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Natural Gas Production from Batch Feeding of Sheep Droppings and Food Waste as a Partial Mixture in a Confined Batch Digester

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Abstract: Solid waste is one of the major issues created by the society due to the improper disposal of solid waste. Environmental issues are created, that is air pollution, ground water contamination, soil pollution, water quality depletion & human health related problems etc. Biogas production is one of the solutions to reduce solid waste related environmental problems. In this project study was conducted to analyze the biogas production with co-digestion of sheep droppings and food wastes. The biogas production was carried out under a mesophilic temperature of 27°C to 33°C for a duration of 55 days. The objectives of this project is to analyze the different ratio co-digestion of sheep droppings and food waste and also optimize the high biogas producing ratio. There are five laboratory scale samples composed of a different ratio of sheep droppings to food wastes to make a sample D1 (100:0), D2 (80:20), D3 (70:30), D4 (60:40) and D5 (50:50). The co-digestion occurred in a 20 litre capacity cylindrical container. The sample will be a semi solid liquid which is poured 16 litre in the container. The pH is noted over the fermentation period of 55 days. All the parameters influencing the anaerobic digestion like pH, temperature, alkalinity, total solids, volatile solids and volatile fatty acid are tested every day to find the digestion process takes place inside the digester. Sample D1 (100 % sheep droppings) showed the maximum gas production 85.45 l/kg at the end of the digestion. Sample D-2 (80: 20 for 80 % sheep droppings and 20 % food waste) of the gas production is 62.71 l/kg. Sample D-3 (60: 40 for 60 % sheep droppings and 40 % food waste) of the gas production is 36.46 l/kg. Sample D-5 (50: 50 for 50 % sheep droppings and 50 % food waste) of the gas production is 4.25 l/kg. The Paper completely deals with the digester set up of 2, in which it comprises of 80 % sheep droppings and 20 % food waste.

Keywords: Natural Gas Production, Sheep Dropping, Food Waste, Digester.

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