

TWENTY THIRD  
ANNUAL

AG. REPORT NO. 23



# WESTERN DAKOTA

## CROPS DAY RESEARCH REPORT



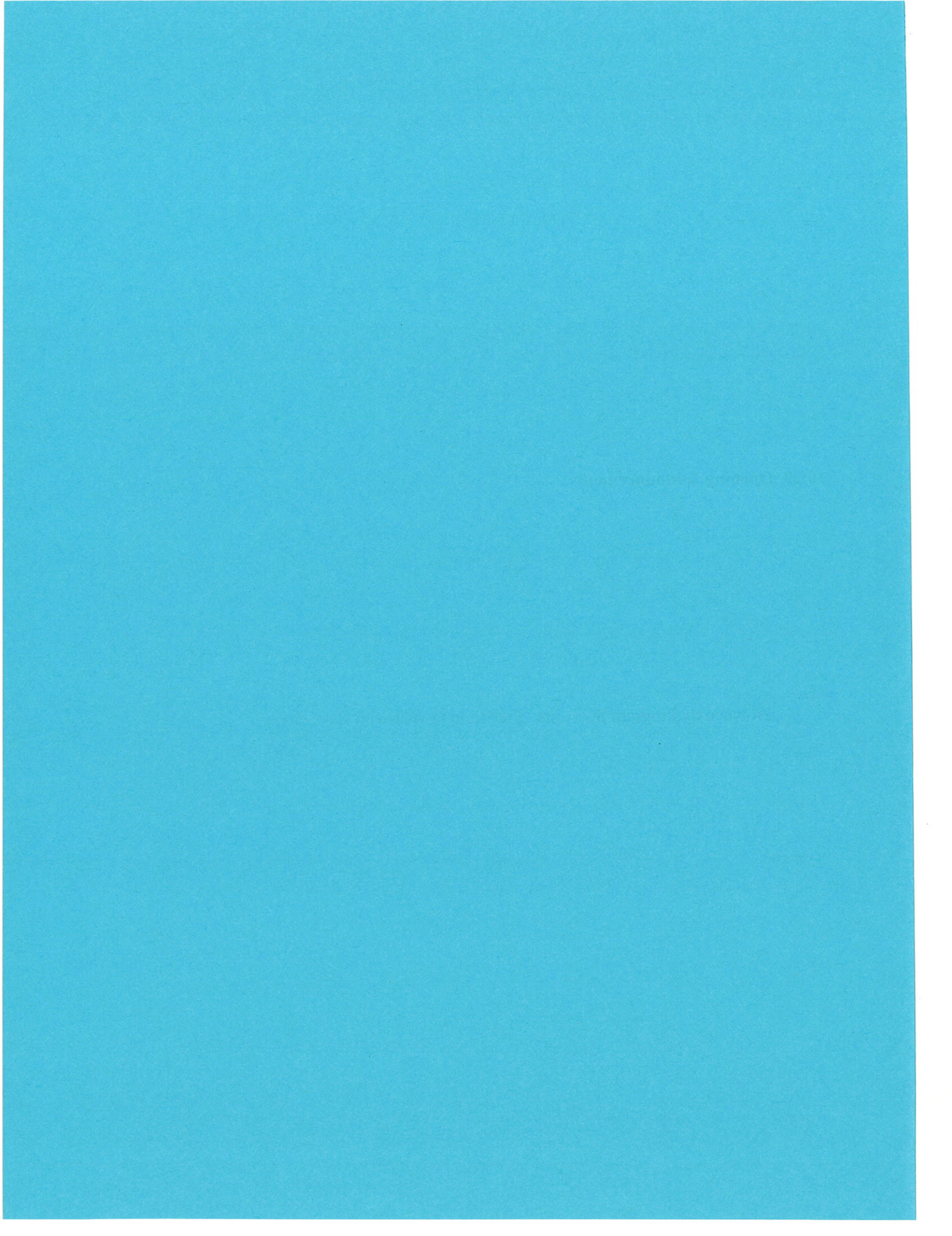
HETTINGER ARMORY  
DECEMBER 7, 2006

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# **23<sup>rd</sup> Annual Western Dakota Crops Day**

## **December 7, 2006**

### **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**

**10:20 Opening Announcements**

**10:30 Crop Variety Updates and Highlights of Ongoing Crop Production Research**

Dr. Pat Carr, Agronomist, NDSU Dickinson Research Extension Center

John Rickertsen, SDSU West River Ag Center, Rapid City

Eric Eriksmoen, 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 Grass Weed ID and Control of Problem Weeds, Dr. Brian Jenks, Extension Weed Specialist, NDSU North Central Research Extension Center, Minot.**

**2:10 Improving Soil Health in Semiarid Cropping Systems, Dr. Mark Leibig, Soil Scientist, USDA – ARS, Mandan.**

**2:50 Conclusion**

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



# Acknowledgments

The Hettinger and Dickinson Research Extension Centers gratefully acknowledge and thank 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.

## 2006 Western Dakota Crops Day Sponsors

Hettinger Area Chamber of Commerce	Pioneer HiBred International
North Dakota Grain Growers Assn.	Nutech Seed
AgriPro Wheat	Farm Credit Services of Mandan
Philom Bios	Minn - Dak Growers, Ltd.
Monsanto	Premier Pulses International, Inc.
North Dakota Farmers Union	West Dakota Feed & Seed
Dekalb / Interstate Seed	Proseed, Inc.
Northern Pulse Growers Assn.	Arysta LifeSciences
Archer Daniels Midland Co.	BASF Corp.
REA Hybrids	North Dakota Barley Council
Helena Chemical Company	Pulse USA

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.

Daryl Birdsall, New Leipzig  
Neal and Justin Freitag, Scranton  
August and Perry Kirschmann, Regent  
Nick Vollmuth, Selfridge  
Dale Anderson, Reeder  
USDA – ARS Northern Great Plains Research Center, Mandan  
Larry Willnow, Regent  
Roger Ashley, Dickinson Research Extension Center  
Roger Rosenow, Ralph, SD  
John Rickertsen, SDSU West River Ag Center, Rapid City  
Dick Rolland, Legume Logic, Wilton  
Blake VanderVorst, Ducks Unlimited, Bismarck  
Duane Boehm, Richardton  
Keith Gietzen, Glen Ullin  
Pat Doll, Hannover

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# Interpreting Statistical Analysis

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

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

One of these tools is the Coefficient of Variability (C.V.). This statistic gives an indication of the amount of variation in an experimental trial and is a measure of the precision or effectiveness of the trial and the procedures used in conducting it. Attempts are made to control human error and some environmental conditions such as soil variability by replicating the variable in question. For example, there were four plots (replications) of the variety Reeder 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 2006 Hettinger HRSW variety trial was 7.3 meaning that there was a 7.3 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.



2006 Weather Summary for the Dickinson Research Extension Center, Dickinson, ND.

Month	-----Maximum temp.-----		-----Minimum temp.-----		-----Precipitation -----		-----Small grains GDD <sup>1</sup> -----		-----Corn GDD <sup>2</sup> -----	
	Long Term 1897 - 2005	Current Year	Long Term 1897 - 2005	Current Year	Long Term 1897 - 2005	Current year	Long Term 1897 - 2006	Current year	Long Term 1897 - 2006	Current year
	°F		°F		inches					
November - 05	39.8	43.7	16.8	22.9	0.52	1.12				
December - 05	27.8	28.2	5.8	9.1	0.39	0.44				
January	22.8	38.1	-0.1	18.7	0.50	0.27				
February	27.1	31.0	3.9	9.0	0.40	0.09				
March	37.9	39.4	14.9	17.8	0.74	1.00				
April	54.7	62.7	28.4	32.8	1.43	2.51	346	509	254	300
May	66.2	68.5	39.1	40.5	2.29	2.08	645	707	382	456
June	75.0	78.7	49.0	51.0	3.60	0.68	900	980	585	674
July	83.4	90.8	54.2	58.3	2.20	1.33	1143	1306	530	585
August	82.4	84.9	51.6	54.3	1.73	1.07	1084	1166	319	280
September	71.2	68.2	41.0	40.9	1.38	1.86	724	685		
October	57.6	53.2	30.0	26.3	0.97	1.47				
Mean	53.8	57.3	27.9	31.8						
Total					16.16	13.92	4842	5353	2069	2294

<sup>1</sup> Small grains GDD, is growing degree days calculated with 95°F as the maximum temperature and 32°F as the base temperature.

<sup>2</sup> Corn GDD, is growing degree days calculated with 86°F as the maximum 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, Area Extension Agronomist; and Sheri Schneider, Information Processing Specialist.

# 2006 Growing Conditions

## Hettinger Research Extension Center

The 2006 growing season was again challenging. Over 3 ½ inches of Fall precipitation was received, with most of that being received in October. Winter wheat went into dormancy in fair condition with minimal fall growth. The winter months were generally dry and mild with little snow cover after mid-January. Daily high temperatures were in the 40's and 50's in January causing winter wheat to break dormancy and causing problems with winter survival as bitterly cold temperatures returned in mid-February. A snow storm during the last week of March swept through the western Dakota's leaving deep snow to the west of Hettinger and diminishing to the east. The moisture associated with this storm would play an important roll later in the growing season with the return of dry conditions. Bowman county had relatively good crops whereas Sioux county had areas where the small grain crops died prior to heading out.

The growing season started off with an abundance of moisture and generally ideal growing conditions. Cool season crops progressed nicely through June. July was very hot and dry with average daily high temperatures of 94 degrees. These conditions retarded kernel fill in small grain crops and caused blossom abortion and poor seed fill in many cool season broadleaf crops (canola & field peas). Warm season crops tended to grow very well under these conditions and progressed nicely through their vegetative growth cycle. As these crops moved into their heavy water using reproductive stages and a lack of rainfall persisted, these crops also deteriorate. Areas that received localized thunderstorms tended to recover and had respectable yields.

White sterile wheat heads caused by wheat stem maggot were again prevalent throughout the Western Dakota's but tended to be less noticeable than the previous year. Wheat stem sawfly is continuing to increase in both intensity and area and is quickly becoming a major production problem in wheat. Sunflower stem weevil decimated the Hettinger variety trial. Foliar diseases were generally not a problem this year.

Most trials at the Hettinger Research Center were grown under a no-till system. Broadleaf crop trials were typically planted into small grain stubble and small grain trials were typically planted into soybean 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 rhizobia inoculant prior to seeding.

HRSW, durum and barley trials were treated post-emergence for both grassy weeds (foxtails and 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 either a pre-emergence or 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 12	May 15	May 18
Date of first frost	Sept. 28	Sept. 19	Sept. 20
Frost free days	139	127	125

## Weather Data Summary - Hettinger

Precipitation					
Precipitation (inches)	2002 - 03	2003 - 04	2004 - 05	2005 - 06	51 Year Average
Sept. - Dec.	1.49	6.88	4.41	3.68	3.30
Jan. - March	3.83	1.83	0.98	2.34	1.41
April	1.38	0.54	0.75	2.12	1.63
May	3.18	1.00	2.30	0.97	2.58
June	1.99	0.46	5.10	2.53	3.35
July	0.37	3.43	1.31	0.58	2.06
August	0.44	1.13	1.38	1.75	1.63
<b>Total</b>	<b>12.60</b>	<b>15.27</b>	<b>16.23</b>	<b>13.97</b>	<b>15.96</b>

Air Temperature						
Average Temperature F°	2002	2003	2004	2005	2006	51 Year Average
April	40.2	46.7	45.4	45.5	47.8	42.8
May	49.6	52.9	51.3	50.7	55.6	53.9
June	65.4	60.2	59.5	64.0	65.2	63.3
July	76.2	72.4	69.2	71.9	77.3	70.0
August	67.5	73.7	63.4	68.0	71.3	68.9
September	61.1	57.6	60.2	60.4	56.4	57.6

Growing Degree Units - Corn						
Growing Degree Units (50-86)	2002	2003	2004	2005	2006	34 Year Average
May	245	212	242	226	323	266
June	476	349	371	430	465	423
July	707	612	558	609	678	586
August	549	655	441	513	593	538
September	387	294	335	388	276	311
<b>Total</b>	<b>2364</b>	<b>2186</b>	<b>1947</b>	<b>2166</b>	<b>2335</b>	<b>2124</b>



2006 North Dakota hard red spring wheat variety description table, agronomic traits.

Variety	Agent or Origin <sup>1</sup>	Year Released	Beard	Height	Straw Strength	Maturity	Reaction to Disease <sup>2</sup>				
							Stem Rust	Leaf Rust	Foliar Disease	Root Rot	Head (Scab)
2375	NDSURF	1990	yes	sdwf	med	m.early	R-MR	S	S	M	MS
AC Amazon	Can	2001	no	med/tall	med	med	R	S	MS	NA	MS
AC Intrepid	Canterra	1999	no	med	med	med	R	MR	MS	M	S
AC Snowbird <sup>3</sup>	Can	2001	no	sdwf	strg	med	R	R	S	NA	S
AC Superb	Can	2001	yes	sdwf	strg	m.early	R	S	S	M	S
<b>Ada</b>	<b>MN</b>	<b>2006</b>	<b>yes</b>	<b>sdwf</b>	<b>strg</b>	<b>med</b>	<b>R</b>	<b>MR</b>	<b>MS</b>	<b>NA</b>	<b>MS</b>
Alsen	ND	2000	yes	sdwf	strg	m.early	R	MR	S	M	MR
Amidon	ND	1988	yes	med	med	med	R	MR	M	MR	S
Argent <sup>3</sup>	ND	1998	yes	sdwf	strg	early	R	S	S	M	S
Aurora	N. Star G.	1999	yes	sdwf	strg	m.early	R	NA	S	NA	S
Banton	Trigen	2004	yes	sdwf	strg	m.early	R	NA	MS	NA	S
Bigg Red	WestBred	2004	yes	sdwf	med	med	R-MR	MS-S	MS	NA	MR
Briggs	SD	2002	yes	sdwf	strg	m.early	R-MR	R	MS	S	S
Choteau	MT	2004	yes	sdwf	NA	m.early	NA	NA	NA	NA	NA
Dapps	NDSU	2003	yes	sdwf	med	m.early	R	R	M	M	MS
Express	WestBred	1991	yes	sdwf	strg	med	R	S	MS	NA	VS
Freyr	AgriPro	2004	yes	sdwf	strong	med	R	MR	MS	NA	MR
Glenn	ND	2005	yes	sdwf	strong	m.early	R	R	M	NA	MR
Glupro	ND	1995	yes	tall	med	m.late	R	MS	S	NA	VS
Grandin	ND	1989	yes	sdwf	strg.	early	R	S	S	M	S
Granger	SD	2004	yes	sdwf	m.strg.	m.early	R	R	MS	NA	MS
Granite	WestBred	2002	yes	sdwf	v.strg	m.late	R-MR	MR	S	NA	MS
Gunner	AgriPro	1995	yes	med	m.strg.	med	R-MR	S	M	S	M
Hanna	AgriPro	2002	yes	med	med	m.early	MR	MS/MR	MS	MS	MS
HJ98	MN	1998	yes	sdwf	strg.	m.early	R	S	MS	MR	S
<b>Howard</b>	<b>ND</b>	<b>2006</b>	<b>yes</b>	<b>sdwf</b>	<b>strg.</b>	<b>med</b>	<b>R</b>	<b>R</b>	<b>M</b>	<b>NA</b>	<b>M</b>
Ingot	SD	1998	yes	sdwf	med	early	R	S	S	M	MS
<b>Kelby</b>	<b>AgriPro</b>	<b>2006</b>	<b>yes</b>	<b>sdwf</b>	<b>strg.</b>	<b>med</b>	<b>MR</b>	<b>R</b>	<b>NA</b>	<b>NA</b>	<b>MR</b>
Keystone	WPB	2001	yes	med	med	m.early	R	MR	S	S	MS
Knudson	AgriPro	2001	yes	sdwf	strg	med	MR	MR	MR	MS	M
Lolo <sup>3</sup>	Idaho	1999	yes	med	med	med	R	R	S	NA	S
McNeal	MT	1995	yes	med	strg.	m.early	MS	S	M	M	VS
Mercury	N. Star G.	1999	yes	sdwf	strg.	m.early	R	MS	S	S	S
Norpro	AgriPro	1999	yes	sdwf	strg	med	R	MS/MR	M	M	S
Oklee	MN	2003	yes	sdwf	med	m.early	R	MS	MR	NA	M
Outlook	MT	2002	yes	sdwf	strgt	m.early	NA	NA	NA	NA	NA
Oxen	SD	1996	yes	sdwf	strg.	m.early	MR	MS	S	MS	S
Parshall	ND	1999	yes	med	strg.	m.early	MR	MS	M	MS	M
Polaris	N. Star G.	2003	yes	med	strg.	late	NA	NA	MS	NA	S
Reeder	ND	1999	yes	sdwf	strg.	m.early	R	MS	S	M	S
<b>Rush</b>	<b>WestBred</b>	<b>2006</b>	<b>yes</b>	<b>sdwf</b>	<b>strg.</b>	<b>m.early</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
Russ	SD	1995	yes	med	med	m.early	R	MS	S	MS	S
Saturn	N.Star G.	2003	yes	med	NA	m.late	NA	NA	S	NA	S
Steele-ND	ND	2004	yes	sdwf	med	med	R	R	MS	MS	MS
<b>Traverse</b>	<b>SD</b>	<b>2006</b>	<b>yes</b>	<b>sdwf</b>	<b>med</b>	<b>m.early</b>	<b>R</b>	<b>MR</b>	<b>NA</b>	<b>NA</b>	<b>MR</b>
Trooper	WestBred	2004	yes	sdwf	strong	m.early	R	MS	S	NA	S
Ulen	MN	2005	yes	sdwf	med	m.early	R	MR	MS	NA	S
Walworth	SD	2001	yes	sdwf	med	m.early	R	S	S	M	S

<sup>1</sup> Refers to agent or developer: NDSURF = North Dakota State University Research Foundation; CDC = Crop Development Center, University of Saskatchewan; Can = Agriculture Canada.; N. Star G.= North Star Genetics. <sup>2</sup> R = resistant; MR = moderately resistant; M = intermediate; MS = moderately susceptible; S = susceptible; VS = very Susceptible. <sup>3</sup> Argent is a hard white wheat with good bread making qualities. <sup>4</sup> MR in artificially induced epidemics. NA – not adequately testing. <sup>6</sup> MS in artificially induced epidemics. **Bold varieties are those released in 2006.**

**2006 Hard Red Spring Wheat – Continuously Cropped - No-till** **Hettinger**

Variety	Days to Head	Plant Height inches	Test Weight Lbs/bu	Grain Protein %	---- Grain Yield ----			Average Yield	
					2004	2005	2006	2 yr	3 yr
					----- Bushels per acre -----				
Reeder	63	25	58.0	15.8	49.3	50.2	40.8	45.5	46.8
Steele-ND	63	26	57.6	16.2	49.8	46.2	38.1	42.2	44.7
Briggs	61	24	58.7	15.9	49.4	45.0	39.2	42.1	44.5
Traverse	62	25	55.8	15.2	47.2	47.6	38.6	43.1	44.5
Mercury	62	22	58.1	15.6	46.4	47.2	37.8	42.5	43.8
Norpro	64	23	57.9	16.1	49.0	45.8	36.6	41.2	43.8
Fryer	62	27	58.1	15.6	46.6	46.0	38.0	42.0	43.5
Outlook	67	25	55.9	15.7	49.0	40.8	39.4	40.1	43.1
Oxen	60	23	58.2	15.3	40.4	49.8	38.5	44.2	42.9
Parshall	63	28	57.2	16.1	47.9	42.3	37.3	39.8	42.5
Glenn	61	25	58.9	16.4	47.2	43.6	35.8	39.7	42.2
Howard	64	25	57.6	16.2	50.2	39.7	36.3	38.0	42.1
Trooper	61	22	57.9	15.5	48.1	41.3	36.8	39.0	42.1
Russ	64	27	55.6	16.2	44.9	42.3	36.9	39.6	41.4
Ingot	60	26	60.0	16.4	44.0	41.7	37.8	39.8	41.2
Hanna	62	26	58.8	15.7	47.8	40.3	35.5	37.9	41.2
Banton	59	26	60.2	16.1	39.7	45.0	34.9	40.0	39.9
AC Superb	64	26	55.2	16.4	46.8	36.9	35.5	36.2	39.7
Alsen	64	26	58.6	16.2	41.7	39.4	38.1	38.8	39.7
Gunner	67	25	56.8	16.9	46.1	38.3	34.5	36.4	39.6
Choteau	64	22	55.4	16.4	42.2	39.7	36.5	38.1	39.5
Dapps	64	29	55.7	16.7	46.5	39.1	33.0	36.0	39.5
Knudson	64	23	56.8	15.7	44.9	36.6	36.9	36.8	39.5
Granite	68	22	58.3	17.8	46.2	36.6	33.6	35.1	38.8
AC Amazon	66	28	54.7	16.0	46.0	36.4	32.9	34.6	38.4
Oklee	61	23	58.2	16.6		43.6	38.4	41.0	
Granger	62	27	56.8	15.4		41.7	40.0	40.8	
Ulen	62	24	58.6	16.3		42.1	38.3	40.2	
Express	64	20	57.0	16.0		42.9	35.9	39.4	
Bigg Red	63	25	59.7	15.9		39.9	38.2	39.0	
AP603CL	68	27	57.1	16.4		39.2	34.3	36.8	
Saturn	68	24	51.6	17.8		35.2	28.8	32.0	
Polaris	69	24	53.7	16.4		35.4	28.2	31.8	
Kelby	61	23	58.2	16.6			38.6		
Fireball	63	20	55.6	17.8			33.7		
Baker	69	25	54.8	16.4			31.5		
Rush	60	23	58.2	16.7	33.2		31.0		
Trial Mean	63	25	56.8	16.2	46.5	41.8	35.9	--	--
C.V. %	1.8	7.1	3.7	2.4	8.5	10.7	7.3	--	--
LSD .05	2	2	2.9	0.5	5.5	6.2	3.6	--	--
LSD .01	2	3	3.9	0.7	7.3	8.2	4.8	--	--

Planting Date: April 12, 2006    Harvest Date: July 26, 2006    Previous Crop: soybean  
 Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).  
 Note: The 2005 and 2006 trials sustained late season heat and moisture stress.

## 2006 Hard Red Spring Wheat - Alfalfa burn down

Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height in	Test Weight lbs/bu	Protein %	----- Grain Yield-----			Returns \$/ac	----- Average Yield-----	
						2003	2004	2006		2	3
						-----bu/ac-----			-----bu/ac-----		
AC Superb	61	17,854	29	58.3	16.2	60.8	26.5	44.5	189.65	35.5	43.9
AP 603 CL	64	20,718	30	58.6	17.0	--	--	40.1	171.97	--	--
Ada	60	17,770	27	58.5	15.8	--	--	38.5	164.03	--	--
Alsen	60	19,524	28	59.6	16.1	61.4	27.5	40.1	171.84	33.8	43.0
Amazon	63	17,553	30	57.0	15.3	54.5	14.1	38.2	160.52	26.2	35.6
Banton	56	17,020	29	60.9	15.1	--	14.9	37.1	157.43	26.0	--
Bigg Red	61	17,991	29	61.0	15.5	--	--	41.8	178.04	--	--
Briggs	61	17,957	31	59.0	16.1	57.3	24.1	44.0	188.64	34.0	41.8
Choteau	60	18,145	27	57.4	17.0	--	18.3	41.2	175.12	29.7	--
Dapps	60	18,234	31	57.4	17.1	60.6	11.5	40.8	173.46	26.2	37.6
FBC-Dylan	60	15,876	27	59.3	16.0	--	--	39.4	168.48	--	--
Freyr	60	18,123	28	59.3	15.7	--	29.7	42.9	183.33	36.3	--
Glenn	57	19,517	27	58.5	16.1	63.9	20.4	41.6	177.66	31.0	42.0
Granger	59	16,175	29	59.9	15.6	68.9	26.7	43.7	186.34	35.2	46.5
Granite	63	18,987	25	60.3	17.1	56.4	29.7	42.0	180.21	35.9	42.7
Gunner	64	19,322	30	59.9	17.0	58.8	27.5	43.7	187.67	35.6	43.4
Hanna	60	17,245	32	57.5	15.8	60.9	31.9	43.8	185.85	37.8	45.5
Howard	59	19,544	29	57.5	15.5	62.9	27.5	43.6	184.55	35.6	44.7
Ingot	58	18,825	31	61.6	15.8	64.1	25.8	42.1	180.33	34.0	44.0
Kelby	57	18,929	25	60.0	16.0	--	--	38.1	163.24	--	--
Knudson	59	17,585	26	60.3	15.5	--	--	41.4	176.47	--	--
Mercury	59	16,743	24	59.4	15.4	61.6	30.2	41.1	175.01	35.7	44.3
Norpro	60	17,466	26	59.4	16.2	63.0	27.6	47.2	202.64	37.4	45.9
Oklee	59	17,755	26	59.0	16.5	57.7	24.7	35.3	151.07	30.0	39.2
Outlook	61	17,642	28	58.3	14.8	62.1	30.3	46.4	195.25	38.3	46.2
Oxen	59	18,647	27	59.4	15.2	66.1	28.3	46.1	195.79	37.2	46.8
Parshall	60	18,897	28	57.5	16.3	62.5	21.2	41.9	178.87	31.6	41.9
Polaris	65	17,761	28	59.0	14.3	--	20.1	44.4	184.77	32.2	--
Reeder	64	21,206	30	59.0	17.0	65.4	28.4	40.8	175.14	34.6	44.9
Rush	58	18,205	27	60.9	16.6	--	--	36.9	158.30	--	--
Russ	60	19,023	30	58.1	15.9	64.4	25.7	43.3	184.82	34.5	44.5
Saturn	65	20,441	28	54.6	17.1	--	30.5	44.6	182.56	37.5	--
Steele-ND	60	19,044	31	57.0	16.0	63.9	26.5	43.4	183.46	35.0	44.6
Traverse	59	17,437	29	57.3	15.3	--	--	41.3	173.88	--	--
Trooper	58	17,874	25	57.0	14.9	--	22.6	41.3	171.78	31.9	--
Ulen	58	17,168	28	59.5	16.4	63.0	21.9	38.2	163.74	30.0	41.0
Trial Mean	60	18,254	28	59.0	16.0	60.8	24.0	41.3	175.62	--	--
CV %	1.0	6.6	5.9	1.6	1.8	6.0	17.8	7.9	--	--	--
LSD 0.05	1	1,670	2	1.3	0.6	5.1	NS	4.6	--	--	--

Planting Date: April 24, 2006

Harvest Date: August 7, 2006

Previous Crop: Alfalfa burn down

Seeding Rate: 1.2 million live seeds/ac

Returns were calculated by multiplying the 2006 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on August 30. The price paid on this date was \$4.14/bu for a grain protein concentration was 14%. \$.02/bu was paid for each additional 0.2% increase in grain protein up to 15%. \$.01/bu was paid for each additional 0.2% increase in grain protein from 15% to 16% protein, above which an additional premium was not paid. Grain was discounted \$.02/bu for each 0.2% reduction in grain protein from 14% to 11%, below which no additional discount was assigned. Returns factored in discounts for grain with a test weight <58 lb/bu [-\$.02/bu for 0.5 lb/bu between 58 and 57 lb/bu; -\$.03/bu for 0.5 lb/bu between 57 and 55 lb/bu; -\$.04/bu for 0.5 lb/bu between 55 and 54 lb/bu; and -\$.05/bu for 0.5 lb/bu between 54 and 50 lb/bu].





**2006 HRSW Variety Trial - Continuously Cropped - No-till Scranton**

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height inches	Test Weight Lbs/bu	Grain Protein %	---- Grain Yield ----			Average Yield	
				2004	2005	2006	2 yr	3 yr
				----- Bushels per acre -----				
Oxen	29	56.2	15.3	70.2	54.3	57.0	55.6	60.5
Reeder	29	54.5	15.3	67.7	51.9	60.3	56.1	60.0
Mercury	25	56.5	15.8	72.3	50.4	52.2	51.3	58.3
Steele-ND	30	55.2	15.6	63.1	50.1	57.3	53.7	56.8
Briggs	33	56.6	15.8	62.8	44.4	50.9	47.6	52.7
Fryer	29	55.7	15.3		48.0	57.4	52.7	
Howard	31	55.0	15.5		50.7	52.8	51.8	
Glenn	33	58.4	15.8		47.3	52.9	50.1	
Granger	33	56.1	16.0		41.8	49.9	45.8	
Traverse	32	52.6	15.1			50.9		
Trial Mean	31	55.4	15.5	63.5	48.0	53.5	--	--
C.V. %	5.7	1.9	1.8	5.2	9.1	5.7	--	--
LSD .05	3	1.5	0.4	4.7	6.3	4.4	--	--
LSD .01	3	2.1	0.5	6.3	8.5	5.9	--	--

Planting Date: April 24, 2006                      Harvest Date: August 2, 2006  
 Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).  
 Previous Crop: 2003 & 2004 = lentil, 2005 = hrww.

**2006 HRSW Variety Trial - Continuously Cropped - No-till Regent**

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height inches	Test Weight Lbs/bu	Grain Protein %	---- Grain Yield ----			Average Yield	
				2003	2005	2006	2 yr	3 yr
				----- Bushels per acre -----				
Oxen	22	55.4	15.6	63.2	56.8	36.7	46.8	52.2
Steele-ND	25	55.3	15.6	56.6	55.3	43.2	49.2	51.7
Mercury	21	54.7	15.6	63.6	56.6	34.3	45.4	51.5
Reeder	23	55.3	16.1	58.2	53.8	42.3	48.0	51.4
Briggs	25	53.5	16.0	56.3	54.2	35.7	45.0	48.7
Glenn	25	56.8	15.9		61.1	38.0	49.6	
Fryer	26	55.4	15.6		59.4	39.6	49.5	
Granger	25	54.5	15.9		59.4	36.4	47.9	
Howard	24	54.8	15.7		55.0	39.6	47.3	
Traverse	25	54.4	15.1			38.4		
Trial Mean	24	54.8	15.7	57.0	56.5	38.4	--	--
C.V. %	6.1	2.8	1.7	7.8	6.1	7.3	--	--
LSD .05	2	2.2	0.4	6.5	5.0	4.1	--	--
LSD .01	3	3.0	0.5	8.8	6.7	5.5	--	--

Planting Date: April 24, 2006                      Harvest Date: July 31, 2006  
 Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).  
 Previous Crop: 2002 & 2004 = lentil, 2005 = hrsw.

**2006 HRSW Variety Trial - Continuously Cropped - No-till New Leipzig**

Cooperator: Daryl Birdsall, New Leipzig

Variety	Test	Plant	Grain	---- Grain Yield ----			Average Yield		
	Weight	Height	Protein	2004	2005	2006	2 yr	3 yr	
	lbs/bu	inches	%	----- Bushels per acre -----					
Oxen	55.6	16	16.6	26.6	36.9	18.1	27.5	27.2	
Briggs	55.6	19	17.0	31.0	28.8	14.9	21.8	24.9	
Steele-ND	54.8	20	17.1	29.7	27.8	15.3	21.6	24.3	
Reeder	53.4	19	17.2	22.7	33.1	16.0	24.6	23.9	
Mercury	53.7	17	17.2	23.0	31.3	13.4	22.4	22.6	
Glenn	53.8	20	17.0		28.0	15.0	21.5		
Howard	53.5	20	16.9		26.8	15.9	21.4		
Fryer	53.9	21	16.9		31.7	9.6	20.6		
Granger	54.9	19	17.4		30.2	10.1	20.2		
Traverse	52.1	19	16.6			10.2			
Trial Mean	53.9	19	17.0	26.8	30.4	13.9	--	--	
C.V. %	2.0	9.1	1.1	14.0	8.3	13.0	--	--	
LSD .05	1.6	3	0.3	5.4	3.7	2.6	--	--	
LSD .01	2.9	NS	0.5	7.2	4.9	4.8	--	--	

Planting Date: April 24, 2006 Harvest Date: July 31, 2006  
 Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).  
 Previous Crop: 2003 & 2004 = lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.  
 Note: The 2006 trial sustained severe heat and moisture stress.

**2006 HRSW Variety Trial - Continuously Cropped - No-till Selfridge**

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant	Test	Grain	---- Grain Yield ----			Average Yield		
	Height	Weight	Protein	2004	2005	2006	2 yr	3 yr	
	inches	Lbs/bu	%	----- Bushels per acre -----					
Mercury	23	56.4	16.5	61.2	48.3	31.6	40.0	47.0	
Briggs	26	55.3	16.6	61.3	51.0	26.7	38.8	46.3	
Oxen	23	56.7	16.7	61.0	45.8	25.8	35.8	44.2	
Steele-ND	26	55.3	16.5	58.9	43.3	29.3	36.3	43.8	
Reeder	21	55.6	17.0	53.1	44.3	26.6	35.4	41.3	
Fryer	24	57.7	16.3		52.6	25.3	39.0		
Granger	25	56.9	16.7		50.1	24.1	37.1		
Howard	25	55.3	16.4		45.6	25.7	35.6		
Glenn	22	56.7	17.0		46.0	23.7	34.8		
Traverse	21	53.7	16.0			22.6			
Trial Mean	23	55.7	16.5	55.0	46.8	26.0	--	--	
C.V. %	10.4	1.5	2.9	8.2	7.1	10.5	--	--	
LSD .05	4	1.2	NS	6.6	4.8	3.9	--	--	
LSD .01	NS	1.6	NS	NS	6.5	5.3	--	--	

Planting Date: April 25, 2006 Harvest Date: August 4, 2006  
 Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).  
 Previous Crop: 2003 & 2004 = lentil, 2005 = hrww.  
 NS = No statistical difference between varieties.  
 Notes: The 2006 trial sustained moderate heat and moisture stress.



**2006 HRSW Variety Trial - Continuously Cropped - No-till Mandan**

Cooperator: USDA-ARS, Mandan

Variety	Test	Grain	---- Grain Yield ----			Average Yield		
	Weight	Protein	2004	2005	2006	2 yr	3 yr	
	Lbs/bu	%	----- Bushels per acre -----					
Briggs	55.0	16.3	45.7	66.3	27.9	47.1	46.6	
Mercury	54.5	16.3	43.5	57.6	28.1	42.8	43.1	
Reeder	53.3	16.6	45.0	49.3	33.0	41.2	42.4	
Oxen	53.9	16.0	41.7	49.3	31.6	40.4	40.9	
Fryer	54.2	16.5		64.8	30.0	47.4		
Glenn	55.1	16.5		63.7	30.2	47.0		
Granger	55.6	16.5		63.3	30.4	46.8		
Howard	53.4	16.2		61.9	30.4	46.2		
Steele-ND	54.0	16.4		62.0	29.6	45.8		
Traverse	51.7	15.6			31.6			
Trial Mean	54.1	16.2	40.1	58.7	29.7	--	--	
C.V. %	1.2	2.9	9.4	7.3	9.3	--	--	
LSD .05	1.1	NS	6.4	7.2	4.7	--	--	
LSD .01	1.5	NS	8.6	9.8	6.3	--	--	

Planting Date: April 25, 2006 Harvest Date: August 4, 2006  
 Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).  
 Previous Crop: 2003 = Barley, 2004 = Lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.  
 Note: The 2006 trial sustained severe heat and moisture stress.

