

INVESTIGATION INTO THE MICROBIAL ACTIVITIES IN BIOGAS PRODUCTION USING COW DUNG

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ABSTRACT

Biogas as major sources of energy for most human activities, it plays energetic role in all most operations with energy application. Biogas production field tests were conducted to investigate the microbial activities using cow dung. The experimental field bio-digester volume for the study was 1000 liters of plastic tank. The materials used for the biogas production were cow dung, GEEPEE tank, ball gate valves, filters, pressure meter, male and female adopter, hose, PVC pipe, gas holder, plastic funnel, metal clip and two slots. The parameters such as Total heterotrophic bacteria count (THBC), total heterotrophic fungi count (THF), total coliform counts and Total *Vibrio* counts, Total *Salmonella-Shigella* Counts and Total *Staphylococci species* count and Total *Pseudomonas species* count were determined with their recommended operation procedure. Also, the volume of biogas produced was determined by the aid of the gas holder. The total amount of biogas produced was 0.2012m³ for the period of 54 day of the experiment. Results reviewed that high level of total heterotrophic bacteria count (THBC) followed by total Staphylococci count and total heterotrophic fungi count (THFC) and final total coliform count. There are variations in percentage of the microorganisms present in the cow dung. Furthermore, the results revealed that the amount of cow dung required generating a specific amount of biogas depends on size of the bio-digester used, gas holder and the microorganisms present. As a result, the amount of cow dung, microbes present and gas holder determine the quantity and quality of biogas produced. Hence, recommends that microbial activities are vital factor during the production of biogas.

Keywords: Biogas Production, Cow Dung, Microorganisms, Microbial Activities, Bio-Digester.