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Monthly investigation of some physico-chemical parameters in Saikheda Dam Dist. Yavatmal, (M.S.), India

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Abstract

This study focuses on assessing the water quality of Sakheda dam in Yavatmal District, Maharashtra, India, through a monthly investigation of key physico-chemical parameters. The parameters examined include temperature, total dissolved solids (TDS), conductivity, turbidity, pH and alkalinity. The investigation aims to understand the monthly variations in these physicochemical parameters and their impact on the water quality of the Saikheda dam. The results will provide insights into the dam's water quality status, which is crucial for aquatic life, human consumption, irrigation, and other purposes.

Keywords: *Sakheda dam, Monthly, Water quality, Human consumption* and *Irrigation*

Introduction

Water quality assessment is crucial for maintaining the health and sustainability of aquatic ecosystems, particularly in regions like dams where water is stored for various purposes. The quality of water in dams is greatly influenced by physicochemical factors and their assessment is crucial for appreciative the dynamics of aquatic ecosystems. According to researchers like Wetzel (2001), physico-chemical parameters such as pH, temperature, total dissolved solids, total hardness, alkalinity, chloride, nitrate, phosphate, and turbidity are critical in determining the water quality of lakes and reservoirs. Similarly, studies by Bobdey *et al.*, (2014) on water quality assessment in rivers and lakes have highlighted the importance of monitoring physico-chemical parameters to ensure the health and sustainability of aquatic ecosystems Ingale *et al.*, (2018).

The assessment of physico-chemical parameters in dam water is essential for understanding the effect of anthropogenic activities on quality of dam water and aquatic ecosystem health. As noted by Carpenter et al. (1998), changes in physico-chemical parameters can have significant effects on aquatic ecosystems, including shifts in species composition and alterations in nutrient cycling. This investigation goal to investigate the physico-chemical

parameters of dam water, with a focus on understanding the dynamics of water quality and aquatic ecosystem health.

Materials and Methods

The gorgeous surroundings of the Saikheda dam make it a popular picnic destination. The wetland region is located in Maharashtra's Lingati Village, Taluka Kelapur, in the Yavatmal district, about 20 kilometers southeast of PandharkawadaYavatmal Road. This dam was built on the Khuni River in 1972. The source of this Khuni River is close to Mohoda in the Yavatmal district's Ghatanji taluka, and Pandharkawada is the town that is closest to the dam. The dam is an Earth fill structure. The purpose of the dam is irrigation. The dam's length is 1740 meters (5708. 66 feet), and its height above the lowest foundation is 23. 77 meters (77. 98 feet).The study was conducted for a year, from July 2021 to June 2022. Using a portable water analysis kit and techniques recommended by the APHA (1985) and NEERI (1986), the analysis will be carried out at the site to determine some physicochemical parameters such as temperature, conductivity, total dissolved solids, turbidity, pH, and alkalinity.

Results and Discussion

The monthly investigation of physico-chemical parameters in Saikheda dam, Yavatmal District, Maharashtra, India, revealed significant variations in water quality parameters. The results showed (figure no. 1 to 6) that parameters like temperature exhibited seasonal fluctuations, while parameters like conductivity, total dissolved solids, pH and alkalinity showed variations due to anthropogenic activities Khiradkar *et al.,* (2017) Labhansarad dam in Warora Taluka of Chandrapur District, Maharashtra State, India.

The temperature variations observed in the study were influenced by seasonal changes, with higher temperatures during summer months and lower temperatures during winter months. The pH and alkalinity values in the dam water ranged slightly alkaline, which is consistent with previous studies on similar water bodies (Gharpure *et al.,* 2017). The results of this investigation highlight the significance of regular monitoring of physico-chemical parameters in Saikheda dam to ensure the health and sustainability of the aquatic ecosystem. The results also suggest that the value of conductivity and total dissolved solid uplift during the monsoon month might be due to anthropogenic activities, such as agricultural runoff and sewage input, may be impacting the water quality of the dam. Present investigation analogous with the study of Inagle *et al.,* (2018) from Bhiwapur lake. Also findings corroborated with Bidwai *et al.,* (2019) from Jogada pond.

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Conclusion

The investigation of this study highlight the importance of regular monitoring of physico-chemical parameters in Saikheda dam to ensure the health and sustainability of the aquatic ecosystem. The results also suggest that anthropogenic activities, such as agricultural runoff and sewage input, may be impacting the water quality of the dam.

