

Performance of Arbuscular Mycorrhizal fungi associated with *Cymbidium bicolor* against salinity stress

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Abstract

Arbuscular mycorrhiza fungi (AMF) are soil microorganisms, which are widely recognized to improve plant nutrition by being able to access soil spaces and nutrient sources. They are obligate symbionts and Salinity is a major abiotic threat affect soil all around the world. *Cymbidium bicolor* is an orchid, found as epiphytes on Palmyrah (*Borassus flabellifer*) collected from Mattuwil, Jaffna peninsula. The AMF association in the *C. bicolor* roots helps to survive through salinity stress. Therefore, this investigation was carried out to evaluate mycorrhizae performance under different salinity levels. For the isolation and identification of AMF, Potato Dextrose Agar (PDA) media was prepared along with salt solution as a salt PDA media. The root samples of *C. bicolor* were subjected to surface sterilization. They were then transferred to PDA media and allowed for incubation under room temperature for two days using Complete Randomized Design with four replicates. Growth rate was measured. SAS software package was used to analyze the data. The fungus associated with the *C. bicolor* was *Glomus* spp. It produced a smooth irregular white colony initially and later turned to dark green. They grew well in PDA media. In salt PDA media, AMF had a gradual growth in 140dSm⁻¹ salt concentration and early-stage (5th day after inoculation), significant growth was observed in 170dSm⁻¹ and 200dSm⁻¹ compared with 140dSm⁻¹. But late-stage growth was decreased in 170dSm⁻¹ salt and 200dSm⁻¹ salt. Overall, the significant growth observed in 170dSm⁻¹ salt compare with other concentrations. Results indicate that AMF has significant growth in saline condition, which proves the ability of AMF tolerance to salinity stress.

Keywords: *Mycorrhizae, Salinity, Cymbidium bicolor*