

# PHYTORID TECHNOLOGY FOR WASTE WATER TREATMENT USING WATER HYACINTH

## - A NOVEL METHOD OF WATER REMEDIATION

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The purpose of this study is to evaluate the importance of purifying waste water using phytoid technology. In the developing technologies and growing environment, the usage of the water source plays a vital role and it's been needed and used in large amounts. Insufficient management of municipal and wastewater in immense environmental problems and increasing hygienic risks for the growing urban population thereby hampering poverty alleviation and a sustainable development of Indian society. But by this technology, the wastewater can be converted into a source for various purposes in different aspects by the use of phytoid technology.

Phytoid technology is very effective in water pollution treatment. It leads one step forward to sustainable treatment of wastewater in a safe manner using *Eichhornia crassipes* (water hyacinth) plants and natural source for the treatment without affecting the ecosystem. This method is more advantageous of cost effective, negligible operation and maintenance with minimum electricity, smaller footprint. The main focus of the project is to avoid the scarcity of the irrigation water and to avoid the odor in the treated water.

Water *Eichhornia crassipes* (water hyacinth) is used to treat domestic wastewater. Five organic and inorganic parameters were monitored in one month for water purification. The six chemical, biological and physical parameters included Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), and pH was compared with the Interim National Water Quality Standards and Water Quality Index (WQI). Between 38% to 96% of reduction was observed and water quality has been improved from class III and IV to class II. Analyses for Electricity Conductivity (EC), Salinity, Total Dissolved Solids (TDS) and river classification (INWQS) and Water Quality Index (WQI). Between 38% to 96% of reduction was observed and water quality has been improved from class III and IV to class II. Analyses for Electricity Conductivity (EC), Salinity, Total Dissolved Solids (TDS) and Ammonium (NH<sub>4</sub>) were also investigated. In all parameters, removal efficiency was in the range of 15-20th day (optimum 20th day) which was higher than weeks except DO. It reveals the optimum growth rate of water hyacinth has great effect on waste water purification efficiency in a continuous system and nutrient removal was successfully achieved.

The primary, secondary and tertiary pits were constructed in our college, by the students. Waste water in college was purified using Phytoid technology, they monitored improvement in the BOD, COD values in purified water.

A group of students were selected for this project, they constructed the primary, secondary and tertiary pits in our college. The primary pit contains mesh to purify the solid wastes. The secondary pits are the place where all the enzymatic reactions were conducted by the *Eichhornia crassipes* (water hyacinth) plant to purify water. In the tertiary pit remaining suspended wastes and the nitrogen, phosphorous constituents were removed. The purified water was collected in the tank. Stored purified water using the *Eichhornia crassipes* (water hyacinth) plant was used in watering garden plants in our college.

With this project we wanted to conclude that waste water can be purified by Phytoremediation technology using the *Eichhornia crassipes* (water hyacinth) plant. Stored and purified water can be used for irrigation





Fig. 1 primary pit - it contains wastewater or sewage water

Fig. 2 Secondary pit- contains pre treated wastewater for the sludge digestion proces



Fig.3 Tertiary pit- contains treated water from the biofilter.

