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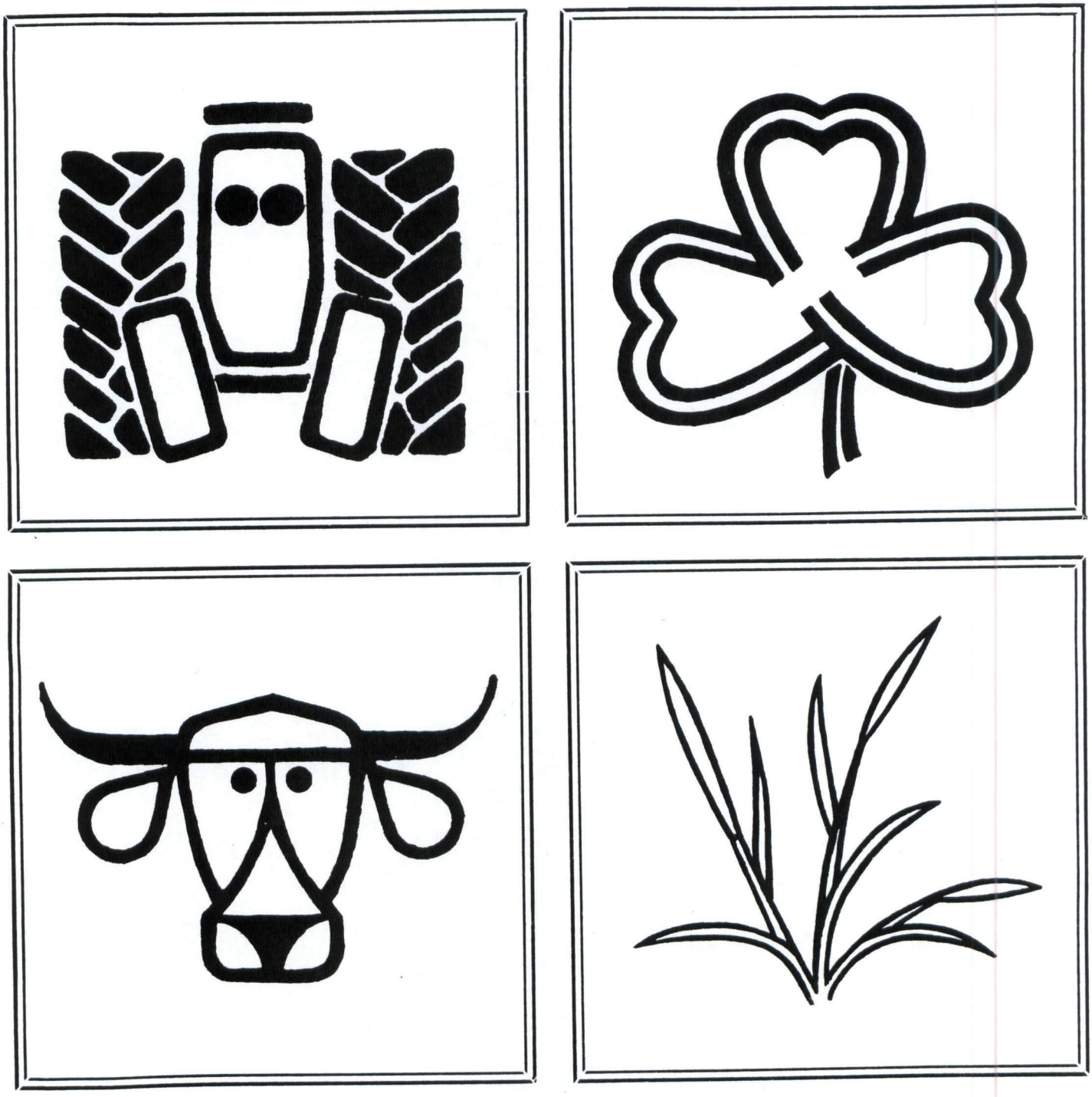

Forage Research in Texas

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1981-82 Forage Yields for Oats, Ryegrass, Rye, Wheat and Triticale

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SUMMARY

Each year many new varieties of small grains, both from commercial and public plant breeding programs, are released. Most of these varieties are released for their grain yield potential and little is known about their forage yielding potential. In East Texas, forage yields of small grains are very important and variety tests are conducted annually. These tests are clipped several times during the growing season in an attempt to simulate grazing. In this report, separate tests were conducted for oats, wheat, ryegrass, rye, and triticale. It is important to consider forage distribution throughout the growing season and not only total forage yield. Early fall and winter forage production may be of more value to a forage program than forage produced in April or May.

