

PUBLICATIONS

1981

Forage Research in Texas

Departmental Technical Report No. 81-12

Department of Soil and Crop Sciences

SG - 0051

Project: H-6046

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Location: Overton

FORAGE VARIETY TESTS FOR OATS, TRITICALE, WHEAT, RYE AND RYEGRASS

OBJECTIVES:

These trials were conducted to determine which varieties produce highest forage yields in East Texas. A second objective was to test newly released or experimental lines to determine their adaptation and cold tolerance under East Texas environmental conditions.

PROCEDURE:

A separate experiment was conducted for each winter annual species. For each forage test, varieties were planted in 4 x 12' plots and replicated four times. Forage yields were determined by clipping a 20 square foot section of each plot at a uniform height. The samples were then dried in an oven, weighed, and pounds of dry forage per acre calculated. A test was clipped from three to as many as six times throughout the growing season, depending on the amount of forage growth made by the plants.

Forages were planted into conventionally tilled seedbeds usually during the first 2-weeks in September. A broadcast application of fertilizer at a rate of 60-60-60 (N-P₂O₅-K₂O) lbs/ac was applied in late August. Additional nitrogen was applied in split application in November and February for a total N rate of about 210 lbs/acre.

RESULTS AND DISCUSSION:

Moisture was limited for the first 2-weeks after planting before a tropical storm resulted in several inches of rain in late September. Wet conditions caused some buildup of seedling diseases, particularly in ryegrass, but yield losses appeared to be minimal. Rainfall amounts by months were: September-6.64; October-2.47; November-4.31; December-5.12; January-3.62; February-2.69; March-2.67; April-4.35; and May-6.15. We observed no severe winterkill with the coldest temperatures occurring on December 18 (16° F) and March 1 (17° F). Due to the warmer than average temperatures, an extra forage clipping was obtained on all of the small grain crops.

In the ryegrass experiment (Table 1), the test was harvested six times. In the Dec 4th harvest, forage yields were below normal and no significant differences were observed between varieties. Seedling

diseases appeared to have reduced fall yields of most if not all of the varieties. In the second harvest on Feb 6, the highest yield was produced by Gulf followed by Shannon and several other varieties. In the March 10 harvest, Ga Reseeding produced the highest yield followed by Tx-0-R-78-3 and several other lines. In the Apr 2 harvest, Marshall produced the highest yield while Baritra produced the highest yield on April 23rd. The largest yield for the season was produced on May 28 and the leading variety was NAPB-157. The total forage yield provides an indication of the consistency of the varieties throughout the ryegrass growing season. Some varieties produce a major portion of the forage before May while others produce a major amount of forage after May 1st.

The wheat forage experiment (Table 2) was harvested five times. No significant differences were determined for the Nov 26th harvest. In the second harvest (Jan 24) the top yield was produced by Delta Queen followed by a number of closely grouped varieties. In the March 5th harvest, TAM-W-101 produced the highest yield. This is somewhat surprising since TAM-W-101 (a hard winter wheat) had a fairly low yield on Jan 24th, but produced the best yield on March 5th. The 16° F temperature recorded on March 1st may have retarded the growth on a number of the soft wheats. The experimental line Ga H -69-56-A-1 lead the study in the April 4th harvest. In the final harvest on May 2nd, the top yield was produced by T-0-76-13, a Texas experimental, followed by several closely grouped varieties. Little real differences exist for the top several selections for total yield.

In the rye forage experiment (Table 3), the forage was clipped five times with the first harvest on Nov 19th. In this test, significant differences are noted between varieties at each harvest date. It should also be noted that a large portion of the total forage yield was produced during January and February which is the period of shortest forage supply for most cattlemen.

