EVALUATION OF THE EFFECTS OF SOME PARAMETERS IN BIOGAS PRODUCTION USING COW DUNG

Preye K. Nimame
Institute of Geoscience and Space Technology /Rivers State University, Port Harcourt
Nigeria
nimamep@gmail.com

Asinyetogha H. Igoni
Department of Agricultural and Environmental Engineering/Rivers State University, Port Harcourt
Nigeria
ahigoni@yahoo.com

Raymond A. Ekemube
Department of Agricultural and Environmental Engineering/Rivers State University, Port Harcourt
Nigeria
Raymond.ekemube@ust.edu.ng

ABSTRACT

Energy generation through biogas has gained relevance in recent years due to its potential capacity as renewal energy source, an analysis of these technology from the life cycle thinking is essential for sustainable development. The dependence on fossil fuels and primary energy source has led to global climate change, environmental degradation and human health problems. This study was carried out to evaluate the effects of some parameters in biogas production using cow dung. The various parameters measured were temperature, pH, and pressure and amount of gas produced. The results obtained showed that biogas production were more at biodigester temperature ranges from 40^{o}C to 44^{o}C and subsequent production were achieved which conforms with the fact that high temperature of mesophilic range is necessary for high gas production. Gas production started to decline towards the end of the production period; even though the temperature in the biodigester was fairly high between 31^{o}C and 35^{o}C, the least temperature was 20^{o}C and production was equally at 0.0025m^3 this could be as result of the rainfall witnessed that period which could have affected environmental temperature hence biodigester. Pressure were relatively low all through the period of the anaerobic process it was between the range of 0.0010psi and 0.0015psi though stable pressure of 0.0010psi was observed for better part of research. The pH was equally stable, it ranged from 7.0 – 7.5 but predominant reading of 7.0 was observed during the process of the digestion which also conforms to the fact that for adequate biogas production, the pH must not fall below 6.7 units. Therefore, suggested that temperature and pH should be a determining factor to ensure adequate biogas production using cow dung

Keywords: Biogas, Biodigester, pH, Pressure, Temperature.