

Laboratory for sustainability, quality and safety of Agrifood productions

The laboratory activities are focused on innovation on research, development and transfer activities to increase competitiveness, quality, safety and sustainability of food production systems and agroforestry by making use of innovative infrastructures, equipment, facilities, technologies and service platforms.

Its main research activities are focused on:

- Analysis of Mediterranean agro-ecosystems and the study of integrated modeling for assessing ongoing global change to develop approaches, methods and tools for sustainable agriculture
- Development of efficient production processes with low waste production, precision and resilient agriculture
- Validation and application of diagnostic methods for the qualification of productions
- Analysis and evaluation of microbiological and chemical changes in the production, processing, packaging and storage processes
- Identification and quantification of components and markers of quality to prove the authenticity and origin of the products and ensure their traceability
- Integrated management of insect pests and vectors
- Use of renewable sources and improvement of the eco-efficiency of food systems throughout a cascade-type approach for biomass exploitation and agrifood waste valorization and for reducing food losses
- Agrifood waste valorisation by conversion of biomass into high-added value products
- Sustainability assessments of agro-food systems



Diagnostics for Food Quality and Safety

Development and application of analytical methods for:

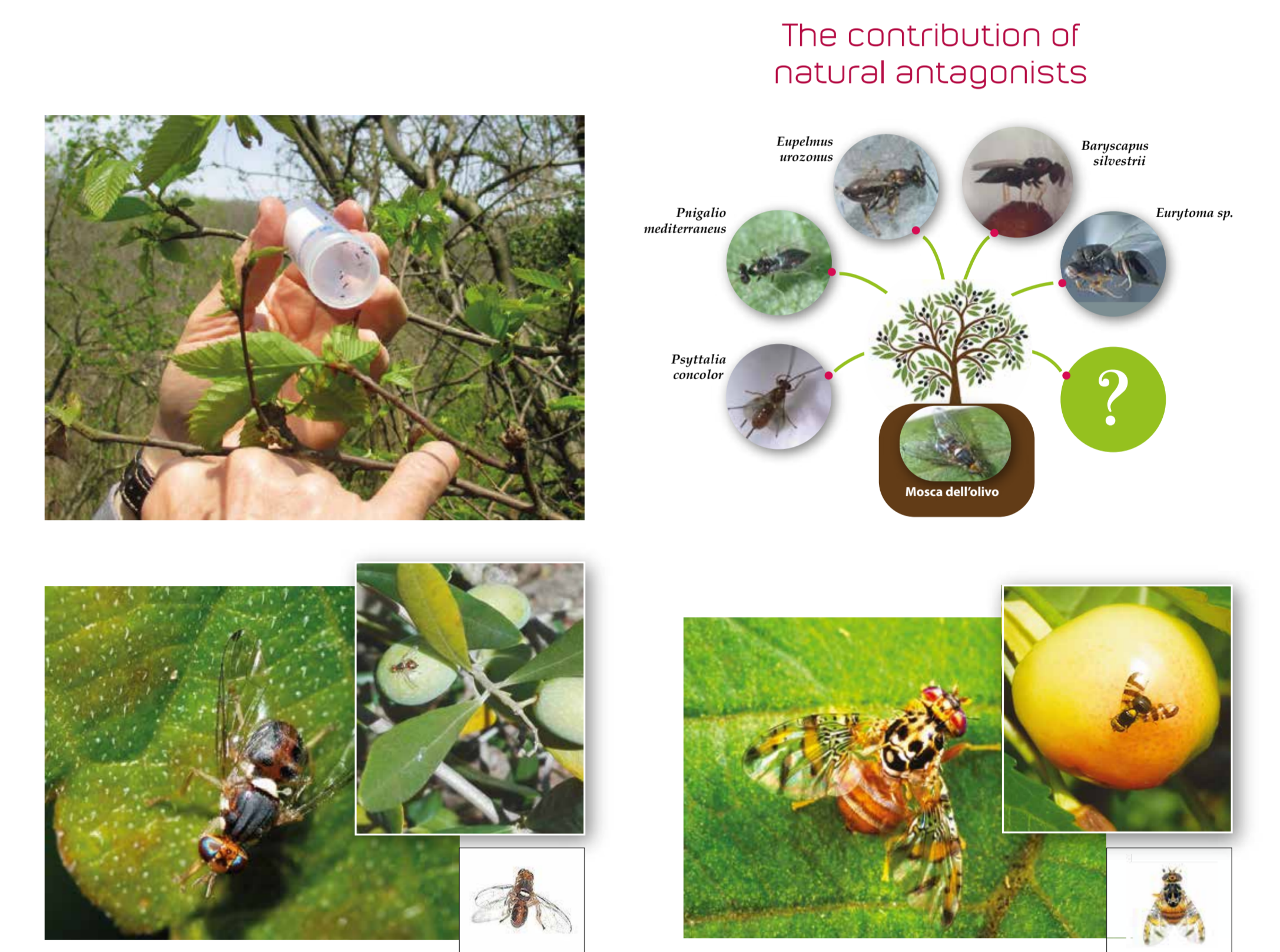
- characterisation, qualification and valorisation of agro-ecosystems;
- identification and quantification of biological contaminants, in particular toxigenic fungi and toxins in raw materials and final products of the agro-industrial sector;
- individuation of “quality” markers for healthy food production and extraction of high-value molecules;
- characterization of plant species and microorganisms as a source of bioactive compounds;
- identification/quantification/definition of markers and patterns for food authenticity and origin demonstration, to ensure a complete traceability all along the supply chain.
- assessment and improvement of chemical and microbiological transformations in food processing, preservation and packaging.



Integrated management of insect pests and vectors

To enhance resilience of agro-ecosystems and to reduce agrochemicals impact:

- Study of insect pests to develop sustainable methods for suppression at field level
- Enhancement resilience of agro-systems and forests resilience
- Biotechnological control of invasive insect species
- Development of mechanistic process-based models (PBM)



Agro-Environmental Microbiology and Biotechnology

Main research areas:

- Plant-growth-promoting microbes for sustainable agriculture
- Soil and root microbiome analysis: from composition to function
- Investigation of environmental microorganisms at the molecular and functional level for their potential biotechnology application
- Enhancement of existing microbial collections for agro-industrial purposes



Sustainability assessments of agro-food systems

Main research areas:

- Improving the salience, credibility and legitimacy of sustainability assessment processes in order to mobilize scientific knowledge for action toward sustainability
- Critical analysis and design of information tools supporting sustainability assessment processes
- Implementation of sustainability assessment processes supporting the quality-based competitiveness strategies of Mediterranean agro-food production systems, food policy design and monitoring, including the development models for sustainable food systems

