

**PROJECT TITLE:** Off-station durum variety evaluations in Montana - 2008

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**PROJECT PERSONNEL:**

County/Site	Producers	CES/AES cooperators
Daniels, dryland	Bobbie Roos	Bobbie Roos, CES
McCone, dryland	Victor Wagner	Ken Nelson, CES
Roosevelt, dryland	Mark Swank	Gina Snyder, CES
Valley, dryland	Bill Lauckner	Verlin Koenig, CES
Wibaux, dryland	David Maus	Dave Bertelsen, CES
Turner	Max Cedererg	Gregg Carlson, NARC
North Havre	Mark Petersen	Gregg Carlson, NARC
Loma	Terry McKeever	Gregg Carlson, NARC

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

**RESULTS:** The site in Wibaux County was not harvested because of drought damage. The site in Roosevelt County was not harvested because of hail damage. Summaries of yields, test weights, protein contents, hard vitreous amber color, and sawfly damage across sites in eastern Montana are shown in Tables 1-5. Experimental line Cimmyt #8 yielded most across sites (Table 1). MT02525 had greatest test weight across sites (Table 2). Dilse had greatest protein content across sites (Table 3). Pierce had greatest percent hard vitreous amber color across sites (Table 4). MT02DH55 had greatest percent sawfly cutting and Cimmyt #11 had the least percent sawfly cutting across sites (Table 5).

**Circle, McCone County:** Performance and relative values of yield, test weight, protein, and HVAC of durum varieties grown at Circle are shown in Tables 6-10. Experimental line MT02525 yielded most.

**Nashua, Valley County:** Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Nashua are shown in Tables 11-15. Alzada and experimental line MT02525 yielded most.

**Flaxville, Daniels County:** Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Flaxville are shown in Tables 16-20. Divide yielded most.

**Turner, Hill County:** Performance and relative values of yield, test weight, protein and sawfly damage of durum varieties grown at Turner are shown in Tables 21-25. Experimental line Cimmyt #8 yielded most.

**North Havre, Hill County:** Performance and relative values of yield, test weight, protein and sawfly damage of durum varieties grown at North Havre are shown in Tables 26-30. Experimental line Cimmyt #8 yielded most.

**Loma, Hill County:** Performance and relative values of yield, test weight, protein and HVAC of durum varieties grown at Loma are shown in Tables 31-34. Experimental line Cimmyt #8 yielded most.

**SUMMARY:** Off-station yield trials are conducted at several sites in northern and 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 six off-station sites in eastern Montana, 2008.

Variety	Circle, dryland recrop	Flaxville, dryland fallow	Nashua, dryland fallow	Turner, dryland recrop	N. Havre dryland recrop	Loma, dryland recrop	average
Cimmyt#8	12.1	8.1	16.5	21.9	49.3	55.0	27.1
MT02525	14.3	8.4	20.0	20.5	47.9	43.5	25.8
Cimmyt#5	10.7	10.6	16.9	17.2	48.2	50.3	25.7
MT03012	11.9	11.4	19.1	16.5	46.4	47.5	25.5
MT04174	10.7	8.3	19.2	15.3	45.7	48.1	24.6
Cimmyt#11	10.9	8.6	16.8	20.6	43.9	41.8	23.8
Grenora	13.3	11.8	15.4	15.4	39.9	43.5	23.2
Divide	9.8	12.7	16.3	17.2	37.8	41.2	22.5
Alzada	11.5	11.8	20.0	17.1	39.6	32.0	22.0
MT02DH55	9.4	11.0	17.3	12.9	39.1	38.6	21.4
Strongfield	11.3	6.8	14.9	19.4	38.5	35.2	21.0
Mountrail	9.2	10.0	17.2	15.3	36.6	36.6	20.8
Alkabo	12.0	10.4	16.2	14.8	33.5	28.0	19.2
Pierce	10.8	8.9	16.3	14.8	33.4	30.5	19.1
Dilse	8.6	9.8	14.8	12.8	35.7	32.2	19.0
site average	11.1	9.9	17.1	16.8	41.03	40.3	22.7
probability	<0.001	0.239	0.010	7.25**	5.22**	23.53**	
CV (S/Mean)	11.9	25.3	10.3	10.57	10.05	7.01	
CV(SE/Mean)	6.9	14.6	6.0	6.1	5.8	4.05	
LSD 0.05	2.2	ns	3.0	2.96	6.89	4.7	

Table 2. Summary of durum test weights in lb/bu at six sites in eastern Montana, 2008.

Variety	Circle, dryland recrop	Flaxville, dryland fallow	Nashua, dryland fallow	Turner, dryland recrop	N. Havre dryland recrop	Loma, dryland recrop	average
MT02525	62.2	62.3	58.5	57.7	61.6	57.7	60.0
Divide	61.3	61.5	58.0	57.3	59.3	58.4	59.3
Cimmyt#8	60.7	60.5	57.2	58.1	61.9	56.9	59.2
MT04174	60.8	60.7	56.5	57.2	61.3	58.2	59.1
Alkabo	61.0	61.5	58.8	57.4	60.1	55.9	59.1
Strongfield	61.3	61.2	57.0	57.5	59.8	56.7	58.9
Pierce	61.8	61.8	58.5	57.0	60.2	54.0	58.9
Grenora	60.3	60.5	56.8	56.5	60.1	57.7	58.7
MT03012	60.0	60.0	56.3	56.9	60.8	57.6	58.6
Mountrail	60.2	61.3	56.5	57.6	59.4	55.9	58.5
Dilse	61.3	60.5	57.5	56.9	59.7	54.5	58.4
Alzada	60.0	60.8	56.5	57.4	59.4	55.5	58.3
Cimmyt#5	59.3	58.7	55.2	56.6	60.7	58.4	58.1
MT02DH55	60.0	60.8	55.8	56.8	59.6	55.3	58.1
Cimmyt#11	57.7	58.3	54.3	55.7	59.1	58.8	57.3
site average	60.5	60.7	56.9	57.1	60.19	56.8	58.7
probability	<0.001	<0.001	<0.001	11.80**	2.24*	5.13**	
CV (S/Mean)	0.6	1.1	1.0	0.53	1.67	2.04	
CV(SE/Mean)	0.3	0.6	0.6	0.3	0.96	1.18	
LSD 0.05	0.6	1.1	1.0	0.5	1.68	1.9	

Table 3. Summary of durum percent protein at six sites in eastern Montana, 2008.

