

## ABSTRACT

Mixing and scum breaking in an anaerobic digester has been generally believed to increase the gas production rate with some doubts raised in the absence of adequate data. The present work was intended to settle this controversial issue following an empirical approach. Statistically concludable experiments were carried out using the elaborate experimental set up with cowdung as feedstock to investigate the effect of (a) mechanical agitation, (b) location, speed and dimensions of paddle and (c) time and frequency of agitation on biogas yield. Temperature of digestion was maintained at 35°C. Experimental findings revealed no effect of these parameters on gas production. Minimum agitation of once a day at 60 rpm for 2 min. with paddle size of  $d = 0.5D$  and  $w = 0.05D$  could prevent scum formation. However, the scum thickness of even 61 per cent of slurry depth observed after 143 days of digestion did not inhibit the methanogenesis. Therefore, the provision of mixing and scum breaking system is not recommended for accelerating the microbial activity in the digester or ultimately the gas production.