Twenty-Seventh Annual

Ag. Report No. 27

Western Dakota Crops Day Research Report 2010

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NDSU HETTINGER Research Extension Center

www.ag.ndsu.edu/HettingerREC/

27th Annual Western Dakota Crops Day

December 16, 2010

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
Roger Ashley, 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 Lets Solve Problems Instead of Just Treating Symptoms. Gabe Brown, Farmer/Rancher, Bismarck.

2:15 Crop Outlook – Why are Market Prices so Volatile? Dr. Frayne Olson, Crops Economist / Marketing Specialist, NDSU Dept. of Agribusiness & Applied Economics, 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.

2010 Western Dakota Crops Day Sponsors

Hettinger Area Chamber of Commerce
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Pulse USA
Integra Fortified Seed

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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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 Sabin 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 2010 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.

2010 Weather Summary for the Dickinson Research Extension Center, Dickinson, ND.

Month	----Maximum temp.---- Long Term 1897 - 2009	Current Year	----Minimum temp.---- Long Term 1897 - 2009	Current Year	-----Precipitation ----- Long Term 1897 - 2009	Current year	---Small grains GDD[1]--- Long Term 1897 - 2009	Current year	-----Corn GDD[2] ----- Long Term 1897 - 2009	Current year
	----------°F ----------		---------- °F ----------		----- inches -----					
November - 09	40.0	52.7	16.9	21.0	0.51	0.00				
December - 09	27.8	18.5	5.6	-1.8	0.41	1.24				
January	23.0	21.4	0.1	3.5	0.50	0.55				
February	27.1	22.5	3.9	-0.1	0.41	0.35				
March	38.0	40.0	15.0	20.0	0.75	0.52				
April	54.7	58.7	28.4	30.1	1.41	1.05	345	426		
May	66.2	61.0	39.2	38.5	2.31	3.17	644	563	253	199
June	75.0	73.8	48.9	49.5	3.57	3.86	899	890	382	388
July	83.5	81.6	54.2	53.5	2.21	3.82	1144	1103	586	542
August	82.4	83.5	51.6	53.3	1.71	0.77	1085	1127	530	544
September	71.3	67.2	41.1	41.7	1.39	3.05	726	675	320	264
October	57.6	63.5	30.0	31.9	0.97	0.28				
Mean	53.9	53.7	27.9	28.4						
Total					16.14	18.66	4844	4783	2070	1937

[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.

Source: Dickinson Research Extension Center. Data compiled by Jeff Kubik and John Urban, Research Technician; Roger Ashley, Extension Agronomist; and Sheri Schneider, Information Processing Specialist.

2010 Growing Conditions
Hettinger Research Extension Center

Growing conditions in Southwestern North Dakota were almost ideal for small grain production with an abundance of precipitation and cool temperatures throughout most of the season. Winter wheat growth and development was halted by bitterly cold temperatures in October but these conditions did not adversely affect winter survival. Small grain planting began during the last half of April. Cold temperatures and 6 inches of snow during the first half of May slowed seedling development and growth. Warm season crops also benefited with timely rainfall, warm August temperatures and a delayed hard frost. Small grain harvest began in mid-August, but persistent rainfall and heavy morning dew drug harvest out to the end of September. A 70 – 90 mph wind storm on Friday, August 13 swept through all of SW North Dakota, causing moderate to severe lodging in corn and sunflowers, and severe shatter losses in canola. Warm season crops tended to mature later than normal, which delayed harvest until mid-November.

An early infection of foliar diseases (tan spot and septoria) was widespread and caused some chlorosis and stunting. Weather conditions favored stripe rust which was prevalent on both winter and spring wheat. Fusarium head blight (scab) was documented in several areas and caused severe crop losses in some fields. Ascochyta blight decimated the chickpea research trials despite being sprayed with several fungicides. Wheat stem sawfly continues to be the number one pest problem in spring wheat but the pest may have reached its plateau last year. Sawfly tolerant spring wheat varieties now occupy large acreages and higher levels of sawfly parasitoids appear to be playing a greater role in controlling this insect. A small area of Hessian fly infested spring wheat was documented near Hettinger.

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.

Weather Data Summary - Hettinger

Frost Free Days

	28°F	32°F	Normal 32°F
Date of Last Frost	May 8	May 14	May 18
Date of First Frost	October 13	September 18	September 20
Frost Free Days	**158**	**127**	**125**

Precipitation

Precipitation (inches)	2005 – 06	2006 – 07	2007 - 08	2008 – 09	2009 – 10	55 Year Average
Sept. – Dec.	3.68	3.15	1.26	6.23	4.66	3.34
Jan. – March	2.34	2.18	0.87	5.16	1.16	1.50
April	2.12	1.09	0.98	1.10	1.76	1.61
May	0.97	5.97	4.01	1.38	3.73	2.62
June	2.53	3.04	4.08	3.53	2.93	3.33
July	0.58	1.62	1.23	2.20	3.68	2.01
August	1.75	3.65	1.75	3.47	2.41	1.70
Total	**13.97**	**20.70**	**14.18**	**23.07**	**20.27**	**16.11**

Air Temperature

Average Temp. F°	2006	2007	2008	2009	2010	55 Year Average
April	47.8	40.2	40.1	38.2	44.8	42.7
May	55.6	56.2	52.0	52.0	50.0	53.9
June	65.2	62.7	59.7	58.8	62.0	63.1
July	77.3	75.4	71.1	64.6	67.6	70.1
August	71.3	68.8	70.0	63.0	68.6	68.8
September	56.4	60.9	56.6	62.6	56.3	57.8

Growing Degree Units - Corn

Growing Degree Units (50-86)	2006	2007	2008	2009	2010	38 Year Average
May	323	272	207	265	210	263
June	465	452	346	344	393	419
July	678	672	606	458	536	583
August	593	533	579	461	547	537
September	276	353	340	421	278	315
Total	2335	2282	2078	2006	2032	2117

North Dakota hard red spring wheat variety descriptions, agronomic traits, 2010.

Variety	Agent or Origin[1]	Year Released	Height	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[10]
Albany	Trigen Seed	2008	32	5	62	NA	NA	NA	M[10]
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[10]
Breaker	WestBred	2007	34	3	64	R	MR	MS	M[10]
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[10]
Faller	ND	2007	35	5	65	R	R	MR	M
Freyr	AgriPro	2004	34	6	64	R	MR/MS	MS	MR
Glenn[9]	ND	2005	37	4	61	R	R	M	MR
Granite[9]	WestBred	2002	29	2	66	R/MR	MR	S	MS
Hat Trick[9]	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[9]	AgriPro	2006	30	4	62	MR	R	M	M
Knudson	AgriPro	2001	32	5	64	MR	MR	MR	M
Kuntz[9]	AgriPro	2007	31	4	65	R	MR	MS	M[10]
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**
RB07[9]	MN	2007	32	6	62	R	R	MS	MR
Reeder	ND	1999	35	3	63	R	MS	S	S
Sabin	**MN**	**2009**	**33**	**6**	**65**	**R**	**MR**	**NA**	**M**
Samson	WestBred	2007	31	2	63	R	MR/MS	MR/MS	S
Select[9]	**SD**	**2010**	**35**	**6**	**60**	**R/MR**	**R/MR**	**R/MR**	**MR**
Steele-ND	ND	2004	35	7	63	R	R	MS	M
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[10]
WB Digger	**WestBred**	**2009**	**34**	**6**	**63**	**MR**	**MR/MS**	**NA**	**MS**

[1] Refers to agent or developer: MN = University of Minnesota; MT = Montana State University; ND = North Dakota State University; SD = South Dakota State University. **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.

[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.

[9]Indicates varieties that showed Bacterial Leaf Streak symptoms based on very limited data.

[10]Based on one year's data.

2010 Hard Red Spring Wheat – Continuously Cropped - No-till — Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	**	lbs/bu	%	---------- Bushels per acre ----------				
Sabin	74	33	1	59.4	14.2	47.0	44.2	92.7	68.4	61.3
Alpine[a]	75	36	1	59.7	13.0	43.6	38.3	88.5	63.4	56.8
Reeder	75	36	0	60.1	14.7	38.3	45.3	86.1	65.7	56.6
Steele-ND	74	36	2	59.3	14.6	48.1	39.2	78.9	59.0	55.4
Blade	76	34	0	60.8	14.0	39.4	47.6	77.0	62.3	54.7
Brennan	75	33	0	60.4	13.7	50.2	37.6	74.7	56.2	54.2
Breaker	77	35	0	60.7	14.0	47.8	37.6	76.3	57.0	53.9
Kuntz	78	31	0	59.1	13.4	44.4	33.5	83.5	58.5	53.8
Jenna	79	33	0	60.0	13.2	42.8	45.0	73.4	59.2	53.7
ND901CL	75	36	0	58.4	15.2	43.1	40.3	76.5	58.4	53.3
Alsen	75	34	0	59.5	14.6	48.2	31.9	78.3	55.1	52.8
RB-07	74	33	0	60.6	14.1	51.6	42.4	63.6	53.0	52.5
Knudson	78	32	0	60.2	13.3	47.2	41.1	67.9	54.5	52.1
Howard	74	35	0	60.5	13.8	39.3	41.8	72.2	57.0	51.1
Samson	75	31	0	59.3	13.3	48.7	37.6	64.0	52.3	51.1
Vantage	82	32	0	61.0	15.3	41.9	44.1	67.4	55.8	51.1
Freyr	78	35	0	60.8	13.8	47.9	35.6	69.6	52.6	51.0
Kelby	74	31	1	59.9	14.3	50.9	33.7	67.2	50.4	50.6
Brick	72	35	2	60.5	13.8	39.8	30.4	80.8	55.6	50.3
Barlow	74	36	0	61.5	14.3	43.1	37.2	68.9	53.0	49.7
Choteau[b]	77	32	0	59.1	14.3	40.5	31.1	75.6	53.4	49.1
Mott[b]	81	34	0	60.0	14.1	34.1	39.0	70.0	54.5	47.7
Faller	78	34	0	58.9	13.6	37.0	36.5	68.8	52.6	47.4
Briggs	73	34	2	61.3	13.9	43.9	36.6	58.4	47.5	46.3
Glenn	74	36	0	62.1	15.0	41.7	31.5	62.5	47.0	45.2
Tom	74	35	2	59.2	14.1		41.7	81.2	61.4	
Brogen	77	32	0	60.2	14.0		41.3	72.7	57.0	
AP605CL	73	36	0	61.2	14.4		42.2	70.2	56.2	
WB Digger	75	34	1	58.3	13.8			80.3		
Edge	76	35	0	59.1	13.9			76.9		
Select	72	35	0	60.8	13.6			74.9		
Trial Mean	76	34	1	59.7	14.0	42.7	38.1	75.4	--	--
C.V. %	1.4	5.5	125	2.4	3.0	8.7	16.4	6.6	--	--
LSD .05	1	3	1	2.0	0.6	5.2	8.7	7.0	--	--
LSD .01	2	4	2	2.6	0.8	6.8	11.5	9.1	--	--

* Days to Head = the number of days from planting to head emergence from the boot.
** Lodging 0-9: 0 = none, 9 = lying flat on ground.
[a] hard white spring wheat. [b] Solid stem / sawfly tolerance.
Planting Date: April 12 Harvest Date: August 11
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007 = hrsw, 2008 & 2009 = field pea.
Note: The 2009 trial sustained moderate hail damage.

2010 Hard Red Spring Wheat - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Alsen	70	16,011	37	59.8	15.7	29.5	70.6	52.8	61.7	50.9
Barlow	70	15,753	37	60.1	15.3	28.6	69.4	59.2	64.3	52.4
Blade	72	14,811	34	61.1	15.1	34.7	77.8	60.0	68.9	57.5
Breaker	72	14,480	34	60.9	15.1	36.4	78.7	55.3	67.0	56.8
Brennan	71	16,305	30	60.6	14.7	35.1	74.8	59.4	67.1	56.4
Brick	68	16,676	37	60.6	14.7	32.8	63.1	49.0	56.1	48.3
Briggs	70	15,273	39	60.3	15.2	29.6	70.5	41.5	56.0	47.2
Brogan	72	16,569	32	60.3	15.3	--	74.6	56.8	65.7	--
Choteau	71	15,294	34	60.0	15.0	34.2	78.5	60.1	69.3	57.6
Edge	71	16,171	34	58.8	14.5	--	--	57.1	--	--
Faller	71	15,977	35	57.5	14.8	29.8	85.3	50.2	67.8	55.1
Freyr	71	16,000	34	59.6	15.1	33.7	72.5	58.0	65.2	54.7
Glenn	69	15,150	37	62.3	15.4	31.0	61.2	47.6	54.4	46.6
Howard	71	15,921	37	60.4	14.8	30.9	77.3	57.0	67.1	55.0
Jenna	73	13,188	34	59.5	14.8	35.2	81.1	60.5	70.8	58.9
Kelby	70	16,028	30	59.9	15.0	34.2	73.7	55.8	64.8	54.6
Knudson	72	15,571	34	58.9	14.0	32.2	87.8	55.3	71.5	58.4
Kuntz	71	18,707	30	58.9	14.5	31.3	78.2	55.6	66.9	55.0
Mott	73	17,594	37	60.8	14.8	34.0	78.7	41.0	59.9	51.2
Parshall	70	16,233	39	60.4	15.4	31.4	66.8	42.3	54.5	46.8
RB07	70	17,308	33	59.3	14.3	37.2	78.2	57.4	67.8	57.6
Reeder	74	17,247	39	61.0	15.7	28.4	72.0	44.6	58.3	48.3
Sabin	71	17,319	34	59.8	15.3	--	80.0	61.3	70.6	--
Samson	72	18,213	31	57.9	13.9	34.6	82.7	51.8	67.3	56.4
Select	68	15,860	36	60.1	14.4	31.0	65.0	52.8	58.9	49.6
Steele-ND	70	15,711	37	60.4	15.2	30.4	75.3	58.1	66.7	54.6
Tom	71	14,140	35	60.0	14.6	32.3	76.8	60.4	68.6	56.5
Vantage	74	15,557	32	62.8	16.7	33.0	72.5	52.7	62.6	52.7
WB-Digger	70	14,904	35	58.6	14.1	--	--	60.5	--	--
Trial Mean	71	15,760	35	59.8	15.0	32.1	74.9	54.4	--	--
CV %	0.8	4.7	3.1	0.9	1.8	10.5	7.5	5.3	--	--
LSD 0.05	1	1,501	2	0.8	0.5	4.7	7.8	4.1	--	--

Planting Date: April 20, 2010

Harvest Date: August 16, 2010

Previous Crop: Field Pea

Seeding Rate: 1.2 million live seeds/ac

Note: Trial received slight hail damage

2010 Hannover Spring Wheat - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Test Weight	Protein	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
		lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Barlow	16,305	60.5	15.5	33.8	54.7	38.1	46.4	42.2
Brennan	17,584	60.0	15.8	--	--	38.7	--	--
Brick	17,188	61.4	14.8	--	46.7	34.9	40.8	--
Faller	15,524	59.3	14.5	30.9	54.1	41.0	47.6	42.0
Glenn	14,904	63.4	15.6	29.2	47.6	35.8	41.7	37.5
Howard	17,194	60.4	15.4	30.3	46.6	38.9	42.7	38.6
Mott	18,298	61.9	14.6	35.7	63.9	42.2	53.1	47.3
Steele-ND	16,521	60.4	15.4	29.4	43.7	36.6	40.1	36.6
Trial Mean	16,690	60.9	15.2	31.7	51.2	38.3	--	--
CV %	5.4	0.5	1.3	9.9	6.5	5.6	--	--
LSD 0.05	NS	0.4	0.5	NS	4.8	3.1	--	--

Planting Date: May 17, 2010 Harvest Date: August 24, 2010

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

2010 Glen Ullin Spring Wheat - Fallow **Dickinson, ND**

Variety	Seeds per Pound	Test Weight	Protein	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
		lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Barlow	16,369	61.4	15.4	51.0	73.2	49.5	61.4	57.9
Brennan	18,402	61.0	15.5	--	--	43.7	--	--
Brick	16,292	61.9	15.4	--	64.8	41.6	53.2	--
Faller	17,828	58.4	14.8	46.1	80.0	44.4	62.2	56.8
Glenn	15,541	64.1	15.7	40.5	65.9	44.3	55.1	50.2
Howard	17,627	59.8	15.1	42.1	68.2	40.0	54.1	50.1
Mott	17,684	62.3	14.7	48.6	82.4	47.9	65.1	59.6
Steele-ND	16,957	60.5	15.5	42.9	68.3	41.7	55.0	51.0
Trial Mean	17,087	61.2	15.3	45.2	71.9	44.1	--	--
CV %	4.4	0.7	1.1	6.8	8.2	6.9	--	--
LSD 0.05	NS	0.6	0.4	5.2	8.6	4.5	--	--

Planting Date: May 17, 2010 Harvest Date: August 24, 2010

Seeding Rate: 1.2 million live seeds/ac

SDSU Hard Red Spring Wheat Variety Trial – Harding County (Ralph), 2009 - 2010.

Variety	Height	Lodging	Test Wt.	Protein	Yield	Bu/A
	Inches	0-9*	Lb/Bu	%	2010	2-Year
ALBANY	27	0	54.4	13.8	25.9	40.1
BARLOW	30	0	55.6	16.0	33.2	41.7
BREAKER	28	0	56.6	15.8	31.1	42.2
BRENNAN	27	0	59.3	14.7	28.9	35.5
BRICK	32	0	57.0	15.0	28.7	37.5
BRIGGS	33	0	55.4	14.6	32.8	42.0
BROGAN	27	0	53.9	14.9	18.7	31.5
CHRIS	36	0	55.1	15.6	26.9	35.0
DIGGER	31	0	53.8	14.5	28.2	.
FALLER	32	0	48.6	14.6	18.2	37.7
GLENN	31	0	53.5	15.8	31.7	38.4
GRANGER	33	0	57.0	14.4	35.0	43.6
HAT TRICK	28	0	55.5	13.0	19.3	.
HOWARD	31	0	52.6	15.4	26.3	37.2
MOTT	32	0	56.2	15.1	25.1	39.5
RB07	29	0	55.2	14.4	29.6	42.1
REEDER	28	0	54.1	14.9	33.5	41.6
SABIN	30	0	55.6	16.6	**38.6**	**47.8**
SAMSON	28	0	52.2	14.3	23.0	29.7
SELECT	32	0	57.2	13.3	34.7	43.2
STEELE-ND	31	0	55.4	15.2	31.0	38.9
TOM	31	0	56.0	15.4	29.1	37.2
TRAVERSE	30	0	55.1	13.9	**35.5**	43.5
VANTAGE	28	0	56.8	16.3	27.6	34.7
Average	30	0.0	55.3	14.7	29.4	38.9
LSD (P=.05)	2.0	0.0	1.9	.	4.6	3.9
CV	4.7	0.0	2.5	.	11.1	10.2

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

Planted: April 21, 2010
Harvested: August 18, 2010
Previous crop: Conventional Fallow.
Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)
Additional Nitrogen: 50 Lb/A

SDSU Hard Red Spring Wheat Variety Trial – Perkins County (Bison), 2008 - 2010.

Variety	Height	Lodging	Test Wt.	Protein	Yield	Bu/A
	Inches	0-9*	Lb/Bu	%	2010	3-Year
ALBANY	23	0	58.7	12.9	**36.3**	**31.9**
BARLOW	27	0	60.6	14.4	**38.4**	**31.8**
BREAKER	27	0	60.1	13.8	**39.2**	.
BRENNAN	23	0	58.4	14.1	32.2	28.1
BRICK	28	0	59.4	13.1	31.8	**31.8**
BRIGGS	30	0	58.9	12.7	**35.7**	**30.4**
BROGAN	25	0	60.1	13.8	**35.6**	.
CHRIS	33	0	57.3	15.2	28.2	23.5
DIGGER	26	0	58.3	13.8	28.9	.
FALLER	26	0	57.9	12.1	**38.1**	30.6
GLENN	25	0	60.3	13.9	28.4	27.9
GRANGER	28	0	61.1	12.4	**33.0**	31.8
HAT TRICK	23	0	59.6	12.1	23.1	.
HOWARD	26	0	57.3	13.1	29.6	27.7
MOTT	28	0	59.4	14	**35.1**	27.3
RB07	26	0	59.7	13.6	**36.3**	32.6
REEDER	24	0	59.8	14.4	31.9	26.1
SABIN	25	0	58.9	13.6	28.2	27.9
SAMSON	24	0	57.8	13.3	**35.0**	32.7
SELECT	27	0	62.5	13.5	31.7	29.9
STEELE-ND	26	0	59.0	13.7	29.8	29.0
TOM	25	0	59.2	14.2	28.4	24.6
TRAVERSE	27	0	57.4	13.9	**33.9**	32.3
VANTAGE	25	0	61.1	15.8	**34.4**	.
Average	26	0.0	59.2	13.7	31.5	29.3
LSD (P=.05)	2.1	0.0	2.1	.	6.7	4.1
CV	5.8	0.0	2.2	.	13.0	**19.2**

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

Planted: April 21, 2010
Harvested: August 17, 2010
Previous crop: Wheat, no-till planted.
Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)
Additional Nitrogen: 60 Lb/A

2010 HRSW Variety Trial - Continuously Cropped - No-till Scranton

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Mott	33	57.7	14.0	24.3	64.3	61.3	62.8	50.0
Barlow	32	59.0	13.8	19.5	74.6	54.4	64.5	49.5
Howard	32	56.5	13.6	18.6	61.6	61.4	61.5	47.2
Faller	32	57.8	13.8	18.2	62.0	59.9	61.0	46.7
Steele-ND	31	57.3	13.5	24.0	58.2	55.6	56.9	45.9
Glenn	34	60.8	14.4	18.2	47.1	60.5	53.8	41.9
Brennan	27	58.1	14.2		64.5	60.8	62.6	
Briggs	34	56.9	14.4		62.7	54.5	58.6	
RB07	30	57.2	14.1			62.6		
Trial Mean	31	57.8	13.9	21.4	60.9	58.2	--	--
C.V. %	6.7	1.8	2.3	7.1	11.2	5.2	--	--
LSD .05	3	1.5	0.5	2.2	9.8	4.4	--	--
LSD .01	4	2.0	0.6	2.9	13.3	5.9	--	--

Planting Date: April 21 Harvest Date: August 17
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 HRSW Variety Trial - Continuously Cropped - No-till Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Faller	28	55.7	14.4	12.1	70.6	48.0	59.3	43.6
Steele-ND	29	56.8	14.9	13.6	65.0	49.2	57.1	42.6
Barlow	30	58.0	14.4	16.1	61.6	47.3	54.4	41.7
Glenn	28	59.8	15.1	14.6	60.5	46.9	53.7	40.7
Howard	28	55.6	14.8	13.5	65.7	44.5	55.1	41.2
Mott	28	57.8	14.3	17.7	58.1	46.9	52.5	40.9
Brennan	25	57.7	14.4		69.2	50.0	59.6	
Briggs	29	57.3	14.8		63.2	49.1	56.2	
RB07	26	57.2	14.6			47.6		
Trial Mean	28	57.3	14.5	15.0	65.1	48.2	--	--
C.V. %	5.2	1.7	4.8	20.9	4.9	6.0	--	--
LSD .05	2	1.4	NS	NS	4.6	NS	--	--
LSD .01	3	1.9	NS	NS	6.2	NS	--	--

Planting Date: April 21 Harvest Date: August 17
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
NS = no statistical difference between varieties.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 HRSW Variety Trial - Continuously Cropped - No-till New Leipzig

Cooperator: Jan Sprecher, New Leipzig

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2007	2008	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Glenn	33	60.4	15.5	32.0	17.5	43.3	30.4	30.9
Faller	32	56.6	14.9	32.6	15.3	43.3	29.3	30.4
Steele-ND	31	56.1	15.0	31.9	17.7	41.3	29.5	30.3
Howard	31	55.8	15.0	29.7	16.9	41.9	29.4	29.5
Brennan	27	58.3	14.7			50.9		
RB07	30	58.3	15.3			50.4		
Mott	31	58.6	15.4			46.3		
Barlow	32	58.9	15.0			44.7		
Briggs	32	58.1	15.4			43.7		
Trial Mean	30	57.8	15.1	30.8	18.5	45.0	--	--
C.V. %	4.2	1.0	1.7	14.9	7.4	6.1	--	--
LSD .05	2	0.8	0.4	NS	2.0	3.9	--	--
LSD .01	3	1.1	0.5	NS	NS	5.3	--	--

NS = no statistical difference between varieties.

