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The effect of AM fungus, *Rhizobium* and molybdenum sources to improve nursery seedlings of *Terminalia bellerica* Roxb

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Growth response and biomass production was estimeted in *Terminalia bellerica* Roxb. seedlings by the inoculation with VMF, *Rhizobium* and Molybdenum spray. The results revealed an increase in shoot and root length of VMF colonization, number of leaves and the dry weight of shoots were recorded significantly higher over the control plants. Indigenous VAM fungus (*Glomus mosseae*), *Rhzobium* and Molybdenum spray improved the agronomic performance through the increased uptake of nutrients like N, P, K, Mg and Molybdenum.

Key words : Terminalia bellerica, Glomus mosseae, Rhizobium, Molybdenum.

INTRODUCTION

Molybdinum (Mo) the Micronutrient has assumed great importance in recent years because of its significant biological nitrogen fixation and intensive crop production.The role of VA mycorrhizal fungi and *Rhizobium* has been well documented on different plants (Lakshman and Patil, 2004). However, in forest nursery, a few research reports are available in recent days to demonstrate that biofertilizers stimulate the growth of many tree species, there by survival rate of planted seedlings are increased (Singh, 2001).

Terminalia bellerica Roxb. is a sub - tropical tree, well adopted to mixed deciduous forests, both dry and moist type. It grows up to 60 feet height, its leaves are used as fodder and wood in the preparation of sword sheaths and in manufacture of light boxes and toys. It is a promising drought tolerant perennial, which grows well in varied soils. The main advantage of its cultivation is that the plant grows well with a minimum requirement of water and without much agriculture management. The present work deals with the effect of AM fungus (*G. mosseae*) and Molybdenum sources to understand the importance of *Albizzia procera* seedlings at the nursery stage.

MATERIALS AND METHODS

A total of 5 x 25 seeds was collected from 12 year old plant of *Terminalia bellerica* Roxb. Seeds were surface sterilized in 2% Sodium hypochlorite, washed in water and sown in earthen pots containing 4 kg. sterilized sandy loam soil in (1:1) ratio, (loam soil and pure sand). The experiments were set up in a completely randomized design and replicated thrice. The earthen pots were treated with biofertilizers and Molybdenum *viz*; VAM fungus, *Rhizobium*, Molybdenum, VAM + *Rhizobium*, VAM + Molybdenum, VAM + *Rhizobium* + Molybdenum, Uninoculated seedlings as control.

Rhizobium was applied through seeds with inoculant containing (1.0×10^{-5} cells/ml) with jaggary based culture (Varma and Subba Rao, 1975). Twenty five grams mixed inoculum of *G. mosseae* was applied to each pot at 5 cm depth near the root zone. The VAM inoculum consisting of 215 chlamydospores/50g hyphae from the pot culture of *Pennisetum typhoidenum* Roem. (pearl millet), which was infected by *G.mosseae*. Different levels (3, 6, and 8g Molybdenum / L water) of Sodium molybdate foliar spray was applied with the help of sprayer when plants were 5cm tall after inoculation. Plants were watered on alternate days. Once in three days, 5 ml of minus P Hoagland solution was given per pot. The parameters such as plant height, root length, dry weight of shoot, number of leaves, leaf length were recorded. Per cent VMF colonization in roots following the procedure of (Phillips and Hayman, 1970). Chemical analysis was carried as per the procedure of (Jackson, 1973). The data were subjected to analysis of variance and tested for significant difference ($P < 0.05$).

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