PROJECT TITLE: Evaluation of regional spring wheat, durum, and oat yield trials - 2003

PROJECT LEADER:
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PROJECT PERSONNEL:
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OBJECTIVE: To evaluate new and introduced lines and cultivars of spring wheat, durum, and oats developed by Universities, the USDA-ARS, and private seed companies, and to determine adaptability of those lines and varieties to conditions in eastern Montana.

MATERIALS AND METHODS:

Dryland site:
Soil type: Williams clay loam
Previous crops: 2002 - fallow, 2001 - safflower. 2000 - small grain plots
Residual soil N to 4 ft: 107 lb N/ac
Residual soil P to 12 in: 17 ppm
Residual soil K to 12 in: 173 ppm
Residual soil S to 12 in:25.8 lb/ac
Applied fertilizer: None
Herbicides: 1.0 pt/ac Roundup applied April 17, 1.5 pt/ac Bronate applied 27 May
Precipitation April – August, 2003: 10.44 inches
Ave (55 yr) precipitation April – August: 9.50 inches
Precipitation September 2002 – August 2003: 15.04 inches
Ave (55 yr) precipitation September – August: 13.88 inches

Irrigated:
Soil type: Savage silty clay
Previous crops: 2002 - onions, 2001 - safflower, 2000 – potatoes
Residual soil N to 4 ft: 59 lb N/ac
Residual soil P to 12 in: 23 ppm
Residual soil K to 12 in: 450 ppm
Residual soil S to 12 inches: 141 lb/ac
Applied fertilizer: 400 lb 18-46-0 applied 15 October 2002
Irrigated (flood) on: 10 Jun, three inches
Herbicides: 1.5 pt/ac Bronate and 2.5 pt/ac Hoelon applied 29 May
Precipitation April – August, 2003: 8.34 inches
Ave (55 yr) precipitation April – August: 9.50 inches
Precipitation September 2002 – August 2003: 13.16 inches
Ave (55 yr) precipitation September – August: 13.88 inches

Comments:
Very good rainfall in March through June resulted in good growth. Very hot temperatures occurred in July and August, but yields and quality were still very good because of good moisture through bloom and the early part of grain fill.

Planting and harvest dates in 2003 were:

Nursery	Planting date	Harvest date
Uniform Regional Hard Red Spring Wheat Trial	Apr 15	Aug 1
Uniform Regional Durum Trial – dryland	Apr 15	Aug 1
Uniform Regional Durum Trial – irrigated	Apr 28	Aug 15
Uniform Regional Oat Trial	Apr 14	Jul 30

RESULTS:

Uniform Regional Hard Red Spring Wheat trial: The Uniform Regional Hard Red Spring wheat trial is conducted in cooperation with Dr. G. Linkert of the University of Minnesota, St. Paul. Dr. G. Hareland of North Dakota State University, Fargo, tests quality of each line and variety. Thirty-seven experimental lines and varieties of spring wheat were tested under dryland conditions (Table 1). Four experimental lines and varieties yielded significantly more than the check variety, Verde, and five yielded significantly less. Average yield was 53.4 bu/acre. Five-year summaries for yield, test weight, and protein are shown in Tables 2 through 4.

Uniform Regional Durum trial, dryland: The Uniform Regional Durum trial is conducted in cooperation with Dr. E.M. Elias, North Dakota State University, Fargo. Dr. G. Hareland of North Dakota State University, Fargo, tests quality of each line and variety. Thirty-two experimental lines and varieties were tested under dryland fallow conditions (Table 5). No lines or varieties significantly out yielded the check variety, Mountrail and 22 yielded significantly less. Average yield was 52.5 bu/acre. Five-year summaries for yield, test weight, and protein are shown in Tables 6 through 8.

Uniform Regional Durum trial, irrigated: The Uniform Regional Durum trial is conducted in cooperation with Dr. E.M. Elias, North Dakota State University, Fargo. Dr. G. Hareland of North Dakota State University, Fargo, tests quality of each line and variety. Thirty-two experimental lines and varieties were tested under irrigated conditions (Table 9). No lines or varieties yielded significantly more than the check variety Mountrail, and 22 yielded significantly less. Average yield was 115.0 bu/acre. Five-year summaries for yield, test weight, lodging and protein of durum varieties grown under irrigation are shown in Tables 10 through 13.

