

APPLICATION OF FLOATING WETLANDS TO IMPROVE WATER QUALITY IN KANDY LAKE

Sumudu Priyanga Ranaweera

Postgraduate Institute of Science
University of Peradeniya
Peradeniya
Sri Lanka

Rapid pollution in urban lakes due to influences of urban environment is one of the critical environmental issues faced by a developing country like Sri Lanka. Kandy Lake, is located in the centre of a major town in Sri Lanka exemplifies the problems encountered in water quality due to urbanization. Therefore, it is necessary to have proper feasible mitigatory measures to address eutrophication, deteriorated water quality, space constraints for treatment facilities and affordability. This study was carried out to find out introduction of floating wetlands to Kandy Lake to assess the stability, durability and improvement of the water quality. This study describes comparison of two floating wetland models with *Canna iridiflora* as a vegetation macrophyte, on removal of waste components in polluted water. Water quality was monitored in all the inlet channels where significant amount of waste water flows to the lake during dry and wet periods using Dissolved Oxygen (DO), Biological Oxygen Demand (BOD₅), pH, temperature, electrical conductivity (EC), ammonium (NH₄⁺), nitrate (NO₃⁻), dissolved phosphate (PO₄³⁻), coliforms and suspended solids (SS). After implementation of two floating wetland models to one of the drain inlet channels in the lake, water quality parameters were again monitored except dissolved oxygen, coliforms and suspended solids within the wetlands and 10 m away from wetlands. Plant growth, flowering stage, harvesting stage, pest management and wetland establishment were also monitored. The experimental results have proven the effectiveness of floating wetland systems in removing both carbonaceous and nitrogenous compounds from polluted water. Macrophyte *C. iridiflora* was successfully grown within the floating mat, flowering started at three months and harvesting was carried out after seventeen weeks. Floating wetlands (FWs) made of PVC can be a viable option for lake restoration in tropical conditions for longer operation period.

Key Words: Eutrophication, Floating wetlands, Lake, Sustainability