

PROJECT TITLE: Off-station durum variety evaluations in eastern Montana - 2005

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PROJECT PERSONNEL:

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

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

RESULTS: Summaries of yields, test weights, heights, hard vitreous amber color, and protein contents across sites are shown in Tables 1-5. Alkabo, Maier and MT02DH56 yielded most across dryland sites (Table 1). Mountrail yielded most at the irrigated site (Table 1).

McCone County (dryland): Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Circle are shown in Tables 6-10. Plaza yielded most.

Wibaux County (dryland) : Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Wibaux are shown in Tables 11-15. Alzada yielded most.

Roosevelt County (dryland): Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Poplar are shown in Tables 16-20. Alzada yielded most.

Sheridan County (dryland): Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Reserve are shown in Tables 21-25. Mountrail yielded most.

Valley County (dryland): Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Nashua are shown in Tables 26-30. MT02DH56 yielded most.

Daniels County (dryland): Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Scobey are shown in Tables 31-35. AC Avonlea yielded most.

Sheridan County (irrigated): Performance and relative values of yield, test weight, and protein of durum varieties grown at Dagmar are shown in Tables 36-39. Mountrail yielded most.

SUMMARY: Off-station yield trials are conducted at several sites in eastern Montana. All experiments reported under this project are of the replicated small plot type. 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, 2005.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland recrop	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Dagmar, sprinkle irrigated
Alkabo	28.6	40.5	41.0	34.8	59.3	8.3	35.4	27.0
Maier	25.1	43.0	42.0	36.5	58.1	7.1	35.3	31.4
MT02DH56	25.2	42.1	40.6	32.7	63.0	7.8	35.2	29.6
Grenora	26.9	43.4	37.9	33.2	57.7	11.0	35.0	33.8
Mountrail	28.1	42.7	41.2	38.6	49.5	9.9	35.0	34.9
Divide	25.4	38.1	37.2	36.5	61.0	7.5	34.3	29.7
Avonlea	28.4	38.2	38.6	34.8	51.0	12.4	33.9	34.2
Pierce	26.0	41.7	38.4	36.1	48.9	10.9	33.7	32.3
Alzada	27.4	46.9	42.1	28.8	48.2	7.8	33.5	28.2
Dilse	24.1	39.9	39.4	32.7	57.2	7.8	33.5	30.6
Lebsock	25.8	43.2	41.8	34.6	46.2	8.7	33.4	30.2
Plaza	30.2	44.4	32.5	36.5	48.8	7.0	33.2	33.8
MT02DH61	25.5	37.4	37.3	30.0	60.8	8.1	33.2	30.9
MT01695	24.3	44.2	41.4	34.2	44.4	9.5	33.0	26.7
MT01617	26.2	43.2	37.8	31.7	52.3	6.0	32.9	33.2
Kyle	25.0	35.7	36.2	35.5	50.9	10.5	32.3	30.9
site average	26.4	41.5	39.1	34.2	53.6	8.8		31.1
probability	0.150	0.233	<0.001	0.009	<0.001	0.001		0.018
CV (S/Mean)	9	10.8	5.9	8.0	9.4	18.1		9.0
CV(SE/Mean)	5.2	6.2	3.4	4.6	5.4	10.5		5.2
LSD 0.05	ns	ns	3.8	4.5	8.4	2.6		4.7

Table 2. Summary of durum test weights in lb/bu at seven sites in eastern Montana, 2005.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland recrop	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Dagmar, sprinkle irrigated
MT01695	62.7	63.3	62.7	62.3	62.5	64.5	63.0	58.3
Lebsock	62.0	61.7	61.0	61.3	62.8	64.3	62.2	60.5
MT02DH56	61.8	61.7	60.3	60.3	62.5	64.3	61.8	59.0
Maier	61.8	61.2	59.5	60.8	62.0	64.7	61.7	60.0
Dilse	61.8	61.3	59.5	61.0	61.8	64.2	61.6	60.7
Alkabo	61.8	61.2	60.2	61.3	61.7	63.2	61.6	59.7
Pierce	61.8	60.8	59.3	61.2	62.5	63.7	61.6	60.2
Divide	61.0	61.7	60.3	60.2	61.0	63.7	61.3	59.0
Kyle	61.8	60.3	59.3	60.3	61.8	63.7	61.2	60.8
Mountrail	61.5	60.3	60.0	60.8	61.3	63.2	61.2	59.2
Plaza	61.8	61.0	58.5	59.5	61.2	63.8	61.0	59.5
Avonlea	62.0	60.2	59.2	59.5	61.3	63.5	60.9	59.5
MT02DH61	61.2	60.3	58.7	59.8	61.5	63.7	60.9	59.5
Grenora	61.0	60.7	59.3	58.7	61.8	62.7	60.7	58.5
Alzada	60.0	60.2	58.0	60.5	58.5	64.3	60.3	56.7
MT01617	60.7	60.2	58.2	58.7	56.8	63.7	59.7	58.0
site average	61.6	61.0	59.6	60.4	61.3	63.8		59.3
probability	<0.001	0.024	<0.001	<0.001	0.004	0.014		<0.001
CV (S/Mean)	0.7	1.6	0.9	1.3	2.5	0.9		1.1
CV(SE/Mean)	0.4	0.9	0.5	0.8	1.5	0.5		0.6
LSD 0.05	0.7	1.6	0.9	1.3	2.6	1.0		1.1

Table 3. Summary of durum heights in inches at seven sites in eastern Montana, 2005.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland recrop	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Dagmar, sprinkle irrigated
Kyle	29.7	42.2	35.8	34.3	39.6	20.3	33.7	32.0
Avonlea	25.5	36.1	32.8	25.2	35.5	19.8	29.2	29.7
Pierce	26.4	36.6	31.8	28.7	33.5	17.3	29.1	30.0
Divide	25.5	33.6	33.5	27.0	36.9	16.5	28.8	26.7
MT02DH61	26.5	34.0	32.3	25.0	34.8	18.2	28.5	29.7
Maier	26.5	34.4	32.8	24.7	32.3	16.2	27.8	27.0
Dilse	24.7	32.8	30.7	25.8	35.0	16.7	27.6	25.7
Alkabo	25.7	33.7	30.7	24.7	33.0	16.8	27.4	27.7
Lebsock	26.0	34.9	32.3	22.8	31.6	16.2	27.3	26.5
Mountrail	25.3	34.0	31.8	25.0	31.5	14.7	27.1	28.8
Grenora	23.5	33.7	31.0	22.8	31.9	17.0	26.7	24.5
MT02DH56	23.9	32.4	32.2	22.8	30.1	15.2	26.1	25.5
Plaza	24.9	29.4	27.0	24.0	28.3	17.2	25.1	25.3
MT01617	23.7	27.9	27.2	23.7	30.8	16.3	24.9	25.2
Alzada	23.0	31.0	27.2	23.0	27.8	16.0	24.7	25.7
MT01695	20.3	26.8	25.8	20.8	28.1	14.8	22.8	21.8
site average	25.1	33.4	30.9	25.0	32.6	16.8		27.0
probability	<0.001	<0.001	<0.001	<0.001	<0.001	0.043		0.002
CV (S/Mean)	5.6	4.8	6.5	5.7	6.8	11.2		8.8
CV(SE/Mean)	3.2	2.7	3.8	3.3	3.9	6.5		5.1
LSD 0.05	2.4	2.6	3.4	2.4	3.7	3.2		4.0

