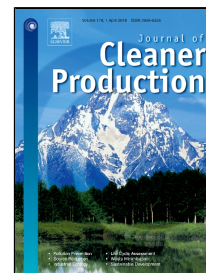


Accepted Manuscript

Enhancing performance and stability of anaerobic digestion of chicken manure using thermally modified bentonite

Junyi Ma, Muhammad Amjad Bashir, Junting Pan, Ling Qiu, Hongbin Liu, Limei Zhai, Abdur Rehim



PII: S0959-6526(18)30433-5
DOI: 10.1016/j.jclepro.2018.02.121
Reference: JCLP 12068
To appear in: *Journal of Cleaner Production*
Received Date: 04 August 2017
Revised Date: 11 February 2018
Accepted Date: 12 February 2018

Please cite this article as: Junyi Ma, Muhammad Amjad Bashir, Junting Pan, Ling Qiu, Hongbin Liu, Limei Zhai, Abdur Rehim, Enhancing performance and stability of anaerobic digestion of chicken manure using thermally modified bentonite, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.02.121

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 Enhancing performance and stability of anaerobic digestion of chicken manure using
2 thermally modified bentonite

3

4 Junyi Ma^a, Muhammad Amjad Bashir^a, Juntong Pan^{a*}, Ling Qiu^b, Hongbin Liu^a,
5 Limei Zhai^a, Abdur Rehim^c

6 a. Institute of Agricultural Resources and Regional Planning, CAAS, 100083, Beijing,
7 PR. China

8 b. College of Mechanic and Electronic Engineering, NWFU, 712100, Yangling, PR.
9 China

10 c. Department of Soil Science, Bahauddin Zakariya University, 60800, Multan,
11 Pakistan

12 Correspondence email: panjuntong@caas.cn

13

14 **Abstract**

15 In this study, anaerobic digestion was carried out along with bentonite addition to
16 avoid ammonia accumulation, which significantly inhibits methane production. To
17 make better use of bentonite, calcinations were applied for modification. Chicken
18 manure was anaerobically digested for 75 days at 35±1 °C in lab-scale sequencing
19 batch reactors. Better performance in methane production and process stability was
20 observed in reactors treated with bentonite, compared to those without bentonite.
21 Among all treatments, the maximum increase of 41% in cumulative methane was
22 found with the treatment where bentonite thermally modified at 300 °C was applied.
23 The treatment also revealed stable variation of pH, total ammonia nitrogen (TAN),
24 and free NH₃ contents. In addition, adsorption capacity of bentonite to TAN was

* Corresponding author at: Institute of Agricultural Resources and Regional Planning, CAAS, 100083, Beijing, PR China. Tel.: +86 1082106899
E-mail address: panjuntong@caas.cn (J.T. Pan)

Download English Version:

<https://daneshyari.com/en/article/8096915>

Download Persian Version:

<https://daneshyari.com/article/8096915>

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