Winetech Scan

Wine Industry Network of Expertise and Technology
Netwerk van Kundigheid en Technologie vir die Wynbedryf

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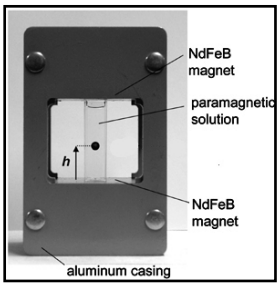
Research News

- Bentonite fining is commonly used in the wine industry as a clarifying technique to remove proteins that are a potential source of haze in wines. Bentonite is not specific to proteins; it also removes other charged species or aggregates. Aroma depletion during fining is generally observed as a secondary, nonspecific effect of bentonite, but the mechanisms and effects in white wines are not clear. The effect of fining on odour-active compounds of two white wines was examined using three different types of sodium bentonite applied at three different concentrations. Two Chardonnay wines were produced with different winemaking processes to obtain two wine styles. The period of aging on lees was adjusted to produce different protein contents in the two wines. It was found that bentonite dose, bentonite type and wine style significantly affected the percentage reduction of some odour-active white wine compounds. Most of these volatiles were indirectly removed via deproteinisation, as they can be fixed to macromolecules by weak bonds, and only a few odour-active molecules were directly removed by bentonite through adsorption. The low adsorbent concentrations of bentonite (20 g/hL) generally used to stabilize wine did not significantly affect the concentration of most aromatic substances. The results suggest that the chemical nature, the hydrophobicity, initial concentration of wine odour-active compounds, and the abundance and nature of wine proteins are all 'matrix factors' modulating the removal of wine odour-active compounds during bentonite fining. The findings have important practical applications for selecting which bentonite dose and type are best for fining a particular wine style. www.ajevonline.org.ez.sun.ac.za/cgi/content/abstract/61/2/225

- Measuring the density of wine is one way of determining its alcohol content. A newly developed method which is claimed to be a simple, inexpensive, and easy-to-use way of determining densities of liquids and solids uses magnetic levitation (MagLev). The sensor comprises two permanent NdFeB magnets and a container filled with a solution of paramagnetic ions between the magnets. Measurements of density are obtained by suspending a diamagnetic object (the sample whose density is to be determined) in the container filled with the paramagnetic fluid, placing the container between the magnets, and measuring the vertical position of the suspended object. In tests, MagLev was used to estimate the salinity of water, to compare a variety of vegetable oils on the basis of the ratio of poly-unsaturated fat to mono-unsaturated fat, to compare the contents of fat in milk, cheese, and peanut butter, and to determine the density of grains. The method is rapid and accurate, and can also be used to monitor changes in chemical or physical processes over time. A disadvantage is that it requires a paramagnetic solution that may be incompatible with certain kinds of analytes. http://dx.doi.org/10.1021/jf100377n



- A row has broken out in the Alsace region of north-eastern France. At the French National Institute for Agricultural Research (INRA www.international.inra.fr) laboratory in Colmar, which is 16 kilometres from the German border and the Rhine, 500 normal grapevines have been planted and, in their midst, 70 diseased plants with a genetically modified graft designed to shield against fanleaf virus (GFLV) and its transmission by earthworms. Although the nearest commercial vineyards are three kilometres away, local winemakers have been suspicious about the experiment from its inception, arguing that the genetically modified material could invade their vineyards and fatally tarnish their image. Their suspicions are part of a broadly shared fear in France and other European countries that genetically modified food is something akin to science-based witchcraft that represents a danger: to consumers' health, perhaps, and certainly to the traditional way of doing things. INRA has being trying to run genetically modified experiments in the area from 2004, but until now has had no success as required permits were not forthcoming, and in 2006 a local environmental activist destroyed an experiment that has just started. In what was seen as a reflection of local sentiment, the judges fined him one euro. www.washingtonpost.com/wp-dyn/content/article/2010/06/11/AR2010061105717.html

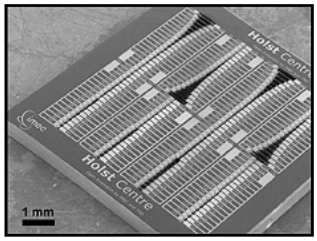
- A study has determined that smoking may counteract the beneficial effect of moderate drinking which lowers the risk of a stroke. The drinking and smoking habits of 22 524 people in the United Kingdom between the ages of 39 and 79 who did not have a history of heart attack or stroke at the start of the study were monitored. During the 12 year-long study, 864 strokes occurred. It was found that the association between alcohol drinking and stroke was significantly different between smokers and non-smokers. In non-smokers, people who consumed moderate amounts of alcohol were 37% less likely to develop a stroke than non-drinkers, while in smokers this association was not observed, which suggests that smoking may modify the relationship between alcohol intake and stroke risk. Moderate drinking was defined as consuming up to 21 units of alcohol per week, about two to three glasses of red wine a day. www.physorg.com/news190375547.html

