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ABSTRACTS FOR POSTER PRESENTATIONS

Effects of pH on Phosphorus Recovery from Different Composition of Food Waste Using Anaerobic Batch Digestion

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Background: Anaerobic digestion is a process by which microorganisms break down biodegradable material in the absence of oxygen. The process involves hydrolysis, acidogenesis and methanogenesis stages. Anaerobic digestion of food waste has been widely investigated for biogas recovery but limited study was performed on phosphorus recovery, which is reported depleting. Food waste is produced every day and dumped on landfill for final disposal which may lead to environmental issues such as odour problems and greenhouse gases release, due to decomposing of food waste, hence impacts global climate change. In anaerobic digestion pH is a very crucial parameter in an attempt to recover phosphorus as it highly influences the production of organic acids during acidogenesis. **Objective:** Therefore, this study was carried out to investigate phosphorus recovery at different pH values (pH4.0, 5.0, 6.0 and uncontrolled) throughout the digestion process. **Methods:** The main substrate used in the anaerobic digestion was food waste which was segregated into different composition namely carbohydrates rich-food waste, fibre rich-food waste and protein rich-food waste. The phosphorus recovery was performed using anaerobic batch digester at mesophilic (35±1°C) condition for 15 days. Semi-treated palm oil mill effluent POME was used as the inoculum to boost up the anaerobic digestion. **Results:** The results indicate that pH6.0 was the optimum pH

to recover phosphorus, where protein rich-food waste shows the highest phosphorus recovery followed by carbohydrate rich-food waste and fibre rich-food waste with 5415.57 mg/L, 4261.14 mg/L and 3704.01 mg/L, respectively. **Conclusion:** This study is very important as it will not only to recover phosphorus from waste, an essential nutrient needed for fertiliser, but also minimizes negative impacts to the environment by reducing waste generation, carbon dioxide emissions and consumption of natural resources.