

1999–2000

Forage Yields
from

**Rye,
Oat,
Wheat,
and
Triticale**
Varieties and Strains

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DISCUSSION

Small-grain forage varieties were planted at the Noble Foundation Headquarters Farm near Ardmore and the Red River Demonstration and Research Farm near Burneyville (Tables 1 and 2). September planting was delayed somewhat because of dry soil at both locations. Once again dry weather during July and August delayed proper soil tillage, fertilizer application, and seedbed preparation. Soils remained dry through early September. Enough rain fell between September 8 and 12 to allow mid- to late September plantings at both locations (Tables 1 and 2). After September and October rains, it became dry again, and the hope of good fall forage dwindled. However, above-normal temperatures in November and December resulted in more growth than expected. Mild temperatures prevailed throughout the growing season and, combined with adequate moisture through January and February, resulted in excellent spring growth. Plant development for all small grains was better than normal by March 1. In fact, many varieties had reached first hollow stem (jointing) stage by early February at Ardmore.

At **Ardmore**, the test plants were harvested five times for forage yield during the growing season (Table 1). Despite the dry weather in late fall and early winter, total forage yields averaged a surprising 6,049 pounds per acre for the test. Overall production was early, since 33 percent was harvested by January 24. Generally the ryes produced the most fall and winter forage, and oats made the most spring forage. The rye varieties were extremely early, since they averaged 45 percent production of their forage by January 24. Oat, wheat, and triticale varieties produced about 75 percent of their yield after January 24. Almost 30 percent of the oats was harvested on the last clipping (May 8). The overall performance of wheat and triticale was similar throughout the growing season.

At **Burneyville**, dry conditions persisted throughout much of the growing season. Dry weather limited fall and early winter forage production. High temperatures and below-normal rainfall curtailed late spring production. Timely rainfall combined with mild temperatures in January, February, and March resulted in excellent forage growth midway through the season.

Despite the drought, the average forage yield of 6,408 pounds per acre was only 5 percent

lower than that in the previous year. Forage was harvested four times during the growing season (Table 2). Only 29 percent of all forage was harvested by February 17. The ryes were the earliest and the most productive throughout the growing season on this deep sandy loam site. Note that nineteen of the top twenty forage producers were ryes. Most of the oat and triticale varieties provided excellent early to midspring forage. Forage yields of the wheats were the latest and lowest in the trial.

Tables 3 and 4 summarize the total forage yields of commercially available small-grain varieties that have been tested the last three years at Ardmore and Burneyville, respectively. Our emphasis was to evaluate the forage production of crops and varieties that are available for use in south central Oklahoma and north Texas.

When studying the data, producers should look for the consistency and dependability of a variety, crop performance, or both over multiple rather than individual years. At **Ardmore** (Table 3), note that the oats have the highest three-year average and have been the most consistent from year to year. However, one should use these data with caution: the last three seasons have favored oat production because winters have been mild. Rye and oat production has been comparable over the last two seasons. Overall, wheat forage yields have been lowest over the three-year period. At **Burneyville** (Table 4), production has been more favorable for ryes over the three-year period. Rye has consistently outyielded the other cool-season forage crops, except during the 1998–99 season. Overall, wheat forage yields have been lowest each year.

‘Bates’ rye was the most consistent and stable over the past three seasons at both Ardmore and Burneyville. Both ‘Maton’ and ‘Wrens Abruzzi’ ryes have also performed well at both locations. ‘Oklon’ rye yields have declined over the past two seasons. The advantage ‘Oklon’ has of producing early fall forage may not be expressed as well during seasons when mild temperatures prevail through the fall and winter, as they have the last three years.

‘Harrison’ oat has been the most consistent over the three-year period on the silt loam soil at Ardmore. However, at Burneyville on sandy loam soil, it has been the least stable of the four oat varieties. ‘Dallas’, a new oat release from Texas, has performed moderately well at both locations.

Coker 9663, an awnless soft wheat variety, has consistently outyielded the hard wheat varieties at both locations. Lockett, a new dual-purpose hard wheat variety from Texas, has also performed

moderately well at both locations over the three-year period. It is an awnless variety that appears to be an excellent graze-out type. 'Jagger', an excellent grain type, produces early forage, but total forage yields have declined the last three years.