Objective

These trials were conducted to determine which varieties produce highest forage yields in East Texas. Second, to compare experimental and newly released lines with recommended varieties for their adaptation to East Texas growing conditions.

Procedure

Triticale, wheat and oats were planted into separate tests on September 10. The rye and ryegrass variety tests were planted on September 9 and 18, respectively. Small grain seed was planted (seeding rate 120 lbs/acre) into six-row plots spaced 8 inches apart, 10 ft in length. Ryegrass seed was hand sown at a rate of 30 lbs/acre in 4 x 10 ft plots and covered with the aid of a cultipactor. The four center rows were harvested at a height of about 2 inches with a flail-type harvester. Fertilizer application consisted of a preplant application at a rate of 60-60-60 ($N-P_2O_5-K_2O$) lbs/acre and a split N application of 100 lbs on October 9, 1981 and 60 lbs on February 19, 1982, for a total N application of 220 lbs/acre. Individual small grain forage tests were harvested when there was sufficient forage to cut. Normally, this would be when the forage was from 8 to 10 inches tall. Forage yields are based on an oven dried basis and are a mean of 4 replications. Data were analyzed as a randomized complete block design.

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Results and Discussion

Planting of small grain forages occurred on schedule in 1981. Above average rainfall during September resulted in early and good establishment of small grains. Precipitation amounts in inches by months were: September 3.9; October 2.8; November 2.8; December 0.7; January 3.4; February 3.2; March 2.7; April 3.9; and May 5.5. A low temperature of 3°F on January 11 resulted in some winter killing but much less than expected.

Rye forage was harvested at six dates beginning December 3 and ending April 28 (Table 1). The major portion of the yield was produced prior to the first harvest. Yields were good but not outstanding with about 3 1/2 tons/acre dry matter being produced for the entire growing season. Only about 1400 lbs separated the highest yielding (Wintergrazer 70) from the lowest yielding entry (NF-142).

Oat forage was harvested three times in 1981-82 (Table 2), however total yields were similar to the rye. Most of the forage was produced in the fall prior to December 8, however about 1/3 of the forage was produced after March 18. Mesquite was the highest yielding variety, closely followed by several other oat varieties and also by Tambar 401 barley which was the only barley line tested. There was some winterfreeze damage among all varieties, however no complete kill on any variety. Crown rust was quite high in 1982, and likely would have reduced grain yields of the more severely diseased varieties, but probably had little affect on forage yields.

Wheat forage yields were between 4000 and 5000 lbs/acre for most of the varieties in 1981-82 (Table 3). The forage test was harvested at five different dates indicating a fairly uniform production throughout the growing season. The highest yield was produced by Vona, a hard red winter wheat and several other entries produced similar yields. A new race of leaf rust was present in 1982 which attacked several varieties which had formerly been resistant. Grain yields in other tests were severely reduced by leaf rust, powdery mildew and glume blotch.

The triticale forage test (Table 4) illustrates quite good yields which are higher than wheat yields as can be seen, since Coker 68-15 was entered in this test as a check. Leaf rust will attack some triticale varieties as is shown in Table 4. Winterhardiness of triticale is variable depending on the wheat parent used in making the original cross with rye to form the new specie. Uniformity of seasonal forage production of triticale is not as good as rye or wheat, but is better than oats or ryegrass. This indicates some forage will be produced at a cooler temperature than with oats or ryegrass.

Ryegrass forage yields in 1981-82 were rather low (Table 5), and this was partly due to winterfreeze damage. Marshall ryegrass (quite winterhardy) produced the highest yield. Gulf ryegrass was severely winterkilled which significantly reduced its' spring time forage production. There were several rescuegrass entries in this test in

1981-82. As can be observed in the data (Table 5), they produced less forage in the fall than most of the ryegrass entries. They also had winterfreeze damage in most cases. Crown rust was present and it should be noted that Marshall is a susceptible line. Under ideal disease buildup conditions, yield of Marshall could be reduced due to crown rust. Gulf was released as a resistant crown rust variety several years ago.

Table 1. Rye Forage Variety Test at Overton, TX 1981-82.

