

# 2010 North Dakota Alternative Crop Variety Performance

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This publication contains information on selected varieties of buckwheat, chickpea, flax, lentil, proso millet, mustard and safflower that North Dakota State University tested in 2010. Additional varieties may have been tested but are not listed. Although alternative crops may have been tested across the state, adaptation may be limited to specific regions.

The agronomic data presented in this publication are from replicated research plots using experimental designs that enable the use of

statistical analysis. The LSD (Least Significant Difference) numbers beneath the columns in tables are derived from the statistical analyses and only apply to the numbers in the column in which they appear. If the difference between two varieties exceeds the LSD value, it means that with 95 percent probability, the higher-yielding variety has a significant yield advantage. If the difference between two varieties is less than the LSD value, then the variety yields are considered similar.

The abbreviation "NS" is used to indicate no significant difference for that trait among any of the varieties.

The CV is a measure of variability in the trial. The CV stands for coefficient of variation and is expressed as a percentage. Large CVs mean a large amount of variation that could not be attributed to differences in the varieties. In the tables, the "mean" indicates the average of the observations in the column.

When selecting a high-yielding and good-quality variety, use data that summarizes several years and locations. Choose the variety that, on average, performs the best at

multiple locations near you during several years. Presentation of data for the entries tested does not imply approval or endorsement by the authors conducting the test.

Information contained in this publication is based on research coordinated by the following NDSU Research Extension Center and Main Station research agronomists or specialists and authors:

*Blaine Schatz and Steve Zwinger,  
Carrington*

*Burton Johnson, Prosper*

*Eric Eriksmoen, Hettinger*

*Bryan Hanson, Langdon*

*Mark Halvorson and Shana Pederson,  
Minot*

*Neil Riveland, Williston*

Contact NDSU Research Extension Centers or Extension Service offices for more detailed and site-specific information on alternative crop variety performance and production recommendations.

Crop variety data in an electronic format are available at [www.ag.ndsu.edu/varietytrials](http://www.ag.ndsu.edu/varietytrials).

Weather data are available at <http://ndawn.ndsu.nodak.edu/>.

# NDSU

N.D. Agricultural Experiment Station  
NDSU Extension Service

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January 2011

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Thanks to the following NDSU agronomy research specialists and technicians  
for their work to assist with generating the data for this publication:

Carrington: Ezra Aberle, Paul Hendrickson, Kelly Bjerke, Tim Indergaard,  
Todd Ingebretson, Steve Schaubert and Bob Smith;  
Prosper: Paula Petersen; Hettinger: Rick Olson; Langdon: Richard Wilhelm;  
Minot: Angela Sebelius and James Tarasenko;  
Williston: Gordon Bradbury, Tyler Tjelde and Sara Brogger

Also, thanks to Betty Montgomery, administrative secretary, Carrington,  
for her assistance in assembling this publication.

## Buckwheat Variety Trials, 2010

Variety	Yield (lb/a)							Average		
	Location									
	Langdon	Carrington	Prosper	Minot	Hettinger	Williston	2010	2 Year	3 Year	
Koma	2197	800	2331	1239	1688	1951	1701	1952	1605	
Koto	2616	717	2017	1203	1385	1759	1616	1856	--	
Manor	2377	761	2148	1643	1917	1919	1794	1855	1597	
Mean	2397	759	2165	1362	1663	1876	--	--	--	
LSD 0.05	NS	NS	NS	NS	191	NS	--	--	--	

Variety	Test Weight (lb/bu)							Average		
	Location									
	Langdon	Carrington	Prosper	Minot	Hettinger	Williston	2010	2 Year	3 Year	
Koma	46.1	47.7	45.7	41.0	36.3	40.3	42.9	45.0	43.0	
Koto	46.4	46.2	47.0	39.0	35.4	39.1	42.2	44.2	--	
Manor	44.5	45.9	46.5	39.0	37.0	39.4	42.1	43.5	42.0	
Mean	45.7	46.6	46.4	39.7	36.2	39.6	--	--	--	
LSD 0.05	0.9	NS	NS	NS	1.2	NS	--	--	--	

Variety	Days to Flower					Average	
	Location						
	Langdon	Carrington	Prosper	Hettinger	Williston		
Koma	39	33	29	35	41	35	
Koto	38	32	29	34	39	34	
Manor	37	31	28	33	38	33	
Mean	38	32	29	34	39	--	
LSD 0.05	1	1	NS	1	1	--	

## Buckwheat Variety Trials, 2010

Variety	Plant Height (inches)					Average	
	Location						
	Langdon	Carrington	Prosper	Minot	Williston		
Koma	44	45	46	35	26	39	
Koto	48	49	47	37	28	42	
Manor	45	47	47	38	28	41	
Mean	46	47	47	37	27	--	
LSD 0.05	NS	4	NS	NS	NS	--	

Variety	1000 KWT (grams)			Lodging (0-9)				
	Location			Avg	Location			Average
	Prosper	Minot	Hettinger		Langdon	Carrington	Prosper	
Koma	35.8	26.0	31.6	31.1	7.3	0.3	8.0	7.0
Koto	39.1	26.0	32.2	32.4	6.3	0.0	7.5	6.0
Manor	32.9	28.0	28.0	29.6	7.5	1.0	8.0	5.0
Mean	35.9	26.7	30.6	--	7.0	0.4	7.8	6.0
LSD 0.05	1.9	NS	2.6	--	1.0	0.9	NS	NS

Location	Planting Date	Harvest Date
Langdon	May 27	September 27
Carrington	June 3	September 8
Prosper	June 2	September 14
Minot	June 21	October 13
Hettinger	May 29	September 30
Williston	May 18	September 21

## Chickpea Variety x Fungicide Trials, 2010

Location <sup>1</sup>	Plant Date	Harvest Date	Previous Crop
Minot	May 19	October 5	Flax
Williston	May 17	August 25	Durum

<sup>1</sup> Carrington and Hettinger trials were lost due to high disease pressure.

Multiple applications of foliar fungicides were applied to manage ascochyta blight in fungicide plots.  
Seeding rate was 4 pure live seeds/ft<sup>2</sup>.

Variety	Seed Yield (lb/a)					
	Minot		Williston		Average	
	Fungicide	No Fung.	Fungicide	No Fung.	Fungicide	No Fung.
<b>Kabuli</b>						
B-90	2495	1379	820	847	1658	1113
CDC Frontier	3145	632	901	634	2023	633
CDC Luna	2787	190	786	635	1787	413
Dylan	754	0	700	363	727	182
HB14	190	0	915	691	553	346
HB19	1110	66	785	567	948	317
Sawyer	2391	228	819	623	1605	426
Sierra	1165	0	680	508	923	254
Troy	1117	0	343	171	730	86
<b>Desi</b>						
CDC Anna	2971	412	677	531	1824	472
Mean	1813	291	743	557	1278	424
CV%		41.2		19.7		
LSD 0.05		711		NS		

## Chickpea Variety x Fungicide Trials, 2010

Variety	Days to 10% Flowering							
	Minot		Williston		Average		Fungicide	No Fung.
	Fungicide	No Fung.	Fungicide	No Fung.				
<b>Kabuli</b>								
B-90	56	53	46	47	51	50		
CDC Frontier	52	54	46	45	49	50		
CDC Luna	48	48	45	44	47	46		
Dylan	49	50	43	43	46	47		
HB14	51	52	44	44	48	48		
HB19	48	49	43	44	46	47		
Sawyer	47	47	43	44	45	46		
Sierra	51	50	46	45	49	48		
Troy	51	51	49	49	50	50		
<b>Desi</b>								
CDC Anna	52	52	44	45	48	49		
Mean	51	51	45	45	48	48		
CV%		2.5		2.2				
LSD 0.05		2		NS				

