

عنوان مقاله:

Evaluation of a novel anaerobic co-digestion system for disposal of dead swine and manure: An important tool in animal production

محل انتشار:

مجله بین المللی بازیافت مواد آلی در کشاورزی، دوره 9، شماره 3 (سال: 1399)

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خلاصه مقاله:

Purpose The anaerobic digester for dead animals is the most eco-friendly and cost-effective way to dispose of this waste. The aim of this study was to evaluate the removal efficiency of organic matter and pathogenic microorganisms by an anaerobic co-digestion of whole dead animals and manure, both of swine origin. **Methods** Two test digesters coated with geomembrane were used. Samples were obtained from a private pig farm with ۲۰۰۰ sows in Southern Brazil from April to June of ۲۰۱۷. The analyses were performed in triplicate, at six treatment points and physicochemical and microbiological analyses were performed to evaluate the efficiency of the anaerobic co-digester system. **Results** We found the efficiency in the removal of chemical oxygen demand (۸۷.۸۸%), biological oxygen demand (۸۳.۵۷%) and total solids (۷۵%), accorded with levels proposed in Resolution ۴۳۰/۲۰۱۱ of the Brazilian National Environment Council. Furthermore, macro- and micronutrient values also accorded with the environmental parameters proposed by Brazilian legislation. Based on the total nitrogen (۲۲۲۲.۰۰ mg L⁻¹) and environmental critical phosphorus values (۳۳۳۳.۳۰ mg dm⁻³), a subsequent agronomic evaluation is suggested prior to the release of this effluent into the soil. The absence of Salmonella spp. and helminth eggs reinforced the notion of suitability of the system for the treatment of dead animals. Total coliform counts and E. coli counts were within the expected standards.

Conclusion Treatment of dead animals and effluents using an anaerobic digestion process was efficient, suggesting .that it could replace other methods such as composting and incineration

کلمات کلیدی:

Agroindustrial waste, Anaerobic co-digestion, Dead animal digester, Swine breeding

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