ABSTRACT

Currently, the existence of fuel derived from petroleum, coal and others has started to become increasingly rare and expensive. The number of human population is increasing as well as technological advances and industrial developments that drain various energy sources are some of the causes of this scarcity, therefore a thought is needed to create alternative energy that is cheap and efficient for the needs of the wider community. Development of alternative renewable energy needs to be done to minimize scarcity. Alternative energy as a substitute for fuel oil can come from livestock and plantation waste. Utilization of livestock waste and agricultural fruit that is starting to rot can have a positive impact on the local environment and can generate various benefits for obtaining quality fuel. This study conducted tests on the biogas produced, namely; C/N ratio, pH value, temperature, gas volume, oxygen (O2), hydrogen sulfide, carbon dioxide (CO2), methane gas (CH4) with a mixture of starter compositions: G1 Cow manure Em4, G2 Goat manure and Em4, G3 Quail droppings and Em4, fruit waste G4 and Em4. In this study the best starter variation was fruit waste after the addition of EM4, namely starter G4 obtained a pH of 7 and contained a C/N ratio of 7.065 with a research time of 30 days, on the 13th day there was an increase in the quality of biogas fuel marked by an increase in temperature of 29 ,7^{o}C, volume of 48.5 mL, CH4 of 960 LEL, decreased O2 content of 0%, H2S content of 0 ppm, CO content of 0 ppm.

Keywords: Starter; biogas; methane; animal waste; fruit waste; Em4