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ISOLATION AND SELECTION OF EFFICIENT PHOSPHOFUNGI FROM RUBBER PLANTATIONS

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Twenty five phosphofungal isolates from rubber (*Hevea brasiliensis*) plantations were evaluated for solubilzation of ferric phosphate, aluminium phosphate, tricalcium phosphate fertilizer grade rock phosphate and acid phosphatase activity. Among the twenty five, seven isolates showed solubilization of phosphates and fertilizer grade rock phosphate and belonged to *Aspergillus* spp. and *Penicillium* spp. and was selected for further studies. These selected isolates were further evaluated for its beneficial effect on growth of rubber seedlings raised in root trainer cups. Among the seven, one isolate, *Penicillium* spp. (Pf 11) was further evaluated for growth improvement in root trainer plants in combination with 25, 50 and 100 per cent of the recommended dose of fertilizer and compared with uninoculated plants with 25, 50 and 100 per cent of fertilizer. The plants inoculated with Pf 11 at 50 per cent fertilizer showed higher girth, height and root development followed by inoculation with Pf 11 at 25 per cent fertilizer level. Girth of plants in treatment with Pf 11 at full fertilizer was lower than the treatment with 25 and 50 per cent fertilizer application in combination with inoculation. Highest population of inoculated phospho fungi was at 25 per cent fertilizer application and was reduced as the fertilizer levels increased. An efficient phosphofungus (*Pencillium* spp.) could be isolated from the rubber plantations and upon inoculation in rubber seedlings recorded better growth at 50 per cent of the recommended level of fertiliser.

Key words: *Hevea brasiliensis*, *Penicillium* spp., Phosphofungi, Phosphorus solubilization

INTRODUCTION

Phosphorus (P) is one of the important macro elements for both plants and microorganisms. Phosphatic fertilisers applied in soil are rapidly fixed as iron and aluminium phosphates in acid soils or as calcium phosphate in neutral and alkaline soils and get precipitated strongly on the surface of the soil particles. These reactions reduce the available P in soil solution (Bray and Kurtz, 1945; Buckman and Brady, 1969; Bear, 1976). Major share of the soils in the traditional rubber growing tract are low in available P due to the high fixation of applied P as hydroxides of iron and aluminium (Karthikakuttyamma *et al.*, 1991; NBSS&LUP, 1999; Joseph, M., 2016). A large proportion of the total P in rubber growing soils exists in organic form (Prasannakumari *et al.*, 2008). Soil microorganisms including bacteria, fungi, actinomycetes and arbuscular mycorrhiza have the ability to solubilize the precipitated phosphates, converting them into soluble forms that are available to plant which is a less expensive and environment friendly approach (Coutinho *et al.*, 2012). Microbial

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