

NUTRIENT MANAGEMENT IN RUBBER SEEDLING NURSERY: STUDIES ON AN INTEGRATED APPROACH THROUGH INCORPORATION OF BIO-INOCULANTS

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In rubber (*Hevea brasiliensis*), seedling plants are raised either in the ground nursery or in polythene bags for producing good quality stock plants for bud grafting. Field experiment in rubber seedling nursery was conducted during 2009-2010 and 2010-11 planting season to study the possibility of reducing the dose of nitrogen and phosphorus fertilizers by incorporating bio-inoculants. The treatments were (T1) control, (T2) standard practice (SP), (T3) standard practice (SP) + bio-inoculants (BI), (T4) 50 per cent N and P and recommended dose of K and Mg + bio inoculants (BI) and (T5) bio- inoculants (BI) alone. The consortia of bio-inoculants were one isolate of N fixing bacteria (*Azotobacter* sp.), two strains of P solubilizing bacteria (*Bacillus* spp.) and two strains of plant growth promoting rhizobacteria (*Pseudomonas* spp.) isolated from the rubber growing soils and multiplied at RRII and arbuscular mycorrhizal fungi (AMF) from The Energy and Resources Institute (TERI), New Delhi. Growth of the plants in T5, viz., BI alone was on par with reduced dose of N and P with BI(T4) or full dose of chemical fertilizers (T2) indicating the possibility of reducing the dose of N and P fertilizers. *Pseudomonas* population was significantly different among the treatments and was higher in all treatments with BI viz., T3, T4 and T5. AMF in the root indicated 70 to 80 per cent infection in all the plants irrespective of the treatments. The results need to be reconfirmed through on-farm trials in different locations with varying soil fertility status.

Keywords: Bio-inoculants, *Hevea brasiliensis*, Nutrient management, Rubber seedling nursery

In rubber (*Hevea brasiliensis*), seedling plants are raised either in the ground nursery or in polythene bags for producing good quality root stock plants. Buds of elite planting materials are grafted on the stock plants to produce the planting material of choice. The current recommended dose of chemical fertilizers for the seedling is 500 kg N, 250 kg P₂O₅, 100 kg K₂O and 37.5 kg

MgO ha⁻¹ (Karthikakuttyamma *et al.*, 2000). Joseph *et al.* (1997) reported that the inoculation of the N fixing bacteria, *Azotobacter* in seedling nursery improved their population in the rhizosphere and 50 per cent reduction in the N fertilizer could be achieved. *Azotobacter* inoculation augmented the population of various micro-organisms in the rhizosphere of rubber