

Diversity and spore density of arbuscular mycorrhizal fungi in the rhizosphere of Cowpea (*Vigna unguiculata* [L.] Walp.) cultivated in different soils in Senegal

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1 ABSTRACT

Arbuscular mycorrhizal fungi (AMF) play a significant role in soil structure, plant water and nutrient uptake particularly in poor soils. This work aims to determine the diversity and spore density of AMF in the rhizosphere of cowpea cultivated in three soil types (Dek, Dek_Dior and Dior) collected from two sites (Ouarkhokh and Dya) in Senegal (West Africa). Using morpho-anatomical identification of spores isolated from cowpea rhizosphere, 15 taxa classified in 8 genera (*Gigaspora*, *Racocetra*, *Scutellospora*, *Entrophospora*, *Acaulospora*, *Glomus*, *Sclerocystis* and *Rhizophagus*) and 3 families (*Gigasporaceae*, *Acaulosporaceae* and *Glomeraceae*) were identified. The genus *Glomus* is the most represented followed by *Gigaspora* in the different soil types. The spore density was significantly higher in Dek soil than in Dior soil. This study also revealed that AMF communities were clustered according to sites and soil types, with a clearer separation between Dek soil and Dior soil for Ouarkhokh as well as Dya site. In addition, *Racocetra gregaria* was identified as indicator species for Dya site in the Sudano-Sahelian zone and *Gigaspora* sp. and *Acaulospora* sp. were identified as indicator species for Ouarkhokh site in the Sahelian zone. Meanwhile, *Scutellospora heterogama* was identified as indicator species for Dek soil and *Glomus coronatum* as indicator species for Dek soil and Dek_Dior soil. Future research should focus on these AMF taxa in order to develop highly effective and competitive inoculants for cowpea cultivation in these different soil types and sites.