

**TREATING HOUSEHOLD KITCHEN WASTEWATER USING  
CONSTRUCTED WETLAND SUITABLE FOR THE RURAL AREA OF  
SRI LANKA**

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**Abstract**

Treating the wastewater from the kitchen before discharging it into the environment is vital in preserving natural resources such as groundwater, surface water, soil, etc. However, in most cases, kitchen wastewater is discharged into the environment without any treatment in developing countries like Sri Lanka, especially in rural areas. Hence the study objective is to examine the feasibility of treating kitchen wastewater by implementing constructed wetland suitable for rural areas in the north-western province of Sri Lanka. A pilot-scale horizontal subsurface flow constructed-wetland constructed, with the dimension of 1.8 m x 1.6 m x 0.6 m in length, width and depth, respectively. The selected native plants were planted into the constructed wetland, watered and maintained for thirty days. After 30 days, the freshwater supply was stopped and wastewater generated from the kitchen was sent into the constructed wetland. The hydraulic retention time was maintained as three days. The water quality parameters such as Biochemical Oxygen Demand (BOD) and Hydrogen Ion (pH) were tested in influent and effluent samples using the standard laboratory procedures and were compared with the standard set by the Central Environmental Authority (CEA) and the World Health Organization (WHO). BOD level in the raw kitchen wastewater and treated wastewater were observed to be in the range of 125.5 - 147.5 mg/l and 9.5 - 13.0 mg/l respectively. The BOD<sub>5</sub> levels of the effluent were within limits set by the CEA and WHO standards. The pH level in the raw kitchen wastewater and treated wastewater were observed to be in the range of 8.54 - 8.83 and 6.38 - 6.83 respectively. The effluent's pH values moved towards neutral phase and was within the range of CEA standards. The overall removal efficiency in BOD and pH were 91.9% and 24.9% respectively. This type of constructed wetlands with native plants can be technically feasible, low-cost solution to treat the kitchen wastewater in rural areas of Sri Lanka.

**Keywords:** *constructed wetland, kitchen wastewater, wastewater treatment*