

## Evaluation of Combined System of Constructed Wetland/Expanded Clay Aggregate in Greywater Treatment

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**Abstract :** In this study, a laboratory-scale was designed and fabricated to treat single house greywater in the north of Tunisia with a combination of physical and natural treatments systems. The combined system includes a bio-filter composed of LECA® (lightweight expanded clay aggregate) followed by a vertical up-flow constructed wetland planted with *Iris pseudacorus* and *Typha Latifolia*. Applied two hydraulic retention times (HRTs) with two different plants types showed that a bio-filter planted with *Typha Latifolia* has an optimum removal efficiency for degradation of organic matter and transformation of nitrogen and phosphate at HRT of 30 h. The optimum removal efficiency of biochemical oxygen demand (BOD), chemical oxygen demand (COD), and suspended solids (SS) ranged between 48-65%, between while the nutrients removal was in the range of 70% to 90%. Fecal coliforms dropped by three to four orders of magnitude from their initial concentration, but this steel does not meet current regulations for unlimited irrigation. Hence further improvement procedures are suggested.

**Keywords :** constructed wetland, greywater treatment, nutrients, organics

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