Energy conversion of biomass crops and agroindustrial residues by combined biohydrogen/biomethane system and anaerobic digestion

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Title

Energy conversion of biomass crops and agroindustrial residues by combined biohydrogen/biomethane system and anaerobic digestion

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Abstract

Aim of this study was to evaluate the suitability of ensiled giant reed, ensiled maize, ensiled olive pomace, wheat bran for combined systems (CS: dark fermentation + anaerobic digestion (AD)) producing hydrogen-rich biogas (biohythane), tested in batch under basic operational conditions (mesophilic temperatures, no pH control). Substrates were also analyzed under a single stage AD batch test, in order to investigate the effects of DF on estimated energy recovery (ER) in combined systems. In CS, maize and wheat bran exhibited the highest hydrogen potential (13.8 and 18.9 NL $kgVS^{-1}$) and wheat bran the highest methane potential (243.5 NL $kgVS^{-1}$). In one-stage AD, giant reed, maize and wheat bran showed the highest methane production (239.5, 267.3 and 260.0

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