



DISEASE & SEASON UPDATE – November 2020

November tips

- ✓ **Irrigation** system operating **pressures** and dripper uniformity should be checked at the start of the irrigation season before problems could have lasting impacts on vineyard performance. Water velocity through driplines is important to **effective line flushing** and reducing dripper blockage risk. Valve design and flushing methods are key factors. Talk to your irrigation specialist for advice on these.
- ✓ Do you have a **bushfire management plan** for your property? If you have your own firefighting equipment, is it ready to go?
- ✓ When was the last time you checked the status of your **spray tractor cabin carbon filters**? These are a vital safety item and should be checked regularly and replaced before they lose efficacy.
- ✓ Have you considered potential biosecurity risks to your vineyard? What **farm-gate hygiene practices** do you have in place? The Vinehealth Australia website has a range of useful resources. <https://vinehealth.com.au/2018/01/farm-gate-hygiene/>

Weather & season update

August, September and October rainfall were all above long-term averages which helped make up for the below average May to July period. This in combination with good rains in early and late April not only ensured good soil moisture at key stages for vines but has also been beneficial to soil health via supporting organic biomass production (ie midrow crops) and soil biology. Good soil moisture prior to and since budburst has also been beneficial to soil nutrient mobilization and vine nutrient uptake. The table on page 2 provides a weather summary for September and October.

Winter and spring weed control has been more involved this year and has highlighted the value of good planning, timing and integrated weed management practices.

Budburst percentages and shoot growth have been very strong this season and in some cases vine canopies have become more congested than ideal. This season has been a reminder of the merits of shoot-thinning in certain cases, which will be a topic covered at the June 2021 Barossa Pruning Expo.

Whilst there were some tense nights for growers in frost-prone areas through September, this season has

been a largely low frost-risk spring with only a few isolated cases of relatively minor damage on 27 September.

Most vineyards and varieties are showing average to above-average bunch numbers and size, especially where there was sufficient rootzone soil moisture before budburst last season.

Vine phenology (ie EL timing) appears to be more disparate across varieties, sites, vine ages and pruning timing this season. Many people report vine phenology being about 2-3 weeks later than last season. There is usually some 'catchup' through the growing season, however the combination of this wide-ranging phenology and better yields is likely to see the 2021 vintage being more favourably spread-out than recent vintages.

There have been mixed reports on flowering in some early varieties such as Chardonnay, whereas other reports are that flowering has been quick and uniform. Most Barossa Valley vineyards are now through capfall, and Eden Valley is anticipated to complete flowering over the next 1-2 weeks. The two recent days of higher temperatures and wind (10/11 & 15/11) may cause concern for some growers after last season's experiences. It is unlikely that these short bursts will have a significant impact on fruit-set percentages in those vineyards that were into or through flowering. It is worth noting that bunch 'shatter' as it's known - where some berries fall from the bunch 8-12 days after flowering - is a natural phenomenon in grapevines and occurs in many horticultural crops. Inflorescences start with many flowers but in most cases only 20-30% of these develop into berries (Dookooslian, 2000). The poor fruit-set last season was due to several factors with many periods of temperatures below 15°C before and during flowering being a key factor. The very severe heat spike on 20 November was also a factor in some vineyards, as was plant water stress - although 2019 wasn't unique in that regard. Wind can affect flowering but to a much lesser extent in grapevines than in other horticultural crops. This AWRI FactSheet is a good reference on flowering and fruit-set processes https://www.awri.com.au/wp-content/uploads/3_phenology_flowering_and_pollination.pdf

Trunk disease (eg *Eutypa lata* and *Botryosphaeria* spp.) has been more evident in affected vineyards this season. This may not necessarily indicate that incidence has increased as much as it may appear, because symptom expression can vary from season to season due to several factors. Some vineyards have noticed more Light Brown Apple Moth (LBAM) larvae this season, although in most cases natural predators are keeping these at low levels.