Variety	Pounds of dry matter per acre					Total Yield
	Date harvested					
	Dec 3	Jan 25	Mar 1	Mar 15	April 28	
Wintergrazer-70	4239	741	690	639	1124	7433
Sun Rise SS1	4928	307	435	460	1226	7356
Bonel	4545	588	690	562	945	7330
Wintergrazer-70B	4111	639	664	613	1200	7227
Elbon	4673	588	664	460	715	7100
Sun Rise 80	4468	486	665	486	945	7050
Maton	3958	639	588	613	1073	6871
Wintergrazer-80	3600	613	690	613	1328	6844
NF-214	3881	639	613	511	1098	6742
Vitagraze	4494	486	588	460	690	6718
NF-74	3473	562	588	511	1149	6283
NF-142	3268	613	639	562	945	6027
Mean	4136	575	626	541	1036	6915
LSD (.10 probability)	902	145	110	96	293	1052
C.V (%)	18	21	15	15	23	13

Planted on Sept. 9, 1981.

Preplant fertilizer application of 60 lbs of N, P_2O_5 and K_2O.

Topdressed with 100 and 60 lbs of N on Oct. 9 and Feb. 19, respectively.

The odds are 9 to 1 that two varieties actually yielded differently if their yields differ as much as the LSD. Smaller differences may be due to chance.

Table 2. Oat Forage Variety Test at Overton, TX 1981-82.

Variety	Pounds of dry matter per acre				% winter survival	% crown rust
	Date harvested			Total yield		
	Dec 8	Mar 18	April 30			
Mesquite	4698	434	1890	7022	25[1/]	0
Tambar 401 barley	4749	639	1507	6895	30	0
Big Mac	4060	1098	1736	6894	30	0
Coker 80-33	4290	486	1864	6640	25	0
Coker 227	4035	485	1966	6486	35	1
Coker 234	4060	332	1711	6103	20	1
Coronado	4239	0	1839	6078	25	15
Bob	3728	511	1635	5874	30	3
NF-188	2758	1201	1839	5798	70	50
Coker 80-20	4749	0	1021	5770	20	1
Ora	3473	818	1456	5747	45	15
NF-121	2631	971	1922	5594	25	40
TAM-0-312	3192	0	1890	5082	30	10
Walken	2553	692	1558	4803	45	60
Four Twenty Two	3371	0	1149	4520	20	3
NF-95	2452	153	1788	4393	20	50
Mean	3690	489	1677	5856		
LSD (.10 probability)	878	374	405	1097		
C.V.	20	65	20	16		

[1/] Winter survival recorded on Jan. 28, 1982.

Planted on Sept. 10, 1981.

Preplant fertilizer application of 60 lbs/acre of N, P_2O_5 and K_2O.

Topdress fertilizer application of 100 and 60 lbs/acre of N on Oct. 9 and Feb. 19, respectively.

The odds are 9 to 1 that two varieties actually yielded differently if their yields differ as much as the LSD. Smaller differences may be due to chance.

Table 3. Wheat Forage Variety Test at Overton, TX 1981-82.

Variety	Pounds of dry matter per acre						%
	Date harvested					Total	Leaf
	Dec 9	Jan 26	Mar 1	Mar 16	April 29	Yield	rust
Vona	2196	562	588	511	1456	5313	20
Tx-80-54	2758	741	664	333	690	5186	40
Tx-73003	2375	690	639	333	894	4931	40
Tx-73-61	2018	665	843	333	1022	4881	30
Tx-76-26-1	1890	664	562	486	1201	4803	20
TAM-W-106	2170	511	690	435	894	4700	10
Oasis	2196	716	741	333	664	4650	20
Tx-73-93	1660	690	690	435	1124	4599	5
Tx-78-7303	2171	715	613	333	767	4599	30
McNair 10-03	2068	741	792	307	664	4572	10
Arthur 71	2120	562	690	460	715	4547	40
Southern Belle	2069	613	767	435	639	4523	10
Terrall-800-22	2145	537	588	460	792	4522	40
Delta Queen	2196	435	511	358	894	4394	5
Coker 68-15	2120	588	537	409	715	4369	40
NF-21	2222	383	256	307	1150	4318	20
Northrup King-812	2120	664	792	281	383	4240	3
NF-2	1967	384	358	333	1047	4089	20
Mean	2137	603	629	382	873	4624	20
LSD*	370	126	142	65	241	454	
C.V.	15	17	18	14	23	8	

* .10 probability.

Planted on Sept. 10, 1981.

Preplant fertilizer application of 60 lbs N, P_2O_5 and K_2O.

