

AWRI workshop wraps up packaging problems

The all-important packaging process can leave winemakers searching for answers to the many questions that arise during the crucial phase of getting wine to market.

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Bottling, labelling & packaging

WHETHER YOU AGREE great wine is made in the vineyard or in the winery, one very important part of wine quality is often overlooked – getting it into the bottle and delivering it to the consumer in its intended condition. Packaging can be expensive, up to 50 per cent of wine production costs. Statistics from the Winemakers' Federation of Australia (accessed 2010) show that the direct costs of bottling, from large to smaller producers, is about \$5.69-13.56 per case of wine, or about 13-18% of total revenue per case. Despite this, it

can be quite difficult for a winemaker to find information about best practice packaging. It is generally not a major part of Australian university winemaking curriculum and the information publically available is not often of a practical nature; being a packaging winemaker is something generally learnt on the job. Unsurprisingly, information on packaging is a constant request from Australia's winemakers to the AWRI.

The AWRI's Troublefree Packaging for Winemakers workshop was launched in November 2009 in McLaren Vale to address this greater issue. Broad consultation with researchers, wineries, wine bottlers, suppliers and wine

industry partners across Australia occurred to develop realistic and practical information that can be easily adopted. Delivery to Australia's winemaking regions is now complete with the last one held in Tasmania in October 2012. In total, 28 workshops were held with over 500 participants and feedback from attendees has been overwhelmingly positive. It's possible that some regions would like the workshops re-presented in their area, due to people not being able to attend the previous workshop. If you want the workshop presented or repeated in your region please contact winemakingservices@awri.com.au.

The aim of the packaging workshop is to provide practical information right from preparing wine for bottling to wine storage and transport. Below are some insights into topics discussed at the workshops.

Heat stability

Ten per cent of all wine hazes sent to the AWRI for identification each year are related to wine protein instability. Bentonite fining is the main tool to remove wine protein. The amount of protein expressed by the grape is affected by ripeness, Botrytis and other

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infections, heatwave events and other parameters and thus winemakers shouldn't assume to add the same amount of bentonite each year to the same batch of fruit. In the workshop, the heat stability test is dissected and some of the more common mistakes are explained along with new recommendations made for the temperature and time of the heating and cooling steps; the variety of bentonite fining options are detailed along with new alternatives, as is the timing of bentonite addition: to juice, ferment, post-ferment or during cold stabilisation.

Cold stability

Harmless potassium bi-tartrate crystals found in the bottom of bottled wine is the most common wine deposit observed. As Rankine (1989) put it: "The deposit is harmless but the customer's reaction might not be." Why this occurs when wines have been cold stabilised is discussed, looking at the range of cold stability predictive tests available and the pros and cons of each. The cold stabilisation contact process is explained along with importance of filtering the wine cold, off tartrate lees.

Avoiding sulfide development

The assumption that a wine will become reductive if sealed with a screwcap closure is dispelled. Formation of sulfides in wine, the different sulfide forms and determination of the sulfide form to determine the appropriate treatment is covered. The risk of preemptive copper additions to wine, or why copper additions on the day of the bottling are discouraged, and why winemakers should ensure copper levels remain less than 0.5mg/L are explained.

Packaging preparation

For most producers, a minimum of four weeks is generally needed to prepare a wine for packaging, whether you are bottling your own wine, using a mobile bottler, or a specialised contract bottler. In some regions, however, so much advance notice is needed that some need to book in a bottling date six months in advance. Pointers are given for bottling in each scenario. The WFA Packaging Specifications are also summarised, highlighting benchmark analysis specifications, along with detailing what analysis should be undertaken at each stage of the bottling process.

Wine composition – how much SO₂?

The AWRI's closure trials have provided much more information other than just closure performance, such as sulfur dioxide loss over time and respective sensory effects on wine. How much preservative to add to different wine styles is discussed, to prevent oxidation and microbial growth, with respect to wine pH, along with other chemical preservatives measures including dimethyl dicarbamate (DMDC) and sorbic acid.

Sanitation and filtration

To avoid post-bottling fermentation, sanitation procedures of filtration equipment and the bottling line are required. Depth and surface filters, appropriate filter selection based on wine composition (for example turbidity and sweetness level), filter performance tests, along with monitoring options for sanitation and filtration effectiveness are covered.

Packaging operation

There are a lot of wine movements to get a wine into bottle, with a wine possibly having its highest dissolved oxygen content just before bottling. Dissolved oxygen management by wine sparging is explained along with the large contribution of headspace oxygen which has led to the adoption of the new gas measurement: Total Packaged Oxygen (TPO). Expected fill heights, filling temperature, typical wine loss during packaging small and large volumes of wine, and typical QA checks required are detailed. A dissection occurs for each type of closure application: pros and cons and QA requirements.

Wine storage and wine transport

As more than 60% of Australian produced wine is now exported, knowledge of the implications of storage and transport of wine has become much more important. Horizontal versus upright storage of wine, wine storage temperature and humidity, critical or minimal levels of SO₂ preservative below which a wine starts to display oxidative characters, and SO₂ levels that are needed at bottling for ageing wines two, five, and up to 10 years are discussed. Heat and extreme cold temperature effects on wine development are detailed with appropriate measures and controls.

The AWRI's roadshow workshop program is intended to provide technical personnel employed in the Australian wine sector with practical hands-on training to develop and enhance quality management and general work practices, in order to minimise quality loss during processing and packaging, and minimise processing costs to wine producers. During delivery of this workshop feedback from industry has led to a number of areas where more research and information is required, particularly in relation to the effect of storage temperature on wine development. There has been a large amount of interest during these workshops in wine transport in general, particularly transporting wine in bulk for bottling offshore both for quality and sustainability reasons. Further research will be conducted in this area from this industry feedback.

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