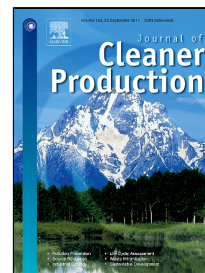


Accepted Manuscript

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PII: S0959-6526(17)31687-6
DOI: 10.1016/j.jclepro.2017.07.231
Reference: JCLP 10234
To appear in: *Journal of Cleaner Production*
Received Date: 05 January 2017
Revised Date: 28 July 2017
Accepted Date: 29 July 2017

Please cite this article as: Visva Bharati Barua, Ajay S. Kalamdhad, Biochemical Methane Potential Test of Untreated and Hot Air Oven Pretreated Water Hyacinth: A Comparative Study, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.07.231

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Word count = 6903

Biochemical Methane Potential Test of Untreated and Hot Air Oven Pretreated Water Hyacinth: A Comparative Study

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ABSTRACT

Water hyacinth is capable of miraculously concealing an entire freshwater body within two weeks by forming thick mats. These thick mats of water hyacinth causes nuisance to both aquatic organisms and human beings. As it intimidates the existence of aquatic organisms and bothers the livelihood and recreational activities of human beings. Therefore this weed is used for biochemical methane potential test in order to check it's prospective for producing biogas. Biochemical methane potential (BMP) was examined for both untreated as well as hot air oven pretreated water hyacinth whole plant (i.e., leaves, stem and roots) to determine the ideal food to microorganism (F/M) ratio. A comparative study conducted between untreated and hot air oven pretreated water hyacinth revealed that the F/M ratio 2 of the untreated water hyacinth, showed the highest methane yield of 143 ± 14 mL CH₄/g VS on the 32nd day whereas for hot air oven pretreated water hyacinth F/M ratio 1.5 showed the highest methane yield of 193 ± 22 mL CH₄/g VS on the 14th day itself. It was observed that the hot air oven pretreated water hyacinth showed enhanced biogas production within a very short duration. Also, the ideal F/M ratio was determined for both untreated and pretreated water hyacinth through BMP study.

KEYWORDS: Water hyacinth, hot air oven pretreatment, biochemical methane potential (BMP) test, food to microorganisms ratio (F/M).

1. INTRODUCTION

Water hyacinth is the world's most dreaded and beautiful aquatic weed. Its eye-catching lavender coloured flowers and round green shimmery leaves caught the attention of people to utilise it as a decorative plant (Bhattacharya and Kumar, 2010). But slowly and steadily it started showing its true colour, by entirely enveloping the freshwater body within few days (Forrest et al., 2010). Water hyacinth's proficiency of forming thick mats threatens the

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