

Hydrothermal Carbonization of Anaerobic Digestate from Food Waste/ Agrowaste in Lesvos Island.

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Abstract

Biowaste management is in the center of attention in recent years, due to the increased focus on Circular Economy practices. Local management solutions promote exploration for small and medium scale processing and monitoring systems. In this context were developed above 2 possible pathways of biowaste valorization: composting and anaerobic digestion. An overall seem of a treatment strategy is presented in Figure 1. This study focuses on biowaste utilization for energy production with the hydrothermal treatment of anaerobic residues for biogas production. Lesvos has numerous dairy processing facilities and olive mills, and therefore olive mill wastewater and dairy wastewater are the main biowaste streams in the island, along with olive tree pruning, municipal food waste and municipal sludge. Most studies present very specific applications on very specific types of biowaste, but this study aims to co-treat several biowaste streams together. A holistic experimental campaign that combined aerobic and anaerobic treatment strategies was developed, and the main focus of this present study was the analysis of products from hydrothermal co-treatment of food waste AD digestate along with local biowaste, like OMWW, sludge etc. The co-treatment of food waste together with spent coffee grounds and OMWW produced optimal results in respect to hydrochar production. In addition, HTC was able to reduce COD of OMWW by levels of magnitude. The HTC co treatment of food waste with water as hydrothermal medium produced hydrochars with the highest heating values.

AD = Anaerobic Digestion

HTC = Hydrothermal Carbonization

OMWW = Olive Mill Wastewater

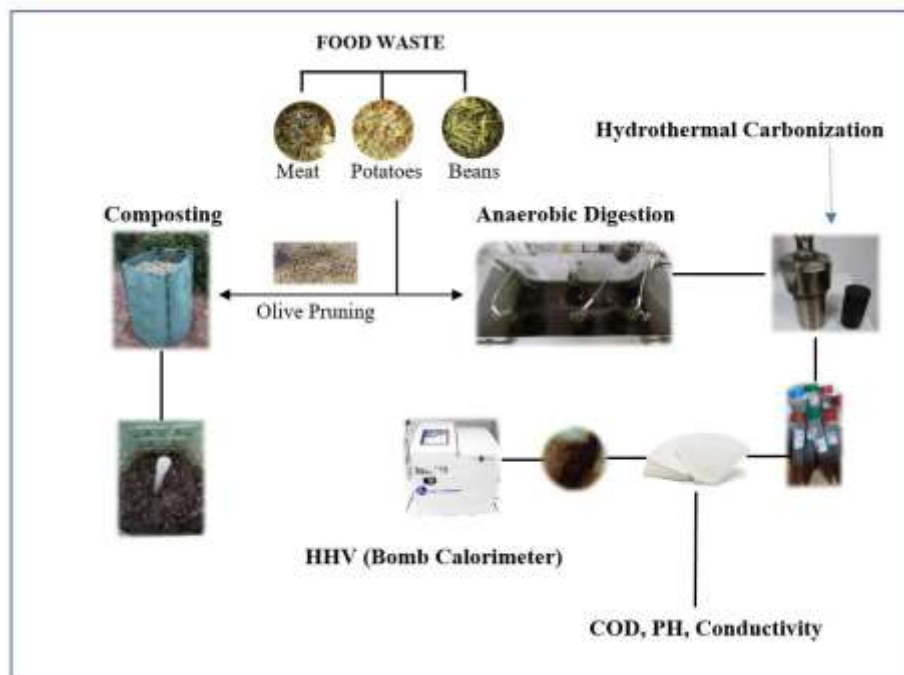


Figure 1 Overall seem of applied biowaste valorization strategies

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