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NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Twenty-Eighth Annual

Western Dakota Crops Day

Research Report 2011

Hettinger Research Extension Center
www.ag.ndsu.edu/HettingerREC/
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28th Annual Western Dakota Crops Day

December 15, 2011

Hettinger Armory

MST

9:00 am Registration

Coffee and doughnuts. Free time to view exhibits and visit with Ag. Industry Program Sponsors.

10:00 Earlybird Drawing and Opening Announcements

10:15 Crop Variety Updates and Highlights of Ongoing Crop Production Research

Dr. Pat Carr, Research Agronomist, NDSU Dickinson Research Extension Center
John Rickertsen, Extension Agronomist, SDSU West River Research Center, Rapid City
Roger Ashley, NDSU Extension Agronomist, Dickinson
Eric Eriksmoen, Research Agronomist, NDSU Hettinger Research Extension Center

12:00 Lunch

Provided by Program Sponsors. Free time to visit with sponsors.

1:00 Ag Industry Update

1:30 Insect Pest Outlook for Southwestern North Dakota.

Dr. Janet Knodel, NDSU Extension Entomologist, Fargo.

2:15 Wheat Disease Issues 2011: Outlook for 2012.

Dr. Marcia McMullen, NDSU Extension Plant Pathologist, Fargo.

3:00 Conclusion

Drawing for door prizes, coffee and opportunity to visit with sponsors.

Acknowledgments

The Hettinger Research Extension Center gratefully acknowledges and thanks the following companies and organizations for their financial support and participation in this year's Western Dakota Crops Day. Those listed below have provided for the noon meal and have sponsored the event in total. We thank them for their commitment and support.

2011 Western Dakota Crops Day Sponsors

Hettinger Area Chamber of Commerce
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Alliance Ag Cooperative

We also acknowledge and thank the following individuals for their willingness to cooperate with us at off-station plot sites and in providing us with materials for this publication. Their participation has enabled us to compile the enclosed information which would not otherwise be possible.

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Keith Gietzen, Glen Ullin
Pat Doll, Hannover

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Interpreting Statistical Analysis

Field research involves the testing of one or more variables such as crop varieties, fertilizers, weed control methods, etc. Field testing of such variables are conducted in order to determine which variety, fertilizer, herbicide, etc. is best for the particular area of production. The main objectives of crop production research are to determine the best means of producing a crop and how to maximize yield and economic return from farming.

Agricultural researchers use statistics as a tool to help differentiate production variables so that real and meaningful conclusions can be drawn from a relatively large amount of data gathered from relatively small research plots.

One of these tools is the Coefficient of Variability (C.V.). This statistic gives an indication of the amount of variation in an experimental trial and is a measure of the precision or effectiveness of the trial and the procedures used in conducting it. Attempts are made to control human error and some environmental conditions such as soil variability by replicating the variable in question. For example, there were four plots (replications) of the variety Mott grown in the Hettinger HRSW variety trial. The plots are mixed and dispersed throughout the trial to help eliminate differences that might be a result of soil or other variations. The numbers that you see in the tables are an average of all four replications. The C.V. for yield in the 2011 Hettinger HRSW variety trial was 6.6 meaning that there was a 6.6 percent average variation between high and low yields among replications. In summation, a trial with a C.V. of 6 is more precise and more can be concluded from it than a trial with a C.V. of 16.

Another important statistical tool is the Least Significant Difference or LSD. If the yield of variety A exceeds variety B by more than the LSD value, you can conclude that under like environmental conditions, variety A is expected to significantly out-yield variety B. The LSD value allows you to separate varieties, fertilizers, herbicides, or any other variable and determine whether or not they are actually different. The LSD .01 or 1% value is always larger and gives you more precision than the LSD .05 or 5% value. Little confidence can be placed in a variety or treatment unless the results differ by more than the LSD value.

2011 Weather Summary for the Dickinson Research Extension Center, Dickinson, ND.

	---- Maximum temp.----		-----Minimum temp.-----		-----Precipitation -----		-----Small grains GDD[1]-----		-----Corn GDD[2] -----	
Month	Long Term 1897 - 2009	Current year[3]	Long Term 1897 - 2009	Current year[3]	Long Term 1897 - 2009	Current year[3]	Long Term 1897 - 2009	Current year[3]	Long Term 1897 - 2009	Current year[3]
	---------- °F ----------		---------- °F ----------		----- inches -----					
November	40.0	38.1	16.9	18.3	0.51	0.42				
December	27.8	20.4	5.6	4.0	0.41	0.46				
January	23.0	20.3	0.1	3.0	0.50	1.27				
February	27.1	21.0	3.9	0.3	0.41	0.68				
March	38.0	30.8	15.0	14.1	0.75	0.84				
April	54.7	49.0	28.4	29.3	1.41	1.99	345	262		
May	66.2	60.3	39.2	40.7	2.31	5.25	644	569	253	172
June	75.0	74.0	48.9	50.6	3.57	1.63	899	852	382	380
July	83.5	83.9	54.2	59.5	2.21	2.07	1144	1118	586	640
August	82.4	83.6	51.6	56.5	1.71	2.99	1085	1061	530	575
September	71.3	74.1	41.1	44.4	1.39	0.53	726	733	320	355
October	57.6	62.5	30.0	36.2	0.97	0.23				
Mean	53.9	51.5	27.9	29.7						
Total					16.14	18.36	4844	4595	2071	2122
April - October Total					13.58	14.69				

[1] Small grains GDD, is growing degree days calculated with 95°F as the maximum temperature and 32°F as the base temperature.

[2] Corn GDD, is growing degree days calculated with 86°F as the maxium temperature and 50°F as the base temperature.

[3] Current weather data generated by the North Dakota Weather Network (NDAWN) station at Dickinson located approximately 1,354.5 feet NW (345.42°) of the manual read station. Current precipitation values Nov - Mar courtesy of Gary Ottmar, DREC Ranch, Manning.

Source: Dickinson Research Extension Center and North Dakota Agricultural Weather Network. Data compiled by John Urban, Research Technician; Roger Ashley, Extension Agronomist; and Sheri Schneider, Information Processing Specialist.

2011 Growing Conditions
Hettinger Research Extension Center

The fall of 2010 was ideal for winter wheat establishment with an abundance of rainfall in September followed by warm and dry conditions in October. There was an above normal amount of snowfall and accumulations greater than one foot throughout most of the winter months. The last spring snow storm dropped 8 inches of snow on April 20. Cold and wet conditions prevailed through the end of May resulting in only 50% of the wheat acres being planted and many of those acres being mudded in causing poor and uneven stands. Continued periods of wet weather through June caused soils to become almost fully saturated, resulting in many fields being left unplanted. These wet conditions caused small grain plants to develop small shallow root systems resulting in pale looking nitrogen deficient seedlings. This condition would later prove to be tremendously detrimental when those crops were at the critical seed forming growth stage and were hit with hot temperatures during the last 2 weeks of July. Weakened plants also became more susceptible to a plethora of diseases issues. An early infection of foliar diseases (tan spot and septoria) was widespread but was generally controlled by judicious use of fungicides. Wheat streak mosaic virus was common in winter wheat and to a lesser degree in some spring wheat. Symptoms ranged from mild to severe with some fields being destroyed to stop its spread to adjacent fields. Barley yellow dwarf, transmitted by aphids, was also very common in all small grain crops and varied in severity but was generally mild to moderate. Bacterial leaf streak was widespread in most wheat fields and was presented with symptoms of dead leaf tissue on the flag leaf which was uncontrolled with fungicides. Fusarium head blight (scab) was commonly observed in low water saturated portions of fields. Wheat stem sawfly infestations appear to be dwindling with the widespread use of tolerant varieties and an explosion of naturally occurring sawfly parasitoids. Grasshopper populations appear to be increasing in both numbers and infested acres. Overall, the wheat crop was very disappointing with commonly reported yields of 10 to 20 bushels per acre and test weights in the low 50's.

Late season crops tended to develop and produce quite well despite being planted later than normal. Early maturing corn varieties accumulated enough heat units to mature prior to a killing frost and sunflower yields were generally higher than average.

Most trials at the Hettinger Research Center were grown under a no-till cropping system. The predominant soil type is classified as a silty loam. Small grain trials were typically planted into field pea stubble and broadleaf crop trials were typically planted into spring wheat stubble. Residual soil fertility levels were determined and fertilizer was applied according to specific yield goals for each crop. Urea (46-0-0) was the primary nitrogen fertilizer source and was applied with a no-till drill prior to planting. Monoammonium phosphate (11-52-0) was typically applied directly with the seed during planting. All legume crops were treated with granular *rhizobia* inoculant during seeding.

HRSW, durum and barley trials were treated post-emergence for both wild oats and for broadleaf weeds (kochia, Russian thistle and wild buckwheat). Most broadleaf crops were treated with a pre-emergence burn down and with a post-emergence herbicide for grassy weeds and broadleaf weeds when possible. All small grain trials were treated with an insecticide to control aphids and with a fungicide at the 3 leaf stage to control foliar diseases and again at heading to control fusarium head blight.

Weather Data Summary - Hettinger

Frost Free Days

	28°F	32°F	Normal 32°F
Date of Last Frost	May 5	May 15	May 18
Date of First Frost	September 22	September 4	September 20
Frost Free Days	**140**	**112**	**125**

Precipitation

Precipitation (inches)	2006 – 07	2007 – 08	2008 - 09	2009 – 10	2010 – 11	56 Year Average
Sept. – Dec.	3.15	1.26	6.23	4.66	4.80	3.36
Jan. – March	2.18	0.87	5.16	1.16	2.84	1.50
April	1.09	0.98	1.10	1.76	2.31	1.61
May	5.97	4.01	1.38	3.73	4.61	2.64
June	3.04	4.08	3.53	2.93	3.39	3.32
July	1.62	1.23	2.20	3.68	1.85	2.04
August	3.65	1.75	3.47	2.41	2.30	1.71
Total	**20.70**	**14.18**	**23.07**	**20.27**	**22.10**	**16.18**

Air Temperature

Average Temp. F°	2007	2008	2009	2010	2011	56 Year Average
April	40.2	40.1	38.2	44.8	39.4	42.7
May	56.2	52.0	52.0	50.0	50.2	53.8
June	62.7	59.7	58.8	62.0	62.0	63.1
July	75.4	71.1	64.6	67.6	71.3	70.1
August	68.8	70.0	63.0	68.6	65.3	68.8
September	60.9	56.6	62.6	56.3	56.9	57.8

Growing Degree Units - Corn

Growing Degree Units (50-86)	2007	2008	2009	2010	2011	39 Year Average
May	272	207	265	210	161	260
June	452	346	344	393	358	417
July	672	606	458	536	631	584
August	533	579	461	547	555	537
September	353	340	421	278	347	316
Total	2282	2078	2006	2032	2052	2114

North Dakota hard red spring wheat variety descriptions, agronomic traits, 2011.

Variety	Agent or Origin[1]	Year Released	Height (in)	Straw Strength[2]	Days to Head[3]	Reaction to Disease[4]			
						Stem Rust	Leaf Rust	Leaf Spot[5]	Head Scab
Agawam[6]	WestBred	2008	30	7	58	NA	S	NA	MS
Albany	Trigen Seed	2008	32	5	62	NA	NA	NA	M
Alpine[7]	AgriPro	2008	34	6	62	NA	NA	MS	MS
Alsen	ND	2000	34	3	63	R	MR/MS	S	MR
Barlow	ND	2009	35	6	62	R	R	MR	M
Blade	WestBred/Sabre	2007	33	4	64	R	MR	MS	M
Breaker	WestBred	2007	34	3	64	R	MR	MS	M
Brennan	AgriPro	2009	30	4	62	R	MR	M	MS
Brick	SD	2009	35	5	60	R	R	NA	MR
Briggs	SD	2002	35	7	61	R/MR	R	MS	S
Brogan	WestBred	2009	32	3	64	MR	MR	MS	S
Carberry	Can.	2009	32	4	57	NA	NA	NA	NA
Choteau[6]	MT	2004	32	7	66	NA	NA	NA	NA
Cromwell	Thunder Seed	2007	33	5	67	NA	MR	MR	S
Dapps	ND	2003	39	5	59	R	R	M	S
Edge	WestBred/Sabre	2008	33	4	62	NA	NA	NA	MS
Faller	ND	2007	35	5	65	R	R	MR	M
Freyr	AgriPro	2004	34	6	64	R	MR/MS	MS	MR
Glenn	ND	2005	37	4	61	R	R	M	MR
Hat Trick	Trigen Seed	2007	34	5	61	R	MR	M	MS
Howard	ND	2006	36	7	63	R	R	M	M
Jenna	AgriPro	2009	32	4	66	R	MR	M	M
Kelby	AgriPro	2006	30	4	62	MR	R	M	M
Kuntz	AgriPro	2007	31	4	65	R	MR	MS	M
Mott[6]	ND	2009	36	3	66	MR	MS	MS	MS
Muchmore	Can.	2009	32	4	57	NA	NA	NA	NA
ND 901CL PLUS[8]	ND	2010	36	4	60	R/MR	MR/R	NA	M[10]
Pivot	WestBred	2010	27	3	67	MS	MR	MR	S
Prosper	**NDSU**	**2011**	**35**	**5**	**65**	**R**	**MR**	**M**	**M**
RB07	MN	2007	32	6	62	R	R	MS	MR
Reeder	ND	1999	35	3	63	R	MS	S	S
Rollag	MN	2011	35	5	63	R	MR	MR	MR
Sabin	MN	2009	33	6	65	R	MR	NA	M
Samson	WestBred	2007	31	2	63	R	MR/MS	MR/MS	S
Select	SD	2010	35	6	60	R/MR	R/MR	R/MR	MR
Steele-ND	ND	2004	35	7	63	R	R	MS	M
SY Soren	**Syngenta/AgriPro**	**2011**	**30**	**NA**	**63**	**R**	**MR**	**NA**	**M**
SY Tyra[6]	**Syngenta/AgriPro**	**2011**	**30**	**NA**	**62**	**R**	**MR**	**NA**	**S**
SY605 CL[8]	AgriPro	2009	34	7	62	R/MR	S	MS	S
Tom	MN	2008	34	6	64	R	R	NA	M
Traverse	SD	2006	37	6	60	R	MR	NA	M
Vantage	WestBred	2007	32	2	67	R	MR/MS	MS	MS
Velva	**NDSU**	**2012**	**35**		**63**				
WB Digger	WestBred	2009	34	6	63	MR	MR/MS	NA	MS
WB Mayville	**Monsanto/WB**	**2011**	**30**	**6**	**63**	**R**	**MR**	**MS**	**S**

[1] Refers to agent or developer: MN = University of Minnesota; MT = Montana State University; ND = North Dakota State University; SD = South Dakota State University; Can. = varieties developed in Canada. **Bold** varieties are those recently released so data is limited and rating values may change. NA indicates insufficient information is available to make an accurate assessment.

[2]Straw Strength = 1-9 scale with 1 the strongest and 9 the weakest. These values are based on recent data and may change as more data become available.

[3]Days to Head = the number of days from planting to head emergence from the boot averaged over several locations in 2010 and 2011.

[4] R = resistant; MR = moderately resistant; M = intermediate; MS = moderately susceptible; S = susceptible; VS = very susceptible.

[5]Leaf spot refers to the leaf fungal diseases such as tan spot and septoria. It does not include bacterial leaf streak.

[6]Solid stemmed or semisolid stem, imparting resistance to sawfly.

[7]Hard white wheat.

[8]CL = refers to a Clearfield variety, with tolerance to Beyond™ family of herbicide.

2011 Hard Red Spring Wheat Variety Trial at Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	----- Grain Yield -----			Average Yield	
					2009	2010	2011	2 yr	3 yr
	*	inches	lbs/bu	%	---------- Bushels per acre ----------				
Sabin	64	32	57.9	15.8	44.2	92.7	47.5	70.1	61.5
Reeder	64	33	55.9	15.7	45.3	86.1	49.4	67.8	60.3
Tom	64	35	56.9	15.6	41.7	81.2	44.7	63.0	55.9
Velva	66	33	55.8	15.3	41.1	77.4	49.0	63.2	55.8
Jenna	67	33	56.5	15.5	45.0	73.4	48.9	61.2	55.8
Blade	66	33	57.3	15.8	47.6	77.0	40.5	58.8	55.0
SY605CL	62	35	55.5	15.8	42.2	70.2	51.7	61.0	54.7
Brennan	64	31	57.1	15.5	37.6	74.7	49.9	62.3	54.1
Howard	64	35	55.4	15.7	41.8	72.2	46.1	59.2	53.4
Brick	62	36	59.0	15.4	30.4	80.8	47.7	64.2	53.0
Brogan	65	32	55.8	15.9	41.3	72.7	44.6	58.6	52.9
Breaker	65	33	57.8	15.9	37.6	76.3	44.2	60.2	52.7
Prosper	67	33	55.7	15.8	38.3	78.2	40.0	59.1	52.2
Steele-ND	65	33	55.5	16.1	39.2	78.9	38.6	58.8	52.2
Kuntz	65	33	54.3	15.1	33.5	83.5	39.4	61.4	52.1
ND901CL	66	36	56.3	16.5	40.3	76.5	38.9	57.7	51.9
Samson	64	30	56.3	15.2	37.6	64.0	53.2	58.6	51.6
Barlow	64	35	56.7	16.0	37.2	68.9	45.5	57.2	50.5
Kelby	63	31	57.3	15.9	33.7	67.2	49.9	58.6	50.3
Vantage	68	32	60.3	17.3	44.1	67.4	37.8	52.6	49.8
Mott	68	35	58.0	16.6	39.0	70.0	39.3	54.6	49.4
Faller	66	33	55.9	15.8	36.5	68.8	38.0	53.4	47.8
Alsen	65	31	55.4	16.6	31.9	78.3	32.1	55.2	47.4
RB07	64	31	55.2	16.4	42.4	63.6	35.8	49.7	47.3
Fryer	66	35	54.8	15.8	35.6	69.6	35.8	52.7	47.0
Briggs	62	35	55.3	15.8	36.5	58.4	43.3	50.8	46.1
Choteau	66	30	51.4	16.4	31.1	75.6	27.9	51.8	44.9
Glenn	63	35	59.2	16.1	31.5	62.5	39.5	51.0	44.5
Edge	64	30	55.8	15.8		76.9	48.5	62.7	
Select	62	35	55.5	16.0		74.9	44.7	59.8	
WB Digger	64	34	52.0	15.6		80.3	38.6	59.4	
SY Soren	63	30	55.4	16.0			48.8		
WB Mayville	63	30	51.6	16.0			41.6		
SY Tyra	65	30	52.7	15.1			39.0		
O'Neal	67	33	53.1	15.9			36.0		
Rollag	64	30	56.5	16.3			35.2		
WB Gunnison	63	32	53.2	15.3			30.3		
Trial Mean	65	33	55.8	15.8	38.1	75.4	42.1	--	--
C.V. %	1.0	4.7	1.4	1.6	16.4	6.6	6.6	--	--
LSD 5%	1	2	1.3	0.4	8.7	7.0	4.5	--	--
LSD 1%	1	3	1.7	0.5	11.5	9.1	5.9	--	--

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

Planting Date: May 2 Harvest Date: August 15
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2008 & 2009 = field pea, 2010 = HRSW.
Note: The 2009 trial sustained moderate hail damage. The 2011 trail sustained heat stress and moderate infections of bacterial leaf blight and barley yellow dwarf causing lower test weights and grain yields.

2011 Hard Red Spring Wheat - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
Alsen	62	16,153	30	56.0	16.9	70.6	52.8	54.3	269.60	53.5	59.2
Barlow	61	15,105	32	56.9	16.5	69.4	59.2	60.7	323.55	59.9	63.1
Blade	63	15,990	29	58.3	16.3	77.8	60.0	57.9	302.18	58.9	65.2
Breaker	63	15,422	30	58.4	16.0	78.7	55.3	60.0	318.68	57.6	64.7
Brennan	62	16,444	26	56.3	16.4	74.8	59.4	55.7	280.91	57.6	63.3
Brick	60	17,031	32	56.9	15.6	63.1	49.0	54.9	274.02	51.9	55.7
Brogan	63	18,185	28	54.8	16.3	74.6	56.8	56.0	277.13	56.4	62.5
Choteau	63	18,725	29	49.4	16.3	78.5	60.1	49.5	211.29	54.8	62.7
Edge	62	17,029	30	54.0	16.5	--	57.1	55.1	267.41	56.1	--
Faller	63	16,472	29	51.5	15.9	85.3	50.2	48.6	205.13	49.4	61.4
Freyr	63	17,086	29	56.6	15.6	72.5	58.0	52.8	255.45	55.4	61.1
Glenn	60	15,177	32	58.4	16.8	61.2	47.6	60.7	326.95	54.1	56.5
Howard	62	16,610	32	53.4	16.5	77.3	57.0	53.0	247.79	55.0	62.4
Jenna	64	14,718	28	56.2	16.3	81.1	60.5	60.6	320.98	60.5	67.4
Kelby	62	16,769	26	56.4	16.6	73.7	55.8	54.0	267.94	54.9	61.2
Mott	64	17,742	28	56.4	16.4	78.7	41.0	52.8	256.89	46.9	57.5
ND901CL	62	16,950	31	54.9	16.9	66.0	46.7	49.6	227.97	48.1	54.1
Power Play	62	17,281	29	54.0	16.4	--	--	55.0	264.65	--	--
Prosper	63	16,784	30	54.5	15.9	80.4	51.4	55.8	273.97	53.6	62.5
RB07	61	17,570	28	54.5	15.9	78.2	57.4	51.3	237.66	54.3	62.3
Sabin	62	16,920	29	56.0	16.4	80.0	61.3	56.4	285.81	58.9	65.9
Samson	63	17,433	28	53.8	15.7	82.7	51.8	62.3	321.75	57.1	65.6
Select	60	17,269	32	56.1	15.4	65.0	52.8	57.0	288.00	54.9	58.3
Steele-ND	62	15,619	28	54.4	16.4	75.3	58.1	50.3	230.30	54.2	61.2
Sy Soren	62	17,591	26	56.0	16.4	--	--	54.5	270.25	--	--
Sy Tyra	63	19,586	27	50.2	15.6	--	--	50.8	222.81	--	--
Tom	62	14,030	30	58.1	15.9	76.8	60.4	56.0	285.44	58.2	64.4
Vantage	68	18,315	28	56.4	17.7	72.5	52.7	47.4	214.50	50.1	57.5
Velva	63	16,219	28	52.8	15.9	85.3	47.9	55.7	265.45	51.8	63.0
WB-Digger	62	16,305	27	53.2	15.8	--	60.5	54.5	256.41	57.5	--
WB-Gunnison	63	18,742	26	48.0	16.0	--	--	37.9	119.70	--	--
WB-Mayville	62	16,967	26	49.7	16.9	--	--	54.6	253.20	--	--
Alpine	63	17,014	29	55.6	15.3	--	--	55.1	269.34	--	--
Trial Mean	62	16,782	29	54.6	16.2	74.9	54.4	54.1	263.43	--	--
CV %	1.1	4.3	7.8	2.0	1.4	7.5	5.3	8.0	--	--	--
LSD 0.05	1	1,019	3	1.5	0.4	7.8	4.1	6.1	--	--	--

Planting Date: May 4, 2011 Harvest Date: August 17, 2011

Previous Crop: Field Pea Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2011 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 21. The price paid on this date was $8.19/bu, for a grain protein concentration of 14%. An additional $.01/bu was paid for each additional 0.2% increase in grain protein up to 17% above which an additional premium was not paid. Grain was discounted $0.02/bu for each 0.2% reduction in grain protein from 14% to 11%,below which no additional discount was not assigned. Returns factored in discounts for grain with a test weight <58 lb/bu [-$0.02/bu for 0.5 lb/bu between 58 and 57 lb/bu; -$0.03/bu for 0.5 lb/bu between 57 and 55 lb/bu; -$0.04/bu for 0.5 lb/bu between 55 and 54 lb/bu; and -$0.05/bu for 0.5 lb/bu between 54 and 52 lb/bu]. Returns also deduct $177.77, the sum of all listed costs from the December 2010 Farm Management Planning Guide Projected 2011 Crop Budgets South West North Dakota for spring wheat.

2011 Hard Red Spring Wheat Variety Trial at Scranton

Cooperator: Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Conventional Varieties								
Barlow	33	56.7	16.2	74.6	54.4	34.5	44.4	54.5
Faller	31	54.8	16.3	62.0	59.9	28.0	44.0	50.0
Reeder	31	54.8	16.1	52.4	64.3	29.2	46.8	48.6
Steele-ND	33	56.5	16.6	58.2	55.6	30.1	42.8	48.0
Glenn	31	60.8	16.8	47.1	60.5	27.8	44.2	45.1
RB07	28	57.7	16.4		62.6	33.0	47.8	
Velva	32	54.9	16.1		58.7	31.5	45.1	
Sabin	29	58.3	16.6			35.5		
Prosper	33	55.0	16.2			28.9		
Select	31	58.2	15.4			29.9		
Sawfly Tolerant Varieties								
Mott	32	58.2	16.5	64.3	61.3	34.3	47.8	53.3
Vida	31	55.0	15.5	54.9	66.4	28.8	47.6	50.0
Choteau	29	55.1	16.1	53.0	66.8	21.2	44.0	47.0
AC Lillian	33	53.0	17.6	47.3	61.5	22.3	41.9	43.7
SY Tyra	27	55.1	15.5			29.4		
WB-Gunnison	30	55.5	15.5			22.6		
O'Neal	31	54.1	16.4			22.4		
Blends*								
Blend 1	32	56.6	16.7			28.3		
Blend 2	32	56.3	16.3			28.4		
Blend 3	28	54.3	16.2			24.5		
Blend 4	33	56.4	15.9			31.0		
Trial Mean	31	56.0	16.2	60.9	58.2	28.7	--	--
C.V. %	4.5	1.5	1.3	11.2	5.2	5.2	--	--
LSD 5%	2	1.2	0.3	9.8	4.4	2.1	--	--
LSD 1%	3	1.5	0.4	13.3	5.9	2.8	--	--

*1 = Choteau + Steele-ND, 2 = Mott + Steele-ND, 3 = Mott + O'Neal, 4 = Mott + Vida.