**HRSW in the West River Region**

**Combined Means**

Variety	Days to	Plant	Seeds /	Test	Grain	---- Grain Yield ----			Average Yield	
	Head	Height	Pound	Weight	Protein	2004	2005	2006	2 yr	3 yr
		inches	#	Lbs/bu	%	----- Bushels per acre -----				
Oxen	60	24	18,647	56.7	15.8	43.9	46.4	36.4	41.4	42.2
Steele-ND	62	27	19,044	55.6	16.2	42.8	45.2	36.2	40.7	41.3
Reeder	64	25	21,206	55.8	16.2	42.8	44.4	37.1	40.8	41.4
Mercury	60	22	16,743	56.2	16.1	42.1	46.0	34.1	40.0	40.7
Briggs	61	27	17,957	56.2	15.9	41.9	45.8	34.1	40.0	40.6
Fryer	61	26	18,123	56.5	15.8		49.2	34.7	42.0	
Granger	60	27	16,175	56.5	15.9		47.9	33.4	40.6	
Glenn	59	26	19,517	56.8	16.1		47.1	33.7	40.4	
Howard	62	26	19,544	55.4	15.8			34.8		
Traverse	60	26	17,437	54.1	15.3			33.2		
# of Locations*	2	1	1	8	8	10	9	8	17	27

\* Locations:2006 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Selfridge, Mandan & Ralph, SD.  
 2005 = Hettinger, Scranton, Regent, New Leipzig, Selfridge, Mandan, Hannover, Glen Ullin & Ralph, SD.  
 2004 = Hettinger, Dickinson, Scranton, Selfridge, New Leipzig, Mandan, Hannover, Glen Ullin, Ralph & Bison, SD.

**2006 Specialty Wheat Variety Trial - Continuously Cropped - No-till, Hettinger**

Variety	Type	Days to Head	Plant Height	% Lodg.	Test Weight	Grain Protein	Grain Yield
	*		inches	**	Lbs/bu	%	Bu/Ac
Lolo	HW	62	24	23	58.7	15.8	34.6
AC Snowbird	HW	61	26	12	57.2	16.6	33.5
Choteau	SF	61	21	2	56.8	16.8	33.8
Ernest	SF	62	26	0	57.8	17.2	30.8
Parshall	HR	62	25	5	58.6	16.5	39.3
Glenn	HR	61	25	4	59.6	16.6	38.5
Reeder	HR	64	24	12	58.8	16.0	35.6
Trial Mean		63	24	7	57.6	16.5	32.2
C.V. %		1.3	6.0	74	1.2	2.1	12.3
LSD 5%		1	2	8	1.2	0.6	6.6
LSD 1%		2	3	11	1.6	0.8	8.9

\* Type: HW = hard white, SF = sawfly tolerant, HR = hard red.

\*\* Percent stem lodging caused by sawfly.

Planting Date: April 11, 2006

Harvest Date: July 27, 2006

Previous Crop: Soybean

**2006 Specialty Wheat Variety Trial - Continuously Cropped - No-till, Regent**

Cooperator: Larry Willnow, Regent

Variety	Type	Plant Height	Test Weight	Grain Protein	Grain Yield		
					2005	2006	2yr Avg
	*	inches	Lbs/bu	%	Bu/A		
Choteau	SF	23	55.4	16.2	51.3	29.5	40.4
Ernest	SF	26	56.6	16.2	42.1	27.6	34.8
AC Snowbird	HW	25	54.3	16.0	39.7	13.0	26.4
Lolo	HW	23	55.5	15.7	40.1	9.9	25.0
Parshall	HR	24	57.0	15.8	47.2	22.4	34.8
Reeder	HR	21	57.1	16.1	52.0	23.1	37.6
Glenn	HR	23	57.6	15.8		19.7	
Trial Mean		24	56.1	16.1	45.2	22.7	--
C.V. %		7.3	1.5	1.3	6.8	12.9	--
LSD 5%		NS	1.4	0.4	4.4	4.9	--
LSD 1%		NS	1.9	0.5	6.0	6.6	--

\* Type: SF = sawfly tolerant, HW = hard white, HR = hard red.

Planting Date: April 24, 2006

Harvest Date: July 31, 2006

Previous Crop: HRSW

NS = no statistical difference between varieties.

Note: The 2005 & 2006 trials were severely infested with wheat stem sawfly.

2006 North Dakota durum wheat variety descriptions, agronomic traits.

Variety	Agent or Origin <sup>1</sup>	Year Released	Chaff Color	Height	Straw Strength	Maturity	Reaction to Disease <sup>2</sup>			
							Stem Rust	Leaf Rust	Foliar Disease	Scab
AC Avonlea	Can.	1997	white	med	med.	med.	R	R	M	S
AC Melita	Can.	1995	white	tall	med.	med.	R	NA	NA	S
AC Morse	Can.	1996	white	s.dwf.	strong	med.	R	R	M	NA
AC Navigator	Can.	1999	white	s.dwf.	weak	med.	R	R	M	S
AC Pathfinder	Can.	1999	white	med.	weak	med.	R	R	M	S
Alkabo	ND	2005	white	med.	v.strong	med.	R	R	M	MS
Alzada	WB	2004	White	s.dwf	strong	early	R	NA	NA	NA
Belzer	ND	1997	white	tall	med.	late	R	R	M	MR
Ben	ND	1996	white	med.	strong	med.	R	R	MR	S*
Cando	ND	1975	tan	s.dwf.	v.strong.	med.	R	R	M	VS
Dilse	ND	2002	white	med.	strong	late	R	R	M	MS
Divide	ND	2005	white	med.	strong	med.	R	R	M	MR
Dressler	AgriPro	1996	white	tall	med.	med.	R	MR	NA	VS
Fjord	AgriPro	1986	white	tall	strong	m.early	R	R	M	S
Grande D'Oro	WB/DGP	2005	white	med.	m.strong	med.	R	R	M	NA
Grenora	ND	2005	white	med.	strong	med.	R	R	M	MS
Kari	AgriPro	1998	white	med	strong	med	R	R	M	S
Kyle	Can.	1984	white	tall	weak	med.	R	MR	M	NA
Laker	WB	1985	white	s.dwf.	strong	med.	R	MR	S	S
Lebsock	ND	1999	white	med	strong	med	R	R	M	MS
Lloyd	ND	1983	white	s.dwf.	v.strong	med.	R	MR	S	VS
Maier	ND	1998	white	med	strong	m-late	R	R	M	S*
Medora	Can.	1983	white	tall	strong	m.early	R	R	MS	VS
Monroe	ND	1985	white	tall	med.	early	R	R	M	VS
Mountrail	ND	1998	white	med	strong	late	R	R	M	S*
Munich	ND	1995	white	med.	v.strong	med.	R	R	MR	S*
Pierce	ND	2001	white	med.	m.strong	med.	R	R	MS	S
Plaza	ND	1999	white	s.dwf.	v. strong	late	R	R	M	MS
Plenty	Can.	1990	white	tall	weak	late	R	R	MR	MS
Primo D'Oro	WB/DGP	2004	white	tall	med.	m.early	R	R	MS	NA
Renville	ND	1988	white	tall	med.	med.	R	R	M	S*
Rugby	ND	1973	tan	tall	strong	m.early	R	R	MR	S*
Vic	ND	1979	white	tall	med.	m.early	R	R	MR	S*
Voss	AgriPro	1994	white	s.dwf.	v.strong	med.	R	MR	MS	S

1 Refers to agent or developer: WB = Westbred, ND = North Dakota, DGP = Dakota Growers Pasta.

2 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 have often been higher than would be expected based on visual symptoms.



**2006 Durum Variety Trial - Continuously Cropped - No-till**

**Hettinger**

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
					2004	2005	2006	2 yr	3 yr
		inches	Lbs/bu	%	----- Bushels per acre -----				
Grenora	63	21	57.7	16.9	35.7	47.8	35.3	41.6	39.6
Mountrail	64	21	57.6	17.0	36.1	45.8	34.5	40.2	38.8
Grande D'oro	63	23	58.6	17.0	30.4	45.4	36.8	41.1	37.5
Lebsock	62	24	58.7	16.5	32.2	46.0	33.4	39.7	37.2
Ben	63	22	57.8	17.8	33.4	43.0	34.9	39.0	37.1
Divide	64	23	57.4	17.2	33.7	42.3	34.2	38.2	36.7
Alkabo	62	22	58.2	16.9	32.5	45.3	30.5	37.9	36.1
Pierce	63	24	57.8	17.6	29.9	45.1	32.2	38.6	35.7
Primo D'oro	62	23	58.4	17.8	32.4	43.4	31.1	37.2	35.6
Belzer	65	25	55.7	17.1	33.5	41.4	30.6	36.0	35.2
Plaza	64	23	57.6	17.2	29.8	41.4	32.0	36.7	34.4
Dilse	65	24	57.4	18.6	32.5	37.0	30.9	34.0	33.5
Rugby	64	24	57.1	18.0	29.2	33.0	31.1	32.0	31.1
Maier*	67	23	53.6	18.4	32.1	49.7	--		
Alzada	60	23	57.6	16.4			35.6		
Strongfield	64	24	57.2	19.4			30.2		
Normano	69	24	54.4	17.3			21.5		
Trial Mean	64	23	57.3	17.6	32.9	44.2	31.6	--	--
C.V. %	1.6	7.5	0.9	3.4	9.6	8.2	8.4	--	--
LSD .05	1	NS	0.7	0.8	4.4	5.1	3.7	--	--
LSD .01	2	NS	1.0	1.1	5.8	6.7	4.9	--	--

\* Maier had very poor stand establishment.

NS = no statistical difference between varieties.

Planting Date: April 11, 2006

Harvest Date: July 24, 2006

Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).

Previous Crop: soybean.

Notes: The 2005 and 2006 trials sustained late season heat and moisture stress.

The 2004 trial sustained hard frosts in May and June.

2006 Durum - Alfalfa burn down

Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height in	Test Weight lbs/bu	Protein %	----- Grain Yield-----			Returns \$/ac	Average Yield	
						2004	2005	2006		Year 2	Year 3
						-----bu/ac-----			----bu/ac----		
AC Navigator	61	13,197	30	59.5	15.1	27.1	45.8	54.9	212.17	50.3	42.6
Alkabo	61	13,040	30	57.5	14.9	33.5	47.4	54.6	204.65	51.0	45.2
Alzada	56	12,685	30	57.0	14.6	23.2	43.0	52.5	195.25	47.7	39.6
Belzer	63	14,275	33	55.2	15.4	26.9	51.4	47.9	171.67	49.7	42.1
Ben	60	15,502	33	57.3	15.8	28.6	47.7	47.2	176.80	47.4	41.2
Dilse	62	14,275	31	56.1	16.4	35.4	47.3	48.3	176.43	47.8	43.7
Divide	63	15,074	32	56.1	15.8	27.3	50.3	50.4	183.66	50.3	42.6
Grande Doro	62	14,301	31	57.2	14.9	--	46.1	51.4	192.08	48.7	--
Grenora	59	14,829	32	55.7	15.5	30.1	50.2	52.2	189.28	51.2	44.2
Lebsock	60	14,177	32	57.6	15.1	28.7	48.6	50.1	188.98	49.4	42.5
Maier	61	15,629	30	56.9	16.3	28.1	51.3	49.8	184.83	50.6	43.1
Mountrail	63	15,216	31	55.7	14.6	32.1	48.5	53.2	192.51	50.9	44.6
Pierce	61	15,203	32	56.3	15.6	31.0	49.6	49.1	178.79	49.3	43.2
Plaza	63	16,082	28	54.6	15.7	28.0	47.3	45.3	159.63	46.3	40.2
Primo D'Oro	60	14,749	33	55.8	16.1	30.1	44.9	45.7	166.00	45.3	40.3
Rugby	61	15,588	35	54.4	16.4	29.9	41.0	46.5	162.24	43.7	39.1
Strongfield	61	14,677	32	54.4	16.0	--	--	54.6	191.30	--	--
Trial Mean	62	13,925	32	56.8	15.6	28.8	47.3	49.6	182.92	--	--
CV %	1.3	8.1	4.9	3.4	4.0	14.3	8.8	11.7	13.9	--	--
LSD 0.05	1	1,578	2	2.7	NS	5.8	5.81	NS	NS	--	--

Planting Date: April 25, 2006

Harvest Date: August 4, 2006

Previous Crop: Alfalfa burn down

Seeding Rate: 1.2 million live seeds/ac

Returns were calculated by multiplying the 2006 yield by the test weight discount paid at the Southwest Grain Terminal located at Gladstone on August 30. The price paid on this date was \$3.90/bu for grain with a minimum test weight of 60 lb/bu. Grain was discounted \$.02/bu for each 0.5 lb reduction in test weight between 60 and 58 lb/bu, \$.04/bu per 0.5 lb reduction between 58 and 54 lb/bu, and \$.05/bu per 0.5 lb/bu reduction between 54 and 50 lb/bu.

**2006 Durum Variety Trial - Continuously Cropped - No-till Scranton**

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
	inches	Lbs/bu	%	2004	2005	2006	2 yr	3 yr
Mountrail	32	55.4	15.4	65.1	54.6	55.2	54.9	58.3
Grenora	29	56.6	15.7	68.3	49.6	55.8	52.7	57.9
Ben	33	56.9	16.2	65.1	52.0	53.1	52.6	56.7
Lebsock	32	58.2	15.6	64.8	45.9	52.3	49.1	54.3
Divide	32	56.8	15.8		53.0	52.1	52.6	
Alkabo	32	55.3	15.6		50.4	54.3	52.4	
Trial Mean	32	56.5	15.7	63.1	50.9	53.8	--	--
C.V. %	4.9	1.8	1.9	5.7	7.2	3.9	--	--
LSD .05	2	1.5	0.5	NS	NS	NS	--	--
LSD .01	NS	2.1	NS	NS	NS	NS	--	--

Planting Date: April 24, 2006                      Harvest Date: August 2, 2006  
 Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).  
 Previous Crop: 2003 & 2004 = Lentil, 2005 = hrww  
 NS = no statistical difference between varieties.

**2006 Durum Variety Trial - Continuously Cropped - No-till Regent**

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
	inches	Lbs/bu	%	2003	2005	2006	2 yr	3 yr
Mountrail	22	52.3	16.2	44.6	54.3	29.7	42.0	42.9
Ben	26	54.3	16.9	45.6	51.1	29.7	40.4	42.1
Lebsock	24	54.2	16.0	45.0	49.0	31.6	40.3	41.9
Grenora	22	54.2	16.1		48.1	35.1	41.6	
Alkabo	23	54.0	16.0		52.8	29.8	41.3	
Divide	24	53.9	16.3		49.4	31.1	40.2	
Trial Mean	23	53.8	16.2	43.5	50.8	31.2	--	--
C.V. %	4.0	2.0	2.0	5.4	7.1	5.3	--	--
LSD .05	1	NS	0.5	NS	NS	2.5	--	--
LSD .01	2	NS	NS	NS	NS	3.5	--	--

Planting Date: April 24, 2006                      Harvest Date: July 31, 2006  
 Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).  
 Previous Crop: 2002 & 2004 = Lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.

**2006 Durum Variety Trial - Continuously Cropped - No-till Mandan**

Cooperator: USDA-ARS, Mandan

Variety	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
			2004	2005	2006	2 yr	3 yr
	Lbs/bu	%	----- Bushels per acre -----				
Mountrail	49.4	17.8	37.6	67.2	27.3	47.2	44.0
Grenora	52.3	17.3	38.3	67.6	25.7	46.6	43.9
Ben	52.1	18.9	34.4	68.7	28.6	48.6	43.9
Lebsock	55.0	17.2	32.6	68.5	27.5	48.0	42.9
Alkabo	52.3	18.5		69.1	28.1	48.6	
Divide	50.6	18.2		67.0	26.7	46.8	
Trial Mean	51.9	18.0	34.8	68.0	27.3	--	--
C.V. %	1.4	4.2	13.5	2.4	7.6	--	--
LSD .05	1.4	NS	NS	NS	NS	--	--
LSD .01	1.9	NS	NS	NS	NS	--	--

Planting Date: April 25, 2006 Harvest Date: August 4, 2006  
 Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).  
 Previous Crop: 2003 = Barley, 2004 = Lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.

**SDSU Durum Wheat Variety Trial – Harding County (Ralph), 2003-2006.**

Variety	Height	Lodging	Test Wt	Protein	Yield	Bu/A
	Inches	0-9*	Lb/Bu**	Percent	2006	4 Year
Alkabo	31	0		17.2	<b>32.4</b>	--
Ben	34	0		19.2	<b>31.1</b>	<b>30.8</b>
Dilse	31	0		18.2	<b>31.7</b>	<b>30.4</b>
Divide	31	0		19.0	<b>32.5</b>	--
Grenora	30	0		17.5	<b>32.4</b>	--
Lebsock	32	0		18.3	<b>29.5</b>	<b>31.5</b>
Maier	31	0		19.4	<b>31.1</b>	28.6
Mountrail	30	0		18.4	<b>27.4</b>	<b>32.7</b>
Renville	33	0		18.9	27.0	<b>29.9</b>
Vic	32	0		16.9	<b>28.5</b>	<b>30.2</b>
Average	31.3	0.0		18.3	30.4	31.1
LSD (P=.05)	2.8	0.0		--	5.3	3.6
CV	6.1	0.0		--	11.9	16.5

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

\*\* Samples too wet to get accurate test weight.

