Sudarat Pakdee 2008: Biogas Production from Vermicelli Factory Wastes by Anaerobic Digestion. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor. Mongkol Damrongsri, Dr.Ing. 118 pages.

The purpose of this research was to study the organic loading rate from vermicelli wastes that makes maximum biogas production by anaerobic digestion single phase with high-rate reactor at net volume 6.5 L. Reactors had continuously mixed well by stirrers. The raw vermicelli wastewater and vermicelli solid had been mixed to give an average 65,000 mg/L COD and used to control the volumetric loading rate of 2.0, 4.0, 6.0 and 8.0 kg-COD/m^3-d with semi-continuous feed in laboratory condition. Influent wastewater had been adjusted pH to 7.

The result at volumetric loading rate of 2.0, 4.0, 6.0 and 8.0 kg-COD/m^3-d could be treated the COD and suspended solids from 88.82 to 95.12% and 74.07 to 96.04% respectively. The removal efficiencies were decreased by increasing of volumetric loading rate while the gas production were increased according to the increasing of volumetric loading. Methane gas produced average was range from 0.0043 to 0.0909 l/g at standard temperature and pressure condition. At volumetric loading of 8.0 kg-COD/m^3-d gave the maximum biogas production which the percentage of maximum methane content was average 50.64 %. This study had properly buffer and pH to treat by anaerobic digestion.

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