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Organic matter and nutrient status of some selected tea growing soils in the Matara District

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Assessment of soil quality in tea lands is extremely important to investigate the nutrient status of such soils and make recommendations for sustainable land management practices. In this background, the present study was conducted to assess the organic matter and nutrient status of selected tea growing soils in the Matara District, Sri Lanka.

Representative soil samples (from 0 -15 cm depth) were drawn randomly from ten selected tea-growing fields and analyzed for N, P, K and organic matter contents using standard methods. A forest with the same soil type was used as the reference site to compare the cultivated and undisturbed soils.

Results revealed that the average nutrient contents of tea growing soils were 0.18 %, 200 mg/kg of soil and 112 mg/kg of soil for N, P and K, respectively, whereas the corresponding figures for the forest soil were 0.17 %, 65 mg/kg of soil and 30 mg/kg of soil. The average organic matter contents were 1.6 and 2.5 %, for tea soils and reference forest soil respectively. Continuous usage of chemical fertilizers such as urea, rock phosphate and muriate of potash in tea cultivation could be the possible reason for the higher N, P and K values of tea growing soils over the forest soil. Furthermore, it could be seen that considerably low organic matter content in tea growing soils compared to forest soil could badly influence the sustainability of tea production. It is therefore, of paramount importance that the improvement of the organic matter status of tea soils by means of preventing soil erosion and sustaining or increasing soil organic matter levels by adding crop residues, compost and organic manures are done to ensure sustained productivity of tea growing lands.

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Dry matter accumulation of three selected salt tolerant plant species as influenced by the method of establishment

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Excessive soil salinity reduces the growth of many plant species, depending on the species and the severity of the salinity problem. A proper attention is extremely necessary for successful establishment of species, since, all species do not grow equally well under all conditions. A field experiment was conducted at Hungama in Hambanthota district to assess the effect of establishment methods on seedling growth of three selected salt tolerant plant species namely, Ranawara (*Cassia auriculata*), Maliththa (*Salvadora persica*) and Wood apple (*Feronia limonia*). Planting pits (30 x 30 x 30 cm) were dug at 60 x 60 cm spacing and filled with sub soil (T1), top soil (T2), top soil and mulched with paddy straw (T3) and filled with sub soil and mulched with paddy straw (T4). A Randomized Completely Block Design (RCBD) was used with four replications. Representative plants from each treatment were uprooted at 3 month intervals, dried at 70°C for 72 h for dry matter measurements.

The results demonstrated that total dry matter has increased with time in all the species regardless of the treatment imposed. However, in contrast, below ground dry matter has increased at a higher rate than that of above ground, throughout the experimental period. Results further revealed that sub soil proved to be very successful in the establishment of all species during the first three months of age showing significantly ($p \leq 0.05$) greater dry matter accumulation, compared to other treatments. However, 6, 9 and 12 months after planting the rate of dry matter accumulation in sub soil+ paddy straw mulch was significantly ($p \leq 0.05$) higher than that of any other treatment for all the species tested. Paddy straw, as a mulch, has the capacity for preventing excessive salt accumulation that results from evaporation and erosion. Sub soil with a mulch of decomposed paddy straw could retain soil moisture and create a favorable environment in which microbial activities are increased thereby increase in soil fertility may further explain the greater performance in sub soil+ paddy straw mulch treatment.

It could be concluded that planting pits filled with sub soil and mulched with paddy straw may provide favourable conditions for plants to grow through its most injury-prone seedling stage in salt affected soils.