Growing Super Sangiovese in the King Valley

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Introduction

Sangiovese is a flagship variety in the King Valley in NE Victoria. A key objective of the 5-year study encompassing 25 vineyards was that vignerons understand the crucial parameters that influence Sangiovese grape and wine quality, and the viticultural practices that can be implemented to manipulate those parameters to produce top range wines.

Material and Methods

The Sangiovese blocks are located at altitudes between 250 and 435 m with a diverse range of aspects and slopes. Vines were planted between 8 and 28 years ago and cane or spur pruned on mainly VSP trellises. As in previous benchmarking studies[1] canopy traits were assessed on 20 shoots at veraison and pre-harvest for vine balance (cm^2 of active leaf area/g fruit), degree of cane lignification, leaf health and cluster exposure. Data loggers (*Tinytag, Hastings, Port Macquarie*) in the bunch zone recorded temperature hourly from mid-December to harvest. Soil temperature (*TinytagPlus, Hastings*) was measured all year at 100 mm depth. Irrigation and rainfall were monitored. Soil moisture was recorded by *Enviro Scan Solo (Sentek)* probes. Petioles were analysed by *Vintessential, Dromana.* Berry Sensory Assessment[2] was undertaken pre-harvest and grape chemistry from 20 bunches was analysed by *AWRI, Adelaide.* Small lot wines were made from 25 kg of fruit by *Chrismont Wines*. *King Valley Wines* performed post ferment chemical wine analysis and *AWRI* assessed wine phenolics.

In 2016, 2017 and 2018 pre-flowering (EL 17) basal leaf removal[3] (PFLR) of 6 leaves (**Fig. 1, left vine**) was performed in one row of several sites, from which grapes were analysed separately and separate wines were made.

Fig. 1 *Vine with basal leaves removed before flowering (left)*

Seven-month-old wines were assessed by four winemakers. A group meeting with wine tastings followed each vintage (**Fig. 2**).

Fig. 2 *Wine sensory assessment 2018 at Chrismont Wines*

Results and Discussion

The King Valley has ideal conditions for Sangiovese with cool nights and warm days, but global climatic variability and the influence of the mountains can lead to high rainfall pre-veraison making it difficult to initiate RDI (Regulated Deficit Irrigation). A weather proof way of producing smaller berries and bunches was demonstrated via pre-flowering basal leaf removal. This led to lighter and looser bunches compared to controls, even in the rainy 2017 (**Fig. 3**).

Fig. 3 *Lower bunch weight per shoot at harvest through pre-flowering basal leaf removal (LR)*

By veraison, leaf area in PFLR vines was similar to that of the controls. Over the 5 years vine balance was improved at all sites to >10 through less trimming and better control of fruit weight per shoot (ideally < 300 g). Differential canopy management (open to E/S and leaf cover over W/N) was adopted to prevent afternoon heat loads on bunches (**Fig. 4**).

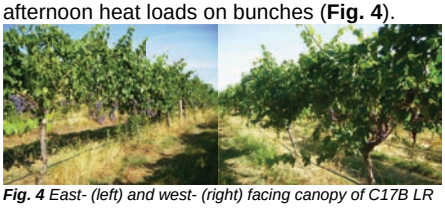

Fig. 4 *East- (left) and west- (right) facing canopy of C17B LR*

Temperature loggers in the bunch zone revealed seasonal and geo-climatic differences between sites, in particular for the average degree hours (degree h/days of ripening) below 15°C and above 35°C (**Fig. 5**).

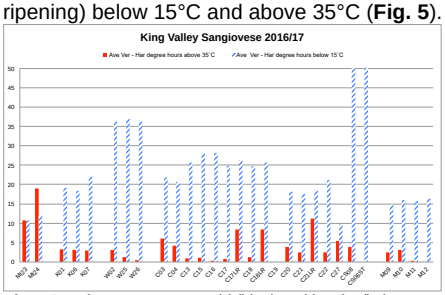

Fig. 5 *Bunch zone average cold (blue) and hot (red) degree hours from veraison to harvest in Sangiovese of Milawa (MI), Central King Valley (K), Whitfield (W), Cheshunt (C) Cheshunt South (CS) and Myrrhee (M) in 2017*

For each site and in each of the 5 years the cornerstones for highest fruit quality were:
(I) Moderate bunch zone temperatures through canopy management, (II) adequate vine balance with longer shoots and fruit weight control pre-flowering, (III) crop estimation after cap fall and partial bunch removal if needed at berry diameter of 2 mm, (IV) *Botrytis* prevention, (V) pre-veraison RDI when possible and (VI) maintaining healthy leaves through targeted irrigation up to ripe harvest.

Grape tannin concentrations were seasonally affected and site related (**Fig. 6**) with lower tannins in all sites in the rainy 2017. In 2018 advanced management practices enhanced tannins even in cooler sites (blue).

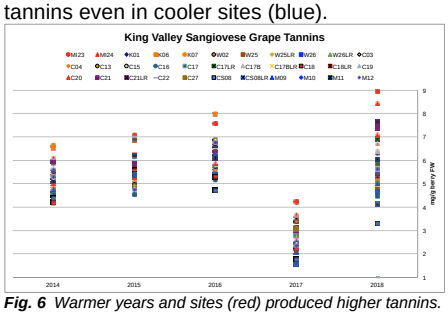

Fig. 6 *Warmer years and sites (red) produced higher tannins.*

Pre-flowering partial leaf removal improved grape colour and tannins (except in C18 with accidental heat loads in PFLR vines) (**Fig. 7**).

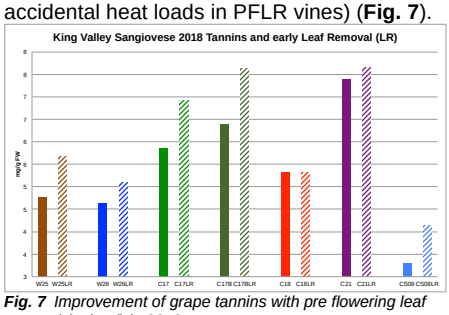

Fig. 7 *Improvement of grape tannins with pre flowering leaf removal (striped) in 2018.*

Wine chemistry showed that high grape tannins resulted in high wine tannins and that PFLR treatments led to a higher amount of pigmented tannins. Wine tastings revealed an improvement in palate volume, hue and colour in most wines from the PFLR treatments (**Fig. 8**) in particular in 2018.

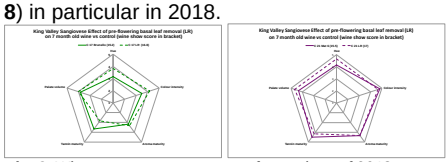

Fig. 8 *Wine sensory assessment of two wines of 2018.*

Conclusion

Measuring crucial grape growing parameters in 25 vineyards over 5 years demonstrated the importance of early season targeted vineyard management. Guidelines for best practice were distributed to all participants and stakeholders. Detailed grape and wine analyses demonstrated the potential for optimised grape and wine quality for each site.

Acknowledgements

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