Uniform Regional Oat trial: The Uniform Regional Oat trial is conducted in cooperation with Dr. C. Erickson of the USDA-ARS National Small Grain Facility, Aberdeen, ID. Thirty-two experimental lines and varieties were tested (Table 14). One line yielded significantly more the check variety, Otana and one yielded significantly less. Average yield was 124.3 bu/acre. Five-year summaries for yield, test weight, and protein are shown in Tables 15 through 17.

SUMMARY: The uniform regional yield trials are conducted at many sites in several states across the western USA, and have been in place since the 1930's. These trials provide important information about experimental lines from state breeding programs, private companies, and the USDA-ARS breeding programs. New varieties are released based on data from these trials.

FUTURE PLANS: New and existing varieties and experimental lines of spring wheat, durum and oat will continue to be tested under dryland and irrigated conditions at the Eastern Agricultural Research Center, so that breeders can release improved varieties and producers can have information on varieties that are adapted to this area. A durum selection and breeding program has been established at EARC in cooperation with the durum breeder from NDSU for development of new varieties adapted to irrigated and dryland conditions in eastern Montana and western North Dakota. New and existing varieties and experimental lines of winter wheat are now being tested under dryland conditions at the Williston Research Center in cooperation with the winter wheat breeder from MSU.

Table 1. Agronomic data obtained from a Uniform Regional hard red spring wheat yield trial grown under dryland fallow conditions at the Eastern Agricultural Research Center, Sidney, MT.

line or variety	pedigree or ID	Heading, days from planting	height, inches	grain protein content	test wt, lb/bu	yield, bu/ac
BZ998447	SPILLMAN/906R	62.0	35.5	12.12	59.8	61.3a
SD 3540	UNKNOWN	61.3	35.3	14.06	63.5	60.3a
MAN 264	2002 LFRST GENES	64.0	33.2	11.89	61.2	60.0a
N99-0107	N94-0157//SUMAI 3/DALEN	64.0	36.2	14.23	62.3	58.6a
ND 800	ND741 SELN	63.7	34.0	13.71	61.3	58.5
N98-0286	N91-0048/LARS	65.0	31.9	13.17	60.7	58.5
SD 3546	SD8070/SD3165	61.7	35.6	13.39	61.5	58.4
SD 3641	1318 316-1-2/N93-0136//SD3249	61.0	32.9	14.37	63.3	58.0
ND 751	ND2709/3/GR*3//RAMSEY/ND622/4/	64.3	35.0	13.25	63.0	57.9
MN994366	NORLANDER/HJ98	61.0	30.6	14.14	63.3	56.6
2375	OLAF//ERA/SUQAMUXI68/3/CIS/ND4	62.3	33.1	13.62	61.3	56.3
98S11320	N97-0117/3/N92-0098//SUMAI3/DA	62.0	31.8	15.54	63.3	55.6
ND 801	ND2849/ND721	62.7	36.3	14.02	63.0	55.3
96S35615	N95-0319//N86-1076/DALEN	61.3	30.4	13.96	63.2	54.6
WA 7925	SPILLMAN/WPB906R//SUNSTAR2	62.3	35.5	13.30	61.5	54.6
SD 3618	SD8119/SD3236	64.0	34.0	13.69	61.3	54.6
SD 3635	SD8070/SD3118//SD3225	63.0	36.4	12.80	60.8	54.4
MAN 241	2002 LFRST GENES	64.7	31.6	12.56	58.3	54.4
96040403	HAMER//RHT21/LARS	63.0	27.3	12.80	62.5	54.4
KEENE	KEENE	65.3	39.0	15.14	62.7	54.4
ND 747	ARINA//FO.2791/ND694/3/ND706	62.0	34.7	15.00	64.0	53.4
01M96	B1021/HJ98	62.3	32.6	14.60	64.2	53.4
VERDE	MN7663/SBY35A	65.0	33.9	13.92	61.7	53.2
BW314A	RL4763*2/HOWELL	62.3	40.7	14.50	60.8	52.8
ND 741	PARSHALL/ND706	64.0	34.1	13.46	61.5	52.5
N99-0241	N93-0090/HAMER	65.7	33.6	12.45	61.2	50.9
01M88	B1021/MN91227	66.0	30.0	12.51	62.7	50.7
NDSW0246	ERNEST//ND622/KEENE	65.0	36.7	14.72	62.3	50.0
N99-2234	ACBARRIE/NORPRO	64.3	38.7	15.22	61.7	49.7
MAN 221	2002 LFRST GENES	64.7	34.3	12.67	61.0	48.6
ES54	GLENLEA//90B07-W3B//RL4452	66.7	39.0	15.03	59.0	48.4
MT 9929	MT9401/MT9328	63.7	31.1	13.52	62.5	47.9
WA 7931	PI591045/3/TANAGER'S'/TORIM73/	64.3	37.0	12.98	61.8	47.5x
CA901735	KEYSTONE/IVAN	62.0	30.3	13.23	63.3	47.1x
BW307	90B01-AD4D/PASQUA	66.0	41.1	16.34	58.0	46.9x
MARQUIS	CI 3651	68.0	46.8	15.34	62.0	43.4x
CHRIS, 525-1	CI 13751	65.3	41.1	14.99	60.2	41.8x
Mean		63.7	34.9	13.84	61.8	53.4
Probability		<0.001	<0.001	<0.001	<0.001	<0.001
CV(S/mean)		0.6	4.3	3.6	0.9	6.1
CV (SE/mean)		0.4	2.5	2.1	0.5	3.5
LSD 0.05		0.7	2.4	0.82	0.9	5.3

