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INFLUENCE OF YIELD AND HARVEST DATE ON SHIRAZ WINE VOLATILE AND NON-VOLATILE COMPOSITION

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Targeted and untargeted metabolomics was applied to wine samples in order to determine the effect of yield and harvest date on Shiraz wine volatile and non-volatile composition within the same warm-hot Australian mesoclimate. Vines were drip irrigated and trellised to open sprawling canopy with an average yield from 10.2-18.5 kg/vine/vineyard. Shiraz wines were made in triplicates from grapes harvested at two occasions 10 to 12 days apart (harvest 1; H1 and harvest 2; H2, respectively) commencing 12 days from the plateau of berry sugar accumulation.

Wine volatiles were acquired by HS-SPME-GCxGC-TOFMS. A total of 1,276 putative compounds were detected in at least one of the wine samples and 175 compounds showed significant trends related to grape maturity. The first two dimensions of the PCA accounted for 57% of the variation and separated the samples according to the harvest date, irrespective of the yield. Trained tasting panels were able to perceive differences between wines from H1 and H2.

Wine polyphenols and wine pigments were quantified by LC-MS/MS. Vineyard yield had a predominant effect on wine color related pigments, whereas harvest date was of lesser importance. More than 50 quantified polyphenols in wines were poorly correlated with either harvest date or yield.

In conclusion, common evolution of wine volatiles, irrespective of site particularities was noticed for Shiraz, whereas it seems that wine non-volatile composition (colour related compounds and polyphenols) is at bigger influence of site rather than harvest date in the late ripening.