

Comparison of process stability in methane generation from palm oil mill effluent using dairy manure as inoculum



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H I G H L I G H T S

- This study investigated methane production from dairy manure as inoculum.
 - Addition of dairy manure improved both the start-up time and rate of biogas production.
 - Biogas production was achieved at ambient temperature.
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The potential of methane production in a continuously stirred tank reactor (CSTR) was investigated using dairy manure as inoculum at pH 6.8 and 37 °C temperature in this study. Two identical anaerobic bioreactors namely CSTR₁ and CSTR₂ filled with palm oil mill effluent (POME) as a carbon source were used. CSTR₁ was not added with the inoculum, while CSTR₂ was added with dairy manure as inoculum. Both the reactors were allowed to run for 5 days (d) in batch condition at hydraulic retention time (HRT) 10 d. The CSTR₂ produced 0.85 L/d gas yield and 59% methane content compared to 0.39 L/d gas yield and 20% produced in CSTR₁, respectively. A better chemical oxygen demand (COD) reduction percentage of 48% was found in CSTR₂ compared to CSTR₁ with 33%. The investigation showed that dairy manure as inoculum has a marked influence on the start-up period and the biogas production rate.

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