PROJECT TITLE: Evaluation of regional spring wheat, durum, and oat yield trials - 2007

PROJECT LEADER:
Joyce Eckhoff, MSU Eastern Ag Research Center, 1501 N Central Ave, Sidney, MT 59270
phone: (406)433-2208 e-mail: jeckhoff@sidney.ars.usda.gov

PROJECT PERSONNEL:
Dr. D. Garvin, University of Minnesota
Dr. G Hareland, North Dakota State University
Dr. E.M. Elias, North Dakota State University
Dr. D. Obert, USDA National Small Grain Facility, Aberdeen, Idaho

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: 2006 - fallow, 2005 – safflower, 2004 - small grain plots
Residual soil N to 3 ft: 85 lb N/ac
Residual soil P to 6 in: 35 ppm
Applied fertilizer: None
Herbicides: BroxM (1.5 pt/ac) applied May 30
Precipitation April – August, 2007: 9.80 inches
Ave (59 yr) precipitation April – August: 9.46 inches
Precipitation September 2006 – August 2007: 15.90 inches
Ave (59 yr) precipitation September – August: 13.87 inches
Comments:
Above average precipitation and cool temperatures in May with standing water in some plots. Hot and dry in July and August.

Irrigated site:
Soil type: Savage silty clay
Previous crops: 2006 – safflower, 2005 – sugarbeets, 2004 – barley
Residual soil N to 4 ft: 120 lb N/ac
Residual soil P to 6 in: 23 ppm
Applied fertilizer: none applied
Irrigated (sprinkler) on: June 28
Herbicides: BroxM (1 pt/ac) and Curtail (1.75 pt/ac) applied June 4
Precipitation April – August, 2007: 10.44 inches
Ave (59 yr) precipitation April – August: 9.46 inches
Precipitation September 2006 – August 2007: 15.90 inches
Ave (59 yr) precipitation September – August: 13.87 inches
Comments:
Above average precipitation and cool temperatures in May. Hail storm on June 16 damaged small grains, especially those early lines that were in the boot.

Nursery	Planting date	Harvest date
Uniform regional hard spring wheat trial	Apr 24	Aug 2
Uniform regional durum trial – dryland	Apr 24	Aug 2
Uniform regional durum trial – irrigated	May 1	Aug 8
Uniform regional oat trial	Apr 23	Jul 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-one experimental lines and varieties of spring wheat were tested under dryland conditions (Table 1). Two varieties yielded significantly less than the check variety, Keene. 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). Eighteen lines and varieties yielded significantly less than the check variety, Mountrail. 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). Seventeen lines and varieties yielded significantly less than the check variety, Mountrail. 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. Don Obert of the USDA-ARS National Small Grain Facility, Aberdeen, ID. Twenty-four experimental lines and varieties were tested (Table 16). Fifteen lines yielded significantly less than the check variety, Monaco. 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.

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*	height, cm	percent protein	test wt, lb/bu	yield, bu/ac	
SD3943	55.0	88.0	12.92	61.7	57.0	
06MSP18	61.3	74.0	13.49	61.0	57.0	
1S004210	55.7	69.0	14.08	62.3	56.3	
MT 0516	56.0	80.7	12.64	61.5	55.9	
MN02255	56.7	76.3	13.06	62.0	55.4	
MT 0415	59.7	86.7	15.71	61.0	54.6	
SD3948	54.3	88.7	12.62	62.2	53.1	
BZ903513	57.3	81.7	14.23	62.8	52.4	
ND043-21	54.3	80.3	13.40	62.3	52.4	
06MSP3	54.7	70.0	14.86	61.0	52.3	
MN033584	58.3	81.3	13.95	61.3	52.1	
S0211294	56.3	73.3	12.85	61.8	52.1	
CA905749	59.0	80.7	12.90	63.2	52.0	
SD3942	55.3	83.7	13.02	62.0	50.9	
WA008013	57.3	101.3	13.99	61.7	50.7	
BW873	57.0	94.0	13.47	60.8	50.5	
S029214	60.0	71.0	13.24	61.7	50.4	
NDSW0430	57.3	80.7	11.99	62.7	50.3	
ND051-1	56.0	87.3	13.50	61.3	49.9	
KEENE	59.7	96.0	14.35	61.5	49.6	
ND043-20	58.3	91.0	13.70	61.0	49.4	
VERDE	59.7	80.0	12.72	60.7	49.3	
SD3944	55.3	84.0	12.73	61.3	49.3	
CA905750	60.3	82.0	14.05	63.0	49.1	
NDSW0481	57.3	88.0	14.02	61.7	48.8	
CA905776	61.3	78.0	12.40	60.2	48.7	
ND051-2	56.3	96.0	13.00	61.8	48.3	
SD3956	54.0	84.0	13.57	62.7	47.8	
MN03196	58.3	77.0	13.29	63.0	47.7	
NDSW0601	60.3	80.7	13.85	60.8	47.4	
S02913	59.0	72.0	12.20	61.2	47.2	
MN031194	57.0	78.0	14.42	62.0	45.9	
ND051-3	58.3	77.0	13.34	60.8	45.8	
NDSW0449	60.3	87.0	12.62	61.7	45.6	
2375	57.3	81.7	12.61	61.0	45.4	
BW362	57.7	96.0	14.44	61.3	45.0	
BW357	57.7	95.0	13.48	62.5	44.9	
MN033084	58.7	82.7	14.03	61.3	43.9	
ES95	60.0	96.7	13.81	58.8	42.3	
Chris, 525-1	58.0	100.7	14.38	59.8	38.0	x
MARQUIS	60.7	101.3	13.88	60.2	36.6	x
Average	57.74	84.2	13.48	61.5	49.3	
Probability	1.4	5.2	6.3	0.7	11.8	
CV (S/MEAN)	0.8	3.0	3.6	0.4	6.8	
LSD (0.05)	1.3	7.2	1.38	0.7	9.4	

*days from planting

x indicates significantly lower yield than check variety, Keene, 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	2003	2004	2005	2006	2007	Ave	as % of Keene
MT0516	--	--	--	--	55.9	55.9	112.7
MT0415	--	--	--	52.3	54.6	53.5	104.0
Traverse	--	59.1	50.4	--	--	54.8	102.1
2375	56.3	66.6	45.2	51.1	45.4	52.9	100.1
Keene	54.4	62.5	44.7	53.2	49.6	52.9	100.0
Verde	53.2	57.8	47.4	54.0	49.3	52.3	99.0
Chris 525-1	41.8	44.1	34.6	41.5	38.0	40.0	75.6
Marquis	43.4	40.8	36.6	36.4	36.6	38.8	73.3

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	2003	2004	2005	2006	2007	Ave	as % of Keene
MT0415	--	--	--	60.7	61.0	60.9	100.3
Keene	62.7	62.0	62.0	59.8	61.5	61.6	100.0
MT0516	--	--	--	--	61.5	61.5	100.0
2375	61.3	61.7	62.0	60.0	61.0	61.2	99.4
Verde	61.7	61.0	62.0	59.5	60.7	61.0	99.0
Marquis	62.0	59.2	60.8	58.0	60.2	60.0	97.5
Chris 525-1	60.2	58.8	59.7	57.7	59.8	59.2	96.2
Traverse	--	59.0	60.0	--	--	59.5	96.0

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 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	2003	2004	2005	2006	2007	Ave	as % of Keene
MT0415	--	--	--	13.8	15.7	14.8	102.4
Keene	15.1	15.8	13.5	14.4	14.4	14.6	100.0
Chris 525-1	15.0	16.0	13.3	14.4	14.4	14.6	99.9
Marquis	15.3	16.3	12.8	13.3	13.9	14.3	97.8
Traverse	--	14.9	12.8	--	--	13.9	94.5
Verde	13.9	14.4	12.6	12.5	12.7	13.2	90.3
2375	13.6	14.6	12.3	12.3	12.6	13.1	89.3
MT0516	--	--	--	--	12.6	12.6	87.5

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*	height, cm	percent protein	HVAC	test wt, lb/bu	yield, bu/ac	
Grenora	60.0	78.7	12.52	76.2	62.0	52.3	
D03722	61.0	79.3	12.36	75.8	61.8	51.3	
Mountrail	61.0	80.7	12.62	73.4	61.0	51.1	
D03612	61.0	85.7	12.19	71.3	62.2	50.6	
Alkabo	59.7	81.0	11.97	62.9	62.3	50.1	
D03004	59.3	85.7	11.92	67.4	63.7	49.9	
D021724	60.7	85.0	12.54	71.7	62.0	49.2	
Divide	60.0	85.7	12.43	69.7	62.0	49.2	
D021667	62.3	86.7	12.5	72.9	62.0	48.6	
D00095	61.0	88.3	11.67	57.3	62.3	46.4	
D01279	62.0	79.3	12.1	62.7	61.5	46.0	
Pierce	60.3	78.7	12.38	71.3	62.5	45.9	
D00752	62.0	87.3	12.12	72.0	62.5	45.5	
D021737	60.7	83.0	12.29	66.0	62.2	45.5	
D03708	60.7	80.0	11.55	64.6	62.5	45.1	x
D031350	61.3	85.3	12.27	73.6	61.8	45.0	x
DH01138	61.0	79.3	11.99	66.2	61.3	44.9	x
Lebsock	60.3	74.3	12.02	64.1	63.0	44.9	x
D031606	59.3	77.0	12.3	74.7	62.8	44.5	x
D03089	60.7	78.7	12.03	74.8	62.0	43.5	x
D031671	59.7	76.7	11.62	56.1	62.7	42.9	x
D031527	60.7	75.7	12.62	69.0	62.0	42.6	x
D03707	60.0	87.7	12.92	83.2	62.2	42.5	x
D021110	60.0	82.3	12.25	70.8	62.5	42.2	x
D03710	60.0	83.7	12.62	75.6	61.8	42.0	x
DH01111	61.0	74.3	11.67	65.0	62.7	41.9	x
D031553	60.0	76.0	12.8	77.0	62.2	41.9	x
D031607	60.3	85.7	11.62	60.5	62.5	41.4	x
D03028	60.3	82.3	11.81	61.6	61.3	41.4	x
D021657	61.0	79.7	12.63	64.5	62.3	40.6	x
D021742	60.0	79.3	13.07	78.4	62.3	40.4	x
D021727	61.0	83.0	12.8	70.0	62.2	37.1	x
Average	60.6	81.4	12.26	69.4	62.2	45.2	
probability	0.012	0.420	0.048	0.369	<0.001	<0.001	
CV (S/MEAN)	1.5	8.4	4.5	15.1	0.7	7.6	
LSD (0.05)	1.5	11.2	0.90	17.1	0.8	5.6	

*days from planting
x indicates significantly lower yield than check variety, Mountrail, at probability <0.05

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

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Mountrail	56.8	60.7	40.6	45.7	51.1	51.0	100.0
Grenora	55.5	57.1	40.7	45.7	52.3	50.3	98.6
Alkabo	52.7	57.9	42.5	46.4	50.1	49.9	97.9
Divide	54.9	55.9	41.5	41.5	49.2	48.6	95.3
Pierce	53.1	54.8	38.3	42.8	45.9	47.0	92.2
Lebsock	53.6	45.6	41.1	47.6	44.9	46.6	91.3

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	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Lebsock	62.5	61.0	61.8	60.8	63.0	61.8	102.0
Alkabo	62.5	61.7	61.0	60.8	62.3	61.7	101.7
Pierce	62.0	61.8	61.3	60.3	62.5	61.6	101.6
Divide	62.5	60.8	60.2	59.8	62.0	61.1	100.8
Grenora	61.8	61.7	59.8	59.0	62.0	60.9	100.4
Mountrail	61.3	61.2	59.7	59.8	61.0	60.6	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	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Pierce	14.8	13.7	12.5	13.3	12.4	13.3	101.8
Grenora	14.4	13.6	12.8	13.3	12.5	13.3	101.7
Lebsock	14.4	14.5	11.9	13.4	12.0	13.2	101.1
Mountrail	14.2	13.4	12.2	13.1	12.6	13.1	100.0
Divide	14.4	13.8	11.8	12.9	12.4	13.1	99.7
Alkabo	14.5	12.5	12.7	12.9	12.0	12.9	98.6

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare 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	2007	Ave	as % of Mountrail
Grenora	94	77	72	76	79.8	101.9
Mountrail	93	78	69	73	78.3	100.0
Pierce	87	78	70	71	76.5	97.7
Alkabo	96	79	61	63	74.8	95.5
Lebsock	92	77	63	64	74.0	94.5
Divide	88	58	53	70	67.3	86.0

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare 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*	height, cm	lodging index	percent protein	hvac	test wt, lb/bu	yield, bu/ac	
Divide	58.0	84.7	0.0	15.22	86.4	59.0	45.6	
Alkabo	56.0	76.0	0.0	15.00	88.8	60.0	43.8	
D031671	56.0	79.3	0.0	15.12	82.4	59.5	43.8	
D01279	57.3	79.7	0.0	14.54	82.4	59.7	43.0	
Mountrail	56.7	76.3	0.0	14.54	83.7	58.8	42.5	
D00752	58.0	80.7	0.0	14.66	82.4	59.5	42.0	
D03089	58.0	88.0	0.0	14.90	91.4	59.2	41.5	
Grenora	55.0	75.0	0.0	14.66	88.5	59.5	40.5	
D00095	57.7	79.3	0.0	14.33	80.7	59.7	39.6	
D03004	55.3	78.0	0.0	13.89	72.9	61.0	37.6	
D021737	57.7	79.7	0.0	14.87	87.9	60.5	37.0	
DH01138	57.0	75.0	0.0	14.33	73.0	58.0	35.9	
D03612	57.0	78.3	0.0	13.47	61.3	59.7	35.9	
D031606	54.7	79.3	0.0	15.16	85.3	59.2	35.6	
D031607	55.3	78.7	0.0	15.52	88.6	59.0	35.4	
D021110	57.3	81.0	0.0	15.07	86.2	57.8	35.0	x
D03722	57.7	72.3	0.0	15.38	84.1	58.5	34.6	x
D03028	58.0	79.0	0.0	14.72	60.5	57.3	33.6	x
D031350	56.7	78.0	0.0	14.57	81.3	59.2	32.7	x
Pierce	56.7	79.7	0.0	15.11	83.7	58.8	31.4	x
D031527	57.0	77.3	0.0	15.04	76.2	59.0	31.4	x
DH01111	57.0	76.3	0.0	14.98	79.2	58.0	29.0	x
Lebsock	56.7	74.0	0.0	14.55	74.0	60.5	28.5	x
D03707	55.7	71.0	0.0	15.11	81.8	58.7	27.8	x
D021724	56.7	74.3	0.0	15.17	79.3	58.7	27.5	x
D021667	58.3	71.3	0.0	14.70	72.4	58.3	27.2	x
D021727	57.0	78.0	0.0	15.04	79.2	59.3	26.8	x
D03710	55.7	76.0	0.0	15.41	83.5	58.0	26.1	x
D031553	56.3	72.7	0.0	15.39	79.9	58.3	26.0	x
D021657	57.0	76.3	0.0	14.81	79.3	59.5	24.7	x
D03708	56.0	69.7	0.0	14.68	72.7	58.0	23.7	x
D021742	56.7	70.3	0.0	15.57	85.7	59.0	19.6	x
Average	56.8	77.0	0.0	14.86	80.5	59.0	33.9	
probability	<0.001	0.153		<0.001	0.002	<0.001	<0.001	
CV (S/mean)	1.4	7.7		3.1	10.1	0.9	13.3	
CV (SE/mean)	0.8	4.5		1.8	5.8	0.5	7.7	
LSD (0.05)	1.3	9.7		0.75	13.2	0.9	7.4	

*days from planting
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	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Grenora	125.4	86.8	89.6	91.1	40.5	86.7	100.3
Mountrail	124.3	79.4	93.5	92.4	42.5	86.4	100.0
Alkabo	115.5	84.2	84.4	79.7	43.8	81.5	94.3
Divide	114.8	68.8	91.3	84.0	45.6	80.9	93.6
Pierce	116.1	65.5	88.1	83.4	31.4	76.9	89.0
Lebsock	110.8	68.4	85.8	74.1	28.5	73.5	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. Hail damage in 2007.

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	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Lebsock	64.3	63.5	62.7	62.0	60.5	62.6	101.2
Alkabo	64.8	63.8	62.5	61.3	60.0	62.5	101.0
Pierce	64.3	63.2	62.5	62.2	58.8	62.2	100.5
Divide	63.8	62.8	62.7	61.5	59.0	62.0	100.1
Grenora	63.8	63.7	61.7	61.0	59.5	61.9	100.1
Mountrail	63.7	62.8	62.3	61.8	58.8	61.9	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 yields only to the check variety. Hail damage in 2007.

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	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Divide	14.2	13.5	13.4	12.4	15.2	13.7	104.2
Pierce	14.0	12.8	13.4	11.8	15.1	13.4	101.8
Grenora	13.9	12.3	13.6	11.9	14.7	13.3	100.8
Lebsock	13.7	13.2	13.4	11.5	14.6	13.3	100.8
Mountrail	13.6	13.0	13.3	11.5	14.5	13.2	100.0
Alkabo	13.0	11.5	13.2	11.5	15.0	12.8	97.4

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. Hail damage in 2007.

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	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Divide	2.0	0.3	1.3	1.0	0.0	0.9	176.9
Pierce	3.0	0.0	0.7	0.3	0.0	0.8	153.8
Mountrail	1.3	0.0	1.3	0.0	0.0	0.5	100.0
Grenora	2.3	0.0	0.3	0.0	0.0	0.5	100.0
Lebsock	1.7	0.0	0.3	0.0	0.0	0.4	76.9
Alkabo	0.3	0.0	0.0	0.0	0.0	0.1	11.5

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. Hail damage in 2007.

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	2007	Ave	as % of Mountrail
Grenora	98	89	69	88	86.0	101.8
Divide	97	88	71	86	85.5	101.2
Alkabo	93	90	38	89	85.5	101.2
Pierce	95	89	71	84	84.8	100.4
Mountrail	96	90	68	84	84.5	100.0
Lebsock	99	85	59	74	84.5	100.0

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. Hail damage in 2007.

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*	height, cm	percent protein	test wt, lb/bu	yield, bu/ac	
Cayuse	62.0	91.0	12.94	33.3	111.0	
Monico	62.0	88.7	12.43	35.5	109.8	
99Ab11963	62.7	86.0	12.32	36.7	107.1	
Maverick	61.0	82.0	12.70	32.7	105.0	
99Ab10971	61.7	80.7	12.58	35.7	95.7	
95Ab12770	63.0	78.3	12.47	35.2	94.5	
Ajay	61.7	66.7	14.58	33.0	94.5	
99Ab11974	60.3	75.3	13.06	35.3	94.0	
99Ab11703	63.3	76.3	11.71	32.2	93.9	
99Ab11798	66.3	75.7	12.43	33.5	92.7	x
02Ab5836	63.7	76.0	12.39	33.3	92.5	x
Kildeer	60.3	80.7	12.37	35.5	92.2	x
97Ab7767	65.7	79.7	13.32	29.8	90.6	x
99Ab11259	61.3	80.7	12.88	35.5	89.5	x
02HO-209	63.7	85.7	12.94	31.7	88.0	x
Powell	65.3	80.3	13.30	31.2	85.7	x
94Ab5818	60.3	74.0	12.73	33.7	84.3	x
94Ab5469	61.0	70.7	12.84	36.0	83.8	x
99Ab12057	64.0	63.3	13.07	33.7	82.6	x
99Ab11136	67.0	81.3	12.29	30.3	79.0	x
97Ab8620	65.3	74.0	12.68	33.8	78.5	x
96Ab8963	61.7	72.7	12.99	33.8	78.1	x
99Ab11136	67.3	78.0	11.62	30.8	76.6	x
97Ab7761	65.7	72.0	12.72	30.3	66.5	x
average	63.2	77.9	12.72	33.4	90.3	
probability	<0.001	<0.001	0.074	<0.001	<0.001	
CV (S/mean)	1.0	6.6	6.1	3.8	11.0	
LSD (0.05)	1.1	8.5	1.28	2.1	16.3	

* days from planting
x indicates significantly lower yield than check variety, Monaco, at a probability of 0.05

Table 17. Relative yields of oat varieties in bu/ac as compared to Monico when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Monico
Monico	128.3	153.7	147.1	114.0	109.8	130.6	100.0
Killdeer	131.5	146.9	145.7	112.9	92.2	125.8	96.4
Maverick	122.2	146.9	143.8	102.4	105.0	124.1	95.0
Cayuse	123.6	140.1	131.8	100.5	111.0	121.4	93.0
Powell	118.9	146.7	--	94.9	85.7	111.6	88.2
Ajay	104.3	132.7	--	101.2	94.5	108.2	85.5

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 in lb/bu as compared to Monico when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Monico
Killdeer	38.3	36.0	36.8	32.7	35.5	35.9	100.1
Monico	37.0	35.7	38.2	32.8	35.5	35.8	100.0
Ajay	35.3	33.5	--	31.3	33.0	33.3	94.4
Maverick	34.2	33.7	36.2	29.0	32.7	33.2	92.5
Cayuse	34.2	32.5	35.3	29.7	33.3	33.0	92.1
Powell	33.7	32.0	--	28.7	31.2	31.4	89.1

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 in percent as compared to Monico when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Monico
Ajay	15.2	14.1	--	14.7	14.6	14.7	112.7
Powell	14.9	12.8	--	13.2	13.3	13.6	104.2
Cayuse	15.2	13.6	11.5	13.1	12.9	13.3	103.4
Maverick	13.8	12.8	11.8	14.0	12.7	13.0	101.6
Monico	13.5	13.0	12.1	13.1	12.4	12.8	100.0
Killdeer	13.9	12.2	11.5	12.3	12.4	12.5	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.