SOIL O-LIVE

« THE SOIL BIODIVERSITY AND FUNCTIONALITY OF MEDITERRANEAN OLIVE GROVES: A HOLISTIC ANALYSIS OF THE INFLUENCE OF LAND MANAGEMENT ON OLIVE OIL QUALITY AND SAFETY*»*

HORIZON-MISS-2021-SOIL-02-03 - Linking soil health to nutritional and safe food

Project financed by Horizon Europe Collaborative Projects

Abstract:
After more than fifty years of intensive agriculture application, the environmental situation for many olive groves across the Mediterranean Region is quite dramatic in terms of land degradation, biodiversity impoverishment, functionality loss, which may have already impacted on the quality and safety of olive oil, one of the most important commodities produced in Europe. Through the implementation of a series of multidisciplinary and interdisciplinary WPs, this project will perform the first rigorous diagnostic of the environmental situation of olive groves soils at a broad scale, considering the most important areas of olive production at the Mediterranean Region and its relationships to olive oil quality. Soil O-live aims (i) to analyze the impact of pollution and land degradation on soils from olive groves in terms of multi-biodiversity, ecological function at different levels of organization and scales; (ii) to investigate the relationship of soil health status with quality and safety of olive oil; (iii) to implement effective soil amendments and ecological restoration practices that promote manifest soil biodiversity and functionality enhancements in permanent Mediterranean olive orchards across its native range of distribution, that should be translated to improvements in olive oil quality and safety; (iv) to define rigorous ecological thresholds that allow to implement future clear norms and regulations in order to design a novel certification for healthy soils in European olive orchards.

Objectives of Workpackage 3
Lead: Università Roma Tre (Prof. Pasquale Borrelli); Participating: University of Basel (Prof. Christine Alewell)
(1) Design and develop a harmonized framework to assess and monitor the state of soil degradation due to erosion under cultivation of olive trees in line with the objectives of the Soil Mission Board. This framework will span from remote mapping and modelling land use effects on soil health as well as calibration and validation with selected tracers of sediment transport and indicators of soil degradation (2) Test and implement the new methodological framework in a set of selected pilot testing sites of the Soil O-live project under different climatic and land management conditions. (3) Develop and deploy a pan-Mediterranean modelling-based assessment coupled to remote mapping and ground-based observations validation, to spatial-temporally define the European olive groves exposed to degradation processes. (4) Extrapolate the modelling into the future and develop a machine-learning approach to forecast future soil and land degradation scenarios under land use and climate change.