METHANE GENERATION FROM MARKET REFUSE

A Research Study

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ABSTRACT

CAMARCE, MADONNA LAIZA V., POLINGA, LADY MARIANNE E., REYES, DHJOANNA R., and SAYAMAN, AIA MARIZ S., Applied Research III, Cavite State University Laboratory School, Indang, Cavite **"Methane Generation from Market Refuse".**

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The study on "Methane Generation from Market Refuse" was conducted at Department of Animal Science, Cavite State University, Indang, Cavite from July to December 2001.Specifically, it aimed to: (a) determine the gas yield of different market refuse using sludge from pig manure as starter;(b) to determine the retention time of the different treatments; and (c) to determine the quality of the organic fertilizer produced.

Different proportions of fish entrails and vegetable refuse were evaluated. Duncan's Multiple Range Test and t-test were used to compare the quality of effluent against the DENR standard for wastewater quality.

It took 13 weeks to complete the fermentation of pure vegetable wastes and 15 weeks for 1:3 and 1:1 fish entrails to vegetable wastes mixture.

Twenty thousand liters of biogas were generated for 1 cu.m. of pure vegetable wastes, while only 8000 li. and 5900 li. of gas were generated from 1 cu.m. of 1:3 and 1:1 fish entrails to vegetable wastes mixture, respectively.

The pH and temperature of the effluent o f both treatment passed the DENR standard for wastewater that can be disposed of to Class C water.

The TSS, COD and BOD of the effluent for both treatments indicate further treatment because it did not pass the standard set by DENR. Treatments with fish entrails produced a sludge with higher N-P-K content than that from pure vegetable.

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A research study presented to the faculty of the Laboratory School, College of Education, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for graduation under the supervision of Engr. Camilo A. Polinga.

INTRODUCTION

While the term "biogas" appears to be relatively recent in origin, the generation of methane from organic wastes has been known decades before the onset of the so-called energy crisis. Biogas was used as fuel for streetlamps in England over fifty years ago; during the fuel embargo of World War II, the German used biogas to run automobiles (Terrado, 1988).

Today, after so many years of disruption in the energy markets, energy supplies are in transition. As energy demand continue to rise worldwide and indeed soars in many developing countries, individual nations cannot afford to be complacement about the price and availability of the energy.

The increasing cost of fuel and organic fertilizers underscore the need to utilize the wastes and residues that agricultural production continually generates in huge quantities. This virtually untapped renewable energy source that can be converted not only as an energy source but as a source of organic fertilizer as well, through biogas technology. Biogas is a combustible gas that all organic matter produce when fermented and decomposed by anaerobic bacteria