Eight years of geo-climatic characterisation of Macedon Ranges Vineyards

Initiated by *GrapeLinks* and the *MRVA*, an in-vineyard temperature and phenology study in 27 Macedon Ranges vineyards is now in its 8th year.
In each vineyard a *Tinytag* temperature data logger in a south and bottom open shelter was placed in a representative block of mainly white varieties, into the canopy at 1.20 above ground. Hourly data were calculated as accumulated degree hours pre- and post veraison and those above 35°C (heatloads) and below 15°C (cold night index). To compare vineyards with different ripening duration the degree hours were divided by the days of the observation period. Also the percentage of degree hours spent in the beneficial bracket between 15°C and 35°C were calculated.

Heatloads, and in particular cold degree hours, showed a subdivision of the region into 5 geo-climatic zones with the coldest vineyards in Highlying positions, cold vineyards were found in the Central subregion, followed by the vineyards on the Western ridges. The vineyards South of the Dividing Range were warmer and the Northern vineyards were warmest, but still exhibited cool climate characteristics.
The results of the first 5 years of the study can be found in the information booklet "*Macedon Ranges Cool Climate Vineyards and Wines".*

Cold degree hours did not diminish every year (with a general warming of the global atmosphere), they cycled in step with the El Niño/La Niña occurrences. There were four distinctly cold ripening periods in 8 years and only one warmer El Niño season.
Diurnal temperature curves of each vineyard, with veraison and harvest dates indicated, facilitated the monitoring of daily temperature conditions between seasons. The reports each year allowed a comparison between sites and subregions.

In the last 8 years, veraison dates in the Macedon Ranges were earlier when the air temperatures were warmer and there was lower rainfall in the preceding months. Harvest dates were related to veraison dates, except in the very cold autumn 2021.

Mean monthly temperatures in March, which is the main month of ripening, could be retrieved from the data loggers. They were between 14.6 and 17.7°C and reflected the vineyard's positions in the geo-climatic subzones, however, in some cases the meso-climate of a vineyard (e.g. wind exposed on hills or close to tree lines) created outliers in each of the zones, which were explained by the photographs of the sites.

In 2021 the average Mean March Temperature of the vineyards in the Macedon Ranges (15.9°C) was the coldest of Australia, lower than that in Tasmania. It varied between 15 and 20°C over the last 8 years, whereas in that period the Rheingau and Burgundy mean August (month of ripening) temperatures varied between 19 and 25°C.

In the Macedon Ranges the Growing Season Temperature (October to April) over the last 8 years was 16.4°C, whereas in the Rheingau it has risen to an average of 18°C in the same time period. The combination of ocean proximity, high latitude (37°S) and altitude (600m) create a very special cool climate grape growing area, which is less affected by global warming than its European counterparts. It is worthwhile to continue this study as the data can help with site-adapted management practices, monitor the rare cool climate temperature signatures, and help to preserve the precious cool climate aromas and flavours of the region's wines.