

KARAKTERISTIK FESES SAPI POTONG DAN KUDA SEBAGAI BAHAN BAKU BIOGAS

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INTISARI

Penelitian ini bertujuan untuk mengetahui perbedaan karakteristik feses sapi potong dan kuda sebagai bahan dasar pembuatan biogas. Penelitian dilaksanakan di Laboratorium Ternak Potong, Kerja, dan Kesayangan, Fakultas Peternakan, Universitas Gadjah Mada selama 5 bulan. Penelitian menggunakan 4 ekor sapi potong dan 4 ekor kuda. Parameter yang diteliti adalah karakteristik fisik dan kimia feses dan dari pembuatan biogas berupa volume gas dan kandungan gas metana. Karakteristik fisik berupa tekstur, warna, berat, dan volume. Karakteristik kimia berupa kadar air dan karbon/nitrogen (C/N) rasio. Data dianalisis menggunakan *T-test*. Hasil penelitian pada karakteristik fisik berupa tekstur, warna, volume, dan berat feses sapi dan kuda berturut-turut masing-masing adalah ($2,75 \pm 0,96$ dan $2,75 \pm 0,96$); ($3,75 \pm 0,50$ dan $2,5 \pm 0,58$); ($8,21 \pm 1,24$ dan $6,36 \pm 3,15$ liter/ekor/hari); ($8,82 \pm 1,38$ dan $6,57 \pm 3,13$ kg/ekor/hari). Karakteristik warna yang menunjukkan berbeda nyata ($P < 0,05$) antara feses sapi dan kuda, tetapi tekstur, berat, dan volume keduanya berbeda tidak nyata. Hasil penelitian pada karakteristik kimia berupa kadar air dan C/N rasio sapi dan kuda berturut-turut masing-masing ($74,02 \pm 3,62$ dan $77,37 \pm 1,59$ %); ($4,64 \pm 1,09$ dan $6,12 \pm 1,07$). Kadar air dan C/N rasio feses kuda lebih tinggi ($P < 0,05$) daripada feses sapi. Pembuatan biogas feses sapi dan kuda menghasilkan nyala api pertama ($16,00 \pm 1,41$ dan $7,50 \pm 0,70$ hari), dan volume ($275,77$ dan $3640,00 \pm 367,69$ ml) serta mengandung gas metana ($32,29 \pm 0,91$ dan $29,42 \pm 29,55$ %/V). Nyala api digester kuda lebih dulu ($p < 0,05$) dari digester sapi potong, tetapi volume dan kandungan gas metana dari feses sapi dan kuda berbeda tidak nyata. Konsumsi pakan sapi dan kuda adalah ($12,16 \pm 0,45$ dan $6,69 \pm 1,62$ kg/ekor/hari). Konsumsi pakan sapi lebih tinggi ($P < 0,05$) daripada kuda. Dari penelitian disimpulkan bahwa karakteristik yang membedakan feses sapi potong dan kuda adalah karakteristik kimia berupa kadar air dan C/N rasio, sedangkan produksi gas dari feses kuda lebih besar dari feses sapi.

Kata kunci: Karakteristik Feses, Sapi, Kuda, Biogas, Produksi gas

THE FECES CHARACTERISTIC OF BEEF CATTLE AND HORSES AS A RAW MATERIAL OF BIOGAS

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ABSTRACT

This research was aimed to determine the difference feces characteristics of beef cattle and horses as raw materials of biogas. The research was conducted in the Laboratory of Meat, Draught, and Companion, Faculty of Animal Science, Universitas Gadjah Mada. Four beef cattle and four horses were used in this research. The observed data were physical and chemical characteristics of feces and results of biogas, i.e gas volume and methane. Physical characteristic were texture, color, weight, and gas volume. Chemical characteristic were water content and C/N ratio. Data were analyzed using *T-test*. The result of study showed that physical characteristic were texture, color, gas volume, and weight of beef cattle and horses feces respectively; $2,75 \pm 0,96$ vs $2,75 \pm 0,96$; $3,75 \pm 0,50$ vs $2,5 \pm 0,58$; $8,21 \pm 1,24$ vs $6,36 \pm 3,15$ liter/head/day; and $8,82 \pm 1,38$ vs $6,57 \pm 3,13$ kg/head/day. There was a significant difference ($P < 0,05$) to the color characteristic of beef cattle feces and horses feces, while the texture, weight, and gas volume had no significant difference. The result of chemical characteristic were water content and C/N ratio of beef cattle and horses feces respectively; $74,02 \pm 3,62$ vs $77,37 \pm 1,59$ %; $4,64 \pm 1,09$ and $6,12 \pm 1,07$. Chemical characteristic of beef cattle and horses feces were significantly different with averages of water content and C/N ratio. Water content and C/N ratio of horses feces are highest ($P < 0,05$) than beef cattle feces. Biogas with beef cattle and horses feces produced first biogas flame; $16,00 \pm 1,41$ vs $7,50 \pm 0,70$ day, gas volume for beef cattle and horses respectively; $1312,50 \pm 143,61$ vs $1425,00 \pm 403,11$ ml, and methane for beef cattle and horses respectively; $32,29 \pm 0,91$ vs $29,42 \pm 29,55$ %. The first biogas flame of horses feces has come ahead ($P < 0,05$) than beef cattle feces, while gas volume and methane from beef cattle and horses had no significant difference. Feed intake for beef cattle and horses respectively; $12,16 \pm 0,45$ vs $6,69 \pm 1,62$ kg/head/day. Feed intake of beef cattle are highest ($P < 0,05$) than horses. The conclusion shows that difference feces characteristic beef cattle those of horse in term of water content and C/N ratio, while horses feces produces much gas than beef cattle feces.

Keywords : Feces characteristic, Cattle, Horse, Biogas, Gas production