

055**Bioremediation for water purification - A case study at St. Coombs Lake, Talawakelle**

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Phytoremediation is one of the most eco friendly and innovative techniques to remove pollutants from soil and water in agricultural areas. This study explored potentials of bioremediation for water purification at Tea Research Institute of Sri Lanka through monitoring water quality of St. Coombs lake and through several glasshouse and laboratory experiments for validating the results during the period of November 2004- February of 2005.

The water quality parameters such as pH, nitrate, phosphate, iron and total coliforms at 35 °C / 100 ml and *Escherichia coli* at 44° C / 100 ml were monitored during dry and rainy periods. The possible causes for water pollution of the lake were also monitored. Nitrate pollution was greater during rainy periods since higher contribution of erosion and runoff. Higher levels of total coliforms and *Escherichia coli* were observed in both seasons. Five plant species traditionally known to have phytoremedial properties i.e. Kang kong (*Ipomea aquatica*), Giant reed (*Arundo donax*), Water hyacinth (*Eichhornia cracipes*), Bulrush (*Scirpus lacustris*) and Kumbuk (*Terminalia arjuna*) were evaluated for nutrient absorption. The histology of Kumbuk and Tea roots were assessed for their anatomical attributes to the bioremediation properties.

The differences in root anatomical traits in different plant species lead to differences in nutrient and water absorption. Kang kong, Water hyacinth and Bulrush showed better performances in nutrient absorption. The results supported the potentials and technical attributes to common bioremediation plant species in purification of water. These attempts would be environmentally and user friendly, cost effective as well as aesthetic advantages and long-term applicability compared to chemical treatments.