

EFFECT OF PHOSPHORUS ON GROWTH AND YIELD OF MAIZE (*Zea mays* L.) IN REDDISH BROWN EARTH SOILS IN THE DRY ZONE OF SRI LANKA

P.P. Kumara and D.M.S. Duminda

*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture,
Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka*

Phosphorus (P) is an essential element for plants. However, many soils lack P in readily available form to crops and thus limit the growth especially in the dry zone soils in Sri Lanka. Hence, this field research was conducted during *Yala* season (2013) in a farmer field, Kahatagasdigaliya to examine the effect of P rates at 0 (T1), 20 (T2), 30 (T3) and 40 (T4) kg of P/ha on growth and yield parameters of maize (Var. Sampath). The experimental plots were arranged in a Randomized Complete Block Design with four replicates. Soil samples were obtained initially and at 4, 8, 12 and 16 weeks after planting (WAP) and analyzed for pH, electrical conductivity (EC) and available P levels. Leaf samples obtained at 4, 8 and 12 WAP were analyzed for total P%. The growth parameters examined were the plant height at 50% tasseling, number of days spent to 50% tasseling and shoot dry matter yield. Yield parameters tested were the number of cobs per plant, number of seed rows per cob, number of seeds per row, number of seeds per cob, 100 seed weight and total grain yield. Soil pH, EC, available P and leaf P content were not significantly different among treatments. Plant height at 50% tasseling stage was significantly higher in T2 than T1. The number of days to 50% tasseling was higher in T1 than in other treatments and shoot dry matter yield was higher in T3 than in T2. The number of cobs per plant, number of seed rows per cob, number of seeds per row and number of seeds per cob were not significantly different among treatments while the 100 seed weight was significantly higher in T2, T3 and T4 compared to the control. Application of 40 kg/P/ha produced the highest grain yield of maize by variety Sampath under the tested experimental conditions in Sri Lanka.

Keywords: Grain yield, Growth, Maize, Phosphorus