

1999–2000
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, dual-purpose forage, and grain yield at Ardmore and Burneyville, Oklahoma, during the 1999–2000 season. Forage yields are reported in NF-FOR-00-10. The test included twenty-one ryes, nineteen wheats, eight triticales, three triticale-rye blends, and six oats. Even though soils remained dry in early September, adequate moisture did allow mid- to late September plantings at both locations. The September-October rains allowed good stand development, but it became dry again in November and December. Mild temperatures prevailed throughout the growing season. Sufficient moisture from January through March resulted in more plant growth than expected. Spring was unusually warm, and plant development was well ahead of normal at jointing and heading. Below-normal rainfall in April and May and high temperatures in mid- to late May hastened maturity of the crops, which resulted in shriveling and reduced test weight of the grain, with the later-maturing varieties affected the most.

Despite below-normal rainfall during the year, grain yields were very good at both locations. Barley yellow dwarf was the most common disease in the wheats and oats in the late fall and winter at Ardmore. Root rots also became evident in the wheats and triticales at Ardmore as the crops began to mature. Powdery mildew was present in the wheats at both locations in early spring and undoubtedly caused some grain yield reduction in the more susceptible varieties. Leaf rust came in late and did not cause any appreciable damage to any of the crops.

At **Ardmore** (table 1), the overall grain yield average of 63.1 bushels per acre was one of the best since we began testing small grains. The mild temperatures and timely rainfall contributed to plant growth's being well ahead of normal. Many varieties had reached first hollow stem or jointing stage by late January to early February, so all forage clipping of grain plots was terminated after January 24. Rye yields were the best overall since the initiation of the small grain variety testing program in 1966–67. The ryes also produced the most uniform yields in the test: 52.0 to 66.3 bushels per acre. Wheat yields were the most variable, since these varieties were more susceptible to the diseases than the other crops were.

Overall grain production averaged 53.2 bushels per acre at **Burneyville** (table 2), which is surprising, since rainfall totals were well below normal for the growing season. Again, timely rainfall and mild temperatures in late winter and early spring resulted in rapid plant development and early jointing of all small grains. No grain-plot forage was harvested after February 17. The ryes produced the most uniform yields at this location also: 45.0 to 63.7 bushels per acre. Wheat and triticale yields were the most variable, with an approximately 35-bushel difference. Both of these small grains have wider ranges of maturity than the ryes and oats, which may account for the variability. The pow-

dery mildew in March and April and the high temperatures in May affected yields of the later-maturing and disease susceptible wheat varieties the most.

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 the calculation of possible returns and profit from various varieties and management strategies.

Table 3 shows the grain yields of commercially available varieties that have been tested at both locations over the last three growing seasons. Grain yields are taken after forage clipping, which is terminated at the initial sign of first hollow stem, or jointing. Because of planting dates, varietal maturity, and temperatures and moisture availability during winter, jointing occurrence varies yearly. The early-maturing varieties generally suffer the most grain yield loss when clipping continues beyond jointing stage in the spring. Note that Bates and Maton rye varieties with an average maturation rate have been more dependable than the early varieties Oklon, Wrens Abruzzi, and Wrens 96 over this three-year period. 'Coker 9663' soft wheat has been much more productive and stable for grain yield than the hard wheat varieties at both locations. 'Dallas' has exhibited the most yield stability of the oat varieties across both locations.

Table 1. Grain yields and estimated gross returns from small-grain varieties, 1999–2000; Ardmore, Oklahoma

