

EFFECT OF STRAW ON POTASSIUM AVAILABILITY FOR RICE IN RED YELLOW PODZOLIC SOILS OF LOW COUNTRY INTERMEDIATE ZONE

A.A.N. Roshani¹, W.M.U.K. Rathnayaka² and M.G.T.S. Amarasekera¹

¹ *Dept. of Soil and Water Resources Management, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.*

² *Rice Research and Development Institute, Batalagoda, Ibbagamuwa, Sri Lanka.*

Potassium is an essential element for the rice growth. Water stress reduces K⁺ uptake because plant absorbs it mainly through passive process. This is critically affects paddy farming especially during *Yala* season. Since rice straw is a good potassium source, an experiment was conducted to study the effect of rice straw on potassium availability under normal and moisture stress conditions.

The field experiment included three treatments (1) only nitrogen and phosphorus without potassium (control) (11) nitrogen, phosphorus with potassium (111) nitrogen, phosphorus with potassium + paddy straw (5 t/ha) under normal and water stress condition. The experiment laid out in Split Plot Design with four replicates. It was planned to provide moisture stress condition from one week before 50% flowering to one week after 50% flowering. However it could not be achieved due to unexpected rainfall received during study period. Exchangeable soil and plant potassium content, plant growth and yield parameters were measured at panicle initiation, 50% flowering and 85% maturity stages of the crop.

A reliable set of measurements could not be obtained under water stress condition due to unexpected rainfall. Under normal condition tiller number was significantly different among 3 treatments where it was high in potassium treated plots. Grain yields also showed a significant variation and highest yield was observed in the treatment with straw. Highest filled grain percentage and 1000 seed weight were also recorded in straw added treatment. High exchangeable potassium content in soil was recorded in straw added treatment. Results suggested that incorporation of paddy straw enhance K⁺ availability in the soil and it increases potassium uptake by rice. The study should be repeated to assess the effect of moisture stress and come up with more precise findings.

Key words: Potassium availability, Rice yield, Water stress