a indicates significantly greater yield than check variety, Verde, at a probability of 0.05
x indicates significantly lower yield than check variety, Verde, at a probability of 0.05

Table 2. Relative yields of spring wheat varieties as compared to Chris when grown under dryland fallow conditions in the Uniform Regional Hard Red Spring Wheat trial at Sidney, MT.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Verde
ND 800	--	--	--	--	58.5	58.5	110.0
ND751	--	--	--	--	57.9	57.9	108.8
Outlook	--	--	60.5	43.4	--	52.0	106.9
NR801	--	--	--	--	55.3	55.3	103.9
ND747	--	--	--	--	53.4	53.4	100.4
Verde	69.6	59.5	51.3	45.9	53.2	55.9	100.0
ND741	--	--	50.5	45.5	52.5	49.5	98.7
Keene	69.4	57.1	50.2	44.8	54.4	55.2	98.7
2375	68.4	52.6	51.0	44.7	56.3	54.6	97.7
Dapps	69.0	46.7	--	--	--	57.9	89.6
Choteau	--	--	--	37.7	47.9	42.8	86.4
Chris 525-1	58.9	52.7	43.0	33.9	41.8	46.1	82.4
Marquis	51.7	45.5	46.7	29.8	43.4	43.4	77.7

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 3. Relative test weights of spring wheat varieties as compared to Chris when grown under dryland fallow conditions in the Uniform Regional Hard Red Spring Wheat trial at Sidney, MT.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Verde
ND747	--	--	--	--	64.0	64.0	103.7
Keene	62.7	62.5	62.2	60.5	62.7	62.1	102.4
ND 800	--	--	--	--	63.0	63.0	102.1
ND751	--	--	--	--	63.0	63.0	102.1
ND801	--	--	--	--	63.0	63.0	102.1
ND741	--	--	61.7	58.5	61.5	60.6	100.7
2375	61.8	62.8	60.7	58.8	61.3	61.1	100.7
Marquis	61.3	62.5	60.5	58.7	62.0	61.0	100.5
Choteau	--	--	--	57.7	62.5	60.1	100.3
Dapps	61.0	62.2	--	--	--	61.6	100.2
Verde	60.8	62.2	60.5	58.2	61.7	60.7	100.0
Chris 525-1	61.2	62.7	59.8	57.0	60.2	60.2	99.2
Outlook	--	--	59.7	57.7	--	58.7	98.9

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 4. Relative protein contents of spring wheat varieties as compared to Chris when grown under dryland fallow conditions in the Uniform Regional Hard Red Spring Wheat trial at Sidney, MT.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Verde
Dapps	14.2	13.8	--	--	--	14.0	117.2
Marquis	13.0	13.1	13.3	15.0	15.3	13.9	110.5
Chris 525-1	13.3	12.9	13.3	14.3	15.0	13.8	109.0
Keene	12.7	13.9	13.0	13.8	15.1	13.7	108.6
ND747	--	--	--	--	15.0	15.0	107.9
ND741	--	--	13.8	13.2	13.5	13.5	103.3
Outlook	--	--	12.8	13.1	--	13.0	102.4
NR801	--	--	--	--	14.0	14.0	100.7
Verde	11.8	12.1	12.1	13.2	13.9	12.6	100.0
2375	11.8	12.1	12.2	13.0	13.6	12.5	99.4
ND 800	--	--	--	--	13.7	13.7	98.6
Choteau	--	--	--	13.0	13.5	13.3	97.8
ND751	--	--	--	--	13.2	13.2	95.0

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety.

