

Characterization of Vegetable Wastes and Its Potential Use for Hydrogen and Methane Production via Dark Anaerobic Fermentation

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Abstract : The problem of fruit and vegetable waste management is a grave one and with ever increasing need to feed the exponentially growing population, more and more solid waste in the form of fruit and vegetables waste are generated and its management has become one of the key issues in protection of environment. Energy generation from fruit and vegetables waste by dark anaerobic fermentation is a recent an interesting avenue effective management of solid waste as well as for generating free and cheap energy. In the present study 17 vegetables were characterized for their physical as well as chemical properties, these characteristics were used to determine the hydrogen and methane potentials of vegetable from various models, and also lab scale batch experiments were performed to determine their actual hydrogen and methane production capacity. Lab scale batch experiments proved that vegetable waste can be used as effective substrate for bio hydrogen and methane production, however the expected yield of bio hydrogen and methane was much lower than predicted by models, this was due to the fact that other vital experimental parameters such as pH, total solids content, food to microorganism ratio was not optimized.

Keywords : vegetable waste, physico-chemical characteristics, hydrogen, methane

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