

Influence of different rates of nitrogen (N) and phosphorus (P) fertilizers on growth and nutrient use efficiency of rubber (*Hevea brasiliensis*)

ABSTRACT

The effect of N and P on nutrient concentrations, growth and vegetative traits of rubber (RRIM 2025) clone was evaluated. The treatments consisted 9 combinations of nitrogen (Urea) and phosphorus (Christmas Island Rock Phosphate – CIRP) with fixed rate of potassium (1.5 g per plant). The treatments were applied at different rates T1 (39.49 g), T2 (42.10 g), T3 (38.18 g), T4 (27.28 g) and T5 (26.10 g). The seedlings were planted in 15 cm x 30 cm filled with an Oxisol soil. Soil containing treatment (T2) significantly increased the seedlings growth like height and girth size than the remaining treatments. The results found that seedlings grown with T2 recorded higher chlorophyll content than the seedlings that were grown with T1, T4 and T5. Noticeably seedlings that was grown with T1 (39.49 g), T2 (42.10 g), and T3 (38.18 g) significantly had a higher shoot dry weight (SDW) than seedlings that were grown with T4 (27.28 g) and T5 (26.10 g). The same scenario was noticed in total dry weight (TDW) of the seedlings where T1 (68.64 g), T2 (73.30 g) and T3 (67.08 g) significantly recorded higher total dry weight than seedlings that were grown with T4 (50.29 g) and T5 (48.86 g). The result shows reflected a correlation between the SDW and TDW with respect to similar influence of the treatments on both the vegetative traits. Higher nitrogen content was recorded in seedlings rubber that were grown with T2 (3.57%) and significantly different from the seedlings that were grown with other treatments. The results of this study showed that higher dosage of fertilizer may not be necessary for the rubber seedlings. Application of fertilizers at the rate T2 which contains 2.0 g urea/plant and 7.5 g CIRP/plant could be considered as the optimum amount of fertilizer required for the rubber seedlings.

Keyword: Nitrogen; Phosphorus; Rubber Seedlings; Fertilizer.