'Presto' triticale consistently produces good spring forage but does not yield much fall or winter forage.

Table 1. Small-grain forage performance, 1999–2000; Headquarters Farm, Ardmore, Oklahoma

Variety or Strain ¹	Clipping Dates						1999– 2000 Total	Elbon (%)	Forage Produced by 1/24 (%)
	Total through								
	11/17	1/24	1/24	3/1	3/28	5/8			
	Pounds of oven-dry forage per acre								
ABT XR9908 rye	1,808	2,231	4,039	2,289	1,986	30	8,344	126	48
Harrison oat	978	1,415	2,393	1,205	1,659	2,701	7,958	120	30
NF 65 rye	1,566	2,188	3,754	2,396	1,555	91	7,796	118	48
Bates (RS1) rye	1,683	2,010	3,693	2,352	1,397	312	7,754	117	48
ABT XR9907 rye	1,499	1,822	3,321	2,091	1,946	0	7,358	111	45
Bates (RS2) rye	1,777	1,912	3,689	2,065	1,508	90	7,352	111	50
ABT XR9905 rye	1,572	1,535	3,107	1,724	2,465	4	7,300	110	43
Bates rye	1,602	1,697	3,299	1,807	2,118	0	7,224	109	46
ABT XR9902 rye	1,653	1,275	2,928	1,607	2,625	40	7,200	109	41
ABT XR9909 rye	1,698	1,524	3,222	1,995	1,719	82	7,018	106	46
ABT XR9903 rye	1,651	1,764	3,415	2,018	1,564	0	6,997	106	49
NF 1 rye	1,319	1,825	3,144	2,065	1,736	0	6,945	105	45
Wrens Abruzzi rye	1,670	1,994	3,664	1,860	1,261	140	6,925	105	53
NF 28 rye	1,245	1,679	2,924	2,248	1,642	96	6,910	105	42
ABT XR96-1 rye	1,309	1,529	2,838	1,944	2,073	6	6,861	104	41
Maton rye	1,617	938	2,555	1,443	2,771	28	6,797	103	38
Winterking rye	1,365	1,612	2,977	1,867	1,773	6	6,623	100	45
Elbon rye	1,197	818	2,015	1,501	3,091	0	6,607	100	30
NF 39 rye	1,387	1,612	2,999	1,923	1,527	117	6,566	99	46
Wrens 96 rye	1,620	1,458	3,078	1,847	1,201	384	6,510	99	47
FLHR31,314 oat	943	1,264	2,207	847	1,778	1,660	6,492	98	34
NF 188 oat	506	1,059	1,565	1,119	2,215	1,558	6,457	98	24
Ozark oat	558	870	1,428	756	2,449	1,543	6,176	93	23
RSI L989 triticale	789	918	1,707	1,694	2,172	480	6,053	92	28
NF 4 wheat	1,111	768	1,879	1,759	1,900	428	5,966	90	31
Dallas oat	413	910	1,323	1,222	1,492	1,866	5,903	89	22
Lockett wheat	805	408	1,213	1,794	2,717	177	5,901	89	21
ABT XR95-3 rye	1,204	1,123	2,327	1,645	1,927	0	5,899	89	39
Oklon rye	1,409	1,187	2,596	1,499	1,752	22	5,869	89	44
Coker 9704 wheat (soft)	785	1,231	2,016	2,091	1,374	262	5,743	87	35
Tonkawa wheat	773	431	1,204	1,189	3,270	49	5,712	86	21
Coker 9663 wheat (soft)	834	1,179	2,013	2,320	627	749	5,709	86	35
OK94P549-2C wheat	831	485	1,316	1,120	3,174	0	5,610	85	23
RSI 1029E triticale	988	548	1,536	1,900	1,856	308	5,600	85	27
2174 wheat	762	993	1,755	1,280	2,501	44	5,580	84	31
Tam 202 wheat	457	339	796	2,313	1,638	803	5,550	84	14
2137 wheat	838	353	1,191	1,363	2,985	0	5,539	84	22
NF 165 wheat	965	831	1,796	1,679	1,997	0	5,472	83	33
ABT XB9911 triticale-rye	699	302	1,001	1,253	2,967	242	5,463	83	18
RSI 10207 triticale	652	414	1,066	1,894	2,288	206	5,454	83	20
Custer wheat	805	530	1,335	1,518	2,550	0	5,403	82	25
TX94VT6331 triticale	918	563	1,481	1,830	1,678	414	5,403	82	27
NF 87 triticale	1,248	1,588	2,836	1,529	843	135	5,343	81	53
OK95571 wheat	775	451	1,226	775	3,305	0	5,306	80	23
Coronado wheat	950	816	1,766	1,531	1,956	0	5,253	80	34
Tomahawk wheat	669	356	1,025	1,236	2,833	128	5,222	79	20
ABT XB9916 triticale-rye	598	506	1,104	1,420	2,468	216	5,208	79	21
NF 134 wheat	681	669	1,350	1,526	2,231	30	5,137	78	26
Danko Presto triticale	424	363	787	1,390	2,659	275	5,111	77	15
La. 604 oat	548	591	1,139	697	1,220	2,005	5,061	77	23
ABT XB97-1 triticale-rye	359	270	629	1,349	2,739	239	4,956	75	13

