

Intrusion of Salinity in the Coastal Belt Area of Pekua Upazilla in Chattogram, Bangladesh and its impacts on Crop Production

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Abstract

The magnitude of salinity intrusion in coastal areas depends on sensible balance between fresh water flow and saltwater from the sea. Sea level rise due to global warming is now a major environmental issue. It is a matter of serious concern for countries with long coast line. As a consequence of sea level rise, coastal belts of Bangladesh will be affected. Bangladesh is one of the most vulnerable countries to be affected by a rise in sea level. Taking the above facts into consideration, this research has been undertaken particularly to find out the variation of concentration of salinity (Brix %) with distance from the shore line in ground water, measured from tube well water used by the coastal people. A section of the coastal belt from Pekua in the North-eastern part of Bangladesh was taken as the study area. Concentration of salinity in ground water and surface water (used for irrigation purpose) of Pekua upazila were studied. From this study it was found that intrusion of salinity is decreased with the increasing in distance from the coast. From this analysis, it was also observed that Toitong to Shilkhali coast has the lowest concentration of salt while the Rajakhali to Ujantia coastal areas has the highest concentration of salinity. The Salinity concentration at Ujantia is maximum among these stations. The concentration of Salinity in ground water was exceeded the standard recommended limit (0.05 Brix %, according to Department of Water and Environmental Regulation, Government of Western Australia) at Rajakhali within the distance of 10.8 KM from the coastal belt. It was found that concentration of salinity was almost same during high tide and ebb tide. It was also found that concentration of salinity in ground water is not uniform throughout the length of the coastal area. Grain size was not studied. The aim was to find an empirical identification of a line beyond which towards the shore water will not be drinkable or cannot be used for irrigation. If the depth of this narrow strip of land continues to increase over the years, people may have a tendency to migrate inward in search of drinking water abandoning their ancestral homesteads.

Keywords

Salinity, Intrusion, High tide, Ebb tide, Surface water, Ground water

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Biography

Dr. Tasnima Zannat is an Assistant Professor (Chemistry) of Department of Civil Engineering at the Faculty of Science Engineering, Southern University Bangladesh. She started his academic career in BCSIR, as a research fellow after receiving her M.Sc degree in Inorganic & Physical Chemistry from University of Chittagong . She received his Ph.D degree in Analytical & Environmental Chemistry from the department of Chemistry, University of Chittagong. His research activities include the area of Environmental Chemistry & Analytical Chemistry. She has published one book & 25 papers in several journal & conferences proceedings. She has supervised many undergraduate students in these areas.

Engr. Salma akter is an Assistant professor of Department of Civil Engineering at the Faculty of Science Engineering, Southern University Bangladesh. He earned his undergraduate degree in Civil Engineering from Chittagong University of Engineering and Technology (CUET). His research activities include the area of Environmental Engineering. He has supervised many under-graduate students in these areas. Moreover, he has published 5 journal papers & conference proceedings.

Utpal Das is a student of Department of Civil Engineering at the Faculty of Science Engineering, Southern University Bangladesh. He was the research assistant of this research project.