Variety or Strain ¹	Yield (Bu./Ac.)	Test Weight (Lb./Bu.)	Estimated Gross Returns per Acre (Dollars)			
			Grain ²	Forage Produced by Jan. 24 ³	Total Grain and Forage	Total Forage, No Grain Harvest ⁴
Rye						
ABT XR9902	66.3	56.0	298.35	64.42	326.77	158.40
Elbon	65.0	56.2	292.50	44.33	336.83	145.35
ABT XR9908	63.7	55.4	286.65	88.86	375.51	183.57
ABT XR96-1	63.3	55.3	284.85	62.44	347.29	150.94
Bates (RS2)	63.3	55.2	284.85	81.16	366.01	161.74
Bates	63.0	54.8	283.50	72.58	356.08	158.93
Maton	63.0	56.1	283.50	56.21	339.71	149.53
ABT XR9909	62.0	55.3	279.00	70.88	349.88	154.40
Winterking	61.0	55.3	274.50	65.49	339.99	145.71
NF 28	60.0	55.2	270.00	64.33	334.33	152.02
ABT XR9903	59.7	55.4	268.65	75.13	343.78	153.93
Oklon	59.0	55.5	265.50	57.11	322.61	129.12
ABT XR9905	58.0	55.5	261.00	68.35	329.35	160.60
Bates (RS1)	57.7	54.4	259.65	81.25	340.90	170.59
NF 39	57.0	55.2	256.50	65.98	322.48	144.45
NF 1	57.0	54.4	256.50	69.17	325.67	152.79
ABT XR9907	56.7	55.1	255.15	73.06	328.21	161.88
Wrens 96	54.7	54.8	246.15	67.72	313.87	143.22
NF 65	54.3	54.8	244.35	82.59	326.94	171.51
ABT XR95-3	54.0	55.1	243.00	51.19	294.19	129.78
Wrens Abruzzi	52.0	55.3	234.00	80.61	314.61	152.35
Wheat						
Coker 9663 (soft)	98.0	61.0	205.80	44.29	250.09	125.60
Coker 9704 (soft)	80.3	59.7	168.63	44.35	212.98	126.35
Tam 202	75.0	57.1	172.50	17.51	190.01	122.10
OK94P549-2C	74.7	61.2	171.81	28.95	200.76	123.42
Lockett	73.3	57.9	168.59	26.69	195.28	129.82
2174	69.7	60.5	160.31	38.61	198.92	122.76
NF 4	69.3	61.1	159.39	41.34	200.73	131.25
Custer	67.0	58.1	154.10	29.37	183.47	118.87
Tonkawa	59.3	60.6	136.39	26.49	162.88	125.66
2137	57.7	57.7	132.71	26.20	158.91	121.86
Coronado	57.7	56.2	132.71	38.85	171.56	115.57
Tomahawk	57.0	56.3	131.10	22.55	153.65	114.88
Thunderbolt	56.0	61.1	128.80	6.38	135.18	99.20
NF 134	54.0	55.0	124.20	29.70	153.90	113.01
OK 95571	53.0	57.5	121.90	26.97	148.87	116.73
NF 165	53.0	53.6	121.90	39.51	161.41	120.38
Tam 302	50.0	56.4	115.00	14.28	129.28	99.84
Jagger	49.7	56.7	114.31	31.28	145.59	107.91
Longhorn	46.0	57.5	105.80	26.97	132.77	105.71
Oat						
FLHR31,314	118.3	34.8	118.30	48.55	166.85	142.82
Harrison	103.0	37.1	103.00	52.65	155.65	175.08
Dallas	91.0	36.6	91.00	29.11	120.11	129.87
NF 188	89.0	36.6	89.00	34.43	123.43	142.05

Ozark	89.0	37.2	89.00	31.42	120.42	135.87
La. 604	79.7	35.1	79.70	25.06	104.76	111.34
	Triticale					
RSI 1029E	64.0	53.1	128.00	33.79	161.79	123.20
ABT XB9916	62.0	51.4	124.00	24.29	148.29	114.58
TX94VT6331	61.0	46.4	122.00	32.58	154.58	118.87
Danko Presto	60.7	50.8	121.40	17.31	138.71	112.44
ABT XB9911	57.7	49.1	115.40	22.02	137.42	120.19
NF 87	55.7	46.5	111.40	62.39	173.79	117.55
RSI L989	50.0	49.9	100.00	37.55	137.55	133.17
RSI 10207	47.3	50.7	94.60	23.45	118.05	119.99
ABT XB97-1	43.0	51.1	86.00	13.84	99.84	109.03
TX96VT5019	41.0	50.0	82.00	36.52	118.52	104.76
Trit I	31.3	49.2	62.60	13.20	75.80	102.15

¹NF numbers are Noble Foundation experimental strains. ABT numbers are experimental blends developed by Agrio BioTech. FLHR31,314 is an experimental oat strain from the University of Florida. OK numbers are Oklahoma State University experimental strains. TX numbers are Texas A&M University experimental strains. RSI L989, RSI 1029E, and RSI 10207 are experimentals developed by Resource Seeds, Inc. Seed of this experimental material is not commercially available.

