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Co-digestion Of Olive Mill Wastewater and Swine Manure Using Up-Flow Anaerobic Sludge Blanket Reactor for Biogas Production

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Author(s)

Hassan Azaizeh, Jeries Jadoun

ABSTRACT

Swine wastewater (SW) and olive mill wastewater (OMW) are two problematic wastes that have become major causes of health and environmental concerns. The main objective of the current work was to evaluate the efficiency of the co-digestion strategy for treatment of SW and OMW mixtures. Mesophilic batch reactors fed with mixtures of SW and OMW showed that the two adapted sludges Gadot and Prigat exhibited the best COD removal capacity and biogas production; therefore both were selected to seed up-flow anaerobic sludge blanket (UASB) continuous reactors. During 170 days of operation, both sludges Gadot and Prigat showed high biodegradation potential. The highest COD removal of 85-95% and biogas production of 0.55 L?g-1 COD were obtained at a mixture consisting of 33% OMW and 67% SW. Under these conditions, an organic load of 28,000 mg?L-1 COD was reduced to 1,500-3,500 mg?L-1. These results strongly suggest that co-digestion technology using UASB reactors is a highly reliable and promising technology for wastewater treatment and biogas production.

KEYWORDS

Anaerobic Co-digestion, Olive Mill Waste Effluent, Swine Manure, Biogas, Mesophilic Tem-perature

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