Fig. no. 1: Bars shows Temperature monthly values of stations S1, S2, S3 and S4 in Saikheda dam water district Yavatmal during July 2021- June 2022.

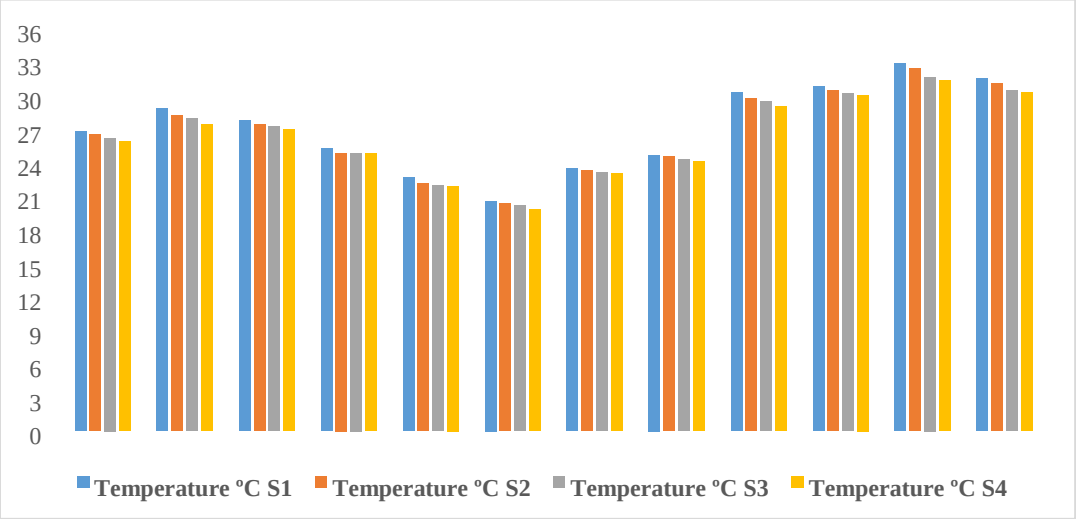

Fig. no. 2: Bars shows Total dissolved solids monthly values of stations S1, S2, S3 and S4 in Saikheda dam water district Yavatmal during July 2021 June 2022.

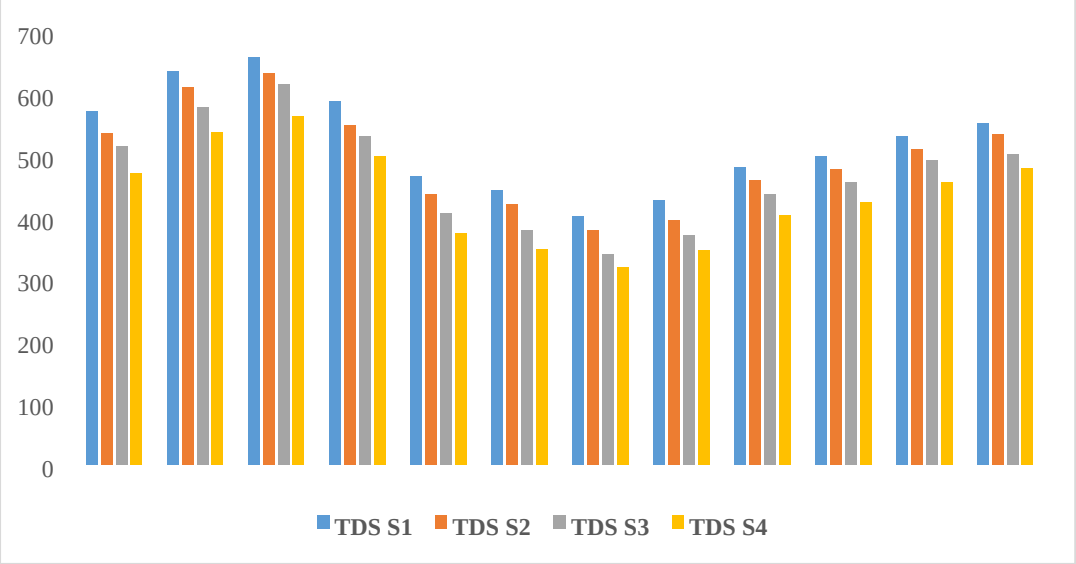

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Fig. no. 3: Bars shows Conductivity monthly values of stations S1, S2, S3 and S4 in Saikheda dam water district Yavatmal during July 2021- June 2022.

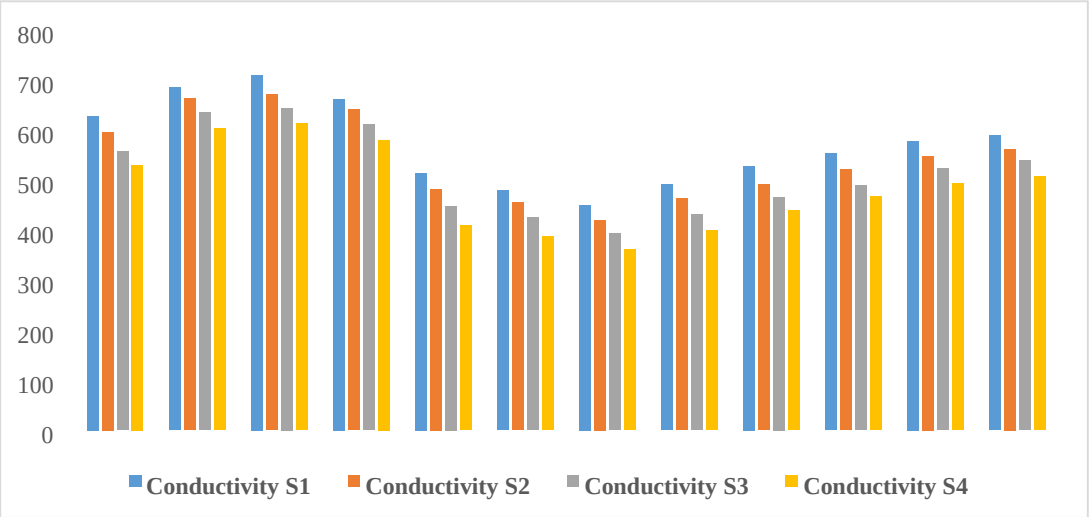

Fig. no. 4: Bars shows Turbidity monthly values of stations S1, S2, S3 and S4 in Saikheda dam water district Yavatmal during July 2021- June 2022.

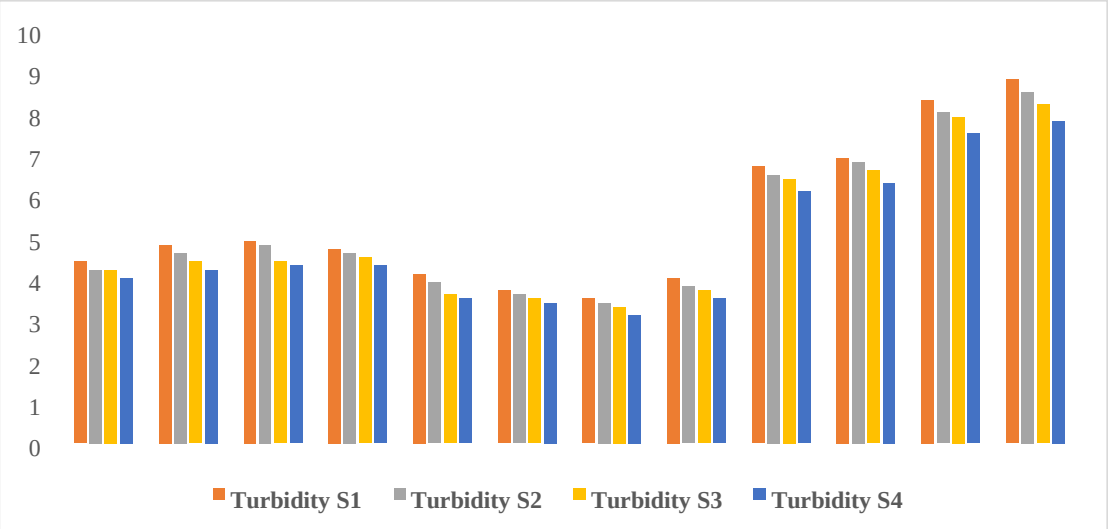

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Fig. no. 5: Bars shows pH monthly values of stations S1, S2, S3 and S4 in Saikheda dam water district Yavatmal during July 2021- June 2022.

