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2006 South Dakota Forage Grass Variety Performance Trials

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Establishment and management

A summary of location, planting date and seeding rates is given in Tables 1 and 2. Plots were 3 feet and 20 feet long and planted with a plot planter with a cone seeder (Carter Manufacturing, Brookston, IN). Each plot contained 5 rows with 6-inch spacings. Each location had a randomized complete block design replicated four times. Varieties were randomized and blocked by species to account for physiological developmental differences.

Winter injury was scored for each plot at the onset of growth in the spring and was based on a visual assessment with a ranking of 1= no injury; 6 = completely dead plants. In the future, stage of maturity at harvest for all cultivars and species will be determined using the mean-stage-by-count Kalu and Fick (1981, Crop Science 21:267-271) adapted to perennial grasses by Moore et al. (1993, Agronomy Journal 83:1073-1077).

A sickle-bar harvester (Swift Machine) was used to harvest all plots. Fresh grass samples were obtained randomly from each species during harvest. The wet weight of samples was measured and samples were oven dried at 140 F under forced-air drying chambers for 72 hours to determine yield on a dry matter basis.

Herbicides and insecticides were used as needed to successfully establish and manage grass pests. Soil fertility was maintained throughout the trial at levels recommended by the SDSU soil testing laboratory.

Table 1. Location, planting date, and harvest dates for grass forage variety performance trials in South Dakota.

Location	Planting date	First harvest	Second harvest
SDSU Agronomy Research Farm			
Brookings	5 May '05	8 June '06	2 Aug '06
Southeast Research Farm			
Beresford	2 May '05	6 June '06	-
Northeast Research Farm			
Watertown	6 May '05	7 June '06	13 Sept '06

Table 2. Grass common name and seeding rates in the grass forage performance trial in South Dakota.

Grass common name	Seeding rate (lb PLS/ Acre)
Creeping bentgrass	8
Hybrid bromegrass	10
Meadow bromegrass	12
Smooth bromegrass	7
Orchardgrass	8
Perennial ryegrass	20
Reed canarygrass	8
Tall fescue	10
Timothy	8

2006 results

Winter injury score and forage yields (tons dry matter per acre) are reported for Brookings, Beresford, and

Watertown in Tables 3-7. Released and experimental (when present) names of each cultivar were reported as provided by the seed company at the time of entry.

All grass species were seeded in 2005 and established very well due to adequate precipitation. However, the severe drought in 2006 resulted in insufficient forage mass to justify a second cutting for all species at Beresford and some species at Brookings. Winter injury also reduced perennial ryegrass yield at Brookings and Watertown.

Table 3. Tall fescue dry matter yield and winter injury score at Brookings, 2006.

Cultivar	Winter injury*	8 June	2 Aug	Season total
		----------DM tons/ acre----------		
Barcarella	2.9	2.06	0.81	2.87
Bariane	3.8	1.29	0.61	1.90
Drover	3.3	1.61	0.78	2.39
PST-5NF	2.8	1.80	0.79	2.59
Pradel**	2.5	1.24	0.43	1.67
Seine	3.8	1.17	0.94	2.11
Tuscany II	3.1	1.89	0.99	2.88
Fawn	2.8	1.83	0.95	2.78
LSD 5%	0.6	0.50	0.16	0.56
CV %	13	14	14	16

* Winter injury; 1= no injury; 6=dead; evaluated on 4 May 2006.
**Pradel is meadow fescue.

Table 4. Tall fescue dry matter yield and winter Injury score at Watertown, 2006.

Cultivar	Winter injury*	7 June	13 Sept	Season total
		----------DM tons/ acre----------		
Tuscany II	2.9	3.77	2.11	5.88
PST-5NF	2.8	3.66	2.72	6.38
Barcarella	2.9	3.57	2.85	6.42
Seine	3.8	3.56	2.84	6.40
Drover	3.3	3.23	2.34	5.57
Pradel**	2.5	3.01	1.73	4.74
Bariane	3.8	2.70	2.04	4.74
Fawn	2.8	3.54	2.54	6.08
LSD 5%	0.6	0.61	NS	1.65
CV %	13	12	39	19

NS = non-significant;
* Winter injury; 1= no injury; 6=dead; evaluated on 3 May 2006.
**Pradel is meadow fescue

Table 5. Grass forage dry matter yield and winter injury score at Brookings, 2006.