Jagger wheat	595	827	1,422	2,124	856	503	4,905	74	29
Longhorn wheat	831	395	1,226	1,623	1,956	0	4,805	73	26
TX96VT5019 triticale	944	716	1,660	1,561	1,287	254	4,762	72	35
Trit I triticale	571	29	600	686	2,613	744	4,643	70	13
Tam 302 wheat	527	122	649	1,020	2,869	0	4,538	69	14
Thunderbolt wheat	271	19	290	1,156	3,033	30	4,509	68	6
Average									
	1,022	1,005	2,027	1,613	2,067	342	6,049	92	33
L. S. D. ² (.05)									
	438	474	773	517	636	293	1,191		
C. V. ³ (%)									
	26.5	29.2	23.6	19.8	19.0	52.9	12.2		

¹NF numbers are Noble Foundation experimental strains. ABT numbers are experimental blends developed by AgrioBioTech. OK numbers are Oklahoma State University experimental strains. RSI L989, RSI 1029E, and RSI 10207 are experimentals developed by Resource Seeds, Inc. Seed of this experimental material are not commercially available.

²Least significant difference.

³Coefficient of variation.

Planting date: September 23, 1999.

Seeding rate: 2,000,000 live seed per acre, which approximates 90–120 pounds per acre, depending on variety.

Seeding method: Drilled in 7-inch rows at a 1-inch planting depth.

Replications: Three.

Soil type: Wilson silt loam.

Previous crop: Small grains.

Management: Disked and roller-harrowed.

Weed control: Preemergence—0.56 ounce Amber per acre on September 23, 1999.

Fertilization: Preplant—50 pounds N, 30 pounds P₂O₅, and 30 pounds K₂O per acre on August 30, 1999. Topdress—70 pounds N per acre on February 15, 2000.

Table 2. Small-grain forage performance, 1999–2000; Red River Demonstration and Research Farm, Burneyville, Oklahoma