Planted: May 8, 2006 Herbicide: Cleanwave (14 oz/A) + MCPA (3/4 pint/ac)  
 + Puma (2/3 pint /A)

Harvested: July 31, 2006 Additional Nitrogen: 50 lb/A

Previous crop: Conventional fallow

**Durum in the West River Region**

**Combined Means**

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
						2004	2005	2006	2 yr	3 yr
		inches	#	lbs/bu	%	----- Bushels per acre -----				
Mountrail	64	27	15,216	54.1	16.6	40.2	49.0	37.9	43.4	42.4
Ben	62	30	15,502	55.7	17.5	37.2	48.6	37.4	43.0	41.1
Lebsock	61	29	14,177	56.7	16.4	36.1	46.8	37.4	42.1	40.1
Grenora	61	27	14,829	55.3	16.5		52.3	39.4	45.8	
Alkabo	62	28	13,040	55.8	16.6		51.7	37.9	44.8	
Divide	64	28	15,074	54.7	17.0		48.2	38.2	43.2	
# of Locations*	2	5	1	5	6	8	8	6	14	22

\* Locations: 2006 = Hettinger, Dickinson, Scranton, Regent, Mandan & Ralph, SD.  
 2005 = Hettinger, Dickinson, Scranton, Regent, Mandan, Hannover, Glen Ullin & Ralph, SD.  
 2004 = Hettinger, Dickinson, Scranton, Selfridge, New Leipzig, Mandan, Ralph & Bison, SD.

**2006 Spring Triticale Variety Trial – Continuously Cropped No-till, Hettinger**

Variety	Days to Head	Plant Height	Test Weight	---- Grain Yield ----			Average Yield	
				2004	2005	2006	2 yr	3 yr
		inches	Lbs/bu	----- Bushels per acre -----				
Wapiti	60	37	50.9	57.4	41.0	39.9	40.4	46.1
RSI 310	61	35	51.6	51.9	45.0	40.6	42.8	45.8
Companion	61	36	51.0	53.4	39.3	36.7	38.0	43.1
Laser	61	35	51.2	55.1	30.3	31.7	31.0	39.0
Trical 2700	67	36	46.4	55.2	28.8	32.2	30.5	38.7
Marvel	64	35	42.6	49.5	30.0	28.1	29.0	35.9
Trial Mean	62	36	49.0	53.8	35.7	34.9	--	--
C.V. %	0.9	6.2	0.5	5.4	8.6	9.9	--	--
LSD .05	1	NS	0.3	4.4	4.7	5.2	--	--
LSD .01	1	NS	0.5	6.1	6.4	7.2	--	--

Planting Date: April 12, 2006  
 Harvest Date: July 24, 2006  
 Seeding Rate: 1 million live seeds / acre.  
 Previous Crop: soybean.  
 NS = no statistical difference between varieties.



2006 North Dakota barley variety descriptions.

Variety	Use <sup>1</sup>	Origin	Year Released	Awn Type <sup>2</sup>	Rachilla hair length <sup>6</sup>	Aleurone Color	Height	Straw Strength	Relative Maturity	Stem Rust	Reaction to Disease <sup>3</sup>		
											Loose Smut	Spot Blotch	Net Blotch
<b>Six-row</b>													
Azure	M/F	ND	1982	S	L	blue	med.	m.strg.	m.early	S	S	MR-R	MS-S
Drummond	M/F	ND	2000	S	L	white	m.short	v.strg.	med.	S	S	MR-R	MS-S
Excel	M/F	MN	1990	S	L	white	m.short	strg.	med.	S	S	MR-R	MS-S
Foster	M/F	ND	1995	S	L	white	m.short	strg.	med.	S	S	MR-R	MS-S
Hazen	F	ND	1984	S	L	white	med.	m.strg.	med.	S	S	MR-R	MS-S
Lacey	M/F <sup>†</sup>	MN	1999	S	S	white	m.short	strg.	med.	S	S	MR-R	MS-S
Legacy	M/F <sup>†</sup>	BARI	2000	S	L	white	med.	strg.	m.late	S	S	MR-R	MS-S
MNBrite*	F	MN	1997	S	S	white	tall	med.	early	S	S	MR-R	MS-S
Morex	M/F	MN	1978	S	S	white	tall	med.	early	S	S	MR	S
Robust	M/F	MN	1983	S	S	white	med.	m.strg.	med.	S	S	MR-R	MS-S
Stander	F	MN	1993	S	S	white	m.short	v.strg.	m.late	S	S	MR-R	MS-S
Stellar-ND	M/F <sup>†</sup>	ND	2005	S	L	white	m.short	v.strg.	med.	S	S	MR-R	MS-S
Tradition	M/F <sup>†</sup>	BARI	2003	S	L	white	m.short	v.strg.	med.	S	S	MR-R	MS-S
<b>Two-row</b>													
AC Metcaif <sup>†</sup>	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
Conlon <sup>4</sup>	M/F <sup>†</sup>	ND	1996	S	L	white	m.short	med.	early	S	S	MS	MR-R
Estlick	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 <sup>5</sup>	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
Logan	F	ND	1995	S	L	white	med.	strg.	med.	S	S	MR	MR
Rawson	F	ND	2005	R	L	white	med.	med.	med.	S	S	MR	MS
Stark	F	ND	1991	S	L	white	m.tall	med.	late	S	S	S-MS	MS-S
Valter	F	Can	1999	R	L	white	med.	m.weak	m.late	S	NA	MS	NA
<b>Specialty</b>													
Wanubet	SP	MT	1990	R	L	white	med.	weak	late	S	S	S	S

<sup>†</sup>Not being used by all major U.S. brewers. \*Moderately resistant to Fusarium head blight

<sup>1</sup> M = malting; F = feed; SP = special uses (hullless), MP = malt status pending <sup>2</sup> Rough or smooth awned.

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

<sup>4</sup> Lower DON accumulations than other varieties tested. <sup>5</sup> Recommended as a malting barley in western U.S. <sup>6</sup> S = short, L = long

**2006 Barley Variety Trial - No-till**

**Hettinger**

Variety	Days to Head	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ----			Average Yield	
						2004	2005	2006	2 yr	3 yr
		inches	Lbs/bu	>6/64	%	----- Bushels per acre -----				
<b>Two Row Types</b>										
Haxby	65	25	53.4	78	14.2	76.9	76.8	84.6	80.7	79.4
Eslick	66	23	50.6	61	14.0	78.3	63.6	77.4	70.5	73.1
Bowman	64	23	53.0	95	13.8	63.5	66.8	80.3	73.6	70.2
Rawson	64	26	51.4	98	11.5	64.3	65.2	75.5	70.4	68.3
AC Metcalf	66	24	49.0	77	14.9	68.3	60.6	74.7	67.6	67.9
Conion	64	26	53.2	98	13.3	44.5	63.9	78.3	71.1	62.2
Harrington	68	23	46.3	30	15.3	69.4	52.6	59.7	56.2	60.6
<b>Six Row Types</b>										
Lacey	62	23	50.6	79	14.0	67.6	65.4	79.3	72.4	70.8
Legacy	64	25	47.6	61	14.0	67.2	55.4	77.1	66.2	66.6
Drummond	64	24	49.5	73	13.8	62.4	64.5	72.1	68.3	66.3
Stellar-ND	63	24	48.6	77	13.3	64.0	60.1	74.0	67.0	66.0
Tradition	64	23	50.0	74	14.3	62.0	56.7	73.9	65.3	64.2
Robust	64	28	49.5	62	14.5	62.6	52.8	70.8	61.8	62.1
Trial Mean	64	24	50.3	77	13.6	66.7	64.6	76.0	--	--
C.V. %	1.4	7.0	1.5	8.5	2.9	5.8	10.5	9.7	--	--
LSD .05	1	2	1.0	9	0.6	5.4	9.5	10.4	--	--
LSD .01	2	3	1.4	12	0.7	7.1	12.6	13.8	--	--

Planting Date: April 11, 2006  
 Harvest Date: July 18, 2006  
 Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).  
 Previous Crop: 2005 = fallow, 2004 & 2003 = soybean.

2006 Barley - Alfalfa burn down

Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height in	Test Weight lbs/bu	Protein %	% Plump >6/64	----- Grain Yield-----			Returns \$/ac	----- Average Yield -----	
							2004	2005	2006		Year 2	Year 3
							-----bu/ac-----				----bu/ac----	
<b>Six Row</b>												
Drummond	60	14,786	30	43.7	15.2	61	47.8	95.4	89.9	143.36	92.7	77.7
Lacey	59	14,151	30	42.3	15.2	63	46.2	97.7	88.4	135.92	93.1	77.4
Legacy	60	16,458	29	38.6	14.4	50	57.2	94.8	76.0	103.83	85.4	76.0
Robust	60	13,588	31	44.7	15.4	69	40.4	93.2	89.8	146.27	91.5	74.5
Stellar-ND	60	15,355	28	39.8	13.9	67	44.9	101.5	83.8	121.68	92.6	76.7
Tradition	60	15,311	31	42.6	14.8	54	52.1	88.0	82.3	127.44	85.1	74.1
<b>Two Row</b>												
AC Metcalfe	65	12,418	31	43.9	16.3	81	57.6	85.1	88.6	140.92	86.9	77.1
Bowman	64	11,218	30	47.5	15.8	86	62.9	69.2	85.8	141.62	77.5	72.7
Conlon	62	10,213	30	46.4	15.1	95	34.4	76.0	82.3	134.85	79.2	64.2
Rawson	65	8,882	32	48.4	13.3	97	52.6	91.6	91.1	150.39	91.4	78.4
Eslick	65	13,089	30	44.2	15.6	57	63.1	100.8	98.1	157.80	99.4	87.3
Harrington	67	15,471	33	40.8	17.4	48	45.0	75.4	78.6	115.48	77.0	66.3
Haxby	65	12,198	29	47.2	15.6	61	72.5	83.9	94.0	153.32	89.0	83.5
Trial Mean	63	13,211	30	42.9	15.1	72	50.6	90.1	87.7	135.27	--	--
CV %	1.3	8.8	5.7	4.8	3.5	16.7	18.6	5.9	11.1	14.1	--	--
LSD 0.05	1	1,643	2	2.9	1.1	17	NS	7.4	13.6	26.70	--	--

Planting Date: April 25, 2006

Harvest Date: July 31, 2006

Previous Crop: Alfalfa burn down

Seeding Rate: 1.2 million live seeds/ac

Returns were calculated by multiplying the 2006 yields by the price paid for feed barley minus the test weight discount paid at the Southwest Grain Terminal located at Gladstone on August 30. The price paid on this date was \$1.65/bu for grain with test weights heavier than 45 lb/bu. Grain with a test weight of 45 lb/bu was discounted \$.03/bu, with an additional discount of \$.04/bu per pound down to 42 lb/bu. Below 42 lb/bu, an additional discount of \$.05/bu occurred per pound.

**2006 Barley Variety Trial - Continuously Cropped - No-till** **Scranton**

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	% Plump	Grain Protein	Grain Yield			Average Yield	
	inches	Lbs/bu	>6/64	%	2004	2005	2006	2 yr	3 yr
----- Bushels per acre -----									
<b>2 Row Types</b>									
Rawson	30	47.8	94	10.6	81.9	66.7	90.5	78.6	79.7
Eslick	28	45.9	75	11.8		76.7	94.8	85.8	
Haxby	27	49.6	69	12.2		68.9	94.7	81.8	
Conlon	29	49.2	97	11.6		39.9	82.0	61.0	
<b>6 Row Types</b>									
Drummond	30	45.9	59	12.5	89.9	65.6	82.9	74.2	79.5
Tradition	27	44.1	56	12.0	81.1	68.9	81.6	75.2	77.2
Robust	31	46.5	58	12.8	75.4	62.6	77.9	70.2	72.0
Stellar-ND	30	43.4	70	12.1		67.2	77.3	72.2	
Trial Mean	29	46.7	74	12.0	82.1	64.6	85.2	--	--
C.V. %	4.8	1.5	8.4	6.6	6.5	10.3	6.0	--	--
LSD .05	2	1.0	9	NS	8.5	9.8	7.4	--	--
LSD .01	3	1.4	12	NS	12.2	13.3	10.1	--	--

Planting Date: April 24, 2006 Harvest Date: August 2, 2006

Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).

Previous Crop: 2003 & 2004 = Lentil, 2005 = hrww.

NS = no statistical difference between varieties.

**2006 Barley Variety Trial - Continuously Cropped - No-till** **Regent**

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	% Plump	Grain Protein	Grain Yield			Average Yield	
	inches	Lbs/bu	>6/64	%	2003	2005	2006	2 yr	3 yr
----- Bushels per acre -----									
<b>2 Row Types</b>									
Conlon	25	47.7	93	13.1	76.4	53.7	57.5	55.6	62.5
Haxby	23	48.4	40	13.6		73.5	70.4	72.0	
Eslick	21	45.2	29	14.9		74.3	64.0	69.2	
Rawson	23	46.6	88	11.2		65.1	61.0	63.0	
<b>6 Row Types</b>									
Robust	24	44.2	49	14.7	58.3	60.6	48.3	54.4	55.7
Drummond	23	43.4	45	13.6		68.3	57.1	62.7	
Stellar-ND	21	42.1	55	13.3		70.4	53.8	62.1	
Tradition	22	43.6	44	14.2		65.8	50.1	58.0	
Trial Mean	23	45.1	57	13.5	66.8	66.5	57.4	--	--
C.V. %	4.5	1.6	10.3	2.5	5.5	6.8	5.5	--	--
LSD .05	1	1.0	9	0.5	5.7	6.7	4.6	--	--
LSD .01	2	1.4	12	0.7	8.0	9.1	6.2	--	--

Planting Date: April 24, 2006 Harvest Date: July 31, 2006

Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).

Previous Crop: 2002 & 2004 = lentil, 2005 = hrww.

**2006 Barley Variety Trial - Continuously Cropped - No-till** **New Leipzig**

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant	Test	%	Grain	---- Grain Yield ----			Average Yield	
	Height	Weight	Plump	Protein	2004	2005	2006	2 yr	3 yr
	inches	Lbs/bu	>6/64	%	----- Bushels per acre -----				
<b>2 Row Types</b>									
Rawson	18	43.9	77	12.9	38.3	53.6	30.3	42.0	40.7
Conlon	19	45.6	82	14.1	27.4	41.5	25.7	33.6	31.5
Haxby	17	46.4	38	15.8		71.7	31.5	51.6	
Eslick	17	42.8	27	15.4		63.2	34.9	49.0	
<b>6 Row Types</b>									
Drummond	20	41.3	36	14.5	38.9	55.5	29.3	42.4	41.2
Tradition	15	40.7	40	15.0	34.7	47.2	26.1	36.6	36.0
Robust	19	40.6	33	15.4	32.6	47.4	24.9	36.2	35.0
Stellar-ND	17	38.9	47	14.2		49.4	24.7	37.0	
Trial Mean	18	42.5	50	14.7	34.2	53.6	28.2	--	--
C.V. %	7.7	1.8	14.7	3.4	11.1	12.0	9.8	--	--
LSD .05	2	1.1	11	0.7	5.9	9.5	4.0	--	--
LSD .01	3	1.5	14	1.0	8.3	12.9	5.5	--	--

Planting Date: April 24, 2006      Harvest Date: July 31, 2006

Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).

Previous Crop: 2003 & 2004 = lentil, 2005 = hrww.

Note: The 2006 trial sustained severe heat and moisture stress.

**2006 Barley Variety Trial - Continuously Cropped - No-till** **Selfridge**

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant	Test	%	Grain	---- Grain Yield ----			Average Yield	
	Height	Weight	Plump	Protein	2004	2005	2006	2 yr	3 yr
	inches	Lbs/bu	>6/64	%	----- Bushels per acre -----				
<b>2 Row Types</b>									
Rawson	22	45.6	79	12.0	86.9	68.5	47.1	57.8	67.5
Conlon	22	47.4	91	14.6	81.7	66.4	47.8	57.1	65.3
Haxby	21	48.0	42	15.5		75.7	53.1	64.4	
Eslick	19	46.2	46	15.2		71.9	51.7	61.8	
<b>6 Row Types</b>									
Tradition	18	41.5	38	15.4	87.9	73.3	36.0	54.6	65.7
Drummond	20	42.1	40	15.4	87.4	71.4	32.4	51.9	63.7
Robust	21	41.0	19	15.6	66.3	60.8	26.4	43.6	51.2
Stellar-ND	19	38.4	27	14.6		72.9	25.7	49.3	
Trial Mean	20	43.8	50	14.7	82.0	70.1	40.5	--	--
C.V. %	5.0	1.7	12.3	3.6	7.5	4.5	10.9	--	--
LSD .05	1	1.1	9	0.8	9.5	4.7	6.5	--	--
LSD .01	2	1.5	12	1.1	13.3	6.3	8.8	--	--

Planting Date: April 25, 2006      Harvest Date: August 4, 2006

Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).

Previous Crop: 2003 & 2004 = lentil, 2005 = hrww.

Note: The 2006 trial sustained moderate heat and moisture stress.



