Purification Efficiency of an Experimental System Composed of the Macrophytes Echinochloa Pyramidalis (Lam) Hutch and Cyperus Alternifolius L. for the Phytoremediation of Wastewater

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Abstract:

The aim of this study is to evaluate the purification efficiency of the experimental system consisting of two Congolese plant filters or emerging macrophytes, F-EP (Echinochloa Pyramidalis (Lam) Hutch) and F-CA (Cyperus Alternifolius L) on wastewater. To do this, we set up an experimental device consisting of gravel, fine sand and the two plants. The plants were grown in an experimental pilot plant consisting of 8 tanks each containing wastewater to be treated, plus 2 tanks used as controls. A study of the system's purification performance after 90 days of treatment showed a significant reduction in physical, organic and mineral pollution. For the two planted filters, F-EP (Echinochloa pyramidalis (Lam) Hutch & Chase) and F-CA (Cyperus alternifolius L.), the removal rate at the end of treatment was 81%-91% for COD, almost 100% for turbidity and TSS, 89%-99% for NH4+, NO3- and PO43- ions, and 94%-98% for Ni2+, Cr3+ and Cu2+ ions. We also noted an increase in the levels of organic and mineral pollutants in both plants during treatment. This study shows that Echinochloa Pyramidalis (Lam) Hutch and Cyperus Alternifolius L. are effective macrophyte filters for eliminating physical and chemical pollution in wastewater.

keywords:

Phytoremediation, phytoepuration, pollutants, wastewater.