



Potential for denitrification in sequencing batch constructed wetlands cultivated with *T. latifolia* and *C. zizanioides*

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ABSTRACT

Denitrification and uptake by plants in constructed wetlands (CWs) were studied. Nitrate was applied in CWs operated in batch mode. The systems received $50 \text{ g m}^{-3} \text{ NO}_3^- \text{ -N}$, and among six units, three received ethanol as carbon source. The experiment consisted of two main stages, with each one cycle time (t_c) of 3 and 1 d. In an extra stage, the decay values of water variables were assessed. The range of nitrate-nitrogen removal (stage I) was 11.7–54.8% for CWs without ethanol and 98.0–99.9% for CWs receiving the external carbon source. During stage II, $\text{NO}_3^- \text{ -N}$ removals were 3.6–15.7% for CWs without ethanol and 94.7–97.5% for CWs with ethanol addition. CWs were effective for removing nitrate, especially the planted systems. CWs cultivated with vetiver showed the best results in nitrogen removal. The addition of ethanol increased the denitrification efficiency, but increasing nitrite concentrations in the CWs should also be considered.

Keywords: Nitrate; Ecotechnology; Vetiver; Cattail; Constructed wetlands

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