2020 Actuals compared to Long Term Averages (LTA)

Source: Bureau of Meteorology website

wetter dryer

cooler warmer

Month	Rainfall (mm)		Raindays (>1mm)		Min Temp (°C)		Max Temp (°C)	
	2020	LTA	2020	LTA	2020	LTA	2020	LTA
Nuriootpa								
September	50	60	7	9	7.9	6.7	18.6	17.8
October	57	36	8	6	9.3	8.2	20.8	21.5
TOTAL	107	96	15	15				
Mt Crawford								
September	74	73	9	10	7.5	7.3	15.9	15.1
October	99	45	12	6	9.0	8.5	18.3	18.3
TOTAL	173	118	21	16				
Roseworthy								
September	50	46	7	7	7.7	6.3	21.5	19.8
October	51	30	8	5	8.9	7.7	23.3	23.9
TOTAL	101	76	15	12				

Downy Mildew

There have been a few isolated reports of Downy Mildew (DM) oilspots in Barossa subsequent to borderline Primary Infection events on 8 and/or 24 October. These have only been single oilspots, some of which had gone to Secondary Infection stage. Protectant sprays in those isolated cases appear to have prevented a second generation of oilspots and these older oilspots will become inactive within 1-2 weeks. A notable observation with some of these isolated cases is that the oilspots found were only in areas with **water lying in gullies or wheel tracks** in heavier soils. This suggests borderline primary infection weather conditions, but also serves as a guide on where to focus **disease scouting** for DM. The risk of DM infection and any potential crop loss is now rapidly diminishing as we go into drier months and we get past flowering and to the immune pea-size berry stage (EL31). Whilst DM infections can still occur on bunch stalks and leaves after EL31, this would take an ideal sequence of multiple DM weather events over several weeks to become a significant risk. Nonetheless, this season merits **maintaining DM preventative spray cover** further into the season than might be merited if the weather outlook was much dryer. As always, the key is **regular monitoring** of your vineyard for DM oilspots and to act quickly if any clusters of oilspots are found.

Powdery Mildew

This growing season has so far been significantly more favourable to Powdery Mildew (PM) development than the previous two seasons due to generally moderate temperatures and humidity, and more cloudy days. Vine canopy density is another elevated risk factor in some vineyards, both in terms of disease conditions and spray coverage. Some growers have adopted shorter spray intervals this season as an effective way of reducing risk, which is an appropriate strategy in higher-risk vineyards and seasons. PM disease pressure has been relatively low over the last two seasons, however if the timing and/or efficacy of any of your early season PM sprays were disrupted this season then extra diligence is merited. The risk of late-season leaf infection could be higher this season, especially with later harvest varieties. **Withholding periods** come into effect with some sprays from hereon, hence remember to always check your vineyards' phenology and your spray diary restrictions when planning sprays. Whilst PM sprays between budburst and flowering (suggested minimum of 3) are the most critical, a PM spray not too long after flowering is also crucial to **protect newly formed berries**. Spray water volumes and coverage of bunches should also be checked and adjusted as necessary at this time. It is best not to assume that what was effective and appropriate last season will automatically be the same for this season. **Consider canopy density and what else has changed since last season** – eg different pruning, different spray unit, worn nozzles, etc. **Checking spraying coverage** with water-sensitive papers or a test run with kaolin clay will soon tell you if you're doing a good job - or if you could be putting your best crop at risk.

Botrytis

There were some reports of leaf botrytis being found after the long leaf-wetness period in late October which suggests increased spore load for later infection risk if there are more extended warm-wet periods through the season. Some growers may have applied a botryticide at 80% capfall to higher-risk blocks and/or varieties. There are also some botryticide spray options after flowering. Expert advice should be sought on these and again check with your grape purchaser. There are no simple yes or no guidelines to the merits of these botryticide sprays and ultimately it comes down to balancing up the risk factors, the economics and the risk-aversion of the decision maker. Season-variable factors such as canopy density, bunch congestion, yield and nitrogen status are also worth considering. Very good spray coverage of the flowers / berries is essential for any of these sprays to significantly reduce the risk of latent and later-season bunch rot if the weather favours development.

Spraying at flowering

Some people have a view that sprays applied at flowering can disrupt flowering processes in wine grapes which may reduce yields. The basis of this view can usually be traced back to potentially outdated information or some general assumptions. Copper-based sprays are sometimes singled-out based on the potential for what is known as phytotoxicity. Some older research showed these effects, however these were generally based on old copper formulations or were experiments in more copper-shy horticultural crops or table grapes. Modern copper formulations have very low phytotoxicity risk and use lower rates than were common decades ago. Some product labels mention avoiding use on copper-shy varieties, however this is most often related to leaf symptoms and very few wine grape varieties are regarded as being copper-shy. Product manufacturers do extensive testing on agrochemical products before they are released to the market and no manufacturer would recommend products that have shown significantly detrimental effects on crop yield.