Variety	Plant Height (inches)							
	Minot		Williston		Average		Fungicide	No Fung.
	Fungicide	No Fung.	Fungicide	No Fung.				
<b>Kabuli</b>								
B-90	19	20	12	12	16	16		
CDC Frontier	23	19	10	12	17	16		
CDC Luna	19	18	9	10	14	14		
Dylan	19	16	10	10	15	13		
HB14	22	17	12	12	17	15		
HB19	21	19	12	11	17	15		
Sawyer	21	17	10	10	16	14		
Sierra	19	17	12	13	16	15		
Troy	19	17	9	11	14	14		
<b>Desi</b>								
CDC Anna	19	19	10	11	15	15		
Mean	20	18	11	11	15	15		
CV%		10.2		12.3				
LSD 0.05		3		NS				

## Chickpea Variety x Fungicide Trials, 2010

Flower Duration (days)		
Variety	Williston	
	Fungicide	No Fung.
<b>Kabuli</b>		
B-90	21	19
CDC Frontier	20	20
CDC Luna	20	21
Dylan	22	21
HB14	20	20
HB19	22	21
Sawyer	21	21
Sierra	18	20
Troy	17	17
<b>Desi</b>		
CDC Anna	22	20
Mean	20	20
CV%		7.9
LSD 0.05		NS

Ascochyta Blight Rating						
Variety	Minot <sup>1</sup>			Williston <sup>2</sup>		
	Early		Late		Fungicide	No Fung.
<b>Kabuli</b>	Fungicide	No Fung.	Fungicide	No Fung.	Fungicide	No Fung.
B-90	1.0	1.0	2.0	4.0	1.0	3.0
CDC Frontier	1.0	1.0	1.3	4.0	1.0	4.0
CDC Luna	1.0	1.3	1.3	6.0	1.7	3.7
Dylan	2.7	4.3	2.0	9.0	2.3	6.3
HB14	2.3	5.7	2.7	9.0	2.0	2.7
HB19	1.7	2.7	3.0	8.3	1.7	5.0
Sawyer	1.3	2.0	2.7	7.0	3.3	7.7
Sierra	1.7	3.0	3.0	8.7	3.3	8.0
Troy	3.0	4.3	2.3	9.0	2.3	8.0
<b>Desi</b>						
CDC Anna	1.0	1.0	2.0	4.7	3.0	2.7
Mean	1.7	2.6	2.2	7.0	2.2	5.1
CV%		31.5		19.0		24.0
LSD 0.05		1.1		1.4		1.4

<sup>1</sup> Ascochyta blight rating based on scale 1-9 (0 = no infection, 9 = 100% infection).

<sup>2</sup> Ascochyta blight rating based on scale 0-5 (0 = no infection, 5 = severe infection).

## Chickpea Variety x Fungicide Trials, 2010

Variety	Test Weight (lb/bu)					
	Minot		Williston		Average	
	Fungicide	No Fung.	Fungicide	No Fung.	Fungicide	No Fung.
<b>Kabuli</b>						
B-90	56.4	53.7	60.4	60.6	58.4	57.2
CDC Frontier	56.7	55.8	59.5	59.1	58.1	57.5
CDC Luna	53.8	39.0	59.4	59.6	56.6	49.3
Dylan	50.1	0.0	55.2	56.5	52.7	28.3
HB14	51.4	0.0	58.5	59.0	55.0	29.5
HB19	55.4	0.0	56.9	58.2	56.2	29.1
Sawyer	56.2	56.1	59.1	59.9	57.7	58.0
Sierra	52.8	0.0	58.4	58.0	55.6	29.0
Troy	52.1	0.0	55.2	58.8	53.7	29.4
<b>Desi</b>						
CDC Anna	56.6	53.0	59.8	59.2	58.2	56.1
Mean	54.2	25.8	58.2	58.9	56.2	42.4
CV%		3.4		1.9		
LSD 0.05		2.3		NS		

Variety	1000 Seed Weight (grams)					
	Minot		Williston		Average	
	Fungicide	No Fung.	Fungicide	No Fung.	Fungicide	No Fung.
<b>Kabuli</b>						
B-90	270	201	276	272	273	236
CDC Frontier	335	243	368	379	351	311
CDC Luna	387	179	375	328	381	254
Dylan	461	0	526	396	494	198
HB14	328	0	488	414	408	207
HB19	429	95	534	400	481	247
Sawyer	389	263	455	414	422	339
Sierra	494	0	471	375	483	188
Troy	384	0	470	275	427	138
<b>Desi</b>						
CDC Anna	208	137	201	194	205	165
Mean	368	112	416	345	392	228
CV%	29.4		7.0			
LSD 0.05	117		39			

## Chickpea Variety x Fungicide Trials, 2010

Variety	Seeds/lb					
	Minot		Williston		Average	
	Fungicide	No Fung.	Fungicide	No Fung.	Fungicide	No Fung.
<b><i>Kabuli</i></b>						
B-90	1682	2474	1642	1699	1662	2087
CDC Frontier	1433	1946	1236	1198	1335	1572
CDC Luna	1181	2540	1212	1385	1197	1963
Dylan	1078	0	862	1173	970	587
HB14	1474	0	930	1098	1202	549
HB19	1316	927	849	1137	1083	1032
Sawyer	1294	1974	998	1098	1146	1536
Sierra	927	0	964	1226	946	613
Troy	1242	0	968	1649	1105	825
<b><i>Desi</i></b>						
CDC Anna	2182	3453	2253	2335	2218	2894
Mean	1381	1331	1191	1400	1286	1366
CV%		34.5		7.0		
LSD 0.05		777		142		

## Chickpea Variety x Fungicide Trials, 2010

Variety	Seed Size (%) <sup>1</sup>							
	Minot							
	>10mm		>9mm		>8mm		<8mm	
	Fung.	No Fung.	Fung.	No Fung.	Fung.	No Fung.	Fung.	No Fung.
<b>Kabuli</b>								
B-90	0.0	0.0	0.0	0.0	2.2	1.0	98.0	95.5
CDC Frontier	0.0	0.0	6.4	0.5	34.9	14.1	58.9	85.6
CDC Luna	1.2	0.3	18.7	0.0	42.1	6.3	37.9	93.5
Dylan	26.4	0.0	29.7	0.0	18.1	0.0	25.8	0.0
HB14	11.8	0.0	22.6	0.0	23.9	0.0	41.7	0.0
HB19	24.8	0.0	34.7	0.0	21.3	0.0	19.0	0.0
Sawyer	9.4	3.8	20.5	12.5	30.7	24.1	39.3	59.5
Sierra	28.3	0.0	35.4	0.0	20.8	0.0	15.6	0.0
Troy	23.2	0.0	31.5	0.0	23.7	0.0	21.7	0.0
<b>Desi</b>								
CDC Anna	0.0	0.0	0.0	0.0	2.0	0.0	98.1	100.0
Mean	12.5	0.4	19.9	1.2	22.0	4.5	45.6	43.8
CV%	53.9		53.1		57.1		26.7	
LSD 0.05	5.8		9.4		12.6		20.0	

Variety	Seed Size (%) <sup>1</sup>							
	Williston <sup>2</sup>							
	>10mm		>9mm		>8mm		<8mm	
	Fung.	No Fung.	Fung.	No Fung.	Fung.	No Fung.	Fung.	No Fung.
<b>Kabuli</b>								
B-90	--	--	--	--	--	--	--	--
CDC Frontier	0.0	5.2	2.4	18.6	32.6	27.6	64.9	48.5
CDC Luna	0.4	0.6	7.6	11.4	33.1	31.5	58.7	56.3
Dylan	10.3	7.9	35.4	25.8	31.2	25.9	23.0	40.3
HB14	15.1	10.1	29.8	34.8	33.9	29.7	21.1	25.2
HB19	10.7	9.4	29.9	24.5	34.6	29.8	24.9	36.2
Sawyer	6.1	3.2	16.7	21.7	41.8	40.8	35.3	34.2
Sierra	8.8	7.6	28.5	26.7	36.1	35.6	26.5	30.0
Troy	10.9	5.4	26.8	15.4	30.4	25.1	31.8	53.9
<b>Desi</b>								
CDC Anna	--	--	--	--	--	--	--	--
Mean	7.8	6.2	22.2	22.4	34.2	30.8	35.8	40.6
CV%	48.0		25.1		14.5		20.5	
LSD 0.05	NS		12.4		NS		16.2	

<sup>1</sup> Seed size data as reported reflect the % of the seed sample remaining on top of the sieves stacked in series.