Table 5. Agronomic data obtained from a Uniform Regional durum yield trial grown under dryland fallow conditions at the Eastern Agricultural Research Center, Sidney, MT

line or variety	pedigree or ID	Heading, days from planting	height, inches	protein content	test wt, lb/bu	yield, bu/ac
Mountrail	Mountrail	65.7	34.4	14.15	61.3	56.8
D99938	MOUNTRAIL/D940640	65.7	34.8	14.15	61.8	55.7
D97780	D91260/D901419	64.3	33.9	14.37	61.8	55.5
D971511	BEN/D901282//BELZER	65.7	35.2	14.41	62.5	54.9
AC Avonlea	AC Avonlea	65.0	34.4	15.18	61.5	54.8
Plaza	Plaza	66.0	28.7	13.75	61.7	54.6
D99513	BEN/D921023	65.0	34.0	14.82	62.0	54.5
Maier	Maier	65.0	32.8	13.88	63.0	54.3
D99073	PLAZA/D931118	65.7	32.1	13.64	61.5	54.3
Lebsock	Lebsock	64.7	32.3	14.40	62.5	53.6
Ben	Ben	65.0	35.0	13.83	63.3	53.3x
Pierce	Pierce	65.0	35.3	14.84	62.0	53.1x
D98530	D901419/D901525//D901486	64.0	31.9	14.39	62.7	53.1x
D98730	RENVILLE/LEBSOCK	64.0	35.7	14.88	63.2	53.0x
D96604	D901247/D89263	65.0	31.9	14.51	62.5	52.7x
Renville	Renville	65.0	37.9	14.59	61.8	52.7x
Dilse	Dilse	66.0	34.4	14.59	62.5	52.7x
D99910	LEBSOCK/D901518//BELZER	66.0	34.6	14.37	61.3	52.4x
D98529	D901419/D901525//D901486	64.3	31.0	14.27	62.5	52.2x
D99891	D901419/D931052//MEDORA	64.0	34.7	14.59	61.7	52.0x
D99541	LEBSOCK/D91058	64.3	31.9	14.48	61.0	51.9x
D99637	D940640/D940556	65.7	33.3	14.65	62.3	51.5x
D95123	D89221/D901525	65.0	31.9	14.75	62.8	51.1x
D96622	D901281/BELZER	65.0	36.1	14.69	61.5	51.1x
D95672	Sceptre/Renville	65.0	35.3	14.40	63.7	50.9x
D99638	D940640/D940556	65.7	34.9	14.94	61.3	50.7x
D97643	D89263/D901518	65.3	34.6	13.50	62.3	50.6x
D98813	D87122/LEBSOCK	65.0	34.9	15.56	62.2	50.5x
D95097	D89530/D89131	64.0	31.8	14.33	62.2	49.7x
D99656	MAIER/D941514	65.3	33.6	14.28	62.8	49.5x
D99983	D941178/DILSE	65.0	33.5	14.85	60.3	47.6x
D99639	D940640/D940556	65.0	33.6	15.38	60.5	47.6x
mean		65.0	33.8	14.48	62.1	52.5
probability		<0.001	<0.001	0.0315	<0.001	<0.001
CV (S/mean)		0.8	4.4	4.2	0.9	3.8
CV (SE/mean)		0.4	2.5	2.5	0.5	2.2
LSD 0.05		0.8	2.4	1.00	0.9	3.2

x indicates significantly lower yield than check variety, Mountrail, at a probability of 0.05

Table 6. Relative yields of durum varieties as compared to Renville when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Mountrail	77.9	50.8	55.8	37.1	56.8	55.7	100.0
Plaza	65.4	56.7	54.7	36.9	54.6	53.7	96.4
Pierce	64.6	52.8	53.6	39.5	53.1	52.7	94.7
AC Avonlea	69.3	52.3	50.8	34.7	54.8	52.4	94.1
Renville	63.0	51.5	51.6	38.6	52.7	51.5	92.5
Maier	61.6	52.7	48.1	38.7	54.3	51.1	91.7
Dilse	64.1	50.5	47.8	39.4	52.6	50.9	91.4
Ben	59.7	50.9	51.4	38.8	53.3	50.8	91.3
Lebsock	59.4	48.3	47.0	40.6	53.6	49.8	89.4

