



International Research News

Effect of rootstock on wine composition

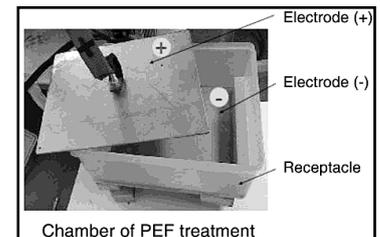
In the state of Washington it is possible that, in order to deal with invasive insects and worms, growers would have to start grafting. Concerns regarding the effect of grafting on wine quality have been raised as most vineyards in Washington grow own-rooted vines. Also, few studies have been conducted to evaluate the effect of rootstock on wine composition. The genotype of the scion (that which is grafted on to the rootstock) is thought to determine the types of compounds synthesized in the fruit, while rootstocks are thought to have an indirect effect on fruit composition by primarily influencing the vegetative growth of the grafted wine, including vine vigour, canopy size and fruit yield.

Now two studies have been carried out in Washington to investigate the grafting of Chardonnay, Merlot and Syrah on five different rootstocks. Rootstocks usually did not impact vine phenology, fruit set, and plant water status. The rootstock effect on yield formation depended on the scion cultivar, and variations in different yield components often cancelled out each other, but rootstock 3309C (Merlot and Syrah), rootstock 5C (Merlot and Chardonnay), and own roots (Chardonnay) were often associated with high yields. Nevertheless, the rootstocks had only minor effects on fruit ripening and did not consistently alter soluble solids, titratable acidity, potassium, anthocyanins or tannins. The pH was higher in fruit from own-rooted vines compared with grafted Merlot and Chardonnay. Overall, scion effects and differences due to yearly climate variation far outweighed any differences due to rootstock. All fruit and wine variables measured, with the exception of total soluble solids (TSS), varied significantly with scion. Only TSS and berry size were consistently affected by vintage. Wines from own-rooted vines tended to have somewhat higher pH, potassium, and total tannin than did wines from grafted vines. The relationships between fruit and wine for anthocyanins and tannins were not straightforward and warrant further research. <http://dx.doi.org/10.5344/ajev.2011.11078> and <http://dx.doi.org/10.5344/ajev.2011.11079>

PEF treatment of whole Merlot grapes

Microsecond or nanosecond duration of pulsed electric field treatment (PEF) has been shown to be a very effective non-thermal process for extraction enhancement, improving the extraction of several compounds in red and white grape pomace. It has also been applied as an alternative system of microbiological control in wineries, significantly reducing spoilage flora of must and wine. The technique does not degrade juices and involves minimum power consumption.

The effects of PEF pre-treatment (500–700 V/cm) on whole Merlot grapes with a short treatment duration (40–100 ms) on the evolution of colour intensity, anthocyanins and phenolic content during the alcoholic fermentation of Merlot grapes and seven months after bottling were investigated. The permeabilization of Merlot skin by application of PEF resulted in increased extraction of polyphenols and anthocyanins. Pulsed electric field of moderate intensity and short duration accelerates the flow kinetics of phenolic compounds through the cell membranes, and the kinetics of the extraction of valuable compounds during the vinification stage was established. Tasting showed that pulsed electric field treatment contributes to the enhancement of the sensory attributes of wine. <http://dx.doi.org/10.5344/ajev.2012.11088>



Colour evolution in rosé wines

Rosé wines are typically served cooled at 6 to 10°C and consumed during spring and summer. Even though time spent inside the bottle before consumption is less than one year, sensory attributes, including colour, change during those months. Qualitative colour changes are well known, but few studies that provide quantitative colour measurements have been undertaken.

Now a study reports on the colour evolution of Spanish rosé wines during sixteen months of storage in the bottle. Six different Spanish rosé wines from six different wineries were studied. Natural cork was used as closure in three wines, the rest used synthetic closures. While the classification into colour categories at different times depended on the wine sample, it was found that all the wines took three to four months to change from raspberry to strawberry colour and seven to eight months to reach a redcurrant colour. Only two wines had developed salmon colour by the end of the experiment. Closure type had no effect on colour development. www.sasev.org/journal-sajev/sajev-articles/volume-32-1/Colour_Evolution_Rose_Wines.pdf/view

Determining resistance to Anthracnose

Anthracnose is one of the most detrimental diseases of grapevines in humid regions. It is caused by the fungus *Elsinoe ampelina*. Anthracnose attack over a period of two or three years weakens grapevines and may result in misshapen fruit or weaken them to the point that they are prone to other infections and damage. To lessen the risk of crop damage and to reduce fungicide application, resistant cultivars are needed.

