

Evolution of oxygen transfer in the various cork stopper manufacturing conditions. Effect of this parameter on still and sparkling wine

Summary

One of the most significant variables that affect the evolution of wine in the bottle is the supply of oxygen through its stopper: the oxygen transfer rate.

Cork stoppers are known to have an advantage over their synthetic alternatives in this respect due to their vegetal matrix. Corks enable the progressive ingress of oxygen into the bottle over time, preventing the oxidation and reduction processes that are characteristic of certain alternative stoppers. The project consists of determining the variables in the cork stopper production process that affect oxygen transfer and obtaining information with a view to modifying the production procedure in order to adjust the oxygen transfer rate of the corks in accordance with the values agreed for each type of wine.

Objectives

1. Assessment of oxygen transfer throughout the production process.
2. Application of control measures based on the values obtained in point 1.
3. Assessment of the effect of the oxygen transfer rate on the wine.
4. Preparation of a catalogue of cork stoppers with different transfer rates and their effects on the evolution of the wine.
5. Foster relations between the cork sector and the winemaking industry.

Description of the actions planned in the project

ACTION 1. Drafting of a protocol to measure cork stopper oxygen transfer.

ACTION 2. Control of oxygen transfer throughout the production process.

ACTION 3. Assessment of the oxygen transfer rates.

ACTION 4. Drafting of a protocol of cork stopper manufacturing guidelines to obtain different oxygen transfer rates.

ACTION 5. Dissemination.

Expected results and practical recommendations

The expected result of the project is an innovative method to measure the oxygen transfer rate of cork stoppers throughout the manufacturing process. This protocol will allow cork companies to make changes to their production process with the aim of obtaining different rates to meet the demands of the market. Similarly, the companies could supply more homogeneous products in relation to this property in order to better compete with alternative stoppers.

The aim is also to define optimal oxygen transfer rates for wine, fostering relations between cork companies and winemakers and adding more arguments for the advantages of cork stoppers over alternative stoppers.

There are currently various methods of determining the OTR: measuring the oxidation-reduction potential, measuring the dissolved oxygen with a polarographic probe and measuring the composition of the gas in the neck of a flask with gas chromatography. The problem with these techniques is that

they are destructive: they do not enable analyses without compromising the seal and therefore do not enable monitoring throughout the maturation of the wine.

Once the methodology has been determined, the project proposes measuring the OTR and the total package oxygen (TPO) of different types of stoppers in different manufacturing process conditions. In the case of cork stoppers for still wine, the type of surface treatment that is applied and the visual classes will be taken into account. In the case of cork stoppers for sparkling wine different disc and cylinder qualities will be taken into account. Moreover, a study will be conducted on the physical and chemical parameters of the wine before and after bottling to see the effect of the OTR and TPO values on the quality of the wine. The results of the study will make it possible to better understand the material and its properties.

Additionally, one of the objectives of the project is the assessment of the effect of the oxygen transfer rate on wine, given that, currently, optimal rates have not been defined to guarantee the end quality of wine.

Task force leader

Entity: **J. VIGAS, S.A.**

Contact e-mail:
teresa@jvigas.com

Typology of entity:
Agri-food company

Task force coordinator

Entity: **Institut Català del Suro**

Contact e-mail:
pjove@icsuro.com

Typology of entity:
Agri-food company

Other task force members (grant beneficiaries)

Entity: **Francisco Oller, S.A.**

Contact e-mail:
jrosello@ollerfco.com

Typology of entity:
Agri-food company

Entity: **Manuel Serra, S.A.**

Contact e-mail:
dpto.tecnico@manuelterra.com

Typology of entity:
Agri-food company

Entity: **Tapones y Especialidades del Corcho, S.A.**

Contact e-mail:
dir@tesa-cork.com

Typology of entity:
Agri-food company

Other task force members

Subject area(s) of application

Farming/forestry competitiveness and diversification

Food quality/processing and nutrition
General
Supply chain, marketing and consumption

Geographical area(s) of application

Province(s)

Region(s)

Girona

Gironès
Baix Empordà

The dissemination plan will be implemented at the start of the project to inform the public of the grant, throughout the project to announce the technical progress made, and at the end of the project. In all three cases it will be done on different levels:

1. Web portal of the participating companies and the research centre.
- 2.2. The objectives and the results to be shared by the grant beneficiaries will be disseminated through a number of different channels:
 - Social media. The most significant and general interest objectives and results will be published on social media, mainly using the research centre's account.
 - E-newsletters. At least two articles on the project, which will respect the privacy of the companies, will be written and published by the researchers.
3. Seminars and other events. A technical seminar is to be held during the project.
4. Technical article. A technical article will be published in an agricultural magazine at the end of the project.

Around the end of the project a technical seminar will be held to present the prototypes and the results. Like the dissemination actions, the seminar will be aimed at the technicians of cork companies, wineries and other agri-food companies suffering aroma contamination problems.

Project website

More information on the project

Project dates

Starting date (month-year): June 2018

Completion date (month-year):

Current status: *Underway*

Budget approved

Total budget: €119,016.08

DARP funding: €48,357.86

EU funding: €36,480.49

Own funding: €34,177.73

With funding from:



Generalitat de Catalunya
**Departament d'Agricultura,
Ramaderia, Pesca i Alimentació**



**Fons Europeu Agrícola
de Desenvolupament Rural:**
Europa inverteix en les zones rurals

Project funded through Operation 16.01.01 (Cooperation for Innovation) through the Catalan Rural Development Programme 2014-2020.

Order ARP/133/2017, of 21 June, approving the regulatory bases of grants for cooperation for innovation through the promotion of the creation of European Association for Innovation task forces in terms of agricultural productivity and sustainability and the execution of innovative pilot projects by these groups.

Resolution ARP/1868/2017, of 20 July, calling for applications for grants for the year 2017.

Project ID: 043_2017