

PHOSPHOROUS FERTILIZER PRACTICES ADOPTED IN POLYBAG NURSERIES OF *Hevea brasiliensis*

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Phosphorous (P) is one of the most important nutrient for the growth of rubber plants (*Hevea brasiliensis* Muell. Arg.) and often not available in required quantities in rubber growing soils due to fixation. P fixation capacity in different rubber growing soils is believed to be different. Eppawela rock phosphate (ERP), high grade eppawala rock phosphate (HERP) and diammonium phosphate (DAP) are the commonly used P fertilizers in Sri Lankan rubber plantations, This study was conducted to evaluate the agronomic effectiveness of the currently adopted phosphorous fertilizer practices in budding nursery plants and to determine the phosphorous fixation curves in different rubber growing soils.

Two separate field and laboratory experiments were conducted. Field experiment was conducted using *Agalawatta* series soils (Typic Hapludults) with four different P treatments (no phosphorous fertilizer, only HERP, only DAP and HERP+DAP) selected from current fertilizer practices adopted in budding nurseries. 50 g of HERP was added as a basal application and DAP was added as a monthly application in liquid form. Treatments were arranged according to a complete randomized design with 20 single plant replicates per treatment. Growth measurements of seedlings at 4 months after planting and scion at 2 months after cut-back were made. Total plant P uptake and available P content of the soil were measured at 4 weeks after planting. In the laboratory experiment, phosphorous fixation curves were constructed for 4 major rubber growing soils (*Agalawatta*, *Homagama*, *Parambe* and *Bibile* series) by adding 0, 20, 40, 80, 160 and 320 ppm of P as KH_2PO_4 and measuring available phosphorous content by Bray II method.

There was a significant growth response to P fertilizers. Growth of the seedlings in the HERP and HERP+DAP treatments were significantly better than plants in the DAP only treatment. However, there was no significant difference between DAP only and zero P treatments. Growth of the scions was not significantly different among fertilizer P treated plants. In the laboratory experiment, available P contents were low in *Agalawatta* (2.7 ppm) and *Parambe* (5.9 ppm) series compared to those in the *Bibile* (48.2 ppm) and *Homagama* (48 ppm) series. The phosphorous fixation was significantly high in *Agalawatta*, *Homagama*, *Parambe* series compared to that in *Bibile* series, probably due to low pH and high Fe and Al contents. P fixation curves revealed that application of 50 g HERP is sufficient to raise available P contents in the soil more than double the critical P level (48 ppm) while application of DAP only during the seedling stage is not enough to reach critical levels in *Agalawatta* and *Parambe* series.

Key words: Rubber soils, Phosphorous fertilizers, Agronomic effectiveness