

**COMPARISON OF SOIL CHEMICAL CHARACTERISTICS UNDER  
DIFFERENT RICE INPUT PRODUCTION SYSTEMS: THE SECOND  
YEAR IN TRANSITION**

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Rice (*Oryza sativa*) is the staple food of most of the Asian countries including Sri Lanka. At present, conventional farming in Sri Lanka is heavily dependent on external inputs such as synthetic fertilizers and other agrochemicals. However, many studies have revealed that intensive farming with high chemical inputs is not sustainable ecologically and economically. Hence, this study was conducted to compare soil characteristics of rice fields managed under conventional (DOA: Department of Agriculture Recommendation), reduced (50% of DOA) and organic input systems. The experiment was conducted in the research field, Faculty of Agriculture, Rajarata University of Sri Lanka during *Maha* season 2019/2020. Soil samples were collected just after land preparation (initial), 50% of heading and harvesting stages from three input systems to determine soil chemical parameters. Data analysis was done by mixed procedure of statistical analysis system. Soil pH was significantly higher ( $p < 0.05$ ) at initial stage of all three systems and showed decreasing trend with time due to submerged conditions. Comparatively low electrical conductivity values were observed in 50% heading stage in all three systems probably due to leaching of soluble salts with irrigation. Significantly high ( $p < 0.05$ ) organic matter content was reported in organic system at 50% heading stage compared to the same stage in other systems. Available soil nitrogen was higher in conventional system at initial stage compared to organic system. The available soil phosphorus showed an increasing trend in organic system from initial to harvesting stage. Moreover, soil available phosphorus was significantly higher ( $p < 0.05$ ) in organic system compared to other systems at 50% heading and harvesting stages. A decreasing trend of exchangeable potassium was also observed with time in all three systems probably due to uptake by plants and leaching. It can be concluded that nitrogen is the most limiting nutrient for the growth and development of rice plant in organic system. Hence, incorporating nitrogen rich organic inputs may be a viable option to enhance productivity of organic input system that requires further investigations.

**Keywords:** Input management systems, Organic farming, Soil health