

EFFECT OF UREA-ENRICHED PARTIALLY BURNT PADDY HUSK ON PADDY CULTIVATION

S.M.D.P. Nayanethri¹, W.M.U.K. Rathnayake² and D.M.S. Duminda¹

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

²*Rice Research and Development Institute, Bathalagoda, Sri Lanka.*

A field experiment was conducted during Yala 2022 at the Rice Research and Development Institute, Bathalagoda, Ibbagamuwa, Sri Lanka to evaluate the potential use of urea-enriched partially burnt paddy husk. The experiment was laid out in Randomized Complete Block Design. The treatments were, zero N fertilizer (T1), Department of Agriculture (DOA) recommended urea amount (225 kg ha⁻¹) (T2), 50% of the DOA recommended urea amount (112.5 kg ha⁻¹) (T3), 50% DOA recommended urea enriched partially burnt paddy husk with split application (T4), 50% DOA recommended urea enriched partially burnt paddy husk with basal application (T5), partially burnt paddy husk only (T6). Ten hills were selected randomly from each plot and the number of tillers was counted. The plant heights, leaf colour chart value, and soil plant analysis development (SPAD) value were measured. The weights of above and below ground biomasses were taken. The grain yield parameters and final yield were recorded. Soil samples were chemically analysed at the initial stage and just after harvesting stage for pH, EC, soil available P, exchangeable K, and organic matter content. Data was analysed by ANOVA procedure using Statistical Tool for Agricultural Research (STAR) software 2.0.1 version. The growth parameters showed a clear response with added N fertilizer. The highest yield was observed in T2 (5.4 t ha⁻¹) treatment compared to other five treatments. The highest plant N content was observed in both T2 (3.4%) and T5 (3.3%) treatments. The N uptake by plants in T2 (0.45 g) and T5 (0.45 g) were significantly higher ($p < 0.05$) than the other four treatments. According to the results, the basal application of urea-enriched partially burnt paddy husk could be used as an alternative to commercially available urea in paddy cultivation.

Keywords: Nitrogen fertilizer, Paddy, Soil properties, Urea