

**PROJECT TITLE:** Off-station durum yield trials - 2003

**OBJECTIVE:** To evaluate varieties of durum under irrigated and dryland conditions at various sites in eastern Montana.

**PROJECT LEADER:** Joyce Eckhoff, MSU Eastern Agricultural Research Center, Sidney, MT

**COOPERATORS:**

County	Producers	CES Agents
Daniels, dryland	Bobbie Roos	Bobbie Roos
McCone, dryland	Victor Wagner	Ken Nelson
Roosevelt, dryland	Mark Swank	Gina Snyder
Sheridan, dryland	Max Aasheim	Terry Angvick
Valley, dryland	Bill Lauckner	Verlin Koenig
Valley, irrigated	Alisha (Zeller) & Cole Sibley	Verlin Koenig
Wibaux, dryland	David Maus	Dave Bertelsen

**MATERIALS AND METHODS:** Sixteen durum varieties were planted at six dryland and three irrigated sites. Plots were 20 feet long and three feet wide, with one foot between rows. Entire plots were harvested using a plot combine. Planting and harvest dates were

Location	Planted	Harvested
Scobey, Daniels County – dryland	Apr 29	Aug 20
Circle, McCone County – dryland	Apr 28	Aug 6
Poplar, Roosevelt County – dryland	Apr 29	Aug 15
Reserve, Sheridan County – dryland	Apr 30	Aug 12
Wibaux, Wibaux County – dryland	May 2	Aug 13
Nashua, Valley County – dryland	Apr 15	Jul 28
Nashua, Valley County – flood irrigated	Apr 17	Aug 14

**RESULTS:** Summaries of yields, test weights, heights, hard vitreous amber color, and protein contents across sites are shown in Tables 1-5. AC Pathfinder, AC Avonlea, and AC Navigator yielded most across dryland sites (Table 1). Belzer yielded most at the irrigated site (Table 1).

**McCone County:** Performance and relative values of durum varieties at **Circle** are shown in Tables 6-9. AC Pathfinder, Kyle and Plaza yielded most.

**Wibaux County (dryland):** Performance and relative values of durum varieties at **Wibaux** are shown in Tables 10-13. AC Avonlea and AC Pathfinder yielded most.

**Roosevelt County (dryland):** Performance and relative values of durum varieties at **Poplar** are shown in Tables 14-17. AC Pathfinder and AC Avonlea yielded most.

**Sheridan County (dryland):** Performance and relative values of durum varieties at **Reserve** are shown in Tables 18-21. Maier and Mountrail yielded most.

**Valley County (dryland):** Performances of durum varieties at **Nashua** are shown in Table 22-25. Maier and Dilse yielded most.

**Daniels County (dryland):** Performance and relative values of durum varieties at **Scobey** are shown in Tables 26-29. AC Avonlea and Belzer yielded most.

**Valley County (irrigated):** Performances of durum varieties at **Nashua** are shown in Table 30. Belzer yielded most. This is the first year for this site so no relative values are available.

**SUMMARY:** The off-station yield trials are conducted at several sites in eastern Montana. These trials provide important information about performance of experimental lines and varieties from Montana, other states, and private companies. Regional durum producers make decisions on varieties to grow based on data from these trials.

**FUTURE PLANS:** Off-station durum yield trials will continue indefinitely. Expansion to other locations in future years is possible.

Table 1. Summary of durum yields in bu/acre at seven off-station sites in eastern Montana, 2003.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland fallow	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Nashua, sprinkler irrigated
Pathfinder	20.7	18.7	<b>54.9</b>	39.6	39.0	29.4	33.7	69.2
Avonlea	17.1	<b>19.1</b>	53.0	37.6	38.1	31.5	32.7	73.5
Navigator	18.2	<b>19.1</b>	50.8	38.7	38.6	29.9	32.6	75.6
Dilse	17.9	15.6	46.3	38.8	40.8	<b>31.9</b>	31.9	83.5
Maier	17.3	15.1	46.0	<b>40.4</b>	<b>41.1</b>	29.9	31.6	73.6
Mountrail	16.5	16.8	47.4	40.1	37.6	31.1	31.6	84.3
Kyle	20.5	17.8	45.6	36.4	38.9	30.1	31.5	62.0
Lebsock	15.3	16.9	45.0	36.7	38.7	30.0	30.4	78.6
Plaza	20.4	16.6	44.4	33.2	36.4	30.3	30.2	82.4
Renville	16.3	17.0	40.2	38.5	36.4	31.2	29.9	74.7
Belzer	17.9	15.8	44.9	35.0	36.4	29.0	29.8	<b>95.3</b>
Ben	18.0	15.3	42.4	36.7	36.2	27.7	29.4	71.0
Munich	16.1	15.9	36.0	36.1	37.8	29.9	28.6	68.6
Pierce	17.6	15.4	40.6	31.9	37.8	25.1	28.1	64.4
site average	17.9	16.8	45.8	37.1	38.5	29.3		75.6
p value	0.027	0.065	<0.001	0.124	0.168	<0.001		<0.001
CV (S/Mean)	10.3	10.1	9.5	8.8	7.4	6.6		8.3
CV(SE/Mean)	6.0	5.8	5.5	5.1	4.3	3.8		4.8
LSD 0.05	3.1	2.8	7.3	ns	ns	3.2		10.5

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

Valley Irrigated (Nashua)

Producer

Max Aasheim

David Maus

Victor Wagner

Mark Swank

Bill Lauckner

Bobbie Roos

Alisha (Zeller) & Cole Sibley

CES Agent

Terry Angvick

Dave Bertelsen

Ken Nelson

Gina Snyder

Verlin Koenig

Bobbie Roos

Verlin Koenig

Table 2. Summary of durum test weights in lb/bu at seven sites in eastern Montana, 2003

