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# Nutrient removal of Secondary Treated Water through Algal ponds

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Freshwaters are becoming increasingly scarce. At the same time the existing freshwater resources are deteriorating both in terms of quality and quantity. The quality of such freshwater systems as ponds and lakes depends upon interaction of various biotic and abiotic components where the physico-chemical environment plays a major role. In ponds systems the nutrients decide the productivity where algae act as indicators of the nutrient status of water. The present study focuses on treatment of secondary treated water by algal pond systems and transitions in physico-chemical parameters. In the study water and algal samples were collected weekly from the wastewater treatment plant and the algal pond at IISc, Bangalore for two seasons. Inorganic parameters as major ions, dissolved metals and organic parameters like biochemical oxygen demands were measured following standard protocols. The samples were also checked for temperature, pH, dissolved oxygen, electrical conductivity on site. During the initial phases of the study *Microcystis auregonosa* sp. were abundant indicating N limiting conditions. However, after the biomanipulation of introducing the duckweed sp., significant transitions in nutrient regime were observed. This led to the dominance of *Chlorococcum* sp. due to higher organic matter because of higher detrital C as a result of duckweed steaming and decay. Further changes in the inflow parameters aided in the prolific growth of chlorophycean members. This reveals the changes in the algal communities with the changes in the environmental parameters and nutrient regime. This study emphasizes the role of algal communities as indicators as well as agents of nutrient remediation that can be sustainably used for secondary wastewater treatment economically.

**Keywords:** Lake, physico-chemical parameters, freshwater algae, nutrients, wastewater