Planting Date: May 5
Harvest Date: August 23
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and moderate infections of bacterial leaf streak and barley yellow dwarf causing lower test weights and grain yields.

2011 Hard Red Spring Wheat Variety Trial at Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Conventional Varieties								
Faller	31	57.0	16.4	70.6	48.0	34.3	41.2	51.0
Steele-ND	33	58.5	17.2	65.0	49.2	30.8	40.0	48.3
Barlow	33	58.0	17.0	61.6	47.3	30.4	38.8	46.4
Reeder	31	56.2	16.5	55.0	42.9	37.2	40.0	45.0
Glenn	31	59.5	17.2	60.5	48.3	27.0	37.6	45.3
Velva	33	55.2	16.6		49.3	34.9	42.1	
RB07	28	58.1	17.4		47.6	35.2	41.4	
Select	31	59.0	16.6			35.4		
Sabin	29	56.9	17.0			32.7		
Prosper	33	57.9	16.6			30.0		
Sawfly Tolerant Varieties								
Mott	32	58.6	16.5	58.1	51.5	33.8	42.6	47.8
Vida	32	55.4	16.3	58.4	49.2	30.7	40.0	46.1
Choteau	29	55.4	16.7	52.7	43.4	26.0	34.7	40.7
AC Lillian	34	53.7	18.1	49.1	39.9	21.8	30.8	36.9
SY Tyra	27	58.5	16.3			33.8		
WB Gunnison	30	56.8	16.1			31.7		
O'Neal	31	55.2	16.4			25.4		
Blends*								
Blend 1	32	58.1	17.0			31.7		
Blend 2	32	57.8	17.2			32.6		
Blend 3	31	55.0	16.4			24.0		
Blend 4	33	57.2	16.6			31.5		
Trial Mean	31	57.1	16.7	65.1	8.2	31.2	--	--
C.V. %	4.3	1.3	1.3	4.9	6.0	5.4	--	--
LSD 5%	2	1.0	0.3	4.4	4.0	2.4	--	--
LSD 1%	3	1.3	0.4	5.8	4.8	3.1	--	--

*1 = Choteau + Steele-ND, 2 = Mott + Steele-ND, 3 = Mott + O'Neal, 4 = Mott + Vida.

Planting Date: May 5
Harvest Date: August 23
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and moderate infections of bacterial leaf streak and barley yellow dwarf causing lower test weights and grain yields.

2011 Hard Red Spring Wheat Variety Trial at New Leipzig

Cooperator: Jan Sprecher, New Leipzig

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2008	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Glenn	35	57.7	17.2	17.5	43.3	13.5	28.4	24.8
Steele-ND	34	53.2	16.8	17.7	41.3	15.2	28.2	24.7
Faller	34	52.6	16.6	15.3	43.3	15.6	29.4	24.7
Mott	37	55.6	17.2		46.3	23.6	35.0	
RB07	30	53.8	17.0		50.4	19.7	35.0	
Velva	33	52.5	16.2		47.8	17.1	32.4	
Barlow	35	52.1	17.0		44.7	15.6	30.2	
Sabin	33	54.3	17.3			23.2		
Select	35	55.5	16.3			22.2		
Prosper	32	53.6	16.7			15.7		
SY Tyra	27	51.9	15.6			14.2		
WB Gunnison	32	50.7	16.0			10.3		
Trial Mean	33	53.6	16.7	18.5	45.0	17.1	--	--
C.V. %	2.7	1.4	1.1	7.4	6.1	9.0	--	--
LSD 5%	1	1.1	0.2	2.0	3.9	2.2	--	--
LSD 1%	2	1.5	0.3	NS	5.3	3.0	--	--

NS = no statistical difference between varieties.

Planting Date: May 5 Harvest Date: August 22
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and moderate infections of bacterial leaf streak and barley yellow dwarf causing lower test weights and grain yields.

2011 Hard Red Spring Wheat Variety Trial at Selfridge

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Barlow	35	51.9	16.9	50.9	43.3	33.3	38.3	42.5
Faller	36	50.4	16.4	52.5	41.1	32.7	36.9	42.1
Mott	37	49.7	17.4	50.9	45.3	26.7	36.0	41.0
Steele-ND	33	50.4	16.7	52.4	38.2	30.4	34.3	40.3
Glenn	36	53.6	17.1	45.7	42.4	31.6	37.0	39.9
Velva	35	49.0	16.6		44.8	30.6	37.7	
RB07	36	50.5	17.0		42.8	30.3	36.6	
Sabin	33	51.9	17.2			36.4		
Select	35	52.9	16.1			34.5		
Prosper	37	49.7	16.7			33.7		
SY Tyra	29	46.9	15.6			26.5		
WB Gunnison	30	47.3	16.2			16.2		
Trial Mean	35	50.3	16.7	50.0	43.0	30.2	--	--
C.V. %	4.0	1.8	1.3	9.3	6.1	6.4	--	--
LSD 5%	2	1.6	0.4	6.7	3.8	3.3	--	--
LSD 1%	3	2.1	0.5	9.0	5.1	4.5	--	--

Planting Date: May 6 Harvest Date: August 22
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2008 = sunflower, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and moderate infections of bacterial leaf streak and barley yellow dwarf causing lower test weights and grain yields.

2011 Hannover Spring Wheat - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 Year	Average Yield 3 Year
		in	lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Barlow	20,020	32	55.9	15.8	54.7	38.1	29.4	33.7	40.7
Faller	18,886	31	56.3	15.1	54.1	41.0	27.9	34.4	41.0
Glenn	20,596	32	58.3	15.8	47.6	35.8	27.6	31.7	37.0
Mott	20,838	34	56.0	15.6	63.9	42.2	30.2	36.2	45.4
Prosper	18,860	31	55.9	15.2	--	--	27.9	--	--
RB07	23,407	32	54.1	16.3	--	--	22.0	--	--
Sabin	20,232	32	55.9	15.7	--	--	32.7	--	--
Steele-ND	20,699	32	56.3	16.0	43.7	36.6	23.8	30.2	34.7
Velva	20,310	32	52.6	15.3	--	--	32.2	--	--
Trial Mean	20,428	32	55.7	15.6	51.2	38.3	28.2	--	--
CV %	3.3	2.4	1.4	1.4	6.5	5.6	6.5	--	--
LSD 0.05	985	NS	1.2	0.5	4.8	3.1	2.7	--	--

Planting Date: June 7, 2011
Previous Crop: Lentil

Harvest Date: September 14, 2011
Seeding Rate: 1.2 million live seeds/ac

2011 Glen Ullin Spring Wheat - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 Year	Average Yield 3 Year
		in	lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Barlow	18,506	29	58.3	15.4	73.2	49.5	30.7	40.1	51.1
Faller	17,371	31	56.4	15.0	80.0	44.4	33.3	38.8	52.6
Glenn	19,002	31	59.0	15.5	65.9	44.3	27.1	35.7	45.8
Mott	18,500	31	58.4	15.4	82.4	47.9	37.1	42.5	55.8
Prosper	17,109	30	56.9	14.9	--	--	32.0	--	--
RB07	20,710	29	55.8	15.9	--	--	27.8	--	--
Sabin	18,902	29	57.8	15.1	--	--	35.0	--	--
Steele-ND	18,692	29	58.1	15.2	68.3	41.7	28.8	35.3	46.3
Velva	18,259	30	54.9	14.9	--	--	33.6	--	--
Trial Mean	18,561	30	57.3	15.3	51.2	38.3	31.7	--	--
CV %	3.8	2.2	1.1	0.9	6.5	5.6	6.3	--	--
LSD 0.05	1,019	1	0.9	0.3	4.8	3.1	2.9	--	--

Planting Date: June 7, 2011
Previous Crop: Wheat

Harvest Date: September 14, 2011
Seeding Rate: 1.2 million live seeds/ac

SDSU Hard Red Spring Wheat Variety Trial – Harding County (Ralph), 2009 - 2011.

Variety	Height	Lodging	Test Wt.	Protein	Yield	Bu/A
	Inches	0-9*	Lb/Bu	%	2011	3-Year
ALBANY	31	0	56.4	14.8	**33.2**	37.8
BARLOW	34	0	52.8	15.7	27.1	36.8
BREAKER	32	0	48.2	16.5	22.0	35.5
BRICK	35	0	50.6	15.5	24.6	33.2
BRIGGS	34	0	43.9	16.5	25.0	36.3
BROGAN	32	0	53.0	16.2	26.3	29.8
CHRIS	36	0		17.1	9.5	26.6
EDGE	32	0	52.8	15.5	28.4	.
FALLER	32	0	50.0	15.7	21.9	32.5
GLENN	36	0	45.9	16.1	21.5	32.8
GRANGER	35	0	52.2	16.1	23.4	36.8
HOWARD	34	0	50.5	16.7	20.2	31.5
MOTT	32	0	54.3	16.9	26.2	35.1
PROSPER	32	0	50.3	15.9	21.5	.
RB07	32	0	50.7	15.8	25.1	36.5
REEDER	32	0	50.6	15.0	28.2	37.1
ROLLAG	31	0	52.3	15.9	21.1	.
SABIN	31	0	54.0	15.3	29.0	**41.5**
SAMSON	30	0	55.0	14.9	**34.8**	31.4
SELECT	35	0	50.3	15.2	28.2	38.1
STEELE-ND	33	0	49.0	16.5	20.4	32.7
SY SOREN	28	0	54.4	16.1	28.2	.
TRAVERSE	36	0	52.6	14.9	30.1	**39.0**
VANTAGE	30	0	56.2	17.8	26.5	32.0
WB-DIGGER	31	0	50.0	15.6	21.4	.
WB-MAYVILLE	28	0	52.1	16.3	21.2	.
VELVA	30	0	49.8	15.6	29.2	.
Average	33	0.0	51.1	15.7	25.1	34.7
LSD (P=.05)	2	0.0	3.2	.	2.9	2.6
CV	4.2	0.0	4.4	.	8.2	9.4

* 0=No lodging, 9 = 100% lodged.

Planted: May 3, 2011 Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)
Harvested: August 18, 2011 Additional Nitrogen: 60 Lb/A
Previous crop: Conventional Fallow.

2011 Hard Red Spring Wheat Varieties in the West River Region - Combined Means

Variety	Days to Head*	Plant Height	Seeds / Pound	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	%	---------- Bushels per acre ----------				
Mott	66	33	19,027	56.1	16.5	58.1	48.4	33.8	41.1	46.8
Barlow	62	33	17,877	55.5	16.3	56.6	49.2	34.1	41.6	46.6
Faller	64	32	17,576	53.9	15.9	59.6	46.8	31.1	39.0	45.8
Steele-ND	64	32	18,337	54.7	16.4	53.1	47.7	29.8	38.8	43.5
Glenn	62	33	18,258	56.9	16.5	48.9	45.8	30.7	38.2	41.8
RB07	62	30	20,562	54.5	16.5		50.4	31.1	40.8	
Sabin	63	31	18,685	55.9	16.3			36.5		
Velva	64	32	18,263	53.1	15.8			34.9		
Prosper	65	32	17,584	54.4	16.0			31.7		
# of Locations	2	9	3	9	9	10	11	9	20	30

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

Locations: 2011 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Selfridge, Hannover, Glen Ullin & Ralph, SD.

2010 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Selfridge, Mandan, Hannover, Glen Ullin, Ralph, SD & Bison, SD.

2009 = Hettinger, Dickinson, Scranton, Regent, Selfridge, Mandan, Hannover, Glen Ullin, Ralph, SD & Bison, SD.

WHEAT STEM SAWFLY

Sawfly damage occurs annually in North Dakota. This insect primarily affects wheat in the central and western areas of the state. The larvae tunnel in the stem, reducing grain yield by 10% to 25% or higher yield losses when infestations are severe. Additional loss occurs when infested stems lodge, rendering the grain unharvestable. Larvae overwinter in the wheat stubble making infested sites the source of next year's problems.

Managing Wheat Stem Sawfly:

Chemical control. Insecticides have been found to be ineffective in controlling wheat stem sawfly.

Harvesting. Swath the most heavily infested fields at 30% to 35% moisture before significant lodging occurs. This requires field surveys to determine infestation levels. Infested stems have a reddish-brown spot below the second or third node. Examine 50 consecutive stems in a drill row from at least two sites (one near the field margin, another near the center). Determine the percent of stems infested at each site. **If more than 15% of stems are infested by sawflies, producers should swath the wheat crop.** Producers should swath sawfly-infested wheat as soon as kernel moisture drops below 40% to save infested stems before they lodge. If producers decide to swath grain, use a high swathing height to conserve the parasitoids that attack wheat stem sawfly. Research from Montana State University has shown that taller residue (at least the lower ⅓ of the plant)is better for conserving the parasitoids. If 10 to 15% of the crop was cut by sawfly during the current field season, a solid-stemmed variety of wheat is recommended for the upcoming field season.

Fall tillage. A shallow fall tillage to dislodge stubble and leave it on the soil surface can result in 90% mortality of overwintering larvae. Tillage can be limited to areas where surveys indicated infestations within the field or strip.

Crop rotation. Non-host crops are oats, flax, sunflower, legumes, and to a lesser extent barley, rye, durum or winter wheat.

Resistant wheat varieties. Resistant wheats have a solid-stem trait which is unsuitable for sawfly development. Please note the 2009 release of the NDAES solid-stem hard red spring wheat release named 'Mott' which has good resistance to wheat stem sawfly and high yield.

Wheat Stem Sawfly Resistant Wheat Variety Descriptions

Variety	Type[1]	Height	Origin[2]	Year Released	Straw Strength	Maturity	Test Weight	Protein	Yield[3]
Older varieties that were released prior to 1990 (may be difficult to find):									
Cutless	HRS	semidwarf	NDAES	1986	med	med early	high	avg	med
Glenman	HRS	semidwarf	MAES	1985	strong	med	avg	low	high
Fortuna	HRS	standard	NDAES & MAES	1966	med	med	high	avg	high
Lew*	HRS	standard	MAES & ARS	1976	med	med	high	low	high
Leader	HRS	standard	AC	1981	med	med	high	high	med
Rambo	HRS	semidwarf	WPB	1986	very strong	med early	high	avg	high
Tioga	HRS	standard	NDAES & ARS	1974	med	med	high	avg	low
Newer varieties that were released after 1990:									
AC Abbey	HRS	standard	AC	1998	med	med	high	high	high
AC Eatonia	HRS	standard	AC	1996	med	med	high	high	high
AC Lilian	HRS	standard	AC	2006	med	med	high	high	high
Agawam	HWS	semidwarf	WPB	2005	strong	med	high	avg	high
Choteau	HRS	semidwarf	MAES	2003	strong	med	avg	avg	high
Ernest	HRS	standard	NDAES	1995	med	med	high	high	high
Explorer*	HWS	semidwarf	MAES	2002	strong	med	high	high	high
Genou	HRW	standard	MAES	2004	strong	med	high	high	high
Mott	HRS	standard	NDAES	2009	strong	med-late	high	high	high
Rampart	HRW	standard	MAES	1996	med	med	high	high	high
Vanguard	HRW	standard	MAES	1995	med	med	avg	high	high

*indicates semi-solid lines that provide partially resistance.

[1]HRS = Hard Red Spring Wheat, HRW = Hard Red Winter Wheat, HWS = Hard White Spring Wheat..

[2]AC = Agriculture Canada, ARS = Agriculture Research Service (USDA), MAES = Montana Agricultural Experiment Station, NDAES = North Dakota Agricultural Experiment Station, WPB = Western Plant Breeders, Inc.

[3]Yields are relative to sawfly resistant varieties.

2011 Sawfly Variety Trial at Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	Grain Yield 2008	Grain Yield 2010	Grain Yield 2011	Average Yield 2 yr	Average Yield 3 yr
	**	inches	lbs/bu	%	Bushels per acre				
Sawfly Tolerant Varieties									
Vida	62	29	55.6	15.6	35.7	60.6	21.5	41.0	39.3
Mott	65	31	58.1	17.0	26.9	62.2	22.9	42.6	37.3
Choteau	64	30	55.8	16.6	20.9	60.7	14.9	37.8	32.2
AC Lillian	66	32	55.9	17.8	25.4	50.7	18.2	34.4	31.4
SY Tyra	62	25	54.6	15.4			19.6		
O'Neal	64	28	53.6	16.3			16.4		
WB Gunnison	62	27	54.0	15.8			13.0		
AP04S0514-1-12	64	28	55.8	15.8			21.9		
Blends*									
Blend 1	63	31	54.7	16.6			22.1		
Blend 2	62	31	55.2	16.6			21.9		
Blend 3	66	28	53.8	16.2			16.7		
Blend 4	66	30	56.3	15.8			21.2		
Conventional Varieties									
Reeder	62	30	55.3	16.5	25.3	64.4	25.3	44.8	38.3
Steele-ND	61	32	54.4	16.6	24.2	65.0	22.4	43.7	37.2
Glenn	60	31	59.0	16.8	25.6	56.3	22.7	39.5	34.9
Durum Wheat									
Grenora	66	32	53.3	16.3	27.7	65.8	19.7	42.8	37.7
Mountrail	66	33	53.7	16.4	23.9	63.9	22.1	43.0	36.6
Alkabo	66	32	55.2	16.1	23.2	61.3	20.0	40.6	34.8
Divide	66	33	54.7	16.5	18.9	60.0	21.5	40.8	33.5
Trial Mean	64	30	55.2	16.3	24.7	59.6	20.2	--	--
C.V. %	1.6	3.8	1.4	0.8	10.7	4.1	9.0	--	--
LSD 5%	1	2	1.1	0.2	4.4	3.6	2.6	--	--
LSD 1%	2	2	1.5	0.2	5.9	4.6	3.4	--	--

*1 = Choteau + Steele-ND, 2 = Mott + Steele-ND, 3 = Mott + O'Neal, 4 = Mott + Vida.

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

Planting Date: May 9

Harvest Date: August 23

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).

Previous Crop: 2007 = durum, 2009 = canola, 2010 = HRSW.

Note: The 2011 trial sustained moderate infections of barley yellow dwarf and bacterial leaf streak causing low test weights and grain yields. There was a very low incidance of wheat stem sawfly. The 2008 trial sustained severe late season heat and moisture stress.

North Dakota durum wheat variety descriptions, agronomic traits, 2011.

Variety	Agent or Origin[1]	Year Released	Average Plant Height (in)	Straw Strength[2]	Days to Heading[3]	Reaction to Disease[4]			
						Stem Rust	Leaf Rust	Foliar Disease	Head Scab
AC Commander	Can.	2002	32	5	68	R	R	MS	NA
AC Napoleon	Can.	2001	40	5	68	R	R	S	NA
AC Navigator	Can.	1999	32	5	66	R	R	M	S
Alkabo	ND	2005	36	2	67	R	R	M	MS
Alzada[5]	WB	2004	30	6	63	R	R	S	VS
Belzer	ND	1997	39	5	66	R	R	M	MR
Ben	ND	1996	39	3	67	R	R	MR	S*
CDC Verona	Can.	2010	38	4	69	R	R	MR	S
DG Max	DGP	2008	38	5	66	R	MR	MR	MS
DG Star	DGP	2007	37	4	64	R	R	M	NA
Dilse	ND	2002	37	5	68	R	R	M	MS
Divide	ND	2005	38	5	68	R	R	M	MR
Grande D'Oro	WB/DGP	2005	37	4	68	R	R	M	NA
Grenora	ND	2005	35	5	67	R	R	M	MS
Kyle	Can.	1984	39	7	68	R	MR	M	NA
Lebsock	ND	1999	37	3	67	R	R	M	MS
Maier	ND	1998	37	5	67	R	R	M	S*
Mountrail	ND	1998	37	5	68	R	R	M	S*
Pierce	ND	2001	38	5	67	R	R	MS	S
Plaza	ND	1999	29	7	68	R	R	M	MS
Rugby	ND	1973	38	5	64	R	R	MR	S*
Strongfield	Can.	2004	37	6	68	R	R	MS	S
Tioga	ND	2010	39	4	68	R	R	M	MS
Wales	WB	2008	36	3	67	R	R	M	S*
WB-Belfield	WB	2011	30	2	62	R	R	S	S
Westhope	WB	2009	36	3	67	R	R	MS	S

[1]Refers to agent or developer: Can. = Agriculture Canada, WB = Westbred, ND = North Dakota State University, DGP = Dakota Growers Pasta.
[2]Straw Strength = 1-9 scale with 1 the strongest and 9 the weakest. Based on recent data. These values may change as more data become available.
[3]Days to Head = the number of days from planting to head emergence from the boot. Averaged from several locations in 2010,
[4]R = resistant; MR = moderately resistant; M = intermediate; MS = moderately susceptible; S = susceptible; VS = very susceptible; Foliar Disease = reaction to tan spot and septoria leaf spot complex.
[5]Alzada has a disease-resistance package that is best suited for western North Dakota (drier growing conditions).
* Indicates yields and/or quality often have been higher than would be expected based on visual symptoms. NA = Not adequately tested.

2011 Durum Variety Trial at Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	%	---------- Bushels per acre ----------				
Wales	66	38	55.8	15.2	48.1	85.4	39.0	62.2	57.5
Westhope	66	38	55.7	14.8	49.6	79.8	43.1	61.4	57.5
Maier	67	34	54.5	16.0	52.3	80.4	34.4	57.4	55.7
AC Commander	67	29	54.0	15.1	51.7	81.7	33.5	57.6	55.6
DG Max	66	39	56.8	15.7	50.6	77.2	39.0	58.1	55.6
Mountrail	67	38	54.4	15.0	50.7	81.4	34.5	58.0	55.5
Dilse	67	37	53.3	16.4	49.8	79.3	34.7	57.0	54.6
Grande D'oro	66	38	56.0	15.0	50.0	77.0	36.2	56.6	54.4
Lebsock	66	37	55.9	15.0	51.1	77.4	33.7	55.6	54.1
Alkabo	67	37	55.5	14.8	52.0	75.5	34.8	55.2	54.1
Ben	66	37	55.9	15.2	48.0	76.2	37.2	56.7	53.8
Grenora	66	35	53.3	15.2	48.4	77.6	34.6	56.1	53.5
Pierce	67	39	56.7	15.0	46.7	75.6	35.9	55.8	52.7
AC Navigator	68	30	54.3	15.2	52.6	77.9	26.4	52.2	52.3
Divide	67	38	55.2	15.7	46.9	77.5	30.5	54.0	51.6
DG Star	65	36	53.6	15.9	43.6	74.9	32.8	53.8	50.4
Strongfield	67	37	53.1	16.5	43.0	79.5	28.0	53.8	50.2
Tioga	68	38	54.3	16.0	47.7	74.8	28.1	51.4	50.2
Rugby	64	39	55.2	14.9	33.1	71.8	40.1	56.0	48.3
Alzada	64	32	51.8	15.5	39.4	74.6	28.9	51.8	47.6
CDC Verona	67	39	52.8	15.6		80.5	35.2	57.8	
WB Belfield	62	27	52.7	14.8			32.7		
Trial Mean	66	37	55.4	15.0	48.6	79.8	37.7	--	--
C.V. %	1.1	5.1	1.8	2.0	7.2	4.4	5.7	--	--
LSD 5%	1	3	1.4	0.4	4.9	4.9	3.0	--	--
LSD 1%	1	4	1.9	0.6	6.4	6.5	4.0	--	--

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

Planting Date: May 2
Harvest Date: August 18
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2008 & 2010 = field pea, 2009 = canola.
Note: The 2009 trial sustained moderate hail damage. The 2011 trial sustained heat stress and a moderate infection of barley yellow dwarf causing lower test weights and grain yields.

2011 Durum Variety Trial at Scranton

Cooperator: Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Grenora	33	53.8	15.8	68.3	54.0	31.9	43.0	51.4
Mountrail	33	55.4	15.8	63.6	51.1	33.5	42.3	49.4
Alkabo	34	56.8	15.7	62.4	49.9	31.4	40.6	47.9
Tioga	36	56.7	15.5	59.7	50.5	32.9	41.7	47.7
Divide	34	56.4	16.2	63.9	44.9	32.1	38.5	47.0
Maier	34	55.5	16.2			32.1		
Trial Mean	34	55.7	15.8	62.8	50.3	32.3	--	--
C.V. %	4.3	1.6	1.2	3.1	4.0	4.1	--	--
LSD 5%	2	1.4	0.3	2.9	3.0	NS	--	--
LSD 1%	NS	1.8	0.4	4.0	4.2	NS	--	--

NS = no statistical difference between varieties.

Planting Date: May 5
Harvest Date: August 23
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and a moderate infection of bacterial leaf streak causing lower test weights and grain yields.

2011 Durum Variety Trial at Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Grenora	30	54.2	15.2	66.1	48.7	25.6	37.2	46.8
Mountrail	31	55.2	14.7	64.5	47.6	26.3	37.0	46.1
Tioga	34	55.8	14.6	63.8	48.7	23.7	36.2	45.4
Alkabo	31	57.0	14.3	62.3	45.9	26.9	36.4	45.0
Divide	34	56.1	14.8	60.7	45.8	26.9	36.4	44.5
Maier	30	55.3	15.2			25.6		
Trial Mean	32	55.8	14.7	63.2	47.4	27.3	--	--
C.V. %	3.4	1.8	1.9	4.3	4.8	6.9	--	--
LSD 5%	2	1.5	0.4	NS	NS	2.8	--	--
LSD 1%	2	NS	0.6	NS	NS	3.8	--	--

NS = no statistical difference between varieties.

Planting Date: May 5
Harvest Date: August 23
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and a moderate infection of bacterial leaf streak causing lower test weights and grain yields.

