



Future Food Systems:

Innovation through Progress at Scientific Interfaces

12 - 14 November 2024 | Bruges, Belgium

ABSTRACT BOOK

Invited Keynote speakers

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Oral presentations

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Holistic and Multidisciplinary Approaches for Sustainable Food Systems

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Aim:

The global food systems environment is changing at an unprecedented speed. Securing healthy and nutritious food for a growing population has never been more pressing. In 2015, the United Nations Member States established the 2030 Agenda for Sustainable Development, comprising 17 distinct goals. This presentation highlights how food professionals address current food systems challenges by presenting specific case studies. Furthermore, it explores potential research interventions to tackle these issues.

Method:

Food production and distribution are critical in innovation and multidisciplinary approaches to a more sustainable, safe, and healthy future. More efficient, less energy—and water-consuming technologies, such as ozone, UV, and sonication treatments, are discussed in various products and applications, including the valorization of by-products. The relevance of predictive and artificial intelligence tools (AI) in optimizing processing and distribution regarding quality, energy consumption, and minimizing losses is also explored.

Results:

Various case studies of research and research-industry collaborating projects are presented, covering: the use of non-thermal and more sustainable technologies for food processing and preservation (e.g., cold-pressed juices, valorization of by-products); predictive modeling to define food processing conditions, shelf-life estimation, and optimizing passive cold food distribution; application of AI to estimate shelf-life of fresh fruits, helping to minimize losses and managing the distribution chain; and sustainable consumer cooking using solar energy. Hurdles, such as the scalability of technologies and the reliability of AI predictions, will be discussed.

Conclusion:

The optimization and sustainability of food systems require holistic and multidisciplinary approaches to solving the complexity of today's emerging challenges. Through a combination of case studies and innovative research, the potential of engineering and collaboration to ensure food systems that are sustainable, efficient, and capable of meeting future generations' nutritional needs are discussed. Modeling and AI are tools requiring more attention to explore their potential fully.