

2000–2001
Grain Yields
and
Estimated Returns
from

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

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Discussion

Small-grain varieties and strains were evaluated for forage and grain yield at Ardmore and Burneyville, Oklahoma, during the 2000–2001 season. Forage yields are reported in publication number NF-FOR-01-05. The test included eighteen ryes, sixteen wheats, twelve oats, nine triticales, and two triticale-rye blends. The early part of the growing season was unfavorable for good crop production. The crop started later than normal because soils were dry through mid-October at both locations. The first rains came on October 20, and stand emergence was delayed until the first of November. High rainfall and low temperatures during November and December stunted early growth and delayed development of the crops. First forage harvests were delayed until early March, and many entries in the tests had initiated jointing or first hollow stem before forage clipping could begin. Muddy fields forced harvest delays of seven to ten days. We were unable to simulate a dual-purpose forage and grain system because the grain plots could not be harvested for fall-winter forage production.

The spring was ideal for both forage and grain production. Low disease pressure, mild temperatures, and excellent moisture prevailed at both locations throughout the spring, resulting in excellent growth and development. At the Ardmore Headquarters Farm, the test plots were planted on a new site on a Heiden clay soil. Grain yields were fantastic! High nitrogen fertilizer rates may have been a primary cause of the accelerated yields. In our trials, the amount of nitrogen applied throughout the season is based on total forage production goals. This season, much of the nitrogen fertilizer was not used early by the slowly developing crop, so more was available in the spring for grain and forage production. In early December, after the heavy rainfall in late October and November, a top-dress application of nitrogen was made to stimulate growth by replacing preplant nitrogen lost by denitrification or leaching through the soil profile. Additional nitrogen was applied in early February.

At **Ardmore** (table 1), the overall grain yield average of 85.3 bushels per acre was the best since the initiation of the small-grain variety testing program in 1966. Many varieties had reached jointing or first hollow-stem stage by early March, so no forage clipping of the grain plots was initiated. The plants were able to devote most of their energy to producing grain, with little interference from weather and Mother Nature. Overall, average crop yields in bushels per acre were as follows: rye, 61.5; wheat, 82.3; oat, 110.9; and triticale, 100.3. Yields varied considerably between varieties within each crop. The ryes produced the most uniform yields in the test: 48.0 to 68.0 bushels per acre. Oat yields were the most variable, since some varieties lost grain to shattering and lodging caused by strong winds just before harvest. Triticale yields were outstanding because many of the varieties matured later and took advantage of the mild temperatures and favorable moisture in late spring.

Overall grain production averaged 60.3 bushels per acre at **Burneyville** (table 2), which is also the highest recorded yield since testing was initiated in 1994 at this location. Again, no grain-plot forage was harvested because of the late development of the crop. Overall average crop yields in bushels per acre were as follows: rye, 47.6; wheat, 63.8; oat, 64.7; and triticale, 71.0. Rye and wheat varieties were the most uniform, although yields were much higher for the wheats at this location. Again, oat yields were the most variable, with about a 45-bushel difference. Among the triticale varieties, there was more variability between the top two yielders than there was among the remaining varieties.

The estimated gross economic returns in tables 1 and 2 were calculated on the basis of values at the bottom of the tables; substitute your own values as necessary. The gross income estimates are shown to encourage your calculating possible returns and profit from various varieties, crops, and management strategies.

Table 3 shows the grain yields of commercially available varieties that have been tested at both locations throughout the last three growing seasons. Except during the 2000–2001 growing season, grain yields have been taken after forage clipping, which is terminated at the initial sign of jointing or first hollow stem. Because of planting dates, varietal maturity, and fall-winter temperatures and moisture availability, jointing occurrence varies yearly. The early-maturing varieties generally incur the most grain yield loss when clipping continues beyond the jointing stage in the spring, but such loss will not be a factor in this year's data, because forage was not harvested from the grain plots. Among the rye varieties, 'Bates' and 'Maton' mature slightly later. They have been more dependable and have yielded consistently more than the early varieties, 'Oklon' and 'Wrens 96'. The soft wheat varieties 'Coker 9663' and 'Coker 9704' have been more stable for grain yield than the hard wheat varieties at both locations. 'Horizon 314', a new variety developed by the University of Florida Agricultural Experiment Station at Quincy, has had the most stable yields of the oats at both locations. It was tested as experimental FLHR31,314 in the 1998–1999 and 1999–2000 trials. Seed of this variety should be commercially available for the 2001 fall planting season.