Table 4. Summary of durum protein contents in percent at seven sites in eastern Montana, 2005.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland recrop	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Dagmar, sprinkle irrigated
MT02DH61	12.00	15.11	16.46	14.19	12.06	9.87	13.28	12.12
Dilse	11.85	15.20	16.19	13.38	12.70	9.46	13.13	12.17
Avonlea	10.67	15.13	15.70	13.87	11.03	10.20	12.77	11.09
MT02DH56	11.57	14.31	15.39	14.09	11.45	9.70	12.75	12.84
Maier	11.19	14.37	15.51	12.90	11.56	9.63	12.53	11.47
Pierce	11.24	14.88	15.75	12.82	10.65	9.81	12.52	11.46
Grenora	11.17	13.71	15.34	13.64	11.09	9.97	12.49	12.24
MT01617	10.92	13.62	15.16	12.88	12.14	9.68	12.40	11.04
Mountrail	10.42	14.80	15.75	12.41	11.45	9.17	12.33	11.37
Alzada	10.48	13.86	14.42	13.86	11.37	9.44	12.24	11.36
Alkabo	10.59	14.31	15.14	13.07	10.64	9.36	12.19	11.09
Kyle	10.75	14.59	15.23	12.32	10.57	9.37	12.14	11.40
Divide	10.45	14.13	15.39	13.41	10.64	8.71	12.12	10.78
Lebsock	10.65	13.75	14.73	13.59	10.62	8.86	12.03	11.21
Plaza	10.26	13.10	15.61	12.53	10.95	9.55	12.00	11.53
MT01695	9.59	12.73	13.71	11.89	9.28	8.14	10.89	12.05
site average	10.86	14.22	15.34	13.18	11.14	9.43		11.58
probability	<0.001	0.003	<0.001	0.001	0.128	0.479		0.009
CV (S/Mean)	4.3	5	2.1	4.7	9.8	9.5		5.0
CV(SE/Mean)	2.5	2.9	1.2	2.7	5.7	5.5		2.9
LSD 0.05	0.77	1.19	0.54	1.03	ns	ns		0.97

Table 5. Summary of durum hard vitreous amber color (HVAC) as percent at seven off-station sites in eastern Montana, 2005.

Variety	Circle, dryland recrop	Wibaux, dryland fallow	Poplar, dryland fallow	Reserve, dryland fallow	Nashua, dryland fallow	Scobey, dryland fallow	dryland average	Dagmar, sprinkle irrigated
Avonlea	73.3	92.7	92.8	87.2	69.2	70.7	81.0	70.9
Alzada	68.7	89.2	88.0	86.2	67.1	73.5	78.8	69.4
MT01617	70.9	86.4	90.2	82.1	73.8	62.9	77.7	69.9
MT02DH61	72.0	91.8	94.0	84.9	53.3	66.1	77.0	78.1
Dilse	56.9	89.6	93.5	80.5	66.7	55.1	73.7	70.6
Maier	58.4	90.4	95.5	82.4	48.9	58.0	72.3	75.3
Plaza	56.6	82.1	92.3	78.3	56.9	58.5	70.8	70.7
MT02DH56	51.8	92.5	98.8	86.4	44.1	47.1	70.1	80.1
Kyle	75.9	85.5	89.6	83.7	11.3	65.3	68.5	77.6
Grenora	43.6	86.2	90.2	84.0	51.1	55.0	68.4	71.5
Pierce	54.0	93.1	93.3	80.0	37.2	52.2	68.3	69.3
Mountrail	61.7	91.1	90.3	78.5	18.2	52.6	65.4	70.9
MT01695	53.7	86.8	90.4	79.7	41.0	40.3	65.3	73.3
Divide	40.4	87.0	91.5	86.0	33.4	27.6	61.0	53.7
Lebsock	49.7	84.4	86.6	80.5	8.4	41.9	58.6	63.7
Alkabo	25.8	88.7	91.1	82.1	5.4	6.7	50.0	55.5
site average	57.1	88.6	91.8	82.7	42.9	52.1		70.0
probability	<0.001	<0.001	<0.001	0.045	0.090	0.001		<0.001
CV (S/Mean)	17.3	2.4	1.5	4.3	68.5	29.5		6.6
CV(SE/Mean)	10.0	1.4	0.9	2.5	39.5	17.0		3.8
LSD 0.05	16.5	3.5	2.3	5.9	48.9	25.6		7.7

Table 6. Performance of durum grown under dryland continuous cropping conditions at Circle, MT. Planted: Apr 22, 2005 Harvested: Aug 16, 2005 Cooperator: Victor Wagner

Variety	height, inches	HVAC	grain protein	test weight	yield, bu/acre
Plaza	24.9	56.6	10.26	61.8	30.2
Alkabo	25.7	25.8	10.59	61.8	28.6
Avonlea	25.5	73.3	10.67	62.0	28.4
Mountrail	25.3	61.7	10.42	61.5	28.1
Alzada	23.0	68.7	10.48	60.0	27.4
Grenora	23.5	43.6	11.17	61.0	26.9
MT01617	23.7	70.9	10.92	60.7	26.2
Pierce	26.4	54.0	11.24	61.8	26.0
Lebsock	26.0	49.7	10.65	62.0	25.8
MT02DH61	26.5	72.0	12.00	61.2	25.5
Divide	25.5	40.4	10.45	61.0	25.4
MT02DH56	23.9	51.8	11.57	61.8	25.2
Maier	26.5	58.4	11.19	61.8	25.1
Kyle	29.7	75.9	10.75	61.8	25.0
MT01695	20.3	53.7	9.59	62.7	24.3
Dilse	24.7	56.9	11.85	61.8	24.1
average	25.1	57.1	10.86	61.6	26.4
probability	<0.001	<0.001	<0.001	<0.001	0.150
CV (S/Mean)	5.6	17.3	4.3	0.7	9.0
CV(SE/Mean)	3.2	10.0	2.5	0.4	5.2
LSD 0.05	2.4	16.5	0.77	0.7	ns

Table 7. Relative yielding abilities of durum varieties compared to Mountrail when grown under dryland conditions in McCone County in cooperation with CES.

