

ANALISIS PENGARUH CO-DIGESTION FESES SAPI PERAH DAN ISI RUMEN TERHADAP PRODUKSI DAN EMISI METANA (CH₄)

Muhammad Arfy Abror

19/442999/PT/08131

INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh pencampuran bahan baku pada proses pencernaan anaerobik berupa biogas dengan proses *co-digestion* berupa feses sapi perah dan isi rumen terhadap produksi dan emisi CH₄. Penelitian ini dilakukan dengan melakukan pencampuran bahan baku berupa feses sapi perah dan isi rumen dengan komposisi bahan baku menggunakan perbandingan 75:25, 50:50, dan 25:75. Proses pencernaan anaerobik berlangsung selama 40 hari dan dilakukan analisis karakteristik bahan baku biogas meliputi pH, suhu, dan rasio C/N, serta analisis kandungan CH₄ menggunakan metode Gas Kromatografi dilanjutkan dengan perhitungan nilai fluks CH₄ untuk mengetahui emisi CH₄ yang dihasilkan. Data hasil penelitian dianalisis secara statistik menggunakan *One-Way Analysis of Variance*, jika terdapat perbedaan signifikan dilakukan uji lanjut *Tukey (HSD)*. Berdasarkan hasil penelitian, dapat disimpulkan bahwa pencernaan anaerobik dengan proses *co-digestion* berupa pencampuran feses sapi perah dan isi rumen dengan komposisi bahan baku 75:25, 50:50, dan 25:75 belum mampu meningkatkan produksi CH₄ serta mengurangi emisi CH₄ secara optimal. Namun hasil penelitian ini tetap dapat dijadikan sebagai pencampuran alternatif untuk menghasilkan biogas.

Kata kunci : *co-digestion*, emisi CH₄, produksi CH₄, feses sapi perah, isi rumen, biogas.

ANALYSIS OF THE EFFECT OF CO-DIGESTION OF DAIRY COW FECES AND RUMEN CONTENT ON METAHAN (CH₄) PRODUCTION AND EMISSIONS

Muhammad Arfy Abror

19/442999/PT/08131

ABSTRACT

This study aims to determine the effect of mixing raw materials in the anaerobic digestion process for biogas production with co-digestion of dairy cow feces and rumen content on CH₄ production and emissions. The study was conducted by mixing raw materials of dairy cow feces and rumen contents with a ratio of 75:25, 50:50, and 25: 75. The anaerobic digestion process lasted for 40 days. Analysis of biogas raw material characteristics including pH, temperature, and C/N ratio was carried out, as well as CH₄ content analysis using the Gas Chromatography method followed by CH₄ flux calculation to determine the resulting CH₄ emissions. Data from the study were statistically analyzed using One-Way Analysis of Variance, and if there was a significant difference, the Tukey (HSD) test was performed. Based on the research result, it can be concluded that anaerobic co-digestion with a mixture of raw materials in the form of dairy cow feces and rumen contents with raw material compositions of 75:25, 50:50, and 25:75 has not been able to increase CH₄ production and reduce CH₄ emissions optimally. However, the results of study can still be used as an alternative mixture for producing biogas.

Keyword : co-digestion, CH₄ emissions, CH₄ production, dairy cow feces, rumen content, biogas.