

EVALUATION OF SINGLE SUPER PHOSPHATE FERTILIZER ON GROWTH AND YIELD OF RICE GROWN IN LOW COUNTRY WET ZONE

B.V.S. Imasha¹ M.G.N. Rupasinghe² and D.M.S. Duminda¹

¹*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*Regional Rice Research and Development Centre, Bombuwala, Sri Lanka.*

Phosphorus (P) is an important nutrient for the growth and development of rice. The high cost of Triple Super Phosphate (TSP), paves the way for the use of an alternative locally available Single Super Phosphate (SSP) in rice cultivation. This study was carried out at the Regional Rice Research and Development Centre, *Bombuwala* to investigate the use of SSP as a source of phosphate fertilizer. A two-month incubation study and a three-month pot experiment were conducted simultaneously in a completely randomized design (CRD) with four replicates and six treatments. Treatments included: No fertilizer (T1), No P fertilizer (T2), 25 kg P₂O₅ ha⁻¹ as TSP (T3), 25 kg P₂O₅ ha⁻¹ as SSP (T4), 30 kg P₂O₅ ha⁻¹ as SSP (T5) and 35 kg P₂O₅ ha⁻¹ as SSP (T6). The available P content was recorded at two-week intervals and pH was recorded weekly during the incubation study. Rice variety Bw 312 was used in the pot experiment and plant growth and yield parameters were recorded. The collected data was statistically analyzed by ANOVA procedure in R software. In the incubation study, soil-available phosphorus content in T3 and T5 was comparable and significantly higher ($p > 0.05$) compared to other treatments. Soil pH of SSP-treated pots was less than 4.5 indicating moderately acidic in nature. In the pot experiment, the highest plant P content was recorded in T6 (0.67%) while T3 also reported a plant P content of 0.65%. In addition, no significant difference in plant height at the tillering stage (64.2 cm), yield per pot (16.77 g) and filled grains per panicle (78) was observed in T3 compared to T5 treatment. Results conclude that SSP at the rate of 30 kg P₂O₅ ha⁻¹ would be a better alternative to replace imported TSP in rice farming.

Keywords: Incubation study, Phosphorus, Plant tissue Phosphorus, Pot experiment, Soil pH