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Phosphorus Rates on Growth Parameters of Maize (*Zea mays* L.) in Reddish Brown Earth under Greenhouse Condition

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Abstract

Phosphorus is an essential element for plants. However, many soils lack sufficient in form that is readily available to crops to ensure optimum growth especially in dry zone soils in Sri Lanka. Hence, this study was undertaken with the objective of evaluating the impact of different rates of Triple Super Phosphate (TSP) as a source of Phosphorus for maize (Var. Sampath) growth under greenhouse condition. Top soils at a depth of 0-25 cm were collected from research farm, Puliyankulama and from a farmland in Kahatagasdigiliya, Anuradhapura district. Greenhouse experiment conducted for both soils. Twenty pots were arranged in a completely randomized design with four treatments (0, 20, 30 and 40 kg of Phosphorus ha^{-1}) and five replicates for a single experiment. Soil samples were taken at 4, 8, 10, 12 and 16 weeks after planting (WAP). The soil samples were analysed for soil pH, electrical conductivity (EC) and available Phosphorus (Olsen's method). The leaf Phosphorus content at 50% tasseling stage was measured using dry ash method. The growth parameters were plant heights at 4, 8, 10 and 12 WAP, number of days to 50% tasseling and number of days to 80% silking. Results indicate soil pH, EC, and leaf Phosphorus % are not significantly different ($p<0.05$) at different levels of Phosphorus in both locations. However, soil available Phosphorus is significantly different ($p<0.05$) to the control. Conversely it does not show significant different ($p<0.05$) among fertilized treatments at both sites. Moreover, plant height at 50% tasseling stage, number of days to 50% tasseling and number of days to 80% silking are not significantly different ($p<0.05$) among any treatments at both soil types. Hence, the results further revealed that the different levels of P treatments have no significant effect on soil pH, EC, available P, leaf P and growth parameters of maize variety Sampath under greenhouse conditions.

Keywords: Growth, Maize (*Zea mays* L.), Phosphorus, Reddish brown earth