

## **Soil and Water Resource Management through Hydroponics Systems: An Experimental Research Comparing Two Middle Class Houses Located in Kalutara District**

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Water quality in any outward appearance is significant as it help to conserve and restore the quality of the surface waters and ground waters as well. Standards help to recognize water quality problems caused by, for instance, inappropriately treated wastewater discharges, runoff or discharges from active or deserted mining sites, sediment, fertilizers, and chemicals from agricultural areas, and erosion of stream banks caused by reprehensible grazing practices. Standards also support efforts to achieve and maintain protective water quality conditions. Water quality sustains ecological processes that support native fish populations, vegetation, wetlands and bird life. Similarly, many of our own uses depend on water quality that is suitable for irrigation, watering stock, drinking, fishing and recreation, and to meet cultural and spiritual needs. Scientific contributions and science based investigation will be critical for understanding water-use behavior and for devising effective institutions to manage water in times of increasing scarcity. Considerable investments in the construction of infrastructure may be economically infeasible for developing countries. In these circumstances, small-scale, decentralized technologies are very important. Hydroponics is one of the main alternatives for water based agriculture and plays a critical role in terms of water resource management. It is a promising start-up to introduce water management and water reuse systems in any level. Small scale domestic hydroponics system based practices are increasing among the environmentally concerned nations. Conversely, Sri Lanka as an affluent country of water resources is somewhere lacking the perspective of this theory as a way to conserve water and also as a source of income. This research was carried out in order to investigate domestic water consumption and the management of domestic wastewater in a profitable way. An experimental setup was made for conducting the study to investigate the effects of application of domestic wastewater connected to a hydroponics system. The system could be easily utilized in urban areas especially in urban compartments. It is suitable for small villages and single house systems as a decentralized wastewater management option. The system could be adapted to the local conditions of the rural areas as well. The study showed that it will be possible to achieve high efficiency by using wastewater with utilized step-wise horizontal flow hydroponic systems. These systems could be operated as full treatment systems for wastewater. The quantitative data showed a correlation between the values of water bill expenditure and income generated from wastewater.

**Keywords:** Wastewater, Hydroponic system, Water management