

ABSTRACT

Anaerobic digester is a method of waste management by breaking down organic compound in waste with the help of microorganism to produce methane gas without the need of oxygen. In this study, we tested the effect of the addition of EM4 on stale rice substrates on the potential for methane gas production in a simple biogas reactor. The addition of EM4 bioactives to the substrate is considered appropriate in accelerating the fermentation process of organic matter, bacteria is more scalable, works at mesophilic temperatures and does not cause unpleasant odors when compared to other bioactives. The biogas reactor in this study used the Batch method and accommodates an influent volume of 12.67 liters at room temperature. there are five variations of the addition of EM4 namely variation 0%, variation 9%, variation 11%, variation 13% and variation 15%. From the study that had been conducted for 15 days, from variation 0%, it is found that the total gas volume dan methane gas content produced is more than other four variations: 20.420 ml dan 108,0334 ml with a methane gas efficiency of 0.529%. The addition of EM4 to the stale rice substrate resulted in smaller methane gas production so that the addition of EM4 bioactives was considered inappropriate in this study.

Keywords: Anaerobic digester, Methane Gas, Mesofilic, Substrate Variation, EM4 (Effective Microorganisms), Substrate Variation, Batch Method, Organic Waste