



HYDROCHEMICAL ANALYSIS OF DUG WELLS WATER QUALITY OF GHORASAHAN BLOCK AT EAST CHAMPARAN, DISTRICT, BIHAR

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ABSTRACT:

The present paper deals with dug wells water quality of Ghorasahan block at East Champaran District, Bihar. The well water parameters such as temperature, pH, turbidity, electrical conductivity, alkalinity, dissolved oxygen, biochemical oxygen demand, total hardness, calcium, magnesium, phosphate, sulphate, c, iron, chloride and fluoride were estimated in the samples to evaluate their quality. Our result revealed that concentration of DO, BOD, Total hardness, Calcium, magnesium, sulphate, turbidity, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in this well. The concentration of from 20 mg/l to 60 mg/L which is higher the permissible limit of WHO health based guide line values. The higher concentration of nitrate needs proper treatment before the use for drinking purposes and irrigation purposes. Finally it can be suggested that an intensive study may be carried out before the domestic consumption.

KEYWORDS:

POND WATER, WATER QUALITY, DISSOLVED OXYGEN.

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INTRODUCTION

Although considerable investigations have been made by the researchers but a little information is known about the systematic dug wells water quality. It is important to note that no qualitative, quantitative or ecological study on hydro chemical was made so far from of Ghorasahan block at East Champaran District, Bihar. Dug well has received various types of sewage i.e., domestic sewage, cattle waste etc. Hence an attempt into the hydro chemical investigation in relation to the different physicochemical characteristics of water taken up in the present investigation. Information about of Ghorasahan block at East Champaran District, Bihar. These freshwater communities are extremely sensitive to environmental variations. Phytoplanktons are the microscopic free floating algal communities of water bodies and productivity of an aquatic system is directly related to diversity of phytoplankton. The phytoplanktonic study is a very useful tool for the assessment of water quality and productivity of any type of water body and also contributes to understanding of lentic water bodies . Phytoplankton includes several thousands of microalgae belonged to Chlorophyta (green algae), Cyanophyta (blue green algae), Bacillariophyta (diatoms), Euglenophyta (pigmented flagellate or phytoflagellated) etc. They respond quickly to environmental changes and are used to assess the ecological status of water body. In the present study an attempt has been made to assess the hydro chemical studies of phytoplankton and their distribution

and fluctuations in the hydrological variables in the different dug well.

MATERIALS AND METHOD

Water samples were collected in different station in Ghorasahan block at East Champaran District, Bihar. Samples were collected in plastic bottles for physico-chemical and biological analysis. Water temperature, pH, dissolved oxygen and free CO were determined on the 2 sampling spots and other parameters were analyzed in the laboratory. It is small, open, shallow, round shaped, fresh water dug well. All collections were made between 7.30 am to 9.30 am during the study period. Phytoplankton samples were collected by filtering dug well water through plankton net with 25 µm mesh size. The filtrate was immediately preserved in 4% formaldehyde. The phytoplankton samples were observed thoroughly under microscope and have been identified with the help of standard literature (Fritsch, 1935; Desikachary, 1959; Round 1971; Prescott, 1978 and Anand, 1998) and Physico-chemical parameters were analyzed in accordance with APHA et al. (2012), Sarmah & Goswami (2012), Mishra & Singh (2018) and Choudhary (2019).

RESULTS

Our result revealed that concentration of DO, BOD, Total hardness, Calcium, sulphate, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in comparison to permissible

limits. In five different samples 16 species of phytoplankton members were identified in four classes of algae viz. Chlorophyceae, Cyanophyceae, Bacillariophyceae and Euglenophyceae. Among these Cyanophyceae includes

w1-7, w2-8, w3-7, w4-6 and w5-5 species followed by Chlorophyceae w1-5, w2-2, w3-3, w4-3, w4-4 species. Bacillariophyceae and Euglenophyceae only one species in w1 were recorded.

TABLE 1: DIFFERENT PHYTOPLANKTON SPECIES IN FIVE STATION OF GHORASAHAN BLOCK AT EAST CHAMPARAN DISTRICT, BIHAR.

S.n	Phytoplanktons (algae)	W1 No of species	W2 No of species	W3 No of species	W4 No of species	W5 No of species
1	Cynophyceae	7	8	7	6	5
2	Chlorophyceae	5	2	3	3	4
3	Bacillariophyceae	1	0	0	0	0
4	Euglenophyceae	1	0	0	0	0

TABLE 2: SHOWING DIFFERENT PARAMETERS OF GROUND WATER QUALITY OF DUG WELL IN GHORASAHAN BLOCK AT EAST CHAMPARAN DISTRICT, BIHAR.

S.n	Parameters	W1 Sampling and Analysis	W2 Sampling and Analysis	W3 Sampling and Analysis	W4 Sampling and Analysis	W5 Sampling and Analysis
1	Temperature(°C)	28	30	26	27	27
2	PH	7.6	6.5	6.5	7.6	7.6
3	Alkalinity (mg/l)	230	230	232	230	230
4	Phosphate (mg/l)	0.0	0.0	0.0	0.0	0.0
5	Iron (mg/l)	0.3	0.3	0.3	0.3	0.3
6	Nitrate (mg/l)	15	15	15	15	15
7	Nitrite (mg/l)	2.0	3.0	3.0	2.0	2.0
8	Chloride (mg/l)	300	220	300	300	300
9	Total Hardness (mg/l)	340	350	200	500	500
10	DO(mg/l)	3.1	3.2	3.2	3.1	3.1
11	BOD(mg/l)	2.0	2.1	2.2	2.2	2.2
12	Floride	0.0	0.0	0.0	0.0	0.0

CONCLUSION

1. Phytoplankton species Cyanophyceae formed the dominant group, followed by Chlorophyceae Bacillariophyceae and Euglenophyceae in five different dug water sample.
2. Concentration of DO, BOD, Total hardness, Calcium, sulphate, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in comparison to permissible limits. The Proper treatment necessary before the use for drinking and irrigation purposes.

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