Topdressed with 100 and 60 lbs of N on Oct. 9, and Feb. 19, respectively.

The odds are 9 to 1 that two varieties actually yielded differently if their yields differ as much as the LSD. Smaller differences may be due to chance.

Table 4. Triticale Forage Variety Test at Overton, TX 1981-82.

Variety	Pounds of dry matter per acre					%	%
	Date harvested				Total	leaf	winter
	Dec 10	Feb 18	Mar 16	May 3	yield	rust	survival[1/]
B-227-8	2452	792	1201	2528	6973	5	100
876-J	2630	971	1201	1762	6564	5	100
B-858	2886	511	920	2094	6411	0	50
A-313-A-16	2375	817	945	2247	6384	5	60
A-313-A-15	2656	537	894	2145	6232	1	60
CO-61	2094	281	562	2911	5848	0	50
CO-53	2247	869	1047	1660	5823	30	100
A-876-28	2171	664	1201	1737	5773	0	70
A-476	2528	307	588	2323	5746	1	50
A-313A-737	2298	869	996	1456	5619	5	90
A-876-6	2196	792	971	1634	5593	60	100
ARK 2014	2502	281	817	1711	5311	20	60
B-227-14	2145	537	971	1634	5287	0	90
ARK 2309	2579	358	767	1481	5185	20	40
NF-55	2477	664	868	1073	5082	10	90
ARK 2307	3013	179	384	1124	4700	20	40
Coker 68-15 wheat	2324	664	1098	613	4699	30	100
NF-12	2119	818	792	894	4623	20	90
ARK 2301	2375	281	639	1251	4546	10	40
NF-185	2145	664	920	716	4445	10	60
Mean	2410	593	889	1650	5542		
LSD (.10 probability)	504	178	260	316	681		
C.V.	18	25	24	16	10		

[1/] Data recorded on Jan. 28, 1982.

Planted on Sept. 10, 1981.

Preplant fertilizer application of 60 lbs/acre of N, P_2O_5 and K_2O.

Topdressed with 100 and 60 lbs/acre of N on Oct. 9 and Feb. 19, respectively.

The odds are 9 to 1 that two varieties actually yielded differently if their yields differ as much as the LSD. Smaller differences may be due to chance.

Table 5. Ryegrass and Rescuegrass Forage Variety Test at Overton, TX 1981-82.

Variety	Pounds of dry matter per acre					%	%[2]
	Date harvested				Total	Winter	Crown
	Dec 15	Mar 4	April 2	May 4	Yield	Survival[1]	Rust
Marshall	2146	715	869	1303	5033	80	45
Tx-R-80-4	2120	486	588	1226	4420	5	20
Tx-R-80-T	1859	460	588	1379	4286	50	20
ISI-79-1 rescuegrass	1263	818	920	1201	4202	80	0
Florida 80	2094	409	537	1149	4189	25	0
ISI-80-4 rescuegrass	818	894	996	1328	4036	100	0
ISI-80-1 "	1022	817	945	1251	4035	80	0
Tx-R-81-T	1583	460	588	1379	4010	70	20
ISI-80-2 rescuegrass	869	664	766	1686	3985	90	0
Ga Reseeding	1507	562	664	1200	3933	50	45
Gulf	2375	128	179	996	3678	5	25
ISI Miro-364-WA-77	1788	460	537	869	3654	40	0
Tetrablend-444	2043	281	384	945	3653	30	50
ISI TT-80-M-7-1-T-8	1558	588	664	817	3627	90	0
Common	2554	0	103	869	3526	5	55
Shannon	1532	511	588	894	3525	60	50
Tx-R-81-1	1660	205	230	1047	3142	10	20
Penploid-4	1762	77	128	1175	3142	5	5
ISI-78-1 rescuegrass	1098	205	256	1354	2913	40	0
ISI-80-3 "	1022	128	179	1201	2530	3	0
Mean	1633	443	535	1163	3774		
LSD (.10 probability)	656	183	204	224	843		
C.V.	34	35	32	16	19		

[1]Winter survival recorded on Jan. 28, 1982.

[2]Crown rust severity recorded at Angleton, TX, April 28, 1982.

Planted on Sept. 18, 1981.

Preplant fertilizer application was 60 lbs of N, P_2O_5 and K_2O. Topdressed with 100 and 60 lbs of N on Oct. 9 and Feb. 19, respectively.

The odds are 9 to 1 that two varieties actually yielded differently if their yields differ as much as the LSD. Smaller differences may be due to chance.