Whilst flower parts exposed at capfall do have delicate tissues, pollination is one step of several processes that determine final berry number per bunch. Pollination can also take place under flower caps, and flowering and fruit-set processes are far more sensitive to temperature than correctly used fungicide sprays. A wide range of spray products are commonly applied at flowering in many vineyards with no negative impacts observed. What should of course be avoided is applying any products in excess of recommended label rates, and appropriate concentration factors and water rates. This includes high rates of wettable sulphur under hot-humid conditions, and high rates of foliar nitrogen products which may interfere with fruit-set metabolic processes. It is of course possible to avoid spraying for a week or so once capfall has started, however there is no merit in avoiding such sprays if that is detrimental to good coverage and disease control.

Climate Outlook

The recent Bureau of Meteorology climate outlook states that a La Niña is underway in the tropical Pacific, and December to February rainfall is likely to be above average across most of Australia. The Nuriotpa median for this 3-month period is 64mm. Maximum temperatures are *likely* to be above median and minimums *very likely* above median for this same period. La Niña seasons tend to give rise to concerns of a wet vintage and possible bunch rot in susceptible varieties and vineyards. Years like 2011 come to mind for some people, however 2010-2011 recorded the strongest La Niña on record and was a unique period in other respects. As explained in a recent Wine Australia article, **La Niña doesn't guarantee a wet summer** <https://www.wineaustralia.com/news/articles>

Irrigation

Irrigation prior to flowering has been commonplace in recent seasons, and has been merited again in some vineyards this season to minimise the risk of plant water stress affecting flowering. The merits of this can range from being verified by soil moisture readings, through to 'playing safe' in high yield target vineyards. In some cases, these have also been to fertigate for specific goals. In low evaporation sites and with under-vine mulch this hasn't generally been necessary, but with the onset of flowering we typically see a rapid increase in vine water use so it is important to keep a close eye on soil moisture and the weather. The majority of early season moisture extraction prior to flowering tends to be in the top 30-40cms, with deeper rootzone extraction ramping up quickly after flowering. A key consideration is how much irrigation to apply at this early stage of the season so as to not waste water, cause waterlogging or unnecessary nutrient leaching of the rootzone. This is where soil moisture devices are very valuable. Some monitoring systems can also indicate soil temperature and salinity factors.

Below are some key considerations with irrigation management at this stage of the season:

- Do you want to hold-back or promote more shoot-growth after flowering? To do the former means imparting a soil moisture deficit shortly after fruit-set. This usually means holding-off irrigation or only applying very small amounts until the desired effect is achieved.
- What are the goals of the vineyard / block in terms of quality and yield? Berry-size is most sensitive to moisture deficit immediately after flowering hence this is when the irrigation 'lever' can be used to greatest effect in either direction in dry climates although larger rainfall events and very mild weather can of course negate this lever.
- What is your water budget? If water volumes are quite limited, consideration should be given to what crop level can be supported with that volume to harvest, and when to 'stretch' things, and when to not. Whilst the outlook is for above average rainfall this summer, the timing of these is unpredictable whereas irrigation is.
- Heatwave management. Planning ahead according to irrigation system capacity and site characteristics is important to dealing with heatwaves - which will inevitably occur this summer. Preserving some subsoil moisture for later in the season is especially important in vineyards with limited irrigation capacity to irrigate frequently during heatwaves. Whereas in deeper, slow-drying soils and with good irrigation capacity, this is less critical. Early season irrigation strategies will affect how much vines extract from the subsoil.
- Earlier this season Barossa grower and Grape Barossa Chair Will Holmes talked about water budgeting and irrigation management in dry seasons. You can view the video here: <https://vimeo.com/444736871>
- Many vineyards have larger canopies and significantly more leaf area and crop-load this season. This will likely see more rapid rates of vine water use compared to last season. Whilst soil moisture levels have started out much better than last season, vines on shallow soils will soon be heavily reliant on irrigation. Again, soil moisture monitoring can help take the guesswork out of adjusting irrigation regimes to each season.

