

***“ORGANIC PROCESSING FACILITY TO
GENERATE A HIGH-QUALITY RENEWABLE
FUEL AS BIOGAS FROM THE
UTILIZATION OF KITCHEN WASTES”***

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ABSTRACT

The anaerobic digestion of kitchen waste is a process that has become a promising technology in waste management throughout the world. Thus, the objective of this study was to optimize the applications of anaerobic digestion to the treatment of kitchen wastes.

To achieve this, the pilot scale experiment was conducted in inclined type plug flow reactor. Initially OFKSW was digested successively in start-up process to acclimatize the reactor.

Firstly, the reactor was operated in mesophilic condition (25°C). The start-up process was established over a period of 4 weeks and the highest volume of biogas production (1543 L/day) and methane composition ($x\%$) was achieved at day 32. In order to obtain the highest biogas production the input digestate was to be maintained at a pH range of 7.2-7.4. To maintain this pH caustic soda (NaOH) was used.

The result showed the accumulation of VFA which is the inhibiting conditions for methanogenic activity which was confirmed by the decreased pH below 6.5. In this study, the post-treatment of the fresh digestate was done to increase the TS concentration thereby decreasing the weight and volume of fresh digestate for the transportation as well as made suitable for composting or soil amendment.

So they can be used as fertilizer as well as for refuse derived fuel (RDF). This study also confirmed about the energy production and consumption within the system itself and found about 80 % surplus energy from this system.