IRRIGATION QUALITY OF SHALLOW GROUND WATER IN NULLUKULAM VILLAGE, VAVUNIYA

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Agro-wells are highly potential and widely used for supplementary irrigation in the dry zone. This study was conducted to evaluate irrigation quality of shallow ground water in 71 agro-wells in Palamaikkul village, Vavuniya District. Electrical conductivity (EC) and pH were measured as the two main quality parameters in all wells. Quality parameters of Total Dissolved Solids (TDS), Calcium (Ca^{+2}), Magnesium (Mg^{+2}) and Sodium (Na^{+}) were analyzed in especially selected 15 agro-wells. Total depth and water depth of agro-wells also were measured. Water depth of wells at the end of the study period showed ground water potentials of 27% and 35% as very high and high while 33% and 3% showed moderate and low potential respectively, and were consistent with FAO irrigation water quality standards. Average pH values of water ranged from 6.5 to 9.56 and 75% of wells were suitable for irrigation while average EC values ranged from 0.4 - 6.0 dS m^{-1} and 16%, 76% and 8%, of the wells had severe restrictions, slight to moderate restriction and no restriction for irrigation, respectively. Based on TDS values 93% of wells were slight to moderately restricted for irrigation. Well water analyzed for salinity indicated 11.3%, 36.6% and 52.1% as medium (Class 2), high (Class 3) and very high salinity hazard (Class 4), respectively. The sodium adsorption ratio (SAR) values indicated low sodium hazard (Class S1) in all wells. Combination of SAR and EC values showed 46.6%, 26.7% and 26.7% of wells with high salinity-low sodium, very high salinity-low sodium and medium salinity-low sodium in water, respectively. Irrigation water quality indicated that many crops could be cultivated with the available quality of shallow ground water. However, majority of the wells needs precautionary measures to sustain the soil quality.

Key words: Agro-well, Groundwater, Irrigation water quality, Salinity hazard, Sodium hazard