



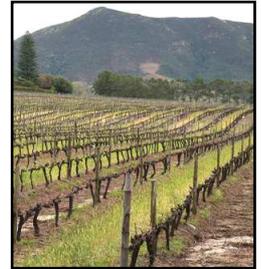
Research news

- The capacity for packaging, especially polymer packaging and non-polar flavour compounds, to directly remove volatile compounds through sorptive processes is termed flavour scalping and is well established in the food science/technology literature and is exploited commercially. A study investigated the effect of packaging on the concentration of 3-Alkyl-2-methoxypyrazines (MPs) in wine. High levels of MPs can make wines taste as though the grapes from which they were made were under-ripe or of low-quality. Invasive Asian lady beetles (also known as Harlequin ladybirds) eat grapes and can accidentally get mixed into the winemaking process where they then contribute to the formation of undesirable alkyl-methoxypyrazines. Three types of MPs (IBMP, IPMP, and SBMP) were added to Riesling and Cabernet Franc wines and monitored over 18 months. Changes in MP concentrations during bottle aging varied with closure/packaging option, with the greatest decrease evident in Tetrapak cartons. The results were similar for both types of grape. After 18 months, IBMP, IPMP, and SBMP in the Tetrapak-stored wines decreased by 45%, 32%, and 26%, respectively. In wines stored in bottles, the levels of IBMP did not fall as much: by 37% for synthetic cork, 36% for screw cap and 31% for natural cork. For When it came to IPMP the level increased by 2-3% for natural cork, but fell by 7% for screw cap and 19% for synthetic cork. Why the Tetrapak cartons have this effect is not entirely understood, but the researchers speculated that the wine may be seeping through the inner polythene layers and making contact with the aluminium layer beyond, with the alkyl-methoxypyrazine molecules sticking to the aluminium and thus being separated from the wine. Thus adjusting the composition of box interiors could be a way for the wine industry to control the concentration of unpleasant chemicals. As MP concentrations in Tetrapak decreased over 3 to 6 months after bottling and then remained stable for both wines and all MP species, such cartons could be ideal for storing wines that are inclined to be high in alkyl-methoxypyrazines but which will be drunk relatively soon after purchase, before oxidation of the boxed wine becomes a significant problem. <http://pubs.acs.org/doi/abs/10.1021/jf803720k>
- A genetic trait of yeast that minimizes the formation of undesirable hydrogen sulphide (H₂S) during fermentation has been identified and sequenced. The researchers have subsequently used it in breeding strategies using classic non-GMO breeding techniques. In tests, they have incorporated the trait into the popular UCD522 (Montrachet) yeast, and say that any commercial yeast strain can become a non-producer (of H₂S) when the newly identified trait is incorporated. The new trait has been licensed to Functional Technologies Corp and will be marketed under its Phytterra Yeast brand. The researchers, however, cautioned that if the source of the H₂S is sulphur added in the vineyard, there will likely still be some sulphides present in the wine. Use of the new trait does not mean that applications of sulphur in the vineyard can now be made closer to harvest. www.winesandvines.com/template.cfm?section=news&content=61611
- Three irrigation strategies were compared on a block of Syrah vines planted in shallow soil in France. The strategies were: an empirical one based on the vineyard manager's experiences (TRAD), one aimed to maximize yield, without wasting water (REND) and one aimed to produce quality grapes suitable for the production of high end red wines (QUAL). The REND strategy supplied in total 18% less water than did the TRAD strategy, while the QUAL strategy supplied 91% more water. The three strategies eliminated the water stress seen in the control vines (which were not irrigated) and resulted in different wine styles: REND gave a fruity wine, at yields high enough to have a good profitability for that vineyard plot at a competitive sales price in a premium market. QUAL and TRAD gave more structured wines, suitable for the production of high end wines for aging, TRAD being more suitable for local markets and QUAL more for international markets. The control resulted in the least appreciated wine, being concentrated, dry and burning, with low yields. Despite a doubled water supply, the REND strategy only increased yields by 18 to 22% in comparison to the QUAL and TRAD strategies. This limited difference could be due to inefficient water distribution as when there is high water supply, once the drip by drip bulb is saturated, the extra water supplied tends to percolate, therefore causing greater losses. Also, the mineral nutrition of the vine becomes the limiting factor when water needs are fully met. www.infowine.com/default.asp?scheda=8033
- Using ultrahigh-resolution mass spectrometry, researchers have been able to show that 10-year-old wines still carry a signature of the forest location where oaks of the barrel in which they were aged have grown. 4 wines, each of which had been oak matured in 12 slightly different oak barrels from 9 different oak forests, were subjected to high-field ion cyclotron resonance-Fourier transform mass spectrometry (ICR-FT/MS) in the mass range 150–2 000 *m/z* (mass to charge ratio). The complex mass spectra resulting were subjected to various statistical and algorithmic process (including van Krevelen diagrams). For example, the spectrum of a red wine



from Burgundy (*Vosne Romanée* 1995) had up to 17 400 peaks, which can be unambiguously attributed to 1 180 unique compounds containing C,H,O,N and/or S. It must be noted, however, that many of the compounds responsible for the aroma of wines, which exhibit *m/z* values below 150, were not detected in the study. The researchers were able to clearly discriminate between the wines according to their geographical origin and the grape variety. In addition the sensitivity of the analyses was such that they were able to discriminate the wines according to the forest origin of the oaks used for barrel aging of these wines, something which has not previously been possible. www.pnas.org/cgi/doi/10.1073/pnas.0901100106

