



Forage Research in Texas

1984

Performance of Warm-season Grass Varieties and Species

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ABSTRACT

Twenty-seven warm-season grass varieties and species were evaluated for yield, in vitro dry matter digestibility, and winter hardiness during the 1983 growing season and 1983-84 winter. Dry matter yields varied from 2188 to 13680 pounds per acre. Several varieties and species produced in excess of 5 tons dry forage per acre. In vitro dry matter digestibilities (IVDMD) of vegetative tillers sampled in August varied from 32.9 to 69.3% with 10 varieties and species above 60% IVDMD. Winterhardiness ratings are also reported.

INTRODUCTION

Twenty-seven warm-season varieties and species representing many commonly available native and introduced species were established in a twice replicated nursery in 1981 primarily for observational purposes. Comparative yield and quality information of warm-season grass varieties and species are needed to assist producers in species evaluations. Plots were harvested in 1982 and in 1983 for yield and quality comparisons.

MATERIALS AND METHODS

Seedlings of the grass varieties and species were started in peat pots in the greenhouse, and transplanted on 12 inch centers in 20 foot rows, 3 rows per plot, 2 replications in early April 1981. The plots were shredded in July 1981 and during the 1981-1982 dormant season. Plots were harvested for yield in May and August of 1982.

Plots were fertilized with 400 pounds of 13-13-13 on April 13, 1983. Varieties and species were visually rated for stand density in May 1983. The rating was based on a 1 to 5 scale with 1 assigned to excellent stands with no skips and 5 assigned to a stand with no live plants present.

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KEYWORDS: Warm-season grasses, yield, digestibility, winterhardiness for in vitro dry matter digestibility.

Yields were determined from harvest on May 30, June 27, July 22, August 25, and September 26, 1983. The center row of each plot was harvested to a 4 inch harvest height for the yield determinations. Vegetative tillers at the 3 to 5 leaf growth stage were hand harvested prior to the August 25 harvest and analyzed.

Winterhardiness ratings were determined by visual observation in May 1984 following the cold winter of 1983-84. The rating was based on a 1 to 5 scale with 1 assigned to an excellent stand with no skips or dead plants; 5 assigned to plots with no live plants present.

RESULTS

Forage yields and in vitro dry matter digestibilities (IVDMD) are reported in Table 1. Large variation existed between replications resulting in large LSD values.

The average yield for the twenty-seven varieties and species of warm-season grasses was 7515 pounds of dry forage per acre. Production from Pretoria 90 bluestem, Lometa Indiangrass, Eastern Gamagrass (PMT 831), Kleberg bluestem, Big Sacaton (PMT 820) and Alamo Switchgrass was in excess of 5 tons dry forage per acre.

Yield rankings generally correspond to those in other studies where some of these varieties and species were included, and are very similar to those reported for the 1982 growing season. Three notable differences in the yield rankings between 1982 and 1983 are Birdwood-buffel, Common buffel, and Lometa Indiangrass. Birdwood-buffelgrass which was the fourth highest yielding variety in 1982 (10,067 pounds/acre) only produced 4340 pounds of dry forage per acre in 1983 (ranking 23). Common buffelgrass which produced 7293 pounds of dry forage per acre in 1982 only produced 2655 pounds of forage in 1983. Both grasses had poor stands at the start of the 1983 growing season (stand density rating of 3.5 - Table 2). Lometa Indiangrass which only produced 6949 pounds of dry forage per acre in 1982 (ranking 15) produced 12,592 pounds of dry forage in 1982 (ranking 2). Lometa Indiangrass has an excellent stand in 1983 (stand density rating of 1.0).

In vitro dry matter digestibilities rankings corresponded to those reported in other studies which included various of these grass varieties and species. Average IVDMD of vegetative tillers harvested in August was 54.62%.

Winter hardiness ratings taken in May 1984 are reported in Table 2. Winterhardiness patterns are as expected for the grass

varieties and species. Since the last harvest was September 26, very little fall growth occurred prior to the first freeze of 1983.

