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Biomethanation of water hyacinth biomass

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Abstract

The aim of this study was to test practical solutions to improve biogas yield during the anaerobic digestion of water hyacinth (WH) biomass. Increasing the WH (whole plant) solid content to ~40% through sun drying (6 hours), and its subsequent digestion increased biogas yield by 14% with a higher biogas methane (75%) content. Ensilation of dried WH (40% moisture) was found effective for its preservation to ensure its continuous availability even during offseasons, but the biogas yield from six months ensilated biomass was 20% less compared with fresh WH. Co-digestion of WH with waste activated sludge and food waste revealed ~150 and ~400 ml biogas/g VS respectively against ~140 ml/g VS of WH alone. The practical approaches tested in this study like pre-treatment, preservation, and co-digestion of WH found to be effective to make its bio methanation more feasible.

Keywords: Water hyacinth, *Eichhornia*, Anaerobic digestion, Ensilation, Co-digestion

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