



Winetech Scan

Wine Industry Network of Expertise and Technology • Netwerk van Kundigheid en Tegnologie vir die Wynbedryf



April 2016

New Project 2016: Using biological control (fungi and nematodes) against two sporadic pests in vineyards and orchards.

Researcher: Dr P Addison, Stellenbosch University

The movement towards more environmentally friendly produced products create the need for the development of sustainable and environmentally friendly pest control strategies. These strategies should be incorporated into an integrated pest management (IPM) program. This project focusses on alternative management options to replace or supplement toxic chemical inputs for the control of katydids (“krompokkels”) and banded fruit weevils in vineyards and orchards. These insects are sporadic pests in vineyards and orchards, but appear to be on the increase. There is currently no control measures registered for katydids and the chemicals that are used are not 100% effective.

Entomopathogenic nematodes or fungi (EPN or EPF) are deadly pathogens of insects and play a role in the natural regulation of insect populations. EPF acts as a parasite and kills or disables insects. EPN kill their hosts with the help of symbiotic bacteria carried in their intestines. Many EPN with their associated bacteria have been used as biological control agents against insect pests. Recent research conducted at the University of Stellenbosch also indicated their potential for controlling South African grapevine and orchard pests like the vine mealybug and the banded fruit weevil. Optimizing the use of EPN strains which are effective against more than one pest, could make control options more cost-effective. EPN's and EPF are safe for non-target organisms and for humans. Additionally, it can be mass produced and applied using standard agricultural equipment making them ideal candidates for the control of agricultural pests.

Variable results achieved with the use of EPF or EPF/EPN combinations indicate that fungi in particular still have undeveloped potential. Mainly there is a lack of understanding of their complex soil interactions and this will need to be further investigated. These pathogenic interactions are very intricate and specific to certain environmental conditions which is why there is a need to source locally adapted isolates.

The focus of this research will be on EPN and EPF in the laboratory and field applications. For katydids in particular they also aim to assess the use of parasitic wasps for future use within IPM programmes. This project aims to establish guidelines, for the use of EPN and EPF against katydids and weevils in vineyards and orchards.

Final report: Methods to improve Sauvignon blanc wine quality and diversity in SA

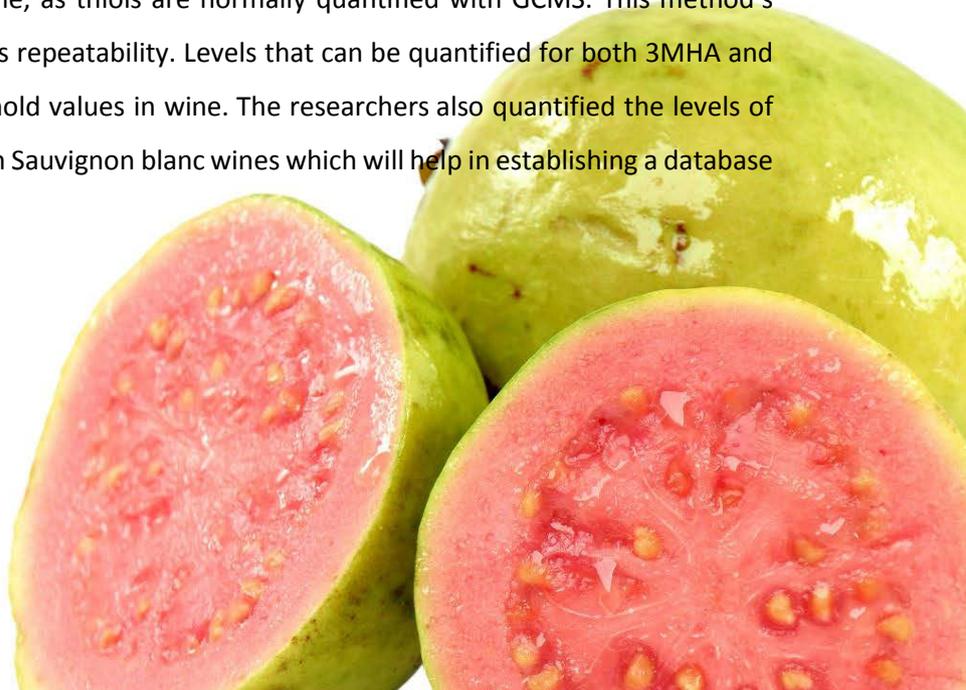
Researcher: Prof Wessel du Toit

The main aim of this project was to investigate winemaking practices which may affect Sauvignon blanc wine composition. We found that oxygen (O_2) additions to Sauvignon blanc must in the absence of sulphur dioxide (SO_2) led to lower volatile thiol and glutathione (GSH) levels in the resulting wines. However, SO_2 additions even in the presence of O_2 , negated this loss. Methoxypyrazine levels were not influenced by these treatments, while SO_2 additions also influenced ester and higher alcohol concentrations. Different levels of GSH and SO_2 in commercial wines influenced O_2 consumption during ageing of the wine. We also assessed the sensory interaction between 3-mercapto-hexanol and 2-isobutyl-3-methoxypyrazine, two aroma impact compounds in Sauvignon blanc wine. These two compounds sensorially suppressed each other at high levels. [Read more](#)

Final report: Assessing volatile thiol concentration in South African Sauvignon blanc wines

Researcher: Prof Wessel du Toit

Researchers at Stellenbosch University have developed a novel LCMS method for the quantification of 3MH and 3MHA concentrations in white wines. This is the first time that this method has been used to quantify these compounds in wine, as thiols are normally quantified with GCMS. This method's sensitivity is very good, as well as its repeatability. Levels that can be quantified for both 3MHA and 3MH are below their sensory threshold values in wine. The researchers also quantified the levels of these compounds in 45 South African Sauvignon blanc wines which will help in establishing a database of these compounds. [Read more](#)



Final report: Antioxidant and oxygen programme for South African white wines

Researcher: Prof Wessel du Toit

This project investigated the sensory and chemical changes in a Sauvignon blanc wine that underwent controlled, repetitive oxidation. Another aim was to assess the sensory interaction between two impact aroma compounds in Sauvignon blanc, IBMP and 3MH, with certain oxidation derived compounds such as acetaldehyde, methional and phenylacetaldehyde. Sauvignon blanc wines' sensory and chemical changes showed that certain sulphur compounds are very sensitive to oxidation. A concurrent increase in oxidation derived compounds were also observed. Sensory interaction was observed between oxidation derived compounds as well as 3MH and IBMP. In certain cases these compounds enhanced each other, while a masking or suppressive effect was often observed in others.

[Read more](#)

Vitisflower: an innovating app to calculate the number of flowers per inflorescence

Researchers from the University of La Rioja and ICVV in Spain have developed a new algorithm based on artificial vision techniques to automatically determine the number of flowers per inflorescence using a smartphone camera under field conditions. Measurements made on 132 inflorescences showed a good correlation between the manual counted and calculated through image processing numbers of flowers. This innovating app provides winegrowers and technical advisers with a new early indicator of the bunch size. [Read more](#)

Analysis of Total Arsenic Content in California Wines and Comparison to Various Health Risk Criteria

Results from the statistical analysis of 101 wines produced and bottled in California suggest that no more than 0.3% of California wines (if any) may contain arsenic concentrations greater than the 100 µg/L guideline. Chronic daily intake of arsenic as a result of wine consumption was estimated to account for a small fraction (<8.3%) of a typical adult's dietary arsenic intake, indicating that wine consumption is not a significant source of total arsenic exposure. These results indicate that the presence of arsenic in wine does not represent a health risk for consumers. [Read more](#)