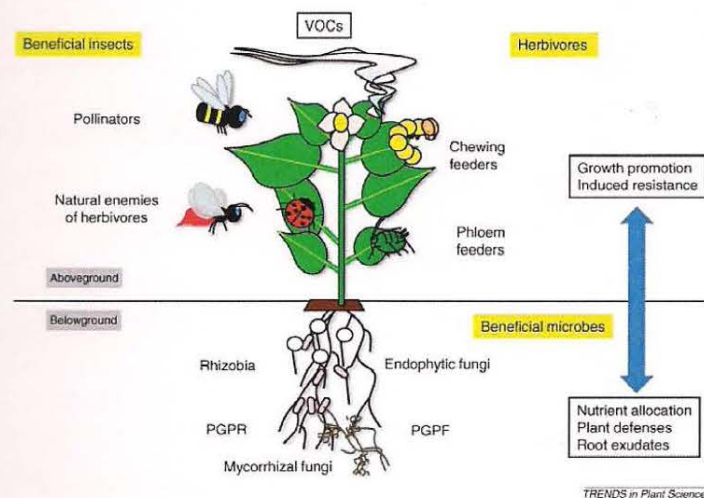


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plants, microbes and arthropods:
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Endophytic and epiphytic phyllosphere fungal communities are shaped by different environmental factors in a Mediterranean ecosystem

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ABSTRACT: The diversity and potential factors that influence fungal assemblages in the phyllosphere of Mediterranean tree species have been barely studied, especially when endophytic and epiphytic communities are simultaneously considered. The endophytic and epiphytic fungal communities in the phyllosphere of olive tree, a typically Mediterranean species adapted to grow under adverse climatic conditions, were studied for evaluating differences between both fungal communities, and examine whether different abiotic (climate-related) and biotic (plant organ) factors play a role in structuring these communities. Both communities differed in size and composition, being the epiphytic community richer and more abundant, displaying a dominance of melanized fungi. Season was the major driver of community composition, especially of epiphytes. Other drivers shaping epiphytes were wind speed and temperature. Plant organ, rainfall, and temperature were drivers of endophytic composition. In contrast, limited variation is provided by canopy orientation, but its effect was distinct among seasons. In conclusion, epiphytic and endophytic communities are not driven by the same factors. Several sources of variation interact in complex ways to form and maintain the phyllosphere fungal community in Mediterranean climates. The importance of climatic parameters for these fungal communities suggests that they are likely to be affected by future climate change.

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