

Efficiency of *Typha Latifolia* (Broad-Leaved Cattail) for Treatment of Municipal Wastewater from Batticaloa Urban Council using Constructed Wetlands

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Abstract

Constructed wetland method is one of potential treatment alternative that can be employed using emergent plants to remove pollutant from various types of wastewater. Although, it has been known that several type of plants can be used for this purpose, only limited studies have shown the contribution of emergent plant itself for treatment of wastewater. Another complicated situation is that the efficiency of treatment depends on local environmental factors and the quality and quantity of wastewater. This study focused on the efficiency of *Typha Latifolia* grown in constructed wetland for the treatment of municipal wastewater from Baticaloa municipal council. The treatment efficiencies were obtained using the different water quality parameters at different hydraulic retention times at the wetland, comparing with the initial values of the parameters. The removal or retention of pollutants in wastewater may also occur due to the sorption to soil in the bed or due to the natural attenuation mediated by microbial communities by redox mediated abiotic reactions and therefore removal efficiencies were also studied in controlled systems with the exception of plant growth under similar environmental conditions. The result shows that the highest removal efficiencies were 89%, 92%, 94%, 94%, 97%, 94% and 95% for NO_3^- , PO_4^{3-} , COD, Mn, Zn, BOD and TSS in *Typha latifolia* system while the values calculated for wetlands with the exception of plant growth were 58%, 73%, 78%, 61%, 79% , 78% and 92% respectively. This study clearly shows that *Typha Latifolia* that can be grown very easily under many environmental and climatic factors and mostly available in natural wetland systems in the area and be applied for the treatment of municipal wastewater in Baticaloa area in Sri Lanka

Keywords: Waste water, *Typha Latifolia*, Waste Removal Efficiencies

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