Cultivar	Winter injury*	8 June	2 Aug	Season total
		----------DM tons/ acre----------		
Bromegrass				
Lincoln	1.8	2.45	0.14	2.59
Fleet	2.9	1.74	0.21	1.95
AC Knowles	3.0	1.66	0.21	1.87
Montana	2.9	1.59	0.18	1.77
Orchardgrass				
Pauite 2	3.0	1.48	0.36	1.84
Barexcel	3.1	1.46	0.36	1.82
Potomoc	2.9	1.59	0.43	2.02
Timothy				
Winnetou	1.8	1.76	-	1.76
Climax	2.3	1.30	-	1.30
Perennial ryegrass				
Barsprinter	3.4	0.72	-	0.72
Remington	3.5	0.64	-	0.64
Aubisque	4.3	0.35	-	0.35
Linn	4.0	0.85	-	0.85
Reed canarygrass				
Chiefton	2.1	3.37	1.20	4.57
Creeping bentgrass				
PSTORAF	2.5	1.29	0.82	2.11
$LSD_{0.05\ bromegrass}$	0.6	0.31	NS	0.36
$LSD_{0.05\ orchardgrass}$	NS	NS	NS	NS
$LSD_{0.05\ timothy}$	NS	NS	-	NS
$LSD_{0.05\ perennial\ ryegrass}$	0.7	0.37	-	0.37
$LSD_{0.05\ ALL}$	0.7	0.41	0.10	0.40
CV %	17	17	33	14

NS = non-significant
* Winter injury; 1= no injury; 6=dead; evaluated on 4 May 2006.

Table 6. Grass foragedry matter yield and winter injury score at Watertown, 2006.

Cultivar	Winter injury*	8 June	2 Aug	Season total
		----------DM tons/ acre----------		
Bromegrass				
Lincoln	1.4	3.74	0.85	4.59
Fleet	2.1	3.48	0.96	4.44
AC Knowles	2.6	3.47	0.73	4.20
Montana	2.3	3.10	1.00	4.10
Orchardgrass				
Pauite 2	2.4	3.38	1.85	5.23
Barexcel	2.6	3.21	1.58	4.79
Potomoc	2.1	3.11	1.70	4.81
Timothy				
Winnetou	1.6	2.93	0.31	3.23
Climax	1.6	3.11	0.26	3.37
Perennial ryegrass				
Barsprinter	4.5	1.16	0.46	1.62
Remington	4.3	1.06	0.55	1.61
Aubisque	5.3	0.47	0.42	0.89
Linn	4.4	1.23	0.35	1.58
Reed canarygrass				
Chiefton	1.8	4.47	1.88	6.35
$LSD_{0.05}$ bromegrass	0.6	NS	NS	NS
$LSD_{0.05}$ orchardgrass	NS	NS	NS	NS
$LSD_{0.05}$ timothy	NS	NS	NS	NS
$LSD_{0.05}$ perennial ryegrass	0.6	0.38	NS	0.47
$LSD_{0.05}$ ALL	0.6	0.5	0.4	0.7
CV %	8	13	30	13

NS = non-significant

* Winter injury; 1= no injury; 6=dead; evaluated on 3 May 2006.

Table 7. Grass forage dry matter yield and winter injury score at Beresford, 2006.

Cultivar	Winter injury*	6 June
		DM tons/ acre
Tall fescue		
Tuscany II	2.4	1.85
PST-5NF	3.1	1.61
Seine	2.5	1.75
Fawn	2.0	1.60
Bromegrass		
Montana	2.8	1.59
Orchardgrass		
Pauite 2	2.0	1.48
Potomoc	1.5	1.59
Timothy		
Winnetou	1.9	1.76
Perennial ryegrass		
Aubisque	1.6	0.35
Linn	1.5	0.85
Reed canarygrass		
Chiefton	4.1	3.37
Creeping bentgrass		
PSTORAF	2.9	1.29
$LSD_{0.05}$ tall fescue	0.7	NS
$LSD_{0.05}$ orchardgrass	NS	NS
$LSD_{0.05}$ perennial ryegrass	NS	NS
$LSD_{0.05}$ ALL	0.7	0.4
CV %	20	17

NS = non-significant

* Winter injury; 1= no injury; 6=dead; evaluated on 9 May 2006.

EXEX8158, 2006. Access at http://agbiopubs.sdstate.edu/articles/ExEx8158.pdf.