

Phytoremediation of Farm Wastewater by Selected Aquatic Plants

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Wastewater is the main source for the pollution of surface waters and treating wastewater is an essential process to reduce the environmental hazards. Wastewater management has a direct impact on the biological diversity of aquatic ecosystems, disrupting the fundamental integrity of our life support systems on. When water bodies receive excess nutrients through wastewater, especially nitrates and phosphates, can stimulate eutrophication. Eutrophication leads to excessive plant growth, especially algal blooms, oxygen depletion, decreased biodiversity, changes in species composition and dominance, and a severe reduction in water quality. Although there are natural causes, much of the eutrophication seen today is a result of inadequately treated wastewater and agricultural runoff. Moreover, aquatic plants, mostly weeds grow profusely in lakes and waterways all over the world and in recent decades their negative effects have been magnified by man's intensive use of water bodies. Eradication of such aquatic weeds has proved almost impossible and even reasonable control is difficult. Turning these weeds in to productive use would be desirable, if it would partly offset the costs involved in mechanical removal of those from water bodies. Therefore this study was conducted to assess the water purification ability of five selected aquatic plants; *Duckweed*, *Waterhyacinth*, *Azola*, *Salvinia* and *hydrilla*. Reduction of nitrate, phosphate, EC, TDS, pH in wastewater collected from an animal farm by these weeds separately were tested. Most of the aquatic plants show better performance in water purification process. During the experiment period 87.5 % of nitrate and 67 % of phosphate have been absorbed by the aquatic plants and 25 % reduction of EC and TDS was also observed. Alkaline pH has changed to neutral. Duckweed and Water hyacinth show higher pollutant removal efficiency and highest performance in survival among these aquatic plants. *Azola* performs a considerable pollutant reduction than others plants. Whereas *Salvinia* performs the lowest reduction rate compared to other aquatic plants. In addition to that, *Hydrilla* performs the highest reduction of water pH. In this study phytoremediated wastewater, which consists permissible levels of pollutants can be used for the irrigation of farm plants without any physiological stress.

Keywords: Aquatic plants, Phytoremediation, Pollutant removal, Water quality parameters