Planting Date: April 22 Harvest Date: August 17
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2006 = hrww, 2007 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.
The 2010 trial sustained moderate hail damage.

2010 HRSW Variety Trial - Continuously Cropped - No-till Selfridge

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2007	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Faller	30	52.3	15.4	38.8	52.5	41.1	46.8	44.1
Howard	29	54.0	15.4	39.9	52.2	37.9	45.0	43.3
Glenn	30	56.7	16.2	40.7	45.7	42.4	44.0	42.9
Steele-ND	31	53.8	15.8	36.8	52.4	38.2	45.3	42.5
Mott	31	56.1	15.4		50.9	45.3	48.1	
Barlow	30	55.8	15.8		50.9	43.3	47.1	
Brennan	27	56.4	15.6		47.0	47.1	47.0	
Briggs	31	56.2	16.0		47.5	44.4	46.0	
RB07	28	54.8	15.2			42.8		
Trial Mean	30	54.9	15.5	38.8	50.0	43.0	--	--
C.V. %	4.7	1.3	1.4	6.7	9.3	6.1	--	--
LSD .05	2	1.0	0.3	3.8	6.7	3.8	--	--
LSD .01	3	1.4	0.4	5.1	9.0	5.1	--	--

Planting Date: April 22 Harvest Date: August 16
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2006 = hrww, 2008 = sunflower, 2009 = hrsw.

2010 HRSW Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Mott	37	57.9	14.2	59.1	67.0	71.1	69.0	65.7
Barlow	36	58.0	14.7	66.2	63.2	64.3	63.8	64.6
Faller	35	55.3	14.1	58.5	69.2	61.4	65.3	63.0
Steele-ND	35	57.7	15.1	59.5	54.6	64.6	59.6	59.6
Howard	34	57.1	14.2	57.6	57.3	58.4	57.8	57.8
Glenn	35	59.6	15.1	56.2	54.1	60.4	57.2	56.9
Brennan	30	56.8	13.9		65.6	66.2	65.9	
Briggs	35	57.9	14.6		64.4	66.6	65.5	
RB07	31	55.7	14.5			62.9		
Trial Mean	34	56.5	14.3	61.7	61.9	64.1	--	--
C.V. %	3.0	1.1	3.3	6.0	5.0	4.4	--	--
LSD .05	1	0.9	0.7	5.4	4.5	4.0	--	--
LSD .01	2	1.2	0.9	7.2	6.0	5.4	--	--

Planting Date: April 22
Harvest Date: August 16
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007& 2008 = hrsw, 2009 = field pea.

Hard Red Spring Wheat in the West River Region — Combined Means

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	%	---------- Bushels per acre ----------				
Mott	70	34	15,599	59.7	14.3	34.9	58.1	48.4	53.2	47.1
Barlow	66	33	14,373	59.8	14.5	35.5	56.6	49.2	52.9	47.1
Faller	69	33	14,293	57.6	13.9	30.4	59.6	46.8	53.2	45.6
Steele-ND	67	33	14,736	59.1	14.4	32.5	53.1	47.7	50.4	44.4
Howard	67	33	15,185	58.5	14.3	30.6	54.5	46.2	50.4	43.8
Glenn	65	34	14,065	61.0	14.9	30.5	48.9	45.8	47.4	41.7
Brennan	66	31	15,077	59.9	14.3		53.1	50.2	51.6	
Briggs	67	34	--	59.6	14.4		53.0	47.4	50.2	
RB07	67	30	--	57.6	14.4			50.4		
# of Locations*	4	17	6	21	19	9	10	11	21	30

* Locations: 2008 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Mandan, Hannover, Glen Ullin & Bison, SD.
2009 = Hettinger, Dickinson, Scranton, Regent, Selfridge, Mandan, Hannover, Glen Ullin, Ralph & Bison, SD.
2010 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Selfridge, Mandan, Hannover, Glen Ullin, Ralph & 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.

2010 Sawfly Tolerance Trial — Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	Grain Protein	Grain Yield 2008	Grain Yield 2010	Grain Yield 2 yr
	*	inches	0-9**	lbs/bu	%	lbs/A	lbs/A	lbs/A
Tolerant Varieties								
Vida	70	33	2	56.2	14.3	35.7	60.6	48.2
Mott	72	35	0	58.3	14.7	26.9	62.2	44.6
Agawam	67	33	1	58.0	13.7	36.6	52.4	44.5
Choteau	69	34	0	58.1	14.7	20.9	60.7	40.8
Conan	70	31	0	58.3	14.0	27.8	52.6	40.2
AC Lillian	72	37	3	54.3	15.5	25.4	50.7	38.0
Conventional (non-tolerant) Varieties								
Reeder	68	34	0	58.2	15.0	25.3	64.4	44.8
Steele-ND	68	35	3	56.9	14.8	24.2	65.0	44.6
Glenn	66	36	0	60.9	15.5	25.6	56.3	41.0
Durum Varieties								
Grenora	72	34	0	57.4	13.6	27.7	65.8	46.8
Mountrail	72	37	0	59.1	13.3	23.9	63.9	43.9
Alkabo	71	35	0	59.3	13.4	23.2	61.3	42.2
Divide	72	36	0	58.2	14.2	18.9	60.0	39.4
Trial Mean	70	34	1	58.0	14.3	24.7	59.6	--
C.V. %	1.1	4.9	100	2.7	1.7	10.7	4.1	--
LSD .05	1	2	1	2.3	0.4	4.4	3.6	--
LSD .01	2	3	1	2.9	0.5	5.9	4.6	--

* 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: April 19
Harvest Date: August 18
Previous Crop: 2007 = durum, 2009 = canola.
Note: The 2008 trial sustained severe late season heat and moisture stress.

2010 Sawfly Tolerance Variety Trial - Continuously Cropped - No-till at Scranton

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Tolerant Varieties								
Mott	37	58.7	13.0	18.3	58.5	65.2	61.8	47.3
Vida	35	57.9	13.1	11.4	54.9	66.4	60.6	44.2
Choteau	33	57.7	12.9	8.3	53.0	66.8	59.9	42.7
AC Lillian	40	56.5	14.0	11.7	47.3	61.5	54.4	40.2
Conan	31	56.2	13.9	10.7	45.4	54.5	50.0	36.9
Conventional Varieties								
Reeder	33	57.2	13.6	11.6	52.4	64.3	58.4	42.8
Steele-ND	35	58.4	13.3	10.0	53.1	61.8	57.4	41.6
Glenn	35	61.2	13.5	6.8	44.2	63.9	54.0	38.3
Durum Varieties								
Mountrail	36	57.7	11.8	9.6	54.4	77.0	65.7	47.0
Divide	37	58.6	12.5	8.8	50.5	74.1	62.3	44.5
Alkabo	34	58.6	12.0	8.9	47.1	70.0	58.6	42.0
Grenora	33	57.1	12.0			72.1		
Trial Mean	31	57.8	13.9	21.4	60.9	58.2	--	--
C.V. %	6.7	1.8	2.3	7.1	11.2	5.2	--	--
LSD .05	3	1.5	0.5	2.2	9.8	4.4	--	--
LSD .01	4	2.0	0.6	2.9	13.3	5.9	--	--

Planting Date: April 21
Harvest Date: August 17
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 Sawfly Tolerance Variety Trial - Continuously Cropped - No-till at Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Tolerant Varieties								
Vida	25	55.1	14.9	11.6	58.4	49.2	53.8	39.7
Mott	26	57.4	15.2	7.0	47.8	51.5	49.6	35.4
Choteau	25	55.3	14.8	8.1	52.7	43.4	48.0	34.7
Conan	25	56.5	15.2	13.4	44.8	42.2	43.5	33.5
AC Lillian	31	54.8	16.2	10.6	49.1	39.9	44.5	33.2
Conventional Varieties								
Glenn	29	59.5	15.4	17.0	50.3	48.3	49.3	38.5
Steele-ND	28	56.3	15.2	14.4	49.8	42.9	46.4	35.7
Reeder	26	56.4	15.0	8.2	55.0	42.9	49.0	35.4
Durum Varieties								
Divide	29	53.8	15.4	11.4	53.2	29.4	41.3	31.3
Mountrail	27	52.0	15.1	6.9	52.4	27.3	39.8	28.9
Alkabo	27	55.6	14.8	4.2	47.7	32.6	40.2	28.2
Grenora	25	53.2	14.5			37.6		
Trial Mean	27	55.6	15.0	10.5	51.9	41.8	--	--
C.V. %	4.5	2.8	3.1	19.2	5.6	6.3	--	--
LSD .05	2	2.2	0.7	3.4	4.2	3.7	--	--
LSD .01	2	2.9	0.9	4.5	5.5	5.0	--	--

Planting Date: April 21
Harvest Date: August 17
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

North Dakota durum wheat variety descriptions, agronomic traits, 2010.

Variety	Agent or Origin[1]	Year Released	Average Plant Height	Straw Strength[2]	Maturity	Reaction to Disease[3]			
						Stem Rust	Leaf Rust	Foliar Disease	Scab
AC Commander	Can.	2002	32	6	68	R	R	MS	NA
AC Napoleon	Can.	2001	40	6	68	R	R	S	NA
AC Navigator	Can.	1999	32	6	66	R	R	M	S
Alkabo	ND	2005	36	3	67	R	R	M	MS
Alzada	WB	2004	30	7	63	R	R	S	VS
Belzer	ND	1997	39	6	66	R	R	M	MR
Ben	ND	1996	39	4	67	R	R	MR	S*
CDC Verona	Can.	2010	38	5	69	R	R	MR	S
DG Max	DGP	2008	38	6	66	R	MR	MR	MS
DG Star	DGP	2007	37	5	64	R	R	M	NA
Dilse	ND	2002	37	6	68	R	R	M	MS
Divide	ND	2005	38	6	68	R	R	M	MR
Grande D'Oro	WB/DGP	2005	37	5	68	R	R	M	NA
Grenora	ND	2005	35	6	67	R	R	M	MS
Kyle	Can.	1984	39	8	68	R	MR	M	NA
Lebsock	ND	1999	37	4	67	R	R	M	MS
Maier	ND	1998	37	6	67	R	R	M	S*
Mountrail	ND	1998	37	6	68	R	R	M	S*
Pierce	ND	2001	38	6	67	R	R	MS	S
Plaza	ND	1999	29	8	68	R	R	M	MS
Rugby	ND	1973	38	6	64	R	R	MR	S*
Strongfield	Can	2004	37	7	68	R	R	MS	S
Tioga	Westbred	2010	39	5	68	R	R	M	MS
Wales	Westbred	2008	36	4	67	R	R	M	S*
Westhope	Westbred	2009	36	4	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 one the strongest and nine the weakest. Based on recent data. These values may change as more data become available.

[3]R = resistant; MR = moderately resistant (slow rusters); M = intermediate; MS = moderately susceptible; S = susceptible; VS = very susceptible; Foliar Disease = reaction to tan spot and septoria leaf spot complex. Letter ratings for head blight (scab) based on visual head symptoms. * Indicates yields and/or quality often have been higher than would be expected based on visual symptoms. NA = Not adequately tested.

2010 Durum Wheat – Continuously Cropped - No-till — Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	%	---------- Bushels per acre ----------				
AC Commander	73	29	58.7	14.4	45.1	51.7	81.7	66.7	59.5
AC Navigator	72	31	59.7	14.3	37.5	52.6	77.9	65.2	56.0
DG Max	72	34	60.6	14.8	26.5	50.6	77.2	68.9	54.8
Maier	72	33	59.8	15.1	31.0	52.3	80.4	66.4	54.6
Lebsock	71	33	60.0	13.9	33.8	51.1	77.4	64.2	54.1
Grenora	73	32	59.8	14.5	33.3	48.4	77.6	63.0	53.1
Wales	72	34	62.3	14.6	25.9	48.1	85.4	66.8	53.1
Alkabo	72	32	59.5	14.0	30.3	52.0	75.5	63.8	52.6
Dilse	74	34	60.3	15.0	28.4	49.8	79.3	64.6	52.5
DG Star	68	33	59.7	14.3	37.1	43.6	74.9	59.2	51.9
Mountrail	72	33	59.7	14.2	23.2	50.7	81.4	66.0	51.8
Grande Doro	72	34	60.2	14.2	28.1	50.0	77.0	63.5	51.7
Divide	74	34	59.8	14.6	30.3	46.9	77.5	62.2	51.6
Strongfield	73	34	58.8	15.1	32.2	43.0	79.5	61.2	51.6
Tioga	73	35	59.6	15.1	31.6	47.7	74.8	61.2	51.4
Alzada	68	30	58.1	14.5	39.1	39.4	74.6	57.0	51.0
Ben	73	36	60.0	13.8	28.2	48.0	76.2	62.1	50.8
Pierce	72	34	61.0	14.3	27.5	46.7	75.6	61.2	49.9
Rugby	70	36	59.6	14.4	27.3	33.1	71.8	52.4	44.1
Westhope	71	33	60.6	15.0		49.6	79.8	64.7	
CDC Verona	74	33	59.5	15.2			80.5		
Trial Mean	72	34	60.2	14.3	31.8	48.6	79.8	--	--
C.V. %	1.0	4.6	1.5	3.7	11.6	7.2	4.4	--	--
LSD .05	1	2	1.2	0.7	5.1	4.9	4.9	--	--
LSD .01	1	3	1.6	1.0	6.8	6.4	6.5	--	--

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

Planting Date: April 19
Harvest Date: August 12
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2007 = hrsw, 2008 = field pea, 2009 = canola.
Note: The 2009 trial sustained moderate hail damage.
The 2008 trial sustained late season heat and moisture stress.

2010 Durum - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
AC Commander	75	11,471	31	58.5	13.9	12.3	93.3	62.0	77.7	55.9
AC Napoleon	74	11,412	37	58.5	14.2	13.8	82.6	54.8	68.7	50.4
AC Navigator	72	12,397	32	59.2	14.1	12.7	83.9	51.8	67.8	49.5
Alkabo	75	12,442	34	60.0	13.2	13.5	75.0	50.7	62.8	46.4
Alzada	71	11,736	29	53.9	13.8	17.5	69.4	53.2	61.3	46.7
Ben	74	11,798	37	58.8	14.4	13.2	75.6	50.0	62.8	46.2
CDC Verona	76	11,860	35	60.8	14.5	--	87.0	56.8	71.9	--
DG Max	74	11,797	37	59.3	14.0	12.5	87.2	55.1	71.2	51.6
DG Star	72	12,345	35	58.1	14.3	11.2	80.4	51.5	66.0	47.7
Dilse	76	11,894	35	58.3	15.5	13.6	84.4	58.0	71.2	52.0
Divide	75	11,500	36	59.6	14.1	16.6	87.1	51.8	69.5	51.8
Grande D'oro	74	12,726	34	60.2	13.6	--	--	53.4	--	--
Grenora	74	12,151	32	58.8	13.8	13.7	89.6	56.0	72.8	53.1
Lebsock	74	12,795	34	60.2	13.9	15.0	77.9	52.8	65.4	48.6
Maier	74	13,213	35	58.6	13.4	14.7	85.3	57.3	71.3	52.4
Mountrail	75	12,322	35	58.5	13.5	12.4	92.2	58.1	75.1	54.2
Pierce	74	12,378	36	59.8	13.9	17.5	87.7	54.3	71.0	53.2
Rugby	73	12,349	38	59.9	14.3	--	--	44.7	--	--
Strongfield	76	11,953	36	57.9	14.8	13.2	78.0	57.3	67.7	49.5
Tioga	74	11,299	37	60.7	14.1	14.3	82.3	56.0	69.1	50.9
Wales	75	12,296	35	57.1	14.5	14.2	92.7	60.1	76.4	55.7
Westhope	74	11,707	34	57.9	13.9	--	--	57.4	--	--
Trial Mean	74	12,114	35	59.6	14.1	13.6	85.2	56.7	--	--
CV %	0.9	5.1	4.0	1.8	2.8	19.5	7.5	6.2	--	--
LSD 0.05	1	1,247	2	1.5	0.8	NS	8.9	4.9	--	--

Planting Date: April 20, 2010
Harvest Date: August 16, 2010
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac
Note: Trial received slight hail damage
Returns were not calculated due to market volatility

2010 Hannover Durum - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Test Weight	Protein	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
		lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Alkabo	13,270	60.6	14.6	34.3	62.1	48.4	55.3	48.3
Divide	13,401	58.9	14.6	34.2	60.9	44.1	52.5	46.4
Grenora	12,557	59.5	14.9	35.6	61.4	49.3	55.3	48.7
Tioga	11,985	59.6	14.5	--	66.1	46.1	56.1	--
Trial Mean	12,707	60.0	14.4	33.1	63.0	48.4	--	--
CV %	4.0	1.0	1.7	10.0	3.2	5.6	--	--
LSD 0.05	NS	0.9	0.6	NS	3.0	4.1	--	--

Planting Date: May 17, 2010
Harvest Date: August 24, 2010
Previous Crop: Wheat
Seeding Rate: 1.2 million live seeds/ac
Returns were not calculated due to market volatility

2010 Glen Ullin Durum - Fallow **Dickinson, ND**

Variety	Seeds per Pound	Test Weight	Protein	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
		lbs/bu	%	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
Alkabo	12,360	61.9	13.6	36.4	68.8	52.4	60.60	52.5
Divide	11,959	61.1	13.4	42.9	64.8	56.9	60.89	54.9
Grenora	12,228	61.1	13.9	37.6	69.5	57.2	63.35	54.8
Tioga	10,983	62.0	13.5	--	80.1	60.6	70.31	--
Trial Mean	11,881	61.6	13.4	37.0	71.7	56.9	--	--
CV %	2.2	0.8	4.0	23.1	10.0	7.1	--	--
LSD 0.05	671	NS	NS	NS	NS	NS	--	--

Planting Date: May 17, 2010
Harvest Date: August 24, 2010
Seeding Rate: 1.2 million live seeds/ac
Returns were not calculated due to market volatility

SDSU Durum Wheat Variety Trial - Perkins County (Bison), 2010.

Variety	Height	Lodging	Test Wt	Protein	Yield
	Inches	0-9*	Lb/Bu	%	Bu/Ac
AC AVONLEA	30	0	58.5	16.8	36.4
ALKABO	30	0	59.4	13.2	36.4
DIVIDE	30	0	60.3	13.2	33.9
GRENORA	29	0	59.6	12.6	39.6
LEBSOCK	30	0	60.6	12.2	30.7
TIOGA	34	0	59.1	13.2	38.2
Average	30.2	0.0	59.6	13.5	35.9
LSD (P=.05)	1.5	0.0	1.8	.	**NS**
CV	3.4	0.0	1.9	.	11.4

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

Planted: April 21, 2010
Harvested: August 17, 2010
Previous crop: Wheat, no-till planted.
Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)
Additional Nitrogen: 60 Lb/A

SDSU Durum Wheat Variety Trial - Harding County (Ralph), 2006 - 2010.

Variety	Height	Lodging	Test Wt	Protein	Yield	Bu/Ac
	Inches	0-9*	Lb/Bu	%	2010	4-year
AC AVONLEA	33	0	56.7	15.6	50.1	.
ALKABO	31	0	57.1	13.4	38.3	39.9
DIVIDE	35	0	58.4	15.0	**53.8**	**.**
GRENORA	30	0	55.5	15.2	46.1	41.1
LEBSOCK	32	0	58.0	15.2	39.9	38.9
TIOGA	36	0	58.9	15.0	**52.2**	**.**
Average	33	0.0	57.4	14.9	46.8	2.9
LSD (P=.05)	1.2	0.0	1.2	.	3.1	**NS**
CV	2.4	0.0	1.4	.	4.4	10.5

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

Planted: April 21, 2010
Harvested: August 18, 2010
Previous crop: Conventional Fallow
Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)
Additional Nitrogen: 50 Lb/A

2010 Durum Variety Trial - Continuously Cropped - No-till at Scranton

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Grenora	29	54.5	13.6	18.3	68.3	54.0	61.2	46.9
Mountrail	29	54.9	13.9	16.6	63.6	51.1	57.4	43.8
Alkabo	29	57.2	13.4	17.9	62.4	49.9	56.2	43.4
Divide	31	55.8	14.0	17.8	63.9	44.9	54.4	42.2
Tioga	33	56.2	13.9		59.7	50.5	55.1	
Trial Mean	30	55.8	13.8	17.6	62.8	50.3	--	--
C.V. %	3.5	1.0	2.7	16.2	3.1	4.0	--	--
LSD .05	2	0.9	NS	NS	2.9	3.0	--	--
LSD .01	2	1.2	NS	NS	4.0	4.2	--	--

NS = no statistical difference between varieties.

Planting Date: April 21
Harvest Date: August 17
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 Durum Variety Trial - Continuously Cropped - No-till at Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Grenora	27	55.6	13.4	10.5	66.1	48.7	57.4	41.8
Mountrail	28	55.1	13.1	10.0	64.5	47.6	56.0	40.7
Alkabo	29	56.7	12.5	8.9	62.3	45.9	54.1	39.0
Divide	30	55.5	14.1	10.0	60.7	45.8	53.2	38.8
Tioga	30	56.6	14.0		63.8	48.7	56.2	
Trial Mean	29	56.0	13.3	9.7	63.2	47.4	--	--
C.V. %	3.9	1.5	3.1	51	4.3	4.8	--	--
LSD .05	2	NS	0.6	NS	NS	NS	--	--
LSD .01	2	NS	0.9	NS	NS	NS	--	--

NS = no statistical difference between varieties.

Planting Date: April 21
Harvest Date: August 17
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 Durum Variety Trial - Continuously Cropped - No-till at Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Grenora	37	55.5	13.5	57.7	68.1	71.7	69.9	65.8
Alkabo	37	57.3	13.1	60.2	70.2	67.1	68.6	65.8
Divide	38	57.2	14.3	55.8	69.6	69.2	69.4	64.9
Mountrail	39	56.0	13.4	56.9	63.0	70.0	66.5	63.3
Tioga	40	56.6	13.8		66.8	65.6	66.2	
Trial Mean	39	56.8	13.7	57.1	67.1	68.8	--	--
C.V. %	2.0	0.8	2.8	6.0	4.2	4.1	--	--
LSD .05	1	0.7	0.6	NS	4.3	NS	--	--
LSD .01	2	0.9	0.8	NS	5.9	NS	--	--

Planting Date: April 22
Harvest Date: August 16
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2007& 2008 = hrsw, 2009 = field pea.

