

ASSESSMENT OF GROUNDWATER QUALITY FOR IRRIGATION USE IN GOOTY MANDAL, ANDHRA PRADESH, INDIA

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Abstract

The aim of this study was to evaluate the status of groundwater quality and its suitability for agriculture on the basis of calculated water quality indices. To achieve this objective, thirty six groundwater samples were collected during December, 2014 in Gooty Mandal, Anantapur District of Andhra Pradesh, India and physico chemical parameters like EC, pH, TDS and major cations and anions were determined. The results showed that groundwater in the study area is near-neutral to weakly alkaline in nature. The order of major dominance of cations in groundwater is $\text{Na}^+ > \text{Ca}^{2+} > \text{Mg}^{2+} > \text{K}^+$ and the anions is $\text{HCO}_3^- > \text{Cl}^- > \text{CO}_3^{2-} > \text{NO}_3^- > \text{SO}_4^{2-}$. Important constituents that influence the water quality for irrigation are estimated using established methods like Total Hardness (TH), Residual Sodium Carbonate (RSC), Sodium Adsorption Ratio (SAR), Sodium Percent (Na%), Kelley's Ratio (KR), Magnesium Ratio (MR) and Permeability Index (PI). Most of the samples have exceeded the critical levels of irrigation water indices. Based on this study it is indicated that the study area requires careful management while raising most of the crops.

Keywords: Groundwater, Irrigation water quality, Semiarid, India.