

**IMPACT OF THE SURROUNDING LAND USES ON WATER QUALITY OF TISSA WEWA, BASAWAKKULAMA WEWA AND NUWARA WEWA IN ANURADHAPURA**

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*Basawakkulama wewa, Nuwara wewa and Tissa wewa* are major drinking and irrigation water supplying reservoirs in *Anuradhapura*, Sri Lanka. Frequent assessment of water quality is important for the sustainable management of drinking and irrigation water resources. This study was conducted to evaluate the impact of the surrounding land uses on temporal variation of irrigation water quality in *Basawakkulama wewa, Nuwara wewa* and *Tissa wewa* in *Anuradhapura*. Land use map of each reservoir was prepared using ArcGIS software and satellite images were obtained from Google Earth. Water samples were collected by representing the major land uses (virgin, disturbed and irrigation outlet) surrounding each reservoir. The coordinates of the sample locations were recorded using GPS receiver and sampling (3 replicates from each sample location at one-time point) was repeated in one-month interval for three months. Each water sample was analysed for pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Nitrate-Nitrogen ( $\text{NO}_3^-$ -N), Ammonium-Nitrogen ( $\text{NH}_4^+$ -N), Dissolved Reactive Phosphorus (DRP), Alkalinity,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ , Sodium Absorption Ratio (SAR) and Sodium Percentage (SP). Data analysis was performed using repeated measures ANOVA followed by Tukey's post hoc mean separation procedure. All the measured water quality parameter values were below the maximum permissible levels given by FAO irrigation guidelines indicating high suitability for irrigation. Significant ( $p < 0.05$ ) temporal variations of measured water quality parameter were observed in three sample locations of each reservoir over the investigated time period (from December 2019 to February 2020). In most cases, the measured water quality parameters were significantly ( $p < 0.05$ ) different among three land uses of each reservoir at each time point. The results highlight the high impact of the time and land uses on water quality in each reservoir. However, further studies are required to conclude the influences of land uses on water quality of the selected reservoirs.

**Keywords:** Irrigation water quality, Land uses, Water quality guidelines, Water quality parameters