Biowaste value chain in a circular economy context

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Stating the problem: The escalating demand for sustainable management of organic waste and the reduction of dependence on fossil fuels has highlighted anaerobic digestion (AD) as a viable biotechnological approach within the circular economy paradigm. This study focuses on biowaste sourced from a university canteen, which was characterized and selected as a complex, high-moisture feedstock for AD. Methodology & Theoretical Orientation: AD in batch processes, catalyzed with biochar, is being studied with the primary objective of exploring its potential for the dual recovery of biomethane and volatile fatty acids (VFAs), both of which are valuable bioresources for energy production and bioproduct synthesis, respectively. The study emphasizes understanding the influence of key operational parameters, including substrate composition, organic loading rate, buffering capacity, and temperature, on the acidogenic and methanogenic phases of digestion. Conclusion & Significance: This ongoing research aims to elucidate how efforts to integrate institutional food waste management with resource recovery systems contribute to the promotion of decentralized waste-toenergy models. The findings are expected to support optimization strategies for both bioenergy production and short-chain carboxylic acid recovery from mixed organic streams.

Recent Publications

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3. Amaral, A. C., Steinmetz, R. L. R., Kunz, A. (2019). O processo de biodigestão. In: Airton, Kunz et al. (Eds.), Fundamentos da digestão anaeróbia, purificação do biogás, uso e tratamento do digestato (Cap. I, pp. 13-26). Concórdia, Brasil: Sbera, Embrapa Suínos e Aves.https://www.alice.cnptia.embrapa.br/alice/bitstream/doc/1 108617/1/LivroBiogas.pdf
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Biography

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