

**PROJECT TITLE:** Off-station durum yield trials - 2001

**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	Ardis Oelkers
Roosevelt, irrigated	Brad Bender	Chet Hill
Sheridan, dryland	Max Aasheim	Terry Angvick
Sheridan, irrigated	Steve Brekke	Terry Angvick
Valley, dryland	Bill Lauckner	Verlin Koenig
Valley, irrigated	Kelly Donovan	Verlin Koenig
Wibaux, dryland	David Maus	Dave Bertelsen

**MATERIALS AND METHODS:** Seventeen 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	9 May	30 Aug
Circle, McCone County – dryland	2 May	13 Aug
Poplar, Roosevelt County – dryland	8 May	16 Aug
Poplar, Roosevelt County – irrigated	8 May	27 Aug
Reserve, Sheridan County – dryland	10 May	29 Aug
Dagmar, Sheridan County – irrigated	10 May	29 Aug
Nashua, Valley County – dryland	12 Apr	20 Aug
Larslan, Valley County – irrigated	19 Apr	27 Aug
Wibaux, Wibaux County – dryland	3 May	15 Aug

**RESULTS:** Summaries of yields, test weights, heights and protein contents across **dryland sites** are shown in Tables 1-4, and summaries of yields, test weights, heights and protein contents across **irrigated sites** are shown in Tables 29-32. Morse and Mountrail yielded most across dryland sites (Table 1). Mountrail yielded most across the irrigated sites (Table 29).

**McCone County:** Performance and relative values of durum varieties at **Circle** are shown in Tables 5-8. Plaza and AC Morse yielded most.

**Wibaux County (dryland):** Performance and relative values of durum varieties at **Wibaux** are shown in Tables 9-12. Maier, AC Navigator, AC Morse, and Lebsock yielded significantly more than the check variety, Renville.

**Roosevelt County (dryland):** Performance and relative values of durum varieties at **Poplar** are shown in Tables 13-16. AC Morse and Mountrail yielded most.

**Sheridan County (dryland):** Performance and relative values of durum varieties at **Reserve** are shown in Tables 17-20. Mountrail yielded most.

**Valley County (dryland):** Performances of durum varieties at **Nashua** are shown in Table 21-24. Mountrail yielded most.

**Daniels County (dryland):** Performance and relative values of durum varieties at **Scobey** are shown in Tables 25-28. AC Napoleon, AC Morse, and YU89-475 yielded significantly more than the check variety, Renville.

**Sheridan County (irrigated):** Performance and relative values of durum varieties at **Dagmar** are shown in Tables 33-36. This site had serious scab infection and yields were very low. Mountrail and AC Napoleon yielded significantly more than the check variety, Renville.

**Valley County (irrigated):** Performance and relative values of durum varieties at **Larslan** are shown in Tables 37-40. AC Napoleon, Mountrail, and Maier yielded significantly more than the check variety, Renville.

**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, North Dakota, 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 six dryland off-station sites in eastern Montana, 2001. All sites except McCone (Circle) are on fallow ground.

Variety	Circle	Wibaux	Poplar	Reserve	Nashua	Scobey	average
AC Morse	34.2	39.5	<b>61.7</b>	39.5	55.3	35.8	44.3
Mountrail	32.8	37.7	61.3	<b>47.0</b>	<b>62.3</b>	23.5	44.1
AC Napoleon	33.4	36.1	59.5	39.7	55.4	<b>38.2</b>	43.7
AC Avonlea	30.3	38.8	59.2	38.7	59.3	25.1	41.9
Renville	32.7	37.0	56.9	44.6	60.6	19.0	41.8
Maier	26.8	<b>41.3</b>	58.3	44.8	56.4	19.4	41.2
AC Melita	29.9	36.2	53.2	42.6	60.7	24.1	41.1
Plaza	<b>34.4</b>	38.0	53.7	40.3	52.4	26.8	40.9
Lebsock	30.7	39.4	56.2	42.9	57.9	16.5	40.6
AC Pathfinder	31.4	38.7	56.5	37.2	56.1	23.0	40.5
Belzer	30.2	38.6	54.3	39.4	54.3	21.9	39.8
Pierce	29.7	36.9	53.5	39.5	59.9	19.5	39.8
Kyle	29.2	39.2	54.1	39.9	52.2	20.3	39.2
Ben	31.2	38.6	47.9	39.6	54.9	21.0	38.9
Sceptre	29.1	36.7	51.2	41.2	51.5	23.9	38.9
AC Navigator	27.7	40.8	44.8	33.6	48.3	21.3	36.1
YU89-475	30.3	36.9	43.5	33.0	38.5	28.3	35.1
site average	30.8	38.3	54.5	40.2	55.1	24.0	
p value	<0.001	<0.001	<0.001	<0.001	0.010	<0.001	
CV (S/Mean)	5.9	3.5	5.2	4.8	10.1	18.3	
CV(SE/Mean)	3.4	2.0	3.0	2.8	6.4	10.3	
LSD <sub>0.05</sub>	3.0	2.2	4.7	3.2	10.2	8.5	

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

Producer

Max Aasheim

David Maus

Victor Wagner

Mark Swank

Bill Lauckner

Bobbie Roos

CES Agent

Terry Angvick

Dave Bertelsen

Ken Nelson

Chet Hill

Verlin Koenig

Bobbie Roos

Table 2. Summary of durum test weights in lb/bu at six dryland off-station sites in eastern Montana, 2001. All sites except McCone (Circle) are on fallow ground.

Variety	Circle	Wibaux	Poplar	Reserve	Nashua	Scobey	average
Lebsock	64.5	62.7	65.2	64.3	63.0	64.1	64.0
Ben	64.0	61.8	64.7	64.8	62.5	64.1	63.7
Pierce	63.3	61.3	65.0	64.0	62.7	64.1	63.4
Maier	64.0	61.8	64.7	63.8	61.7	64.1	63.4
AC Pathfinder	63.5	61.5	64.0	62.8	61.8	64.1	63.0
Plaza	63.5	60.7	64.0	64.0	60.7	64.2	62.9
Kyle	63.2	61.2	64.0	63.5	62.3	63.2	62.9
AC Melita	63.0	61.2	63.7	63.3	62.2	63.1	62.8
AC Morse	63.2	60.8	63.5	63.0	61.7	63.3	62.6
Renville	63.0	61.0	64.0	63.5	62.0	62.3	62.6
Mountrail	62.3	60.0	63.7	63.8	61.7	63.2	62.5
AC Avonlea	63.2	60.5	63.5	62.8	61.8	62.9	62.5
AC Navigator	62.3	61.3	63.2	63.0	61.3	63.9	62.5
Sceptre	62.0	60.3	63.3	62.7	61.0	63.3	62.1
AC Napoleon	62.3	59.5	63.0	62.8	60.7	62.4	61.8
Belzer	61.2	60.8	63.3	61.3	60.2	63.0	61.6
YU89-475	61.7	59.3	60.3	61.3	60.5	62.8	61.0
site average	63.0	60.9	63.7	63.2	61.6	63.4	
p value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CV (S/Mean)	0.5	0.6	0.7	0.6	0.9	0.6	
CV(SE/Mean)	0.3	0.3	0.4	0.3	0.5	0.4	
LSD <sub>0.05</sub>	0.5	0.6	0.7	0.6	0.9	0.7	

Cooperators:

County

Sheridan (Reserve)  
Wibaux (Wibaux)  
McCone (Circle)  
Roosevelt (Poplar)  
Valley (Nashua)  
Daniels (Scobey)

Producer

Max Aasheim  
David Maus  
Victor Wagner  
Mark Swank  
Bill Lauckner  
Bobbie Roos

CES Agent

Terry Angvick  
Dave Bertelsen  
Ken Nelson  
Chet Hill  
Verlin Koenig  
Bobbie Roos

Table 3. Summary of durum heights in inches at six dryland off-station sites in eastern Montana, 2001. All sites except McCone (Circle) are on fallow ground.