Durum in the West River Region — Combined Means

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	%	---------- Bushels per acre ----------				
Mountrail	69	35	11,224	58.7	13.2	27.0	61.5	61.6	61.6	50.0
Grenora	69	33	11,114	58.6	13.5	29.3	60.7	55.6	58.2	48.5
Divide	70	35	11,251	59.4	13.8	29.1	59.6	53.1	56.4	47.3
Alkabo	69	33	11,394	59.3	13.3	28.0	57.5	51.6	54.6	45.7
Tioga	69	37	11,422	58.8	14.1			54.7		
# of Locations*	4	14	6	18	18	8	9	9	18	26

* Locations: 2008 = Hettinger, Dickinson, Scranton, Regent, Mandan, Hannover, Glen Ullin & Bison, SD.
2009 & 2010 = Hettinger, Dickinson, Scranton, Regent, Mandan, Hannover, Glen Ullin, Ralph & Bison, SD.

2010 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	Loose Smut	Spot Blotch	Net Blotch
Six-rowed													
Celebration	MT	BARI	2008	S	S	White	M.short	Strg.	Med.	S	S	MR/R	MS/MS
Drummond	M/F	ND	2000	S	L	White	M.short	V.strg.	Med.	S	S	MR/R	MS/S
Innovation	MT	BARI	2009	S	L	White	M.short	Strg.	Med.	S	S	MR/R	MS/S
Lacey	M/F	MN	1999	S	S	White	M.short	Strg.	Med.	S	S	MR/R	MS/S
Legacy	M/F	BARI	2000	S	L	White	Med.	Strg.	M.late	S	S	MR/R	MS/S
MNBrite[6]	F	MN	1997	S	S	White	Tall	Med.	Early	S	S	MR/R	MS/S
Quest	MT	MN	2010	S	L	White	M.short	V.strg.	Med.	S	S	MR/R	MS/S
Rasmusson	M/F	MN	2008	S	S	White	M.short	Strg.	Med.	S	S	MR/R	MS/S
Robust	M/F	MN	1983	S	S	White	Med.	M.strg.	Med.	S	S	MR/R	MS/S
Stellar-ND	M/F	ND	2005	S	L	White	M.short	V.strg.	Med.	S	S	MR/R	MS/S
Tradition	M/F	BARI	2003	S	L	White	M.short	V.strg.	Med.	S	S	MR/R	MS/S
Two-rowed													
AC Metcalfe	M	Can	1997	R	L	White	Med.	Med.	Late	S	NA	MS	MS
Bowman	F	ND	1984	S	L	White	M.short	Med.	Early	S	S	MS/S	S/MS
CDC Copeland	M	Can	1999	R	L	White	Tall	Med.	M.late	S	S	MS	MR
Champion	F	WestBred	2007	--	L	White	Tall	--	M.late	NA	NA	NA	NA
Conlon[7]	M/F	ND	1996	S	L	White	M.short	Med.	Early	S	S	MS	MR/R
Conrad	M	BARI	2007	R	L	White	Tall	M.weak	Late	S	NA	NA	NA
Eslick	F	MT	2003	R	L	White	Med.	M.weak	M.late	S	NA	MS	NA
Gallatin	F	MT	1986	R	L	White	Med.	Med.	Late	S	S	MS/S	MS
Harrington[8]	F	Can	1981	R	L	White	Med.	M.weak	V.late	S	S	S	MS
Haxby	F	MT	2003	R	L	White	Med.	Med.	Med.	S	NA	MS	NA
Hockett	MT	MT	2008	R	L	White	Med.	Med.	Med.	S	NA	NA	NA
Lilly	F	Germany	--	R	L	White	Short	M.strg.	Late	S	NA	S	NA
Pinnacle	MT	ND	2006	S	L	White	Med.	Strg.	M.late	S	S	MR	MS
Rawson	F	ND	2005	R	L	White	Med.	Med.	Med.	S	S	MR	MS
Scarlett	M	Germany	1995	R	L	White	Short	Med.	Late	S	NA	NA	NA
Stark	F	ND	1991	S	L	White	M.tall	Med.	Late	S	S	S/MS	MS/S
Sunshine	F	Germany	--	R	L	White	Short	M.strg.	Late	S	NA	S	NA
Valier	F	Can	1999	R	L	White	Med.	M.weak	M.late	S	NA	MS	NA
Specialty													
Enduro	SP	WestBred	2007	H	L	White	Med.	--	M.late	NA	NA	NA	NA
Wanubet	SP	MT	1990	R	L	White	Med.	Weak	Late	S	S	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.; Can = Canada; 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] Lower DON accumulations than other varieties tested.
[8] Recommended as a malting barley in western USA.

2010 Barley Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	% Plump	Grain Protein	----- Grain Yield ----- 2008	2009	2010	Avg. Yield 2 yr	3 yr
	*	Inches	0-9**	lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types											
Pinnacle	73	33	2	48.7	94	12.9	94.0	79.6	113.3	96.4	95.6
Haxby	75	35	3	48.7	84	13.5	91.1	78.8	115.5	97.2	95.1
Conlon	70	36	2	48.1	93	14.2	102.7	74.9	106.4	90.6	94.7
Rawson	71	34	2	47.3	93	13.1	80.6	66.0	106.7	86.4	84.4
CDC Copeland	80	33	2	45.4	89	14.0	73.9	70.6	107.3	89.0	83.9
AC Metcalfe	76	31	4	46.7	91	14.1	67.4	68.0	102.6	85.3	79.5
Lilly	74	32	0	46.2	84	13.4			126.7		
Sunshine	77	31	2	45.9	90	12.6			121.3		
6 Row Types											
Tradition	73	32	6	45.9	91	13.4	88.0	71.4	117.4	94.4	92.3
Lacey	72	25	8	46.5	89	12.8	76.7	77.1	111.9	94.5	88.6
Rasmusson	72	30	8	46.3	90	13.1	63.7	72.1	110.8	91.4	82.2
Stellar-ND	72	32	5	44.8	88	13.4	60.4	64.8	113.5	89.2	79.6
Celebration	72	34	8	43.8	87	14.6		81.7	106.1	93.9	
Quest	72	35	7	45.1	86	13.2		60.5	109.1	84.8	
Innovation	72	32	7	45.5	84	13.8			110.8		
Trial Mean	73	33	4	46.6	90	13.1	76.5	74.2	113.8	--	--
C.V. %	1.2	13	24	1.3	3.2	5.5	8.4	11.3	4.7	--	--
LSD .05	1	NS	1	0.9	3	1.0	9.0	11.8	7.6	--	--
LSD .01	2	NS	2	1.1	4	1.4	12.0	15.7	10.2	--	--

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

Planting Date: April 12
Harvest Date: August 2
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2009 = field pea, 2008 & 2007 = hrsw.
Note: The 2009 trial sustained moderate hail damage.

2010 Hannover Barley - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Test Weight	% Plump	Protein	---Grain Yield--- 2009	2010	Average Yield
		lbs/bu	>6/64	%	---bu/ac---		bu/ac
Six Row							
Celebration	15,521	44.9	90.6	14.1	112.1	48.6	80.4
Stellar-ND	13,018	45.5	93.4	13.4	111.3	48.1	79.7
Tradition	15,228	45.9	88.7	13.5	113.2	44.2	78.7
Two Row							
Conlon	13,548	45.9	90.1	13.9	--	26.0	--
Pinnacle	13,809	42.8	86.7	13.1	107.9	41.8	74.8
Rawson	12,656	42.8	87.1	12.9	98.8	41.0	69.9
Trial Mean	13,963	44.6	89.4	13.5	108.6	41.6	--
CV %	3.8	1.7	2.7	2.7	3.0	7.8	--
LSD 0.05	1,378	1.2	NS	NS	5.0	4.9	--

Planting Date: May 17, 2010
Harvest Date: August 24, 2010
Previous Crop: Wheat Seeding Rate: 1.2 million live seeds/ac

2010 Glen Ullin Barley - Recrop **Dickinson, ND**

Variety	Seeds per Pound	Test Weight	% Plump	Protein	---Grain Yield--- 2009	2010	Average Yield
		lbs/bu	>6/64	%	---bu/ac---		bu/ac
Six Row							
Celebration	13,767	46.0	95.5	11.4	126.2	54.3	90.3
Stellar-ND	12,160	45.5	95.0	11.6	132.1	53.8	93.0
Tradition	12,620	46.9	95.3	11.3	121.1	56.2	88.7
Two Row							
Conlon	12,257	45.6	95.0	11.2	--	51.7	--
Pinnacle	11,159	47.0	94.5	11.2	125.3	56.4	90.8
Rawson	9,981	46.5	97.2	10.7	122.0	53.3	87.6
Trial Mean	11,991	46.3	95.4	11.2	125.3	54.3	--
CV %	3.0	1.3	1.5	4.9	4.7	19.0	--
LSD 0.05	934	0.9	NS	NS	NS	NS	--

Planting Date: May 17, 2010
Harvest Date: August 24, 2010
Previous Crop: Wheat Seeding Rate: 1.2 million live seeds/ac

SDSU Spring Barley Variety Trial - Perkins County (Bison), 2010.

	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Protein Percent	Yield 2010
TWO ROW					
CONLON **+**	22	0	**	12.4	9.3
ESLICK	21	0	46.5	12.2	**47.4**
PINNACLE	25	0	48.1	11.8	**45.4**
RAWSON	28	0	47.2	12.1	**42.5**
SIX ROW					
CELEBRATION	26	0	46.6	13.7	29.6
LACEY	25	0	47.7	12.9	35.4
STELLAR-ND	25	0	45.6	12.6	37.9
TRADITION	25	0	47.2	11.9	36.5
Average	24.6	0.0	47.0	12.5	35.5
LSD (P=.05)	1.8	0.0	1.9	.	8.0
CV	5.1	0.0	2.7	.	15.4

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

Planted: April 21, 2010 Harvested: August 17, 2010
Previous crop: Wheat, no-till planted. Additional Nitrogen: 60 Lb/A
Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)

SDSU Spring Barley Variety Trial - Harding County (Ralph), 2009 - 2010.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Protein Percent	Yield 2010	Bu/A 2-Year
TWO ROW						
CONLON **+**	30	0	**	13.9	7.7	8.6
ESLICK	26	0	46.8	12.3	**77.4**	**83.8**
PINNACLE	32	0	43.4	11.9	55.0	64.2
RAWSON	32	0	46.7	12.4	56.0	63.0
SIX ROW						
CELEBRATION	32	0	43.5	13.6	50.1	.
LACEY	32	0	48.0	13.5	62.0	62.8
STELLAR-ND	33	0	43.8	13.5	60.3	60.6
TRADITION	33	0	47.5	12.9	63.3	.
Average	31.2	0.0	45.7	13.0	54.0	57.1
LSD (P=.05)	1.8	0.0	1.3	.	7.9	4.5
CV	3.8	0.0	1.9	.	9.9	11.1

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

Planted: April 21, 2010 Harvested: August 18, 2010
Previous crop: Conventional Fallow. Additional Nitrogen: 50 Lb/A
Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A) + Axial XL (1 pt/A)

2010 Barley Variety Trial - Continuously Cropped - No-till — Scranton

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Pinnacle	30	47.0	88	11.6	20.6	91.1	72.9	82.0	61.5
Rawson	30	46.3	91	11.9	22.1	72.9	87.8	80.4	60.9
6 Row Types									
Stellar-ND	28	45.5	92	12.7	15.6	108.2	91.8	100.0	71.9
Tradition	28	45.7	88	12.7		100.0	92.9	96.4	
Celebration	27	44.4	88	13.0		91.2	78.6	84.9	
Trial Mean	29	45.8	89	12.4	17.2	92.7	84.8	--	--
C.V. %	4.3	1.0	1.2	2.2	28	3.5	5.1	--	--
LSD .05	NS	0.7	1	0.4	NS	4.9	6.7	--	--
LSD .01	NS	1.0	2	0.6	NS	6.8	9.4	--	--

NS = no statistical difference between varieties.

Planting Date: April 21 Harvest Date: August 17
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 Barley Variety Trial - Continuously Cropped - No-till — Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Rawson	29	48.1	93	12.2	23.8	97.4	76.9	87.2	66.0
Pinnacle	28	48.8	94	12.6	20.5	92.5	83.8	88.2	65.6
Conlon	30	46.9	93	13.2	12.3	101.3	76.4	88.8	63.3
6 Row Types									
Stellar-ND	27	45.2	86	13.2	13.9	88.0	72.2	80.1	58.0
Celebration	26	44.7	87	13.5		92.0	77.5	84.8	
Tradition	27	45.7	88	14.2		85.5	79.9	82.7	
Trial Mean	28	46.6	90	13.2	16.1	92.8	77.8	--	--
C.V. %	4.2	1.8	4.2	3.7	27	3.8	3.9	--	--
LSD .05	2	1.3	3	0.7	6.6	6.3	4.6	--	--
LSD .01	NS	1.8	NS	1.0	9.2	9.0	6.3	--	--

NS = no statistical difference between varieties.

Planting Date: April 21 Harvest Date: August 17
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2010 Barley Variety Trial - Continuously Cropped - No-till — New Leipzig

Cooperator: Jan Sprecher, New Leipzig

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2007	2008	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Pinnacle	31	47.4	92	13.4	63.9	28.6	68.9	48.8	53.8
Rawson	33	46.1	92	12.9	59.0	30.4	58.0	44.2	49.1
Conlon	32	46.6	91	14.0	45.9	25.6	54.5	40.0	42.0
6 Row Types									
Stellar-ND	33	42.6	79	13.4	66.8	33.3	52.8	43.0	51.0
Celebration	30	43.0	83	14.6			55.9		
Tradition	32	43.9	78	14.4			54.1		
Trial Mean	32	44.9	86	13.8	64.4	30.0	57.4	--	--
C.V. %	6.4	1.4	5.3	2.5	4.7	9.8	5.0	--	--
LSD .05	NS	0.9	7	0.5	4.4	4.4	4.4	--	--
LSD .01	NS	1.3	9	0.7	6.0	6.1	6.0	--	--

NS = no statistical difference between varieties.

Planting Date: April 22 Harvest Date: August 17
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2006 = hrww, 2007 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.
The 2010 trial sustained moderate hail damage.

2010 Barley Variety Trial - Continuously Cropped - No-till — Selfridge

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2007	2009	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Rawson	35	44.7	91	13.1	54.6	76.1	89.8	83.0	73.5
Conlon	30	46.1	92	14.6	59.2	76.9	76.6	76.8	70.9
Pinnacle	32	44.8	89	13.5	46.2	63.4	74.2	68.8	61.3
6 Row Types									
Stellar-ND	30	42.7	82	13.8	51.4	71.4	83.1	77.2	68.6
Tradition	30	44.4	88	14.0		89.4	87.3	88.4	
Celebration	28	42.9	85	14.9		82.8	79.4	81.1	
Trial Mean	31	44.3	88	14.0	59.3	76.6	81.7	--	--
C.V. %	2.3	1.4	2.2	2.2	6.8	7.4	4.3	--	--
LSD .05	1	0.9	3	0.5	5.9	8.6	5.3	--	--
LSD .01	2	1.2	4	0.6	8.0	11.8	7.3	--	--

Planting Date: April 22 Harvest Date: August 16
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2006 = hrww, 2008 = sunflower, 2009 = hrsw.

2010 Barley Variety Trial, Continuously Cropped, No-till at Mandan

Cooperator: UDSA-ARS, Mandan

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2009	2010	2 yr
	inches	lbs/bu	>6/64	%	--------- bu/A ---------		
2 Row Types							
Pinnacle	34	45.9	90	11.6	79.4	89.4	84.4
Rawson	34	45.1	90	11.9	73.3	86.5	79.9
Conlon	33	46.4	92	12.8	72.2	79.5	75.8
6 Row Types							
Tradition	31	45.6	92	12.2	90.1	91.4	90.8
Stellar-ND	33	44.7	93	12.4	88.0	87.9	88.0
Celebration	31	44.8	91	13.0	83.7	90.1	86.9
Trial Mean	33	45.4	91	12.3	81.1	87.5	--
C.V. %	4.6	1.1	1.9	2.6	3.9	2.7	--
LSD .05	2	0.8	NS	0.5	4.8	3.5	--
LSD .01	NS	1.0	NS	0.7	6.6	4.9	--

NS = no statistical difference between varieties.

Planting Date: April 22
Harvest Date: August 16
Seeding Rate: 750,000 live seeds / acre (approx.. 1.4 bu/A).
Previous Crop: 2008 & 2009 = hrsw.

Barley in the West River Region — Combined Means

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Grain Protein	% Plump	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	%	>6/64	---------- Bushels per acre ----------				
2 Row Types											
Pinnacle	68	32	10,168	46.9	11.9	92	43.6	83.5	69.6	76.6	65.6
Conlon	65	31	10,988	47.0	12.9	94	47.4	80.0	67.3	73.6	64.9
Rawson	68	32	9,488	46.6	12.0	93	42.4	79.7	69.2	74.4	63.8
6 Row Types											
Stellar – ND	67	31	11,387	45.0	12.6	91	34.7	82.4	69.6	76.0	62.2
Celebration	67	32	12,967	44.8	13.1	92		93.0	67.2	80.1	
Tradition	78	32	12,266	46.2	12.6	92		92.9	72.4	82.6	
# of Locations*	3	16	5	20	18	16	5	10	10	20	25

* Locations: 2008 = Hettinger, Dickinson, Scranton, Regent & New Leipzig.
2009 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Mandan, Glen Ullin, Hannover, Bison & Ralph, SD.
2010 = Hettinger, Scranton, Regent, New Leipzig, Selfridge, Mandan, Glen Ullin, Hannover, Bison & Ralph, SD.

2010 North Dakota oat variety descriptions.

Variety	Origin[1]	Year Released	Grain Color	Height	Straw Strength	Maturity[2]	Reaction to Diseases: Stem Rust[3]	Reaction to Diseases: Crown Rust[3]	Reaction to Diseases: Barley Y.Dwf[4]	Bu/Wt.	Protein[5]
AC	Can. Proven	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. OAS	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	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	M.strg.	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
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
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	--	V.good	--
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
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; 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.

2010 Oat Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	0-9**	lbs/bu	---------- Bushels per acre ----------				
AC Pinnacle	74	38	2	37.9	115.3	98.5	159.6	129.0	124.5
Furlong	75	38	0	37.3	115.4	98.5	154.7	126.6	122.9
Monida	74	37	3	36.1	112.8	97.1	153.3	125.2	121.1
Rockford	73	40	2	40.1	124.4	90.6	145.8	118.2	120.3
CDC Minstrel	74	37	0	36.6	112.0	101.9	154.9	128.4	119.6
Stallion	72	39	2	40.8	111.1	91.3	151.2	121.2	117.9
Killdeer	72	34	3	37.2	101.7	97.0	151.0	124.0	116.6
Souris	72	37	0	38.3	108.2	82.1	155.9	119.0	115.4
Beach	72	42	0	39.8	108.7	80.5	149.0	114.8	112.7
HiFi	73	37	2	37.5	108.8	85.9	140.1	113.0	111.6
CDC Dancer	74	39	0	37.5	110.7	75.0	145.9	110.4	110.5
Maida	72	37	0	37.4	108.6	80.9	139.7	110.3	109.7
Youngs	74	40	7	35.8	106.7	81.5	133.5	107.5	107.2
Jerry	71	39	2	38.4	101.4	70.2	133.8	102.0	101.8
Otana	74	41	6	38.8	90.7	72.9	139.6	106.2	101.1
Morton	72	41	1	38.7	98.1	61.4	135.7	98.6	98.4
Hytest	70	42	4	41.4	96.5	66.9	121.9	94.4	95.1
Buff***	68	35	0	46.6	82.0	57.7	103.2	80.4	81.0
Stark***	76	42	2	40.8	75.8	59.5	95.8	77.6	77.0
Leggett	74	39	2	38.2		94.9	154.4	124.6	
Shelby 427	68	37	0	38.4			142.2		
Streaker***	68	38	3	47.8			114.2		
Trial Mean	72	39	2	38.8	105.9	85.1	143.8	--	--
C.V. %	0.8	4.1	80	2.3	5.3	9.8	5.8	--	--
LSD .05	1	2	2	1.2	7.8	11.8	11.7	--	--
LSD .01	1	3	3	1.7	10.4	15.6	15.5	--	--

* Days to Head = the number of days from planting to emergence of panicle.
** Lodging: 0 = none, 9 = lying flat on ground.
*** Naked (hulless) type.

Planting Date: April 19 Harvest Date: August 6
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2009 = mustard, 2008 = HRSW, 2007 = fallow.
Note: The 2009 trial sustained moderate hail damage.

2010 Oat - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Lodging Score	Test Weight	Grain Yield 2008	Grain Yield 2009	Grain Yield 2010	Average Yield 2 Year	Average Yield 3 Year
			in	0-9	lbs/bu	bu/ac	bu/ac	bu/ac	bu/ac	bu/ac
AC Pinnacle	73	14,895	39	1.0	34.4	55.2	213.3	189.2	201.2	152.5
Beach	72	15,313	41	0.0	37.9	51.2	167.8	174.9	171.3	131.3
Buff*	69	17,480	38	0.5	37.6	48.9	151.2	149.9	150.5	116.7
CDC Dancer	72	15,918	41	0.5	34.9	57.8	172.9	158.9	165.9	129.9
CDC Minstrel	71	14,513	38	0.0	33.4	52.1	188.9	183.5	186.2	141.5
Furlong	73	11,724	39	0.5	34.3	57.4	182.1	184.3	183.2	141.3
HiFi	70	15,486	40	0.8	35.7	50.7	174.8	185.4	180.1	137.0
Hytest	69	13,919	41	1.3	37.5	57.0	151.0	161.7	156.4	123.3
Jerry	69	16,283	40	2.0	35.8	53.5	157.5	151.3	154.4	120.8
Killdeer	70	15,416	37	0.5	35.7	56.3	199.5	176.5	188.0	144.1
Leggett	72	14,496	38	1.3	35.0	--	194.2	177.2	185.7	--
Maida	71	14,539	39	0.5	34.9	50.4	164.6	162.3	163.4	125.8
Monida	73	17,380	39	0.5	33.7	60.1	179.2	185.5	182.4	141.6
Morton	71	15,624	41	0.3	35.6	49.2	162.8	159.1	161.0	123.7
Otana	72	16,881	41	0.5	36.7	66.0	167.9	164.3	166.1	132.7
Paul*	73	16,358	41	1.3	37.7	33.7	139.5	150.7	145.1	108.0
Rockford	72	15,660	41	0.8	37.5	51.5	187.1	188.2	187.7	142.3
Shelby 427	68	16,680	39	1.0	37.6	--	--	153.0	--	--
Souris	70	15,546	37	0.8	34.9	55.9	175.1	168.6	171.8	133.2
Stallion	70	16,489	41	2.5	37.1	61.8	170.9	156.3	163.6	129.7
Stark*	74	17,039	42	2.0	38.4	39.9	149.1	161.7	155.4	116.9
Streaker*	68	17,215	39	3.5	42.0	--	--	115.0	--	--
Youngs	73	12,493	41	1.5	34.2	52.1	178.9	165.1	172.0	132.1
Trial Mean	71	15,107	40	1	36.0	52.8	173.0	169.7	--	--
CV %	0.9	6.5	2.3	68.3	2.4	9.3	6.0	7.2	--	--
LSD 0.05	1	1,982	1	1	1.2	6.9	14.6	17.1	--	--

Planting Date: April 21, 2010

Harvest Date: August 11, 2010

* Hulless

Previous Crop: Field Pea

Seeding Rate: 1 million live seeds/ac

SDSU Oat Variety Trial - Perkins County (Bison), 2008 - 2010.