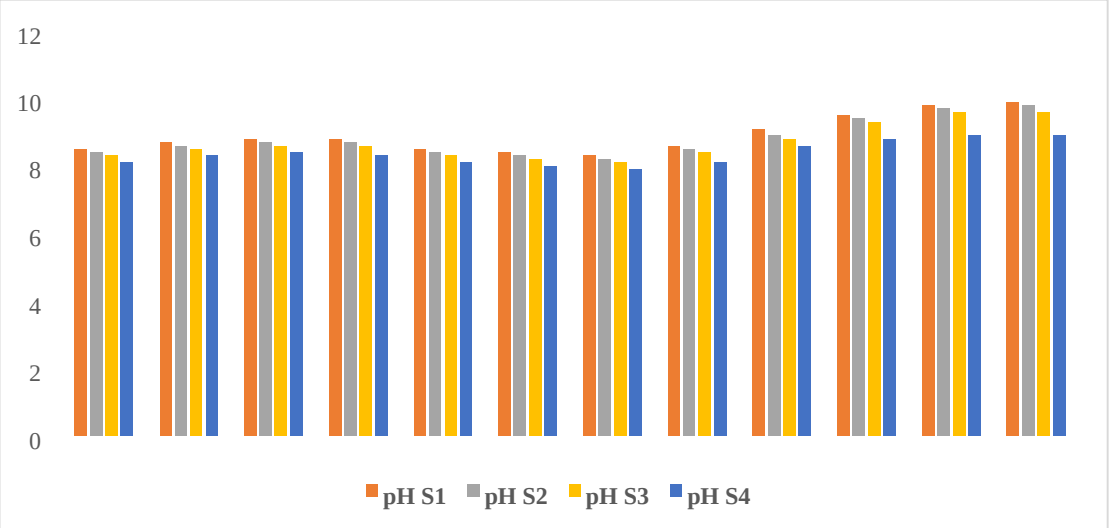
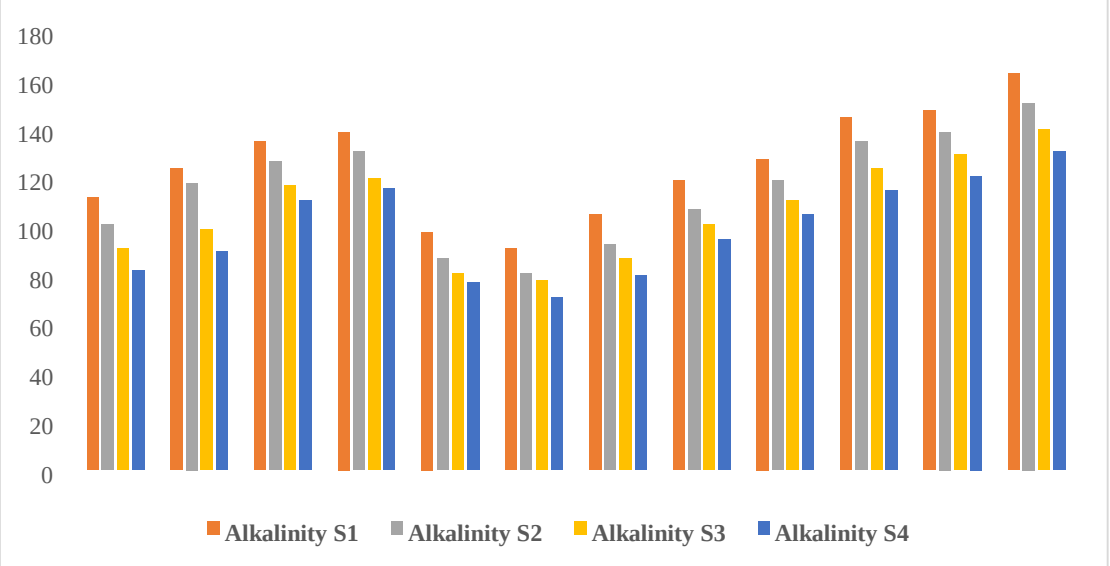


Fig. no. 6: Bars shows Alkalinity monthly values of statio in ns S1, S2, S3 and S4 in Saikheda dam water district Yavatmal during July 2021- June 2022.



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