

39. 農畜剩餘資材共消化產氣評估

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厭氧消化兼具廢水處理與能源取得兩種技術，已被廣泛應用於含生物可分解性廢水之產業如工業廢水、畜牧廢水、屠宰場廢水及農業廢棄物等，厭氧消化處理農畜剩餘資材，處理過程中之產物轉變成可再生能源如沼氣與沼渣，可同時減輕能源短缺與環境問題。採行共消化提高沼氣產量，提供厭氧消化的基質是將兩種或更多原料的混合物，成為沼氣生產普遍應用之技術。本試驗配製養豬廢水與蔬菜殘渣混合液進行厭氧共消化，首先分析新鮮豬糞之總固形物含量，調配成總固形物 1.5% 之豬糞混和液，依調配 TS 1.5% 組之豬糞重替代不同比例之蔬菜殘渣，評估共消化有機負荷率及沼氣產量。結果顯示依調配 TS 1.5% 組之豬糞重替代加入不同重量百分比 10 – 30% 之蔬菜殘渣組之產氣量顯著 ($P < 0.05$) 高於 TS 1.5% 之豬糞廢水組，結果可提供畜牧場或能源場投入沼氣生產參考。

關鍵語：養豬廢水、沼氣、共消化

Evaluation of co-digestion gas production of agricultural and livestock surplus materials

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Anaerobic digestion has both wastewater treatment and energy acquisition technology, has been widely used in industries containing biodegradable wastewater such as industrial wastewater, livestock wastewater, slaughterhouse wastewater and agricultural waste, anaerobic digestion treatment of agricultural and livestock residues materials, the treatment process of the product into renewable energy such as biogas and digestate, can reduce energy shortage and environmental problems at the same time. The use of co-digestion to increase biogas production, to provide substrates for anaerobic digestion is a mixture of two or more raw materials, which has become a common technology for biogas production. In this experiment, a mixture of pig wastewater and vegetable residues was prepared for anaerobic co-digestion, and the total solids content of fresh pig manure was analyzed, and a pig wastewater of 1.5% of TS was prepared, and different proportions of vegetable residues were replaced by pig manure weight of the TS 1.5% group, and the co-digestion organic load rate and biogas yield were evaluated. The results showed that the gas yield of pig manure in the vegetable residues group with different weight percentages of 10-30% was significantly higher ($P < 0.05$) than that in the pig wastewater with TS 1.5%, which could provide a reference for biogas production in livestock farms or energy farms.

Key Words: Pig wastewater, Biogas, Co-digestion