

Treatment of Eutrophic KotaSAS Lake by Phytoremediation using Macrophytes Species; *Eichhornia Crassipes* and *Pistia Stratiotes*

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Abstract. The wastewater treatment is known as a necessary attention for the process of retreatment towards the removal of suspended solids. Phytoremediation is a plant-based system which directly used of green plant in-situ to reduce pollutants in the lakes. This method is ecologically friendly and solar dependent clean-up technology. This study was undertaken ex situ where the aim of this study is to treat the eutrophic man-made lake at KotaSAS lakeside through following objectives; to identify the variation of physicochemical attributes of KotaSAS lake water through phytoremediation, to evaluate the potential of selected heavy metals and nutrients removal (nitrate and phosphorus) using *Eichhornia crassipes* (water hyacinth) and *Pistia stratiotes* (water lettuce) and to determine the correlations between sampling points and physicochemical attributes using statistical analysis.. The method of analysis of lake water was referred by Standard Method for Examination of Water and Wastewater by APHA. Then, statistical notation was conducted on the results obtained to identify the accuracy and validity of data, which in this case, correlations and t-test statistical method was used. Referring to the statistical notation of ($p < 0.05$), conclusion on the significance of the result and variables were made. It is justified statistically that the data obtained for each treatment using different types of plants are valid and concise. As a result, it is found that water lettuce and water hyacinth have different nutrients removal and heavy metals removal efficiency but, in all cases,, these phytoremediation agents exhibited nutrients removal efficiency from the range of 27% up to 58% followed by heavy metals removal efficiency from the range of 23% up to 60%. Water hyacinth exhibited great nitrate and phosphorus removal efficiency, 51.51% and 58.81% whereby as for water lettuce exhibited great heavy metals removal efficiency for manganese (Mn), iron (Fe) and copper (Cu), 60.68%, 58.2% and 26.4% respectively. With this achievement acquired in phytoremediation technology employing water hyacinth, it is of utmost important for this technology to be implemented in larger scales thereafter. Hence, this plant is suitable to be used in controlling eutrophic lake due to its hyper-accumulating ability.

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