Three new species of arbuscular mycorrhizal fungi discovered at one location in a desert of Oman : Diversispara omaniana, Septoglomus nakheelum and Rhizophagus arabicus

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Three new species of arbuscular mycorrhizal (AM) fungi (Glomeromycota) were isolated from soil samples collected from a hyperarid sandy plain of South Arabia. Morphological characteristics of the spores clearly differentiated them from closely related AM species. Molecular analyses were performed on rDNA sequences obtained from single spores including a similar to 1700 bp region comprising partial SSU, ITS, partial LSU and the similar to 600 bp ITS region only. The phylogenetic trees based on these regions showed that the three species belong to well described genera but are clearly distinct from known species. Consequently, we describe them here as Diversispora omaniana, Septoglomus nakheelum and Rhizophagus arabicus spp. nov. D. omaniana and R. arabicus were isolated from the native, arid habitat, while S. nakheelum was isolated from a nearby irrigated date palm plantation. The discovery of three new species of AM fungi from this location suggests that a number of additional undescribed AM taxa may be present in such desert ecosystems. Further work to understand the diversity and functional significance of these new AM taxa may offer new opportunities for conservation, re-vegetation, and sustainable agriculture in extremely arid environments.

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