Variety	Height	Lodging	Test Wt	Yield	Bu/A
	Inches	0-9*	Lb/Bu	2010	3 -Year
BUFF (hull-less)	29	0	39.3	26.1	41.0
STREAKER (hull-less)	32	0	40.5	37.3	39.5
BEACH	35	0	38.7	57.2	**61.6**
COLT	30	0	37.1	45.5	54.5
DON	28	0	35.2	44.4	50.8
HIFI	35	0	36.9	52.8	**64.2**
JERRY	31	0	35.2	39.5	59.7
REEVES	35	0	38.6	45.5	44.1
ROCKFORD	31	0	37.0	52.8	.
SHELBY427	33	0	39.2	66.7	**66.5**
SOURIS	28	0	36.9	61.5	**66.6**
STALLION	33	0	36.7	57.4	56.7
Average	31	0.0	37.0	49.8	55.0
LSD (P=.05)	4.1	0	2.8	12.8	6.6
CV	6.3	0	5.4	**18.1**	15.6

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

Planted: April 21, 2010 Herbicide: Widematch (1 pt/A) + MCPA (8 oz/A)
Harvested: August 17, 2010 Additional Nitrogen: 60 Lb/A
Previous crop: Wheat, no-till planted.

2010 Oat Variety Trial - Continuously Cropped - No-till New Leipzig

Cooperator: Jan Sprecher, New Leipzig

Variety	Plant Height	Test Weight	---- Grain Yield ---- 2007	2008	2010	Average Yield 2 yr	3 yr
	inches	lbs/bu	---------- Bushels per acre ----------				
Maida	34	34.5	80.4	43.9	75.2	59.6	66.5
Killdeer	33	36.0	65.1	37.4	86.6	62.0	63.0
Morton	38	36.3	63.9	48.6	73.1	60.8	61.9
Souris	33	36.7	66.8	37.1	75.0	56.0	59.6
Jerry	39	36.8	71.4	36.1	70.2	53.2	59.2
Rockford	37	37.1			77.2		
Trial Mean	36	36.2	63.0	40.2	76.2	--	--
C.V. %	5.8	2.5	11.9	9.7	4.6	--	--
LSD .05	4	0.5	11.1	5.8	6.4	--	--
LSD .01	NS	NS	15.2	8.0	9.0	--	--

NS = no statistical difference between varieties.

Planting Date: April 22 Harvest Date: August 17
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2006 = hrww, 2007 & 2009 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.
The 2010 trial sustained moderate hail damage.

2010 Oat Variety Trial - Continuously Cropped - No-till Selfridge

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant Height	Test Weight	------ Grain Yield ------			Average Yield	
			2007	2009	2010	2 yr	3 yr
	inches	lbs/bu	---------- Bushels per acre ----------				
Killdeer	29	34.8	117.6	169.3	124.8	147.0	137.2
Souris	30	35.1	118.4	164.1	106.9	135.5	129.8
Maida	33	35.7	96.1	145.1	112.9	129.0	118.0
Morton	36	35.5	89.6	143.2	101.9	122.6	111.6
Jerry	34	36.5	100.7	124.8	105.7	115.2	110.4
Rockford	35	36.9		170.3	112.3	141.3	
Trial Mean	33	35.8	99.3	154.9	110.8	--	--
C.V. %	3.7	1.6	4.8	3.2	4.2	--	--
LSD .05	2	0.9	7.2	7.3	7.0	--	--
LSD .01	3	1.2	9.7	9.9	9.7	--	--

Planting Date: April 22
Harvest Date: August 16
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2006 = hrww, 2008 = sunflower, 2009 = hrsw.

2010 Oat Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS NGP Research Center, Mandan

Variety	Plant Height	Test Weight	------ Grain Yield ------			Average Yield	
			2008	2009	2010	2 yr	3 yr
	inches	lbs/bu	---------- Bushels per acre ----------				
Killdeer	39	35.1	142.1	166.7	142.2	154.4	150.3
Souris	39	36.0	137.0	159.0	139.7	149.4	145.2
Maida	45	36.5	119.0	153.8	146.5	150.2	139.8
Morton	46	36.3	124.6	154.1	133.2	143.6	137.3
Jerry	42	37.4	127.2	127.5	118.2	122.8	124.3
Rockford	45	38.4		172.4	142.7	157.6	
Trial Mean	43	36.6	126.2	157.8	137.1	--	--
C.V. %	2.8	1.2	6.0	4.1	3.1	--	--
LSD .05	2	0.7	11.3	9.6	6.4	--	--
LSD .01	3	0.9	15.5	13.2	8.8	--	--

Planting Date: April 22
Harvest Date: August 16
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2007, 2008 & 2009 = hrsw.

Oat in the West River Region — Combined Means

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	----- Grain Yield ----- 2008	2009	2010	Average Yield 2 yr	3 yr
		inches	#	lbs/bu	---------- Bushels per acre ----------				
Killdeer	66	37	13,980	36.2	100.0	158.1	136.2	147.2	131.4
Souris	66	37	14,496	36.2	100.4	133.2	129.2	131.2	120.9
Maida	67	42	13,230	35.5	92.7	136.1	127.3	131.7	118.7
Morton	67	43	14,516	36.3	90.6	119.7	120.6	120.2	110.3
Jerry	65	40	15,054	37.0	94.0	110.8	115.8	113.3	106.9
Rockford	67	42	14,719	37.9		143.5	133.2	138.4	
# of Locations*	4	10	2	10	3	5	5	10	13

* Locations: 2008 = Hettinger, Dickinson & Mandan.
2009 = Hettinger, Dickinson, Selfridge, Mandan & Bison, SD.
2010 = Hettinger, Dickinson, New Leipzig, Selfridge & Mandan.

HARD WHITE SPRING WHEAT VARIETY DESCRIPTIONS

Variety	Origin[1]	Height	Maturity	Lodging	Resistance To[2]: Stem Rust	Leaf Rust	Foliar Disease	Root Rot	Scab	Sawfly	Quality Factors: Test Weight	Grain Protein
AC Karma	AC	medium	late							S	medium	medium
AC Snowbird	AC	tall	medium	M	R	R	S	MS	S	S	low	medium
AC Snowstar	AC	tall	early							S	low	low
AC Vista	AC	m short	medium	MR	R	S	S	MS	MS	S	low	medium
Alpine	AgriPro	medium	medium								medium	m low
Agawam	WB	short	early	R	NA	NA	NA	NA	S	R	m high	low
Blanca Grande	GM	short	early	R	NA	NA	NA	NA	S	S	high	low
Diamond	Meridian	medium	m late								m high	m high
Explorer	MT	m short	early	MS	R	MR	MS	MS	S	MR	m low	m low
ID377S	ID	m short	early	M	NA	S	S	NA	NA	S	low	v low
Kanata	AC	m short	medium	R	MS	MR	S	NAA	NA	S	medium	high
Lolo	ID	medium	medium	M	R	R	S	NA	S	S	m high	m low
Loshsa	ID	medium	medium	R	NA	NA	NA	NA	S	S	low	medium
Otis	WSU	tall	medium								medium	medium
Plata	GM	short	medium	R	NA	NA	NA	NA	S	S	m high	m low
Snow Crest	WB	short	v early	NA	NA	NA	NA	NA	NA	NA	medium	m low
Waikea	WB	m short	early	R	NA	NA	NA	NA	S	S	low	m low

[1] Refers to developer: CDC = Crop Development Center, University of Saskatchewan; AC = Agriculture Canada; GM= General Mills, WB = WestBred, ID = University of Idaho

[2] R =resistant; MR =moderately resistant; M =intermediate; MS =moderately susceptible; S =susceptible; VS =very susceptible; NA = data not available. *Indicates yield and/or /quality have often been higher than expected based on visual head blight symptoms alone.

2010 White Spring Wheat – Continuously Cropped - No-till — Hettinger

Variety	Days to Head	Plant Height	Lodging	Grain Protein	Test Weight	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	0-9**	%	lbs/bu	---------- Bushels per acre ----------				
Alpine	74	33	2	13.6	58.7	43.6	54.8	60.9	57.8	53.1
AC Vista	74	36	4	13.6	58.6	36.4	56.7	54.0	55.4	49.0
AC Karma	74	34	2	13.7	58.8	36.1	55.4	54.3	54.8	48.6
Lolo	75	35	0	13.5	59.2	31.4	54.8	59.0	56.9	48.4
Penawawa	75	33	0	12.6	59.0	32.7	57.2	54.3	55.8	48.1
Lochsa	74	33	0	13.9	57.0	31.3	47.3	61.4	54.4	47.7
Otis	75	38	0	13.4	59.5	32.0	49.8	58.1	54.0	46.6
Waikea	73	36	2	13.8	57.6	33.2	47.9	54.2	51.0	45.1
Diamond	75	37	2	14.3	61.6	30.5	46.8	57.1	52.0	44.8
Agawam	73	32	0	13.5	60.0	37.7	40.0	53.1	46.6	43.6
Golden 86	73	33	0	14.1	60.3	29.2	41.9	54.5	48.2	41.9
AC Snowstar	74	36	0	14.0	63.4	30.9	49.7	44.9	47.3	41.8
Snowcrest	71	27	0	14.1	58.1	33.7	37.9	49.4	43.6	40.3
AC Snowbird	75	39	4	14.9	60.4	29.9	43.8	44.7	44.2	39.5
Kanata	75	37	0	15.3	62.3	33.9	37.8	40.4	39.1	37.4
Hard Red Spring Wheat										
Reeder	74	34	0	15.0	60.6	34.3	59.4	52.9	56.2	48.9
Steele-ND	75	35	3	14.6	61.4	34.8	51.9	50.8	51.4	45.8
Glenn	73	38	2	15.0	63.0	35.9	46.6	52.1	49.4	44.9
Trial Mean	74	35	1	14.0	59.6	33.4	48.0	53.6	--	--
C.V. %	0.8	4.2	69	1.8	2.5	11.0	4.8	6.1	--	--
LSD .05	1	2	1	0.4	2.5	5.2	3.3	5.4	--	--
LSD .01	1	3	2	0.6	3.3	6.9	4.3	7.2	--	--

* 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: April 12
Harvest Date: August 8
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2009 = field pea, 2008 = hrsw, 2007 = barley
Note: The 2008 trial sustained late season heat and moisture stress.
The 2009 trial sustained moderate hail damage.

2010 White Spring Wheat - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	-------Grain Yield------- 2008	2009	2010	Average Yield 2 Year	3 Year
			in	lbs/bu	%	---------bu/ac---------			----bu/ac----	
AC Karma	70	16,102	32	59.5	11.2	29.6	78.3	47.5	62.9	51.8
AC Snowbird	70	17,684	37	59.2	13.3	26.2	59.0	32.4	45.7	39.2
AC Snowstar	70	17,806	37	61.0	11.8	--	50.1	34.3	42.2	--
AC Vista	70	13,814	34	59.0	10.6	28.0	66.1	50.7	58.4	48.3
Agawam	68	14,657	31	61.2	10.8	24.8	75.2	47.5	61.4	49.2
Alpine	71	15,812	34	61.3	11.1	34.0	79.8	55.7	67.8	56.5
Diamond	70	16,235	36	61.7	11.0	28.1	61.7	41.4	51.6	43.7
Glenn (hrsw)	69	15,799	37	63.5	12.7	27.5	52.1	34.8	43.4	38.1
Golden 86	69	14,338	29	60.2	11.1	24.4	72.8	39.2	56.0	45.5
Kantana	70	19,901	37	59.0	14.1	24.7	48.7	28.2	38.5	33.9
Lochsa	71	15,625	32	55.8	10.9	27.5	64.5	42.3	53.4	44.8
Lolo	71	15,302	33	60.7	11.2	29.8	76.0	45.2	60.6	50.3
Otis	72	15,326	36	61.2	10.7	27.8	79.5	49.2	64.3	52.2
Penewawa	72	17,976	28	58.0	9.4	29.1	80.5	37.1	58.8	48.9
Reeder (hrsw)	71	14,525	32	61.5	11.3	26.8	67.0	50.6	58.8	48.1
Snow Crest	67	17,617	26	57.8	11.9	25.1	68.8	35.8	52.3	43.2
Steele-ND (hrsw)	70	16,452	35	60.8	12.2	26.7	57.7	46.0	51.8	43.4
Waikea	70	13,822	31	56.8	11.3	27.7	71.1	49.3	60.2	49.4
Trial Mean	70	15,904	33	59.9	11.5	27.6	67.5	43.3	--	--
CV %	1.2	3.3	5.3	0.9	2.0	6.8	11.2	9.1	--	--
LSD 0.05	1	1,105	3	0.9	0.5	2.7	12.5	6.5	--	--

Planting Date: April 19, 2010
Harvest Date: August 12, 2010
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac
Note: Trial received slight hail damage
Returns were not calculated due to market volatility

2010 North Dakota winter rye variety descriptions.

Variety	Origin[1]	Year Released	Height	Straw Strength	Maturity	Seed Color	Seed Size	Test Weight	Winter Hardiness
AC Rifle	Can.	1994	Short	V.good	Med.	Blue	Med.	Med.	V.good
AC Remington	Can.	1998	Short	V.good	Med.	--	Med.	Good	Good
Aroostok	USDA	1999	Tall	Fair	Early	--	Small	High	V.good
Ensi	Finland		Tall	Fair	Late	--	Small	Low	--
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	Can.	1980	Tall	Good	M.early	Blue	Large	Med.	V.good
Prima	Can.	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.	--	Large	Low	Good

[1] Can. = Canada; 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.

2010 Winter Rye Variety Trial - Continuously Cropped - No-till at Hettinger

Variety	Winter Surv.	Heading Date	Plant Height	Lodging	Test Weight	Grain Yield
	%	June	inches	0-9*	lbs/bu	bu/A
Dacold	99	10	53	4	52.1	105.1
Hancock	98	4	49	6	53.6	92.9
Spooner	91	5	48	3	51.3	73.8
Aroostok	99	1	51	3	52.0	66.3
Rymin	72	9	45	1	48.9	59.3
Wheeler	99	7	50	2	50.6	53.2
Ensi	20	26	52	2	42.8	46.2
Trial Mean	87	8	50	3	51.2	79.1
C.V. %	4.4	13.8	2.7	34	1.2	4.1
LSD .05	6	2	2	1	0.9	4.7
LSD .01	7	2	3	2	1.2	6.3

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

Planting Date: October 8, 2009 Harvest Date: August 7, 2010
Seeding Rate: 1 million live seeds / acre
Previous Crop: hrsw

North Dakota hard winter wheat variety descriptions and agronomic traits.

Variety	Agent or Origin	Year	Quality[1]	Reaction to Disease[2]			Maturity	Straw Strength	Height	Winter[4] Hardiness
				Leaf Rust	Stem Rust	Scab[3]				
Alice[5]	SD	2006	Good	S	MR	S	Early	M. strong	Short	Fair
Art	Agripro	2008	Average	R	R	NA	M. early	Strong	M. short	Fair
Boomer	WB[6]	2009	NA	MR	NA	NA	Med.	Strong	Med.	Good
CDC Accipiter	Can.	2008	Good	MS	R	NA	Med.	Strong	Short	Good
CDC Buteo	Can/WB	2004	Average	MS	NA	S	Med.	Med.	Med.	Good
CDC Falcon	Can/WB	2000	Average	MS	NA	S	Med.	M. strong	Short	Good
CDC Peregrine	Can.	2008	Average	MR	R	NA	Med.	Strong	Med.	Good
CDC Raptor	Can.	2002	NA	MS	NA	NA	Med.	M. strong	M. short	Good
Crimson	SD	1997	Good	S	MS	NA	Med.	M. strong	Med.	Fair-Good
Darrell	SD	2006	Average	MS	R	MS	Med.	Strong	Med.	Good
Elkhorn	ND	1995	Average	MR	R	NA	Med.	Med.	Med.	Good
Erhardt	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Good
Expedition	SD	2002	Average	MS	R	S	Med.	Strong	Med.	Good
Goodstreak	NE	2002	Average	S	MR	S	M. early	Med.	Tall	Fair
Harding	SD	1999	Average	MS	NA	S	Med.	M. strong	Med.	Good
Hawken	Agripro	2007	Good	MR	MR	NA	Early	Strong	V. short	Fair-Poor
Jagalene	Agripro	2002	Average	S	MR	VS	Early	Strong	Short	Fair
Jerry	ND	2001	Good	MR	R	MS	Med.	Strong	Med.	Good
Lyman	SD	2008	NA	R	R	MS	Med.	Med.	Med.	Good
Mace	ARS-NE	2008	NA	MS	R	NA	M. early	Strong	Short	Fair
McClintock	Can.	2003	Average	S	NA	S	Med.	Strong	Med.	Fair
Millennium	NE/SD	1999	Average	MR	MR	S	Med.	Strong	M. short	Fair
Overland	NE	2006	Avg-Fair	MR/R	MR	MS	Med.	Strong	Short	Fair
Paul	MT	2003	Average	S	NA	NA	Med.	Med.	Med.	Fair
Radiant[7]	Can.	2005	Average	S	S	S	Late	V. strong	Tall	Good
Ransom	ND	1998	Good	MR	NA	S	M. early	Med.	Med.	Good
Roughrider	ND	1975	Good	S	R	MS	Med.	M. strong	Med.	Good
Striker	WB	2009	NA	MR	NA	NA	Med.	Strong	Med.	Good
Wahoo	NE/WY	2001	Poor	S	R	S	Med.	M. strong	Med.	Fair
Wendy[5]	SD	2004	NA	MS	MR	S	M. early	M. strong	Short	Fair-Good
Wesley	NE/SD/WY	2000	Average	MS	R	VS	M. early	M. strong	Short	Fair
Yellowstone	MT	2005	NA	NA	S	VS	Med.	Med.	Med.	Good

[1]NA = data not available or data insufficient to give rating.
[2]R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible; VS = very susceptible; NA = not available.
[3]Primarily based on data collected in 2005 from several locations.
[4]Varieties with less than good winter hardiness should be seeded only in tall stubble.
[5]White wheat.
[6]WB = WestBred
[7]Curl mite resistant.

2010 Winter Wheat Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Winter Surv.	Heading Date	Plant Height	Lodging	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	%	June	inches	0-9*	lbs/bu	%	---------- Bushels per acre ----------				
Falcon	92	20	29	0	61.3	13.0	53.2	50.5	82.5	66.5	62.1
Accipiter	92	23	32	0	60.7	12.7	49.8	51.0	84.3	67.6	61.7
Radiant	95	22	30	0	61.6	13.1	48.1	46.5	83.1	64.8	59.2
Overland	99	18	33	1	61.4	14.0	50.0	45.2	80.2	62.7	58.5
Jerry	95	21	34	1	60.5	13.6	49.0	44.3	78.5	61.4	57.3
Darrell	92	19	35	1	60.7	13.8	50.3	48.9	72.0	60.4	57.1
Millennium	98	18	36	1	62.3	14.2	49.4	45.2	76.8	61.0	57.1
Yellowstone	95	22	31	1	57.2	13.1	51.3	42.9	73.5	58.2	55.9
Hawken	98	16	28	0	61.2	14.4	48.4	52.4	65.3	58.8	55.4
Wesley	96	16	32	0	60.8	14.2	50.5	43.6	71.6	57.6	55.2
Lyman	96	16	33	2	60.7	15.2	42.8	49.5	72.3	60.9	54.9
Jagalene	92	18	32	0	61.7	13.6	46.1	43.3	69.9	56.6	53.1
Boomer	94	21	33	1	59.9	13.6		53.4	79.3	66.4	
Decade	94	19	30	0	61.2	14.7		54.4	75.3	64.8	
Striker	92	20	27	0	61.4	13.5		47.0	76.7	61.8	
Peregrine	93	23	35	4	60.1	12.7		44.5	68.5	56.5	
Mace	90	20	31	2	60.0	13.4		42.8	69.8	56.3	
Art	93	16	31	0	61.8	14.2		36.2	74.5	55.4	
Carter	96	21	27	2	59.5	14.0			65.7		
Trial Mean	94	20	32	1	60.7	13.8	48.3	46.7	74.5	--	--
C.V. %	4.0	4.2	5.7	78	1.5	3.0	6.8	7.7	5.4	--	--
LSD .05	NS	1	3	1	1.3	0.6	4.6	5.1	5.7	--	--
LSD .01	NS	2	3	1	1.7	0.8	6.1	6.7	7.6	--	--

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

Planting Date: October 8, 2009 Harvest Date: August 7, 2010
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2007 = durum, 2008 & 2009 = hrsw.
Note: The 2009 trial sustained moderate hail damage.

2010 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

Variety	Winter Survival	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	%	inches	lbs/bu	%	---------- Bushels per acre ----------				
Overland	99	29	57.0	10.0	58.9	84.4	51.4	67.9	64.9
Jagalene	97	27	56.4	10.8	56.7	86.7	44.5	65.6	62.6
Darrell	97	30	56.7	10.0	60.1	77.1	48.9	63.0	62.0
Millennium	98	30	57.7	10.6	55.5	77.7	51.1	64.4	61.4
Peregrine	97	35	57.6	9.6	52.3	86.0	44.5	65.2	60.9
Radiant	93	31	54.3	10.3	57.3	85.7	38.4	62.0	60.5
Jerry	92	30	55.3	11.1	57.7	76.3	47.0	61.6	60.3
Accipiter	98	28	57.6	10.2	55.0	80.8	44.4	62.6	60.1
Lyman	98	30	57.3	10.8	43.5	87.5	47.3	67.4	59.4
Yellowstone	97	29	52.6	11.5	53.6	75.7	47.5	61.6	58.9
Falcon	98	26	56.4	10.2	52.6	78.7	40.7	59.7	57.3
Wesley	99	27	54.1	12.4	38.0	81.7	50.1	65.9	56.6
Hawken	96	26	55.3	12.7	39.1	83.2	45.9	64.6	56.1
Decade	98	29	56.0	11.6		92.2	49.6	70.9	
Boomer	95	30	54.4	11.4		81.8	48.3	65.0	
Art	97	26	56.0	11.4		80.4	44.7	62.6	
Mace	95	25	52.4	11.0		76.5	40.5	58.5	
Striker	95	26	55.8	11.3		74.0	41.4	57.7	
Carter	96	25	55.2	11.6			40.0		
Trial Mean	96	28	55.4	11.0	49.2	81.3	45.1	--	--
C.V. %	4.6	5.3	1.6	7.8	14.0	7.1	15.4	--	--
LSD .05	NS	2	1.3	1.2	9.7	8.1	9.8	--	--
LSD .01	NS	3	1.7	1.6	12.9	10.8	12.9	--	--

Planting Date: October 8, 2009 Harvest Date: August 18, 2010
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2007 = soybean, 2008 & 2009 = hrsw.
Note: The 2010 trial sustained significant nitrogen deficiency causing relatively poor protein content and yields.

