

Performance of a vertical flow constructed wetland treating domestic wastewater for a small community in rural Tunisia

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ABSTRACT

Several least-cost wastewater treatment technologies and decentralized systems are being tested to be implemented in Tunisian rural areas. This study demonstrates the system performances of a pilot-scale subsurface vertical flow constructed wetland designed to enhance living sanitation conditions for several dwellings located in the rural area of Boujrida, north-east of Tunisia. Constructed in 2004, the plant consists of a septic tank followed by a vertical constructed wetland planted with common reed *Phragmites Australis*. The plant was monitored from June 2004 to April 2006. The analysis is based on the following parameters: TSS, COD, BOD₅, TKN, NH₄⁺, NO₃⁻, PO₄³⁻ and sulphates. Other in situ parameters are considered as well. In general, the treatment performances of the constructed plant are lower than those expected and the effluent did not meet the Tunisian standard of discharge. However, the system showed better removal efficiency after a period of rest. The overall results showed high concentrations in raw wastewater, good performances in the septic tank and variable removal rates in the constructed wetland. Conclusions are drawn from the experimental results and from literature.

Keywords: Wastewater treatment; Vertical flow constructed wetland; Treatment efficiency; Rest period

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