

Avoid mousy, off-flavours

Many winemakers are experimenting with new techniques in white winemaking such as high grape solids ferments, extended lees ageing, higher pH with minimal sulfur dioxide (SO₂), oxidative ageing and minimal clarification or filtration. In many cases the aim of these practices is to produce white wines with more texture. While these changing practices have resulted in some great successes, they also come with some increased risks. The incidence of both 'Brett' and mousy characters in white wines submitted to the AWRI helpdesk is on the rise. Common questions about mousy off-flavour are explored below.

WHAT DOES A MOUSY WINE TASTE LIKE?

The flavour of mousy wines has been described as the aroma of caged mice; it is also similar to certain cracker biscuits and beers. Adding a spoonful of uncooked jasmine rice to a glass of wine can replicate the character.

The mousy character in wine is generally not perceptible as an aroma; it only becomes obvious after a wine is swallowed. This is because the compounds responsible are only aromatic at neutral or higher pH levels. In wine, which has low pH, the compounds are in acidified non-aromatic forms. When you swirl the wine in your mouth, the pH increases and the compounds return to their aromatic form; you then begin to 'smell' the character back through your mouth into your nose.

If a wine is mousy, there can often be other off-aromas present such as volatile acidity (vinegar) that might suggest there is a problem with the wine. If you suspect a wine is mousy, a simple test is to dip your finger in the wine and rub onto the base of your palm or the back of your hand. The contact with skin will increase the pH of the wine and allow you to smell the character on your hand if it is present.

IS EVERYONE SENSITIVE TO MOUSY CHARACTER?

About 30% of the population (this includes winemakers) cannot perceive the mousy character at all. There is also a wide range of sensitivities among those that can identify the character. Some people see it straight away with the flavour persisting for minutes afterward. For others it may take more than 30 seconds before the character even becomes apparent.

WHAT COMPOUNDS ARE RESPONSIBLE FOR MOUSY OFF-FLAVOUR?

Three related compounds are responsible for mousy off flavour: 2-ethyltetrahydropyridine, 2-acetyltetrahydropyridine and 2-acetylpyrroline.

WHAT CAUSES MOUSY OFF-FLAVOUR?

There are two origins of mousy off-flavour:

1. Microbial origin. Most strains of lactic acid bacteria (LAB) including *Lactobacillus hilgardii*, *Lactobacillus plantarum*, *Lactobacillus brevis* and *Oenococcus oeni* (Costello et al. 2001) and the yeast *Dekkera/Brettanomyces* can produce the character. Production is favoured in high pH wines with high solids and high nutrient loads and with oxygen exposure.

2. Chemical origin. Through hyperoxidation, when hydrogen peroxide is used to remove SO₂ from juice or wine. Recent research also suggests formation is possible via the Maillard reaction between amino acids and reducing sugars during

extended wine ageing (Künzler and Nikfardjam 2013).

This may be particularly relevant to wines made with high solids or extended lees ageing and/or stored with low levels of SO₂.

CAN MOUSINESS BE MEASURED?

Unfortunately there is no routine method available to measure the level of mousiness in wines, and thus it is also not currently possible to determine a sensory threshold for mousiness. Winemakers should be aware of their sensitivity to mousy character and if not very sensitive, seek out others who can perceive the character to taste their wines.

CAN MOUSY WINES BE TREATED?

There are no verified ways to remove the character, other than attempting to blend it away. If the character was produced by microorganisms then it is important to sterile filter the wine to make sure no additional mousy character will be produced. High additions of SO₂, particularly in white wines, can mask the character, but the character is likely to be observed again over time as the SO₂ level drops.

HOW DO I GET THE TEXTURE IN WINE WITHOUT THE MOUSE?

When targeting texture by extracting macromolecules from grapes, lees ageing, using high pH regimes or oxidative handling, wines are at greater risk of microbial contamination. Extra attention should be paid to microbial control through rigorous hygiene and targeted use of antimicrobial agents such as SO₂. More regular tasting during wine ageing, by tasters known to be sensitive to mousy character, should also be employed.

For more information regarding mousy off-flavour, please contact the AWRI helpdesk on winemakingservices@awri.com.au or 08 8313 6600.

References

Costello, P.J., Lee, T.H., Henschke, P.A. Ability of lactic acid bacteria to produce N heterocycles causing mousy off-flavour in wine. *Aust. J. Grape Wine Res.* 7: 160-167; 2001.

Künzler, L. Nikfardjam, M. P. Investigations into the formation of 2-acetylpyridine and the mousy off-flavor in wine. *Mitteilungen Klosterneuburg, Rebe und Wein, Obstbau und Fruchteverwertung* 63 (4): 187-198; 2013.



Online purchases more popular than cellar door

AROUND one-in-five regular wine drinkers in Australia have bought wine online recently, making online sales more popular than direct purchases from the cellar door for the first time, according to a new report by Wine Intelligence.

The Wine Intelligence Australia Internet and Social Media Report 2015 found online wine shoppers tend to be men who are engaged wine drinkers. They are more likely to be either the wine consumer segment named 'adventurous connoisseurs', a category of higher-spending, knowledgeable wine drinkers with a genuine interest in exploring the category; or the more value-driven, 'mainstream bargain hunters', who are typically older, very frequent and experienced wine drinkers who know what they like and seek good value.

The report examined how Australian wine consumers were buying wine online, as well as how wine drinkers have engaged with online content about wine. The report explored developments in consumer technology that influenced how people learn about wine, including how one-in-five wine drinkers now searched for information about wine using a mobile or tablet; as well as the use of apps for wine has increased substantially, now reaching 17% of wine drinkers compared with just 2% in 2012.

Natasha Rastegar, a member of Wine Intelligence's senior management team who leads the office in Sydney, said the growing use of the online world for wine in Australia was primarily based on a consumer need for pricing transparency.

"The main reason people shop online for wine is due to the expectation of price discounts and therefore better value for money," Rastegar said.

"However the research does reveal interesting ways to engage consumers online beyond price. We see that the main way wine drinkers actively engage with wine on social media for example are to post pictures either enjoying a wine moment or wines they are drinking, or to enter competitions. Furthermore, recommendations on social media can have a particularly strong influence on the wine purchase decisions of younger drinkers."

The data in the report was sourced from research carried out among 1006 consumers in 2014 and 769 in 2012, who were selected to represent the make-up of regular wine drinkers across Australia.


WineTech and the future of wine retail

THE Wine Industry Suppliers Australia (WISA) will host WineTech, the National Wine Industry Supplier Trade Exhibition, from 14–16 July at the Adelaide Exhibition & Events Centres' Goyder Pavilion. Alongside the exhibition will be a commercial-content program for wine industry professionals.

WISA has announced Sam Willard, from the Woolworths Liquor Group, has been confirmed as a key note speaker.

"Sam has almost 20 years' experience in the hospitality and wine industry. He heads up Dan Murphy's Connections program, which allows the retailer to meet customer demands by offering a wider range of products specifically from the boutique end of the market" said WISA Executive Officer, Matthew Moate.

"This seminar will offer a unique insight into the changing technology available to wine producers to market and sell their products." The seminar forms part of a content program covering wine tourism; industry succession planning; export; and marketing topics. Bookings and pricing for the seminars will be available in the coming months.

For more information about WineTech 2015 visit www.winetechnaustralia.com.au. 



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