North Dakota - Biomass from Switchgrass Varieties in Western North Dakota

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Switchgrass is a potential biofuel crop for the northern Great Plains region. Biomass yield and survival in western North Dakota of eight switchgrass varieties and experimental strains were measured for three years at three locations (Table 1). Harvest treatments were single annual cuttings in mid-August or mid-September. Key results:

- Biomass yield of adapted switchgrass varieties fluctuated widely, based largely on rainfall.
- Five of eight entries originated over 300 miles south of the evaluation sites and were subject to winter injury; however, the exceptions were 'Dacotah', ND3743, and 'Sunburst' entries.
- 'Sunburst', from southern SD, ranked 1st or 2nd in biomass yield in all environments and was the top-yielding entry in all environments in the droughty 3rd production year.
- 'Trailblazer' ranked 1st, 2nd, or 3rd in biomass yield in all settings.
- Yield rankings of the other six entries were inconsistent.
- Harvest date did not influence survival.
- Mid-September harvest resulted in ~10% greater biomass yield than mid-August harvest (2.7 vs. 2.5 ton DM/ac).
- At the most productive site, biomass yield of 'Sunburst' ranged from 1.4 ton DM/ac in a drought year to 5.6 ton DM/ac in a relatively wet year.

Table 1. *Biomass yields & survival percentages of switchgrass varieties.*

Entry	Biomass Yield			Survival		Heading Date
	Mid-Aug.	Mid-Sept.	Range	Mid-Aug.	Mid-Sept.	
	----Ton DM/ac----			----Percent----		Day of Year
Dacotah	2.4	2.4	1.0-4.2	91	92	186
ND3743	2.2	2.2	0.9-3.9	89	91	186
Summer	2.3	2.6	1.2-4.4	61	65	206
Sunburst	3.2	3.5	1.4-5.6	96	96	213
Trailblazer	22.9	3.3	1.2-4.9	93	93	227
Shawnee	2.5	2.6	1.1-4.5	87	82	230
OK NU-2	2.2	2.6	0.9-4.2	75	79	252
Cave-In-Rock	2.2	2.2	1.0-4.3	79	78	232
LSD (0.05)	0.2	0.2	NA	3	3	4