

**AS1.****EVALUATION OF POTASSIUM LEACHING OF A REDDISH BROWN EARTH AND A NON CALCIC BROWN SOIL IN RELATION TO K-RESERVES, EXCHANGEABLE K AND PLANT K UPTAKE**

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Leaching of potassium plays a significant role in reducing its efficient use by crops and reserves in the soils. Potassium is generally subjected to leaching in considerable amounts. However only a limited attention had been given to understand the behavior of Sri Lankan soils in relation to potassium leaching.

This study was hence conducted to evaluate the extent of potassium leaching of two contrasting soils and to establish the changes that may occur in relation to exchangeable and reserve potassium.

A leaching column experiment was conducted using undisturbed sub-soils (20-50 cm) and disturbed top-soils (0-20 cm) of a Reddish Brown Earth (RBE) and a Non Calcic Brown (NCB) soil taken from Mahailuppallama and Aralaganwila respectively of the dry zone of Sri Lanka. The leaching experiment was conducted for 5 weeks using rice as the indicator plant. The treatments tested were soil alone, soil + potassium, soil + crop without potassium and soil + crop with potassium. Each leaching column was daily irrigated with 340 ml of distilled water and potassium in the daily collected leachates was determined. At the end of the experiment, the soil columns were separated into 10 cm portions and their exchangeable and reserve potassium contents were determined. Potassium uptake by the rice crop was also monitored.

The results showed that the potassium leaching in the NCB was substantially higher than that of the RBE mainly due to the differences in texture and structure as well as soil horizon arrangements. Presence of a crop reduced the magnitude of potassium leaching whereas the application of potassium has increased the leaching. The contents of exchangeable potassium were markedly reduced in NCB due to promoted leaching as well as due to the presence of lesser potassium reserves. The higher reserves found in RBE showed the ability to refill the exchangeable potassium partially. Application of potassium has also compensated the reductions of exchangeable potassium. A depletion of potassium reserves was observed in both soils due to leaching as well as plant uptake the degree of depletion was higher in NCB. Leaching losses of potassium could be reduced to considerable levels by modifying the present agronomic practices especially linked to potassium applications, irrigation and crop selection.