

How to start irrigating with less water

Before making any significant change to practices it is important to prepare in the following manner:

- Identify soil types in the vineyard.
- Establish a means of monitoring moisture in these patches of different soil (tools range from dig sticks to computerised moisture monitoring).
- Become familiar with growth stages of vines on your property.

THE FOLLOWING BROAD DESCRIPTION OF THE GRAPE PRODUCTION CYCLE AND WATER REQUIREMENTS WILL ASSIST WITH DECISION-MAKING ABOUT TIMING AND THE AMOUNT TO APPLY.

After Harvest

- The vine is still actively growing after harvest, building vine reserves - a process that requires adequate moisture and nutrients.
- Consider a post-harvest irrigation.
- Monitor soil moisture through winter to ensure the soil profile has good moisture levels going into budburst.

Fruitset to Veraison

- From fruitset to veraison (known as the Regulated Deficit Irrigation or RDI period) start by allowing the soil around the majority of roots to dry by reducing or ceasing irrigation.
- Continue to dry the profile until vegetative growth slows or stops (indicated by monitoring data and visual inspections). Once this has been achieved, controlled irrigations can start again if vegetative growth is not restimulated.
- The RDI period is defined as being from when any signs of flowering are over and full early set is obvious, continuing to the first sign of colour change in skins (start of veraison).

Veraison to Harvest

- Moisture monitoring continues to be useful in the period from veraison to harvest to keep moisture levels within a desired range for steady healthy growth.
- By checking the amount of applied water that goes past the rootzone, water use efficiency can be improved. If only 10 % or less passes through this is regarded as high efficiency.
- Water saving is best achieved by supplying needs for steady vine growth and berry development without excessive wastage past the rootzone, and not by a constant deficit. This regime should continue until harvest.

Monitoring

Familiarisation with soil moisture monitoring equipment and key visual signs exhibited by vines about their moisture requirements is vital. Soil moisture monitoring data shows changing patterns of moisture levels, the points of extraction from the profile and effects of rain and hot dry periods.

Vineyard inspections of general vine health, internode lengths and state of tendrils will assist decision-making. There are varietal differences, with Shiraz being quicker to show inactive tendrils than Cabernet Sauvignon at the same level of moisture deficit.

Scheduling of irrigations will be influenced by soil type (eg. available water, infiltration rate, soil depth), weather (eg. subsoil reserves after winter, evaporation, rain events) and stage of growth.

Important risks when attempting to cut water applications

- Keeping soil too dry throughout the growing season will increase the risk of poor yield and poor quality.
- Dry subsoil in winter and early spring can lead to poor budburst and variable yield
- Vines under stress because the soil is too dry during flowering have been associated with low berry numbers.
- A late season deficit just prior to harvest presents the risk of berry shrivelling and grapes not attaining optimum maturity.
- Timing is therefore critical and it is important to consider scheduling based on monitoring and general water use efficiency.
- RDI is a specific practice at a specific time. It aims to enhance quality by controlling vine growth and in the process less water is used than the amount desired by the vine. Extreme deficits, however, are not advised. More will be gained by general water use efficiency via monitoring.
- It can be risky to apply so little water to a section of the property that the vines in question will take more than one season to recover. The critical point will vary with each situation but, for purposes of illustration, consider that there is a warm inland property where applying 3 megalitres/ha or less will, according to regional advice, risk a sustained setback. On this 20 hectare property there are 15 ha of Shiraz and 5 ha of Cabernet Sauvignon and all hectares have been used to a uniform 6 megalitres within a 120 megalitre allocation. With the onset of restrictions of, say, 25% there is now only 90 megalitres to budget and there could be a temptation to forgo a profitable yield from the lower priced Cabernet Sauvignon and allocate all 90 megalitres to the 15 ha of Shiraz without change to irrigation practice (ie all Shiraz will get the usual 6 megalitres).

This puts the Cabernet Sauvignon at too much risk, however, and it would make better sense to use monitoring and scheduling to reduce allocations to Shiraz to, say, 5 megalitres/ha without effects on profit, while providing the remainder to the Cabernet Sauvignon to reduce risk of extended effects on productive capacity.

Further information

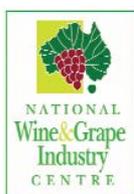
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