



International Research News

A review of current literature on commercial oenological tannins

The structure, chemical and sensory properties as well as the methods of analysis of commercial oenological tannins that are often added to wine have been reviewed. The main sources of oenological tannins are grapes and oak wood. The interactions of these tannins with wine components can be complex and, while there are many commercial tannins available on the market, there is little information about their properties, such as botanical source, composition, purity, solubility and reaction kinetics, and their influence on wine quality is often uncertain. Further investigations are thus necessary into the composition and characterisation of these tannins, and specifically their effect on the colour, tannin content and mouthfeel of red wine. It is noted that developments in analytical chemistry should be able to answer some of these questions. These answers will provide evidence whether the current dosages recommended by the suppliers are optimal or even justified. The literature, however, suggests that the addition of these tannins often does not lead to large differences in the chemical profile of wine, and sometimes even leads to unwanted sensory characters being observed in the wine. <http://dx.doi.org/10.1111/ajgw.12002>

Best ASEV Papers for 2012

Each year, the American Society of Enology and Viticulture (ASEV) evaluates all of the research papers published in the American Journal of Enology and Viticulture (AJEV) for the prior year. Two papers, one in the field of enology and one in the field of viticulture, that are deemed outstanding in their content and a substantial contribution to the field, are selected. The papers selected from 2012 are: 'Foliar Application of Abscisic Acid Increases Freezing Tolerance of Field-Grown *Vitis vinifera* Cabernet franc Grapevines' www.ajevonline.org/content/63/2/185 and 'Profiling the Yeast Communities of Wine Fermentations Using Terminal Restriction Fragment Length Polymorphism Analysis' www.ajevonline.org/content/63/3/377



Effect of sunlight exclusion at different phenological stages on anthocyanin accumulation in red grape clusters

At the experimental vineyard of the Institute of Botany, Chinese Academy of Sciences, Beijing, the red grape cv. *Jingxiu* was grown in an open field in 2011, and in a greenhouse and a rain-shelter in 2012. Sunlight exclusion imposed at the three berry development stages did not show consistent effects on berry weight, soluble solids content or titratable acidity over two seasons and three cultivation conditions. Despite this, sunlight exclusion from fruit set to one week pre-veraison consistently increased anthocyanin concentrations at one week post-veraison and maturity, which would be very valuable for better colouration of red grapes, though it remains to be further elucidated and verified in other red grape cultivars. Sunlight exclusion from one week pre-veraison to one week post-veraison inhibited anthocyanin accumulation, but anthocyanin concentration recovered to a normal level after sunlight exposure resumed. Sunlight exclusion from one week post-veraison to maturity did not greatly affect anthocyanin concentration at maturity. <http://dx.doi.org/10.5344/ajev.2013.12130>

Cluster thinning reduces the economic sustainability of Riesling production

A study examined the effects of cluster thinning (CT) on various fruit, wine, sensory and economic parameters of a commercial Riesling vineyard in the Finger Lakes area of New York State. Crop levels of 1, 1.5, and 2 clusters per shoot were compared to non-thinned (control) Riesling vines over a three year period, so as to understand how CT is justified as part of an economically sustainable viticulture program.

By the third year, yield and crop load (yield/pruning weight) did not differ among treatments. Sensory results showed differences for all third year wines despite the fact that yields did not differ, potentially a result of the compounding of CT treatments from previous years and impacts on vine N storage. There were no detrimental viticultural effects of CT and despite higher soluble solids at harvest, vines with a low crop load led to large financial losses for the grower at constant market prices. Cluster thinning practices designed to reduce yields for fruit or wine quality improvement purposes also reduced grower net returns. The low crop grapes required a 143% price increase to compensate for lost yields and increased production costs. <http://dx.doi.org/10.5344/ajev.2013.12123>

Impact of dissolved oxygen at bottling on sulphur dioxide and sensory properties of a Riesling wine

In white wine, a moderate oxygen exposure is viewed as potentially favourable to avoid reductive off-odours, while excessive oxygen exposure can result in loss of fresh and fruity aromas as well as oxidative browning. SO₂ is provided at different steps of wine processing to ensure protection of the wine against oxidative spoilage. As there is growing concern regarding the health implications of the addition of SO₂ to foods and beverages, a better understanding of the potential of improved oxygen management for wine quality appears to be necessary.