Nutrition management

Petiole analysis is a valuable tool for supporting good decision making with vineyard soil management and cost-effective fertiliser inputs. Petiole analysis data can also help with problem diagnosis, tracking of vine nutrient trends over time and to assess the impacts of changes in vineyard management. Petiole sampling is typically done at around 50-100% capfall because this is a consistently definable stage in vine phenology, and most benchmark values for each element have been established at this stage. Petiole testing can also be done at other times such as veraison, however interpreting the results is more difficult as there are limited benchmark values at this stage. Contact your agronomist or laboratory for information on optimal sampling procedures. It is also important to collect the whole petiole between the shoot and leaf blade connections as research has shown that there are differences in nutrient concentrations along the petiole.

Seeking expert advice is generally recommended with the interpretation of results. Below are a few tips to consider though if you send your samples directly to the laboratory and rely on their reports.

- Foliar fertilisers applied before flowering can skew results due to surface contamination. Ideally some rows should be set aside for sampling in the block where no foliar fertiliser products are applied.
- Mancozeb sprays can skew zinc and manganese results as this active contains traces of these elements.
- Weather conditions at the time of sampling can affect some nutrients - especially nitrate and potassium which are very dynamic in the plant. Avoid sampling on very hot or cold days and ideally sample in the morning.
- Unusually wet or dry seasons can skew some elements. For example, iron tends to be lower in cool wet soils.
- Benchmark ranges can vary between laboratories. It's best to stick with one lab to track changes over years..
- The more historical data you have the more useful the results become.
- Soil test results for the same block will enhance interpretation and the design of optimal fertiliser programs.
- Look for visual symptoms of deficiencies in old and young leaves. See online resources or get expert help.
- Nitrate nitrogen is highly dynamic in plant tissue and is not a good indicator of N status. Total N is somewhat better but visual assessment of shoot vigour and leaf colour is also a good guide. Grape YAN is also useful.
- Yield is important to consider when interpreting results. Most benchmark values are for high-production goals, and low yielding vineyards can still perform well with lower levels of some elements.
- Petiole and soil tests are very useful to track emerging salinity issues before they might appear visually.

Differences in vine growth and petiole test results over the last four seasons have highlighted how much some nutrients can fluctuate. What has been evident over this period is that vineyards with good soil structure, higher organic matter and biological activity have maintained better and more consistent nutritional status. Seasonal conditions can have significant effects on some nutrients or cause transient effects that may not require immediate action.

Below are some general insights on vineyard nutrition and this season, but as always, seek expert advice as required:

- ❖ Low potassium was evident in some vineyards this season due to cold wet soils. This usually abates as soils warm up. Potassium deficiency isn't common but can arise in sandier soils and with high yields.
- ❖ Nitrogen levels have so far this season shown to be adequate to luxurious. Fertigation and foliar N inputs should be adjusted in-line with the desired canopy size and yield. Some sites will require no extra N. Excessive inorganic N inputs can increase fungal disease risk, cause deficiencies in other nutrients, reduce red wine quality and can lead to greater acidification of the rootzone over time.
- ❖ Where N is merited it is best applied (fertigated) as several small doses, but not during flowering or after veraison.
- ❖ Soil and plant phosphorus levels can become luxurious after many years of DAP inputs with cover crops. Raising organic matter can improve P availability, and some vineyards could reduce P inputs for a while
- ❖ Foliar 'salt' symptoms have been evident in vineyards with high soil sodium levels and poor soil drainage. Effective flushing of salt by winter rainfall depends on soil type, drainage and calcium levels. Improving organic matter and soil calcium levels (eg mulch & gypsum) can help buffer against salt impacts and structural decline.
- ❖ Lower iron levels have been evident in some vineyards this year which can be transient and/or pH related.
- ❖ Lower manganese levels have been evident in quite a few vineyards. This is relatively common on higher pH clay loams. Foliar Mn sprays are sometimes merited. Look for foliar symptoms in older leaves.
- ❖ Zinc levels were low in some vineyards last season but appear to be better this year. Foliar Zn pre-flowering is relatively common to reduce the risk of low Zn affecting flowering. Petiole testing can guide the merits of this.
- ❖ Calcium and Magnesium are very important macronutrients and are sometimes neglected. The soil ratio of these is also important to soil structure and plant nutrition. In some cases, foliar calcium can be beneficial.

- ❖ Improving soil health (physical, chemical and biological) should always be a priority. Organic matter is the lifeblood of soils and when everything is in balance, vine nutrition and profits are easier to manage.

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