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A comparative study of AMF diversity in annual and perennial plant species from semiarid gypsum soils.

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The arbuscular mycorrhizal fungi (AMF) communities composition regulate plant interactions and determine the structure of plant communities. In this study we analysed the diversity of AMF in the roots of two perennial gypsophyte plant species, Herniaria fruticosa and Senecio auricula, and an annual herbaceous species, Bromus rubens, growing in a gypsum soil from a semiarid area. The objective was to determine whether perennial and annual host plants support different AMF communities in their roots and whether there are AMF species that might be indicators of specific functional plant roles in these ecosystems. The roots were analysed by nested PCR, cloning, sequencing of the ribosomal DNA small subunit region and phylogenetic analysis. Twenty AMF sequence types, belonging to the Glomus group A, Glomus group B, Diversisporaceae, Acaulosporaceae, Archaeosporaceae and Paraglomeraceae, were identified. Both gypsophyte perennial species had differing compositions of the AMF community and higher diversity when compared with the annual species, showing preferential selection by specific AMF sequences types. B. rubens did not show host specificity, sharing the full composition of its AMF community with both perennial plant species. Seasonal variations in the competitiveness of AM fungi could explain the observed differences in AMF community composition, but this is still a working hypothesis that requires the analysis of further data obtained from a higher number of both annual and perennial plant species in order to be fully tested.