In the oat forage study (Table 4), five harvests were taken. Most of the forage was produced after March 1st. The highest yields on the March 13th clipping were produced by NF-95, Walken and several other closely grouped varieties. On the Apr 3th harvest NF-188, Walken and Nora produced the higher yields. On the last harvest (May 5), TAM-0-312 produced the highest yield followed by Ora and Four twenty-two. The range of the total yield between varieties was very close together. Therefore, varietal differences in forage distribution over the growing season are of more importance than differences in total yield.

Triticale forage yields (Table 5) were well below yields of the other small grain and ryegrass annuals. Triticale apparently does not tiller out as well as other winter annuals. Most of the selections are also subject to winter injury and regrowth after clipping is rather slow. The varieties in this study do not appear to have much forage potential for East Texas.

Table 2. Wheat forage variety test at Overton, TX 1980.

| Variety | Harvest Date | | | | | Total Yield |
|------------------------------|-------------------------------|-----------------------|----------------------|-----------------------|-----------------------|-------------|
| | Nov 26 | Jan 24 | Mar 5 | Apr 4 | May 2 | |
| | Pounds of dry matter per acre | | | | | |
| T-0-7907-72 ^{1/} | 1085 ^{2/} | 1861a-b ^{3/} | 797e-g ^{3/} | 1390f-g ^{3/} | 1901b-d ^{3/} | 7034 |
| TAN-W-101 ^{1/} | 380 | 786c-e | 2171a | 1571e-g | 1842c-e | 6750 |
| T-0-73-61 ^{1/} | 664 | 1447a-c | 1593b-c | 1203g-h | 1701c-f | 6608 |
| Ga-H-69-56-A-1 ^{1/} | 144 | 559d-e | 1324b-e | 2839a | 1646d-f | 6512 |
| Sturdy | 257 | 750c-e | 1657b | 2413b | 1325g-i | 6402 |
| McNair 1003 | 735 | 1534a-c | 781e-g | 1350f-g | 1832c-e | 6232 |
| T-0-73133 ^{1/} | 424 | 1082a-e | 1054c-f | 1840c-e | 1719c-e | 6119 |
| NF-21 | 143 | 1262a-d | 1380b-d | 1534e-g | 1756c-e | 6075 |
| Maverick ^{1/} | 720 | 1111a-e | 1379b-d | 1847c-e | 9851 | 6042 |
| T-0-73-93 ^{1/} | 384 | 896c-e | 1193b-f | 2010c-d | 1510e-g | 5993 |
| McNair 3003 | 450 | 1116a-e | 804d-g | 1555e-g | 2034a-c | 5959 |
| Delta Queen | 393 | 1890a | 306f-g | 1152g-h | 2203a-b | 5944 |
| Coker 68-15 | 774 | 1037b-e | 1141b-f | 1698d-f | 1280g-i | 5930 |
| T-0-72-91 ^{1/} | 148 | 534e | 1198b-f | 2414b | 1625d-f | 5919 |
| T-0-74-39 ^{1/} | 309 | 1247a-d | 917d-f | 1497e-g | 1857c-e | 5827 |
| McNair 3069 | 1289 | 1352a-d | 267g | 857h | 2036a-c | 5801 |
| T-0-76-13 ^{1/} | 217 | 1062b-e | 872d-f | 1211g-h | 2290a | 5652 |
| Coker 75-6 | 368 | 716c-e | 1306b-e | 1580e-g | 1638d-f | 5608 |
| Agent | 310 | 1193a-e | 1188b-f | 1181g-h | 1685d-f | 5557 |
| T-0-76-13 ^{1/} | 450 | 1149c-e | 905d-f | 1172g-h | 1625d-f | 5301 |
| Coker 76-22 | 291 | 1213a-e | 645f-g | 1443e-g | 1618d-f | 5210 |
| Arthur 71 | 302 | 393 | 997d-f | 2139b-c | 1355f-h | 5186 |
| T-0-73-54 ^{1/} | 183 | 874a-e | 1013d-f | 1439e-g | 1560d-g | 5069 |
| Tex Red | 252 | 705c-e | 1301b-e | 1363f-g | 1109h-i | 4730 |
| Mean | 7.5 | 18.2 | 18.5 | 27.4 | 27.6 | 5893 |
| CV | 444 | 1074 | 1091 | 1612 | 1672 | |
| | 50 | 45 | 30 | 15 | 25 | |

0/6 Distillation

^{1/} Varieties followed by 1 are experimental lines. ^{2/} There were no significant differences in yield for the Nov. 26 harvest. ^{3/} Variety yields within a column followed by the same letter are not significantly different at the 5% level by Duncan's test. Planting date: 9/11/79.

Table 1. Ryegrass variety forage clipping study at Overton, TX 1979-80.

| Variety | Harvest date | | | | | Total Yield | |
|------------------------|-------------------------------|----------------------|------------------------|-----------------------|-----------------------|------------------------|--------|
| | Dec. 4 | Feb. 6 | Mar. 10 | Apr. 2 | Apr. 23 | | May 28 |
| | Pounds of dry matter per acre | | | | | | |
| NAPB-157 | 575 ^{1/} | 998b-d ^{2/} | 1228a-d ^{2/} | 1052a-c ^{2/} | 1567a-e ^{2/} | 2393a-e ^{2/} | 7813 |
| Gulf 3/ | 742 ¹⁰ | 1788a ^{2A} | 1062a-f ^{1A3} | 680d-f ¹⁰ | 1483a-g ¹⁰ | 1679a-f ^{22b} | 7434 |
| Shannon | 636 | 1355a-b | 1180a-e | 909a-f | 1364b-g | 1979a-d | 7423 |
| Ga Reseeding | 211 | 1260a-c | 1541a | 837a-f | 1466a-g | 1527b-g | 6842 |
| Barspectra | 614 | 959b-d | 1132a-f | 1059a-b | 1188e-g | 1866a-e | 6818 |
| Moritz ^{3/} | 500 | 1077a-d | 1272a-c | 1050a-c | 1238c-g | 1653b-f | 6790 |
| Baritra | 261 | 679b-d | 850b-f | 922a-d | 1903a | 2148a-b | 6763 |
| Marshall | 391 | 1012b-d | 1266a-c | 1103a | 1704a-c | 1286d-g | 6762 |
| Mont. Sel | 326 | 959b-d | 1167a-f | 815a-f | 1519a-f | 1751a-e | 6537 |
| Tx-0-R-78-3 | 435 | 1243a-c | 1478a | 608f | 1152e-g | 1522b-g | 6438 |
| NAPB-150 | 526 | 988b-d | 1024a-f | 940a-d | 1282c-g | 1652b-f | 6412 |
| Lyra | 618 | 888b-d | 1029a-f | 1051a-c | 1364b-g | 1350d-g | 6300 |
| Trident | 182 | 651b-d | 1072a-f | 1109a | 1408b-g | 1878a-e | 6300 |
| Maris | 412 | 777b-d | 914b-f | 1040a-c | 1750a-b | 1379c-g | 6272 |
| Tx-0-R-78-2 | 326 | 1296a-c | 1339a-b | 624e-f | 1215d-g | 1463c-g | 6263 |
| Magnolia | 287 | 947b-d | 1248a-d | 754c-f | 1422b-g | 1585b-g | 6243 |
| N-K-K-20 | 295 | 579b-d | 1110a-f | 860a-f | 1780a-b | 1562b-g | 6186 |
| N-K-78-120 | 162 | 502c-d | 893b-f | 905a-f | 1523a-f | 2091a-c | 6076 |
| Meritra 3/ | 330 | 547b-d | 823b-f | 970a-d | 1426b-g | 1886a-e | 5982 |
| Multi-mo ^{3/} | 255 | 551b-d | 944b-f | 1030a-c | 1566a-e | 1629b-f | 5975 |
| Asso | 391 | 780b-d | 1174a-e | 843a-f | 1027g | 1539b-g | 5754 |
| Tetrablend 444 | 294 | 755b-d | 1042a-f | 760b-f | 1345b-g | 1510b-g | 5706 |
| Tx-0-R-78-1 | 249 | 917b-d | 1194a-e | 759b-f | 1204d-g | 1202e-g | 5525 |
| Common | 123 | 539c-d | 876b-f | 703d-f | 1268c-g | 1606b-f | 5115 |
| SRGE | 118 | 515c-d | 940b-f | 760b-f | 1399b-g | 1002g | 4734 |
| Fla. Reseeding | 188 | 680b-d | 745a-f | 864a-f | 1159e-g | 1020f-g | 4656 |
| Mean | 328 | 840 | 1051 | 872 | 1418 | 1583 | 6092 |
| CV | 60 | 56 | 29 | 20 | 19 | 27 | |

