

## THE CATALYTIC EFFECT OF TERMITES IN THE ANAEROBIC CO-DIGESTION OF PIG MANURE AND WATER LEAF TOWARDS BIOGAS PRODUCTION

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### ABSTRACT

In this study, the biogas production potential of pig manure and water leaf in the ratio of 4:1 (pig manure: waterleaf) was investigated. The two substrates were mixed thoroughly with water and charged into a metal prototype biodigester in the ratio 2:1 of water to waste. They were subjected to anaerobic digestion under a 40 day retention period and mesophilic temperature range of 24°C to 28°C. Enzymes extracted from termites were introduced into the feed stocks to facilitate the rate of production of biogas. The experiment was conducted within water resources laboratory of the Department of Civil and Environmental Engineering of the Federal University of Technology, Akure, Nigeria. The results obtained from the plot of the cumulative gas yield against retention period showed that there was no gas production for the first 8 days of the retention period for the termite-aided co-digestion process. An improvement in the amount of biogas produced was noticed after Day 15. The results showed that the co-digestion of pig manure with water leaf has the potential to produce biogas but the amount of biogas produced can be optimized by the introduction of enzymes obtained from the gut of termites.

**Keywords:** Biogas Production, Pig manure, Water leaf, Enzyme, Termites.