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Tank cascade systems in the dry zone are considered as one of the traditional land water management systems and have evolved in order to manage the surface water resources efficiently. *Ulagalla* cascade is a prominent cascade located in Anuradhapura district with nineteen small tanks and highly utilizing for agricultural purposes. Therefore, a systematic monitoring of surface water quality is vital. This study was conducted to assess the variation of surface water quality in *Ulagalla* cascade and its suitability for irrigation. Water samples were collected once a month during October, 2015 to January, 2016 from each tank for chemical analysis. Electrical conductivity (EC), pH, Total Dissolved Solids (TDS), dissolved oxygen (DO), turbidity, concentrations of sodium, potassium, magnesium and calcium, alkalinity, nitrate nitrogen, ammonium nitrogen and available phosphorous ($\text{PO}_4^{3-}\text{-P}$) were tested. Salinity, sodium adsorption ratio (SAR) and sodium percentage (Na %) were calculated using the measured parameters. Water spread area was demarcated using Google earth pro software. Out of nineteen tanks 63, 21, 11 and 5% of the tanks had a water spread area of 0-10 ha, 10-40 ha, 40-70 ha and 70-100 ha respectively. Forty seven percent (47%) of the tanks showed high amounts of $\text{PO}_4^{3-}\text{-P}$ over the EPA (Environmental Protection Agency) suggested value (0.08 ppm) for eutrophication. Based on the Na%, 11 and 89% of the tanks water were categorized as excellent and good for irrigation respectively. As per the US salinity hazard diagram 21% of the tanks had low salinity low sodium (C1S1) water while, 79% of the tanks had medium salinity low sodium (C2S1) water. It was observed that concentrations of almost all the chemical parameters were concentrated towards the downstream of the cascade along the main water way. Surface water in *Ulagalla* cascade can be used to irrigate most crops provided with considerable amount of leaching.

Keywords: Eutrophication, Irrigation, Salinity hazard, *Ulagalla* cascade, Water quality