

PROJECT NEWBLOOD INTERVIEW

1. What is the main objective of your research?

The main objective of the NEWBLOOD project is to study the influence of specific patterns for the cultivation of pigmented oranges, as well as the evaluation of different varieties of these oranges with greater resilience to climate change, with special emphasis on Mediterranean conditions. The aim is to recover the cultivation of this type of fruit, currently disappeared in Spain, and with great potential for the producer and exporter sectors.

2. What results have you obtained so far, and how do you believe these can contribute to the main objective of your research?

The project is currently in an intermediate phase; we have already published 3 articles in international journals, and we are currently conducting laboratory tests that will allow us to continue expanding our knowledge on our research line.

Our research results will be useful for selecting a pattern on which to graft different varieties of blood oranges based on market requirements (fresh consumption, better antioxidant properties, etc.). Additionally, we have studied differences in peel thickness, juice content, balance of organic acids and sugars, and phenolic compound content in 8 different varieties, finding significant differences that can serve as a reference in agronomic selection based on consumer demand. We have also evaluated the potential of pigmented orange peel extracts as food preservatives and nutraceutical ingredients, considering that different blood orange varieties have different profiles of primary and secondary metabolites in the peel, making them suitable for various applications.

In summary, our project highlights the importance of pigmented oranges due to their high content of bioactive compounds, nutritional benefits, and potential applicability in the food and nutraceutical industry. It also demonstrates how blood orange varieties and rootstock-graft combinations can affect the quality and content of compounds in both juice and peel, with implications for both agronomic and nutritional aspects.

3. What methodology and technologies are you using in your research?

The research team has all the necessary materials and infrastructure to carry out the activities outlined in this project. Both the consolidated research group at UMH in "Fruticultura y Técnicas de Producción" from the Department of Producción Vegetal y Microbiología, and the Citrus Research Group at the Instituto Valenciano de Investigaciones Agrarias (IVIA), which participates in this project, have laboratories equipped with all the necessary infrastructure to guarantee the objectives set. Among the major equipment available are gas chromatographs with mass spectrometry and FID detectors (Shimadzu) for the identification and quantification of volatile compounds and fatty acids, texture meters (Stable Micro Systems), colorimeters (Minolta), HPLC for the identification and quantification of sugars and organic acids, spectrophotometers for the determination of total phenolic compounds and antioxidant activity, as well as atomic absorption-emission spectrometer (Unicam) for minerals, and refrigerated chambers for conservation studies. Additionally, UMH has a Scientific Instrumentation Service (<http://sic.umh.es/>) that provides its researchers with all the analytical equipment available at UMH. All variety behavior tests will be conducted at IVIA (Citrus Department), which has all the necessary means for this.

Support will be provided by the "Calidad y Seguridad Agroalimentaria" group at UMH, which has 2 tasting rooms with 10 and 15 standardized work cabins (UNE 87004) and the necessary equipment and facilities (modern kitchens for sample preparation, reception and storage areas, etc.) for conducting descriptive and affective studies (with consumers). It also has specific classrooms for conducting consumer studies.

Collaboration with international centers is noteworthy; in this project, there will be the participation of collaborators from Poland and Italy.

4. What challenges have you encountered in implementing your results in the agri-food sector?

The project has not reached that phase yet.

5. What social and economic impacts do you believe the implementation of your results can have in the agri-food sector?

Cultivation of blood oranges in Spain was more popular in the past. The NEWBLOOD project faces the challenge of reintroducing to society, both consumers and producers, the benefits and potential of cultivating these varieties for health and in the

agronomic market. Incorporating these anthocyanin-rich fruits into our diets can improve the health of the population and help reduce diseases.

In terms of the economic aspect, this project will help lay the theoretical foundations for applying knowledge in the field as efficiently as possible. Spain has great potential to develop its national and international market for these orange varieties, as Italy has done, where 70% of orange production belongs to pigmented varieties.

6. What recommendations do you have for other researchers or stakeholders in the agri-food sector regarding the implementation of your results?

We will be able to formulate recommendations in a more advanced stage of the project. For now, we are in an intermediate stage, and we still have open lines of research.