

PROJECT TITLE: Evaluation of regional spring wheat, durum, and oat yield trials - 2000

PROJECT LEADER:

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PROJECT PERSONNEL:

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Dr. E.M. Elias, North Dakota State University
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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:

SOIL TYPE: Williams loam
PREVIOUS CROPS: 1999 - fallow, 1998 - safflower. 1997 - small grain plots
RESIDUAL SOIL N TO 3 FT: 85 lb/ac,
RESIDUAL SOIL P TO 6 IN: 24 ppm
RESIDUAL SOIL K TO 6 IN: 225 ppm
APPLIED FERTILIZER: none
HERBICIDES: 2 pt/ac Bronate applied 22 May 2000
PLOT SIZE: 40 ft², rows 10 feet long and four rows wide, with one foot between rows.
PRECIPITATION APR-AUG, 2000: 10.49, AVE (52 yr) PRECIPITATION APR-AUG: 9.46
PRECIPITATION OCT 99 – SEP 00: 13.93, AVE (52 yr) PRECIPITATION OCT-SEP: 13.82

Irrigated:

SOIL TYPE: Savage silty clay
PREVIOUS CROPS: 1999 - sugarbeets, 1998 - foundation durum, 1997 - safflower plots
RESIDUAL SOIL N TO 4 FT: 30 lb/ac, 50 lb/ac assumed for sugarbeet tops
RESIDUAL SOIL P TO 6 IN: 21 ppm
RESIDUAL SOIL K TO 6 IN: 230 ppm
APPLIED FERTILIZER: 400 lb/ac 18-46-0 and 50 N/ac as liquid 28-0-0 applied 8 October 1999
IRRIGATED (FLOOD) ON: 13 June, three inches applied
HERBICIDES: 2 pt/ac Bronate applied 22 May 2000
PRECIPITATION APR-AUG, 2000: 8.52, AVE (52 yr) PRECIPITATION APR-AUG: 9.46
PRECIPITATION SEP 99 – AUG 00: 11.18, AVE (52 yr) PRECIPITATION SEP-AUG: 13.82

Planting and harvest dates in 2000 were:

<u>Nursery</u>	<u>Planting date</u>	<u>Harvest date</u>
Uniform Regional Hard Red Spring Wheat Trial	11 April	2 August
Uniform Regional Durum Trial – dryland	11 April	7 August
Uniform Regional Durum Trial – irrigated	18 April	4 August
Uniform Regional Oat Trial	6 April	31 July

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-four experimental lines and varieties of spring wheat were tested under dryland conditions (Table 1). Experimental lines ID560, T98379, and MN97803 yielded significantly more than the check variety, Chris. Average yield was 55.1 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-three experimental lines and varieties were tested under dryland fallow conditions (Table 5). Plaza had the highest yield, although there were no significant differences in yield detected. Average yield was 51.0 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-three experimental lines and varieties were tested under irrigated conditions (Table 9). Ten lines and varieties yielded significantly more than the check variety Renville. Average yield was 93.8 bu/acre. Five-year summaries for yield, test weight, and protein of durum varieties grown under irrigation are shown in Tables 10 through 12.

Uniform Regional Oat trial: The Uniform Regional Oat trial is conducted in cooperation with Dr. D. M. Wesenberg of the USDA-ARS National Small Grain Facility, Aberdeen, ID. Thirty-two experimental lines and varieties were tested (Table 13). Two lines, 87AB5632 and SA97388 yielded significantly more than the check variety, Otana. Average yield was 138.5 bu/acre. Five-year summaries for yield, test weight, and protein are shown in Tables 14 through 16.

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.

