FruitValue

Utilization of second-class fruits for the production of high value-added products in the Region of Central Macedonia

The Problem

Despite being a global leader in certain fruits, the Greek fruit production sector struggles to maintain competitiveness in a globalized agro-industrial market. The heavy reliance on primary production methods limits its ability to adapt to modern demands, such as sustainability, waste reduction, and consumer-driven product development. A significant portion of fruit yield, especially second-grade produce, is undervalued, being relegated to low-margin uses. This results not only in economic inefficiencies but also in environmental waste. Addressing these challenges requires innovative approaches to transform second-grade fruits into high-value products using sustainable technologies and processes.

The Project

FruitValue is a research-driven initiative focused on transforming second-grade fruits into high-value products through innovative, green technologies. By integrating academic expertise with industry capabilities, the project will develop and demonstrate processes for creating bioactive ingredients and natural sugars, supporting sustainability, and enhancing the competitiveness of Greece's fruit sector on the global stage.

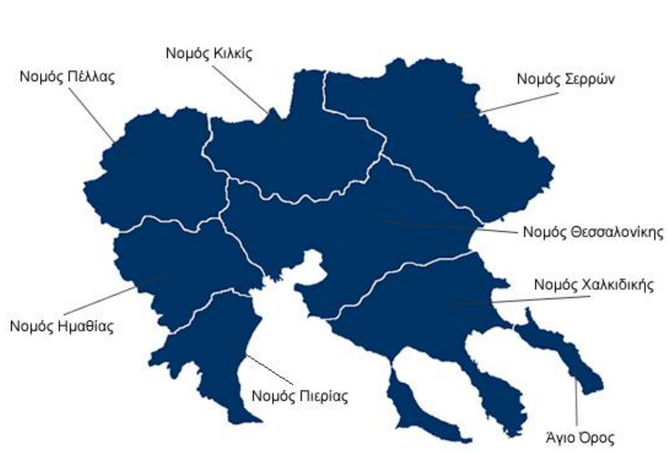

Figure 1. Region of Central Macedonia.

FruitValue Overall Objectives

The FruitValue project aims to:

1. **Develop innovative processes to extract high-value bioactive compounds and natural sugars from second-grade fruits.**
2. **Apply advanced techniques like green extraction and encapsulation to create stable, high-quality ingredients for food, supplements, and cosmetics.**
3. **Strengthen the economic viability of the fruit sector by utilizing undervalued produce and creating market-ready, consumer-driven products.**
4. **Demonstrate sustainability by employing cradle-to-grave environmental assessments and integrating green energy solutions.**
5. **Promote regional innovation by fostering collaboration between private and academic sectors, enhancing knowledge transfer and local employment.**
6. **Facilitate market access for the developed products through pilot-scale production and stakeholder engagement. Through these objectives, FruitValue seeks to create a sustainable, competitive model for the Greek fruit sector, leveraging regional strengths and addressing global consumer trends.**

The Approach

FruitValue operates within a framework emphasizing sustainability, innovation, and market alignment. The project aligns with the European Union's "Farm-to-Fork" strategy, aiming to improve efficiency across the food supply chain and reduce waste. It also supports the smart specialization strategy of Central Macedonia, leveraging the region's agricultural prowess to address global market demands.

The project focuses on the comprehensive use of second-grade fruits, minimizing environmental impact while maximizing economic value. Cutting-edge methods, such as advanced drying, extraction, and encapsulation technologies, are employed to ensure high-quality product development. Collaboration between the private sector and research institutions ensures a robust integration of theoretical knowledge and practical application.

By incorporating environmental and techno-economic assessments, FruitValue adheres to sustainability principles, analyzing the lifecycle impacts of its processes. A digital traceability platform further enhances transparency and supply chain efficiency. This holistic framework positions FruitValue as a model for sustainable innovation in the agri-food sector.

Expected Impacts

1. Economic Growth and Employment: The project will create new jobs in agriculture, research, and production, supporting local economies and retaining skilled professionals in Greece.

2. Innovation and Competitiveness: By developing advanced fruit-based products, FruitValue enhances the global competitiveness of Greek agricultural outputs.

3. Environmental Sustainability: Utilizing second-grade fruits reduces waste and promotes sustainable practices, aligning with EU environmental goals.

4. Market Diversification: High-value, consumer-driven products cater to trends like organic, clean-label, and vegan options, expanding market opportunities for Greek products.

5. Regional Leadership: Establishing Central Macedonia as a hub for agri-food innovation strengthens its role in global agricultural markets.

The Project Partners

Glavakis TREES & HERBS

ARISTOTLE UNIVERSITY OF THESSALONIKI

ELGO - DIMITRA HELLENIC AGRICULTURAL ORGANIZATION - DIMITRA

iBO Institute for Bio-Economy and Agri-Technology

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

Contact:

Dr. Georgios Banias

Researcher B

g.banias@certh.gr | +30 2311 257650

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

iBO Institute for Bio-economy & Agri-technology

iBO | CERTH

6th km CharilaouThermi Rd.

57001 | Thermi | Thessaloniki | Greece

www.ibo.certh.gr | www.certh.gr