

Evaluation of Perennial Grass Biomass Energy Crops in North Dakota

Ezra Aberle

With the continued need for alternative energy sources, the Carrington Research Extension Center initiated a perennial grass evaluation trial for biomass feedstock production in 2006 in conjunction with other Research Extension Centers. The objective was to evaluate warm- and cool-season grasses and grass mixtures for biomass feedstock production in central North Dakota.

Materials and Methods

The species listed below were seeded at the CREC on May 19, 2006. The plots were seeded with a plot drill with 6-inch row spacing in a 15 x 30 foot plot. There is a comparison between annual and biannual harvesting as well. The annual harvest plots were harvested September 19, 2012, and the data is reported below.

Table 1. Yield of perennial grasses for biomass production, 2012.

Species	Yield T/ac	*
Sunburst Switchgrass	4.00	a
Trailblazer Switchgrass	3.50	ab
Alkar Tall Wheatgrass	4.13	a
Haymaker Intermediate Wheatgrass	3.37	ab
CRP Mix (Intermediate & Tall Wheatgrass)	3.70	ab
CRP Mix (Wheatgrasses +alfalfa+Sweetclover)	3.50	ab
Sunburst Switchgrass + Tall Wheatgrass	3.93	a
Sunburst Switchgrass + Sunnyview Big Bluestem	4.23	a
Sunburst Switchgrass + Mustang Altai wildrye	4.03	a
Magnar Basin + Mustang Altai wildrye	3.00	b
Mean	3.74	
C.V. (%)	14.49	
LSD 0.05	0.92	

* Yields followed by the same letter are not significantly different from one another

The 2012 growing season started out with adequate subsoil moisture provided by previous wetter-than-normal years but was characterized by below-average precipitation for April, May, June and July followed by a slightly above-normal August precipitation. Average temperatures were well above normal for April, May, June and July followed by slightly below-normal temperatures for August and September. Yields were lower than previous seasons due to reduced precipitation, however this data leads us to believe that both warm-season and cool-season grasses have great potential for biomass feedstock production. Continuous evaluation of warm-season and cool-season grasses is required to provide a more definitive conclusion.