

PhD: Food science

Title: Characterization and evaluation of food products through advanced statistical methods and models.

Supervisor: Prof. Alfonso Piscitelli

Objectives of the research project and interdisciplinary collaborations:

The goal of the project is the definition of operational procedures aimed at both the better characterization of food products (as EVO oil) and their evaluation through the use of statistical methods and models for the analysis of chemical, physical and sensorial variables. To study the characteristics of food products, the proposer has established a collaboration with the Flavors Lab of the Department of Agriculture Sciences, in the person of prof. A. Genovese, for chemical-physical analyzes of food products. Furthermore, the evaluation of the parameters relating to taste, aroma, consistency, as well as the image of the product will be ensured by a panel of sensory analysts. The ambition of the project is to define, design and structure processes for the collection and analysis of chemical, physical and sensorial measures both for the evaluation and for the characterization of the food product, in order to improve the quality and promotion of food products. Over the three-year period, the research project will focus on identifying the relationships between the "properties" of the outcomes and/or conditions of some specific food transformation processes.

Innovation and originality of the project in relation to the state of the art:

The expected original results consist of systematized protocols for the definition, measurement, and analysis of the characteristics of food products. The level of research innovation is connected to the use and implementation of "ad hoc" statistical and machine learning models and techniques. In fact, through the definition and implementation of adequate analysis techniques of sensory parameters and chemical and physical indices, the reliability of the results, as well as the identification of patterns and systematics, it will be possible to guarantee that a food company has the tools to protect themselves and face market opportunities.

Grant availability:

The proposer holds funds to support research activities (000001 Economic Budget) coming from the departmental research fund.

Collaborations with foreign institutions:

For more than 10 years, the proponent can count on a fruitful scientific collaboration with the Division of Methodology and Statistics at the Institute of Psychology of the Faculty of Social and Behavioural Sciences of Leiden University (NL) (contact: Prof. Dr. Mark de Rooij, [personal page](#)), and the formalization of a cooperation agreement is ongoing with the same University, so as to expand and enhance the possibilities of collaboration and exchanges.