

Assessment of Soil Salinity through Remote Sensing Technique in the Coastal Region of Bangladesh

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Abstract : Soil salinity is a major problem for the coastal region of Bangladesh, which has been increasing for the last four decades. Determination of soil salinity is essential for proper land use planning for agricultural crop production. The aim of the research is to estimate and monitor the soil salinity in the study area. Remote sensing can be an effective tool for detecting soil salinity in data-scarce conditions. In the research, Landsat 8 is used, which required atmospheric and radiometric correction, and nine soil salinity indices are applied to develop a soil salinity map. Ground soil salinity data, i.e., EC value, is collected as a printed map which is then scanned and digitized to develop a point shapefile. Linear regression is made between satellite-based generated map and ground soil salinity data, i.e., EC value. The results show that maximum R^2 value is found for salinity index $SI_7 = G \cdot R/B$ representing 0.022. This minimal R^2 value refers that there is a negligible relationship between ground EC value and salinity index generated value. Hence, these indices are not appropriate to assess soil salinity though many studies used those soil salinity indices successfully. Therefore, further research is necessary to formulate a model for determining the soil salinity in the coastal of Bangladesh.

Keywords : soil salinity, EC, Landsat 8, salinity indices, linear regression, remote sensing

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