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EVALUATION OF MICROBIAL BIOMASS CARBON IN PADDY SOILS OF ANURADHAPURA DISTRICT, SRI LANKA

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Paddy (*Oryza sativa*) is the principle food as well as the main income source for many farm families in Sri Lanka. Both biotic and abiotic environments in paddy fields have been disturbed by excessive chemical inputs, which in turn disrupt the nutrient availability in agricultural fields. This leads to diminution of quantity and quality of the harvest. Paddy ecosystem serves as one of the favored habitats for a large number of soil microorganisms, which play a vital role in maintaining the nutrient cycles and soil fertility. Microbial biomass carbon (MBC) is the amount of carbon present within microbial organisms present in soil. This case study is aimed at assessing the status and functions of MBC of paddy-growing soils within a season in Anuradhapura, the largest paddy-growing district in Sri Lanka. Conditional Latin Hyper Cube Sampling design was employed in the study. Pooled soil samples (143) were collected from the Anuradhapura district at 0 - 15 cm soil depth. The soil MBC at each sample location was determined using chloroform fumigation and extraction method. Other soil parameters [pH, Electrical conductivity (EC), active carbon (AC) fraction, available potassium (K)] were also measured. Total soil carbon (TSC) content was estimated using CHN elemental analyzer. The results revealed that, the soil MBC varied in the range from 0.001 to 0.17 % and most of the soil pH values were scattered within the range of 5.76 - 8.62. The EC (r = 0.533), TSC percentage (r = 0.401), AC percentage (r = 0.326) and K percentage (r = 0.511) are positively correlated with the MBC percentage. The study revealed that the MBC, which may contribute to long term agricultural sustainability, can be maintained by managing the soil organic carbon and its fractions. Furthermore, it enhances the nutrient retention capacity and the availability of paddy soil.

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Keywords: Microbial biomass carbon**,** Nutrient retention, Paddy, Total soil carbon