

**Research Title** Biogas production potential from food waste and vetiver grass  
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The objectives of this research were to study the ratios of food waste and vetiver grass for biogas production and the stability in anaerobic digestion. Eleven mixing ratios of food waste and vetiver grass were 1:0, 0:1, 1:1, 2:1, 3:1, 4:1, 5:1, 1:2, 1:3, 1:4 and 1:5. They were subjected to a lab scale anaerobic batch experiment with the digestion time 60 days. Highest specific biogas yield of 0.280 L/g VS<sub>removed</sub> was obtained from ratio of food waste to vetiver 4:1 with C/N ratio of 28.20. While the specific biogas yield of the single digestion of food waste (1:0) and single digestion of vetiver grass was only 0.180 and 0.109 L/g VS<sub>removed</sub>, respectively. It was found that the methane production of food waste with vetiver grass at ratio of 4:1 was increased 29.74 % and 96.68 % compared with single substrate of food waste (1:0) and vetiver (0:1), respectively. The results also showed the highest of COD (90.27±0.02 %), TVS (85.31±0.70 %), TS (82.00±0.29 %) removal were observed with ratio of 4:1, while there were the lowest for ratio of 0:1. Higher COD, TVS, TS, reduction higher methane production potential. VFA/Total alkalinity ratio of all ratio of food waste to vetiver at digestion time 40 days remained in 0.0895±0.0007-0.1944±0.0027 which indicated that the digesters were in good stability. This study showed that the co-digestion of food waste and vetiver improve the biogas yield and degradation efficiency.