

INVESTIGATION OF SOIL TEXTURAL CLASSES OF PADDY CULTIVATED AREAS IN *KURUNEGALA* DISTRICT, SRI LANKA

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Soil texture is an important soil physical property determining productivity of paddy fields. There is a growing concern to study the variability of soil texture in paddy fields. This study assessed the variability of soil texture in paddy fields in *Kurunegala* district including three climatic zones (wet, dry and intermediate) of agro-ecological regions (AERs), soil types, three irrigation systems (major, minor and rainfed), four cropping patterns (rice-rice, rice-fallow, rice-other field crops, and rice -vegetables). Soil samples collected from the paddy fields within *Kurunegala* district were used to investigate the soil texture. Geographic Information System (GIS), Global Positioning System (GPS), Google maps and smart phone-based sampling methods were used to collect soil samples across the study area. Samples were drawn from 0–15 cm depth from different paddy tracks. Conventional hydrometer method was used to analyse the distribution of soil particles and assess the textural composition. The ANOVA procedure was used through Statistical Analysis System (SAS) software to identify impacts of the selected factors on soil texture variation. Results revealed that soil texture varied among different climatic zones in study area with significant effects ($p < 0.05$) of irrigation type, agro-ecological zone and paddy soil type in the district. Soil with sandy loam textural class (71% of analysed samples) prevailed mostly in paddy fields across all three climatic zones in *Kurunegala* district. However, the cropping pattern had no significant effect ($p > 0.05$) on soil texture in the district. Hence, it is concluded that irrigation type, soil type of paddy soils and agro-ecological regions of *Kurunegala* district can be used as secondary information to predict soil texture in paddy fields and optimize irrigation strategies and nutrient management. This strategic finding may help to improve productivity and soil quality in the paddy fields in *Kurunegala* district.

Keywords: Agro-ecological regions, Rice grown soils, Soil texture