



Arbuscular mycorrhizal fungi diversity influenced by different agricultural management practices in a semi-arid Mediterranean agro-ecosystem

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The arbuscular mycorrhizal fungi (AMF) are a key, integral component of the stability, sustainability and functioning of ecosystems. In this study a field experiment was performed at the El Teularet-Sierra de Enguera Experimental Station (eastern Spain) to assess the influence during a 6-yr period of different agricultural practices on the diversity of arbuscular mycorrhizal fungi (AMF). The management practices included residual herbicide use, ploughing, ploughing + oats, addition of oat straw mulch and a control (land abandonment). Adjacent soil under natural vegetation was used as a reference for local, high-quality soil and as a control for comparison with the agricultural soils under different management practices. The AM fungal small-subunit (SSU) rRNA genes were subjected to PCR, cloning, sequencing and phylogenetic analyses. Thirty-six different phylotypes were identified, which were grouped in four families: Glomeraceae, Paraglomeraceae, Ambisporaceae and Claroideoglomeraceae. The first results showed significant differences in the distribution of the AMF phylotypes as consequence of the difference between agricultural management practices. Thus, the lowest diversity was observed for the plot that was treated with herbicide. The management practices including ploughing and ploughing + oats had similar AMF diversity. Oat straw mulching yielded the highest number of different AMF sequence types and showed the highest diversity index. Thus, this treatment could be more suitable in sustainable soil use and therefore protection of biodiversity.