Variety	2001	2002	2003	2004	2005	average	As % of Mountrail
Plaza	34.4	21.9	20.4	26.0	30.2	26.6	107.7
Alkabo	--	--	--	--	28.6	28.6	101.8
Mountrail	32.8	21.4	16.5	24.6	28.1	24.7	100.0
Alzada	--	--	--	--	27.4	27.4	97.5
AC Avonlea	30.3	22.5	17.1	22.0	28.4	24.1	97.5
Grenora	--	--	--	--	26.9	26.9	95.7
Kyle	29.2	19.3	20.5	22.5	25.0	23.3	94.4
Pierce	29.7	20.3	17.6	20.8	26.0	22.9	92.7
MT01695	--	--	--	24.2	24.3	24.3	92.0
Maier	26.8	22.1	17.3	22.2	25.1	22.7	92.0
MT01617	--	--	--	21.8	26.2	24.0	91.1
MT02DH61	--	--	--	--	25.5	25.5	90.7
Dilse	--	19.4	17.9	20.5	24.1	20.5	90.4
Divide	--	--	--	--	25.4	25.4	90.4
MT02DH56	--	--	--	--	25.2	25.2	89.7
Lebsock	30.7	15.7	15.3	22.7	25.8	22.0	89.3

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

Variety	2001	2002	2003	2004	2005	average	As % of Mountrail
Dilse	--	62.0	60.7	62.5	61.8	61.8	103.8
Kyle	63.2	63.0	60.9	62.0	61.8	62.2	103.6
Lebsock	64.5	62.1	59.7	62.4	62.0	62.1	103.5
Maier	64.0	62.2	59.9	62.8	61.8	62.1	103.5
Plaza	63.5	61.7	59.8	62.0	61.8	61.8	102.9
AC Avonlea	63.2	60.4	60.2	61.9	62.0	61.5	102.5
Pierce	63.3	60.7	59.6	61.7	61.8	61.4	102.3
MT01617	--	--	--	63.2	60.7	62.0	101.3
MT01695	--	--	--	61.2	62.7	62.0	101.3
Alkabo	--	--	--	--	61.8	61.8	100.5
MT02DH56	--	--	--	--	61.8	61.8	100.5
Mountrail	62.3	58.6	57.0	60.8	61.5	60.0	100.0
MT02DH61	--	--	--	--	61.2	61.2	99.5
Grenora	--	--	--	--	61.0	61.0	99.2
Divide	--	--	--	--	61.0	61.0	99.2
Alzada	--	--	--	--	60.0	60.0	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 9. Relative protein contents of durum varieties as compared to Mountrail when grown under dryland conditions in McCone County in cooperation with CES.

Variety	2001	2002	2003	2004	2005	average	As % of Mountrail
MT02DH61	--	--	--	--	12.0	12.0	115.4
MT02DH56	--	--	--	--	11.6	11.6	111.5
Grenora	--	--	--	--	11.2	11.2	107.7
Alkabo	--	--	--	--	10.6	10.6	101.9
Maier	12.1	13.1	14.8	14.0	11.2	13.0	101.7
Alzada	--	--	--	--	10.5	10.5	101.0
Mountrail	10.2	13.8	15.7	14.0	10.4	12.8	100.0
Pierce	11.1	13.7	14.2	13.9	11.2	12.8	100.0
Divide	--	--	--	--	10.4	10.4	100.0
AC Avonlea	11.4	13.3	14.4	14.1	10.7	12.8	99.7
Dilse	--	12.4	14.8	13.9	11.8	13.2	98.1
Lebsock	9.7	12.3	15.4	14.0	10.6	12.4	96.7
Plaza	10.2	12.5	14.6	14.1	10.3	12.3	96.3
Kyle	11.1	12.2	13.7	13.4	10.8	12.2	95.5
MT01617	--	--	--	12.0	10.9	11.5	93.9
MT01695	--	--	--	12.9	9.6	11.3	92.2

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.

Table 10. Relative HVACs of durum varieties as compared to Mountrail when grown under dryland conditions in Sheridan County in cooperation with CES. Cooperator:

Cultivar	2003	2004	2005	Ave	as % of Mountrail
AC Avonlea	81.8	94.3	73.3	83.1	116.9
MT02DH61	--	--	72.0	72.0	116.7
Kyle	79.2	85.7	75.9	80.3	112.9
Alzada	--	--	68.7	68.7	111.3
Maier	77.4	92.0	58.4	75.9	106.8
Dilse	75.3	89.1	56.9	73.8	103.8
Mountrail	66.1	85.5	61.7	71.1	100.0
Plaza	68.3	82.6	56.6	69.2	97.3
Pierce	57.9	86.5	54.0	66.1	93.0
MT01617	--	65.5	70.9	68.2	92.7
Lebsock	67.3	80.5	49.7	65.8	92.5
MT01695	--	77.3	53.7	65.5	89.0
MT02DH56	--	--	51.8	51.8	84.0
Grenora	--	--	43.6	43.6	70.7
Divide	--	--	40.4	40.4	65.5
Alkabo	--	--	25.8	25.8	41.8

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

Table 11. Performance of durum grown under dryland conditions at Wibaux, MT.
 Planted: Apr 25, 2005 Harvested: Aug 31, 2005 Cooperator: David Maus

Variety	Height, inches	HVA color	Grain protein	Test weight	Yield, bu/acre
Alzada	31.0	89.2	13.86	60.2	46.9
Plaza	29.4	82.1	13.10	61.0	44.4
MT01695	26.8	86.8	12.73	63.3	44.2
Grenora	33.7	86.2	13.71	60.7	43.4
Lebsock	34.9	84.4	13.75	61.7	43.2
MT01617	27.9	86.4	13.62	60.2	43.2
Maier	34.4	90.4	14.37	61.2	43.0
Mountrail	34.0	91.1	14.80	60.3	42.7
MT02DH56	32.4	92.5	14.31	61.7	42.1
Pierce	36.6	93.1	14.88	60.8	41.7
Alkabo	33.7	88.7	14.31	61.2	40.5
Dilse	32.8	89.6	15.20	61.3	39.9
Avonlea	36.1	92.7	15.13	60.2	38.2
Divide	33.6	87.0	14.13	61.7	38.1
MT02DH61	34.0	91.8	15.11	60.3	37.4
Kyle	42.2	85.5	14.59	60.3	35.7
average	33.4	88.6	14.22	61.0	41.5
probability	<0.001	<0.001	0.003	0.024	0.233
CV (S/Mean)	4.8	2.4	5.0	1.6	10.8
CV(SE/Mean)	2.7	1.4	2.9	0.9	6.2
LSD 0.05	2.6	3.5	1.19	1.6	7.4

Table 12. Relative yielding abilities of durum varieties as compared to Mountrail when grown under dryland conditions in Wibaux County in cooperation with CES.

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
Alzada	--	--	--	--	46.9	46.9	109.8
MT01695	--	--	--	29.0	44.2	36.6	103.4
Grenora	--	--	--	--	43.4	43.4	101.6
MT01617	--	--	--	28.4	43.2	35.8	101.1
Mountrail	37.7	36.4	16.8	28.1	42.7	32.3	100.0
AC Avonlea	38.8	37.2	19.1	27.9	38.2	32.2	99.7
MT02DH56	--	--	--	--	42.1	42.1	98.6
Maier	41.3	30.0	15.1	28.8	43.0	31.6	97.8
Lebsock	39.4	30.8	16.9	25.7	43.2	31.2	96.5
Plaza	38.0	25.8	16.6	30.3	44.4	31.0	95.9
Alkabo	--	--	--	--	40.5	40.5	94.8
Pierce	36.9	32.8	15.4	26.5	41.7	30.7	94.8
Kyle	39.2	26.5	17.8	30.4	35.7	29.9	92.5
Divide	--	--	--	--	38.1	38.1	89.2
Dilse	--	27.1	15.6	27.0	39.9	27.4	88.4
MT02DH61	--	--	--	--	37.4	37.4	87.6

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.