Table 1. Grain yields and estimated gross returns from small-grain varieties, 2000–2001; Ardmore, Oklahoma

Variety or Strain ¹	Yield (Bu./Ac.)	Test Weight (Lb./Bu.)	Estimated Gross Returns per Acre (Dollars)	
			Grain, No Forage Harvest ²	Total Forage, No Grain Harvest ^{3,4}
Rye				
NF39	68.0	56.0	306.00	138.37
Bates	65.6	55.7	295.20	129.23
Maton	65.4	55.1	294.30	143.09
NF65	63.9	56.3	287.55	133.75
NF28	63.7	56.0	286.65	135.43
Bates (RS2)	63.6	56.4	286.20	130.15
NF1	62.2	56.2	279.90	135.14
XR 9903	62.0	55.5	279.00	121.77
Bates (RS1)	61.7	56.1	277.65	131.24
Winterking	61.6	56.5	277.20	143.32
XR 9905	61.5	55.8	276.75	133.68
Oklon	61.0	56.3	274.50	125.57
XR 9908	60.2	56.3	270.90	133.82
XR 9909	60.0	55.3	270.00	126.46
Elbon	59.8	55.5	269.10	133.25
XR 9907	59.8	54.6	269.10	134.54
Bates (RS3)	59.7	55.7	268.65	128.57
Wrens 96	48.0	55.5	216.00	148.76
Wheat				
Coker 9663 (soft)	94.5	62.4	189.00	136.19
OK 101	93.4	59.8	252.18	133.29
2137	92.1	60.7	248.67	126.75
Jagger	90.9	59.6	245.43	136.69
Coker 9704 (soft)	86.2	61.4	172.40	109.99
NF4	85.9	60.4	231.93	138.11
Custer	84.3	60.9	227.61	121.37
Coker 9803 (soft)	83.6	61.1	167.20	104.35
Lockett	80.6	59.6	217.62	131.67
Coronado	79.2	60.6	213.84	108.31
Tomahawk	78.1	58.1	210.87	117.91
Tonkawa	77.5	62.3	209.25	127.71
2174	75.9	61.7	204.93	117.08
Tam 202	74.9	59.2	202.23	118.57
NF165	72.5	57.9	195.75	128.00
Longhorn	67.4	59.8	181.98	109.53
Oat				
Horizon 314	147.7	35.1	221.55	123.62
TX96D093	133.1	35.0	199.65	155.20
Ozark	127.8	34.5	191.70	146.06
La. 604	112.5	34.2	168.75	139.85
TX94D081	108.1	36.3	162.15	129.23
Harrison	107.5	36.3	161.25	138.17
TX98D137	106.1	37.1	159.15	120.15
TX96D070	102.5	30.9	153.75	116.29
Dallas	100.9	31.0	151.35	121.84

833	99.3	34.1	148.95	122.20
TX96D011	96.4	32.2	144.60	97.71
NF188	89.3	34.1	133.95	150.68
Triticale				
RSI 346	115.3	49.1	219.07	145.93
TX98D955	108.3	53.6	205.77	139.13
XB 9916 (triticale-rye blend)	104.5	53.9	198.55	138.80
RSI 1029E	104.3	55.8	198.17	142.99
TX96VT5019	104.1	54.0	197.79	140.91
TX94D7575	102.3	53.1	194.37	129.13
RSI L989	98.3	53.0	186.77	142.79
Danko Presto	96.0	52.0	182.40	140.98
RSI 10207	94.7	53.6	179.93	139.06
NF87	92.5	48.6	175.75	144.90
XB 9917 (triticale-rye blend)	83.2	51.7	158.08	127.74

¹NF designations are Noble Foundation experimental strains. XB and XR designations are experimental blends developed by Seed Resource. TX designations are Texas A&M University experimental strains. RSI designations are experimentals developed by Resource Seeds, Inc. Seed of this experimental material are not commercially available.

²Grain values per bushel: rye, \$4.50; hard wheat, \$2.70; soft wheat, \$2.00; triticale, \$1.90; oat, \$1.50.

³Forage value: approximately \$3.30/cwt for oven-dry forage.

- assumptions:
1. stocker calves: average daily gain (ADG) = 2 lb.
 2. consumption: 3% (0.03) of body weight
 3. average weight: 600 lb./calf
- calculations:
1. 600 lb. x 0.03 = 18 lb./head/day
 2. 2,000 lb./ton ÷ 18 lb. = 111 animal days
 3. 2 lb. of ADG x 111 animal days = 222 lb. of gain
 4. \$0.30 = custom rate for 1 lb. of gain; 222 lb. x 0.30 = \$66.60/ton = \$3.30/cwt

⁴Forage yields and influencing factors are reported in publication number NF-FOR-01-05.

Table 2. Grain yields and estimated gross returns from small-grain varieties, 2000–2001; Burneyville, Oklahoma

Variety or Strain ¹	Yield (Bu./Ac.)	Test Weight (Lb./Bu.)	Estimated Gross Returns per Acre (Dollars)	
			Grain, No Forage Harvest ²	Total Forage, No Grain Harvest ^{3,4}
Rye				
Winterking	53.2	55.7	239.40	156.85
XR 9905	52.3	55.6	235.35	184.87
NF65	51.8	56.0	233.10	183.35
Bates (RS1)	50.8	56.0	228.60	179.19
NF39	50.1	55.9	225.45	158.57
NF1	49.8	55.4	224.10	167.48
Maton	49.5	56.0	222.75	168.93
XR 9908	48.6	55.9	218.70	169.55
Elbon	48.2	56.2	216.90	158.80
Bates (RS3)	47.5	55.5	213.75	164.90
XR 9909	46.8	56.0	219.02	159.98
NF28	46.6	55.4	209.70	173.91
XR 9907	46.0	55.6	207.00	167.84
Bates	45.8	55.8	206.10	185.99
XR 9903	44.8	55.6	201.60	158.00
Bates (RS2)	44.3	55.9	199.35	166.42
Oklon	43.4	55.5	195.30	160.28
Wrens 96	37.6	55.3	169.20	149.82
Wheat				
2137	76.1	62.8	205.47	146.85
OK 101	73.1	62.7	197.37	162.92
Coronado	70.8	63.1	191.16	151.00
Jagger	69.8	60.9	188.46	147.31
Coker 9704 (soft)	68.0	62.8	136.00	133.58
Tam 202	67.1	61.0	181.17	144.87
Lockett	64.1	62.1	173.07	161.77
NF4	63.0	63.0	170.10	158.86
Coker 9663 (soft)	63.0	61.9	126.00	132.36
2174	62.0	62.7	167.40	140.05
NF165	59.4	60.7	160.38	153.98
Coker 9803 (soft)	59.2	63.0	118.40	114.21
Custer	58.6	62.5	158.22	182.72
Tonkawa	57.6	63.1	155.52	145.96
Tomahawk	56.9	59.8	153.63	100.06
Longhorn	52.7	63.2	142.29	121.28
Oat				
TX96D011	85.1	36.0	127.65	159.89
Ozark	82.5	37.3	123.75	162.36
TX96D070	77.2	34.2	115.80	140.94
NF188	76.0	36.8	114.00	170.15
Dallas	75.2	37.5	112.80	142.16
Horizon 314	65.7	35.8	98.55	146.39
833	63.2	36.5	94.80	151.17
TX94D081	60.9	39.3	91.35	139.95
La. 604	59.6	37.0	89.40	142.82

