

Effect of feed loading on biogas methane production in batch mesophilic anaerobic digesters treating food waste

Abstract

Food waste mixture upgraded to a carbon to nitrogen ratio of 30 was co-digested at different feed loadings of 0.5, 1.5, 3.5 and 5.5gVS/L in batch and mesophilic conditions (37°C). Results showed that the production of biogas methane increased with an increase of the feed loading to the digester. A maximum cumulative biogas methane yield of 0.535L/gVS was attained at feed loading of 3.5gVS/L. Generally, it was observed that higher feed loading to the digester led to pH reduction and a decrease in treatment efficiency from 96% to 75%.

Keyword: Batch digester; Biogas methane; Feed loading; Anaerobic digesters