Groundwater Quality Mapping of Baragudha Block of Sirsa District, Haryana, India

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Abstract

Proper planning and management of groundwater requires spatial assessment and mapping of groundwater quality, therefore, the present study was planned to characterize the groundwater and delineate its spatial variations in Baragudha block of Sirsa district, Haryana. Seventy six samples were collected from existing tubewells and analyzed for different chemical composition, *i.e.*, Na^+, Ca^{2+}, Mg^{2+}, K^+, CO_3^{2-}, HCO_3^-, Cl^- and SO_4^{2-} and the parameters, *i.e.*, pH, EC, SAR and RSC. To study the spatial distribution of different parameters *viz.*, EC, pH and water quality according to AICRP criteria, the maps were prepared through GIS. The results were interpreted according to three different classification criteria, *i.e.*, AICRP, USSL and Piper, to check its suitability for irrigation purpose. According to AICRP criteria, out of seven categories, the maximum (27.6%) samples were found in marginally saline and the minimum (1.3%) in alkali, whereas, no sample was found in marginally alkali and high alkali categories. According to USSL, the groundwater quality of Baragudha block was observed under the categories of C1S1, C2S1, C3S1, C3S2, C4S2, C3S3, C4S3 and C4S4. According to Piper criteria, 11.8% samples were under good category (Ca^{2+}-Mg^{2+}-Cl^- and Ca^{2+}-Na^+-HCO_3^- type) and remaining 88.2% were under poor category (Na^+-Cl^- type). Based on mapping through GIS, the classification of area under different quality of groundwater was more significant than percent samples existed indifferent categories.

Key words: GIS, Groundwater quality, Marginal saline, Alkali, Classification criteria, SAR, RSC