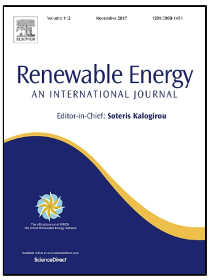
Accepted Manuscript



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PII:	S0960-1481(17)30652-3
DOI:	10.1016/j.renene.2017.07.039
Reference:	RENE 9014
To appear in:	*Renewable Energy*
Received Date:	16 November 2016
Revised Date:	10 June 2017
Accepted Date:	10 July 2017

Please cite this article as: Pearl Nolan, Evelyn M. Doyle, Jim Grant, Pádraig O'Kiely, Upgrading grass biomass during ensiling with contrasting fibrolytic enzyme additives for enhanced methane production., *Renewable Energy* (2017), doi: 10.1016/j.renene.2017.07.039

Upgrading grass biomass during ensiling with contrasting fibrolytic enzyme additives for enhanced methane production.

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Abstract

The aims were to quantify the effects of applying fibrolytic enzymes at ensiling on conservation characteristics and specific methane (CH_4) yields (SMY) per unit mass, and per unit land area. At two stages of primary growth, four replicate plots of two species (perennial ryegrass and timothy) were subjected to nine treatments, an untreated control and four fibrolytic enzymes (ENZ 1 - 4) applied at two enzyme dosage rates (low and high) prior to ensiling. Silage SMYs were subsequently determined in an *in vitro* batch anaerobic digestion test. Generally, applying fibrolytic enzymes at ensiling reduced total fibre compared to control silages, which consequently enhanced mass-SMY and area-SMY. However, the impact on fibre, mass-SMY and area-SMY differed depending on both grass species and growth stage at harvest, with no single enzyme being consistently superior. Thus the potential of enhanced methane output with added enzymes at ensiling is both fibrolytic enzyme and grass substrate specific.