- A study in France examined the effect of spontaneous green cover on various grape crop parameters, including yield, by considering the amount of time it is present on the vineyard plot annually. Vineyard plots of red grapes in five different communes were monitored over the period from 2002 to 2007. Each plot consisted of 4 blocks which were treated as follows: control (chemical removal of the winter flora starting from bud break); natural permanent green cover; natural green cover chemically removed starting from flowering; natural green cover chemically removed starting from bunch closure. The presence of green cover during all or part of the vine cycle caused only limited or no competition with the vine in most of the cases observed. This competition mainly affected the vine vigour and usually yield and maturity were unaffected. Only when there was cramping with perennials was there a significant decrease in yield. Such cases were less frequent than initially expected and were easy enough to identify and thus to control. The presence of green cover (even permanent) does not accentuate water restriction as the vine defoliation is comparable across all the treatments when it occurs. Spontaneous green cover can therefore be implemented in many situations and can be managed using simple observations in key periods of the season (flowering, bunch closure). Spontaneous green cover with weeding on the vine rows is also one of the least costly technical treatment methods, and is to be recommended. Uncovered soil for the whole vegetative season should be the method of choice only for soils that are particularly infertile, as well as for those where target yields are not attained. <http://www.infowine.com/default.asp?scheda=8238>



Market research

- Most marketing researchers use rating scales to understand consumer wine preferences. A 2003 review (http://wwwdocs.fce.unsw.edu.au/marketing/amj_8_01_hall.pdf) summarised problems with rating scales, and concluded that the best means to advance understanding of which attributes led consumers to purchase a particular wine was to use either choice-based experiments or an analysis of actual consumer purchases. Both methods are difficult to implement or to evaluate. It is now suggested that all these problems can be avoided by the use of a technique new to wine marketing research, best-worst scaling (BWS). A paper discusses the concepts and an example of using BWS to determine the importance of wine cues while consumers are choosing wine in a retail store. Among these cues are extrinsic cues such as brand, price, label and region and intrinsic cues such as taste, aroma and alcohol content. The design of the questionnaire as well as the steps to analyze and present the results are presented. It is concluded that the BWS approach can be easily implemented for research in wine businesses, especially for multicultural comparisons, as it avoids scale confounds. After transformation of the best and worst scores of each respondent for each attribute, the data can be analyzed directly using various statistical methods and can be expressed as choice probabilities. <http://195.92.228.61/10.1108/17511060910948008>

Health

- The impact of long-term alcohol intake, including wine, on cardiovascular mortality and life expectancy at age 50 was investigated in the group of men known as the Zutphen Study, a cohort of 1 373 men born between 1900 and 1920 in Holland and examined repeatedly between 1960 and 2000. The investigation found that long-term light alcohol intake is associated with a lower risk of both cardiovascular and all-cause mortality risk, and a longer life expectancy. Wine consumers had a 5 years longer life expectancy compared with non-alcohol consumers. Among alcohol users, who increased from 45% of the total in 1960 to 89% in 2000, the average number of glasses consumed varied between a half and 1.5 glasses per day for wine, beer and spirits. Long-term use of alcohol was linked to a reduced risk of death; compared to men who did not drink, those drinking between 0-20g/day had a 57% lower cerebrovascular mortality risk, a 30% lower risk of death due to cardiovascular disease (CVD), and a 25% reduced risk of death due to any cause. When assessing alcohol by type, wine had the strongest effect, with those consuming an average of 0-20g of wine per day having a 39% reduced risk of coronary heart disease (CHD), a 32% reduced risk of CVD, and a 27% reduced risk of death from any cause. Overall, men consuming an average of 6g/day of alcohol (from beer, wine or spirits) could expect to live 2.3 years longer from age 50 than those who did not consume alcohol. When limiting the calculation to wine drinkers, those who drank an average of 8g alcohol/day from wine (less than half a glass per day) lived 4.7 years longer than those who didn't use alcohol. 70% of the wine consumed was red wine. <http://jech.bmj.com/cgi/content/short/jech.2008.082198v1>

Winetech Scan is available on the Winetech website www.winetech.co.za
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