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland fallow	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Nashua, sprinkler irrigated
Navigator	60.9	60.5	64.7	61.0	61.5	63.5	62.0	63.5
Lebsock	59.7	60.9	64.3	61.0	62.0	63.3	61.9	64.0
Dilse	60.7	60.3	64.2	60.5	62.0	62.8	61.8	64.3
Ben	60.2	59.8	64.2	61.0	61.5	63.3	61.7	63.7
Pathfinder	60.4	61.2	63.7	60.5	61.2	63.0	61.7	63.2
Kyle	60.9	59.7	63.5	60.2	61.0	62.3	61.3	63.5
Maier	59.9	59.6	63.8	60.0	60.8	63.2	61.2	64.2
Renville	59.1	60.0	63.5	60.8	60.7	63.0	61.2	63.0
Avonlea	60.2	59.6	63.7	59.2	60.2	61.8	60.8	63.7
Pierce	59.6	59.2	62.8	58.7	60.7	62.4	60.6	63.2
Plaza	59.8	58.8	62.7	58.3	59.3	62.5	60.2	63.2
Munich	57.9	58.1	62.3	59.0	60.5	61.8	59.9	63.2
Mountrail	57.0	58.8	63.7	59.5	58.8	61.7	59.9	64.0
Belzer	59.4	58.9	62.2	58.3	59.8	60.7	59.9	63.3
site average	59.6	59.5	63.4	59.8	60.5	62.4	60.9	63.3
p value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
CV (S/Mean)	1.0	1.4	0.8	1.3	1.3	0.9		0.9
CV(SE/Mean)	0.6	0.8	0.5	0.8	0.8	0.5		0.5
LSD 0.05	1.0	1.4	0.8	1.3	1.4	0.9		1.0

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

Valley Irrigated (Nashua)

Producer

Max Aasheim

David Maus

Victor Wagner

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Alisha (Zeller) & Cole Sibley

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Gina Snyder

Verlin Koenig

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Table 3. Summary of durum heights in inches at seven sites in eastern Montana, 2003.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland fallow	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Nashua, sprinkler irrigated
Kyle	28.0	32.8	38.7	35.0	34.4	25.2	32.4	41.7
Renville	23.7	30.6	38.3	33.3	34.5	25.9	31.0	40.3
Avonlea	22.3	30.3	34.1	33.2	32.6	24.2	29.4	37.4
Belzer	21.9	30.0	34.4	31.7	30.8	25.1	29.0	38.5
Ben	24.0	28.1	33.7	29.4	33.1	25.0	28.9	38.3
Pathfinder	22.2	30.4	35.3	30.0	29.9	24.8	28.8	34.8
Lebsock	22.3	27.7	32.4	32.8	31.8	24.2	28.5	34.3
Mountrail	22.3	27.9	34.4	30.0	31.8	23.9	28.4	34.1
Maier	21.5	28.0	32.2	32.8	30.7	23.8	28.2	34.0
Dilse	21.8	28.6	32.3	32.7	29.1	24.3	28.1	35.2
Munich	20.5	27.8	29.6	31.2	31.0	22.9	27.2	33.3
Navigator	23.4	25.9	30.3	26.5	28.1	23.8	26.3	30.6
Plaza	24.2	26.9	27.5	24.9	27.2	23.6	25.7	29.8
Pierce	21.9	25.5	27.6	27.2	25.3	23.0	25.1	36.6
site average	22.8	28.6	33.0	30.9	30.8	24.2		35.5
p value	0.008	<0.001	<0.001	<0.001	<0.001	0.302		<0.001
CV (S/Mean)	7.8	4.2	4.1	77.4	4.0	5.6		5.5
CV(SE/Mean)	4.5	2.4	2.4	4.3	2.3	3.3		3.2
LSD 0.05	3.0	2.0	2.3	3.8	2.1	ns		3.3

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

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Table 4. Summary of durum protein contents in percent at seven sites in eastern Montana, 2003.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland fallow	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Nashua, sprinkler irrigated
Avonlea	14.36	15.08	12.62	16.25	16.23	12.60	14.52	13.10
Dilse	14.82	15.05	12.70	16.02	15.13	12.94	14.44	13.42
Munich	16.03	15.09	12.94	15.08	15.02	11.92	14.35	12.34
Ben	15.44	14.95	12.34	14.88	15.61	12.28	14.25	13.32
Renville	15.14	15.14	12.83	14.91	15.30	11.90	14.20	12.33
Maier	14.81	14.74	12.41	15.64	15.40	12.10	14.18	13.09
Belzer	13.89	15.14	12.06	15.78	15.82	12.38	14.18	12.10
Mountrail	15.68	14.22	12.12	14.88	16.01	11.77	14.11	12.23
Plaza	14.55	14.61	12.13	15.62	15.90	11.80	14.10	11.53
Pierce	14.24	14.75	12.61	15.62	15.19	12.17	14.10	13.01
Pathfinder	13.9	14.09	12.76	15.17	15.44	11.87	13.87	12.32
Kyle	13.68	15.65	11.73	15.09	14.72	11.97	13.81	13.11
Lebsock	15.38	13.68	11.47	14.51	14.41	11.81	13.54	12.17
Navigator	13.46	13.55	12.03	14.06	13.66	11.39	13.03	12.97
site average	14.56	14.62	12.29	15.17	15.25	12.05		12.72
p value	<0.001	0.101	0.013	<0.001	0.147	0.011		<0.001
CV (S/Mean)	5.0	5.9	4.1	3.7	6.0	3.3		3.9
CV(SE/Mean)	2.9	3.4	2.3	2.1	3.5	1.9		2.2
LSD 0.05	1.23	1.44	0.83	0.94	ns	0.67		0.82

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

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Table 5. Summary of durum hard vitreous amber color as percent at seven off-station sites in eastern Montana, 2003.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland fallow	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Nashua, sprinkler irrigated
Avonlea	81.8	94.2	90.7	95.2	95.0	94.5	91.9	79.2
Dilse	75.3	92.9	82.5	91.6	98.3	96.1	89.5	69.0
Maier	77.4	93.1	83.6	91.1	90.6	93.0	88.1	66.9
Renville	75.2	96.2	84.8	94.7	90.0	83.2	87.4	60.8
Kyle	79.2	92.2	79.8	85.1	86.7	85.1	84.7	73.5
Navigator	76.3	86.5	85.0	87.0	86.3	85.1	84.4	79.3
Ben	74.4	91.1	76.5	89.8	91.0	82.7	84.2	64.6
Mountrail	66.1	89.0	82.9	88.1	80.7	86.3	82.2	65.9
Pathfinder	63.4	86.5	81.3	85.8	83.6	82.6	80.5	58.8
Munich	57.2	88.6	78.0	80.1	92.4	83.7	80.0	51.4
Lebsock	67.3	85.2	68.1	89.7	90.2	77.1	79.6	55.5
Plaza	68.3	81.7	77.3	81.9	81.5	81.8	78.8	50.8
Belzer	69.1	82.3	64.0	83.9	86.2	76.9	77.1	53.4
Pierce	57.9	71.4	57.6	84.6	82.6	68.8	70.5	69.9
site average	69.5	86.8	76.0	87.0	87.6	83.4		63.3
p value	<0.001	0.001	<0.001	<0.001	<0.001	0.003		<0.001
CV (S/Mean)	5.5	7.7	7.7	3.3	5.4	8.5		10.2
CV(SE/Mean)	3.2	4.4	4.4	1.9	3.1	4.9		5.9
LSD 0.05	6.4	11.1	9.7	4.8	7.9	11.9		10.9

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

Valley Irrigated (Nashua)

Producer

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Table 6. Performance of durum grown under dryland continuous cropping conditions at Circle, MT. Planted: 28 Apr 2003 Harvested: 6 Aug 2003 Cooperator: Victor Wagner

Variety	height, inches	grain protein	HVA color	test weight	yield, bu/acre	
Pathfinder	22.2	13.90	63.4	60.4	20.7	a
Kyle	28.0	13.68	79.2	60.9	20.5	a
Plaza	24.2	14.55	68.3	59.8	20.4	a
Navigator	23.4	13.46	76.3	60.9	18.2	
Ben	24.0	15.44	74.4	60.2	18.0	
Belzer	21.9	13.89	69.1	59.4	17.9	
Dilse	21.8	14.82	75.3	60.7	17.9	
Pierce	21.9	14.24	57.9	59.6	17.6	
Maier	21.5	14.81	77.4	59.9	17.3	
Avonlea	22.3	14.36	81.8	60.2	17.1	
Mountrail	22.3	15.68	66.1	57.0	16.5	
Renville	23.7	15.14	75.2	59.1	16.3	
Munich	20.5	16.03	57.2	57.9	16.1	
Lebsock	22.3	15.38	67.3	59.7	15.3	
average	22.8	14.56	69.5	59.6	17.9	
p value	0.008	<0.001	<0.001	<0.001	0.027	
CV (S/Mean)	7.8	5.0	5.5	1.0	10.3	
CV(SE/Mean)	4.5	2.9	3.2	0.6	6.0	
LSD 0.05	3.0	1.23	6.4	1.0	3.1	

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

Table 7. Relative yielding abilities of durum varieties compared to Renville when grown under dryland conditions in McCone County in cooperation with CES. Cooperator: Victor Wagner

Variety	1999	2000	2001	2002	2003	average	As % of Mountrail
AC Pathfinder	--	--	31.4	22.1	20.7	24.7	105.0
Plaza	31.3	27.0	34.4	21.9	20.4	27.0	102.6
Munich	31.9	32.8	--	19.6	16.1	25.1	101.6
Mountrail	30.4	30.5	32.8	21.4	16.5	26.3	100.0
AC Avonlea	--	30.9	30.3	22.5	17.1	25.2	99.6
Renville	31.0	31.8	32.7	18.8	16.3	26.1	99.2
Kyle	30.5	30.3	29.2	19.3	20.5	26.0	98.6
Dilse	--	--	--	19.4	17.9	18.7	98.4
Belzer	--	28.3	30.2	20.5	17.9	24.2	95.8
Pierce	--	--	29.7	20.3	17.6	22.5	95.6
Maier	26.1	26.2	26.8	22.1	17.3	23.7	90.0
AC Navigator	--	--	27.7	17.3	18.2	21.1	89.4
Ben	23.6	26.5	31.2	18.3	18.0	23.5	89.4
Lebsock	27.4	26.8	30.7	15.7	15.3	23.2	88.1

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



Table 8. Relative test weights of durum varieties as compared to Renville when grown under dryland conditions in McCone County in cooperation with CES. Cooperator: Victor Wagner

Variety	1999	2000	2001	2002	2003	average	As % of Mountrail
Dilse	--	--	--	62.0	60.7	61.4	106.1
AC Navigator	--	--	62.3	63.4	60.9	62.2	104.9
AC Pathfinder	--	--	63.5	61.7	60.4	61.9	104.3
Kyle	63.0	62.8	63.2	63.0	60.9	62.6	103.3
Pierce	--	--	63.3	60.7	59.6	61.2	103.2
Maier	63.7	62.5	64.0	62.2	59.9	62.5	103.1
Lebsock	63.0	62.8	64.5	62.1	59.7	62.4	103.0
AC Avonlea	--	62.3	63.2	60.4	60.2	61.5	102.6
Plaza	62.5	62.5	63.5	61.7	59.8	62.0	102.3
Ben	62.9	62.5	64.0	60.4	60.2	62.0	102.3
Renville	63.0	62.8	63.0	60.4	59.1	61.7	101.8
Belzer	--	61.0	61.2	58.8	59.4	60.1	100.2
Munich	61.5	62.3	--	59.4	57.9	60.3	100.2
Mountrail	63.0	62.0	62.3	58.6	57.0	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 9. Relative protein contents of durum varieties as compared to Renville when grown under dryland conditions in McCone County in cooperation with CES. Cooperator: Victor Wagner

Variety	1999	2000	2001	2002	2003	average	As % of Renville
Ben	10.9	12.4	10.8	13.7	15.4	12.6	102.9
Maier	11.1	11.8	12.1	13.1	14.8	12.6	102.4
Munich	11.0	11.1	--	13.3	16.0	12.9	100.4
AC Avonlea	--	11.5	11.4	13.3	14.4	12.7	100.2
Mountrail	10.9	10.8	10.2	13.8	15.7	12.3	100.0
Renville	11.8	11.0	10.2	13.1	15.1	12.2	99.7
Pierce	--	--	11.1	13.7	14.2	13.0	98.2
Belzer	--	11.0	10.7	13.7	13.9	12.3	97.6
Lebsock	11.4	11.0	9.7	12.3	15.4	12.0	97.4
Kyle	10.9	11.7	11.1	12.2	13.7	11.9	97.1
Plaza	10.0	11.1	10.2	12.5	14.6	11.7	95.1
AC Navigator	--	--	11.0	12.3	13.5	12.3	92.7
Dilse	--	--	--	12.4	14.8	13.6	92.2
AC Pathfinder	--	--	10.0	12.4	13.9	12.1	91.4

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

Table 10. Performance of durum grown under dryland conditions at Wibaux, MT.

Planted: 2 May 2003      Harvested: 13 August 2003      Cooperator: David Maus

Variety	Height, inches	Grain protein	HVA color	Test weight	Yield, bu/acre
Avonlea	30.3	15.08	94.2	59.6	19.1
Navigator	25.9	13.55	86.5	60.5	19.1
Pathfinder	30.4	14.09	86.5	61.2	18.7
Kyle	32.8	15.65	92.2	59.7	17.8
Renville	30.6	15.14	96.2	60.0	17.0
Lebsock	27.7	13.68	85.2	60.9	16.9
Mountrail	27.9	14.22	89.0	58.8	16.8
Plaza	26.9	14.61	81.7	58.8	16.6
Laser SW	28.7	13.55	70.9	57.2	16.3
Munich	27.8	15.09	88.6	58.1	15.9
Belzer	30.0	15.14	82.3	58.9	15.8
Dilse	28.6	15.05	92.9	60.3	15.6
Pierce	25.5	14.75	71.4	59.2	15.4
Ben	28.1	14.95	91.1	59.8	15.3
Maier	28.0	14.74	93.1	59.6	15.1
average	28.6	14.62	86.8	59.5	16.8
p value	<0.001	0.101	0.001	<0.001	0.065
CV (S/Mean)	4.2	5.9	7.7	1.4	10.1
CV(SE/Mean)	2.4	3.4	4.4	0.8	5.8
LSD 0.05	2.0	1.44	11.1	1.4	2.8

Table 11. Relative yielding abilities of durum varieties as compared to Renville when grown under dryland conditions in Wibaux County in cooperation with CES. Cooperator: David Maus

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
AC Pathfinder	--	--	38.7	35.3	18.7	30.9	102.0
Mountrail	37.1	48.4	37.7	36.4	16.8	35.3	100.0
AC Avonlea	--	43.6	38.8	37.2	19.1	34.7	99.6
Lebsock	43.5	42.4	39.4	30.8	16.9	34.6	98.1
AC Navigator	--	--	40.8	28.0	19.1	29.3	96.7
Kyle	38.7	44.9	39.2	26.5	17.8	33.4	94.7
Plaza	40.0	46.4	38.0	25.8	16.6	33.4	94.6
Pierce	--	--	36.9	32.8	15.4	28.4	93.6
Maier	38.4	39.3	41.3	30.0	15.1	32.8	93.0
Ben	32.3	43.5	38.6	31.4	15.3	32.2	91.3
Munich	36.5	42.8	--	30.0	15.9	31.3	90.3
Belzer	--	43.4	38.6	27.7	15.8	31.4	90.1
Renville	32.1	41.5	37.0	28.9	17.0	31.3	88.7
Dilse	--	--	--	27.1	15.6	21.4	80.3

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 12. Relative test weights of durum varieties as compared to Renville when grown under dryland conditions in Wibaux County in cooperation with CES. Cooperator: David Maus

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
AC Pathfinder	--	--	61.5	61.4	61.2	61.4	103.0
AC Navigator	--	--	61.3	62.0	60.5	61.3	102.8
Lebsock	61.7	62.3	62.7	61.2	60.9	61.8	102.4
Pierce	--	--	61.3	61.4	59.2	60.6	101.7
Dilse	--	--	--	60.1	60.3	60.2	101.3
Kyle	61.5	61.8	61.2	61.0	59.7	61.0	101.2
Maier	60.2	62.5	61.8	61.0	59.6	61.0	101.2
Ben	60.0	62.8	61.8	60.7	59.8	61.0	101.2
Renville	60.3	62.3	61.0	60.2	60.0	60.8	100.8
AC Avonlea	--	62.0	60.5	60.1	59.6	60.6	100.6
Plaza	60.5	62.2	60.7	60.9	58.8	60.6	100.5
Mountrail	60.7	62.0	60.0	60.0	58.8	60.3	100.0
Belzer	--	60.8	60.8	58.8	58.9	59.8	99.4
Munich	59.0	62.2	--	58.5	58.1	59.5	98.5

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.

Table 13. Relative protein contents of durum varieties as compared to Renville when grown under dryland conditions in Wibaux County in cooperation with CES. Cooperator: David Maus

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Dilse	--	--	--	17.7	15.1	16.4	107.5
Munich	14.5	17.1	--	17.1	15.1	16.0	104.9
AC Avonlea	--	17.2	15.9	17.1	15.1	16.3	104.3
Maier	14.9	17.4	15.7	17.1	14.7	16.0	103.9
Ben	14.8	16.9	16.0	16.6	15.0	15.9	103.3
Renville	14.5	16.5	15.8	17.2	15.1	15.8	103.0
Kyle	14.4	16.6	15.5	16.6	15.6	15.7	102.5
Belzer	--	16.3	15.2	17.2	15.1	16.0	101.9
Plaza	14.4	15.7	15.6	17.0	14.6	15.5	100.7
Pierce	--	--	15.9	16.1	14.8	15.6	100.6
Mountrail	14.2	16.1	16.0	16.3	14.2	15.4	100.0
Lebsock	14.6	16.8	14.8	15.8	13.7	15.1	98.6
AC Pathfinder	--	--	15.0	16.2	14.1	15.1	97.4
AC Navigator	--	--	14.9	16.2	13.6	14.9	96.1

NOTE: Average proteins 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 14. Performance of durum grown under dryland conditions at Poplar, MT.  
 Planted: 29 Apr 2003 Harvested: 15 Aug 2003 Cooperator: Mark Swank

Variety	height, inches	grain protein	HVA color	test weight	yield, bu/acre
Pathfinder	35.3	12.76	81.3	63.7	54.9 a
Avonlea	34.1	12.62	90.7	63.7	53.0
Navigator	30.3	12.03	85.0	64.7	50.8
Laser SW	34.5	11.54	48.0	61.3	49.6
Mountrail	34.4	12.12	82.9	63.7	47.4
Dilse	32.3	12.70	82.5	64.2	46.3
Maier	32.2	12.41	83.6	63.8	46.0
Kyle	38.7	11.73	79.8	63.5	45.6
Lebsock	32.4	11.47	68.1	64.3	45.0
Belzer	34.4	12.06	64.0	62.2	44.9
Plaza	27.5	12.13	77.3	62.7	44.4
Ben	33.7	12.34	76.5	64.2	42.4
Pierce	27.6	12.61	57.6	62.8	40.6
Renville	38.3	12.83	84.8	63.5	40.2
Munich	29.6	12.94	78.0	62.3	36.0 x
Average	33.0	12.29	76.0	63.4	45.8
p value	<0.001	0.013	<0.001	<0.001	<0.001
CV (S/Mean)	4.1	4.1	7.7	0.8	9.5
CV(SE/Mean)	2.4	2.3	4.4	0.5	5.5
LSD 0.05	2.3	0.83	9.7	0.8	7.3

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

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

Table 15. Relative yields of durum varieties as compared to Renville when grown under dryland conditions in Roosevelt County in cooperation with CES. Cooperator: Mark Swank

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Dilse	--	--	--	43.7	46.3	45.0	103.1
AC Pathfinder	--	--	56.5	37.4	54.9	49.6	100.1
Mountrail	48.6	58.7	61.3	39.9	47.4	51.2	100.0
AC Avonlea	--	55.8	59.2	38.4	53.0	51.6	99.6
Maier	46.2	54.1	58.3	39.5	46.0	48.8	95.4
Lebsock	43.7	55.6	56.2	43.0	45.0	48.7	95.2
Plaza	49.5	59.5	53.7	35.7	44.4	48.6	94.9
Renville	49.4	52.3	56.9	39.4	40.2	47.6	93.1
Kyle	47.8	52.9	54.1	34.2	45.6	46.9	91.7
Belzer	--	54.4	54.3	33.1	44.9	46.7	90.1
Pierce	--	--	53.5	39.5	40.6	44.5	89.9
Ben	45.3	53.3	47.9	39.2	42.4	45.6	89.1
AC Navigator	--	--	44.8	34.8	50.8	43.5	87.8
Munich	45.1	49.0	--	38.2	36.0	42.1	86.5

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 16. Relative test weights of durum varieties as compared to Renville when grown under dryland conditions in Roosevelt County in cooperation with CES. Cooperator: Mark Swank

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Lebsock	61.5	63.8	65.2	62.0	64.3	63.4	101.9
Pierce	--	--	65.0	62.0	62.8	63.3	101.1
Dilse	--	--	--	61.0	64.2	62.6	101.0
Maier	61.0	63.0	64.7	60.8	63.8	62.7	100.8
Ben	61.0	63.0	64.7	61.0	62.4	62.4	100.4
Renville	61.5	62.3	64.0	60.5	63.5	62.4	100.3
AC Pathfinder	--	--	64.0	60.5	63.7	62.7	100.3
Kyle	61.5	62.0	64.0	60.0	63.5	62.2	100.0
Mountrail	61.0	62.2	63.7	60.3	63.7	62.2	100.0
AC Navigator	--	--	63.2	59.3	64.7	62.4	99.7
AC Avonlea	--	61.3	63.5	59.5	63.7	62.0	99.2
Plaza	60.8	62.5	64.0	58.2	62.7	61.6	99.1
Munich	60.5	62.0	--	59.0	62.3	61.0	98.6
Belzer	--	61.7	63.3	58.5	62.2	61.4	98.3

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.

Table 17. Relative proteins of durum varieties as compared to Renville when grown under dryland conditions in Roosevelt County in cooperation with CES. Cooperator: Mark Swank

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
AC Avonlea	--	14.7	13.4	15.5	12.6	14.1	105.6
Maier	13.4	14.7	13.3	15.5	12.4	13.9	105.5
Munich	12.9	14.4	--	15.6	12.9	14.0	104.7
Ben	12.6	14.6	13.3	14.9	12.3	13.5	103.0
Dilse	--	--	--	15.3	12.7	14.0	102.9
Renville	12.5	14.3	13.0	14.9	12.8	13.5	102.7
AC Navigator	--	--	13.6	15.0	12.0	13.5	102.5
Belzer	--	13.8	13.3	15.2	12.1	13.6	102.3
AC Pathfinder	--	--	12.6	14.7	12.8	13.4	101.3
Kyle	12.5	14.0	13.0	15.1	11.7	13.3	100.9
Plaza	12.0	13.5	13.4	15.2	12.1	13.2	100.8
Lebsock	13.1	14.2	12.9	14.2	11.5	13.2	100.3
Mountrail	12.5	13.6	12.4	15.1	12.1	13.1	100.0
Pierce	--	--	12.9	14.1	12.6	13.2	100.0

NOTE: Average proteins 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 18. Performance of durum grown under dryland conditions at Reserve, MT.  
 Planted: 30 April 2003 Harvested: 12 August 2003 Cooperator: Max Aasheim

Variety	height, inches	grain protein	HVA color	test weight	yield, bu/acre
Maier	32.8	15.64	91.1	60.0	40.4
Mountrail	30.0	14.88	88.1	59.5	40.1
Pathfinder	30.0	15.17	85.8	60.5	39.6
Dilse	32.7	16.02	91.6	60.5	38.8
Navigator	26.5	14.06	87.0	61.0	38.7
Renville	33.3	14.91	94.7	60.8	38.5
Avonlea	33.2	16.25	95.2	59.2	37.6
Ben	29.4	14.88	89.8	61.0	36.7
Lebsock	32.8	14.51	89.7	61.0	36.7
Kyle	35.0	15.09	85.1	60.2	36.4
Munich	31.2	15.08	80.1	59.0	36.1
Belzer	31.7	15.78	83.9	58.3	35.0
Plaza	24.9	15.62	81.9	58.3	33.2
Pierce	27.2	15.62	84.6	58.7	31.9
site average	30.9	15.17	87.0	59.8	37.1
p value	<0.001	<0.001	<0.001	<0.001	0.124
CV (S/Mean)	77.4	3.7	3.3	1.3	8.8
CV(SE/Mean)	4.3	2.1	1.9	0.8	5.1
LSD <sub>0.05</sub>	3.8	0.94	4.8	1.3	ns

Table 19. Relative yields of durum varieties as compared to Renville when grown under dryland conditions in Sheridan County in cooperation with CES. Cooperator: Max Aasheim

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Mountrail	38.2	32.9	47.0	36.6	40.1	39.0	100.0
Dilse	--	--	--	37.9	38.8	38.4	100.0
Maier	36.8	27.5	44.8	37.5	40.4	37.4	96.0
Munich	38.6	29.9	--	37.0	36.1	35.4	95.8
Renville	39.0	29.2	44.6	34.3	38.5	37.1	95.3
Plaza	42.0	34.4	40.3	35.5	33.2	37.1	95.2
AC Avonlea	--	32.7	38.7	36.8	37.6	36.5	93.1
AC Pathfinder	--	--	37.2	36.6	39.6	37.8	91.7
Lebsock	35.7	24.4	42.9	35.8	36.7	35.1	90.1
Kyle	38.2	27.4	39.9	29.9	36.4	34.4	88.2
Belzer	--	30.3	39.4	33.1	35.0	34.5	88.0
Pierce	--	--	39.5	34.0	31.9	35.1	85.2
Ben	28.6	26.3	39.6	33.4	36.7	32.9	84.5
AC Navigator	--	--	33.6	30.9	38.7	34.4	83.4

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 20. Relative test weights of durum varieties as compared to Renville when grown under dryland conditions in Sheridan County in cooperation with CES. Cooperator: Max Aasheim

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Lebsock	63.0	61.8	64.3	61.8	61.0	62.4	101.4
Ben	63.0	61.2	64.8	60.8	61.0	62.2	101.0
AC Navigator	--	--	63.0	61.0	61.0	61.7	100.5
Dilse	--	--	--	60.3	60.5	60.4	100.5
Maier	63.3	60.7	63.7	61.2	60.0	61.8	100.4
Renville	63.5	60.8	63.5	60.0	60.8	61.7	100.3
AC Pathfinder	--	--	62.8	60.8	60.5	61.4	100.1
Mountrail	62.8	60.8	63.8	60.7	59.5	61.5	100.0
Pierce	--	--	64.0	61.3	58.7	61.3	100.0
Plaza	63.5	61.2	64.0	59.5	58.3	61.3	99.6
Kyle	62.5	60.3	63.5	60.0	60.2	61.3	99.6
AC Avonlea	--	60.5	62.8	60.7	59.2	60.8	99.3
Munich	63.0	60.2	--	59.0	59.0	60.3	98.9
Belzer	--	59.8	61.3	59.2	58.3	59.7	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.

Table 21. Relative proteins of durum varieties as compared to Renville when grown under dryland conditions in Sheridan County in cooperation with CES. Cooperator: Max Aasheim

Cultivar	1999	2000	2001	2002	2003	Ave	as % of Mountrail
Dilse	--	--	--	15.6	16.0	15.8	107.1
AC Avonlea	--	12.9	15.4	15.3	16.2	15.0	106.8
Maier	11.7	13.7	15.2	15.3	15.6	14.3	106.1
Belzer	--	12.6	14.7	15.0	15.8	14.5	103.8
Munich	11.5	13.2	--	15.4	15.1	13.8	103.6
Pierce	--	--	14.5	14.6	15.6	14.9	102.5
Ben	11.4	13.1	14.4	15.1	14.9	13.8	102.2
AC Pathfinder	--	--	14.6	14.6	15.2	14.8	101.8
Kyle	10.8	13.9	14.6	14.1	15.1	13.7	101.6
Renville	11.1	12.5	14.8	15.0	14.9	13.7	101.3
Lebsock	11.5	12.3	14.5	14.7	14.5	13.5	100.1
Mountrail	11.4	12.4	14.1	14.6	14.9	13.5	100.0
AC Navigator	--	--	14.8	14.6	14.1	14.5	99.8
Plaza	10.2	12.1	14.5	14.6	15.6	13.4	99.4

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

Table 22. Performance of durum grown under dryland conditions at Nashua, MT.  
Planted: 15 April 2003, Harvested: 28 July 2003 Cooperator: Bill Lauckner

Variety	Height, inches	Grain protein	% HVA color	Test weight	Yield, bu/acre
Laser SW	31.2	14.84	78.4	57.7	43.4
Maier	30.7	15.40	90.6	60.8	41.1
Dilse	29.1	15.13	98.3	62.0	40.8
Pathfinder	29.9	15.44	83.6	61.2	39.0
Kyle	34.4	14.72	86.7	61.0	38.9
Lebsock	31.8	14.41	90.2	62.0	38.7
Navigator	28.1	13.66	86.3	61.5	38.6
Avonlea	32.6	16.23	95.0	60.2	38.1
Munich	31.0	15.02	92.4	60.5	37.8
Pierce	25.3	15.19	82.6	60.7	37.8
Mountrail	31.8	16.01	80.7	58.8	37.6
Plaza	27.2	15.90	81.5	59.3	36.4
Renville	34.5	15.30	90.0	60.7	36.4
Belzer	30.8	15.82	86.2	59.8	36.4
Ben	33.1	15.61	91.0	61.5	36.2
average	30.8	15.25	87.6	60.5	38.5
p value	<0.001	0.147	<0.001	<0.001	0.168
CV (S/Mean)	4.0	6.0	5.4	1.3	7.4
CV(SE/Mean)	2.3	3.5	3.1	0.8	4.3
LSD 0.05	2.1	ns	7.9	1.4	ns

Table 23. Relative yielding abilities of spring wheat varieties as compared to Mountrail when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2000	2001	2002	2003	Ave	As % of Mountrail
Dilse	--	--	45.4	40.8	43.1	103.1
Mountrail	68.6	62.3	46.0	37.6	53.6	100.0
Pierce	--	59.9	47.2	37.8	48.3	99.3
AC Avonlea	63.1	59.3	48.1	38.1	52.2	97.4
Maier	59.0	56.4	47.6	41.1	51.0	95.1
AC Pathfinder	--	56.1	43.7	39.0	46.3	95.1
Renville	59.3	60.6	44.8	36.4	50.3	93.8
Munich	60.0	--	42.6	37.8	46.8	92.6
Plaza	60.7	52.4	48.7	36.4	49.6	92.5
AC Navigator	--	48.3	46.8	38.6	44.6	91.6
Lebsock	53.8	57.9	45.6	38.7	49.0	91.4
Kyle	56.6	52.2	46.1	38.9	48.5	90.5
Belzer	56.6	54.3	45.5	36.4	48.2	89.9
Ben	52.3	54.9	43.6	36.2	46.8	87.3

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 24. Relative test weights of durum varieties as compared to Mountrail when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2000	2001	2002	2003	Ave	As % of Mountrail
Dilse	--	--	62.0	62.0	62.0	103.8
AC Navigator	--	61.3	63.2	61.5	62.0	102.6
Lebsock	64.7	63.0	61.5	62.0	62.8	102.4
Pierce	--	62.7	62.0	60.7	61.8	102.3
AC Pathfinder	--	61.8	62.0	61.2	61.7	102.1
Maier	65.0	61.7	61.8	60.8	62.3	101.6
Ben	64.0	62.5	61.0	61.5	62.3	101.6
Kyle	64.0	62.3	61.0	61.0	62.1	101.3
AC Avonlea	63.7	61.8	61.8	60.2	61.9	101.0
Munich	64.0	--	60.3	60.5	61.6	100.7
Renville	63.5	62.0	60.3	60.7	61.6	100.5
Mountrail	64.0	61.7	60.7	58.8	61.3	100.0
Plaza	64.7	60.7	60.2	59.3	61.2	99.8
Belzer	63.2	60.2	59.7	59.8	60.7	99.0

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 25. Relative protein contents of durum varieties as compared to Mountrail when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2000	2001	2002	2003	Ave	As % of Mountrail
AC Avonlea	11.5	15.4	12.0	16.2	13.8	103.8
Maier	11.2	15.4	12.8	15.4	13.7	103.0
Ben	11.4	14.7	12.5	15.6	13.6	102.3
Belzer	10.1	15.2	12.6	15.8	13.4	100.8
Mountrail	10.5	14.2	12.5	16.0	13.3	100.0
Munich	11.4	--	12.5	15.0	13.0	99.7
Renville	9.7	14.6	13.2	15.3	13.2	99.2
Lebsock	11.2	14.4	12.6	14.4	13.2	99.2
Kyle	10.5	14.6	12.9	14.7	13.2	99.2
Plaza	10.1	14.3	12.6	15.9	13.2	99.2
Dilse	--	--	12.7	15.1	13.9	97.5
Pierce	--	14.2	12.2	15.2	13.9	97.4
AC Pathfinder	--	14.6	11.2	15.4	13.7	96.5
AC Navigator	--	13.8	12.1	13.7	13.2	92.7

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 26. Performance of durum grown under dryland conditions at Scobey, MT.  
 Planted: 29 April 2003 Harvested: 20 August 2003 Cooperator: Bobbie Roos

Variety	Height, inches	Grain protein	HVA color	Test weight	Yield, bu/acre
Avonlea	24.2	12.60	94.5	61.8	31.5
Belzer	25.1	12.38	76.9	60.7	29.0
Ben	25.0	12.28	82.7	63.3	27.7
Dilse	24.3	12.94	96.1	62.8	31.9
Kyle	25.2	11.97	85.1	62.3	30.1
Lebsock	24.2	11.81	77.1	63.3	30.0
Maier	23.8	12.10	93.0	63.2	29.9
Mountrail	23.9	11.77	86.3	61.7	31.1
Munich	22.9	11.92	83.7	61.8	29.9
Navigator	23.8	11.39	85.1	63.5	29.9
Pathfinder	24.8	11.87	82.6	63.0	29.4
Pierce	23.0	12.17	68.8	62.4	25.1
Plaza	23.6	11.80	81.8	62.5	30.3
Renville	25.9	11.90	83.2	63.0	31.2
site average	24.2	12.05	83.4	62.4	29.3
p value	0.302	0.011	0.003	<0.001	<0.001
CV (S/Mean)	5.6	3.3	8.5	0.9	6.6
CV(SE/Mean)	3.3	1.9	4.9	0.5	3.8
LSD <sub>0.05</sub>	2.3	0.67	11.9	0.9	3.2

Table 27. Relative yields of durum varieties as compared to Renville when grown under dryland conditions in Daniels County in cooperation with CES. Cooperator: Bobbie Roos

Variety	1999	2001	2002	2003	average	As % of Mountrail
AC Avonlea	--	25.1	31.1	31.5	29.2	100.9
Mountrail	50.1	23.5	32.3	31.1	34.2	100.0
AC Pathfinder	--	23.0	33.7	29.4	28.7	99.1
Dilse	--	--	30.9	31.9	31.4	99.1
Kyle	46.5	20.3	38.2	30.1	33.8	98.6
Belzer	--	21.9	32.9	29.0	27.9	96.5
Plaza	43.7	26.8	29.6	30.3	32.6	95.2
Ben	45.0	21.0	35.4	27.7	32.3	94.2
Renville	46.3	19.0	31.4	31.2	32.0	93.5
AC Navigator	--	21.3	30.0	29.9	27.1	93.4
Maier	41.2	19.4	33.0	29.9	30.9	90.1
Lebsock	41.6	16.5	35.1	30.0	30.8	89.9
Munich	42.9	--	28.0	29.9	33.6	88.8
Pierce	--	19.5	33.3	25.1	26.0	86.9

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

Table 28. Relative test weights of durum varieties as compared to Renville when grown under dryland conditions in Daniels County in cooperation with CES. Cooperator: Bobbie Roos

Variety	1999	2001	2002	2003	average	As % of Mountrail
Maier	63.1	64.4	62.7	63.2	63.4	102.3
Plaza	62.9	64.2	62.7	62.5	63.1	101.9
Pierce	--	64.1	62.7	62.4	63.1	101.8
Lebsock	62.8	64.1	61.8	63.3	63.0	101.8
AC Pathfinder	--	64.1	62.0	63.0	63.0	101.7
Ben	62.9	64.1	61.2	63.3	62.9	101.6
Dilse	--	--	60.8	62.8	61.8	100.9
AC Navigator	--	63.9	60.2	63.5	62.4	100.6
Renville	62.2	62.3	61.3	63.0	62.2	100.5
Kyle	61.1	63.2	61.3	62.3	62.0	100.1
Mountrail	61.7	63.2	61.0	61.7	61.9	100.0
Munich	61.7	--	60.5	61.8	61.3	99.8
AC Avonlea	--	62.9	60.7	61.8	61.8	99.7
Belzer	--	63.0	60.3	60.7	61.3	99.0

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

Table 29. Relative protein contents of durum varieties as compared to Renville when grown under dryland conditions in Daniels County in cooperation with CES. Cooperator: Bobbie Roos

Variety	1999	2001	2002	2003	average	As % of Mountrail
Dilse	--	--	14.0	12.9	13.4	112.1
AC Avonlea	--	10.7	13.8	12.6	12.4	109.4
Munich	9.9	--	14.0	11.9	11.9	108.5
Ben	9.4	11.0	13.7	12.3	11.6	108.2
Maier	9.3	10.4	13.2	12.1	11.2	104.4
AC Navigator	--	10.3	13.5	11.4	11.7	103.8
Pierce	--	9.8	12.7	12.2	11.6	102.4
Belzer	--	9.3	13.0	12.4	11.6	102.4
AC Pathfinder	--	9.2	13.2	11.9	11.4	101.2
Renville	9.3	9.2	13.0	11.9	10.8	100.9
Mountrail	9.0	9.9	12.2	11.8	10.7	100.0
Plaza	8.8	9.9	12.4	11.8	10.7	100.0
Lebsock	9.2	8.7	12.9	11.8	10.6	99.3
Kyle	8.4	8.9	12.0	12.0	10.3	96.3

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

Table 30. Performance of durum grown under irrigated conditions at Nahsua, MT.  
 Planted: 17 April 2003 Harvested: 14 August 2003 Cooperator: Alisha (Zeller) & Cole Sibley

Variety	height, inches	grain protein	HVA color	test weight	yield, bu/acre	
Belzer	38.5	12.10	53.4	63.3	95.3	a
Mountrail	34.1	12.23	65.9	64.0	84.3	
Dilse	35.2	13.42	69.0	64.3	83.5	
Plaza	29.8	11.53	50.8	63.2	82.4	
Lebsock	34.3	12.17	55.5	64.0	78.6	
Laser SW	33.2	13.76	51.0	60.2	76.3	
Navigator	30.6	12.97	79.3	63.5	75.6	
Renville	40.3	12.33	60.8	63.0	74.7	
Maier	34.0	13.09	66.9	64.2	73.6	x
Avonlea	37.4	13.10	79.2	63.7	73.5	x
Ben	38.3	13.32	64.6	63.7	71.0	x
Pathfinder	34.8	12.32	58.8	63.2	69.2	x
Munich	33.3	12.34	51.4	63.2	68.6	x
Pierce	36.6	13.01	69.9	63.2	64.4	x
Kyle	41.7	13.11	73.5	63.5	62.0	x
average	35.5	12.72	63.3	63.3	75.6	
p value	<0.001	<0.001	<0.001	<0.001	<0.001	
CV (S/Mean)	5.5	3.9	10.2	0.9	8.3	
CV(SE/Mean)	3.2	2.2	5.9	0.5	4.8	
LSD 0.05	3.3	0.82	10.9	1.0	10.5	

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