

SHORT-TERM EFFECT OF ORGANIC PADDY INPUT MANAGEMENT SYSTEM ON DIFFERENT SOIL PROPERTIES OF RICE GROWN IN ALFISOLS

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Abstract: Rice (*Oryza sativa* L.) is one of the main crops in Sri Lanka. Currently, rice farming in Sri Lanka is highly dependent on external inputs such as fertilizers and pesticides. However, many studies have revealed that long-term use of chemical inputs negatively impacts soil health. Organic farming is considered a feasible alternative to overcome these negative consequences. Hence, this field experiment was conducted to investigate and compare the soil characteristics in continuously grown paddy in an organic input system over the last three years (2019, 2020, and 2022 *Yala* seasons) at the research field, Faculty of Agriculture, Rajarata University of Sri Lanka. Soil samples were collected from the surface (0-15 cm) and subsurface (15-30 cm) soil just before land preparation in an organic input system with three replicates. Soil nutrient levels were studied using standard analytical procedures. Data analysis was done using mixed procedure of SAS 9.0 version. Soil pH and cation exchange capacity (CEC) were not significantly different ($P>0.05$) among two depths while significantly different ($P<0.05$) across three rice growing seasons. Soil organic matter content and microbial biomass carbon were significantly greater ($P<0.05$) in the 2020 and 2022 *Yala* seasons. Also aforementioned parameters were significantly greater ($P<0.05$) at surface soil compared to the subsurface soil. Soil organic matter content, organic carbon and CEC have increased with time. Therefore, it can be concluded that continuous application of organic fertilizers has improved soil health and sustained soil fertility in the rice-grown Alfisols in Sri Lanka. Hence the findings could be applied into rice grown in Tank Cascade SysteMS in the dry zone of Sri Lanka.

Keywords: Cation exchange capacity; Microbial biomass carbon; Soil characteristics; Soil fertility; Soil pH