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Inventory of blue green algae in island of Kosi division

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Abstract: On field sampling of different wetland pockets(six selected sampling sites) of Saharsa district falling under Kosi division, as many as 15 different species of chlorophyceae as members of blue green algal flora have been recorded that reflect the species richness of the group in this habitat. As regards the species abundance of these species, the individuals of the species have also been numerically counted from the algal samples in the net. The data has been statistically computed to investigate its relative abundance (RA %= $\Sigma n/N$).

Keywords : Blue green algae, cyanobacteria, Kosi division, relative abundance

INTRODUCTION

Blue green algae which is also known as cyanobacteria are a group of photosynthetic bacteria, some of which are nitrogen-fixing, that live in a wide variety of moist soils and water either freely or in a symbiotic relationship with plants or lichen-forming fungi.¹ They may be present in the form of unicellular to filamentous and also in colonial form. Colonies may also be present in the form of filaments, sheets, or even hollow spheres. Some filamentous species can differentiate into several different cell types. Blue-green algae (BGA) constitute the largest, most diverse & the most widely distributed group of prokaryotes that performs oxygenic photosynthesis. They commonly obtain their energy through oxygenic photosynthesis, which produces the oxygen gas in the atmosphere of Earth.^{2,3} The name cyanobacteria comes from their color, giving them their other name, “blue-green

algae”, though some modern botanists restrict the term *algae* to eukaryotes.^{4,5} They appear to have originated in freshwater or a terrestrial environment. Unlike heterotrophic prokaryotes, cyanobacteria have internal membranes. These are flattened sacs called thylakoids where photosynthesis is performed.^{6,7} Excessive growth of blue green algae in ponds, lakes and reservoirs has become a serious water quality problem and threatens human and animal health. Nutrient rich eutrophic water bodies promote growth of blue-green algae that produce toxic chemicals.⁸ The algae hamper the treatment of water for drinking, prevent recreational use and clog pipes. Therefore, monitoring of water bodies for phytoplankton and planning preventive measures accordingly are needed for controlling the algal bloom in water bodies which are in a good and moderate status. If the water body found to be already colonized or invaded by algae, then an assessment followed by urgent actions are needed to bring them into improved status.

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MATERIAL & METHODS

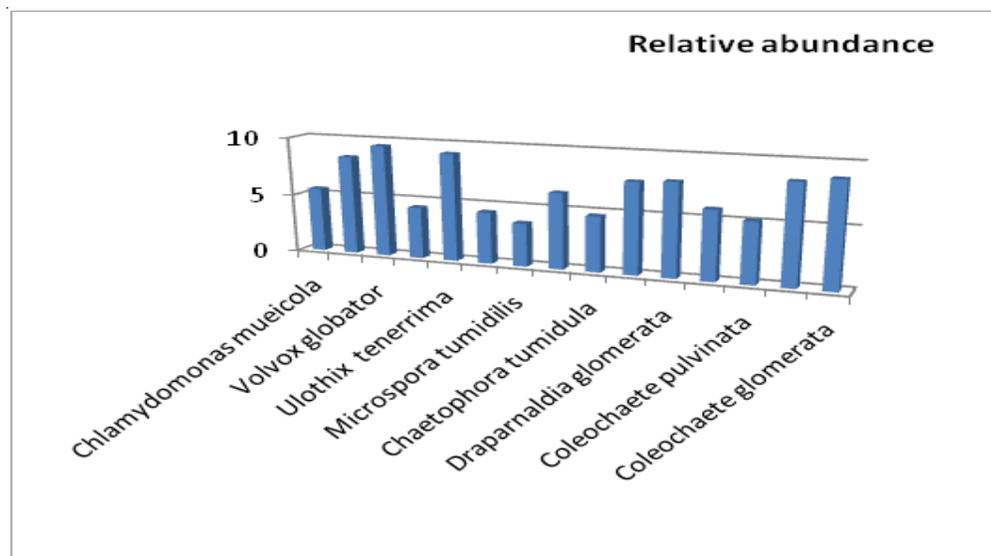
Collection of the blue green algae which is also known as cyanophyceae was carried out from randomly sampled wet land water of five different sites (Mehshi, Mohanpur, Salkhua, Bangaon & Pahapur) falling in Saharsa district of Kosi division for a period of one year from 2013-2014.

The collection was done with the help of planktonic net which were kept in the plastic & brought to the botany department in Madhepura for its further analysis & for computing the data statistically as well as for its identification. The statistical analysis performed for its study on relative has been given in table 1 and also presented in graph 1.

Table 1- Relative abundance of blue green algal species sampled from five selected wetland sites of Saharsa district in Kosi division

Sl. No	Name of the individual	No. of individual	Sampling sites	Relative abundance % (n/N* 100)
1	<i>Chlamydomonas mueicola</i>	150	Mehshi	5.498
2	<i>Pandonina morum</i>	230	Mohanpur	8.431
3	<i>Volvox globator</i>	260	Salkhua	9.530
4	<i>Ulothrix aequator</i>	120	Bangaon	4.398
5	<i>Ulothix tenerrima</i>	250	Pahapur	9.164
6	<i>Microspora amoena</i>	120	Bangaon	4.398
7	<i>Microspora tumidilis</i>	100	Mohanpur	3.665
8	<i>Stigeoclonium lubrium</i>	175	Mehshi	6.414
9	<i>Chaetophora tumidula</i>	128	Salhua	4.692
10	<i>Chaetophora incrassate</i>	210	Mehshi	7.697
11	<i>Draparnaldia glomerata</i>	215	Pahapur	7.881
12	<i>Coleochaete divergens</i>	160	Bangaon	5.865
13	<i>Coleochaete pulvinata</i>	140	Mohanpur	5.131
14	<i>Coleochaete orbicularis</i>	230	Bangaon	8.431
15	<i>Coleochaete glomerata</i>	240	Mehshi	8.797
	Total	2728		

Graph 1- Histogram showing the RA % of blue green algae sampled from five selected wetland sites of Saharsa district in Kosi division



RESULT AND DISCUSSION

Fifteen species of blue green algae belonging to family chlorophyceae were identified which has been given in table no 1 that also depicts the relative abundance of major groups of cyanophyceae recorded during the study period in the reservoir of the selected wetland water body. Among these taxonomic groups, the *Volvox globator* sampled from Salkhua site were among the most abundant groups contributing about 9.530% to the total population which is followed by *Ulothrix tenerrima* (9.164%), sampled from Pahapur, *Coleochaete orbicularis* (8.431%) from Bangaon, *Coleochaete glomerata* (8.797%) from Mehshi. However, *Microspora tumidilis* (3.665%) sampled from Mohanpur & *Ulothrix aequator* (4.398%) sampled from Bangaon were rarely found in these reservoir. The above finding reflects that the five selected wetland sites namely Mehshi, Mohanpur, Salkhua, Bangaon & Pahapur are having diverse distribution of blue green algae with their specific roles in the aquatic ecosystem chiefly related to nitrogen fixation & eutrophication .

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