Variety	Circle	Wibaux	Poplar	Reserve	Nashua	Scobey	average
Kyle	29	35	38	35	34	27	33
Renville	30	32	34	32	33	27	31
AC Melita	30	33	33	33	32	27	31
AC Napoleon	30	31	30	30	32	26	30
AC Pathfinder	31	31	32	30	29	26	30
Ben	30	30	32	32	31	27	30
AC Avonlea	28	30	30	30	29	25	29
Belzer	27	29	34	31	28	27	29
AC Morse	28	28	30	29	27	25	28
Mountrail	28	28	32	30	29	23	28
Pierce	26	28	32	30	28	25	28
Sceptre	29	30	28	29	28	24	28
Maier	27	29	30	30	27	24	28
Lebsock	26	28	30	30	27	23	27
Plaza	26	24	27	26	25	23	25
YU89-475	27	26	25	25	23	24	25
AC Navigator	23	26	28	26	24	23	25
site average	28	29	31	30	29	25	
p value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
CV (S/Mean)	5.6	4.1	4.2	3.9	6.3	5.4	
CV(SE/Mean)	3.2	2.4	2.4	2.2	3.7	3.1	
LSD <sub>0.05</sub>	2.6	2.0	2.2	1.9	3.0	2.2	

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

Producer

Max Aasheim

David Maus

Victor Wagner

Mark Swank

Bill Lauckner

Bobbie Roos

CES Agent

Terry Angvick

Dave Bertelsen

Ken Nelson

Chet Hill

Verlin Koenig

Bobbie Roos

Table 4. Summary of durum grain protein contents at six dryland off-station sites in eastern Montana, 2001. All sites except McCone (Circle) are on fallow ground.

Variety	Circle	Wibaux	Poplar	Reserve	Nashua	Scobey	average
AC Morse	11.5	16.1	13.4	14.8	15.2	12.2	13.9
AC Napoleon	10.6	16.2	13.6	14.7	15.4	11.9	13.7
AC Avonlea	11.4	15.9	13.4	15.4	15.4	10.7	13.7
Maier	12.1	15.7	13.3	15.2	15.4	10.4	13.7
Ben	10.8	16.0	13.3	14.4	14.7	11.0	13.4
YU89-475	11.1	15.0	13.6	14.6	13.9	11.3	13.3
Sceptre	11.5	15.4	12.3	14.8	14.8	10.7	13.3
AC Melita	11.1	15.6	12.8	14.6	15.2	9.8	13.2
Belzer	10.7	15.2	13.3	14.7	15.2	9.3	13.1
Pierce	11.1	15.9	12.9	14.5	14.2	9.8	13.1
AC Navigator	11.0	14.9	13.6	14.8	13.8	10.3	13.1
Plaza	10.2	15.6	13.4	14.5	14.3	9.9	13.0
Kyle	11.1	15.5	13.0	14.6	14.6	8.9	13.0
Renville	10.2	15.8	13.0	14.8	14.6	9.2	12.9
Mountrail	10.2	16.0	12.4	14.1	14.2	9.9	12.8
AC Pathfinder	10.0	15.0	12.6	14.6	14.6	9.2	12.7
Lebsock	9.7	14.8	12.9	14.5	14.4	8.7	12.5
site average	10.8	15.6	13.1	14.7	14.7	10.2	
p value	<0.001	<0.001	<0.001	0.003	<0.001	0.002	
CV (S/Mean)	2.9	2.5	2.8	2.0	2.2	9.6	
CV(SE/Mean)	1.6	1.4	1.6	1.1	1.2	5.5	
LSD <sub>0.05</sub>	0.5	0.6	0.6	0.5	0.5	1.6	

Cooperators:

County

Sheridan (Reserve)

Wibaux (Wibaux)

McCone (Circle)

Roosevelt (Poplar)

Valley (Nashua)

Daniels (Scobey)

Producer

Max Aasheim

David Maus

Victor Wagner

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Bobbie Roos

CES Agent

Terry Angvick

Dave Bertelsen

Ken Nelson

Chet Hill

Verlin Koenig

Bobbie Roos

Table 5. Performance of durum grown under dryland continuous cropping conditions at Circle, Montana. Planted: 2 May 2001 Harvested: 13 August 2001 Cooperator: Victor Wagner

Variety	height, inches	grain protein	test weight	yield, bu/acre
Plaza	26	10.2	63.5	34.4
AC Morse	28	11.5	63.2	34.2
AC Napoleon	30	10.6	62.3	33.4
Mountrail	28	10.2	62.3	32.8
Renville	30	10.2	63.0	32.7
AC Pathfinder	31	10.0	63.5	31.4
Ben	30	10.8	64.0	31.2
Lebsock	26	9.7	64.5	30.7
YU89-475	27	11.1	61.7	30.3
AC Avonlea	28	11.4	63.2	30.3
Belzer	27	10.7	61.2	30.2
AC Melita	30	11.1	63.0	29.9
Pierce	26	11.1	63.3	29.7
Kyle	29	11.1	63.2	29.2 x
Sceptre	29	11.5	62.0	29.1 x
AC Navigator	23	11.0	62.3	27.7 x
Maier	27	12.1	64.0	26.8 x
average	28	10.8	63.0	30.8
p value	<0.001	<0.001	<0.001	<0.001
CV (S/Mean)	5.6	2.9	0.5	5.9
CV(SE/Mean)	3.2	1.6	0.3	3.4
LSD 0.05	2.6	0.5	0.5	3.0

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

Table 6. 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	1996	1998	1999	2000	2001	average	As % of Renville
Mountrail	--	33.9	30.4	30.5	32.8	31.9	103.7
AC Morse	--	31.2	--	29.1	34.2	31.5	102.7
AC Napoleon	--	--	--	--	33.4	33.4	102.1
Renville	14.5	27.5	31.0	31.8	32.7	27.5	100.0
Kyle	12.4	35.1	30.5	30.3	29.2	27.5	100.0
Plaza	--	28.7	31.3	27.0	34.4	30.4	98.7
AC Pathfinder	--	--	--	--	31.4	31.4	96.0
AC Avonlea	--	--	--	30.9	30.3	30.6	94.9
YU89-475	--	--	--	--	30.3	30.3	92.7
Pierce	--	--	--	--	29.7	29.7	90.8
Belzer	--	--	--	28.3	30.2	29.3	90.7
Maier	--	30.4	26.1	26.2	26.8	27.4	89.0
Sceptre	--	--	--	--	29.1	29.1	89.0
Lebsock	--	--	27.4	26.8	30.7	28.3	88.9
AC Melita	--	25.3	--	26.4	29.9	27.2	88.7
Ben	11.6	28.9	23.6	26.5	31.2	24.4	88.6
AC Navigator	--	--	--	--	27.7	27.7	84.7