Variety	Circle, dryland recrop	Flaxville, dryland fallow	Nashua, dryland fallow	Turner, dryland recrop	N. Havre dryland recrop	Loma, dryland recrop	average
Dilse	13.41	13.63	16.35	16.6	14.1	17.8	15.32
Strongfield	13.75	13.37	16.79	16.2	13.7	17.3	15.19
Mountrail	13.69	13.58	16.40	15.6	14.7	16.4	15.06
Divide	13.01	13.31	15.64	15.6	15.3	17.4	15.04
Pierce	13.49	13.16	16.15	16.1	14.4	16.5	14.97
Alkabo	13.20	13.35	15.85	15.0	14.7	16.4	14.75
MT02DH55	13.66	13.46	16.26	15.6	13.5	14.4	14.48
MT04174	13.42	13.81	15.78	15.8	13.8	13.8	14.40
Grenora	13.28	13.14	15.94	15.4	14.0	14.6	14.39
MT03012	13.64	13.34	15.66	15.5	13.7	13.8	14.27
Alzada	12.30	13.12	15.30	15.3	13.7	15.8	14.25
MT02525	13.06	12.67	15.29	15.3	13.6	13.6	13.92
Cimmyt#11	13.13	13.12	16.50	14.2	12.7	12.3	13.66
Cimmyt#5	13.35	13.23	15.35	14.2	13.2	12.4	13.62
Cimmyt#8	13.15	13.02	15.92	14.0	12.0	11.8	13.32
site average	13.30	13.29	15.95	15.4	13.8	15.0	14.44
probability	0.010	0.274	<0.001				
CV (S/Mean)	2.9	3.2	1.9				
CV(SE/Mean)	1.7	1.8	1.1				
LSD 0.05	0.64	0.70	0.50				

Table 4. Summary of durum percent hard vitreous amber color at three sites in eastern Montana, 2008.

Variety	Circle, dryland recrop	Flaxville, dryland fallow	Nashua, dryland fallow	average
Pierce	76.0	90.7	78.9	81.9
MT04174	70.8	90.5	77.9	79.7
MT03012	70.2	90.3	76.3	79.0
Mountrail	69.3	92.0	73.6	78.3
Strongfield	69.7	88.2	75.8	77.9
MT02DH55	64.2	95.2	73.4	77.6
Dilse	63.5	92.1	74.8	76.8
MT02525	70.8	82.0	77.5	76.8
Grenora	64.0	91.1	73.9	76.3
Divide	62.7	92.6	70.4	75.2
Alkabo	57.5	91.8	74.4	74.6
Alzada	62.9	88.5	70.3	73.9
Cimmyt#5	57.1	81.8	66.5	68.5
Cimmyt#8	56.6	80.5	68.3	68.5
Cimmyt#11	44.6	81.8	59.3	61.9
site average	64.0	88.6	72.8	75.1
probability	<0.001	<0.001	<0.001	
CV (S/Mean)	4.8	3.9	3.8	
CV(SE/Mean)	2.8	2.3	2.2	

Table 5. Summary of percent durum sawfly damage at four off-station sites in eastern Montana, 2008.

Variety	Circle, dryland recrop	Turner, dryland recrop	N. Havre dryland recrop	Loma, dryland recrop	average
MT02DH55	8.3	21.67	21.67	8.33	15.0
Dilse	12.3	28.33	8.33	6.67	13.9
Pierce	6.0	26.67	8.33	12.00	13.3
Grenora	8.3	21.67	11.67	5.33	11.8
Alkabo	7.3	18.33	15.00	5.33	11.5
Mountrail	6.7	13.33	10.00	3.67	8.4
Divide	8.3	8.33	3.67	2.33	5.7
MT03012	7.7	11.67	2.33	0.33	5.5
Strongfield	7.7	10.00	2.33	0.67	5.2
Alzada	5.7	10.00	2.33	0.67	4.7
MT04174	5.0	4.00	3.67	0.67	3.3
MT02525	4.3	2.33	1.00	0.33	2.0
Cimmyt#5	3.3	1.00	0.67	1.00	1.5
Cimmyt#11	2.3	2.33	1.00	0.33	1.5
Cimmyt#8	2.3	1.00	0.67	1.00	1.3
site average	6.4	12.04	6.18	3.24	7.0
probability	0.003	4.96**	2.24*	2.92**	
CV (S/Mean)	39.9	60.38	31.78	111.93	
CV(SE/Mean)	23.1	34.86	18.35	64.63	

Table 6. Performance of durum grown under dryland continuous cropping conditions at Circle, MT. Circle, MT. Planted: Apr 19, 2008 Harvested: Aug 8, 2008 Cooperator: Victor Wagner

variety	height, inches	% sawfly cutting	grain protein	HVAC, percent	test wt, lb/bu	yield, bu/acre	
MT02525	21.4	4.3	13.06	70.8	62.2	14.3	a
Grenora	21.7	8.3	13.28	64.0	60.3	13.3	a
Cimmyt#8	19.2	2.3	13.15	56.6	60.7	12.1	a
Alkabo	23.1	7.3	13.20	57.5	61.0	12.0	a
MT03012	21.5	7.7	13.64	70.2	60.0	11.9	a
Alzada	22.3	5.7	12.30	62.9	60.0	11.5	a
Strongfield	23.2	7.7	13.75	69.7	61.3	11.3	
Cimmyt#11	20.6	2.3	13.13	44.6	57.7	10.9	
Pierce	24.7	6.0	13.49	76.0	61.8	10.8	
MT04174	20.9	5.0	13.42	70.8	60.8	10.7	
Cimmyt#5	17.8	3.3	13.35	57.1	59.3	10.7	
Divide	24.4	8.3	13.01	62.7	61.3	9.8	
MT02DH55	23.6	8.3	13.66	64.2	60.0	9.4	
Mountrail	23.5	6.7	13.69	69.3	60.2	9.2	
Dilse	22.3	12.3	13.41	63.5	61.3	8.6	
average	22.0	6.4	13.30	64.0	60.5	11.1	
probability	<0.001	0.003	0.010	<0.001	<0.001	<0.001	
CV (S/Mean)	4.8	39.9	2.9	4.8	0.6	11.9	
CV(SE/Mean)	2.7	23.1	1.7	2.8	0.3	6.9	
LSD 0.05	1.8	4.3	0.64	5.2	0.6	2.2	

a indicates significantly greater yield than check variety, Mountrail, at  $p=0.05$

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

Variety	2003	2004	2005	2006	2008	average	As % of Mountrail
Cimmyt #8	--	--	--	--	12.1	12.1	131.5
MT02525	--	--	--	11.5	14.3	12.9	126.5
MT03012	--	--	--	13.7	11.9	12.8	125.5
Strongfield	--	--	--	12.9	11.3	12.1	118.6
Cimmyt #11	--	--	--	--	10.9	10.9	118.5
MT04174	--	--	--	--	10.7	10.7	116.3
Cimmyt #5	--	--	--	--	10.7	10.7	116.3
Alkabo	--	--	28.6	13.1	12.0	17.9	110.7
Grenora	--	--	26.9	13.2	13.3	17.8	110.1
Alzada	--	--	27.4	13.7	11.5	17.5	108.5
MT02DH55	--	--	--	11.6	9.4	10.5	102.9
Mountrail	16.5	24.6	28.1	11.2	9.2	17.9	100.0
Pierce	17.6	20.8	26.0	12.0	10.8	17.4	97.3
Divide	--	--	25.4	11.7	9.8	15.6	96.7
Dilse	17.9	20.5	24.1	11.7	8.6	16.6	92.4

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

Variety	2003	2004	2005	2006	2008	average	As % of Mountrail
Dilse	60.7	62.5	61.8	58.5	61.3	61.0	102.5
Pierce	59.6	61.7	61.8	59.7	61.8	60.9	102.4
MT02525	--	--	--	58.3	62.2	60.3	101.9
Strongfield	--	--	--	59.0	61.3	60.2	101.8
Alkabo	--	--	61.8	59.7	61.0	60.8	101.6
MT03012	--	--	--	59.7	60.0	59.9	101.3
Divide	--	--	61.0	59.2	61.3	60.5	101.0
MT04174	--	--	--	--	60.8	60.8	101.0
Cimmyt #8	--	--	--	--	60.7	60.7	100.8
Grenora	--	--	61.0	58.5	60.3	59.9	100.1
Mountrail	57.0	60.8	61.5	58.0	60.2	59.5	100.0
Alzada	--	--	60.0	59.7	60.0	59.9	100.0
MT02DH55	--	--	--	57.8	60.0	58.9	99.7
Cimmyt #5	--	--	--	--	59.3	59.3	98.5
Cimmyt #11	--	--	--	--	57.7	57.7	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.

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	2003	2004	2005	2006	2008	average	As % of Mountrail
Strongfield	--	--	--	15.1	13.8	14.5	101.8
MT02DH55	--	--	--	15.0	13.7	14.4	101.1
Dilse	14.8	13.9	11.8	15.3	13.4	13.8	101.0
Mountrail	15.7	14.0	10.4	14.7	13.7	13.7	100.0
MT02525	--	--	--	15.3	13.1	14.2	100.0
Grenora	--	--	11.2	14.3	13.3	12.9	100.0
Alkabo	--	--	10.6	14.8	13.2	12.9	99.5
MT03012	--	--	--	14.6	13.6	14.1	99.3
Pierce	14.2	13.9	11.2	14.6	13.5	13.5	98.4
Divide	--	--	10.4	14.6	13.0	12.7	97.9
MT04174	--	--	--	--	13.4	13.4	97.8
Cimmyt #5	--	--	--	--	13.4	13.4	97.8
Cimmyt #8	--	--	--	--	13.2	13.2	96.4
Cimmyt #11	--	--	--	--	13.1	13.1	95.6
Alzada	--	--	10.5	13.7	12.3	12.2	94.1

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 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	2006	2008	Ave	as % of Mountrail
Strongfield	--	--	--	85.6	69.7	77.7	108.3
MT03012	--	--	--	79.4	70.2	74.8	104.3
Alzada	--	--	68.7	79.2	62.9	70.3	102.8
MT04174	--	--	--	--	70.8	70.8	102.2
Dilse	75.3	89.1	56.9	73.7	63.5	71.7	100.5
Mountrail	66.1	85.5	61.7	74.1	69.3	71.3	100.0
Pierce	57.9	86.5	54.0	80.1	76.0	70.9	99.4
MT02525	--	--	--	69.4	70.8	70.1	97.8
MT02DH55	--	--	--	75.5	64.2	69.9	97.4
Grenora	--	--	43.6	72.1	64.0	59.9	87.6
Divide	--	--	40.4	75.5	62.7	59.5	87.1
Cimmyt #5	--	--	--	--	57.1	57.1	82.4
Cimmyt #8	--	--	--	--	56.6	56.6	81.7
Alkabo	--	--	25.8	79.8	57.5	54.4	79.5
Cimmyt #11	--	--	--	--	44.6	44.6	64.4

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 Nashua, MT.  
 Planted: Apr 12, 2008    Harvested: Aug 19, 2008    Cooperator: Bill Lauckner

variety	height, inches	grain protein, %	HVAC, percent	test wt, lb/bu	yield, bu/acre
Alzada	26.3	15.30	70.3	56.5	20.0
MT02525	23.6	15.29	77.5	58.5	20.0
MT04174	25.5	15.78	77.9	56.5	19.2
MT03012	24.9	15.66	76.3	56.3	19.1
MT02DH55	28.7	16.26	73.4	55.8	17.3
Mountrail	27.2	16.40	73.6	56.5	17.2
Cimmyt#5	21.3	15.35	66.5	55.2	16.9
Cimmyt#11	24.7	16.50	59.3	54.3	16.8
Cimmyt#8	26.0	15.92	68.3	57.2	16.5
Divide	25.9	15.64	70.4	58.0	16.3
Pierce	28.5	16.15	78.9	58.5	16.3
Alkabo	27.8	15.85	74.4	58.8	16.2
Grenora	26.4	15.94	73.9	56.8	15.4
Strongfield	28.7	16.79	75.8	57.0	14.9
Dilse	26.8	16.35	74.8	57.5	14.8
average	26.1	15.95	72.8	56.9	17.1
probability	<0.001	<0.001	<0.001	<0.001	0.010
CV (S/Mean)	5.9	1.9	3.8	1.0	10.3
CV (SE/Mean)	3.4	1.1	2.2	0.6	6.0
LSD 0.05	2.6	0.50	4.7	1.0	3.0

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

Cultivar	2003	2004	2005	2006	2008	Ave	As % of Mountrail
MT04174	--	--	--	--	19.2	19.2	111.6
Divide	--	--	61.0	29.1	16.3	35.5	109.9
Grenora	--	--	57.7	32.2	15.4	35.1	108.8
Alkabo	--	--	59.3	28.5	16.2	34.7	107.4
Strongfield	--	--	--	33.5	14.9	24.2	102.3
MT03012	--	--	--	28.8	19.1	24.0	101.3
Mountrail	37.6	58.6	49.5	30.1	17.2	38.6	100.0
MT02525	--	--	--	27.1	20.0	23.6	99.6
Dilse	40.8	49.1	57.2	30.0	14.8	38.4	99.4
Alzada	--	--	48.2	27.5	20.0	31.9	98.9
Cimmyt #5	--	--	--	--	16.9	16.9	98.3
Cimmyt #11	--	--	--	--	16.8	16.8	97.7
Pierce	37.8	51.1	48.9	32.1	16.3	37.2	96.5
Cimmyt #8	--	--	--	--	16.5	16.5	95.9
MT02DH55	--	--	--	27.9	17.3	22.6	95.6

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 Mountrail when grown under dryland conditions in Valley County in cooperation with CES.

Cultivar	2003	2004	2005	2006	2008	Ave	As % of Mountrail
MT02525	--	--	--	60.5	58.5	59.5	102.8
Dilse	62.0	62.5	61.8	61.3	57.5	61.0	102.5
Pierce	60.7	61.8	62.5	60.3	58.5	60.8	102.1
Alkabo	--	--	61.7	60.0	58.8	60.2	101.9
Cimmyt #8	--	--	--	--	57.2	57.2	101.2
Divide	--	--	61.0	60.0	58.0	59.7	101.1
Strongfield	--	--	--	60.0	57.0	58.5	101.0
Grenora	--	--	61.8	59.8	56.8	59.5	100.7
MT03012	--	--	--	59.7	56.3	58.0	100.2
Mountrail	58.8	61.7	61.3	59.3	56.5	59.5	100.0
MT04174	--	--	--	--	56.5	56.5	100.0
MT02DH55	--	--	--	58.7	55.8	57.3	98.9
Alzada	--	--	58.5	59.0	56.5	58.0	98.2
Cimmyt #5	--	--	--	--	55.2	55.2	97.7
Cimmyt #11	--	--	--	--	54.3	54.3	96.1

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

Cultivar	2003	2004	2005	2006	2008	Ave	As % of Mountrail
Strongfield	--	--	--	13.6	16.8	15.2	103.8
MT03012	--	--	--	14.1	15.7	14.9	101.7
Cimmyt #11	--	--	--	--	16.5	16.5	100.6
Dilse	15.1	10.3	12.7	12.7	16.4	13.4	100.3
Mountrail	16.0	10.3	11.4	12.9	16.4	13.4	100.0
MT02DH55	--	--	--	12.8	16.3	14.6	99.3
Grenora	--	--	11.1	13.2	15.9	13.4	98.8
Pierce	15.2	9.9	10.6	14.0	16.2	13.2	98.4
Alkabo	--	--	10.6	13.2	15.8	13.2	97.3
Cimmyt #8	--	--	--	--	15.9	15.9	97.0
Alzada	--	--	11.4	12.7	15.3	13.1	96.8
MT04174	--	--	--	--	15.8	15.8	96.3
MT02525	--	--	--	12.6	15.3	14.0	95.2
Divide	--	--	10.6	12.4	15.6	12.9	94.8
Cimmyt #5	--	--	--	--	15.4	15.4	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 15. 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	2006	2008	Ave	as % of Mountrail
Alzada	--	--	61.7	59.5	70.3	63.8	138.6
Grenora	--	--	51.1	52.8	73.9	59.3	128.7
MT03012	--	--	--	71.1	76.3	73.7	122.8
Strongfield	--	--	--	67.6	75.8	71.7	119.5
Dilse	98.3	75.0	66.7	48.8	74.8	72.7	117.5
Pierce	82.6	70.2	37.2	66.5	78.9	67.1	108.4
MT04174	--	--	--	--	77.9	77.9	105.8
MT02525	--	--	--	42.8	77.5	60.2	100.3
Mountrail	80.7	90.5	18.2	46.4	73.6	61.9	100.0
Divide	--	--	33.4	32.9	70.4	45.6	98.9
Alkabo	--	--	5.4	48.9	74.4	42.9	93.1
Cimmyt #8	--	--	--	--	68.3	68.3	92.8
Cimmyt #5	--	--	--	--	66.5	66.5	90.4
MT02DH55	--	--	--	34.9	73.4	54.2	90.3
Cimmyt #11	--	--	--	--	59.3	59.3	80.6

