

**Seasonal variation in Physico-chemical Characterisation of Bhindawas Wetland,
Jhajjar, Haryana (India)**

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Running Title: Variation in water quality, TSI and its suitability

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Abstract: Bhindawas wetland is the largest wetland in state of Haryana with an area of around 1064 acres. At present the wetland bird sanctuary is facing the danger from the water hyacinth which impair the quality of the water making it unfit for human consumption due to water borne diseases, increase eutrophication, silting and gradually drying up of the water bodies. Present study was carried out to understand the variation in the water quality along with Trophic State Index, correlation between different water parameters and its suitability for domestic and agriculture use in different months i.e July (pre-monsoon), September (monsoon) and November, January (post-monsoon). Nine samples were collected from the study area, seven from wetland area and two from drain no.8 adjacent to wetland for four times at the interval of two month. Range of pH, temperature, conductivity, total dissolved solids, total suspended solids and Turbidity varied from 6.5-8.26, 14°C-35.4°C, 250-1963 $\mu\text{mho/cm}$, 164-1282 mg/l, 7.8-86.2mg/l and 8-62 NTU respectively. Cationic concentration of sodium, potassium, calcium and magnesium varied from 18-102, 0-45, 14-95 and 4-46 mg/l respectively. Whereas, anionic concentration of bicarbonate, chloride and sulphate varied from 48-368, 8-198 and 27-187 mg/l respectively. Variation in dissolved oxygen was from 2.8 to 8.6 mg/l. Variation in total phosphorous, chlorophyll-a, ammonia, nitrate, total alkalinity, acidity and total hardness were in the range of from 0-0.97, 0.085-0.320, 0-0.69, 0-2.04, 40-338, 2-9 and 54-322 mg/l respectively. Heavy metal like copper, nickel, lead and total chromium were found Below Detectable Limit (BDL). The physio-chemical parameter were found below the higher permissible limit given by WHO and BIS except turbidity Wetland water was suitable for irrigation based on the SAR, but having higher salinity (28% samples shows C3S1 class). Piper diagram shows that study area is dominated by Alkaline earth (Ca+Mg) and strong acid (SO₄+Cl). . Calculation based on Carlson Trophic State Index revealed that wetland come under the hypereutrophic category.

Keywords: Water quality. Trophic State Index. Salinity. Bhindawas wetland. Salinity