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 Renville when grown under dryland conditions in McCone County in cooperation with CES. Cooperator: Victor Wagner

Variety	1996	1998	1999	2000	2001	average	As % of Renville
Maier	--	62.3	63.7	62.5	64.0	63.1	100.9
Lebsock	--	--	63.0	62.8	64.5	63.4	100.8
AC Pathfinder	--	--	--	--	63.5	63.5	100.8
Kyle	63.4	62.0	63.0	62.8	63.2	62.9	100.6
Ben	63.2	61.8	62.9	62.5	64.0	62.9	100.6
Pierce	--	--	--	--	63.3	63.3	100.5
Plaza	--	62.0	62.5	62.5	63.5	62.6	100.1
Renville	62.2	61.5	63.0	62.8	63.0	62.5	100.0
AC Avonlea	--	--	--	62.3	63.2	62.8	99.8
Mountrail	--	62.0	63.0	62.0	62.3	62.3	99.6
AC Napoleon	--	--	--	--	62.3	62.3	98.9
AC Navigator	--	--	--	--	62.3	62.3	98.9
AC Melita	--	60.6	--	61.3	63.0	61.6	98.7
AC Morse	--	59.8	--	61.8	63.2	61.6	98.7
Sceptre	--	--	--	--	62.0	62.0	98.4
YU89-475	--	--	--	--	61.7	61.7	97.9
Belzer	--	--	--	61.0	61.2	61.1	97.1

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 8. 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	1996	1998	1999	2000	2001	average	As % of Renville
Sceptre	--	--	--	--	11.5	11.5	112.7
YU89-475	--	--	--	--	11.1	11.1	108.8
Pierce	--	--	--	--	11.1	11.1	108.8
AC Avonlea	--	--	--	11.5	11.4	11.5	108.0
AC Navigator	--	--	--	--	11.0	11.0	107.8
AC Morse	--	14.9	--	12.1	11.5	12.8	105.8
Maier	--	15.6	11.1	11.8	12.1	12.7	105.0
AC Melita	--	15.2	--	11.7	11.1	12.7	104.4
AC Napoleon	--	--	--	--	10.6	10.6	103.9
Belzer	--	--	--	11.0	10.7	10.9	102.4
Ben	13.0	15.1	10.9	12.4	10.8	12.4	102.1
Kyle	12.9	14.7	10.9	11.7	11.1	12.3	100.7
Renville	12.7	15.2	11.8	11.0	10.2	12.2	100.0
AC Pathfinder	--	--	--	--	10.0	10.0	98.0
Lebsock	--	--	11.4	11.0	9.7	10.7	97.3
Plaza	--	15.2	10.0	11.1	10.2	11.6	96.5
Mountrail	--	14.4	10.9	10.8	10.2	11.6	96.1

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

Table 9. Performance of durum grown under dryland conditions at Wibaux, Montana.  
 Planted: 3 May 2001      Harvested: 15 August 2001    Cooperator: David Maus

Variety	Height, inches	Grain protein	Test weight	Yield, bu/acre	
Maier	29	15.7	61.8	41.3	a
AC Navigator	26	14.9	61.3	40.8	a
AC Morse	28	16.1	60.8	39.5	a
Lebsock	28	14.8	62.7	39.4	a
Kyle	35	15.5	61.2	39.2	
AC Avonlea	30	15.9	60.5	38.8	
AC Pathfinder	31	15.0	61.5	38.7	
Ben	30	16.0	61.8	38.6	
Belzer	29	15.2	60.8	38.6	
Plaza	24	15.6	60.7	38.0	
Mountrail	28	16.0	60.0	37.7	
Renville	32	15.8	61.0	37.0	
YU89-475	26	15.0	59.3	36.9	
Pierce	28	15.9	61.3	36.9	
Sceptre	30	15.4	60.3	36.7	
AC Melita	33	15.6	61.2	36.2	
AC Napoleon	31	16.2	59.5	36.1	
average	29	15.6	60.9	38.3	
p value	<0.001	<0.001	<0.001	<0.001	
CV (S/Mean)	4.1	2.5	0.6	3.5	
CV(SE/Mean)	2.4	1.4	0.3	2.0	
LSD 0.05	2.0	0.6	0.6	2.2	

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

Table 10. 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	Ave	as % of Renville
Lebsock	43.5	42.4	39.4	41.8	113.3
Plaza	40.0	46.4	38.0	41.5	112.5
Mountrail	37.1	48.4	37.7	41.1	111.4
Kyle	38.7	44.9	39.2	40.9	110.8
AC Navigator	--	--	40.8	40.8	110.3
Maier	38.4	39.3	41.3	39.7	107.6
AC Avonlea	--	43.6	38.8	41.2	105.1
Belzer	--	43.4	38.6	41.0	104.6
AC Pathfinder	--	--	38.7	38.7	104.6
Ben	32.3	43.5	38.6	38.1	103.3
Sceptre	34.0	--	36.7	35.4	102.3
Renville	32.1	41.5	37.0	36.9	100.0
Pierce	--	--	36.9	36.9	99.7
YU89-475	--	--	36.9	36.9	99.7
AC Morse	--	38.4	39.5	39.0	99.5
AC Napoleon	--	--	36.1	36.1	97.6
AC Melita	--	39.9	36.2	38.1	97.2

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 as compared to Renville when grown under dryland conditions in Wibaux County in cooperation with CES. Cooperator: David Maus

Cultivar	1999	2000	2001	Ave	as % of Renville
Lebsock	61.7	62.3	62.7	62.2	101.6
AC Pathfinder	--	--	61.5	61.5	100.8
Kyle	61.5	61.8	61.2	61.5	100.5
Maier	60.2	62.5	61.8	61.5	100.5
Ben	60.0	62.8	61.8	61.5	100.5
AC Navigator	--	--	61.3	61.3	100.5
Pierce	--	--	61.3	61.3	100.5
Renville	60.3	62.3	61.0	61.2	100.0
AC Melita	--	62.0	61.2	61.6	100.0
Plaza	60.5	62.2	60.7	61.1	99.8
Mountrail	60.7	62.0	60.0	60.9	99.5
AC Avonlea	--	62.0	60.5	61.3	99.5
AC Morse	--	61.5	60.8	61.2	99.4
Belzer	--	60.8	60.8	60.8	98.7
Sceptre	59.2	--	60.3	59.8	98.5
AC Napoleon	--	--	59.5	59.5	97.5
YU89-475	--	--	59.3	59.3	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.

Table 12. 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	Ave	as % of Renville
Maier	14.9	17.4	15.7	16.0	102.6
AC Avonlea	--	17.2	15.9	16.6	102.5
AC Napoleon	--	--	16.2	16.2	102.5
Ben	14.8	16.9	16.0	15.9	101.9
AC Morse	--	16.8	16.1	16.5	101.9
Pierce	--	--	15.9	15.9	100.6
Renville	14.5	16.5	15.8	15.6	100.0
Kyle	14.4	16.6	15.5	15.5	99.4
AC Melita	--	16.5	15.6	16.1	99.4
Mountrail	14.2	16.1	16.0	15.4	98.7
Lebsock	14.6	16.8	14.8	15.4	98.7
Sceptre	14.4	--	15.4	14.9	98.3
Belzer	--	16.3	15.2	15.8	97.5
Plaza	14.4	15.7	15.6	15.2	97.4
AC Pathfinder	--	--	15.0	15.0	94.9
YU89-475	--	--	15.0	15.0	94.9
AC Navigator	--	--	14.9	14.9	94.3

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 13. Performance of durum grown under dryland conditions at Poplar, MT.  
 Planted: 8 May 2001    Harvested: 16 August 2001    Cooperator: Mark Swank

Variety	height, inches	grain protein	test weight	yield, bu/acre
AC Morse	30	13.4	63.5	61.7
Mountrail	32	12.4	63.7	61.3
AC Napoleon	30	13.6	63.0	59.5
AC Avonlea	30	13.4	63.5	59.2
Maier	30	13.3	64.7	58.3
Renville	34	13.0	64.0	56.9
AC Pathfinder	32	12.6	64.0	56.5
Lebsock	30	12.9	65.2	56.2
Belzer	34	13.3	63.3	54.3 x
Kyle	38	13.0	64.0	54.1 x
Plaza	27	13.4	64.0	53.7 x
Pierce	32	12.9	65.0	53.5 x
AC Melita	33	12.8	63.7	53.2 x
Sceptre	28	12.3	63.3	51.2 x
Ben	32	13.3	64.7	47.9 x
AC Navigator	28	13.6	63.2	44.8 x
YU89-475	25	13.6	60.3	43.5 x
Average	31	13.1	63.7	54.5
p value	<0.001	<0.001	<0.001	<0.001
CV (S/Mean)	4.2	2.8	0.7	5.2
CV(SE/Mean)	2.4	1.6	0.4	3.0
LSD 0.05	2.2	0.6	0.7	4.7

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

Table 14. 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	1997	1998	1999	2000	2001	Ave	as % of Renville
Mountrail	--	38.4	48.6	58.7	61.3	51.8	106.5
AC Morse	--	--	--	54.5	61.7	58.1	106.4
AC Avonlea	--	--	--	55.8	59.2	57.5	105.3
AC Napoleon	--	--	--	--	59.5	59.5	104.6
Belzer	23.3	40.3	--	54.4	54.3	43.1	103.8
Plaza	--	35.9	49.5	59.5	53.7	49.7	102.2
Maier	--	40.0	46.2	54.1	58.3	49.7	102.2
Kyle	26.0	39.0	47.8	52.9	54.1	44.0	102.0
Renville	21.0	35.8	49.4	52.3	56.9	43.1	100.0
AC Pathfinder	--	--	--	--	56.5	56.5	99.3
Lebsock	--	--	43.7	55.6	56.2	51.8	98.0
AC Melita	21.9	35.8	--	49.2	53.2	40.0	96.4
Ben	18.8	41.5	45.3	53.3	47.9	41.4	96.0
Pierce	--	--	--	--	53.5	53.5	94.0
Sceptre	--	--	40.9	--	51.2	46.1	86.6
AC Navigator	--	--	--	--	44.8	44.8	78.7
YU89-475	--	--	--	--	43.5	43.5	76.4

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 15. 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	1997	1998	1999	2000	2001	Ave	as % of Renville
Pierce	--	--	--	--	65.0	65.0	101.6
Lebsock	--	--	61.5	63.8	65.2	63.5	101.4
Ben	65.0	63.3	61.0	63.0	64.7	63.4	100.5
Maier	--	62.8	61.0	63.0	64.7	62.9	100.3
Renville	64.5	63.0	61.5	62.3	64.0	63.1	100.0
AC Pathfinder	--	--	--	--	64.0	64.0	100.0
AC Morse	--	--	--	62.2	63.5	62.9	99.5
AC Melita	64.8	62.0	--	62.0	63.7	63.1	99.5
Mountrail	--	62.2	61.0	62.2	63.7	62.3	99.3
Kyle	62.6	62.5	61.5	62.0	64.0	62.5	99.1
Plaza	--	61.3	60.8	62.5	64.0	62.2	99.1
AC Avonlea	--	--	--	61.3	63.5	62.4	98.8
AC Navigator	--	--	--	--	63.2	63.2	98.8
AC Napoleon	--	--	--	--	63.0	63.0	98.4
Belzer	63.1	61.7	--	61.7	63.3	62.5	98.4
Sceptre	--	--	59.8	--	63.3	61.6	98.1
YU89-475	--	--	--	--	60.3	60.3	94.2

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.

Table 16. 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	1997	1998	1999	2000	2001	Ave	as % of Renville
AC Napoleon	--	--	--	--	13.6	13.6	104.6
AC Navigator	--	--	--	--	13.6	13.6	104.6
YU89-475	--	--	--	--	13.6	13.6	104.6
AC Morse	--	--	--	15.0	13.4	14.2	104.0
Maier	--	15.8	13.4	14.7	13.3	14.3	103.6
AC Avonlea	--	--	--	14.7	13.4	14.1	102.9
Ben	16.3	15.7	12.6	14.6	13.3	14.5	102.1
Lebsock	--	--	13.1	14.2	12.9	13.4	101.0
Renville	15.8	15.4	12.5	14.3	13.0	14.2	100.0
AC Melita	15.8	15.0	--	14.5	12.8	14.5	99.3
Pierce	--	--	--	--	12.9	12.9	99.2
Kyle	15.8	14.6	12.5	14.0	13.0	14.0	98.5
Plaza	--	15.1	12.0	13.5	13.4	13.5	97.8
Mountrail	--	15.2	12.5	13.6	12.4	13.4	97.3
AC Pathfinder	--	--	--	--	12.6	12.6	96.9
Sceptre	--	--	12.4	--	12.3	12.4	96.9
Belzer	14.3	14.8	--	13.8	13.3	14.1	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 17. Performance of durum grown under dryland conditions at Reserve, MT.  
 Planted: 10 May 2001    Harvested: 29 August 2001    Cooperator: Max Aasheim

Variety	Height, inches	Grain protein	Test weight	Yield, bu/acre
Mountrail	30	14.1	63.8	47.0
Maier	30	15.2	63.8	44.8
Renville	32	14.8	63.5	44.6
Lebsock	30	14.5	64.3	42.9
AC Melita	33	14.6	63.3	42.6
Sceptre	29	14.8	62.7	41.2 x
Plaza	26	14.5	64.0	40.3 x
Kyle	35	14.6	63.5	39.9 x
AC Napoleon	30	14.7	62.8	39.7 x
Ben	32	14.4	64.8	39.6 x
AC Morse	29	14.8	63.0	39.5 x
Pierce	30	14.5	64.0	39.5 x
Belzer	31	14.7	61.3	39.4 x
AC Avonlea	30	15.4	62.8	38.7 x
AC Pathfinder	30	14.6	62.8	37.2 x
AC Navigator	26	14.8	63.0	33.6 x
YU89-475	25	14.6	61.3	33.0 x
site average	30	14.7	63.2	40.2
p value	<0.001	0.003	<0.001	<0.001
CV (S/Mean)	3.9	2.0	0.6	4.8
CV(SE/Mean)	2.2	1.1	0.3	2.8
LSD <sub>0.05</sub>	1.9	0.5	0.6	3.2

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

Table 18. 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	1997	1998	1999	2000	2001	Ave	as % of Renville
Mountrail	--	52.6	38.2	32.9	47.0	42.7	107.8
Plaza	--	53.2	42.0	34.4	40.3	42.5	107.3
Maier	--	49.4	36.8	27.5	44.8	39.6	100.1
Renville	31.0	45.8	39.0	29.2	44.6	37.9	100.0
Kyle	36.1	43.0	38.2	27.4	39.9	36.9	97.5
AC Avonlea	--	--	--	32.7	38.7	35.7	96.7
AC Melita	28.8	44.4	--	26.4	42.6	35.6	94.4
AC Morse	--	--	--	28.9	39.5	34.2	92.7
Belzer	23.8	45.9	--	30.3	39.4	34.9	92.6
Lebsock	--	--	35.7	24.4	42.9	34.3	91.6
Sceptre	--	--	34.8	--	41.2	38.0	91.2
Ben	28.4	48.2	28.6	26.3	39.6	34.2	90.4
AC Napoleon	--	--	--	--	39.7	39.7	89.0
Pierce	--	--	--	--	39.5	39.5	88.6
AC Pathfinder	--	--	--	--	37.2	37.2	83.4
AC Navigator	--	--	--	--	33.6	33.6	75.3
YU89-475	--	--	--	--	33.0	33.0	74.0

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.

Table 19. 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	1997	1998	1999	2000	2001	Ave	as % of Munich
Pierce	--	--	--	--	64.0	64.0	100.8
Lebsock	--	--	63.0	61.8	64.3	63.0	100.7
Ben	60.7	62.7	63.0	61.2	64.8	62.5	100.5
Plaza	--	62.0	63.5	61.2	64.0	62.7	100.2
Renville	60.8	62.3	63.5	60.8	63.5	62.2	100.0
Maier	--	62.2	63.3	60.7	63.7	62.5	99.9
Kyle	61.2	61.5	62.5	60.3	63.5	61.8	99.4
Mountrail	--	61.0	62.8	60.8	63.8	62.1	99.3
AC Melita	60.3	61.3	--	60.7	63.3	61.4	99.3
AC Navigator	--	--	--	--	63.0	63.0	99.2
AC Avonlea	--	--	--	60.5	62.8	61.7	99.2
AC Napoleon	--	--	--	--	62.8	62.8	98.9
AC Pathfinder	--	--	--	--	62.8	62.8	98.9
AC Morse	--	--	--	59.8	63.0	61.4	98.8
Sceptre	--	--	61.8	--	62.7	62.3	98.0
Belzer	59.7	60.8	--	59.8	61.3	60.4	97.7
YU89-475	--	--	--	--	61.3	61.3	96.5

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 20. 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	1997	1998	1999	2000	2001	Ave	as % of Munich
Maier	--	13.1	11.7	13.7	15.2	13.4	105.7
AC Avonlea	--	--	--	12.9	15.4	14.2	103.7
AC Morse	--	--	--	13.3	14.8	14.1	102.9
Kyle	13.5	12.1	10.8	13.9	14.6	13.0	102.2
Ben	13.0	12.8	11.4	13.1	14.4	12.9	101.9
AC Melita	12.8	12.3	--	13.2	14.6	13.2	101.0
Renville	12.7	12.4	11.1	12.5	14.8	12.7	100.0
AC Navigator	--	--	--	--	14.8	14.8	100.0
Lebsock	--	--	11.5	12.3	14.5	12.8	99.7
Sceptre	--	--	11.0	--	14.8	12.9	99.6
AC Napoleon	--	--	--	--	14.7	14.7	99.3
Belzer	12.5	12.1	--	12.6	14.7	13.0	99.0
AC Pathfinder	--	--	--	--	14.6	14.6	98.6
YU89-475	--	--	--	--	14.6	14.6	98.6
Mountrail	--	12.2	11.4	12.4	14.1	12.5	98.6
Pierce	--	--	--	--	14.5	14.5	98.0
Plaza	--	12.3	10.2	12.1	14.5	12.3	96.7

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 21. Performance of durum grown under dryland conditions at Nashua, MT.  
 Planted: 12 April 2001, Harvested: 20 August 2001 Cooperator: Bill Lauckner

Variety	Height, inches	Grain protein	Test weight	Yield, bu/acre
Mountrail	29	14.2	61.7	62.3
AC Melita	32	15.2	62.2	60.7
Renville	33	14.6	62.0	60.6
Pierce	28	14.2	62.7	59.9
AC Avonlea	29	15.4	61.8	59.3
Lebsock	27	14.4	63.0	57.9
Maier	27	15.4	61.7	56.4
AC Pathfinder	29	14.6	61.8	56.1
AC Napoleon	32	15.4	60.7	55.4
AC Morse	27	15.2	61.7	55.3
Ben	31	14.7	62.5	54.9
Belzer	28	15.2	60.2	54.3
Plaza	25	14.3	60.7	52.4
Kyle	34	14.6	62.3	52.2
Sceptre	28	14.8	61.0	51.5
AC Navigator	24	13.8	61.3	48.3 x
YU894-75	23	13.9	60.5	38.5 x
average	29	14.7	61.6	55.1
p value	<0.001	<0.001	<0.001	0.010
CV (S/Mean)	6.3	2.2	0.9	10.1
CV(SE/Mean)	3.7	1.2	0.5	6.4
LSD 0.05	3.0	0.5	0.9	10.2

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

Table 22. Relative yielding abilities of spring wheat varieties as compared to McNeal when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2000	2001	Ave	As % of Renville
Mountrail	68.6	62.3	65.5	109.1
AC Avonlea	63.1	59.3	61.2	102.0
Renville	59.3	60.6	60.0	100.0
Pierce	--	59.9	59.9	98.8
Maier	59.0	56.4	57.7	96.2
AC Melita	54.2	60.7	57.5	95.8
AC Morse	58.8	55.3	57.1	95.2
Plaza	60.7	52.4	56.6	94.3
Lebsock	53.8	57.9	55.9	93.2
AC Pathfinder	--	56.1	56.1	92.6
Belzer	56.6	54.3	55.5	92.5
AC Napoleon	--	55.4	55.4	91.4
Kyle	56.6	52.2	54.4	90.7
Ben	52.3	54.9	53.6	89.3
Sceptre	--	51.5	51.5	85.0
AC Navigator	--	48.3	48.3	79.7
YU894-75	--	38.5	38.5	63.5

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

Cultivar	2000	2001	Ave	As % of Renville
Lebsock	64.7	63.0	63.9	101.8
Pierce	--	62.7	62.7	101.1
Maier	65.0	61.7	63.4	101.0
Ben	64.0	62.5	63.3	100.8
Kyle	64.0	62.3	63.2	100.6
Mountrail	64.0	61.7	62.9	100.2
AC Melita	63.5	62.2	62.9	100.2
Renville	63.5	62.0	62.8	100.0
AC Avonlea	63.7	61.8	62.8	100.0
Plaza	64.7	60.7	62.7	99.8
AC Pathfinder	--	61.8	61.8	99.7
AC Morse	63.0	61.7	62.4	99.4
AC Navigator	--	61.3	61.3	98.9
Sceptre	--	61.0	61.0	98.4
Belzer	63.2	60.2	61.7	98.2
AC Napoleon	--	60.7	60.7	97.9
YU894-75	--	60.5	60.5	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 test weights only to the check variety.

Table 24. Relative protein contents of durum varieties as compared to Renville when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2000	2001	Ave	As % of Renville
AC Avonlea	11.5	15.4	13.5	110.7
AC Morse	11.7	15.2	13.5	110.7
AC Melita	11.3	15.2	13.3	109.0
Maier	11.2	15.4	13.3	109.0
Ben	11.4	14.7	13.1	107.4
AC Napoleon	--	15.4	15.4	105.5
Lebsock	11.2	14.4	12.8	104.9
Belzer	10.1	15.2	12.7	104.1
Kyle	10.5	14.6	12.6	103.3
Mountrail	10.5	14.2	12.4	101.6
Sceptre	--	14.8	14.8	101.4
Renville	9.7	14.6	12.2	100.0
Plaza	10.1	14.3	12.2	100.0
AC Pathfinder	--	14.6	14.6	100.0
Pierce	--	14.2	14.2	97.3
YU894-75	--	13.9	13.9	95.2
AC Navigator	--	13.8	13.8	94.5

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 25. Performance of durum grown under dryland conditions at Scobey, MT.  
 Planted: 9 May 2001    Harvested: 30 August 2001    Cooperator: Bobbie Roos

Variety	Height, inches	Grain protein	Test weight	Yield, bu/acre	
AC Napoleon	26	11.9	62.4	38.2	a
AC Morse	25	12.2	63.3	35.8	a
YU89-475	24	11.3	62.8	28.3	a
Plaza	23	9.9	64.2	26.8	
AC Avonlea	25	10.7	62.9	25.1	
AC Melita	27	9.8	63.1	24.1	
Sceptre	24	10.7	63.3	23.9	
Mountrail	23	9.9	63.2	23.5	
AC Pathfinder	26	9.2	64.1	23.0	
Belzer	27	9.3	63.0	21.9	
AC Navigator	23	10.3	63.9	21.3	
Ben	27	11.0	64.1	21.0	
Kyle	27	8.9	63.2	20.3	
Pierce	25	9.8	64.1	19.5	
Maier	24	10.4	64.1	19.4	
Renville	27	9.2	62.3	19.0	
Lebsock	23	8.7	64.1	16.5	
site average	25	10.2	63.4	24.0	
p value	<0.001	0.002	<0.001	<0.001	
CV (S/Mean)	5.4	9.6	0.6	18.3	
CV(SE/Mean)	3.1	5.5	0.4	10.3	
LSD <sub>0.05</sub>	2.2	1.6	0.7	8.5	

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

Table 26. 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	average	As % of Renville
AC Napoleon	--	38.2	38.2	201.1
AC Morse	--	35.8	35.8	188.4
YU89575	--	28.3	28.3	148.9
AC Avonlea	--	25.1	25.1	132.1
AC Melita	--	24.1	24.1	126.8
AC Pathfinder	--	23.0	23.0	121.1
Belzer	--	21.9	21.9	115.3
Mountrail	50.1	23.5	36.8	112.5
AC Navigator	--	21.3	21.3	112.1
Plaza	43.7	26.8	35.3	108.0
Pierce	--	19.5	19.5	102.6
Kyle	46.5	20.3	33.4	102.1
Ben	45.0	21.0	33.0	100.9
Renville	46.3	19.0	32.7	100.0
Sceptre	40.2	23.9	32.1	98.2
Maier	41.2	19.4	30.3	92.7
Lebsock	41.6	16.5	29.1	89.0

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 27. 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	average	As % of Renville
AC Pathfinder	--	64.1	64.1	102.9
Pierce	--	64.1	64.1	102.9
AC Navigator	--	63.9	63.9	102.6
Maier	63.1	64.4	63.8	102.4
Plaza	62.9	64.2	63.6	102.1
Ben	62.9	64.1	63.5	101.9
Lebsock	62.8	64.1	63.5	101.9
AC Morse	--	63.3	63.3	101.6
AC Melita	--	63.1	63.1	101.3
Belzer	--	63.0	63.0	101.1
AC Avonlea	--	62.9	62.9	101.0
YU89575	--	62.8	62.8	100.8
Mountrail	61.7	63.2	62.5	100.3
Sceptre	61.7	63.3	62.5	100.3
AC Napoleon	--	62.4	62.4	100.2
Renville	62.2	62.3	62.3	100.0
Kyle	61.1	63.2	62.2	99.8

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 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	average	As % of Renville
AC Morse	--	12.2	12.2	132.6
AC Napoleon	--	11.9	11.9	129.3
YU89575	--	11.3	11.3	122.8
AC Avonlea	--	10.7	10.7	116.3
AC Navigator	--	10.3	10.3	112.0
Ben	9.4	11.0	10.2	109.7
Maier	9.3	10.4	9.9	106.5
Sceptre	9.1	10.7	9.9	106.5
AC Melita	--	9.8	9.8	106.5
Pierce	--	9.8	9.8	105.4
Mountrail	9.0	9.9	9.5	102.2
Plaza	8.8	9.9	9.4	101.1
Belzer	--	9.3	9.3	101.1
Renville	9.3	9.2	9.3	100.0
AC Pathfinder	--	9.2	9.2	100.0
Lebsock	9.2	8.7	9.0	96.8
Kyle	8.4	8.9	8.7	93.5

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. Summary of durum yields in bu/acre at two irrigated off-station sites in eastern Montana, 2001. Both sites are under pivot irrigation.

Variety	Dagmar*	Larslan	average
Mountrail	<b>26.5</b>	74.6	50.6
AC Napoleon	24.9	<b>74.7</b>	49.8
Lebsock	24.7	72.6	48.7
Maier	22.9	74.1	48.5
Belzer	24.7	72.2	48.5
AC Avonlea	19.7	72.2	46.0
Plaza	18.2	72.4	45.3
Pierce	20.8	69.8	45.3
AC Morse	22.6	63.0	42.8
Renville	19.5	65.3	42.4
Ben	19.9	63.9	41.9
AC Melita	21.3	62.0	41.7
Kyle	18.6	64.0	41.3
AC Pathfinder	17.7	64.5	41.1
Sceptre	15.1	63.9	39.5
AC Navigator	11.6	59.0	35.3
YU89-475	8.1	35.2	21.7
average	19.8	66.1	
p value	<0.001	<0.001	
CV (S/Mean)	16.1	8.9	
CV(SE/Mean)	9.3	5.2	
LSD 0.05	5.3	9.8	

\*Severe scab infection

Cooperators:

County  
 Sheridan (Dagmar)  
 Valley (Larslan)

Producer  
 Steve Brekke  
 Kelly Donovan

CES Agent  
 Terry Angvick  
 Verlin Koenig

Table 30. Summary of durum test weights in lb/bu at two irrigated off-station sites in eastern Montana, 2001. Both sites are under pivot irrigation.

Variety	Dagmar*	Larslan	average
Pierce	57.6	61.8	59.7
Lebsock	56.9	61.7	59.3
Ben	56.7	61.2	59.0
AC Pathfinder	56.5	60.5	58.5
Kyle	57.8	59.2	58.5
Maier	55.9	61.0	58.5
AC Melita	55.9	60.3	58.1
Belzer	57.1	58.5	57.8
Renville	56.0	59.5	57.8
Sceptre	56.0	59.5	57.8
AC Napoleon	56.1	59.2	57.7
Mountrail	55.6	59.8	57.7
Plaza	55.5	59.7	57.6
AC Avonlea	55.3	59.7	57.5
AC Morse	54.3	59.7	57.0
AC Navigator	53.4	58.3	55.9
YU89-475	48.3	51.7	50.0
average	55.6	59.5	
p value	<0.001	<0.001	
CV (S/Mean)	1.5	1.1	
CV(SE/Mean)	0.9	0.6	
LSD 0.05	1.4	1.1	

\*Severe scab infection

Cooperators:

County  
 Sheridan (Dagmar)  
 Valley (Larslan)

Producer  
 Steve Brekke  
 Kelly Donovan

CES Agent  
 Terry Angvick  
 Verlin Koenig

Table 31. Summary of durum heights in inches at two irrigated off-station sites in eastern Montana, 2001. Both sites are under pivot irrigation.

Variety	Dagmar	Larslan	average
Kyle	42	43	43
AC Melita	40	37	39
Belzer	38	37	38
AC Napoleon	38	36	37
Pierce	38	35	37
Renville	38	36	37
AC Avonlea	37	35	36
AC Pathfinder	37	34	36
Ben	36	35	36
Mountrail	37	34	36
Sceptre	35	34	35
AC Morse	35	32	34
Lebsock	35	33	34
Maier	35	32	34
AC Navigator	31	31	31
Plaza	30	30	30
YU89-475	28	27	28
average	36	34	
p value	<0.001	<0.001	
CV (S/Mean)	3.3	6.1	
CV(SE/Mean)	1.9	3.5	
LSD 0.05	2.0	3.5	

\*Severe scab infection

Cooperators:

County  
 Sheridan (Dagmar)  
 Valley (Larslan)

Producer  
 Steve Brekke  
 Kelly Donovan

CES Agent  
 Terry Angvick  
 Verlin Koenig

Table 32. Summary of durum grain protein contents in percent at two irrigated off-station sites in eastern Montana, 2001. Both sites are under pivot irrigation.

Variety	Dagmar	Larslan	average
YU89-475	17.2	16.5	16.9
AC Avonlea	16.3	16.1	16.2
AC Morse	16.2	15.8	16.0
AC Navigator	16.4	15.6	16.0
Kyle	15.3	16.1	15.7
Maier	15.4	15.9	15.7
Sceptre	16.3	15.0	15.7
AC Napoleon	15.6	15.6	15.6
Plaza	15.9	15.0	15.5
AC Melita	15.3	15.2	15.3
AC Pathfinder	15.4	15.2	15.3
Ben	15.5	15.0	15.3
Renville	15.1	15.4	15.3
Pierce	15.4	14.9	15.2
Belzer	14.7	15.3	15.0
Lebsock	14.6	14.9	14.8
Mountrail	14.6	14.8	14.7
average	15.6	15.4	
p value	<0.001	<0.001	
CV (S/Mean)	3.1	2.0	
CV(SE/Mean)	1.8	1.2	
LSD 0.05	0.8	0.5	

\*Severe scab infection

Cooperators:

County  
 Sheridan (Dagmar)  
 Valley (Larslan)

Producer  
 Steve Brekke  
 Kelly Donovan

CES Agent  
 Terry Angvick  
 Verlin Koenig

Table 33. Performance of durum grown under irrigated conditions at Dagmar, MT.  
 Planted: 10 May 2001    Harvested: 29 August 2001    Cooperator: Steve Brekke  
**Severe scab infection**

Variety	height, inches	grain protein	test weight	yield, bu/acre	
Mountrail	37	14.6	55.6	26.5	a
AC Napoleon	38	15.6	56.1	24.9	a
Belzer	38	14.7	57.1	24.7	
Lebsock	35	14.6	56.9	24.7	
Maier	35	15.4	55.9	22.9	
AC Morse	35	16.2	54.3	22.6	
AC Melita	40	15.3	55.9	21.3	
Pierce	38	15.4	57.6	20.8	
Ben	36	15.5	56.7	19.9	
AC Avonlea	37	16.3	55.3	19.7	
Renville	38	15.1	56.0	19.5	
Kyle	42	15.3	57.8	18.6	
Plaza	30	15.9	55.5	18.2	
AC Pathfinder	37	15.4	56.5	17.7	
Sceptre	35	16.3	56.0	15.1	
AC Navigator	31	16.4	53.4	11.6	x
YU89-475	28	17.2	48.3	8.1	x
average	36	15.6	55.6	19.8	
p value	<0.001	<0.001	<0.001	<0.001	
CV (S/Mean)	3.3	3.1	1.5	16.1	
CV(SE/Mean)	1.9	1.8	0.9	9.3	
LSD 0.05	2.0	0.8	1.4	5.3	

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 34. Relative yields of durum varieties as compared to Renville when grown under irrigated conditions in Sheridan County in cooperation with CES. Cooperator: Steve Brekke

Cultivar	1996	1998	1999	2000	2001	Ave	as % of Renville
AC Napoleon	--	--	--	--	24.9	24.9	127.7
Mountrail	--	72.3	55.4	60.2	26.5	53.6	109.5
AC Melita	--	70.5	--	51.1	21.3	47.6	107.5
Pierce	--	--	--	--	20.8	20.8	106.7
AC Morse	--	66.5	--	46.6	22.6	45.2	102.1
Belzer	--	--	--	49.6	24.7	37.2	102.1
AC Avonlea	--	--	--	54.5	19.7	37.1	101.9
Maier	--	68.8	53.6	54.1	22.9	49.9	101.8
Renville	35.8	60.1	62.9	53.3	19.5	46.3	100.0
Ben	38.3	66.3	51.0	49.0	19.9	44.9	96.9
Lebsock	--	--	52.6	54.2	24.7	43.8	96.9
Plaza	--	67.3	44.5	56.5	18.2	46.6	95.3
AC Pathfinder	--	--	--	--	17.7	17.7	90.8
Kyle	48.9	65.1	32.1	44.0	18.6	41.7	90.1
Sceptre	--	--	47.9	--	15.1	31.5	76.5
AC Navigator	--	--	--	--	11.6	11.6	59.5
YU89-475	--	--	--	--	8.1	8.1	41.5

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.

