Winetech Scan
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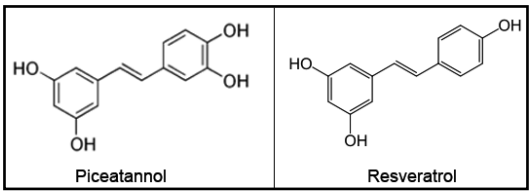
Netwerk van Kundigheid en Technologie vir die Wynbedryf

# International Research News

### Micro-vibrate the insects away

With the ongoing growing public concern about use of pesticides, a challenge in increasing the safety of the global food production is to identify appropriate alternative mating disruption approaches for the numerous insect pests that do not rely on chemical communication. A study has shown that effective mating disruption based on substrate-borne vibrational signals can be achieved in the field. An electromagnetic shaker was used to vibrate a grapevine support wire with a disruptive signal that was transmitted to the plants in both potted and fully mature field grapevine plants. When these disruptive vibrational signals were applied, the mating frequency of the leafhopper pest *Scaphoideus titanus* dropped dramatically by 91% in semi-field conditions and by 96% in a mature vineyard. The underlying mechanism of this environmentally friendly pest-control tactic is a masking of the vibrational signals used in mate recognition and location. Because vibrational communication is widespread in insects, mating disruption using substrate vibrations could transform many open field and greenhouse based farming systems. http://dx.doi.org/10.1371/journal.pone.0032954

### Piceatannol inhibits development of fat cells




Despite the well documented health benefit of resveratrol (found in grapes and red wine) in the intervention of the development of obesity, the role of piceatannol in the development of adipose tissue and related diseases is unknown. Piceatannol is an analogue and a metabolite of resveratrol (it has one more hydroxyl group – see right). Now a study has found that piceatannol alters the timing of gene expressions, gene functions and insulin action during the early phase of adipogenesis, the process in which early stage fat cells become mature fat cells. It does this through inhibition of mitotic clonal expansion and insulin receptor activity. This results in a delay or complete inhibition of adipogenesis. The study concludes that piceatannol is a novel anti-adipogenic compound that could modulate the development of adipose tissue. www.jbc.org/content/287/14/11566

### A cellular biosensor for the detection of 'cork taint'

2,4,6-trichloroanisole (TCA) is the primary compound responsible for the musty/mould off-odour known as 'cork taint'. It is formed from chlorophenols through the activity of natural fungal strains present on cork oak bark. Chromatographic and electrochemical methods are currently used for the determination of TCA but its detection at low concentrations remains a technical challenge. A rapid novel biosensor system based on the Bioelectric Recognition Assay (BERA) has been developed. The sensor measures the electric response of cultured membrane-engineered fibroblast cells suspended in an alginate gel matrix due to the change of their membrane potential in the presence of the analyte. The BERA sensor was tested against real white wine samples from cork soaks. It was able to detect TCA from cork soaks rapidly (3–5 min) at very low concentrations (1.02–12 ng/l), covering the whole range for the detection threshold for wines (1.4–10 ng/l), and thus demonstrating higher sensitivity than the human sensory threshold. In addition, the assay was quite selective against other haloanisoles and halophenols structurally related to or co-occurring with TCA. http://dx.doi.org/10.1016/j.talanta.2011.02.029

# Local Research News

### 'Burnt rubber' flavour investigated

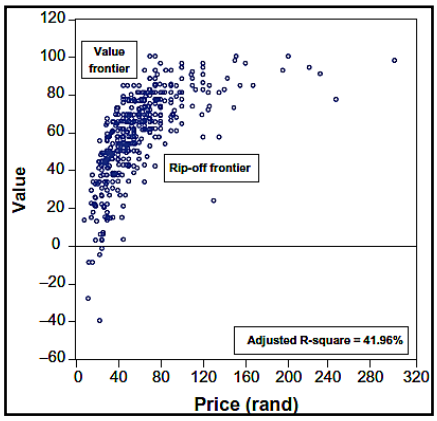
As several international wine writers had claimed in 2008 that a off-flavour 'burnt rubber' (BR) character was prominent in, and was specific to, SA red wines, a project to investigate the matter was undertaken. A panel of the five best BR- tasters and ten non-regular tasters was trained intensively over a two-year period to distinguish the taint from amongst other taints in wine. Over one thousand three hundred wines were tasted during this period at wine shows as well as in a formal sensory environment. Many of these wines were brought to the panel because they had previously been identified as presenting a problem. Approximately 20% of this large, but biased, collection of wines was found to show some burnt or smoky taints by the trained panel. Aside from 'BR / rubberiness' being present in 10.5% of the samples to varying degrees, a range of other descriptors were used, including herbaceousness, tarriness, smokiness, oxidation, 'brettiness', fishiness, TCA, sulphur and chemical smells and tastes.

It became apparent that this range of aromas are often misdiagnosed as BR or may be found simultaneously with it, and it is difficult to assess their contributions separately. 'Burnt, rubbery, and smoky' smells can be caused by a number of different factors which are fairly well known to winemakers such as volatile phenols from barrels or other sources, and 'herbaceousness' linked to cultivar characteristics and unripe fruit. Volatile Sulphur Compounds (VSC) are one of the known causes of BR taint but VSC analysis of wines carried out by GC-MS showed that low VSC levels were not necessarily associated with a lack of the BR taint, and that other compounds were therefore responsible for the BR taint. Volatile phenols

and VSCs are however commonly found in wines from all over the world, and do not constitute a SA-specific problem. It was concluded that there are indeed 'BR' related issues in SA wines, but that these do not constitute more than a small percentage of faults. The majority of the affected wines did not show off-flavours that can be described as being specific to, or typical of, SA wines since these taints are found in wines from most, if not all, wine-producing countries. www.sawislibrary.co.za/dbtextimages/BauerFF8.pdf

### Value or rip-off?

Using published ratings of tasted wines on the 5-star system, a study examined the relationship between price, value, and value for money of 1 358 South African wines from eight cultivars from 2007. Regression models confirmed the unequal pricing of consecutive increments in star-styled wine quality assessments. The study mapped the wines on a value vs. price diagram (right) and indicated which wines lie close to the 'rip-off frontier' (low value – high price), and which wines are found close to the 'value frontier' (high value – low price). As the 'value' of the wine increases, so does the spread of prices. The study concluded that, using the methodology presented, fertile areas for bargain hunting can thus be found at both ends of the price continuum, thereby assisting retailers and consumers in better identifying wines that offer value for money. http://dx.doi.org/10.2147/IJWR.S28321




## Other News

### US to review online marketing of wine and other liquors

The US Federal Trade Commission is to review the online marketing of beer, liquor and wine. It is requiring 14 major alcoholic beverage producers to release information about their Internet and digital marketing efforts. The parent companies for wineries including Kendall-Jackson, Robert Mondavi and Beaulieu Vineyard, as well as Anheuser-Busch and Bacardi, are all being tapped for data likely to shape future advertising rules. The last study of this kind, completed in 2008, compiled alcohol marketing data for 2005. That year Twitter, now widely used for marketing, didn't even exist, and only 1.9% percent of the surveyed companies' $3.3 billion in marketing expenditures was spent on the Internet. However, industry marketing is rapidly evolving to exploit new technologies, and this will be explored by the regulators. Once completed, probably next year, the study will guide Federal Trade Commission recommendations on how the alcohol industry should regulate itself both on- and offline. http://phys.org/news/2012-05-online-beer-liquor-wine.html

### Global Research Council established

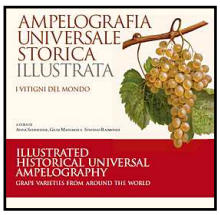
The Global Research Council (GRC), comprising leaders of publicly funded science agencies from about 50 nations, has been established as a voluntary, virtual organization designed to foster discussion of shared goals, aspirations, and principles, and to provide a vehicle to unify science across the globe. The GRC will not, at least for the time being, get involved in funding international research projects. It also released its first work product, a common set of principles that frame how funders should review and choose the most worthy research projects. It highlights six key elements necessary for a rigorous and transparent review system, including the use of expert assessment of proposals and a transparent, impartial and confidential review process. The principles may be downloaded from www.nsf.gov/news/newsmedia/globalsummit/gs_principles.pdf. Report from http://blogs.nature.com/news/2012/05/worlds-science-funders-announce-global-research-council.html

### Management of Sprayer Wash Water

In the EU the quality of waste water has become an issue that can no longer be ignored by the wine industry and the management of discharge from wine-growing activity (waste and effluent) has now become a top priority. The French Vine and Wine Institute has carried out research into a number of related areas: characterisation of spray effluent (volumes, impact, etc); design of the filling and washing area; optimisation of spray residues; technical references on in-field rinsing; treatment of residues optimised with specific systems; identification of processes, comparison of their technical, economic and practical performance using a bench test; and monitoring systems in wineries.

The trials show that a comprehensive approach is required. Tools should be adapted so as to keep problems to a minimum when handling products. Not only the sprayer but also the filling/washing area and the storage facility for pesticides need to be reviewed. In-field rinsing practices need examination. www.winenvironment.eu/docs/Management_of_sprayer.pdf

### Ampelography




Ampelography is the scientific description of the vine. The Italian Ministry of Agriculture has published a lavish 3-volume work on the subject. In Italian and English, it illustrates 551 cultivars, complete with entries describing each one. It also contains beautiful collections of ampelographic plates from the 'Ampelographie - Traité général de viticultur'e' by Pierre Viala and Victor Vermorel (1901-10), Giorgio Gallesio's 'Pomona Italiana' (1817 and 1839) and 'Ampelografia Italiana' (1882). A preview of the book may be downloaded from www.ampelografia.it/sites/default/files/book_preview.pdf