

Analyzing Irbid's Food Waste as Feedstock for Anaerobic Digestion

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Abstract : Food waste samples from Irbid were collected from 5 different sources for 12 weeks to characterize their composition in terms of four food categories; rice, meat, fruits and vegetables, and bread. Average food type compositions were 39% rice, 6% meat, 34% fruits and vegetables, and 23% bread. Methane yield was also measured for all food types and was found to be 362, 499, 352, and 375 mL/g VS for rice, meat, fruits and vegetables, and bread, respectively. A representative food waste sample was created to test the actual methane yield and compare it to calculated one. Actual methane yield (414 mL/g VS) was greater than the calculated value (377 mL/g VS) based on food type proportions and their specific methane yield. This study emphasizes the effect of the types of food and their proportions in food waste on the final biogas production. Findings in this study provide representative methane emission factors for Irbid's food waste, which represent as high as 68% of total Municipal Solid Waste (MSW) in Irbid, and also indicate the energy and economic value within the solid waste stream in Irbid.

Keywords : food waste, solid waste management, anaerobic digestion, methane yield

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