Suitability of Ground Water for Irrigation Purpose in Omalur Taluk, Salem, Tamil Nadu, India

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Abstract: In India, agriculture plays a vital role in socio-economic and in worldwide, India secured seventh place to export agriculture products. In a study area, agriculture based on sources of groundwater for irrigation purpose, therefore 50 groundwater samples were collected from study area to evaluate the suitability for irrigation purpose. The groundwater samples were analyzed for 12 parameters are Electrical conductivity, total dissolved solids, pH, Major cation like calcium, Sodium Magnesium, Potassium, fluoride and major anion like Sulphate, Chloride, Carbonate, Bicarbonate. The most effective irrigation indices are Sodium Absorption Ratio, Permeability Index, Residual Sodium Carbonate, Magnesium hazards, Kelly ratio and USSL, Wilcox diagram to evaluate the quality of groundwater for irrigation purpose. In the study area, Piper Diagram shows that Ca-Mg-Cl, Ca-Cl type of water and naturally in alkaline state. Based on indices value majority of groundwater samples were suitable for irrigation and some sample locations are unfit for irrigation use due to anthropogenic activities like excess amount of fertilizers and pesticides used for crop yield. Gibbs plot reveals that, rock and evaporation domination affect the quality of groundwater. Based on Wilcox and USSL diagram Classification of groundwater shows that 98% of the samples were fit for irrigation purpose.

Keywords: Groundwater quality, Irrigation indices, Wilcox diagram, USSL diagram, Sodium absorption ratio