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Relationship of Physico-chemical Properties of Water with Phytoplankton Abundance in Peraru Village Tank in Vavuniya District

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Abstract

The village tank cascade system, predominantly found in the Vavuniya district, satisfies the water demand for agriculture and domestic needs considerably. Among them, the Peraru village tank lies in a cascade line in the Vavuniya district. The water resource of Peraru village reservoir is treated by the National Water Supply and Drainage Board, Vavuniya, and distributed to the local public. As Peraru a drinking water fountain, the study of phytoplankton and water quality is important. The study's objective was to identify the phytoplankton and estimate the abundance of phytoplankton in the Peraru village tank along with the Physico-chemical characteristics of water. A phytoplankton sampling was done by using plankton net at the selected three locations of Peraru village reservoir weekly from March to April 2021. Totally, 24 samples were analyzed during the study period. Simultaneously, water samples were also collected at each site to determine dissolved oxygen, electrical conductivity, pH, turbidity, temperature, nitrate, and phosphate concentrations. Identification of phytoplankton was made based on standard guides, and the abundances of phytoplankton were estimated using Sedgewick- rafter counting cells. The results of Physico-chemical parameters were statistically tested using ANOVA and found correlations between the abundance of phytoplankton and Physico-chemical parameters. Phylum Bacillariophyta and genus *Aulacoseira* were the dominant phylum and genus in the Peraru village tank. Dissolved Oxygen (DO), Electrical Conductivity (EC), nitrate, and phosphate positively influenced the abundance of phytoplankton in the Peraru village tank, while turbidity negatively affected the same.

Keywords: Phytoplankton abundance, Correlation, Physico-chemical parameters

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