

**PHOSPHORUS APPLICATION RATES ON GROWTH AND YIELD PARAMETERS OF MAIZE (*Zea mays* L.) IN THE REDDISH BROWN EARTH, UNDER FIELD CONDITIONS**

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Phosphorus (P) is an essential element for maize but many soils are low in readily available forms that, ensure satisfactory crop growth. The field research was conducted during *Yala* (2013) season at the research farm, Rajarata University of Sri Lanka to examine the effect of P application rates at 0 (T1), 20 (T2), 30 (T3) and 40 kg/ha (T4) on growth and yield parameters of maize (Var. Sampath). Experimental plots were arranged in a Randomized Complete Block Design with four replicates. Soil samples were obtained initially at 4, 8, 12 and 16 weeks after planting (WAP) and analyzed for pH, electrical conductivity (EC) and available P. Leaf samples obtained at 4, 8 and 12 WAP were analyzed for total P%. Growth parameters; plant height at 50% tasseling, number of days to 50% tasseling and shoot dry matter yield and yield parameters; number of cobs per plant, seed rows per cob, seeds per row, seeds per cob, 100 seed weight and total grain yield were recorded. Soil pH, EC, available P and leaf P content were not significantly different ( $p > 0.05$ ) among treatments. Plant height at 50% tasseling stage was significantly higher ( $p < 0.05$ ) at T4 than T2 while number of days to 50% tasseling and dry matter yield were not significantly different ( $p > 0.05$ ) among any treatments. The number of cobs per plant, seed rows per cob and 100 grain weight were not significantly different ( $p > 0.05$ ) among treatments while the number of grains per row and grains per cob were significantly higher ( $p < 0.05$ ) in T4 treatment than the control. Thus, it can be concluded that the P application of 40 kg/ha produces the highest grain yield of maize variety Sampath under the tested experimental conditions in the dry zone of Sri Lanka.

**Keywords:** Grain yield, Growth, Maize, Phosphorus