2011 Hannover Durum - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 Year	Average Yield 3 Year
		in	lbs/bu	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Alkabo	15,459	36	56.8	62.1	48.4	25.5	36.9	45.3
Divide	15,127	38	54.8	60.9	44.1	30.8	37.5	45.3
Grenora	14,546	36	56.6	61.4	49.3	30.4	39.8	47.0
Tioga	14,007	40	55.0	66.1	46.1	34.6	40.3	48.9
Trial Mean	14,776	38	55.5	63.0	48.4	30.5	--	--
CV %	4.3	2.0	1.5	3.2	5.6	10.6	--	--
LSD 0.05	961	2	1.3	3.0	4.1	4.9	--	--

Planting Date: June 7, 2011
Harvest Date: September 14, 2011
Previous Crop: Lentil
Seeding Rate: 1.2 million live seeds/ac

2011 Glen Ullin Durum - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 Year	Average Yield 3 Year
		in	lbs/bu	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Alkabo	15,006	36	57.1	68.8	52.4	43.9	48.14	55.0
Divide	16,515	37	54.8	64.8	56.9	49.1	53.03	57.0
Grenora	14,671	33	57.1	69.5	57.2	44.8	51.00	57.2
Tioga	14,743	37	54.1	80.1	60.6	49.3	54.90	63.3
Trial Mean	15,107	36	55.5	71.7	56.9	47.1	--	--
CV %	7.6	2.3	1.8	10.0	7.1	8.9	--	--
LSD 0.05	NS	2	1.5	NS	NS	NS	--	--

Planting Date: June 7, 2011
Harvest Date: September 14, 2011
Seeding Rate: 1.2 million live seeds/ac
Previous crop: Wheat

SDSU Durum Wheat Variety Trial - Harding County (Ralph), 2010 - 2011.

Variety	Height	Lodging	Test Wt	Protein	Yield	Bu/Ac
	Inches	0-9*	Lb/Bu	%	2011	2-year
AC AVONLEA	33	0	48.2	16.6	25.1	37.6
ALKABO	33	0	52.9	14.4	**33.8**	36.1
DIVIDE	34	0	52.0	15.4	31.7	**42.8**
GRENORA	32	0	47.6	15.4	31.4	38.8
MOUNTRAIL	32	0	51.1	15.2	27.7	33.8
TIOGA	35	0	53.1	14.6	31.4	**41.8**
Average	33	0.0	50.8	15.2	40.2	38.5
LSD (P=.05)	1.3	0.0	2.1	.	1.8	**1.2**
CV	2.7	0.0	2.7	.	3.9	5.3

* 0 = no lodging, 9 = 100% lodged.

Planted: May 3, 2011 Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)

Harvested: August 18, 2011 Additional Nitrogen: 60 Lb/A

Previous crop: Conventional Fallow.

2011 Durum Varieties in the West River Region - Combined Means

Variety	Days to Head*	Plant Height	Seeds / Pound	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	%	---------- Bushels per acre ---			----------	
Mountrail	69	34	--	55.1	15.2	61.5	61.6	32.7	47.2	51.9
Grenora	68	33	14,608	53.8	15.4	60.7	55.6	33.1	44.4	49.8
Divide	69	36	15,821	54.9	15.5	59.6	53.1	33.5	43.3	48.7
Alkabo	68	34	15,232	56.0	14.8	57.5	51.6	32.7	42.2	47.3
Tioga	69	36	14,375	54.8	15.2		54.7	33.3	44.0	
Maier	68	34	--	54.0	15.8			33.1		
# of Locations	5	6	2	6	4	9	9	6	15	24

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

Locations: 2011 = Hettinger, Scranton, Regent, Hannover, Glen Ullin & Ralph, SD.
2009 & 2010 = Hettinger, Dickinson, Scranton, Regent, Mandan, Hannover, Glen Ullin, Ralph, SD & Bison, SD.

2011 North Dakota barley variety descriptions.

Variety	Use[1]	Origin[2]	Year Released	Awn Type[3]	Rachilla Hair Length[4]	Aleurone Color	Height	Straw Strength	Relative Maturity	Reaction to Disease[5]			
										Stem Rust	Spot-form Net Blotch	Spot Blotch	Net Blotch
Six-rowed													
Celebration	M/F	BARI	2008	S	S	White	M.short	Strg.	Med.	S	MS	MR/R	MS/MS
Drummond	M/F	ND	2000	S	L	White	M.short	V.strg.	Med.	S	MR	MR/R	MS/S
Innovation	MT	BARI	2009	S	L	White	M.short	Strg.	Med.	S	MS	MR/R	MS/S
Lacey	M/F	MN	1999	S	S	White	M.short	Strg.	Med.	S	MR	MR/R	MS/S
Legacy	M/F	BARI	2000	S	L	White	Med.	Strg.	M.late	S	MS	MR/R	MS/S
Quest[6]	M/F	MN	2010	S	L	White	M.short	V.strg.	Med.	S	MR	MR/R	MS/S
Rasmusson	M/F	MN	2008	S	S	White	M.short	Strg.	Med.	S	MS	MR/R	MS/S
Robust	M/F	MN	1983	S	S	White	Med.	M.strg.	Med.	S	MS/S	MR/R	MS/S
Stellar-ND	M/F	ND	2005	S	L	White	M.short	V.strg.	Med.	S	MS	MR/R	MS/S
Tradition	M/F	BARI	2003	S	L	White	M.short	V.strg.	Med.	S	MS	MR/R	MS/S
Two-rowed													
AC Metcalfe	M	Canada	1997	R	L	White	Med.	Med.	Late	S	MS	MS	MS
CDC Copeland	M	Canada	1999	R	L	White	Tall	Med.	Late	S	MS	MS	MR
Champion	F	WestBred	2007	NA[7]	L	White	Tall	NA	M.late	NA	NA	NA	NA
Conlon[8]	M/F	ND	1996	S	L	White	M.short	Med.	M.early	S	MR	MS	MR/R
Conrad	M	BARI	2007	R	L	White	Tall	M.weak	Late	S	MS	NA	NA
Eslick	F	MT	2003	R	L	White	Med.	M.weak	M.late	S	NA	MS	NA
Harrington[9]	F	Canada	1981	R	L	White	Med.	M.weak	Late	S	S	S	MS
Haxby	F	MT	2003	R	L	White	Med.	Med.	Med.	S	MS	MS	NA
Hockett	M/F	MT	2008	R	L	White	Med.	Med.	Med.	S	NA	NA	NA
Lilly	F	Germany	NA	R	L	White	Short	M.strg.	Late	S	MS/S	S	MR/R
Pinnacle	M/F	ND	2006	S	L	White	Med.	Strg.	M.late	S	S	MR	MS
Rawson	F	ND	2005	R	L	White	Med.	Med.	Med.	S	MS	MR	MS
Scarlett	M	Germany	1995	R	L	White	Short	Med.	Late	S	NA	S	MR
Sunshine	F	Germany	NA	R	L	White	Short	M.strg.	Late	S	S	S	MS
Specialty													
Enduro	SP	WestBred	2007	H	L	White	Med.	NA	M.late	NA	NA	NA	NA
Wanubet	SP	MT	1990	H	L	White	Med.	Weak	Late	S	NA	S	S

[1] M = malting; MT = Being tested in plant scale tests for malting and brewing quality; F = feed; SP = special uses (hulless).
[2] BARI = Busch Agricultural Resources Inc.; MN = University of Minnesota; MT = Montana State University; ND = North Dakota State University.
[3] R = rough; S = smooth; H = hulless.
[4] S = short; L = long.
[5] R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible; NA = not available.
[6] Moderately resistant to Fusarium head blight.
[7] NA = Not available.
[8] Lower DON accumulations than other varieties tested.
[9] Recommended as a malting barley in western USA.

2011 Barley - Fallow **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	% Plump	------- Grain Yield-------- 2008	2009*	2011	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	>6/64	----------bu/ac----------			$/ac	----bu/ac----	
Six Row												
Celebration	63	16,489	29	37.9	14.1	92	57.8	74.6	77.9	177.25	76.2	70.1
Innovation	60	15,607	29	38.7	13.7	90	--	--	84.0	206.50	--	--
Lacey	62	14,256	29	40.2	13.2	93	53.6	74.9	77.0	182.02	76.0	68.5
Quest	63	16,177	30	38.1	14.0	88	53.1	71.0	73.2	158.39	72.1	65.8
Rasmusson	61	14,191	28	41.1	12.9	92	53.5	86.4	82.5	211.11	84.5	74.1
Stellar-ND	60	13,148	30	39.4	13.0	93	50.4	72.0	78.0	182.57	75.0	66.8
Tradition	60	15,069	32	41.9	13.0	94	53.3	72.5	85.7	228.71	79.1	70.5
Two Row												
AC Metcalfe	66	18,029	30	33.8	14.6	85	52.3	107.2	60.5	97.75	83.9	73.3
CDC Copeland	67	16,518	30	34.0	14.6	83	45.8	110.0	61.3	101.62	85.7	72.4
Conlon	60	13,553	30	41.7	13.6	96	49.1	74.5	65.4	133.43	70.0	63.0
Conrad	72	20,306	25	32.4	15.6	75	52.7	105.6	50.2	52.01	77.9	69.5
Haxby	64	13,877	29	42.7	13.8	90	55.1	105.0	82.4	215.43	93.7	80.8
Lilly	67	17,229	24	36.5	14.0	60	--	--	66.7	126.09	--	--
Pinnacle	62	13,599	30	39.3	13.2	89	54.1	89.3	76.8	178.39	83.1	73.4
Rawson	68	14,730	28	38.6	13.0	91	54.9	81.4	60.9	102.24	71.2	65.7
Trial Mean	64	15,590	28	38.1	13.5	88	52.3	83.5	73.2	156.90	--	--
CV %	1.5	6.6	5.6	2.6	3.17	3.5	7.1	13.2	4.6	--	--	--
LSD 0.05	1	1,457	2	1.4	0.9	6	5.2	18.0	4.7	--	--	--

Planting Date: May 5, 2011

Harvest Date: August 10, 2011

Previous Crop: Fallow

Seeding Rate: 1.2 million live seeds/ac

* Note: 2009 trial received hail

[1]Returns were calculated by multiplying the 2010 yields by the price paid for feed barley minus the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 1. The price paid on this date was $4.80/bu for grain with test weights heavier than 45 lb/bu. Grain with a test weight of 45 lb/bu was discounted $.03/bu, with an additional discount of $.04/bu per pound down to 42 lb/bu. Below 42 lb/bu, an additional discount of $.05/bu occurred per pound. Returns also deduct $171.29, the sum of all listed costs from the December 2010 Farm Management Planning Guide Projected 2011 Crop Budgets South West North Dakota for barley.

2011 Barley Variety Trial at Hettinger

Variety	Days to Head	Plant Height	BYD**	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	*	inches	%	lbs/bu	%	---------- Bushels per acre ----------				
2 Row Varieties										
Haxby	64	35	100	43.1	13.2	78.8	115.5	82.1	98.8	92.1
Conlon	59	34	0	42.9	13.7	74.9	196.4	80.9	93.6	87.4
Pinnacle	62	35	80	41.1	12.7	79.6	113.3	59.4	86.4	84.1
CDC Copeland	68	37	100	41.1	13.5	70.6	107.3	63.4	85.4	80.4
Rawson	63	36	70	41.4	12.6	66.0	106.7	66.7	86.7	79.8
AC Metcalfe	67	33	90	41.9	14.4	68.0	102.6	56.8	79.7	75.8
Lilly	65	29	70	39.1	13.4		126.7	81.6	104.2	
Conrad	68	32	50	50.7	13.7			71.1		
6 Row Varieties										
Tradition	62	34	60	40.3	12.6	71.4	117.4	91.1	104.2	93.3
Lacey	64	35	80	41.8	13.1	77.1	111.9	84.1	98.0	91.0
Rasmusson	63	34	60	40.5	12.8	72.1	110.8	84.3	97.6	89.1
Celebration	64	35	100	37.9	14.2	81.7	106.1	70.2	88.2	86.0
Quest	62	38	80	39.9	13.4	60.5	109.1	72.3	90.7	80.6
Stellar-ND	64	33	60	38.9	13.4	64.8	113.5	61.7	87.6	80.0
Innovation	62	35	90	39.9	12.3		110.8	89.4	100.1	
Trial Mean	63	34	59	40.5	12.8	74.2	113.8	76.6	--	--
C.V. %	1.6	5.7	--	1.6	2.7	11.3	4.7	6.8	--	--
LSD 5%	1	3	--	0.9	0.5	11.8	7.6	7.4	--	--
LSD 1%	2	4	--	1.2	0.7	15.7	10.2	9.8	--	--

* Days to Head = the number of days from planting to head emergence from the boot.
** BYD: Percent of flag leaves infected with barley yellow dwarf virus.

Planting Date: May 2 Harvest Date: August 8
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2008 = hrsw, 2009 & 2010 = field pea.
Note: The 2009 trial sustained moderate hail damage.

2011 Barley Variety Trial at Scranton

Cooperator: Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
2 Row Types								
Rawson	31	42.8	12.1	72.9	87.8	54.4	71.1	71.7
Pinnacle	31	41.4	12.3	91.1	72.9	30.0	51.4	64.7
6 Row Types								
Stellar-ND	29	41.4	12.8	108.2	91.8	56.0	73.9	85.3
Innovation	29	41.4	12.4			56.7		
Quest	31	40.1	12.9			54.6		
Trial Mean	30	41.4	12.5	92.7	84.8	50.3	--	--
C.V. %	4.3	3.0	1.3	3.5	5.1	3.1	--	--
LSD 5%	NS	NS	0.2	4.9	6.7	2.4	--	--
LSD 1%	NS	NS	0.3	6.8	9.4	3.4	--	--

NS = no statistical difference between varieties.

Planting Date: May 5 Harvest Date: August 23
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and a moderate infection of barley yellow dwarf causing lower test weights and grain yields.

2011 Barley Variety Trial at Regent

Cooperators: August and Perry Kirschmann

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
2 Row Types								
Rawson	29	45.0	12.4	97.4	76.9	43.6	60.2	72.6
Pinnacle	32	46.0	12.8	92.5	83.8	39.5	61.6	71.9
Conlon	27	43.6	13.3	101.3	76.4	33.5	55.0	70.4
6 Row Types								
Stellar-ND	28	42.6	13.8	88.0	72.2	39.2	55.7	66.5
Innovation	26	42.2	12.7			42.4		
Quest	28	42.4	13.3			42.2		
Trial Mean	28	43.6	13.0	92.8	77.8	40.1	--	--
C.V. %	4.9	1.7	2.2	3.8	3.9	6.6	--	--
LSD 5%	2	1.1	0.4	6.3	4.6	4.0	--	--
LSD 1%	3	1.6	0.6	9.0	6.3	5.5	--	--

Planting Date: May 5 Harvest Date: August 23
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2008, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and a moderate infection of barley yellow dwarf causing lower test weights and grain yields.

2011 Barley Variety Trial at Selfridge

Cooperator: Nick Vollmuth

Variety	Plant Height	Test Weight	Grain Protein	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
2 Row Types								
Rawson	33	37.0	12.5	76.1	89.8	52.5	71.2	72.8
Conlon	28	42.1	13.7	76.9	76.6	58.8	67.7	70.8
Pinnacle	31	39.4	12.7	63.4	74.2	44.6	59.4	60.7
6 Row Types								
Stellar-ND	33	38.4	13.9	71.4	83.1	50.3	66.7	68.3
Quest	35	37.5	13.6			43.4		
Innovation	34	36.6	13.4			37.9		
Trial Mean	32	38.5	13.3	76.6	81.7	47.9	--	--
C.V. %	4.3	2.7	3.5	7.4	4.3	10.4	--	--
LSD 5%	3	1.9	0.8	8.6	5.3	9.0	--	--
LSD 1%	4	2.7	NS	11.8	7.3	12.9	--	--

NS = no statistical difference between varieties.

Planting Date: May 6 Harvest Date: August 22
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2008 = sunflower, 2009 & 2010 = HRSW.
Note: The 2011 trial sustained heat stress and a moderate infection of barley yellow dwarf causing lower test weights and grain yields.

2011 Hannover Barley - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	% Plump	Protein	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 Year	Average Yield 3 Year
		in	lbs/bu	>6/64	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Six Row										
Innovation	13,619	25	41.3	97.3	13.7	--	--	59.1	--	--
Quest	14,350	28	39.9	93.8	13.6	--	--	58.7	--	--
Stellar-ND	13,014	24	38.6	96.2	14.0	111.3	48.1	30.0	39.1	63.1
Two Row										
Conlon	12,338	24	43.3	94.7	14.3	--	26.0	39.3	32.6	--
Pinnacle	12,420	25	41.9	95.8	13.0	107.9	41.8	49.5	45.7	66.4
Rawson	11,352	26	41.9	96.1	12.7	98.8	41.0	55.2	48.1	65.0
Trial Mean	12,849	25	41.2	95.6	13.6	108.6	41.6	48.6	--	--
CV %	3.2	2.2	1.2	1.0	1.6	3.0	7.8	9.1	--	--
LSD 0.05	621	1	0.7	NS	0.5	5.0	4.9	6.7	--	--

Planting Date: June 7, 2011 Harvest Date: August 9, 2011

Previous Crop: Lentil Seeding Rate: 1.2 million live seeds/ac

2011 Glen Ullin Barley - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	% Plump	Protein	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 Year	Average Yield 3 Year
		in	lbs/bu	>6/64	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Six Row										
Innovation	14,612	25	41.8	94.3	13.2	--	--	58.4	--	--
Quest	14,680	27	39.9	88.8	12.8	--	--	56.6	--	--
Stellar-ND	13,229	25	39.5	94.2	13.8	121.1	56.2	52.0	54.1	76.4
Two Row										
Conlon	12,468	25	44.8	95.6	12.7	--	51.7	38.1	44.9	--
Pinnacle	12,901	25	41.9	91.0	12.2	125.3	56.4	47.4	51.9	76.4
Rawson	10,825	26	41.9	94.9	12.8	122.0	53.3	49.0	51.1	74.8
Trial Mean	13,119	25	41.6	93.1	12.9	125.3	54.3	50.2	--	--
CV %	3.9	3.8	1.6	1.8	3.3	4.7	19.0	6.4	--	--
LSD 0.05	762	NS	1.0	4.4	NS	NS	NS	4.9	--	--

Planting Date: June 7, 2011 Harvest Date: August 9, 2011

Previous Crop: Wheat Seeding Rate: 1.2 million live seeds/ac

SDSU Spring Barley Variety Trial - Harding County (Ralph), 2009 - 2011.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Protein Percent	Yield 2011	Bu/A 3-Year
TWO ROW						
HAYS	26	0	39.5	15.1	27.5	.
COWBOY	32	0	39.7	13.7	34.4	.
CONLON **+**	27	0	**	12.3	9.2**+**	**+**
ESLICK	24	0	37.8	12.6	**40.4**	**69.3**
PINNACLE	27	0	37.7	10.9	35.2	54.5
RAWSON	29	0	38.8	11.7	26.4	50.8
SIX ROW						
CELEBRATION	27	0	37.8	12.5	30.0	.
LACEY	27	0	41.7	12.9	**38.6**	54.7
STELLAR-ND	28	0	37.5	12.6	32.1	51.1
TRADITION	28	0	40.5	12.5	32.5	.
Average	28	0.0	39.0	12.6	30.6	56.1
LSD (P=.05)	2	0.0	1.0	.	3.8	4.7
CV	4.1	0.0	2.7	.	8.5	12.0

+ Colon yields were adversely affected by wildlife damage.
* 0 = no lodging, 9 = 100% lodged.
** Not enough sample for a test weight.

Planted: May 3, 2011 Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)
Harvested: August 18, 2011 Additional Nitrogen: 60 Lb/A
Previous crop: Conventional Fallow.

2011 Barley Varieties in the West River Region - Combined Means

Variety	Days to Head*	Plant Height	Seeds / Pound	Test Weight	Grain Protein	% Plump	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	%	>6/64	---------- Bushels per acre ----				
2 Row Types											
Rawson	66	30	12,302	40.9	12.5	94	79.7	69.2	54.6	61.9	67.8
Pinnacle	62	30	12,973	41.1	12.5	92	83.5	69.6	49.6	59.6	67.6
Conlon	60	28	12,786	43.0	13.3	95	80.0	67.3	49.1	58.2	65.5
6 Row Types											
Stellar-ND	62	29	13,130	39.5	13.4	95	82.4	69.6	52.5	61.0	68.2
Innovation	61	29	14,613	40.0	12.8	94			61.1		
Quest	62	31	15,069	39.4	13.3	90			57.3		
# of Locations	2	8	3	8	8	3	10	10	7	17	27

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

Locations: 2011 = Hettinger, Dickinson, Scranton, Regent, Selfridge, Hannover, Glen Ullin & Ralph, SD.
2010 = Hettinger, Scranton, Regent, New Leipzig, Selfridge, Mandan, Hannover, Glen Ullin, Ralph, SD & Bison, SD.
2009 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Mandan, Hannover, Glen Ullin, Ralph, SD & Bison, SD.

2011 North Dakota oat variety descriptions.

Variety	Origin[1]	Year Released	Grain Color	Height	Straw Strength	Maturity[2]	Reaction to Diseases: Stem Rust[3]	Crown Rust[3]	Barley Y.Dwf[4]	Bu/Wt.	Protein[5]
AC Assiniboia	Can. Proven Seed	1997	Red	Med	Strong	L	S	S	T	Good	ML
AC Gwen	Can. SeCan	2000	Hulless	Tall	Strong	L	S	S	R	Good	L
AC Kaufman	Can.	2000	Yellow	Tall	Strong	L	S	S	MT	V.good	ML
AC Pinnacle	Can. QAS	1999	White	Tall	Med.	L	S	S	S	V.good	L
AC Ronald	Can. SeCan	2001	White	M.short	V.strg.	L	S	S	T	V.good	M
Beach	ND	2004	White	Tall	M.strg.	ML	S	MR/MS	MS	V.good	M
Buff	SD	2002	Hulless	Med.	M.strg.	L	S	MR/MS	MT	Good	H
CDC Dancer	Can. Cargill	2000	White	Tall	Strong	L	S	MS	S	V.good	M
CDC Minstrel	Sask.	2006	White	Tall	M.strg.	L	S	S	S	Good	M
CDC Orrin	Can. QAS/Cargill	2001	White	Tall	Strong	L	S	S	S	Good	ML
CDC Weaver	Can.	2005	Yellow	Med.	M.strg.	L	S	S	S	Good	M
Drumlin	WI	2003	Yellow	Med.	Strong	M	S	MR	VT	Good	M
Excel	IN	2006	White	Med.	Strong	M	S	MS	T	V.good	M
Furlong	AAFC Winnipeg	2003	Red	Tall	M.strg.	L	S	S	T	V.good	M
HiFi	ND	2001	White	Tall	Strong	L	MR/MS	R	T	Good	M
Hytest	SD	1986	White	Tall	M.strg.	E	S	MS	S	V.good	H
Jerry	ND	1994	White	Tall	Strong	M	S	MS	MT	V.good	M
Jud	ND	1997	Ivory	Tall	Med.	L	R	MR/MS	T	Good	MH
Killdeer	ND	2000	White	Med.	Strong	M	S	MS	MT	Good	M
Leggett	AAFC Winnipeg	2005	White	Tall	Strong	L	MR	R	S	Good	M
Leonard	MN	2001	Yellow	Tall	M.strg.	L	S	S	T	Fair	ML
Loyal	SD	2000	Ivory	Tall	M.strg.	L	S	MR	T	Good	MH
Maida	ND	2005	Yellow	Med.	Strong	M	R	S	MS	V.good	MH
Minstrel	Sask.	2008	White	M.tall	Strong	L	MR/MS	S	S	Good	M
Monida	MT/ID	1985	White	M.tall	Strong	L	S	S	S	Fair	ML
Morton	ND	2001	White	Tall	V.strg.	L	S	S	MT	V.good	M
Newburg	ND	2011	White	Tall	Med.	L	R	R	MT	Good	M
Otana	MT	1977	White	M.tall	M.weak	L	S	S	S	V.good	ML
Paul	ND	1994	Hulless	V.tall	Strong	L	R	MR/MS	T	Good	H
Reeves	SD	2002	White	M.tall	Med.	E	S	MR	MT	Good	H
Rockford	ND	2008	White	Tall	Strong	L	S	R	MT	V.good	M
Sesqui	MN	2001	Yellow	M.tall	Strong	L	S	S	T	Good	M
Shelby427	SD	2008	White	Med.	Strong	E	S	R	NA	V.good	NA
Souris	ND	2006	White	Med.	Strong	M	MS	R	MS	V.good	M
Stallion	SD	2006	White	Tall	Med.	L	S	MR	NA	V.good	M
Stark	ND	2004	Hulless	Tall	M.strg.	L	R	MR/MS	T	V.good	M
Streaker	SD	2008	Hulless	Tall	M.weak	M	S	R/MR	NA	V.good	MH
Summit	AAFC Winnipeg	2008	White	Med.	Strong	L	S	R	MT	Good	M
Vista	WI	2000	Yellow	Tall	Strong	L	S	R	MT	Good	M
Youngs	ND	1999	White	Med.	Strong	L	S	MS/S	MT	Good	M

[1] Can = Canada; ND = North Dakota State University; SD = South Dakota State University; WI = University of Wisconsin; IN = Purdue University; MT = Montana State University; ID = Idaho; Sask. = Saskatchewan.
[2] E = early; M = medium; L = late; V = very late.
[3] R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible.
[4] Barley Yellow Dwarf Virus; S = susceptible; MS = moderately susceptible; MT = moderately tolerant; T = tolerant; VT = very tolerant; NA = not available. Varieties rated MT or T have a relatively good degree of protection against barley yellow dwarf virus.
[5] H = high; M = medium; L = low.

2011 Oat Variety Trial at Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	----- Grain Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	*	inches	0-9**	lbs/bu	---------- Bushels per acre ----------				
Furlong	70	37	1	32.1	98.5	154.7	122.7	138.7	125.3
AC Pinnacle	70	35	0	32.9	98.5	159.6	117.5	138.6	125.2
CDC Minstrel	67	34	0	32.8	101.9	154.9	112.1	133.5	123.0
Stallion	67	37	3	32.7	91.3	151.2	120.6	135.9	121.0
Newburg	66	40	4	32.3	87.1	152.7	122.9	137.8	120.9
Killdeer	66	30	2	31.7	97.0	151.0	113.7	132.4	120.6
Monida	70	35	0	28.1	97.1	153.3	102.9	128.1	117.8
Souris	67	31	0	33.3	82.1	155.9	113.5	134.7	117.2
Rockford	66	38	2	36.2	90.6	145.8	113.5	129.6	116.6
Leggett	68	34	1	31.7	94.9	154.4	95.4	124.9	114.9
Beach	66	35	1	34.8	80.5	149.0	113.9	131.4	114.5
Morton	67	42	0	33.7	61.4	135.7	112.1	123.9	103.1
Jerry	66	33	0	34.2	70.2	133.8	92.0	112.9	98.7
CDC Dancer	70	36	0	30.3	75.0	145.9	67.7	106.8	96.2
Otana	67	41	0	26.6	72.9	139.6	67.2	103.4	93.2
Hytest	64	38	1	34.6	66.9	121.9	70.2	96.0	86.3
HiFi	68	36	2	31.8	85.9	140.1	103.8	81.3	82.8
Shelby 427	62	36	3	35.5		142.2	127.5	134.8	
Naked (hulless) Varieties									
Buff	62	36	1	36.8	57.7	103.2	114.5	108.8	91.8
Stark	70	39	2	36.1	59.5	95.8	90.9	93.4	82.1
Streaker	63	39	4	42.3		114.2	81.1	97.6	
Paul	71	35	1	40.3			47.1		
Trial Mean	67	36	1	33.5	85.1	143.8	104.1	--	--
C.V. %	1.1	5.1	55	3.7	9.8	5.8	4.1	--	--
LSD 5%	1	2	1	1.7	11.8	11.7	6.0	--	--
LSD 1%	1	3	2	2.3	15.6	15.5	7.9	--	--

* Days to Head = the number of days from planting to head emergence from the boot.
** Lodging: 0 = none, 9 = lying flat on the ground.

Planting Date: May 3
Harvest Date: August 9
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2008 = hrsw, 2009 = mustard, 2010 = field pea.
Note: The 2009 trial sustained moderate hail damage. The 2011 trail was moderately infected with barley yellow dwarf causing lower test weights and grain yields.

2011 Oat - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
AC Pinnacle	64	11,104	34	32.4	213.3	189.2	154.1	165.90	171.6	185.5
Beach	63	11,753	38	36.1	167.8	174.9	129.0	131.04	151.9	157.2
Buff*	62	12,903	31	35.1	151.2	149.9	106.9	76.23	128.4	136.0
CDC Dancer	64	11,366	34	31.2	172.9	158.9	118.8	84.52	138.9	150.2
CDC Minstrel	63	10,328	30	30.0	188.9	183.5	120.5	81.53	152.0	164.3
Furlong	66	9,569	34	31.9	182.1	184.3	139.2	130.50	161.7	168.5
HiFi	63	11,945	32	31.8	174.8	185.4	114.9	80.45	150.1	158.3
Hytest	62	12,239	33	33.4	151.0	161.7	105.9	67.26	133.8	139.5
Jerry	62	11,796	34	33.3	157.5	151.3	113.1	81.81	132.2	140.6
Killdeer	63	11,813	32	34.3	199.5	176.5	138.5	141.21	157.5	171.5
Leggett	64	11,250	33	34.6	194.2	177.2	139.5	146.02	158.3	170.3
Monida	66	13,196	31	31.7	179.2	185.5	126.1	101.65	155.8	163.6
Morton	64	13,038	36	33.4	162.8	159.1	126.9	112.18	143.0	149.6
Newburg	62	11,452	37	33.0	174.3	177.7	128.2	111.75	153.0	160.1
Otana	64	13,183	36	32.8	167.9	164.3	110.7	74.42	137.5	147.6
Rockford	63	12,429	37	35.0	187.1	188.2	139.4	146.23	163.8	171.6
Shelby 427	61	12,850	32	35.8	--	153.0	117.9	103.69	135.4	--
Souris	64	12,162	29	32.1	175.1	168.6	115.4	83.44	142.0	153.0
Stallion	63	13,244	36	36.4	170.9	156.3	141.0	157.92	148.6	156.1
Stark*	65	12,664	35	34.2	149.1	161.7	111.0	81.74	136.3	140.6
Streaker*	60	13,908	32	38.2	--	115.0	90.5	48.77	102.7	--
Trial Mean	63	11,724	33	33.2	173.0	169.7	123.0	105.15	--	--
CV %	1.0	4.3	6.7	4.2	6.0	7.2	10.2	--	--	--
LSD 0.05	1	711	3	2.0	14.6	17.1	17.6	--	--	--

Planting Date: May 5, 2011 Harvest Date: August 16, 2011

* Hulless

Previous Crop: Field Pea

Seeding Rate: 1 million live seeds/ac

[1]Returns were calculated by multiplying the 2011 yield by the test weight discount paid at the Southwest Grain Terminal located in Gladstone on September 21. The price paid was $2.30/bu for grain with a test weight greater than 37 lb/bu. Grain with a test weight of 37 lb/bu was discounted $.04/bu, with an additional discount of $.04/bu per pound to 30 lb/bu. Below 30 lb/bu, an additional discount of $.07/bu occurred per pound. Returns also deduct $159.31, the sum of all listed costs from the December 2010 Farm Management Planning Guide Projected 2011 Crop Budgets South West North Dakota for oats.

2011 North Dakota hard winter wheat variety description table, agronomic traits.

Variety	Agent or Origin[2]	Year	Reaction to Disease[1]				Maturity[3]	Straw Strength	Height[4] (inches)	Winter[5] Hardiness
			Stripe Rust	Leaf Rust	Stem Rust	Scab				
Accipiter	W.Ag	2008	NA	MS	R	S	0	Strong	36	2
Alice[6]	SD	2006	NA	S	MR	S	-3	M. strong	33	-
Art	Agripro	2008	R	R	R	MS	-4	Strong	33	8
Boomer	WB	2009	NA	MR	NA	S	0	Strong	34	3
Carter	WB	2010	S	NA	NA	S	0	Strong	32	6
CDC Buteo	WB	2004	NA	MS	NA	S	0	Med.	36	2
CDC Falcon	WB	2000	MS	MS	NA	S	0	M. strong	34	4
Darrell	SD	2006	NA	S	R	MS	-2	Strong	35	6
Decade	MT/ND	2010	S	VS	R	VS	-2	Strong	35	2
Expedition	SD	2002	MS	MS	R	S	-3	Strong	34	4
Hawken	Agripro	2007	S	MR	MR	S	-3	Strong	28	7
Ideal	SDSU	2011	NA	R	MR	S	-1	M. strong	33	5
Jagalene	Agripro	2002	MS	S	MR	VS	-2	Strong	33	6
Jerry	ND	2001	MR	MR	R	S	0	Strong	37	3
Lyman	SD	2008	MS	R	R	MR	-2	Med.	35	5
Mace	ARS-NE	2008	NA	MS	R	MS	0	Strong	33	-
Millennium	NE/SD	1999	MR	MR	MR	S	-2	Strong	37	6
Overland	NE	2006	MR	MR/R	MR	S	-2	Strong	35	5
Peregrine	W.Ag	2008	R	MR	R	MS	+1	Strong	39	2
Radiant[7]	Can.	2005	R	S	S	S	+1	V.strong	36	2
Ransom	ND	1998	NA	MR	MR	S	+1	Med.	37	3
Roughrider	ND	1975	NA	S	R	MS	0	M. strong	42	2
Striker	WB	2009	NA	MR	NA	S	-2	Strong	32	5
SY Wolf	Agripro	2010	MS	MR	R	MS	-2	Strong	33	6
WB-Matlock	WB	2010	MS	MS	NA	MS	+1	Strong	36	2
Wesley	NE/SD/WY	2000	MR	MS	R	S	-3	M. strong	32	6
Yellowstone	MT	2005	R	S	S	VS	+2	Med.	33	5

[1]R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible; VS = very susceptible; NA = not available.
[2]W.Ag = Western Ag, WB = WestBred.
[3]Days to heading relative to Jerry.
[4]Based on the average of several locations in 2011, and should be used for comparing varieties. The environment can impact the height of varieties.
[5]Relative winter hardiness rating: 1 = Excellent, 10 = very poor. These values are subject to change as additional information becomes available.
[6]White wheat.
[7]Curl mite resistant.

2011 Winter Wheat - Recrop **Dickinson, ND**

Variety	Heading Date	Seeds per Pound	Plant Height	Test Weight	Grain Yield 2009	Grain Yield 2011	2 Year Average
	June		in	lbs/bu	-----bu/ac-----		bu/ac
Accipiter	25	21,998	36	46.4	68.5	40.6	54.6
Art	23	24,560	34	51.3	55.8	65.4	60.6
SY Wolf	24	17,785	33	50.5	--	61.8	--
Boomer	26	20,508	34	44.5	70.9	37.0	53.9
CDC Falcon	26	20,183	34	48.4	70.4	48.6	59.5
Carter	26	21,955	32	48.0	--	46.8	--
Darrell	24	16,285	37	50.5	71.8	54.2	63.0
Decade	24	18,606	38	48.5	70.4	48.6	59.5
Expedition	23	16,477	35	51.5	67.1	54.6	60.9
Hawken	23	18,827	30	50.1	61.7	41.1	51.4
Jerry	26	15,598	39	48.9	58.9	39.1	49.0
Lyman	23	16,203	36	51.6	61.4	55.6	58.5
Millennium	24	18,286	38	48.6	60.4	50.4	55.4
Overland	24	21,010	35	49.8	72.1	50.5	61.3
Peregrine	27	20,633	41	48.6	68.2	42.7	55.5
Ideal	25	18,238	33	48.8	73.2	46.7	60.0
Striker	26	21,197	34	46.8	61.1	37.7	49.4
WB-Matlock	28	18,982	37	48.0	--	28.8	--
Wesley	23	15,379	33	47.3	57.3	47.8	52.5
Yellowstone	28	20,537	31	42.3	73.7	35.7	54.7
Trial Mean	25	19,162	35	48.5	65.0	46.7	--
CV %	3.4	15.5	7.1	4.4	23.9	13.3	--
LSD 0.05	1	4,194	4	3.0	NS	8.8	--

Planting Date: September 21, 2010
Harvest Date: August 9, 2011
Previous Crop: Oat
Seeding Rate: 1 million live seeds/ac

2011 Winter Wheat Variety Trial - Continuously Cropped - No-till **Mandan**

Cooperator: USDA-ARS, Northern Great Plains Research Lab., Mandan

This trial was partially funded by Ducks Unlimited, Bismarck

	------ No Foliar Fungicide ------				-------- Foliar Fungicide*--------							
									Grain Yield		Average Yield	
Variety	Plant Ht	Test Weight	Grain Pro	Grain Yield	Plant Ht	Test Weight	Grain Pro	Grain Yield	2009	2010	2 yr	3 yr
	inch	lbs/bu	%	bu/A	inch	lbs/bu	%	---------- bushels per acre ----------				
Decade	34	50.6	12.9	25.0	33	51.4	12.9	30.0	92.3	49.6	39.8	57.3
Overland	33	50.5	12.3	22.8	35	52.9	12.5	34.0	84.4	51.4	42.7	56.6
Lyman	33	--	13.4	14.7	35	52.2	13.7	25.8	87.5	47.3	36.6	53.5
Millennium	39	49.9	12.4	17.6	36	52.9	12.3	33.0	77.7	51.1	42.0	53.9
Art	33	49.4	12.8	20.7	32	51.9	13.1	31.9	80.4	44.7	38.3	52.3
Peregrine	34	51.9	12.6	19.3	34	52.1	12.8	22.7	86.0	44.5	33.6	51.1
Boomer	36	--	13.0	9.6	33	50.1	13.6	22.1	81.8	48.3	35.2	50.7
Wesley	32	--	13.5	12.6	32	48.8	13.8	19.6	81.7	50.1	34.8	50.5
Hawken	31	48.7	12.7	17.1	26	50.4	13.8	20.1	83.2	45.9	33.0	49.7
Darrell	37	--	13.0	13.7	33	50.9	13.3	21.9	77.1	48.9	35.4	49.3
Radiant	39	--	12.1	13.6	36	51.5	12.6	20.6	85.7	38.4	29.5	48.2
Accipiter	36	--	12.6	13.5	36	51.6	12.5	19.2	80.8	44.4	31.8	48.1
Jerry	33	--	13.5	9.3	35	50.0	13.7	19.7	76.3	47.0	33.4	47.7
Falcon	34	--	13.2	13.7	36	51.1	12.3	23.9	78.7	40.7	32.2	47.8
Striker	28	--	13.3	11.1	32	51.5	13.2	22.4	74.0	41.4	31.9	45.9
Yellowstone	34	--	13.0	2.7	32	46.8	13.3	11.4	75.7	47.5	29.4	44.9
Carter	31	--	13.4	12.0	33	50.5	13.7	19.5		40.0	29.8	
SY Wolf	29	52.3	11.7	31.9	33	51.7	12.7	32.2				
SY503CL2	31	--	13.2	16.0	33	52.3	12.2	31.2				
Expedition	33	48.2	12.8	18.3	34	52.0	13.2	29.4				
WB Matlock	32	--	13.3	13.8	34	52.9	13.8	21.4				
Ideal	33	50.1	12.6	17.4	34	51.8	12.4	31.5				
Trial Mean	33	49.6	12.9	15.4	33	51.1	13.1	23.5	81.3	45.1	--	--
C.V. %	--	--	--	--	6.4	1.9	2.7	24.2	7.1	15.4	--	--
LSD .05	--	--	--	--	4	1.6	0.6	9.3	8.1	9.8	--	--
LSD .01	--	--	--	--	4	2.1	0.8	12.4	10.8	12.9	--	--

*Foliar fungicides: 5 oz/A Stratego applied on June 4 (jointing) and 8.2 oz/A Prosaro on July 1 (flowering).

Planting Date: September 28, 2010
Harvest Date: August 22, 2011
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: hrsw.
Note: The 2011 trial sustained severe foliar and head disease infestations. The 2010 trial sustained significant nitrogen deficiency causing relatively poor yields.

SDSU Hard Winter Wheat Variety Trial - Corson County (McLaughlin), 2011.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Protein %	Yield Bu/A
ALICE	30	0	54.7	14.6	26.2
ARAPAHOE	32	0	55.9	15.5	36.5
ART	29	0	53.6	16.3	21.8
CAMELOT	31	0	53.1	15.3	21.2
DARRELL	31	0	54.2	17.7	28.6
EVEREST	27	0	55.9	15.7	28.2
EXPEDITION	32	0	55.1	14.3	35.2
FULLER	31	0	45.0	15.5	13.6
HARDING	32	0	52.1	16.1	28.6
HAWKEN	26	0	44.5	17.8	15.2
IDEAL	32	0	53.8	14.7	36.5
JAGALENE	29	0	49.9	15.3	17.6
JERRY	34	0	59.6	14.9	**42.1**
LYMAN	32	0	59.6	14.4	**41.9**
WB-MATLOCK	31	0	59.1	15.3	**39.7**
MCGILL	34	0	51.5	14.9	29.0
MILLENNIUM	31	0	58.1	15.9	35.4
OVERLAND	31	0	58.4	14.5	34.8
SETTLER CL	34	0	52.4	14.0	27.8
SMOKY HILL	31	0	49.2	16.0	22.0
WESLEY	29	0	50.4	15.7	28.4
ROBIDOUX	32	0	51.1	15.7	21.6
SY WOLF	29	0	52.0	15.9	32.6
Average	31	0.0	53.7	15.4	29.1
LSD (P=.05)	6	0.0	3.6	.	5.4
CV	9.0	0.0	4.1	.	11.3

* 0 = no lodging, 9 = 100% lodged.

Planted: September 28, 2010
Harvested: August 8, 2011
Additional Nitrogen: 80 Lb/A
Previous crop: Field peas, no-till planted.

2011 North Dakota winter rye variety descriptions.

Variety	Origin[1]	Year Released	Height	Straw Strength	Maturity	Seed Color	Seed Size	Test Weight	Winter Hardines
AC Rifle	Canada	1994	Short	V.good	Med.	Blue	Med.	Med.	V.good
AC Remington	Canada	1998	Short	V.good	Med.	NA	Med.	Good	Good
Aroostok	USDA	1999	Tall	Fair	Early	NA	Small	High	V.good
Ensi	Finland	1933	Tall	Fair	Late	NA	Small	Low	NA
Dacold	ND	1989	Med.	Good[2]	V.late	Bl-grn.	Med.	Low	Good
Frederick	SD	1984	Tall	Fair	Late	Tan	Med.	High	Good
Hancock	WI	1979	Tall	Good	Med.	Tan	Large	High	Fair[3]
Musketeers	Canada	1980	Tall	Good	M.early	Blue	Large	Med.	V.good
Prima	Canada	1984	Tall	Good	Med.	Blue	Large	Med.	V.good
Rymin	MN	1973	Tall	V.good	Late	Grn-gray	Large	High	Fair[3]
Spooner	WI	1993	Tall	V.good	Med.	Tan	Large	High	Good
Wheeler	MI	1971	Tall	Fair	Med.	NA	Large	Low	Good
Wrens Abruzzi	GA	1953	Tall	Fair	Early	NA	Small	High	Good

[1]ND = North Dakota State University; SD = South Dakota State University; WI = University of Wisconsin; MN = University of Minnesota; MI = Michigan State University.
[2]Under certain environments lodging has been observed.
[3]Varieties with fair winter hardiness should not be seeded on bare soil.

2011 Winter Rye Variety Trial at Hettinger

Variety	Winter Survival	Plant Height	Test Weight	----- Grain Yield ------ 2010	2011	Avg.
	%	inches	lbs/bu	-- bushels per acre --		
Dakold	92	52	47.5	105.1	103.2	104.2
Hancock	92	52	51.4	92.9	93.1	93.0
Spooner	78	52	50.1	73.8	82.5	78.2
Aroostok	94	55	50.3	66.3	73.6	70.0
Wheeler	97	58	48.3	53.2	43.9	48.6
Rymin	1	46	43.7	59.3	30.1	44.7
Boreal	98	60	50.1		71.8	
Abrazzi Wrens	95	52	51.3		62.5	
Trial Mean	74	53	48.6	79.1	73.5	--
C.V. %	10	5.1	1.8	4.1	4.2	--
LSD 5%	11	4	1.3	4.7	4.5	--
LSD 1%	14	5	1.7	6.3	6.0	--

Planting Date: September 20, 2010
Harvest Date: August 1, 2011
Seeding Rate: 1 million live seeds / acre
Previous Crop: 2009 = hrsw, 2010 = field pea.

2011 Winter Triticale Variety Trial at Hettinger

Variety	Winter Survival	Heading Date	Plant Height	Test Weight	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 yr	Average Yield 3 yr
	%	June	inches	lbs/bu	Bushels per acre				
NE426GT	64	18	46	43.8	84.2	116.0	88.9	102.4	96.4
Pika	85	14	52	46.7	41.2	107.2	79.1	93.2	75.8
Boreal	45	20	58	42.1	36.4	91.6	91.5	91.6	73.2
Trical 102	60	20	52	41.3			67.3		
Bobcat	78	20	49	41.4			68.8		
Trial Mean	66	19	51	43.1	63.4	104.9	79.1	--	--
C.V. %	26	7.3	1.7	3.3	5.8	4.5	9.1	--	--
LSD 5%	26	2	1	2.2	5.5	8.1	11.1	--	--
LSD 1%	NS	3	2	3.0	7.5	12.3	15.5	--	--

NS = no statistical difference between varieties.

Planting Date: September 20, 2010
Harvest Date: August 1, 2011
Seeding Rate: 1 million live seeds / acre
Previous Crop: 2008 & 2009 = hrsw, 2010 = field pea.
Note: The 2009 trial sustained moderate hail damage.

2011 Spring Triticale Variety Trial at Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Yield 2009	Grain Yield 2010	Grain Yield 2011	Average Yield 2 yr	Average Yield 3 yr
	*	inches	lbs/bu	Bushels per acre				
Trical 2700	69	46	46.2	53.2	102.8	24.2	63.5	60.1
Champion	64	48	49.4	37.5	107.0	25.7	66.4	56.7
Wapiti	64	48	48.7	40.1	104.0	22.5	63.2	55.5
Laser	64	47	47.4	33.2	98.3	22.8	60.6	51.4
Marvel	66	45	43.1	29.2	88.5	12.2	50.4	43.3
Trical 141	71	47	45.5			20.8		
Merlin	63	40	41.3			18.1		
AC Uhmia	65	39	48.4			17.2		
Trial Mean	66	45	46.3	40.9	100.9	20.4	--	--
C.V. %	0.9	4.4	1.7	18.1	2.8	10.0	--	--
LSD 5%	1	3	1.2	11.1	4.3	3	--	--
LSD 1%	1	4	1.6	15.4	6	4.1	--	--

* Days to Head: The number of days from planting to head emergence from the boot.

Planting Date: May 3
Harvest Date: August 23
Seeding Rate: 1 million live seeds / acre
Previous Crop: 2008 = field pea, 2009 = hrsw, 2010 = field pea.
Note: The 2009 trial sustained moderate hail damage. The 2011 trial sustained a moderate infectection of bacterial leaf streak causing low test weights and grain yields.

SAFFLOWER VARIETY DESCRIPTIONS

Variety	Origin [1]	PVP [6]	Hull Type [2]	Oil Type [3]	Irrigated Yield [4]	Dryland Yield [4]	TWT [4]	Oil [3]	Maturity	Tolerance [5] Alt.	Tolerance [5] BB
Cardinal	MT/ND	yes	N	high lino	v good	v good	high	fair	med	T	MT
Centennial	MT/ND	yes	STP	linoleic	m good	good	med	v good	m late	MT	MT
Finch	MT/ND	no	N	linoeic	good	v good	v high	fair	m early	MS	T
MonDak	MT/ND	yes	N	high oleic	good	v good	high	fair	m early	T	MT
Morlin	MT/ND	yes	STP	high linoleic	v good	good	med	good	m late	T	T
Nutrasaff	MT/ND	yes	RED	linoeic	good	good	med	high	med	T	MT
S-541	ST	no	STP	linoeic	fair	v good	m high	v good	m late	MS	MS
Montola 2000	MT/ND	yes	N	high oleic	m good	good	med	good	early	MS	MS
Montola 2001	MT/ND	yes	STP	high oleic	good	fair	med	good	med	MT	MT
Montola 2003	MT/ND	yes	N	high oleic	v good	v good	m high	good	m early	MT	MT
Montola 2004	MT/ND	yes	N	high oleic	good	good	m high	good	m early	MS	MT

[1] ST -= SeedTec International, MT = Montana, ND = North Dakota
[2] STP = striped, N = normal, RED = reduced
[3] Lino - linoleic
[4] Relative ratings of yield, test weight, and oil will vary under conditions of moderate-severe disease infestation
[5] Alt = Alternaria leaf spot disease, BB = bacterial blight, S = susceptible, MS = moderately susceptible, MT = moderately tolerant, T = tolerant
[6] "yes" indicates the variety is protected and the seed may be sold for planting purposes only as a class of certified seed (Title V option)

2011 Safflower Variety Trial at Hettinger

Variety	Days to Bloom	Plant Height	Oil Content	Test Weight	Seed Yield 2009	Seed Yield 2010	Seed Yield 2011	Avg. Yield 2 year	Avg. Yield 3 year
	*	inches	%	lbs/bu	pounds per acre				
Linoleic Types									
Cardinal	90	36	41.4	34.6	1958	3015	1607	2311	2193
Finch	89	34	39.4	34.1	1566	2444	1785	2114	1932
NutraSaff	89	34	43.7	45.0	986	2458	938	1698	1461
Oleic Types									
Hybrid 1601	89	35	43.0	34.1	2073	3361	1791	2576	2408
Hybrid 9049	86	33	39.2	33.1	1663	3184	2100	2642	2316
MonDak	89	33	36.9	35.5	1947	2831	2078	2454	2285
Montola 2003	89	30	39.0	35.3	1813	2898	2057	2478	2256
Trial Mean	88	34	38.9	36.4	1568	2793	1777	--	--
C.V. %	0.8	4.0	4.4	4.0	10.0	5.3	8.0	--	--
LSD 5%	1	2	2.5	2.1	226	212	207	--	--
LSD 1%	1	3	3.4	2.8	304	285	280	--	--

* Days to Bloom = the number of days from planting to 10% bloom.

Planting Date: May 3
Harvest Date: September 9
Seeding Rate: 300,000 live seeds / Acre (approx. 22 lbs/A).
Previous Crop: 2008 = hrsw, 2009 = oat, 2010 = barley.

2011 North Dakota flax variety descriptions.

Variety[1]	Origin[2]	Year Released	Relative Maturity	Seed Color	Plant Height	Wilt[3]
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

[1] All varieties have resistance to prevalent races of rust; all have good oil yield and oil quality.

[2] Can. = Canada; ND = North Dakota State University; SD = South Dakota State University.

[3] R = resistant; MR = moderately resistant; MS = moderately susceptible; NA = not available.

2011 Flax Variety Trial at Hettinger

Variety	Days to Bloom	Plant Height	Test Weight	----- Seed Yield ----- 2008	2009	2011	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	---------- Bushels per acre ----------				
York	63	21	56.3	13.4	40.8	28.8	34.8	27.7
CDC Arras	64	21	54.7	12.4	42.0	26.5	34.2	27.0
Prairie Grand	62	22	56.0	11.6	40.1	27.5	33.8	26.4
Prairie Thund	63	22	56.1	8.2	42.0	28.2	35.1	26.1
Carter**	63	20	--	11.3	40.6	24.1	32.4	25.3
Nekoma	62	21	56.6	11.2	39.1	25.1	32.1	25.1
Prairie Blue	63	22	55.7	9.5	39.4	26.4	32.9	25.1
Lightning	62	21	56.0	12.3	39.3	23.3	31.3	25.0
CDC Bethum	63	22	55.3	10.1	41.1	23.4	32.2	24.9
CDC Sorrel	64	23	55.6	10.4	39.8	24.3	32.0	24.8
Hanley	61	21	55.8	9.6	40.2	24.7	32.4	24.8
Pembina	62	21	55.6	11.6	37.9	23.4	30.6	24.3
Webster	63	23	56.0	11.1	34.5	27.1	30.8	24.2
Shape	63	24	54.9			24.2		
Trial Mean	63	22	55.7	10.5	39.2	25.6	--	--
C.V. %	1.0	8.0	1.1	11.8	6.9	10.2	--	--
LSD 5%	1	NS	0.9	1.8	3.8	3.7	--	--
LSD 1%	1	NS	1.1	2.4	5.1	NS	--	--

* Days after planting. ** Yellow seed type.
NS = no statistical difference between varieties.

Planting Date: May 3 Harvest Date: August 24
Seeding Rate: 40 lbs/A
Previous Crop: 2007 & 2008 = HRSW, 2010 = Barley.
Note: The 2008 trial sustained severe late season heat and moisture stress.

2011 Crambe Variety Trial at Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodging	Test Weight	----- Seed Yield ----- 2009	2010	2011	Average Yield 2 yr	3 yr
	*	days	*	inches	0 - 9**	lbs/bu	---------- Pounds per acre ----------				
Meyer	52	21	82	44	0	26.9	1550	2669	1612	2140	1944
BelAnn	56	22	89	43	2	26.6	1802	2582	1305	1944	1896
Westhope	53	21	84	42	0	25.9		2851	1729	2290	
Trial Mean	54	21	85	43	1	26.4	1722	2700	1549	--	--
C.V. %	0.9	2.3	0.0	1.6	149	1.7	14.6	4.6	6.2	--	--
LSD 5%	1	1	1	1	NS	0.8	NS	NS	167	--	--
LSD 1%	1	NS	1	2	NS	NS	NS	NS	253	--	--

* Days after planting. ** Lodging: 0 = none, 9 = lying flat on ground.
NS = no statistical difference between varieties.

Planting Date: May 3 Harvest Date: August 8
Seeding Rate: 25 lbs/A
Previous Crop: 2008 = field pea, 2009 = oat, 2010 = HRSW.
Note: The 2009 trial sustained moderate hail damage.

2011 Oil Type Sunflower Variety Trial at Hettinger

Brand	Hybrid	Oil Type & Traits	Days to Bloom	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield 2009	Seed Yield 2010	Seed Yield 2011	Average Yield 2 yr	Average Yield 3 yr
		*	**	**	inches	lbs/bu	%	Pounds per acre				
Triumph	s678	NS,SS	74	121	50	25.7	37.6	1914	2528	1644	2086	2029
Seed	s668	NS,SS	76	110	46	24.8	35.9		2791	1726	2258	
	s673	NS,SS	78	110	45	24.1	37.2			1543		
	s870HCL	HO,CL,SS	76	111	46	24.0	37.4			1487		
Mycogen	8H449CLDM	HO,CL,DM	72	110	67	26.5	37.5	2798	2404	1631	2018	2278
Seeds	8D481	NS	73	110	67	25.2	33.7	1817	1784	2389	2086	1997
	8D310	NS	68	108	62	24.1	33.0	2290	1694	1550	1622	1845
	8N421CLDM	NS,CL,DM	72	109	59	24.2	35.8			1401		
Genosys	8037	HO,CL,DM	71	102	66	28.3	33.4		1993	1272	1628	
	9319	NS,DM	71	110	67	25.1	35.5			1794		
	9008	NS,DM	73	110	64	24.8	33.7			1560		
Syngenta	3480NS/CL/DM	NS,CL,DM	72	105	63	23.7	36.7	2111	2505	1912	2208	2176
Seed	3845HO	HO,EX	70	106	51	26.0	37.4	2320	2160	1719	1940	2066
	7120HO/DM	HO,DM	66	110	51	24.8	37.1	1635	1979	1578	1778	1731
	3733NS/DM	NS,DM	70	107	56	24.5	37.7			2264		
	3495NS/CL/DM	NS,CL,DM	73	106	66	26.4	36.4			1927		
	3995NS/SU	NS,EX	71	103	62	22.3	34.5			1778		
	4596HO/DM	HO,DM	69	112	67	27.7	36.2			1711		
	3733NS/DM coated	NS,DM	70	108	59	23.8	36.3			1707		
	NX82758	NS,CL,DM	70	110	58	21.7	34.7			1630		
	3158NS/CL/DM	NS,CL,DM	71	106	61	24.3	36.0			1569		
	NX01162	NS,CL,DM	70	104	65	21.6	31.9			1440		
	3990NS/CL/DM	NS,CL,DM	73	104	65	24.7	36.1			1353		
Proseed	E-22CL		68	112	67	26.0	34.2			1748		
	E-14		70	109	75	24.2	34.0			1543		
	E-21CL		71	110	71	22.9	34.2			1420		
	E-10		73	109	70	21.3	33.6			1385		
Pioneer	P63ME80	NS,EX	69	110	72	24.5	35.6			1843		
Hi-Bred	P63ME70	NS,EX	71	107	68	21.9	37.3			1670		
Int'l	P63HE60	HO,EX	72	106	70	24.4	34.8			1442		
Integra	724NSCL	NS,CL	70	106	59	24.0	34.6		1544	1220	1382	
Seed	756NSCL	NS,CL	71	106	66	26.6	35.0			1664		
	IX10-94	NS,EX	71	108	56	24.5	35.5			1660		
Elite	Pacific	HO	72	111	67	21.6	34.8			2058		
Seeds	Biba	Convent	70	105	62	24.0	37.0			1799		
	Pomar	Convent	72	108	72	22.9	36.0			1659		
	Balistic CL	HO,CL	71	112	73	24.6	35.6			1580		
	Ethic	HO	72	110	69	22.9	36.5			1205		
Croplan	460 ENS	NS,EX	70	109	58	23.3	36.3		2736	1911	2324	
Genetics	559 CLDMRNS	NS,CL,DM	71	110	69	25.2	36.9		2458	2175	2316	
	442 ENS	NS,EX	70	103	60	23.4	36.9			1691		
	548 CLDMRNS	NS,CL,DM	69	106	52	25.5	36.6			1437		
Seeds	Badger	Convent,CL	67	105	58	25.0	34.4			2134		
2000	Durango	NS,EX,DM	76	108	56	23.6	35.1			1770		
	Falcon	NS,EX,DM	72	105	53	23.7	35.6			1767		
	Torino	NS,CL	73	106	56	25.9	35.8			1537		
	Camaro DMR	NS,CL,DM	72	103	65	24.7	35.2			1352		
	x9822 DMR	HO,CL,DM	70	108	52	24.5	35.7			1345		

continued

Brand	Hybrid	Oil Type & Traits	Days to Bloom	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield 2009	Seed Yield 2010	Seed Yield 2011	Average Yield 2 yr	Average Yield 3 yr
		*	**	**	inches	lbs/bu	%	Pounds per acre				
Maturity Checks												
Early	Falcon		72	105								
Medium	Mycogen 8N270		66	104								
Late	Croplan 378 HO		69	110								
Trial Mean			71	108	62	24.4	35.6	2040	2169	1658	--	--
C.V. %			1.8	1.6	4.9	4.0	3.5	14.6	12.8	8.1	--	--
LSD 5%			2	2	4	1.3	1.7	405	389	188	--	--
LSD 1%			2	3	6	1.8	2.3	536	514	249	--	--

* Oil Type and Traits: NS = NuSun, HO = high oleic, Convent = conventional oil, CL = Clearfield, EX = Express herbicide tolerant, DM = downy mildew resistant, SS = short stature.

** Days to Bloom / Mature: The number of days from planting to 10% bloom / physiologic maturity.

Planting Date: June 6
Seeding Rate: 19,000 seeds / acre
Previous Crop: HRSW

Harvest Date: September 9
Row Spacing: 30"
Soil Type: loam

2011 Roundup Ready Canola Variety Trial at Hettinger

Brand	Variety	Type	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodging	Test Weight	Oil Content	Seed Yield
		*	**	days	**	inches	0 - 9***	lbs/bu	%	lbs/A
Proseed	Sprinter	H,ws	52	27	96	54	0	58.2	41.3	1193
Croplan	HyCLASS 940	H	51	19	85	44	2	53.2	43.2	1842
	HyCLASS 988	H	53	20	94	47	1	51.8	44.5	2142
	HyCLASS 955	H	52	18	89	42	3	53.0	45.9	2140
Monsanto	DKL 30-42	H	50	20	85	39	2	52.8	43.4	2106
	DKL 72-40	H	52	17	89	39	3	53.1	45.7	1955
Cargill	08H1134	H	54	18	94	41	2	52.8	44.2	1898
	07H874	H	55	16	90	43	0	52.3	43.1	2322
	V2035	H	54	18	90	41	3	53.8	45.4	1825
Mycogen	1012RR	H	57	18	94	49	0	55.6	42.8	2130
	1014RR	H	57	18	93	46	0	54.2	43.2	1964
	G152936H	H	55	16	89	44	1	52.4	44.4	2084
	G152951H	H	57	18	94	50	0	54.8	43.1	1963
BrettYoung	6070RR	H	50	20	89	42	2	51.6	44.1	2417
	6040RR	H	56	16	86	45	1	52.5	43.4	1937
	BY11-860	H	62	21	88	45	2	51.3	43.0	1902
Integra	7121R	H	52	20	88	46	2	53.6	41.4	1719
	7150R	H	50	19	87	41	3	52.6	44.5	1951
	7152R	H	52	18	88	41	2	52.5	43.6	2002
TCI	Heara	O,E	52	21	85	38	0	49.2	39.6	813
	Rodin	H,E	52	25	92	48	0	53.2	40.8	1642
Trial Mean			53	19	89	44	1	53.0	43.5	1858
C.V. %			0.9	2.9	2.1	8.3	56	1.6	2.7	7.3
LSD 5%			1	1	3	5	1	1.2	1.7	189
LSD 1%			1	1	4	7	2	1.6	2.2	255

* Type: ws = winter x spring cross, H = hybrid, O = open pollinated, E = high euricic acid rapeseed.

** Days after planting. *** Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: May 3 Harvest Date: August 9 Previous Crop = HRSW

2011 Camelina Variety Trial at Hettinger

Variety	Days to Bloom	Days to Mature	Plant Height	Lodging	Test Weight	Oil Content	----- Seed Yield ----- 2008	2010	2011	Average Yield 2 yr	3 yr
	*	*	inches	0 - 9**	lbs/bu	%	---------- Pounds per acre ----------				
Ligena	56	86	31	1	45.6	35.8	1136	2835	1352	2094	1774
Galena	56	84	31	0	48.5	37.7	899	2584	1576	2080	1686
Calen	57	86	32	0	45.4	35.2	903	2786	1136	1961	1608
Robinson	56	83	31	1	47.6	35.0	832	2481	1439	1960	1584
Blaine Creek	56	84	32	0	50.3	36.9	733	2370	1317	1844	1473
Suneson	56	83	31	2	50.8	37.3	828	2215	1083	1649	1375
Trial Mean	56	85	32	1	48.2	36.7	886	2545	1412	--	--
C.V. %	1.0	1.1	3.8	151	3.2	3.8	13.0	7.3	7.8	--	--
LSD 5%	1	1	NS	NS	2.2	NS	168	279	159	--	--
LSD 1%	NS	2	NS	NS	3.0	NS	226	386	215	--	--

NS = no statistical difference between varieties.
* Days after planting.
** Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: May 3
Harvest Date: August 8
Seeding Rate: 6 lbs/A
Previous Crop: 2007 = HRSW, 2009 = durum, 2010 = HRSW.
Note: The 2008 trial sustained late season heat and moisture stress.

2011 Tame Mustard Variety Trial at Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodging	Test Weight	----- Seed Yield ----- 2008	2010	2011	Average Yield 2 yr	3 yr
	*	days	*	inches	0 - 9**	lbs/bu	---------- Pounds per acre ----------				
Yellow Types											
Andante	46	24	84	39	1	51.7	681	2274	1736	2005	1564
AC Pennant	45	24	83	39	1	51.8	510	2117	1595	1856	1407
Ace	46	24	85	40	1	51.1	452	2255	1472	1864	1393
Tilney	46	24	84	38	1	52.3	619	2182	1291	1736	1364
Oriental Type											
Forge	51	27	87	53	1	51.3	1137	2535	1399	1967	1690
Brown Type											
Common	50	28	87	42	0	51.6	1208	2443	1477	1960	1709
Trial Mean	47	25	85	42	1	51.6	825	2332	1495	--	--
C.V. %	0.8	2.9	0.8	6.4	71	1.8	21.8	6.2	5.8	--	--
LSD 5%	1	1	1	4	NS	NS	267	213	130	--	--
LSD 1%	2	2	1	6	NS	NS	365	292	180	--	--

* Days after planting.
** Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: May 3 Harvest Date: August 8
Seeding Rate: 610,000 pls/A (approx. Yellow = 12 lbs/A, Brown and Oriental = 6 lbs/A).
Previous Crop: 2007 = HRSW, 2009 = durum, 2010 = HRSW.
Note: The 2008 trial sustained severe heat and moisture stress.

2011 Field Pea Variety Trial at Hettinger

Variety	Brand	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodging	1000 Seed wt	Protein Content	Test Weight	------ Seed Yield ------ 2009	2010	2011	Avg. Yield 2 year	3 year
		*	days	*	inches	0 - 9**	grams	%	lbs/bu	---------- bushesl per acre ----------				
Yellow Types														
CDC Golden	Alt. Seed Str.	63	14	88	19	8	199	25.3	64.6	40.8	64.4	60.9	62.6	55.4
Agassiz	Meridian Seed	63	15	89	22	6	228	25.7	65.8	43.4	53.7	58.6	56.2	51.9
Midas	Pulse USA	64	12	87	21	8	168	25.2	65.0	39.6	53.5	58.5	56.0	50.5
Korando	Pulse USA	61	14	86	18	8	243	25.4	63.2	31.2	51.5	64.4	58.0	49.0
DS Admiral	Pulse USA	63	14	86	21	6	211	25.3	63.9	33.8	50.3	59.8	55.0	48.0
Gunner	Paulson Pr. Seed	62	15	88	21	7	197	25.1	64.4			60.1		
Vegas	JB Farms	62	14	87	24	7	196	25.4	66.4			59.5		
Green Types														
SW Arcadia	Pulse USA	62	12	86	19	9	176	25.6	64.3	42.1	52.2	51.3	51.8	48.5
K2	Pulse USA	62	14	88	22	7	180	25.1	64.2	37.9	47.4	55.4	51.4	46.9
Majoret	Pulse USA	64	12	89	20	8	193	25.9	64.8	34.9	49.3	46.3	47.8	43.5
Cruiser	Pulse USA	62	15	89	19	8	193	25.3	63.6	36.1	48.0	44.0	46.0	42.7
CDC Striker	Alt. Seed Str.	64	12	89	20	8	199	26.2	64.7	25.3	46.0	47.0	46.5	39.4
Shamrock	Legume Matrix	66	11	92	23	5	212	25.2	64.1			51.0		
Trial Mean		62	14	88	22	6	201	25.7	64.7	34.9	52.1	55.5	--	--
C.V. %		1.0	5.6	1.0	16.3	14.4	6.6	1.5	2.5	7.7	6.1	4.9	--	--
LSD 5%		1	1	1	5	1	19	0.5	NS	3.8	4.5	3.9	--	--
LSD 1%		1	1	2	NS	2	25	0.7	NS	5.0	6.1	5.1	--	--

* Days to Bloom & Mature = the number of days from planting to 10% bloom and physiological maturity.

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

Planting Date: April 29

Seeding Rate: 330,000 live seeds / Acre.

Harvest Date: August 8

Previous Crop: 2008 = durum, 2009 & 2010 = HRSW.

2011 Field Pea - Recrop **Dickinson, ND**

Variety	Days to Bloom	Bloom Duration	Seeds per Pound	Plant Height	Test Weight	Lodging Score	Protein	--Grain Yield-- 2009	2010	2011	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
				in	lbs/bu	0-9	%		--bu/ac--		$/ac		--bu/ac--
Yellow Types													
Agassiz	56	15	2,293	27	62.0	3	24.4	--	57.0	50.3	499.41	53.7	--
DS Admiral	56	14	2,207	26	64.0	4	24.1	34.6	55.6	45.6	437.58	50.6	45.3
CDC Golden	56	14	2,341	26	62.1	5	25.5	41.0	61.3	47.5	461.80	54.4	49.9
CDC Centennial	56	14	2,113	23	63.5	8	24.2	--	63.2	48.1	470.89	55.7	--
CDC Meadow	56	15	2,504	27	64.4	5	24.5	--	63.3	44.4	421.28	53.9	--
CDC Treasure	55	15	2,294	28	64.3	4	24.6	--	--	49.5	488.75	--	--
Green Types													
Cruiser	55	15	2,756	25	62.9	7	24.4	30.0	53.0	36.1	279.97	44.5	39.7
CDC Patrick	57	13	2,934	25	63.0	7	24.7	--	58.2	45.4	397.10	51.8	--
CDC Striker	56	13	2,125	26	63.6	1	25.4	34.4	57.6	43.0	366.87	50.3	45.0
Majoret	56	13	2,093	25	63.5	1	24.8	38.1	54.6	45.4	396.18	50.0	46.0
Trial Mean	56	14	2,366	26	63.3	4	24.7	36.7	58.2	45.5	421.98	--	--
CV %	0.7	4.3	3.7	6.1	0.7	25.9	1.4	7.1	6.1	5.4	--	--	--
LSD 0.05	1	1	126	2	0.6	2	0.5	3.9	5.2	3.5	--	--	--

Planting Date: May 6, 2011

Harvest Date: August 3, 2011

Lodging: 0=No lodging, 9=Completely flat

Previous Crop: Oat

Seeding Rate: 325,000 live seeds/ac

Grain protein percentages reported on a 0% moisture basis

[1]Returns were calculated by multiplying the 2011 yield by the average price for yellow ($13.33/bu) and green ($12.50/bu) peas listed on the Northern Pulse Growers Association web site (http://northernpulse.com/) on September 20, 2011. Returns also deduct $170.77, the sum of all listed costs from the December 2010 Farm Management Planning Guide Projected 2011 Crop Budgets South West North Dakota for Field Pea.

2011 Lentil - Recrop **Dickinson, ND**

Variety	Days to Bloom	Bloom Duration	Seeds per Pound	Plant Height	Test Weight	Lodging Score	Returns[1]	Grain Yield
				in	lbs/bu	0-9	$/ac	pounds per acre
Large Green Types								
CDC Greenland	55	20	7,265	13	60.0	2	351.79	2,006
Pennell	55	19	6,466	12	58.3	0	414.75	2,239
Riveland	54	19	5,992	13	58.3	2	361.75	2,043
Medium Green Type								
CDC Richlea	54	20	8,800	12	60.3	2	429.07	2,292
Small Green Type								
CDC Viceroy	56	18	13,062	13	63.5	0	448.49	2,364
Small French Green Type								
CDC Lemay	55	19	13,660	12	63.3	1	372.81	2,084
Medium Red Type								
CDC Red Rider	55	20	9,796	13	62.1	1	485.50	2,501
Small Red Types								
CDC Redberry	55	19	10,120	12	61.9	0	409.54	2,220
CDC Rouleau	55	18	10,337	12	61.5	0	386.56	2,135
Extra Small Red Type								
CDC Rosetown	56	19	15,275	12	63.8	0	451.49	2,375
Trial Mean	55	19	10,077	13	61.3	1	411.17	2226
CV %	1.2	4.5	5.0	6.8	2.3	52.0	--	4.1
LSD 0.05	1	1	736	NS	2.1	1	--	134

Planting Date: May 6, 2011
Harvest Date: August 10, 2011
Lodging: 0=No lodging, 9=Completely flat
Previous Crop: Oat
Seeding Rate: 600,000 live seeds/ac

[1]Returns were calculated by multiplying the 2011 yield by the average price for lentils ($.27/lb) listed on the Northern Pulse Growers Association web site (http://northernpulse.com/) on September 20, 2011. Returns also deduct $189.78, the sum of all listed costs from the December 2010 Farm Management Planning Guide Projected 2011 Crop Budgets South West North Dakota for Lentil.

2011 Lentil Variety Trial at Hettinger

Variety	Days to Bloom	Days to Mature	Plant Height	Lodging	1000 Seed wt.	Test Weight	Seed Yield 2009	Seed Yield 2010	Seed Yield 2011	Avg. Yield 2 year	Avg. Yield 3 year
	*	*	inches	0 - 9**	grams	lbs/bu	pounds per acre				
Large Green Types											
Pennell	60	84	11	3.2	64.6	60.8	1530	1128	1551	1340	1403
CDC Greenland	62	87	11	5.5	57.8	62.6	1724	872	1254	1063	1283
Riveland	60	87	10	6.2	66.4	61.3	1186	743	1010	876	980
Medium Green Type											
CDC Richlea	62	86	11	6.5	51.6	64.1	1434	1154	1463	1308	1350
Small Green Types											
CDC Viceroy	62	85	11	3.2	31.0	66.9	1822	1446	1710	1578	1659
Essex	62	87	10	7.2	39.0	65.5			1252		
Small French Green Type											
CDC Lemay	60	84	9	5.8	30.6	67.4	1424	1570	1140	1355	1378
Medium Red Type											
CDC Red Rider	61	85	11	4.2	43.8	65.9	1782	1663	1984	1824	1810
Small Red Types											
CDC Rouleau	61	86	10	1.0	41.4	66.7	1822	1749	1656	1702	1742
CDC Redberry	60	86	12	0.0	43.6	66.5	1592	1390	1870	1630	1617
Extra Small Red Type											
CDC Rosetown	62	84	10	5.2	27.2	68.0	1749	1498	1711	1604	1653
Spanish Brown Type											
Morena	62	87	11	2.2	32.6	68.9			1260		
Trial Mean	61	85	10	5.1	40.8	65.6	1512	1321	1484	--	--
C.V. %	1.4	1.1	9.5	32	6	1.3	11.9	11.8	6.9	--	--
LSD 5%	1	1	1	2.3	3.4	1.2	257	226	144	--	--
LSD 1%	2	2	2	3.1	4.5	1.6	344	305	192	--	--

* Days to Bloom & Mature = the number of days from planting to 10% bloom and physiological maturity.
** Lodging: 0 = none, 9 = lying flat on ground.
Planting Date: May 3 Harvest Date: August 11
Seeding Rate: 550,000 live seeds / Acre. Previous Crop: 2008 = durum, 2009 & 2010 = HRSW.

2011 Clearfield Lentil Variety Trial at Hettinger

Variety	Days to Bloom	Days to Mature	Plant Height	Lodging	Test Weight	Seed Yield 2009	Seed Yield 2010	Seed Yield 2011	Avg. Yield 2 year	Avg. Yield 3 year
	*	*	inches	0 - 9**	lbs/bu	pounds per acre				
Large Green Type										
CDC Improve-CL	58	92	14	1.2	59.9	1918	1432	1722	1577	1691
Medium Green Type										
CDC Impress-CL	58	87	11	6.5	58.8	2249	1543	1760	1652	1851
Small Red Types										
CDC Maxim-CL	58	89	12	0.0	64.3	2234	2255	1874	2064	2121
CDC Impact-CL	59	88	12	1.8	66.5	1645	1593	1841	1717	1693
Extra Small Red Types										
CDC Imperial-CL	58	85	12	3.2	63.2	2035	2290	1620	1955	1982
CDC Impala-CL	60	88	13	4.0	65.9	1939	2215	1712	1964	1955
Trial Mean	59	88	12	2.8	63.1	2003	1888	1755	--	--
C.V. %	0.6	0.8	3.4	25	1.3	9.9	6.6	4.6	--	--
LSD 5%	1	1	1	1.0	1.5	299	189	122	--	--
LSD 1%	1	1	1	1.4	2.1	414	261	169	--	--

* Days to Bloom & Mature = the number of days from planting to 10% bloom and physiological maturity.
** Lodging: 0 = none, 9 = lying flat on ground.
Planting Date: May 4 Harvest Date: August 11
Seeding Rate: 550,000 live seeds / Acre. Previous Crop: 2008 = durum, 2009 & 2010 = HRSW.

2011 Chickpea Variety Trial at Hettinger

Variety	Fungicide	Days to Bloom	Ascochyta	Test Weight	Seeds per lb	Seed Size 10 mm	Seed Size 9 mm	Seed Size 8 mm	Seed Yield 2008	Seed Yield 2009	Seed Yield 2011	Avg. Yield 2 yr	Avg. Yield 3 yr
	*	**	0-9***	lbs/bu		%	%	%	Pounds per Acre	Pounds per Acre	Pounds per Acre	Pounds per Acre	Pounds per Acre
Large Kaboli Types													
Sawyer	treated	67	0.3	53.3	1161	6	12	19	1774	798	1090	944	1221
	untreated	66	2.0	--	1706	0	0	2			203		
Sierra	treated	68	0.3	38.1	1636	5	12	13	1933	287	457	372	892
	untreated	68	4.0	--	--	0	0	0			0		
Dylan	treated	64	1.3	38.3	3122	0	2	7	1933	199	145	172	759
	untreated	63	5.0	--	--	0	0	0			0		
Troy	treated	68	0.3	38.2	2533	1	2	7	1468	172	192	182	611
	untreated	68	5.3	--	--	0	0	0			0		
Small Kaboli Types													
B-90	treated	67	0.0	55.0	1648	0	0	1	2314	2024	1029	1526	1789
	untreated	66	1.0	55.7	2191	0	0	0			970		
CDC Frontier	treated	66	0.0	58.0	1512	0	4	19	2112	1750	1106	1428	1656
	untreated	65	1.0	55.3	1671	0	1	14			1219		
CDC Luna	treated	63	0.3	55.0	1353	0	8	23		1281	1114	1198	
	untreated	63	1.0	40.5	2558	0	0	7			331		
Desi Types													
CDC Anna	treated	67	0.3	53.0	2333	0	0	1	2311	1895	1692	1794	1966
	untreated	65	1.3	53.0	3153	0	0	0			617		
Trial Mean		66	3.0	54.6	1912	2	5	11	1920	943	777	--	--
C.V. %		2.2	15.8	3.1	28.8	114	73	36	8.8	22	35	--	--
LSD 5%		1	0.3	1.1	284	1	1	2	245	300	130	--	--

* Fungicide treatments: 5 oz/A Proline on June 17, June 29 and July 28.

** Days to Bloom = the number of days from planting to 10% bloom.

*** Ascochyta blight rating: 0 = none, 9 = completely dead plants.

Planting Date: May 3
Harvest Date: September 6
Seeding Rate: 175,000 live seeds / Acre.
Previous Crop: HRSW

2011 Dry Bean Variety Trial at Hettinger

Variety	Days to Bloom	Plant Height	1000 Seed wt.	Test Weight	------ Seed Yield ------ 2009	2010	2011	Avg. Yield 2 year	3 year
	*	inches	grams	lbs/bu	---------- pounds per acre ----------				
Pinto									
Lapaz	60	23	251	53.9	1889	1995	1916	1956	1933
Lariat	55	18	240	54.8	1540	2122	2068	2095	1910
Maverick	53	21	229	52.2	1808	1987	1791	1889	1862
Stampede	55	22	251	53.7	1745	1559	1914	1736	1739
Sonora	54	23	199	53.9		2076	1999	2038	
Medicine Hat	53	26	208	53.7		2066	1532	1799	
Windbreaker	54	27	275	52.2		1942	1645	1794	
Santa Fe	55	24	208	53.7		1295	2150	1722	
Galeena	55	25	224	56.8			1958		
Navy									
Avalanche	55	25	174	55.8	1474	1556	1549	1552	1526
Vista	60	20	190	57.0	1401	1611	1370	1490	1461
Ensign	55	25	164	55.1	1207	1380	1401	1390	1329
HMS Medalist	55	23	150	59.0		1447	1253	1350	
Skyline	57	22	166	56.8			1326		
Black									
Zorro	60	24	180	56.0	1413	2043	1573	1808	1676
Jaguar	60	23	154	50.7	1341	1768	1833	1800	1647
Eclipse	60	22	144	57.5	1343	1784	1707	1746	1611
Loreto	60	25	180	48.4		1227	1502	1364	
Small Red									
Merlot	56	21	217	48.5	675	1589	1496	1542	1253
Pink									
Sedona	60	22	268	--	803	838	612	725	751
Trial Mean	57	23	207	54.2	1378	1640	1656	--	--
C.V. %	1.6	23	9.7	3.3	10.6	6.1	7.5	--	--
LSD 5%	1	NS	28	2.5	208	165	177	--	--
LSD 1%	2	NS	38	3.3	276	222	235	--	--

* Days to Bloom = the number of days from planting to 10% bloom.
NS = no statistical difference between varieties.

Planting Date: May 26
Harvest Date: September 12
Seeding Rate: 100,000 live seeds / Acre (approx. 60 lbs/A).
Previous Crop: 2008 = hrsw, 2009 = barley, 2010 = oat.

2011 Soybean Variety Trial at Hettinger

Brand	Variety	Maturity Group	Plant Height	Test Weight	------ Seed Yield ------ 2009	2010	2011	Avg. Yield 2 year	3 year
			inches	lbs/bu	---------- bushels per acre ----------				
Roundup Ready									
Proseed	P2 11-50	0.5	28	53.9			43.5		
	P2 11-10	0.4	26	51.8			38.9		
Syngenta Seed	S08-A2	0.8	27	53.9			38.0		
	S06-W2	0.6	29	53.5			36.7		
	S10-G7	1.0	26	54.3			34.0		
Seeds 2000	2051 RR2Y	0.5	24	53.5			41.1		
	2082 RR2Y	0.8	27	54.7			32.3		
Integra Seed	79020 R	0.2	23	52.2			37.8		
	20100 R2Y	0.1	26	54.4			37.5		
Conventional									
NDSU	Sheyenne	0.8	25	54.5	28.1	33.1	35.8	34.4	32.3
	Ashtabula	0.4	26	54.1	23.2	28.2	43.9	36.0	31.8
	Cavalier	00.7	24	55.7	21.9	26.6	37.8	32.2	28.8
	ProSoy	0.8	27	53.4	19.1	25.9	38.0	32.0	27.7
	Traill	00.0	26	55.0	21.5	26.6	34.3	30.4	27.5
Trial Mean			26	53.9	22.8	26.8	37.7	--	--
C.V. %			4.7	0.9	9.6	9.2	3.4	--	--
LSD 5%			2	0.7	3.4	3.7	1.8	--	--
LSD 1%			2	1.0	4.7	5.0	2.4	--	--

Planting Date: May 17 Harvest Date: September 26
Seeding Rate: 150,000 live seeds / Acre. Row Spacing: 30"
Previous Crop: 2008 = hrsw, 2009 = barley, 2010 = oat.

2011 Tame Buckwheat Variety Trial at Hettinger

Variety	Days to Bloom	Test Weight	----- Seed Yield ----- 2008	2010	2011	Average Yield 2 yr	3 yr
	*	lbs/bu	---------- Pounds per acre ----------				
Manor	40	35.2	762	1917	1317	1617	1332
Koma	42	36.2	765	1688	1453	1570	1302
Koto	41	36.6		1385	1178	1282	
Trial Mean	41	36.0	726	1663	1316	--	--
C.V. %	1.6	4.6	15.3	6.6	5.4	--	--
LSD 5%	NS	NS	NS	191	124	--	--
LSD 1%	NS	NS	NS	289	187	--	--

* Days after planting.
NS = no statistical difference between varieties.

Planting Date: May 26 Harvest Date: September 12
Seeding Rate: 700,000 live seeds/A
Previous Crop: 2007 = HRSW, 2009 = oat, 2010 = barley.
Note: The 2008 trial sustained late season heat and moisture stress.

Saline tolerant alfalfa variety trial on the Golden Valley County Conservation District Farm, Beach, ND, 2011.

Variety	Agent or origin	2007 Yield[1]	2008 Yield[1]	2009 Yield[1]	2010 1st Cutting Yield[1,2]	2010 2nd Cutting Yield[1,2]	2011 1st Cutting Yield[1,2]	2011 2nd Cutting Yield[1,2]	Total 7 cuttings	All cuttings % Vernal
		---------- tons/acre ----------								%
Vernal	Public	1.07	1.74	0.47	1.62	0.99	2.36	1.50	9.7	100
Bullseye	Target Seed LLC	1.41	2.25	0.52	1.44	0.73	1.90	1.61	9.9	101
Rugged	Target Seed LLC	1.52	2.71	0.44	1.90	0.95	2.40	1.84	11.8	121
TS4002	Target Seed LLC	1.45	2.37	0.47	1.37	0.79	2.39	1.48	10.3	106
CW054038	Cal West Seeds	1.28	2.63	0.46	1.50	1.10	2.19	1.79	11.0	112
PGI 437	Cal West Seeds/PGI	1.53	2.17	0.42	1.61	0.98	2.13	1.61	10.4	107
CW34024/	Cal West Seeds/PGI	1.76	2.52	0.49	1.71	1.05	2.34	1.59	11.5	118
PGI 459	Cal West Seeds/PGI	1.65	2.20	0.49	1.79	1.09	2.29	1.70	11.2	115
CW044024	Cal West Seeds	1.71	2.69	0.52	1.47	0.92	1.86	1.38	10.5	108
CW064027	Cal West Seeds	1.95	2.52	0.51	1.65	1.01	2.06	1.47	11.2	115
Mean		1.53	2.38	0.48	1.61	0.97	2.19	1.60	-	
CV%		23.7	18.2	22.5	10.9	26.8	16.04	10.70	-	
LSD .05		NS	NS	NS	0.29	NS	NS	NS	-	
LSD.10		0.44	0.52	NS	0.25	NS	NS	0.29	-	

[1] Yield on a dry matter basis

Planted 22 June 2007
Harvested 30 Aug 2007
Harvested 24 Jun 2008
Harvested 24 Jun 2009
Harvest 10 Jun 2010
Harvest 21 Jul 2010
Harvest 1 Jul 2011
Harvest 9 Aug 2011

[2] Pocket gophers have invested one rep so only 3 reps used to calculate statistics

2011 Winter Wheat Varietal Response to Foliar Applied Fungicides Mandan

Cooperator: USDA-ARS, Northern Great Plains Research Lab., Mandan
This trial was partially funded by Ducks Unlimited, Bismarck
Observations by Brandi Herauf, IPM Scout, Dickinson Res. Ext. Center

	Untreated						Treated*					
	Tan Spot		Septoria		Bac Blight		Tan Spot		Septoria		Bac Blight	
Variety	Inc	Sev	Inc	Sev	Inc	Sev	Inc	Sev	Inc	Sev	Inc	Sev
	% Flag Leaf											
Jerry	40	1	100	95	0	0	90	2	20	50	50	1
Decade	10	1	100	100	0	0	80	1	30	10	90	20
Falcon	20	20	100	95	0	0	30	1	20	20	90	40
Accipiter	60	2	60	80	40	10	70	1	10	50	70	10
Peregrine	80	10	80	80	40	10	90	2	0	0	70	20
Expedition	0	0	100	100	0	0	20	1	40	80	50	10
Darrell	10	1	100	95	10	5	50	1	20	50	90	20
Lyman	0	0	100	100	0	0	70	1	40	40	50	5
SD05118-1	40	10	70	85	10	50	90	2	20	80	90	60
Millennium	0	0	100	100	0	0	80	1	40	90	60	60
Wesley	30	1	100	95	10	60	60	1	10	100	70	40
Overland	0	0	100	100	0	0	60	1	20	40	70	20
Yellowstone	20	1	100	95	0	0	80	2	60	50	40	20
Carter	10	1	70	100	10	80	60	1	60	60	40	5
Boomer	10	1	100	100	0	0	60	1	20	20	50	10
Striker	0	0	100	100	0	0	40	1	30	10	50	10
WB Matlock	0	0	100	100	0	0	80	1	70	30	20	40
Hawken	10	1	90	100	10	2	30	1	70	90	60	10
Art	0	0	100	100	0	0	50	1	40	80	60	10
SY Wolf	60	2	40	20	40	50	100	1	40	10	50	60
Radiant	50	20	60	50	30	20	100	2	0	0	90	30
AP503CL2	0	0	100	100	0	0	40	1	10	100	80	10
PST-44	70	20	70	60	40	20	50	1	0	0	90	70
PST-45	60	5	70	60	30	3	50	1	40	60	50	50
PST-46	30	1	20	5	100	50	60	1	10	5	80	50

*Foliar fungicides: 5 oz/A Stratego applied on June 4 (jointing) and
8.2 oz/A Prosaro applied on July 1 (flowering).

Inc = percentage of flag leaves showing infection.
Sev = percentage of flag leaf surface infected with disease.

Date of Observation: July 21, 2011 Previous Crop: hrsw.

2011 Evaluation of Diseases on Hard Red Spring Wheat Varieties at Hettinger

Evaluations by Brandi Herauf, IPM Crops Scout, Dickinson Res. Ext. Center

	Tan Spot		Septoria		Fusarium (scab)		Leaf Rust		Untreated		---- Treated** ----	
Variety	Inc*	Sev*	Inc	Sev	Inc	Sev	Inc	Sev	Test wt.	Yield	Test wt.	Yield
	%	%	%	%	%	%	%	%	lbs/bu	bu/A	lbs/bu	bu/A
RB07	60	1	100	2	0	0	0	0	53.5	30.0	55.2	35.8
Sabin	40	1	100	5	0	0	0	0	59.2	29.9	57.9	47.5
Faller	80	5	100	10	0	0	0	0	56.7	31.9	55.9	38.0
Prosper	50	2	60	10	0	0	0	0	57.5	23.2	55.7	40.0
Velva	40	1	100	5	0	0	40	2	55.1	42.4	55.8	49.0
Barlow	100	2	70	5	0	0	30	1	57.6	41.8	56.7	45.5
Steele-ND	70	3	100	3	0	0	30	1	56.1	35.9	55.5	38.6
Glenn	60	5	100	50	0	0	20	1	60.6	32.3	59.2	39.5
Select	40	5	90	60	0	0	0	0	57.1	43.3	55.5	44.7
SY Tyra	100	5	100	10	0	0	0	0	53.9	32.7	52.7	39.0
Mott	50	1	60	5	10	50	100	3	58.7	34.6	58.0	39.3
WB Gunnison	0	0	100	90	0	0	0	0	55.9	26.7	53.2	30.3
Brick	10	1	100	80	0	0	0	0	58.9	40.3	59.0	46.7
Briggs	20	1	100	5	0	0	0	0	56.6	39.7	55.3	43.3
Rollag	60	3	100	20	0	0	0	0	57.3	31.6	56.5	35.2
Howard	90	3	100	60	0	0	20	1	55.8	43.1	55.4	46.1
Alsen	70	3	100	90	10	2	0	0	56.2	27.3	55.4	32.1
Jenna	70	2	100	10	0	0	0	0	57.7	41.1	56.5	48.9
Brennan	80	2	100	5	0	0	10	1	57.3	44.5	57.1	49.9
Choteau	30	2	100	30	0	0	0	0	52.9	26.0	51.4	27.9
Kelby	40	1	100	10	0	0	0	0	58.1	46.4	57.3	49.9
Kuntz	80	2	100	10	40	50	20	1	54.2	37.5	54.3	39.4
Fryer	60	1	100	2	0	0	40	2	55.3	31.9	54.8	35.8
Vantage	70	1	100	5	20	60	60	1	60.3	36.3	60.3	37.8
ND901CL	70	4	100	5	0	0	60	1	56.9	34.5	56.3	38.9
AP605CL	70	5	100	4	0	0	0	0	56.3	47.3	55.5	51.7
Reeder	100	5	100	80	0	0	100	5	55.1	43.7	55.9	49.4
Tom	100	3	100	5	0	0	0	0	56.7	40.8	56.9	44.7
Breaker	90	5	100	10	0	0	20	1	59.1	45.2	57.8	44.2
Blade	90	3	100	5	0	0	0	0	58.2	41.8	57.3	40.5
Samson	80	3	100	5	0	0	40	1	55.3	47.6	56.3	53.2
Brogan	80	3	100	10	0	0	0	0	55.9	41.5	55.8	44.6
WB Digger	30	5	90	20	0	0	20	4	52.7	37.2	52.0	38.6
WB Mayville	0	0	100	98	0	0	0	0	51.6	36.6	51.6	41.6
Edge	60	2	100	5	0	0	60	5	56.4	44.7	55.8	48.5
SY Soren	60	1	100	5	0	0	0	0	55.5	43.9	55.4	48.8
O'Neal	10	1	100	95	0	0	80	3	53.2	35.6	53.1	36.0
						Trial Mean			56.3	38.8	55.8	42.1

*Incidence = percentage of plants with disease.

*Severity = percentage of flag leaf surface or seed head with disease.

**Fungicide Treatments: 8 oz/A Pyraclostrobin (Headline) on June 7 (3 leaf) & 4 oz/A Tebuconazole (Onset) on July 6 (heading).

Date of Observation: July 28

Planting Date: May 2

Previous Crop: HRSW

2011 Spring Wheat Tolerance to Selected Diseases **Dickinson, ND**

	Tan Spot		Septoria		Bacterial Stripe		Fusarium Head Blight	
Variety	Incedence[1]	Severity[2]	Incedence[1]	Severity[2]	Incedence[1]	Severity[2]	Incedence[1]	Severity[3]
	---------- % ----------							
alpine	10	20	10	20	0	0	0	0
Alsen	2	5	10	70	0	0	0	0
Barlow	6	10	7	80	0	0	0	0
Blade	4	5	10	80	0	0	0	0
Breaker	10	1	10	60	0	0	1	10
Brennan	5	1	10	50	0	0	0	0
Brick	5	20	10	80	0	0	0	0
Brogan	0	0	10	100	0	0	0	0
Choteau	2	3	10	80	0	0	0	0
Edge	3	3	10	70	0	0	1	10
Faller	10	3	10	60	0	0	0	0
Freyr	1	30	10	95	0	0	0	0
Glenn	4	2	10	60	0	0	0	0
Howard	4	2	10	70	0	0	0	0
Jenna	8	10	9	60	0	0	0	0
Kelby	6	5	10	30	0	0	0	0
Mott	10	5	10	10	0	0	0	0
ND901CL	6	10	10	60	1	3	0	0
Power Play	0	0	10	100	0	0	0	0
Prosper	3	2	10	70	1	10	0	0
RB07	5	1	10	20	0	0	0	0
Sabin	4	30	10	70	0	0	0	0
Samson	2	10	10	85	0	0	1	50
Select	0	0	10	100	0	0	0	0
Steele-ND	1	10	10	90	0	0	3	5
Sy Soren	2	5	10	70	0	0	0	0
Sy Tyra	0	0	10	100	0	0	0	0
Tom	4	1	10	70	0	0	0	0
Vantage	6	3	9	50	0	0	0	0
Velva	3	1	10	60	0	0	0	0
WB-Digger	1	1	10	98	0	0	0	0
WB-Gunnison	0	0	10	100	0	0	4	50
WB-Mayville	0	0	10	100	0	0	0	0

Observations performed by Brandi Herauf, IPM Crop Scout, Dickinson Research Extension Center

Date of observations: August 1, 2011

Planting Date: May 4, 2011

Previous Crop: Field Pea

[1] Incidence = Percent of plants exhibiting symotoms

[2] Severity = Percent of leaf exhibiting lesions

[3] Severity = Percent of head affected in symptomatic heads

2011 Evaluation of Diseases on Durum Wheat Varieties at Hettinger

Evaluations by Brandi Herauf, IPM Crops Scout, Dickinson Res. Ext. Center

	Tan Spot		Septoria		Untreated		---- Treated** ----	
Variety	Inc*	Sev*	Inc	Sev	Test wt.	Yield	Test wt.	Yield
	%	%	%	%	lbs/bu	bu/A	lbs/bu	bu/A
Maier	100	3	80	40	55.9	31.3	54.1	35.4
Mountrail	80	2	100	30	56.1	32.4	53.8	35.2
Divide	100	2	100	20	55.8	28.1	55.1	31.4
Alkabo	90	5	100	30	57.1	32.4	55.0	35.6
Grenora	40	1	100	5	53.8	29.2	53.2	36.4
Tioga	50	1	90	10	55.4	25.8	54.0	28.9
Lebsock	20	1	100	40	57.5	33.2	55.4	33.9
Pierce	30	1	100	70	57.4	34.2	56.5	36.4
DG Max	70	1	100	50	57.4	33.4	56.6	40.9
Westhope	40	2	100	40	57.2	38.6	55.2	44.6
Alzada	0	0	100	80	53.2	26.6	51.4	29.7
Strongfield	40	2	90	70	54.0	27.5	52.8	28.2
AC Commander	20	1	100	40	54.0	29.1	54.0	35.0
AC Navigator	30	1	100	40	55.7	26.5	53.8	26.4
WB-Belfield	0	0	100	95	53.3	30.0	52.5	33.6
Wales	0	0	100	40	55.2	30.4	56.0	41.9
CDC Verona	10	10	100	40	53.4	34.5	52.7	35.5
Grande D'oro	50	3	100	20	55.3	33.9	56.3	37.0
DG Star	30	1	90	20	54.1	31.7	53.5	33.2
Rugby	20	1	100	60	54.5	36.2	55.4	41.4
Ben	40	1	100	30	54.8	34.3	56.2	38.1
Dilse	60	1	60	30	53.0	30.1	53.5	36.2
	Trial Mean				55.8	34.8	55.3	38.7

*Incidence = percentage of plants with disease.

*Severity = percentage of flag leaf surface with disease.

**Fungicide Treatments: 8 oz/A Pyraclostrobin (Headline) on June 7 (3 leaf) & 4 oz/A Tebuconazole (Onset) on July 6 (heading).

Date of Observation: July 28

Planting Date: May 2

Previous Crop: HRSW

2011 Evaluation of Barley Yellow Dwarf on Barley and Oat Varieties at Hettinger

Evaluations by Brandi Herauf, IPM Crops Scout, Dickinson Res. Ext. Center

Barley	
Variety	Incidence
2 Row Types	
Conlon	0
Rawson	70
Pinnacle	80
AC Metcalfe	90
CDC Copeland	100
Haxby	100
Lilly	70
Conrad	50
6 Row Types	
Stellar-ND	60
Quest	80
Innovation	90
Lacey	80
Tradition	60
Celebration	100
Rasmusson	60

Oat	
Variety	Incidence
Paul	50
HiFi	20
Shelby 427	60
Stallion	10
Killdeer	60
CDC Dancer	50
CDC Minstrel	40
Rockford	20
AC Pinnacle	20
Streaker	30
Hytest	10
Otana	0
Newburg	0
Buff	0
Monida	0
Souris	10
Jerry	30
Morton	20
Leggett	30
Furlong	0
Stark	0
Beach	0

Incidence = percentage of plants with disease.

Date of Observation: July 28

Rancona fungicide seed treatmen tperformance on spring wheat on the Darwyn and Francis Mayer Farm, Mott, ND, 2011.

	--- June 28 evaluation ---			--- Initial whole plant evaluation ---					Evaluation soft dough			---------- Harvest ----------			
Treatment	Plant density	Leaf stage	Vigor	Plant length	Tillers	SCI[1]	Seminal roots	Crown root	Color[2]	Mass[3]	SCI[1]	Height	Plant density	Grain[4] yield	Test[4] weight
				mm	no/plant		no/plant	no/plant				mm		bu/acre	lb/bu
Untreated Check	160.3	3.1	5.0	406.7	4.1	0.6	4.5	10.4	1.6	3.1	1.4	753.0	163.5	24.8	51.8
Rancona Pinnacle	146.8	2.5	6.0	431.1	4.3	0.8	4.6	9.6	1.8	2.9	1.4	736.8	223.3	24.8	51.2
Dividend Extreme	160.3	2.8	5.8	510.2	3.5	0.6	4.6	9.0	1.7	3.2	1.4	783.8	205.4	23.2	50.1
Dividend Extreme, Rancona 3.8 FS	187.5	3.1	5.3	428.0	3.2	0.8	4.5	10.1	1.6	3.3	1.3	771.3	206.0	24.9	51.4
Rancona Pinnacle, Exp1	177.6	2.9	6.0	444.7	2.4	1.5	4.2	7.8	1.7	2.8	1.4	725.8	161.6	26.4	52.5
Rancona Pinnacle, Exp2	199.8	2.9	5.3	439.5	3.7	0.7	4.4	10.0	1.5	3.1	1.4	793.8	222.1	23.8	51.6
Exp3	144.3	3.0	5.3	409.9	4.6	0.5	4.3	11.6	1.4	3.4	1.2	782.0	204.8	23.1	50.4
Rancona Crest WR	180.1	3.1	6.0	436.9	3.3	0.8	4.5	10.6	1.5	3.3	1.3	769.8	216.5	26.3	51.6
Rancona Crest	155.4	3.0	5.8	451.5	3.2	0.7	4.5	10.0	1.6	3.0	1.3	791.3	215.3	26.4	50.8
Exp3, Exp4, Exp2	187.5	3.7	7.0	469.1	2.7	1.2	4.3	8.6	1.6	3.1	1.5	749.8	198.0	27.5	51.5
Rancona Dimension	172.7	2.8	5.3	439.2	3.3	0.6	3.8	9.5	1.6	3.2	1.4	717.5	173.9	22.2	51.3
Exp4	187.5	2.9	5.3	456.4	4.1	0.8	4.7	10.4	1.7	3.2	1.3	753.8	222.1	25.1	51.7
Mean	171.6	2.98	5.6	443.6	3.5	0.8	4.4	9.8	1.6	3.1	1.4	760.7	201.0	24.9	51.3
CV	23	11.4	12.3	9.8	20.4	58.4	10.6	24.8	15.9	11.7	20.3	7.3	23.7	13.7	3.4
LDS 0.05	NS	0.49	1.0	NS	1.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1] SCI = subcrown internode rating. 1 = 0 to 25% of subcrown internode covered with lesions; 2 = 25 to 50% subcrown internode covered with lesions; 3 = 50 to 75% of subcrown internode covered with lesions; and 4 = more than 75% of subcrown internode covered with lesions.

[2] Color = root color. 1 = white; 4 = dark

[3] Mass = root mass. 1 = small; 4 = large.

[4]Grain yield and test weight adjusted to 12% moisture basis.

Foliar fungicide trial in cooperation with Bayer CropScience and the Dickinson Research Extension Center on the Perry and August Kirschmann farm, Regent, ND, 2011

Treatment[1]	App Rate	Foliar evaluation[2] I1	S1	I2	S2	I3	S3	Grain yield	Test wt
	fl oz/acre							bu/acre	lb/bu
Untreated		18	20	20	23	100	15	26.1	54.7
4-5L, Stratego YLD+ Wolverine Herbicide	1.5oz + 27.4 0z	10	2	10	14	93	7	27.3	55.6
Flag, Prosaro 421SC + NIS	5.0 oz + 0.125%v/v	20	16	17	10	48	2	25.7	57.3
Flowering, Prosaro 421SC + NIS	6.5oz + 0.125%v/v	20	16	18	17	43	3	34.4	57.0
4-5L, Stra YLD + Wolv/ Flag, Prosaro 421 + NIS	1.5 oz+27.4oz/5.0oz+0.125%v/v	10	2	10	8	23	1	29.0	56.5
Mean		16	11	15	14	61	6	28.5	56.2
CV%		14	49	30	38	29	91	13.1	3.7
LSD.05		3.4	8.4	7.0	8.3	27.6	7.6	5.77	NS

[1] Application: 4-5 L = 4 to 5 leaf stage, 6/23; Flag = flag leaf stage, 7/15; Flowering = flowering stage, 7/19; Wolverine was applied to all plots at the 4 to 5 leaf stage of crop development on 6/23.

[2] I1, I2, I3 = Incidence of leaf diseases symptoms in treatment as observed on 6/30, 7/19, and 7/27 respectively

[2] S1, S2, S3 = Severity of leaf diseases symptoms in treatment as observed on 6/30, 7/19, and 7/27 respectively

Impact of Previous Crop and Tillage on Barley Variety Performance
NDSU Dickinson Research Extension Center

Previous research at Dickinson indicated yield advantages when spring wheat following field pea in rotation compared to growing wheat continuously. A study was established in 2009 at Dickinson to compare barley variety performance when preceded by canola, corn, field pea, and spring wheat. Three six-rowed (Lacey, Stellar-ND, and Tradition) and three two-rowed (Conlon, Conrad, and Pinnacle) varieties were seeded after each of the four crops in a no-till system. We were unable to detect a difference that was different statistically for average yield of the barley varieties when following the four different crops in 2011 (P=0.33; Table 1). In contrast, higher barley yield was measured following field pea than following corn or spring wheat in 2010. Greater variability in grain yield within plots used to calculate average yield for each of the four previous crops occurred in 2011 compared with 2010; this variability explains our inability to detect yield differences in 2011 that were differently statistically between previous crop treatments, even though there was a range in mean yield ranging from 57 bu/acre for barley following canola to 70 bu/acre for barley following field pea. The rank in barley yield across both years among the four crops was field pea>corn>canola≅spring wheat. Barley test weight was relatively light in 2011 (average TW = 37.9 lb/bu) and unaffected by previous crop, as also was the case in 2010.

Table 1. Previous Crop by Barley Variety Trial, NDSU Dickinson Research Extension Center, 2010-2011

	Grain yield			Test weight		
	2010	2011	Average	2010	2011	Average
Previous Crop	---------- bu/acre ----------			---------- lb/bu ----------		
Canola	90	57	74	48.0	38.1	43.1
Corn	70	65	68	45.7	38.0	41.9
Field pea	95	70	83	47.9	37.9	42.9
Spring Wheat	86	59	73	48.3	37.6	43.0
LSD 0.05	7	NS		NS	NS	
Barley varieties						
Conlon	74	53	64	48.8	40.0	44.4
Conrad	90	58	74	46.6	35.7	41.2
Lacey	88	66	77	47.9	37.6	42.8
Pinnacle	86	66	76	47.5	36.7	42.1
Stellar-ND	89	65	77	46.2	37.6	41.9
Tradition	84	69	77	48.2	39.7	44.0
LSD 0.05	6	3		0.9	0.7	

Tradition produced equal or higher yields than other barley varieties in 2011 (Table 1). Conlon produced lower yields than other barley varieties in 2011, as also was the case in 2010. In 2010, Conrad (2-rowed) and Stellar-ND (6-rowed) were among the highest yielding varieties, but both produced lower yields than Tradition in 2011. Kernels with the heaviest test weight were produced by Conlon (2-rowed) and Tradition (6-rowed) in 2010 and 2011.

We were unable to detect any impact of tillage system on barley yield across the six varieties in a separate field study in 2011 (Table 2). This is consistent with a lack in yield response to changes in tillage system in both 2009 and 2010. In contrast, a positive impact of tillage reduction on wheat yield was measured in these plots between 2000 and 2006, with a 40% higher yield under no-till compared with clean-till (i.e., conventional-till) and a 30% higher yield compared with reduced-till. Much of the yield advantage was attributed to soil moisture conservation under no-till compared with tilled systems, particularly closer to the soil surface. Volumetric water content was greater under no-till than clean- and reduced-till at a 4-inch soil depth throughout the 2011 growing season in the present study (Fig. 1a), and on several dates at an 8-inch soil depth (Fig. 1b). However, this failed to translate into a barley grain yield advantage because seedbeds were adequately moist for good emergence across all tillage systems earlier in the season shortly after plots were seeded (data not presented). Interestingly, volumetric soil water content was less under no-till than reduced- and clean-till plots by 67 days after seeding at a 2-ft soil depth (Fig. 1c). These soil water differences between tillage systems did not translate into

Table 2. Tillage Systems by Barley Variety Trial, NDSU Dickinson Research Extension Center 2009-2011

	Grain yield				Grain test weight			
	2009	2010	2011	Average	2009	2010	2011	Average
Tillage system	----------bu/acre----------				----------lb/bu----------			
Conventional	107	58	66	77	49	44	40	44
Reduced	-	67	65	-	-	45	41	43
No-till	99	63	56	73	48	47	40	45
LSD 0.05	NS	NS	NS		NS	1	NS	
Barley varieties								
Conlon	105	58	54	72	50	48	42	47
Conrad	121	62	57	80	50	45	40	45
Lacey	87	65	69	74	49	45	40	45
Pinnacle	121	67	62	83	48	45	39	44
Stellar-ND	86	60	62	69	46	44	39	43
Tradition	97	63	69	76	49	46	42	46
LSD 0.05	12	5	5		1	1	1	

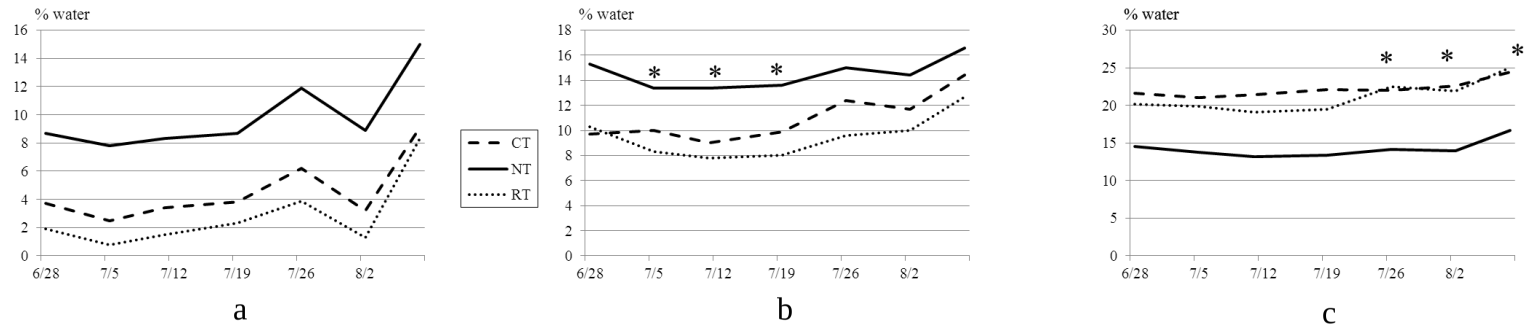

Figure 1. Volumetric soil water content at 4-inch (a), 8-inch (b), and 24-inch (c) depths in clean-till (CT), reduced-till (RT), and no-till (NT) plots at the NDSU Dickinson Research Extension Center in 2011. Differences were detected between soil water content in NT plots and other plots on each date at the 4-inch depth, and the dates indicated by the asterisk (*), at 8-inch and 24-inch depths ($P < 0.05$).

above-ground differences in barley grain yield in any year (Table 2). Test weight of barley grain also was not impacted consistently by tillage system in any year.

The 6-rowed varieties Lacey and Tradition produced greater amounts of grain than the other four barley varieties across the three tillage systems in 2011 (Table 2). In contrast, the 2-rowed variety Pinnacle produced grain yield equal or greater than amounts produced by other barley varieties in both 2009 and 2010. Relatively low yields were produced by Stellar-ND in each of the three years of this ongoing study.

The 2-rowed variety Conlon produced grain with a test weight that was equal or heavier than grain test weight produced by other barley varieties in 2009, 2010, and 2011 (Table 2). Among 6-rowed varieties, Tradition produced grain with a relatively heavy test weight. Conversely, light test weight grain was produced by Stellar-ND.

Results of the ongoing tillage study with barley and the previous study with wheat suggest that the yield advantage which typically occurs under relatively dry conditions (wheat) can disappear when more favorable moisture conditions develop, particularly during spring through mid-summer (barley). This is not surprising since much of the advantage in crop performance under no-till has been attributed to soil moisture conservation in southwestern North Dakota. We suspect that barley yield would be enhanced under no-till compared with tilled tillage systems if dry conditions developed and persisted in the Dickinson area. This study will be continued in an attempt to verify this hypothesis.

2011 PrePare/Sierra Control of Bromes in Spring Wheat

Eric Eriksmoen, Hettinger, ND

Pre-plant (PP) treatments were applied on May 8 to 3 leaf downy brome (dobr) with 52° F, 69% RH, cloudy sky and east wind at 3 mph. 'Mott' HRSW was seeded no-till on May 16. Post-emergence (POST) treatments were applied on June 8 to 3 leaf wheat, heading downy brome, tillering Japanese brome (jabr), 2 leaf wild oat (wiot) and 1 leaf Persian darnel (peda) with 56° F, 58% RH, cloudy sky and southeast wind at 5 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. The trial was a randomized complete block design with three replications. Weed populations for downy brome, Japanese brome, wild oat and Persian darnel were 2, 4, 0.5 and 0.75 plants per square foot, respectively. Plots were evaluated for crop injury on June 8, June 14, June 20, June 30 and July 18, and for weed control on June 30, July 18 and August 16. The trial was harvested on August 20.

			App.	- June 30 -		--------- July 18 ----------				---- August 16 -----			Test	Grain
	Treatment	Product rate	Timing	jabr	peda	inj	wiot	jabr	peda	jabr	dobr	peda	weight	yield
		oz/A		---------- % control ----------									lbs/bu	bu/A
1	Untreated			0	0	0	0	0	0	0	0	0	53.8	12.7
2	PrePare+AMS+NIS	0.3+1.5lb+0.25%	PP	73	0	0	0	90	0	98	17	0	58.0	25.9
3	PrePare+AMS+T'down Total	0.3+1.5lb+24	PP	93	0	0	0	98	0	98	93	0	58.2	25.5
4	PrePare+AMS+NIS fb Sierra + Basic Blend	0.3+1.5lb+0.25% 0.35 + 1%	PP POST	91	0	0	99	96	10	99	81	0	57.5	25.2
5	PrePare+AMS+T'down Total fb Sierra + Basic Blend	0.3+1.5lb+24 0.35 + 1%	PP POST	98	0	0	99	99	10	98	92	0	58.1	26.9
6	PrePare+AMS+NIS fb Sierra + Basic Blend	0.3+1.5lb+0.25% 0.5 + 1%	PP POST	80	10	0	99	90	10	99	53	0	57.9	28.1
7	PrePare+AMS+T'down Total fb Sierra + Basic Blend	0.3+1.5lb+24 0.5 + 1%	PP POST	99	10	0	99	99	17	99	98	0	58.1	29.6
8	Rimfire Max + Basic Blend	3 + 1%	POST	96	0	0	99	93	7	99	70	0	57.9	25.7
	C.V. %			13	321	0	0	7	192	2	29	0	1.5	13.8
	LSD .05			18	NS	NS	1	10	NS	2	32	NS	1.5	6.1

NS = no statistical difference between treatments

Summary

Crop injury was not observed. All herbicide treatments provided excellent season long control of Japanese brome. Pre-plant treatments alone (trts 2 & 3) did not provide any residual control of wild oats, but the addition of Sierra applied post-emergence provided excellent control of wild oats. The addition of Touchdown Total to pre-plant treatments significantly enhanced downy brome control. None of the treatments controlled Persian darnel.

2011 Valent Winter Wheat Herbicide Trial

Eric Eriksmoen, Hettinger, ND

Pre-plant (PP) treatments were applied on September 21, 2010 with 59^{o} F, 64% RH, partly cloudy sky and east wind at 6 mph. 'AP503CL2' HRWW was seeded no-till on September 28. Fall post-emergence (FPOST) treatments were applied on October 13, 2010 with 55^{o} F, 30% RH, cloudy sky and southwest wind at 2 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2, OM of 3.2% and 85% hrsw residual ground cover. The trial was a randomized complete block design with four replications. The trial had a pre-plant burndown application of 24 oz/A Roundup WeatherMax on September 12, 2010 and an application of 12 oz/A Huskie herbicide + 8 oz/A Headline fungicide on June 4, 2011 to control broadleaf weeds and foliar diseases. Plots were evaluated for crop injury on October 22, 2010 and on May 19, 2011, and the trial was harvested on August 5, 2011.

	Treatment	Product rate	App. Timing	10/22 inj	5/19 inj	Test weight	Grain yield
		oz/A		%*	%**	lbs/bu	bu/A
1	Untreated			0	0	--	11.2
2	Valor SX	2.0	PP	0	12	--	7.9
3	Fierce	3.0	PP	0	35	52.2	26.7
4	PrePare + NIS	0.3 + 0.25%	PP	0	5	52.6	22.7
5	Valor SX	2.0	FPOST	2	0	57.0	20.6
6	Valor SX + Harm Ext + NIS	2.0 + 0.6 + 0.25%	FPOST	10	0	54.1	17.5
7	Everest + NIS	0.6 + 0.25%	FPOST	3	18	57.3	30.0
8	PowerFlex + Basic Blend	3.5 + 1%	FPOST	4	50	53.7	27.8
9	Valor SX fb PowerFlex + Basic Blend	2.0 3.5 + 1%	PP FPOST	1	22	53.8	27.4
10	Fierce fb PowerFlex + Basic Blend	3.0 3.5 + 1%	PP FPOST	3	28	55.0	35.5
	C.V. %			133	168	4.1	31.5
	LSD .05			4	NS	NS	10.4

NS = no statistical difference between treatments
*Crop injury on October 22, 2010 = % leaf speckling
*Crop injury on May 19, 2011 = % crop stunting

Summary

Fall crop injury symptoms were leaf speckling and observations were generally minor with the exception Valor SX + Harmony Extra which was quite obvious. Crop stunting was observed in the spring and was generally quite evident but inconsistent with most treatments. Grain yields did not correspond to injury symptoms but were more related to weed control (data not collected).

2011 Bayer Winter Wheat Herbicide Trial

Eric Eriksmoen, Hettinger, ND

Pre-plant (PP) treatments were applied on October 6, 2010 to 3 leaf downy brome (dobr) with 54° F, 55% RH, sunny sky and southwest wind at 5 mph. 'AP503CL2' HRWW was seeded no-till on October 11. Spring treatments (SPOST) were applied on May 19, 2011 to tillering wheat, tillering downy brome and 2 leaf Japanese brome (jabr) with 46° F, 80% RH, cloudy sky and northeast wind at 3 mph. Wild oats (wiot) had not yet emerged. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2, OM of 3.2% and 85% hrsw residue ground cover. The trial was a randomized complete block design with four replications. The trial had an application of 12 oz/A Huskie herbicide + 8 oz/A Headline fungicide on June 4, 2011 to control broadleaf weeds and foliar diseases. Weed populations for downy brome, Japanese brome and wild oats were 20, 2 and 0.25 plants /ft^2 respectively. Plots were evaluated for crop injury on May 19, June 1, June 22 and July 18, and were evaluated for weed control on May 19, June 22 and July 18. The trial was harvested on August 5.

				------ May 19 ------			6/22	---------- July 18 ----------				Test	Grain
	Treatment	Product rate	Timing	inj	stand	dobr	dobr	inj	dobr	jabr	wiot	weight	yield
		oz/A		%	%	---------- Percent Control ----------						lbs/bu	bu/A
1	R'up Weather Max + AMS	16 + 17lbs	PP	0	54	92	84	0	82	20	0	51.6	25.2
2	R'up W. Max + Olympus + AMS	16 + 0.6 + 17lbs	PP	0	58	94	91	0	95	79	0	52.9	30.2
3	R'up W. Max + Olympus + AMS	16 + 0.9 + 17lbs	PP	0	60	91	89	0	91	94	0	53.1	33.2
4	R'up W. Max + PrePare + AMS	16 + 0.3 + 17lbs	PP	0	50	96	84	0	88	38	0	52.6	31.7
5	R'up W. Max + Olympus + AMS fb Olympus + NIS	16 + 0.6 + 17lbs 0.6 + 0.5%	PP SPOST	0	70	95	99	0	99	99	55	52.4	31.7
6	R'up W. Max + Olympus + AMS fb Rimfire Max + MSO	16 + 0.6 + 17lbs 3 + 20	PP SPOST	0	69	95	97	0	98	96	58	52.4	33.2
7	R'up W. Max + PrePare + AMS fb Everest + NIS	16 + 0.3 + 17lbs 0.3 + 0.5%	PP SPOST	0	78	90	91	0	94	97	70	53.0	36.8
	C.V. %			0	28	4	5	0	5	21	34	2.2	20.1
	LSD .05			NS	NS	NS	6	NS	7	24	13	NS	NS

NS = no statistical difference between treatments

Summary

Crop injury was not observed. All herbicide treatments with the exception of Roundup alone (trt1) provided good season long control of downy brome. Pre-plant treatments 1, 2 and 3 provided marginal activity on Japanese brome and no activity on wild oats. Sequential treatments (trts 5, 6 & 7) provided excellent season long control of both downy brome and Japanese brome and provided some activity on wild oats.

2011 Broadleaf Weed Control with Starane Flex in Spring Wheat

Eric Eriksmoen, Hettinger, ND

'Mott' HRSW was seeded no-till on May 16. Treatments were applied on June 16 to 4 ½ leaf wheat, 1 inch kochia (kocz), 1 inch Russian thistle (ruth) and 4 inch wild buckwheat (wibw) with 54° F, 80% RH, clear sky and east wind at 6 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. The trial was a randomized complete block design with four replications. Weed populations for kochia, Russian thistle and wild buckwheat were 6, 3 and 2 plants per square foot, respectively. Plots were evaluated for crop injury on June 20, June 22, July 1, July 16 and August 11, and for weed control on July 1, July 16 and August 11. The trial was harvested on August 20.

			6/22	July 1				7/16	August 11				Test	Grain
	Treatment	Product rate	inj	inj	kocz	ruth	wibw	tamu	kocz	ruth	wibw	plet	weight	yield
			Percent control										lbs/bu	bu/A
1	Untreated		0	0	0	0	0	0	0	0	0	0	54.9	22.3
2	Starane Flex	13.5	0	0	88	65	88	99	88	77	94	99	57.0	27.3
3	Starane Flex + MCPA est	13.5 + 8.6	0	0	90	62	92	99	88	80	94	99	55.8	25.4
4	Starane Flex + 2,4-D est	13.5 + 8.6	1	0	89	64	90	99	94	90	94	99	56.9	26.4
5	Affinity TM + MCPA + NIS	0.6+13+0.25%	2	0	61	75	90	99	66	92	92	99	57.0	24.2
6	Huskie + AMS	11 + 0.5 lb	2	0	55	66	52	99	76	82	10	99	56.5	25.3
	C.V. %		142	0	29	37	23	0	19	21	10	0	3.0	9.1
	LSD .05		NS	NS	28	30	23	1	20	22	10	1	NS	NS

NS = no statistical difference between treatments

Summary

Crop injury was relatively minor and diminished quickly. All herbicide treatments provided good season long kochia control except for Affinity TM (trt 5) and Huskie (trt 6). Starane Flex + 2,4-D (trt 4) and Affinity TM were the only treatments that provided good season long control of Russian thistle. All herbicide treatments provided excellent season long control of wild buckwheat except for Huskie. All herbicide treatments provided excellent control of tansy mustard (tamu) and prickly lettuce (plet).

2011 Syngenta Wild Oat Control in Spring Wheat

Eric Eriksmoen, Hettinger, ND

'Mott' HRSW was seeded no-till on May 16. Post-emergence (POST) treatments were applied on June 17 to 4 ½ leaf wheat, heading downy brome (dobr), Japanese brome (jabr) in the boot stage, 4 leaf wild oat (wiot), tillering foxtail barley (fxba) and 4 leaf Persian darnel (peda) with 44° F, 94% RH, cloudy sky and north wind at 9 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. The trial was a randomized complete block design with four replications. The trial was sprayed with 12 oz/A Huskie herbicide + 8 oz/A Headline fungicide on June 4 to control broadleaf weeds and foliar diseases. Weed populations for downy brome, Japanese brome, wild oat, foxtail barley and Persian darnel were 1, 1, 0.25, 0.5 and 1 plants per square foot, respectively. Plots were evaluated for crop injury on June 22, July 1, July 16 and July 29, and for weed control on July 16, July 29 and August 14. The trial was harvested on August 20.

			July 16			July 29					August 14			Test	Grain
	Treatment	Product rate	jabr	dobr	fxba	inj	jabr	dobr	fxba	wiot	jabr	dobr	peda	weight	yield
		oz/A	Percent Control											lbs/bu	bu/A
1	Untreated		0	0	0	0	0	0	0	0	0	0	0	57.9	23.7
2	Exp	8.2	0	0	0	0	0	0	0	99	0	0	99	60.0	25.7
3	Rimfire Max + Basic Blend	3.0 + 1%	94	55	45	0	96	72	40	99	97	56	99	59.0	28.5
4	Wolverine	27.2	0	0	0	0	0	0	7	99	0	0	0	59.4	29.1
5	Puma	10.6	0	0	5	0	0	0	7	99	0	0	0	59.1	25.0
6	Goldsky + AMS + NIS	16+1.5lb+0.5%	95	95	20	0	96	90	40	99	98	93	50	59.6	31.1
7	Everest + Basic Blend	0.75 + 1%	91	0	20	0	99	12	40	99	99	18	0	59.3	29.8
	C.V. %		5	18	212	0	4	45	129	--	4	65	--	1.0	8.9
	LSD .05		3	6	NS	NS	3	16	NS	--	3	23	--	0.9	4

NS = no statistical difference between treatments

Summary

Crop injury was not observed. All herbicide treatments provided excellent season long control of wild oats, although populations in this study were minimal and isolated to one replication. Exp and Rimfire Max treatments provided excellent control of Persian Darnel. Rimfire Max, Goldsky and Everest treatments provided excellent season long control of Japanese brome and marginal control of foxtail barley. Goldsky was the only treatment to provide acceptable season long control of downy brome.

2011 BASF Clearfield Spring Wheat Trial

Eric Eriksmoen, Hettinger, ND

'ND901CL' HRSW was seeded no-till on May 9. Treatments were applied on June 8 to 4 leaf wheat and to 2 leaf volunteer RR canola (vcan), 1 inch kochia (kocz), 1 inch Russian thistle (ruth), 1 inch common mallow (cmal), 4 inch wild buckwheat (wibw) and tillering Japanese brome (jabr) with 45° F, 91% RH, cloudy sky and north wind at 10 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. The trial was a randomized complete block design with three replications. 8 oz/A Headline fungicide was applied on June 18 to control foliar diseases. Weed populations for volunteer canola, kochia, Russian thistle, common mallow, wild buckwheat and Japanese brome were 4, 6, 3, 2, 4 and 0.75 plants per square foot, respectively. Plots were evaluated for crop injury on June 14 and for weed control on June 22 and July 18. The trial was harvested on August 20.

			6/14	June 22						July 18					Test	Grain
	Treatment	Product rate	inj	vcan	wibw	kocz	ruth	dand	cmal	wibw	plet	kocz	vcan	jabr	weight	yield
		oz/A	Percent control												lbs/bu	bu/A
1	Untreated		0	0	0	0	0	0	0	0	0	0	0	0	55.6	19.7
2	Beyond + MSO	4 + 20	0	90	47	25	98	53	90	0	0	10	99	99	55.8	26.5
3	Beyond + MSO	6 + 20	1	93	50	30	95	37	90	0	17	17	99	--	54.6	24.0
4	Beyond+Bronate+NIS	4+16+0.25%	1	93	95	40	88	47	88	93	50	99	99	99	55.5	28.3
5	Beyond+Bronate+NIS	6+16+0.25%	0	88	85	63	95	60	90	90	50	99	99	99	55.0	27.0
6	Beyond+WideMatch+NIS	4+12+0.25%	1	92	47	80	93	67	85	93	99	93	99	99	55.6	27.4
7	Wolverine	27.2	5	95	93	60	99	63	70	83	--	99	90	0	56.3	25.3
8	Everest 2.0+WideMatch+ MCPA ester + Basic Bl.	0.75 + 12 + 8 + 1%	0	90	60	90	95	52	12	93	--	99	96	99	54.5	25.8
9	Axial XL + WideMatch + MCPA ester	16.5 + 12 + 8	4	90	67	90	67	80	27	93	--	99	99	0	55.9	24.1
	C.V. %		67	3	15	40	8	43	15	12	106	16	4	0	3.1	6.2
	LSD .05		1	4	16	37	11	38	16	12	NS	19	6	1	NS	2.7

NS = no statistical difference between treatments

Summary

Crop injury was relatively minor and diminished quickly. All herbicide treatments provided excellent season long control of volunteer canola. Beyond alone treatments (trts 2 & 3) were relatively ineffective at controlling wild buckwheat and kochia, however, the addition of Bronate or WideMatch to these treatments provided excellent season long control of these weeds. All herbicide treatments with the exception of Axial XL (trt 9) provided good control of Russian thistle. All herbicide treatments provided marginal control of dandelion (dand). Beyond treatments (trts 2 – 6) were the only treatments to provide good to excellent control of common mallow. Beyond + WideMatch (trt 6) provided excellent control of prickly lettuce (plet) although observations were not conclusive for all treatments. As would be expected, Wolverine (trt 7) and Axial XL (trt 9) had no efficacy on Japanese brome.

2011 Broadleaf Weed Control with Supremacy in Spring Wheat

Eric Eriksmoen, Hettinger, ND

'Mott' HRSW was seeded no-till on May 16. Treatments were applied on June 16 to 4 ½ leaf wheat, 1 inch kochia (kocz), 1 inch Russian thistle (ruth) and 4 inch wild buckwheat (wibw) with 54° F, 80% RH, clear sky and east wind at 6 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. The trial was a randomized complete block design with four replications. Weed populations for kochia, Russian thistle and wild buckwheat were 4, 3 and 2 plants per square foot, respectively. There was also a scattered amount of prickly lettuce (plet) present. Plots were evaluated for crop injury on July 1 and July 29, and for weed control on July 29 and August 11. The trial was harvested on August 18.

