

Biomass Production Potential on “Marginal” Land in Vermont

Many of the perennial grasses growing on non-prime farmland in Vermont could be a potential source of biomass energy if harvested late in the season. To assess the potential production of these types of “existing” grasslands, five fields were assessed in 2007 by collecting multiple hand cuttings in late July and early August. The fields had not been cut prior to this cutting. None had received any nutrient inputs in 2007. Samples were cut, dried and weighed to determine dry matter yield. The samples were then ground and sent to the Dairy One Lab (Ithaca, NY) for ash and potassium analysis and to the Cornell Forage Research Lab (J. Cherney) for energy analysis using a bomb calorimeter.

Average biomass production across all fields was 2.75 tons d.m. per acre (see Table below). The three most productive fields had over 90% reed canarygrass. One of the lowest producing fields was made up mainly of smooth brome grass and the other was mixed mainly reed canarygrass. Ash content ranged from 5 to 7.9 percent, much higher than the desired levels for using biomass for heat energy. For example, wood is typically 1 to 2% ash.

Biomass Samples Collected from "Existing Fields" - 2007

Field Name	<u>Swift</u>	<u>Church</u>	<u>Lincoln</u>	<u>Rainville</u>	<u>Meach</u>	<u>Average</u>
Town	S. Burl	S. Burl.	E. Randolph	Alburg	Shelburne	
Sample Date	8/4/11	8/4/11	8/4/11	7/25/11	7/26/11	
No. Subsamples	9	11	14	11	12	
<u>Biomass</u>						
<i>(tons d.m./acre)</i>						
Mean	2.73	2.41	2.88	3.30	2.42	2.75
Standard Deviation	0.46	0.40	0.46	0.42	0.29	
<u>Ash Content</u>						
<i>(% of d.m.)</i>						
Mean	7.83	7.93	5.14	7.87	6.55	7.06
Std. Dev.	0.74	1.10	0.76	1.02	1.15	
<u>Potassium Content</u>						
<i>(% of d.m.)</i>						
Mean	1.61	1.17	1.19	1.43	1.13	1.31
Std. Dev.	0.33	0.18	0.26	0.08	0.16	
<u>Bomb Calorimeter</u>						
<i>(BTU's/lb. dm)</i>						
Mean	7875	7762	7984	7844	7924	7878
Std. Dev.	29	144	95	77	123	
<u>Plant Composition*</u>						
<i>(% of d.m.)</i>						
Reed Canarygrass	100	69	94	100	2	
Ky. Bluegrass	-	9	-	-	-	
Fine fescue	-	10	-	-	-	
Smooth brome grass	-	2	-	-	88	
Other Grasses	-	5	-	-	5	
Legumes	-	2	-	-	6	
Broadleaf Weeds	-	3	6	-	-	

*Visual appraisal

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