

STUDY OF WATER QUALITY OF KHOKSA POKHER, DALSINGSARAI, DISTRICT SAMASTIPUR (BIHAR) INDIARANI BIBHA KUMARI¹, *ARUN KUMAR AND B. BHATTA²Panda, Chakbahauddin, Dalsingsarai,
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Received : 20.2.16; **Accepted** : 28.3.16**ABSTRACT**

The present study was carried out the physicochemical conditions of water of Khoksa, Pokher Dalsingsarai, District Samastipur (Bihar). The quality was assessed by examining various physicochemical parameters namely pH, dissolved oxygen, turbidity, free CO₂ and phosphate. From the investigation, it was found that some of the parameters pH, dissolved oxygen, phosphate were within permissible limits but there is a need to take some concrete steps by farmers to use chemical fertilizers and pesticides in limit to save water fauna and better health of people residing in this area.

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KEY WORDS : Limnology, Physicochemical characteristics, Water quality

Introduction

Water is universal solvent and a great gift of nature. It is major constituent of all living organisms⁴. The production of fish depends on the quality of water⁵. The present investigation was designed to study the limnology of water of Khoksa pokher of Dalsingsarai, Dist. Samastipur, Bihar because no such work was done previously.

Materials and Methods

The water body (Khoksa Pokher) is located in village Khoksa, Dist. Samastipur (Bihar) on the latitude 25°39' North and longitude 82°52' East. It is connected with Naua chour in North and Khilhabad chour in West. There is canal in the West and another in East through which water enters during rainy season the pond receives the wastes from agriculture fields, washing of clothes and animals. Water samples were collected at four sides during morning and day hours. Sampling was done at monthly intervals and at fixed dates. Water

samples were collected aseptically in sterilized jars temperature, pH, turbidity, dissolved oxygen (D.O.) , free CO₂, phosphate were estimated according to method suggested².

Observations

1. Physical Parameters

(A) Water temperature:

Temperature variation of Khoksa pokher ranged from 15.5⁰ C to 33.5⁰C. The lowest and the highest temperature were recorded in December (15.5⁰C) and June (33.5⁰C) respectively. It showed fluctuation in different months.

(B) Rainfall:

The total rainfall of the area was recorded 1098.70 mm. The lowest rainfall was in Oct. 10.10 mm. There was no rainfall in April and the highest rainfall was in the month of August 457.70 mm.

(C) Water level:

The water level of Khoksa pokher varied

TABLE-1: Physicochemical Conditions of water of Khoksa Pokher Dalsingsarai (Dist-Samastipur) during Jan.2013 to Dec.2013

Parameters/Month	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG	SEP.	OCT.	NOV.	DEC.
A. PHYSICAL												
1. Water temperature Min.°C Max.°C	16	17	18.1	19	25.5	25	25.5	24.5	26.3	25.1	25	15.5
	22.6	23	25	27	31.9	33.5	31	30.8	31.5	29.5	24.5	21.5
2. Rain fall (mm)	15.6	15.8	2.94	NIL	2.83	146	225	457.7	175.4	10.1	30.5	16.8
3. Water Level (m)	2.65	2.6	2.55	2.5	2.6	3	3.75	3.8	3	2.8	2.5	2.1
4. Turbidity (cm)	70	75	80	110	115	125	150	160	150	120	90	75
B. CHEMICAL												
5. pH	7.5	7.7	7	7.1	7.2	7.4	7.9	8.2	7	7.4	7.6	8
6. D.O. (ppm)	6	7	7	7.5	7.4	7.6	7	7.5	6.5	6.5	6.6	6
7. Free CO ₂ (ppm)	26	19.6	27.3	26.6	24	29	34	31	28	36	32	28.5
8. Phosphate (mg/l)	0.25	0.27	0.31	0.4	0.5	0.92	0.78	0.52	0.31	0.19	0.4	0.41

from 2.10 to 3.30 meters. In January 2.65 meter decreased during the month of February to April (2.60 m to 2.50 m) and then continued increasing upto August (2.60 m to 3.80 m) after which it showed downfall trend till the month of December (2.10 m).

(D) Turbidity:

The turbidity of Khoksa pokher ranged from 70 cm to 160 cm. The highest data were recorded in month of August 160 cm and the lowest in the month of January 70 cm. There was an increasing trend of turbidity from February to August 75 cm to 160 cm. After there was decreasing trend of turbidity from September to January 150 cm to 70 cm.

2. Chemical parameters

(A) pH:

The pond showed a range of variation in the pH value from (7.0 to 8.2) during the whole period of investigation and data collection. It was completely alkaline in nature. In January pH value was 7.5 and decreased in the month of March 7.0. From April to August there was increasing tendency (7.1, 7.2, 7.4, 7.9 and 8.2). It came down in September (7.0) but again increasing trend was observed from October to December (7.4, 7.6 & 8). Thus there were two maxima of pH in August and December 8.2 and 8.0 and two minima in month of March and September (7.0).

(B) Dissolved Oxygen (D.O.):

The dissolved oxygen of Khoksa pokher showed marked fluctuations in the dissolved oxygen content of water ranging from 6.0 ppm to 7.6 ppm. This pond showed two maxima in June

(7.6 ppm) and August (7.5 ppm) and two minima in January (6.0 ppm) and December (6.0 ppm).

(C) Free Carbon Dioxide (CO₂):

The free CO₂ other chemical factor showed considerable variation ranging from 19.6 ppm to 36.0 ppm. This showed two minima February (19.5 ppm) and May (24.0 ppm) and two maxima July (34.0 ppm) and October (36.0 ppm).

(D) Phosphate:

The value of phosphate content ranged from 0.19 mg/l to 0.92 mg/l. The highest value of the phosphate was 0.92 mg/l in the month of June, from July to October there was decreasing trends. A sudden increase in value of phosphate content was recorded in November and December 0.40 mg/l and 0.41 mg/l respectively. The value of phosphate content in January was 0.25 mg/l showed slightly increasing tendency upto month of June (0.92 mg/l). Thus the phosphate value also showed two maxima in June (0.92 mg/l) and December (0.41 mg/l) and two minima one in month of January (0.25 mg/l) and other in October (0.19 mg/l).

Result and Discussion

The result of the present study of water quality analysis presents in Table -1 values of different parameters which are under limit and suitable condition for optimal growth of aquatic organisms but care should be taken not to exceed beyond the limit.

Several workers have investigated on different water bodies from time to time and found similar conditions¹.

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