

Effect Of Agro-Nutrients On Aquatic Flora

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Bhopal, the capital city of the Madhya Pradesh is endowed with lakes, pools, ponds and reservoirs. These water spreads are situated around human settlements and some of them, near lime-furnace or crop-fields. Hence, most of the water, that flows into lake basin, contains domestic sewage and agricultural fertilizers which comprise phosphorus, nitrogen and potassium, in the form of gomor, urea, cowdung, superphosphates and potash. Besides, acetates of calcium and magnesium are also known to find their way into these water sheets.

During present study, microcosmal studies were carried out on three inland reservoirs – Upper lake, Lower lake and Shahpura lake, Bhopal, by housing definite amount of water and soil aliquota from natural waters. Changes in physicochemical and limnobiological parameters were recorded at an interval of 1, 3, 5, 10, 15 and 30 days.

Exposure to nutrients not only checked the development of Chlorophyceae during colonization but also initiated major shifts in the sociology of phytoplankton after a short time. Supply of nutrients upto 5 mg/l concentration did not affect the vegetation significantly, however, further enrichment largely suppressed the ground water dominants i.e., Chlorophytes. Conditions, similar to controlled ones, prevailed in treated microcosms too, but for those treated with 10 mg/l and 15 mg/l of nutrients where blue-green forms dominated at the cost of prevailing green algae. In all cases, *Crucigenia crucifera*, *C. rectangularis*, *Scenedesmus abundans* (UL & LL), *S. bijugatus*, *S. dimorphus* (UL, LL & SL), *Characiopsis longipes*, *Crucigenia quadricauda* and *Scenedesmus armatus* (SL) registered their presence for most of the period whereas, certain strains viz. *Ankistrodesmus falcatus*, *Scenedesmus obliquus*, *S. parisiensis*, *S. quadricauda*, *Amphora ovalis* (UL), *Eudorina elegans*, *Oocystis crassa*, *Staurastrum gracile*, *S. orbicularae*, *Tetraedron minimum*, *Cosmarium granatum* (LL), *Coelastrum microporum*, *Pediastrum tetras* and *Selanastrum gracile* (SL) could not withstand the nutritional changes and perished earlier.

Both calcium and magnesium acetate evinced no drastic effect on diatom community, however, depletion in nutrients rendered a regular decline in number with respect to duration. Further, *Melosira granulata*, which was abundant in natural lakes, propagated successfully in enriched waters and expressed itself to be a eutrophic form. Other species, which indicated a positive correlation with magnesium, include *Fragillaria*, *Navicula cryptocephala*, *Nitzschia closterium* & *Tabellaria* sps. in Upper lake and *Cymbella affinis* & *Synedra ulna* in Lower lake microcosms.

Among Cyanophytes, initial growth mainly consisted of *Arthrospira massartii* (UL & SL), *Anabaena* sps, *Merismopedia punctata* (LL & SL), *Nostoc microscopium* and *Oscillatoria amphigranulata* as in natural waters but after addition of nutrient there occurred a sudden spread of *Microcystis aeruginosa*. It was, atleast in part, due to changed competitive situation where *Microcystis* sps succeeded in surpassing other forms.

Dinophytes underwent swift decline and finally succumbed within a fortnight.

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