

Accepted Manuscript

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Muhammad Hassan, Weimin Ding, Jinhua Bi, Esmaeil Mehryar, Zahir Ahmed Ali Talha, Hongying Huang

PII: S0960-8524(15)01398-X

DOI: <http://dx.doi.org/10.1016/j.biortech.2015.09.115>

Reference: BITE 15628

To appear in: *Bioresource Technology*

Received Date: 13 August 2015

Revised Date: 27 September 2015

Accepted Date: 29 September 2015



Please cite this article as: Hassan, M., Ding, W., Bi, J., Mehryar, E., Talha, Z.A.A., Huang, H., Methane enhancement through oxidative cleavage and alkali solubilisation pre-treatments for corn stover with anaerobic activated sludge, *Bioresource Technology* (2015), doi: <http://dx.doi.org/10.1016/j.biortech.2015.09.115>

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Methane enhancement through oxidative cleavage and alkali solubilisation pre-treatments for corn stover with anaerobic activated sludge

Muhammad Hassan ^a, Weimin Ding ^{a, *}, Jinhua Bi ^b, Esmail Mehryar ^a, Zahir Ahmed Ali Talha ^a, Hongying Huang ^b

^a College of Engineering, Nanjing Agricultural University, Nanjing, Jiangsu 210031, China

^b Institute of Agricultural Resources and Environment, Jiangsu Academy of Agricultural Science, Nanjing, Jiangsu 210014, China

* Corresponding author. Tel +86-25 5860 6502, E-mail address: wmding@njau.edu.cn

Abstract

In the present study, thermo-chemical pre-treatment was adopted to evaluate methane production potential from corn stover by co-digesting it with anaerobic activated sludge. Three chemicals H_2O_2 , $Ca(OH)_2$ and $NaOH$ were selected with two levels of concentration. All thermo-chemical pre-treatments were found significant ($P < 0.05$) to enhance lignocellulosic digestibility and methane production. The results indicated that the methane yield by H_2O_2 -1, H_2O_2 -2, and $NaOH$ -2 treated corn stover were 293.52, 310.50 and 279.42 ml/g.VS which were 57.18%, 66.27% and 49.63% higher than the untreated corn stover respectively. In the previous studies pre-treatment time was reported in days but our method had reduced it to about one hour. H_2O_2 -2 and $NaOH$ -2 treatments remained prominent to increase lignocellulosic degradation vigorously up to

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