			7/1	July 29					August 11				Test	Grain
	Treatment	Product rate	inj	inj	kocz	ruth	wibw	plet	kocz	ruth	wibw	plet	weight	yield
			Percent control										lbs/bu	bu/A
1	Untreated		0	0	0	0	0	0	0	0	0	0	54.9	24.1
2	Supremacy + NIS	4.0 + 0.25%	0	0	81	87	98	99	74	84	97	99	56.5	26.7
3	Supremacy + NIS	5.0 + 0.25%	0	0	94	97	93	99	93	96	98	99	56.9	26.8
4	Supremacy + NIS	6.0 + 0.25%	0	0	93	99	96	99	96	98	96	99	56.6	25.3
5	Supremacy + MCPA est	5.0 + 12	0	0	94	94	90	93	88	99	90	99	56.0	24.7
6	Supremacy + 2,4-D est	5.0 + 12	0	0	95	99	98	96	98	99	97	99	57.0	25.5
7	Supremacy + Bronate	5.0 + 16	0	0	87	99	90	65	93	99	96	88	56.5	25.8
8	Exp + NIS	5.0 + 0.25%	0	0	96	94	94	94	98	96	94	99	56.5	27.5
9	WideMatch + MCPA est	16 + 12	0	0	91	99	94	93	94	98	96	99	56.0	26.6
10	Starane Flex + NIS	13.5 + 0.25%	0	0	99	97	85	99	97	94	85	99	56.3	26.5
11	Huskie	11	0	0	82	88	20	99	91	99	62	99	55.8	26.0
	C.V. %		0	0	10	9	17	7	11	8	16	1	2.2	3.9
	LSD .05		NS	NS	12	12	19	9	14	11	19	1	NS	1.5

NS = no statistical difference between treatments

Summary

Crop injury was not observed. All herbicide treatments provided good season long control of kochia and Russian thistle except for the 4 oz/A rate of Supremacy (trt 2) which provided only marginal control of those weeds. All herbicide treatments provided good season long control of wild buckwheat except for Huskie (trt 11). All herbicide treatments provided excellent control of prickly lettuce.

2011 BASF Clearfield Lentil System Trial

Eric Eriksmoen, Hettinger, ND

'CDC Maxim' lentil was seeded no-till on May 9. Pre-emergence treatments (PRE) were applied on May 19 with 42° F, 86% RH, cloudy sky and northeast wind at 3 mph. Post-emergence treatments (POST) were applied on June 15 to 8 node (4") lentil, 4 leaf volunteer Roundup Ready canola (vcan), 1 inch kochia (kocz), 2 inch Russian thistle (ruth), 4 inch wild buckwheat (wibw), Japanese brome (jabr) in the boot and heading downy brome (dobr) with 73° F, 41% RH, clear sky and north wind at 2 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to 5 foot wide by 28 foot long plots. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. The trial was a randomized complete block design with four replications. Weed populations for volunteer canola, kochia, Russian thistle, wild buckwheat, Japanese brome and downy brome were 6, 2, 0.25, 3, 3 and 2 plants per square foot, respectively. There was also a scattered amount of prickly lettuce (plet), tansy mustard (tmus) and volunteer spring wheat (vhrs) present. Plots were evaluated for crop stand establishment on June 3, for crop injury on June 1 and June 15, and for weed control on June 15, July 1, July 18 and August 11. The trial was harvested on August 16.

		Product	App.	6/15	Crop	---------- July 18 ----------				-------- August 11 ---------				Test	Seed
	Treatment	rate	timing	inj	stand	wibw	tamu	jabr	vhrs	kocz	ruth	vcan	plet	weight	yield
		oz/A		%	#/9' row	---------- Percent Control ----------								lbs/bu	lbs/A
1	Untreated			0	106	0	0	0	0	0	0	0	0	56.3	1174
2	Roundup Original fb Clethodim	32 4	PRE POST	2	106	58	0	99	96	97	94	0	74	59.9	1560
3	R'up + Prowl H_2O fb Clethodim	32 + 48 4	PRE POST	2	108	58	0	99	98	98	97	0	70	61.0	1685
4	R'up+Prowl H_2O+Sharpen fb Clethodim	32+48+0.75 4	PRE POST	8	106	50	23	99	92	98	94	0	76	60.7	1658
5	R'up fb Beyond	32 4	PRE POST	8	83	88	99	99	94	96	99	97	95	61.6	1660
6	R'up + Prowl H_2O fb Beyond	32 + 48 4	PRE POST	14	106	94	99	99	99	96	99	99	92	61.2	1871
7	R'up+Prowl H_2O+Sharpen fb Beyond	32+48+0.75 4	PRE POST	6	100	97	99	99	97	98	99	99	99	60.4	1603
8	R'up + Sharpen fb Beyond	32 + 0.75 4	PRE POST	10	95	97	99	99	99	90	97	99	93	60.3	1887
	C.V. %			64	16	12	17	0	6	4	4	3	19	2.0	5.5
	LSD .05			6	NS	12	13	1	7	5	5	2	22	1.8	132

NS = no statistical difference between treatments

Summary

Selected data is shown above. Crop injury consisted of leaf chlorosis and stunting which was quite evident with several treatments but did not correlate to seed yields. None of the pre-emergence treatments provided adequate season long control of wild buckwheat or prickly lettuce, however, treatments which also had a post-emergence application of Beyond herbicide had good to excellent control of these weeds. Beyond treatments also provided excellent season long control of tansy mustard and volunteer canola. All herbicide treatments provided excellent season long control of grassy weeds, kochia and Russian thistle.

2011 Field Pea Tolerance to Lorox DF Herbicide

Eric Eriksmoen, Hettinger, ND

'Majoret' green field pea was seeded no-till on May 9. Treatments were applied just prior to crop emergence on May 19 with 60° F, 68% RH, cloudy sky and east wind at 10 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to 5 foot wide by 28 foot long plots. The soil is classified as a silt-loam with a pH of 5.9 and OM of 2.6%. The trial was a randomized complete block design with four replications. The trial was sprayed with 16 oz/A Poast herbicide on June 10 to control grassy weeds and 4 oz/A Raptor Herbicide on June 24 to control common mallow. Plots were evaluated for stand establishment on June 3, date of 10% bloom and lodging just prior to harvest. The trial was harvested on August 8.

	Treatment	Product rate	Stand	10% bloom	Lodging	1000 KWT	Test weight	Seed yield
		oz/A	#/9' row	July	0-9*	grams	lbs/bu	bu/A
1	Untreated		40	3	6	197	64.1	47.7
2	Lorox DF	16	37	4	6	205	66.1	47.7
3	Lorox DF	32	37	3	5	205	64.7	50.4
4	Lorox DF	48	38	4	6	210	63.9	48.3
	C.V. %		17	15	10	6	3.5	6.4
	LSD .05		NS	NS	NS	NS	NS	NS

NS = no statistical difference between treatments

Summary

Crop injury was not observed at any time throughout the growing season. Agronomic characteristics including stand establishment, flowering date and crop lodging, and seed characteristics including kernel weight, test weight and yield showed no adverse effects from any of the application rates of Lorox DF.

Bowman - Slope County Cover Crop Demonstration

Roger Ashley, Area Extension Specialist/Cropping Systems

Cover crops have many uses. Though Bowman/Slope Counties are normally dry during the summer, growing conditions were excessively wet in early 2011 resulting in many producers declaring a prevented planting situation. Evaporation of water will occur from the surface and water in saturated soils will eventually drain away allowing the producer to seed but if nothing is growing in the field over the year the soil will enter next spring at a higher moisture level than normal. Even with just normal precipitation seeding delays due to excessively wet field conditions may be expected next spring. Growing a cover crop will utilize some of the excess water this year. An actively growing well canopied cover crop may use up to 0.33 inches of water per day. In addition to water use a cover crop will add organic matter to the soil, improve biological activity in the soil, improve nutrient cycling and protect the soil from wind and water erosion.

The Cover Crop Demonstration on the Ernie Holzemer Farm was done in cooperation of the Bowman-Slope Soil Conservation District, Natural Resource Conservation Service (NRCS), Bowman and Slope County Extension Services, Sustainable Agriculture Research and Education (SARE), Dickinson Research Extension Center and Hettinger Research Extension Center. Producer's Choice and PGG Seeds provided improved cultivars of radish, forage brassicas, teff, and annual alfalfa. The remaining seed was purchased from Bowman Grain Inc, Bowman, ND.

About the Site:

Cropping History – Spring Wheat 2007; Spring Wheat 2008; Flax 2009; Spring Wheat 2010; Prevented Plant with 20 acres seeded to cover crops 2011.

Next Cash Crop - Spring Wheat 2012.

Soil Series – include Vebar-Talley fine sandy loam, Daglum-Rhodes silty clay loam, Moreau silty clay, Morton complex, and Regent-Dogtooth silt loams. Slopes range from 0 to 6%.

Soil Test October 21, 2010 – N at 0-24" = 68 lbs/acre; Phosphorous = 11 ppm; Potassium = 181 ppm; Chloride 0-24" = 36 lbs/acre; Sulfur 0-24" = 480 lbs/acre; OM = 1.5%; Soil Salts 0-6"= 1.24 mmho/cm, 6-24" = 1.72 mmho/cm.

Herbicide Burndown – June – RT3 @ 24 fl oz/acre + Flame (AMS) @ 1 qt/100 gallons of solution. July 18, 2011 – RT3 @ 43 fl oz/acre + Flame (AMS) @ 1 qt/acre + Aim @ ½ fl oz/acre.

Seeding Date – July 21 and 22, 2011

Drill Used – NDSU's Cross-slot opener equipped drill. This drill has a true ultra-low disturbance opener with a STIR factor of 1.95. STIR factor. A single disc opener is 2.43. West Plains Implement Case IH provided a tractor to seed the plot.

First Rainfall Event – July 23, 2011 @ 0.8 inches

Rainfall Events – July 28 @ 0.4 inches; August 3 @ 0.5 inches; August 5 @ 1.5 inches; August 11 @ 0.25 inches; August 15 @ 1.3 inches

First Emergence Noted - Brassicas, alfalfa, and oats on July 25, 2011.

Why demonstrate various cover crop species? Plants have different characteristics that affect soils and soil health. These characteristics can be used as a "tool" to accomplish a desired result. However like other tools cover crops do have their limitations that need to be recognized and managed. Some species can provide a green bridge for various diseases and insects if the grower isn't managing the cover crop correctly. An example is cover crops with species such as wheat, barley, triticale, and rye are hosts for WSMV and wheat curl mites which transmit the disease. Cover crops containing these species should be terminated at least two weeks prior to seeding a cash crop of wheat, barley, triticale, and rye.

Plant samples were harvested by hand on September 23, dried and then total dry matter per acre calculated . Data reported here are from non-replicated strips for demonstration purposes only and inferences should not be made as to a cultivar or species yielding significantly more or less than another cultivar or species.

Crop Species	Crop Variey Name	Planting rate (percent in mix by wt)	Seed Costs	Dry matter
		lb/acre (%)	$/acre	lb/acre
				23-Sep
Radish	Tillage	8.2 (100)	26.24	518
Radish	Graza	5 (100)	16.00	516
Winter Brassica	Winfred	5 (100)	30.00	452
Winter Brassica	Winfred	10 (100)	30.00	503
Ethiopian Cabbage	PG584	2 (100)	10.00	516
Alfalfa	Not stated	3.5 (100)	11.38	360
Soybean	Not stated	60 (100)	51.00	427
Cowpea	Iron & Clay	70 (100)	98.00	222
Field Pea	4010 Forage Pea	86 (100)	29.41	661
Sunflower	Viper	17 (100)	13.06	628
Oat	Morton	75 (100)	24.61	692
Millet	Siberian Foxtail	20 (100)	9.20	551
Black Lentil	Indianhead	26 (100)	26.00	376
Teff Grass	Tiffany	4 (100)	14.40	554
Soybean + Sorghum Sudangrass	Not stated + Sweet Thing	60 (63 + 37)	56.85	931
Soybean + Millet	Not stated + Siberian Foxtail Millet	45 (80 + 20)	34.74	798
Cowpea + Soybean + Millet + Winter Brassica + Rasdish + Sunflower	Iron & Clay + not stated + Siberian Foxtail + Tillage + Viper	45 (27 + 41 + 20 +3 + 3 + 6)	47.36	1274
Field pea + Lentil + Oat + Winter Brassica + Radish + Sunflower	4010 Forage pea + Indianhead + Morton, + Winfred + Tillage + Viper	75 (52 + 17 + 24 + 2 + 2 + 3)	43.02	1443
Soybean + Millet + Sunflower + Turnip	Not stated + Manta Siberian + Black Oil + Purple Top	28 (55 + 30 + 11 + 4)	21.45	1245

Ethiopian Cabbage was noted on Sept 2 to be severly infested with Checkered White (*Pontia protodic*)

Cover Crop Management Tips

Roger O. Ashley, Area Extension Agronomist
NDSU Extension Service, Dickinson, ND

Cover crop is a crop used to cover the soil surface; to decrease erosion and leaching, shade the ground, and offer protection to the ground from excessive freezing and heaving. When a cover crop is grown to reduce nutrient leaching or retrieve nutrients deep in the soil profile, it is referred to as a "catch crop." A **green manure crop**, sometimes called green fallow, is a crop that is grown primarily to improve soil fertility and is terminated shortly after planting while it is still green or soon after flowering. An annual crop that is grown primarily for grazing or haying is called an **annual forage crop**. Cover crops, catch crops, green manure crops, and annual forage crops can provide an opportunity for growers to increase diversity in crop rotations. Excessive moisture for spring seeding in 2011 provided producers an opportunity to add diversity in their crop rotations as well as use this water to grow cover crops. Excess water lost to percolation below the root zone, runoff to creeks and rivers, and evaporation is of little value to production agriculture. Cover crops provide the opportunity to capture carbon and add it to soils in the form of organic matter. Problems associated with mid-summer planting in highly variable conditions are a challenge.

"Too Wet to Seed – Too Dry to Germinate."

This seemingly contradictory statement has actually been uttered by individuals expressing frustration with their inability to seed into wet soils and then when they do seed failing to get a plant stand because soils were dry in the seed zone. Bare soils as found in tilled systems will often dry in the planting zone to a point where seed will not germinate or germinate sporadically while just an inch or two below the seed soils are at field capacity or more. Water at or near the surface can evaporate, percolate into the soil or run off. Most of the water below the surface must percolate to deeper depths in the soil, move laterally to someplace else (saline seep) while very little evaporates. Producers have tried tillage to dry soils but in the process compacts wet soils and makes it more difficult to get a vigorous growing crop stand. Producers who till are more dependent upon timely precipitation. Maintaining upright residue at the surface in long term no-till develops more structure to support equipment operation as well as improved plant rooting and growing conditions.

Mid-summer Seeding

Mid-summer can be one of the most challenging times to seed a crop no matter what the purpose. Precipitation isn't as dependable as during May or June, soil temperatures are hot, and the soil surface dries faster. Soils where little or no residue is present are more hostile for mid-summer seeding. Crop residue that is not connected to the soil can be washed off during intense summer rainfall events or blown away by the wind essentially creating a hostile environment for germinating seed, young plants and soil. Crop residue left standing modifies the temperature and moisture conditions available for germination and crop establishment. Maintaining and using residue to improve germination and establishment of the crop is essential for consistent, successful summer time seeding. Research indicates that even when soils are close to wilt point, residue cover maintains soil humidity levels between 90 to 100%, sufficient to germinate seed.

Seeding into Wet Soils

"*Seeding into wet soils is an engineering problem*." If seeding could be done without compacting soil we can seed. Some producers have sown seed using an airplane to spread the seed across the field but high humidity/moisture conditions are needed to germinate seed on the exposed soil surface. In the Great Plains wet conditions are not very dependable so a harrow is required to incorporate seed into the soil.

Avoid using high disturbance seeding equipment. The further soil is moved from the seed slot the more difficult it is to move the soil back over the seed. Also high disturbance seeders tend to leave large chunks of soil on the surface that turn into rock hard clods unless a tillage implement follows immediately behind the opener to break up the clods. Wet soils often cling to disc openers. Mud thrown off the disc can be picked up by gauge wheels and

packer wheels changing the depth of seeding –raising the opener to the extent where seed is placed on the surface of the ground. Also mud that is brought up with the opener also contains weed seed. Weed seed brought to the surface may break dormancy creating additional weed control problems. Growers can minimize mud problems by adjusting gauge wheels and seeding boots to rub up against the disc to scape mud off. Some opener designs provide subsurface scrapers to keep mud below the surface rather than allowing it to come to the surface where it becomes a problem.

Some soils swell with the addition of water and then shrink as it dries. These soils contain clay. These soils are particularly difficult to plant into as seed slots are very difficult to close and when the slots are closed in the seeding operation can be pulled apart as soil dries under the hot drying sun. Check slot closure often during seeding and post seeding to emergence. If the slot isn't closing properly adjust the drill. If the slot opens after seeding is complete light tillage with a harrow or other tillage implement may help move soil over exposed seed. Ultra low disturbance openers (STIR < 2.0) reduce slot closure problems as well as post-seeding soil drying.

Seeding to moisture is a mistake. Seed planted deep will have poor emergence and weak growth. In bare soil conditions, soils will often dry to seeding depth/tillage depth leaving seed high and dry. Seed should be planted to the recommended depth in wet or dry conditions. Small seeded crop species should be seeded no deeper than ¼ inch while large seeded species need not be seeded deeper than an inch. Mixed species that contain both large and small seeded species should be seeded at the shallowest depth recommended. If the seed is placed in dry soils the next rainfall will germinate the seed and the seed will emerge rapidly. Under no-till conditions with adequate crop residue, properly placed residue over the seed slot will maintain humidity levels between 90 to 100%.

Wet residue can hair pin with disc openers. Growers can reduce this problem by setting grain tables to cut as high as possible while gleaning grain from the field. Better yet, stripper headers leave the majority of the straw attached (90% of the mature plant height) to the soil leaving only chaff to spread and cover the surface. Soils under upright attached residue warms and dries faster than soils where residue is half standing and half lying flat on the soil surface. Also residue dries faster standing than lying flat on the soil surface. If most residue is left standing hair pinning becomes less of an issue. Also hair pinning can be minimized by offsetting seeding direction by about 3^{o} or more from the previous direction of seeding. GPS and auto steer makes this part easier.

Designing Cover Crop Mixtures ("Cocktails")

Several factors need to be considered when designing cover crop mixtures. Some of these considerations are:

1) Residual herbicides used in previous crop(s)
2) Next cash crop in the following year(s)
3) Crop insurance
4) Timing of cover crop planting operation
5) Water-use of cover crop
6) Termination
7) Volunteering in following crops
8) Seeding rate and costs

Residual Herbicides What herbicides were used in the previous crop or crops that may injure or kill specific species in the proposed cover crop. Depending on the particular herbicide, herbicide residues can last from a few hours to a few years. Include species unlikely to be damaged by these herbicides. Cover crops also provide a means to do a bioassay in fields where long term residual herbicides have been used. Include some seed of sensitive species to gain insight into how much residue remains in the field. Information on crop rotation restrictions can be found in the NDSU Extension Seed Science publication, 2011 North Dakota Weed Control Guide, pages 108-111 and herbicide product labels.

Next Cash Crop. Cover crop species should be selected that add to diversity of the crop rotation and limit the potential to provide a green bridge for disease and insects to the next cash crop. Broadleaf crops such as sunflower and canola (brassicas) where diseases such as sclerotina is a problem should be limited to planting once every second or third year. Including these species in a cover crop when sunflower or canola will be grown within the next two or three years may not be such a good idea. Growing grass species such as millet, oat, wheat, barley and rye probably isn't a good idea if winter wheat and possibly spring wheat is your next cash crop unless termination eliminates these species **at least two weeks prior to seeding**. With the diversity of the species available to use in cover crop mixtures or cocktails producers should be able to tailor these mixtures to their needs.

Crop insurance is used by producers to manage risks in production and income. Cash crops are the main income source and cover crops should be used as a tool to improve long term productivity of their soils. Poor planning in cover crop design can limit producers on their seeding options the following year(s). A table summarizing crop insurance rotation restrictions is provided below.

Seeding Time. Adjust species selected for cover crops to match your seeding schedule. Seeding a cool season grass in the middle of summer and expecting it to produce large quantities of residue is unrealistic. Select species that will grow well in the conditions in which they will be seeded and grow. The diversity of species available can provide you a chance to seed at the right time almost every month of the year.

Water-use. Cover crops do use water and depending on the species and time of year they can use as little as 0.01 to 0.33 inches a day. Producers can decide when and where to plant cover crops and when to terminate their growth. In dry conditions producers may decide they will not plant any cover crops as the cash crop will use all the available water to produce straw and grain. Producers may decide that they have sufficient moisture to grow a cover crop for a portion of the year and then terminate with herbicide. The residue from the cover crop may contribute more to the next crop growth than the water it uses. Crop species generally use about half of the total moisture the crop will use for germination to the beginning of reproductive stages compared to allowing the plant to go to maturity. Termination at flowering will provide crop residue to protect the soil as well as catch snow during the winter.

Termination. Some species may be more difficult to terminate with herbicide or tillage than other species. Many of the species used for cover crops are killed when freezing conditions occur in late fall or early winter while other species may survive into the next growing season. For example adapted alfalfa varieties and hairy vetch can be a challenge to terminate with glyphosate. See the ND Weed Control Guide, page for suggested herbicides used to terminate volunteer crop species. Timing of termination to various plant stages can also be a challenge.

Volunteer Cover. Cover crops may go to seed before termination providing a source of competing plants during the cash crop phase of the rotation. Herbicides and crop competition will often control volunteers but some hard seeded crops may have several "flushes" to control. See the 2011 ND Weed Control Guide, page 115 for suggested herbicide used to control volunteer cover crop species in the cash crop.

Seeding Rates and Costs. Growers can purchase premixed cover crop cocktails or they can mix their own. A "ball park" estimate for the amount of seed to include of each species in a mix is to divide the full rate of each species if it were to be seeded as a pure stand by the number of species to be included in cocktail mix. Use clean, disease free high quality seed. Poor quality seed can lead to poor germination, introduction of some diseases, and poor performance. Growers can develop inexpensive mixes by adjusting both amounts of specific species going into the mix as well as total rate per acre seeded. Depending on specific field situation and management abilities "half seeding rates" may be used and still obtain desirable results.

Rotation restriction summary for crop insurance in North Dakota, Risk Management Agency, Actuarial Information, http://www.rma.usda.gov, August 29, 2011.

Crop[1]	County Coverage Listing[2]	Rotation Restrictions[3]
Barley	All Counties	None
Buckwheat	Burleigh, Dickey, Dunn, Hettinger, Kidder, La Moure, McIntosh, McLean, Mountrail, Sheridan, Stark, Stutsman	Canola, crambe, chickpeas, dry beans, mustard, rapeseed, soybeans, sunflowers, **buckwheat**
Canola	All Counties	**Canola, chickpeas, dry beans, mustard, rapeseed, or sunflowers**.
Corn	All Counties	None
Dry Bean	Barnes, Benson, Burleigh, Cass, Cavalier, Dickey, Eddy, Emmons, Foster, Grand Forks, Grant, Griggs, Hettinger, Kidder, La Moure, McHenry, McKenzie, McLean, Nelson, Oliver, Pembina, Pierce, Ramsey, Ransom, Richland, Rolette, Sargent, Sheridan, Steel, Stutsman, Towner, Traill, Ward, Wells, Williams	Dry bean, canola, crambe, mustard, rapeseed, soybeans, or sunflowers.
Dry Peas	All Counties	**Field peas (Austrian, Forage/Feed, Smooth, Green or Yellow)** or sunflowers.
Flax	All Counties	None
Garbanzo beans (Chickpeas)	Divide, Dunn, Golden Valley, Grant, Hettinger, McKenzie, McLean, Mountrail, Oliver, Stark, Ward.	**Garbanzo beans (chickpeas)**
Lentils	All Counties	**Lentils** or any other broadleaf crop
Mustard	Adams, Billings, Burke, Cavalier, Divide, Dunn, Golden Valley, Hettinger, McLean, Mountrail, Nelson, Ramsey, Renville, Slope, Stark, Towner, Ward, Williams	Crambe, mustard, canola, chickpeas, dry beans, rapeseed, or sunflowers
Oats	All Counties	None

[1]Crop to be insured.
[2]North Dakota counties where crop is insured. Insurance available in other counties by special arrangement.
[3]Crops grown in year previous to insured crop. Crops listed in **bold print**; have been planted in **either of the preceding two crop years**. Crops listed in **bold and underlined**; crop has been planted in **any of the three preceding years**.

Crop[1]	County Coverage Listing[2]	Rotation Restrictions[3]
Potatoes	Barnes, Benson, Cass, Cavalier, Dickey, Eddy, Emmons, Foster, Grand Forks, Griggs, Kidder, La Moure, Logan, McHenry, McLean, Mercer, Morton, Pembina, Ramsey, Ransom, Richland, Steel, Stutsman, Traill, Walsh	Potatoes or sunflowers
Rye	Barnes, Bottineau, Burke, Burleigh, Dickey, Foster, Grant, Hettinger, Kidder, La Moure, McHenry, McIntosh, Morton, Pierce, Richland, Rolette, Sargent, Stutsman, Ward, Wells, Williams	None
Safflower	Adams, Benson, Bottineau, Bowman, Burke, Divide, Dunn, Golden Valley, Grant, Hettinger, McHenry, McKenzie, McLean, Morton, Mountrail, Pierce, Renville, Slope, Stark, Ward, Williams	None
Soybean	Barnes, Benson, Bottineau, Burleigh, Cass, Cavalier, Dickey, Eddy, Emmons, Foster, Grand Forks, Griggs, Kidder, La Moure, Logan, McHenry, McIntosh, McLean, Morton, Mountrail, Nelson, Pembina, Pierce, Ramsey, Ransom, Renville, Richland, Rolette, Sargent, Sheridan, Steel, Stutsman, Towner, Traill, Walsh, Ward, Wells	None
Sugar Beets	Cass, Grand Forks, McKenzie, Pembina, Richland, Steele, Traill, Walsh, Williams	Sugar beets
Sunflowers	All Counties	Sunflowers, canola, crambe, dry beans, safflowers, mustard, or rapeseed
Wheat	All Counties	None

[1]Crop to be insured.
[2]North Dakota counties where crop is insured. Insurance available in other counties by special arrangement.
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