



New project 2017: The role of moderate alcohol consumption in Multiple Scleroses

Researcher: S. J. van Rensburg

Multiple Sclerosis (MS) is characterised by demyelination within the central nervous system (CNS), which may result in neurological disabilities over time, causing considerable hardship to patients and their families, in addition to being costly to treat. Standard medication for MS does not improve disability outcome, although it may reduce the relapse rate and slow disease progression in about 50% of patients. The aim of the MS research project at Tygerberg is to identify factors that predispose patients to, or protect against, disability progression. The present study aims to address the role of alcohol in protecting against disability progression in a group of study participants (25 patients with MS and 25 healthy controls) using three different research methods, while at the same time providing training opportunities to four persons from previously disadvantaged groups.



New project 2017: Cardioprotective compounds in South African wines

Researcher: S. Lecour

Previous research conducted at University of Cape Town (UCT) suggests that chronic consumption of melatonin, given at a concentration found in wine, can protect against model heart attacks and pulmonary hypertension. Using synthetic wine, researchers have been able to demonstrate that the protection provided by melatonin is enhanced in the presence of other compounds, including resveratrol. Researchers at the University of Milan also recently discovered various melatonin isomers in wine. The UCT researchers hypothesize that the health benefit associated with a chronic moderate consumption of red wine may be related to both melatonin/ melatonin isomers and may be enhanced by increasing the melatonin/melatonin isomers content. This study aims to:

- Determine the melatonin isomer content of SA wines
- Test the physiological effect of different melatonin isomers in a cell culture approach
- Verify the physiological effect of melatonin isomers in synthetic wines
- Test the cardioprotective effect of the most potent melatonin isomer in a model of heart attack and pulmonary hypertension
- Explore the cardioprotective mechanism activated with melatonin and melatonin isomers

New project 2017: Improving poor performing grape vines by means of root pruning or mulching

Researcher: E Moffat

Spatial variability and grapevine underperformance are common challenges faced by grape growers. Root pruning is currently carried out as a practice based on growers' practical experience, and not on scientific evidence. Furthermore, it is not common practice to incorporate organic matter during a root pruning action to improve soil physical, as well as biological conditions. Incorporated organic matter, e.g. of which compost is most commonly used, has a wide array of benefits to soils. The water-saving effects of organic mulches are well documented. However, further research into the required thickness of compost mulches would be valuable to growers.

The first field trial intends to investigate the effect of incorporating organic matter during the root pruning action on the soil environment and grapevine performance. If this practice proves to be successful, it would establish the ground work for further investigation into the costs and most efficient implement to use to incorporate compost during root pruning. The second field trial aims to establish the ideal compost mulch thickness at which water-saving benefits are achieved.

New project 2017: Screening of locally available rootstocks for nematode and drought resistance

Researchers: S. Booï

The South African grape industry is currently dependent on a small selection of grapevine rootstocks. Most commercial grapevine rootstocks are susceptible to most nematode species found in South Africa. When nematodes feed on the roots of a grapevine, the ability of the vine to absorb water and nutrients is restricted, thereby resulting in low vigour and much reduced yield. The damage that is caused by plant-parasitic nematodes in SA may be estimated close to R2 billion. Another challenge is the phasing out of highly toxic nematicides and in turn, a need for environmentally friendly and pesticide-free control methods. There is therefore, a drive towards breeding for resistance.

In this research project, approximately 20 locally available grapevine rootstocks (imported and locally bred) will be screened for resistance to nematode pests found in South African vineyards, under controlled glasshouse conditions. Nematodes that will be included in the study are ring, dagger, root lesion and root-knot nematodes. Furthermore, these rootstocks will also be screened for drought tolerance.

The study would assist in the identification of major rootstocks that the grapevine industry can rely on for future vineyard establishment.

Latest international research

Researchers identify the dried and cooked fruit aroma in Merlot and Cabernet Sauvignon musts and wines.

Researchers: A. Pons, L. Allamy, V. Lavigne, D. Dubourdieu and P. Darriet

More and more young Bordeaux wines, especially Merlot, are being described as having dried fruit nuances in their aroma and flavour. These aromas occur due to longer hang-time on the vine and partial dehydration as a result of the effect of warmer climates on the physiology of vines.

French researchers compared Merlot and Cabernet Sauvignon musts and wines with and without dried fruit aromas via GC-O-MS. Various odorous zones were obtained and one in particular was found in wines described having prune and fig flavours. The wine volatile fractions were also analysed via GC-O-MS with a corresponding reference compound, hence the dried fig character was identified as C10-massoa lactone.

C10-massoa lactone is more prominent in juice and 68 µg/l has been reported. It is reduced to δ-decalactone during fermentation and much lower concentrations of C10-massoa lactone remain in final wines. Its detection threshold is 10 µg/l in must and 11 µg/l in wine. [Read more](#)

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Sensory and chemical drivers of wine minerality aroma: An application to Chablis wines

Researchers: H. Rodrigues et al.

French and Spanish researchers conducted a study on Chablis wine produced from grapes from the left and the right banks of the Serein river. All the wines were from the 2013 vintage. All eight wines were produced in exactly the same way by the same producer in stainless steel tanks and aged for one year in the bottle before analysis. The wines were chemically as well as sensory analysed. Tasters were also asked to give the wines a minerality score.

Wines from the left side of the river scored higher in minerality than wines from the right side. These wines also had higher levels of methanethiol (MeSH, a negative sulphur compound) that have a masking effect on fruity and floral characteristics. The wines from the right bank had higher concentrations of norisoprenoids, responsible for fruity and floral characteristics. It also had higher copper concentrations, which could be the factor responsible for lower MeSH.

The research was done on a small set of wines and on one vintage. Further research is needed on more wines and more vintages to determine MeSH's exact role in minerality perception. [Read more](#)

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