SDSU Hard Winter Wheat Variety Trial - Perkins County (Bison), 2010.

Variety	Height	Lodging	Test Wt	Protein	Yield	Bu/A
	Inches	0-9*	Lb/Bu	%	2010	3-Year
Hard Red						
ARAPAHOE	28	0	59.4	13.6	**29.5**	34.2
ART	26	0	59.5	13.5	27.6	.
BOOMER	26	0	57.9	12.2	**31.1**	.
CAMELOT	26	0	58.2	12.5	**28.5**	.
DARRELL	26	0	59.5	13.5	26.3	36.4
EXPEDITION	25	0	59.0	13.0	26.6	38.2
FULLER	24	0	59.7	14.2	22.9	32.2
HARDING	25	0	60.4	14.2	20.2	32.9
HATCHER	24	0	61.5	12.6	**31.2**	36.1
HAWKEN	24	0	61.4	13.9	24.5	34.5
JAGALENE	23	0	60.4	14.5	24.8	32.4
JERRY	26	0	59.0	13.7	25.7	31.7
LYMAN	26	0	60.0	14.9	**33.7**	39.9
MILLENNIUM	26	0	61.1	13.4	28.2	35.4
OVERLAND	26	0	58.4	13.0	**28.5**	37.4
RADIANT	28	0	61.6	14.1	27.7	.
SETTLER CL	23	0	61.1	13.2	24.0	33.3
SMOKY HILL	23	0	59.6	14.4	24.7	33.8
STRIKER	23	0	60.2	13.7	27.9	.
WAHOO	26	0	60.0	13.5	**34.1**	39.9
WESLEY	23	0	59.2	14.1	29.0	35.6
Hard White						
ALICE	24	0	59.3	13.2	**29.5**	33.8
WENDY	22	0	61.9	14.8	25.7	39.9
Average	25	0.0	60.0	13.4	28.5	35.5
LSD (P=.05)	3.1	0.0	2.3	.	5.7	5.8
CV	8.6	0.0	2.7	.	14.2	**20.2**

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

Planted: September 28, 2009
Harvested: August 12, 2010
Previous crop: Wheat, no-till planted.
Herbicide: Fall - Maverick (.66 oz/A)
Additional Nitrogen: 60 Lb/A

2010 Winter Spelt Variety Trial - Continuously Cropped - No-till Hettinger

Variety	Winter Surv.	Heading Date	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	%	July	inches	0-9*	lbs/bu	---------- pounds per acre ----------				
Frank	96	2	46	2.0	31.6	2620	1296	3994	2645	2637
PI348159	95	2	43	1.8	28.7	2782	1734	3510	2622	2675
Oberkorn	0	--	--	--	--			--		
Trial Mean	95	2	44	1.9	30.2	2582	1515	3752	--	--
C.V. %	1.9	42	7.3	36	5.1	5.5	19.0	3.1	--	--
LSD .05	NS	NS	NS	NS	NS	NS	NS	265	--	--

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

Planting Date: October 8, 2009
Harvest Date: August 8, 2010
Previous Crop: 2007 = durum, 2008 & 2009 = hrsw.
Note: The 2009 trial sustained moderate hail damage.

2010 Spring Emmer Variety Trial - Continuously Cropped - No-till Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	0-9**	lbs/bu	---------- pounds per acre ----------				
Lucille	77	42	6.5	32.5	2465	2972	5012	3992	3483
Red Vernal	77	40	7.2	32.6	2216	2917	5128	4022	3420
ND Common	77	39	7.0	34.0	2362	2581	4575	3578	3173
Common H	78	39	6.5	33.5	2552	2231	3877	3054	2887
Common M	77	39	5.5	32.9	1837	2402	4274	3338	2838
Bowman	76	40	7.2	32.2	2398	2229	3848	3038	2825
Common R	77	39	7.5	33.1	1678	2345	4082	3214	2702
Vernal	76	42	6.0	33.0			5360		
Debra	70	27	0.0	49.8			4982		
Common MC	78	40	7.0	32.3			4179		
Trial Mean	76	39	6.0	34.6	2215	2534	4531	--	--
C.V. %	1.1	5.9	10.1	2.7	12.2	9.4	4.0	--	--
LSD .05	1	3	0.9	1.4	402	360	261	--	--
LSD .01	2	4	1.2	1.8	551	500	352	--	--

**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: April 19
Harvest Date: August 9
Previous Crop: 2007 = durum, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained late season heat and moisture stress.
The 2009 trial sustained moderate hail damage.

2010 Winter Triticale Variety Trial - Continuously Cropped - No-till Hettinger

Variety	Winter Surv.	Heading Date	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	%	June	inches	0-9*	lbs/bu	---------- Bushels per acre ----------				
NE426GT	92	16	41	1.0	49.6	48.0	84.2	116.0	100.1	82.7
Boreal	99	6	49	5.8	52.0	43.4	36.4	91.6	64.0	57.1
Pika	97	6	49	5.0	49.8		41.2	107.2	74.6	
Trial Mean	96	10	46	3.9	50.4	47.7	63.4	104.9	--	--
C.V. %	1.6	6.0	3.7	14.1	1.1	7.2	5.8	4.5	--	--
LSD .05	3	1	3	1.0	1.0	NS	5.5	8.1	--	--
LSD .01	4	2	5	1.4	1.5	NS	7.5	12.3	--	--

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

Planting Date: October 8, 2009
Harvest Date: August 5, 2010
Previous Crop: 2007 = durum, 2008 & 2009 = hrsw.
Note: The 2008 trial sustained late season heat and moisture stress.
The 2009 trial sustained moderate hail damage.

2010 Spring Triticale Variety Trial – Continuously Cropped No-till, Hettinger

Variety	Days to Head	Plant Height	Test Weight	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	---------- bushels per acre ----------				
Trical 2700	73	45	46.6	39.6	53.2	102.8	78.0	65.2
Companion	68	41	51.5	46.6	37.5	107.0	72.2	63.7
Wapiti	68	43	51.1	45.1	40.1	104.0	72.0	63.1
Laser	68	42	50.2	44.9	33.2	98.3	65.8	58.8
Marvel	70	42	44.0	46.5	29.2	88.5	58.8	54.7
Ultima	72	36	49.5			105.1		
Trial Mean	70	41	48.8	46.9	40.9	100.9	--	--
C.V. %	1.2	3.4	1.6	8.7	18.1	2.8	--	--
LSD .05	1	2	1.2	6.2	11.1	4.3	--	--
LSD .01	2	3	1.6	8.5	15.4	6.0	--	--

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

Planting Date: April 19
Harvest Date: August 17
Seeding Rate: 1 million live seeds / acre.
Previous Crop: 2007 = durum, 2008 = field pea, 2009 = hrsw.
Note: The 2009 trial sustained moderate hail damage.

2010 Oil Type Sunflower Variety Trial – Continuously Cropped, No-till — Hettinger, N. Dakota

Cooperator: Alfred Rose, Hettinger

Brand	Hybrid	Oil Type & Traits	Days to Bloom	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield 2008	Seed Yield 2009	Seed Yield 2010	Avg. Yield 2 yr	Avg. Yield 3 yr
		*	**	**	inches	lbs/bu	%	pounds / acre				
Triumph	s678	NS,SS	76	122	31	30.1	43.3	1448	1914	2528	2221	1963
Seed	s878	HO,SS	77	124	40	31.2	43.1	1220	1844	1918	1881	1661
	s668	NS,SS	78	120	34	30.6	40.9			2791		
	s8420	NS,SS	79	126	38	--	45.3			2069		
	610CLD	NS,CL,DM	73	116	45	31.0	42.9			1543		
Proseed	E-8	NS,DM	77	125	33	31.1	43.8		1887	2755	2321	
	7001CL	NS,CL	77	120	36	32.2	40.8		1860	2197	2028	
	E-85	HO	72	117	42	--	42.5			1728		
Mycogen	8H449	HO,DM	76	121	38	34.0	43.1	1636	2798	2404	2601	2279
	8N358	NS,CL,DM	74	119	41	31.1	43.7	1494	2428	2132	2280	2018
	8D481	NS	75	124	46	27.7	43.4	1655	1817	1784	1800	1752
	8H288	HO,CL,DM	72	119	48	32.2	42.0		2352	2059	2206	
	8D310	NS	71	118	45	27.5	43.4		2290	1694	1992	
Croplan	460	NS,EX	76	122	47	29.6	43.1			2736		
Genetics	559	NS,CL,DM	76	123	54	33.0	41.7			2458		
	3080	NS,DM	72	120	41	31.5	41.5	1066		2049		
	306	NS,DM	73	124	42	31.2	44.5	1157		1799		
	555	NS,CL,DM	74	119	46	30.2	41.6			1781		
Seeds	Firebird	NS,EX	77	123	40	31.2	40.9	1580	2622	2664	2643	2289
2000	Blazer	NS,CL	78	121	45	31.3	40.1	1207	2112	2565	2338	1961
	x9828	NS,CL,DM	74	118	47	31.7	42.4			2106		
	x9866	NS,CL,DM	76	123	45	29.9	43.3			2003		
	Cobra	NS,EX	73	118	39	--	42.9			1668		
Integra	IX10-94	NS,EX	77	119	47	31.3	43.4			2168		
Seed	IX10-96	NS,EX	78	119	49	--	43.7			1894		
	IX10-98	NS,EX	76	119	46	31.4	44.5			1866		
	IX10-10576	NS,CL	76	119	52	32.9	44.6			1657		
	724	NS,CL	75	120	46	32.4	43.9			1544		
Syngenta	3433	NS,DM	74	119	42	32.8	42.8	980	2814	2978	2896	2257
	3845	HO	74	120	42	32.6	42.6	1393	2320	2160	2240	1958
	3480	NS,CL,DM	74	122	41	30.8	43.5	1070	2111	2505	2308	1895
	3980	NS,CL	78	125	51	--	43.1	1127	1921	1668	1794	1572
	7120	HO,DM	72	122	39	--	44.9	825	1635	1979	1807	1480
	3875	NS	76	121	45	32.4	42.8		2342	3151	2746	
	3732	NS	75	120	43	33.2	44.5		2497	2803	2650	
	4651	NS,DM	76	120	45	30.0	44.8			2665		

continued

Brand	Hybrid	Oil Type & Traits	Days to Bloom	Days to Mature	Plant Height	Test Weight	Oil Content	------ Seed Yield ------ 2008	2009	2010	Avg. Yield 2 yr	3 yr
		*	**	**	inches	lbs/bu	%	---------- pounds / acre ----------				
Genosys	6007	NS,CL	76	119	49	31.7	41.6	1038	2283	2088	2186	1803
	7052	HO,CL	76	117	52	--	38.4		2072	1916	1994	
	7163	NS	74	120	42	28.3	43.6			2363		
	8037	NS,CL	76	116	51	--	45.3			1983		
	8064	HO,CL	78	119	46	--	41.1			1948		
Trial Mean			75	120	44	31.4	42.9	1106	2040	2169	--	--
CV %			1.5	1.2	7.2	3.1	5.8	8.5	14.6	12.8	--	--
LSD .05			1	2	4	1.4	NS	131	405	389	--	--
LSD .01			2	3	6	1.8	NS	173	536	514	--	--

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

** Days to Bloom / Maturity = the number of days from planting to 10% bloom / physiologic maturity.

Planting Date: May 17, 2010
Harvest Date: November 8, 2010
Seeding Rate: 19,000 seeds / acre.
Row Spacing: 28" Previous Crop: HRSW Soil Type: Sandy Loam
Notes: Oil content and seed yields are based on 10% moisture. The 2008 trial sustained late season moisture stress. The 2009 trial sustained moderate hail damage. The 2010 trial sustained moderate lodging cause by a wind storm.

2010 Crambe Variety Trial - Continuously Cropped - No-till Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Test Weight	-------- Yield -------- 2008	2009	2010	Avg. Yield 2 yr	3 yr
	*	days	*	lbs/bu	---------- lbs / ac ----------				
BelAnn	49	23	85	24.7	1513	1802	2582	2192	1966
Meyer	44	25	80	25.5	1367	1550	2669	2110	1862
Westhope	44	25	80	25.4			2851		
Trial Mean	46	24	81	25.2	1600	1733	2700	--	--
C.V. %	0.6	3.6	2.1	1.6	8.4	14.6	4.6	--	--
LSD .05	1	1	3	NS	NS	NS	NS	--	--

* Days to Bloom / Mature = the number of days from planting until 10% bloom / physiologic maturity.

NS = no statistical difference between varieties.

Planting Date: May 17
Harvest Date: August 23
Seeding rate: 25 lbs/A
Previous Crop: 2007 = hrsw, 2008 = field pea, 2000 = oat.
Note: The 2009 trial sustained moderate hail damage.

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)

2010 Safflower Variety Trial – Continuously Cropped - No-till Hettinger

Variety	Days to Bloom	Test Weight	Oil Content	Seed Yield 2008	Seed Yield 2009	Seed Yield 2010	Average Yield 2 yr	Average Yield 3 yr
	*	lbs/bu	%	pounds per acre				
Linoleic Types								
Cardinal	74	44.9	36.8	1377	1958	3015	2486	2117
Finch	73	43.7	36.2	1357	1566	2444	2005	1789
NutraSaff	74	36.5	46.2	612	986	2458	1722	1352
Oleic Types								
Hybrid 1601	73	39.9	37.9	1637	2073	3361	2717	2357
Hybrid 9049	72	42.1	32.5	1665	1663	3184	2408	2161
MonDak	75	40.1	35.7	1386	1947	2831	2389	2055
Montola 2003	75	42.5	36.5	1141	1813	2898	2356	1951
Montola 2000	73	39.2	37.4	1474	1596	2777	2186	1949
Trial Mean	74	40.9	37.1	1319	1568	2793	--	--
C.V. %	0.8	1.6	3.3	7.7	10.0	5.3	--	--
LSD .05	1	0.9	1.7	147	226	212	--	--
LSD .01	1	1.3	2.4	198	304	285	--	--

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

Planting Date: May 17
Harvest Date: September 3
Seeding Rate: 300,000 live seeds / acre (approx. 22 lbs/A).
Previous Crop: 2007 & 2008 = hrsw, 2009 = oat.
Notes: The 2009 trial sustained moderate hail damage.

2010 Dormant Seeded Safflower Trial — Hettinger

Variety	Plant Stand	Flowering Date	Plant Height	Test Weight	Oil Content	Seed Yield 2005	Seed Yield 2006	Seed Yield 2008	Seed Yield 2010	Seed Yield Avg.
	#/ft		inches	lbs/bu	%	pounds per acre				
Fall Seeded										
Finch	2.7	July 24	31	37.7	33.9	2036	1547	1388	2110	1770
Montola 2003	5.3	July 26	32	36.5	36.7	2240	1545	1082	2771	1910
MonDak	6.3	July 24	33	37.0	35.1			1684	3248	2466
Cardinal	3.3	July 26	34	39.2	33.7			1379	2942	2160
Mean	4.4	July 25	32	37.6	34.8	2138	1546	1383	2768	1998
Spring Seeded										
Finch	8.9	Aug. 1	31	39.2	35.0	1627	2333	1364	1809	1783
Montola 2003	9.1	Aug. 2	28	37.8	36.9	1907	1513	939	2350	1677
MonDak	8.3	Aug. 1	29	36.9	35.1			1322	2231	1776
Cardinal	10.7	Aug. 2	31	40.6	33.3			1354	2647	2000
Mean	9.2	Aug. 2	30	38.6	35.1	1767	1923	1245	2259	1783
C.V. %	35	0.1	5.8	4.0	3.2	13.3	8.2	7.0	5.1	--
LSD .05	3.3	1	3	2.3	1.7	381	212	136	195	--
LSD .01	4.6	1	NS	NS	2.3	532	293	184	184	--

Planting date	Fall	Spring	Harvest date	Previous Crop
2005	Nov 9	Apr. 6	Sept. 20	Barley
2006	Nov 14	Apr. 12	Aug. 29	Barley
2008	Nov 16	May 7	Sept. 5	HRSW
2010	Nov 6	May 17	Sept. 2	HRSW

Seeding Rate: 400,000 live seeds / acre.

2010 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	1 - 9***	lbs/bu	%	lbs/a
Roundup Ready Types										
Proseed	50 Caliber	H	52	17	89	33	1	51.1	50.5	2195
	30 Caliber	S	56	15	95	39	1	52.2	48.8	2056
Pioneer	45H28	H	55	15	92	36	2	50.9	49.2	1906
	45S51	S	53	16	90	32	2	51.7	48.2	1902
Croplan	HyCLASS 921	H	54	13	89	33	0	50.9	49.2	1957
	HyCLASS 940	H	52	16	88	34	1	51.8	48.2	1711
	HyCLASS 947	H	51	17	88	34	1	50.8	49.6	1837
	HyCLASS 988	H	55	16	96	37	0	50.8	49.0	2424
Monsanto	G86382	H	54	16	94	35	0	50.6	50.5	2207
	G84602	H	52	16	94	35	0	50.5	48.5	2353
	G98059	H	52	15	92	30	3	50.6	46.8	2180
	G89304	H	51	16	89	32	3	49.6	47.9	1895
	G98022	H	52	16	92	32	1	50.8	48.5	2273
	G98073	H	53	15	92	34	1	51.4	49.7	2300
	G98046	H	55	15	90	37	1	51.4	48.5	2210
	G98034	H	55	14	92	33	0	50.6	49.8	1988
	G72818	H	54	14	95	38	0	50.7	49.2	2104
	G88666	H	52	15	89	36	1	50.0	48.3	2206
	G82746	H	52	17	93	34	2	50.1	49.6	1939
Dekalb	DKL51-45	H	52	16	89	32	2	50.3	49.0	2019
	DKL72-40	H	54	15	94	37	1	50.9	50.2	2254
	DKL30-42	H	53	14	88	31	0	50.9	46.6	2028
	DKL72-55	H	49	18	87	32	1	49.4	46.9	1759
BrettYoung	6040RR	H	55	15	91	37	0	51.0	48.9	2158
	H8111	H	54	15	90	38	1	52.1	50.7	1644
DL Seeds	30511-D8	H	52	16	95	38	1	52.0	49.9	2629
Clearfield Types										
Croplan	XCEED 8470	OP	53	20	92	41	5	52.3	49.0	2487
	XCEED 8571	OP	57	20	92	42	3	53.2	48.7	2312
Trial Mean			53	16	91	34	1	50.9	48.9	2069
C.V. %			1.1	4.8	1.6	6.7	57	0.6	3.4	6.4
LSD 5%			1	1	2	4	1	0.5	NS	219
LSD 1%			1	2	3	5	2	0.7	NS	292

* Type: H = hybrid, OP = open pollinated, S = synthetic.
** Days after planting.
*** Lodging: 1 = none, 9 = lying flat on ground.
NS = No statistical difference between varieties.

Planting Date: April 30
Harvest Date: August 8
Previous Crop = HRSW

2010 Spring Camelina Variety Trial at Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodging	Test Weight	Oil Content	Seed Yield 2007	Seed Yield 2008	Seed Yield 2010	Avg. Yield 2 year	Avg. Yield 3 year
	*	days	*	inches	1 - 9**	lbs/bu	%	pounds per acre				
Ligena	58	14	92	34	2.0	47.4	33.7	1360	1136	2835	1986	1777
Robinson	58	13	88	33	0.5	48.5	34.9	1707	832	2481	1656	1673
Galina	58	14	90	34	0.2	48.7	38.0	1387	899	2584	1742	1623
Suneson	58	13	88	34	1.8	48.4	36.8	1173	828	2215	1522	1405
Blaine Creek	59	14	90	35	0.8	48.6	36.0	1013	733	2370	1552	1372
Calena	58	14	91	34	0.2	49.7	35.2		903	2786	1844	
Trial Mean	58	14	90	34	0.9	48.7	35.8	--	886	2545	--	--
C.V. %	1.0	5.2	1.0	5.6	96	1.9	4.9	--	13.0	7.3	--	--
LSD .05	NS	NS	1	NS	1.3	1.4	2.7	--	168	279	--	--
LSD .01	NS	NS	2	NS	NS	NS	NS	--	226	386	--	--

*Days to Bloom / Mature = the number of days from planting to 10% bloom or maturity.
**Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: April 19, 2010
Harvest Date: July 28, 2010
Seeding Rate: 6 lbs/A
Previous Crop: 2006 = barley, 2007 = hrsw, 2008 = durum.
Note: The 2008 trial sustained severe late season heat and moisture stress.

2010 Camelina - Recrop **Dickinson, ND**

Variety	Days to Bloom	Bloom Duration	Plant Height	Test Weight	Oil Content	--Grain Yield-- 2009	--Grain Yield-- 2010	Average Yield
			in	lbs/bu	%	---lbs/ac---		--lbs/ac---
Blaine Creek	60	14	30	51.5	36.6	642.9	2122.6	1382.7
Calena	59	13	30	50.9	36.8	1102.3	2650.8	1876.5
Galena	59	13	31	50.1	37.0	1422.9	2667.3	2045.1
Ligena	60	13	31	48.3	37.8	1424.8	2483.0	1953.9
Robinson	59	13	30	51.5	37.5	--	2115.2	--
Suneson	59	13	31	52.1	37.1	1162.0	2094.3	1628.1
Trial Mean	59	13	31	50.7	37.1	1133.2	2355.5	--
CV %	0.9	3.1	4.9	1.5	2.1	25.8	7.3	--
LSD .05	NS	1	NS	1.1	NS	NS	258.5	--

Planting Date: 4/22/2010 Harvest Date: 4/22/2010
Previous Crop: Field Pea Seeding Rate: 6 lbs/acre
Seed oil % determined on an NMR machine and reported on 8.5% moisture basis.

2010 Tame Mustard Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodg	Test Weight	Yield 2007	Yield 2008	Yield 2010	Avg. Yield 2 yr	Avg. Yield 3 yr
	*	days	*	inches	0-9**	lbs/bu	lbs / ac				
Yellow Types											
Tilney	48	25	90	38	1.0	53.4	1027	619	2182	1400	1276
Andante	49	24	90	39	1.0	54.1	616	681	2274	1478	1190
AC Pennant	47	26	88	40	0.5	53.4	821	510	2117	1314	1149
Ace	49	25	91	45	0.2	53.2	534	452	2255	1354	1080
Oriental Types											
Forge	57	23	93	45	3.5	52.7	863	1137	2535	1836	1512
Brown Types											
Duchess	57	23	94	44	4.8	51.2	1109	1168	2520	1844	1599
Common Brown	56	24	94	48	3.5	51.9	945	1208	2443	1826	1532
Trial Mean	52	24	91	43	2.1	52.8	845	825	2332	--	--
C.V. %	1.0	2.1	1.2	2.8	49	1.1	20.6	21.8	6.2	--	--
LSD .05	1	1	1	2	1.5	0.9	259	267	213	--	--
LSD .01	1	1	2	3	2.1	1.2	354	365	292	--	--

* Days to Bloom / mature = the number of days from planting 10% bloom / physiologic maturity.
** Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: April 19 Harvest Date: August 3
Seeding rate: 610,000 pls/A (approx. Yellow = 12 lbs/A, Oriental & Brown = 6 lbs/A)
Previous Crop: 2006 = soybean, 2007 = hrsw, 2009 = durum.
Note: The 2007 and 2008 trials sustained severe heat and moisture stress.

2010 Fall Seeded Alternative Crops - No-till — Hettinger

Crop	Variety	Date of 10% Bloom	Crop Maturity	Test Weight	Seed Yield
				lbs/bu	lbs/A
Winter Camelina	Russian	May 25	July 2	46.1	1991
Winter Camelina	Joelle	June 4	July 13	42.6	1667
Field Pennycress	Olson	May 31	July 1	45.2	1008
Spring Camelina	Soneson	May 25	June 29	48.3	1461
Turnip	Purple Top	Poor Winter Survival			
Winter Canola	DK CWH630	No Winter Survival			
Winter Canola	DK CWH683	No Winter Survival			
Winter Canola	DK CWH101D	No Winter Survival			
Winter Canola	HyCLASS 154w	No Winter Survival			
Winter Canola	HyCLASS 107w	No Winter Survival			

Planting Date: Winter Canola = August 18, 2009, other crops = Oct. 10
Harvest Date: July 22
Seeding rate: 10 lbs/A
Previous Crop: hrsw.

2010 Field Pea Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Brand	Days to Bloom	Duration of bloom	Days to Mature	Plant Height	Lodg.	1000 Seed wt.	Test Weight	--- Seed Yield ---- 2008	2009	2010	Avg. Yield 2 yr	3 yr
		days*	days	days*	inches	0-9**	grams	lbs/bu	--------- bushels per acre ---------				
Yellow Types													
Agassiz	Meridian	67	10	92	30	2	219	63.6	45.7	43.4	53.7	48.6	47.6
DS Admiral	Pulse USA	66	8	90	32	0	199	62.0	41.6	33.8	50.3	42.0	41.9
CDC Golden	Alt. Seed Str.	67	9	92	31	3	208	63.1		40.8	64.4	52.6	
CDC Centennial	Alt. Seed Str.	68	7	92	24	4	222	62.9		42.7	57.8	50.2	
CDC Meadow	Alt. Seed Str.	66	10	90	32	1	187	62.5		44.2	57.5	50.8	
Midas	Svalof	68	8	90	27	0	179	62.3		39.6	53.5	46.6	
PUSA 09001	Pulse USA	66	9	90	33	2	221	62.8		38.3	53.5	45.9	
Korando	Pulse USA	65	11	89	32	2	215	61.9		31.2	51.5	41.4	
Marquee	Svalof	67	8	90	29	1	161	61.6		30.9	50.6	40.8	
PUSA 09006	Pulse USA	66	9	90	32	2	192	61.7		32.9	46.7	39.8	
LL11809	Legume Logic	67	9	93	38	4	200	62.1			54.4		
Green Types													
Majoret	Pulse USA	67	8	93	30	1	192	63.2	41.3	34.9	49.3	42.1	41.8
Cooper	Meridian	72	6	98	28	2	228	64.0	39.7	28.7	52.8	40.8	40.4
Cruiser	Pulse USA	66	10	93	28	4	165	61.4	36.4	36.1	48.0	42.0	40.2
CDC Striker	Alt. Seed Str.	67	8	93	32	2	204	63.0	38.1	25.3	46.0	35.6	36.5
Arcadia	Svalof	67	7	94	26	2	199	62.5		42.1	52.2	47.2	
K2	Svalof	65	10	92	28	0	184	62.8		37.9	47.4	42.6	
CDC Patrick	Alt. Seed Str.	68	8	95	30	3	179	62.3			54.9		
Aragorn	Progene	66	10	90	25	4	180	60.7			46.0		
Trial Mean		67	9	92	30	2	197	62.4	40.1	34.9	52.1	--	--
C.V. %		0.8	8.5	1.5	4.8	54	7.3	1.4	6.1	7.7	6.1	--	--
LSD .05		0.7	1	2	2	1	20	1.2	3.5	3.8	4.5	--	--
LSD .01		1.0	2	3	3	2	27	1.6	4.6	5.0	6.1	--	--

* Days to Bloom & Mature = the number of days from planting to 10% bloom & physiological maturity.
** Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: April 19
Seeding Rate: 330,000 live seeds / acre.

Harvest Date: July 31
Previous Crop: 2007 = HRSW, 2008 = durum, 2009 = HRSW.

2010 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	Average Yield
				in	lbs/bu	0-9	%	--bu/ac--		--bu/ac--
Agassiz	63	16	2,078	28.7	63.3	1.3	22.6	--	57.0	--
CDC Centennial	63	14	1,878	27.1	62.8	1.8	21.9		63.2	
CDC Golden	63	16	2,156	28.6	63.0	2.0	22.5	41.0	61.3	51.1
CDC Meadow	63	16	2,304	30.1	63.1	1.8	21.7	--	63.3	--
CDC Patrick	64	14	2,616	27.0	62.8	2.0	22.3	--	58.2	--
CDC Striker	63	14	1,994	31.9	63.8	0.8	22.7	34.4	57.6	46.0
Cruiser	63	15	2,347	25.1	62.4	1.8	22.6	30.0	53.0	41.5
DS Admiral	63	15	2,017	29.6	63.5	1.5	22.1	34.6	55.6	45.1
Majoret	63	14	1,948	30.9	63.1	1.0	22.9	38.1	54.6	46.4
Trial Mean	63	15	2,149	28.8	63.1	1.5	22.3	36.7	58.2	--
CV %	0.4	4.0	2.6	6.4	0.7	49.6	0.6	7.1	6.1	--
LSD 0.05	0	1	80	2.9	0.6	NS	0.3	3.9	5.2	--

Planting Date: April 21, 2010
Harvest Date: July 30, 2010
Lodging: 0=No lodging, 9=Completely flat
Previous Crop: Barley
Seeding Rate: 325,000 live seeds/ac
Grain protein percentages reported on a 0% moisture basis

2010 Field Pea Variety Trial – Continuously Cropped - No-till Mandan

Variety	Brand	1000 Seed wt.	Test Weight	Seed Yield
		grams	lbs/bu	bu/A
Yellow Cotyledon Types				
CDC Golden	Alt. Seed Str.	200	60.9	57.3
Agassiz	Meridian Seeds	229	60.1	53.9
DS Admiral	Pulse USA	195	60.9	53.2
Green Cotyledon Types				
Cruiser	Pulse USA	158	60.9	48.7
Majoret	Pulse USA	190	60.8	46.9
CDC Striker	Alt. Seed Str.	202	61.0	44.9
Arogorn	Progene	174	59.8	42.9
Malachite	Pulse USA		60.6	42.0
Trial Mean			59.7	42.9
C.V. %			0.9	8.3
LSD .05			0.9	5.8
LSD .01			1.2	7.7

Planting Date: April 22
Harvest Date: August 16
Seeding Rate: 330,000 live seeds / acre.
Previous Crop: HRSW

SDSU Field Pea Variety Trial - Perkins County (Bison), 2010.

Variety	Height	Lodging	Test Wt	Yield
	Inches	0-9*	Lb/Bu	Bu/Ac
CDC MOZART (yellow)	26	0	58.6	41.2
CDC GOLDEN (yellow)	27	0	60.6	43.6
DS ADMIRAL (yellow)	26	0	60.2	40.5
COOPER (green)	28	0	61.6	41.8
Average	27	0.0	60.2	41.8
LSD (P=.05)	3.0	0	1.7	**NS**
CV	7.0	0	1.7	9.5

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

Planted: April 21, 2010
Harvested: August 12, 2010
Previous crop: Wheat, no-till planted.
Additional Nitrogen: Inoculated
Herbicide: Prowl H20 (3 pt/A) PRE + Poast (1 pt/A) POST

2010 Lentil Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Plant Ht.	Lodging	1000 Seed wt.	Test Weight	---- Seed Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	0-9**	grams	lbs/bu	---------- pounds per acre ----------				
Large Green Types										
CDC Greenland	66	19	7	68.2	--	1315	1724	872	1298	1304
Pennell	67	18	2	82.2	57.8	1095	1530	1128	1329	1251
Riveland	63	17	6	74.2	--	1098	1186	743	964	1009
Medium Green Types										
CDC Richlea	65	17	5	58.8	59.3	1355	1434	1154	1294	1314
Small Green Type										
CDC Viceroy	67	16	5	36.4	61.6	1295	1822	1446	1634	1521
Small French Green Type										
CDC LeMay	65	14	8	35.8	61.2	1294	1424	1570	1497	1429
Medium Red Types										
CDC Red Rider	66	18	3	47.0	59.5		1782	1663	1722	
Small Red Types										
CDC Rouleau	66	17	2	40.8	60.0	1247	1822	1749	1786	1606
CDC Redberry	65	17	2	47.0	61.3		1592	1390	1491	
Extra Small Red Type										
CDC Rosetown	66	18	4	33.8	61.7		1749	1498	1624	
Trial Mean	66	17	4	52.4	60.6	1056	1512	1321	--	--
C.V. %	1.0	12.3	39	3.1	1.7	13.2	11.9	11.8	--	--
LSD .05	1	NS	3	5.2	NS	197	257	226	--	--
LSD .01	1	NS	4	7.0	NS	262	344	305	--	--

* Days to Bloom = the number of days from planting to 10% flowering.
** Lodging: 0 = none, 9 = lying flat on ground.
NS = no statistical difference between varieties.

Planting Date: April 19
Harvest Date: August 18
Seeding Rate: 550,000 live seeds / acre.
Previous Crop: 2007 & 2008 = hrsw, 2009 = durum.
Note: The 2009 trial sustained moderate hail damage.

2010 Clearfield Lentil Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Plant Ht.	Lodging	1000 Seed wt.	Test Weight	---- Seed Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
	*	inches	0-9**	grams	lbs/bu	---------- pounds per acre ----------				
Large Green Type										
CDC Improve	65	16	2.2	76.8	57.0	985	1918	1432	1675	1445
Medium Green Type										
CDC Impress	65	14	4.5	56.2	58.0	1364	2249	1543	1896	1719
Small Red Types										
CDC Maxim	63	15	0.5	44.2	61.0	1227	2234	2255	2244	1905
CDC Impact	62	14	2.2	39.8	61.0	537	1645	1593	1619	1258
Extra Small Red Types										
CDC Imperial	64	15	4.0	34.2	60.0	758	2035	2290	2162	1694
CDC Impala	66	15	3.5	34.6	61.3	729	1939	2215	2077	1628
Trial Mean	64	15	2.8	47.6	59.7	1056	2003	1888	--	--
C.V. %	1.0	7.7	53	2.2	1.6	13.2	9.9	6.6	--	--
LSD .05	1	NS	2.2	1.6	1.5	197	299	189	--	--
LSD .01	1	NS	NS	2.2	2.1	262	414	261	--	--

* Days to Bloom = the number of days from planting to 10% flowering.
** Lodging: 0 = none, 9 = lying flat on the ground.
NS = no statistical difference between varieties.

Planting Date: April 19
Harvest Date: August 18
Seeding Rate: 550,000 live seeds / acre.
Previous Crop: 2007 & 2008 = hrsw, 2009 = durum.
Note: The 2008 trial sustained severe late season heat and moisture stress.
The 2009 trial sustained moderate hail damage.

2010 Roundup Ready Soybean Variety Trial – Continuously Cropped, No-till Hettinger

Brand	Variety	Maturity Group	Days to Mature	Plant Height	Test Weight	Oil Content	Protein Content	Seed Yield
			*	inches	lbs/bu	%	%	bu/A
NK	S06-W2	0.6	108	35	55.9	19.6	33.4	28.3
NK	S08-A2	0.8	109	31	56.3	19.2	34.8	28.2
NK	S09-N6	0.9	111	32	56.3	18.8	34.4	26.4
North Star Genetics	NS0091RR	00.9	101	31	54.6	19.8	36.4	22.4
North Star Genetics	NS0092RR	00.9	98	30	54.5	20.9	33.0	19.5
Integra Fortified Seed	79031	0.3	118	31	55.3	20.0	34.4	25.3
Integra Fortified Seed	20520	0.5	106	38	56.3	19.2	33.9	27.0
Asgrow	AG730	0.7	108	31	55.7	18.4	36.2	26.4
Asgrow	AG1230	1.2	120	34	56.0	20.2	33.6	31.4
Seeds 2000	2061RR2Y	0.6	107	37	55.6	19.9	33.8	25.5
Seeds 2000	2120RR	1.2	122	33	56.5	20.6	32.4	28.3
Proseed	90-40	0.4	116	37	55.6	22.1	30.4	34.9
Trial Mean			110	33	55.9	19.9	33.9	27.0
C.V. %			1.9	9.3	0.9	3.1	3.4	8.3
LSD .05			3	5	0.7	1.4	2.5	3.2
LSD .01			4	6	1.0	1.9	3.6	4.3

* Days to mature = the number of days from planting to physiological maturity.

Planting Date: May 17
Harvest Date: September 30
Seeding Rate: 250,000 pls/A (approx. 1.5 bu/A)
Row Spacing: 28”
Previous Crop: oats

2010 Conventional Soybean Variety Trial – Continuously Cropped - No-till Hettinger

Variety	Maturity Group	Days to Mature	Plant Height	Test Weight	Oil Content	Protein Content	---- Grain Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
		*	Inches	Lbs/bu	%	%	---------- Bushels per acre ----------				
Sheyenne	0.8	108	37	56.7	20.9	29.5	24.1	28.1	33.1	30.6	28.4
Cavalier	00.7	100	34	55.7	21.7	29.6	15.5	21.9	26.6	24.2	21.3
Ashtabula	0.4	104	38	54.9	20.9	31.1		23.2	28.2	25.7	
Traill	00.0	102	35	55.7	20.9	33.2		21.5	26.6	24.0	
ProSoy	0.8	116	42	55.7	19.4	33.4		19.1	25.9	22.5	
Trial Mean		108	37	55.6	20.5	31.9	20.8	22.8	26.8	--	--
C.V. %		2.0	7.8	1.5	3.8	3.0	7.8	9.6	9.2	--	--
LSD .05		3	4	NS	NS	1.6	0.6	3.4	3.7	--	--
LSD .01		4	6	NS	NS	2.5	0.8	4.7	5.0	--	--

* Days to mature = the number of days from planting to physiologic maturity.
NS = no statistical difference between varieties.

Planting Date: May 17
Harvest Date: September 30
Seeding Rate: 250,000 live seeds / acre (approx. 1.5 bu/A).
Row Spacing: 28”
Previous Crop: 2007 & 2008 = hrsw, 2009 = barley.
Note: The 2008 trial sustained heat and moisture stress.
The 2009 trial sustained moderate hail damage.

2010 Buckwheat Variety Trial – Continuously Cropped No-till at Hettinger

Variety	Days to Bloom	Test Weight	1000 Seed Weight	---- Grain Yield ---- 2006	2008	2010	Average Yield 2 yr	3 yr
	*	lbs/bu	grams	---------- Pounds per acre ----------				
Manor	33	37.0	28.0	588	762	1917	1340	1089
Koma	35	36.3	31.6	775	765	1688	1226	1076
Koto	34	35.4	32.2			1385		
Trial Mean	34	36.5	30.6	613	726	1663	--	--
C.V. %	0.0	1.9	3.3	17.3	15.3	6.6	--	--
LSD .05	1	1.2	1.7	160	NS	191	--	--
LSD .01	1	NS	2.6	NS	NS	289	--	--

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

Planting Date: May 29
Harvest Date: September 30
Seeding Rate: 700,000 live seeds / acre.
Previous Crop: 2005 = barley, 2007 = hrsw, 2009 = oat.

2010 Dry Bean Variety Trial – Continuously Cropped - No-till Hettinger

Variety	Days to Bloom	Lodging	1000 Seed wt.	Test Weight	---- Seed Yield ---- 2008	2009	2010	Average Yield 2 yr	3 yr
Pinto	*	0-9**	grams	lbs/bu	---------- Pounds per acre ----------				
Lapaz	59	2.5	314	56.9	628	1889	1995	1942	1504
Maverick	54	4.0	304	55.2	552	1808	1987	1898	1449
Lariat	57	5.5	315	56.1	568	1540	2122	1831	1410
GTS 900	58	5.0	300	58.3	539	1636	1847	1742	1341
Buster	53	3.0	328	54.5	515	1566	1896	1731	1326
Stampede	54	5.0	318	52.4	626	1745	1559	1652	1310
Othello	52	3.0	327	47.2	696	1496	1650	1573	1281
Sonora	54	2.5	270	55.8			2076		
Medicine Hat	54	2.5	324	55.1			2066		
Mariah	56	2.5	315	57.5			1991		
Windbreaker	54	2.5	356	53.7			1942		
Santa Fe	54	3.5	343	52.8			1295		
Navy									
Vista	59	6.0	149	54.8	544	1401	1611	1506	1185
Avalanche	58	3.3	177	57.3	447	1474	1556	1515	1159
Norstar	56	6.0	166	57.8	544	1257	1441	1349	1081
Ensign	57	6.0	171	56.9	504	1207	1380	1294	1030
Navigator	59	4.3	151	55.5	428	1131	1340	1236	966
Seahawk	58	6.0	174	55.5	453	1067	1349	1208	956
HMS Medalist	59	5.3	149	57.9			1447		
Mayflower	58	5.0	159	53.4			973		
Black									
Eclipse	59	2.5	166	57.4	449	1343	1784	1564	1192
Jaguar	58	2.0	158	56.6	377	1341	1768	1554	1162
T-39	59	5.0	167	57.7	391	1334	1591	1462	1105
Zorro	58	2.5	170	57.8		1413	2043	1728	
Loreto	58	2.5	177	57.7			1227		
Pink									
Sedona	58	5.5	294	49.4	391	803	838	820	677
Great Northern									
Matterhorn	54	2.5	307	54.7	548	1459	1904	1682	1304
Small Red									
Merlot	54	3.5	288	54.7	525	675	1589	1132	930
Trial Mean	57	4.0	55.3	238	516	1378	1640	--	--
C.V. %	1.9	31	4.4	3.2	23	10.6	6.1	--	--
LSD .05	1	2.1	4.0	13	165	208	165	--	--
LSD .01	2	2.8	5.4	17	NS	276	222	--	--

* Days to mature = the number of days from planting to 10% bloom.
** Lodging: 0 = none, 9 = lying flat on the ground. NS = no statistical difference between varieties.
Planting Date: May 19 Harvest Date: September 3
Seeding Rate: 100,000 live seeds / acre (approx. 60 lbs/A).
Previous Crop: 2007 & 2008 = hrsw, 2009 = barley.
Note: The 2008 trial sustained severe drought. The 2009 trial sustained moderate hail damage.

2010 Corn Variety Trial - Continuously Cropped - No-till — Hettinger

Brand	Hybrid	GDU's	Relative Maturity	Days to Silk	Ear Height	Harvest Moisture	Test Weight	Grain Yield
		*	days	days	inches	%	lbs/bu	bu/A
Roundup Ready								
REA	2T320	2075	84	78	22	26	56.1	80.3
	2T149	2150	85	78	30	26	56.3	72.3
	2T425	2150	85	79	27	30	56.8	81.1
	3V376	2225	89	79	29	34	56.8	82.0
	3V440	2230	91	80	28	36	57.3	106.0
Integra	9340RBC		84	78	30	34	57.6	90.6
	6385VT3		85	79	30	29	57.5	99.1
	9361VT3		86	78	31	34	57.6	86.6
Dekalb	DKC30-20	2100	80	77	29	24	56.0	82.1
	DKC33-54	2175	83	78	27	29	57.1	84.1
Proseed	781	1900	81	78	28	28	57.8	99.2
	787	2030	87	79	29	36	57.4	72.7
Liberty Link								
Proseed	981	1900	81	78	28	25	56.4	104.4
	1086	2020	86	79	29	36	57.6	88.6
Trial Mean				79	28	32	57.0	87.8
C.V. %				1.5	8.6	14.1	3.9	8.6
LSD 5%				NS	2	6	NS	10.8
LSD 1%				NS	3	9	NS	14.5

*Growing Degree Units to Black Layer.
NS = no statistical difference between hybrids.

Planting Date: May 17
Harvest Date: October 18
Seeding Rate: 24,000 seeds / acre
Row Spacing: 28", 2-planted x1-skip row configuration.
Soil Type: Sandy Loam
Previous Crop: HRSW
Growing Degree Days: 2154 (norm = 2130)

Nitrogen Rate Recalibration for Corn in North Dakota
Southwest North Dakota Update 12/1/2010

Roger Ashley, Area Extension Specialist/Cropping Systems
David Franzen, NDSU Extension Soil Science Specialist

Current nitrogen fertilizer recommendations for corn in North Dakota are outdated and need to be reexamined with fresh field evaluations. Outside of land costs, fertilizer costs are the highest input for most corn farmers. Nitrogen recommendations that are relevant to today's hybrids and cultural practices are needed to remain profitable and avoid undue environmental scrutiny.

The cost of N to North Dakota growers has ranged from $100 million to $300 million per year over the last several years (assumes 2 million acres of corn, average N rate 160 lb N/acre). Since the data that helped develop the current N rate formula is over thirty-years old and farming practices have changed considerably, it is not known if current N rates are too high or too low, and what adjustments might be applied in more modern tillage systems. Savings due to lower N requirements or higher yields due to more efficient N rates will result in millions of dollars in profitability for the state's corn growers.

The objective is to develop a modern N-rate dataset for corn in order to reevaluate and develop more effective N recommendations and adjustments.

As part of the statewide effort to recalibrate nitrogen rates for corn, two sites have been selected in southwest North Dakota. They are locate on the Mike Zook Farm, Beach and the Reggie Pahl Farm, New Leipzig. Other sites (a total of 60 site years) have been located in the other regions of North Dakota. These farms will cooperate over the next three years. At each location, a nitrogen (N)-rate study is established in the spring prior to corn planting.

Each site is soil sampled for residual nitrate-N to a depth of 2 feet prior to fertilizer application. The study consists of a randomized complete block design with four replications and six treatments, consisting of a check, and then graduate N rates of 40 lbs N/acre, 80 lbs N/acre, 120 lbs N/acre, 160 lb N/acre and 200 lbs N/acre applied as either ammonium nitrate or urea broadcast. Fertilizer P, K, and Zn will also be applied if the cooperator is unable to do so within the study area.

The cooperator applies herbicide, seeds the area, and applies other normal farming operations within the plot area as with the rest of the field except nitrogen. The study is monitored throughout the growing season, and the middle two rows of each plot were hand-harvested and shelled before the cooperator harvested the field.

After the three-year period is complete, data will be analyzed using a variety of methods to determine the best N recommendation strategy to maximize grower profitability. The 2010 data for the two southwest ND sites is given below. Soil test indicated the Beach site had 46 lb/acre and the New Leipzig site had 38 lb/acre soil nitrate-nitrogen prior to the addition of the nitrogen treatments. Ammonium nitrate was the source of N used. Additional data will be required before the N recommendation strategy can be determined.

Nitrogen rate	Beach		New Leipzig	
	Grain yield	Test wt	Grain yield	Test wt
lb/acre	bu/acre	lb/bu	bu/acre	lb/bu
0	76.9	52.3	84.0	57.4
40	86.6	53.2	93.4	57.9
80	90.5	53.7	89.7	55.1
120	94.3	53.4	94.3	56.3
160	92.2	53.9	101.7	57.0
200	101.9	53.7	97.3	54.2
Mean	90.4	53.4	93.4	54.2
CV%	7.1	1.4	7.2	4.3
$LSD_{0.05}$	9.7	NS	10.2	NS

This project is partially supported by the North Dakota Corn Council.

2010 Proso Millet Variety Trial – Continuously Cropped No-till, Hettinger

Variety	Days to Head	Plant Height	Test Weight	---- Grain Yield ---- 2007	2008	2010	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	---------- pounds per acre ----------				
Horizon	60	39	63.3	2530	1347	2466	1906	2114
Sunup	60	41	66.0	2032	1401	2906	2154	2113
Sunrise	61	39	64.3	2280	1377	2591	1984	2083
Trial Mean	60	40	64.5	2281	1150	2654	--	--
C.V. %	0.6	6.0	2.7	10.5	10.8	9.3	--	--
LSD .05	NS	NS	NS	415	NS	NS	--	--

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

Planting Date: May 29 Harvest Date: September 3
Seeding Rate: 25 lbs/A Previous Crop: 2006, 2007 & 2009 = hrsw.

2010 Forage Hay Variety Trial - Continuously Cropped – No-till Hettinger

Variety	Plant Height	Harvest Moisture	Crude Protein	ADF	NDF	TDN	RFV	---------- Yield ---------- 2008	2009	2010	2 yr	3yr
	inches	%	%	%	%	%		---------- Tons / acre* ----------				
Barley												
Haybet	33	64	11.7	28	58	49	106	4.01	3.81	2.86	3.34	3.56
Tetonia	27	66	10.7	27	56	51	114		4.71	3.90	4.30	
Lenetah	28	64	11.7	26	56	52	114		4.01	3.25	3.63	
Cowboy	37	69	12.0	31	58	44	104			3.90		
Triticale												
Trical 141	50	67	11.2	35	60	62	95			3.46		
Merlin	39	64	13.6	30	53	68	114			2.73		
Trial Mean	36	66	--	--	--	--	--	--	3.87	3.35	--	--
C.V. %	3.3	3.9	--	--	--	--	--	--	13.2	6.9	--	--
LSD .05	2	4	--	--	--	--	--	--	0.82	0.35	--	--
LSD .01	3	NS	--	--	--	--	--	--	1.18	0.48	--	--

* Forage yields and quality reported on a dry weight basis.
ADF = Acid Detergent Fiber
NDF = Neutral Detergent Fiber
TDN = Total Digestible nutrients
RFV = Relative Feed Value using NFTA guidelines
NS = no statistical difference between varieties

Planting Date: April 27, 2010 Harvest Date: July 23, 2010 (milk stage).
Seeding Rate: 750,000 live seeds/acre.
Previous Crop: 2007 = barley, 2008 = oat, 2009 = hrsw.
Note: The 2009 trial sustained moderate hail damage.

SDSU Cool Season Annual Forage Trial - Harding County (Ralph), 2010.

Crop (Variety)	Harvest Date – Yield Ton/Ac @ 13%					Average
	July 7, 2010	July 14, 2010	July 21, 2010	July 28, 2010	August 4, 2010	
Pea (Arvika)	2.0	2.4	*	2.5	1.2	2.0
Pea (Mozart)	2.1	2.8		1.9	1.0	2.0
Hairy Vetch (Common)	1.0	1.5		2.5	2.0	1.8
Oat (Troy)	2.8	3.1		3.3	2.8	3.0
Oat/Pea (60% Troy / 40%Arvika)	2.6	2.7		3.1	2.2	2.7
Barley (Haybet)	2.3	2.6		1.9	1.4	2.1
Barley/Pea (60% Haybet / 40% Arvika)	2.2	2.5		2.4	1.7	2.2
Spring Triticale (Common)	2.4	2.8		3.3	2.8	2.8
Spring Triticale / Pea (60%s.Trit/40%Arvika)	2.4	2.8		3.6	3.0	3.0
Spring Wheat (Traverse)	1.6	1.7		2.2	2.0	1.9
Mean	2.1	2.5		2.7	2.0	2.3
LSD (.05)	0.4	0.5		0.5	0.5	.
CV	11.9	13.4		12.2	16.3	.

* July 21st date was not harvested because of heavy rain.

Planted: April 21, 2010 Herbicide: Glyphosate burn down
Harvested: Five Dates Additional Nitrogen: 50 Lb/A
Previous crop: Conventional Fallow

SDSU Warm Season Forage Trial - Harding County (Ralph), 2010.

Crop (Variety)	Harvest Date – Yield Ton/Ac @ 13%					Average
	Aug 4, 2010	Aug 11, 2010	Aug 18, 2010	Aug 25, 2010	Sept 1, 2010	
Teff Grass (Tiffany)	1.7	2.6	2.6	2.4	2.1	2.3
Foxtail Millet (Manta)	2.2	3.4	3.7	3.8	3.8	3.4
Foxtail Millet (Golden German)	2.4	2.9	3.5	3.5	3.7	3.2
Foxtail Millet (White Wonder)	2.1	2.8	2.9	3.5	3.4	2.9
Proso Millet (Sunup)	2.3	2.9	3.5	3.2	3.9	3.2
Pearl Millet (Producers Pro Millet)	2.0	2.1	2.9	2.9	3.4	2.7
Sorghum Sudan (Honey Sweet)	2.3	3.3	3.7	3.8	3.9	3.4
Sorghum Sudan (Honey Sweet 2)	2.0	2.9	3.0	3.2	3.2	2.9
Sorghum Sudan (Honey Sweet BMR)	2.1	3.2	3.1	3.3	3.8	3.1
Cowpea (Red Ripper)	0.8	1.2	0.7	0.5	0.5	0.7
Mean	2.0	2.7	3.0	3.0	3.2	2.8
LSD (.05)	0.4	0.5	0.5	0.8	0.9	.
CV	13.1	13.6	11.1	17.6	19.5	.

Planted: June 9, 2010 Herbicide: Glyphosate burn down
Harvested: Five Dates Additional Nitrogen: 50 Lb/A
Previous crop: Conventional Fallow

Saline tolerant alfalfa variety trial, 2007-2010, Golden Valley Conservation District Farm, Beach, ND.

Variety	Agent or origin	2007 Yield[1]	2007 % Vernal	2008 Yield[1]	2008 % Vernal	2009 Yield[1]	2009 % Vernal	2010 1st Cutting Yield[1,2]	2010 2nd Cutting Yield[1,2]	2010 % Vernal	Total 5 cuttings	All cuttings % Vernal
		tons/acre		tons/acre		tons/acre		tons/acre			tons/acre	
Vernal	Public	1.07	100	1.74	100	0.47	100	1.62	0.99	100	5.9	100
Bullseye	Target Seed LLC	1.41	132	2.25	129	0.52	111	1.44	0.73	83	6.3	108
Rugged	Target Seed LLC	1.52	142	2.71	156	0.44	94	1.90	0.95	109	7.5	128
TS4002	Target Seed LLC	1.45	136	2.37	136	0.47	100	1.37	0.79	83	6.5	110
CW054038	Cal West Seeds	1.28	120	2.63	151	0.46	98	1.50	1.10	100	7.0	119
CW14032/PGI 437	Cal West Seeds/PGI	1.53	143	2.17	125	0.42	89	1.61	0.98	99	6.7	114
CW34024/PGI 427	Cal West Seeds/PGI	1.76	164	2.52	145	0.49	104	1.71	1.05	106	7.5	128
CW24044/PGI 459	Cal West Seeds/PGI	1.65	154	2.20	126	0.49	104	1.79	1.09	110	7.2	123
CW044024	Cal West Seeds	1.71	160	2.69	155	0.52	111	1.47	0.92	92	7.3	124
CW064027	Cal West Seeds	1.95	182	2.52	145	0.51	109	1.65	1.01	102	7.6	130
Mean		1.53		2.38		0.48		1.61	0.97		-	
CV%		23.7		18.2		22.5		10.9	26.8		-	
LSD .05		NS		NS		NS		0.29	NS		-	
LSD.10		0.44		0.52		NS		0.25	NS		-	

[1] Yield on a dry matter basis

Planted 22 June 2007

Harvested 30 Aug 2007

Harvested 24 Jun 2008

Harvested 24 Jun 2009

Harvested 10 Jun 2010

Harvested 21Jul 2010

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

Source: Dickinson Research Extension Center. Data compiled by Roger Ashley, Area Extension Specialist/Cropping Systems; Ashley Ueckert, Golden Valley County Agent; Brandi Herauf, Field Assistant; Angie Adsero, Field Assistant.

2010 Foliar Diseases on Winter Wheat at Hettinger

Variety	Tan Spot Incidence	Tan Spot Severity	Septoria Incidence	Septoria Severity	Stripe Rust Incidence	Stripe Rust Severity	WSMV	Bac Blight Incidence	Bac Blight Severity	Untreated Test Weight	Treated* Test Weight	Untreated Grain Yield	Treated* Grain Yield
	%	%	%	%	%	%	%	%	%	lbs/Bu	lbs/Bu	bu/A	bu/A
Art	34	2	6	1	18	2	6	32	2	60.8	62.1	71.7	75.4
Boomer	26	1	6	1	28	2	6	6	1	58.6	60.3	79.6	79.1
CA9W07-817	28	2	6	1	14	2	2	22	4	61.7	61.6	76.5	73.0
Carter	22	2	4	1	18	2	2	18	2	58.3	59.8	61.8	67.0
Accipiter	39	2	6	1	0	0	6	12	1	60.5	60.8	80.9	85.5
CDC Falcon	52	1	4	1	6	1	6	36	1	61.3	61.4	79.9	83.4
Perigrine	28	2	8	1	16	1	6	12	1	58.7	60.5	64.9	69.7
Darrell	26	1	0	0	88	5	1	22	1	59.9	61.0	69.5	72.8
Hawken	22	1	0	0	78	8	4	56	2	58.8	62.0	56.0	68.3
Jagalene	82	4	10	1	90	6	1	76	3	59.6	62.4	64.3	71.8
Jerry	36	2	6	1	0	0	8	48	5	61.1	60.4	81.0	77.6
Lyman	32	1	8	1	0	0	2	34	2	61.0	60.7	72.6	72.2
Mace	46	1	4	1	0	0	4	22	1	59.9	60.1	67.4	70.6
Millennium	28	2	8	1	0	0	2	26	2	62.4	62.2	80.1	75.7
Decade	18	1	0	0	22	2	4	72	5	61.1	61.2	75.4	75.2
Overland	20	2	10	1	20	1	4	6	1	61.3	61.5	80.4	80.2
Radiant	18	1	6	1	4	1	4	6	1	61.2	61.8	82.9	83.2
SD05118-1	16	2	8	1	42	2	4	14	1	61.1	62.0	71.3	78.4
SD06069	38	1	4	1	0	0	6	8	1	61.8	62.2	84.5	80.9
SD06158	20	2	8	1	0	0	4	16	1	53.1	57.4	49.1	65.2
Striker	24	1	4	1	76	4	4	18	2	60.4	61.8	72.7	78.0
Wesley	28	1	4	1	0	0	4	16	1	60.7	60.9	71.6	71.6
Yellowstone	30	2	6	1	0	0	8	82	4	56.0	57.7	66.7	75.8
									Mean	60.0	60.9	72.2	75.2

Data collected on June 29, 2010 by Dixie Dennis, NDSU Extension Service IPM Scout.

* Treated with 4 oz/A Onset (tebuconazole) Fungicide on June 24 (flowering).

Note: This data is not replicated. Use data with caution.

2010 Spring Wheat Variety Tolerance to Foliar Diseases at Hettinger

Dixie Dennis, IPM Crops Scout, Dickinson Res. Ext. Center

	Stripe Rust			Leaf Rust		Tan Spot
Variety	Inc*	Sev**	Ralph***	Inc.	Sev.	Sev.
	---------- % of Flag Leaf ----------					
Glenn	76	5	MR	26	7	7
Faller	66	1	S	0	0	8
Briggs	72	7	MS	12	1	5
Steele-ND	92	8	MR	0	0	5
Howard	32	10	MS	0	0	7
RB07	82	3	MS	0	0	7
Mott	74	5	MR	68	4	7
Barlow	52	1	MS	0	0	11
Brenan	82	1	MS	68	1	4
Freyer	0	0		72	2	7
Kelby	72	3		58	2	8
Alsen	26	1		82	2	7
Knudson	74	2		0	0	3
Kuntz	82	3		14	1	7
Reeder	8	3	MR	86	8	6
Choteau	4	1		0	0	10
Tom	78	1	MR	82	2	6
Sabin	0	0	R	88	2	8
Brick	54	2	MS	26	2	5
Jenna	52	4		54	1	4
WB Digger	83	7	S	88	2	4
Brogan	46	1	S	0	0	10
ND901CL	86	4		72	1	7
AP605CL	86	5		0	0	6
Alpine	76	1		82	2	8
Edge	0	0		100	13	6
Blade	82	1		12	1	3
Samson	42	2	S	68	3	6
Vantage	84	5	MR	64	1	5
Breaker	28	2	S	0	0	4
Select	52	3	S	0	0	8

*Incidence = percent of plants with disease.
**Severity = percent of flag leaf with disease.
***Observations by Eric Eriksmoen at Ralph, SD on July 12.
S = susceptible, M = moderate, R = resistant

Date of observations: July 29
Planting Date: April 12
Previous Crop: field pea

2010 Durum Wheat Variety Tolerance to Foliar Diseases at Hettinger

Dixie Dennis, IPM Crops Scout, Dickinson Res. Ext. Center

Variety	Stripe Rust		Leaf Rust		Tan Spot
	Inc*	Sev**	Inc.	Sev.	Sev.
	---------- % of Flag Leaf ----------				
Mountrail	96	11	0	0	7
Alkabo	92	6	0	0	4
Grenora	18	1	12	1	7
Divide	0	0	0	0	4
Tioga	18	1	26	1	6
Grande Doro	48	2	12	1	6
Rugby	94	5	0	0	4
Ben	94	10	0	0	5
Maier	82	2	0	0	4
Lebsock	94	10	0	0	6
Pierce	4	2	0	0	10
Dilse	8	1	16	1	4
DG Star	32	3	0	0	6
DG Max	0	0	14	1	6
Wales	14	1	0	0	5
Westhope	26	1	14	1	8
Alzada	0	0	0	0	7
Strongfield	0	0	0	0	11
AC Commander	0	0	8	1	7
AC Navigator	88	4	0	0	8
CDC Verona	0	0	0	0	6

*Incidence = percent of plants with disease.
**Severity = percent of flag leaf with disease.

Date of observations: July 29
Planting Date: April 19
Previous Crop: Canola

Rancona fungicide seed treatment performance on spring wheat on the Ryan Kadrmas Farm, Dickinson, ND, 2010

Treatment	Plant density	Root Evaluation Vigor	Color[1]	Mass[2]	SCI[3]	Mature plant height	Head density	Grain yield[4]
	ft^{-2}					inches	ft^{-2}	bu/acre
Untreated Check	27.5	100.0	2.4	2.4	2.8	33.0	33.2	47.5
Rancona Pinnacle	30.3	111.3	2.1	2.4	2.6	34.7	33.4	52.0
Dividend Extreme	28.7	105.0	1.7	2.5	2.6	34.4	35.2	49.1
Rancona Crest	26.6	97.5	2.1	2.4	2.3	34.2	36.0	50.7
Rancona Apex	30.4	112.5	1.9	2.3	2.3	32.9	33.1	52.7
Rancona 3.8FS + MetaStar	27.7	101.3	2.0	2.7	2.4	33.3	33.9	51.1
Incentive RTA (I RTA) + Nitro Shield (NS)	27.4	101.3	2.1	2.5	2.2	33.6	35.8	51.1
Mean	28.5	104.2	2.1	2.4	2.4	34.0	34.2	50.6
CV%	17.1	15.16	12.7	16.4	11.9	5.0	15.2	5.8
LSD.05	NS	NS	0.38	NS	NS	NS	NS	NS

[1]Color: 1 = white, 4 = dark.

[2]Mass: 1 = few roots, 4 = many roots

[3]SCI: Subcrown internode rating, 1 - 4, 1 = less than 25% of the internode infected, 2 = 25-50% of the internode infected, 3 = 51-75% of the internode infected, multiple lesions, and 4 = 75-100% of the internode infected, lesions coalesced.

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

Planted 24 May 2010 with Cross-slot no-till plot drill.

Post emergence herbicide and foliar fungicide applied 20 Jun 2010, Unity, Puma, MCP Ester4, BroClean, Tilt.

Harvested 26 Aug 2010.

Root sampling and evaluation 19-23 Jul 2010 by Angie Adsero and Brandi Herauf, Field Assistances.

This study was done in cooperation with Chemtura. Unregistered fungicide treatments are not shown.

Vincit seed treatment performance on hard red spring wheat trial on the Ryan Kadrmas Farm, Dickinson, 2010.

				Root evaluation								
Treat Name	Rate	Vigor	Plant density	Plant length	Stage	Subcrown[1] internode rating	Seminal root count	Crown root count	Mature height	Head density	Test wt	Grain yield
			ft^{-2}	inches	Zadoks		$plant^{-1}$	$plant^{-1}$	inches	ft^{-2}	lb/bu	bu/a
Vincit Minima	3.07	105	27.4	15.5	27.3	1.2	4.1	10.4	31.8	37.2	56.6	52.0
Vincit Minima	6.14	124	30.5	14.9	26.6	1.2	4.6	7.8	30.0	35.0	56.9	45.8
Vincit 5	1.54	96	23.5	15.1	25.8	1.4	4.8	8.3	31.3	38.2	57.6	48.0
Vincit 5	3.07	118	28.9	15.2	26.8	1.4	4.7	9.1	30.1	38.8	56.9	48.0
Vincit Minima + Met T	3.07 + .03	98	23.8	14.5	27.5	1.3	4.6	8.8	31.3	39.2	57.0	52.2
Vincit 5 + Met T	1.54 + 0.3	119	29.2	14.6	27.0	1.3	4.5	9.9	30.7	35.5	57.3	46.8
Raxil MD	5	123	29.5	15.4	27.0	1.2	4.6	9.5	31.1	37.2	57.0	45.2
Untreated		100	24.6	14.8	26.7	1.3	4.4	9.5	31.2	33.8	57.7	45.1
Mean		110	27.2	15.0	26.8	1.3	4.5	9.2	30.9	36.9	57.1	47.9
CV%		12.7	13.5	6.7	2.5	11.8	12.0	9.7	5.7	8.7	1.5	9.6
LSD.05		20.6	NS	NS	1.0	NS	NS	1.3051	NS	NS	NS	NS

[1]Subcrown internode rating 1-4. 1=less than 25% of the internode infected, 2=25 to 50% of the internode infected, 3=50 to 75% of the internode infected, multiple lesions, and 4 = 75 to 100% of the internode infected, lesions coalesced.

Previous crop spring wheat.

Planted 20 May 2010 with Cross-slot no-till plot drill.

Variety is Howard HRSW.

Herbicide and foliar fungicide applied 20 Jun 2010, Unity, Puma, MCP Ester4, BroClean, Tilt.

Root sampling and evaluation performed on 21-25 Jun 2010 by Angie Adsero and Brandi Herauf, Field Assistants.

Harvested 26 Aug 2010.

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

Vincit products are not currently registered in North Dakota.

This study was done in cooperation with Cheminova.

Foliar fungicide trial in cooperation with Bayer CropScience and the Dickinson Research Extension Center on the Miles Hanson Farm, Amidon, ND, 2010.

Treatment Name[a]	I1[b]	S1[b]	I2[c]	S2[c]	I3[d]	S3[d]	Test weight	Yield
	---------- % ----------						lb/bu	bu/acre
Untreated	95	20	100	29	100	42	57.0	43.6
Stratego 4 oz/a 4 to 5 leaf	95	2	100	12	100	17	58.9	49.3
Stratego 8 oz/a Flag leaf	95	14	98	3	98	8	60.2	48.4
Prosaro 6.5 oz/a Flag leaf + NIS 0.125%v/v	100	16	95	3	100	6	59.5	52.0
Prosaro 6.5 oz/a Flowering + NIS 0.125% v/v	100	16	100	17	100	11	60.5	54.3
Stratego 4 oz/a 4 to 5 leaf Prosaro NIS 6.5 oz/a Flowering	98	1	95	6	98	6	59.5	51.4
Mean	97.5	11.3	98.4	12.5	98.7	17.1	58.7	48.3
CV%	6.1	39.2	5.2	55.6	3.8	41.2	2.8	9.7
LSD .05	NS	6.5	NS	10.2	NS	10.4	2.4	6.9

[a]Treatment name includes rate of fungicide application rate and timing.

[b]I = Incidence, percent of plants exhibiting symptoms, S = Severity, percent of leaf area covered with lesions on 21 Jun 2010

[c]I = Incidence, percent of plants exhibiting symptoms, S = Severity, percent of leaf area covered with lesions on 9 Jul 2010

[d]I = Incidence, percent of plants exhibiting symptoms, S = Severity, percent of leaf area covered with lesions on 16 Jul 2010

Fusarium Head Blight symptoms not found.

Strip rust and leaf rust symptoms found

Previous crop spring wheat.

Hard red spring wheat variety, Howard, planted 26 Apr, 2010

Fungicide application dates, 4 to 5 leaf = 13 Jun 2010, Flag leaf = 30 Jun 2010, Flowering = 9 Jul 2010

Harvest, 17 Aug 2010.

No crop injury observed during this trial.

Foliar fungicide trial in cooperation with the Syngenta and the Dickinson Research Extension Center on the Miles Hanson Farm, Amidon, ND, 2010.

Treatment Name[a]	Rate oz/acre	I1	S1	I2	S2	I3	S3	Test wt lb/bu	Yield bu/acre
		---------- % ----------							
Untreated Check		100	29	100	33	100	35	57.8	44.4
Quilt Xcel FGS2	7.5	30	2	100	8	100	20	59.4	47.5
Quilt FGS2	7	100	9	95	4	98	17	60.7	50.6
Tilt FGS2	2	68	4	90	8	100	18	57.2	45.0
Tilt + Warrior FGS2	2 + 1.28	50	3	60	8	100	17	57.7	49.0
Tilt FGS2 + Quilt FGS8	2 + 14	78	2	88	6	68	2	61.1	52.3
Quilt FGS8	14	93	17	100	17	48	1	60.8	50.7
Quilt Xcel FGS8	10.5	93	15	83	1	53	1	60.4	47.7
Quilt + Warrior FGS2	7 + 1.28	90	18	95	8	100	16	57.6	46.7
Stratego FGS2	4	98	10	95	5	100	23	57.8	43.1
Mean		79.8	9.5	9.05	9.7	8.7	14.9	59.0	47.7
CV%		11.9	67.1	17.9	85.4	21.2	45.9	3.1	5.7
LSD .05		13.8	9.2	23.6	12.0	26.6	9.9	2.6	4.0

[a]Treatment name, FGS2 = Feekes Growth Stage 2, tillering, FGS8 = Feekes Growth Stage 8, Flag leaf.

[b]I1 = Incidence, percent of plants exhibiting symptoms, S1 = Severity, percent of leaf exhibiting lesions on 21 Jun 2010.

[c]I2 = Incidence, percent of plants exhibiting symptoms, S2 = Severity, percent of leaf exhibiting lesions on 9 Jul 2010.

[d]I3 = Incidence, percent of plants exhibiting symptoms, S3 = Severity, percent of leaf exhibiting lesions on 16 Jul 2010.

Previous crop was spring wheat.

Variety seeded 26 April 2010 was Howard.

Fungicide application dates, 4 to 5 leaf = 13 Jun 2010, Flag leaf = 30 Jun 2010.

Harvest, 17 Aug 2010.

No crop injury observed during this trial.

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

Previous research at Dickinson has compared spring wheat variety performance when preceded by corn, field pea, and wheat. 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. Preliminary results indicate that preceding barley with corn tended to result in fewer spikes and less grain per acre than preceding barley with canola, field pea, or spring wheat. Differences in barley performance were not detected for any parameter considered when preceded by canola, corn, and field pea. , wit that barley variety selection affected each of the traits that were measured more : (1) barley variety performance across different tillage systems; and (2) the impact of previous crop on subsequent barley performance. Barley variety selection had a significant impact on each parameter considered.

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

	Plant count	Days to heading	Spike density	Plant height	Yield	Test weight	Moisture
	-no./ft^2-	-d-	-Spikes/ft^2-	-in-	-bu/ac-	-lb/bu-	-%-
Previous Crop							
Canola	18	64	17	34	90	48.0	9.6
Corn	15	65	15	31	70	45.7	9.3
Field pea	17	63	17	32	95	47.9	10.2
Spring Wheat	17	64	16	33	86	48.3	10.0
LSD 0.05	NS	NS	1.8	1	7	NS	NS
Barley varieties							
Conlon	16	60	20	32	74	48.8	9.9
Conrad	16	74	24	31	90	46.6	9.4
Lacey	16	62	12	32	88	47.9	9.8
Pinnacle	16	65	18	33	86	47.5	11.1
Stellar-ND	15	62	12	33	89	46.2	8.6
Tradition	22	63	12	33	84	48.2	9.7
LSD 0.05	2	1	2	1	6	0.9	1

Table 1-2. Tillage Systems by Barley Variety Trial, NDSU Dickinson Research Extension Center 2009-2010

	Surface residue			Days to heading			Plant height		
	2009	2010	Average	2009	2010	Average	2009	2010	Average
Tillage system	-%-			-d-			-in-		
Conventional	8	14	11	55	57	56	30	29	30
Reduced	-	39	-	-	58	-	-	29	-
No-till	73	67	70	56	59	58	29	29	29
LSD 0.05	57	13	-	NS	1	-	NS	NS	-
Barley varieties									
Conlon	41	51	46	52	53	53	30	30	30
Conrad	45	50	48	58	68	63	26	27	27
Lacey	-	29	-	55	57	56	30	29	30
Pinnacle	-	-	-	56	56	56	31	29	30
Stellar-ND	-	29	-	56	57	57	30	29	30
Tradition	-	-	-	55	56	56	30	30	30
LSD 0.05	NS			1	1	-	2	1	-

	Spike density			Grain yield			Grain test weight		
	2009	2010	Average	2009	2010	Average	2009	2010	Average
Tillage system	-Spikes/ft^2-			-bu/acre-			-lb/bu-		
Conventional	42	33	38	107	58	83	49	44	46
Reduced	-	32	-	-	67	-	-	45	-
No-till	40	31	36	99	63	81	48	47	47
LSD 0.05	NS	NS	-	NS	NS	-	NS	1	-
Barley varieties									
Conlon	51	40	46	105	58	81	50	48	49
Conrad	56	40	48	121	62	91	50	45	48
Lacey	24	24	24	87	65	76	49	45	47
Pinnacle	51	35	43	121	67	94	48	45	46
Stellar-ND	30	23	27	86	60	73	46	44	45
Tradition	32	29	31	97	63	80	49	46	48
LSD 0.05	11	4	-	12	5	-	1	1	-

2010 Prepare Herbicide + Glyphosate on Winter Wheat

Eric Eriksmoen, Hettinger, ND

Pre-plant treatments (PP) were applied on October 8 with 41^{o} F, 36% RH, clear sky and NW wind at 6 mph. Downy brome (dobr) and Japanese brome (jabr) were not emerged. 'Jerry' HRWW was seeded on October 17, 2009 into cool dry soil. Fall post-emergence treatments (FPOST) were applied on November 5 to winter wheat that was about 25% emerged (spike) and to 2 leaf downy brome with 46^{o} F, 24% RH, partly cloudy sky and south wind at 7 mph. Winter wheat survival was excellent. Early spring post-emergence treatments (SPOST) were applied on April 10 to 2 leaf winter wheat and to tillering downy brome and 2 leaf Japanese brome with 46^{o} F, 24% RH, clear sky and north wind at 7 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 trial was a randomized complete block design with four replications. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. Downy brome populations averaged 3 / ft^2 at FPOST and 5 /ft^2 at SPOST. Japanese brome populations averaged 3 / ft^2 at SPOST. Plots were evaluated for crop injury and weed control on May 3, June 8 and July 27. Plant height was measured on June 24, shortly after heading. The trial was harvested on August 2.

Summary

Crop injury was relatively minor except for treatments with PowerFlex (trts 10-12) which caused crop thinning and delayed maturity. The addition of ARY-0454-110 pre-plant (trt 3) significantly improved season long control of Japanese brome and downy brome compared to pre-plant glyphosate alone (trt 2). Glyphosate + PrePare (trt 4) applied pre-plant provided very good season long control of Japanese brome but only marginal season long control of downy brome. The lower rate of ARY-0454-104 applied as a fall split application (trt 5) provided very good season long control of both Japanese and downy brome. All fall / spring split applications with PrePare applied in the fall (trts 7–11) provided excellent season long control of both Japanese and downy brome. There were no statistical differences between treatments for plant height. Herbicide treatment test weights tended to be significantly higher than the untreated check. All herbicide treatments had higher grain yields than the untreated check although none were statistically different.

	Treatment	Product rate	App. timing	- May 3 - inj	dobr	- June 8 - inj	dobr	----- July 27 ----- inj	jabr	dobr	Plant height	Test weight	Grain Yield
		oz/A		---------- % Control ----------							cm	lbs/bu	bu/A
1	Untreated			0	0	0	0	0	0	0	74	55.7	37.4
2	Glyphosate + AMS	11 + 1lb	PP	0	25	0	0	0	67	0	79	56.5	50.3
3	Glyphosate + AMS + ARY-0454-110	11 + 1lb + 0.52	PP	4	97	15	91	5	99	97	72	57.5	47.3
4	Glyphosate + AMS + PrePare	11 + 1 lb + 0.306	PP	0	80	1	42	0	92	82	72	56.6	48.7
5	Glyphosate + AMS + PrePare / ARY-0454-104 + Basic Blend (BB)	11 + 1 lb + 0.306 / 0.61 + 1%	PP / FPOST	0	92	1	80	0	94	91	78	57.1	57.0
6	Glyphosate + AMS / ARY-0454-104 + BB	11 + 1 lb / 1.22 + 1%	PP / FPOST	0	94	0	65	0	96	60	79	56.8	51.0
7	Glyphosate + AMS + PrePare / ARY-0454-104 + Basic Blend	11 + 1 lb + 0.306 / 0.61 + 1%	PP / SPOST	0	97	2	94	2	99	97	74	56.5	50.6
8	Glyphosate + AMS + PrePare / ARY-0454-104 + Metsulfuron 60 + BB	11 + 1 lb + 0.306 / 0.61 + 0.05 + 1%	PP / SPOST	1	97	2	96	6	99	94	73	57.1	47.5
9	Glyphosate + AMS + PrePare / ARY-0454-104 + ARY-0546-001 + ARY-0547-001 + BB	11 + 1 lb + 0.306 / 0.61 + 0.225 + 0.075 + 1%	PP / SPOST	2	99	1	88	0	97	94	77	57.1	50.6
10	Glyphosate + AMS + PrePare / PowerFlex + BB	11 + 1 lb + 0.306 / 1.75 + 1%	PP/ SPOST	10	99	4	94	1	98	96	76	56.8	48.9
11	Glyphosate + AMS + PrePare / PowerFlex + BB	11 + 1 lb + 0.306 / 3.52 + 1%	PP / SPOST	39	99	12	99	11	99	98	72	57.1	48.0
12	Glyphosate + AMS / PowerFlex + BB	11 + 1 lb / 3.52 + 1%	PP / SPOST	8	99	0	82	0	99	81	70	57.4	52.1
	C.V. %			152	15	130	20	166	11	13	9	1.1	13.1
	LSD 5%			12	17	6	20	5	14	14	NS	0.9	NS

NS = no statistical difference between treatments.

2010 Rimfire Max on Winter Wheat, Eric Eriksmoen, Hettinger, ND

'Jerry' HRWW was seeded on October 17, 2009 into cool dry soil. Fall pre-emergence treatments (PRE) were applied on October 25 with 37° F, 64% RH, clear sky and NW wind at 5 mph to 1 leaf downy brome (dobr). Winter wheat survival was excellent. Spring post-emergence treatments (SPOST) were applied on May 23 to 4 leaf winter wheat and to downy brome in the late boot stage and tillering Japanese brome with 68° F, 39% RH, mostly clear sky and SE 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 trial was a randomized complete block design with four replications. The soil is classified as a silt-loam with a pH of 6.2 and OM of 3.2%. Downy brome populations averaged 7 / ft^2 in the fall and 10 /ft^2 in the spring. Japanese brome, Persian darnel and wild oat populations averaged 2, 0.8 and 0.5 / ft^2 respectively. Plots were evaluated for crop injury and weed control on May 3, June 8, June 24 and July 28. The trial was harvested on August 2.

		Product	App.	- May 3 -		- June 8 -		--------- June 24 ---------				---------- July 28 ----------					Test	Grain
	Treatment	rate	timing	inj	dobr	inj	dobr	inj	jabr	wiot	peda	inj	dobr	jabr	wiot	peda	weight	yield
		oz/A		---------- % Control ----------													lbs/bu	bu/A
1	Untreated			0	0	0	0	0	0	0	0	0	0	0	0	0	55.4	46.2
2	Olympus + NIS	0.6 + 0.5%	PRE	0	82	0	73	0	71	94	66	0	93	99	0	0	55.1	46.1
3	Olympus + NIS	0.9 + 0.5%	PRE	0	92	0	87	0	87	83	50	0	91	99	60	0	56.5	50.6
4	Rimfire Max + MSO	3.0 + 20	PRE	0	84	0	60	0	40	66	0	0	71	72	37	0	54.2	47.4
5	Olympus + NIS / Rimfire Max + MSO	0.6 + 0.5% / 3.0 + 20	PRE / SPOST	5	90	9	97	3	98	99	99	0	98	99	90	99	56.4	48.3
6	Olympus + NIS / Rimfire Max + MSO	0.9 + 0.5% / 3.0 + 20	PRE / SPOST	0	90	10	96	5	99	99	99	0	97	99	99	99	56.6	48.4
7	Rimfire Max + MSO	3.0 + 20	SPOST	0	0	1	92	0	84	99	87	0	96	99	99	50	57.1	51.3
8	Osprey+ NIS+ UAN	4.75+0.5%+64	SPOST	0	0	0	94	0	82	99	99	0	84	94	96	99	56.2	53.6
9	PrePare + NIS / Everest + NIS	0.3 + 0.5% / 0.3 + 5%	PRE / SPOST	0	92	0	85	0	70	99	0	0	92	99	99	0	56.1	49.4
	C.V. %			342	11	284	24	398	34	19	44	275	16	11	53	--	1.6	15.6
	LSD 5%			3	9	NS	27	NS	35	22	35	NS	18	13	47	--	1.3	NS

NS = no statistical difference between treatments.

Summary

Crop injury was relatively minor or non-existent except for Olympus / Rimfire Max split applications (trts 5 & 6) which caused crop stunting. Fall applied Olympus (trts 2 & 3) provided excellent season long control of downy and Japanese brome but did not provide season long control of wild oats or Persian darnel. Fall applied Rimfire Max (trt 4) provided marginal control of downy and Japanese brome, poor control of wild oat and no control of Persian darnel. Olympus/Rimfire Max split applications (trts 5 & 6) provided excellent season long control of downy & Japanese brome, wild oat and Persian darnel. Spring applied Rimfire Max (trt 7) provided excellent season long control of downy brome, Japanese brome and wild oat but only marginal season long control of Persian darnel. Spring applied Osprey (trt 8) provided excellent season long control of Japanese brome, wild oat and Persian darnel but was a little weak at controlling downy brome. PrePare / Everest split application (trt 9) provided very good season long control of downy brome, Japanese brome and wild oats but did not control Persian darnel.

2010 Evaluation of Weed Control with Rimfire Max on Spring Wheat

Eric Eriksmoen, Hettinger, ND

'Howard' HRSW was seeded on April 15. Treatments were applied on May 23 to 3 leaf wheat and to jointing downy brome (dobr), tillering Japanese brome (jabr), 4 leaf wild oat (wiot) and 2 leaf Persian darnel (peda) with 62° F, 55% RH, mostly sunny sky and east 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 four replications. Weed populations for downy brome, Japanese brome, wild oat and Persian darnel were 4, 12, 0.5 and 0.5 plants per square foot, respectively. Plots were evaluated for crop injury on June 1 and June 14, and for weed control on June 14, July 1 and July 28. The trial was harvested on August 9.

			6/1	June 14		------- July 1 -------			---------- July 28 ----------				Test	Grain
	Treatment	Product rate	inj	inj	dobr	jabr	peda	wiot	wiot	dobr	jabr	peda	weight	yield
		oz/A	---------- % Control ----------										lbs/bu	bu/A
1	Untreated		0	0	0	0	0	0	0	0	0	0	55.1	30.2
2	Rimfire Max + Huskie + MSO*	3.0 + 11 + 24	2	0	65	81	99	99	99	70	99	99	57.7	48.4
3	Rimfire Max + Huskie + BB*	3.0 + 11 + 1%	0	0	59	70	99	96	99	50	99	99	58.3	47.8
4	Rimfire Max + Huskie + HSOC*	3.0 + 11 + 12	1	0	74	79	99	69	96	86	99	99	58.1	47.4
5	Rimfire Max + Bro. Adv. + BB	3.0 + 12.8 + 1%	3	0	72	76	99	99	99	58	99	99	58.9	51.7
6	Rimfire Max+Affinity TM+Starane+BB	3.0+0.6+5.28+1%	2	0	40	62	15	76	66	38	98	0	58.3	42.9
	C.V. %		160	0	20	18	13	33	30	38	1	0	3.3	7.5
	LSD .05		NS	NS	15	17	16	38	36	29	1	1	NS	5.1

* MSO = methylated seed oil, BB = basic blend, HC = high surfactant oil concentrate NS = no statistical difference between treatments

Summary

Crop injury was minimal when observed and quickly diminished. All herbicide treatments provided excellent season long control of Japanese brome, wild oats and Persian darnel with the exception of Rimfire Max + Affinity TM + Starane (trt 6) which appeared to have antagonistic effects on grassy weed control resulting in a lower grain yield than the other herbicide treatments. It appears that HSOC (trt 4) enhanced downy brome control by Rimfire Max + Huskie compared to other adjuvants (trts 2 & 3). Rimfire Max provided only marginal control of downy brome.

2010 Evaluation of Broadleaf Herbicides on Spring Wheat

Eric Eriksmoen, Hettinger, ND

'Howard' HRSW was seeded on April 15. Treatments were applied on May 31 to 4 leaf wheat and to1" kochia (kocz), 2" Russian thistle (ruth), 6" field bindweed (fibw), 4 leaf wild buckwheat (wibw) and to 4 leaf volunteer Roundup Ready canola (vcan) with 63° F, 61% RH, sunny sky and south wind at 4 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 trial was over-sprayed on June 5 with 16 oz/A Axial XL to control grassy weeds. 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, field bindweed, wild buckwheat and volunteer canola were 50+, 12, 0.75, 0.75 and 2 plants per square foot, respectively. Plots were evaluated for crop injury on June 7 and June 15, and for weed control on June 15, July 1 and July 29. The trial was harvested on August 2.

		Product	6/7	June 15					July 1			
	Treatment	rate	inj	inj	kocz	ruth	fibw	wibw	vcan	kocz	ruth	fibw	vcan
		oz/A	% control										
1	Untreated		0	0	0	0	0	0	0	0	0	0	0
2	Wolverine	27.4	0	0	85	90	58	80	91	92	94	63	99
3	WideMatch + MCPA	12 + 8	0	0	89	84	90	89	92	92	96	97	99
4	Orion	17	0	0	71	84	50	75	92	50	30	96	98
5	GoldSky + NIS	16 + 0.25%	0	0	90	90	76	78	90	92	95	91	99
	C.V. %		0	0	10	5	29	16	3	4	17	23	1
	LSD .05		NS	NS	11	6	24	16	3	4	16	25	1

NS = no statistical difference between treatments

			July 29			Test	Grain
	Treatment	Product rate	kocz	ruth	fibw	weight	yield
		oz/A	% control			lbs/bu	bu/A
1	Untreated		0	0	0	58.5	49.3
2	Wolverine	27.4	84	99	45	57.5	53.0
3	WideMatch + MCPA	12 + 8	92	96	88	58.9	47.8
4	Orion	17	26	50	96	59.0	48.1
5	GoldSky + NIS	16 + 0.25%	90	90	68	56.2	53.6
	C.V. %		21	8	36	2.4	8.4
	LSD .05		19	8	33	NS	NS

NS = no statistical difference between treatments

Summary

Crop injury was not observed. All herbicide treatments provided excellent control of volunteer canola. Wolverine (trt 2) provided excellent season long control of Russian thistle but only marginal control of wild buckwheat and kochia, and poor control of field bindweed. WideMatch + MCPA (trt3) provided excellent season long control of kochia, Russian thistle and wild buckwheat, and good control of field bindweed. Orion (trt 4) provided excellent season long control of field bindweed but only marginal control of kochia, Russian thistle and wild buckwheat. GoldSky (trt 5) provided excellent season long control of kochia and Russian thistle but only marginal control of wild buckwheat and field bindweed. There were no statistical differences for test weight or grain yield between treatments.

North Dakota State University Soil Moisture and Temperature Monitoring with Varying Crop Residue Conditions

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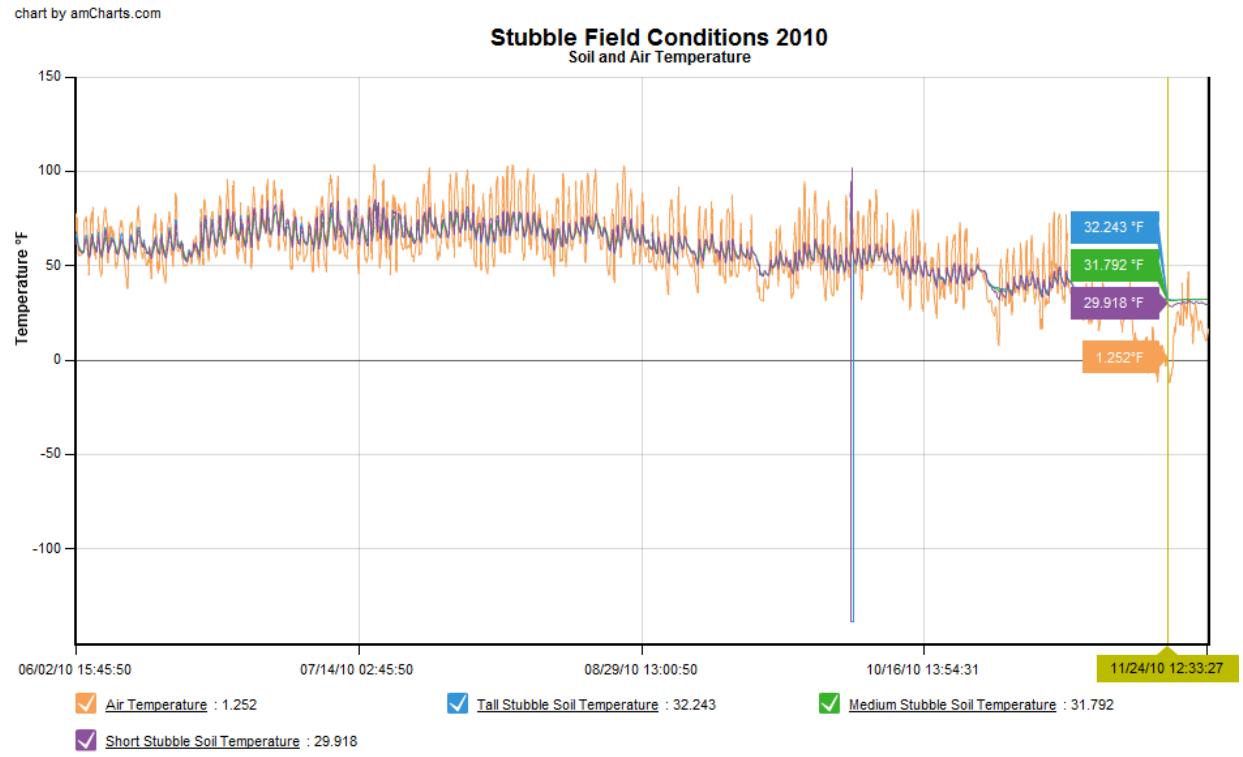
There are misconceptions on the part of producers and some researchers as to how heat and moisture are transferred from atmosphere to soils and from soils to atmosphere in an agronomic setting. Also misconceptions on the rate of drying and heating of soils under intact standing residue configurations in a no-till environment are cited as reasons for reducing residue to short lengths or even powder. Because of these misconceptions there has been excessive tillage, especially in the eastern portion of the state, harvest equipment that "shaves" the ground requiring straw to be chopped into short lengths and spread over the width of the header and post-harvest tillage operations that do little in terms of spreading residue while increasing costs. The North Dakota Agricultural Network (NDAWN) monitors soil temperature under turf and bare soil conditions at the four inch depth but does not necessarily represent commonly used or potentially used residue and seeding management scenarios. The purpose of the Residue Management Monitoring program is to provide producers a real time window to see how moisture and temperature changes under three different residue management systems used in no-till cropping systems function in three ND locations. The three locations are Fargo, Jamestown and Beach. Instrumentation installed at each location monitors rainfall, wind speed, air temperature for the site as well as soil moisture (0-6 inches) and temperature at seeding depth (1 ½ inches) under the three residue management scenarios. The residue management scenarios are short residue (4 inches), medium height residue (12 inches) and stripped residue (90 percent of mature plant height or about 30 inches).

A NDSU website will provide producers a "front row seat" to observe soil moisture and temperature changes under different crop residue configurations. With this knowledge producers will have an opportunity to make more informed decisions about residue management and planting equipment. The website address is http://www.ageng.ndsu.nodak.edu/farmmonitor/index.php

Golden Valley County Stubble Field Conditions



Notes

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