Forage Production from Small Grain Varieties at Beeville

D. F. Bryn, W. R. Ocumpaugh, J. N. Rahmes, and D. Martinez, Jr.

Summary

This report presents forage yield data for clipping tests on oats, wheat, and barley at Beeville, Texas. Data are presented for a three- and four-cut system with their respective freeze damage ratings. The four-cut system always produced more forage than the three-cut system and generally resulted in less freeze damage. Oats generally produced more forage than wheat or barley, however, freeze damage was generally higher on oats. TAMO 386 and TX83A6293 oats had the lowest freeze damage ratings of the oats included in the test. TAMO 386 oats produced the most forage in both cutting regimes.

Introduction

A large number of oat and wheat varieties are available to be planted as winter forage crops. Furthermore, plant breeders are continuely developing new varieties that are better adapted to the environmental stresses that are present in the region.

KEYWORDS: Oats/wheat/barley/ryegrass/South Texas/freeze damage/winter pasture.

This research was conducted to evaluate the forage yield potential of several experimental and released varieties of oats, wheat, and barley in South Texas.

Procedures

Twenty-three commercial and experimental lines of wheat, oat, and barley were evaluated for adaptation and forage production at Beeville, Texas in 1988-1989. In addition, Tetragold ryegrass was included as a comparison. The test was planted October 10, 1988 on a prepared seedbed which had been fallowed for 1 year. The soil at this site is a Weesatche sandy clay loam. All small grains were planted at 1.5 inch depth while the ryegrass was drilled to 0.75-inch depth. Plots were five rows with 10-inch spacing, 15 ft in length planted in a randomized block with four replicaions. Small grain seeding rate was 100 lbs/A, while the ryegrass rate was 32 lbs/A. Preplant incorporated fertilizer was 30-17-8-27 lbs/A (N-P_2O_5-KCl-S). A top dressing of 50 lbs N/A was applied on February 22, 1989.

Two replications were harvested on January 16, February 20, March 29, and May 19. Due to a rain-out during the harvest on January 16, the other two replications were harvested on February 20, March 29, and May 19. Rainfall for South Texas has been below normal for 2 years (Figure 1). Rainfall at Beeville for the 12-month period preceeding plant-

ing was 64 percent of normal. The growing season received 47 percent of normal rainfall. Only January rainfall was above normal with 3.53 inches (42 percent of the total rainfall for the growing season). It also coincided with the first harvest. As a result, half the replications were harvested three times and half four times. The results for each cutting system will be presented. An ice storm occurred February 4 to 8, 1989, which caused freeze damage to some lines.

Results

Oat lines generally yielded more than the other species in both cutting regimes. Oat and wheat lines produce more total forage yield when harvested four times than when cut three times ($P<0.05$). Only Coker 983 wheat and Tetragold ryegrass were consistently not significantly different from the leading oat cultivars (Table 1 and 2). Six oat lines (TAMO 386, H833, TX86B117, TX83A6293, Mesquite II, and Coronado) led both cutting regimes. Collin wheat was the lowest yielding line in the test.

All lines were scored for freeze damage after the February ice storm. Generally, less freeze damage was observed with the four-cut system than the three-cut system, particularly with oats (Tables 1 and 2). Wheat cultivars showed no significant differences in freeze damage when cut four times, but TAM 200 had moderate freeze damage when cut three times (Tables 1 and 2). TAMO 386 and TX83A62923 oat were superior in freeze resistance in both cutting regimes. Three experimental oat lines had consistently high freeze damage scores.

