Unravelling the beta diversity of plant-parasitic nematodes associated with cultivated olive in southern Spain. A. ARCHIDONA-YUSTE¹, T. WIEGAND², P. CASTILLO¹, J.A. NAVAS-CORTÉS¹.
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Olive trees host many plant-parasitic nematodes (PPNs). Understanding the factors that maintain biodiversity in communities depends on identification of diversity. We investigated the effects of environmental conditions, soil properties, agronomic management practices and spatial structure, on the variation of species community composition (β-diversity) and species richness of PPNs infesting rhizosphere soil from 376 commercial olive orchards widely distributed in Andalusia, southern Spain. We identified 128 species of PPNs with different feeding behaviours. Constrained ordination analysis showed that all explanatory variables together accounted for approx. 13% of the variation of community composition and 30% of species richness. These low values showed that spatial variability in the distribution of plant-parasitic nematodes is generally very stochastic. Also, with redundancy analysis and variation partitioning, we determined the relative importance of environmental conditions, soil properties, agronomic management and spatial structure, as well as different tendencies among species composition and richness. Environment (6% of community composition variance), soil (35%), agronomic management (7%) and spatial structure (18%) explained variance from the total explained variance of community composition. For species richness, environment explained 0% of variance, soil 5%, agronomic management 14%, and spatial structure 34%. Overall, the diversity of PPNs species infesting soils from cultivated olive is mainly influenced by land properties and spatial habitat, and to a lesser extent by environmental conditions and agronomic management.

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