PROJECT TITLE: Evaluation of regional spring wheat, winter wheat, durum, and oat yield trials.

PROJECT LEADERS: Joyce L.A. Eckhoff
Jerald W. Bergman
Eastern Agricultural Research Center
Sidney, MT 59270

PROJECT PERSONNEL: Dr. R.H. Busch, University of Minnesota
Dr. C.J. Peterson, University of Nebraska
Dr. E.M. Elias, North Dakota State University
Dr. D.M. Wesenberg, USDA National Small Grain Facility

OBJECTIVE:

To evaluate new and introduced lines and cultivars of spring wheat, winter wheat, durum, and oats developed by other Universities, the USDA/ARS, and private seed companies, to determine adaptability of those lines and varieties to conditions in eastern Montana.

RESULTS:

Uniform Regional Hard Red Spring Wheat Yield Trial

The Uniform Regional Hard Red Spring Wheat yield trial is conducted in cooperation with Dr. R.H. Busch of the University of Minnesota, St. Paul. Planting date at Sidney was 12 April, and harvest date was 3 September. Thirty-two varieties and experimental lines were evaluated in the 1993 regional spring wheat yield trial (Table 1). The highest yielding line, with a yield of 64 bu/acre, was Montana line MT 8849, which will be released soon under the name of McNeal. Average yield of the nursery was 51.0 bu/acre. Relative yields, test weights, and protein contents of varieties grown in this trial are shown in Tables 2 through 4.

Northern Regional Winter Wheat Yield Trial

The Northern Regional Winter Wheat yield trial is conducted in cooperation with Dr. C.J. Peterson of the University of Nebraska, Lincoln. Thirty-two varieties and experimental lines were evaluated in 1992-93 (Table 5). Planting date was 14 September 1992, and harvest date was 9 August 1993. The highest yielding line was a hybrid winter wheat from Hybritech, XNH-1687, with a yield of 45.9 bu/acre. Average grain yield of the nursery was 39.4 bu/acre. Relative yields, test weights, and protein contents are shown in Tables 6 through 8.

Uniform Regional Durum Yield Trial

The Uniform Regional Durum yield trial is conducted in cooperation with Dr. E.M. Elias of North Dakota State University, Fargo. Thirty-two varieties and experimental lines were evaluated in 1993 (Table 9). The highest yielding line was North Dakota line D8460, with a yield of 48.8 bu/acre. Average yield was 37.7 bu/acre. Relative yields, test weights, and protein contents are shown in Tables 10 through 12.

Uniform Regional Oat Yield Trial

The Uniform Regional Oat yield trial is conducted in cooperation with Dr. D.M. Wesenberg of the USDA/ARS National Small Grain Facility, Aberdeen, ID. Thirty varieties and experimental lines were evaluated (Table 13.) The highest yielding line was Idaho line 86AB664, with a yield of 110.1 bu/acre. Average yield was 90.2 bu/acre. Relative yields, test weights, and protein contents are shown in Tables 14 through 16.

SUMMARY:

The regional yield trials were conducted under dryland conditions at the Eastern Agricultural Research Center in Sidney. The experimental site was fallow in 1992. Soil moisture at planting was adequate for germination and emergence, but conditions were dry until the beginning of June, which probably reduced yields somewhat. Above average rainfall occurred in June, July, and August, with unusually cool temperatures during this time, resulting in the development of leaf diseases.

FUTURE PLANS:

New and existing varieties and experimental lines will continue to be evaluated at the Eastern Agricultural Research Center so that breeders can release improved varieties and producers can have information on the varieties that are best adapted to conditions in this area.

