

Context and objectives

PESTOLIVE (Contribution of olive history for the management of soil-borne parasites in the Mediterranean basin) aims to produce knowledge and tools for a new and efficient management of plant-parasitic nematodes (PPN) and plant-pathogenic fungi (PPF) in olive (*Olea europaea* L.) cropping systems and nurseries, while reducing the use of pesticides. Because of the anthropic continuum from *Olea* post-glacial refuges to oleasters (domestication) and then to olive trees (breeding and cropping), the fragmentation of the PPN and PPF communities and of their natural enemies could explain the scattered diversity of control techniques (especially resistant rootstocks, biocontrol, cropping strategies) developed and applied all around the Mediterranean basin. PESTOLIVE is a new approach because it is based on i) the analysis and the management of parasite diversity (ecology of communities) instead of controlling emblematic species (population approach) and ii) the involvement of knowledge about the historical co-adaptation of soil-borne parasite and natural enemies communities to olive tree domestication (origins and past assemblages) and breeding that follows the history of *O. europaea* around the Mediterranean basin.

Workplan

PESTOLIVE is broken down into four scientific work packages (WP). In WP1 (olive domestication and breeding), the analysis of the wild and cropped olive diversity (phylogeography and population genetics) all around the Mediterranean basin associated with domestication history and breeding is a prerequisite to understanding co-evolutionary patterns between pathogens and the olive tree. In WP2 (response of soil-borne organisms to domestication and breeding), the spatial distribution of PPN, PPF and associated antagonists is explored to investigate i) co-phylogeographic correspondences between plant and parasite diversities and ii) life-trait genetic variation involved in community assemblages forced by anthro-

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pestolive. In WP3 (response of soil-borne organisms to plant-resistance [ancestral & cultivars]), resistance against PPN and PPF is tackled in order to look for new resistance sources and to assess the durability of the resistance in terms of time remanence and of parasite diversity conservation. In WP4 (response of soil-borne organisms to cropping systems [low vs high inputs]), the capacity to manage PPN and PPF communities in a soil diversity conservation approach is assessed considering the very large range of olive production systems in Mediterranean countries. PESTOLIVE is managed and coordinated in a specific WP (WPO, project management). It involves 18 research and teaching organisations from seven Mediterranean countries in order to promote international multidisciplinary collaboration, training co-supervision and shared technical platforms within the consortium. Attachments with national and international councils (IOC, for example) will guaranty communication with local producer organisations in order to fit with olive and oil production constraints vs implementing production strategies with innovative methods for soil-borne pest management.

