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Anaerobic digestion of food waste – challenges and opportunities

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Abstract

The disposal of large amounts of food waste has caused significant environmental pollution and financial costs globally. Compared with traditional disposal methods (i.e., landfilling, incineration, and composting), anaerobic digestion (AD) is a promising technology for food waste management, but has not yet been fully applied due to a few technical and social challenges. This paper summarizes the quantity, composition, and methane potential of various types of food waste. Recent research progress in different strategies to enhance AD of food waste, including co-digestion, addition of micronutrients, control of foaming, and process design, is discussed. It is envisaged that AD of food waste could be combined with existing AD facility or be integration with the production of value-added products to reduce cost and increase revenue. Further understanding of the fundamental biological and physicochemical processes in AD is required to improve the technology.

Key words: food waste, food supply chain waste, anaerobic digestion, bioenergy, biofuel, methane