

# 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

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- 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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## A R T I C L E I N F O

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## A B S T R A C T

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 CSTR<sub>1</sub> and CSTR<sub>2</sub> filled with palm oil mill effluent (POME) as a carbon source were used. CSTR<sub>1</sub> was not added with the inoculum, while CSTR<sub>2</sub> 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 CSTR<sub>2</sub> produced 0.85 L/d gas yield and 59% methane content compared to 0.39 L/d gas yield and 20% produced in CSTR<sub>1</sub>, respectively. A better chemical oxygen demand (COD) reduction percentage of 48% was found in CSTR<sub>2</sub> compared to CSTR<sub>1</sub> 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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