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## Assessment of Irrigation Water Quality of Ghatanji Area, Yavatmal District, Maharashtra

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### Abstract

In recent decades, water quality is an important issue due to increase in its need for various purposes like drinking, industrial and agricultural. In India, drinking water quality is also reached to its alarming level in various areas of the country. So urgent need and attention is necessary to overcome this problem. Irrigation suitability of underground water from deeper aquifers has been carried out in Ghatanji area (PGA-8, PGW-4 and PGW-5 watershed) of Yavatmal district, Maharashtra. The study area is covered by basaltic lava flows of Deccan Volcanic Province with black soil (vertisols) cover. Total 35 groundwater samples were collected during post-monsoon period and analysed for various parameters such as pH, EC, TDS, TH, TA,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{HCO}_3^-$ ,  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$  and  $\text{NO}_3^-$  by standard methods. Piper diagram is used for the graphical representation of groundwater analysis. Sodium percentage (Na%), Sodium adsorption ratio (SAR), Residual sodium carbonate (RSC), Permeability Index (PI) and USSL diagram are used for evaluating the suitability of water for irrigation purpose. The results of the analysis reveal occurrence of major ions in the order  $\text{Ca}^{2+} > \text{Mg}^{2+} > \text{Na}^+ > \text{K}^+ = \text{HCO}_3^- > \text{Cl}^- > \text{SO}_4^{2-} > \text{NO}_3^-$ . The study area comprises mostly of Ca-HCO<sub>3</sub> type water, where alkaline earth exceeds alkalis and weak acids exceed strong acids. Plot of samples on USSL diagram shows its high salinity and low sodium nature. In general, groundwater is suitable for irrigation. Salt tolerant cropping and proper groundwater quality management strategies are required for water conservation.

**Keywords:** Suitability, Groundwater, Irrigation purpose, Ghatanji area, Maharashtra.