**2006 Barley Variety Trial - Continuously Cropped - No-till Mandan**

Cooperator: USDA-ARS, Mandan

Variety	Test	%	Grain	---- Grain Yield ----			Average Yield		
	Weight	Plump	Protein	2004	2005	2006	2 yr	3 yr	
	Lbs/bu	>6/64	%	----- Bushels per acre -----					
<b>2 Row Types</b>									
Rawson	42.6	76	13.5	48.2	79.5	42.7	61.1	56.8	
Haxby	41.0	24	15.4	56.1	60.0	34.8	47.4	50.3	
Conlon	38.9	24	14.8	24.7	37.3	36.8	37.0	32.9	
Eslick	41.3	19	14.9		76.6	47.4	62.0		
<b>6 Row Types</b>									
Tradition	41.7	30	14.3	41.3	65.9	46.4	56.2	51.2	
Drummond	42.7	40	13.8	48.1	33.8	46.2	40.0	42.7	
Robust	40.3	42	14.4	43.2	47.2	37.0	42.1	42.5	
Stellar-ND	41.5	39	14.9		72.4	40.3	56.4		
Trial Mean	41.2	36	14.6	43.6	59.1	41.1	--	--	
C.V. %	5.2	16.5	9.4	16.3	13.3	11.4	--	--	
LSD .05	NS	10	NS	12.9	13.8	8.1	--	--	
LSD .01	NS	14	NS	18.4	19.1	NS	--	--	

Planting Date: April 35, 2006 Harvest Date: August 4, 2006  
 Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).  
 Previous Crop: 2003 = barley, 2004 = lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.  
 Note: The 2006 trial sustained severe heat and moisture stress.

**Barley in the West River Region**

**Combined Means**

Variety	Days to	Plant	Seeds /	Test	Grain	%	---- Grain Yield ----			Average Yield	
	Head	Height	Pound	Weight	Protein	Plump	2004	2005	2006	2 yr	3 yr
		inches	#	lbs/bu	%		----- Bushels per acre -----				
<b>2 Row Types</b>											
Conlon	63	25	10,213	46.9	13.8	83	44.8	54.1	58.6	56.4	52.5
Eslick	66	23	13,089	45.2	14.5	45		73.4	66.9	70.2	
Haxby	65	24	12,198	47.7	14.6	50		71.2	66.2	68.7	
Rawson	64	25	8,882	46.6	12.1	87		70.0	62.6	66.3	
<b>6 Row Types</b>											
Drummond	62	24	14,786	44.1	14.1	51	58.9	63.2	58.6	60.9	60.2
Tradition	62	23	15,311	43.5	14.3	48	56.6	66.1	56.6	61.4	59.8
Robust	62	24	13,588	43.8	14.7	47	49.0	58.9	53.6	56.2	53.8
Stellar-ND	62	25	15,355	41.8	13.8	55		68.4	54.2	61.3	
# of Locations*	2	6	1	7	7	7	8	8	7	15	23

\* Locations: 2006 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Selfridge, & Mandan.  
 2005 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Selfridge, Mandan, & Ralph, SD.  
 2004 = Hettinger, Dickinson, Scranton, Selfridge, New Leipzig, Mandan, Ralph & Bison, SD.

2006 North Dakota Oat Variety Descriptions

Variety	Origin	Year Released	Grain Color	Height	Straw Strength	Maturity <sup>1</sup>	Reaction to Diseases				
							Stem rust <sup>2</sup>	Crown rust <sup>2</sup>	Barley Y.DwV <sup>3</sup>	bu/Wt	Protein <sup>4</sup>
AC Assiniboia	Can. Proven Seed	1997	red	med	strong	L	S	S	T	good	ML
AC Gwen	Can. SeCan	2000	hulless	tall	strong	L	S	S	R	good	L
AC Kaufman	Can.	2000	yellow	tall	strong	L	S	S	MT	v.good	ML
AC Medallion	Can. Cargill	1997	white	tall	med.	L	S	S	MT	good	ML
AC Morgan	Can. SeCan	1999	white	med.	strong	L	S	S	S	v.good	ML
AC Pinnacle	Can. QAS	1999	white	tall	med.	L	S	S	S	v.good	L
AC Ronald	Can. SeCan	2001	white	m. short	v. strong	L	S	S	T	v.good	M
Beach	NDSU	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 Boyer	Sask. Value Added	1994	white	tall	m.strg.	L	S	MS	S	v.good	ML
CDC Dancer	Can. Cargill	2000	white	tall	strong	L	S	MS	S	v.good	M
CDC Orrin	Can. QAS Cargill	2001	white	tall	strong	L	S	S	S	good	ML
CDC Pacer	Sask. Value Added	1996	white	tall	m.strg.	L	S	S	S	good	L
Ebeltoft	ND	1999	white	tall	strong	VL	S	MS	S	v.good	M
Gem	WI	1996	yellow	tall	strong	L	S	MS	MT	v.good	M
HiFi	ND	2001	white	tall	strong	L	MR/MS	R	T	good	M
Hyttest	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
Leonard	MN	2001	yellow	tall	m.strong	L	S	S	T	fair	ML
Loyal	SD	2000	ivory	tall	m.strong	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	NA	good	ML
Morton	ND	2001	white	tall	v.strong	L	S	R	MT	v.good	M
Otana	MT	1977	white	m.tall	m.weak	L	S	S	S	v.good	ML
Paul	ND	1994	naked	v.tall	strong	L	R	MR/MS	T	good	H
Reeves	SD	2002	white	m.tall	med.	E	S	MR	MT	good	H
Richard	MN	2000	yellow	tall	strong	M	S	MS	T	good	M
Sesqui	MN	2001	yellow	m.tall	strong	L	S	S	T	good	M
Souris	NDSU	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	NDSU	2004	naked	tall	m.strg.	L	R	MR/MS	T	v.good	M
Triple Crown	Canterra	1998	white	tall	strong	L	S	S	S	good	L
Vista	WI	2000	yellow	tall	strong	L	S	R	MT	good	M
Wabasha	MN	2001	white	tall	v.strong	M	S	S	T	good	M
Whitestone	ND	1994	white	short	strong	L	S	MS	MT	good	L
Youngs	ND	1999	white	med.	strong	L	S	MS/S	MT	good	M

1 E = early; M = medium; L = late.

2 R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible

3 S = susceptible; MS = moderately susceptible; MT = moderately tolerant; T = tolerant.

Varieties rated MT or T have a relatively good degree of protection against barley yellow dwarf virus.

4 H = high; M = medium; L = low; V = very; VL = very low.

Varieties in bold were released in 2006.

2006 Oat Variety Trial – No-till

Hettinger

Variety	Days to Head	Plant Height	Test Weight	---- Grain Yield ----			Average Yield	
				2004	2005	2006	2 yr	3 yr
		inches	Lbs/bu	----- Bushels per acre -----				
Killdeer	66	29	34.0	84.4	89.3	104.7	97.0	92.8
Souris	66	27	33.9	87.5	100.6	82.3	91.4	90.1
AC Pinnacle	70	29	33.2	83.5	81.0	103.4	92.2	89.3
Monida	70	30	32.6	82.2	79.9	100.0	90.0	87.4
HiFi	68	31	32.4	74.9	98.1	88.6	93.4	87.2
CDC Pacer	70	32	30.4	88.0	85.3	82.8	84.0	85.4
AC Assiniboia	69	31	34.3	75.4	83.1	95.7	89.4	84.7
Youngs	69	32	32.6	82.6	82.7	87.5	85.1	84.3
Ebeltoft	72	27	32.5	74.7	82.8	94.0	88.4	83.8
Beach	67	33	34.5	74.2	87.5	87.9	87.7	83.2
AC Kaufman	66	31	35.4	77.8	77.9	92.8	85.4	82.8
Otana	70	34	30.8	78.6	82.3	84.6	83.4	81.8
Jerry	64	30	37.7	67.7	84.9	92.4	88.6	81.7
Hystest	65	32	37.9	63.0	91.2	88.2	89.7	80.8
Maida	66	29	34.6	70.0	77.7	90.0	83.8	79.2
AC Ronald	68	27	34.1	63.4	87.2	86.8	87.0	79.1
Morton	66	32	31.4	75.2	76.0	79.0	77.5	76.7
CDC Dancer	69	32	31.5	68.2	74.2	77.4	75.8	73.3
Buff*	61	26	44.4	61.1	78.5	67.2	72.8	68.9
Stark*	72	30	39.1	61.7	59.2	63.6	61.4	61.5
Paul*	73	31	41.3	56.6	44.8	40.6	42.7	47.3
Weaver	72	31	32.2		87.1	75.7	81.4	
Stallion	67	31	36.1			109.8		
Leonard	68	31	33.0			87.7		
Trial Mean	68	31	34.4	74.6	82.2	87.3	--	--
C.V. %	1.6	5.2	3.8	10.4	10.4	7.6	--	--
LSD .05	1	2	1.8	10.9	12.0	9.3	--	--
LSD .01	2	3	2.4	14.4	15.8	12.3	--	--

\* Naked (hulless) type.

Planting Date: April 10, 2006

Harvest Date: July 28, 2006

Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).

Previous Crop: 2005 = fallow, 2004 & 2003 = soybean.

## 2006 Oat - Alfalfa burn down

Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height in	Test Weight lbs/bu	----- Grain Yield-----			Returns \$/ac	Average Yield	
					2004	2005	2006		2	3
					-----bu/ac-----			----bu/ac----		
AC Assiniboia	65	15,721	29	31.4	55.9	130.1	95.1	91.23	112.6	93.7
AC Kaufman	62	16,007	29	31.8	41.5	103.8	91.4	91.35	97.6	78.9
AC Pinnacle	63	17,130	30	32.9	60.1	135.8	108.1	113.78	121.9	101.3
AC Ronald	61	16,243	30	33.9	48.3	124.2	97.6	102.86	110.9	90.0
Beach	61	16,842	32	34.9	46.2	121.9	94.4	104.89	108.1	87.5
Buff*	57	22,846	27	38.0	37.3	80.1	60.9	74.31	70.5	59.4
CDC Dancer	63	17,868	31	32.5	52.1	121.8	96.0	96.22	108.9	89.9
CDC Pacer	63	15,068	31	29.6	54.4	119.2	107.4	93.96	113.3	93.6
CDC Weaver	64	12,887	31	31.5	--	107.5	98.7	99.32	103.1	--
Ebeltoft	65	17,518	26	30.3	53.5	132.1	89.4	84.24	110.8	91.7
HiFi	63	20,581	31	32.1	49.4	114.5	87.9	85.04	101.2	83.9
HiFi-9	62	19,796	31	32.1	--	--	89.5	86.95	--	--
Hyttest	59	16,563	33	34.3	51.6	101.2	90.5	96.50	95.9	81.1
Jerry	59	16,475	30	33.5	46.1	115.2	90.5	93.85	102.8	83.9
Killdeer	59	17,912	26	32.2	56.8	137.9	93.5	93.91	115.7	96.1
Leonard	63	17,017	29	28.7	58.0	124.6	96.3	76.24	110.4	93.0
Maida	62	15,991	30	32.0	46.4	118.0	84.2	80.86	101.1	82.9
Monida	64	17,452	30	27.4	56.0	131.8	104.8	77.53	118.3	97.5
Morton	62	17,236	32	30.9	49.8	121.7	97.2	89.33	109.5	89.6
Souris	60	19,715	27	32.8	55.2	123.8	97.0	97.41	110.4	92.0
Otana	63	17,418	31	30.8	62.9	124.3	96.3	89.58	110.3	94.5
Paul*	64	19,027	31	39.3	42.0	82.9	58.5	72.26	70.7	61.1
Stallion	60	13,635	31	32.4	--	--	100.2	98.33	--	--
Stark*	65	21,683	32	36.1	43.8	89.0	68.1	78.32	78.5	67.0
Youngs	63	14,954	31	30.1	52.8	114.3	98.0	88.05	106.1	88.4
Trial Mean	62	17,160	30	32.7	51.1	116.5	93.0	92.89	--	--
CV %	1.3	6.6	4.8	3.1	17.9	10.6	9.8	11.9	--	--
LSD 0.05	1	1,595	2	1.4	NS	17.4	12.7	15.5	--	--

Planting Date: April 25, 2006

Harvest Date: July 31, 2006

\* Hulless

Previous Crop: Alfalfa burn down

Seeding Rate: 1 million live seeds/ac

Returns were calculated by multiplying the 2006 yield by the test weight discount paid at the Southwest Grain Terminal located in Gladstone on August 30. The price paid was \$1.25/bu for grain with a test weight greater than 37 lb/bu. Grain with a test weight of 37 lb/bu was discounted \$.04/bu, with an additional discount of \$.04/bu per pound to 30 lb/bu. Below 30 lb/bu, an additional discount of \$.07/bu occurred per pound.

**2006 Oat Variety Trial - Continuously Cropped - No-till New Leipzig**

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height inches	Test Weight Lbs/bu	----- Grain Yield -----			Average Yield	
			2001	2003	2006	2 yr	3 yr
			----- Bushels per acre -----				
Killdeer	22	31.6	91.3	72.7	25.8	49.2	63.3
Morton	25	31.6	98.8	50.4	22.3	36.4	57.2
Jerry	23	34.2			25.0		
Maida	24	32.4			24.2		
Beach	22	33.5			23.1		
Souris	20	32.6			15.2		
Trial Mean	23	32.7	94.4	57.7	22.6	--	--
C.V. %	6.0	2.1	13.0	12.9	13.8	--	--
LSD .05	2	1.0	NS	11.5	4.7	--	--
LSD .01	3	1.4	NS	16.1	6.5	--	--

Planting Date: April 24, 2006 Harvest Date: July 31, 2006  
 Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).  
 Previous Crop: 2000 & 2005 = hrww, 2002 = lentil.  
 NS = no statistical difference between varieties.  
 Note: The 2006 trial sustained severe heat and moisture stress.

**2006 Oat Variety Trial - Continuously Cropped - No-till Selfridge**

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant Height inches	Test Weight Lbs/bu	----- Grain Yield -----			Average Yield	
			2004	2005	2006	2 yr	3 yr
			----- Bushels per acre -----				
Killdeer	25	31.4	104.0	110.2	38.3	74.2	84.2
Beach	29	36.1	110.4	92.3	35.0	63.6	79.2
Morton	28	33.4	105.4	97.7	28.1	62.9	77.1
Souris	23	33.5		99.4	36.3	67.8	
Maida	28	34.2		101.0	21.0	61.0	
Jerry	28	36.5			40.0		
Trial Mean	27	34.2	100.0	101.4	33.1	--	--
C.V. %	5.0	1.1	8.2	8.4	11.2	--	--
LSD .05	2	0.6	NS	NS	5.6	--	--
LSD .01	3	0.8	NS	NS	7.7	--	--

Planting Date: April 25, 2006 Harvest Date: August 4, 2006  
 Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).  
 Previous Crop: 2003 & 2004 = lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.  
 Note: The 2006 trial sustained moderate heat and moisture stress.



**2006 Oat Variety Trial - Continuously Cropped - No-till** **Mandan**

Cooperator: USDA-ARS, Mandan

Variety	Test Weight	---- Grain Yield ----			Average Yield	
		2003	2004	2006	2 yr	3 yr
	Lbs/bu	----- Bushels per acre -----				
Killdeer	32.5	92.5	86.1	53.3	69.7	77.3
Beach	33.5	85.4	64.2	44.4	54.3	64.7
Morton	30.4	77.5	60.8	47.0	53.9	61.8
Jerry	33.5			54.8		
Maida	33.0			51.1		
Souris	33.3			50.4		
Trial Mean	32.7	80.8	67.0	50.2	--	--
C.V. %	2.1	6.3	9.5	11.3	--	--
LSD .05	1.3	7.9	11.6	NS	--	--
LSD .01	1.8	11.0	16.5	NS	--	--

Planting Date: April 25, 2006      Harvest Date: August 4, 2006  
 Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).  
 Previous Crop: 2002 & 2003 = Barley, 2005 = hrww.  
 NS = no statistical difference between varieties.  
 Notes: The 2006 trial sustained severe heat and moisture stress.

**Oat in the West River Region**

**Combined Means**

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	---- Grain Yield ----			Average Yield	
					2004	2005	2006	2 yr	3 yr
		inches	#	lbs/bu	----- Bushels per acre -----				
Killdeer	62	26	17,912	32.3	88.9	112.5	63.1	87.8	88.2
Beach	64	29	16,842	34.5	81.5	100.6	57.0	78.8	79.7
Morton	64	29	17,236	31.5	76.4	98.5	54.7	76.6	76.5
Maida	64	28	15,991	33.2		98.9	54.1	76.5	
Jerry	62	28	16,475	35.1			60.5		
Souris	63	24	19,715	33.2			56.2		
# of Locations*	2	4	1	5	6	3	5	8	14

\* Locations: 2006 = Hettinger, Dickinson, New Leipzig, Selfridge & Mandan.  
 2005 = Hettinger, Dickinson & Selfridge.  
 2004 = Hettinger, Dickinson, Scranton, Selfridge, Mandan & Bison, SD.