Local research news

- At present a variety of diagnostic test kits, both locally produced and imported, are used for the detection of grapevine viruses and virus-like disease agents in South Africa. The different sensitivities and specificities of these kits result in incomparable and inconsistent diagnoses of the viral status of propagation material. In view of this, ELISA kits from Bioreba, Agritest and ARC-PPRI (Agricultural Research Council – Plant Protection Research Institute) for the detection of the grapevine viruses GLRaV-1, GLRaV-2, GLRaV-3, GVA, GVB and GFLV were assessed and compared. Enzyme-linked immunosorbent assay (ELISA) is a biochemical technique used mainly in immunology to detect the presence of an antibody or an antigen in a sample. The ELISA kits that were found to be the most sensitive and specific for the detection of these viruses in vines cultivated in South Africa were: for GLRaV-1, GLRaV-2, GLRaV-3 - the ARC-PPRI individual ELISA kits; for GVA and GVB – Agritest; for GFLV - Bioreba. Furthermore, through the use of suitable treatments, it was found that it is not necessary to test samples in duplicate for all of the ELISA kits that were compared. As regards storing of samples prior to testing, it was found that only GFLV (but not in the PPRI extraction buffer) were stable in vine samples when stored for periods in a freezer, and that all others viruses were sensitive to freezer storage in that detectable virus levels dropped with storage time. www.sawislibrary.co.za/dbtextimages/BellstedtDU.pdf

Innovation

- One of the main gas sensing approaches in uncontrolled environments is the identification of vapours (smells) using multiple sensing elements (receptors) in a system that is often referred to as an electronic nose or e-nose. An accurate e-nose requires small, integrated, low-power detectors with individually tuned chemical coatings. Present methods using chemi-resistors or quartz crystals are not scalable or power-efficient enough to build low-power small form factor e-noses. Now a new generation of microbridges with embedded individual piezoelectric ‘ shakers’ in a high-density array with very high fabrication yield has now been developed. The novel design allows for rapid coating of a range of absorbents on individual microbridges using commercial inkjet printing technology. The suspended structures vibrate individually, and changes in their modes of vibration (resonances) are monitored as an indication of vapour absorption in their coatings. Due to the very high length-to-thickness ratio of the microbridges, the new gas sensor chip has a high sensitivity to low-concentration vapours. This truly low-power miniaturized implementation of an e-nose technology can be used in current applications such as wine and cheese monitoring, but could in the future also help sniff-out human conditions such as asthma, lung cancer, and kidney diseases. Right: The complete sensor chip (9mm x 9mm) consisting of 160 unique individually addressable micromechanical resonators. http://www2.imec.be/be_en/press/imec-news/gassensor.html



- South Africa appears to be the first country in the world to issue a wine bottle seal certifying the ‘ wine has been grown and produced sustainably’. The seal, available from the 2010 harvest year, is issued by the Wine and Spirit Board and is intended for bottled wines only. To qualify for the new seal, every link in the supply chain has to be Integrated Production of Wine (IPW) accredited – the farm, the winery and the bottling plant. Key elements of the IPW scheme are that withholding periods of agrochemicals may not be exceeded; no unregistered chemicals may be used; non-permitted residues may not be present in grapes; introduction of natural predators in vineyards; and all relevant legislation pertaining to cultivation of virgin soil (including environmental impact assessments), registration and treatment of water use, and all aspects related to the health and safety of workers, and the handling, storage and disposal of agrochemicals and empty containers, must be complied with. To date, more than 95% of the South African wine industry has been following sustainable wine-growing and wine making principles and it is expected that about 50% of the country’s producers will make use of the new seal for the 2010 vintage, rising to 80% from the 2011 vintage. As the seal will be applied exclusively to wines bottled in SA, it should act as a disincentive to producers to bottle their wines off-shore, as such off-shore bulk bottlers will not have the benefit of an easy-to-recognise message to consumers that their wines are made with respect for the environment. See www.ipw.co.za and www.swsa.co.za. http://urbansprout.co.za/sustainability_seal_for_south_african_wine_a_world_first

- The Global Mundo Tapas eatery at the Rydges Hotel in North Sydney, Australia has ditched printed menus and now hands diners an Apple touchscreen iPad computer from which to choose and order their meals. Diners can browse the menu, complete with photographs and tasting notes, with a flick of a finger. When a steak is ordered the device asks how you would like the meat cooked, and placing your order can be done with the press of a button. Planned features include pop-up boxes that will suggest wines to match meals, and a stock-control system to delete sold-out items from the menu. www.physorg.com/news194849162.html

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