+EXTROL: Study and application of innovative systems for the extraction of olive oil

Summary

In recent years, new food processing technologies have been developed that are more environmentally friendly, consume less energy and preserve food quality. The food industry has the potential to optimise traditional processes by incorporating these technologies, improving its competitiveness.

As part of the +EXTROL project, a pilot test will be carried out with the participating cooperatives, incorporating some of these new extractive technologies to improve the extractive process of extra virgin olive oil that takes place in the oil mills of the agri-food companies in the sector. This improvement would also involve the automation and monitoring of all the extraction stages, with the idea of obtaining the highest yields of a product with the highest quality and at the same time reducing the costs of the process.

Objectives

To achieve these objectives, the mixing time must be shortened and the processing temperature lowered throughout the oil extraction process. These are the two basic parameters that need to be optimised in order to improve the quality of the oil and obtain premium extra virgin olive oils. The application of different extraction technology and online control and monitoring technologies of the pomace obtained to know the amount of residual oil not extracted in the process, should allow us to optimise these two parameters to obtain the desired results. In addition, the new extractive processes under study by the operational group should enable us to increase the polyphenol content, which will extend the shelf life of our oils. Finally, these new innovative systems are expected to result in maintenance savings and a reduction of breakdowns in the middle of the season, leading to a reduction in fixed costs.

The +EXTROL project has the following main objectives:

- Improve olive oil extraction yields.
- Improve quality due to the increase of polyphenols in the oil and an organoleptic improvement.
- Improve energy efficiency by reducing energy consumption per litre of oil extracted (kWh/kg).
- Reduce the environmental impact of the wastewater obtained, both by reducing the water input into the system and by reducing the quantity of polyphenols in the wastewater.

Description of the actions planned in the project

The aim of this project is to carry out an experimental design with different study parameters (olive variety, temperature and mixing time, etc.) and applying new technologies in the extraction process (ultrasound, overpressure, electric pulses), with the aim of increasing its scarce implementation in the sector due to several reasons:

- There is some reluctance on the part of oil mills to invest in a technology that has a high initial cost and a return that is not very clear in the short term, especially in the case of small annual productions.

- The existence of different technologies on the market means that producers are not clear about which one can best be adapted to their needs.

The study will be completed with the following controls and analyses:

- An analysis of different organoleptic parameters of the oils obtained once the extraction conditions have been optimised, with a tasting panel.
- A chemical analysis of the oils obtained, carrying out the normal analyses that are carried out on any final product to determine its characteristics: acid number, peroxide number, K270, K232, K225, Rancimat at 100°C.
- Analysis of polyphenols, tocopherols and other volatile compounds that will help us to classify the quality of the oils obtained.

Expected results and practical recommendations

Based on the results obtained, a technical and economic feasibility study will be carried out to conclude whether any of the new extractive techniques tested in the project can be implemented in the olive oil mills of the food companies in the area.

Leader of the Operational Group

ORGANISATION: UNIÓ FRUITS, SCCL

Coordinator of the Operational Group

ORGANISATION: TERRA ALTA OLIVE OIL PDO REGULATORY BOARD

Other members of the Operational Group (grant recipients)

ORGANISATION: AGRÍCOLA DE CORBERA D'EBRE, SCCL

ORGANISATION: COVILALBA, SCCL

ORGANISATION: AGRÍCOLA I SC SANT JOSEP, SCCL

Other members of the Operational Group (not recipients of the grant)

ORGANISATION: EURECAT FOUNDATION

Subject area(s) of application

- ☐ Agricultural production system
- ☐ Agricultural practice
- ☐ Agricultural equipment and machinery
- ☐ Livestock farming and animal welfare
- ☐ Vegetable production and horticulture
- ☐ Landscape / Territorial management
- ☐ Pest and disease control
- ☐ Fertilisation and nutrient management
- ☐ Soil management
- ☐ Genetic resources
- ☐ Forestry

☒	Water management
☐	Climate and Climate Change
☒	Energy management
☒	Waste and by-product management
☐	Biodiversity and environmental management
☒	Food quality/processing and nutrition
☐	Supply chain, marketing and consumption
☐	Competitiveness and agricultural and forestry diversification
☐	General

Geographical area(s) of application

PROVINCE(S)	REGION(S)
TARRAGONA	TERRA ALTA, RIBERA D'EBRE, BAIX CAMP

Dissemination of the project (publications, conferences, multimedia, etc.)

--MEETINGS WITH THE MANAGERS AND PRESIDENTS OF THE COOPERATIVES PARTICIPATING IN THE PROJECT.
- INFORMATIVE SEMINAR FOR THE MEMBERS OF THE COOPERATIVES PARTICIPATING IN THE PROJECT.
-INFORMATIVE SEMINAR ON THE RESULTS OF THE STUDIES AND PROJECT.
-PUBLICATION ON THE WEBSITE, SOCIAL MEDIA, BLOGS AND PRESS DISSEMINATING THE RESULTS OF THE PROJECT.

Project website

http://unio.coop/innovacio/

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €245,114.00
	DACC funding: €113,353.62
Current status: Under way	**EU funding:** €85,512.38
	Own funding: €46,248.00

With funding from:

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Order ARP/113/2021 of 20 May, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ACC/1660/2021, of 27 May, announcing the call for the grant.

Generalitat de Catalunya
Departament d'Acció Climàtica, Alimentació i Agenda Rural

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