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*Full Length Research Paper*

# Domestic wastewater treatment with a vertical completely drained pilot scale constructed wetland planted with *Corchorus oliterius*

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## Abstract

A pilot scale constructed wetland planted with *Corchorus oliterius* was developed for domestic wastewater treatment. The reactor system was composed of rectangular beds realized in cement. Each bed was filled from the bottom to the top with 0.1 m of gravel (15/25 mm) and 0.30 m of a uniformly distributed medium grain (mean sand diameter = 426,66; uniformity coefficient = 0,37) white sand from the Ebrié lagoon. Two beds planted with yang *C. oliterius* plants (high density: 40 plants/m²; low density: 10 plants/m²) and one control (unplanted bed) were used to perform the experiment. The beds filtrates pH was neutralized to 7. The planted

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beds removed the COD (low density = 61%, high density = 65%) more than the control (54%). Nutrients were also best removed in the planted beds ($NH_4^+$: 67%, $PO_4^{3-}$: 52%) than in the control ($NH_4^+$: 11%; $PO_4^{3-}$: 56%). The increase of the plant density did not influence significantly ($p < 0.05$) pollutants removal. However, this augmentation increased the bed performance. The plants leaves were less contaminated at 0.9 m above the bed surface, suggesting this height for their harvesting for sale.



**Key words:** Domestic wastewater, constructed wetland, treatment, *Corchorus oliterius*.


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