

EVALUASI EMISI GAS METAN (CH₄) PADA FESES SAPI POTONG YANG TEROLAH DAN TIDAK TEROLAH

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INTISARI

Penelitian ini bertujuan untuk mengetahui emisi gas CH₄ pada feses yang diolah menjadi biogas (menghasilkan sludge biogas) dan kompos dan emisi gas CH₄ pada feses sapi potong yang tidak diolah yaitu feses segar dan feses ditimbun. Sampel yang digunakan dalam penelitian adalah feses segar sapi potong, feses yang ditimbun, *sludge* dan kompos yang berasal dari Kelompok Ternak Ngudi Mulyo, Pleret, Bantul. Pengukuran emisi gas CH₄ dilakukan menggunakan sungkup dengan volume 25 L dan dilengkapi alat berupa kipas, karet, termometer, dan baterai. Pengambilan sampel gas dilakukan setiap 2 minggu sekali selama 8 minggu. Setiap pengambilan sampel gas dilakukan dengan interval waktu 10 menit sebanyak 3 kali. Sampel gas dianalisis menggunakan *Gas Chromatografi* (GC) kemudian dihitung fluks gas CH₄ yang diperoleh. Variabel data uji yang lain adalah uji pH, kadar air, suhu, kadar bahan organik, kadar C organik, kadar N total dan C/N rasio. Hasil penelitian menunjukkan bahwa feses ditimbun menghasilkan emisi gas CH₄ paling tinggi yaitu sebesar 173.101,00 ppm, feses segar menghasilkan emisi gas CH₄ sebesar 162.797,10 ppm, *sludge* menghasilkan emisi gas CH₄ sebesar 3.070,55 ppm dan kompos menghasilkan emisi gas CH₄ sebesar 2.963,33 ppm selama 8 minggu. Terjadi kenaikan emisi gas CH₄ pada feses ditimbun sebesar 6,33% jika dibandingkan feses segar. *Sludge* dan kompos mengalami penurunan emisi gas CH₄ sebesar 98,11% dan 98,18% jika dibandingkan feses segar. Kesimpulan penelitian ini adalah pengolahan limbah menjadi biogas maupun kompos dapat mengurangi emisi gas CH₄.

Kata kunci: Feses sapi potong, Emisi gas CH₄, Sludge dan Kompos.

Evaluation of Methane (CH₄) Gas Emission of Treated and Untreated Cattle Feces

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ABSTRACT

This research is aimed to determine the emission of CH₄ gas from treated cattle feces that is sludge biogas and compost (cattle feces that utilized as fertilizer) and also untreated cattle feces that is fresh cattle feces and buried cattle feces. Materials that used in this study were collected from animal farm community of Ngudi Mulyo, Pleret, Bantul. Measurement of CH₄ gas emission is using a chamber with a volume of 25 L and equipped with a fan, rubber, thermometer, and battery. Gas that used as samples were taken every 2 weeks for 8 weeks of observation. The sampling of gas is taken within the intervals of 10 minutes and was done in triplicate. Gas samples were analyzed using Gas Chromatography (GC) and then the flux of obtained CH₄ gas was calculated. Tests were carried out in the form of pH test, water content, temperature, organic matter content, organic C content, total N content and C/N ratio. The results of this research showed that the buried feces produced the highest CH₄ gas emissions of 173.101,00 ppm, fresh feces produced CH₄ gas emissions of 162.797,10 ppm, sludge produced CH₄ gas emissions of 3.070,55 ppm and compost produced 2.963,33 ppm CH₄ gas emissions for 8 weeks. There was an increase of CH₄ gas emission in buried feces by 6.33% compared to fresh feces. There are the decrease of CH₄ gas emission from sludge biogas and compost of 98,11% and 98,18% respectively compared to fresh feces. It was concluded that the processing of cattle feces to biogas and compost is important to reduce CH₄ gas emissions.

Keyword: Cattle feces, CH₄ gas emission, Sludge and Compost