

Accepted Manuscript

Corn silage fungal-based solid-state pretreatment for enhanced biogas production in anaerobic co-digestion with cow manure

Marina Tišma, Mirela Planinić, Ana Bucić-Koöić, Mario Panjičko, Gregor D. Zupančič, Bruno Zelić

PII: S0960-8524(18)30044-0
DOI: <https://doi.org/10.1016/j.biortech.2018.01.037>
Reference: BITE 19394

To appear in: *Bioresource Technology*

Received Date: 7 November 2017
Revised Date: 3 January 2018
Accepted Date: 7 January 2018

Please cite this article as: Tišma, M., Planinić, M., Bucić-Koöić, A., Panjičko, M., Zupančič, G.D., Zelić, B., Corn silage fungal-based solid-state pretreatment for enhanced biogas production in anaerobic co-digestion with cow manure, *Bioresource Technology* (2018), doi: <https://doi.org/10.1016/j.biortech.2018.01.037>

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.



1 **Corn silage fungal-based solid-state pretreatment for enhanced biogas production in**
2 **anaerobic co-digestion with cow manure**

3 Marina Tišma^{1*}, Mirela Planinić¹, Ana Bucić-Koöić¹, Mario Panjičko², Gregor D.
4 Zupančič², Bruno Zelić³

5 ¹Josip Juraj Strossmayer University of Osijek, Faculty of Food Technology Osijek, Franje
6 Kuhača 20, HR-31000 Osijek, Croatia

7 ²CROTEH - Sustainable Technologies Development Centre Ltd., Dragutina Golika 63,
8 HR-10000 Zagreb, Croatia

9 ³University of Zagreb, Faculty of Chemical Engineering and Technology, Marulićev trg
10 19, HR-10000 Zagreb, Croatia

11 *corresponding author: marina.tisma@ptfos.hr

12 **Abstract:**

13 The objective of this research was to use white-rot fungus *Trametes versicolor* for corn
14 silage pretreatment and to investigate the effect of pretreatment on biogas
15 productivity. Semi-continuous pilot-scale experiment, comprised of two experimental
16 phases, was carried out. In the first phase, operational conditions of the full-scale
17 biogas plant were reproduced at pilot-scale. In that phase, the reactor was daily fed
18 with the mixture of cow manure, digestate from industrial postfermentor, corn grits
19 and ensiled corn silage, and the average methane generation rate $0.167 \text{ m}^3_{\text{CH}_4} \text{ kg}_{\text{VS}}^{-1}$.
20 In the second phase, corn grits and ensiled corn silage were replaced with corn silage
21 pretreated with *T. versicolor*, and the average methane generation rate increased up
22 to $0.236 \text{ m}^3_{\text{CH}_4} \text{ kg}_{\text{VS}}^{-1}$. The results of this study suggest that application of fungal-based

Download English Version:

<https://daneshyari.com/en/article/7068286>

Download Persian Version:

<https://daneshyari.com/article/7068286>

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