How and why identify matter other than grapes

HARVEST IS USUALLY the time when The Australian Wine Research Institute (AWRI) is asked a range of questions about different kinds of matter other than grapes (MOG) and its potential implications for wine quality. Here are some of those questions from this harvest.

Questions regarding MOG type and effect are front of mind during vintage.

What is considered MOG?

MOG includes foreign objects contained in the harvested grapes upon delivery at the winery. MOG includes grapevine leaves, petioles and canes, stones, trellis or irrigation parts, harvest tools, buckets or any other object that may end up in the load (Allen 2003). Even that bicycle that was leant up against a harvest bin or that mobile phone dropped into the bin. MOG also includes excessive levels of vineyard pests, such as snails and caterpillars.

In comparison to MOG, 'contaminants' refer to loads that may be contaminated with soil, fuel, oil or other lubricants, diesel taint picked up during transport, non food-grade materials, dilution with water, unwanted additives or animal matter including insect pests, although the latter may also be a component of a MOG assessment.

MOG levels

The level of MOG in a load is commonly gauged using a visual assessment against a standard such as the Australian Winegrape Load Assessment Manual and posters. Bins are inspected on arrival at the weighbridge and compared with a series of photographs ranked MOG 0-5 according to the level of contamination. MOG 0 carries no risk or loss to quality and MOG 5 includes damaging objects of an unacceptable level and the load may be rejected. The 'MOG score' can also be used to assign price penalties if required.

How does MOG get there?

The transfer of MOG into a load of grapes is usually associated with machine harvest operations. Poor harvester set-up and inadequate monitoring of harvest performance may result in high levels of leaves and petioles in grapes. A variety of pests can also accumulate in the bins if they are not controlled during the

season. Pieces of cordon may contribute to MOG if broken off during harvest and equipment/rubbish left in the canopy may end up in the load.

MOG impact

Foreign objects

Objects commonly found include: rocks, stones, irrigation and trellis parts, buckets, wire and posts. Less commonly found are: mobile phones, walkie talkies and bicycles. These all can result in physical damage to winery equipment, particularly the auger of a winery receival hopper. Some batteries of phones and radios can contain trace amounts of toxic metals but, generally, will only leak these compounds if crushed or damaged. The AWRI can help you test for these metals if necessary.

Leaves and foliage

Grape leaves, stems and shoots can result in greater green and vegetative characters in the resultant wine. Interestingly, Capone and colleagues (2012) recently reported increased amounts of rotundone or pepper character can be extracted into the wine from excessive amounts of leaves and stems in a fermentation.

Excessive amounts of foliage also increase the risk of greater agrochemical residues to be extracted into the juice and end up in the resultant wine.

Leaves and branches from other trees such as Eucalyptus trees, that have fallen amongst vineyards and then are harvested with fruit, have been recently reported by Capone *et al.* (2012) to cause increased amount of eucalyptus character to be extracted into wine, in addition to just airborne transfer of eucalyptol from nearby trees.

Rogue varieties

This includes both mixed harvest of perhaps red and white fruit. Sometimes, a lesser grade fruit or different varietal could be substituted for a more premium quality or grape. These factors can result in significant penalties for the grape supplier. Protein profiling can identify the grape variety of the load. Grape substitution is more difficult to determine unless samples of grapes or juice are held back.

Spoilage contamination

Paint – Each year some fruit ends up being transferred to a winery in a freshly painted grape bin, or a grape bin that has been painted with the wrong type of paint (Cowey *et al.* 2009). This results in the grapes and juice being tainted with a hydrocarbon or petrol-like aroma and the wine has to be destroyed. The AWRI has a 'taint screen' which can detect such contaminants.

Non-allowed materials such as hydraulic oil (Australian Food Standards), from broken hydraulic lines on a mechanical harvester or on a winery crusher, can spray unwanted oils onto fruit which result in an oily film on the surface of the must. Note, there are no current methods sensitive enough to measure this contamination and visual observation and photographic evidence is normally required to recover loss of the fruit through insurance.

Microbial spoilage

In hot years, excessive sunburn and berry splitting can result in an increased microbial load in the vineyard and greater amounts of fermentation of grapes by natural yeasts and increased amounts of acetic acid from bacteria in the must, which can impede the inoculated fermentation at the winery.

Pests and disease

Millipedes, caterpillars, ladybirds, cicadas and earwigs can be problem pests during harvest, particularly in wetter years burrowing into foliage and bunches. Excessive amounts of millipedes can impart herbal characters to wine; ladybirds give a 'green, capsicum, asparagus, herbaceous' character from 2-methoxy 3-isopropylpyrazine (IPMP); and cicadas give a savoury/cheesy smell.

In wetter years, powdery and downy mildews, and botrytis can proliferate amongst foliage and fruit. Considered more a fruit defect, fruit can be downgraded or rejected based on limits set by wineries. Excessive levels of powdery mildew can provide a wine fault. Botrytis has greater implications by producing laccase, an oxidative enzyme which can rapidly oxidise the juice. GW

Ask the AWRI is a monthly column that focusses on viticulture and oenology issues in alternate months. AWRI winemaking and viticulture specialists are available to help Australian wine and grape producers. Call on 08 8313 6600 or email at winemakingservices@awri.com.au

References

Allen, W. (2003) Australian winegrape assessment in the vineyard and at the winery. Prepared for and endorsed by the Winegrape Growers' Council of Australia (WGCA) and the Winemakers' Federation of Australia (WFA) Liaison Committee. Winetitles.

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Curtin student researches fermentation by naturalised yeast genotypes

A RESEARCH STUDENT at Curtin University is embarking on research that aims to positively influence the sensory profile of wine and expand market opportunities.

Based at the Margaret River campus, Elizabeth Nugent is researching the spontaneous fermentation of wine by naturalised yeast genotypes (i.e., those from the grape berry itself and winery equipment) for her Master's thesis.

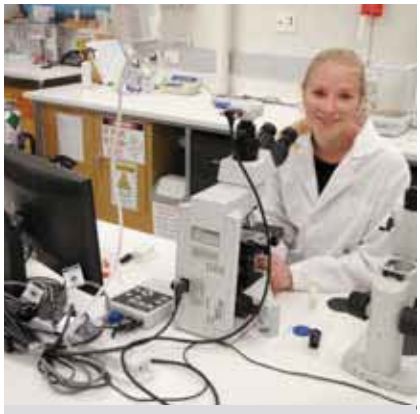
The aim of the research is to develop a greater understanding of the ecology and fermentative behaviour of the naturalised yeast genotypes present in the Margaret River region.

She says this field of research is extensive and that there is an opportunity to improve the scientific understanding of the nature of naturalised genotypes and their ecology.

"Currently, the encouragement of spontaneous fermentation is unpredictable and can possess significant risks, such as undesirable sensory characters and incomplete fermentation," Nugent said.

"We believe that by evaluating the naturalised genotypes individually, the likelihood of unwanted volatile production and the fermentation end point can be predicted for each species.

"These findings could then be directly applied for the sensory improvements of isolated ferments and extrapolated to mixed and naturalised ferments for further research and confirmation." GW



Curtin University research student Elizabeth Nugent.