

Accepted Manuscript

Enhanced nitrogen removal of low C/N domestic wastewater using a biochar-amended aerated vertical flow constructed wetland

Xu Zhou, Xuezhen Wang, Hai Zhang, Haiming Wu

PII: S0960-8524(17)30726-5
DOI: <http://dx.doi.org/10.1016/j.biortech.2017.05.072>
Reference: BITE 18098

To appear in: *Bioresource Technology*

Received Date: 31 March 2017
Revised Date: 7 May 2017
Accepted Date: 12 May 2017



Please cite this article as: Zhou, X., Wang, X., Zhang, H., Wu, H., Enhanced nitrogen removal of low C/N domestic wastewater using a biochar-amended aerated vertical flow constructed wetland, *Bioresource Technology* (2017), doi: <http://dx.doi.org/10.1016/j.biortech.2017.05.072>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Enhanced nitrogen removal of low C/N domestic wastewater using a biochar-amended aerated vertical flow constructed wetland

Xu Zhou^a, Xuezheng Wang^a, Hai Zhang^a, Haiming Wu^{a, b}*

^a College of Natural Resources and Environment, Northwest A&F University, Yangling, Shaanxi 712100, PR China

^b Key Laboratory of Plant Nutrition and the Agri-environment in Northwest China, Ministry of Agriculture, P R China

Abstract

Recently, vertical flow constructed wetlands (VFCWs) with intermittent aeration have been proven as an efficient technology to enhance removal efficiency of organics and nitrogen for wastewater treatment. However, the low denitrification effect in VFCWs was a problem for treating low carbon source wastewater. In this study, intermittent aeration and biochar, produced by biomass pyrolysis, was used to promote the nitrogen removal in VFCWs for low C/N domestic wastewater. Four systems, including non-aerated with non-biochar VFCW, non-aerated with biochar VFCW, aerated with non-biochar VFCW and aerated with biochar VFCW, were conducted for comparing their treatment performances. The results showed that much higher removal of COD (94.9%), $\text{NH}_4^+\text{-N}$ (99.1%), TN (52.7%) and lower N_2O emission ($60.54 \mu\text{g}\cdot\text{m}^{-2}\cdot\text{h}^{-1}$) was obtained in aerated VFCW with biochar addition. The results suggested that adding biochar to intermittent aerated VFCWs could be an effective and appropriate strategy for low C/N wastewater treatment.

Download English Version:

<https://daneshyari.com/en/article/4997010>

Download Persian Version:

<https://daneshyari.com/article/4997010>

[Daneshyari.com](https://daneshyari.com)