

**CONSTRUCTED WETLAND SYSTEM FOR TREATMENT  
OF GREY WATER AT STUDENTS' HOSTEL COMPLEX, FACULTY  
OF AGRICULTURE, RAJARATA UNIVERSITY OF SRI LANKA**

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Discharge of untreated wastewater badly affects the natural environment causing serious issues such as water and air pollution, health hazards for animals and plants, loss of biodiversity etc. Wetland plants have special ability to treat the wastewater by absorbing various pollutants. Therefore, this study aimed to treat the greywater discharged by students' hostel complex in Faculty of Agriculture Rajarata University of Sri Lanka using a Free Water Surface (FWS) flow constructed wetland (CW). A pilot scale constructed wetland unit was designed near the hostel complex. Total surface area of the wetland was 2 m<sup>2</sup> and *Scirpus laeustris* (Bulrush) was used in the study. Hydraulic Retention Time (HRT), flow rate and volume of the designed system was 17 hours, 0.05 m<sup>3</sup> per hour and 0.85 m<sup>3</sup> respectively. Wastewater samples were collected from inlet and outlet of wetland unit and quality parameters such as Biochemical Oxygen Demand (BOD<sub>5</sub>), NO<sub>3</sub><sup>-</sup>-N, NH<sub>4</sub><sup>+</sup>-N, Total Phosphorus (TP), Total Suspended Solids (TSS), Total Dissolved Solids (TDS), pH and Electrical conductivity (EC) were monitored for six weeks. An initial soil analysis was done for parameters such as pH, EC, bulk density, true density, NO<sub>3</sub><sup>-</sup>-N and TP. According to the results, removal efficiencies of BOD<sub>5</sub>, NO<sub>3</sub><sup>-</sup>-N, NH<sub>4</sub><sup>+</sup>-N, TP and TSS of the system were 62%, 85%, 86%, 53% and 79% respectively. The pollutant removal efficiency was increased with time possibly due to the increment of phytoremediation ability of *Scirpus laeustris* with the plant growth. Therefore, it can be concluded that the greywater can be efficiently treated using *Scirpus laeustris* planted constructed wetland. This study should be continued by adjusting the HRT to bring the quality parameters of discharging effluent to be reached within the range of the national standards for discharging effluent.

**Keywords:** Bulrush, Constructed Wetland, Hydraulic Retention Time, Removal Efficiency, Wastewater