HORIZON 2020

Achieving unique wines through an efficient production process

Results in Brief

Scaling up native microorganisms to create customised wines

The originality of wine aromas depends on the microbes used during production. An EU-funded project has designed bioreactors to create them at scale.

FOOD AND NATURAL RESOURCES

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Wine has long been a core part of European culture. Many wines of European origin are protected designation of origin (PDO) products, meaning all parts of the production process must be carried out within a specific region.

The aromas and flavours of each wine depend on the microorganisms – yeast and bacteria – present during production, which are unique to the local environment. As these microorganisms are difficult to produce at industrial scale, creating unique and newly protected wines can be challenging.

The EU-funded ECOBIOMASS project created a completely novel solution to this scaling problem: bioreactors able to grow the right microorganisms in large volumes.

“We wanted to enable wineries, and in general any company, to have the possibility of employing their own microorganisms and creating a hallmark,” explains Miguel Romano, director of R&D at LEV2050. “The use of unique microorganisms in combination with our patented bioreactors also helps make the entire process more sustainable and economical,” adds Romano, who coordinated the ECOBIOMASS

project.

The bioreactors are the only currently available solution in the wine industry providing the industrial scaling of native microorganisms.

Creating the right environment for microorganisms to thrive

First, the desired organisms from the vineyard of the winery are selected and studied. “To create a hallmark from them, we first isolate, identify and finally characterise their virtues and skills,” explains Romano. “To do that, we select those that are more genetically distant.”

The native microorganisms must have the right characteristics of fermentation for the specific wine that is being produced. But another sought-after characteristic is the organoleptic behaviour: how the final product stimulates each of the human senses.

Once chosen, the microorganisms are then placed into the bioreactors, along with specifically targeted nutrients. “We study each of the microorganisms and create a tailor-made culture medium,” says Romano. The reactors are then set up with the optimum conditions to grow the organisms up to 10 times the initial biomass.

The overall process creates high-quality, unique wines that can achieve the PDO seal of differentiation.

Running trials at Europe’s wineries

The team first contacted wineries with strong identities tied to their terroir, something reflected by their respect for the environment and sustainability. Successful trials were carried out in France, Italy and Portugal and with highly prestigious wineries.

The most important result, says Romano, was customer satisfaction, based on the trust placed in the ECOBIOMASS team and confidence in the use of the bioreactors.

“They were very happy with the economic savings that come with this technology, its ease of use, and the spectacular resulting wines they obtained,” Romano notes. “The bioreactors and culture media provide freshly made yeasts, with high vitality that is noticeable in the wines, along with cleanliness, expressiveness and, by using native yeasts, originality,” he adds.

The ECOBIOMASS team now aims to consolidate and grow the number of clients in Europe.

“We would like to thank the European Commission, because through this project we were able to introduce our philosophy into Europe – something we longed for so much,” remarks Romano.

Keywords

ECOBIOMASS | wine | production | yeast | bacteria | scale | microorganisms | originality | aroma

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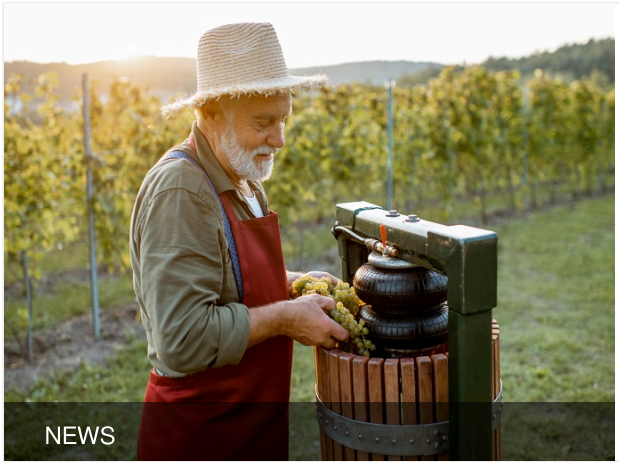

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