A Riesling wine from the Rheingau region in Germany was bottled with different levels of dissolved oxygen and sealed with two different coextruded (allowing different oxygen ingress) and one screw cap closure in order to investigate the impact of

dissolved oxygen and of closure oxygen transfer rate on wine evolution. Dissolved oxygen introduced at bottling influenced SO₂ decline during bottle storage, and especially during the first three months. However, the loss of SO₂ was more strongly correlated with the total amount of oxygen consumed by the wine rather than with the evolution of dissolved oxygen. Closure oxygen transfer rate also influenced SO₂ loss and this effect became more important with time in the bottle. Although closure was an important factor influencing sensory attributes of bottled wine, within each closure dissolved oxygen accounted for significant differences across the wines. Wines bottled with high dissolved oxygen showed significantly higher ratings for oxidation, confirming the influence of dissolved oxygen management on the evolution of wine over time.
<http://dx.doi.org/10.5344/ajev.2013.12112>

A statistical model to estimate bud fruitfulness in Pinot noir

Grape yields in Victoria (Australia) show that the largest source of seasonal yield variation is the number of bunches per vine, accounting for about 60% of the variation, with the number of berries per bunch the next highest source of yield variation. The basic physiological processes which give rise to this level of variability remain imperfectly understood. The natural fruitfulness of two clones of Pinot noir was surveyed in three vineyards in Southern Tasmania (Australia) under similar commercial vineyard management regimes. An interesting and uncommon method of statistical analysis to map bud fertility along the cane of Pinot noir in these vines was developed. The study compared Pinot noir fruitfulness at three different sites during winter dormancy by light microscopy and actual fruitfulness established three weeks after budburst.

Strong differences were observed between inflorescence primordia counts and actual inflorescence number after budburst. When examined microscopically, fruitfulness was evenly distributed along the cane with the exception of the first two nodes, which were significantly lower. In contrast, actual fruitfulness after budburst showed site differences and interactions between fruitfulness and node position. The research produced a probabilistic map showing the distribution of fruitfulness along the cane. Cane starch was shown to be a significant predictor for inflorescence count and cane size was positively correlated with the mean number of inflorescences per node. The results concur with previous reports that stress the importance of controlling dry matter partitioning to ensure adequate reserves are retained for subsequent seasons.
<http://dx.doi.org/10.5344/ajev.2013.12086>

Other news

Diatomaceous earth adds arsenic to German beer

A research team has found that German beer contains higher levels of arsenic than the water it is made from. After testing 140 samples of beers as part of a monitoring program, they concluded that the arsenic was released into the beer from a filtering material called kieselguhr or diatomaceous earth, which is used to remove yeast, hops and other particles so as to give the beer a clear appearance. Diatomaceous earth is also widely used to filter wine. The arsenic levels were only slightly elevated, and it is not likely that people would get sick from drinking such beers. The team pointed out that beers produced in at least six other countries had a higher arsenic content than did German beers.
<http://phys.org/news/2013-04-widely-filtering-material-arsenic-beers.html>



Technical guide on resistant varieties of grapevines

The ICV (Institut Coopératif du Vin) group has published (in French) a guide on grapevine varieties that are resistant to the most common diseases such as mildew, botrytis, etc. Information on 200 varieties from 6 European countries is presented and there are 56 detailed cards containing sensory analysis and other useful information. www.icv.fr/e-services/index.php/fr/

Good Fining Practice Guidelines

The International Organisation of Vine and Wine (OIV) has produced a working document for winemakers entitled 'Good fining practice guidelines for wine to be applied after the use of proteinaceous [allergenic] wine fining agents [casein and egg white]'. It summarises detailed information and arguments regarding: the definition of good manufacturing / fining practices for wines; criteria for methods of analysis available; and the background of scientific evidence. The document may be downloaded at www.oiv.int/oiv/files/Good_Fining_Practice_Guidelines_EN.pdf

Biosensor test strips for wild yeasts

The use of wild yeasts allows the introduction of a much broader and diverse spectrum of flavours and aromas, leading to characteristically unique wines. However, spontaneous fermentation can be difficult in the presence of wild yeasts that inhibit fermentation or introduce undesirable flavours. To reduce this risk, only small amounts of must are used for spontaneous fermentation, thus restricting the amount of wine that can be produced. An ongoing project involving cooperation between Chile and Germany is developing a test strip that can be used by wine-makers to see within minutes which wild yeasts are present in the must, and thus to take action to control fermentation if inappropriate strains are present. So far 19 different yeast strains have been identified, 10 of which were found in the must. The relevance of these different strains in terms of generating different wine flavours and aromas is now under investigation. See also 'Portable yeast identifier' in *Winetech Scan* April 2012. www.fcm.fraunhofer.de/en/beispiele11/entwicklung_einesnachweissystems fuer wildhefen in der spontanen wein v. html

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

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