

## **New project 2017: Modelling colour stability and ageing potential in SA red wines**

*Researcher: Wessel du Toit*

The evolution of red wines in terms of certain sensorial characteristics as influenced by phenolic compounds is not well known. The question remains whether winemakers agree on the sensorial descriptions influenced by phenolics, as well as the ageing potential of red wines and if these can be used to predict the sensory composition of a wine after a period of ageing. During red wine ageing, changes in the chemical composition will be translated into changes of the sensory profile. Wines with higher ageing potential should keep better and/or even improve their characteristics and quality.

The sales of rosé wines also increased significantly over the past few years. The pink colour of rosé wines are sought after, but in some cases quickly change into an orange onion skin hue. Factors influencing this are not clear and need investigation. The main objectives of this study would thus be to combine multivariate data analysis with spectroscopic, chemical analysis and sensory profiles to understand and identify the main factors that contribute to the colour stability, as well as the ageing potential in terms of phenolics, of South African red and rosé wines.

## **New project 2017: Factors affecting the perception of thiols in SA white wines**

*Researcher: Wessel du Toit*

The presence of volatile thiols (even above the perception threshold) does not guarantee a fruity smelling wine. A certain concentration is needed for it to be sufficiently perceived. The effects reductive compounds, as well as winemaking steps to lower levels of these compounds, have on the perception of positive thiols in white wines are also not well known. One of the aims of this project is to determine the concentration range of volatile thiols where the aroma of the wine is significantly altered (effective concentrations). Another aim would be to ascertain the sensorial effect reductive compounds have on the aroma of positive thiols.

## **New project 2017: Investigating the effect of sparging on white wine**

*Researcher: Wessel du Toit*

Sparging is used as a tool to reduce dissolved oxygen concentration in wines before bottling. Either nitrogen gas or carbon dioxide gas can be used to sparge a wine. This treatment is thought to protect the wine from oxidation. A loss of aroma due to the volatility of aroma compounds during sparging have been reported, however this has not been conclusively proven. The question is whether sparging is more beneficial for the wine sensory and chemical properties, compared to a wine that was not sparged and thus bottled with residual dissolved oxygen concentrations? Other than that, the choice of gas used can also potentially influence the profiles and needs to be investigated. There are, however, very little information available regarding the effect of sparging on the wine's chemical and sensory composition. Literature on the subject is limited and only popular articles can be found on the subject, none of which have done actual tests to investigate the effect of sparging treatments. The aim of this project is to investigate the effect of sparging on the chemical and sensory composition of white wines.

## **New project 2017: The identity and ecology of economically important mites (Acari) in vineyards**

*Researcher: Pia Addison*

The mite fauna of South Africa is poorly understood, due to a lack of enough researchers working on mites, as well as some taxonomic impediments. This is primarily due to their small size, making this group difficult to handle and identify. There is also the increasing threat of invasive mites occurring in vineyards, particularly nursery material, therefore making a comprehensive inventory of mites is very important. The aim of this project is to develop the mite inventory in vineyards from existing information; as well as determine basic ecological information on mites, such as seasonality, economic status and alternative hosts of dominant mites in vineyards. This research will also indicate target species and potentially new species that should be the focus of management strategies. This project is a continuation of preliminary work (initial mite surveys) done in mother blocks and nurseries, funded by PlantSA.

## **A study of the distribution of economically significant weevils in the deciduous fruit industry.**

*Researcher: Pia Addison*

The factors determining the distribution of various fruit-attacking weevils within the southwestern Cape is not known. Most recently, field studies experimented in Florida, USA, have pointed out that the weevil larvae feed underground, pinpointing the underground infestation site will serve as a valuable source of information for mitigating the cost of chemical and/or biological treatments.

However, management of weevils in South Africa is inhibited by the shallow understanding of the correlation between soil texture, cover crops and the distribution of Banded fruit weevils (BFW). Therefore the results obtained from this study will yield valuable information in developing improved weevil management practices related to both soil texture and cover crop variability (cultural control methods), as well as prioritizing the species that should be targeted for management purposes. It is proposed that an in depth analysis be undertaken to determine which abiotic and biotic factors play a role in causing damaging population levels in commercial orchards/vineyards. The project will address the following questions:

1. Does soil type and ground cover influence the distribution of weevils in orchards/vineyards? We hypothesize that BFW adults are more likely to remain within the vicinity of their emergence, and their distribution pattern will be determined by the soil texture and ground cover, with the likelihood of more larval infestation in coarse grain textured soil and with more sparse cover crops.
2. What is the potential economic impact of various weevil species found to attack orchards/vineyards?
3. What is the bio-ecology of lesser dominant weevil species in orchards/vineyards?