



FABRICATION AND PRELIMINARY INVESTIGATION OF A SIMPLE BIOGAS PLANT FOR CATTLE INDUSTRY

Ishani Dilrukshi¹, Kannan Nadarajah¹

¹ Department of Agricultural Engineering, Faculty of Agriculture, University of Jaffna, Sri Lanka

Presenting author: Ishani Dilrukshi | ishaniramanayake543@gmail.com

A simple biogas plant was fabricated using 70 L capacity PVC tank, shaker, a structured inlet and outlet for slurry handling, gas collection system and temperature monitoring device. This research activity is highly important at present to increase the use of renewable resources with an intention of minimizing environmental pollution. The biogas plant designed was tested with 10% headspace and 12% of Total Solid (TS) concentration of the slurry. The experimental setup was preliminary evaluated with no stirring. The temperature, pH, VS (Volatile Solid), TS, DO (Dissolve Oxygen), MC (Moisture Content) and biogas yield were recorded daily. The results revealed that TS, pH and DO reduced with incubation time, while temperature and VS expressed no uniform pattern. The TS and DO played a key role in the biogas production. The value of TS and DO is 9.3% and 3.8 mg/L respectively after 30 days of incubation. The biogas generation was insignificant under these experimental conditions provided. The slurry with a mixture of inoculum and intermitted stirring are suggestions for better biogas production by this simple biogas plant in future. This innovative scientific study will be beneficial for small scale farmers to increase their renewable energy consumption for environmental sustainability.

Keywords: Fabrication; Cattle Slurry; Biogas; Renewable Energy; Pollution