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Review

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Constructed floating wetlands: a review of research, design, operation and management aspects, and data meta-analysis

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Abstract

This paper summarizes the state-of-the-art on Constructed Floating Wetlands (CFWs). An attempt has been made here to collect and organize current literature and provide an insight to most topics of the ongoing scientific conversation on CFWs. Several issues are discussed such as applications, construction materials, vegetation species, mechanisms for pollutant removal and management strategies. Raw data were extracted from studies and were imposed to statistical analysis in order to reveal correlations (Spearman's r coefficient) between total nitrogen (TN), total phosphorus (TP) and ammonium nitrogen ($\text{NH}_4^+\text{-N}$) concentration reduction and several operational or design parameters, e.g., vegetation aerial coverage, water depth, initial loading, Hydraulic Loading Rate (HLR) and Hydraulic Retention Time (HRT). TN concentration reduction correlated well with initial loading ($r=0.841$; $p=0.000$; $n=28$) and showed a lower correlation with HRT ($r=0.443$; $p=0.013$; $n=28$), and negative correlations with depth ($r=-0.690$; $p=0.000$; $n=28$) and HLR ($r=-0.528$; $p=0.002$; $n=28$). $\text{NH}_4^+\text{-N}$ and TP

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