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Nutrients Removal from Industrial Wastewater Using Constructed Wetland System

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Abstract : A study was done to establish the effectiveness of wetland plants: Echinocloa pyramidalis (L) and Cyperus papyrus (L) in purifying wastewater from sugar factory stabilization pond effluent. A pilot-scale Free Water Surface Wetland (FWSCW) system was constructed in Chemelil sugar factory, Kenya for the study. The wetland was divided into 8 sections (cells) and planted with C. papyrus and E. pyramidalis in alternating sequence. Water samples and plant specimen were taken fortnightly at inlets and outlets of the cells and analysed for total phosphates and total nitrates. The data was analysed by use of Microsoft excel and SPSS computer packages. Water analysis recorded a reduction in the nutrient levels between the inlet pond nine and the final outlet channel to River Nyando. The plants grown in the wetland experienced varied increases and reductions in the level of total foliar nitrogen and phosphorous, indicating that though the nutrients were being removed from the wetland, the same were not those assimilated by the plants either. The control plants had higher folia phosphorous and nitrogen, an indication that the system of the constructed wetland was able to eliminate the nutrients effectively from the plants.

Keywords : wetlands, constructed, plants, nutrients, wastewater, industrial
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