

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

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Rice (*Oryza sativa* L.) is one of the main agricultural crops in Sri Lanka. At present, rice farming in Sri Lanka is highly depend on external inputs such as fertilizers and pesticides. However, many studies have revealed that long-term use of chemical inputs creates negative impacts on soil health. Organic farming is considered as 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 organic input system over the last 3 years (2019, 2020 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 at just before land preparation in 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. Available P, Total N and Total Fe contents were significantly different ($p < 0.05$) among three rice growing seasons as well as two depths. Soil pH, cation exchange capacity (CEC), total K, Mg, Na, Mn were not significantly different ($p > 0.05$) among two depths while significantly different ($p < 0.05$) across three rice growing seasons. Soil EC, exchangeable K, Total Zn, Ca, Cu, Cd, Pb, and as were not significantly different ($p > 0.05$) over two depths although they were significantly different ($p < 0.05$) in three rice growing seasons. However, soil organic matter content, organic carbon content and microbial biomass carbon were significantly greater ($p < 0.05$) in 2020 *Yala* and 2022 *Yala* seasons and two depths. Soil organic matter content, organic carbon and CEC have increased with time, while, soil heavy metal contents were reduced over three years. 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.

Keywords: Alfisols, Organic input management system, Rice, Soil characteristics