Table 13. 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	2001	2002	2003	2004	2005	Ave	as % of Mountrail
Lebsock	62.7	61.2	60.9	60.2	61.7	61.3	102.7
MT02DH56	--	--	--	--	61.7	61.7	102.3
Divide	--	--	--	--	61.7	61.7	102.3
MT01617	--	--	--	62.1	60.2	61.2	102.1
MT01695	--	--	--	58.8	63.3	61.1	101.9
Maier	61.8	61.0	59.6	60.1	61.2	60.7	101.7
Alkabo	--	--	--	--	61.2	61.2	101.5
Pierce	61.3	61.4	59.2	60.2	60.8	60.6	101.4
Dilse	--	60.1	60.3	60.1	61.3	60.5	101.3
Kyle	61.2	61.0	59.7	60.2	60.3	60.5	101.3
Plaza	60.7	60.9	58.8	60.0	61.0	60.3	100.9
Grenora	--	--	--	--	60.7	60.7	100.7
AC Avonlea	60.5	60.1	59.6	59.7	60.2	60.0	100.5
Mountrail	60.0	60.0	58.8	59.5	60.3	59.7	100.0
MT02DH61	--	--	--	--	60.3	60.3	100.0
Alzada	--	--	--	--	60.2	60.2	99.8

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 14. 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	2001	2002	2003	2004	2005	Ave	as % of Mountrail
Dilse	--	17.7	15.1	17.7	15.2	16.4	105.0
AC Avonlea	15.9	17.1	15.1	18.0	15.1	16.2	103.3
MT02DH61	--	--	--	--	15.1	15.1	102.0
Maier	15.7	17.1	14.7	17.9	14.4	16.0	101.5
Kyle	15.5	16.6	15.6	16.8	14.6	15.8	100.6
Pierce	15.9	16.1	14.8	17.1	14.9	15.8	100.3
Mountrail	16.0	16.3	14.2	17.3	14.8	15.7	100.0
Plaza	15.6	17.0	14.6	17.0	13.1	15.5	98.3
MT02DH56	--	--	--	--	14.3	14.3	96.6
Alkabo	--	--	--	--	14.3	14.3	96.6
Lebsock	14.8	15.8	13.7	17.2	13.8	15.1	95.8
Divide	--	--	--	--	14.1	14.1	95.3
Alzada	--	--	--	--	13.9	13.9	93.9
Grenora	--	--	--	--	13.7	13.7	92.6
MT01695	--	--	--	17.0	12.7	14.9	92.5
MT01617	--	--	--	15.6	13.6	14.6	91.0

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 15. Relative HVAC of durum varieties as compared to Mountrail when grown under dryland conditions in Wibaux County in cooperation with CES. Cooperator: David Maus

Cultivar	2003	2004	2005	Ave	as % of Mountrail
AC Avonlea	94	110	93	99	103.1
Maier	93	110	90	98	102.1
MT02DH61	--	--	92	92	101.1
MT02DH56	--	--	92	92	101.1
Dilse	93	107	90	97	101.0
Mountrail	89	108	91	96	100.0
Alkabo	--	--	89	89	97.8
Alzada	--	--	89	89	97.8
Kyle	92	101	86	93	96.9
Luke	--	--	87	87	95.6
Pierce	71	108	93	91	94.8
Lebsock	85	103	84	91	94.8
MT01617	--	102	86	94	94.5
Grenora	--	--	86	86	94.5
MT101695	--	99	87	93	93.5
Plaza	82	101	82	88	91.7

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

Table 16. Performance of durum grown under dryland conditions at Poplar, MT.
 Planted: May 2, 2005 Harvested: Sep 9, 2005 Cooperator: Mark Swank

Variety	height, inches	HVA color	grain protein	test weight	yield, bu/acre
Alzada	27.2	88.0	14.42	58.0	42.1
Maier	32.8	95.5	15.51	59.5	42.0
Lebsock	32.3	86.6	14.73	61.0	41.8
MT01695	25.8	90.4	13.71	62.7	41.4
Mountrail	31.8	90.3	15.75	60.0	41.2
Alkabo (D96604)	30.7	91.1	15.14	60.2	41.0
MT02DH56	32.2	98.8	15.39	60.3	40.6
Dilse	30.7	93.5	16.19	59.5	39.4
Avonlea	32.8	92.8	15.70	59.2	38.6
Pierce	31.8	93.3	15.75	59.3	38.4
Grenora (D97780)	31.0	90.2	15.34	59.3	37.9
MT01617	27.2	90.2	15.16	58.2	37.8
MT02DH61	32.3	94.0	16.46	58.7	37.3
Divide (D971511)	33.5	91.5	15.39	60.3	37.2
Kyle	35.8	89.6	15.23	59.3	36.2
Plaza	27.0	92.3	15.61	58.5	32.5
Average	30.9	91.8	15.34	59.6	39.1
probability	<0.001	<0.001	<0.001	<0.001	<0.001
CV (S/Mean)	6.5	1.5	2.1	0.9	5.9
CV(SE/Mean)	3.8	0.9	1.2	0.5	3.4
LSD 0.05	3.4	2.3	0.54	0.9	3.8

Table 17. Relative yields of durum varieties as compared to Mountrail when grown under dryland conditions in Roosevelt County in cooperation with CES.

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
MT101695	--	--	--	53.8	41.4	47.6	107.1
Alzada	--	--	--	--	42.1	42.1	102.2
Mountrail	61.3	39.9	47.4	47.7	41.2	47.5	100.0
Alkabo	--	--	--	--	41.0	41.0	99.5
Lebsock	56.2	43.0	45.0	48.5	41.8	46.9	98.7
AC Avonlea	59.2	38.4	53.0	45.1	38.6	46.9	98.7
MT02DH56	--	--	--	--	40.6	40.6	98.5
Maier	58.3	39.5	46.0	46.0	42.0	46.4	97.6
Dilse	--	43.7	46.3	42.2	39.4	42.9	97.4
MT01617	--	--	--	45.7	37.8	41.8	93.9
Kyle	54.1	34.2	45.6	50.3	36.2	44.1	92.8
Grenora	--	--	--	--	37.9	37.9	92.0
Pierce	53.5	39.5	40.6	46.4	38.4	43.7	92.0
Plaza	53.7	35.7	44.4	49.7	32.5	43.2	90.9
MT02DH61	--	--	--	--	37.3	37.3	90.5
Divide	--	--	--	--	37.2	37.2	90.3

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

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
Lebsock	65.2	62.0	64.3	64.0	61.0	63.3	101.9
MT101695	--	--	--	61.7	62.7	62.2	101.1
Pierce	65.0	62.0	62.8	63.8	59.3	62.6	100.7
Maier	64.7	60.8	63.8	63.8	59.5	62.5	100.6
Dilse	--	61.0	64.2	63.8	59.5	62.1	100.6
MT02DH56	--	--	--	--	60.3	60.3	100.5
Divide	--	--	--	--	60.3	60.3	100.5
MT01617	--	--	--	65.3	58.2	61.8	100.4
Alkabo	--	--	--	--	60.2	60.2	100.3
Mountrail	63.7	60.3	63.7	63.0	60.0	62.1	100.0
Kyle	64.0	60.0	63.5	63.2	59.3	62.0	99.8
AC Avonlea	63.5	59.5	63.7	62.8	59.2	61.7	99.4
Grenora	--	--	--	--	59.3	59.3	98.8
Plaza	64.0	58.2	62.7	63.3	58.5	61.3	98.7
MT02DH61	--	--	--	--	58.7	58.7	97.8
Alzada	--	--	--	--	58.0	58.0	96.7

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

Table 19. Relative proteins of durum varieties as compared to Mountrail when grown under dryland conditions in Roosevelt County in cooperation with CES.

