

ALTERNATIVE FERTILIZER PRACTICES ON NITROGEN AVAILABILITY OF COCONUT GROWING SOILS IN SRI LANKA

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National fertilizer crisis invites alternative fertilizer practices. A pot experiment was conducted at Coconut Research Institute (CRI) to evaluate the nitrogen availability of soils in coconut cultivations adapted with alternative fertilizer practices. Pots filled with 20 kg of *Madampe* soil series were applied with five treatments; T1: control, T2: inorganic fertilizer, T3: cattle manure, T4: goat manure and T5: poultry manure as per the CRI recommendations. The pots were maintained with 60% water holding capacity and arranged in CRD with three replicates under plant house conditions. Soil samples were collected at every two-week interval to analyse soil moisture, pH, EC, available nitrate, available ammonium, organic carbon, and microbial population using standard methods. The pH, EC, available nitrate, and organic carbon was significantly ($p < 0.05$) different among treatments. Poultry manure recorded a highly alkaline pH (7.84–8.11) followed by goat and cattle manure. The highest EC was recorded in cattle manure ($235.80 \mu\text{S cm}^{-1}$) in 4th week, while the lowest was recorded in the control ($5.83 \mu\text{S cm}^{-1}$) in 8th week. Inorganic fertilizer practice resulted in a significantly ($p < 0.05$) higher level of available nitrate ($105.94 - 341.31 \text{ mg kg}^{-1}$) than other treatments indicating that inorganic fertilizers add more nitrate compared to organic fertilizers. Among organic fertilizers, poultry manure had the highest amounts of nitrates ($170.39 \text{ mg kg}^{-1}$) followed by goat manure and cattle manure. Among organic fertilizers, the highest percent of organic carbon content was recorded in poultry manure (0.38%). Organic fertilizers recorded a higher microbial population. In conclusion, poultry manure can positively influence on the nitrogen availability and organic carbon content in soil. Thus, poultry manure is the best alternative fertilizer practice among the tested.

Keywords: Inorganic fertilizer, Organic fertilizer, Poultry manure