

Accepted Manuscript

Integrated bioethanol production from mixtures of corn and corn stover

Sitong Chen, Zhaoxian Xu, Xiujuan Li, Jianming Yu, Mufeng Cai, Mingjie Jin

PII: S0960-8524(18)30322-5
DOI: <https://doi.org/10.1016/j.biortech.2018.02.125>
Reference: BITE 19635

To appear in: *Bioresource Technology*

Received Date: 28 December 2017
Revised Date: 24 February 2018
Accepted Date: 26 February 2018



Please cite this article as: Chen, S., Xu, Z., Li, X., Yu, J., Cai, M., Jin, M., Integrated bioethanol production from mixtures of corn and corn stover, *Bioresource Technology* (2018), doi: <https://doi.org/10.1016/j.biortech.2018.02.125>

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.

Integrated bioethanol production from mixtures of corn and corn stover

Sitong Chen^{1#}, Zhaoxian Xu^{1#}, Xiujuan Li², Jianming Yu¹, Mufeng Cai¹, Mingjie Jin^{1*}

¹ School of Environmental and Biological Engineering, Nanjing University of Science and Technology, 200 Xiaolingwei Street, Nanjing 210094, China.

² College of Biotechnology and Pharmaceutical Engineering, Nanjing Tech University, No. 30 South Puzhu Road, Nanjing 211816, China.

*Corresponding Authors: Prof. Mingjie Jin, Tel/fax: +86-(025)-84315173; E-mail address: jinmingjie@njust.edu.cn

These authors contributed equally to this work.

Abstract:

Conversion of lignocellulosic biomass, such as corn stover (CS), to ethanol has encountered issues of inhibition from degradation products, low ethanol titer and low ethanol productivity. This work integrated CS into corn ethanol process for effective conversion. CS was pretreated using either dilute alkali or dilute acid pretreatment. The pretreated CS was enzymatically hydrolyzed and then mixed with liquefied corn for ethanol fermentation. Fermentation strains, substrate mixing ratios and fed-batch strategy were investigated. The mixture of alkali pretreated CS and corn at solids loadings of 10% and 20%, respectively, resulted in 92.30 g/L ethanol. Ethanol titer was further improved to 96.43 g/L with a fed-batch strategy. The mixture of dilute acid pretreated CS and corn achieved a better performance, leading to 104.9 g/L ethanol with 80.47% ethanol yield and a productivity as high as 2.19 g/L/h. This work demonstrated effective conversion of CS and corn together to ethanol.

Keywords: Cellulosic ethanol, Corn ethanol, Lignocellulosic biomass conversion, Fermentation inhibition, Mixed substrates

Download English Version:

<https://daneshyari.com/en/article/7067557>

Download Persian Version:

<https://daneshyari.com/article/7067557>

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