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Anaerobic Mono-Digestion of Turkey Manure: Efficient Revaluation to Obtain Methane and Soil Conditioner

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ABSTRACT

This work demonstrates the possibility to make a full valuation of a solid waste such as turkey manure, to obtain methane and a soil conditioner/fertilizer from turkey manure anaerobic digestion in a mesophilic pilot-scale continuous stirred tank reactor at different organic loading rates (OLR) (from 0.5 to 2.5 kgVS/m^3d). The application of the anaerobic mono-digestion for the turkey manure treatment was an efficient alternative, because high volatile solids removal and methane were obtained in addition to obtaining a stabilized solid waste that can be applied as soil conditioner, based on its nutritional parameters and humic substances content. In this way, the turkey manure anaerobic digestion can be applied avoiding the co-digestion of the manure with other wastes and allows a process devoid of pollutant emissions, obtaining two products. The reactor operation depends on the OLR, and its operation does not allow an OLR above 1.5 kgVS/m^3d. Higher OLR produced a decrease in the TS and VS removals and methane productivity.

KEYWORDS

Methane, Biomethanization, Solid Wastes, Turkey Manure, Soil Conditioner, Fertilizer

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