The impact of excess nutrient addition to the sensory and chemical profile of Central Otago Pinot noir

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Poster Abstract

The aim of the study was to evaluate the chemical composition and sensory profile of Central Otago, New Zealand Pinot noir wines produced from relatively high, yeast available nitrogen (YAN) musts with various diammonium phosphate (DAP) additions. The study design involved two independent variables, where wines with three levels of ferment nutrition and two levels of simulated aging were produced in triplicate. The volatile composition and perceived flavour profiles of the wines were evaluated by chemical and sensory methods. Concentrations of esters and fatty acids were measured using stable isotope dilution analysis with HS-SPME-GC-MS method (Kemp 2010). Analysis of volatile sulphur compounds utilised static headspace injection and cool-on-column gas chromatography coupled with sulfur chemiluminescence detection (GC-SCD) (Siebert et al. 2010). The sensory methodology involved nineteen New Zealand wine professionals evaluating the Pinot noir wines by descriptive analysis and by sorting tasks (Parr et al. 2007). Chemical data showed that fatty acids decreased with increasing DAP with the exception of decanoic acid that showed a significant increase as DAP concentration increased. Ethyl esters and branched fatty acid esters decreased with increased DAP with the exceptions of ethyl decanoate and ethyl methyl butanoate. Acetate esters also showed a significant decrease with added DAP additions. Of the sulfides measured, dimethyl sulfide significantly decreased (P <0.05) across the DAP treatments. Sensory data demonstrated that wines of different nutrient additions could be separated by participants on the basis of descriptive terminology employed to characterise the wines. In summary, results demonstrate chemical and sensory differentiation of Pinot noir wines as a function of DAP addition during fermentation.

References:
