

PUBLICATIONS

1988

FORAGE AND LIVESTOCK RESEARCH - 1988

RESEARCH CENTER TECHNICAL REPORT 88-1

Texas A&M University Agricultural Research & Extension Center
at Overton

Texas Agricultural Experiment Station
Texas Agricultural Extension Service

Overton, Texas

April 21, 1988

All programs and information of the Texas Agricultural Experiment Station and Texas Agricultural Extension Service are available to everyone without regard to race, color, religion, sex, age, or national origin.

Mention of trademark or a proprietary product does not constitute a guarantee or a warranty of the product by the Texas Agricultural Experiment Station or Texas Agricultural Extension Service and does not imply its approval to the exclusion of other products that also may be suitable.

SMALL GRAIN FORAGE YIELDS AT OVERTON 1985-1987

L. R. Nelson, Steve Ward and Jim Crowder

SUMMARY

This report presents forage yield data for clipping tests on oats, wheat, and rye at Overton, Texas. Data are presented for a 3 year period, and for the 1986-87 growing season. The major portion of the oat forage was produced in the fall and spring or during warm periods. Forage production of rye was quite uniform even during January and February with no winterkill. Wheat was intermediate between oats and rye for seasonal forage production. When selecting small grain varieties to plant on your farm or ranch, data from more than one year should be used to overcome environmental variations.

INTRODUCTION

A large number of small grain varieties of wheat, rye, oats, and ryegrass are available to cattlemen each year to be planted as winter annuals. Selection of adapted, high yielding varieties can result in high forage yields and profits for cattlemen. Selection of low yielding, unadapted varieties which may winterkill will usually result in an unprofitable winter pasture program. These studies were conducted to determine the forage yielding potential of numerous experimental and newly released varieties of wheat, oats, and rye in East Texas and to determine the seasonal distribution of the winter small grains. Finally, to test the varieties for winterhardiness and disease resistance or susceptibility.

PROCEDURES

Available commercial and experimental wheat, oat, and rye cultivars were evaluated for adaptation, forage production, and rust resistance in 1984-85, 1985-86, and 1986-87 at Overton, Texas.

All tests were planted in a prepared seedbed. Planting dates at Overton were early September in all three years. Seeding rates were 120 lbs/ac for all three small grains. Seed was planted with a drill with six row plots 12 ft in length and with 8 inch row spacing. Each

forage species was planted into a separate experiment. Each experiment was replicated four times.

Fertilizer application rates varied each year. Preplant applications were 24-96-96 lbs/ac of N, P₂O₅ and K₂O, respectively, for 1984 and 1986. In 1985, fertilization rates were 60-60-80 lbs/ac respectively, for the three nutrients. In 1984-85, N was applied as urea at .96 lbs/ac on Oct. 11, 50 lbs on Dec. 14 and 65 lbs on Feb. 20 for a total N rate of 235 lbs/ac. In 1985-86, N was applied as urea at a rate of 100 lbs on Oct. 16 and 50 lbs/ac on Jan. 22, for a total N rate of 210 lbs N/ac. In 1986-87, N was applied as ammonium nitrate at rates of 100 lbs/ac on Oct. 3, 25 lbs on Jan. 5, and 40 lbs on Feb. 19, for a total N rate of 189 lbs/ac.

RESULTS

Weather: In 1984-85 good stands were obtained with each of the three species. Winterfreeze injury did occur, which resulted in reduced forage yields particularly in oats and wheat. Winterkill injury resulted in lower yields for less hardy varieties such as NK Probrand 812, Mit, and McNair 1003. Varieties which were winterhardy and tended to go dormant were not injured and generally produced higher yields in 1984-85. Examples of winterhardy varieties are Bounty 100 and TAM-106.

In 1985-86, a dry period in April may have shortened the growing season particularly with wheat and oats, however good yields were produced. In 1986-87, little freeze injury occurred and good yields resulted.

Data for oats for 1986-87 (Table 1) are presented. Above average yields were produced with a mean yield of 7411 lbs/ac, over all varieties. The highest yield was produced by Noble Foundation 20, an experimental line. Note that nearly one-half of the forage was produced between March 3 and April 9 in 1987.

The mean yield for the rye experiment (Table 2) was 6840 lbs/ac for total season yield. The data indicate that there was uniform forage production with the exception of January when the rye was not harvested.