Table 1 Agronomic data obtained from a dryland uniform regional hard red spring wheat nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: April 12, 1993 Date Harvested: September 3, 1993 Plot Size: 40 Sq. Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre	
MT 8849	72	32	0.0	14.0	58.2	64.4	aa
MN 90114	71	31	0.0	13.4	58.3	64.1	aa
N90-0671	72	30	0.0	13.0	56.5	61.6	aa
XW398A4	74	32	0.0	14.0	56.8	59.9	aa
SD 5	75	34	0.0	13.0	58.2	58.3	aa
SBE0444	70	34	0.0	13.4	57.0	58.1	aa
SBE0437	71	34	0.0	13.1	57.8	57.5	aa
N86-0348	72	36	0.0	13.6	57.2	56.3	aa
SD 8070	69	37	5.4	14.0	58.0	56.1	aa
MN 89103	72	33	0.0	13.2	56.7	55.8	aa
N90-0666	71	34	0.0	14.3	57.2	55.6	aa
N90-0700	69	31	0.0	13.4	55.2	55.4	aa
ND 678	71	39	10.0	14.4	59.2	53.8	a
MN 90071	70	34	0.0	13.7	57.3	53.3	a
SD 8073	71	36	7.8	13.8	56.2	52.6	a
Era	74	34	0.0	13.0	56.7	51.9	
SD 10	70	32	0.0	13.6	55.5	51.7	
ND 671	69	38	6.1	14.7	58.5	51.4	
ND 674	71	37	0.0	15.1	59.2	51.0	
ND 673	71	39	7.4	13.8	58.8	50.8	
8601AE3C	78	40	8.9	13.7	59.3	50.4	
SD 8072	69	37	11.1	13.6	56.8	49.2	
Butte 86	70	36	6.5	13.2	56.5	47.5	
ND 677	71	37	5.0	14.7	57.2	46.2	
MN 90253	69	32	5.9	13.1	56.2	45.9	
Stoa	71	39	5.9	14.8	56.7	45.3	
BZ984334	69	32	0.0	14.3	55.3	44.3	
BZ988351	70	29	0.0	14.7	53.8	44.2	
BW 152	71	38	14.8	14.3	55.7	38.5	
Chris, 525-1	72	38	15.9	14.2	56.7	34.2	xx
N88-3140	74	38	6.5	15.8	54.8	33.7	xx
Marquis	77	41	9.2	13.0	57.3	32.8	xx

(Continued)

Table 1 (Continued) Agronomic data obtained from a dryland uniform regional hard red spring wheat nursery at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: April 12, 1993 Date Harvested: September 3, 1993 Plot Size: 40 S.q Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre
Mean	72	35	4.0	13.9	57.0	51.0
F-Value	20.00	4.77	7.82	3.28	13.85	10.41
SE of the mean	0.50	1.42	1.72	0.38	0.36	2.54
LSD (0.05)	1.42	4.00	4.88	1.08	1.01	7.19
LSD (0.01)						9.87
CV (SE/Mean)	0.29	4.03	43.66	2.75	0.62	4.98
CV (s/Mean)	0.50	6.98	75.62	4.76	1.08	8.63

1/ 4 row plots, rows 10 ft. long and 1.0 ft. apart. At harvest the entire plot was taken for yield, test weight and protein determinations.

2/ Heading date is the number of days from planting date.

Stoa is the check variety with an average yield of 45.3 Bu/Acre.

aa Indicates a significantly greater yield than check Stoa at the 0.01 level of significance.
a Indicates a significantly greater yield than check Stoa at the 0.05 level of significance.
xx Indicates a significantly lower yield than check Stoa at the 0.01 level of significance.

Previous crop: Summer fallow Soil type: Williams Loam

Residual soil N: 109 lbs/acre to four ft. Residual soil P: 28 lbs/acre to six inches

Insecticide: None Fertilizer: None

Herbicide: 1.5 pts/a Bronate was applied on May 26, 1993.

Precipitation for average crop year = 13.78 inches. Precipitation for 1993 crop year = 16.75 in. Crop year considered to be from October 1, 1992 through September 30, 1993.

Precipitation for April 1 - August 31 period during 1993 = 13.47 inches. Average precipitation for same period = 9.49 inches.

Table 2. Relative yielding abilities of spring wheat varieties as compared to Stoa when grown in the dryland Uniform Regional hard red spring wheat trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Stoa
MT 8849	2	--	--	--	79.0	64.4	71.7	125.5
Dalen	2	23.0	41.2	--	--	--	32.1	105.6
Era	5	19.4	39.3	35.8	77.4	51.9	44.8	105.2
ND 677	1	--	--	--	--	46.2	46.2	102.0
Stoa	5	19.9	40.9	37.7	69.0	45.3	42.6	100.0
Butte 86	5	19.7	38.0	40.5	65.3	47.5	42.2	99.2
Chris	4	18.9	33.8	33.0	--	34.2	30.0	83.4
Marquis	5	14.2	30.5	24.0	72.1	32.8	34.7	81.6

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, Stoa.