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
MT02DH61	--	--	--	--	16.5	16.5	104.4
Dilse	--	15.3	12.7	13.4	16.2	14.4	103.2
AC Avonlea	13.4	15.5	12.6	13.1	15.7	14.1	103.1
Maier	13.3	15.5	12.4	13.4	15.5	14.0	102.8
Plaza	13.4	15.2	12.1	12.2	15.6	13.7	100.4
Mountrail	12.4	15.1	12.1	12.8	15.8	13.6	100.0
Pierce	12.9	14.1	12.6	12.8	15.8	13.6	100.0
Kyle	13.0	15.1	11.7	11.9	15.2	13.4	98.1
MT02DH56	--	--	--	--	15.4	15.4	97.5
Grenora	--	--	--	--	15.3	15.3	96.8
Lebsock	12.9	14.2	11.5	12.7	14.7	13.2	96.8
Alkabo	--	--	--	--	15.1	15.1	95.6
Divide	--	--	--	--	15.1	15.1	95.6
MT01617	--	--	--	11.7	15.2	13.5	94.1
Alzada	--	--	--	--	14.4	14.4	91.1
MT101695	--	--	--	11.5	13.7	12.6	88.1

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 20. Relative HVAC of durum varieties as compared to Mountrail when grown under dryland conditions in Roosevelt County in cooperation with CES.

Cultivar	2003	2004	2005	Ave	as % of Mountrail
MT02DH56	--	--	99	99	110.0
AC Avonlea	91	89	93	91	109.6
Maier	84	88	96	89	107.2
Dilse	82	87	94	88	106.0
MT101695	--	87	90	88	106.0
MT02DH61	--	--	94	94	104.4
Divide	--	--	92	92	102.2
Alkabo	--	--	91	91	101.1
Mountrail	83	76	90	83	100.0
Grenora	--	--	90	90	100.0
Plaza	77	77	92	82	98.8
Alzada	--	--	88	88	97.8
Kyle	80	70	90	80	96.4
Pierce	58	84	93	78	94.0
Lebsock	68	80	87	78	94.0
MT01617	--	53	90	72	86.7

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

Table 21. Performance of durum grown under dryland conditions at Reserve, MT.
 Planted: May 4, 2005 Harvested: Sep 7, 2005 Cooperator: Max Aasheim

Variety	height, inches	HVA color	grain protein	test weight	yield, bu/acre
Mountrail	25.0	78.5	12.41	60.8	38.6
Maier	24.7	82.4	12.90	60.8	36.5
Plaza	24.0	78.3	12.53	59.5	36.5
Divide	27.0	86.0	13.41	60.2	36.5
Pierce	28.7	80.0	12.82	61.2	36.1
Kyle	34.3	83.7	12.32	60.3	35.5
Alkabo	24.7	82.1	13.07	61.3	34.8
Avonlea	25.2	87.2	13.87	59.5	34.8
Lebsock	22.8	80.5	13.59	61.3	34.6
MT01695	20.8	79.7	11.89	62.3	34.2
Grenora	22.8	84.0	13.64	58.7	33.2 x
Dilse	25.8	80.5	13.38	61.0	32.7 x
MT02DH56	22.8	86.4	14.09	60.3	32.7 x
MT01617	23.7	82.1	12.88	58.7	31.7 x
MT02DH61	25.0	84.9	14.19	59.8	30.0 x
Alzada	23.0	86.2	13.86	60.5	28.8 x
site average	25.0	82.7	13.18	60.4	34.2
probability	<0.001	0.045	0.001	<0.001	0.009
CV (S/Mean)	5.7	4.3	4.7	1.3	8.0
CV(SE/Mean)	3.3	2.5	2.7	0.8	4.6
LSD _{0.05}	2.4	5.9	1.03	1.3	4.5

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

Table 22. Relative yields of durum varieties as compared to Mountrail when grown under dryland conditions in Sheridan County in cooperation with CES.

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
Mountrail	47.0	36.6	40.1	49.2	38.6	42.3	100.0
Maier	44.8	37.5	40.4	49.0	36.5	41.6	98.4
Dilse	--	37.9	38.8	46.2	32.7	38.9	94.6
Divide	--	--	--	--	36.5	36.5	94.6
AC Avonlea	38.7	36.8	37.6	50.0	34.8	39.6	93.6
Lebsock	42.9	35.8	36.7	47.5	34.6	39.5	93.4
MT01617	--	--	--	49.7	31.7	40.7	92.7
MT01695	--	--	--	46.4	34.2	40.3	91.8
Plaza	40.3	35.5	33.2	45.8	36.5	38.3	90.4
Kyle	39.9	29.9	36.4	49.0	35.5	38.1	90.2
Alkabo	--	--	--	--	34.8	34.8	90.2
Pierce	39.5	34.0	31.9	48.4	36.1	38.0	89.8
Grenora	--	--	--	--	33.2	33.2	86.0
MT02DH56	--	--	--	--	32.7	32.7	84.7
MT02DH61	--	--	--	--	30.0	30.0	77.7
Alzada	--	--	--	--	28.8	28.8	74.6

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.

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

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
Lebsock	64.3	61.8	61.0	62.3	61.3	62.1	101.5
MT01695	--	--	--	61.2	62.3	61.8	101.1
Alkabo	--	--	--	--	61.3	61.3	100.8
Dilse	--	60.3	60.5	62.3	61.0	61.0	100.7
Maier	63.7	61.2	60.0	62.5	60.8	61.6	100.7
Pierce	64.0	61.3	58.7	62.3	61.2	61.5	100.5
Kyle	63.5	60.0	60.2	62.2	60.3	61.2	100.0
Mountrail	63.8	60.7	59.5	61.3	60.8	61.2	100.0
Alzada	--	--	--	--	60.8	60.8	100.0
MT01617	--	--	--	62.8	58.7	60.8	99.5
AC Avonlea	62.8	60.7	59.2	62.3	59.5	60.9	99.5
MT02DH56	--	--	--	--	60.3	60.3	99.2
Divide	--	--	--	--	60.2	60.2	99.0
Plaza	64.0	59.5	58.3	61.0	59.5	60.5	98.8
MT02DH61	--	--	--	--	59.8	59.8	98.4
Grenora	--	--	--	--	58.7	58.7	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 24. Relative proteins of durum varieties as compared to Mountrail when grown under dryland conditions in Sheridan County in cooperation with CES.

