South Africa's top 10 Sauvignon blanc wines.

How do the chemical and sensory profiles compare?

Carien Coetzee[1] and Wessel J. du Toit[1]

[1]Institute of Grape and Wine Science – Department of Viticulture and Oenology, Stellenbosch University, Private Bag X1, Matieland, 7602, Stellenbosch, South Africa

Introduction

The Top 10 Sauvignon Blanc competition, presented by the Sauvignon Blanc Interest Group of South Africa and sponsored by First National Bank, is the country's foremost platform for producers of this cultivar to showcase and benchmark their wines.

The ten selected wines (2015 vintage) were subjected to various chemical analyses including volatile thiol and methoxypyrazine determination, while the sensory profile of each wine was determined using projective mapping. Profiles obtained from the investigation enables wine producers to identify composition of award winning Sauvignon blanc wines through statistically sound sensory evaluation methods.

Methods and Materials

Analysis of the volatile thiols (3MH: 3-mercaptohexan-1-ol and 3MHA: 3-mercaptohexyl acetate) as well as a methoxypyrazine (IBMP: 3-isobutyl-2-methoxypyrazine) were done at commercial laboratory. VinLAB is an ISO17025 accredited laboratory as determined by South African National Accreditation System. Other major volatile compounds as well as terpenes were analysed according to previously published methods[1].

Thirty judges participated in the sensory analysis of the wines during which projective mapping[2] was done. Frequency of citation of attributes was used to construct word clouds in which words used more often by the panel are displayed in a larger font.

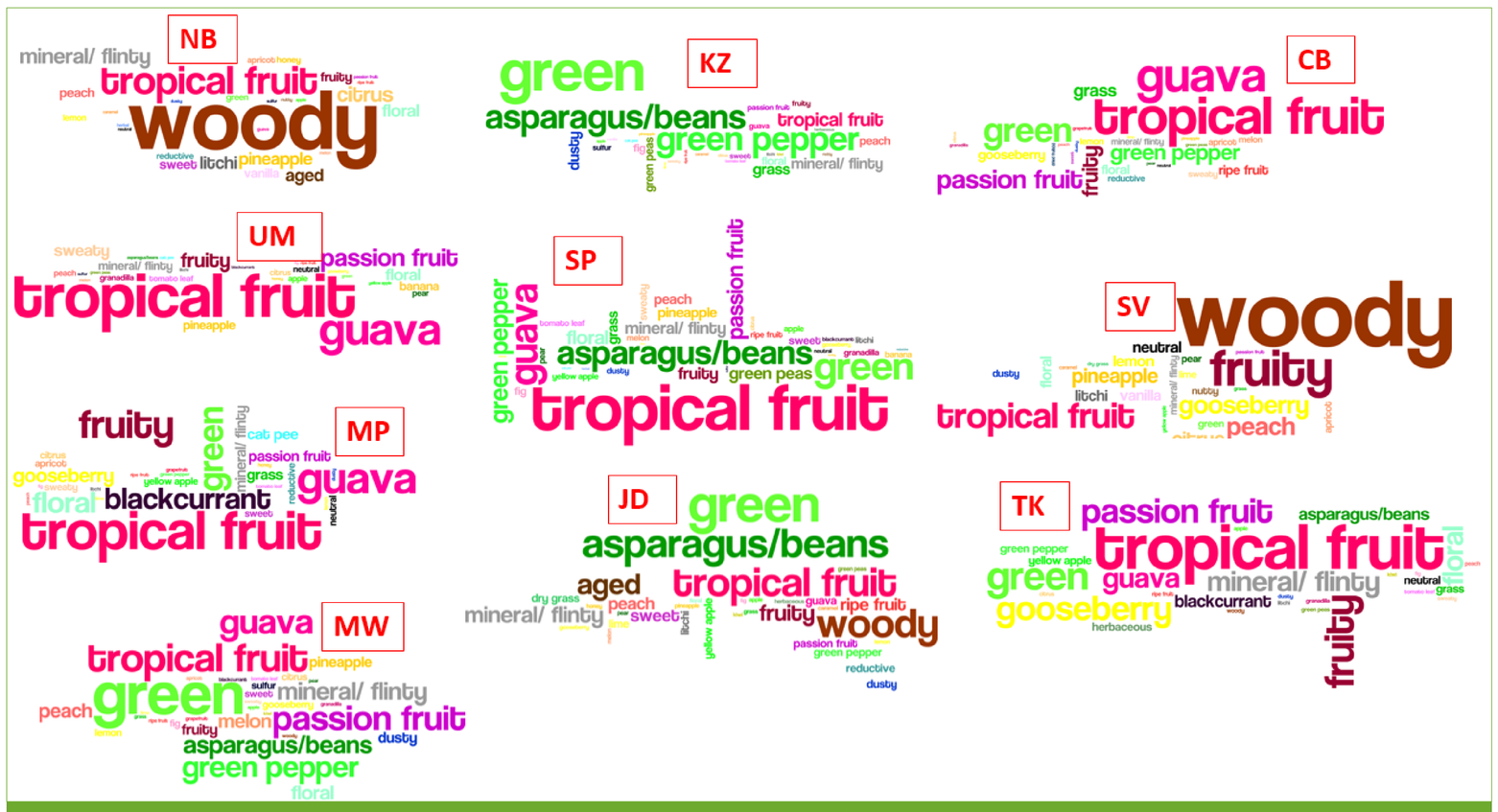

Figure 1. Word clouds constructed using results obtained from projective mapping of the ten selected Sauvignon blanc wines. Words displayed in a larger font indicates terms used more frequently by the sensory panel. Red codes in blocks show specific wines.

Results and discussion

Wines entered in the competition originated from all over the winegrowing regions of the country and the winning wines showed good representation of quality South African Sauvignon blanc wines. Wine styles varied greatly from having predominantly "tropical fruit" aroma to more "green" style wines (Figure 1). These type of attributes are usually associated with the typical Sauvignon blanc impact compounds such as the volatile thiols (tropical associated aroma) and the methoxypyrazines (green associated aroma). Oak contact also delivered wines with a dominant "woody" character while a few wines displayed a combination of all the aroma groups mentioned.

Figure 2 shows the biplot of all aroma compounds measured for the ten wines. Wines higher in volatile thiols (3MH and 3MHA) includes CB, UM and KZ. Comparing the aroma profile obtained from sensory analysis with the chemical composition of the wines (Figures 2 and 3) it is evident that wine aroma did not always correspond with concentration of specific aroma impact compounds. For instance, the aroma profile of KZ was dominated by "green" characters even though it was one of the wines containing highest concentration of 3MH and 3MHA. It did, however, also have a high concentration of IBMP which shows the strong interactive effects wine compounds can have in a complex medium such as wine. Other studies have also investigated these type of interactions and the contribution of the volatile thiols to the "green" aroma of wines has also been reported [3,4].

Conclusions

Results showed great diversity in Sauvignon blanc wine styles: from fresh and fruity to green and even wooded wines. The sensory results of the selected wines did not always correspond to the chemical profile highlighting the importance of other aroma compounds impacting the wines as well as interactions occurring between volatile compounds.

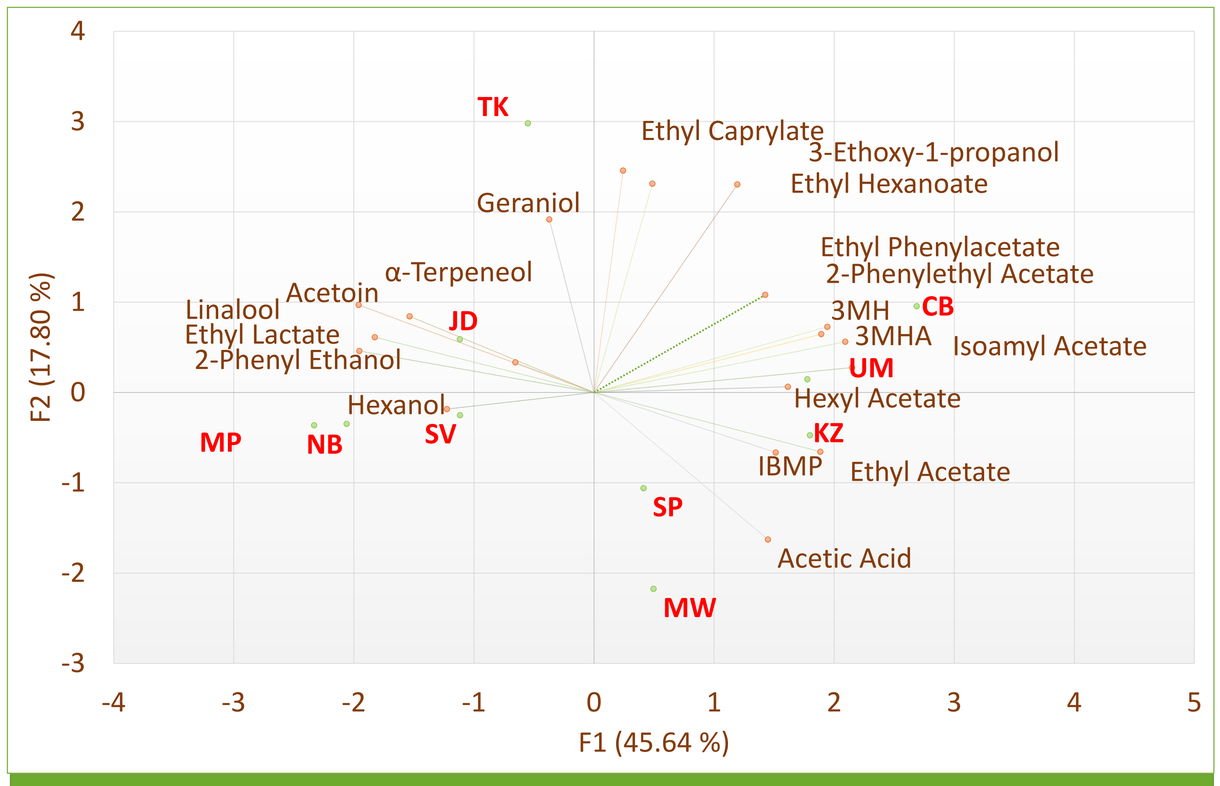

Figure 2. Biplot of aroma compounds analysed. Codes in red indicate wines.

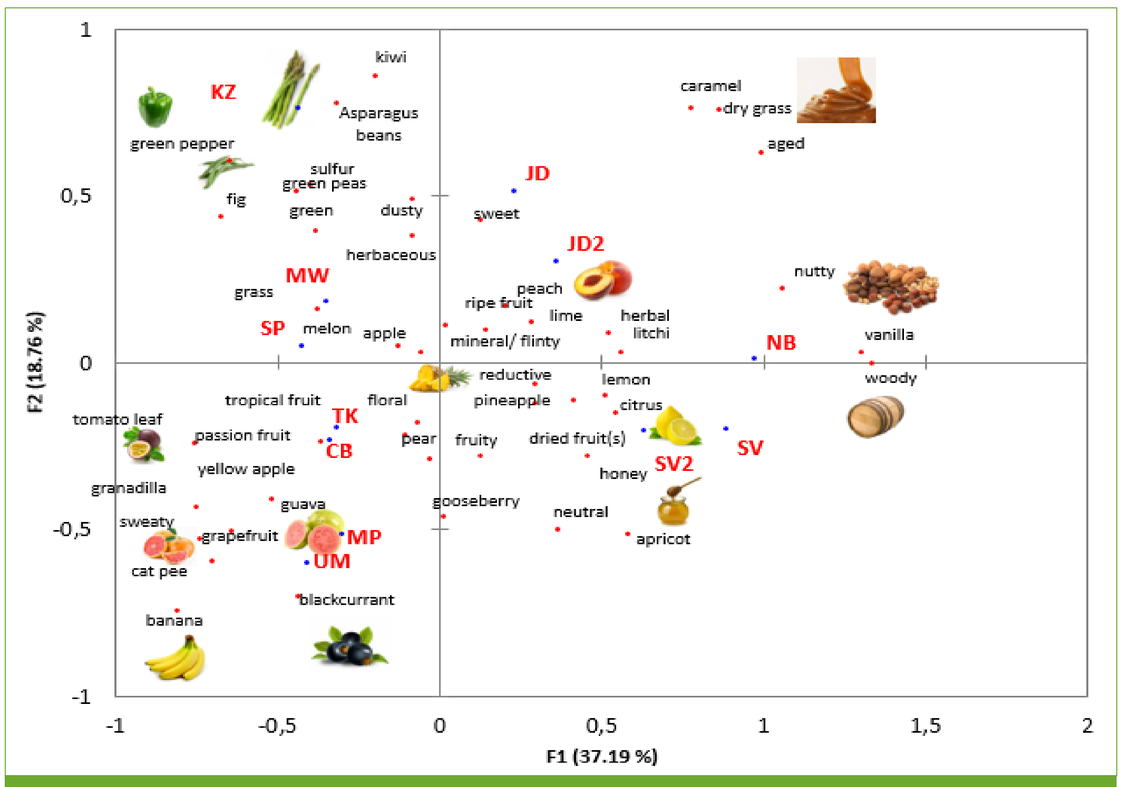

Figure 3. CA plot of aroma descriptors and wine samples. Codes in red indicate wines.

Contact

Dr. Carien Coetzee
University of Stellenbosch
Email: coetzee@sun.ac.za

Acknowledgements

Jeanne Brand
Valeria Panzeri
Aléta Bruwer
Alex Schulze

References

[1] Louw et al.,2009. *J Agric Food Chem*. **57**(7):2623–32.
[2] Risvik et al., 1994. *Food Qual Pref*. **5**(4):263-269.
[3] Coetzee et al., 2015. *Aust J Grape Wine Res*. **21**(2):179–88.
[4] Van Wyngaard et al., 2014. *Aust J Grape Wine Res*. **20**(2):178–85.

FNB Sauvignon BLANC Top10

vinlab
your partner in quality wine making