Table 3. Relative test weights of uniform regional spring wheat varieties as compared to Stoa when grown in the dryland Uniform Regional hard red spring wheat trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Stoa
MT 8849	2	--	--	--	62.7	58.2	60.4	101.7
ND 677	1	--	--	--	--	57.2	57.2	100.9
Dalen	2	56.9	57.5	--	--	--	57.2	100.7
Butte 86	5	57.1	57.0	60.5	62.8	56.5	58.8	100.6
Marquis	5	55.4	59.4	58.8	62.5	57.3	58.7	100.4
Stoa	5	56.6	57.0	59.7	62.2	56.7	58.4	100.0
Era	5	56.0	56.0	57.7	62.5	56.7	57.8	98.9
Chris	4	55.5	56.0	59.3	--	56.7	56.9	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, Stoa.

Table 4. Relative protein contents of uniform regional spring wheat varieties as compared to Stoa when grown in the dryland Uniform Regional hard red spring wheat trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1988-1992 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Stoa
Dalen	2	18.0	17.3	--	--	--	17.6	101.1
Chris	4	18.2	17.3	17.1	--	14.2	16.7	100.8
Stoa	5	18.2	16.7	16.6	15.4	14.8	16.3	100.0
ND 677	1	--	--	--	--	14.7	14.5	99.3
Marquis	5	18.7	16.6	16.4	15.5	13.0	16.0	98.2
Butte 86	5	17.9	16.7	16.3	16.1	13.2	16.0	98.2
MT 8849	2	--	--	--	15.0	14.0	14.5	96.0
Era	5	18.3	16.3	16.0	14.0	13.0	15.5	95.0

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

Table 5 Agronomic data obtained from a dryland northern regional winter wheat nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: September 14, 1992 Date Harvested: August 9, 1993 Plot Size: 40 Sq. Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Percent Winter Survival	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre
XNH 1687	162	35	92.5	3.3	9.5	61.9	45.9
XNH 1650	163	35	80.0	4.9	9.2	60.1	45.3
ND 8889	163	38	95.3	9.4	9.0	60.7	45.1
ND 90109	163	35	99.5	5.3	9.6	60.9	45.0
XNH 1643	162	33	88.3	4.9	8.5	61.6	44.6
MT 8719	165	34	94.3	9.7	10.5	60.5	44.1
NE 88595	158	32	94.8	1.4	9.8	62.5	43.8
MT 8713	163	30	97.5	0.0	9.3	61.9	43.3
ND 8955	163	36	98.3	10.1	8.8	60.6	43.3
W-198	168	37	100.0	19.3	9.2	60.1	42.3
NE 87615	159	28	75.0	2.1	12.5	61.1	42.3
XNH 1648	162	34	76.3	2.5	8.6	60.0	42.2
SD 89204	162	32	76.3	17.2	9.9	60.2	42.0
XNH 1712	162	32	82.0	1.0	9.0	60.7	41.9
ND 8930	167	40	98.5	5.8	10.1	59.7	41.3
Abilene	159	29	80.0	0.0	11.4	63.1	40.7
SD 87143	159	34	96.0	2.1	10.3	62.3	40.7
NE 89657	161	34	91.8	4.3	10.8	60.8	40.3
SD 89102	164	37	98.8	15.8	10.2	61.3	39.2
W-235	166	40	87.0	27.8	9.6	59.1	39.0
ND 89142	165	39	94.8	7.4	9.0	60.9	38.8

(Continued)

Table 5 (Continued) Agronomic data obtained from a dryland northern regional winter wheat nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: September 14, 1992 Date Harvested: August 9, 1993 Plot Size: 40 Sq. Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Percent Winter Survival	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre
NE 90625	162	33	94.5	2.5	9.9	61.3	38.6
NE 89522	159	32	84.3	6.8	9.7	61.1	37.7
Roughrider	164	38	99.3	18.1	9.8	62.0	37.4
SD 89333	157	35	95.5	11.9	9.5	62.9	37.0
SD 88231	158	34	85.0	8.8	10.2	61.9	36.6
SD 89119	160	33	72.5	9.7	10.3	61.2	36.4
ND 8933	165	38	99.0	11.6	9.6	60.3	35.6
NE 88526	161	34	95.0	4.2	11.6	61.3	35.4
SD 88201	163	34	90.5	9.6	10.3	62.5	35.4
NE 89526	160	33	95.0	2.5	11.7	60.8	34.3
NE 88588	160	34	96.5	6.3	10.1	62.3	34.2
Kharkof	164	41	94.5	38.5	10.1	61.6	31.8
Tomahawk	159	27	38.8	11.3	11.8	60.3	29.0
ID 0426	169	30	20.8	0.0	11.0	53.9	27.3
Mean	162	34	87.4	8.5	10.0	60.9	39.4
F-Value	22.70	14.65	11.17	4.10	6.91	13.21	1.33
SE of the mean	0.61	0.85	4.96	4.04	0.36	0.42	4.02
LSD (0.05)	1.70	2.39	13.92	11.34	1.01	1.19	11.28
CV (SE/Mean)	0.37	2.50	5.68	47.81	3.59	0.70	10.21
CV (s/Mean)	0.75	5.00	11.36	95.61	7.18	1.39	21.43

(Continued)

Table 5 (Continued) Agronomic data obtained from a dryland northern regional winter wheat nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

1/ 4 row plots, rows 10 ft. long and 1.0 ft. apart. At harvest the two center rows were taken for yield, test weight, and protein determinations.

2/ Heading date is the number of days from January 1st.

Roughrider is the check variety with an average yield of 37.4 Bu/Acre.

Previous crop: Summer fallow Soil type: Williams Loam

Residual soil N: 109 lbs/acre to four ft. Residual soil P: 28 lbs/acre to six inches

Insecticide: None Fertilizer: None

Herbicide: 1.5 pts/a Bronate was applied May 20, 1993.

Precipitation for average crop year = 13.78 inches. Precipitation for 1993 crop year = 16.75 in. Crop year considered to be from October 1, 1992 through September 30, 1993.

Precipitation for April 1 - August 31 period during 1993 = 13.47 inches. Average precipitation for same period = 9.49 inches.

Table 6. Relative yielding abilities of winter wheat varieties as compared to Roughrider when grown in the dryland Northern Regional Winter Wheat trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1988-1993 period.

Cultivar	# of Years	1988	1990	1991	1992	1993	Ave	as % of Roughrider
Abilene	2	11.4	--	--	--	40.7	26.0	109.7
MT 8713	2	--	--	--	89.3	43.3	66.3	106.2
MT 8719	2	--	--	--	83.0	44.1	63.6	101.8
Roughrider	5	10.1	39.0	43.0	87.5	37.4	43.4	100.0
Colt	3	10.7	43.6	--	75.0	--	43.1	94.7
Kharkof	4	9.9	40.0	28.9	--	31.8	26.4	81.9
Tomahawk	1	--	--	--	--	29.0	29.0	77.5

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, Roughrider.
NOTE: Winter wheat was not harvested in 1989 due to severe winter kill.

Table 7. Relative test weights of winter wheat varieties as compared to Roughrider when grown in the dryland Northern Regional Winter Wheat trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1988-1993 period.

Cultivar	# of Years	1988	1990	1991	1992	1993	Ave	as % of Roughrider
Abilene	2	59.6	--	--	--	63.1	61.4	104.4
Kharkof	4	57.8	58.0	61.5	--	61.6	59.7	101.4
Colt	3	57.7	58.0	--	63.4	--	59.7	101.4
MT 8713	2	--	--	--	64.0	61.8	62.9	100.5
Roughrider	5	55.5	58.0	60.2	63.2	62.0	59.8	100.0
MT 8719	2	--	--	--	63.5	60.5	62.0	99.0
Tomahawk	1	--	--	--	--	60.3	60.3	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 test weights only to the check variety. Roughrider.
NOTE: Winter wheat was not harvested in 1989 due to severe winter kill.

Table 8. Relative protein contents of winter wheat varieties as compared to Roughrider when grown in the dryland Northern Regional Winter Wheat trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1988-1993 period.

Cultivar	# of Years	1988	1990	1991	1992	1993	Ave	as % of Roughrider
Tomahawk	1	--	--	--	--	11.8	11.8	120.4
MT 8719	2	--	--	--	12.4	10.5	11.5	104.1
Abilene	2	14.8	--	--	--	11.4	13.1	101.9
Roughrider	5	15.9	15.4	14.1	12.2	9.8	13.5	100.0
Kharkof	4	15.2	15.1	13.9	--	10.1	13.6	98.4
MT 8713	2	--	--	--	12.1	9.2	10.6	96.8
Colt	3	14.4	14.4	--	11.9	--	13.6	93.6

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, Roughrider.
NOTE: Winter wheat was not harvested in 1989 due to severe winter kill.

Table 9 Agronomic data obtained from a dryland uniform regional durum nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: April 13, 1993 Date Harvested: September 7, 1993 Plot Size: 40 Sq. Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre	
D8460	69	32	3.7	14.3	57.2	48.8	
D88303	70	28	0.0	14.4	58.2	48.1	
D87130	70	35	6.5	13.9	58.7	46.8	
D89111	72	34	3.1	13.9	58.3	42.0	
Sceptre	71	33	6.7	13.4	56.2	41.7	
D89331	72	37	11.1	13.1	58.8	41.6	
D89172	71	31	0.0	13.3	58.0	41.5	
Ward	68	36	13.4	14.5	57.8	41.3	
D89235	73	35	2.2	12.8	57.7	40.9	
D89008	70	33	1.3	13.4	57.2	40.8	
D88273	70	33	3.9	14.0	57.7	40.0	
D87122	70	32	11.3	13.8	57.8	39.7	
D89-476	70	36	11.3	13.6	57.0	39.2	
D87450	70	29	0.0	13.5	55.2	38.8	
D89135	70	32	7.8	13.5	57.8	38.5	
D89-346	69	31	1.3	13.5	57.9	38.4	
Rugby	69	35	8.3	13.3	57.7	38.4	
D89424	71	28	0.0	12.9	54.7	37.2	
D89263	70	32	1.9	14.0	58.2	37.2	
Renville	71	38	11.6	13.1	57.5	36.4	
D87240	71	33	13.2	14.3	54.2	35.8	
D88450	71	29	0.0	14.2	56.1	35.0	
D88289	70	31	9.4	14.5	57.2	34.8	
Stoa	74	38	9.3	14.6	57.2	34.7	
D89538	69	28	0.0	13.5	54.1	34.0	
D88793	70	35	8.5	14.5	57.0	32.2	x
Vic	71	34	6.5	13.7	57.1	31.8	x
Medora	69	34	13.0	13.8	56.9	31.7	x
Lloyd	71	26	0.0	13.9	53.7	30.9	x
Monroe	68	33	15.0	13.4	56.4	30.6	x
Mindum	74	44	77.8	13.7	58.2	30.1	xx
D87436	69	26	2.2	13.9	54.1	28.7	xx

(Continued)

Table 9 (Continued) Agronomic data obtained from a dryland uniform regional durum nursery at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: April 13, 1993 Date Harvested: September 7, 1993 Plot Size: 40 S.q Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre
Mean	71	33	8.1	13.7	56.9	37.7
F-Value	11.92	12.77	52.32	1.13	15.66	3.26
SE of the mean	0.42	1.04	1.88	0.46	0.36	2.83
LSD (0.05)	1.17	2.93	5.33	1.30	1.02	7.99
LSD (0.01)						11.00
CV (SE/Mean)	0.59	3.15	23.16	3.33	0.64	7.49
CV (s/Mean)	1.02	5.46	40.12	5.77	1.10	12.98

1/ 4 row plots, rows 10 ft. long and 1.0 ft. apart. At harvest the entire plot was taken for yield, test weight and protein determinations.

2/ Heading date is the number of days from planting date.

Ward is the check variety with an average yield of 41.3 Bu/Acre.

x Indicates a significantly lower yield than check Ward at the 0.05 level of significance.
xx Indicates a significantly lower yield than check Ward at the 0.01 level of significance.

Previous crop: Summer fallow Soil type: Williams Loam

Residual soil N: 109 lbs/acre to four ft. Residual soil P: 28 lbs/acre to six inches

Insecticide: None Fertilizer: None

Herbicide: 1.5 pts/a Bronate was applied on May 26, 1993.

Precipitation for average crop year = 13.78 inches. Precipitation for 1993 crop year = 16.75 in. Crop year considered to be from October 1, 1992 through September 30, 1993.

Precipitation for April 1 - August 31 period during 1993 = 13.47 inches. Average precipitation for same period = 9.49 inches.

Table 10. Relative yielding abilities of durum varieties as compared to Ward when grown in the dryland Uniform Regional durum yield trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Ward
Renville	5	22.2	36.6	41.6	69.0	36.4	41.2	110.8
Sceptre	5	18.2	34.5	44.6	63.7	41.7	40.5	109.2
Lloyd	5	18.5	36.9	37.7	64.0	30.9	37.6	101.2
Medora	5	14.1	36.0	39.0	65.9	31.7	37.3	100.5
Ward	5	18.5	34.8	38.7	52.5	41.2	37.1	100.0
Rugby	5	19.4	33.0	36.9	55.8	38.4	36.7	98.8
Vic	5	18.9	33.1	32.7	63.1	31.8	35.9	96.7
Monroe	5	18.2	33.9	35.3	55.5	30.6	34.7	93.4
Mindum	5	15.3	31.1	35.0	55.7	30.1	33.4	90.0

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, Ward.

Table 11. Relative test weights of uniform regional durum varieties as compared to Ward when grown in the dryland Uniform Regional durum yield trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Ward
Mindum	5	58.7	62.4	58.9	64.5	58.2	60.5	101.4
Vic	5	59.5	60.0	59.6	62.8	57.1	59.8	100.2
Ward	5	58.3	60.0	59.5	62.8	57.8	59.7	100.0
Rugby	5	58.4	60.0	59.6	62.8	57.7	59.7	100.0
Renville	5	58.2	59.5	60.4	62.8	57.5	59.7	100.0
Medora	5	56.9	60.5	59.9	63.2	56.9	59.5	99.7
Sceptre	5	57.4	59.0	59.6	62.5	56.2	58.9	98.8
Monroe	5	56.9	59.0	58.1	62.5	56.4	58.6	98.2
Lloyd	5	56.9	60.0	57.5	62.0	53.7	58.0	97.2

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, Ward.

Table 12. Relative protein contents of uniform regional durum varieties as compared to Ward when grown in the dryland Uniform Regional durum yield trial at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Ward
Medora	5	20.6	19.0	17.9	15.8	13.8	17.4	101.8
Ward	5	19.0	18.1	17.2	16.8	14.5	17.1	100.0
Monroe	5	19.7	17.2	17.5	16.8	13.4	16.9	98.8
Renville	5	19.1	17.7	17.9	16.0	13.1	16.8	97.9
Rugby	5	18.6	17.8	17.5	16.1	13.3	16.7	97.3
Mindum	5	19.3	17.8	17.6	14.9	13.7	16.7	97.3
Vic	5	18.7	17.4	17.2	15.9	13.7	16.6	96.8
Sceptre	5	19.6	18.3	16.2	14.9	13.4	16.5	96.3
Lloyd	5	19.1	16.4	17.8	14.2	13.9	16.3	95.1

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

Table 13 Agronomic data obtained from a dryland uniform regional spring oat nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: April 12, 1993 Date Harvested: August 11, 1993 Plot Size: 40 Sq. Ft.[1/]

Variety	Average Days to Heading[2/]	Average Height Inches	Lodging Index	Average Protein Content %	Average Test Wt. Lbs/Bu	Average Yield Bu/Acre
86AB664	72	38	5.6	10.6	36.2	110.1 a
Rio Grande	70	35	5.9	10.4	36.0	102.1
Ajay	72	30	0.0	12.3	36.8	101.7
Monida	74	39	13.9	10.8	37.0	100.9
82AB248	76	36	0.9	9.8	34.5	99.8
Border	76	38	2.6	11.4	35.5	99.5
Calibre	74	42	11.3	11.5	35.7	97.0
83AB3250	77	36	1.9	10.4	32.8	96.7
IAH613-3	68	39	4.7	11.1	36.7	96.4
87AB5772	69	31	0.9	10.6	37.3	95.3
82AB1178	71	32	0.0	11.2	35.7	94.7
ND860416	74	37	9.7	11.1	34.5	93.6
89AB6153	67	32	0.0	11.7	37.3	92.2
Cayuse	71	38	9.7	11.4	33.5	91.1
Valley	72	37	1.3	11.6	37.6	91.0
Derby	71	42	12.2	11.1	37.2	90.9
83AB3119	75	34	0.0	10.9	34.5	90.6
Ogle	69	33	9.3	10.6	37.2	89.6
Appaloosa	75	38	8.0	10.6	34.5	89.0
Otana	73	42	9.1	11.9	38.3	88.9
84AB825	74	36	3.2	11.1	35.2	88.4
ND852107	71	41	9.1	11.5	35.7	86.9
Newdak	68	35	2.2	11.4	35.8	86.6
86AB1867	67	33	1.9	11.2	36.0	86.3
87AB5125	75	37	0.9	10.8	35.7	83.2
Riel	71	40	4.1	11.7	37.0	79.9
Park	70	41	13.9	11.9	34.7	76.5
88AB3073	74	35	0.9	11.0	44.1	73.9
Robert	74	40	0.9	11.0	36.1	69.3 x
86AB1616	75	40	5.0	11.2	38.3	65.3 x
Mean	72	37	5.0	11.1	36.2	90.2
F-Value	39.54	15.96	4.27	2.30	4.28	2.10
SE of the mean	0.44	0.84	2.18	0.35	0.96	6.85
LSD (0.05)	1.24	2.39	6.18	0.98	2.72	19.40
LSD (0.01)						25.77
CV (SE/Mean)	0.25	2.29	43.91	3.12	2.65	7.60
CV (s/Mean)	0.43	3.96	76.06	5.40	4.59	13.16

(Continued)

Table 13 (Continued) Agronomic data obtained from a dryland uniform regional spring oat nursery conducted at the Eastern Agricultural Research Center, Sidney, Montana, 1993.

Date Seeded: April 12, 1993 Date Harvested: August 11, 1993 Plot Size: 40 Sq. Ft. 1/

1/ 4 row plots, rows 10 ft. long and 1 ft. apart. At harvest the two center rows were taken for yield, test weight and protein determinations.

2/ Heading date is the number of days from planting date.

Otana is the check variety with an average yield of 88.9 Bu/Acre.

a Indicates a significantly greater yield than check Otana at the 0.05 level of significance.
x Indicates a significantly lower yield than check Otana at the 0.05 level of significance.

Previous crop: Summer fallow

Soil type: Williams Loam

Residual soil N: 66 lbs/acre to 3 ft.

Residual soil P: 31 lbs/acre to 6 inches.

Insecticide: None

Fertilizer: None

Herbicide: 1.5 pts/a Bronate was applied on May 26, 1993.

Precipitation for average crop year = 13.78 inches. Precipitation for 1993 crop year = 16.75 in. Crop year considered to be from October 1, 1992 through September 30, 1993.

Precipitation for April 1 - August 31 period during 1993 = 13.47 inches. Average precipitation for same period = 9.49 inches.

Table 14. Relative yielding abilities of oat varieties in the Uniform Regional Oat yield trial as compared to Otana when grown under dryland conditions at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Otana
Border	5	29.6	79.6	98.7	182.2	99.5	97.9	104.4
Rio Grande	5	43.6	80.4	89.7	169.9	102.0	97.1	103.6
Monida	5	29.5	77.5	90.2	187.0	100.8	97.0	103.4
Derby	2	--	--	--	195.6	90.9	143.2	103.2
Ajay	5	31.8	77.7	97.4	170.4	101.7	95.8	102.2
Newdak	3	--	--	94.7	186.2	86.6	122.5	101.8
Otana	5	32.4	75.5	83.4	188.7	88.9	93.8	100.0
Cayuse	5	38.0	81.7	91.6	166.3	91.1	93.7	99.9
Ogle	5	42.4	77.0	93.7	162.3	89.6	93.0	99.2
Appaloosa	5	34.4	73.3	88.1	177.9	89.0	92.5	98.7
Calibre	5	18.0	64.9	74.0	199.5	97.0	90.7	96.7
Valley	5	29.7	71.6	84.7	164.3	91.0	88.3	94.1
Park	5	26.9	69.6	85.1	175.7	76.5	86.8	92.5
Riel	5	30.4	72.3	78.9	169.6	79.9	86.2	91.9
Robert	5	27.7	62.1	81.4	176.1	69.3	83.3	88.8

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, Otana.

Table 15. Relative test weights of oat varieties in the Uniform Regional Oat yield trial as compared to Otana when grown under dryland conditions at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Otana
Riel	5	30.5	39.5	38.7	37.7	37.0	36.7	101.3
Derby	2	--	--	--	39.7	37.2	38.4	100.4
Valley	5	31.2	37.3	37.0	38.2	37.6	36.3	100.2
Otana	5	30.5	38.1	35.8	38.3	38.3	36.2	100.0
Ogle	5	32.0	34.2	37.2	36.3	37.2	35.4	97.7
Ajay	5	31.0	34.1	36.6	37.3	36.8	35.2	97.1
Newdak	3	--	--	37.2	35.7	35.8	36.2	96.7
Rio Grande	5	30.5	34.5	36.0	37.3	36.0	34.9	96.3
Robert	5	28.3	36.4	36.8	36.7	36.1	34.9	96.3
Monida	5	29.5	35.8	32.5	38.3	37.0	34.6	95.6
Calibre	5	23.2	39.3	34.3	38.7	35.7	34.2	94.6
Park	5	27.0	36.9	34.5	36.0	34.7	33.8	93.4
Border	5	27.5	31.7	32.7	36.5	35.5	32.8	90.6
Cayuse	5	27.5	31.9	31.6	36.2	33.5	32.1	88.8
Appaloosa	5	27.5	31.8	29.9	36.0	34.5	31.9	88.2

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, Otana.

Table 16. Relative protein contents of oat varieties in the Uniform Regional Oat yield trial as compared to Otana when grown under dryland conditions at the Eastern Agricultural Research Center, Sidney, Montana, during the 1989-1993 period.

Cultivar	# of Years	1989	1990	1991	1992	1993	Ave	as % of Otana
Ajay	5	15.6	15.0	14.4	11.9	12.3	13.8	102.1
Park	5	15.3	14.7	14.0	12.3	11.9	13.6	100.6
Valley	5	15.1	15.1	14.1	12.1	11.6	13.6	100.3
Riel	5	15.8	14.6	14.0	11.9	11.7	13.6	100.3
Otana	5	15.8	14.2	13.8	12.1	11.9	13.6	100.0
Border	5	14.9	14.8	13.4	11.9	11.4	13.3	97.9
Robert	5	15.1	14.0	14.3	11.9	11.0	13.3	97.8
Rio Grande	5	15.9	13.9	14.1	11.1	10.4	13.1	96.5
Cayuse	5	15.1	14.0	14.0	10.9	11.4	13.1	96.5
Ogle	5	15.6	13.8	13.4	11.9	10.6	13.1	96.3
Newdak	3	--	--	13.3	11.7	11.4	12.1	96.3
Appaloosa	5	15.4	14.2	13.6	11.4	10.6	13.0	96.2
Derby	2	--	--	--	11.9	11.1	11.5	95.8
Calibre	5	14.1	14.4	13.6	11.1	11.5	12.9	95.4
Monida	5	14.8	13.4	12.8	10.2	10.8	12.4	91.4

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