

## Studies on Phytoplankton of Bindusara Dam Water, at Pali, District Beed, Maharashtra, India

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**Abstract:** This research was taken to study the phytoplankton composition of the Bindusara Reservoir of the Pali dam. Physico-chemical parameters were favourable for growth of phytoplankton. The Phytoplankton Community was maximum in summer season and minimum in monsoon. It is because of high temperature turbidity in summer season and vice versa. The Dominant trend of phytoplankton in the present investigation is Chlorophyceae > Bacillariophyceae > Cynophyceae > Euglenophyceae.

**KeyWords:** Phytoplankton, Physico-chemical parameters, Bindusara, Pali Dam, Chloophyceae, Bacillariophyceae

### INTRODUCTION

In natural water bodies phytoplanktons are present. The quantity of phytoplankton depends on the ecological factors. It varies in different water bodies. In order to monitor pollution, various aquatic systems have been used (Palmer 1969, Hutchinson 1967 & Liebman 1962). In monitoring the water quality, the structure of aquatic community is important various phytoplankton groups prefer to exist in many kinds of water. but no particular group can be blamed to pollution. There may be certain species which resist pollution in each group while others may be very sensitive. The Plankton Population on which the whole aquatic life depends directly or indirectly is governed by Reid (1961). The plankton's quantity depends on the interaction of number & Physical, Chemical & biological conditions and the tolerance of the organisms.

### MATERIAL AND METHODS:

The Physico-chemical parameters were analyzed according to standard methods. Trivedy and Goel (1981) and APHA (1995) Koderkar (1992). For collection of plankton samples (40 meshes / CM) was used sedwick rafter counting cell method suggested by APHA. Sample was collected from selected sampling sites, named as A, B, C and D respectively. For the Physico-chemical analysis, the sample as collected in plastic cans separate sample was taken in another glass bottle for identification of phytoplankton during one year study period.

Table .1 Physico-chemical parameters of Bindusara dam water

Sr.no	Parameters	Range
1.	Water temp( <sup>0</sup> C)	18.1 to 32.6
2.	Electronic Conductivity	468 to 985
3.	Total dissolved	293 to 728
4.	PH	7.5 to 8.8
5.	Total Alkalinity (mg/l)	97 to 259
6.	Dissolved oxygen (mg/l)	5.3 to 9.9
7.	Carbon dioxide dissolved(mg/lit)	0.02 to 0.09
8.	Total hardness (mg/lit)	67 to 144
9.	Nitrate (mg/lit)	2.1 to 11.8
10.	Potassium (mg/lit)	0.2 to 2.1
11.	Chloride (mg/lit)	28 to 68
12.	Nitrite	0.3 to 38

Table .2 Composition of Phytoplankton count no/lit in Bindusara dam water during the year 2019-2020

Sr.no	Phytoplankton & Month	Chlorophyceae	Bacillariophyceae	Cynophyceae	Euglenophyceae	Total
1.	June-2019	175	70	61	369	675
2.	July-2019	886	443	315	182	1826
3.	Aug-2019	182	96	139	175	592
4.	Sept-2019	98	52	47	77	274
5.	Oct-2019	558	212	65	57	892



6.	Nov-2019					
7.	Dec-2019	862	671			
8.	Jan-2020	792	225	408	275	2216
9.	Feb-2020	156	386	512	330	1859
10.	Mar-2020	1627	1220	430	824	1796
11.	April-2020	1025	1008	428	532	3807
12.	May-2020	2635	2529	359	992	3384
	Total	1762	1634	639	1228	7031
	Total mean	10758	8546	818	776	4990
	Percentage	9142.83	7048.16	4211	5817	29342
		31.83%	24.53%	12.05%	17.27%	100

**Result and Discussion:**

The monthly variation of physiochemical parameters and composition of phytoplankton are represented in table 1&2 of Bindusara dam water. The monthly variation of chlorophyceae recorded in the range of 98 to 2635, the Bacillariophyceae recorded, the range between 52 to 2529 number/lit. The range of cyanophyceae were from 47 to 818 number/lit and Euglenophyceae were from 57 to 1228 number/lit. The population of phytoplankton in Bindusara dam water was composed of major four groups namely chlorophyceae (31.83%) > Bacillariophyceae (24.53%) > Euglenophyceae (17.77%) > cyanophyceae (12.05%). In the present investigation the chlorophyceae was the dominant groups according to the all groups of phytoplankton follows Bacillariophyceae, Euglenophyceae and Cyanophyceae. Quality of an aquatic ecosystem is dependent on the physical & chemical qualities of water and also on biological diversity of the system (M. C. Combie 1953) stated that temperature may effect the seasonal change of phytoplankton in temperature zone. Similarly Nazreen S (1980). Hutchinson (1957) mentioned that temperature play important role in controlling both the quality & quantity of planktonic flora. In the present investigation the water temperature of Bindusara dam ranged from 18.1 to 32.6°C. The minimum temp. was recorded in the winter season, moderates in monsoon season and higher in summer season. The peak of the phytoplankton density in Bindusara dam water recorded in April and it is because of the long photoperiod with higher temperature which favored their growth during these months. Similar observations were also recorded by Lakshminarayana (1965) Nazreen (1980) Krishnan (1999), Jindas & Gusain (2007). The second peak of the phytoplankton density was recorded during the winter season may be due to the higher amount of dissolved oxygen in winter season. The similar results were made by Rao P.S. (1984), Inphathi & Pandey (1989) Vankateswarlu (1969).

The growth of phytoplankton also depends on the PH values of water. The High PH value indicate the best and vineyard (1965) Nanzeen (1980) & Nandan & Patel (1992) Krishnan et al (1999) Salaskar & Yeragi (2003) found high chlorides related with high density of myxophyceae. The nutrients such as nitrates, phosphates affect the growth of phytoplankton.

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