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## EFFECT OF MICROBIAL ACTIVITY IN THE RHIZOSPHERE OF WETLAND PLANTS ON REMOVAL OF TOTAL ORGANIC CARBON AND NITROGEN FROM WASTEWATER

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### Abstract

Rhizobag incubation experiments were conducted to study microbial biomass carbon (MBC), microbial biomass nitrogen (MBN), soil respiration and enzyme activity (urease and phosphatase) in the rhizosphere soil of three different wetland plants and its influence on the removal of total organic carbon (TOC) and total nitrogen (TN). MBC, MBN, soil respiration and enzyme activity were higher in the rhizosphere than in the non-rhizosphere soil of the wetland plants. Microbial activity in the rhizosphere of the wetland plants was different with *Phragmites australis* > *Coix lacryma-jobi Linn* > *Canna indica linn*. Higher microbial activity in the rhizosphere of *Phragmites australis* resulted from higher concentrations of carbon in the rhizosphere. The removal efficiency of TOC and TN from wastewater was enhanced by higher microbial activity in the rhizosphere soil of the wetland plants. *Phragmites australis* had higher removal efficiencies of TOC and TN compared with *Coix lacryma-jobi Linn* and *Canna indica linn* due to higher microbial activity. The purification capacity of constructed wetlands could be improved by screening for suitable wetland plants with relatively higher microbial activity in the rhizosphere.

*Key words:* wetland plant, rhizosphere, microbial activity, TN, TOC

*Received:* March, 2011; *Revised final:* July, 2011; *Accepted:* July, 2011

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