Accidental terroir- influence of soil on wine flavours in adjacent Pinot noir blocks of the Mornington Peninsula

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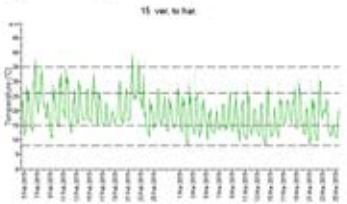
Eldridge Estate is situated at an altitude of 180- 225 m on north facing slopes of a 600 m high ridge of the Mornington Peninsula, Victoria, in SE Australia (Fig.1).

The two Pinot noir blocks, both encompassing a mix of clones of G5V15, 115 and 777 are located in the upper Southern part of the property and in the lower Northern part (Fig. 2, Upper= blue arrow, Lower=red arrow).

Row orientation of both Pinot noir blocks of the property is N/S with bunches at the Eastern side of the row (Fig. 3, left) of a Scott Henry trellis exposed to the morning sun and on the warmer western side covered in 1.5 leaf layers (Fig.3, right).

Electronic data loggers (*Tinytag Hastings, Port Macquarie*) were attached within the vine canopy at the height of the bunch zone and readings were taken every hour (Fig. 4). Bunch zone temperature management and monitoring was performed by *GrapeLinks, Melbourne* in 20 Pinot noir vineyards of the Mornington Peninsula (Winter and Lee, 2016).

Such differential canopy management resulted in only very few heat loads above 35°C in the bunch zone during the ripening period (as an example in Fig.4 data from a logger in the upper block).



Vineyard management was similar in both blocks with no irrigation, one early undervine herbicide treatment in both blocks, and grass sward in the midrow.

In 2015 grapes in the Lower block ripened earlier with similar crop load (2.5t/acre) and were harvested 2 days before the Upper block with 22.9 Brix (compared to the upper patch yielding only 22.7 Brix 3 days later). Berry sensory assessment did not result in drastic differences.

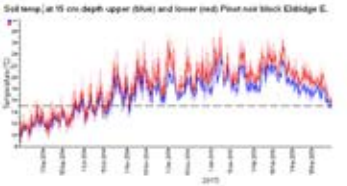
However under the same winemaking conditions (using a *Vaslin-Bucher* E1 de-stemmer into small stainless steel fermenters (1 tonne) with indigenous yeasts, the same bacterial culture for malolactic fermentation ferments pressed 5 days after they went dry and placed into a tank for a week before going to identical oak barrels) wines tasted distinctly different.

The wine from the Lower part of the vineyard was richer, more structured whereas that from the Upper part was more elegant and aromatic.

Wine analysis

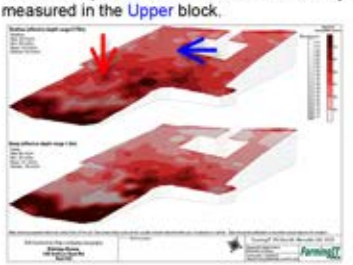
Soil temperature data loggers (*Tinytag Gemini Plus 2 TGP-4020 Hastings, Port Macquarie*) had been inserted at 15 cm depth between vines (Fig. 3) in both blocks and had been programmed to read every 20 minutes.

Soil temperatures at 15 cm depth (Fig. 5) had larger amplitudes and reached lower values in winter in the Lower block compared to the Upper block. From late October onwards rainfall events led to similar subsoil temperatures in both blocks, however from mid January a dry period until shortly before harvest led to the soil in the Lower block being consistently warmer than that in the Upper block. A similar result was obtained in 2014.



Soil pits were excavated by *Soil Solutions LCC, USA* and soil in the Upper block was loamy silt (40% sand, 40% silt, 20% clay) to 18 cm, then silty loam (20% sand, 55% silt, 25% clay), overlying deep clay loam from 38 cm onwards. In the Lower section soil was determined to also be loamy silt in the first 18 cm but then followed by clay loam (30% sand, 30% silt and 40% clay) overlying heavy clay from 55 cm onwards (30% sand, 10% silt and 60% clay).

An EM38 scan was performed of the whole vineyard by *Farming IT, Meredith* after good winter rainfall when soil was close to field capacity. In particular at a depth of 0-75 cm conductivity was higher at the part of the Lower block where soil analysis had been performed (Fig. 6 red arrow), indicative of heavier soil with a lower amount of available water, compared to the lower conductivity measured in the Upper block.



Soil moisture probes will be installed up to a depth to 80 cm in both locations to monitor the fate of rainwater in those differing soils. The clay layer under the Lower block may lead to a lower water availability, which may have led to higher tannin concentrations in that wine.

Winter, E. and Lee C.. (2015) From vine to wine – ten years of benchmarking 25 Pinot noir vineyards of the Mornington Peninsula, Australia, Poster, AWITC.