

GROWTH RESPONSE OF RUBBER (*HEVEA BRASILIENSIS* MUELL. ARG.) SEEDLINGS TO INOCULATION WITH ARBUSCULAR MYCORRHIZAL FUNGI AND OTHER BENEFICIAL MICROORGANISMS

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The effect of three arbuscular mycorrhizal fungi (AMF) on growth of rubber seedlings in polybags was studied. Among these the seedlings treated with *Glomus fasciculatum* had attained the highest growth rate in terms of girth and height followed by those treated with *Glomus mosseae* and *Gigaspora margarita*. The dual inoculation with *G. fasciculatum* and *G. mosseae* exhibited a synergistic effect on growth of plants. The high percentage of mycorrhizal root colonization, spore numbers and maximum plant biomass increase were recorded in the combined inoculation of *G. fasciculatum* and *G. mosseae* over the control. An increase in the total plant biomass over control was also observed in singly treated plants with *G. fasciculatum*, *G. mosseae* and *G. margarita*. In nursery, the girth and height of plants in combined inoculation with AMF and Phosphate solubilizing microorganisms (PSM) was significantly superior to rest of the treatments. The dual inoculation of seedlings with AMF + *Azotobacter* sp. also attained higher girth and height over the uninoculated plants. In single inoculation, plants with AMF attained the highest girth and height followed by PSM and *Azotobacter*. The present study shows the potential of AM fungi along with PSM or *Azotobacter* to improve the growth of rubber seedlings in the seedling nursery.

Keywords: AM fungi, Biomass, Growth, *Hevea brasiliensis*, Root colonization, Seedlings

INTRODUCTION

The presence of arbuscular mycorrhizal fungi (AMF) is highly essential for sustainable agriculture as they enhance the transportation of mineral nutrients to the plants and carbon compounds to the soil and its biota (Reid, 1990). Earlier studies revealed that the AMF can improve the photosynthetic activity and water uptake of plants, reduce the susceptibility of plants to

the pathogens and enhance the uptake of limited nutrients like phosphorus and zinc (Brown and Bethlenfalvay, 1988; Giovannetti, 1990; Iwano, 1993; Isabelle *et al.*, 1998). The mycorrhizal fungi may be integrated in the disease management by producing mycorrhizal seedlings to prevent infection by pathogens (Mridha, 2003). AMF also provide a wider absorptive surface than root hairs and help in absorption of immobile ions in soils such as P, Cu and Zn