

**SPATIAL VARIATION OF SOME SOIL CHARACTERISTICS OF NON  
CALCIC BROWN SOILS RELATED TO IRRIGATED AGRICULTURE: A  
CASE STUDY IN MAHAWELI SYSTEM- B**

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Land productivity of irrigated paddy fields in Mahaweli System-B is gradually being decreased. Some of these lands are facing the problems of water logging, salinity, acidity and iron toxicity. Paddy lands at the tail end of canals are prone to scarcity of water and farmers reuse drainage water for irrigation. The main objective of this study was to identify the effect of irrigation water quality on soil quality changes of command area in relation to Non Calcic Brown soils.

Changes of electrical conductivity (EC), pH, phosphorus (P) and potassium (K) concentration of water along the Left Bank Main Canal, LBL - 1 branch canal, D - 13 distributory canal, FC - 47, FC - 48, FC - 49 and FC - 50 field canals and drainage canals from Maduruoya reservoir and changes of above parameters and organic matter content in soils of each field canal from head end to tail end were evaluated in the laboratory during the 2005/2006 *maha* season. Water samples were collected after every two weeks from one foot depth from the water surface and soil samples were collected from 0 -15 cm and 16 - 30 cm depths with an interval of one month.

The results showed that there were considerable changes of EC, K and P concentrations of water from head end to tail end of every field canal. However there were no significant changes of water quality parameters from reservoir to distributory canal. The EC of the soil and organic matter content

were increased from head end to tail end of command areas. Poorly drain soils showed high organic matter content compared to well drain condition. The study indicated a positive relationship between EC of irrigation water and EC of soil from head end to tail end which expressed the increase of soil salinity with the usage of saline irrigation water.

*Key words:* Non Calcic Brown soils, electrical conductivity, salinity, pH, organic matter, field canal, drainage canal