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 7. Relative test weights of durum varieties as compared to Renville when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Lebsock	63.3	63.3	62.5	60.7	62.5	62.5	102.7
Ben	62.8	62.8	62.0	59.7	63.3	62.1	102.2
Pierce	62.3	63.0	62.0	60.2	62.0	61.9	101.8
Dilse	62.7	62.5	61.7	59.5	62.5	61.8	101.6
Maier	61.8	62.5	60.8	59.8	63.0	61.6	101.3
Renville	61.8	61.2	61.2	59.3	61.8	61.1	100.4
Plaza	62.0	62.7	60.5	58.3	61.7	61.0	100.4
AC Avonlea	61.2	61.8	61.3	58.7	61.5	60.9	100.2
Mountrail	61.7	62.2	61.0	57.8	61.3	60.8	100.0

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 8. Relative protein contents of durum varieties as compared to Renville when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, Montana

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
AC Avonlea	12.4	13.3	13.7	15.1	15.2	13.9	105.3
Dilse	12.6	13.3	13.5	15.1	14.6	13.8	104.4
Renville	11.5	13.4	13.8	14.8	14.6	13.6	102.9
Maier	12.1	13.2	13.4	14.5	13.9	13.4	101.4
Pierce	12.1	12.8	12.9	14.4	14.8	13.4	101.2
Ben	12.2	13.2	13.3	14.4	13.8	13.4	101.1
Lebsock	11.6	13.5	12.8	14.0	14.4	13.3	100.2
Mountrail	12.3	12.4	12.4	14.9	14.2	13.2	100.0
Plaza	10.9	12.3	12.8	14.6	13.8	12.9	97.3

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare only to the check variety.

Table 9. Agronomic data obtained from a Uniform Regional durum yield trial grown under flood irrigated conditions at the Eastern Agricultural Research Center, Sidney, MT.

entry	reps	heading, days from planting	height, inches	lodging index	protein content	test wt, lb/bu	yield, bu/ac
D99541	LEBSOCK/D91058	60.0	114.0	1.3	13.65	63.7	125.7
D97780	D91260/D901419	58.0	113.3	2.3	13.88	63.8	125.4
D97643	D89263/D901518	62.0	121.0	1.7	12.59	64.0	125.4
Mountrail	Mountrail	61.7	120.3	1.3	13.55	63.7	124.3
D99073	PLAZA/D931118	62.3	100.3	0.0	13.30	63.0	120.6
D99639	D940640/D940556	60.0	119.7	2.3	14.22	63.7	120.2
D96622	D901281/BELZER	61.7	123.3	2.0	13.32	64.3	119.8
Maier	Maier	61.7	114.3	2.0	14.20	64.0	118.9
D99637	D940640/D940556	62.0	120.3	1.3	13.40	64.2	118.6
Plaza	Plaza	62.7	95.3	0.7	13.06	63.3	117.0
Pierce	Pierce	61.3	118.7	3.0	14.01	64.3	116.1x
D99638	D940640/D940556	62.0	119.3	1.7	13.61	64.2	115.9x
D99938	MOUNTRAIL/D940640	62.0	123.0	2.7	14.47	63.7	115.9x
D95123	D89221/D901525	61.3	115.0	1.7	14.03	64.5	115.7x
D96604	D901247/D89263	60.7	116.3	0.3	12.99	64.8	115.5x
D95672	Sceptre/Renville	61.0	128.3	2.3	14.88	64.8	115.2x
D98813	D87122/LEBSOCK	61.3	124.0	1.7	13.74	64.3	115.1x
D99891	D901419/D931052//MEDORA	58.0	120.3	2.3	13.58	63.5	115.1x
D971511	BEN/D901282//BELZER	62.3	121.3	2.0	14.18	63.8	114.8x
D99983	D941178/DILSE	61.0	121.0	2.3	12.48	63.3	114.4x
D99656	MAIER/D941514	61.0	120.0	1.3	13.49	64.2	113.9x
D98530	D901419/D901525//D901486	58.0	115.0	2.3	14.16	64.0	113.4x
Dilse	Dilse	62.0	111.0	2.3	15.06	63.8	112.8x
AC Avonlea	AC Avonlea	58.7	119.3	1.3	14.27	62.7	112.7x
Lebsock	Lebsock	59.7	113.0	1.7	13.72	64.3	110.8x
D98529	D901419/D901525//D901486	58.0	113.3	1.0	13.87	64.2	110.1x
Renville	Renville	61.3	127.7	3.0	14.18	63.7	109.3x
D99910	LEBSOCK/D901518//BELZER	62.3	121.3	2.0	13.86	63.7	108.7x
Ben	Ben	61.0	120.3	2.7	14.30	64.5	107.5x
D99513	BEN/D921023	58.0	120.3	3.3	14.19	62.8	104.1x
D95097	D89530/D89131	57.7	114.3	2.3	14.67	62.7	104.0x
D98730	RENVILLE/LEBSOCK	60.0	126.7	3.7	14.73	63.7	103.8x
Mean		60.7	117.9	1.9	13.9	63.9	115.0
Probability		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CV (S/mean)		1.2	3.1	38.6	2.5	0.7	4.0
CV (SE/mean)		0.7	1.8	22.3	1.4	0.4	2.3
LSD 0.05		1.1	6.0	1.2	0.6	0.7	7.5