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 Flaxville, MT.  
 Planted: May 6, 2008    Harvested: August 25, 2008    Cooperator: Charlie Cahill

variety	height, inches	percent protein	HVAC, percent	test wt, lb/bu	yield, bu/ac
Divide	19.6	13.31	92.6	61.5	12.7
Alzada	17.6	13.12	88.5	60.8	11.8
Grenora	15.1	13.14	91.1	60.5	11.8
MT03012	15.9	13.34	90.3	60.0	11.4
MT02DH55	18.1	13.46	95.2	60.8	11.0
Cimmyt#5	15.7	13.23	81.8	58.7	10.6
Alkabo	16.1	13.35	91.8	61.5	10.4
Mountrail	16.7	13.58	92.0	61.3	10.0
Dilse	15.7	13.63	92.1	60.5	9.8
Pierce	16.5	13.16	90.7	61.8	8.9
Cimmyt#11	15.1	13.12	81.8	58.3	8.6
MT02525	15.2	12.67	82.0	62.3	8.4
MT04174	14.8	13.81	90.5	60.7	8.3
Cimmyt#8	15.9	13.02	80.5	60.5	8.1
Strongfield	17.3	13.37	88.2	61.2	6.8
site average	16.4	13.29	88.6	60.7	9.9
probability	0.017	0.274	<0.001	<0.001	0.239
CV (S/Mean)	8.7	3.2	3.9	1.1	25.3
CV(SE/Mean)	5.0	1.8	2.3	0.6	14.6
LSD <sub>0.05</sub>	2.4	0.70	5.8	1.1	4.2

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

Variety	2003	2004	2005	2006	2008	average	As % of Mountrail
Cimmyt #5	--	--	--	--	10.6	10.6	106.0
Grenora	--	--	11.0	42.7	11.8	21.8	101.2
Mountrail	31.1	61.0	9.9	44.8	10.0	31.4	100.0
MT02DH55	--	--	--	42.5	11.0	26.8	97.6
Alkabo	--	--	8.3	44.4	10.4	21.0	97.5
Divide	--	--	7.5	42.9	12.7	21.0	97.5
Strongfield	--	--	--	45.1	6.8	26.0	94.7
MT03012	--	--	--	39.4	11.4	25.4	92.7
Dilse	31.9	51.5	7.8	38.8	9.8	28.0	89.2
MT02525	--	--	--	40.4	8.4	24.4	89.1
Alzada	--	--	7.8	37.0	11.8	18.9	87.5
Cimmyt #11	--	--	--	--	8.6	8.6	86.0
Pierce	25.1	45.6	10.9	40.1	8.9	26.1	83.3
MT04174	--	--	--	--	8.3	8.3	83.0
Cimmyt #8	--	--	--	--	8.1	8.1	81.0

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

Variety	2003	2004	2005	2006	2008	average	As % of Mountrail
MT02525	--	--	--	61.2	62.3	61.8	101.4
Pierce	62.4	61.2	63.7	62.0	61.8	62.2	101.1
Alkabo	--	--	63.2	62.0	61.5	62.2	100.9
Alzada	--	--	64.3	61.2	60.8	62.1	100.7
Divide	--	--	63.7	61.0	61.5	62.1	100.6
Dilse	62.8	60.7	64.2	61.2	60.5	61.9	100.6
Strongfield	--	--	--	61.2	61.2	61.2	100.5
Mountrail	61.7	61.0	63.2	60.5	61.3	61.5	100.0
MT03012	--	--	--	61.5	60.0	60.8	99.8
Grenora	--	--	62.7	61.2	60.5	61.5	99.7
MT04174	--	--	--	--	60.7	60.7	99.0
Cimmyt #8	--	--	--	--	60.5	60.5	98.7
MT02DH55	--	--	--	58.5	60.8	59.7	97.9
Cimmyt #5	--	--	--	--	58.7	58.7	95.8
Cimmyt #11	--	--	--	--	58.3	58.3	95.1

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

Variety	2003	2004	2005	2006	2008	average	As % of Mountrail
MT02DH55	--	--	--	14.1	13.5	13.8	104.2
Dilse	12.9	14.3	9.5	12.7	13.6	12.6	104.1
MT04174	--	--	--	--	13.8	13.8	101.5
Pierce	12.2	13.2	9.8	12.5	13.2	12.2	100.7
Mountrail	11.8	13.0	9.2	12.9	13.6	12.1	100.0
Strongfield	--	--	--	13.0	13.4	13.2	99.6
Grenora	--	--	10.0	12.3	13.1	11.8	99.2
Cimmyt #5	--	--	--	--	13.2	13.2	97.1
MT03012	--	--	--	12.4	13.3	12.9	97.0
Alkabo	--	--	9.4	11.8	13.4	11.5	96.9
Divide	--	--	8.7	12.6	13.3	11.5	96.9
Cimmyt #11	--	--	--	--	13.1	13.1	96.3
Cimmyt #8	--	--	--	--	13.0	13.0	95.6
MT02525	--	--	--	12.6	12.7	12.7	95.5
Alzada	--	--	9.4	11.5	13.1	11.3	95.2

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 20. Relative hard vitreous amber color (HVAC) of durum varieties as compared to Mountrail when grown under dryland conditions in Daniels County in cooperation with CES.