A study has evaluated the resistance of grapevines to anthracnose by counting the number of lesions on a leaf, and by measuring the lesion length. This was done for 13 cultivars in a detached-leaf (i.e. leaves that had been removed from the vine) assay using greenhouse-grown cuttings, as well as for 6 cultivars in a fungicide-free vineyard. The lesion shape in susceptible cultivars was almost circular, whereas that in resistant cultivars was usually irregular. The correlation between lesion length in the detached-leaf assay and that in the vineyard was high and significant, suggesting that both methods of assessing resistance provided similar results, reliably predicting resistance to anthracnose. As annual field evaluations of grapevines can be costly, and other disease or insect attacks may interfere with the accuracy of the field ratings, the detached-leaf assay could reduce costs. <http://dx.doi.org/10.5344/ajev.2012.11109>

Other News

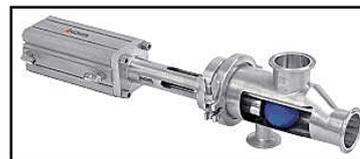
Portable yeast identifier

A vineyard has a characteristic yeast population of its very own. Winemakers who use these wild yeasts for spontaneous fermentation have a good chance of producing a truly top-class wine. Spontaneous fermentation is not without its risks, however, since not all wild yeasts have a positive effect on the development of a wine. There are some undesirable yeasts that can generate unpleasant flavours, or even impede the fermentation process.

A group in Germany has developed a prototype portable detector which allows winemakers to establish whether the grape must contains the correct yeasts before fermentation has begun. The detector is the size of a cell phone and contains ten tubes, each coated with different antibodies. The tubes are filled with grape must, and any yeast that encounters a matching antibody on the walls of the tube causes a biochemical reaction that produces an easily recognizable colour change. The group says that the technology is very flexible, all that is required is to produce the antibodies. The analytical technology can also be used to detect other micro-organisms, such as fungi, bacteria and viruses that cause diseases in plants. www.fraunhofer.de/en/press/research-news/2012/march/first-aid-for-winemakers.html

PIG reduces winery wastages

The Winenvironment project (www.winenvironment.eu) is an alliance of stakeholders looking into sustainable development. It tested a PIG system, intended to recover wine remaining in transfer pipes, in 16 cellars in different European countries. The system comprises a launcher, a spherical PIG (both shown right), a receiver, and valves and detectors. The sphere is driven by a propellant (normally compressed air) down the pipeline, thus recovering any remaining product.



It was found that the PIG system allows recovery of approximately 97 to 98% of the remaining wine volumes in pipes without risk of mixture with water (which is the case with water pushing, which latter generated wine losses from 7 to 20% in the tests) nor oxygen dissolution (which is the case with a no-load operation of the pump, with losses from 5 to 30%). The use of a sphere also allows full and efficient rinsing with low water volumes. At the end of the push, pipes do not contain residual water, which improves hygiene. Compared to the usual draining and rinsing practices in the 16 cellars, water savings varied from 50 to more than 80%. Pipe rinsing generates effluents whose volume varies according to the quantities of water used, while the use of the PIG reduced pollution flows by factors of 2 to 10. Go to www.winenvironment.eu/publications.php and click on the table (right-side) in the second article down to download a report.

Online tool for measuring natural resources consumed

The California Sustainable Winegrowing Alliance (CSWA) has introduced a new free online Performance Metrics tool to complement its Sustainable Winegrowing Program. Growers and vintners can track and store their metrics data and access associated educational information. They can compare their metrics from year to year and, eventually, link measurable outcomes to changed practices. The new tool allows growers and vintners to track and store their use of water, energy, and nitrogen, and to see the impact of their energy use on greenhouse gas emissions. It also includes a sustainable winegrowing self-assessment. Performance Metrics is already used by growers and vintners to gauge their economic success, such as farming costs per acre/ton of grapes or production cost per bottle/case of wine. Now they will be able to calculate, manage and track improvement of performance with a broader set of sustainability metrics, and to identify areas where operations may be optimized and costs cut. <http://metrics.sustainablewinegrowing.org>

Limit of detection and quantification potentially allergenic residues of fining agent proteins halved

The representatives of the 45 nations that comprise the International Organisation of Vine and Wine have reduced by half the limit of detection and the limit of quantification of the methods used for detecting potentially allergenic residues of fining agent proteins in wine. Natural substances such as casein (present in milk and cheese), ovalbumine or lysozyme (present in egg whites) may potentially be used to fine wine in order to clarify it. In turn, different methods of analysis can be used to determine whether or not these elements are present in the wine. The new threshold values for detecting potentially allergenic residues in wine are: limit of detection ≤ 0.25 mg/L and limit of quantification ≤ 0.5 mg/L. The new limits do not affect the suitability of existing commercially available methods or kits, or the validity of quality control and definition of these methods. www.oiv.int/oiv/info/en/allergenes?lang=en

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

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