

**EFFECT OF POTASSIUM FERTILIZER SPLIT  
APPLICATIONS ON OPTIMUM POTASSIUM  
CONTENT IN LEAF AND STEM OF RICE (*Oryza  
sativa* L.) IN LOW COUNTRY INTERMEDIATE  
ZONE**

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## ABSTRACT

Potassium (K) is one of the main essential nutrient required for plant growth and yield. An experiment was conducted at the Rice Research and Development Institute, Batalagoda to find out the effect of K fertilizer split applications on optimum K content in leaf and stem of rice in low country intermediate zone. The experiment comprised six treatments namely: No K fertilizer (T1); rice straw only (T2); 20 kg of K (at basal), 20 kg of K (at panicle initiation) with rice straw (T3); 20 kg of K (at basal) with rice straw (T4); 20 kg of K (at panicle initiation) with rice straw (T5); 20 kg of K (at basal), 20 kg of K (at panicle initiation) (T6) and arranged in Randomized Complete Block Design with four replicates. Rice straw was applied at the rate of 5 t/ha. Soil samples were analyzed for exchangeable K, non-exchangeable K and plant samples were analyzed for K content in leaf and stem. At harvesting, total grain yield and number of panicles were recorded. Shoot dry weight, number of tillers, number of panicles, flowering time were not significantly different ( $P>0.05$ ) among six treatments. Soil and plant K content in T1 was significantly lower ( $P<0.05$ ) throughout the cultivation period compared to T2, T3, T4, T5 and T6. All K fertilizer applied plots depicted higher K content in leaf and stem of rice compared to the non K fertilizer treated plots (with or without straw added plots). The highest exchangeable K and non-exchangeable K contents were recorded in the treatment received K fertilizer at the rate of 40 kg ha<sup>-1</sup> with rice straw (T3). A correlation between exchangeable K with plant K uptake was lower in rank to non-exchangeable K with plant K uptake irrespective of the treatments applied and number of weeks after planting. Six weeks after planting, with increasing non-exchangeable K the greater increase in plant K uptake could be observed. According to these results it can be suggested that application of K fertilizer and rice straw is necessary to increase level of K in plants to resist pest and diseases.

**Key words:** Potassium, rice straw, rice yield, chemical fertilizer