First International O2inWines™ Conference on Oxygen Management a Success

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Attendees explored the latest advances in oxygen control and collaboration between academia, industry

MONTPELLIER, France (June 3, 2008) – Scientists, oenologists and wine professionals from around the world gathered at the Institut National de la Recherche Agronomique (INRA) in Montpellier to participate in the industry's first conference exploring the impact of oxygen in wine. Hosted by O2inWines™, a nonprofit organization formed by Nomacorc, Lallemand and G3 Enterprises, the conference brought together more than 250 wine specialists from 18 countries to talk about new findings in the measurement, impact and management of oxygen during the different stages of wine production.

"O2inWines is a unique platform for academic and industry researchers to share their latest findings with an engaged, relevant audience," said Véronique Cheynier, director of research at INRA. "I found the participants to be extremely interested in what leading industry innovators and researchers had to say."

State-of-the-art research that was presented at the conference demonstrated that although oxygen management is a complex research subject, much progress is being made. However, the scientific results supplied by academic research must be "translated" and communicated to the industry. Therefore, the ultimate goal of the conference and the O2inWines association will be to bridge the gap between technology and knowledge, R&D and the industry.

"Because O2inWines involves innovation leaders from academia and industry, the members can collaborate to promote effective solutions to oxygen management challenges," said Didier Théodore, business support manager, Lallemand. "This will ultimately assist winemakers in improving the quality and consistency of their wines by perfecting the control of oxygen at every stage in the winemaking process."

The conference was presented in three sessions:

- Measuring oxygen and oxygen exposure
- Understanding the impact of oxygen exposure
- Controlling oxygen exposure during winemaking and wine preservation
- Dr. Stéphane Vidal from Nomacorc (Belgium) began the first session with an overview of the methods used to measure oxygen and reduction/oxidation. Subsequently, several new tools to study these phenomena were presented, including:

- BPAA oxygen measurement technique, which allows for accurate measurement of the dissolved oxygen in the bottle (Dr. Elizabeth Waters, AWRI, Australia)
- High-resolution GC/MS analysis, which allows for identification and quantification of the various aroma compounds in wine (Dr. Pat Sandra, RIC, Belgium)
- Several high-resolution analysis techniques to qualify and quantify polyphenolic structures in wine (Dr. Jim Kennedy, OSU, USA)
- The electronic tongue to rapidly qualify wine composition and stage of evolution (Dr. María Luz Rodriguez-Mendez, University of Valladolid, Spain)
- UV-VIS and near-infrared spectroscopy in combination with chemometrics data handling, which allows for rapid determination of various key wine metrics without opening the bottle (Dr. Bob Dambergs, AWRI, Australia)

The second phase of the conference focused on understanding the impact of oxygen in wines.

- Dr. Hélène Fulcrand (INRA Montpellier, France) gave an overview on the understanding of the various mechanisms that are involved in oxidation. She highlighted the influence of oxygen on aroma development, taste/structure formation and color changes of the wine.
- Dr. Andrew Waterhouse (UC Davis, USA) continued the discussion with in-depth explanations of the initial reaction steps in the oxidation process. He demonstrated that a better understanding of these initial oxidation steps will provide useful insight into how to better control wine oxidation.
- In addition, Dr. César Ferreira (UCP, Portugal) presented his team's research on wine aroma development via oxidation in white and port wine. Compounds such as sotolon, phenylacetaldehyde and methional were found to correlate with the level of dissolved oxygen. In white wine, they lead to a reduction in perceived quality. But in port wine, they lead to an improvement in perceived quality, which illustrates that oxygen ingress needs to be managed to achieve the desired level of quality based on the end application.
- Dr. Véronique Cheynier (INRA Montpellier, France) gave an insightful lecture about the many structures and reactions of polyphenols and how they can explain color, astringency and bitterness changes of the wine.
- Finally, Gérard Casaubon (PUC, Chile) concluded with a method to understand oxygen's influence on consumers' preferences for the aroma and taste development of commercial wines.

The last part of the conference focused on the practical aspect of winemaking and oxygen management.

- Dr. John Cunningham (G3 Enterprises, USA) presented a survey among California winemakers on where and how they are measuring oxygen during their winemaking. He clearly showed that the majority of the testing was done with merely wine tasting and that quantification methods were yet scarcely used.
- Dr. Anne Ortiz-Julien (Lallemand, France) addressed the oxygen demand by yeasts during wine fermentation. She illustrated the need for oxygen management via her research on oxygen additions during alcoholic fermentation and how these additions can lead to different fermentation kinetics, depending on the yeast's O2 requirement.
- Patrick Ducournau (Vivelys, France) discussed the need to manage the oxygen dosing at the barrel aging stage (micro-oxygenation) and stressed that, depending on the type of wine and winemaking style, the level of oxygen needs to be changed. The bottling process is the last step in winemaking and has an important influence on the quantity of dissolved oxygen in the bottle, explained Dr. Rainer Jung (Forschungsanstalt Geisenheim, Germany). His studies focus on the best bottling conditions to obtain the optimal shelf life of wines.
- Finally, Dr. Olav Aagaard (Nomacorc, Belgium) ended the conference by showing how to control post-bottling oxygen ingress into the bottle by means of the closure choice. He illustrated the importance of being able to deliver oxygen consistently to the bottle and to measure the total oxygen package, which is the sum from dissolved oxygen, headspace oxygen and oxygen transfer through the closure.

The success of the first O2inWines™ conference demonstrated that there is a lack of information on oxygen management, and additional knowledge is actively sought after by the wine world. O2inWines™ intends to continue serving as a forum for academia and industry to come together by hosting additional conferences. The second installment, which will include updates on ongoing research, is planned for 2010.

Presentations from the First International O2inWines™ Conference on Oxygen Management will be made available to the media during July through the O2inWines™ association.

About O2inWines™ O2inWines™ is an international nonprofit association composed of suppliers and service providers to the wine industry, all leading innovators in their fields and heavily involved in researching oxygen management. World-renowned research institute and university members underscore the quality of the research programs facilitated by the association. The objective of the association is the promotion of scientifically based solutions for oxygen management challenges in the wine industry. O2inWines™ is based in Toulouse, France.