



## Project Title

Circular economy in olive oil and wine sectors. Valorization of by-products and residues through innovative processes and new business models (CREIAMO)

## Principal Investigators

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## Funded by

Fondazione Cariplo, Milan (Italy)

## Duration

30 months (July 2019 – December 2021)



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## Summary

The main objective of this project is to boost the creation of new destinations for residues originated by olive oil and wine production, new options for their economic valorization and new business models to increase the competitiveness of companies operating in the Lombardia Region. To achieve this objective the project will operate on different eco-innovation strategies:

- **Process and product eco-innovation.** A further alternative for the exploitation of waste from the production of wine and olive oil will be studied. The presence of lipids, carbohydrates, phenolic compounds, organic acids, tannins, pectins and minerals makes these residues potentially usable for producing biosurfactants. Biosurfactants produced by microorganisms (bacteria, fungi, and yeast) are found to have a wide range of applications in environmental protection, which include enhancing oil recovery, controlling oil spills, biodegradation, and detoxification of oil-contaminated industrial effluents and soils. In our project, the produced biosurfactants will be used to treat contaminated soil, which represents a main environmental issue.

- **Systemic eco-innovation through industrial symbiosis (IS).** The fundamental principle of IS is the sharing of resources (materials, energy, water and by-products) between traditionally separate industries to create mutual economic and environmental benefits. In this way companies achieve at the same time economic, environmental, and social advantages. The present project aims at creating a symbiosis network with the idea of the active participation of both SMEs and local stakeholders in the Lombardia region. The goals will be: provide a methodology and a tool for industrial symbiosis implementation in this case at regional scale, implement a IS Platform as a support to SMEs to individuate symbiosis opportunities in the region.

The project is developed with a multi-disciplinary approach that integrates key developments in microbiology, chemistry, food science, ecotoxicology, economics, industrial design and engineering. The project also aims to create a Research and Development network able to strengthen industrial and technological components of the actors involved, in order to integrate, link and enhance knowledge in research and innovation. Finally, the project represents a deep training and professional opportunity for young researchers and fosters communication and interaction between researchers and civil society, embracing the principles of Responsible Research and Innovation (RRI).

