

## OLIVE AGROFORESTRY SHAPES AND INFLUENCE SOIL BACTERIA COMMUNITY UNDER DIFFERENT SOIL MANAGEMENTS

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Agroforestry is an agriculture system that integrates woody perennials with arable crops, livestock, or fodder in the same place of land. Agroforestry systems are characterized by high species diversity providing more ecosystem services (i.e., soil fertility maintenance, carbon sequestration, climate change mitigation, and biodiversity conservation) than agricultural monocultures. Agroforestry is the most promising system in terms of adaptation to ongoing climate change. Tree rows in agroforestry systems enhance soil quality and microbial soil-related biodiversity by shaping and altering its composition and structure. The advancement of biotechnology and next-generation sequencing (NGS) have facilitated the comprehension of the mechanisms at the base of the interaction between trees and their related microbiome. Despite these progresses, there is still a knowledge gap about this topic. The aim of this work was to investigate the influence of *Olea europaea* L. in shaping and influencing the bacterial soil community of a wheat-barley agroforestry system by comparing different soil managements, namely conventional tillage versus minimum tillage, and with or without cover-cropping. The microbial community characterization was performed by sequencing the V5-V6 region of the bacterial 16S rRNA gene with the Ion Torrent Platform. NGS preliminary analyses indicate the

presence of 4,760 amplicon sequence variants (ASV) belonging for the 99.8% to bacteria and the rest to archaea domain. Among the genera present, the *Bacillus* spp. is the most abundant respect to bacteria involved in nitrogen cycles (for example: *Bradyrhizobium*, *Rhizobiaceae*, *Nitrosomonadaceae*), but additional analyses are in course to better evaluate the effect of olive trees and the presence or absence of cover crops.

The obtained results could raise awareness and understanding of the complex interaction between olive trees and soil microorganisms, and how the different soil management could influence this interaction in the field.