Accepted Manuscript

An assessment of farm scale biomass pelleting in the northeast

Daniel Ciolkosz, Michael Jacobson, Nichole Heil, Will Brandau

PII: S0960-1481(17)30111-8

DOI: 10.1016/j.renene.2017.02.025

Reference: RENE 8532

To appear in: Renewable Energy

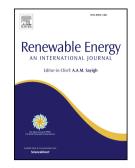
Received Date: 28 April 2016

Revised Date: 3 February 2017

Accepted Date: 10 February 2017

Please cite this article as: Ciolkosz D, Jacobson M, Heil N, Brandau W, An assessment of farm scale biomass pelleting in the northeast, *Renewable Energy* (2017), doi: 10.1016/j.renene.2017.02.025.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



AN ASSESSMENT OF FARM SCALE BIOMASS PELLETING IN THE NORTHEAST

2

37

3	Daniel Ciolkosz", Michael Jacobson', Nichole Heil", Will Brandau'
4	a - Penn State Department of Agricultural and Biological Engineering; University Park, PA 16802
5	b - Penn State Department of Ecosystem Science and Management; University Park, PA 16802
6	c – Wood Crest Farm, Wapwallopen PA 18660
7	* - Corresponding Author, dec109@psu.edu
8	
9	
10	
11	
12	
13	
14	
15	
16	ABSTRACT
17	Farm scale pellet production is a promising opportunity for farmers and landowners interested in
18	producing a renewable biomass fuel. However, the true costs and performance of these systems in a
19	farm setting is not fully understood. A feasibility analysis was carried out on the farm-scale
20	switchgrass production operation at Wood Crest Farm near Berwick, PA as a representative example of
21	operations in the region. Farmer interviews and direct measurements of equipment performance,
22	energy use, and labor requirements were recorded for all stages of the operation. Results indicate that
23	the production of pellets at this facility costs \$98 per tonne, excluding labor, equipment and land
24	purchase costs. As such, this represents a "bare bones" operating cost. Including the cost of labor
25	brings the cost to about \$307 per tonne. Thus, production may only be economically feasible when
26	land, equipment, and labor are available at marginal or reduced cost. Every joule of energy input into
27	the operation yielded 7.8 joules of energy in the pellet fuel. There appears to be potential to reduce
28	operating costs by increasing pelletizer yield and/or automating pelletizer operations - two
29	opportunities for engineered solutions in this sector that can render the operation financially viable
30	even when labor costs are included. On-farm pelleting in the Northeast US appears to have potential to
31	be cost competitive with commercial wood pellets in select scenarios, and has the potential to be more
32	widely applicable if modest improvements are made to process efficiency.
33	
34	
35	Keywords
36	Biomass, Pelleting

دريافت فورى ب

ISIArticles مرجع مقالات تخصصی ایران

- ✔ امكان دانلود نسخه تمام متن مقالات انگليسي
 - ✓ امكان دانلود نسخه ترجمه شده مقالات
 - ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
 - ✓ امكان دانلود رايگان ۲ صفحه اول هر مقاله
 - ✔ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
 - ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات