

# **Abstracts**

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## Investigation of the Potential Production of Biogas from Cassava Tuber

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Biogas is an alternative source of energy for substitution of natural energy, that is being reduced by human activities and becoming expensive. Cassava tuber, a cheap and abundant agriculture product produced in the Northeast Thailand, particularly in Nakhon Ratchasima province, is considered to be a suitable raw material for the production of biogas. The objective of this study is to investigate the potential production of biogas from cassava tuber using the single-state digester. It was found that cassava tuber collected from Nakhon Ratchasima province composed of the average content of 88.63% (dry weight) of total solid, 97.57% of volatile solid, 2.43% of ash, 39.48% of carbon, 0.54% of nitrogen, and 0.23% of phosphorus. The carbon-to-nitrogen ratio was 73:1. Dry cassava tuber (after chopping into <math><1\text{ cm}^3</math> pieces and containing 11.37% of moisture content) and organic loading rates at 1.25- 20% (w/v) total solid were applied. Biogas production was performed in anaerobic digesters with working volume of 5 liters at ambient temperature for 30 days. When using 1.25% (w/v) total solid, the maximum gas yield of 1.14 liters/day and the methane content of 54.91% were obtained on day 18 whereas the maximum methane content of 64.35% and the gas yield of 0.61 liters/day were obtained on day 21. The calorific value was basically estimated. At the maximum methane yield of 1.25% (w/v) total solid organic loading rates, 25.48 kJ per liter of biogas which compared to 1.38 liters of coal gas, 0.31 liters of propane, and 0.2 liters of butane were achieved.