

## Chemical Properties of Rice Soils Managed under Organic or Inorganic Fertilizer Applied Conditions

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Over the past decade, paddy cultivation in Sri Lanka mostly rely upon chemical based conventional farming practices. Although it has substantially increased crop yields, they have adversely affected the environment and pose a threat to human and animal health. Moreover, physical and chemical properties of paddy soils managed under organic and conventional farming practices are not recently explored. Issues arising due to conventional agricultural practices and current government agriculture policy decisions have motivated organic paddy cultivation in Sri Lanka. Therefore, it is imperative to compare the nitrogen (N), phosphorus (P), potassium (K) and organic matter (OM) contents of paddy soils managed under organic and inorganic/conventional conditions. Hence, the objective of the current study was to compare the nutritional status of the inorganic or organic fertilizer applied paddy soils from three districts in Sri Lanka. Total of 44 soil samples (*i.e.*, 27 organically and 17 inorganically managed) were collected representing paddy lands in Anuradhapura (11), Polonnaruwa (8) and Gampaha (25) districts in Sri Lanka. Nitrogen, P, and K concentrations, and OM content of the soil samples were measured using Kjeldahal, Olsen, Flame photometric and Walkley and Black methods, respectively. Electrical conductivity (EC) and pH of the samples were measured using pH and conductivity meter. There was no significant ( $p > 0.05$ ) interaction between districts and the type of fertilizer applied to determine the level of N, P, K, OM, pH and EC in soils. However, the main effect of district was significant ( $p < 0.05$ ). Gampaha district recorded the significantly highest N, K and OM content than other districts ( $p < 0.05$ ). Soils collected from Polonnaruwa district recorded higher P concentration over the other two districts. There was no significant difference in soil N, P and K concentrations between the fields managed under organic and inorganic conditions ( $p > 0.05$ ) while the OM content was higher in organic fertilizer applied fields than the inorganic fertilizer applied soils. Soils collected from these districts were acidic in nature (pH; 3.6 to 5.9). The mean EC level of the soil was  $76 \mu\text{s cm}^{-1}$  and ranged between  $24\text{-}254 \mu\text{s cm}^{-1}$ . Understanding this spatial variability of soil fertility as affected by the type of nutrient management system adopted is important when making agronomic decisions for sustainable paddy cultivation in Sri Lanka.

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