

Small Scale Batch Anaerobic Digestion of Rice Straw

Authors : V. H. Nguyen, A. Castalone, C. Jamieson, M. Gummert

Abstract : Rice straw is an abundant biomass resource in Asian countries that can be used for bioenergy. In continuously flooded rice fields, it can be removed without reducing the levels of soil organic matter. One suitable bioenergy technology is anaerobic digestion (AD), but it needs to be further verified using rice straw as a feedstock. For this study, a batch AD system was developed using rice straw and cow dung. It is low cost, farm scale, with the batch capacity ranging from 5 kg to 200 kg of straw mixed with 10% of cow dung. The net energy balance obtained was from 3000 to 4000 MJ per ton of straw input at 15-18% moisture content. Net output energy obtained from biogas and digestate ranged from 4000 to 5000 MJ per ton of straw. This indicates AD as a potential solution for converting rice straw from a waste to a clean fuel, reducing the environmental footprint caused by current disposal practices.

Keywords : rice straw, anaerobic digestion, biogas, bioenergy

Conference Title : ICMAE 2016 : International Conference on Mechanization and Agricultural Engineering

Conference Location : Bangkok, Thailand

Conference Dates : August 30-31, 2016