Cultivar	2001	2002	2003	2004	2005	Ave	as % of Mountrail
MT02DH61	--	--	--	--	14.2	14.2	114.5
MT02DH56	--	--	--	--	14.1	14.1	113.7
Alzada	--	--	--	--	13.9	13.9	112.1
Grenora	--	--	--	--	13.6	13.6	109.7
Divide	--	--	--	--	13.4	13.4	108.1
AC Avonlea	15.4	15.3	16.2	13.7	13.9	14.9	106.4
Alkabo	--	--	--	--	13.1	13.1	105.6
Dilse	--	15.6	16.0	13.7	13.4	14.7	105.0
Maier	15.2	15.3	15.6	13.3	12.9	14.5	103.3
Pierce	14.5	14.6	15.6	14.1	12.8	14.3	102.3
Plaza	14.5	14.6	15.6	13.9	12.5	14.2	101.6
Lebsock	14.5	14.7	14.5	13.4	13.6	14.1	101.0
Mountrail	14.1	14.6	14.9	14.0	12.4	14.0	100.0
Kyle	14.6	14.1	15.1	12.9	12.3	13.8	98.6
MT01617	--	--	--	12.4	12.9	12.7	95.8
MT01695	--	--	--	12.9	11.9	12.4	93.9

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

Table 25. Relative HVACs of durum varieties as compared to Mountrail when grown under dryland conditions in Sheridan County in cooperation with CES.

Cultivar	2003	2004	2005	Ave	as % of Mountrail
MT02DH56	--	--	86	86	110.2
Alzada	--	--	86	86	110.2
Divide	--	--	86	86	110.2
MT02DH61	--	--	85	85	109.0
Grenora	--	--	84	84	107.7
AC Avonlea	95	90	87	91	105.8
Alkabo	--	--	82	82	105.1
Mountrail	88	92	78	86	100.0
Dilse	92	85	80	86	100.0
MT01695	--	90	80	85	100.0
Maier	91	81	82	85	98.8
Kyle	85	81	84	83	96.5
MT01617	--	82	82	82	96.5
Plaza	82	84	78	81	94.2
Lebsock	90	74	80	81	94.2
Pierce	85	92	80	86	10.0

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

Table 26. Performance of durum grown under dryland conditions at Nashua, MT.
 Planted: Apr 17, 2005 Harvested: Aug 18, 2005 Cooperator: Bill Lauckner

Variety	Height, inches	% HVA color	Grain protein	Test weight	Yield, bu/acre
MT02DH56	30.1	44.1	11.45	62.5	63.0 a
Divide	36.9	33.4	10.64	61.0	61.0 a
MT02DH61	34.8	53.3	12.06	61.5	60.8 a
Alkabo	33.0	5.4	10.64	61.7	59.3 a
Maier	32.3	48.9	11.56	62.0	58.1 a
Grenora	31.9	51.1	11.09	61.8	57.7
Dilse	35.0	66.7	12.70	61.8	57.2
MT01617	30.8	73.8	12.14	56.8	52.3
Avonlea	35.5	69.2	11.03	61.3	51.0
Kyle	39.6	11.3	10.57	61.8	50.9
Mountrail	31.5	18.2	11.45	61.3	49.5
Pierce	33.5	37.2	10.65	62.5	48.9
Plaza	28.3	56.9	10.95	61.2	48.8
Alzada	27.8	67.1	11.37	58.5	48.2
Lebsock	31.6	8.4	10.62	62.8	46.2
MT01695	28.1	41.0	9.28	62.5	44.4
average	32.6	42.9	11.14	61.3	53.6
probability	<0.001	0.090	0.128	0.004	<0.001
CV (S/Mean)	6.8	68.5	9.8	2.5	9.4
CV(SE/Mean)	3.9	39.5	5.7	1.5	5.4
LSD 0.05	3.7	48.9	ns	2.6	8.4

a indicates significantly greater yield than check variety, Mountrail

Table 27. Relative yielding abilities of spring wheat varieties as compared to Mountrail when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2001	2002	2003	2004	2005	Ave	As % of Mountrail
MT02DH56	--	--	--	--	63.0	63.0	127.3
Divide	--	--	--	--	61.0	61.0	123.2
MT02DH61	--	--	--	--	60.8	60.8	122.8
Alkabo	--	--	--	--	59.3	59.3	119.8
Grenora	--	--	--	--	57.7	57.7	116.6
Maier	56.4	47.6	41.1	51.9	58.1	51.0	100.4
Dilse	--	45.4	40.8	49.1	57.2	48.1	100.4
MT01617	--	--	--	55.9	52.3	54.1	100.1
Mountrail	62.3	46.0	37.6	58.6	49.5	50.8	100.0
AC Avonlea	59.3	48.1	38.1	51.8	51.0	49.7	97.8
Alzada	--	--	--	--	48.2	48.2	97.4
Pierce	59.9	47.2	37.8	51.1	48.9	49.0	96.4
Lebsock	57.9	45.6	38.7	52.8	46.2	48.2	95.0
Plaza	52.4	48.7	36.4	54.7	48.8	48.2	94.9
Kyle	52.2	46.1	38.9	52.4	50.9	48.1	94.7
MT01695	--	--	--	56.2	44.4	50.3	93.1

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

Cultivar	2001	2002	2003	2004	2005	Ave	As % of Mountrail
Lebsock	63.0	61.5	62.0	62.5	62.8	62.4	102.5
Dilse	--	62.0	62.0	62.5	61.8	62.1	102.4
MT02DH56	--	--	--	--	62.5	62.5	102.0
Pierce	62.7	62.0	60.7	61.8	62.5	61.9	101.8
Maier	61.7	61.8	60.8	62.5	62.0	61.8	101.5
Kyle	62.3	61.0	61.0	62.3	61.8	61.7	101.4
AC Avonlea	61.8	61.8	60.2	62.2	61.3	61.5	101.0
Grenora	--	--	--	--	61.8	61.8	100.8
MT01695	--	--	--	61.5	62.5	62.0	100.8
Alkabo	--	--	--	--	61.7	61.7	100.7
MT02DH61	--	--	--	--	61.5	61.5	100.3
Mountrail	61.7	60.7	58.8	61.7	61.3	60.8	100.0
Plaza	60.7	60.2	59.3	61.8	61.2	60.6	99.7
Divide	--	--	--	--	61.0	61.0	99.5
MT01617	--	--	--	63.5	56.8	60.2	97.8
Alzada	--	--	--	--	58.5	58.5	95.4

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

Cultivar	2001	2002	2003	2004	2005	Ave	As % of Mountrail
MT02DH61	--	--	--	--	12.1	12.1	106.1
Maier	15.4	12.8	15.4	10.9	11.6	13.2	102.6
AC Avonlea	15.4	12.0	16.2	11.0	11.0	13.1	101.9
Dilse	--	12.7	15.1	10.3	12.7	12.7	101.2
Mountrail	14.2	12.5	16.0	10.3	11.4	12.9	100.0
MT02DH56	--	--	--	--	11.4	11.4	100.0
Alzada	--	--	--	--	11.4	11.4	100.0
Plaza	14.3	12.6	15.9	10.0	11.0	12.8	99.1
Grenora	--	--	--	--	11.1	11.1	97.4
Kyle	14.6	12.9	14.7	9.8	10.6	12.5	97.2
Lebsock	14.4	12.6	14.4	10.1	10.6	12.4	96.4
Pierce	14.2	12.2	15.2	9.9	10.6	12.4	96.4
MT01617	--	--	--	8.1	12.1	10.1	93.1
Divide	--	--	--	--	10.6	10.6	93.0
Alkabo	--	--	--	--	10.6	10.6	93.0
MT01695	--	--	--	8.7	9.3	9.0	82.9

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

Table 30. Relative HVACs of durum varieties as compared to Mountrail when grown under dryland conditions in Sheridan County in cooperation with CES. Cooperator: Bill Lauckner

Cultivar	2003	2004	2005	Ave	as % of Mountrail
Alzada	--	--	61.7	61.7	339.0
MT02DH61	--	--	53.3	53.3	292.8
Grenora	--	--	51.1	51.1	280.8
MT02DH56	--	--	44.1	44.1	242.3
Divide	--	--	33.4	33.4	183.5
AC Avonlea	95.0	87.6	69.2	83.9	133.0
Dilse	98.3	75.0	66.7	80.0	126.8
Maier	90.6	83.7	48.9	74.4	117.9
Plaza	81.5	79.8	56.9	72.7	115.2
MT01617	--	47.5	73.8	60.7	111.7
Pierce	82.6	70.2	37.2	63.3	100.3
Mountrail	80.7	90.5	18.2	63.1	100.0
Kyle	86.7	81.6	11.3	59.9	94.9
Lebsock	90.2	73.3	8.4	57.3	90.8
MT01695	--	53.8	41.0	47.4	87.2
Alkabo	--	--	5.4	5.4	29.7

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

Table 31. Performance of durum grown under dryland conditions at Scobey, MT.
 Planted: May 2, 2005 Harvested: Sep 8, 2005 Cooperator: Bobbie Roos

Variety	Height, inches	HVA color	Grain protein	Test weight	Yield, bu/acre
Avonlea	19.8	70.7	10.20	63.5	12.4
Grenora	17.0	55.0	9.97	62.7	11.0
Pierce	17.3	52.2	9.81	63.7	10.9
Kyle	20.3	65.3	9.37	63.7	10.5
Mountrail	14.7	52.6	9.17	63.2	9.9
MT01695	14.8	40.3	8.14	64.5	9.5
Lebsock	16.2	41.9	8.86	64.3	8.7
Alkabo	16.8	6.7	9.36	63.2	8.3
MT02DH61	18.2	66.1	9.87	63.7	8.1
Alzada	16.0	73.5	9.44	64.3	7.8
Dilse	16.7	55.1	9.46	64.2	7.8
MT02DH56	15.2	47.1	9.70	64.3	7.8
Divide	16.5	27.6	8.71	63.7	7.5
Maier	16.2	58.0	9.63	64.7	7.1 x
Plaza	17.2	58.5	9.55	63.8	7.0 x
MT01617	16.3	62.9	9.68	63.7	6.0 x
site average	16.8	52.1	9.43	63.8	8.8
probability	0.043	0.001	0.479	0.014	0.001
CV (S/Mean)	11.2	29.5	9.5	0.9	18.1
CV(SE/Mean)	6.5	17.0	5.5	0.5	10.5
LSD _{0.05}	3.2	25.6	ns	1.0	2.6

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

Table 32. Relative yields of durum varieties as compared to Renville when grown under dryland conditions in Daniels County in cooperation with CES.

Variety	2001	2002	2003	2004	2005	average	As % of Mountrail
Grenora	--	--	--	--	11.0	11.0	111.1
MT01617	--	--	--	70.5	6.0	38.3	107.9
MT01695	--	--	--	64.2	9.5	36.9	103.9
AC Avonlea	25.1	31.1	31.5	61.3	12.4	32.3	102.3
Mountrail	23.5	32.3	31.1	61.0	9.9	31.6	100.0
Kyle	20.3	38.2	30.1	54.8	10.5	30.8	97.5
Plaza	26.8	29.6	30.3	56.7	7.0	30.1	95.3
Dilse	--	30.9	31.9	51.5	7.8	30.5	90.9
Maier	19.4	33.0	29.9	53.8	7.1	28.6	90.7
Lebsock	16.5	35.1	30.0	44.4	8.7	26.9	85.4
Pierce	19.5	33.3	25.1	45.6	10.9	26.9	85.2
Alkabo	--	--	--	--	8.3	8.3	83.8
MT02DH61	--	--	--	--	8.1	8.1	81.8
Alzada	--	--	--	--	7.8	7.8	78.8
MT02DH56	--	--	--	--	7.8	7.8	78.8
Divide	--	--	--	--	7.5	7.5	75.8

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

Variety	2001	2002	2003	2004	2005	average	As % of Mountrail
Maier	64.4	62.7	63.2	62.5	64.7	63.5	102.4
Lebsock	64.1	61.8	63.3	62.5	64.3	63.2	101.9
MT01617	--	--	--	62.7	63.7	63.2	101.8
Alzada	--	--	--	--	64.3	64.3	101.7
MT02DH56	--	--	--	--	64.3	64.3	101.7
Plaza	64.2	62.7	62.5	61.8	63.8	63.0	101.6
Pierce	64.1	62.7	62.4	61.2	63.7	62.8	101.3
Divide	--	--	--	--	63.7	63.7	100.8
MT02DH61	--	--	--	--	63.7	63.7	100.8
Dilse	--	60.8	62.8	60.7	64.2	62.1	100.6
MT01695	--	--	--	60.0	64.5	62.3	100.2
Kyle	63.2	61.3	62.3	60.0	63.7	62.1	100.1
Mountrail	63.2	61.0	61.7	61.0	63.2	62.0	100.0
Alkabo	--	--	--	--	63.2	63.2	100.0
AC Avonlea	62.9	60.7	61.8	60.3	63.5	61.8	99.7
Grenora	--	--	--	--	62.7	62.7	99.2

NOTE: Average test weights 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 34. Relative protein contents of durum varieties as compared to Renville when grown under dryland conditions in Daniels County in cooperation with CES.

Variety	2001	2002	2003	2004	2005	average	As % of Mountrail
Dilse	--	14.0	12.9	14.3	9.5	12.7	109.7
AC Avonlea	10.7	13.8	12.6	14.1	10.2	12.3	109.4
Grenora	--	--	--	--	10.0	10.0	108.7
MT02DH61	--	--	--	--	9.9	9.9	107.6
MT02DH56	--	--	--	--	9.7	9.7	105.4
Maier	10.4	13.2	12.1	13.4	9.6	11.7	104.6
Pierce	9.8	12.7	12.2	13.2	9.8	11.5	102.9
Alkabo	--	--	--	--	9.4	9.4	102.2
Alzada	--	--	--	--	9.4	9.4	102.2
MT01617	--	--	--	12.9	9.7	11.3	101.8
Mountrail	9.9	12.2	11.8	13.0	9.2	11.2	100.0
Plaza	9.9	12.4	11.8	12.1	9.6	11.2	99.5
Lebsock	8.7	12.9	11.8	13.0	8.9	11.1	98.6
Kyle	8.9	12.0	12.0	13.0	9.4	11.1	98.6
Divide	--	--	--	--	8.7	8.7	94.6
MT01695	--	--	--	12.2	8.1	10.2	91.4

NOTE: Average protein contents 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 35. Relative hard vitreous amber color (HVAC) of durum varieties as compared to Renville when grown under dryland conditions in Daniels County in cooperation with CES.

