



Enhancing the Stability of Anaerobic Vegetable Waste Digester through Sewage Sludge Supplementaion for Biogas Production – A Comparative Study.

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Abstract : Anaerobic co-digestion of vegetable waste and sewage sludge was studied extensively and the outcome of co-digestion was compared with the separate digestion of vegetable waste and sewage sludge. The continuous studies were conducted at an organic loading rate of 2 g volatile solids (VS)/l day and at hydraulic retention time (HRT) of 25 days. During the study period the vegetable waste reactor performance was severely affected due to low buffering and high production of volatile fatty acids (VFA) prevailed in the digester. Whereas sewage sludge digester incurred with low gas production due to acclimatization time required. From this study, it was observed that co-digestion of a mixture of vegetable waste and sewage sludge had shown a sizeable increase in cumulative gas production and specific gas yield (0.39 l and , 0.653 l per g of VS fed and drain respectively) compared to that of separate digestion of vegetable waste (0.25 l and 0.43 l per g of VS fed and drain respectively) and sewage sludge (0.34 l and 0.623 l per g of VS fed and drain respectively) while operating all three reactors at the same organic loading rate (OLR). The cumulative biogas production showed that the vegetable waste contains easily biodegradable organic matter compared with the sewage sludge and sewage sludge preferred buffering support for the vegetable waste digestion.

Keywords : Anaerobic digestion; Co-digestion; Vegetable waste; Sewage Sludge; Bio-Energy.

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