ASSESSMENT OF WATER QUALITY IN NATURAL WETLAND: A CASE STUDY IN *KOTAGALA*, SRI LANKA

W.A.I.M. Weerasekara[1], J.M.A.U. Jayasekara[2], J.P.H.U. Jayaneththi[1], D.M.S.H. Dissanayaka[1] and M.I.M. Mowjood[2]

[1]Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.
[2]Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka.

A complete periodic assessment of water quality is essential in making precautions to control the deterioration of wetland ecosystems. This study aimed to assess the temporal and spatial variability of the water quality of *Kotagala* wetland ecosystem. Water samples were collected from nine locations from November 2021 to August 2022 including two seasons; wet (April to November) and dry (December to March). Water quality parameters such as pH, EC, salinity, TSS, TDS, PO_4^{3-}-P, NO_3^--N, and NH_4^+-N were determined using standard methods. Results were compared with standard water quality guidelines given by World Health Organization. According to the results EC (102.12±97.09), salinity (0.10±0.04), TDS (53.32±47.27), NO_3^--N (1.46±0.85), and NH_4^+-N (0.14±0.09) of all tested samples were below the permissible levels for safe recreational water environments except pH (6.29±0.05) and TSS (810.90±8.97). All analysed water quality parameters showed significant differences ($p<0.05$) between two seasons during the sampling period. The average pollutant removal efficiencies (RE) of EC, salinity, TSS, TDS, NO_3^-, and PO_4^{3-} from the wetland outlet in the dry season were 63.4%, 31.8%, 1.2%, 63.8%, 53.6%, and 19.1% respectively whereas they were 60.5%, 30.6%, 0.7%, 58.6%, 42.6%, and 7.4% respectively in wet season. It can be concluded that the pollutant REs in wet season are comparatively lower than dry season which corresponds to the dilution effect due to variations in rainfall. However, continuous monitoring of water quality assessment is essential to develop a strategic plan for minimising the deterioration of *Kotagala* wetland ecosystem.

Keywords: *Kotagala* wetland, Pollutant removal efficiencies, Spatial and temporal variation, Water quality parameters