NOTE: Severe scab infection in 2001

Table 35. Relative test weights of durum varieties as compared to Renville when grown under irrigated conditions in Sheridan County in cooperation with CES. Cooperator: Steve Brekke

Cultivar	1996	1998	1999	2000	2001	Ave	as % of Renville
Ben	61.7	63.0	60.0	62.8	56.7	60.8	101.6
Lebsock	--	--	59.0	63.7	56.9	59.9	101.3
Belzer	--	--	--	62.0	57.1	59.6	100.9
AC Pathfinder	--	--	--	--	56.5	56.5	100.9
Maier	--	62.5	59.3	62.7	55.9	60.1	100.3
Renville	59.8	62.3	59.3	62.0	56.0	59.9	100.0
Kyle	61.7	61.8	56.3	61.8	57.8	59.9	100.0
Mountrail	--	61.0	60.3	62.3	55.6	59.8	99.8
AC Melita	--	60.5	--	61.8	55.9	59.4	98.8
AC Avonlea	--	--	--	60.8	55.3	58.1	98.4
Plaza	--	61.5	56.7	62.0	55.5	58.9	98.4
Sceptre	--	--	57.0	--	56.0	56.5	98.0
AC Morse	--	60.8	--	60.5	54.3	58.5	97.4
AC Napoleon	--	--	--	58.5	56.1	57.3	97.1
Pierce	--	--	--	56.5	57.6	57.1	96.7
AC Navigator	--	--	--	--	53.4	53.4	95.4
YU89-475	--	--	--	--	48.3	48.3	86.3

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.

NOTE: Severe scab infection in 2001

Table 36. Relative protein contents of durum varieties as compared to Renville when grown under irrigated conditions in Sheridan County in cooperation with CES. Cooperator: Steve Brekke

Cultivar	1996	1998	1999	2000	2001	Ave	as % of Renville
YU89-475	--	--	--	--	17.2	17.2	113.9
AC Navigator	--	--	--	--	16.4	16.4	108.6
AC Avonlea	--	--	--	14.8	16.3	15.6	108.4
Sceptre	--	--	13.7	--	16.3	15.0	104.9
AC Morse	--	14.0	--	14.6	16.2	14.9	103.9
AC Napoleon	--	--	--	--	15.6	15.6	103.3
Maier	--	14.4	14.5	14.0	15.4	14.6	103.0
Pierce	--	--	--	--	15.4	15.4	102.0
AC Pathfinder	--	--	--	--	15.4	15.4	102.0
Kyle	10.5	14.6	14.5	14.3	15.3	13.8	101.9
AC Melita	--	14.2	--	14.4	15.3	14.6	101.9
Ben	10.9	14.0	13.8	14.3	15.5	13.7	100.9
Renville	11.3	14.4	13.5	13.6	15.1	13.6	100.0
Plaza	--	13.1	13.3	13.6	15.9	14.0	98.8
Mountrail	--	14.3	13.9	13.0	14.6	14.0	98.6
Lebsock	--	--	13.8	13.2	14.6	13.9	98.6
Belzer	--	--	--	13.2	14.7	14.0	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.

NOTE: Severe scab infection in 2001

Table 37. Performance of durum grown under irrigated conditions at Larslan, MT.  
 Planted: 19 April 2001    Harvested: 27 August 2001    Cooperator: Kelly Donovan

Variety	height, inches	grain protein	test weight	yield, bu/acre
CDC Napoleon	36	15.6	59.2	74.7
Mountrail	34	14.8	59.8	74.6
Maier	32	15.9	61.0	74.1
Lebsock	33	14.9	61.7	72.6
Plaza	30	15.0	59.7	72.4
Belzer	37	15.3	58.5	72.2
AC Avonlea	35	16.1	59.7	72.2
Pierce	35	14.9	61.8	69.8
Renville	36	15.4	59.5	65.3
AC Pathfinder	34	15.2	60.5	64.5
Kyle	43	16.1	59.2	64.0
Ben	35	15.0	61.2	63.9
Sceptre	34	15.0	59.5	63.9
AC Morse	32	15.8	59.7	63.0
AC Melita	37	15.2	60.3	62.0
AC Navigator	31	15.6	58.3	59.0
YU89-475	27	16.5	51.7	35.2 x
average	34	15.4	59.5	66.1
p value	<0.001	<0.001	<0.001	<0.001
CV (S/Mean)	6.1	2.0	1.1	8.9
CV(SE/Mean)	3.5	1.2	0.6	5.2
LSD 0.05	3.5	0.5	1.1	9.8

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

Table 38. Relative yields of durum varieties as compared to Renville when grown under irrigated conditions in Valley County in cooperation with CES.

Cultivar	1999	2001	Ave	as % of Renville
AC Napoleon	--	74.7	74.7	114.4
Belzer	--	72.2	72.2	110.6
AC Avonlea	--	72.2	72.2	110.6
Mountrail	83.2	74.6	78.9	108.8
Pierce	--	69.8	69.8	106.9
Maier	76.0	74.1	75.1	103.6
Lebsock	74.5	72.6	73.6	101.5
Plaza	74.1	72.4	73.3	101.1
Renville	79.6	65.3	72.5	100.0
AC Pathfinder	--	64.5	64.5	98.8
Kyle	77.3	64.0	70.7	97.5
AC Morse	--	63.0	63.0	96.5
AC Melita	--	62.0	62.0	94.9
Ben	73.5	63.9	68.7	94.8
Sceptre	70.9	63.9	67.4	93.0
AC Navigator	--	59.0	59.0	90.4
YU89-475	--	35.2	35.2	53.9

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

Table 39. Relative test weights of durum varieties as compared to Renville when grown under irrigated conditions in Valley County in cooperation with CES.

Cultivar	1999	2001	Ave	as % of Renville
Pierce	--	61.8	61.8	103.9
Lebsock	62.3	61.7	62.0	102.3
AC Pathfinder	--	60.5	60.5	101.7
Ben	62.0	61.2	61.6	101.6
Maier	62.0	61.0	61.5	101.5
AC Melita	--	60.3	60.3	101.3
AC Avonlea	--	59.7	59.7	100.3
AC Morse	--	59.7	59.7	100.3
Renville	61.7	59.5	60.6	100.0
Mountrail	61.2	59.8	60.5	99.8
AC Napoleon	--	59.2	59.2	99.5
Sceptre	60.7	59.5	60.1	99.2
Belzer	--	58.5	58.5	98.3
Plaza	59.2	59.7	59.5	98.2
Kyle	59.5	59.2	59.4	98.0
AC Navigator	--	58.3	58.3	98.0
YU89-475	--	51.7	51.7	86.9

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.

Table 40. Relative protein contents of durum varieties as compared to Renville when grown under irrigated conditions in Valley County in cooperation with CES.

Cultivar	1999	2001	Ave	as % of Renville
YU89-475	--	16.5	16.5	107.1
Kyle	14.5	16.1	15.3	104.8
AC Avonlea	--	16.1	16.1	104.5
Maier	14.2	15.9	15.1	103.4
AC Morse	--	15.8	15.8	102.6
AC Napoleon	--	15.6	15.6	101.3
AC Navigator	--	15.6	15.6	101.3
Renville	13.7	15.4	14.6	100.0
Belzer	--	15.3	15.3	99.4
Lebsock	14.0	14.9	14.5	99.3
AC Pathfinder	--	15.2	15.2	98.7
AC Melita	--	15.2	15.2	98.7
Mountrail	13.9	14.8	14.4	98.6
Ben	13.8	15.0	14.4	98.6
Sceptre	13.7	15.0	14.4	98.6
Pierce	--	14.9	14.9	96.8
Plaza	13.0	15.0	14.0	95.9

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