Variety	2003	2004	2005	2006	2008	average	As % of Mountrail
Dilse	96.1	86.2	55.1	83.7	92.1	82.6	128.9
Pierce	68.8	57.0	52.2	82.0	90.7	70.1	109.4
Alzada	--	--	73.5	82.2	88.5	81.4	106.7
MT02DH55	--	--	--	85.0	95.2	90.1	102.3
MT03012	--	--	--	88.2	90.3	89.3	101.3
Strongfield	--	--	--	88.7	88.2	88.5	100.4
Mountrail	86.3	5.5	52.6	84.2	92.0	64.1	100.0
MT04174	--	--	--	--	90.5	90.5	98.4
Grenora	--	--	55.0	76.4	91.1	74.2	97.2
MT02525	--	--	--	77.4	82.0	79.7	90.5
Cimmyt #5	--	--	--	--	81.8	81.8	88.9
Cimmyt #11	--	--	--	--	81.8	81.8	88.9
Cimmyt #8	--	--	--	--	80.5	80.5	87.5
Divide	--	--	27.6	75.8	92.6	65.3	85.7
Alkabo	--	--	6.7	64.3	91.8	54.3	71.2

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 21. Performance of durum grown under dryland conditions at Turner, MT.  
 Planted: May 12, 2008      Harvested: Sep 16, 2008    Cooperator: Max Cederberg

variety	height, inches	sawfly rating	grain protein, %	test wt, lb/bu	Yield, bu/acre	
Cimmyt#8	18.1	1.00	14.0	58.1	21.9	a
Cimmyt#11	18.6	2.33	14.2	55.7	20.6	a
MT02525	16.6	2.33	15.3	57.7	20.5	a
Strongfield	21.3	10.00	16.2	57.5	19.4	a
Divide	18.1	8.33	15.6	57.3	17.2	
Cimmyt#5	16.3	1.00	14.2	56.6	17.2	
Alzada	17.3	10.00	15.3	57.4	17.1	
MT03012	16.3	11.67	15.5	56.9	16.5	
Grenora	17.4	21.67	15.4	56.5	15.4	
Mountrail	19.6	13.33	15.6	57.6	15.3	
MT04174	16.6	4.00	15.8	57.2	15.3	
Alkabo	17.6	18.33	15.0	57.4	14.8	
Pierce	21.1	26.67	16.1	57.0	14.8	
MT02DH55	19.0	21.67	15.6	56.8	12.9	
Dilse	17.6	28.33	16.6	56.9	12.8	
average	18.1	12.04	15.4	57.1	16.8	
probability	4.60**	4.96**		11.80**	7.25**	
CV (S/Mean)	7.05	60.38		0.53	10.57	
CV(SE/Mean)	4.07	34.86		0.3	6.1	
LSD 0.05	2.13	12.16		0.5	2.96	

a indicates significantly greater yield than check variety, Mountrail at p=0.05

Table 22. Relative yielding abilities of durum varieties as compared to Mountrail when grown under dryland conditions at Turner, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Cimmyt#8	--	--	21.9	21.9	143.1
Cimmyt#11	--	--	20.6	20.6	134.6
MT02525	21.1	26.1	20.5	22.6	120.2
Alzada	23.7	25.2	17.1	22.0	117.0
Strongfield	21.6	24.0	19.4	21.7	115.4
Cimmyt#5	--	--	17.2	17.2	112.4
MT03012	21.7	24.3	16.5	20.8	110.6
Grenora	19.1	25.6	15.4	20.0	106.4
MT04174	--	--	15.3	15.3	100.0
Mountrail	18.9	22.3	15.3	18.8	100.0
Alkabo	18.4	22.5	14.8	18.6	98.9
Divide	17.9	20.0	17.2	18.4	97.9
Pierce	17.6	20.0	14.8	17.5	93.1
Dilse	18.2	--	12.8	15.5	90.6
MT02DH55	18.0	19.2	12.9	16.7	88.8

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

Table 23. Relative test weights of durum varieties as compared to Mountrail when grown under dryland conditions Turner, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Alkabo	58.5	57.5	57.4	57.8	101.9
MT02525	57.5	56.8	57.7	57.3	101.1
Pierce	57.3	57.6	57.0	57.3	101.1
Cimmyt#8	--	--	58.1	58.1	100.9
Divide	57.3	56.7	57.3	57.1	100.7
Dilse	57.5	--	56.9	57.2	100.4
Strongfield	56.7	56.1	57.5	56.8	100.2
Alzada	57.0	56.1	57.4	56.8	100.2
Mountrail	56.3	56.1	57.6	56.7	100.0
MT03012	57.3	55.0	56.9	56.4	99.5
Grenora	57.0	55.7	56.5	56.4	99.5
MT04174	--	--	57.2	57.2	99.3
MT02DH55	56.4	55.6	56.8	56.3	99.3
Cimmyt#5	--	--	56.6	56.6	98.3
Cimmyt#11	--	--	55.7	55.7	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 24. Relative protein contents of durum varieties as compared to Mountrail when grown under dryland conditions Turner, MT.

Cultivar	2007	2008	Ave	as % of Mountrail
Dilse	--	16.6	16.6	106.4
Strongfield	19.8	16.2	18.0	104.0
MT04174	--	15.8	15.8	101.3
Mountrail	19.0	15.6	17.3	100.0
Pierce	18.3	16.1	17.2	99.4
MT02DH55	18.7	15.6	17.2	99.4
MT03012	18.7	15.5	17.1	98.8
Divide	18.2	15.6	16.9	97.7
MT02525	17.9	15.3	16.6	96.0
Alzada	17.8	15.3	16.6	96.0
Grenora	17.4	15.4	16.4	94.8
Alkabo	17.8	15.0	16.4	94.8
Cimmyt#11	--	14.2	14.2	91.0
Cimmyt#5	--	14.2	14.2	91.0
Cimmyt#8	--	14.0	14.0	89.7