Origin, year of release and agronomic traits of hard red winter wheat varieties, 2006

Variety	Agent or Origin	Year	Quality <sup>1</sup>	Leaf Rust	Stem Rust <sup>2</sup>	Scab <sup>3</sup>	Maturity	Straw Strength	Height	Winter <sup>4</sup> Hardiness
Agassiz	ND	1983	Average	S	R	NA	Med.	Med.	Med.	Good
Alice	SD	2006	Good	S	MR	S	Early	M. strong	Short	Fair
Alliance	NE	1997	Poor	S	NA	NA	Early	Strong	Short	Good
Arapahoe	NE	1989	Poor	MS	MR	MS	Med.	Med	Med.	Fair
CDC Buteo	Can/WB	2004	NA	MS	NA	S	Med	Med	Med	Good
CDC Falcon	Can/WB	2000	NA	MS	NA	S	Med.	M. strong	Short	Good
CDC Kestrel	Can.	1994	Poor	S	S	NA	Med.	M. 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
Culver	NE	1998	Poor	MS	MR	NA	M. early	M. 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
Harry	NE	2002	Poor	MR	MR	NA	Med.	Strong	Med.	Poor
Jagalene	Agripro	2002	NA	S	MR	VS	Early	Strong	Short	Fair
Jerry	ND	2001	Good	MR	R	MS	Med.	Strong	Med.	Good
McClintock	Can	2003	Average	S	NA	S	Med.	Strong	Med.	Fair
Millenium	NE/SD	1999	Average	MS	MR	S	Med.	Strong	M. short	Fair
Morgan	WB	1996	NA	S	NA	NA	Med.	M. strong	Med.	Good
Nekota	SD/NE	1997	Good	MS	MR	NA	Early	V. strong	V. short	Good
Norstar	Can.	1977	Average	S	S	NA	Late	Med.	Tall	Good
Nuplains <sup>5</sup>	NE	2000	Average	S	MS	VS	Med.	M. strong	Short	Fair-Poor
NuSky <sup>5</sup>	MT	2001	Avg-Good	S	NA	S	Med.	M. strong	Med.	Fair
Paul	MT	2003	Average	S	NA	NA	Med.	Med.	Med.	Fair
Radiant <sup>7</sup>	Can	2005	Average	S	S	S	Late	V. strong	Tall	Good
Rampart <sup>6</sup>	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Poor
Ransom	ND	1998	Good	MR	NA	S	M. early	Med.	Med.	Good
Rose	SD	1981	Poor	S	MS	NA	Early	V. strong	Short	Fair
Roughrider	ND	1975	Good	S	R	MS	Med.	M. strong	Med.	Good
Seward	ND	1987	Poor	S	R	NA	Med.	M. strong	Med.	Good
Tandem	SD	1997	Good	S	NA	NA	Early	Med.	Med.	Fair
Wahoo	NE/WY	2001	Poor	S	R	S	Med.	M. strong	Med.	Fair
Wendy <sup>5</sup>	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
Windstar	NE	1997	Average	MS	NA	NA	Early	Med.	Med.	Fair-Good
Yellowstone	MT	2005	NA	NA	S	VS	Med	Med	Med	Good

<sup>1</sup>NA = data not available, or data insufficient to give rating

<sup>2</sup>R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible

<sup>3</sup>Primarily based on data collected in 2005 from several locations.

<sup>4</sup>Varieties with less than good winter hardiness should be seeded only in tall stubble.

<sup>5</sup>White wheat

<sup>6</sup>Saw fly resistant

<sup>7</sup>Curl mite resistant

**2006 Winter Wheat Variety Trial - Continuously Cropped - No-fill**

**Hettinger**

Variety	Winter Surv.	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
	%	From 1/1	inches	Lbs/bu	%	2004	2005	2006	2 yr	3 yr
						----- Bushels per acre -----				
Jerry	60	158	24	58.4	13.9	64.6	70.8	24.8	47.8	53.4
Harding	48	157	23	56.8	14.5	60.6	71.1	27.0	49.0	52.9
Yellowstone	17	159	22	56.4	14.0	57.0	68.2	20.4	44.3	48.5
Ransom	60	158	23	56.2	13.9	46.7	64.5	30.4	47.4	47.2
Roughrider	63	158	23	58.8	14.7	50.2	60.8	28.3	44.6	46.4
Wesley	44	156	20	58.7	15.1	44.3	68.7	19.1	43.9	44.0
Millennium	8	157	23	56.8	14.4	55.4	66.9	8.7	37.8	43.7
McClintock	1	159	25	56.7	14.4	53.7	63.3	8.9	36.1	42.0
Jagalene	30	157	20	60.2	14.2	42.4	61.3	20.9	41.1	41.5
Expedition	51	155	20	59.4	13.6	43.2	55.7	19.4	37.6	39.4
CDC Falcon	1	159	20	56.8	13.8	41.5	66.7	8.7	37.7	39.0
CDC Buteo	87	157	23	60.0	13.9		65.8	36.9	51.4	
Wendy*	32	156	20	58.8	14.2		61.7	18.9	40.3	
Radiant	90	158	24	57.3	14.1			41.7		
Paul	38	159	20	55.8	14.9			22.4		
Goodstreak	7	158	20	57.6	13.3			17.8		
Alice*	12	156	19	59.6	14.0			14.7		
Willow Creek**	48	168	28	54.0	16.3			21.4		
Trial Mean	36	158	22	57.8	14.2	44.8	64.0	22.1	--	--
C.V. %	72	0.6	7.9	1.5	2.4	19.5	4.5	46.1	--	--
LSD .05	43	2	3	1.5	0.6	NS	4.7	17.0	--	--
LSD .01	57	2	4	2.0	0.8	NS	6.3	NS	--	--

\* Hard white winter wheat.

\*\* Forage winter wheat.

Planting Date: September 19, 2005

Harvest Date: July 24, 2006

Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).

Previous Crop: 2003 & 2005 = soybean, 2004 = barley.

Notes: Trial went into winter dormancy in fair condition. Trial sustained severe late season heat and moisture stress.

**2006 Winter Wheat Variety Trial - Continuously Cropped - No-till Mandan**

Cooperator: USDA-ARS, Mandan

This trial was funded by Ducks Unlimited, Bismarck

Variety	Winter	Test	Grain	--- Grain Yield ---			Average Yield		
	Surv.	Weight	Protein	2004	2005	2006	2 yr	3 yr	
	%	Lbs/bu	%	----- Bushels per acre -----					
Harding	88	56.6	13.3	52.6	52.8	36.5	44.6	47.3	
Jerry	93	55.4	14.5	54.3	46.1	39.1	42.6	46.5	
Millennium	87	57.3	12.5	55.0	40.0	36.9	38.4	44.0	
Roughrider	83	58.1	13.9	44.2	36.1	37.2	36.6	39.2	
Expedition	90	58.8	12.6	50.0	27.4	36.9	32.2	38.1	
Ransom	85	54.4	13.2	51.1	32.2	30.9	31.6	38.1	
Wesley	83	56.7	13.8	49.5	12.8	41.1	27.0	34.5	
CDC Falcon	90	55.0	14.1	48.0	16.9	37.4	27.2	34.1	
CDC Buteo	87	58.3	13.1		32.8	38.3	35.6		
McClintock	78	57.4	14.3		21.7	35.7	28.7		
Wendy*	90	58.5	12.7		17.8	39.5	28.6		
Yellowstone	67	55.6	14.0		12.5	34.5	23.5		
Alice*	90	57.6	12.2			43.5			
Jagalene	82	58.6	12.6	52.2		42.0			
Paul	87	54.1	13.4			41.5			
Radiant	85	55.8	14.4			36.5			
Goodstreak	80	55.2	12.1			34.5			
Trial Mean	85	56.7	13.4	51.0	27.4	37.5	--	--	
C.V. %	13.8	1.4	5.2	6.7	20.7	16.5	--	--	
LSD .05	NS	1.3	1.1	5.7	9.5	NS	--	--	
LSD .01	NS	1.7	1.5	7.6	12.9	NS	--	--	

\* Hard white winter wheat

Planting Date: September 20, 2005

Harvest Date: August 4, 2006

Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).

Previous Crop: 2003 = barley, 2004 = lentil, 2005 = HRWW.

Notes: Trial sustained severe late season heat and moisture stress.

**2006 North Dakota winter rye variety descriptions.**

Variety	Origin	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
Dacold	ND	1989	med.	good <sup>1</sup>	v.late	bl-grn.	med.	low	good
Prima	Can.	1984	tall	good	med.	blue	large	med.	v.good
Frederick	SD	1984	tall	fair	late	tan	med.	high	good
Musketeers	Can.	1980	tall	good	m.early	blue	large	med.	v.good
Rymin	MN	1973	tall	v.good	late	grn-gray	large	high	fair <sup>2</sup>
Spooner	WI	1993	tall	v.good	med.	tan	--	high	--
Hancock	WI	1979	tall	good	med.	tan	--	high	--

<sup>1</sup> Under certain environments lodging has been observed.

<sup>2</sup> Varieties with fair winter hardiness should not be seeded on bare soil.

**2006 Winter Rye Variety Trial - Continuously Cropped - No-till Hettinger**

Variety	Winter Surv.	Heading Date	Plant Height	Lodging	Test Weight	Grain Yield
	%	From 1/1	inches	0-9*	Lbs/bu	Bu/A
DR02	96	151	34	1.5	53.2	52.0
Dacold	94	156	36	1.0	50.8	51.8
Remington	92	150	41	2.8	54.2	47.6
Spooner	94	146	39	4.2	54.1	41.9
Rymin	92	146	38	3.5	54.3	41.9
Hancock	85	150	38	3.5	53.9	41.4
Musketeer	91	146	36	4.0	54.3	37.7
Wheeler	85	152	40	2.8	50.2	13.2
Trial Mean	91	150	38	2.9	53.2	41.0
C.V. %	4.3	0.6	8.3	33.3	1.1	7.5
LSD .05	6	1	NS	1.4	0.9	4.5
LSD .01	8	2	NS	1.9	1.2	6.2

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

NS = no statistical difference between varieties.

Planting Date: September 19, 2005

Harvest Date: July 24, 2006

Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).

Previous Crop: soybean

Notes: Trial went into winter dormancy in fair condition. Trial sustained severe late season heat and moisture stress.

**2006 Roundup Ready Canola Variety Trial at Hettinger**

Continuously Cropped – No-till

Brand	Variety	Type*	Days to Bloom	Duration of Flowering	Days to Mature	Plant Height	Oil Content	Yield	
				days		inches	%	lbs/A	
Croplan	HyCLASS 712	S	55	16	85	40	36.6	389	
Genetics	HyCLASS 910	H	54	16	84	36	36.0	464	
	HyCLASS 767 SW	S	52	19	84	39	35.7	515	
	HyCLASS 924	H	50	19	82	38	37.3	664	
	HyCLASS 905	H	55	17	86	38	34.2	424	
	HyCLASS 431	S	52	20	85	36	36.2	377	
Dekalb	DKL 52-10	H	51	19	84	39	35.4	561	
	DKL 38-25	H	52	17	84	39	38.9	692	
	DKL 34-55	OP	52	19	84	37	39.5	470	
Interstate	Hyola 357 Mag	H	49	18	82	30	34.6	952	
	Seed	Hyola 514RR	H	56	16	86	40	34.1	395
		SW Patriot RR	S	51	18	84	35	34.8	629
		SW Marksman RR	H	52	20	84	37	38.7	506
		SW Titan RR	H	50	19	84	35	34.8	516
		IS 7145RR	H	54	16	86	41	37.7	436
Monsanto	MB 52141	H	51	19	84	34	36.8	543	
	MB 52143	H	52	20	84	41	39.6	519	
	Z5052	H	49	19	82	32	36.4	657	
	SW-PF-02-3902	H	53	20	85	37	34.7	486	
	SW-PF-02-3910	H	53	19	84	38	34.4	461	
	SWG 5246	OP	53	19	85	33	35.9	375	
	SWH 5263RR	OP	54	19	86	37	36.8	350	
Proseed	2066	H	54	18	84	39	37.7	532	
	Exp30518	H	54	18	85	33	35.5	416	
	Manor**	OP	50	20	83	32	33.8	349	
SW Seed	SW-PI-02-1212	H	50	18	84	35	37.4	642	
Trial Mean			52	18	84	37	36.3	512	
C.V. %			1.4	4.9	0.9	6.4	2.8	12.6	
LSD .05			1	1	1	3	1.4	91	
LSD .01			1	2	1	4	1.9	120	

\* Type: H = Hybrid, S = Synthetic, OP = Open Pollinated

\*\* Proseed Manor is a conventional (non Roundup Ready) type.

Planting Date: April 23, 2006

Harvest Date: July 24, 2006

Previous Crop: HRSW

Note: Very low yields caused by severe heat and moisture stress.



**2006 Crambe Variety Trial - Continuously Cropped - Minimum-till Hettinger**

Variety	Days to Bloom	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield
			Inches	lbs/bu	%	lbs/A
Meyer	64	96	25	22.4	26.4	1176
Bel Ann	64	92	25	22.9	24.5	933
Trial Mean	64	93	26	22.4	24.1	1089
C.V. %	1.2	0.9	8.6	3.5	7.2	14.6
LSD .05	NS	1	NS	NS	NS	230
LSD .01	NS	2	NS	NS	NS	NS

NS = no statistical difference between varieties.

Planting Date: April 12, 2006

Harvest Date: July 24, 2006

Previous Crop: barley

Note: Trial sustained severe late season heat and moisture stress.

**2006 Tame Mustard Variety Trial - Continuously Cropped - Minimum-till Hettinger**

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Test Weight	1000 Seed wt	Yield			Avg. Yield	
				Inches	lbs/bu	grams	2003	2004	2006	2 yr	3 yr
							----- lbs / ac -----				
<b>Yellow</b>											
Andante	41	26	75	24	56.4	5.2	971	1187	927	1057	1028
Ace	43	24	77	24	56.6	4.1	868	1260	722	991	950
Tilney	43	24	78	26	55.6	4.5	868	1180	625	902	891
AC Pennant	43	24	75	22	55.8	4.6	1036	1033	570	802	880
<b>Oriental</b>											
Forge	47	22	78	37	--	3.3	345	1160	404	782	636
Trial Mean	43	24	76	27	56.2	4.4	770	1186	650	--	--
C.V. %	0.5	1.9	1.4	9.6	1.8	5.9	8.6	16.6	10.7	--	--
LSD .05	1	1	2	4	NS	0.4	109	NS	107	--	--
LSD .01	1	1	2	6	NS	0.6	148	NS	150	--	--

Planting Date: April 23, 2006

Harvest Date: July 18, 2006

Seeding rate: Yellow = 12 lbs/A, Oriental = 6 lbs/A

Previous Crop: 2002 & 2004 = barley, 2003 = HRSW

NS = no statistical difference between varieties.

Notes: The 2006 trial sustained severe heat and moisture stress.

**2006 Safflower Variety Trial – Continuously Cropped - No-till**

**Hettinger**

Variety	Days to Bloom	Plant Height inches	Test Weight lbs/bu	*Oil Content %	Seed Yield			Average Yield	
					2004	2005	2006	2 yr	3 yr
<b>Linoleic Types</b>									
S-541	87	19	40.2	47.4	2387	1567	967	1267	1640
Finch	86	21	41.1	40.4	2000	1627	847	1237	1491
NutraSaff	86	21	--	50.2	1973	1680	127	904	1260
<b>Oleic Types</b>									
Montola 2003	87	17	39.6	43.0	1900	1907	622	1264	1476
Montola 2004	84	19	38.9	41.8	1853	1753	773	1263	1460
Montola 2000	85	18	37.5	44.7	1880	1367	860	1114	1369
Trial Mean	86	19	39.3	43.7	2100	1736	870	--	--
C.V. %	1.1	6.9	1.4	0.8	13.5	8.8	13.6	--	--
LSD .05	1	2	0.8	0.5	409	221	171	--	--
LSD .01	2	3	1.1	0.7	NS	298	230	--	--

\* Oil content is adjusted to an 8% moisture basis and is adjusted by oil type.

Planting Date: April 12, 2006 Harvest Date: August 29, 2006

Seeding Rate: 400,000 live seeds / acre.

Previous Crop: 2003 = HRSW, 2004 & 2005 = barley.

NS = no statistical difference between varieties.

Notes: The 2006 trial sustained severe heat and moisture stress.

**2006 Dormant Seeded Safflower Trial**

**Hettinger**

Variety	Plant Stand #/ft <sup>2</sup>	Flowering Date July	Duration of Bloom days	Plant Height inches	Test Weight lbs/bu	Oil Content %	Seed Yield		
							2005	2006	Avg.
<b>Fall Seeded*</b>									
S-541	0.7	13	16	23	41.5	48.1	1893	1113	1503
Finch	2.1	13	15	22	45.3	43.5	2036	1547	1792
Montola 2003	1.6	14	16	22	42.1	44.8	2240	1547	1894
Mean	1.5	13	16	22	43.0	45.5	2056	1402	1730
<b>Spring Seeded*</b>									
S-541	8.9	10	12	24	41.5	48.8	1567	2167	1867
Finch	11.1	7	15	25	44.0	43.1	1627	2333	1980
Montola 2003	20.9	12	10	21	40.9	44.5	1907	1513	1710
Mean	13.6	10	12	23	42.1	45.5	1700	2004	1852
C.V. %	27.0	2.3	6.6	8.3	1.2	0.7	13.3	8.2	--
LSD .05	3.1	1	1	3	0.8	0.5	381	212	--
LSD .01	4.2	1	2	NS	1.0	0.7	532	293	--

\* Planting Date: November 14, 2005 (Fall) & April 12, 2006 (spring)

Harvest Date: August 29, 2006

Seeding Rate: 400,000 live seeds / acre.

Previous Crop: Barley

NS = no statistical difference between varieties.

