

Assessing and managing disease levels close to harvest

THE SPRING AND EARLY SUMMER of the 2017 vintage has been unusually mild and wet and this may lead to increased disease pressure. While disease issues at the time of writing do not appear to be as widespread as the very wet 2011 season, the AWRI helpdesk has received more than the usual number of queries about how to manage disease-affected grapes close to harvest.

The vineyard and winery both face a range of decisions when fruit is affected by disease at this point, with questions about whether the fruit is suitable for harvest and processing into the intended wine quality or style.

HOW DO I TELL HOW MUCH DISEASE I HAVE IN THE VINEYARD?

If there is any concern about the presence of disease and its potential impact on wine quality, often the first step is to complete a disease assessment. This can be as informal as the winemaker and/or viticulturist walking through a representative section of the vineyard and looking at the fruit. More often it involves a more formal assessment, especially if the outcome is likely to affect the price paid for the fruit.

The assessment process can vary, but typically 200 or more bunches are inspected from throughout the canopy, evenly spread across the vineyard. Bunches are assessed for the incidence and severity of disease. Incidence is the presence or absence of disease in each bunch, whereas severity is the proportion of each bunch that is affected by disease. Both assessment methods are then averaged across the whole sample.

The assessment of the presence or absence of disease within a bunch is relatively easy and results are normally consistent between assessors.

Assessing disease severity is more subjective, as the proportion of each bunch that is affected by disease needs to be estimated. Normally a key containing diagrams or photographs of disease-affected bunches is used.

The University of Adelaide has recently released a smart phone application to help with the assessment of powdery mildew (search for PMapp in the app store). The app logs the location of the individual bunch assessments as well as the score and then calculates the incidence and severity continually as the assessment progresses. This is a potential improvement on the traditional pen and paper; however, users should make sure their phone is well-charged, as using the screen and GPS for extended periods is demanding on batteries.

PMapp also contains images and diagrams that can be used for practising assessment of powdery mildew. It can also be used to assess other diseases such as Botrytis, but does not



Chardonnay bunch infected with powdery mildew (photo Eric Wilkes).



IT'S TIME FOR POST HARVEST

Stoller Post Harvest treatment
Post Harvest 23 and Nutri-pHLow

Support next years crop now with Stoller



CONTACT STOLLER AUSTRALIA ON FREECALL 1800 FERTILISER OR VISIT WWW.STOLLER.COM.AU/HIBERNATION

contain any reference diagrams or pictures. Another online tool, the Bunch Rot Assessment Trainer (<http://bunchrot.co.nz/>) developed by Plant & Food Research and HortPlus in New Zealand, is a good source of images of Botrytis and also allows users to practise estimating severity.

HOW MUCH DISEASE IS TOO MUCH?

The effects of different levels of disease depend greatly on the style of wine that is to be made. For example, the laccase enzyme that is produced by Botrytis is potentially more detrimental to red wine quality than white wine quality, as it will break down the anthocyanins, resulting in brown wine. Wine companies will often stipulate a rejection threshold of three per cent in their contracts. Care needs to be taken in interpreting this value as there is a large difference between three per cent incidence (three bunches in 100 contain some disease, even one berry) and three per cent severity (the average amount of disease across all bunches in the vineyard is three per cent). Significant changes in Chardonnay sensory profiles have been reported in wine made from bunches with one-to-five per cent severity of powdery mildew infection compared to disease-free grapes (Stummer et al. 2005).

WHAT CAN BE DONE TO MANAGE DISEASE CLOSE TO HARVEST?

Immediately prior to harvest there are very few fungicides that can be used effectively to manage or reduce the amount of disease present. So, most of the focus is on monitoring and avoiding harvesting the disease-affected fruit. Monitoring disease development is critical as a block can move from being suitable to unsuitable for winemaking in just a few days, especially if the weather is wet and humid.

Often disease will only be in pockets in the vineyard, for example in low-lying areas where the canopies are larger. A good strategy is to divide the vineyard into affected and unaffected sections and then harvest the unaffected fruit; the mapping function in PMapp may be useful for this (try importing your disease assessment results into <http://batchgeo.com/> to create a map).

Another strategy that can be used for premium fruit is to remove the disease-affected fruit prior to mechanical harvesting or to instruct the pickers to avoid the disease-affected bunches, but the economics of these approaches would need to be considered carefully.

For more information about assessing and managing grapevine disease, please contact the AWRI helpdesk on helpdesk@awri.com.au or 08 8313 6600 or.

MOBILE WATER STATUS SUPPORT

A NEW SMARTPHONE APP that helps grapegrowers measure the water status of their vines is being trialled across Australia. The portable viticultural tool has the potential to help grapegrowers make improved water management decisions for their vineyards. Grapegrowers use a thermal camera attached to their smartphone to take images of the canopy of the grapevine. The image is analysed by the app, which calculates the vine water status. The technology is being tested by 15 vineyards across South Australia, Victoria, New South Wales and Tasmania for the rest of the growing season.

The Wine Australia-funded project is being led by the South Australian Research and Development Institute (SARDI), a division of Primary Industries and Regions SA, in close collaboration with The University of New South Wales (UNSW).

“Water and associated pumping costs can be a significant component of the production costs for grapegrowers,” said Dr Kathy Ophel-Keller, the South Australian Research and Development Institute (SARDI) acting executive director.

“Uncontrolled water stress has the potential to reduce the yield and quality of grapes and the resulting wine, which in turn reduces the return to growers.

“The management of vine water status is a key tool for grapegrowers to regulate yield and optimise fruit quality and style.

“This new app offers grapegrowers instant feedback on the water status of their vines, and provides them with the flexibility to assess multiple blocks or sections of blocks, and to make irrigation decisions in real time.”

The 18 month project aimed to evaluate a range of smartphone-based sensing systems to develop a cheap, easy-to-use vine water status monitoring app, to assist growers to manage irrigation.

Initial trial results found the thermal camera was the easiest to use and provided accurate information.

The app was developed by UNSW and the tool is now being tested by a variety of wineries, with their feedback helping to inform the further development of the innovative technology.

The aim is to release the final version of the app later in 2017.

Reference

Stummer, B.E., Francis, I.L., Zanker, T., Lattey, K.a., and Scott, E.S. 2005. Effects of powdery mildew on the sensory properties and composition of Chardonnay juice and wine when grape sugar ripeness is standardised. *Aust. J. Grape Wine Res.* 11: 66-76.

SUPERIOR HEDGING SYSTEMS

The extra edge in productivity and canopy management

- Affordable modular system – add as you go
- Available in four lengths and multiple configurations
- Medium or heavy duty
- Robust construction, low maintenance
- Easy mounting to tractor with hydraulic masts
- Versatile – use for pruning or trimming
- Suitable for hedging olives, orchards and hedges

WHITCO
Vineyard Pruning Equipment

HEDGER BAR SYSTEMS • CANE RAKES • MASTS AND MOUNTING SYSTEMS

Designed and manufactured in Australia by Whitlands Engineering
Call 1800 702 701 for a colour brochure/DVD
To find your nearest dealer, visit www.whitcovinquip.com.au