²Grain values: rye, \$4.50/bu.; hard wheat, \$2.30/bu.; soft wheat, \$2.10/bu.; triticale, \$2.00/bu.; oat, \$1.00/bu.

³Forage value: approximately \$2.20/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. per 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. gain
 4. \$0.20 = custom rate for 1 pound of gain,
222 lb. x 0.20 = \$44.40/ton = \$2.20/cwt

⁴Forage yields and influencing factors are reported in NF-FOR-00-10.

Table 2. Grain yields and estimated gross returns from small-grain varieties, 1999–2000; Burneyville, Oklahoma

Variety or Strain ¹	Estimated Gross Returns per Acre (Dollars)					
	Yield (Bu./Ac.)	Test Weight (Lb./Bu.)	Grain ²	Forage Produced by Feb. 17 ³	Total Grain and Forage	Total Forage, No Grain Harvest ⁴
Rye						
NF 1	63.7	56.4	286.65	82.90	369.55	190.19
ABT XR96-1	62.3	57.1	280.35	67.39	347.74	189.95
NF 65	60.7	56.5	273.15	71.68	344.83	189.82
NF 39	60.3	56.7	271.35	77.86	349.21	177.52
ABT XR9905	60.3	56.5	271.35	62.15	333.50	190.59
NF 28	60.0	56.5	270.00	73.34	343.34	183.63
Oklon	57.3	57.1	257.85	65.32	323.17	170.39
ABT XR9908	57.0	56.5	256.50	72.20	328.70	187.02
Bates (RS1)	56.3	56.8	253.35	71.21	324.56	183.70
Winterking	55.7	56.7	250.65	56.72	307.37	166.80
ABT XR9903	55.3	57.1	248.85	76.21	325.06	189.33
ABT XR9909	55.0	56.6	247.50	70.66	318.16	177.83
ABT XR95-3	55.0	57.3	247.50	67.91	315.41	165.33
Elbon	55.0	57.3	247.50	48.42	295.92	170.61
Wrens Abruzzi	55.0	56.8	247.50	92.80	340.30	175.91
Maton	54.7	56.9	246.15	48.60	294.75	175.19
Bates	54.3	57.1	244.35	67.19	311.54	178.62
Bates (RS2)	54.3	57.3	244.35	64.59	308.94	161.15
ABT XR9907	54.0	56.8	243.00	68.40	311.40	176.99
ABT XR9902	52.0	56.9	234.00	63.12	297.12	172.41
Wrens 96	45.0	56.5	202.50	90.75	293.25	161.79
Wheat						
Coker 9663 (soft)	71.0	58.7	149.10	24.86	173.96	116.34
Tam 202	62.7	59.3	144.21	25.28	169.49	120.21
2174	58.3	60.0	134.09	17.14	151.23	115.94
Custer	57.0	59.7	131.10	9.92	141.02	117.46
Coker 9704 (soft)	55.7	60.1	116.97	19.78	136.75	116.73
OK94P549-2C	55.0	60.5	126.50	11.44	137.94	108.06
NF 4	52.3	58.8	120.29	32.65	152.94	128.41
Tonkawa	52.0	59.6	119.60	14.23	133.83	111.28
NF 165	51.7	55.4	118.91	23.03	141.94	122.30
Lockett	50.7	57.5	116.61	10.56	127.17	102.61
2137	48.0	59.2	110.40	4.29	114.69	88.46
Coronado	47.7	57.8	109.71	25.45	135.16	104.08
Jagger	47.0	58.5	108.10	24.90	133.00	98.21
Longhorn	43.0	59.2	98.90	11.18	110.08	93.04
Tomahawk	42.3	56.6	97.29	10.41	107.70	108.37
NF 134	41.7	56.6	95.91	26.25	122.16	131.67
Tam 302	41.0	57.2	94.30	3.52	97.82	76.01
OK95571	38.7	58.0	89.01	4.22	93.23	77.53
Thunderbolt	35.3	60.4	81.19	2.86	84.05	79.90
Oat						
Dallas	66.0	37.0	66.00	37.16	103.16	142.03
FLHR31,314	56.7	34.3	56.70	43.54	100.24	125.03
La. 604	50.0	34.8	50.00	29.70	79.70	106.33
Harrison	48.0	37.8	48.00	41.18	89.18	130.31

