Analysis of Soil Organic Matter Content in Paddy Lands in the Kurunegala District of Sri Lanka

Kumararathna R.D.C.Y., Rathnayaka W.M.U.K.[1], Suriyagoda L. and Marambe B.[*]
Department of Crop Science,
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Soil organic matter (SOM) is an important soil physical property to determine the land productivity for successful crop production. There is a growing concern to study the temporal and spatial variability of SOM in agricultural ecosystems. Kurunegala district is one of the main areas of paddy cultivation in Sri Lanka. This study assessed the variability of the SOM content in paddy lands in the Kurunegala district, covering the three climatic zones (wet, dry and intermediate), eight agro-ecological regions (AERs), eight soil types, three irrigation systems (major, minor and rainfed), four cropping patterns (rice-rice, rice-fallow, rice-other field crops, and rice -vegetables), and in 30 Divisional Secretariat Divisions (DSDs). Already collected 902 soil samples from the paddy lands within the Kurunegala district were used. Loss on ignition (LOI) method was used to analyze the SOM content. The highest average SOM content was reported from the paddy lands in WM3b (2.9%) and in immature brown loam soils (4.2%). Further, the highest average SOM content (3.1%) was reported in the Bingiriya DSD. There was no significant difference ($P>0.05$) in SOM in paddy lands in the Kurunegala district among the three climatic zones, irrigation systems, and the cropping patterns practiced. However, the SOM content in paddy lands in the Kurunegala district showed a significant difference ($P<0.05$) with the soil type, agro-ecological region and the DSD. The resulted also revealed that the SOM content in most of the paddy soils in Kurunegala district of Sri Lanka was not at a satisfactory level of 3%. These factors should be considered in fertilizer application and in other management practices in the paddy lands within Kurunegala District to improve the soil quality.

Keywords: Kurunegala district, Loss on ignition, Paddy soils, Soil organic matter, Spatial distribution

[1]Rice Research and Development Institute, Bathalagoda, Ibbagmuwa, Sri Lanka
[*]bmarambe@yahoo.com