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Preliminary Study on Existing Scenario of Selected Soil Properties in Cheddikulum Grama Niladhari Division Vavuniya District, Sri Lanka

Madhushani K.G.S.*, Ranasinghe U.D.S.S.

Department of Bio Science, Vavuniya Campus of the University of Jaffna, Vavuniya, Sri Lanka
**samitha.ssg@gmail.com*

Abstract

The productivity of the soil has changed into the worst condition knowingly or unknowingly by anthropogenic activities as well as natural phenomena. The study was conducted to quantify selected soil properties in Cheddikulum Grama Niladhari division, Vavuniya District and find reclaim the problem soil and make suggestions to cultivate the crop variety suitable for the existing soil properties since this area is a recently rehabilitated area. Fifty composite samples were selected for the research using the stratified random sampling method. Stratification was based on the type of land cover, and following land cover patterns were identified agriculture land patches, forest patches, and grassland patches. Soils were collected from top to 30 cm depth (root zone) using a core sampler, and subsamples were collected to obtain composite samples. Soil samples were analyzed for pH, EC, organic matter content, total nitrogen, exchangeable potassium, and available phosphorous. 14.8% of agricultural land area was acidic soil and 4.7% alkaline soil. 15.3% of agricultural land area was identified as saline soil. 67.11% of agricultural lands contain more phosphorous concentration than the optimum range. 4.7% of agricultural lands contain higher potassium concentrations than the optimum range. 94% of forest lands and 100% of grasslands contains phosphorous concentration higher than the optimum range. But forest lands showed a lower level of potassium concentration. 23.6% of grasslands contain higher potassium than the optimum level. Organic matter ranged between 0.01% to 5.43% in agricultural lands where 82% of total nitrogen concentrations were the optimum level. Agriculture practices lead to change in the soil; hence identified soil problems should be reclaimed in order to maintain the fertility of the soil for sustainable production. Proper management of soil can be a better solution for supporting the successful agricultural activity of the community in the future and socio-economic development of this region and need to be adhering to crop variety selection and soil reclamation practices.

Keywords: Productivity, Soil problems, Soil reclamation