

Impact of Different Rice Farming Systems on Diversity of Arbuscular Mycorrhizal Fungi (AMF) in Selected Agroclimatic Zones of Andhra Pradesh

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ABSTRACT

The impact of different rice farming systems on the abundance and diversity of arbuscular mycorrhizal fungi (AMF) was investigated at selected four agro climatic zones of Andhra Pradesh viz., North Coastal Zone, Godavari Zone, Krishna Zone and Southern Zone. There was significant difference in AMF root colonization in different land use types during different cropping stages and also there was a significant difference in AMF root infection ratings between different farming systems, where it was higher in Natural farming. The AMF spore density was significantly higher in Godavari Zone compared to all other agro climatic zones. Seventy one AMF spore types obtained from different rice farming systems of selected 4 agro climatic zones of Andhra Pradesh during 3 cropping stages of rice were characterized based on spore morphology and they belong to 23 AMF species. Eleven AMF species from North Coastal Zone, 10 AMF species from Godavari Zone, 12 AMF species from Krishna Zone and 14 AMF species from Southern Zone were noticed. Regarding the frequency of distribution, *Glomus fasciculatum* was distributed more frequently in intensive farming system. While, in natural farming system *Acaulospora morrowae* was more frequently distributed. In organic farming system *Acaulospora lacunosa* was more frequently distributed. The genus *Glomus* was distributed more frequently than that in the genus *Acaulospora*. Shannon-Wiener diversity index of AM fungi was determined and it was more in organic farming system than other farming systems. Regarding agro climatic zones, AMF diversity was more in Krishna zone than other 3 zones. AMF diversity was more during grand growth stage compared to initial and harvesting stages. The available potassium and acid phosphatase had a positive influence on spore density and root colonization, while the available nitrogen, available phosphorus, alkaline phosphatase and bulk density had a negative influence on spore density and root colonization.

Keywords: *Agro climatic zones, Arbuscular mycorrhizal fungi (AMF), Farming systems, Per cent root colonization, Rice crop, Spore density, Spore types.*