CHEMICAL COMPOSITION OF CANAL AND RIVER WATERS OF PUNJAB

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ABSTRACT

The analysis of surface waters indicated relatively low average EC (0.273±0.06 mS cm^{-1}) and SAR (0.51±0.46) values in river waters compared to that of canal waters having corresponding average EC and SAR values of 0.33±0.13 mS cm^{-1} and 0.91±0.66 (mmol L^{-1})$^{0.5}$. The RSC in all the cases was ≤ 0.0 $mmol_c$ L^{-1}. It reflects that by any standard of quality the surface waters are excellent. In contrast to low Na/Ca ratio, higher HCO_3/Ca ratio was the common feature of both canal and river waters. This reveals the dominance of Ca^{2+} to Na^{1+} among the cations. However, higher HCO_3/Ca ratio indicates that HCO_3 predominates the Ca^{2+} which may cause to precipitate Ca^{2+} in soil as $CaCO_3$ under higher evapotranspiration potential. This geochemical precipitation besides rendering the soil calcareous may enhance relative activity of Na^{1+}. The average concentration of K^{1+} in both the waters did not exceed 0.13 $mmol_c$ L^{-1}. The higher standard deviation from the mean values in respect of different water characteristics indicated a viable variation among the water samples collected from different rivers and canals. However, this may depend on the chemical composition of the soil strata or rock to which the water comes in contact. The canal water in some cases is found to contain higher salts than those of the rivers. It is recommended that salts added, therefore, need to be calculated on the basis of their quantum in canal water from where the fields actually receive water.