

PROJECT TITLE: Evaluation of regional spring wheat, durum, and oat yield trials - 2006

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 ANE METHODS

Dryland site:

Soil type: Williams clay loam
Previous crops: 2005 - fallow, 2004 – safflower, 2003 - small grain plots
Residual soil N to 3 ft: 100 lb N/ac
Residual soil P to 6 in: 31 ppm
Applied fertilizer: None
Herbicides: 1.5 pt/ac Bronate applied May 25
Precipitation April – August, 2006: 9.62 inches
Ave (58 yr) precipitation April – August: 9.45 inches
Precipitation September 2005 – August 2006: 13.77 inches
Ave (58 yr) precipitation September – August: 13.85 inches

Irrigated site:

Soil type: Savage silty clay
Previous crops: 2005 – safflower, 2004 – sugarbeets, 2003 – spring wheat
Residual soil N to 4 ft: 96 lb N/ac
Residual soil P to 6 in: 15 ppm
Applied fertilizer: 200 lb/A 18-46-0 applied Nov 7, 2005
Irrigated (flood) on: Jun 7, Jun 21
Herbicides: 2 pt/ac Buctil applied on May 25
Precipitation April – August, 2006: 9.28 inches
Ave (58 yr) precipitation April – August: 9.45 inches
Precipitation September 2005 – August 2006: 14.65 inches
Ave (58 yr) precipitation September – August: 13.85 inches

<u>Nursery</u>	<u>Planting date</u>	<u>Harvest date</u>
Uniform regional hard spring wheat trial	April 14	July 27
Uniform regional durum trial – dryland	April 14	July 28
Uniform regional durum trial – irrigated	May 1	August 14
Uniform regional oat trial	April 14	July 27

RESULTS:

Uniform Regional Hard Red Spring Wheat trial: The Uniform Regional Hard Red Spring wheat trial is conducted in cooperation with Dr. D. Garvin of the University of Minnesota, St. Paul. Dr. G. Hareland of North Dakota State University, Fargo, tests quality of each line and variety. Forty experimental lines and varieties of spring wheat were tested under dryland conditions (Table 1). Fifteen experimental lines and varieties yielded significantly less than the check variety, Verde, and none yielded significantly more. Average yield was 49.3 bu/acre. Five-year summaries for yield, test weight, and protein are shown in Tables 2-4.

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). Eight lines and varieties yielded significantly less than the check variety, Mountrail. Average yield was 42.9 bu/acre. Five-year summaries for yield, test weight, protein, and hard vitreous amber color are shown in Tables 6-9.

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 flood irrigated conditions (Table 10). Twenty-six varieties yielded significantly less than the check variety, Mountrail. Average yield was 79.3 bu/acre. Five-year summaries for yield, test weight, protein content, lodging, and hard vitreous amber color of durum varieties grown under irrigation are shown in Tables 11-15.

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. Forty –two experimental lines and varieties were tested (Table 16). Fifteen lines yielded significantly less than the check variety, Otana. Average yield was 103.6 bu/acre. Five-year summaries for yield, test weight, and protein are shown in Tables 17-19.

SUMMARY: The experiments reported under this project are all of the replicated small plot type. 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.

