

B-72 Evaluation of the suitability and calibration of methods for the determination of available potassium of coconut growing soils

L L W Somasiri¹, D D K S Liyanage²

(¹Soils & Plant Nutrition Div. Coconut Research Institute, Lunuwila, ²Faculty of Agriculture, Univ. of Peradeniya)

Laboratory methods for the determination of available K in soils such as ammonium acetate (NH₄OAc) and 2.5% acetic acid (HOAc) extractions have not been calibrated in respect of Sri Lankan soils. The present study was carried out to evaluate the suitability and to calibrate each method in respect of coconut.

To evaluate the suitability of methods, a greenhouse pot experiment was carried out with 10 different soil series including both A and B horizons. Each soil in pots received -K (without KCl) and +K (kg/KCl/pot) differential treatments in duplicate. Basal doses of N, P and Mg were also applied to each pot. *Panicum maximum* (Gini grass) was grown on each pot and shoots were harvested monthly for 6 months.

Available K of each pot soil was determined by the above methods.

For field calibration, data on leaf K concentration in 14th frond of coconut and available K of soil at 1 m distance from the palm were obtained from an experiment which received different K and Mg fertilizer levels for 6 consecutive years.

1M NH₄OAc-K accounted for 31.9% of the variation in total dry matter (shoots) weight, but HOAc-K accounted only for 19.9%. Nevertheless NH₄OAc-K accounted for 61.1% of the variation in relative K uptake while HOAc-K accounted for only 44.4%. The results showed that K determined by both methods was more related to plant K uptake than growth parameters, but NH₄OAc method was superior.

The leaf K concentration of coconut showed curvilinear relationships with both NH₄OAc-K and HOAc-K. The curves showed a plateau at leaf K sufficiency range. The threshold values derived for NH₄OAc-K and HOAc-K for coconut by the above relationships were 180 and 185 mg/kg respectively.