Ozark	47.0	34.9	47.00	20.13	67.13	104.96
NF 188	36.0	36.5	36.00	38.96	74.96	130.04
	Triticale					
RSI 1029E	66.3	55.8	132.60	53.55	186.15	181.74
TX94VT6331	62.0	48.6	124.00	38.92	162.92	147.38
ABT XB9916	59.0	55.0	118.00	31.64	149.64	143.66
TX96VT5019	56.3	51.4	112.60	41.58	154.18	126.26
ABT XB97-1	54.7	53.9	109.40	26.38	135.78	132.46
Danko Presto	54.7	51.2	109.40	27.15	136.55	138.40
RSI L989	54.3	51.4	108.60	42.46	151.06	139.96
NF 87	53.3	50.9	106.60	69.92	176.52	146.01
ABT XB9911	52.0	50.1	104.00	14.81	118.81	130.70
RSI 10207	51.0	52.3	102.00	40.96	142.96	136.95
Trit I	30.7	48.6	61.40	8.25	69.65	120.38

¹NF numbers are Noble Foundation experimental strains. ABT numbers are experimental blends developed by Agrio BioTech. FLHR31,314 is an experimental oat strain from the University of Florida. OK numbers are Oklahoma State University experimental strains. TX numbers are Texas A&M University experimental strains. RSI L989, RSI 1029E, and RSI 10207 are experimental blends developed by Resource Seeds, Inc. Seed of this experimental material are not commercially available.

²Grain values: rye, \$4.50/bu.; hard wheat, \$2.30/bu.; soft wheat, \$2.10/bu.; triticale, \$2.00/bu.; oat, \$1.00/bu.

³Forage value: approximately \$2.20/cwt for oven-dry forage. Refer to table 1 for assumptions and calculations.

⁴Forage yields and influencing factors are reported in NF-FOR-00-10.

Table 3. Bilocation grain performance comparison of commercial small-grain varieties, 1997–2000

Variety	Bushels per Acre					
	Ardmore			Burneyville		
	1997–1998	1998–1999	1999–2000	1997–1998	1998–1999	1999–2000
	Rye					
Bates	37.5	51.0	63.0	48.3	49.2	54.3
Elbon	30.1	38.1	65.0	42.8	48.3	55.0
Maton	51.2	37.3	63.0	66.6	55.2	54.7
Oklon	36.5	43.4	59.0	44.5	45.1	57.3
Wrens Abruzzi	35.9	53.8	52.0	48.2	51.9	55.0
Wrens 96	35.0	52.9	54.7	43.3	55.3	45.0
	Average					
	37.7	46.1	59.5	49.0	50.8	53.6
	Wheat					
Coker 9663 (soft)	72.3	100.0	98.0	66.0	66.2	71.0
Coronado	59.2	62.0	57.7	43.5	56.2	47.7
Custer	66.1	70.2	67.0	50.5	48.9	57.0
Jagger	49.2	62.4	49.7	36.4	47.3	47.0
Longhorn	51.7	60.6	46.0	50.1	57.8	43.0
Lockett	73.9	58.2	73.3	66.4	54.2	50.7
Tomahawk	61.3	66.9	57.0	53.1	54.8	42.3
Tonkawa	52.5	72.4	59.3	59.5	59.5	52.0
2137	69.3	67.5	57.7	67.8	51.0	48.0
2174	71.0	59.8	69.7	56.1	62.0	58.3
Tam 202	—	67.2	75.0	—	53.9	62.7
Tam 302	—	62.4	50.0	—	61.8	41.0
	Average					
	62.7	67.5	63.4	54.9	56.1	51.7
	Oat					
Dallas	112.5	114.5	91.0	79.6	82.5	66.0
Harrison	100.7	116.7	103.0	73.1	50.3	48.0
La. 604	105.1	98.2	79.7	69.8	76.1	50.0
Ozark	102.7	81.0	89.0	86.4	76.5	47.0
	Average					
	105.3	102.6	90.7	77.2	71.4	52.8
	Triticale					
Danko Presto	—	83.5	60.7	—	57.3	54.7
Trit I	—	46.5	31.3	—	25.9	30.7
	Average					
	—	65.0	46.0	—	41.6	42.7
	Overall Average					
	63.7	67.8	65.5	57.6	56.1	51.6