

Anaerobic Co-Digestion of Duckweed (*Lemna gibba*) and Waste Activated Sludge in Batch Mode

Authors : Rubia Gaur, Surindra Suthar

Abstract : The present study investigates the anaerobic co-digestion of duckweed (*Lemna gibba*) and waste activated sludge (WAS) of different proportions with acclimatized anaerobic granular sludge (AAGS) as inoculum in mesophilic conditions. Batch experiments were performed in 500 mL capacity reagent bottles at 30°C temperature. Varied combinations of pre-treated duckweed biomass with constant volume of anaerobic inoculum (AAGS - 100 mL) and waste activated sludge (WAS - 22.5 mL) were devised into five batch tests. The highest methane generation was observed with batch study, T4. The Gompertz model fits well on the experimental data of the batch study, T4. The values of correlation coefficient were achieved relatively higher ($R^2 \geq 0.99$). The co-digestion without pre-treatment of both duckweed and WAS shows poor generation of methane gas.

Keywords : aquatic weed, biogas, biomass, Gompertz equation, waste activated sludge

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