<sup>2</sup> B-90 and CDC Anna were not included in any statistical analysis.

## Flax Variety Descriptions

Variety <sup>1</sup>	Origin <sup>2</sup>	Year Released	Relative Maturity	Seed Color	Plant Height	Wilt <sup>3</sup>
AC Lightning	Can.	2002	Late	Brown	Med.tall	R
Bison	ND	1926	Med.	Brown	Med.	MR
Carter	ND	2004	Med.	Yellow	Med.	R
Cathay	ND	1998	Med.	Brown	Med.	MR
CDC Arras	Can.	1999	Med.	Brown	Med.	MR
CDC Bethune	Can.	1999	Med.late	Brown	Med.tall	MR
CDC Mons	Can.	2003	Med.late	Brown	Med.	MR
CDC Sorrel	Can.	2007	Med.late	Brown	Med.tall	MR
Hanley	Can.	2002	Med.early	Brown	Med.	R
Linott	Can.	1966	Med.early	Brown	Med.	MS/MR
McGregor	Can.	1980	Late	Brown	Med.tall	MR
Neche	ND	1988	Med.	Brown	Med.	R
Nekoma	ND	2002	Late	Brown	Med.	MR
Omega	ND	1989	Med.	Yellow	Med.	MS
Pembina	ND	1998	Med.	Brown	Med.	MR
Prairie Blue	Can.	2003	Med.late	Brown	Med.tall	MR
Prairie Grande	Can.	2008	Med.early	Brown	Med.	MR
Prairie Thunder	Can.	2006	Med.	Brown	Short	MR
Rahab 94	SD	1994	Med.	Brown	Med.	MR
Selby	SD	2000	Late	Brown	Tall	MR
Shape	Can.	2010	Med.	Brown	Med.	R
Webster	SD	1998	Late	Brown	Tall	MR
York	ND	2002	Late	Brown	Med.	R

<sup>1</sup> All varieties have resistance to prevalent races of rust; all have good oil yield and oil quality.

<sup>2</sup> Can. = Canada; ND = North Dakota State University; SD = South Dakota State University.

<sup>3</sup> R = resistant; MR = moderately resistant; MS = moderately susceptible; NA = not available.

## Flax Variety Yield and Test Weight, North Dakota, 2008-2010

Variety	Carrington			Langdon			Williston			Average N.D.		
	Test weight	Seed Yield		Test weight	Seed Yield		Test weight	Seed Yield		Test weight	Seed Yield	
	(lb/bu)	2010	3 Year	(lb/bu)	2010	3 Year	(lb/bu)	2010	3 Year	(lb/bu)	2010	3 Year
AC Lightning	53.5	23.1	27.3	52.9	48.5	41.2	53.5	14.3	14.8	53.3	28.6	27.8
Bison <sup>1</sup>	--	--	--	52.4	45.1	36.2	53.2	15.5	15.5	--	--	--
Carter <sup>2</sup>	53.7	26.1	29.2	53.0	47.1	39.5	53.7	15.2	15.3	53.5	29.5	28.0
CDC Arras	52.3	20.4	25.9	52.6	48.1	40.3	53.5	16.6	15.2	52.8	28.4	27.1
CDC Bethune	52.6	23.6	29.8	53.2	51.1	42.1	53.2	15.5	15.6	53.0	30.1	29.2
CDC Sorrel	53.2	26.1	29.8	52.5	44.8	39.5	53.8	15.9	15.8	53.2	28.9	28.4
Hanley	52.4	25.5	28.7	53.0	51.2	--	53.0	14.9	14.5	52.8	30.5	--
Linott <sup>1</sup>	--	--	--	52.9	46.2	39.4	53.5	15.2	14.8	--	--	--
McGregor <sup>1</sup>	--	--	--	53.2	51.0	41.7	53.7	14.0	14.5	--	--	--
Neche	54.2	26.8	29.0	52.8	49.8	42.8	53.3	15.2	15.2	53.4	30.6	29.0
Nekoma	52.6	20.8	26.5	53.2	49.4	41.5	53.8	14.9	15.2	53.2	28.4	27.7
Omega <sup>2</sup>	53.7	28.3	27.8	52.9	44.5	36.9	54.2	14.3	14.4	53.6	29.0	26.4
Pembina	52.5	24.0	28.4	52.7	48.6	41.3	53.2	15.1	14.4	52.8	29.2	28.0
Prairie Blue	52.8	20.9	28.6	52.6	50.5	43.4	53.4	15.0	15.5	52.9	28.8	29.2
Prairie Grande	53.4	24.2	28.6	52.3	51.5	--	53.2	13.5	--	53.0	29.7	--
Prairie Thunder	54.0	27.9	--	52.1	50.7	38.8	53.3	15.1	15.7	53.1	31.2	18.2
Rahab 94	53.6	28.1	28.9	52.5	49.7	41.7	53.2	14.6	14.8	53.1	30.8	28.5
Shape	53.9	22.1	29.4	--	--	--	--	--	--	--	--	--
Webster	52.9	23.0	27.2	53.6	53.6	42.6	53.6	15.4	15.1	53.4	30.7	28.3
York	53.4	22.2	26.0	52.4	47.6	42.0	53.8	16.6	15.2	53.2	28.8	27.7
Mean	53.1	24.0	28.2	52.8	48.9	40.6	53.5	15.1	15.1	53.1	29.6	27.4
CV %	1.7	13.5	--	1.2	4.7	--	0.4	9.9	--	--	--	--
LSD 0.05	NS	5.3	--	0.9	3.3	--	0.5	2.1	--	--	--	--

Planting dates: Carrington = April 26; Langdon = May 14; Williston = May 14.

Harvest dates: Carrington = August 24; Langdon = September 8; Williston = July 26.

<sup>1</sup>Long-term check.

<sup>2</sup>Yellow seeded.

## Flax Variety Trial, McLean County (NCREC, Minot), 2010

Authors: M. Halvorson, A. Sebelius and J. Tarasenko

Variety	1000						
	Flower 10%	Days to Maturity	Plant Height (inch)	Seed Weight (grams)	Test Weight (lb/bu)	Oil Content (%)	Seed Yield (bu/a)
	(DAP <sup>1)</sup>	(DAP <sup>1)</sup>					
Carter <sup>2</sup>	49	80.8	27.3	4.9	49.3	41.9	21.8
Nekoma	50	80.8	29.8	5.1	48.7	41.4	21.8
Omega2	48	76.5	28.0	5.3	48.5	42.0	20.5
Prairie Thunder	47	76.0	26.3	5.0	43.8	41.3	14.0
Rahab 94	50	81.3	29.5	5.4	46.8	41.3	16.0
York	51	82.5	27.8	5.2	45.6	39.3	19.1
Mean	49	79.6	28.1	5.1	47.1	41.2	18.8
CV %	1.8	1.4	3.0	3.0	3.0	1.2	15.2
LSD 0.05	1	1.6	1.3	0.2	2.1	0.7	4.3

Planted on May 13 with a seeding rate of 4 million PLS and harvested on Oct. 4.

<sup>1</sup>DAP = Days after planting.

<sup>2</sup>Yellow-seed type.

## Flax Variety Trial, Carrington, 2010

Authors: B. Schatz and T. Ingebretson

Variety	Days to	Days to	Plant	Plant	Oil Content (%)	Test Weight (lb/bu)	Seed Yield		
	Flower (DAP <sup>1</sup> )	PM (DAP <sup>1</sup> )	Lodge (0-9)	Height (inch)			2010	2 Year	3 Year
CDC Arras	60	97	0	16.3	40.4	52.3	20.4	25.4	25.9
CDC Bethume	63	98	0	17.4	40.6	52.6	23.6	31.1	29.8
CDC Sorrel	63	98	0	17.9	41.3	53.2	26.1	29.7	29.8
Carter	63	99	0	17.4	39.8	53.7	26.1	29.0	29.2
Carter at 50% SR <sup>2</sup>	63	99	0	16.5	40.1	51.8	19.3	--	--
Hanley	64	98	0	19.0	43.3	52.4	25.5	29.8	28.7
Lightning	62	98	0	16.2	40.3	53.5	23.1	27.3	27.3
Neche	62	98	0	18.4	40.3	54.2	26.8	30.1	29.0
Nekoma	61	97	0	15.9	41.0	52.6	20.8	25.2	26.5
Omega	64	100	0	19.8	40.5	53.7	28.3	28.5	27.8
Pembina	63	98	0	18.6	40.9	52.5	24.0	28.3	28.4
Prairie Blue	63	97	0	15.6	41.1	52.8	20.9	28.1	28.6
Prairie Grande	64	97	0.3	16.0	41.3	53.4	24.2	30.5	28.6
Prairie Thunder	64	98	0	17.6	40.2	54.0	27.9	--	--
Rahab 94	63	97	0	19.1	40.5	53.6	28.1	30.8	28.9
Shape	63	97	0	16.9	40.1	53.9	22.1	30.1	29.4
Webster	63	97	0.5	17.3	40.5	52.9	23.0	27.0	27.2
York	64	100	0	16.1	39.1	53.4	22.2	25.5	26.0
Mean	63	98	0.1	17.3	40.6	53.1	24.0	28.5	28.2
CV %	1.5	0.8	403	8.1	1.1	1.7	13.5	--	--
LSD 0.05	1.4	1.2	NS	2	0.6	NS	5.3	--	--

Planted: April 26. Harvested: Aug. 24. Previous crop: spring wheat.

<sup>1</sup>DAP = Days after planting.

<sup>2</sup>Carter at 50% SR treatment was planted at 50% normal seeding rate; 22.5 lb. versus 45 lb/acre.

## Flax Variety Trial, Langdon, 2010

Authors: B. Hanson and R. Wilhelmi

Variety	Days to Flower (DAP <sup>1</sup> )	Plant Height (inch)	Lodging (0-9)	Test Weight (lb/bu)	Seed Yield (bu/a)				
					2008	2009	2010	2 Year	3 Year
Bison	42	31.5	0.5	52.4	34.2	29.2	45.1	37.1	36.2
Carter	42	29.2	0	53.0	34.3	37.0	47.1	42.1	39.5
CDC Arras	43	31.8	0.5	52.6	36.9	35.9	48.1	42.0	40.3
CDC Bethune	43	31.6	0	53.2	38.1	37.1	51.1	44.1	42.1
CDC Sorrel	44	33.5	1.0	52.5	40.0	33.6	44.8	39.2	39.5
Hanley	41	29.8	0.5	53.0	--	--	51.2	--	--
Lightning	43	30.9	0.3	52.9	35.0	40.0	48.5	44.2	41.2
Linott	43	32.5	0	52.9	36.5	35.4	46.2	40.8	39.4
McGregor	43	31.4	0	53.2	35.9	38.1	51.0	44.6	41.7
Neche	43	33.5	0.2	52.8	36.9	41.8	49.8	45.8	42.8
Nekoma	42	30.0	0.2	53.2	35.5	39.7	49.4	44.5	41.5
Omega	42	27.6	0	52.9	35.6	30.7	44.5	37.6	36.9
Pembina	42	32.5	0.3	52.7	35.3	40.0	48.6	44.3	41.3
Prairie Blue	43	31.4	0.7	52.6	38.5	41.1	50.5	45.8	43.4
Prairie Grande	40	25.4	0.7	52.3	--	30.0	51.5	--	--
Prairie Thunder	41	28.0	0.7	52.1	37.4	28.4	50.7	39.5	38.8
Rahab 94	43	29.5	0	52.5	35.8	39.5	49.7	44.6	41.7
Webster	43	32.6	0	53.6	37.5	36.8	53.6	45.2	42.6
York	42	29.9	0	52.4	36.6	41.8	47.6	44.7	42.0
Mean	42	30.7	0.3	52.8	36.5	36.5	48.9	42.7	40.6
CV %	1.3	8.2	166.0	1.2	6.1	13.7	4.7	--	--
LSD 0.05	0.8	3.5	0.8	0.9	3.2	7.0	3.3	--	--

Planted: May 14. Harvested: Sept. 8.

<sup>1</sup>DAP = Days after planting.

# Flax Variety Trial (Fallow), Williston, 2010

Authors: N. Riveland, G. Bradbury and S. Brogger

Cultivar	Days to Flower (DAP <sup>1)</sup>	Flower Duration (days)	Plant Height (inch)	Test Weight (lb/bu)	Oil Content (%)	Seed Yield		
						2010	2 Year	3 Year
<b>Yellow Seeded</b>								
Carter	49.5	16.0	21.6	53.7	37.7	15.2	16.2	15.3
Omega	47.5	16.3	20.5	54.2	37.9	14.3	15.4	14.4
<b>Brown Seeded</b>								
Bison	46.5	20.3	21.8	53.2	37.7	15.5	16.7	15.5
CDC Arras	47.0	20.3	22.1	53.5	37.9	16.6	16.2	15.2
CDC Bethune	48.5	18.5	22.8	53.2	38.4	15.5	16.8	15.6
CDC Sorrel	51.3	13.8	22.9	53.8	38.5	15.9	16.4	15.8
Hanley	48.3	19.0	21.9	53.0	37.1	14.9	15.8	14.5
Flor	46.8	16.3	20.8	53.4	37.5	11.9	--	--
Lightning	48.8	16.5	21.4	53.5	37.9	14.3	--	--
Linott	47.0	21.0	21.4	53.5	37.9	15.2	15.8	14.8
McGregor	48.3	20.5	21.5	53.7	37.2	14.1	15.5	14.5
Neche	48.3	21.5	22.8	53.3	37.8	15.2	15.8	15.2
Nekoma	49.3	17.0	21.6	53.8	38.1	14.9	15.9	15.1
Pembina	48.0	18.0	21.5	53.2	38.9	15.1	14.9	14.4
Prairie Blue	49.0	17.8	22.7	53.4	38.3	15.0	16.6	15.5
Prairie Grande	46.0	16.8	20.3	53.2	38.4	13.5	15.3	--
Prairie Thunder	47.8	15.5	20.1	53.3	37.8	15.1	16.3	15.7
Rahab 94	48.8	16.5	21.3	53.2	38.3	14.6	15.4	14.8
Webster	49.5	18.3	21.0	53.6	38.2	15.4	16.2	15.1
York	48.0	19.5	20.1	53.8	37.1	16.6	16.1	15.2
Mean	48.2	18.0	21.5	53.5	37.9	14.9	16.0	15.1
CV %	0.9	4.5	6.0	0.4	0.6	9.9	--	--
LSD 0.05	0.6	1.1	1.8	0.5	0.4	2.1	--	--

Planted: May 14 into tilled soybean covercrop stubble from 2009. Harvested: July 26.

<sup>1</sup>DAP = Days after planting.

## Flax Variety Trial (Irrigated), Williston, 2010

Authors: N. Riveland, G. Bradbury and S. Brogger

Cultivar	Days to Flower	Flower Duration	Plant Height	Test Weight	Oil Content	Seed Yield				
	(DAP <sup>1</sup> )	(days)	(inch)	(lb/bu)	(%)	2008	2009	2010	2 Year	3 Year
<b>Yellow Seeded</b>										
Carter	47.0	16.8	26.2	50.5	37.8	29.6	50.1	30.3	40.2	36.6
Omega	46.0	13.0	24.1	47.5	37.5	22.2	43.7	26.2	35.0	30.7
<b>Brown Seeded</b>										
Neche	47.8	15.3	25.1	48.0	37.6	19.5	37.7	28.7	33.2	28.6
Nekoma	47.0	16.0	26.2	47.9	37.2	26.6	42.4	31.3	36.9	33.4
Prairie Thu	45.0	14.5	23.7	48.4	37.2	--	--	31.2	--	--
York	47.0	16.0	24.0	50.0	37.2	23.4	46.7	34.2	40.5	34.8
Mean	46.6	15.3	24.9	48.7	37.4	24.3	44.1	30.3	37.1	32.8
CV %	0.4	2.9	6.5	5.3	0.9	9.7	11.9	9.4	--	--
LSD 0.05	0.3	0.7	NS	NS	NS	NS	7.7	4.3	--	--

Planted: April 28 then replanted May 29 because of emergence and stand problems caused by Leatherjacket larvae feeding on the germinating seedlings. Harvested: Sept. 8.

## Flax Variety Trial (No-till), Williston, 2010

Authors: N. Riveland, G. Bradbury and S. Brogger

Cultivar	Days to Flower	Flower Duration	Plant Height	Test Weight	Oil Content	Seed Yield				
	(DAP <sup>1</sup> )	(days)	(inch)	(lb/bu)	(%)	2008	2009	2010	2 Year	3 Year
<b>Yellow Seeded</b>										
Carter	60.0	19.3	21.0	52.5	38.4	4.3	18.7	16.6	17.6	13.2
Omega	61.3	19.3	21.4	52.9	39.1	5.4	17.7	15.5	16.6	12.8
<b>Brown Seeded</b>										
Neche	57.0	23.7	21.5	52.2	38.5	4.9	19.0	14.0	16.5	12.6
Nekoma	58.7	20.7	21.5	52.6	38.5	5.8	20.8	14.8	17.8	13.8
Pembina	58.7	17.7	21.6	52.7	38.1	3.0	17.3	14.2	15.8	11.5
York	60.7	16.7	20.4	53.8	37.3	4.4	22.3	11.8	17.0	12.8
Mean	59.4	19.6	21.2	52.8	38.3	4.6	19.3	14.5	16.9	12.8
CV %	0.7	6.0	701.0	0.6	0.5	32.4	11.7	19.7	--	--
LSD 0.05	0.8	2.1	NS	0.8	0.5	NS	NS	NS	--	--

Planted: April 23 into tilled durum stubble from 2009. Harvested July 26.

<sup>1</sup>DAP = Days after planting.

## Lentil Variety Trials, 2010

Location	Planting	Harvest	Previous
	Date	Date	Crop
Arnegard	April 29	August 3	HRSW
Carrington	April 28	August 13	HRSW
Crosby	May 12	August 11	HRWW
Hettinger	April 19	August 18	HRSW
McClusky	April 29	August 17	Flax
Minot	May 18	September 29	Flax
New Town	May 10	August 13	Durum
Ray	May 11	August 12	Durum
Stanley	May 10	August 19	Canola

Seeding rate was 14 pure live seeds/ft<sup>2</sup>.

Variety	Seed Coat Color	Market Type	Average Yield Across Locations	
			2010	% of CDC Richlea
CDC Greenland	Green	Large	98	98
CDC LeMay	French Green	Small	100	96
CDC Red Rider	Red	Medium	108	105
CDC Redberry	Red	Small	112	103
CDC Richlea	Green	Medium	100	100
CDC Rosetown	Red	Ext. Small	101	99
CDC Rouleau	Red	Small	105	100
CDC Viceroy	Green	Small	104	101
Pennell	Green	Large	84	86
Riveland	Green	Large	75	80

<sup>1</sup> Based on 2010 and 2009 %

## Lentil Variety Trials, 2010

Seed Yield (lb/a)										
Variety	Arnegard	Carrington	Crosby	Hettinger	McClusky	Minot	New Town	Ray	Stanley	Average
<b>French Green</b>										
CDC LeMay	1980	3034	2461	1570	2517	1909	2101	2004	1134	2079
<b>Green</b>										
CDC Greenland	2206	3178	2506	872	1687	1767	2087	2180	2065	2061
CDC Richlea	2158	3515	2548	1154	2443	1665	2321	1867	1182	2095
CDC Viceroy	1568	3741	2353	1446	2527	1961	2115	1998	1189	2100
Pennell	2017	2210	1482	1128	2329	1738	2012	1590	1595	1789
Riveland	1270	2384	1867	743	1722	1210	1348	1463	1856	1540
<b>Red</b>										
CDC Redberry	2045	3702	2120	1390	2390	2059	2421	1806	1328	2140
CDC Red Rider	2238	3228	2032	1663	2459	1850	2205	2047	1301	2114
CDC Rosetown	2135	3522	2213	1498	2284	1513	2247	1893	1711	2113
CDC Rouleau	1831	3153	2485	1749	2315	2082	2634	1903	1229	2153
Mean	1945	3167	2207	1321	2267	1775	2149	1875	1459	2018
CV%	12.0	9.9	12.0	11.8	12.0	13.2	7.0	12.0	13.0	11.6
LSD 0.05	403	457	477	226	364	340	257	386	399	335

Days to 10% Flowering					
Variety	Carrington	Hettinger	McClusky	Minot	Average
<b>French Green</b>					
CDC LeMay	56	65	53	49	56
<b>Green</b>					
CDC Greenland	56	66	57	48	57
CDC Richlea	55	65	54	47	55
CDC Viceroy	56	67	57	49	57
Pennell	55	67	58	46	57
Riveland	54	63	54	47	55
<b>Red</b>					
CDC Redberry	55	65	53	46	55
CDC Red Rider	57	66	57	48	57
CDC Rosetown	56	66	57	46	56
CDC Rouleau	55	66	56	49	57
Mean	56	66	56	48	57
CV%	1.3	1.0	2.2	3.7	2.0
LSD 0.05	1	1	2	2	2

## Lentil Variety Trials, 2010

Days to Physiological Maturity			
Variety	Carrington	Hettinger	Average
<b>French Green</b>			
CDC LeMay	92	98	95
<b>Green</b>			
CDC Greenland	96	99	98
CDC Richlea	95	100	98
CDC Viceroy	93	99	96
Pennell	92	100	96
Riveland	94	100	97
<b>Red</b>			
CDC Redberry	94	99	97
CDC Red Rider	95	100	98
CDC Rosetown	94	98	96
CDC Rouleau	93	99	96
Mean	94	99	97
CV%	0.9	1.1	1.0
LSD 0.05	2	1	3

