

## Accepted Manuscript

Effect of dilute acid pretreatment severity on the bioconversion efficiency of *Phalaris aquatica* L. lignocellulosic biomass into fermentable sugars

Ioannis A. Pappas, Zoi Koukoura, Chrisoula Tananaki, Christos Goulas

PII: S0960-8524(14)00738-X

DOI: <http://dx.doi.org/10.1016/j.biortech.2014.05.072>

Reference: BITE 13480

To appear in: *Bioresource Technology*

Received Date: 25 February 2014

Revised Date: 11 May 2014

Accepted Date: 21 May 2014



Please cite this article as: Pappas, I.A., Koukoura, Z., Tananaki, C., Goulas, C., Effect of dilute acid pretreatment severity on the bioconversion efficiency of *Phalaris aquatica* L. lignocellulosic biomass into fermentable sugars, *Bioresource Technology* (2014), doi: <http://dx.doi.org/10.1016/j.biortech.2014.05.072>

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.

# Effect of dilute acid pretreatment severity on the bioconversion efficiency of *Phalaris aquatica* L. lignocellulosic biomass into fermentable sugars

Ioannis A. Pappas<sup>1,2</sup>, Zoi Koukoura<sup>2</sup>, Chrisoula Tananaki<sup>3</sup>, Christos Goulas<sup>4</sup>

<sup>1</sup>Chemical Process Engineering Research Institute, LPRE, 6th km Harilaou Thessaloniki Road, 57001, Thessaloniki

<sup>2</sup>Aristotle University, Department of Forestry and Natural Environment, Range Ecology Laboratory, 54124, Thessaloniki

<sup>3</sup>Aristotle University, School of Agriculture, Apiculture-Sericulture Laboratory, 54124, Thessaloniki

<sup>4</sup>Idras 33, 55236, Panorama, Thessaloniki

\*Corresponding author: e-mail: [pappas@cperi.certh.gr](mailto:pappas@cperi.certh.gr), telephone: 2310498178

## Abstract

The effect of dilute acid pretreatment severity on the bioconversion efficiency of *Phalaris aquatica* lignocellulosic biomass into fermentable sugar monomers was studied. The pretreatment conditions were expressed in a combined severity factor (CSF), ranged from 0.13 to 1.16. The concentration of xylose and total monomeric sugars released from hemicellulose increased with pretreatment as the CSF increased. Dilute acid pretreatment resulted in about 1.7 fold increase in glucose release relative to the untreated biomass, while CSF was positively correlated with glucose recovery. A maximum glucose yield of 85.05 % was observed at high severity values (i.e. CSF 1.16) after 72h. The total amount of sugars released (i.e. xylose and glucose) was increased with pretreatment severity and a maximum conversion efficiency of 76.1 % of structural carbohydrates was obtained at a CSF =1. Our data indicated that *Phalaris aquatica* L. is an alternative bioethanol feedstock and that hemicellulose removal promotes glucose yield.

Download English Version:

<https://daneshyari.com/en/article/7077211>

Download Persian Version:

<https://daneshyari.com/article/7077211>

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