Entry	heading, days from planting	height, cm	percent protein	test wt, lb/bu	yield, bu/ac
SD 3868	59.0	78.0	12.02	58.8	57.7
MT 0416	61.7	72.3	12.44	60.7	57.6
WA 7998	58.0	72.3	13.25	58.7	55.4
NE10846	60.3	70.7	11.58	58.8	54.4
Verde	62.0	71.0	12.51	59.5	54.0
SD 3944	58.0	76.7	13.57	60.2	53.4
Keene	62.0	90.3	14.42	59.8	53.2
MN033584	61.0	69.7	13.39	60.3	53.1
MN02255	61.7	69.3	12.44	60.3	53.1
NDSW0430	62.7	72.7	12.86	61.7	53.0
ND04320	63.3	77.3	13.49	58.2	52.8
MN02252A	63.3	75.0	13.10	60.5	52.5
BZ901543	59.0	73.7	14.51	59.5	52.3
MT 0415	61.3	73.0	13.75	60.7	52.3
SD 3851	57.3	75.0	13.04	62.8	52.0
MN02072	58.3	65.0	13.66	61.3	51.9
NE18824	63.0	68.7	13.78	55.7	51.6
ND04318	59.7	71.7	13.57	61.5	51.3
2375	60.0	72.7	12.34	60.0	51.1
ND03113	59.3	74.3	13.13	61.0	50.8
ND04319	63.3	75.0	12.54	59.3	50.6
CA905752	61.3	61.7	14.05	59.7	50.1
98S11320	57.7	66.0	15.09	61.7	49.9
SD 4001	61.3	77.0	12.57	59.7	49.3
05MSP5	60.0	71.0	13.73	60.3	48.8
PT436	61.0	81.7	13.71	59.5	47.3 x
99S36221	59.7	61.3	13.73	61.3	47.2 x
98S51114	60.3	67.7	12.52	61.5	47.2 x
MN033061	58.0	67.3	13.71	60.7	46.9 x
SD 3943	58.7	74.0	12.69	61.0	46.5 x
BW864	60.0	71.0	13.49	61.0	46.3 x
CA905751	64.0	66.0	13.98	57.7	45.5 x
CA902704	65.0	74.3	14.46	61.3	44.5 x
BW379	58.3	74.3	14.01	61.7	43.7 x
NDSW0481	63.0	76.3	14.14	59.0	42.7 x
ND04321	60.0	71.3	14.08	61.7	41.7 x
Chirs, 525-1	62.7	92.0	14.36	57.7	41.5 x
BW342	61.0	76.7	14.00	60.8	41.4 x
NDSW0449	64.7	76.0	13.16	60.0	40.4 x
Marquis	65.3	96.3	13.33	58.0	36.4 x
Average	60.9	73.7	13.4	60.09	49.3
Probability	<0.001	<0.001	<0.001	<0.001	<0.001
CV (S/MEAN)	1.5	3.1	4.6	0.9	7.4
LSD (0.05)	1.5	3.7	1.00	0.9	6.0

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 Verde when grown under dryland fallow conditions in the Uniform Regional Hard Red Spring Wheat trial at Sidney, MT.

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Verde
MT0416	--	--	--	--	57.6	57.6	106.7
2375	44.7	56.3	66.6	45.2	51.1	52.8	102.2
Traverse	--	--	59.1	50.4	--	54.8	104.1
Keene	44.8	54.4	62.5	44.7	53.2	51.9	100.5
Verde	45.9	53.2	57.8	47.4	54.0	51.7	100.0
MT0415	--	--	--	--	52.3	52.3	96.9
Chris 525-1	33.9	41.8	44.1	34.6	41.5	39.2	75.8
Marquis	29.8	43.4	40.8	36.6	36.4	37.4	72.4

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Verde
MT0416	--	--	--	--	60.7	60.7	102.0
MT0415	--	--	--	--	60.7	60.7	102.0
Keene	60.5	62.7	62.0	62.0	59.8	61.4	101.5
2375	58.8	61.3	61.7	62.0	60.0	60.8	100.5
Verde	58.2	61.7	61.0	62.0	59.5	60.5	100.0
Marquis	58.7	62.0	59.2	60.8	58.0	59.7	98.8
Chris 525-1	57.0	60.2	58.8	59.7	57.7	58.7	97.0
Traverse	--	--	59.0	60.0	--	59.8	96.7

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 Verde when grown under dryland fallow conditions in the Uniform Regional Hard Red Spring Wheat trial at Sidney, MT.

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Verde
MT0415	--	--	--	--	13.8	13.8	110.4
Chris 525-1	14.3	15.0	16.0	13.3	14.4	14.6	109.6
Marquis	15.0	15.3	16.3	12.8	13.3	14.5	109.2
Keene	13.8	15.1	15.8	13.5	14.4	14.5	109.0
Traverse	--	--	14.9	12.8	--	13.8	102.6
Verde	13.2	13.9	14.4	12.6	12.5	13.3	100.0
MT0416	--	--	--	--	12.4	12.4	99.2
2375	13.0	13.6	14.6	12.3	12.3	13.2	98.8

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

Entry	heading, days from planting	height, cm	percent protein	HVAC	color	test wt, lb/bu	yield, bu/ac	
DG013141	61.3	77.0	13.97	64.2	31.7	59.8	48.4	
Lebsock	63.0	71.0	13.37	62.8	31.4	60.8	47.6	
Alkabo	63.7	74.0	12.86	61.2	30.9	60.8	46.4	
Mountrail	64.7	74.2	13.13	68.7	32.6	59.8	45.7	
Grenora	64.0	70.7	13.29	72.4	31.0	59.0	45.7	
D021667	66.7	75.5	13.04	57.5	32.6	60.5	45.5	
D02021	63.7	71.7	12.98	67.3	31.3	61.0	44.6	
D021636	64.7	72.0	13.85	65.2	30.9	59.7	44.5	
D021110	64.3	76.0	13.12	75.3	29.9	60.7	44.5	
Maier	64.0	72.0	13.74	69.3	30.1	59.7	44.0	
D021724	64.7	70.0	13.03	63.3	31.4	60.7	44.0	
D021727	64.7	77.2	13.32	64.3	32.2	61.3	43.8	
D021657	64.0	74.3	13.81	65.1	31.2	61.0	43.7	
D021729	64.3	76.7	13.00	69.5	29.9	61.2	43.4	
Pierce	65.0	79.3	13.27	69.6	31.4	60.3	42.8	
D00752	67.0	78.7	13.56	70.4	29.9	60.0	42.8	
D00095	65.0	82.7	13.89	70.0	31.7	58.8	42.7	
DH01138	66.0	75.2	13.89	68.0	32.4	58.7	42.7	
D021435	64.0	77.3	13.29	66.5	31.7	60.2	42.7	
D021715	64.3	77.0	13.84	91.0	27.7	60.8	42.5	
D021737	65.7	78.0	13.48	80.6	30.6	61.7	42.5	
D01706	63.7	75.3	12.95	65.0	30.8	59.8	42.1	
D021742	64.0	72.8	13.25	77.8	28.1	61.7	41.8	
Divide	65.3	77.0	12.94	53.0	32.2	59.8	41.5	
DH01112	65.7	74.7	13.53	65.9	30.7	58.8	41.2	x
D021658	65.0	75.7	13.77	66.5	30.9	60.5	40.7	x
DH01146	65.3	73.3	15.10	71.7	29.2	57.8	39.9	x
D011238	65.7	78.5	14.12	66.1	32.0	58.7	39.8	x
D02995	65.7	74.2	14.00	71.6	29.8	59.7	39.7	x
DH01111	65.7	73.2	13.48	69.5	32.1	60.5	39.5	x
D021633	64.0	74.0	13.82	62.1	33.1	60.0	39.2	x
D01279	65.3	70.2	14.03	64.9	30.4	57.7	36.8	x
Average	64.7	75.0	13.52	68.0	31.0	60.1	42.9	
probability	<0.001	0.467	0.003	0.004	0.243	<0.001	<0.001	
CV (S/MEAN)	1.3	6.7	4.1	11.7	6.3	0.8	6.0	
CV (SE/MEAN)	0.7	3.9	2.4	6.7	3.6	0.5	3.5	
LSD (0.05)	1.3	8.2	0.90	13.0	3.2	0.8	4.2	

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

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Mountrail	37.1	56.8	60.7	40.6	45.7	48.2	100.0
Alkabo	38.8	52.7	57.9	42.5	46.4	47.7	98.9
Maier	38.7	54.3	58.2	42.5	44.0	47.5	98.7
Grenora	36.1	55.5	57.1	40.7	45.7	47.0	97.6
Divide	35.7	54.9	55.9	41.5	41.5	45.9	95.3
Pierce	39.5	53.1	54.8	38.3	42.8	45.7	94.9
Lebsock	40.6	53.6	45.6	41.1	47.6	45.7	94.9

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 Mountrail when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Lebsock	60.7	62.5	61.0	61.8	60.8	61.4	102.3
Alkabo	60.0	62.5	61.7	61.0	60.8	61.2	102.1
Pierce	60.2	62.0	61.8	61.3	60.3	61.1	101.9
Maier	59.8	63.0	61.3	61.2	59.7	61.0	101.7
Divide	58.7	62.5	60.8	60.2	59.8	60.4	100.7
Grenora	57.7	61.8	61.7	59.8	59.0	60.0	100.1
Mountrail	57.8	61.3	61.2	59.7	59.8	60.0	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 Mountrail when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Grenora	14.9	14.4	13.6	12.8	13.3	13.8	101.8
Maier	14.5	13.9	13.9	12.7	13.7	13.7	101.3
Pierce	14.4	14.8	13.7	12.5	13.3	13.7	101.3
Lebsock	14.0	14.4	14.5	11.9	13.4	13.6	100.6
Mountrail	14.9	14.2	13.4	12.2	13.1	13.6	100.0
Divide	14.8	14.4	13.8	11.8	12.9	13.5	99.9
Alkabo	14.6	14.5	12.5	12.7	12.9	13.4	99.1

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. Relative hard vitreous amber color of durum varieties as compared to Mountrail when grown in the Uniform Regional Durum trial under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	2004	2005	2006	Ave	as % of Mountrail
Maier	96	79	69	81.3	101.6
Grenora	94	77	72	81.0	101.2
Mountrail	93	78	69	80.0	100.0
Alkabo	96	79	61	78.7	98.4
Pierce	87	78	70	78.3	97.9
Lebsock	92	77	63	77.3	96.6
Divide	88	58	53	66.3	82.9

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

entry	heading, days from planting	height, cm	lodging index	percen t protein	hvac	color	test wt, lb/bu	yield, bu/ac	
Mountrail	53.7	93.7	0.0	11.52	68.0	19.2	61.8	92.4	
Grenora	51.7	90.0	0.0	11.92	69.0	19.6	61.0	91.1	
D01279	55.7	94.3	0.0	11.48	62.8	19.6	61.8	86.8	
D02021	52.3	101.3	0.7	11.89	72.4	18.1	62.2	84.8	
Divide	54.7	101.0	1.0	12.38	71.4	21.0	61.5	84.0	
D00095	54.7	98.7	0.3	11.84	68.8	18.0	61.8	83.9	
Pierce	52.7	96.0	0.3	11.81	70.9	20.4	62.2	83.4	x
D021435	53.0	100.0	2.0	12.19	76.4	18.3	61.8	83.2	x
D021633	53.3	93.7	0.7	12.05	67.7	19.0	62.2	82.6	x
D011238	55.3	97.7	0.3	12.35	77.4	19.1	61.8	82.1	x
D021667	55.0	92.3	0.3	12.02	66.7	18.0	62.2	82.1	x
D021110	52.3	99.0	0.3	12.07	71.8	18.3	62.0	81.1	x
DH01111	53.7	94.3	0.0	11.87	66.0	19.5	61.7	80.1	x
Alkabo	53.0	92.7	0.0	11.54	38.1	19.1	61.3	79.7	x
DH01146	54.3	91.7	0.0	11.63	63.2	19.6	61.5	78.4	x
D02995	54.3	92.7	0.7	12.24	75.5	18.9	62.3	78.2	x
D021658	54.0	97.7	1.3	12.28	73.7	18.2	62.3	78.1	x
D021636	53.3	88.0	0.0	12.09	71.1	19.3	62.5	77.6	x
D00752	55.7	99.7	0.3	11.51	67.4	18.7	62.7	77.6	x
DH01138	54.7	91.0	0.0	12.02	71.2	20.1	61.0	77.1	x
D021737	54.7	93.7	0.7	12.35	78.7	19.0	63.0	76.9	x
DH01112	54.0	95.7	0.0	11.58	60.2	20.2	61.3	76.7	x
D021724	53.3	88.3	0.0	12.08	69.5	21.0	62.2	76.0	x
D01706	52.0	88.7	0.0	11.74	75.6	19.6	62.0	75.6	x
D021715	52.0	93.7	0.3	12.55	72.2	18.6	61.7	75.1	x
D021657	53.7	89.7	0.0	12.08	69.2	20.0	62.2	74.8	x
Maier	53.0	92.0	0.0	11.88	66.5	19.6	61.8	74.6	x
D021729	54.3	101.0	1.0	12.06	60.1	18.1	62.0	74.3	x
Lebsock	52.0	87.0	0.0	11.50	59.2	19.9	62.0	74.1	x
DG013141	50.7	90.3	0.0	11.93	57.4	19.6	60.5	74.1	x
D021727	53.0	97.3	0.3	11.98	61.8	19.2	61.5	73.6	x
D021742	52.7	91.0	0.0	12.66	80.0	19.6	62.5	68.3	x
Average	53.5	94.2	0.3	11.97	68.1	19.3	61.9	79.3	
probability	<0.001	<0.001	<0.001	0.111	0.005	0.173	<0.001	<0.001	
CV (S/mean)	1.1	4.4	144.6	3.8	13.9	6.3	0.6	6.8	
CV (SE/mean)	0.6	2.6	83.5	2.2	8.0	3.7	0.3	3.9	
LSD (0.05)	0.9	6.8	0.8	0.73	15.4	2.0	0.6	8.7	

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

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Grenora	76.5	125.4	86.8	89.6	91.1	93.9	101.4
Mountrail	73.3	124.3	79.4	93.5	92.4	92.6	100.0
Alkabo	69.4	115.5	84.2	84.4	79.7	86.6	93.6
Maier	66.7	118.9	78.6	90.5	74.6	85.9	92.7
Divide	70.4	114.8	68.8	91.3	84.0	85.9	92.7
Pierce	71.6	116.1	65.5	88.1	83.4	84.9	91.7
Lebsock	66.3	110.8	68.4	85.8	74.1	81.1	87.6

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Pierce	64.0	64.3	63.2	62.5	62.2	63.2	100.8
Lebsock	63.5	64.3	63.5	62.7	62.0	63.2	100.7
Alkabo	63.0	64.8	63.8	62.5	61.3	63.1	100.5
Maier	63.3	64.0	63.8	62.3	61.8	63.0	100.4
Divide	63.3	63.8	62.8	62.7	61.5	62.8	100.1
Mountrail	63.2	63.7	62.8	62.3	61.8	62.8	100.0
Grenora	62.3	63.8	63.7	61.7	61.0	62.5	99.6

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Maier	12.3	14.2	13.0	14.0	11.9	13.1	103.8
Divide	11.1	14.2	13.5	13.4	12.4	12.9	102.5
Grenora	12.6	13.9	12.3	13.6	11.9	12.9	102.1
Pierce	11.4	14.0	12.8	13.4	11.8	12.7	100.6
Lebsock	11.5	13.7	13.2	13.4	11.5	12.7	100.5
Mountrail	11.6	13.6	13.0	13.3	11.5	12.6	100.0
Alkabo	11.9	13.0	11.5	13.2	11.5	12.2	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 14. Relative lodging indices of durum varieties compared to Mountrail when grown in the irrigated Uniform Regional Durum Trial at the EARC, Sidney, Montana.

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Mountrail
Divide	1.0	2.0	0.3	1.3	1.0	1.1	143.6
Pierce	1.0	3.0	0.0	0.7	0.3	1.0	128.2
Mountrail	1.3	1.3	0.0	1.3	0.0	0.8	100.0
Maier	0.3	2.0	0.0	1.0	0.0	0.7	84.6
Grenora	0.7	2.3	0.0	0.3	0.0	0.7	84.6
Lebsock	0.3	1.7	0.0	0.3	0.0	0.5	59.0
Alkabo	0.3	0.3	0.0	0.0	0.0	0.1	15.4

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 15. Relative hard vitreous amber color of durum varieties compared to Mountrail when grown in the irrigated Uniform Regional Durum Trial at the EARC, Sidney, Montana.

Cultivar	2004	2005	2006	Ave	as % of Mountrail
Maier	100	91	66	85.7	101.2
Divide	97	88	71	85.3	100.7
Grenora	98	89	69	85.3	100.7
Pierce	95	89	71	85.0	100.4
Mountrail	96	90	68	84.7	100.0
Lebsock	99	85	59	81.0	95.6
Alkabo	93	90	38	73.7	87.0

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

Entry	heading, days from planting	height, cm	percent protein	test wt, lb/bu	yield, bu/ac	
96AB8597	67.0	77.3	11.75	32.2	114.9	
Monico	64.3	83.0	13.13	32.8	114.0	
96AB8796	67.0	69.5	13.32	29.2	113.6	
Killdeer	61.0	76.7	12.29	32.7	112.9	
87AB5632	65.0	77.7	13.10	30.3	110.7	
94AB5818	60.7	67.7	13.44	32.0	110.5	
95A12770	66.3	74.0	12.75	31.5	110.5	
Monida	66.0	84.0	12.86	29.0	110.4	
92AB791	66.0	75.3	13.68	29.0	110.3	
99Ab1170	66.0	67.7	13.73	27.8	109.4	
OT382	66.7	89.2	13.12	31.7	109.2	
99A10971	65.7	69.3	13.12	31.0	108.8	
Otana	64.3	95.2	13.17	33.2	108.6	
02HO-209	66.7	79.2	14.73	29.2	108.6	
ND961161	64.3	77.7	12.41	34.8	108.1	
99A11259	65.0	70.0	13.85	32.5	108.0	
98AB6491	64.7	72.7	13.41	28.5	107.9	
99Ab1197	64.0	69.0	13.14	31.5	107.9	
CDC Pacer	64.3	89.7	12.59	32.5	106.4	
97Ab8620	67.7	72.2	13.53	29.0	106.3	
CDC Dancer	65.0	88.2	13.17	34.5	105.9	
99Ab1196	67.0	75.2	13.03	32.3	104.6	
94AB5943	64.3	72.7	13.61	32.7	104.2	
96AB8963	64.7	68.3	13.53	30.3	103.9	
95A10854	68.0	75.3	13.60	31.3	103.8	
98AB6646	66.3	74.0	12.16	31.7	103.5	
Maverick	64.7	68.7	13.97	29.0	102.4	
97Ab7767	67.0	67.5	14.25	27.3	101.8	x
Ajay	64.7	58.3	14.67	31.3	101.2	x
97AB8081	66.0	76.3	16.20	32.3	101.2	x
Beach	64.0	91.5	13.74	34.3	100.7	x
Cayuse	64.0	74.7	13.08	29.7	100.5	x
99A11136	69.0	73.3	13.57	26.0	98.5	x
Morton	64.7	90.3	14.03	32.8	98.2	x
99Ab1205	65.7	62.7	13.26	28.7	97.9	x
99Ab1179	68.3	74.7	12.88	28.3	97.5	x
99Ab1113	68.7	73.7	12.91	26.7	96.4	x
Powell	67.0	63.7	13.15	28.7	94.9	x
94AB5469	63.7	66.7	13.78	31.8	94.8	x
97Ab7761	68.0	71.0	13.64	28.0	93.5	x
TAMO-405	62.3	65.2	13.75	35.0	81.6	x
Stark	66.3	91.7	15.74	35.7	65.8	x
average	65.5	75.3	13.45	30.9	103.6	
probability	<0.001	<0.001	0.007	<0.001	<0.001	
CV (S/mean)	1.1	5.2	7.8	2.2	4.0	
LSD (0.05)	1.2	6.3	1.70	1.1	6.7	

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

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Otana
Monico	65.4	128.3	153.7	147.1	114.0	121.7	107.4
Killdeer	57.6	131.5	146.9	145.7	112.9	118.9	105.0
Maverick	69.5	122.2	146.9	143.8	102.4	117.0	103.2
Monida	52.3	124.3	147.7	139.7	110.4	114.9	101.4
OT382	38.2	136.2	152.5	134.1	109.2	114.0	100.7
Otana	61.7	125.9	135.6	134.6	108.6	113.3	100.0
CDC Dancer	49.7	127.2	142.5	138.7	105.9	112.8	99.6
Cayuse	62.5	123.6	140.1	131.8	100.5	111.7	98.6
CDC Pacer	44.7	123.9	148.4	122.5	106.4	109.2	96.4
Powell	52.0	118.9	146.7	--	94.9	103.1	95.5
Beach	--	--	--	--	100.7	100.7	92.7
Ajay	58.2	104.3	132.7	--	101.2	99.1	91.8
Morton	--	--	--	--	98.2	98.2	90.4
Stark	--	--	--	--	65.8	65.8	60.6

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Otana
Stark	--	--	--	--	35.7	35.7	107.5
Beach	--	--	--	--	34.3	34.3	103.3
CDC Dancer	32.7	37.5	36.2	38.3	34.5	35.8	102.2
Killdeer	32.8	38.3	36.0	36.8	32.7	35.3	100.7
Otana	31.5	36.8	37.0	36.8	33.2	35.1	100.0
Monico	31.3	37.0	35.7	38.2	32.8	35.0	99.8
CDC Pacer	32.2	36.7	36.5	35.8	32.5	34.7	99.1
Morton	--	--	--	--	32.8	32.8	98.8
OT382	31.0	37.7	35.8	36.5	31.7	34.5	98.5
Maverick	29.2	34.2	33.7	36.2	29.0	32.5	92.6
Ajay	27.5	35.3	33.5	--	31.3	31.9	92.1
Monida	29.7	32.8	33.5	34.8	29.0	32.0	91.2
Cayuse	27.7	34.2	32.5	35.3	29.7	31.9	90.9
Powell	28.5	33.7	32.0	--	28.7	30.7	88.7

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

Cultivar	2002	2003	2004	2005	2006	Ave	as % of Otana
Stark	--	--	--	--	15.7	15.7	118.9
Ajay	11.7	15.2	14.1	--	14.7	13.9	109.0
Morton	--	--	--	--	14.0	14.0	106.1
Beach	--	--	--	--	13.7	13.7	103.8
Cayuse	11.2	15.2	13.6	11.5	13.1	12.9	102.1
Monico	12.8	13.5	13.0	12.1	13.1	12.9	101.9
Maverick	11.8	13.8	12.8	11.8	14.0	12.8	101.4
Powell	10.4	14.9	12.8	--	13.2	12.8	100.4
Otana	11.2	13.9	12.8	12.2	13.2	12.7	100.0
OT382	12.9	13.0	13.0	11.2	13.1	12.6	99.8
Monida	10.2	14.8	12.8	12.2	12.9	12.6	99.4
CDC Pacer	11.3	14.1	12.5	11.9	12.6	12.5	98.6
Killdeer	12.0	13.9	12.2	11.5	12.3	12.4	97.8
CDC Dancer	10.6	13.7	12.4	11.6	13.2	12.3	97.2

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.