Sauvignon blanc under investigation
Current research at the University of Stellenbosch (Oenology)

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Basic Wine

22 February 2019

The University of Stellenbosch has several projects underway with the star of the show being Sauvignon blanc! Scientists are eager to explore the variety's unique characteristics from multiple perspectives – in the vineyard, the winery and the sensory. Below is a brief summary of the current and prospective projects in the Oenology lab. More projects from other fields of research including Viticulture, Biotechnology, Sensory and Consumer are underway, more on those in a later blog. More details of these investigations to follow.

Increasing varietal thiols in South African Sauvignon blanc wines

The most exciting ongoing research project is the studies focussing on methods to increase the aromatic thiol concentration in Sauvignon blanc wines. Various additives were tested, with the addition of a sulphur donor showing the most promising results.

3MH

In one of the studies, the addition of a sulphur donor leads to a concentration 5 times higher (end concentration 2183 ng/L) when compared to the control (456 ng/L). The addition of the sulphur donor together with another 6-carbon precursor lead to a whopping 20 times increase (end concentration 8969 ng/L)!

3MHA

For 3MHA, the addition of the sulphur donor leads to a concentrations 18 times higher (end concentration 581 ng/L) when compared to the control (33 ng/L). The addition of the sulphur donor together with another 6-carbon precursor resulted in 80 times increase (end concentration 2675 ng/L)!

These increases are HUGE, to say the least!

And the answer to your next question: No, it is not legal to add any of these products for commercial use…yet.

The legalities around the addition of these type of compounds are still destined for voluminous red tape and when it comes to being approved, it will certainly spark controversy and change the landscape of Sauvignon blanc (and other cultivars!) production.

It is important to know that the studies have shown that not all vineyard blocks behaved the same way with some locations resulting in extreme increases and others only marginally. Future studies aim to investigate how the two prominent Sauvignon blanc wine styles (green vs tropical fruit) react to the addition of the enhancing compounds.

Researchers involved: Sebastian Vannevel, Dr. Astrid Buica and Prof. Wessel du Toit

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Correcting reductive wines

Correcting reductive wines are a pain, to say the least! In most cases the addition of copper or copper-containing products are the only solution to the problem, however, it is well known that copper will not only target the stinky aroma but will certainly remove other desirable aromatics as well (including volatile thiols!).

The Department of Viticulture and Oenology is looking at conducting trails to really get to the heart of the matter answering the following crucial questions:

- By adding various fining products to wine: Which compounds will be removed and which will remain?
- Do the compounds differ in their speed of reacting? In other words, are there compounds that are removed first with others only reacting at a later stage?

So, what makes this type of work difficult?
The researcher needs to get his/her hands on reductive wines in order to conduct the various studies!

Reductive wines are not something that can be recreated in the laboratory. However, there must be producers who struggle with this every now and then (wink wink). We, therefore, request that you contact SBIG if your wine is not cooperating and turns reductive so some of the wine can be collected to conduct tests. Confidentiality and anonymity will be maintained.

Any other practical information or results observed from experience will also help to understand where the need for information lies and what the focus should be on. So, please get in contact!

Certainly, the Sauvignon blanc producer will benefit from this type of research.

It is also important to remember that the use of copper should only be used as a last resort, the addition thereof can have adverse effects, but more on this in another blog post.

Sparging of South African dry white wines

So many questions! In the past, sparging was done very much on instinct. A bit of a guessing game of how to sparge, when to sparge and how much to sparge.

Prof Wessel du Toit's team is investigating just that. Attempting to answer all the unknowns. The aim of the study is to identify significant factors affecting the efficacy of oxygen removal during sparging of wine and then also to identify the chemical changes in the wine composition due to inert gas sparging.

Some of the key findings so far:

Diffusion stone

- The use of a diffusion stone radically **increased sparging efficacy**

Temperatures

- **Oxygen removal** during sparging was much **more effective at higher temperatures** (compared to lower temperatures)

- Sparging at **higher temperatures also retained CO_2** better compared to lower temperatures

Flow rates

- The flow rate of the sparging gas did not differ significantly in the efficiency of oxygen removal, thus a **slower flow rate** will probably be **just as effective** as a higher flow rate in practice
- Other than the above-mentioned point, a **higher flow rate removed much more CO_2** when compared to a slower flow rate

Gas

- Sparging gas mixtures (60% Nitrogen, 40% Carbon dioxide)
    - At 18°C = **no loss** of dissolved CO_2
    - At 10°C = **increase** dissolved CO_2
- Repeated sparging using nitrogen resulted in the loss of dissolved CO_2 (however retained volatile thiols)

Preliminary conclusion:

If done correctly, sparging could potentially only affect the organoleptic properties related to dissolved CO_2

These results are VERY promising and are well on the way of answering the many questions coming from the industry.

Researchers involved: James Walls, Carien Coetzee and Wessel du Toit

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Contact Carien