Wheat was harvested at six dates in 1986-87 (Table 3) with above average yields. Two triticale varieties produced the highest yields

(including wheat) indicating their good forage potential. Much of the forage from wheat was produced between March 3rd and April 2nd, however wheat also produced some forage during December through March 3rd. A late spring freeze on April 3rd injured wheat not being clipped or grazed, but did not seem to damage the wheat in this clipping test.

Table 4 presents the three year mean yields for the three species. Note that with wheat, several of the means are from only two years, and comparison with variety means from 3 years data may be misleading. These data, whether 2 or 3 year means, provide a better estimate of yield potential than do a single years results.

TABLE 1. OAT FORAGE VARIETY TEST AT OVERTON, TX 1986-87.

| Variety | Harvest Dates | | | | | Total Yield |
|----------------------|---------------|---------|--------|--------|--------|-------------|
| | Oct. 28 | Dec. 12 | Mar. 3 | Apr. 9 | May 14 | |
| Noble Foundation 20 | 1150 | 945 | 2407 | 4004 | 1353 | 9859 |
| Harpool 422 | 760 | 607 | 1812 | 5398 | 1230 | 9808 |
| Noble Foundation 170 | 1100 | 918 | 1943 | 4823 | 949 | 9733 |
| Bob | 980 | 904 | 2088 | 3737 | 843 | 8553 |
| Noble Foundation 63 | 820 | 634 | 1348 | 4037 | 1564 | 8405 |
| Citation | 1330 | 877 | 2088 | 3152 | 702 | 8150 |
| Coker 227 | 780 | 500 | 1696 | 4165 | 755 | 7897 |
| Mesquite | 720 | 445 | 1595 | 4514 | 597 | 7872 |
| Harpool 833 | 820 | 702 | 1885 | 3480 | 843 | 7730 |
| Noble Foundation 188 | 710 | 378 | 1566 | 3852 | 1177 | 7683 |
| Tx 81C 3102 | 930 | 918 | 1711 | 3171 | 843 | 7573 |
| Big Mac | 820 | 472 | 1798 | 3602 | 790 | 7483 |
| Tx 81C 676 | 340 | 580 | 1696 | 3523 | 738 | 6878 |
| Tx 82C 6023 | 300 | 270 | 1348 | 4000 | 738 | 6656 |
| Tx 82M 4964 | 920 | 918 | 2204 | 1964 | 456 | 6462 |
| Tx 81C 3643 | 440 | 337 | 1508 | 2877 | 632 | 5795 |
| SV 85-3919 | 420 | 1121 | 1015 | 2488 | 685 | 5729 |
| SV 85-3905 | 460 | 796 | 1174 | 2534 | 702 | 5668 |
| Tx 83 Ab 2923 | 860 | 486 | 1102 | 2624 | 580 | 5651 |
| Tx 82 M 4350 | 780 | 283 | 623 | 2478 | 474 | 4639 |
| Mean | 772 | 655 | 1631 | 3521 | 833 | 7411 |
| LSD (10% level) | 335 | 429 | 563 | 890 | NS | 1729 |
| CV | 36 | 56 | 29 | 21 | 67 | 19 |

Planted on September 10, 1986.

a/ No significant differences in yield between varieties.

Fertilizer application: Preplant 400 lbs/ac of 6-24-24- (N, P₂O₅, and K₂O).
 Topdressed 100 lbs/ac actual N on Oct. 3, 1986.
 25 lbs/ac actual N on Jan. 5, 1987.
 40 lbs/ac actual N on Feb. 19, 1987.

Weed control: Applied one third ounce glean/acre on Sept. 25, 1986.

TABLE 2. RYE FORAGE VARIETY TEST AT OVERTON, TX 1986-87.

| Variety | Harvest Dates | | | | | | Total Yield |
|--|---------------|--------|--------|---------|---------|---------|-------------|
| | Oct. 28 | Dec. 4 | Feb. 4 | Feb. 23 | Mar. 19 | Apr. 10 | |
| -----pounds of oven dried forage per acre----- | | | | | | | |
| East Texas Seed Exp. 1 | 1330 | 1209 | 1650 | 884 | 2151 | 616 | 7840 |
| Noble Foundation 14 | 1320 | 1404 | 1738 | 897 | 1890 | 560 | 7809 |
| Wintergrazer 70 | 1340 | 1339 | 1487 | 831 | 1674 | 440 | 7111 |
| Noble Foundation 73 | 1150 | 1235 | 1675 | 818 | 1593 | 584 | 7055 |
| Noble Foundation 142 | 1110 | 1196 | 1175 | 791 | 2025 | 639 | 6936 |
| Maton | 1270 | 1339 | 1013 | 713 | 1809 | 578 | 6722 |
| Fla. Exp. 201 | 980 | 962 | 2651 | 660 | 810 | 554 | 6617 |
| Fla. Syn. T | 1130 | 1144 | 1801 | 699 | 1305 | 261 | 6340 |
| Bonel | 780 | 949 | 1125 | 857 | 1899 | 560 | 6170 |
| Elbon | 1100 | 1066 | 987 | 686 | 1710 | 247 | 5797 |
| Mean | 1151 | 1184 | 1530 | 784 | 1687 | 504 | 6840 |
| 1sd (10% level) | 404 | 382 | 488 | 160 | 379 | 349 | 1179 |
| CV | 29 | 26 | 26 | 17 | 18 | 57 | 14 |

Planted on Sept. 12, 1986.

Fertilizer application: Preplant 400 lbs/ac of 6-24-24 (N, P₀₅, and K₂₀).
 Topdressed 100 lbs/ac actual N on Oct. 3, 1986.
 25 lbs/ac actual N on Jan. 5, 1987
 40 lbs/ac actual N on Feb. 19, 1987.

Weed control: Applied one third ounce glean/acre on Sept. 25, 1986.

TABLE 3. WHEAT AND TRITICALE FORAGE VARIETY TEST AT OVERTON, TX 1986-87.

| Variety | Harvest Dates | | | | | | | Total Yield |
|--------------------------------|--------------------------------------|--------|--------|--------|--------|--------|-------|-------------|
| | Oct. 29 | Dec. 5 | Feb. 5 | Mar. 3 | Apr. 2 | May 14 | Yield | |
| | pounds of oven dried forage per acre | | | | | | | |
| Noble Foundation 185 triticale | 1800 | 544 | 1115 | 1160 | 3163 | 1006 | 8788 | |
| Nutriseed 6-6-2 triticale | 1620 | 592 | 588 | 855 | 2903 | 1348 | 7906 | |
| Fillmore | 940 | 320 | 185 | 522 | 3403 | 1923 | 7294 | |
| AgriPro Twain | 1870 | 672 | 185 | 609 | 3243 | 521 | 7100 | |
| Beagle Triticale | 1860 | 992 | 1068 | 507 | 1661 | 970 | 7058 | |
| Nutriseed 2-2-4 triticale | 1380 | 208 | 138 | 638 | 3343 | 1276 | 6984 | |
| TAM-107 | 1690 | 320 | 107 | 754 | 3243 | 790 | 6904 | |
| Fla. 302 | 1140 | 720 | 588 | 986 | 2162 | 1150 | 6746 | |
| SV HT 8005 UNO triticale | 1190 | 224 | 123 | 493 | 3083 | 1402 | 6515 | |
| Noble Foundation 126 | 2200 | 448 | 108 | 493 | 2762 | 449 | 6460 | |
| Tx-79-19-1 Exp. | 1330 | 336 | 324 | 826 | 2402 | 1186 | 6405 | |
| Tx-78-7303 Exp. | 2300 | 960 | 1084 | 667 | 840 | 377 | 6228 | |
| Bradford | 880 | 368 | 278 | 797 | 3023 | 826 | 6172 | |
| Tx-81V6614 Exp. | 1640 | 576 | 247 | 667 | 2161 | 898 | 6143 | |
| Milburn | 2180 | 624 | 371 | 667 | 1581 | 539 | 5962 | |
| AgriPro Magnum | 1040 | 144 | 93 | 609 | 2763 | 1240 | 5888 | |
| Caldwell | 810 | 144 | 15 | 290 | 3524 | 1024 | 5807 | |
| Compton | 1200 | 192 | 61 | 522 | 3103 | 683 | 5761 | |
| AgriPro NASW 76-59 | 1280 | 160 | 92 | 507 | 2342 | 826 | 5675 | |
| Tx-82-118 Exp. | 730 | 400 | 123 | 623 | 2923 | 737 | 5536 | |
| Siouxland | 860 | 304 | 61 | 580 | 3023 | 575 | 5403 | |
| Tx-79-30 Exp. | 1580 | 384 | 371 | 652 | 1902 | 467 | 5356 | |
| Adder | 760 | 144 | 61 | 493 | 2943 | 755 | 5156 | |
| Fla. 201 triticale | 1770 | 704 | 681 | 435 | 1161 | 359 | 5110 | |
| Pioneer 2157 | 1020 | 480 | 123 | 478 | 2222 | 647 | 4970 | |
| Collin | 1420 | 208 | 262 | 725 | 1561 | 683 | 4860 | |
| McNair 1003 | 1330 | 288 | 402 | 594 | 1381 | 719 | 4714 | |
| Tx-80-32 Exp. | 810 | 336 | 464 | 667 | 1261 | 539 | 4077 | |
| Coker 916 | 480 | 192 | 169 | 580 | 1761 | 826 | 4008 | |
| Rosen | 630 | 288 | 216 | 652 | 1561 | 449 | 3796 | |
| Mean | 1325 | 409 | 324 | 635 | 2414 | 840 | 5947 | |
| LSD (10% level) ^{a/} | 854 | 346 | 200 | 228 | 911 | 573 | 2119 | |
| CV | 55 | 72 | 52 | 30 | 32 | 58 | 30 | |

