

Forage Research In Texas, 1986

Small Grain Performance As A Silage Crop

R. M. JONES AND J. C. READ

Summary

Dry matter yields ranged from 3,079 to 4,842 and from 2,361 to 7,487 pounds per acre at Stephenville and Dallas, respectively. Oat cultivars generally produced greater, though not always significantly greater, yields than wheat, triticale, and rye cultivars at both locations. Bob and Harpool 833 oat were the highest producing cultivars in the combined location analysis. Wintermore rye and Mit wheat were low producers at both locations.

Introduction

Small grain forage has often been used as silage because it can be grown during the cool season of the year with greater certainty of production than many summer crops due to more favorable moisture conditions. Protein content is generally higher than most summer-grown forages. Small grain as silage also eliminates the risk of rain-damaged hay since harvest time usually occurs within the most rain intensive period of the year. Current interest among dairymen and farmers in the use and production of silage prompted studies to compare yields of small grains as silage.

Procedure

Identical tests were conducted at Dallas and Stephenville to determine relative forage production among selected cultivars of small grain. The tests included four replications in a randomized complete block design with nine cultivars and one experimental line of oat, nine cultivars of wheat, and one cultivar each of triticale and rye. Conditions under which both tests were conducted are listed in Table 1. Rainfall at Stephenville between October 1 and harvest was 17.55 inches for all entries except Walken oat which, due to later maturity, received 21.35 inches. Mit wheat and Wintermore rye received 28.43 inches of rainfall at Dallas for the same period. All wheat cultivars except Mit and TAM 105 received 29.35 inches. All oat cultivars except Bob, TAM 105 wheat, and Forage I triticale received 35.79 inches. Incidence of rust was noted at harvest.

Each cultivar was cut at flag leaf with either a flail mower (Dallas) or a sickle mower (Stephenville). Plant material was collected and weighed. Subsamples were weighed, dried at 158°F, and reweighed to determine dry matter yields.

Results and Discussion

Stephenville. Dry matter yields ranged from 3,079 to 4,842 pounds per acre (Table 2). Walken and Bob oat yields were significantly greater than yields of all wheat and rye cultivars, but the same as Forage I triticale. All oat cultivars and Coker 68-15, Bradford, McNair 1000, TAM 105, NK 812, and Coker 762 wheat cultivars produced significantly greater dry matter than Wintermore rye. Among wheat cultivars Coker 68-15 yield

was significantly greater than yields of Coker 916, Vona, and Mit. TAM 105 was severely rust infested when harvested April 15.

Dallas. Dry matter yields ranged from 2,361 to 7,487 pounds per acre (Table 2). Yield of 82C6023 experimental oat ranked highest among all cultivars, but was significantly greater than Mesquite oat, Wintermore rye, and all wheat cultivars. Forage I triticale yields ranked between oat and wheat cultivars, but was significantly greater than yields of just two cultivars, Mit wheat and Wintermore rye. Among wheat cultivars there were no significant differences within a range of 895 pounds dry matter per acre; all other wheat cultivar yields were significantly greater than those of Mit. Yield of Wintermore rye was significantly less than all other cultivars except Mit wheat.

TAM 105 wheat was severely rust infested when harvested May 1. NK 812 was moderately infested.

Comparison of locations. Oat cultivars generally produced more dry matter than wheat, triticale, or rye at both locations although all differences were not significant (Table 2). Walken oat was the latest producing oat at both locations. Wintermore rye and Mit wheat yields were lower than all other cultivars at both locations. Yields of Mit and Wintermore rye were much lower at Dallas than at Stephenville whereas yields of all other cultivars were much higher at Dallas. Higher yields at Dallas were likely due to 167 to 204 percent greater rainfall for the growing period (plus October). In addition, the nitrogen differential may not be as great as indicated in Table 1 due to high mineralization of organic nitrogen on the previously

TABLE 1. CONDITIONS FOR THE SMALL GRAIN SILAGE TEST AT DALLAS AND STEPHENVILLE DURING THE 1984-85 SEASON

	Dallas	Stephenville
Soil Name/Type	Austin silty clay	Windthorst fine sandy loam
Plot Size	4 rows spaced 15" x 15'	4 rows spaced 15" x 15'
Harvested Area	Center 10' of center two	Center 10'3" of center two
Seeding Rate:		
Oat	80 lb/A	80 lb/A
Wheat	80 lb/A	80 lb/A
Rye	100 lb/A	100 lb/A
Triticale	100 lb/A	100 lb/A
Seeding Date	11/06/84	11/09/84
Fertilizer:		
Preplant	18-46-0	80-40-40
Topdress	67-0-0 2/01/85	75-0-0 3/01/85
Harvest Dates:		
Wheats, except	April 16	April 04
Mit	April 03	April 04
TAM 105	May 01	April 15
Oats	May 01	April 10
Bob	April 16	April 10
Walken	May 07	May 03
Triticale	May 01	April 15
Rye	April 03	March 25

KEYWORDS: Small grains/silage/yield comparisons/Stephenville/Dallas.

TABLE 2. DRY MATTER YIELDS OF SMALL GRAINS GROWN FOR SILAGE AT DALLAS AND STEPHENVILLE IN THE 1984-85 SEASON

Species	Cultivar	Dallas	Stephenville	Mean
Pounds dry matter per acre ¹				
Oat	Harpool 833	7,360 ab	4,507 a-c	5,933 a
	Bob	6,768 a-d	4,800 a	5,925 a
	Coker 234	6,912 a-c	4,500 a-c	5,706 ab
	Walken	6,559 a-e	4,842 a	5,701 ab
	82C6023	7,487 a	3,827 d-f	5,657 ab
	Nora	6,631 a-e	4,307 a-d	5,469 a-c
	Big Mac	6,332 a-e	4,512 a-c	5,422 a-c
Triticale	Forage I	6,116 a-f	4,669 ab	5,393 a-d
Oat	Harpool 422	6,280 a-e	4,458 a-c	5,369 a-d
	Mesquite	6,021 b-f	4,339 a-d	5,180 a-d
	Coronado	6,264 a-e	3,967 c-e	5,115 a-d
Wheat	Bradford	5,656 c-f	4,078 b-e	4,867 b-d
	NK 812	5,674 c-f	3,822 d-f	4,748 b-d
	McNair 1003	5,417 d-f	4,033 c-e	4,725 b-d
	Coker 68-15	5,236 ef	4,166 b-c	4,701 b-d
	Coker 916	5,499 c-f	3,486 e-g	4,492 cd
	Coker 762	5,207 ef	3,721 d-f	4,464 cd
	Vona	5,577 e-f	3,282 fg	4,429 cd
	TAM 105	4,779 f	3,915 c-e	4,347 d
	Mit	2,469 g	3,273 fg	2,871 e
Rye	Wintermore	2,361 g	3,079 g	2,720 e
Mean		5,743	4,066	4,910
CV		15.05	9.15	17.97

¹Means followed by the same letter are not significantly different at the 0.05 level, Duncan's Multiple Range Test.

fallowed Austin silty clay soil at Dallas. Mit and Wintermore may be better adapted to the fine sandy loam soil at Stephenville. Experimental oat 82C6023 produced

relatively much higher yields at Dallas than at Stephenville, while Forage I triticale was relatively much better at Stephenville than at Dallas.