Using Sensory Analysis to Understand Cabernet Sauvignon Flavour

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Introduction

This study examined Cabernet flavour in berries and finished wines - from different vineyard regions in South Australia. The objective was to use sensory to identify perceptible markers of "quality" that are important in the finished wines. The application of objective sensory profiling of berries and wines enabled comparison of the major sensory differences between the vineyard regions. To understand how sensory profiling related to what is perceived by winemakers, a group of wine making experts repeated the assessment of berries and wines. The results showed good agreement between both sensory and winemaker panels. Further analysis with Gas-Chromatography-Olfactometry-Mass Spectrometry (GC-O-MS) has led to a comparison of volatile odour-activity in the Cabernet grapes from different sites

Methods

•Cabernet berry samples were harvested from 6 vineyards in 4 regions of South Australia and standard slurries were prepared for evaluation.

•A trained sensory panel (N=10) assessed the berries using descriptive analysis. A panel of winemakers repeated the assessment using free choice profiling (FCP).

•Berry samples from each vineyard were vinified by a wine maker and the resultant wines were assessed by both trained and winemaker panels.

•Volatile analysis was conducted by GC-O-MS to compare differences in the profile of odour-active compounds across vineyards. A trained panel (N=7) profiled the intensity of the odour-active volatiles from each of the separate vineyards. This enabled a deeper insight into sensory differences revealed by descriptive analysis and free choice profiling.

Results

•Principal components analysis (PCA) of the trained panel assessment of berries indicated the hot climate sample (Riverland) had *fruity* characteristics while the milder climate samples had more *green* and *vegetal* notes (Figure 1). A similar trend was seen by the winemaker panel (Figure 2).

•In the finished wines, the hot climate sample was again associated with *berry/fruity* notes while the mild climate samples were associated more with *wood/tobacco* (Figure 3). A similar trend was observed by the winemakers *(results not shown)*

•GC-O-MS analysis revealed quantitative differences in the odour active volatiles in berry samples from the different vineyard sites *(results not shown)*

Fig. 1: Trained Panel Berry Assessment

Fig. 2: Wine Maker GPA - Berries

Fig. 3: Trained Panel Wine Assessment
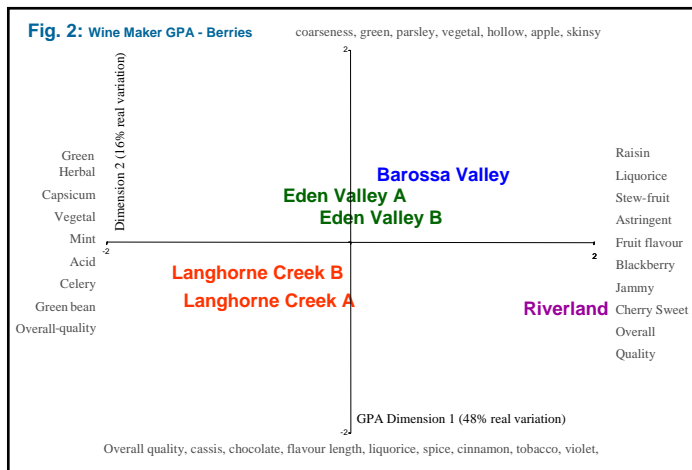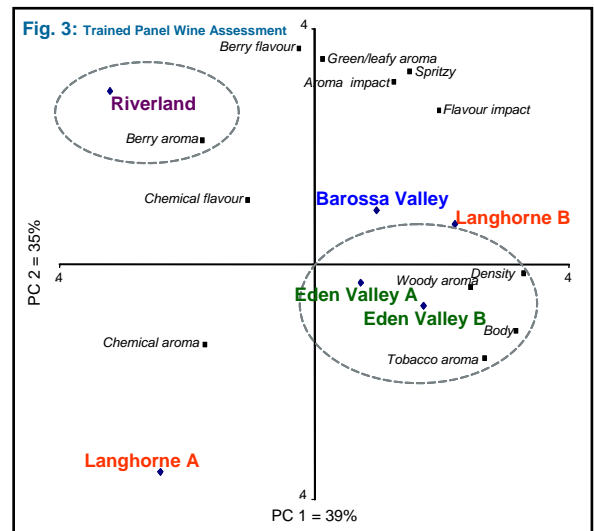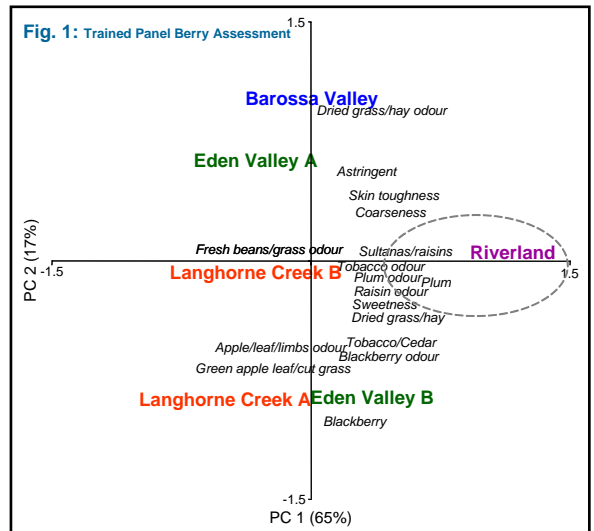
Conclusions/ Future Work

The findings indicated good agreement between trained panel and winemakers on the key sensory factors that differentiated vineyard sites. These results will be validated with berry and wine data from the 2005 vintage