Inoculation of black pepper (*Piper nigrum* L.) rooted cuttings with exotic and native vesicular - arbuscular mycorrhizal (VAM) fungi

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Abstract

Three pot experiments were carried out at the nursery site of Research Station, Department of Export Agriculture, Matale. Growth response of black pepper (*Piper nigrum* Linn.) cuttings (cultivar GK49) at different levels (25g, 75g, 150g, 300g, 0g) of Vesicular Arbuscular Mycorrhizal (VAM) inoculum (containing VAM spores and structures with host crop roots and moist soil) were tested, with the objective of finding the most effective spore density. In order to find out the inoculating ability of native VAM inoculum, two pepper cultivars (Panniyur-1 and MB12) were also tested with native VAM spore isolates and exotic VAM (*Glomus mosseae*) in a factorial combination. Three types of native VAM spore isolates were compared with the exotic VAM to investigate regeneration ability in *Sorghum bicolor* as a micro-pot experiment.

Darkly stained VAM fungal hyphae and other structures in black pepper roots confirmed the success of inoculation. Improvement in root length and plant growth suggests that 300g inoculum (spore density of 3.5 spores/ 1g potting mixture) can be recommended to inoculate pepper cuttings at the nursery. Continuation of observations for 6 months period would be appropriate to obtain better recommendation on effective spore density requirements of inoculum for pepper rooted cuttings.

Observations of pepper growth improvements suggest that the native VAM inoculum could be used as a suitable alternative for exotic VAM inoculum. The highest performance was observed in native VAM inoculated black pepper cultivar Panniyur-1. According to the results of micro-pot experiment, Hatamunagala isolates (a native spore isolate) found to be superior to other VAM spore isolates. Morphological variations in fungal structures indicated the possible existence of a mixture of fungal species in initial native isolates that were tested. Formal identification of different VAM fungi species available in native isolates would be beneficial.

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