x indicates significantly lower yield than check variety, Mountrail, at a probability of 0.05

Table 10. Relative yields of durum varieties compared to Renville when grown in the irrigated Uniform Regional Durum Trial at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Mountrail	85.9	103.2	48.0	73.3	124.3	86.9	100.0
Plaza	88.5	94.6	57.2	72.4	117.0	85.9	98.8
Dilse	89.3	94.0	53.7	67.5	112.8	83.5	96.0
Maier	89.4	93.9	46.6	66.7	118.9	83.1	95.6
Lebsock	83.8	94.5	54.5	66.3	110.8	82.0	94.3
Pierce	85.1	94.3	32.8	71.6	116.1	80.0	92.0
Ben	79.5	96.2	50.6	65.3	107.5	79.8	91.8
Renville	80.9	85.9	34.3	68.3	109.3	75.7	87.1
AC Avonlea	70.1	94.9	27.7	64.4	112.7	74.0	85.1

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 11. Relative test weights of durum varieties compared to Renville when grown in the irrigated Uniform Regional Durum Trial at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Lebsock	61.7	64.0	58.8	63.5	64.3	62.5	102.0
Ben	61.5	63.3	58.3	63.2	64.5	62.2	101.5
Pierce	61.5	63.2	57.1	64.0	64.3	62.0	101.2
Dilse	62.0	62.8	57.7	62.3	63.8	61.7	100.8
Maier	60.8	62.8	57.2	63.3	64.0	61.6	100.6
Mountrail	60.7	63.0	55.7	63.2	63.7	61.3	100.0
Renville	60.8	62.7	55.8	63.2	63.7	61.2	100.0
Plaza	60.5	62.8	56.7	62.7	63.3	61.2	99.9
AC Avonlea	58.5	62.3	52.4	62.0	62.7	59.6	97.3

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 12. Relative protein contents of durum varieties compared to Renville when grown in the irrigated Uniform Regional Durum Trial at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
AC Avonlea	14.6	12.9	17.2	12.3	14.3	14.3	107.9
Dilse	13.6	13.2	16.2	11.5	15.1	13.9	105.3
Maier	13.6	12.8	15.9	12.3	14.2	13.8	104.1
Renville	13.8	13.4	15.9	11.4	14.2	13.7	103.9
Ben	13.6	13.0	15.4	12.0	14.3	13.7	103.3
Lebsock	13.8	12.5	15.2	11.5	13.7	13.3	100.9
Pierce	12.8	12.2	15.8	11.4	14.0	13.2	100.2
Mountrail	13.3	11.8	15.8	11.6	13.6	13.2	100.0
Plaza	12.7	11.4	15.1	11.8	13.1	12.8	97.0

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 13. Relative lodging indices of durum varieties compared to Renville when grown in the irrigated Uniform Regional Durum Trial at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Renville	5.0	0.0	8.7	1.3	3.0	3.6	146.3
Pierce	2.0	0.0	8.3	1.0	3.0	2.9	116.3
Ben	2.7	0.0	7.3	0.7	2.7	2.7	108.9
Mountrail	1.7	0.0	8.0	1.3	1.3	2.5	100.0
AC Avonlea	3.0	0.0	7.7	0.3	1.3	2.5	100.0
Maier	2.0	0.0	7.7	0.3	2.0	2.4	97.6
Dilse	1.0	0.0	6.7	0.7	2.3	2.1	87.0
Lebsock	0.7	0.0	7.3	0.3	1.7	2.0	81.3
Plaza	0.0	0.0	3.7	0.0	0.7	0.9	35.8

NOTE: Average lodging indices in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 14. Agronomic data obtained from a uniform regional oat yield trial grown under dryland fallow conditions at the Eastern Agricultural Research Center, Sidney, MT.

line or variety	pedigree or ID	heading, days from planting	height, inches	protein content	test wt, lb/bu	yield, bu/ac
ABSP14-6	83Ab3119/Monida	70.0	35.8	13.69	34.8	140.6a
OT382	OT349/J775-1	69.7	38.8	12.96	37.7	136.2
87AB5632	Monida/75Ab861	69.3	36.0	12.98	34.7	134.9
95A12584	(95Ab12584) ND840641/86Ab1867	67.7	36.9	13.46	37.8	132.7
Killdeer	ND930122	67.7	35.1	13.86	38.3	131.5
UC128	Albion20//5068/6975/3/Montezum	65.0	35.7	13.38	36.5	130.0
UC129	Cortez 5/Pendek/Me1563	63.3	36.2	14.27	36.7	129.5
ABSP19-9	83Ab3083/Monida	71.0	34.6	14.29	35.2	129.5
Monico	83Ab3119/Monida	68.0	34.5	13.49	37.0	128.3
96AB8796	81Ab5792/82Ab248	69.7	31.8	13.59	32.5	128.3
91AB502	83Ab3363/82Ab1078	65.7	32.7	14.34	36.3	127.6
CDC Dancer	OT373	68.7	39.2	13.73	37.5	127.2
94AB5943	86Ab1867/87Ab5597	68.7	35.6	13.81	37.3	126.0
Otana	CI 9252	70.0	40.7	13.91	36.8	125.9
Monida	CI 483126	71.0	36.1	14.79	32.8	124.3
97AB7571	84Ab358/IA D921-643	70.0	36.5	14.79	36.0	124.2
CDC Pacer	OT351	69.0	38.9	14.07	36.7	123.9
Cayuse	CI 8263	69.7	35.6	15.18	34.2	123.6
95A12661	(95Ab12661) 83Ab3119/86Ab1867C	70.0	33.7	14.35	36.7	123.3
96AB8597	Otana/87Ab4983	71.7	32.9	12.69	37.3	123.2
98AB6491	90Ab1322/Ogle	70.0	32.4	12.96	38.0	123.1
Maverick	90Ab1322	68.7	31.2	13.79	34.2	122.2
Celsia	PI583735	71.0	38.1	13.35	35.3	121.3
98AB6646	IAH61-3-3/90Ab1322	69.3	31.8	13.00	38.2	119.9
MAVTRTED	Maverick treated	68.7	31.1	14.42	35.0	119.4
Derby	DERBY	68.7	42.8	13.48	37.2	119.0
Powell	PI695473	71.3	31.6	14.87	33.7	118.9
94AB5543	83Ab3119/86Ab1867A	70.7	33.7	13.87	37.0	115.9
95A10854	(95Ab10854) 84Ab835/Monida	74.0	33.6	14.59	36.3	115.5
Rio Grande	81Ab5792	67.0	32.8	14.64	34.5	114.1
UC125	Coker234/Coker227//75Q036-83ID	68.3	27.0	11.98	35.8	111.8
Ajay	PI537436	70.0	30.3	15.23	35.3	104.3x
mean		69.2	34.8	13.87	36.0	124.3
probability		<0.001	<0.001	0.086	<0.001	0.006
CV (S/mean)		1.1	4.7	7.7	2.6	7.1
CV (SE/mean)		0.6	2.7	4.5	1.5	4.1
LSD 0.05		1.2	2.7	1.75	1.5	14.4

a indicates significantly greater yield than check variety, Otana, at a probability of 0.05
x indicates significantly lower yield than check variety, Otana, at a probability of 0.05