Planting date: 11 April 2000 Harvest date: 2 August 2000

Variety	Days to heading ¹	Height, inches	Protein content	Test wt, lb/bu	Yield bu/acre ²
ID560	64	29	10.4	61.7	64.4 a
T98379	68	28	11.0	62.3	60.8 a
MN97803	61	32	12.8	63.7	60.8 a
MN97448	61	29	11.6	63.7	60.2
Verde	65	29	12.1	62.2	59.5
ND709-9	62	32	14.2	63.3	59.5
SD3496	58	31	12.5	63.0	59.2
SD3506	62	33	13.2	63.5	58.9
SD3348	59	30	12.5	62.0	58.7
N960144	62	26	12.7	62.5	58.5
S9819160	62	34	11.9	63.2	57.3
Keene	63	34	13.9	62.5	57.1
SLW97606	66	30	14.8	64.7	56.9
SD3367	59	30	13.4	62.8	56.3
WA7859	62	34	13.4	62.5	55.7
ND726	60	32	12.6	65.0	55.5
WA7839	61	28	12.4	63.0	55.1
ND729	63	34	13.4	63.7	55.1
SD3522	62	32	12.4	62.7	55.0
BW259	61	34	13.5	62.8	54.6
T98311	64	31	11.6	62.2	54.2
BW270	63	36	14.1	62.5	53.5
ND721	62	32	13.4	63.0	52.8
Chris-525	64	36	12.9	62.7	52.7
PN2375	61	30	12.1	62.8	52.6
FA998743	62	31	11.7	63.7	52.4
N962444	63	35	13.4	63.0	51.2
MN95229	61	28	12.2	63.5	51.1
S9819122	62	33	12.3	64.0	51.0
N970090	63	24	13.7	63.5	50.8
N990010	60	28	12.5	63.3	49.8
MN97073	61	26	11.9	63.0	48.7
ND724	64	33	13.8	62.2	46.7
Marquis	67	37	13.1	62.5	45.5
mean	62	31	12.8	63.0	55.1
CV (S/mean)	0.9	3.6	4.5	0.6	8.5
LDS _{0.05}	0.9	1.9	0.9	0.6	7.6

Check variety is Chris with an average yield of 52.7 bu/acre.

¹ Heading date is number of days from planting

² a indicates significantly greater yield than check variety, Chris, 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 yield trial at EARC, Sidney Montana.

Cultivar	1996	1997	1998	1999	2000	Ave	as % of Chris
McVey	50.2	53.0	60.7	--	--	54.6	138.3
Reeder	46.6	49.3	64.9	--	--	53.6	135.7
N96-0144	--	--	--	79.0	58.5	68.8	123.2
Norpro	--	41.2	63.5	--	--	52.4	122.5
ID560	--	--	--	--	64.4	64.4	122.2
Scholar	36.5	48.8	--	--	--	42.7	121.9
Parshall	44.6	44.9	54.2	--	--	47.9	121.3
Keene	--	--	62.8	69.4	57.1	63.1	118.2
Verde	--	--	58.8	69.6	59.5	62.6	117.4
2375	--	--	62.8	68.4	52.6	61.3	114.8
ND726	--	--	--	68.2	55.5	61.9	110.8
ND721	--	--	--	70	52.8	61.4	110.0
ND709-9	--	--	--	59.0	59.5	59.3	106.2
ND729	--	--	--	--	55.1	55.1	104.6
ND724	--	--	--	69.0	46.7	57.9	103.7
Chris 525-1	33.0	37.0	48.5	58.9	52.7	46.0	100.0
Zeke	--	31.6	53.7	--	--	42.7	99.8
N96-2444	--	--	--	--	51.2	51.2	97.2
N97-0090	--	--	--	--	50.8	50.8	96.4
N99-0010	--	--	--	--	49.8	49.8	94.5
Marquis	30.9	31.6	44.0	51.7	45.5	40.7	88.5

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 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 yield trial at EARC, Sidney Montana.

Cultivar	1996	1997	1998	1999	2000	Ave	as % of Chris
ND726	--	--	--	63.7	65.0	64.4	103.9
Parshall	63.2	61.0	61.2	--	--	61.8	103.5
Norpro	--	60.0	61.0	--	--	60.5	102.9
Reeder	63.2	60.8	60.2	--	--	61.4	102.8
Scholar	62.2	61.0	--	--	--	61.6	102.3
Keene	--	--	61.3	62.7	62.5	62.2	102.1
ND729	--	--	--	--	63.7	63.7	101.6
2375	--	--	60.7	61.8	62.8	61.8	101.4
ND721	--	--	--	62.5	63.0	62.8	101.3
N97-0090	--	--	--	--	63.5	63.5	101.3
N99-0010	--	--	--	--	63.3	63.3	101.0
N96-0144	--	--	--	62.0	62.5	62.3	100.5
ND709-9	--	--	--	61.2	63.3	62.3	100.5
N96-2444	--	--	--	--	63.0	63.0	100.5
Marquis	61.5	59.9	58.0	61.3	62.5	60.6	100.0
Chris 525-1	61.6	58.8	58.8	61.2	62.7	60.6	100.0
Zeke	--	58.7	58.7	--	--	58.7	99.8
Verde	--	--	59.2	60.8	62.2	60.7	99.7
ND724	--	--	--	61.0	62.2	61.6	99.4
ID560	--	--	--	--	61.7	61.7	98.4
McVey	60.0	57.5	56.3	--	--	57.9	97.0

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 Chris when grown under dryland fallow conditions in the Uniform Regional Hard Red Spring Wheat yield trial at EARC, Sidney Montana.

Cultivar	1996	1997	1998	1999	2000	Ave	as % of Chris
ND724	--	--	--	14.2	13.8	14.0	106.9
N97-0090	--	--	--	--	13.7	13.7	106.2
ND729	--	--	--	--	13.4	13.4	103.9
N96-2444	--	--	--	--	13.4	13.4	103.9
ND709-9	--	--	--	13.0	14.2	13.6	103.8
Parshall	13.3	15.7	16.3	--	--	15.1	101.1
Chris 525-1	13.3	16.0	15.5	13.3	12.9	14.2	100.0
Keene	--	--	15.0	12.7	13.9	13.9	99.8
Zeke	--	16.5	14.9	--	--	15.7	99.7
ND726	--	--	--	13.3	12.6	13.0	98.9
Marquis	13.0	15.4	15.4	13.0	13.1	14.0	98.5
Norpro	--	15.7	15.2	--	--	15.5	98.1
ND721	--	--	--	12.3	13.4	12.9	98.1
N99-0010	--	--	--	--	12.5	12.5	96.9
Reeder	12.3	14.7	15.3	--	--	14.1	94.4
Scholar	12.8	14.8	--	--	--	13.8	94.2
N96-0144	--	--	--	11.7	12.7	12.2	93.1
2375	--	--	14.6	11.8	12.1	12.8	92.3
Verde	--	--	14.3	11.8	12.1	12.7	91.6
McVey	10.8	13.2	13.6	--	--	12.5	83.9
ID560	--	--	--	--	10.4	10.4	80.6

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.

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.

Planting date: 11 April 2000 Harvest date: 7 August 2000

Variety	Days to heading ¹	Height, inches	Protein content	Test wt, lb/bu	Yield bu/acre
Plaza	66	28	12.3	62.7	56.7
D96604	65	30	12.5	62.3	55.0
D95595	66	31	12.9	62.7	53.8
D95081	64	30	12.8	61.7	53.7
D96596	64	30	13.1	62.0	53.5
D95672	63	32	13.3	63.3	53.1
D941033	64	30	12.8	61.8	53.1
Belzer	66	33	13.1	61.5	53.0
D941038	63	30	12.8	63.0	52.8
D95747	63	29	13.1	62.5	52.8
Maier	65	30	13.2	62.5	52.7
D95077	63	29	12.6	62.0	52.5
AC Avonlea	63	31	13.3	61.8	52.3
Munich	63	30	13.6	61.8	52.2
D95097	62	29	12.9	61.3	52.2
AC Navigator	66	27	13.0	62.7	52.0
D95123	64	32	13.0	63.3	51.5
Renville	60	31	13.4	61.2	51.5
Ben	64	33	13.2	62.8	50.9
Mountrail	65	30	12.4	62.2	50.8
D95066	64	28	12.7	62.5	50.7
D941261	66	29	13.3	62.5	50.5
D941030	64	32	13.7	61.8	49.3
D95061	68	27	12.6	63.8	49.1
Rugby	63	33	13.6	62.8	48.5
D941515	62	27	13.6	62.0	48.3
Lebsock	65	30	13.5	63.3	48.3
D96005	62	29	13.3	62.8	47.6
D95517	62	28	13.8	62.0	47.1
D96622	64	32	13.1	62.0	47.0
AC Pathfinder	62	30	13.1	62.2	46.9
D95565	65	29	12.8	63.0	46.9
D96612	64	26	12.9	62.5	45.0
Mean	64	30	13.1	62.4	51.0
CV (S/mean)	1.3	6.2	4.1	0.5	7.8
LDS _{0.05}	1.4	3.0	0.9	0.5	ns

Check variety is Renville with an average yield of 51.5 bu/acre.

¹ Heading date is number of days from planting

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

Cultivar	1996	1997 ¹	1997 ²	1998	1999	2000	Ave	as % of Renville
Mountrail	40.2	36.2	--	61.2	77.9	50.8	53.3	109.5
Plaza	39.6	39.9	--	59.3	65.4	56.7	52.2	107.3
AC Avonlea	--	--	--	--	69.3	52.3	60.8	106.2
Maier	41.1	37.9	--	59.6	61.6	52.7	50.6	104.0
Belzer	35.7	36.9	--	57.4	65.2	53.0	49.6	102.1
AC Navigator	--	--	--	--	--	52.0	52.0	101.0
Ben	39.5	40.6	34.7	54.0	59.7	50.9	46.6	100.6
Renville	37.0	32.5	34.7	59.1	63.0	51.5	46.3	100.0
Lebsock	38.2	35.1	--	58.1	59.4	48.3	47.8	98.4
Munich	39.2	33.8	30.3	54.9	59.1	52.2	44.9	97.0
Rugby	36.0	31.0	--	56.1	55.2	48.5	45.4	93.3
AC Pathfinder	--	--	--	--	--	46.9	46.9	91.1

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.

¹Uniform regional durum trial

²Commercial dryland durum trial

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

Cultivar	1996	1997 ¹	1997 ²	1998	1999	2000	Ave	as % of Renville
AC Navigator	--	--	--	--	--	62.7	62.7	102.5
Lebsock	64.2	61.2	--	61.2	63.3	63.3	62.6	102.2
Rugby	63.3	62.3	--	60.5	62.8	62.8	62.3	101.7
AC Pathfinder	--	--	--	--	--	62.2	62.2	101.6
Ben	62.8	60.9	62.2	60.2	62.8	62.8	62.0	101.3
Maier	63.6	60.2	--	61.0	61.8	62.5	61.8	100.8
Plaza	62.4	59.8	--	60.0	62.0	62.7	61.4	100.1
Renville	62.3	61.4	60.6	59.8	61.8	61.2	61.2	100.0
AC Avonlea	--	--	--	--	61.2	61.8	61.5	100.0
Mountrail	62.3	60.0	--	59.7	61.7	62.2	61.2	99.8
Munich	61.9	61.2	60.6	58.7	61.0	61.8	60.9	99.5
Belzer	61.1	57.8	--	58.7	59.8	61.5	59.8	97.5

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.

¹Uniform regional durum trial

²Commercial dryland durum trial

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

Cultivar	1996	1997 ¹	1997 ²	1998	1999	2000	Ave	as % of Renville
AC Avonlea	--	--	--	--	12.4	13.3	12.9	103.2
Munich	12.2	15.1	15.2	15.0	12.7	13.6	14.0	101.9
Rugby	12.2	15.4	--	14.2	12.8	13.6	13.6	101.8
Renville	12.4	15.4	15.2	14.3	11.5	13.4	13.7	100.0
Maier	11.4	15.3	--	14.7	12.1	13.2	13.3	99.6
Ben	12.7	14.5	14.6	14.5	12.2	13.2	13.6	99.4
Belzer	12.4	14.2	--	14.5	11.9	13.1	13.2	98.7
AC Pathfinder	--	--	--	--	--	13.1	13.1	97.8
Lebsock	11.6	14.4	--	14.0	11.6	13.5	13.0	97.2
AC Navigator	--	--	--	--	--	13.0	13.0	97.0
Mountrail	11.4	14.5	--	14.3	12.3	12.4	13.0	96.9
Plaza	10.8	14.0	--	14.0	10.9	12.3	12.4	92.5

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

¹Uniform regional durum trial

²Commercial dryland durum trial

Table 9. Agronomic data obtained from a Uniform Regional durum yield trial grown under irrigated conditions at the Eastern Agricultural Research Center, Sidney, MT.
 Planting date: 18 April 2000 Harvest date: 4 August 2000

Variety	Days to heading ¹	Lodging index	Height, inches	Protein content	Test wt, lb/bu	Yield bu/acre ²
D95123	56	0.0	36	13.3	64.2	103.8 a
Mountrail	55	0.0	35	11.8	63.0	103.2 a
D96622	55	0.0	37	11.6	62.2	102.6 a
AC Navigator	59	0.0	34	12.8	62.3	98.4 a
D96596	56	0.0	38	13.4	62.2	96.9 a
D95565	57	0.0	38	11.7	63.2	96.3 a
Ben	56	0.0	39	13.0	63.3	96.2 a
Munich	55	0.0	34	12.7	62.5	95.7 a
D941033	54	0.0	36	12.1	62.5	95.6 a
D95077	55	0.0	36	12.3	63.3	95.4 a
AC Avonlea	54	0.0	37	12.9	62.3	94.9
Plaza	58	0.0	31	11.4	62.8	94.6
Lebsock	56	0.0	36	12.5	64.0	94.5
AC Pathfinder	54	0.0	37	12.6	62.0	94.3
D941038	56	0.0	37	12.2	63.2	94.3
D95066	55	0.0	34	12.1	62.2	94.1
D941261	57	0.0	37	13.2	62.8	94.0
Maier	56	0.0	36	12.8	62.8	93.9
D95672	55	0.0	39	12.2	64.5	93.5
D95097	54	0.0	34	13.0	61.7	93.4
D96604	55	0.0	36	11.9	63.2	92.9
Belzer	57	0.0	39	12.1	62.0	92.5
D95747	56	0.0	36	12.1	63.0	92.4
D95517	54	0.0	35	13.2	63.0	92.3
D96005	54	0.0	36	12.5	63.0	92.1
D941030	55	0.0	38	13.0	62.3	91.4
D95595	58	0.0	38	12.8	63.3	90.8
D95081	55	0.0	34	11.8	62.2	90.3
D96612	55	0.0	35	12.3	62.3	89.5
D95061	60	0.0	33	11.8	63.2	88.9
Renville	51	0.0	36	13.4	62.7	85.9
Rugby	54	0.0	40	13.4	63.0	85.3
D941515	54	0.0	35	12.8	62.7	83.6
mean	56	0.0	36	12.5	62.8	93.8
CV (S/mean)	1.2	--	3.7	3.9	0.7	6.1
LDS _{0.05}	1.1	--	2.2	0.8	0.7	9.4

Check variety is Renville with an average yield of 85.9 bu/acre.

¹ Heading date is number of days from planting

² a indicates significantly greater yield than check variety, Renville, 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	1998	1999	2000	Ave	as % of Renville
AC Navigator	--	--	98.4	98.4	114.6
Mountrail	65.9	85.9	103.2	85.0	112.0
AC Pathfinder	--	--	94.3	94.3	109.8
Plaza	63.5	88.5	94.6	82.2	108.3
Maier	63.4	89.4	93.9	82.2	108.3
Munich	64.6	83.7	95.7	81.3	107.1
Lebsock	63.5	83.8	94.5	80.6	106.2
Ben	65.0	79.5	96.2	80.2	105.7
Renville	60.8	80.9	85.9	75.9	100.0
Belzer	64.8	70.4	92.5	75.9	100.0
AC Avonlea	--	70.1	94.9	82.5	98.9
Rugby	64.4	72.4	85.3	74.0	97.5

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 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	1998	1999	2000	Ave	as % of Renville
Lebsock	62.5	61.7	64.0	62.7	101.5
Ben	62.5	61.5	63.3	62.4	101.0
Mountrail	62.2	60.7	63.0	62.0	100.3
Plaza	62.8	60.5	62.8	62.0	100.3
Renville	62.0	60.8	62.7	61.8	100.0
Maier	61.8	60.8	62.8	61.8	100.0
Rugby	62.7	59.2	63.0	61.6	99.7
Munich	61.2	60.5	62.5	61.4	99.4
AC Navigator	--	--	62.3	62.3	99.4
AC Pathfinder	--	--	62.0	62.0	98.9
AC Avonlea	--	58.5	62.3	60.4	97.8
Belzer	61.3	57.7	62.0	60.3	97.6

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 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	1998	1999	2000	Ave	as % of Renville
Rugby	13.2	14.1	13.4	13.6	101.5
AC Avonlea	--	14.6	12.9	13.8	101.1
Renville	13.0	13.8	13.4	13.4	100.0
Ben	13.2	13.6	13.0	13.3	99.3
Maier	13.5	13.6	12.8	13.3	99.3
Munich	13.3	13.4	12.7	13.1	97.8
Belzer	12.7	14.1	12.1	13.0	97.0
Lebsock	12.7	13.8	12.5	13.0	97.0
Mountrail	13.4	13.3	11.8	12.8	95.5
AC Navigator	--	--	12.8	12.8	95.5
AC Pathfinder	--	--	12.6	12.6	94.0
Plaza	13.2	12.7	11.4	12.4	92.5

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

Table 13. Agronomic data obtained from a dryland Uniform Regional oat yield trial grown under dryland fallow conditions at the Eastern Agricultural Research Center, Sidney, MT.
 Planting date: 6 April 2000 Harvest date: 31 July 2000

Variety	Days to heading ¹	Height, inches	Protein content	Test wt, lb/bu	Yield bu/acre ²	
87AB5632	68	30	10.4	39.5	171.8	a
SA97388	65	33	11.2	39.5	156.6	a
ABSP19-9	70	28	10.4	38.8	155.2	
CDC Pacer	67	33	10.4	39.8	155.1	
Whitestone	69	30	11.3	39.7	153.1	
Monida	70	31	9.9	38.3	152.2	
ABSP9-2	66	28	10.7	40.5	152.2	
ND930122	66	30	10.0	39.2	152.2	
Celcia	70	31	10.1	38.7	151.3	
90AB1322	67	25	11.5	39.0	149.7	
95AB10854	72	28	11.2	41.2	149.1	
94AB5543	70	28	11.3	40.3	148.7	
Cayuse	66	29	11.0	36.7	148.6	
91AB406	67	25	11.2	37.2	147.6	
Derby	67	35	10.0	40.3	146.9	
Otana	68	35	11.7	39.3	143.5	
Powell	69	25	10.3	36.8	143.5	
87AB5125	69	26	10.0	39.7	142.0	
95AB12584	64	29	10.7	38.7	140.7	
91AB502	64	25	10.6	38.5	140.7	
87AB4983	64	25	10.7	39.0	139.5	
89AB4088	65	27	12.7	40.5	138.6	
84AB825	71	26	10.2	37.7	138.3	
90AB1620	69	27	10.3	39.8	137.8	
Rio Grande	65	25	11.9	37.8	134.0	
Ajay	68	23	11.9	38.0	126.8	x
AC Belmont*	69	30	10.6	38.8	112.5	x
95AB11633*	70	27	14.6	40.5	107.3	x
Lamont*	71	28	12.3	44.2	107.0	x
Paul*	69	35	13.7	46.5	104.9	x
Provena*	70	27	12.3	48.5	97.4	x
96AB8902*	72	18	13.7	46.2	87.8	x
mean	68	28	11.2	40.0	138.5	
CV (S/mean)	0.4	4.6	6.6	1.7	5.4	
LDS _{0.05}	1.0	2.1	1.2	1.1	12.2	

Check variety is Otana with an average yield of 143.5 bu/acre.

*hulless varieties

¹ Heading date is number of days from planting

² a indicates significantly greater yield than check variety, Renville, at a probability of <0.05

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

Table 14. Relative yields of oat varieties as compared to Otana when grown under dryland fallow conditions at the EARC, Sidney, Montana.

Cultivar	1996	1997	1998	1999	2000	Ave	as % of Otana
Monida	84.2	120.7	151.2	178.0	152.2	137.3	108.4
ABSP9-2	81.8	134.4	146.6	168.0	152.2	136.6	107.8
Whitestone	--	--	--	174.1	153.1	163.6	107.8
ABSP 19-9	--	124.8	147.2	176.0	155.2	150.8	107.7
ND930122	--	--	--	169.6	152.2	160.9	106.0
Celsia	76.1	131.0	138.1	161.0	151.3	131.5	103.8
Cayuse	79.1	115.9	148.0	161.4	148.6	130.6	103.1
Derby	82.6	127.8	134.3	158.7	146.9	130.1	102.7
Powell	81.3	127.5	136.8	159.1	143.5	129.6	102.3
CDC Pacer	--	118.6	134.9	155.3	155.1	141.0	100.7
Otana	73.4	108.9	147.6	160.0	143.5	126.7	100.0
Rio Grande	76.4	101.7	140.7	164.7	134.0	123.5	97.5
Ajay	74.8	119.4	136.5	143.0	126.8	120.1	94.8
Lamont*	70.6	--	--	103.1	107.0	93.6	74.5
Belmont	--	--	--	104.2	112.5	108.4	71.4
Provena*	61.9	--	--	94.4	97.4	84.6	67.3
Paul*	50.0	--	--	82.5	104.9	79.1	63.0

*hulless

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

Cultivar	1996	1997	1998	1999	2000	Ave	as % of Otana
Provena*	43.7	--	--	42.3	48.5	44.8	117.2
Paul*	43.8	--	--	42.0	46.5	44.1	115.2
Lamont*	41.5	--	--	39.0	44.2	41.6	108.6
Whitestone	--	--	--	38.7	39.7	39.2	100.4
Otana	36.7	34.8	33.3	38.8	39.3	36.6	100.0
ABSP9-2	34.4	35.0	33.5	39.5	40.5	36.6	100.0
ABSP 19-9	--	34.2	33.2	39.0	38.8	36.3	99.3
ND930122	--	--	--	38.0	39.2	38.6	98.8
Belmont	--	--	--	37.5	38.8	38.2	97.7
Derby	34.9	33.0	31.5	38.5	40.3	35.6	97.4
CDC Pacer	--	33.7	31.7	36.5	39.8	35.4	96.9
Monida	35.4	33.2	29.3	37.7	38.3	34.8	95.1
Ajay	33.8	33.0	31.5	36.3	38.0	34.5	94.4
Rio Grande	31.8	32.0	32.7	38.0	37.8	34.5	94.2
Celsia	32.7	32.3	29.7	37.8	38.7	34.2	93.6
Powell	30.4	32.0	29.5	36.7	36.8	33.1	90.4
Cayuse	29.6	30.8	30.5	36.7	36.7	32.9	89.8

*hulless

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

Cultivar	1996	1997	1998	1999	2000	Ave	as % of Otana
Paul*	15.8	--	--	9.4	13.7	13.0	123.9
Provena*	14.3	--	--	11.5	12.3	12.7	121.3
Lamont*	13.7	--	--	10.7	12.3	12.2	116.9
Ajay	10.5	14.0	12.2	11.6	11.9	12.0	105.8
Rio Grande	10.2	13.8	12.2	11.0	11.9	11.8	103.9
Otana	9.3	13.7	11.8	10.4	11.7	11.4	100.0
Cayuse	9.7	13.0	11.7	10.8	11.0	11.2	98.8
Whitestone	--	--	--	10.5	11.3	10.9	98.6
Powell	9.3	13.6	11.8	10.8	10.3	11.2	98.1
Belmont	--	--	--	11.0	10.6	10.8	97.7
ND930122	--	--	--	11.3	10.0	10.7	96.4
ABSP9-2	9.6	12.6	12.0	9.6	10.7	10.9	95.8
ABSP 19-9	--	13.7	11.5	9.6	10.4	11.3	95.0
Monida	9.0	13.1	11.8	10.2	9.9	10.8	94.9
CDC Pacer	--	13.0	11.4	10.1	10.4	11.2	94.3
Celsia	9.2	12.5	11.0	10.0	10.1	10.6	92.8
Derby	9.0	12.8	11.3	9.6	10.0	10.5	92.6

*hulless

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.