^{1/}No difference between varieties. ^{2/}Varieties within a column followed by the same letter are not significantly different by Duncan's test. ^{3/}Tetraploid varieties.

Table 3. Rye forage variety test at Overton, TX 1979-80.

| Variety | Harvest Date | | | | | Total Yield |
|-------------------------|-------------------------------|---------------------|--------------------|-----------------------|-----------------------|-------------|
| | Nov 19 | Jan 23 | Feb 29 | Apr 1 | May 5 | |
| | Pounds of dry matter per acre | | | | | |
| Gurley's Abbruzzi | 757a-b ^{1/} | 3301a ^{1/} | 662h ^{1/} | 1109g-j ^{1/} | 2768a-b ^{1/} | 8597 |
| Wrens Abbruzzi | 889a | 2882a-b | 439i | 836j | 3402a | 8448 |
| NF-72 | 629a-c | 2083c-f | 1159d-e | 2082a-b | 1915d-e | 7868 |
| Gurley's G-175 | 589b-d | 2526b-c | 758g-h | 1049h-j | 2902a-b | 7824 |
| Maton | 503b-e | 1609e-h | 1537a-b | 1916a-c | 2025c-e | 7592 |
| Koolgrazer | 261e | 1351h | 1652a | 2247a | 2065c-e | 7576 |
| NAPB-SR-80 | 477c-e | 2189c-e | 955e-g | 986i-j | 2744b | 7351 |
| Gurley's Grazer 2000 | 314d-e | 1995c-g | 915f-g | 1285f-i | 2647b-c | 7156 |
| Bonel | 482c-e | 1540f-h | 1546a-b | 1772b-d | 1779e | 7119 |
| NF-74 | 438c-e | 1732d-h | 1306b-d | 1661c-e | 1965d-e | 7102 |
| ACCO-WR-811 | 876a | 2281c-d | 741g-h | 1226f-i | 1902d-e | 7026 |
| Pennington Wintergrazer | 349c-e | 1620e-h | 1317b-d | 1679c-e | 1879e | 6844 |
| McNair Vita Graze | 385c-e | 2262c-d | 726g-h | 830j | 2566b-d | 6769 |
| NF-214 | 319d-e | 1662e-h | 1535a-b | 1355e-h | 1889e | 6760 |
| Athens Abbruzzi | 348c-e | 1829d-h | 1094d-f | 1438d-g | 2013c-e | 6722 |
| Elbon | 391c-e | 1410g-h | 1416a-c | 1476d-f | 1937d-e | 6630 |
| NF-500 | 407c-e | 1587e-h | 1178c-e | 1920a-c | 1397e | 6489 |
| Mean | 6.8 | 27.3 | 15.3 | 20 | 30.5 | |
| CV | 495 | 1992 | 1114 | 1463 | 2223 | 7287 |
| | 34 | 18 | 14 | 16 | 19 | |

0% Disinfection

^{1/} Variety yields within a column followed by the same letter are not significantly different at the 5% level by Duncan's test.