Variety	2003	2004	2005	average	As % of Mountrail
MT01617	--	90.3	62.9	76.6	263.2
AC Avonlea	94.5	81.3	70.7	82.2	170.9
Dilse	96.1	86.2	55.1	79.1	164.4
Maier	93.0	73.0	58.0	74.7	155.3
Alzada	--	--	73.5	73.5	139.7
Plaza	81.8	60.8	58.5	67.0	139.3
MT01695	--	34.3	40.3	37.3	128.2
MT02DH61	--	--	66.1	66.1	125.7
Kyle	85.1	30.4	65.3	60.3	125.4
Pierce	68.8	57.0	52.2	59.3	123.3
Lebsock	77.1	53.8	41.9	57.6	119.7
Grenora	--	--	55.0	55.0	104.6
Mountrail	86.3	5.5	52.6	48.1	100.0
MT02DH56	--	--	47.1	47.1	89.5
Divide	--	--	27.6	27.6	52.5
Alkabo	--	--	6.7	6.7	12.7

NOTE: Average HVACs 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 36. Performance of durum grown under irrigated conditions at Dagmar, MT.

Variety	height, inches	HVAC	grain protein	test weight	yield, bu/acre
Mountrail	28.8	70.9	11.37	59.2	34.9
Avonlea	29.7	70.9	11.09	59.5	34.2
Plaza	25.3	70.7	11.53	59.5	33.8
Grenora	24.5	71.5	12.24	58.5	33.8
MT01617	25.2	69.9	11.04	58.0	33.2
Pierce	30.0	69.3	11.46	60.2	32.3
Maier	27.0	75.3	11.47	60.0	31.4
MT02DH61	29.7	78.1	12.12	59.5	30.9
Kyle	32.0	77.6	11.40	60.8	30.9
Dilse	25.7	70.6	12.17	60.7	30.6
Lebsock	26.5	63.7	11.21	60.5	30.2
Divide	26.7	53.7	10.78	59.0	29.7 x
MT02DH56	25.5	80.1	12.84	59.0	29.6 x
Alzada	25.7	69.4	11.36	56.7	28.2 x
Alkabo	27.7	55.5	11.09	59.7	27.0 x
MT01695	21.8	73.3	12.05	58.3	26.7 x
average	27.0	70.0	11.58	59.3	31.1
probability	0.002	<0.001	0.009	<0.001	0.018
CV (S/mean)	8.8	6.6	5.0	1.1	9.0
CV (SE/mean)	5.1	3.8	2.9	0.6	5.2
LSD 0.05	4.0	7.7	0.97	1.1	4.7

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

Table 37. Relative yields of durum varieties as compared to Mountrail when grown under irrigated conditions in Sheridan County in cooperation with CES.

Cultivar	1999	2000	2001	2002	2005	Ave	as % of Mountrail
Mountrail	55.4	60.2	26.5	49.9	34.9	45.4	100.0
Grenora	--	--	--	--	33.8	33.8	96.8
MT1617	--	--	--	--	33.2	33.2	95.1
AC Avonlea	--	54.5	19.7	48.8	34.2	39.3	91.7
Lebsock	52.6	54.2	24.7	44.9	30.2	41.3	91.1
Plaza	44.5	56.5	18.2	48.9	33.8	40.4	89.0
Maier	53.6	54.1	22.9	39.7	31.4	40.3	88.9
MT02DH61	--	--	--	--	30.9	30.9	88.5
Pierce	--	--	20.8	45.1	32.3	32.7	88.2
Divide	--	--	--	--	29.7	29.7	85.1
MT02DH56	--	--	--	--	29.6	29.6	84.8
Dilse	--	--	--	40.6	30.6	35.6	84.0
Alzada	--	--	--	--	28.2	28.2	80.8
Alkabo	--	--	--	--	27.0	27.0	77.4
Kyle	32.1	44.0	18.6	49.9	30.9	35.1	77.3
MT1695	--	--	--	--	26.7	26.7	76.5

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. Severe scab infection in 2001

Table 38. Relative test weights of durum varieties as compared to Mountrail when grown under irrigated conditions in Sheridan County in cooperation with CES.

Cultivar	1999	2000	2001	2002	2005	Ave	as % of Mountrail
Lebsock	59.0	63.7	56.9	59.2	60.5	59.9	101.7
Alkabo	--	--	--	--	59.7	59.7	100.8
MT02DH61	--	--	--	--	59.5	59.5	100.5
Dilse	--	--	--	55.8	60.7	58.3	100.4
Kyle	56.3	61.8	57.8	58.3	60.8	59.0	100.3
Maier	59.3	62.7	55.9	56.7	60.0	58.9	100.1
Mountrail	60.3	62.3	55.6	56.8	59.2	58.8	100.0
Divide	--	--	--	--	59.0	59.0	99.7
MT02DH56	--	--	--	--	59.0	59.0	99.7
AC Avonlea	--	60.8	55.3	57.3	59.5	58.2	99.6
Plaza	56.7	62.0	55.5	58.2	59.5	58.4	99.2
Pierce	--	56.5	57.6	57.3	60.2	57.9	99.0
Grenora	--	--	--	--	58.5	58.5	98.8
MT1695	--	--	--	--	58.3	58.3	98.5
MT1617	--	--	--	--	58.0	58.0	98.0
Alzada	--	--	--	--	56.7	56.7	95.8

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. Severe scab infection in 2001

Table 39. Relative protein contents of durum varieties as compared to Mountrail when grown under irrigated conditions in Sheridan County in cooperation with CES.

Cultivar	1999	2000	2001	2002	2005	Ave	as % of Mountrail
MT02DH56	--	--	--	--	12.8	12.8	112.3
AC Avonlea	--	14.8	16.3	14.9	11.1	14.3	107.5
Dilse	--	--	--	15.1	12.2	13.7	107.1
Grenora	--	--	--	--	12.2	12.2	107.0
MT02DH61	--	--	--	--	12.1	12.1	106.1
MT1695	--	--	--	--	12.1	12.1	106.1
Maier	14.5	14.0	15.4	15.4	11.5	14.2	105.7
Kyle	14.5	14.3	15.3	14.7	11.4	14.0	104.8
Pierce	--	--	15.4	14.3	11.5	13.7	102.7
Plaza	13.3	13.6	15.9	13.9	11.5	13.6	101.8
Lebsock	13.8	13.2	14.6	14.4	11.2	13.4	100.3
Mountrail	13.9	13.0	14.6	14.1	11.4	13.4	100.0
Alzada	--	--	--	--	11.4	11.4	100.0
Alkabo	--	--	--	--	11.1	11.1	97.4
MT1617	--	--	--	--	11.0	11.0	96.5
Divide	--	--	--	--	10.8	10.8	94.7

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare only to the check variety. Severe scab infection in 2001.