



Level of Salinization in the Walawe River and Its Impacts on Associated Agricultural Lands

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ABSTRACT

Walawe river, which is located in Ambalantota, belonging to dry zone of Sri Lanka is highly exploited for domestic and irrigation purposes. Seawater intrusion in the river adversely affect the livelihood of bordering communities by hindering freshwater availability and salinization of agricultural lands. Present study determined the level of salinization in Walawe River and its impacts on associated agricultural lands (paddy) during the dry season where the salinization is profound. Data collection was carried out during the period from March to April, where water samples were retrieved from 50 locations along the river starting from the river mouth to 8 km upstream, and salinity levels were examined. Soil samples (n=44) of immediately adjacent agricultural lands were collected from random transects (n=10; length=200 m) which were placed perpendicular to the river, starting from the shoreline. Such that 4-5 soil samples were collected along each transect at 50 m interval. Physicochemical properties of soil samples; salinity, pH, organic matter content, moisture content, nitrate concentration and phosphate concentration were measured. Current status of agricultural productivity was evaluated employing a questionnaire survey using 30 farmers. Salinization through river water, seepage of saline water through river banks and direct spray were identified as major causes of salinization in adjacent agricultural lands. Salinity of the river water ranged from 0.17 to 5.95 ppt (maximum level recorded at the mouth) while soil salinity ranged from 0.10 to 0.44 ppt. Significant correlation was not observed between soil salinity and other physicochemical parameters (Spearman's rank; $P > 0.05$). Further, significant variations were also not observed between variables (Kruskal-Wallis; $P > 0.05$). Findings suggest that at present the impact of salinity has no significant effect on the physicochemical properties of soil and productivity of associated agricultural lands. However, continuous long-term studies are required to assess the long-term salinization effects.

Acknowledgement: FSPI-SEDRIC project provided the financial assistance for the research.

Keywords: Salinization, Agricultural lands, Saltwater intrusion, Walawe River