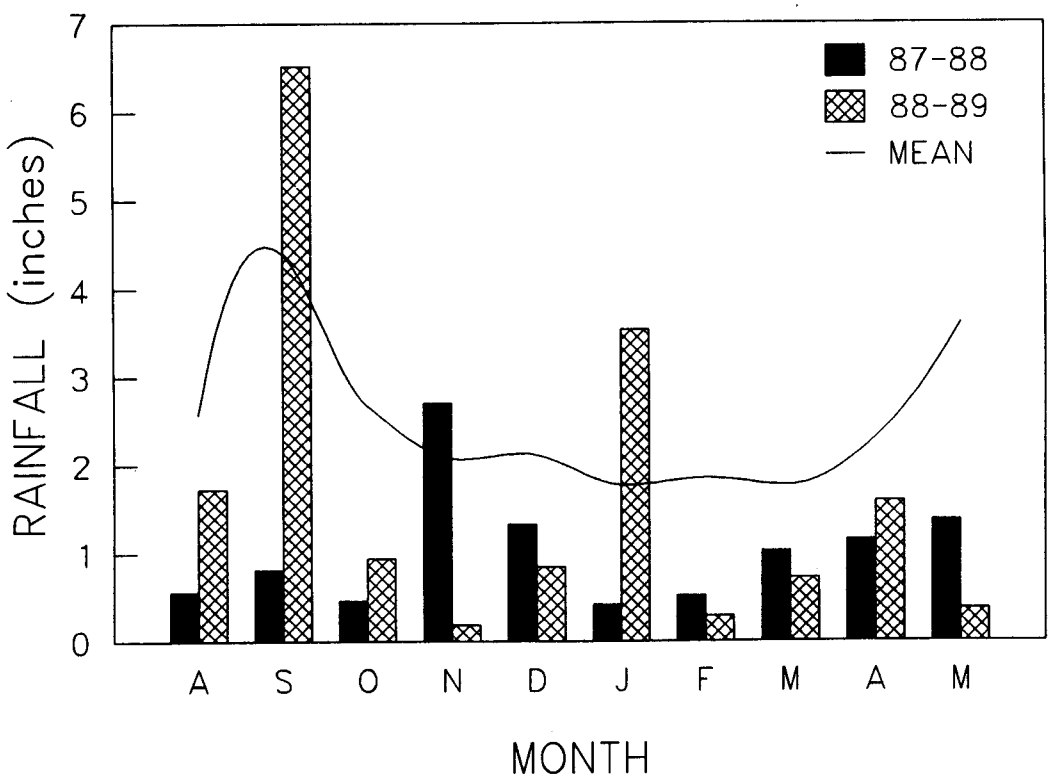

Figure 1. Seasonal rainfall at Beeville, Texas for 1987-1988 and 1988-1989 compared to a 77-year mean.

TABLE 1. FORAGE DRY MATTER YIELD AND FREEZE DAMAGE RATINGS WITH A FOUR-CUT SYSTEM AT TAES-BEEVILLE

Variety/Line	Forage Production					Freeze Damage Rating
	January 16	February 20	March 29	May 19	Total	
	Dry Matter lbs/A					
OAT						
Tamo 386	1,610	584	1,517	1,795	5,506	2.0*
H833	2,199	519	1,498	1,134	5,351	3.0
TX86B1117	2,204	288	942	1,809	5,242	3.5
Mesquite II	2,095	539	1,799	722	5,156	3.0
TX83A6293	2,058	662	1,254	1,151	5,124	2.0
Big Mac	2,624	297	1,081	908	4,910	5.0
Coronado	2,300	437	868	1,070	4,677	3.5
TX86B336	2,780	114	856	737	4,487	6.0
TX82M4964	2,788	22	600	919	4,329	6.5
TX86B1207	1,582	65	672	979	3,298	7.0
WHEAT						
Coker 983	1,485	717	1,278	1,122	4,602	1.5
TX84U4277	1,050	763	2,192	0	4,004	1.5
TX84U4268	1,510	756	1,722	0	3,988	1.0
Florida 302	1,755	663	1,445	0	3,863	1.0
TX86U6065	1,245	556	1,966	0	3,767	1.0
MIT	1,624	635	1,303	0	3,563	1.5
TX84U4441	1,221	723	1,598	0	3,542	2.0
TAM 201	944	606	1,989	0	3,540	1.5
TX86U6161	997	530	1,967	0	3,495	1.0
TAM 200	892	314	1,275	568	3,050	1.0
Collin	965	223	1,587	0	2,775	2.0
BARLEY						
Tambar 402	2,047	848	1,394	112	4,401	1.0
Tambar 401	1,309	638	1,361	0	3,308	1.0
RYEGRASS						
Tetragold	654	766	1,560	1,417	4,397	2.0
Mean	1,664	522	1,405	602	4,182	2.5
CV	25	18	16	37	13	36
LSD (0.05)	848	190	460	463	1,113	1.9

*Freeze damage rating; 0 = no damage, 9 = severe damage.

TABLE 2. FORAGE DRY MATTER YIELD AND FREEZE DAMAGE RATINGS WITH A THREE-CUT SYSTEM AT TAES-BEEVILLE

Variety/Line	Forage Production				Freeze Damage Rating
	February 20	March 29	May 19	Total	
	Dry Matter lbs/A				
OAT					
Tamo 386	2,873	817	1,388	5,078	3.0*
TX86B1117	2,841	952	983	4,776	4.5
TX83A62923	2,671	1,130	704	4,505	2.0
Mesquite II	1,781	1,634	945	4,410	4.5
Coronado	2,671	650	1,024	4,345	4.5
H833	1,969	769	930	3,669	6.0
Big Mac	1,399	955	650	3,003	4.0
TX82M4964	2,294	172	0	2,466	7.0
TX86B336	1,864	319	0	2,183	7.0
TX86B1207	1,888	157	0	2,046	8.0
WHEAT					
Coker 983	1,778	1,464	886	4,129	1.0
TX84U4268	1,920	1,554	0	3,474	1.0
TAM 200	1,857	1,079	395	3,332	4.5
TX84U4277	1,774	1,529	0	3,303	1.0
Florida 302	1,786	1,490	0	3,276	1.0
MIT	1,684	1,499	0	3,183	1.0
TX86U6065	1,431	1,580	0	3,011	1.5
TAM 201	1,257	1,556	0	2,813	1.5
TX86U6161	1,334	1,151	0	2,485	1.0
TX84U4441	891	1,291	0	2,182	1.5
Collin	510	1,193	0	1,703	1.5
BARLEY					
Tambar 402	1,830	1,439	0	3,269	1.5
Tambar 401	1,605	1,596	0	3,201	1.5
RYEGRASS					
Tetragold	1,350	1,569	1,190	4,108	2.5
Mean	1,840	1,148	381	3,331	3.1
CV	35	31	56	26	52
LSD (0.05)	1,398	747	446	1,765	3.3

*Freeze damage rating; 0 = no damage, 9 = severe damage.