TX96D093	48.1	38.3	72.15	154.14
Harrison	43.1	38.6	64.65	136.32
TX98D137	40.2	37.1	60.30	132.92
Triticale				
RSI 1029E	94.7	54.4	179.93	190.11
NF87	75.9	49.6	144.21	163.15
XB 9916 (triticale-rye blend)	74.8	53.8	142.12	184.24
Danko Presto	74.7	52.9	141.93	164.04
TX94D7575	70.2	51.5	133.38	140.15
RSI 10207	70.2	53.3	133.38	133.91
TX98D955	70.0	52.3	133.00	138.20
RSI L989	67.8	52.9	128.82	154.44
RSI 346	66.2	46.9	125.78	153.88
TX96VT5019	58.8	52.2	111.72	135.56
XB 9917 (triticale-rye blend)	57.8	55.1	109.82	167.67

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| | 2. consumption: 3% (0.03) of body weight |
| | 3. average weight: 600 lb./calf |
| calculations: | 1. 600 lb. x 0.03 = 18 lb./head/day |
| | 2. 2,000 lb./ton ÷ 18 lb. = 111 animal days |
| | 3. 2 lb. ADG x 111 animal days = 222 lb. of gain |
| | 4. \$0.30 = custom rate for 1 lb. of gain; 222 lb. x 0.30 = \$66.60/ton = \$3.30/cwt |

⁴Forage yields and influencing factors are reported in publication number NF-FOR-01-05.

Table 3. Bilocation grain performance comparison of commercial small-grain varieties, 1998–2000

Variety	Bushels per Acre					
	Ardmore			Burneyville		
	1998–1999	1999–2000	2000–2001	1998–1999	1999–2000	2000–2001
Rye						
Bates	51.0	63.0	65.6	49.2	54.3	45.8
Elbon	38.1	65.0	59.8	48.3	55.0	48.2
Maton	37.3	63.0	65.4	55.2	54.7	49.5
Oklon	43.4	59.0	61.0	45.1	57.3	43.4
Wrens 96	52.9	54.7	48.0	55.3	45.0	37.6
Winterking	—	61.0	61.6	—	55.7	53.2
Average						
	44.5	60.9	60.2	50.6	53.7	46.3
Wheat						
2137	67.5	57.7	92.1	51.0	48.0	76.1
2174	59.8	69.7	75.9	62.0	58.3	62.0
Coker 9663 (soft)	100.0	98.0	94.5	66.2	71.0	63.0
Coronado	62.0	57.7	79.2	56.2	47.7	70.8
Custer	70.2	67.0	84.3	48.9	57.0	58.6
Jagger	62.4	49.7	90.9	47.3	47.0	69.8
Lockett	58.2	73.3	80.6	54.2	50.7	64.1
Longhorn	60.6	46.0	67.4	57.8	43.0	52.7
Tam 202	67.2	75.0	74.9	53.9	62.7	67.1
Tomahawk	66.9	57.0	78.1	54.8	42.3	56.9
Tonkawa	72.4	59.3	77.5	59.5	52.0	57.6
Coker 9704 (soft)	—	80.3	86.2	—	55.7	68.0
OK 101	—	53.0	93.4	—	38.7	73.1
Average						
	67.9	64.9	82.7	55.6	51.9	64.6
Oat						
Dallas	114.5	91.0	100.9	82.5	66.0	75.2
Harrison	116.7	103.0	107.5	50.3	48.0	43.1
Horizon 314	124.5	118.3	147.7	89.1	56.7	65.7
La. 604	98.2	79.7	112.5	76.1	50.0	59.6
Ozark	81.0	89.0	127.8	76.5	47.0	82.5
Average						
	107.0	96.2	119.3	74.9	53.5	65.2
Triticale						
Danko Presto	83.5	60.7	96.0	57.3	54.7	74.7
Average						
	83.5	60.7	96.0	57.3	54.7	74.7
Overall Average						
	72.2	70.0	85.2	58.9	52.8	60.7

Information in this report is inconclusive but can be of great value when compared with similar information from other sources. Use all available information pertaining to grain and 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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