

## ASSESSMENT OF GROUNDWATER FOR IRRIGATION SUITABILITY AND DRIP EMITTER CLOGGING HAZARD IN GUNDALA MANDAL, TELANGANA, INDIA

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### Abstract

Groundwater samples from 11bore well (BW) and three open wells (OWs) from a cluster of four villages in Gundala mandal, Telangana State were analyzed for 17 physical and chemical parameters. Irrigation suitability of water samples and clogging hazard to drip emitters was assessed using the methodology suggested by the guidelines IS 11624 and IS 14791 of Bureau of Indian Standards (BIS, 1986, 2000) respectively. The water quality analysis has revealed that the Total Dissolved Solids (TDS) and Total Hardness (TH) values of the sampled groundwater varied widely in the range of 403-1395 mgL<sup>-1</sup> and 116 to 587 mgL<sup>-1</sup> respectively. The sodium hazard in irrigation water is due to dominant residual sodium carbonates (RSC) in all the water samples. The total suspended solids (TSS) values in 85.7% samples (12 out of 14 samples) are assigned a 'Normal' rating, indicating negligible risk of physical clogging in the drip emitters. However, more than 70% of samples contain higher values of Iron (Fe), TDS and TH, indicating a higher risk of chemical precipitation and clogging of drip emitters. It is recommended to use groundwater from the study area to grow semi-tolerant and tolerant crops, such as, paddy, cotton, maize and grasses. Developing a composite index to assess drip emitter clogging risk is desirable for easier comparison of water samples.

*Keywords:* Groundwater quality, Irrigation suitability, Drip emitter, Clogging hazard