

Performance of Wheat, Oat, Rye, and Triticale Trials in Bryan, Texas, 1990-93

G. Van Esbroeck, S. S. Simecek, D. H. Bade, and M. A. Hussey

Summary

Wheat, oat, rye, and triticale varieties were grown at Bryan, Texas, during three winters from 1990 to 1993. Plots were seeded in late September or early October and clipped two to four times between December and April. Annual total yields averaged between 6,092 and 7,014 lb/acre; 'Elbon' rye consistently produced the highest yield followed by oats. 'Trit II' triticale had the lowest yield. The oat varieties generally produced a greater proportion of their yield in the November to January period than did rye or wheat.

Introduction

Small grains are commonly used as winter pasture throughout much of central and eastern Texas. Rye is the most cold tolerant and yields well but is susceptible to ergot. Oats are not as winter hardy as rye but generally have greater productivity in the fall in central and south Texas. Many commercial varieties are available to producers. Field trials in Bryan, Texas, were carried out to determine the yield distribution and relative performance of several commercially available varieties.

Procedure

Wheat, oats, rye, and triticale varieties were evaluated for forage production at Bryan for 3 years (1990-91, 1991-92, 1992-93). Trials were in Brazos County on a Lufkin fine sandy loam soil having a pH of 6.8. Varieties varied somewhat from year to year such that 3 years of data are not available for all varieties.

Plots were seeded at a rate of 100 lb/acre in late September or October into a prepared seedbed that was previously fallowed. Plots were 5 by 20 ft with a 7-in. row spacing arranged in a randomized complete block design of two to four replicates. Fertilizer rates varied somewhat from year to year (Tables 1 to 3). Plots were clipped to a height of 4 in. two to four times between December and April. Dry matter yields were calculated from the fresh weight of a 3-ft by 17-ft strip. A subsample was dried at 140 °F for 48 hr to establish dry matter percentage. Analyses of variance were

Keywords: small-grain forage / winter pasture.

carried out within years, and the LSD test at $P < 0.05$ was used to detect treatment differences.

Results and Discussion

Long-term average monthly precipitation at Bryan, Texas, for the October to April period ranges from 2.4 to 4.4 in. Precipitation during the trials was near normal except for January and December of 1991, when rainfall was 15 and 11 in., respectively. Minimum winter temperatures were 12 °F in December 1990 and 26 °F in November 1991 and 1992.

During 1990-91, forage production averaged 7,014 lb/acre (Table 1). Rye yielded the highest, but much of it came late in the season. The relatively poor yields of the oats compared with rye at the 26 February harvest may have been due to some winterkill in the oats from the harsh late December freeze. Rye produced 38% of its yield before 18 December, while the oat varieties produced more than 60% of their yield during this period. Because of the high variability in the data, significant differences ($P < 0.05$) among the oat varieties are not evident.

In the 1991-92 year, fall yields were low from all varieties because of lower than average precipitation in both October and November (Table 2). Total yields

Table 1. Wheat, oat, and rye forage variety yields at Bryan, Texas, from 1990-91.

| Variety | Harvest date | | Total |
|---------------|--------------------------------------|---------|-------|
| | 18 Dec. | 26 Feb. | |
| |lb/acre oven-dried forage | | |
| Elbon rye | 3698 | 6148 | 9845 |
| Bob oats | 5022 | 2811 | 7833 |
| Coronado oats | 4943 | 2563 | 7507 |
| Mesquite oats | 4310 | 3104 | 7414 |
| Mitt wheat | 2422 | 3896 | 6318 |
| Blizzard oats | 3355 | 2659 | 6014 |
| Ozark oats | 3806 | 2182 | 5988 |
| TAMO 386 oats | 2569 | 2627 | 5196 |
| Mean | 3766 | 3249 | 7014 |
| CV (%) | 35 | 26 | 26 |
| LSD (0.05) | 2326 | 1499 | 3239 |

Seeded: 20 Oct. 1990.

Fertilizer: 72 lb/acre of N, P₂O₅, K₂O on 27 Sept. 1990.

Table 2. Wheat, oat, rye and triticale forage variety yields at Bryan, Texas, 1991-92.

| Variety | Harvest date | | | | Total |
|-------------------|--------------------------------------|---------|---------|---------|-------|
| | 9 Dec. | 20 Feb. | 20 Mar. | 29 Apr. | |
| |lb/acre oven-dried forage | | | | |
| Elbon rye | 767 | 2317 | 1309 | 2383 | 6830 |
| Blizzard oats | 580 | 2938 | 1511 | 1752 | 6779 |
| Mesquite II oats | 944 | 2710 | 1773 | 1341 | 5758 |
| 833 oats | 336 | 2912 | 1339 | 2049 | 6636 |
| TAMO 386 wheat | 924 | 2007 | 1858 | 1749 | 6530 |
| Mesquite oats | 672 | 2671 | 1543 | 1382 | 6268 |
| Mitt wheat | 445 | 1984 | 1365 | 2068 | 5862 |
| Ozark oats | 392 | 2111 | 1305 | 1962 | 5771 |
| Coronado oats | 464 | 2053 | 1849 | 1266 | 5633 |
| Trit II triticale | 251 | 2358 | 1438 | 1464 | 5512 |
| Mean | 578 | 2411 | 1528 | 1741 | 6259 |
| CV (%) | 32 | 16 | 13 | 29 | 10 |
| LSD (0.05) | 314 | 668 | 350 | 861 | 1097 |

Seeded: 7 Oct. 1992.

Fertilizer: 60 lb/acre N, 30 lb/acre P₂O₅ and K₂O on 30 Sept. 1991; 75 lb/acre N on 27 Mar. 1992.

in 1991-92 averaged 6,259 lb/acre; rye produced the highest yield, largely because of its high yield at the April harvest. 'Mesquite', 'TAMO 386', and 'Mesquite II' oats had the highest yields at the 9 December harvest. Total yields among the oat varieties varied by about 20% with 'Coronado' oats, the only variety significantly different from the top-yielding 'Blizzard' oats (Table 2).

During 1992-93, total yields averaged 6,092 lb/acre; 'TAMO 386 ERB' and 'TAMO 386 R' oat produced the highest January yields (Table 3). The oat varieties produced 45% of their total yield at the 26 January harvest compared with 37% for rye and wheat. There was a 20% difference in total yield between the highest and lowest yielding oat varieties, but 'Ozark' was the only oat variety showing significantly ($P < 0.05$) lower yields than TAMO 386.

Of the entries included for 3 years, rye produced the highest yields and averaged 7,818 lb/acre. Mesquite and 'Blizzard' oats followed with 3-year average yields of 6,617 and 6,482 lb/acre, respectively. With some exceptions, differences in the yields of varieties within a species were minor, and such considerations as yield distribution, disease tolerance, adaptation to soil conditions, or seed costs may be more important in deciding which variety to grow.

Table 3. Wheat, oat, rye, and triticale forage variety yields at Bryan, Texas, 1992-93.

| Variety | Harvest date | | | Total |
|--------------------|--------------------------------------|---------|--------|-------|
| | 26 Jan. | 18 Feb. | 6 Apr. | |
| |lb/acre oven-dried forage | | | |
| Elbon rye | 2454 | 730 | 3494 | 6778 |
| Tamo 386 ERB oats | 3600 | 264 | 2809 | 6673 |
| Blizzard oats | 2662 | 718 | 3272 | 6653 |
| TX83AB2923 oats | 2819 | 703 | 3059 | 6581 |
| Wintermaster wheat | 2422 | 627 | 3421 | 6470 |
| TAMO 386 R oats | 3068 | 602 | 2553 | 6223 |
| TAMO 386 oats | 2805 | 638 | 2805 | 6248 |
| Mesquite oats | 2721 | 709 | 2740 | 6170 |
| Mesquite II oats | 2810 | 422 | 2765 | 5997 |
| 833 oats | 2496 | 709 | 2686 | 5891 |
| Bob oats | 2439 | 624 | 2722 | 5785 |
| Coronado oats | 2459 | 496 | 2803 | 5764 |
| Mitt wheat | 2091 | 1025 | 2506 | 5623 |
| Ozark oats | 2337 | 745 | 2472 | 5554 |
| Trit II triticale | 559 | 743 | 3771 | 5073 |
| Mean | 2516 | 650 | 2925 | 6092 |
| CV (%) | 18 | 20 | 14 | 12 |
| LSD (0.05) | 641 | 183 | 592 | 1005 |

Seeded: 7 Oct. 1992.

Fertilizer: 75 lb/acre of N, P₂O₅, and K₂O on 29 Sept. 1990.