Variety or Strain ¹	Clipping Dates					1999– 2000 Total	Elbon (%)	Forage Produced by 2/17 (%)
	12/6	2/17	Total through 2/17	3/15	4/18			
	<u>Pounds of oven-dry forage per acre</u>							
ABT XR9905 rye	1,389	1,436	2,825	3,885	1,953	8,663	112	33
NF 1 rye	1,725	2,043	3,768	3,311	1,566	8,645	112	44
ABT XR96-1 rye	1,597	1,466	3,063	3,829	1,742	8,634	111	36
NF 65 rye	1,131	2,127	3,258	3,680	1,690	8,628	111	38
ABT XR9903 rye	1,805	1,659	3,464	3,635	1,507	8,606	111	40
ABT XR9908 rye	1,663	1,619	3,282	3,505	1,714	8,501	110	39
Bates (RS1) rye	1,569	1,668	3,237	3,464	1,649	8,350	108	39
NF 28 rye	1,391	1,943	3,334	3,649	1,364	8,347	108	40
RSI 1029E triticale	731	1,703	2,434	4,788	1,039	8,261	107	30
Bates rye	1,233	1,821	3,054	3,304	1,761	8,119	105	38
ABT XR9909 rye	1,273	1,939	3,212	3,354	1,517	8,083	104	40
NF 39 rye	1,424	2,115	3,539	3,316	1,214	8,069	104	44
ABT XR9907 rye	1,450	1,659	3,109	3,312	1,624	8,045	104	39
Wrens Abruzzi rye	1,573	2,645	4,218	2,523	1,255	7,996	103	53
Maton rye	1,516	693	2,209	3,447	2,307	7,963	103	28
ABT XR9902 rye	1,560	1,309	2,869	3,412	1,556	7,837	101	37
Elbon rye	1,501	700	2,201	3,664	1,890	7,755	100	28
Oklon rye	1,333	1,636	2,969	3,352	1,424	7,745	100	38
Winterking rye	1,230	1,348	2,578	3,794	1,210	7,582	98	34
ABT XR95-3 rye	1,532	1,555	3,087	3,148	1,280	7,515	97	41
Wrens 96 rye	1,595	2,530	4,125	2,308	921	7,354	95	56
Bates (RS2) rye	1,515	1,421	2,936	3,184	1,205	7,325	94	40
TX94VT6331 triticale	403	1,366	1,769	3,611	1,319	6,699	86	26
NF 87 triticale	1,130	2,048	3,178	2,590	869	6,637	86	48
ABT XB9916 triticale-rye	626	812	1,438	3,503	1,589	6,530	84	22
Dallas oat	446	1,243	1,689	2,354	2,413	6,456	83	26
RSI L989 triticale	285	1,645	1,930	3,071	1,361	6,362	82	30
Danko Presto triticale	137	1,097	1,234	3,235	1,822	6,291	81	20
RSI 10207 triticale	216	1,646	1,862	3,001	1,362	6,225	80	30
ABT XB97-1 triticale-rye	543	656	1,199	3,096	1,726	6,021	78	20
NF 134 wheat	326	867	1,193	2,900	1,892	5,985	77	20
ABT XB9911 triticale-rye	219	454	673	3,427	1,841	5,941	77	11
Harrison oat	732	1,140	1,872	2,202	1,849	5,923	76	32
NF 188 oat	600	1,171	1,771	1,954	2,186	5,911	76	30
NF 4 wheat	553	931	1,484	3,115	1,238	5,837	75	25
TX96VT5019 triticale	435	1,455	1,890	3,028	821	5,739	74	33
FLHR31,314 oat	838	1,041	1,879	1,496	2,308	5,683	73	33
NF 165 wheat	361	686	1,047	2,749	1,763	5,559	72	19
Trit I triticale	102	273	375	2,850	2,247	5,472	71	7
Tam 202 wheat	178	971	1,149	3,070	1,245	5,464	70	21
Custer wheat	243	208	451	3,138	1,750	5,339	69	8
Coker 9704 wheat (soft)	218	681	899	2,864	1,543	5,306	68	17
Coker 9663 wheat (soft)	60	1,070	1,130	2,909	1,249	5,288	68	21
2174 wheat	395	384	779	2,057	2,434	5,270	68	15
Tonkawa wheat	222	425	647	2,979	1,432	5,058	65	13
Tomahawk wheat	233	240	473	2,744	1,709	4,926	64	10
OK94P549-2C wheat	172	348	520	2,587	1,805	4,912	63	11
La. 604 oat	503	847	1,350	1,366	2,117	4,833	62	28

Ozark oat	312	603	915	1,497	2,359	4,771	62	19
Coronado wheat	471	686	1,157	2,741	833	4,731	61	25
Lockett wheat	89	391	480	2,443	1,741	4,664	60	10
Jagger wheat	269	863	1,132	2,535	797	4,464	58	25
Longhorn wheat	80	428	508	2,520	1,201	4,229	55	12
2137 wheat	121	74	195	2,199	1,627	4,021	52	5
Thunderbolt wheat	16	114	130	2,484	1,018	3,632	47	4
OK95571 wheat	47	145	192	2,123	1,209	3,524	45	5
Tam 302 wheat	34	126	160	2,003	1,292	3,455	45	5
	Average							
	761	1,126	1,887	2,953	1,568	6,408	83	29
	L. S. D. (.05)							
	398	675	893	797	478	1,428		
	C. V. (%)							
	32.3	37.1	29.3	16.7	18.9	13.8		

