



Soil characteristics driving arbuscular mycorrhizal fungi communities in semiarid soils

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Arbuscular mycorrhizal fungi (AMF) are an important soil microbial group that affects multiple ecosystems functions and processes, including nutrient cycling, plant productivity and competition, and plant diversity. We carried out a study to investigate AMF communities in the roots and the rhizosphere of *Brachypodium retusum* (Pers.) Beauv., a common plant species of great ecological importance that grows in different type of soils in semiarid Mediterranean areas with similar climatic conditions. We hypothesized that if both factors, host plant species and climatic conditions, cannot influence the differences in AMF communities in the roots and in the rhizosphere of *Brachypodium retusum*, variances in AMF richness and diversity could be due to soil characteristics. Hence we study the relationships between physical, chemical and biological soil characteristics and AMF community composition found in the roots and in the rhizospheres. We recorded sixty-seven AMF operational taxonomical units (OTUs). Each soil type presented a different AMF community composition and thus, can be characterized by its own AMF communities. A combination among some of the soil parameters could define the AMF species present in the roots and the rhizosphere of *B. retusum*. It was the case for calcium, urease, protease and β -glucosidase which explained the variation in the AMF communities. In conclusion, soil characteristics can be decisive in the assembling of the AMF communities, managing the diversity and composition of these communities.