



CREALIS PE.DI UNVEILS A NEW SCIENTIFIC STUDY ON THE IMPACT OF CROWN CAP ON SPARKLING WINES DURING AGING

A collaboration between Gérard Liger-Belair's team at the University of Reims Champagne-Ardenne and CREALIS PE.DI provides a better understanding of how the crown cap influences the aging potential of sparkling wines using the traditional method.

The research demonstrates the aging potential associated with liners' different levels of permeability from CREALIS PE.DI's range of crown capsules. This study also reveals the impact of storage temperature, a key parameter for producers storing bottles off the ground.

An unprecedented approach to measuring CO₂ transfers

In a recent scientific study focused on CO₂ retention in sparkling wines produced using the traditional method, researchers at the University of Reims Champagne-Ardenne developed a model capable of predicting changes in carbon dioxide levels during aging on lees and estimating the maximum shelf life compatible with European regulatory requirements.

To develop this model, the researchers relied solely on the only known measurements taken under real aging conditions as part of a collaboration with CREALIS PE.DI, specialist in crown cap manufacturing. During five years of aging on lees, several batches of bottles were monitored to measure CO₂ losses at different levels of permeability through the capsules from CREALIS PE.DI's range: TOP, TOP+3, TOP+, TOP Z, and TOP S.

"This article builds on research conducted over more than a decade on the mechanisms of CO₂ retention in sparkling wines. The lack of long-term in situ measurements had previously been a major obstacle, due to the associated experimental constraints. The data generated as part of the CREALIS PE.DI. research project have made it possible to overcome this limitation and establish an updated model highlighting the predominant influence of the permeability of the cap seal on CO₂ retention."

Gérard Liger-Belair, professor at the University of Reims Champagne-Ardenne.

Cellar temperature and capsule selection: two key factors

While storing bottles in a temperature-controlled cellar is both an economic and environmental challenge for winemakers, this study addresses these issues by also highlighting the combined effect of aging temperature and crown capsule permeability. In fact, the simulations conducted show that an increase in cellar temperature accelerates CO₂ loss and significantly reduces the maximum aging duration compatible with maintaining sufficient pressure in the bottle. This information enables winemakers to strike a balance between potential changes in storage temperatures and the preservation of their wines, with the aim of potentially reducing the environmental impact associated with temperature control in their above-ground cellars.

A better understanding of aging potential

Another important finding of this study concerns aging potential. The model developed makes it possible to assess when a bottle is likely to fall below the regulatory pressure threshold of 3.5 bars at 20 °C after disgorgement. The authors thus emphasize that controlling gas exchange becomes a strategic factor for cuvées intended for extended aging. Furthermore, the study shows that large-format bottles, particularly magnums, naturally retain CO₂ better and have superior aging potential compared to standard bottles.

THE FULL STUDY IS AVAILABLE HERE

CREALIS PE.DI at the heart of winemaking innovation

Through its collaboration with research teams from the University of Reims Champagne-Ardenne, CREALIS PE.DI is helping to advance scientific understanding of gas transfer phenomena in sparkling wines. As a result of this collaboration, CREALIS PE.DI has developed the UP2BUBBLY app. This free, download-free winemaking management tool is designed to predict changes in CO₂ pressure while estimating O₂ ingress for a comprehensive analysis.

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