Table 1. Average dry matter yield and August vegetative dry matter digestibility (IVDMD) of warm-season grasses

Variety (PMT Number)	IVDMD	5/30	6/27	7/22	8/25	9/26	Total
	---	-----pounds dry forage/acre-----					
1. Pretoria 90 bluestem	65.8	5,405	2,814	2,070	2,031	1,360	13,680
2. Lometa Indiangrass	59.1	6,588	2,359	1,434	1,344	867	12,592
3. Eastern gammagrass (831)	48.0	5,440	2,078	1,476	1,323	1,073	11,393
4. Kleberg bluestem	68.2	5,141	1,385	1,058	2,164	1,499	11,247
5. Big sacaton (820)	46.8	4,951	1,950	1,280	1,796	1,189	11,166
6. Alamo switch	51.9	6,930	971	1,079	874	501	10,355
7. Kleingrass 75	59.5	5,092	1,314	1,020	1,718	842	9,986
8. Renner weeping lovegrass	32.9	3,722	1,755	1,018	1,076	1,249	8,820
9. Alkali sacaton	48.6	3,592	1,922	1,055	1,033	884	8,486
10. Llano buffelgrass	62.3	2,452	2,379	1,175	1,643	780	8,429
11. Nueces buffelgrass	62.9	2,461	2,684	990	1,211	796	8,142
12. Polar lovegrass	64.0	2,231	2,102	874	1,683	1,074	7,964
13. Plains bluestem	59.2	2,689	1,161	960	1,493	1,297	7,600
14. Old world bluestem (487)	62.5	2,046	1,450	1,001	1,656	1,323	7,476
15. Big bluestem (1947)	53.2	2,753	1,690	982	1,005	939	7,369
16. Red alta limpograss	60.2	2,945	1,402	1,115	991	531	6,984
17. Dallisgrass	51.2	3,421	1,327	587	757	642	6,766
18. Sideoats grama (470)	54.4	3,195	1,441	832	701	399	6,566
19. Little bluestem (2738)	45.2	2,282	1,109	881	1,398	597	6,267
20. Caucasian bluestem (588)	60.6	2,680	1,138	588	779	743	5,928
21. Lehmann lovegrass	34.7	1,841	1,227	547	631	761	5,007

Table 1. Average dry matter yield and August vegetative dry matter digestibility (IVDMD) of warm-season grasses

Variety (PMT Number)	IVDMD	5/30	6/27	7/22	8/25	9/26	Total
	---	-----pounds dry forage/acre-----					-----
22. Little bluestem (1652)	48.9	1,448	1,008	695	705	491	4,347
23. Birdwood-buffel	69.3	855	1,386	542	827	530	4,240
24. Green spangletop (746)	56.7	988	985	408	796	859	4,046
25. Plains bristlegrass (4022)	40.3	785	570	369	393	600	2,717
26. Common buffelgrass	67.5	623	999	243	373	417	2,655
27. Pensacola bahiagrass	41.3	378	589	578	345	298	2,188
Average	54.6	3,276	1,525	921	1,143	828	7,515
LSD .10	9.1	2,455	640	452	750	565	3,039

Table 2. Stand density ratings of warm-season grass varieties and species

Variety (PMT Number)	Rating May 1983*	Rating May 1984*
Pretoria 90 bluestem	1.0	4.75
Lometa Indiangrass	1.0	1.00
Eastern gammagrass (831)	1.0	1.25
Kleberg bluestem	1.0	1.00
Big sacaton (820)	1.0	1.50
Alamo switch	1.0	1.25
Kleingrass 75	1.0	1.00
Renner weeping lovegrass	1.0	3.00
Alkali sacaton	1.0	1.00
Llano buffelgrass	1.5	5.00
Nueces buffelgrass	2.0	5.00
Polar lovegrass	3.0	3.00
Plains bluestem	2.0	1.25
Old world bluestem (487)	1.0	3.50
Big bluestem (1947)	2.0	1.50
Red alta limpograss	1.0	1.75
Dallisgrass	1.5	3.00
Sideoats grama (470)	1.5	1.00
Little bluestem (2738)	2.0	1.00
Caucasian bluestem (588)	1.0	3.25
Lehamann lovegrass	3.5	2.00
Little bluestem (1652)	2.5	1.50
Birdwood-buffel	3.5	5.00
Green spangletop (746)	2.5	2.00
Plains bristlegrass (4022)	3.0	1.25
Common buffelgrass	3.5	5.00
Pensacola bahiagrass	1.0	1.00