Table 15. Relative yields of oat varieties as compared to Otana when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Otana
ABSP 14-6	--	--	--	66.3	140.6	103.5	110.3
ABSP 19-9	176.0	155.2	122.9	60.3	129.5	128.8	108.5
Maverick	169.4	149.7	116.5	69.5	122.2	125.5	105.7
Monico	168.0	152.2	111.4	65.4	128.3	125.1	105.4
Monida	178.0	152.2	117.8	52.3	124.3	124.9	105.2
Killdeer	169.6	152.2	99.1	57.6	131.5	122.0	102.8
Celsia	161.0	151.3	118.3	58.0	121.3	122.0	102.8
OT382	--	--	122.0	38.2	136.2	98.8	102.2
CDC Pacer	155.3	155.1	121.8	44.7	123.9	120.2	101.2
Cayuse	161.4	148.6	104.3	62.5	123.6	120.1	101.2
UC 129	--	--	90.3	72.8	129.5	97.5	100.9
UC 128	--	--	96.2	65.2	130.0	97.1	100.5
Otana	160.0	143.5	102.4	61.7	125.9	118.7	100.0
Powell	159.1	143.5	116.9	52.0	118.9	118.1	99.5
Derby	158.7	146.9	119.0	45.9	119.0	117.9	99.3
Rio Grande	164.7	134.0	95.4	70.0	114.1	115.6	97.4
CDC Dancer	--	--	101.0	49.7	127.2	92.6	95.8
Ajay	143.0	126.8	90.2	58.2	104.3	104.5	88.0
UC 125	--	--	82.1	25.6	111.8	73.2	75.7

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 16. Relative test weights of oat varieties as compared to Otana when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Otana
CDC Dancer	--	--	37.8	32.7	37.5	36.0	102.1
Monico (ABSP 9-2)	39.5	40.5	37.7	31.3	37.0	37.2	101.1
OT382	--	--	38.0	31.0	37.7	35.6	100.9
Derby	38.5	40.3	38.5	30.8	37.2	37.1	100.8
Killdeer	38.0	39.2	36.8	32.8	38.3	37.0	100.7
CDC Pacer	36.5	39.8	39.2	32.2	36.7	36.9	100.3
Otana	38.8	39.3	37.5	31.5	36.8	36.8	100.0
ABSP 19-9	39.0	38.8	37.7	30.8	35.2	36.3	98.7
Maverick (90Ab1322)	38.0	39.0	37.8	29.2	34.2	35.6	96.9
UC 129	--	--	35.5	30.3	36.7	34.2	96.9
Celsia	37.8	38.7	36.8	28.7	35.3	35.5	96.4
Monida	37.7	38.3	38.0	29.7	32.8	35.3	96.0
UC 125	--	--	35.3	30.0	35.8	33.7	95.6
UC 128	--	--	35.2	29.3	36.5	33.7	95.5
Rio Grande	38.0	37.8	36.8	27.5	34.5	34.9	94.9
ABSP 14-6	--	--	--	29.7	34.8	32.3	94.4
Ajay	36.3	38.0	36.3	27.5	35.3	34.7	94.3
Powell	36.7	36.8	35.0	28.5	33.7	34.1	92.8
Cayuse	36.7	36.7	34.7	27.7	34.2	34.0	92.4

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 17. Relative protein contents of oat varieties as compared to Otana when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Otana
Ajay	11.6	11.9	13.3	11.7	15.2	12.7	106.2
Rio Grande	11.0	11.9	13.2	11.0	14.6	12.3	102.8
Otana	10.4	11.7	12.8	11.2	13.9	12.0	100.0
ABSP 14-6	--	--	--	11.3	13.7	12.5	99.6
Cayuse	10.8	11.0	11.5	11.2	15.2	11.9	99.5
Maverick	10.8	11.5	11.7	11.8	13.8	11.9	99.3
OT382	--	--	11.7	12.9	13.0	12.5	99.2
ABSP 19-9	9.6	10.4	11.6	13.3	14.3	11.8	98.7
Killdeer	11.3	10.0	11.6	12.0	13.9	11.8	98.0
Powell	10.8	10.3	12.3	10.4	14.9	11.7	97.8
CDC Pacer	10.1	10.4	12.5	11.3	14.1	11.7	97.3
UC 129	--	--	11.6	10.8	14.3	12.2	96.8
Monico	9.6	10.7	11.4	12.8	13.5	11.6	96.7
UC 128	--	--	11.3	11.4	13.4	12.0	95.3
Monida	10.2	9.9	11.7	10.2	14.8	11.4	94.7
Celsia	10.0	10.1	10.7	11.7	13.4	11.2	93.2
CDC Dancer	--	--	11.0	10.6	13.7	11.8	93.1
Derby	9.6	10.0	11.0	10.6	13.5	10.9	91.2
UC 125	--	--	9.7	11.5	12.0	11.1	87.6

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety.