

**EXPERIMENTAL STUDY ON THE INFLUENCE OF THE THE WASTE OF  
EMPTY OIL PALM BUNCHES, WATER, AND THE CATTLE RUMEN  
COMPOSITION ON BIOGAS PRODUCTION CHARACTERISTICS**

***Abstract***

*Availability of fossil fuels depleting demand a new alternative renewable energy. If rely only on the availability of fossil fuels, then the next 50 years Indonesia will face seriously energy problem, with respect to the existence of these problems, it is necessary to research on oil palm empty fruit bunches by using a cow rumen starter to get optimal biogas as an alternative to fossil fuels. This research aim is to investigate the influence the use of cow's rumen as a starter on the characteristics of anaerobic decomposition processes in biogas production process stage using materials of oil palm empty fruit bunches, determine levels of methane (CH<sub>4</sub>) in the production of each gas, obtain the best biomass composition to optimally.*

*Research method being used is Complete Random design experiments and single-factor experimental design consisting of four differen biomass compositions, namely: (A) empty Palm bunches: cow rumen: water of 2: 2: 4, 5, (B) an empty Palm bunches: cow rumen: water of 2: 1,5: 4,5, (C) empty Palm away: cow rumen: water of 2: 1: 4, 5, (D) an empty Palm bunches : cow rumen: water of 2: 0.5: 4.5. The process of biogas production was carried out using natural batch system (only a single feed of raw materials at the beginning of the experiment).*

*It is revealed that the B is the most optimum composition in the production of methane containing 55% off methane. While the composition of D is the most optimum in producing optimum gas pressure of 108,807.90 N/m<sup>2</sup>.*

*Keywords: Biomass, Cow Rumen, Biogas, Methane levels.*