

QUALITY ANALYSIS OF THE KADDUKKARAI GIANT TANK WATER FOR DOMESTIC USE

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The water resources are being contaminated due to the improper disposal of industrial waste, runoff from the agricultural farm land and the municipal solid wastes. The present study mainly focuses on the water quality study of one of the largest underutilized pond of Kaddukarai pond (KP) in Mannar, Sri Lanka. The objective of this study is to determine the water quality of the KP by evaluating the physico-chemical parameters and the coliform count. Water samples were collected from two different spots of the KP (S1 and S2), a well located closed to the KP (S3), and the drinking water used by people at Mannar (S4). Physico-chemical parameters such as electric conductivity (EC), total dissolved solid, dissolved oxygen (DO), oxidation reduction potential (ORP) as well as concentrations of carbonate, bicarbonate and chlorine were measured following the standard methods. Standard coliform test was performed to determine the existence of fecal coliforms. The EC of the samples S1, S2, and S3 vary within a narrow range between 397 and 479 $\mu\text{S}/\text{cm}$, whereas the sample S4 shows higher EC of 1116 $\mu\text{S}/\text{cm}$. The DO levels of the samples S1 and S2 are 3.41 and 2.56 mg/L respectively and these values are lower than the acceptable limit. However, the samples S3 and S4 show acceptable DO values of 7.56 and 6.90 mg/L. Except sample S2, which shows slightly higher content of NO_3^- of 21.2 mg/L all the other analyzed water samples show lower NO_3^- levels than the acceptable range. The ORP of all the samples vary between 265 and 275 mV. Samples S1 and S2 are contaminated with coliform bacteria whereas S3 and S4 do not indicate presence of coliforms. Although the coliform count was found to be higher than the accepted range the results indicated that the physico-chemical parameters of this pond water fall within the desirable range for drinking water purposes. Therefore, if the biological quality is improved, water in the KP could be used for domestic and sustainable agricultural purposes.

Keywords: Coliform, Kaddukarai pond, physico-chemical parameters, water quality

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