2006 North Dakota flax variety descriptions.

Variety <sup>1</sup>	Origin	Year Released	Relative Maturity <sup>2</sup>	Seed Color	Plant Height	Wilt	Relative Yield
NorLin	Can.	1982	early	brown	med.	MS	good
AC-Watson	Can.	1996	early	brown	short	MR	v.good
CDC-Valour	Can.	1996	early	brown	short	MR	v.good
Linton	ND	1985	early	brown	med.	R	v.good
Prompt	SD	1988	early	brown	med.	MR	good
Hanley	Can.	2002	mid/early	brown	med.	R	v.good
AC-Emerson	Can.	1994	mid.	brown	med.	VR	v.good
CDC-Normandy	Can.	1995	mid.	brown	short	MR	v.good
Cathay	ND	1998	mid.	brown	med.	MR	v.good
Pembina	ND	1998	mid.	brown	med.	MR	v.good
Carter	ND	2004	mid.	yellow	med.	R	v.good
Nèche	ND	1988	mid.	brown	med.	R	good
Omega	ND	1989	mid.	yellow	med.	MS	v.good
Rahab 94	SD	1994	mid.	brown	med.	MR	good
CDC Arras	Can.	1999	mid.	brown	med.	MR	v.good
CDC Bethume	Can.	1999	mid/late	brown	med.tall	MR	v.good
AC Carnduff	Can.	1998	mid/late	brown	med.tall	MR	v.good
CDC Mons	Can.	2003	mid/late	brown	med.	MR	v.good
Taurus	Can.	2003	mid/late	brown	med.	MR	v.good
Flanders	Can.	1989	late	brown	med.	MS	good
Webster	SD	1998	late	brown	tall	MR	v.good
McDuff	Can.	1993	late	brown	med.tall	MR	v.good
AC Linora	Can.	1993	late	brown	tall	R	v.good
Selby	SD	2000	late	brown	tall	MR	good
York	ND	2002	late	brown	med.	R	v.good
Nekoma	ND	2002	late	brown	med.	MR	v.good
Lightning	Can.	2002	late	brown	med.tall	R	v.good

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

2 Varieties listed order of maturity.

**2006 Flax Variety Trial - Continuously Cropped - No-till**

**Hettinger**

Variety	Days to Bloom	Plant Height	Test Weight	----- Grain Yield -----			Average Yield	
				2003	2004	2006	2 yr	3 yr
		inches	Lbs/bu	----- Bushels per acre -----				
CDC Arras	64	19	46.2	21.6	19.9	14.8	17.4	18.8
York	64	19	44.4	24.8	17.5	12.5	15.0	18.3
Prairie Blue	67	21	42.8	26.8	16.9	11.3	14.1	18.3
Nekoma	64	19	45.3	19.7	16.6	14.4	15.5	16.9
CDC Bethume	65	20	44.1	20.5	18.6	11.4	15.0	16.8
Webster	64	20	44.7	17.9	19.9	12.3	16.1	16.7
Hanley	62	18	46.4	19.5	17.0	12.0	14.5	16.2
Carter*	66	20	46.9	19.8	16.1	9.9	13.0	15.3
Neche	63	19	45.3	17.6	13.7	14.4	14.0	15.2
Pembina	64	20	43.2	19.2	14.9	11.3	13.1	15.1
Rahab 94	64	19	45.6	17.1	9.6	12.9	11.2	13.2
Omega*	68	21	--	20.2	5.4	6.2	5.8	10.6
Trial Mean	64	20	45.0	20.6	16.2	12.1	--	--
C.V. %	1.0	6.1	2.3	11.8	27.8	11.2	--	--
LSD .05	1	2	1.5	4.0	6.4	2.0	--	--
LSD .01	1	NS	2.0	5.4	8.5	2.6	--	--

Planting Date: April 12, 2006

Harvest Date: July 28, 2006

Seeding Rate: 32 lbs / acre.

Previous Crop: 2002 = barley, 2003 = hrsw, 2005 = soybean.

\*Yellow seed type.

NS = no statistical difference between varieties.

Note: The 2006 trial sustained severe heat and moisture stress.

**2006 Camelina Variety Trial – Continuously Cropped - Minimum-till**

**Hettinger**

Variety	Plant Height	Test Weight	Grain Yield
	inches	lbs/bu	lbs/ac
Pleasure #1	22	50.2	1547
Robinson	21	51.8	1640
CO 46	22	50.1	1433
CO 54	23	49.9	973
CO 54-97	23	50.6	1307
Trial Mean	22	50.5	1380
C.V. %	9.5	1.2	10.8
LSD .05	NS	0.9	229
LSD .01	NS	1.3	321

Planting Date: April 13, 2006

Harvest Date: July 14, 2006

Previous Crop: barley

NS = no statistical difference between varieties.

Brand	Variety	Maturity Group	Days to Bloom	Plant Height inches	Test Weight lbs/bu	Protein Content %	Oil Content %	Seed Yield lbs/A
<b>Roundup Ready Varieties</b>								
Dairyland Seeds	DSR-C800/RR	0.09	59	11	54.6	39.6	20.2	5.8
	DSR-C900/RR	0.07	62	12	--	39.9	19.5	2.8
DynaGro	33J05	0.5	60	13	56.6	39.6	19.4	11.7
	36N05	0.5	63	12	58.6	38.1	20.0	10.4
Legend Seed	LS0522RR	0.5	62	13	57.1	40.9	19.9	13.9
	LS0255RR	0.2	60	12	--	39.8	19.5	7.6
Monsanto	AG0301	0.3	61	15	54.7	37.2	20.6	12.7
	AG0801	0.8	61	17	56.2	37.9	20.2	16.5
Peterson Farm	PFS-0606	0.6	64	14	56.6	37.9	20.6	8.1
Seeds	PFS-0509	0.9	64	14	55.7	40.5	18.8	10.5
Proseed	RR0069	0.6	57	14	54.3	37.7	19.4	6.0
	RR20-40	0.4	58	12	54.7	38.6	20.2	8.7
Roughrider	RG200RR	0.0	61	13	--	41.2	18.6	7.9
Genetics	RG405RR	0.5	63	13	56.3	38.9	20.3	7.1
Wolf River Valley	WRV2507RR	0.7	58	16	54.4	37.5	19.8	8.2
Seeds	WRV32005RR	00.5	60	14	--	38.6	19.3	6.7
<b>Conventional Varieties</b>								
NDSU	Pembina	00.5	59	15	--	35.7	20.3	6.8
	Jim	00.7	57	13	--	37.1	20.3	6.5
	Traill	0.0	58	14	57.2	37.4	20.4	12.1
	Walsh	0.2	59	12	57.4	36.2	20.9	10.0
	Barnes	0.3	62	14	56.8	36.4	21.4	9.7
	LaMoure	0.7	61	14	56.7	38.5	19.5	15.4
Trial Mean			60	14	56.3	38.4	20.0	9.3
C.V. %			2.8	7.8	--	--	--	20.5
LSD .05			2	1	--	--	--	2.7
LSD .01			3	2	--	--	--	3.6

Planting Date: May 1, 2006

Harvest Date: September 14, 2006

Previous Crop: barley

Note: The trial sustained severe heat and moisture stress.

2006 Field Pea Variety Trial – Continuously Cropped - No-fill Hettinger

Brand	Variety	Days to Bloom	Duration of Bloom days	Days to Mature	Plant Height inches	Lodg. 0-9*	1000 Seed wt. grams	Test Weight Lbs/bu	Seed Yield ---- bushels per acre -----			Avg. Yield	
									2004	2005	2006	2 yr	3 yr
<b>Yellow Cotyledon</b>													
Crop Dev. Ctr.	CDC Mozart	64	4	84	14	2.0	190	64.0	29.2	72.3	56.8	64.6	52.8
Farm Pure Inc.	Eclipse	61	10	85	16	0.8	198	63.6	21.2	68.3	53.7	61.0	47.7
	Tudor	62	6	84	16	0.8	216	62.4			50.5		
	Polstead	62	8	86	15	0.5	197	62.6			54.4		
	Ceb 4149	63	7	86	17	0.5	195	63.0			46.4		
Pulse USA	DS Admiral	64	5	84	17	0.5	184	63.3	29.8	59.1	59.0	59.0	49.3
	Miami	64	5	84	17	1.2	194	63.2			53.0		
	CDC Golden	60	9	82	17	1.0	175	63.8			53.0		
	CDC Bronco	65	7	87	17	2.0	188	63.4			50.9		
<b>Green Cotyledon</b>													
DLF Trifolium	Nitouche	62	6	85	15	1.2	210	62.0	42.6	66.4	52.6	59.5	53.9
Farm Pure Inc.	Camry	63	4	86	12	0.0	182	62.5			52.4		
	Tamora	66	3	88	18	1.0	228	62.2			51.1		
Pulse USA	Majoret	63	6	86	17	0.8	185	63.5	33.7	66.4	50.7	58.6	50.3
	Cruiser	61	8	84	17	1.0	165	62.8	29.2	67.7	48.8	58.2	48.6
	CDC Sage	64	8	87	18	2.2	169	62.4			41.9		
	CDC Striker	64	5	85	15	0.0	208	63.8			50.9		
USDA	Stirling	60	9	84	13	1.8	188	62.8	20.0	59.3	50.3	54.8	43.2
<b>Forage Type</b>													
Pulse USA	CDC Sonata	66	7	88	17	5.0	222	62.3			45.5		
Trial Mean		63	7	85	16	1.2	194	62.9	32.3	59.6	51.1	--	--
C.V. %		2.2	23.0	0.9	15.6	64.5	4.9	0.8	6.7	8.9	6.0	--	--
LSD .05		2	2	1	4	1.1	14	0.7	3.1	7.5	4.4	--	--
LSD .01		3	3	2	NS	1.5	18	1.0	4.3	10.0	5.8	--	--

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

Planting Date: April 11, 2006 Harvest Date: July 14, 2006 Seeding Rate: 250,000 live seeds / acre.  
 Previous Crop: barley.  
 Notes: The 2004 trial sustained hard frosts during flowering.



**2006 Field Pea Variety Trial at Wilton**

Cooperator: Legume Logic

Variety	Type	1000 Seed wt	Test Weight	Seed Yield		
				2004	2006	2yr Avg.
	*	grams	lbs/bu	-- Bushels per Acre --		
CDC Mozart	Y	188	63.6	80.9	64.9	72.9
Carneval	Y	169	60.0	76.6	57.3	67.0
SW Circus	Y	173	60.6	72.0	60.4	66.2
SW Salute	Y	175	60.3	82.0	49.6	65.8
SW Marquee	Y	171	61.9	79.4	50.7	65.0
SW Midas	Y	174	63.0	75.9	52.7	64.3
Majoret	G	184	63.9	74.6	52.3	63.4
DS Admiral	Y	203	61.8	69.2	56.5	62.8
Nitouche	G	203	59.6	72.4	50.4	61.4
Cruiser	G	179	63.0	64.9	51.0	58.0
Lasso	Y	196	61.3		64.4	
Eclipse	Y	214	63.2		56.6	
Aragorn	G	187	63.3		51.5	
AP-18	G	185	62.8		50.4	
Orka	MF	329	62.4		50.1	
Miami	Y	191	62.2		49.5	
K2	G	188	63.8		48.2	
Trial Mean		196	62.0	73.6	54.1	--
C.V. %		3.2	1.1	7.5	11.1	--
LSD .05		9	0.9	7.7	8.4	--
LSD .01		11	1.2	10.2	11.1	--

\* Type: Y = yellow, G = green, MF = marrow fat.

Planting Date: April 25, 2006

Harvest Date: August 1, 2006

Seeding Rate: 300,000 live seeds/A

Previous Crop: 2003 = triticale, 2005 = hrsw.

**SDSU Field Pea Variety Trial – Perkins County (Ralph), 2006.**

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu**	Yield Bu/A
Arvika	23	3		4.2
Journey	23	3		7.6
Grande	17	0		8.0
CDC Mozart	12	0		6.4
Eclipse	14	0		4.5
Marquee	16	0		8.3
SW Salute	16	0		8.0
CDC Striker	16	0		7.4
Majoret	16	0		8.7
Stratus	14	0		4.9
Average	16.7	0.6		6.8
LSD (P=.05)	2.5	--		1.6
CV	10.4	--		<b>16.6</b>

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

\*\* Not enough sample for a test weight.

Planted: May 8, 2006                      Herbicide: Spartan (3 oz/A pre), Poast (1 pint/A post)  
 Harvested: July 31, 2006                Additional Nitrogen: Inoculated  
 Previous crop: Conventional fallow.

**2006 Field Pea Variety Trial – Continuously Cropped - No-till    Scranton**

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height inches	Test Weight Lbs/bu	1000 Seed wt. grams	Grain Yield bu/ac
<b>Yellow Cotyledon</b>				
SW Midas	22	58.2	135	48.5
DS Admiral	23	57.8	146	37.7
Carneval	24	58.2	125	30.5
<b>Green Cotyledon</b>				
Cruiser	23	59.5	146	39.8
Majoret	21	61.1	162	34.2
CDC Striker	22	58.8	150	23.3
Trial Mean	23	58.9	144	35.7
C.V. %	8.0	3.8	7.5	9.0
LSD .05	NS	NS	16	4.9
LSD .01	NS	NS	23	6.7

Planting Date: April 24, 2006  
 Harvest Date: August 2, 2006  
 Seeding Rate: 250,000 live seeds / acre  
 Previous Crop: hrww  
 NS = no statistical difference between varieties.

**2006 Field Pea Variety Trial – Continuously Cropped - No-till Regent**

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	1000 Seed wt.	--- Grain Yield ---		
	inches	Lbs/bu	grams	2005	2006	Avg.
				----- bu/ac -----		
<b>Yellow Cotyledon</b>						
DS Admiral	18	55.8	137	35.9	33.1	34.5
SW Midas	17	55.8	108		37.8	
Carneval	18	57.4	136		30.4	
<b>Green Cotyledon</b>						
Majoret	19	59.4	160	46.2	38.0	42.1
Cruiser	17	59.1	155	40.5	35.6	38.0
CDC Striker	19	57.9	186		21.0	
Trial Mean	18	57.6	147	34.7	32.7	--
C.V. %	5.7	1.4	6.0	9.4	14.2	--
LSD .05	NS	1.2	13	4.9	7.0	--
LSD .01	NS	1.7	18	6.8	9.7	--

Planting Date: April 24, 2006 Harvest Date: July 31, 2006  
 Seeding Rate: 250,000 live seeds / acre  
 Previous Crop: hrww  
 NS = no statistical difference between varieties.

**2006 Field Pea Variety Trial – Continuously Cropped - No-till Selfridge**

Cooperator: Nick Vollmuth, Selfridge

Variety	Plant Height	---- Seed Yield ----		
	inches	2005	2006	2 yr.
		----- lbs/ac -----		
<b>Yellow Cotyledon</b>				
DS Admiral	14	39.4	19.3	29.4
SW Midas	13		19.4	
Carneval	13		17.4	
<b>Green Cotyledon</b>				
Cruiser	14	36.3	21.0	28.6
Majoret	13	39.1	14.3	26.7
CDC Striker	14		12.3	
Trial Mean	13	35.1	17.3	--
C.V. %	8.2	10.2	13.3	--
LSD .05	NS	NS	3.5	--
LSD .01	NS	NS	4.8	--

Planting Date: April 25, 2006 Harvest Date: August 4, 2006  
 Seeding Rate: 250,000 live seeds / acre  
 Previous Crop: 2004 = lentil, 2005 = hrww.  
 NS = no statistical difference between varieties.

**Field Peas in the West River Region      Combined Means**

Variety	Plant Height	Test Weight	1000 Seed wt.	Seed Yield		
	inches	lbs/bu	grams	2005	2006	Avg.
<b>Yellow Cotyledon</b>						
DS Admiral	18	59.7	168	43.2	41.1	42.2
SW Midas	17	59.0	139		39.6	
Carneval	18	58.5	143		33.9	
<b>Green Cotyledon</b>						
Majoret	18	62.0	173	44.9	37.9	41.4
Cruiser	18	61.1	161	37.2	39.2	38.2
CDC Striker	18	60.2	181		26.7	
# of Locations*	4	4	4	5	5	10

\* Locations: 2006 = Hettinger, Scranton, Regent, Selfridge & Wilton.  
 2005 = Hettinger, Regent, Selfridge, New Leipzig & Wilton.

**2006 Chickpea Variety Trial – Continuously Cropped - No-till**

**Hettinger**

Variety	Days to Bloom	Duration of Bloom	Plant Height	1000 Seed wt.	Test Weight	Seed Size (mm)			Seed Yield				
						>9	8-9	<8	2003	2005	2006	2 yr	3 yr
<b>Large Kaboli</b>													
Sierra	63	13	14	374	59.5	8	75	17	1373	2399	1550	1974	1774
Dwelley	66	14	14	367	59.9	9	70	21	1227	2455	1484	1970	1722
Dylan	58	21	12	384	57.7	10	76	14		2492	1634	2063	
Troy	65	14	13	306	56.0	8	62	30			980		
<b>Small Kaboli</b>													
B-90	63	17	13	220	61.6	--	--	--	2060	3342	2138	2740	2513
<b>Desi</b>													
Myles	57	23	14	174	57.5	--	--	--	2220	3108	2128	2618	2485
Trial Mean	62	17	13	304	58.7	9	71	21	1866	2864	1652	--	--
C.V. %	0.6	3.4	8.8	3.9	0.7	11.0	2.0	6.6	9.1	7.2	6.8	--	--
LSD .05	1	1	NS	18	0.6	2	2	2	243	311	168	--	--
LSD .01	1	1	NS	25	0.9	2	3	3	325	430	233	--	--

NS = no statistical difference between varieties.

Planting Date: April 11, 2006      Harvest Date: August 2, 2006

Seeding Rate: 175,000 live seeds / acre.