^{a/} Planted on Sept. 10, 1986.

To be considered significantly different, yield differences between varieties should be greater than the LSD value.

Fertilizer application: Preplant 400 lbs/ac of 6-24-24 (N,P₂O₅, and K₂O).

Topdressed 100 lbs/ac N on Oct. 3, 1986, 25 lbs/ac N on Jan. 5, and 40 lb/ac actual N on Feb. 19, 1987.

Weed Control: Applied one third ounce of glean/acre on Sept. 25, 1986.

TABLE 4. FORAGE YIELDS OF OATS, RYE, WHEAT AND TRITICALE AVERAGED OVER 3 YEARS (1984-85, 1985-86, 1986-87) AT OVERTON, TX.

| Variety | Harvest Period | | | Average Total Yields |
|----------------------|-------------------------|-------------------------|------------------------------|----------------------|
| | Nov.-Dec. 3 yr. mean | Jan.-Feb. 3 yr. mean | Mar.-April-May 3 yr. mean | |
| <u>OATS</u> | | | | |
| Harpool 422 | 1800 | 1855 | 6024 | 9679 |
| Mesquite | 1693 | 1902 | 5452 | 9047 |
| Bob | 2024 | 1889 | 4749 | 8662 |
| Harpool 833 | 2063 | 1771 | 4759 | 8593 |
| Big Mac | 1824 | 1712 | 4749 | 8285 |
| TAM-0-386 | 1445 | 1364 | 4369 | 7178 |
| <u>RYE</u> | | | | |
| Noble Foundation 142 | 1872 | 2226 | 2027 | 6125 |
| Maton | 1897 | 1969 | 2096 | 5962 |
| Bonel | 1587 | 2210 | 2112 | 5909 |
| Elbon | 1732 | 2114 | 1589 | 5435 |
| <u>WHEAT</u> | | | | |
| Beagle (Triticale)* | 2128 * | 1507 * | 3826 * | 7461 |
| Tx-78-7303* | 2306 * | 2406 * | 2429 * | 7141 |
| TAM-107* | 1673 * | 1344 * | 4110 * | 7127 |
| Siouxland | 1328 * | 1302 * | 3663 * | 6293 |
| Bradford | 1316 | 1416 | 2984 | 5716 |
| Pioneer 2157* | 1426 * | 1122 * | 2766 * | 5314 |
| Fla. 302* | 1538 * | 1467 * | 2298 * | 5303 |
| McNair 1003* | 1366 | 1778 | 1968 | 5112 |
| Tx-82-185* | 1375 * | 1716 * | 1877 * | 4968 |
| Rosen | 1146 | 1545 | 2080 | 4771 |
| Coker 916 | 904* | 959* | 1920* | 3783 |

*This variety was tested in only two years rather than three years.