

Intisari

Penambahan inokulum mikroorganisme dapat meningkatkan produksi biogas dari *Palm Oil Mill Effluent* (POME). Penelitian ini bertujuan untuk mengetahui pengaruh penambahan inokulum sedimen kolam ikan dan cairan kolam anaerobik pabrik kelapa sawit (PKS) pada laju produksi biogas. Pada penelitian ini digunakan POME (Po) sebagai substrat dalam fermentasi dengan penambahan inokulum yang berasal dari cairan kolam anaerobik PKS (Ap) dan sedimen kolam ikan (Si), sehingga perlakuan kombinasi inokulum dalam fermentasi POME yaitu Po, PoAp, PoApSi, dan PoSi. Pengujian terhadap karakteristik POME dan kandungan Fe dalam sedimen kolam ikan dilakukan sebelum fermentasi dimulai. Fermentasi dilakukan pada suhu 60°C dengan metode *batch-fermentation* selama 20 jam dengan pengamatan produksi biogas menggunakan AMD (*Automatic Manometer Datalogger*). Perlakuan PoAp memberikan produksi biogas paling tinggi di antara perlakuan lainnya, sehingga penambahan inokulum cairan kolam anaerobik PKS memberikan pengaruh positif terhadap produksi biogas POME.

Kata kunci: biogas, *palm oil mill effluent*, termofilik

Abstract

The addition of microorganism inoculum can increase biogas production from Palm Oil Mill Effluent (POME). This study aims to determine the effect of adding fish pond sediment inoculum and palm oil mill anaerobic pond fluid on the rate of biogas production. In this study, POME (Po) was used as a substrate in fermentation with the addition of inoculum derived from palm oil mill anaerobic pond fluid (Ap) and fish pond sediment (Si), so that the combined treatment of inoculum in POME fermentation were Po, PoAp, PoApSi, and PoSi. Tests on POME characteristics and Fe content in fish pond sediments were carried out before the fermentation started. Fermentation was carried out at a temperature of 60°C with the batch-fermentation method for 20 hours with the observation of biogas production using AMD (Automatic Manometer Datalogger). The PoAp treatment gave the highest biogas production among other treatments, so the addition of palm oil mill anaerobic pond liquid inoculum had a positive effect on POME biogas production.

Keywords: biogas, palm oil mill effluent, thermophilic