Table 4. Oat forage variety test at Overton, TX 1979-80

| Variety | Harvest Date | | | | | Total Yield |
|-----------------|-------------------------------|--------------------|----------------------|--------------------|---------------------|-------------|
| | Nov 28 | Feb 4 | Mar 13 | Apr 4 | May 5 | |
| | Pounds of dry matter per acre | | | | | |
| TAM-0-312 | 770 ^{1/} | 1789 ^{1/} | 2069ab ^{2/} | 866c ^{2/} | 3757a ^{2/} | 9251 |
| NF-95 | 1275 | 1495 | 2405a | 919c | 2832bcd | 8926 |
| Coker 76-16 | 1222 | 1584 | 1815bc | 971c | 3253abc | 8845 |
| Coker 77-19 | 1352 | 1908 | 1724bc | 853c | 2994bcd | 8831 |
| NF-188 | 919 | 1394 | 2082ab | 1268a | 3152abc | 8815 |
| Walken | 858 | 1689 | 2457a | 1222ab | 2576cd | 8802 |
| Coker 227 | 731 | 1658 | 2084ab | 864c | 3399ab | 8736 |
| Four-twenty-two | 591 | 1310 | 2353a | 935c | 3384ab | 8573 |
| Ora | 920 | 1117 | 2038ab | 992bc | 3478ab | 8545 |
| Coker 78-18 | 1022 | 1450 | 2054ab | 834c | 2938bcd | 8298 |
| Coker 79-22 | 1395 | 1468 | 1353c | 790c | 3109abc | 8115 |
| Fla 501 | 1017 | 1706 | 1476c | 925c | 2942bcd | 8066 |
| NF-17 | 613 | 1068 | 2435a | 931c | 2886bcd | 7933 |
| Mesquite | 940 | 1318 | 2447a | 887c | 2233d | 7825 |
| Big Mac | 708 | 1478 | 1792bc | 941c | 2901cbd | 7820 |
| Coker 324 | 752 | 1452 | 1979ab | 849c | 2785cbd | 7817 |
| Coker 76-20 | 1099 | 1361 | 1659bc | 743c | 2896bcd | 7758 |
| Nora | 808 | 900 | 1996ab | 1011bc | 2776bcd | 7491 |
| Mean | 11.3 | 17.4 | 24.1 | 11.2 | 36.1 | 8358 |
| CV | 944 | 1452 | 2012 | 933 | 3016 | |
| | 56 | 41 | 17 | 17 | 15 | |

% Distribution

^{1/} In the Nov and Feb harvest there were no significant differences in yield at the 5% level between varieties.

^{2/} Variety yields within a column followed by the same letter are not significantly different at the 5% level as judged by Duncan's test.

Table 5. Triticale forage variety test at Overton, TX 1980.

| Variety | Harvest Date | | | | Total Yield |
|----------------------|-------------------------------|---------------------|--------------------|--------------------|-------------|
| | Dec 4 | Feb 1 | Mar 12 | Apr 3 | |
| | Pounds of dry matter per acre | | | | |
| Noble Foundation 55 | 640a ^{1/} | 1971a ^{2/} | 934a ^{1/} | 891b ^{2/} | 4436 |
| South Texas Blend | 296a | 1191ab | 1267a | 1570a | 4324 |
| Noble Foundation 185 | 495a | 2314a | 181a | 634b | 4261 |
| Noble Foundation 12 | 499a | 1938a | 767a | 875b | 4079 |
| 6 T-B227 | 820a | 1802a | 585a | 816b | 4023 |
| 6 T-A-876 | 72a | 430b | 1406a | 1754a | 3662 |
| Harpool-T-71 | 517a | 1697a | 724a | 719b | 3657 |
| Mean | 477 | 1621 | 928 | 1307 | 4063 |
| CV | 73 | 45 | 46 | 30 | |

^{1/} In the Dec 4 and March 12 harvest there were no significant differences.

^{2/} Varieties within a column followed by the same letter are not significantly different at the 5% level by Duncan's test.