Total Potassium Concentration of Major Paddy Growing Soils in Sri Lanka

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Total potassium (K) concentration represents the K pool in a soil, and that provides the required K for plant uptake after making K available through biochemical changes. Knowledge on K pool in different soil types is important for sustainable management of crops and soils. Therefore, this research was conducted to estimate the total K concentration in different rice growing soil types from agro-climatic zones (ACZs) of Sri Lanka. Total of 200 soil samples representing six ACZs (except for Upcountry Wet zone) in Sri Lanka were collected though a stratified random sampling approach. Soil total K concentration was determined through X-ray florescence (XRF) analyser. Soil total K concentration had a wide range of values *i.e.* 316-31,153 mg kg^{-1}. The Reddish Brown Earths & Immature Brown Loams (RBE-IBL) had the highest soil total K concentration (20,127 mg kg^{-1}) followed by Rock Knob Plain (RKP), Reddish Brown Earths with high amount of gravel in subsoil & Low Humic Gley (RBE-LHG), Noncalcic Brown soils & Low Humic Gley soils (NB-LHG), Reddish Brown Earths, Noncalcic Brown soils & Low Humic Gley (RBE-NB-LHG) and Noncalcic Brown soils, soils on old alluvium & Solonetz (NB-S) soils. All these soils had total K concentration greater than 13,000 mg kg^{-1}. Soils of Bog and Half-Bog soils (BHB) and Red-Yellow Podzolic soils with soft or hard laterite (RYP) reported the lowest total K, *i.e.* <5,000 mg kg^{-1}. Soil total K concentration was high in Intermediate Zone Upcountry followed by Dry Zone Low Country, Intermediate Zone Low Country and Intermediate Zone Mid Country and the lowest in Wet Zone Low Country. The results confirm that, soil total K concentration in Sri Lankan paddy growing soils had a clear spatial variability associated with soil type and ACZ. This information would be important for sustainable K-nutrient management in Sri Lankan rice fields.

Keywords: Agro climatic zones, Soil types, Total potassium, X-ray florescence