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 25. Relative sawfly damage of durum varieties as compared to Mountrail when grown under dryland conditions Turner, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Dilse	50.0	--	28.3	39.2	127.1
Grenora	50	33.3	21.7	35.0	121.1
MT02DH55	46.7	30.0	21.7	32.8	113.5
Alkabo	48.3	25.0	18.3	30.5	105.5
Pierce	43.3	21.7	26.7	30.5	105.5
Mountrail	48.3	25.0	13.3	28.9	100.0
Divide	26.7	13.3	8.3	16.1	55.7
Strongfield	16.7	10.0	10.0	12.2	42.2
Alzada	20	6.7	10.0	12.2	42.2
MT03012	11.7	11.7	11.7	11.7	40.5
MT04174	--	--	4.0	4.0	30.1
Cimmyt#11	--	--	2.3	2.3	17.3
MT02525	8.3	3.7	2.3	4.8	16.6
Cimmyt#5	--	--	1.0	1.0	7.5
Cimmyt#8	--	--	1.0	1.0	7.5

NOTE: Average sawfly damage 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 North Havre, MT.  
 Planted: May 14, 2008      Harvested: Aug 28, 2008      Cooperator: Mark Peterson

variety	height, inches	sawfly rating	grain protein, %	test wt, lb/bu	yield, bu/acre	
Cimmyt#8	24.5	0.67	12.0	61.9	49.3	a
Cimmyt#5	24.8	0.67	13.2	60.7	48.2	a
MT02525	24.5	1.00	13.6	61.6	47.9	a
MT03012	26.0	2.33	13.7	60.8	46.4	a
MT04174	25.2	3.67	13.8	61.3	45.7	a
Cimmyt#11	25.8	1.00	12.7	59.1	43.9	a
Grenora	28.6	11.67	14.0	60.1	39.9	
Alzada	27.4	2.33	13.7	59.4	39.6	
MT02DH55	29.2	21.67	13.5	59.6	39.1	
Strongfield	28.2	2.33	13.7	59.8	38.5	
Divide	28.4	3.67	15.3	59.3	37.8	
Mountrail	28.4	10.00	14.7	59.4	36.6	
Dilse	27.5	8.33	14.1	59.7	35.7	
Alkabo	28.3	15.00	14.7	60.1	33.5	
Pierce	29.0	8.33	14.4	60.2	33.4	
average	27.0	6.18	13.8	60.19	41.03	
probability	3.27**	2.24*		2.24*	5.22**	
CV (S/Mean)	6.15	31.78		1.67	10.05	
CV(SE/Mean)	3.55	18.35		0.96	5.8	
LSD 0.05	2.78	3.28		1.68	6.89	

a indicates significantly greater yield than check variety, Mountrail at p=0.05

Table 27. Relative yielding abilities of durum varieties as compared to Mountrail when grown under dryland conditions at North Havre, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Cimmyt#8	--	--	49.3	49.3	134.7
Cimmyt#5	--	--	48.2	48.2	131.7
MT04174	--	--	45.7	45.7	124.9
Cimmyt#11	--	--	43.9	43.9	119.9
MT02525	13.8	46.3	47.9	36.0	110.4
MT03012	18.2	40.0	46.4	34.9	107.1
Alzada	18.3	44.0	39.6	34.0	104.3
Strongfield	13.6	46.3	38.5	32.8	100.6
Mountrail	16.0	45.1	36.6	32.6	100.0
Grenora	15.8	40.9	39.9	32.2	98.8
Dilse	15.8	--	35.7	25.8	97.9
Divide	15.7	42.1	37.8	31.9	97.9
MT02DH55	14.6	41.6	39.1	31.8	97.5
Alkabo	16.4	43.7	33.5	31.2	95.7
Pierce	12.6	40.7	33.4	28.9	88.7

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 28 Relative test weights of durum varieties as compared to Mountrail when grown under dryland conditions North Havre, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Cimmyt#8	--	--	61.9	61.9	104.2
MT04174	--	--	61.3	61.3	103.2
MT02525	52.1	59.4	61.6	57.7	103.2
MT03012	53.8	57.5	60.8	57.4	102.7
Divide	54.5	58.1	59.3	57.3	102.5
Pierce	52.6	59.2	60.2	57.3	102.5
Alkabo	52.9	58.5	60.1	57.2	102.3
Cimmyt#5	--	--	60.7	60.7	102.2
Alzada	52.5	58.6	59.4	56.8	101.6
Strongfield	52.8	57.1	59.8	56.6	101.3
Grenora	51.6	57.6	60.1	56.4	100.9
Dilse	51.7	--	59.7	55.7	100.2
Mountrail	51.8	56.5	59.4	55.9	100.0
Cimmyt#11	--	--	59.1	59.1	99.5
MT02DH55	50.1	56.2	59.6	55.3	98.9

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

Table 29. Relative protein contents of durum varieties as compared to Mountrail when grown under dryland conditions North Havre, MT.

Cultivar	2007	2008	Ave	as % of Mountrail
Mountrail	16.7	14.7	15.7	100.0
Divide	15.8	15.3	15.6	99.4
Alkabo	16.1	14.7	15.4	98.1
Strongfield	16.8	13.7	15.3	97.5
MT03012	16.5	13.7	15.1	96.2
Grenora	16.2	14.0	15.1	96.2
MT02DH55	16.7	13.5	15.1	96.2
Pierce	15.5	14.4	15.0	95.5
MT02525	15.5	13.6	14.6	93.0
Alzada	15.4	13.7	14.6	93.0
Dilse	--	14.1	14.1	95.9
MT04174	--	13.8	13.8	93.9
Cimmyt#5	--	13.2	13.2	89.8
Cimmyt#11	--	12.7	12.7	86.4
Cimmyt#8	--	12.0	12.0	81.6

