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Assessment of water quality of Baya River, Samastipur, Bihar, India

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Abstract- Baya River is one of the most important river in Samastipur District of Bihar. This river enters through Mohiuddin Nagar in Samastipur district and finally meets into the Ganga at Teghra in Begusarai district of Bihar. During investigation physico-chemical characteristics of water of Baya River at three ghats - Barhauna Ghat, Dhobia Ghat and Teghra Ghat have been studied. Study revealed that quality of water changed due to seasonal variation. Physico-chemical characteristics of water are not static through whole year. The quality of water depends on Temperature, PH, DO, BOD, COD, TDS etc. All these parameters are variable according to seasonal variation. Variable affects the biological components.

Keywords- Baya River, Samastipur, Bihar, Seasonal Variation, Biotic Components.

INTRODUCTION

Water is one of the most important necessities of living organisms. Availability of safe potable water is still a problem of majority of people, due to steady increase in population, urbanization, industrialization, deforestation etc. Water resources have been adversely affected both qualitatively and quantitatively leading to as one of the major problems in developing country like India.

Baya River one of the rivers of Bihar of Samastipur district running between Mohiuddin Nagar to Teghra. It is prominent for water supply, drinking, irrigation, bathing, cattle, washing clothes & utensils etc. for the people of that area.

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MATERIALS & METHODS

Morphometry of Baya River from origin to mixing zone of Ganga River and formation of Bagulia wet land/chor study area is divided into three sampling stations i.e. Barhauna ghat, Dhobia ghat and Teghra ghat. These sampling sites are westward to eastward respectively. The sampling period is also divided into three seasons- summer (March to June), Rainy (July to October) and winter (November to February).

The selected physico-chemical parameters applied for assessment of water quality i.e. temperature, turbidity, electrical conductivity, transparency, Total Dissolved Solids (TDS), pH, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen demand (COD), free CO₂, total hardness, total alkalinity and chloride (Cl⁻). Selected physico-chemical parameters are analyzed with the help of standard analytical methods.¹

Temperature is measured by thermometer, pH by pH meter, total hardness by EDTA titration, TDS by TDS meter, transparency by Secchi disk and some other parameters are analyzed by different chemical procedures.

RESULTS AND DISCUSSION

Monthly observations are converted into seasonal by averaged i.e. observation in March, April, May and June are averaged and converted into ‘Summer’.

Table -1 Physico-chemical characteristics of Water of Baya River Samastipur Bihar (March 2016- February 2017).

Sl. No.	Physico- Chemical Parameters	Summer			Rainy			Winter		
		S ₁	S ₂	S ₃	S ₁	S ₂	S ₃	S ₁	S ₂	S ₃
1	Water Temp. (°C)	32.1	32.3	32.9	29.1	29.3	29.7	19.6	19.4	19.9
2	Turbidity (NTU)	8.84	9.10	9.5	9.65	9.60	10.50	8.10	8.50	8.00
3	Electrical Conductivity (µ/s)	411.00	403.00	462.00	503.00	497.00	518.00	507.00	519.00	523.00
4	Transparency (cm)	18.5	13.6	17.8	19.00	15.2	13.5	26.00	19.00	18.50
5	Total Dissolved Solids (TDS)/ mg/L	275.7	265.8	281.9	213.4	217.6	210.5	305.2	301.6	351.5
6	pH	6.87	6.60	6.50	7.50	8.10	7.70	7.60	8.0	8.2
7	DO (mg/L)	5.50	5.68	5.20	6.35	6.65	6.10	7.40	7.70	7.2
8	BOD (mg/L)	8.50	7.80	9.0	8.20	8.50	8.00	7.80	6.80	8.2
9	COD (mg/L)	18.40	20.30	18.1	15.7	19.9	16.2	13.5	15.3	14.8
10	Free CO ₂ (mg/L)	8.70	8.35	8.15	7.50	6.90	7.20	6.50	7.10	6.75
11	Total Hardneu (mg/L)	172.00	163.00	161.00	180.00	176.00	145.00	190.00	175.00	165.00
12	Total alkalinity (mg/L)	124.00	121.00	126.00	132.00	13.00	134.00	142.00	131.00	136.00
13	Chloride (Cl ⁻)	19.50	18.20	17.80	13.40	12.60	13.50	7.2	6.85	6.10

CONCLUSION

The study of Physico-chemical parameters of water of Baya River revealed that important parameters are favourable range of aqua-culture particularly for fish as well as also for phytoplanktons and other aquatic plants. Baya River may give high productivity of biomass. It may change life of peripheral people, if they form better association with this natural water body.

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