

Production of biogas from palm oil mill effluent

Abstract

Malaysia with an average crude palm oil production of more than 13 million tons per year is estimated produce total of palm oil mill effluent (POME) of 53 million tons/year. Batch anaerobic digestion of 8l palm oil mill effluent was studied in a 25l bioreactor at 30°C (thermophilic condition) and pH controlled at 7. POME activated sludge and cow manure at ratio of 1:2.5 POME was used. The biogas produced is 7.825l at hydraulic retention time of 44 days. The peak biogas production occurs at day 24 until day 34 and the production starts to decrease after day 35 due to the availability of nutrient that has decreased tremendously. Modeling studies showed that the linear plots of biogas production rates with the R² of rising and falling limb ranged from 0.926 to 0.954 while the exponential plot shows the R² range from 0.775 to 0.940. © Springer International Publishing Switzerland 2015.