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 30. Relative sawfly damage of durum varieties as compared to Mountrail when grown under dryland conditions North Havre, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
MT02DH55	46.7	6.7	21.7	25.0	118.5
Alkabo	48.3	11.7	15.0	25.0	118.5
Grenora	50.0	10.0	11.7	23.9	113.3
Dilse	50.0	--	8.3	29.2	100.0
Mountrail	48.3	5.0	10.0	21.1	100.0
Pierce	43.3	5.3	8.3	19.0	90.0
Divide	26.7	4.0	3.7	11.5	54.5
Alzada	20.0	2.3	2.3	8.2	38.9
MT04174	--	--	3.7	3.7	37.0
Strongfield	16.7	1.0	2.3	6.7	31.8
MT03012	11.7	5.0	2.3	6.3	29.9
MT02525	8.3	1.0	1.0	3.4	16.1
Cimmyt#11	--	--	1.0	1.0	10.0
Cimmyt#8	--	--	0.7	0.7	7.0
Cimmyt#5	--	--	0.7	0.7	7.0

NOTE: Average sawfly damage 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 Loma, MT.  
 Planted: May 6, 2008 Harvested: Aug 25, 2008 Cooperator: Terry McKeever

variety	height, inches	sawfly rating	grain protein, %	test wt, lb/bu	yield, bu/acre	
Cimmyt#8	26.8	1.00	11.8	56.9	55.0	a
Cimmyt#5	23.9	1.00	12.4	58.4	50.3	a
MT04174	27.4	0.67	13.8	58.2	48.1	a
MT03012	27.4	0.33	13.8	57.6	47.5	a
Grenora	29.7	5.33	14.6	57.7	43.5	a
MT02525	27.4	0.33	13.6	57.7	43.5	a
Cimmyt#11	25.5	0.33	12.3	58.8	41.8	a
Divide	32.9	2.33	17.4	58.4	41.2	
MT02DH55	31.0	8.33	14.4	55.3	38.6	
Mountrail	30.7	3.67	16.4	55.9	36.6	
Strongfield	31.0	0.67	17.3	56.7	35.2	
Dilse	31.3	6.67	17.8	54.5	32.2	
Alzada	28.4	0.67	15.8	55.5	32.0	
Pierce	30.6	12.00	16.5	54.0	30.5	x
Alkabo	29.9	5.33	16.4	55.9	28.0	x
average	28.9	3.24	15.0	56.8	40.3	
probability	9.87**	2.92**		5.13**	23.53**	
CV (S/Mean)	4.76	111.93		2.04	7.01	
CV(SE/Mean)	2.75	64.63		1.18	4.05	
LSD 0.05	2.3	6.07		1.9	4.7	

a indicates significantly greater yield than check variety, Mountrail at p=0.05  
 x indicates significantly lower yield than check variety, Mountrail at p=0.05

Table 32. Relative yielding abilities of durum varieties as compared to Mountrail when grown under dryland conditions at Loma, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Cimmyt#8	--	--	55.0	55.0	150.3
Cimmyt#5	--	--	50.3	50.3	137.4
MT04174	--	--	48.1	48.1	131.4
Cimmyt#11	--	--	41.8	41.8	114.2
MT03012	17.9	31.4	47.5	32.3	107.7
Grenora	22.1	30.8	43.5	32.1	107.0
MT02525	20.6	31.6	43.5	31.9	106.3
MT02DH55	24.4	28.3	38.6	30.4	101.3
Divide	22.4	27.3	41.2	30.3	101.0
Mountrail	22.5	31.0	36.6	30.0	100.0
Strongfield	25.0	28.7	35.2	29.6	98.7
Alzada	19.3	33.4	32.0	28.2	94.0
Alkabo	24.1	32.0	28.0	28.0	93.3
Pierce	19.4	28.7	30.5	26.2	87.3
Dilse	18.7	--	32.2	25.5	86.1

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 33. Relative test weights of durum varieties as compared to Mountrail when grown under dryland conditions Loma, MT.

Cultivar	2006	2007	2008	Ave	as % of Mountrail
Cimmyt#11	--	--	58.8	58.8	105.2
Cimmyt#5	--	--	58.4	58.4	104.5
Divide	55.5	55.4	58.4	56.4	104.1
MT04174	--	--	58.2	58.2	104.1
Alkabo	55.0	55.9	55.9	55.6	102.6
MT02525	53.0	56.0	57.7	55.6	102.6
Cimmyt#8	--	--	56.9	56.9	101.8
Grenora	52.7	54.6	57.7	55.0	101.5
Pierce	55.3	55.7	54.0	55.0	101.5
MT03012	52.4	55.0	57.6	55.0	101.5
Strongfield	54.4	52.2	56.7	54.4	100.4
Mountrail	52.9	53.8	55.9	54.2	100.0
Alzada	51.9	54.8	55.5	54.1	99.8
MT02DH55	54.1	52.3	55.3	53.9	99.4
Dilse	53.5	--	54.5	54.0	99.3

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 34. Relative protein contents of durum varieties as compared to Mountrail when grown under dryland conditions Loma, MT.

Cultivar	2007	2008	Ave	as % of Mountrail
Strongfield	20.7	17.3	19.0	106.1
Divide	18.7	17.4	18.1	101.1
Mountrail	19.4	16.4	17.9	100.0
Pierce	19.0	16.5	17.8	99.4
Dilse	--	17.8	17.8	99.4
Alkabo	18.8	16.4	17.6	98.3
MT02DH55	19.8	14.4	17.1	95.5
Alzada	18.0	15.8	16.9	94.4
Grenora	18.9	14.6	16.8	93.9
MT03012	18.9	13.8	16.4	91.6
MT02525	18.7	13.6	16.2	90.5
MT04174	--	13.8	13.8	77.1
Cimmyt#5	--	12.4	12.4	69.3
Cimmyt#11	--	12.3	12.3	68.7
Cimmyt#8	--	11.8	11.8	65.9

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.