

**BIOGAS PRODUCTION FROM ANAEROBIC CO-  
DIGESTION OF COW DUNG AND HYDROLYSED OIL  
PALM FRONDS**

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This Final Year Project Report entitled “Biogas Production from Anaerobic Co-digestion of Cow Dung and Hydrolyses Oil Palm Fronds” was submitted by Shahila binti Md Shah, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

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## **ABSTRACT**

### **BIOGAS PRODUCTION FROM ANAEROBIC CO-DIGESTION OF COW DUNG AND HYDROLYSES OIL PALM FRONDS**

The usage of oil palm biomass for the biofuel production has turned into a solution to the environmental contamination issues. The study aim was to analyze the potential biogas production of co-digestion Oil Palm Frond (OPF) with cow dung and hydrolysed OPF. The experiments used 1L biodigester attached with gas collector (balloon) performed in batch operation mode. 125g fresh cow dung fed was given to each biodigester. Biodigester A mixed with 125g OPF, biodigester B was a control, and biodigester C mixed with 125g hydrolyses OPF. Each of biodigester was filled with 0.5L water resulting different biogas production: 43.42cm<sup>3</sup>, 17.92cm<sup>3</sup>, and 76.55cm<sup>3</sup> (A/B/C). The results revealed that the highest biogas production was digester C after 20 days of digestion. Pretreatment of cellulose enables hydrolysis for conversion to biogas. Lignin, cellulose, and hemicelluloses degraded, available to microorganisms for conversion to biogas. Biodigester C with 8.42% total solid (TS) and 91.58% moisture content compare to TSs for digester A and B, 38.33%, 15.20% (A/B). It demonstrates, water content influence anaerobic digestion of solid wastes. Water is conceivable for the activity of microorganism to facilitate in dissolving nutrient. pH 7 is considered optimum pH for the microorganism to convert the organic matter into biogas. These results suggested that by utilizing hydrolyses OPF co-digested with cow dung may enhanced the biogas production.