

Performance of cattle dung at different total solids in prototype digesters for biogas production

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■ **ABSTRACT** : An experiment was conducted to study the performance of cattle dung at different total solids (TS) viz., 10, 12, 15 and 18 per cent in three in prototype digesters of 1:0.5, 1:1 and 1:1.7 (H/D ratio) size for a retention period of 56 days under laboratory conditions. The results indicated that, at 10% TS, the cumulative gas production was maximum (345.8 litres) in 1:1.7 H/D size digester followed by 1:1 size digester (305.2 litres) and 1:0.5 size digester (255.8 litres) at the end of retention period of 56 days. While the maximum cumulative gas production of 393.9 litres was recorded in 1:1.7 H/D size digester followed by 1:1 size digester (358.1 litres) and 1:0.5 size digester (297.0 litres) at the end of retention period of 56 days at 12% TS . Whereas at 15 % TS, the maximum cumulative gas production of 474.5 litres was recorded in 1:1.7 H/D size digester followed by 1:1 size digester (419.3 litres) and 1:0.5 size digester (348.4 litres) at the end of retention period of 56 days. It was observed that the cumulative gas production was maximum in 1:1.7 H/D size digesters followed by 1:1 H/D size digester and 1:0.5 H/D size digester at all the total solids fed. The average percentage of methane content was maximum (57.09 %) in the gas produced from cattle dung at 15 per cent TS in 1:1.7 size (H/D ratio) digester, whereas a minimum of 52.48 percentage of methane content was recorded in the gas produced from cattle dung at 10 per cent TS in 1:0.5 size (H/D ratio) digester.

■ **KEY WORDS** : Biogas, Cattle dung, Prototype digesters

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