1000 Seed Weight (grams)										
Variety	Arnegard	Carrington	Crosby	Hettinger	McClusky	Minot	New Town	Ray	Stanley	Average
<b>French Green</b>										
CDC LeMay	37	32	35	36	34	33	33	36	32	34
<b>Green</b>										
CDC Greenland	72	64	63	68	64	60	62	69	65	65
CDC Richlea	59	50	50	59	47	44	51	55	52	52
CDC Viceroy	36	32	32	36	29	30	32	35	33	33
Pennell	77	63	70	82	64	66	66	72	68	70
Riveland	79	64	77	74	68	67	73	77	74	73
<b>Red</b>										
CDC Redberry	48	43	43	47	41	39	43	45	42	43
CDC Red Rider	51	41	49	47	45	42	44	47	45	46
CDC Rosetown	33	29	32	34	28	27	31	33	31	31
CDC Rouleau	41	35	33	41	33	33	38	39	39	37
Mean	53	45	48	52	45	44	47	51	48	48
CV%	2.6	3.4	3.7	3.1	5.0	4.3	2.5	1.9	4.1	3.5
LSD 0.05	3	2	4	5	3	3	3	2	4	8

## Lentil Variety Trials, 2010

Plant Height (in)									
Variety	Arnegard	Carrington	Crosby	Hettinger	Minot	New Town	Ray	Stanley	Average
<b>French Green</b>									
CDC LeMay	11	15	12	14	12	13	12	12	13
<b>Green</b>									
CDC Greenland	14	20	13	19	16	16	15	14	16
CDC Richlea	13	17	13	17	16	14	14	11	14
CDC Viceroy	14	17	12	16	15	14	13	12	14
Pennell	13	15	12	18	15	14	13	12	14
Riveland	13	18	14	17	12	15	14	12	14
<b>Red</b>									
CDC Redberry	13	17	13	17	19	13	14	12	15
CDC Red Rider	14	17	13	18	19	14	14	13	15
CDC Rosetown	13	17	11	18	11	14	12	11	13
CDC Rouleau	13	16	13	17	21	14	12	13	15
Mean	13	17	13	17	16	14	13	12	14
CV%	9.0	9.2	9.2	12.3	14.4	11.4	8.8	6.9	14.7
LSD 0.05	NS	2	NS	NS	3	NS	NS	2	NS

Test Weight (lb/bu)										
Variety	Arnegard	Carrington	Crosby	Hettinger	McClusky	Minot	New Town	Ray	Stanley	Average
<b>French Green</b>										
CDC LeMay	62.1	61.7	62.5	61.2	60.9	55.3	62.6	63.2	62.9	61.4
<b>Green</b>										
CDC Greenland	61.5	56.9	58.3	--	57.4	51.8	58.6	59.3	59.4	57.9
CDC Richlea	62.2	58.9	60.4	59.3	59.5	52.0	60.3	60.1	60.0	59.2
CDC Viceroy	62.0	62.2	62.7	61.6	60.4	55.3	62.4	63.1	62.6	61.4
Pennell	60.4	55.9	56.9	57.8	57.7	50.4	58.2	58.0	58.4	57.1
Riveland	60.1	55.3	58.0	--	57.2	49.9	57.1	55.8	58.8	56.5
<b>Red</b>										
CDC Redberry	62.6	61.7	62.4	61.3	60.7	53.7	62.0	62.0	61.8	60.9
CDC Red Rider	62.7	61.0	62.0	59.5	59.2	53.5	61.6	62.1	62.7	60.5
CDC Rosetown	61.2	62.5	63.3	61.7	62.1	54.4	63.1	63.4	63.8	61.7
CDC Rouleau	62.2	61.4	62.2	60.0	59.7	53.8	62.6	61.8	62.2	60.7
Mean	61.7	59.8	60.9	60.3	59.5	53.0	60.9	60.9	61.3	59.7
CV%	4.0	0.7	0.3	1.7	2.8	1.3	4.0	0.7	1.0	2.8
LSD 0.05	NS	0.6	0.4	NS	2.4	1.0	0.5	0.9	2.0	1.7

## Lentil Variety Trials, 2010

Variety	Seeds/lb										Average
	Arnegard	Carrington	Crosby	Hettinger	McClusky	Minot	New Town	Ray	Stanley		
<b>French Green</b>											
CDC LeMay	12,209	14,196	13,121	12,695	13,539	13,867	13,808	12,541	14,261	13,360	
<b>Green</b>											
CDC Greenland	6,291	7,102	7,226	6,661	7,146	7,609	7,320	6,589	6,935	6,987	
CDC Richlea	7,684	9,051	9,113	7,726	9,761	10,267	8,913	8,265	8,781	8,840	
CDC Viceroy	12,482	14,347	14,371	12,480	16,000	15,392	14,263	13,061	13,834	14,026	
Pennell	5,912	7,265	6,475	5,524	7,099	6,856	6,856	6,312	6,675	6,553	
Riveland	5,751	7,064	5,883	6,125	6,734	6,839	6,242	5,879	6,111	6,292	
<b>Red</b>											
CDC Redberry	9,545	10,629	10,535	9,664	11,242	11,770	10,676	10,009	10,892	10,551	
CDC Red Rider	8,991	11,105	9,255	9,675	10,198	10,852	10,346	9,649	10,016	10,010	
CDC Rosetown	13,835	15,808	14,305	13,437	16,452	17,154	14,483	13,930	14,868	14,919	
CDC Rouleau	10,986	13,170	13,985	11,129	13,922	13,871	12,010	11,519	11,733	12,481	
Mean	9,369	10,974	10,427	9,512	11,209	11,448	10,492	9,775	10,411	10,402	
CV%	3.0	3.4	7.0	3.2	6.1	4.1	3.0	1.0	4.0	4.5	
LSD 0.05	620	538	1,667	371	1,055	674	744	307	805	1,384	

## Clearfield Lentil Variety Trials, 2010

Location	Planting		Harvest		Previous	
	Date		Date		Crop	
Carrington	April 28		August 10		HRSW	
Hettinger	April 19		August 18		HRSW	
Ray	May 11		August 12		Durum	
New Town	May 10		August 13		Durum	
Arnegard	April 29		August 3		HRSW	
Crosby	May 12		August 11		HRWW	
Stanley	May 10		August 19		Canola	

Variety	Seed Yield (lb/a)								Average
	Carrington	Hettinger	Ray	New Town	Arnegard	Crosby	Stanley		
<b>Green</b>									
CDC Impress-CL	2326	1543	2288	2171	2037	2653	1787		2115
CDC Improve-CL	2732	1432	2173	2219	1970	2547	1586		2094
<b>Red</b>									
CDC Impact-CL	2278	1593	2233	2065	1659	2096	1484		1915
CDC-Impala-CL	2347	2215	2046	2259	2075	2421	1427		2113
CDC-Imperial-CL	2210	2290	2000	2129	1804	2188	1500		2017
CDC-Maxim-CL	2784	2255	2212	2108	2161	2510	1089		2160
Mean	3107	1888	2159	2159	1951	2403	1479		2164
CV%	5	7	11	12	9	13	21		
LSD 0.05	248	189	NS	NS	NS	NS	NS		

Variety	Test Weight (lb/bu)								Average
	Carrington	Hettinger	Ray	New Town	Arnegard	Crosby	Stanley		
<b>Green</b>									
CDC Impress-CL	60.1	58.0	62.9	60.3	61.5	60.3	61.8		60.7
CDC Improve-CL	59.6	57.0	62.1	59.7	60.1	59.6	60.5		59.8
<b>Red</b>									
CDC Impact-CL	61.3	61.0	59.7	62.4	63.5	62.5	63.5		62.0
CDC-Impala-CL	62.9	61.3	61.4	62.9	63.1	63.6	64.0		62.7
CDC-Imperial-CL	61.6	60.0	62.7	62.8	63.7	63.0	63.7		62.5
CDC-Maxim-CL	61.8	61.0	61.3	62.1	63.1	62.4	61.9		61.9
Mean	61.2	59.7	61.7	61.7	62.5	61.9	62.6		61.6
CV%	1.2	1.6	1.5	0.2	0.4	0.4	1.1		
LSD 0.05	1.1	1.5	NS	0.3	0.6	0.7	1.8		

## Clearfield Lentil Variety Trials, 2010

Variety	Plant Height (inches)								
	Carrington	Hettinger	Ray	New Town	Arnegard	Crosby	Stanley	Average	
<b>Green</b>									
CDC Impress-CL	10	14	14	15	14	16	13	14	
CDC Improve-CL	13	16	14	15	15	16	14	15	
<b>Red</b>									
CDC Impact-CL	11	14	13	12	13	13	11	12	
CDC-Impala-CL	12	15	13	13	13	13	12	13	
CDC-Imperial-CL	11	15	12	13	13	13	11	13	
CDC-Maxim-CL	14	15	12	12	13	15	12	13	
Mean	12	15	13	14	13	14	12	13	
CV%	11.1	7.7	9.4	6.4	5.8	5.8	6.8		
LSD 0.05	2	NS	NS	2	1	2	2		

Variety	1000 Seed Weight (grams)								
	Carrington	Hettinger	Ray	New Town	Arnegard	Crosby	Stanley	Average	
<b>Green</b>									
CDC Impress-CL	50	56	75	47	59	55	50	56	
CDC Improve-CL	74	77	56	67	80	74	71	71	
<b>Red</b>									
CDC Impact-CL	38	40	34	35	39	35	37	37	
CDC-Impala-CL	31	35	43	28	32	30	30	33	
CDC-Imperial-CL	30	34	33	27	30	28	29	30	
CDC-Maxim-CL	39	44	33	38	38	41	42	39	
Mean	44	48	46	40	46	44	43	44	
CV%	10.8	2.2	2.2	2.4	4.5	0.8	2.5		
LSD 0.05	7	2	3	3	5	1	3		

## Clearfield Lentil Variety Trials, 2010

Variety	Seeds/lb						
	Carrington	Ray	New Town	Arnegard	Crosby	Stanley	Average
<b>Green</b>							
CDC Impress-CL	9,039	6,052	9,690	7,678	8,306	9,004	8,295
CDC Improve-CL	6,144	8,159	6,731	5,702	6,133	6,438	6,551
<b>Red</b>							
CDC Impact-CL	11,857	13,198	12,901	11,782	12,972	12,427	12,523
CDC-Impala-CL	14,933	10,648	15,978	13,996	15,249	15,371	14,363
CDC-Imperial-CL	15,408	13,637	16,613	14,976	16,019	15,477	15,355
CDC-Maxim-CL	12,042	13,890	12,100	11,950	11,131	10,757	11,978
Mean	11,558	10,931	12,336	11,014	11,635	11,579	11,509
CV%	14.0	3.0	2.0	5.0	1.0	2.0	
LSD 0.05	2452	834	577	1499	395	544	

Days to 10% Flowering			
Variety	Carrington	Hettinger	Average
<b>Green</b>			
CDC Impress-CL	57	65	61
CDC Improve-CL	56	65	61
<b>Red</b>			
CDC Impact-CL	57	62	60
CDC-Impala-CL	57	66	62
CDC-Imperial-CL	56	64	60
CDC-Maxim-CL	56	66	61
Mean	56	64	60
CV%	1.0	1.0	
LSD 0.05	NS	1	

Days to Physiological Maturity	
Variety	Carrington
<b>Green</b>	
CDC Impress-CL	95
CDC Improve-CL	96
<b>Red</b>	
CDC Impact-CL	94
CDC-Impala-CL	92
CDC-Imperial-CL	93
CDC-Maxim-CL	95
Mean	94
CV%	0.7
LSD 0.05	1

## Mustard Variety Trials, 2010

Variety	Type	Seed Yield (lb/a)					
		Location			Average		
		Langdon	Carrington	Hettinger	2010	2 Year	3 Year
AC Pennant	Yellow	1670	878	2117	1555	1549	1368
Ace	Yellow	2237	1397	2255	1963	1842	1629
Andante	Yellow	2231	1394	2274	1966	1924	1702
Tilney	Yellow	2069	1276	2182	1842	1781	1579
Forge	Oriental	2611	1212	2535	2119	1851	1662
Common	Brown	2287	1281	2443	2004	1794	1646
Duchess	Brown	2284	1281	2520	2028	1833	1692
Mean		2198	1244	2332	--	--	--
LSD 0.05		381	356	213	--	--	--

Variety	Type	Days to Flower			Flowering Duration (days)			Average	
		Location			Carrington	Hettinger			
		Langdon	Carrington	Hettinger					
AC Pennant	Yellow	35	42	26	34	24	26	25	
Ace	Yellow	37	44	25	35	24	25	24	
Andante	Yellow	36	43	24	34	24	24	24	
Tilney	Yellow	36	43	25	35	24	25	25	
Forge	Oriental	42	49	23	38	23	23	23	
Common	Brown	41	48	24	38	22	24	23	
Duchess	Brown	42	49	23	38	23	23	23	
Mean		38	45	24	--	24	24	--	
LSD 0.05		1	1	1	--	2	1	--	

Variety	Type	Days to Mature			Average	
		Location				
		Langdon	Carrington	Hettinger		
AC Pennant	Yellow	82	83	88	84	
Ace	Yellow	85	88	91	88	
Andante	Yellow	85	87	90	87	
Tilney	Yellow	84	86	90	87	
Forge	Oriental	85	89	93	89	
Common	Brown	85	91	94	90	
Duchess	Brown	86	91	94	90	
Mean		85	88	91	--	
LSD 0.05		1	2	1	--	

## Mustard Variety Trials, 2010

Variety	Type	Plant Height (inches)			Lodging (0-9)			Average	
		Location		Avg	Location		Average		
		Langdon	Carrington		Hettinger	Langdon	Carrington		
AC Pennant	Yellow	50	31	40	40	1.8	1.3	0.5	1.2
Ace	Yellow	52	29	45	42	0.8	1.0	0.2	0.7
Andante	Yellow	51	35	39	42	1.0	1.5	1.0	1.2
Tilney	Yellow	50	30	38	39	0.0	1.5	1.0	0.8
Forge	Oriental	49	43	45	46	1.8	1.3	3.5	2.2
Common	Brown	48	39	48	45	2.3	1.9	3.5	2.6
Duchess	Brown	47	39	44	43	3.0	1.0	4.8	2.9
Mean		50	35	43	--	1.5	1.3	2.1	--
LSD 0.05		2	5	2	--	NS	NS	1.5	--

Variety	Type	Oil (%)	Test Weight (lb/bu)			Average	
		Location	Location				
		Carrington	Carrington	Hettinger			
AC Pennant	Yellow	22.3	55.1	53.4	54.3		
Ace	Yellow	22.3	55.0	53.2	54.1		
Andante	Yellow	22.3	55.2	54.1	54.7		
Tilney	Yellow	22.3	55.0	53.4	54.2		
Forge	Oriental	22.5	53.1	52.7	52.9		
Common	Brown	22.4	53.4	51.9	52.7		
Duchess	Brown	22.4	53.2	51.2	52.2		
Mean		22.4	54.3	52.8	--		
LSD 0.05		0.03	0.5	0.9	--		

Location	Planting Date	Harvest Date
Carrington	April 30	August 3
Hettinger	April 19	August 3
Langdon	May 17	August 25

## Proso Millet Variety Trials, 2010

<b>Variety</b>	<b>Grain Yield (lb/a)</b>				
	Hettinger	Williston	Prosper	Avg.	3 year
Horizon	2466	2017	1766	2083	1789
Sunrise	2591	1908	1877	2125	1657
Sunup	2906	1957	2061	2308	1837
CV%	9.3	4	31	--	--
LSD 0.05	NS	NS	NS	--	--

<b>Variety</b>	<b>Test Weight (lb/bu)</b>				
	Hettinger	Williston	Prosper	Avg.	3 year
Horizon	57.0	53.5	49.4	53.3	53.6
Sunrise	57.9	52.9	49.1	53.3	53.5
Sunup	59.4	54.2	51.1	54.9	54.2
CV%	2.7	0.2	3.3	--	--
LSD 0.05	NS	0.4	NS	--	--

<b>Variety</b>	<b>Plant Height (inches)</b>				
	Hettinger	Williston	Prosper	Avg.	3 year
Horizon	39	24	45	36	36
Sunrise	39	25	47	37	37
Sunup	41	26	48	38	39
CV%	6.0	4.2	7	--	--
LSD 0.05	NS	NS	NS	--	--

<b>Variety</b>	<b>Days to Head*</b>			<b>Lodging**</b>
	Hettinger	Williston	Prosper	
Horizon	60	60	55	6.3
Sunrise	61	60	55	4.0
Sunup	60	60	55	3.5
CV%	0.6	1.6	1	24.4
LSD 0.05	NS	NS	NS	1.9

\*Days to Head = the number of days from planting to emergence of head from the boot.

\*\*Lodging: 0 = none, 9 = lying flat on the ground.

NS = no statistical difference between varieties.

	Hettinger	Williston	Prosper
Planting Date	May 29	June 1	June 2
Harvest Date	September 3	September 29	August 30

## Safflower Variety Trials, 2010

Variety	Seed Yield (lb/acre)								8 location average
	Hettinger no-till	Carrington recrop	recrop	Williston fallow	irrigated	Williston fallow	irrigated	Sidney, MT Prosper	
<b>Oleic</b>									
Montola 2003	2898	1830	1134	1208	1346	2077	2254	770	1690
Montola 2000	2777	1440	1062	947	910	1808	1329	734	1376
MonDak	2831	1859	1264	1215	1657	2499	2036	1153	1814
Hybrid 9049	3184	1903	1454	1563	1094	2337	2423	1174	1891
Hybrid 1601	3361	2315	1525	1487	1444	2912	2812	1526	2173
<b>Linoleic</b>									
Finch	2444	1566	1270	1228	1145	2195	2146	1028	1628
Nutrasaff	2458	1554	943	1125	956	1923	1679	816	1432
Cardinal	3015	1835	1333	1526	1342	2580	2405	1383	1927
00B1587-6	2241	1313	1093	--	--	--	--	--	--
00B1597-3	2954	1960	1408	--	--	--	--	--	--
Mean	2816	1757	1249	1287	1237	2291	2136	1073	--
LSD 0.05	212	320	200	209	267	273	615	177	--

Variety	Plant Height (inches)				4 loc average
	recrop	Williston fallow	irrig	Prosper	
<b>Oleic</b>					
Montola 2003	19.4	24.0	24.2	22.0	22.4
Montola 2000	16.8	21.6	22.3	20.3	20.3
MonDak	20.0	25.9	27.6	25.0	24.6
Hybrid 9049	20.6	24.8	26.4	24.5	24.1
Hybrid 1601	19.5	26.1	27.3	26.5	24.9
<b>Linoleic</b>					
Finch	20.1	22.8	27.5	26.8	24.3
Nutrasaff	20.5	26.3	29.1	25.8	25.4
Cardinal	22.0	26.5	29.5	27.5	26.4
00B1587-6	22.7	--	--	--	--
00B1597-3	22.3	--	--	--	--
Mean	20.4	24.8	26.7	24.8	--
LSD 0.05	2.7	2.0	2.2	2.2	--

## Safflower Variety Trials, 2010

Variety	Test Weight (lb/bu)								8 location average
	Hettinger no-till	Carrington recrop	recrop	Williston fallow	irrigated	Sidney, MT fallow	irrig	Prosper	
<b>Oleic</b>									
Montola 2003	42.5	36.8	38.7	37.1	36.3	42.0	37.4	21.0	36.5
Montola 2000	39.2	36.4	37.7	34.0	34.9	42.0	33.3	21.5	34.9
MonDak	40.1	37.6	39.8	38.4	38.4	43.5	36.8	23.1	37.2
Hybrid 9049	42.1	39.1	41.0	41.0	37.1	44.5	39.8	25.6	38.8
Hybrid 1601	39.9	37.7	38.9	38.0	35.2	41.5	37.5	27.5	37.0
<b>Linoleic</b>									
Finch	43.7	40.9	42.0	41.4	38.1	45.0	41.0	26.5	39.8
Nutrasaff	36.5	35.4	37.3	36.8	34.8	37.0	37.9	24.7	35.0
Cardinal	44.9	40.5	42.9	41.7	37.9	44.0	42.0	28.8	40.3
00B1587-6	38.9	37.4	38.8	--	--	--	--	--	--
00B1597-3	39.8	37.6	38.4	--	--	--	--	--	--
Mean	40.8	37.9	39.6	38.6	36.6	42.4	38.2	24.8	--
LSD 0.05	0.9	1.2	0.8	0.9	1.2	0.1	2.1	2.2	--

Variety	Seed Oil (%)								7 location average
	Hettinger no-till	Carrington recrop	recrop	Williston fallow	irrigated	Sidney, MT fallow	irrigated		
<b>Oleic</b>									
Montola 2003	36.5	34.4	34.1	31.9	29.4	36.1	36.6	34.1	
Montola 2000	37.4	33.8	34.8	31.0	30.7	37.2	35.7	34.4	
Mon-Dak	35.7	31.2	32.5	30.7	29.7	34.0	34.0	32.6	
Hybrid 9049	32.5	30.2	29.1	28.2	26.1	29.6	30.4	29.4	
Hybrid 1601	37.9	34.8	33.9	32.3	31.2	35.1	36.6	34.5	
<b>Linoleic</b>									
Finch	36.2	36.9	35.0	34.0	29.8	34.5	35.8	34.6	
Nutrasaff	46.2	46.0	45.3	43.1	41.0	44.2	45.6	44.5	
Cardinal	36.8	35.4	33.9	33.1	29.1	34.0	34.2	33.8	
00B1587-6	36.4	38.6	38.2	--	--	--	--	--	
00B1597-3	37.0	38.5	36.1	--	--	--	--	--	
Mean	37.3	36	35.3	33.0	30.9	35.6	36.1	--	
LSD 0.05	1.7	1.4	0.6	1.1	0.9	0.8	1.6	--	

## **Safflower Variety Trials, 2010**

<b>Location</b>	<b>Plant Date</b>	<b>Harvest Date</b>
Hettinger	May 17	September 3
Carrington	April 29	October 6
Williston Adv. Yield	April 29	September 8
Williston Fallow	April 29	September 8
Williston Recrop	May 10	September 8
Williston Irrigated	May 13	September 17
Sidney Fallow	April 26	September 14
Sidney Irrigated	May 14	October 19
Prosper	May 19	September 14

**For more information on this and other topics, see: [www.ag.ndsu.edu/ndsuag](http://www.ag.ndsu.edu/ndsuag)**

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