¹NF numbers are Noble Foundation experimental strains. ABT numbers are experimental blends developed by AgrioBioTech. OK numbers are Oklahoma State University experimental strains. RSI L989, RSI 1029E, and RSI 10207 are experimentals developed by Resource Seeds, Inc. Seed of this experimental material are not commercially available.

Planting date: September 22, 1999.

Seeding rate: 2,000,000 live seed per acre, which approximates 90–120 pounds per acre, depending on variety and species.

Seeding method: Drilled in 7-inch rows at a 1-inch planting depth.

Replications: Three.

Soil type: Minco fine sandy loam.

Previous crop: Small grains.

Management: Disked and roller-harrowed.

Weed control: Preemergence—0.56 ounces Amber per acre on September 22, 1999.

Fertilization: Preplant—70 pounds N per acre on September 16, 1999. Topdress—70 pounds N per acre on February 16, 2000.

Table 3. Forage performance summary of commercial small-grain varieties, 1997–2000; Ardmore, Oklahoma

Variety (1998–2000)	Pounds of oven-dry forage per acre									
	1997–1998		1998–1999		1999–2000		Three-year Avg. (1997–2000)		Two-year Avg. (1998–2000)	
	Rye									
Bates	5,435	2 ¹	8,131	1	7,224	1	6,930	1	7,678	1
Elbon	4,397	6	6,788	6	6,607	4	5,931	6	6,698	5
Maton	5,065	3	7,046	5	6,797	3	6,303	4	6,922	4
Oklon	4,916	5	7,444	4	5,869	6	6,076	5	6,657	6
Wrens Abruzzi	4,970	4	8,044	2	6,925	2	6,646	2	7,485	2
Wrens 96	5,768	1	7,447	3	6,510	5	6,575	3	6,979	3
	Average									
	5,092		7,483		6,655		6,410		7,070	
	Oat									
Dallas	6,341	4	7,643	2	5,903	3	6,629	3	6,773	3
Harrison	6,824	1	8,093	1	7,958	1	7,625	1	8,026	1
La. 604	6,389	3	7,299	4	5,061	4	6,250	4	6,180	4
Ozark	6,417	2	7,590	3	6,176	2	6,728	2	6,883	2
	Average									
	6,493		7,656		6,275		6,808		6,966	
	Wheat									
Coker 9663 (soft)	6,464	1	7,805	1	5,709	3	6,659	1	6,757	1
Coronado	5,510	3	7,349	6	5,253	8	6,037	5	6,301	7
Custer	5,504	4	7,494	3	5,403	7	6,134	4	6,449	4
Jagger	5,575	2	7,380	5	4,905	10	5,953	7	6,143	9
Longhorn	4,880	10	7,217	7	4,805	11	5,634	10	6,011	10
Lockett	5,390	5	7,381	4	5,901	1	6,224	2	6,641	2
Tomahawk	5,049	9	6,651	11	5,222	9	5,641	9	5,937	11
Tonkawa	5,300	7	7,509	2	5,712	2	6,174	3	6,611	3
2137	5,343	6	7,157	9	5,539	6	6,013	6	6,348	6
2174	5,097	8	6,867	10	5,580	4	5,848	8	6,224	8
Tam 202	—		7,171	8	5,550	5	—		6,361	5
Tam 302	—		5,773	12	4,538	12	—		5,156	12
	Average									
	5,411		7,163		5,343		6,032		6,245	
	Triticale									
Danko Presto	—		8,156	1	5,111	1	—		6,634	1
Trit I	—		6,005	2	4,643	2	—		5,324	2
	Average									
			7,081		4,877				5,979	
	Overall average									
	5,532		7,318		5,788		6,301		6,549	
	L. S. D. (.05)									
	1,242		1,024		1,105					

¹Rank within column and crop.

