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Effects of feedstock ratio and organic loading rate on the anaerobic mesophilic co-digestion of rice straw and pig manure

Dong Li, Shengchu Liu, Li Mi, Zhidong Li, Yuexiang Yuan, Zhiying Yan, Xiaofeng Liu

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1 Effects of feedstock ratio and organic loading rate on the anaerobic

2 mesophilic co-digestion of rice straw and pig manure

3 Dong Li^a, Shengchu Liu^b, Li Mi^b, Zhidong Li^a, Yuexiang Yuan^a, Zhiying Yan^a,

4 Xiaofeng Liu^{a*}

5 ^a Key Laboratory of Environmental and Applied Microbiology,

6 Environmental Microbiology Key Laboratory of Sichuan Province, Chengdu

7 Institute of Biology, Chinese Academy of Science, Chengdu 610041, China;

8 ^bChengdu Zhongke Energy& Environmental Protection CO.LTD, Chengdu

9 610041, China

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11 Abstract: In order to investigate the effects of feedstock ratio and organic

12 loading rate (OLR) on the anaerobic mesophilic co-digestion of rice straw

13 (RS) and pig manure (PM), batch bottle tests (2.5 L) were carried out at

14 volatile solid (VS) ratios of 0:1, 1:2, 1:1, 2:1, and 1:0 (RS/PM), and

15 continuous bench experiments (40 L) were carried out at OLRs of 3.0, 3.6,

16 4.2, 4.8, 6.0, 8.0, and 12.0 kg VS/(m³•d) with optimal VS ratio. The results

17 showed that the optimal ratio was 1:1 in terms of biogas yield. Stable biogas

18 production with an average specific biogas production of 413 L/kg VS was

19 obtained at an OLR of 3-8 kg VS/(m³•d). Anaerobic co-digestion was

20 severely inhibited by the accumulation of volatile fatty acids when the OLR

21 was 12 kg VS/(m³•d). Further, light and serious foaming were observed at

* Corresponding author. Address: No.9 Section 4, Renmin Nan Road, Chengdu, Sichuan, P.R. China
Tel.: +86 28 82890229; Fax: +86 28 82890233
E-mail address: liuxf@cib.ac.cn

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