Perbandingan potensi inokulum cairan rumen sapi dengan feses sapi dalam mengolah lumpur tinja menjadi gas metana = Perbandingan potensi inokulum cairan rumen sapi dengan feses sapi dalam mengolah lumpur tinja menjadi gas metana

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Abstrak

[Sekitar 58,9% penduduk Indonesia bergantung pada tangki septik untuk mengolah tinja, namun 90% dari IPLT yang ada tidak beroperasi dengan baik. Anaerobic digestion (AD) adalah teknologi alternatif yang dapat menggantikan sistim saat ini, namun dibutuhkan inokulum yang sesuai agar dapat mengolah lumpur tinja. Penelitian ini bertujuan untuk mengetahui pengaruh pencampuran inokulum cairan rumen sapi (R) dan feses sapi (F) ke dalam lumpur tinja, dan penambahan co-substrat serbuk kayu (SK) dan daun kering (DK) terhadap pembentukan gas metana. Metode yang digunakan adalah biochemical methane potential (BMP). Batasan yang digunakan adalah massa inkubasi 28 hari, suhu inkubator 35oC, rasio substrat/inokulum (RSI) 1:2, sampel triplo, dan volume efektif 50%. Substrat lumpur tinja memiliki karakteristik COD 8,99 g/L, TS 8,1 g/L, VS 7,1 g/L, dan C/N 15,2. Hasil kombinasi substrat lumpur tinja dengan co-substrat SK dan DK menghasilkan nilai C/N 24,6 dan 16,8. Dari hasil uji BMP 28 hari, potensi gas metana RSK dan RDK adalah 60,5 dan 51,5 mLCH4/gVS. Kombinasi feses sapi, FSK dan FDK, menghasilkan 1,7 dan 37,7 mLCH4/gVS. Kesimpulan dari penelitian ini adalah inokulum (R) memiliki potensi menghasilkan gas metana lebih besar ketimbang (F), dan campuran co-substrat tidak memiliki pengaruh yang signifikan terhadap pembentukan gas metana.
.....About 58,9% of Indonesians people rely on septic tank to process fecal waste, but 90% of fecal treatment facilities doesn't function properly. Anaerobic Digestion (AD) is an alternative technology than could replace the existing system, but it requires a compatible inoculum to digest fecal sludge waste. This research aims to determine the effects of adding inoculum from cow's rumen fluid (R) and cows feces (F) into fecal sludge, and also determine the effect of combination of sawdust (SK) and dried leaves (DK) to the methane gas production. The biochemical methane potential (BMP) method is used in this research. The research frameworks consist of 28 days incubation period, incubator temperature of 35oC, 1:2 substrate-to-inoculum ratios (RSI), triplicate sample and 50% effective volume. The sewage sludge characteristics are COD 8,99 g/L, TS 8,1 g/L, VS 7,1 g/L and C/N 15,2. The combination of fecal sludge substrate with sawdust co-substrate and dried leaves yields C/N value of 24,6 and 16,8 respectively. The results of this research are the combination of rumen with RSK and RDK yields 60,5 dan 51,5 mLCH4/gVS respectively. The combination of cow feces with FSK and FDK yields 1,7 dan 37,7 mLCH4/gVS. This experiment concluded that inoculum (R) has the highest methane production compare to (F) and the combination of co-substrate (SK) and (DK) has little influence in methane gas production., About 58,9% of Indonesian‟s people rely on septic tank to process fecal waste, but 90% of fecal treatment facilities doesn‟t function properly. Anaerobic Digestion (AD) is an alternative technology than could replace the existing system, but it requires a compatible inoculum to digest fecal sludge waste. This research aims to determine the effects of adding inoculum from cow‟s rumen fluid (R) and cow‟s feces (F) into fecal sludge, and also determine the effect of combination of sawdust (SK) and dried leaves (DK) to the

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