Table 4. Forage performance summary of commercial small-grain varieties, 1997–2000; Burneyville, Oklahoma

Variety	Pounds of oven-dry forage per acre									
	1997–1998		1998–1999		1999–2000		Three-year Avg. (1997–2000)		Two-year Avg. (1998–2000)	
Rye										
Bates	6,506	5 ¹	7,199	3	8,119	1	7,275	2	7,659	2
Elbon	6,102	6	7,240	2	7,755	4	7,032	5	7,498	3
Maton	6,893	1	7,584	1	7,963	3	7,480	1	7,774	1
Oklon	6,865	2	6,828	6	7,745	5	7,146	4	7,287	5
Wrens Abruzzi	6,669	4	6,971	5	7,996	2	7,212	3	7,484	4
Wrens 96	6,768	3	6,971	4	7,354	6	7,031	6	7,163	6
Average										
	6,634		7,132		7,822		7,196		7,478	
Oat										
Dallas	4,990	3	8,460	2	6,456	1	6,635	1	7,458	1
Harrison	4,554	4	8,146	4	5,923	2	6,208	3	7,035	3
La. 604	5,064	2	9,354	1	4,833	3	6,417	2	7,094	2
Ozark	5,282	1	8,254	3	4,771	4	6,102	4	6,513	4
Average										
	4,973		8,554		5,496		6,341		7,025	
Wheat										
Coker 9663 (soft)	4,066	1	6,667	1	5,288	3	5,340	1	5,978	2
Coronado	3,627	8	6,592	3	4,731	7	4,983	4	5,662	4
Custer	3,905	6	5,150	10	5,339	2	4,798	7	5,245	9
Jagger	3,554	9	6,393	6	4,464	9	4,804	6	5,429	6
Longhorn	3,987	5	6,204	7	4,229	10	4,807	9	5,217	10
Lockett	4,005	3	6,514	5	4,664	8	5,061	3	5,589	5
Tomahawk	3,552	10	5,902	8	4,926	6	4,793	8	5,414	7
Tonkawa	4,020	2	5,714	9	5,058	5	4,931	5	5,386	8
2137	3,838	7	4,967	11	4,021	11	4,275	10	4,494	11
2174	3,995	4	6,574	4	5,270	4	5,280	2	5,922	3
Tam 202	—		6,617	2	5,464	1	—		6,041	1
Tam 302	—		4,720	12	3,455	12	—		4,088	12
Average										
	3,855		6,001		4,742		4,907		5,372	
Triticale										
Danko Presto	—		5,843	1	6,291	1	—		6,067	1
Trit I	—		4,326	2	5,472	2	—		4,899	2
Average										
	—		5,085		5,882		—		5,483	
Overall average										
	4,912		6,633		5,733		5,881		6,183	
L. S. D. (.05)										
	1,269		1,665		1,506					

¹Rank within column and crop.

Weather Factors, 1999–2000

Month	Rainfall (Inches)			
	Ardmore		Burneyville	
	1999–2000 Season	Ninety-seven-year Average	1999–2000 Season	Six-year Average
September	7.00	3.64	2.62	3.91
October	3.06	3.62	2.37	3.24
November	0.28	2.46	0.33	2.57
December	1.31	2.21	1.12	2.43
January	2.78	1.80	1.85	2.05
February	1.85	2.07	1.36	1.59
March	4.72	2.88	2.45	3.26
April	2.91	4.04	2.25	3.35
May	1.30	5.31	1.30	3.27
Total	25.21	28.03	15.65	25.67

Minimum Temperatures (20°F or Lower)

Ardmore		Burneyville	
Date	Temperature (°F)	Date	Temperature (°F)
January 29	20	December 6	18
January 30	17	December 22	19
		January 24	20
		January 30	17
		February 2	20

Information in this report is inconclusive but can be of great value when compared with similar information from other sources. Weather data were taken from Oklahoma Mesonet weather stations located on the Headquarters Farm at Ardmore and the Red River Demonstration and Research Farm at Burneyville.

Use all available information pertaining to forage production when making conclusions and decisions. This publication is intended to furnish supplemental information to aid in decision-making and idea formulation.

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