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Nutrients Concentration in the Sediments of Seven Major Lakes of Pokhara Valley Kaski Nepal

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Sediment is an active zone for accumulation and cycling of nutrients that supplies vital nutrients and minerals to promote lake productivity, ensuring the overall health and balance of lake ecosystem. The aim of this study was to examine the richness of nutrients in the sediment of Phewa, Begnas, Rupa, Khaste, Neureni, Dipang, and Gunde lakes of Pokhara valley. Sediment samples were taken from inlet, middle and outlet of lakes in the month of November 2023 after monsoon was over. The collected samples were air-dried at room temperature, and then ground to powder form and sieved. Prepared samples were then analyzed using standard soil analysis methods described by Munsiri et al. (1995). The parameters were analyzed includes: pH, organic matter, nitrogen, phosphorus and potassium.

The results showed that pH level of all lakes was found to vary from slightly acidic to acidic bottom (5.1-6.7 pH). The all lakes have organically rich sediments, ranging from 2-7%. The mean nitrogen content in the sediment of Begnas was within normal range 0.1%- 0.2%, however, rest of lakes were over the normal range, and it was found significantly different ($p < 0.05$) between Begnas Lake and rest of the lakes. All lakes were found to have high phosphorus compared to normal range (0.001-0.003%) and potassium concentrations were found low in all lakes compared to normal range 250–400 kg/ha. Anthropogenic and agricultural activities, landslides and siltation, urbanization and development activities in the catchments area of Pokhara valley lakes are major source of external nutrient loading into bottom of lakes. Excessive nutrient input, particularly of nitrogen and phosphorus, potentially leads to eutrophication and so affects the water quality of lakes. Both internal and external phosphorus loading poses a high risk of deteriorating lake water quality. Hence, proper control of external nutrient loading will improve the lake ecosystem for both fishery and tourism.



Figure1. Nitrogen level in the sediments of lakes of Pokhara valley

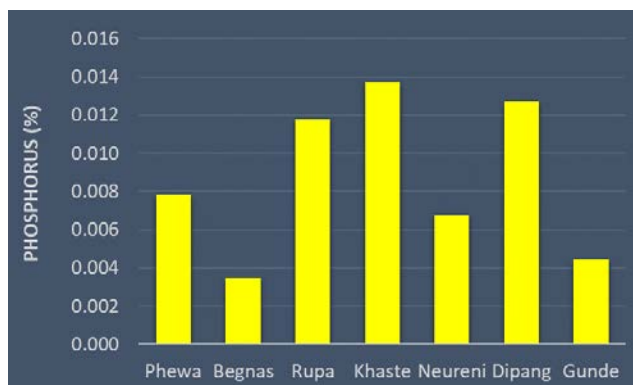


Figure 2. Phosphorus level in the sediments of lakes of Pokhara valley