ABSTRACT

A leaching study was conducted using three different coconut soils such as Madampe (regosols) Sudu (regosols) and Boralu (red yellow podzolic soil) to evaluate the downward movement of nutrients (e.g. N, P, K and Mg) and changes their concentrations with soil depths (0-10, 10-20, 20-30 and 30-40 cm). This study was conduct for a period of 60 days and sampling was carried out at 15 days time interval. (15, 30, 45 and 60 days).

The recommended inorganic fertilizer mixture named Adult Palm Mixture (APM) and dolomite were applied to the different soil types (Madampe, Boralu and Sudu) at the area situated centre of four coconut palms. This area and fertilizer corresponded the half of the original manure circle (4.81 m^2) and half of the original application of fertilizer (1.5 kg of APM and 0.5 kg of dolomite). This treatment was replicated 3 times for each soil type. The amount of total rainfall 140 mm was observed in this experimental period. At each time interval the soil profiles were destructed and separate to above mentioned depths for analysis of available N (NH_4^+N and NO_3^-N), total N, available P exchangeable K and exchangeable Mg. The soil pH was also determined.

The downward movement of the studied nutrients were higher in Sudu soil than Madampe and comparatively very low in Boralu soil. The concentration of available N ((NH_4^+-N and NO_3^--N) total N, available P and exchangeable K were reduced with time and depth due to continuous

leaching while the exchangeable Mg concentration was drastically increased at the 60th day in all 3 soils. In available N comparatively lesser movement of NH_{4+}-N was observed than the NO_3-N. But in Boralu soil NO_3^--N concentration was drastically higher (400 μg/g) at 0-10 cm depth due to anion exchange with iron and aluminium hydrous oxides. Exchangeable K also shown lesser movement in all 3 soils.

The nutrient concentrations, except available P, were drastically higher in Boralu soil than other 2 soil types (Madampe and Sudu) because of its high cation exchange capacity (4.06 mg/100 g^{-1}) and high clay content (20.06%). Therefore the depletion of nutrient in the different soil types were in the decreasing order Sudu > Madampe > Boralu.

This study showed further that the nutrient leaching was high in Sudu soil series than Madampe and Boralu soil series.