Comparison of phosphorus recovery from different organic substrates using Simple Batch Mesophilic Reactor (SBMR)

ABSTRACT

Anaerobic digestion is a technology that widely applied for treatment of organic wastes that are easily biodegrable in nature. This few decades, this technique has become the centre of attention in resource recovery field of research, as it widely used in converting waste into resources, such as biogas and nutrient. While the use of anaerbic digestion for biogas recovery has been extensively studied, phosphorusrecovery using anaerobic digestion isstill under utilised. Therefore, this study was carried out to investigate the anaerobic digestion of different organic substrates, namely food waste, palm oil mill effluent sludge and water treatment sludge in recovering phosphorus using a simple batch mesophilic reactor. Three reactors containing different substrates with working volume of 400 mL were set up to perform anaerobic digestion at optimum conditions (35oC, pH6.0 and 80 rpm) for 30 days. The results show that the highest phosphorus was from palm oil mill effluent sludge, followed by food waste and water treatment sludge with 57.88%, 31.94% and 26.47%, respectively.