

PROJECT TITLE: Evaluation of spring wheat, durum, and barley varieties under minimum-till, continuous cropping conditions – 2007

PROJECT LEADER:

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OBJECTIVE: To determine the best adapted varieties of spring wheat, durum, and barley for production under no-till continuous cropping conditions in eastern Montana.

RESULTS:

Soil type: Williams clay loam
Previous crops: 2006 - spring wheat, 2005 - safflower, 2004 - small grain plots
Residual soil N to 2 ft: 25 lb N/ac
Residual soil P to 6 in: 41 ppm
Applied fertilizer: 30 lb N/ac applied as liquid 28-0-0
Herbicides: BroxM (1.5 pt/ac) and Hoelon (2 pt/ac) applied May 30
Precipitation April – August, 2007: 9.80 inches
Ave (59 yr) precipitation April – August: 9.46 inches
Precipitation September 2006 – August 2007: 15.90 inches
Ave (59 yr) precipitation September – August: 13.87 inches

Experiment	Planting date	Harvest date	Plot size
recrop spring wheat	Apr 23	Jul 31	100 ft ² , entire plot harvested.
recrop durum	Apr 23	Jul 31	100 ft ² , entire plot harvested.
recrop barley	Apr 23	Jul 30	100 ft ² , entire plot harvested.

Comments:

Above average precipitation and cool temperatures in May.

Spring wheat: Twenty lines and varieties of spring wheat were tested under dryland recrop conditions (Table 1). Fourteen lines and varieties yielded significantly more than the check variety, McNeal. Five-year summaries for yield, test weight, height, and protein content are shown in Tables 2 through 5.

Durum: Twelve durum lines and varieties were tested under dryland recrop conditions (Table 6). Two varieties yielded significantly less than the check variety, Mountrail. Five-year summaries for yield, test weight, height, protein content, and hard vitreous amber color are shown in Tables 7 through 11.

Barley: Sixteen barley lines and varieties were tested under dryland recrop conditions (Table 12). Two varieties yielded significantly less than the check variety, Haxby. Five-year summaries for yield, test weight, height, and protein content are shown in Tables 13 through 16.

SUMMARY: The experiments reported under this project are all of the replicated small plot type. The three-year crop rotation is commercial small grain, small grain yield trials, safflower.

FUTURE PLANS: New varieties will continue to be tested under continuous cropping conditions to identify those which will perform best under these conditions. Experimental lines from North Dakota as well as from Montana will be tested so that when those lines are released as varieties, information will be available as to their performance under continuous cropping conditions.

Table 1. Agronomic data obtained from a dryland recrop spring wheat yield trial conducted at the Eastern Agricultural Research Center, Sidney, MT.

entry	heading*	height, in	protein content	test wt, lb/bu	yield, bu/ac	
MT 0515	59.3	28.7	14.88	62.7	41.1	a
Westbred 926	55.0	26.4	11.11	61.0	40.4	a
OUTLOOK	60.7	29.8	14.13	60.5	40.4	a
CORBIN	56.7	28.5	11.71	62.5	40.0	a
HANK	56.7	26.0	11.57	61.2	39.6	a
AGAWAM	56.3	27.4	11.87	64.2	39.3	a
MT 0414	58.0	30.0	14.58	62.5	38.8	a
VIDA	59.3	30.3	14.95	62.0	38.1	a
KNUDSON	58.3	27.3	14.18	62.0	37.8	a
EXPLORER	56.0	27.8	13.12	62.0	37.5	a
NORPRO	57.3	27.8	13.36	62.3	37.1	a
FREYR	58.0	30.8	14.51	62.5	36.4	a
MT 0415	59.3	30.4	15.59	61.8	36.1	a
REEDER	59.7	27.8	15.72	62.0	35.9	a
SCHOLAR	60.7	35.3	12.51	62.2	35.0	
ERNEST	59.3	34.1	13.38	62.3	32.6	
FORTUNA	58.3	33.7	13.06	61.3	31.8	
CONAN	58.3	27.3	11.39	62.2	30.6	
CHOTEAU	57.7	28.5	12.37	62.8	29.5	
MCNEAL	60.3	29.2	11.30	61.2	28.2	
mean	58.3	29.4	13.26	62.1	36.3	
Probability	<0.001	<0.001	<0.001	<0.001	<0.001	
CV (S/mean)	1.6	6.4	8.3	1.0	11.7	
CV (SE/mean)	0.9	3.7	4.8	0.6	6.7	
LSD 0.05	1.6	3.1	1.83	1.0	7.0	

*days from planting

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

Table 2. Relative yielding abilities of spring wheat varieties in bu/ac as compared to McNeal when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of McNeal
MT0515	--	--	--	--	41.1	41.1	145.7
Westbred 926	--	--	--	--	40.4	40.4	143.3
Corbin	--	--	--	--	40.0	40.0	141.8
Hank	--	--	--	--	39.6	39.6	140.4
MT0414	--	--	--	--	38.8	38.8	137.6
Explorer	--	--	--	--	37.5	37.5	133.0
MT0415	--	--	--	--	36.1	36.1	128.0
Agawam	--	--	--	35.8	39.3	37.6	118.8
Vida	--	29.5	40.6	37.6	38.1	36.5	118.5
Outlook	37.7	30.1	37.0	35.2	40.4	36.1	116.4
Ernest	--	--	--	--	32.6	32.6	115.6
Freyr	--	24.4	39.6	40.1	36.4	35.1	114.2
Knudson	--	--	39.6	34.9	37.8	37.4	114.0
Fortuna	--	--	--	--	31.8	31.8	112.8
Reeder	35.2	25.0	41.5	35.7	35.9	34.7	111.8
Norpro	--	19.8	42.8	36.5	37.1	34.1	110.7
Conan	--	--	--	--	30.6	30.6	108.5
Scholar	34.0	23.1	35.6	30.1	35.0	31.6	101.8
McNeal	32.0	24.5	35.3	35.0	28.2	31.0	100.0
Choteau	31.1	24.2	34.8	35.2	29.5	31.0	99.9

NOTE: Average yields 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 3. Relative test weights of spring wheat varieties in lb/bu as compared to McNeal when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of McNeal
MT0515	--	--	--	--	62.7	62.7	108.1
MT0414	--	--	--	--	62.5	62.5	107.8
Agawam	--	--	--	61.5	64.2	62.9	107.3
MT0415	--	--	--	--	61.8	61.8	106.6
Freyr	--	60.8	62.3	60.0	62.5	61.4	105.0
Reeder	59.0	60.0	61.8	58.0	62.0	60.2	103.7
Choteau	58.7	59.8	60.0	59.5	62.8	60.2	103.7
Scholar	59.5	59.3	61.2	58.3	62.2	60.1	103.6
Norpro	--	60.5	59.2	58.3	62.3	60.1	102.8
Vida	--	59.5	60.5	57.2	62.0	59.8	102.3
Knudson	--	--	60.8	58.0	62.0	60.3	102.1
Corbin	--	--	--	--	62.5	62.5	102.1
Ernest	--	--	--	--	62.3	62.3	101.8
Conan	--	--	--	--	62.2	62.2	101.6
Explorer	--	--	--	--	62.0	62.0	101.3
Fortuna	--	--	--	--	61.3	61.3	100.2
McNeal	56.3	56.8	59.8	56.0	61.2	58.0	100.0
Hank	--	--	--	--	61.2	61.2	100.0
Outlook	56.8	57.8	59.0	55.5	60.5	57.9	99.8
Westbred 926	--	--	--	--	61.0	61.0	99.7

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

Table 4. Relative heights of spring wheat varieties in inches as compared to McNeal when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of McNeal
Ernest	--	--	--	--	34	34.0	117.2
Fortuna	--	--	--	--	34	34.0	117.2
Scholar	35	23	28	31	35	30.4	111.8
Freyr	--	26	29	30	31	29.0	110.5
MT0414	--	--	--	--	30	30.0	103.4
MT0415	--	--	--	--	30	30.0	103.4
Outlook	30	26	26	28	30	28.0	102.9
Knudson	--	--	27	27	27	27.0	101.3
McNeal	31	25	25	26	29	27.2	100.0
MT0515	--	--	--	--	29	29.0	100.0
Vida	--	22	25	27	30	26.0	99.0
Norpro	--	22	26	26	28	25.5	97.1
Corbin	--	--	--	--	28	28.0	96.6
Explorer	--	--	--	--	28	28.0	96.6
Agawam	--	--	--	26	27	26.5	96.4
Reeder	28	23	26	26	28	26.2	96.3
Choteau	28	23	24	26	28	25.8	94.9
Conan	--	--	--	--	27	27.0	93.1
Westbred 926	--	--	--	--	26	26.0	89.7
Hank	--	--	--	--	26	26.0	89.7

NOTE: Average heights 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 5. Relative protein contents of spring wheat varieties as percent as compared to McNeal when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of McNeal
MT0415	--	--	--	--	15.6	15.6	138.1
MT0515	--	--	--	--	14.9	14.9	131.9
MT0414	--	--	--	--	14.6	14.6	129.2
Ernest	--	--	--	--	13.4	13.4	118.6
Vida	--	16.8	16.2	15.3	15.0	15.8	116.4
Explorer	--	--	--	--	13.1	13.1	115.9
Fortuna	--	--	--	--	13.1	13.1	115.9
Reeder	17.6	17.2	16.5	15.1	15.7	16.4	115.3
Norpro	--	16.9	15.3	14.8	13.4	15.1	111.0
Knudson	--	--	15.3	14.6	14.2	14.7	108.6
Scholar	17.2	16.2	15.0	16.2	12.5	15.4	108.3
Freyr	--	15.9	14.7	13.6	14.5	14.7	107.9
Outlook	16.1	14.4	15.3	15.0	14.1	15.0	105.2
Corbin	--	--	--	--	11.7	11.7	103.5
Hank	--	--	--	--	11.6	11.6	102.7
Choteau	16.4	15.0	15.6	13.3	12.4	14.5	102.1
Conan	--	--	--	--	11.4	11.4	100.9
McNeal	16.8	13.8	15.8	13.5	11.3	14.2	100.0
Westbred 926	--	--	--	--	11.1	11.1	98.2
Agawam	--	--	--	12.0	11.9	12.0	96.4

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

Table 6. Agronomic data obtained from a dryland recrop durum yield trial conducted at the Eastern Agricultural Research Center, Sidney, MT.

entry	heading*	height, in	percent protein	HVAC	test wt, lb/bu	yield, bu/ac
Alkabo	60.7	32.2	13.92	84.9	63.2	48.5
MT02525	58.3	26.2	12.03	69.0	63.8	46.6
Mountrail	61.3	31.4	13.64	78.3	62.0	43.6
MT02DH55	60.3	29.3	13.31	74.6	61.3	43.4
MT02DH82	59.7	25.2	12.02	65.6	64.3	42.9
Grenora	61.3	29.4	13.46	82.8	62.8	41.4
Pierce	60.7	35.2	14.22	85.3	62.2	40.2
Alzada	57.7	28.9	13.63	85.7	61.2	39.9
Divide	62.0	32.4	14.16	84.5	62.2	38.8
MT3012	58.0	26.4	13.45	87.6	63.0	36.4
Lebsock	61.7	31.6	13.13	76.9	63.2	35.0 x
Strongfield	61.7	29.1	12.63	69.1	62.2	28.7 x
mean	60.3	29.8	13.30	78.7	62.6	40.5
probability	<0.001	<0.001	0.044	0.080	<0.001	0.001
CV (S/mean)	1.4	6.1	6.4	12.0	0.9	10.7
CV (SE/mean)	0.8	3.5	3.7	6.9	0.5	6.2
LSD 0.05	1.5	3.1	1.44	16.0	1.0	7.3

* days from planting

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

Table 7. Relative yields of durum varieties in bu/ac compared to Mountrail when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Alkabo	--	--	36.4	33.4	48.5	39.4	112.3
MT02525	--	--	--	32.3	46.6	39.5	104.4
Grenora	--	--	37.2	30.6	41.4	36.4	103.7
Alzada	--	--	33.7	32.4	39.9	35.3	100.7
Mountrail	31.1	15.4	29.7	32.0	43.6	30.4	100.0
MT02DH55	--	--	--	31.4	43.4	37.4	98.9
MT02DH82	--	--	--	--	42.9	42.9	98.4
Pierce	30.0	17.4	31.3	29.1	40.2	29.6	97.5
Divide	--	--	31.8	31.9	38.8	34.2	97.3
Lebsock	33.5	14.2	32.4	--	35.0	28.8	96.1
MT03012	--	--	--	31.4	36.4	33.9	89.7
Strongfield	--	--	--	29.3	28.7	29.0	76.7

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 8. Relative test weights of durum varieties in lb/bu as compared to Mountrail when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Mountrail
MT02DH82	--	--	--	--	64.3	64.3	103.7
Alkabo	--	--	61.2	59.2	63.2	61.2	103.3
Lebsock	61.0	58.5	61.8	--	63.2	61.1	103.3
MT02525	--	--	--	59.3	63.8	61.6	102.8
Pierce	60.0	59.0	60.8	59.0	62.2	60.2	102.2
Divide	--	--	59.2	58.7	62.2	60.0	101.3
Strongfield	--	--	--	58.8	62.2	60.5	101.0
MT03012	--	--	--	58.0	63.0	60.5	101.0
Alzada	--	--	59.7	58.3	61.2	59.7	100.8
Grenora	--	--	58.8	57.0	62.8	59.5	100.4
Mountrail	58.7	58.1	58.0	57.8	62.0	58.9	100.0
MT02DH55	--	--	--	56.8	61.3	59.1	98.6

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 heights of durum varieties in inches as compared to Mountrail when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Pierce	28	24	29	29	35	29.0	105.8
Lebsock	30	24	27	--	32	28.3	104.6
Divide	--	--	29	28	32	29.7	103.5
Alkabo	--	--	27	28	32	29.0	101.2
Mountrail	29	22	26	29	31	27.4	100.0
MT02DH55	--	--	--	28	29	28.5	95.0
Strongfield	--	--	--	28	29	28.5	95.0
Grenora	--	--	26	26	29	27.0	94.2
Alzada	--	--	26	26	29	27.0	94.2
MT02525	--	--	--	24	26	25.0	83.3
MT03012	--	--	--	24	26	25.0	83.3
MT02DH82	--	--	--	--	25	25.0	80.6

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

Table 10. Relative protein contents of durum varieties as percent as compared to Mountrail when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Mountrail
Mountrail	17.2	16.9	17.8	15.0	13.6	16.1	100.0
MT03012	--	--	--	15.2	13.4	14.3	100.0
MT02DH55	--	--	--	14.7	13.3	14.0	97.9
Divide	--	--	17.0	14.0	14.2	15.1	97.4
Pierce	17.1	16.1	15.9	14.5	14.2	15.6	96.6
Grenora	--	--	15.4	14.6	13.5	14.5	93.8
Strongfield	--	--	--	14.2	12.6	13.4	93.7
Lebsock	16.2	16.2	14.6	--	13.1	15.0	91.8
Alzada	--	--	15.1	13.8	13.6	14.2	91.6
MT02525	--	--	--	13.9	12.0	13.0	90.6
Alkabo	--	--	13.8	14.1	13.9	13.9	90.1
MT02DH82	--	--	--	--	12.0	12.0	88.2

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

Table 11. Relative hard vitreous amber color of durum varieties as percent as compared to Mountrail when grown under dryland continuous cropping at the EARC, Sidney, Montana.

Cultivar	2004	2005	2006	2007	Ave	as % of Mountrail
MT03012	--	--	84.7	87.6	86.2	111.4
Alkabo	--	98.0	74.9	84.9	85.9	105.7
Grenora	--	92.5	76.2	82.8	83.8	103.1
Pierce	78.7	89.6	78.5	85.3	83.0	102.3
Alzada	--	86.4	75.1	85.7	82.4	101.4
Mountrail	80.2	89.3	76.4	78.3	81.1	100.0
Divide	--	92.7	66.1	84.5	81.1	99.8
Lebsock	77.2	92.7	--	76.9	82.3	99.6
Strongfield	--	--	80.1	69.1	74.6	96.4
MT02DH55	--	--	73.9	74.6	74.3	96.0
MT02525	--	--	71.1	69.0	70.1	90.6
MT02DH82	--	--	--	65.6	65.6	83.8

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.

Table 12. Agronomic data obtained from a dryland recrop barley yield trial conducted at the Eastern Agricultural Research Center, Sidney, MT.

Variety	heading*	Height, in	Protein content	Test wt, lb/bu	Yield bu/acre
Eslick	62.3	20.7	9.94	50.5	41.8
Conrad	63.3	20.1	10.88	49.7	41.4
Legacy	57.3	25.2	8.88	49.3	41.1
Tradition	57.7	25.3	10.17	50.0	41.1
Haxby	57.3	21.9	10.89	51.8	40.8
Hays	63.0	20.1	9.63	48.2	40.0
Xena	62.3	20.7	10.61	50.0	39.9
Metcalf	58.7	22.4	8.86	50.8	39.9
Merit	62.0	21.0	9.32	49.2	38.0
Boulder	60.7	21.3	10.97	51.8	37.7
Drummond	56.7	23.8	11.66	48.5	37.2
Harrington	63.7	21.5	9.89	50.0	36.5
Craft	59.3	23.6	11.02	50.2	34.9
Stellar	56.7	24.8	9.44	48.7	34.0
Geraldine	64.7	17.7	10.41	50.5	33.7 x
Hockett	61.7	19.7	9.33	51.3	33.5 x
mean	60.5	21.8	10.12	50.0	38.2
probability	<0.001	<0.001	0.014	0.526	0.146
CV (S/mean)	2.0	8.7	9.0	3.9	10.7
CV (SE/mean)	1.2	5.0	5.2	2.3	6.2
LSD _{0.05}	2.1	3.2	1.53	3.3	6.8

*days from planting

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

Table 13. Relative yields of barley varieties in bu/acre compared to Haxby when grown under dryland recrop conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Haxby
Haxby	51.8	31.8	52.6	59.1	40.8	47.2	100.0
Tradition	--	28.1	52.4	54.4	41.1	44.0	95.5
Stellar	--	--	--	59.7	34.0	46.9	93.8
Legacy	--	--	49.2	52.6	41.1	47.6	93.7
Xena	45.9	--	51.4	53.3	39.9	47.6	93.2
Metcalfe	--	23.9	53.4	54.0	39.9	42.8	92.9
Eslick	46.6	22.8	49.9	54.2	41.8	43.1	91.2
Craft	52.2	27.5	42.8	53.9	34.9	42.3	89.5
Conrad	--	--	47.0	47.6	41.4	45.3	89.2
Hockett	--	27.9	48.1	53.0	33.5	40.6	88.2
Drummond	--	--	44.0	53.2	37.2	44.8	88.1
Boulder	--	--	45.7	50.9	37.7	44.8	88.1
Harrington	44.1	19.2	46.8	51.4	36.5	39.6	83.9
Geraldine	46.8	--	44.1	44.9	33.7	42.4	83.0
Merit	--	--	44.4	42.6	38.0	41.7	82.0
Hays	45.8	27.2	32.5	47.8	40.0	38.7	81.9

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 14. Relative test weights of barley varieties in lb/bu compared to Haxby when grown under dryland recrop conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Haxby
Boulder	--	--	50.8	50.3	51.8	51.0	102.0
Haxby	49.5	50.5	48.8	49.3	51.8	50.0	100.0
Craft	47.8	47.3	50.7	48.8	50.2	49.0	98.0
Geraldine	47.2	--	50.2	46.2	50.5	48.5	97.3
Hockett	--	46.8	48.2	46.3	51.3	48.2	96.1
Xena	46.3	--	49.5	45.7	50.0	47.9	96.0
Conrad	--	--	49.0	45.0	49.7	47.9	95.9
Metcalfe	--	46.3	49.3	44.7	50.8	47.8	95.4
Tradition	--	47.0	47.0	47.0	50.0	47.8	95.3
Drummond	--	--	47.2	47.0	48.5	47.6	95.2
Eslick	46.7	45.3	49.3	45.8	50.5	47.5	95.1
Legacy	--	--	47.2	45.8	49.3	47.4	94.9
Stellar	--	--	--	46.5	48.7	47.6	94.2
Merit	--	--	47.0	42.8	49.2	46.3	92.7
Harrington	45.5	44.2	47.2	44.0	50.0	46.2	92.4
Hays	46.2	44.3	46.2	44.2	48.2	45.8	91.7

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 15. Relative heights of barley varieties in inches compared to Haxby when grown under dryland recrop conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Haxby
Craft	26	20	29	27	24	25.1	105.3
Legacy	--	--	27	28	25	26.7	105.2
Tradition	--	20	26	27	25	24.5	104.2
Stellar	--	--	--	25	25	25.0	104.1
Metcalfe	--	20	29	26	22	24.4	103.8
Haxby	25	18	28	26	22	23.9	100.0
Drummond	--	--	27	25	24	25.2	99.5
Harrington	25	18	25	25	22	23.1	96.7
Boulder	--	--	25	24	21	23.5	92.7
Eslick	23	18	24	24	21	22.0	92.1
Xena	23	--	25	24	21	23.2	91.8
Hockett	--	17	25	24	20	21.5	91.2
Conrad	--	--	25	24	20	23.1	91.2
Merit	--	--	24	24	21	23.0	90.7
Hays	21	17	23	23	20	20.7	86.8
Geraldine	21	--	24	23	18	21.4	84.4

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

Table 16. Relative protein contents of barley varieties as percent compared to Haxby when grown under dryland recrop conditions at the EARC, Sidney, Montana.

Cultivar	2003	2004	2005	2006	2007	Ave	as % of Haxby
Xena	13.3	--	13.2	10.6	10.6	11.9	107.0
Craft	12.2	13.5	11.0	12.0	11.0	11.9	106.6
Eslick	12.3	12.8	12.0	11.7	9.9	11.7	104.8
Hays	12.6	11.0	12.8	11.8	9.6	11.6	103.2
Tradition	--	12.8	11.9	10.1	10.2	11.3	102.7
Boulder	--	--	11.6	10.6	11.0	11.1	102.5
Drummond	--	--	10.9	10.6	11.7	11.1	102.5
Metcalfe	--	12.4	11.2	12.3	8.9	11.2	102.3
Geraldine	12.3	--	11.1	11.4	10.4	11.3	101.3
Conrad	--	--	9.9	11.9	10.9	10.9	100.9
Harrington	12.5	12.8	10.2	10.9	9.9	11.3	100.5
Haxby	12.2	11.4	10.8	10.7	10.9	11.2	100.0
Merit	--	--	11.4	11.0	9.3	10.6	97.8
Hockett	--	11.3	11.4	10.7	9.3	10.7	97.5
Stellar	--	--	--	10.0	9.4	9.7	89.8
Legacy	--	--	10.0	9.8	8.9	9.6	88.6

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