Previous Crop: barley.

2006 Lentil Variety Trial – Continuously Cropped - No-till

Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Ht.	Lodg.	1000 Seed wt.	Test Wt.	Seed Yield			Average Yield	
								2004	2005	2006	2 yr	3 yr
		days		inchs	0-9*	grams	lbs/bu	----- Pounds per acre -----				
<b>Small Red</b>												
CDC Blaze	59	20	84	10	2.0	31	62.2	1587	2370	1875	2122	1944
CDC Robin	62	16	86	12	2.5	24	62.3	1382	1956	2029	1992	1789
Crimson	62	17	86	11	7.0	28	60.8	1148	1981	1989	1985	1706
CDC Redberry	60	17	86	12	1.8	36	59.1		2492	1997	2244	
CDC Rouleau	61	18	88	12	1.8	34	60.7		2508	1526	2017	
<b>Small Green</b>												
CDC Milestone	58	20	85	11	2.2	31	60.4	2203	2378	2102	2240	2228
CDC Viceroy	62	16	88	11	2.5	30	60.2		2386	1972	2179	
<b>Medium Green</b>												
CDC Richlea	59	19	87	11	3.5	43	59.0	2436	2143	2135	2139	2238
Merrit	56	20	83	12	4.8	46	56.5	1951	1364	1485	1424	1600
<b>Large Green</b>												
CDC Sedley	61	17	89	12	1.2	57	58.6	2268	1883	1494	1688	1882
CDC Sovereign	64	15	90	13	1.5	53	58.8		1794	1599	1696	
CDC Glamis	64	15	90	12	2.8	44	57.6		1745	1567	1656	
CDC Meteor	61	18	88	12	2.8	40	59.4			2054		
CDC Plato	62	17	90	13	2.5	51	58.8			1737		
Grandora	64	16	92	14	1.5	51	56.7			1161		
<b>Extra Large Green</b>												
Pennell	64	15	89	12	2.5	47	57.4	2614	1908	1453	1680	1992
Laird	64	16	91	14	2.2	48	58.0	2194	1534	1404	1469	1711
<b>French Green</b>												
Pardina	57	20	86	10	6.0	32	61.8	1596	2378	2029	2204	2001
CDC LeMay	61	17	86	11	4.0	29	59.6		2135	1591	1863	
Trial Mean	61	17	88	12	3.0	40	59.3	1938	2060	1727	--	--
C.V. %	1.7	6.9	1.3	10.4	21.7	6.1	1.3	10.6	8.5	6.2	--	--
LSD .05	1	2	2	2	0.9	3	1.1	297	251	151	--	--
LSD .01	2	2	2	2	1.2	5	1.5	402	335	200	--	--

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

Planting Date: April 12, 2006

Harvest Date: July 25, 2006

Seeding Rate: 550,000 live seeds / acre.

Previous Crop: barley

**2006 Lentil Seeding Rate Trial – Continuously Cropped - No-till**

**Hettinger**

Seeding Rate	Plant Stand	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodg.	1000 Seed wt.	Test Weight	Seed Yield			
									2003	2004	2005	2006
#/ft <sup>2</sup>	#/ft <sup>2</sup>	Days			inches	*	grams	lbs/bu	Pounds per acre			
24	19	61	16	82	10	2.5	29.8	60.8			2660	2240
20	18	61	16	84	10	2.5	30.0	62.4			2623	2194
16	15	61	17	84	10	3.0	29.8	62.6			2464	2063
12	12	61	17	86	10	2.2	30.3	62.0	1307	2233	2352	2110
8	8	61	18	86	10	2.2	30.5	62.4	999	1960	1979	1895
4	--	--	--	--	--	--	--	--	719	1591	--	--
C.V. %	15.7	0	2.9	0.6	9.0	24.5	0.9	2.9	8.2	6.2	7.3	10.0
LSD .05	4	NS	1	1	NS	NS	0.8	NS	134	184	270	NS
LSD .01	5	NS	1	1	NS	NS	1.1	NS	188	258	378	NS

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

Planting Date: April 12, 2006

Harvest Date: July 25, 2006

Variety = 2003, 04 & 05 = CDC Richlea (medium green type), 2006 = CDC Blaze (small red type).

Previous Crop: barley

NS = no statistical difference between seeding rates.

**2006 Buckwheat Variety Trial – Continuously Cropped No-till**

**Hettinger**

Variety	Days to Bloom	Plant Height	Test Weight	1000 Seed Weight	Grain Yield			Average Yield	
					2004	2005	2006	2 yr	3 yr
		inches	lbs/bu	grams	Pounds per acre				
Mancan	31	23	35.5	23.8	745	776	560	668	694
Koto	35	23	36.5	28.2	905	464	625	544	665
Manor	35	23	33.9	24.0	732	666	588	627	662
Koma	38	20	37.2	27.2			775		
Kade 2	37	19	33.0	27.7			719		
Kade 1	40	19	35.0	26.0			411		
Trial Mean	36	21	35.2	26.2	839	587	613	--	--
C.V. %	1.8	8.1	2.8	6.2	11.9	30.2	17.3	--	--
LSD .05	1	3	1.5	2.5	146	NS	160	--	--
LSD .01	1	NS	2.0	3.4	NS	NS	221	--	--

Planting Date: May 26, 2006

Harvest Date: September 19, 2006

Seeding Rate: 700,000 live seeds / acre.

Previous Crop: 2003 = soybean, 2004 & 2005 = barley.

NS = no statistical difference between varieties.

Notes: The 2006 trial sustained severe heat and moisture stress.

**2006 Roundup Ready Corn Trial - Continuously Cropped - No-till, Regent**  
 Cooperators: August and Perry Kirschmann

Brand	Hybrid	GDU's or RM	Ear Height	Test Weight	Harvest Moisture	Grain Yield
		*	inches	Lbs/bu	%	Bu/Ac
Dyna-Gro	51P97	2030	29	53.8	22.3	59.4
	51P33	2100	29	56.3	16.5	48.1
	51P53	2090	27	55.6	21.2	48.9
Legend	LR9483RB	1980	29	54.9	21.1	38.6
	LR9385RB	1985	30	58.0	17.1	52.5
Proseed	XET83RRBt	83	23	56.2	17.9	49.5
	S83RRBt	83	29	55.9	21.8	56.3
	586RR	86	28	53.4	21.1	38.1
	687RR	87	24	54.3	24.4	62.4
Seeds 2000	2821RR	2060	30	55.8	18.4	39.9
Trial Mean			28	55.4	20.2	49.4
C.V. %			9.6	2.4	--	11.6
LSD 5%			4	2.0	--	8.3
LSD 1%			NS	2.7	--	11.3

\*Growing Degree Units to Black Layer or Relative Maturity.  
 NS = no statistical difference between hybrids.  
 Planting Date: May 1, 2006  
 Harvest Date: October 1, 2006  
 Seeding Rate: 26,500 seeds / acre, thinned to 24,000 plants / acre.  
 Row Spacing: 28"  
 Previous Crop: HRSW  
 Note: Yields are adjusted to 13.5% moisture.

**2006 Proso Millet Variety Trial – Continuously Cropped No-till, Hettinger**

Variety	Days to Head	Plant Height	Test Weight	---- Grain Yield ----			Average Yield	
				2003	2004	2006	2 yr	3 yr
		inches	lbs/bu	----- Pounds per acre -----				
Horizon	68	25	48.0	2900	1553	1033	1293	1829
Sunup	64	30	48.5	3067	1520	900	1210	1829
Minsum	62	27	49.7	2027	1933	1200	1566	1720
Huntsman	64	26	48.3	2560	1427	940	1184	1642
Earlybird	60	27	48.3	2620	1253	953	1103	1609
Sunrise	64	25	48.2	2787	1147	833	990	1589
Rise	64	27	46.2	2353	1400	753	1076	1502
Turghai	56	26	48.3	1447	1653	713	1183	1271
Cerise	56	25	50.2	1289	1640	807	1224	1245
Dawn	62	23	47.8	1813	853	753	803	1140
Trial Mean	62	26	48.4	2263	1434	889	--	--
C.V. %	2.2	11.1	2.3	9.4	19.4	22.7	--	--
LSD .05	2	NS	1.6	308	402	NS	--	--
LSD .01	3	NS	2.1	415	541	NS	--	--

Planting Date: May 26, 2006

Harvest Date: September 15, 2006

Seeding Rate: 25 lbs / acre.

Previous Crop: barley

NS = no statistical difference between varieties.

Notes: The 2006 trial sustained severe heat and moisture stress.



**2006 Forage Barley Variety Trial - Continuously Cropped - No-fill** **Hettinger**

Variety	Days to Head	Plant Height inches	Harvest Moisture %	Crude Protein %	ADF %	NDF %	Ca %	P %	K %	RFV %	Nitrate* %	Yield				
												2004	2005	2006	2 yr	3 yr
Westford	69	24	68	19.7	33.0	56.8	0.43	0.35	3.09	103	0.28	2.15	2.25	2.21	2.23	2.20
Bestford	67	27	70	20.0	28.8	54.3	0.38	0.28	2.32	114	0.50	2.12	2.44	2.03	2.24	2.20
Stockford	68	23	67	19.5	30.9	53.1	0.47	0.29	2.57	114	0.34	3.97	3.97	2.33	3.15	
Haybet	68	25	65	17.1	28.7	56.1	0.34	0.30	2.23	110	0.24	3.65	3.65	2.33	2.99	
Drummond	62	24	64	19.1	32.6	57.1	0.42	0.29	2.41	103	0.24	1.93				
Trial Mean	67	25	67	19.1	30.8	55.5	0.41	0.30	2.52	109	0.32	2.17	3.09	2.17	--	--
C.V. %	0.5	3.8	--	--	--	--	--	--	--	--	--	11.8	13.8	7.8	--	--
LSD .05	1	1	--	--	--	--	--	--	--	--	--	NS	0.63	0.26	--	--
LSD .01	1	2	--	--	--	--	--	--	--	--	--	NS	0.85	NS	--	--

\* Nitrate levels below 0.44% are considered safe for all livestock. It is recommended that nitrate levels between 0.44% and 0.66% should be limited to 50% total ration for pregnant animals (Penn State recommendations). N fertility was managed for grain production.

\*\* Forage yields reported on a dry matter (DM) basis.  
NS = no statistical difference between varieties.

Planting Date: April 17, 2006  
Harvest Date: June 26, 2006 (flowering)  
Seeding Rate: 750,000 live seeds/acre.  
Previous Crop: soybean

**2006 Integrating Annual Forage Crops Trial**

**Hettinger**

Michele Stamm & Eric Eriksmoen

Crop	Variety	Winter	Heading	Plant	Harvest	Forage	Crude	ADF	NDF	Ca	P	K	RFV	Nitrate**
		Surv.	Date	Height	Moisture	Yield	Protein							
		%		Inches	%	Tons/A*	%	%	%	%	%	%	%	%
Winter Wheat	Willow Creek	50	June 16	35	62	1.71	16.9	33.8	60.8	0.28	0.28	1.98	95.7	0.08
Winter Wheat	Ransom	57	June 8	25	58	1.43	13.7	35.1	62.0	0.27	0.24	1.57	92.4	0.04
Forage Barley	Hayes	--	July 3	20	65	1.36	22.3	26.3	53.8	0.36	0.32	3.15	118	0.53
Oat	Monida	--	July 3	20	70	0.94	21.1	27.7	54.2	0.39	0.30	3.86	116	0.51
Triticale	Trical 2700	--	June 30	32	71	0.70	19.7	31.5	58.8	0.32	0.31	3.13	102	0.15
Trial Mean		53	June 25	26	65	1.19	18.7	30.9	57.9	0.32	0.29	2.74	105	0.26
C.V. %		7.7	1.4	5.9	--	21.0	--	--	--	--	--	--	--	--
LSD .05		NS	1 day	2	--	0.39	--	--	--	--	--	--	--	--
LSD .01		NS	1 day	3	--	0.56	--	--	--	--	--	--	--	--

\* Forage yields reported on a dry matter (DM) basis.

\*\* Nitrate levels below 0.44% are considered safe for all livestock. It is recommended that nitrate levels between 0.44% and 0.66% should be limited to 50% total ration for pregnant animals (Penn State recommendations). N fertility was managed for grain production. NS = no statistical difference between varieties.

Planting Date: winter wheat = Sept 29, 2005, other crops = May 11, 2006.

Harvest Date: winter wheat = June 26, 2006, other crops = July 3, 2006.

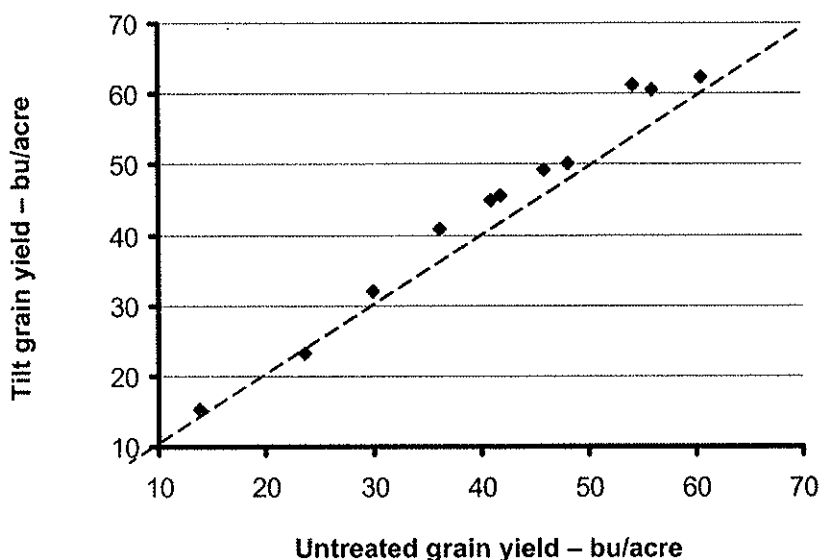
## Early Season Foliar and Seed Applied Fungicide Review for 1998 – 2006.

Roger Ashley  
Area Extension Agronomist

Fungicide products have been tested and reported in the Western Dakota Crops Day Proceedings as well as in annual reports during the past several years. Sixty-five percent of the wheat grown in southwest North Dakota is grown in fields where the previous crop was either spring wheat, winter wheat or durum. Wheat following wheat, including durum, will have a greater incidence and severity of tan spot (*Pyrenophora tritici-repentis*) than wheat following non-host crops in a rotation sequence. The data reported and compared here are from fields with an intensive wheat history. Results will be different when wheat follows a non-host crop.

**Do early season foliar applied fungicides improve grain yields?** In fields with a history of intensive wheat culture and where Tilt (propiconazole) was included in the trial, 8 of 11 trials (Figure 1) conducted in North Dakota between the years of 2000 – 2006 showed grain yields that were significantly higher than the untreated check in the same trial. The three trials that did not show significant increase in yield of Tilt protected plants compared to untreated plants were in trials where the average grain yield was less than 35 bushels per acre. Generally grain yields were about 3.5 to 7 bushels per acre higher with the early season foliar fungicide application. Early season fungicide applications protect the plant from an early infection of tan spot but early fungicide applications do not protect the plant from infections that occur from about flag leaf emergence on. In southwestern North Dakota weather conditions are often hot and dry by the time heading begins so fungicide applications made at flag leaf and later for the control of Septoria and Scab may be unnecessary. Producers should scout their wheat crop at least once a week as well as stay informed on current crop development, infection levels, and weather conditions. Growers may find up-to-date information on disease development as well as infection periods at the NDSU Small Grains Disease Forecast website <http://www.ag.ndsu.nodak.edu/cropdisease/cropdisease.htm>. Producers may also visit with their county extension agent for assistance in accessing the information contained on this website.

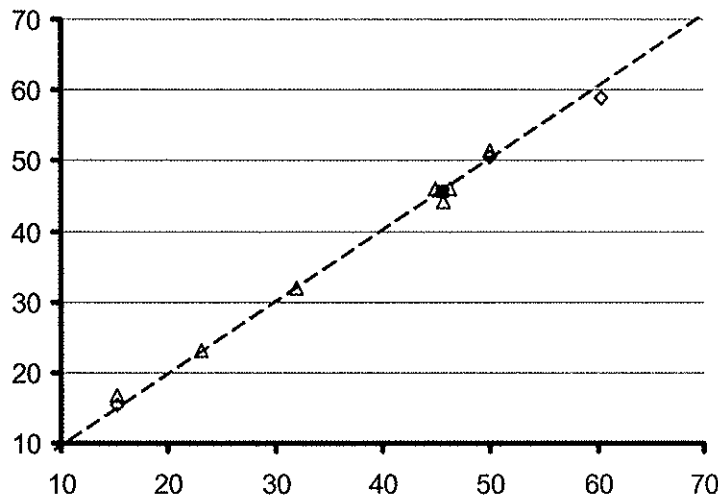
Figure 1. North Dakota early season foliar fungicide applications, comparison of Tilt (propiconazole H) and untreated wheat grain yields 2000 – 2006.



Grain yield points lying above the dashed line (---) yielded more than the untreated check. Grain yield points lying on or below the dashed line yielded the same as or less than the untreated check in the same trial.

**Is Tilt (propiconazole) the only effective product for early season foliar fungicide applications or will other products work?** Tilt, other formulations of propiconazole, and products with other modes of action do an effective job in controlling tan spot when labeled for such use. Figure 2 shows a comparison in grain yields between Tilt and three other commonly used products in early season foliar fungicide applications. Results indicate that grain yields of wheat protected by early season applications of Quilt, Stratego, and Headline were similar to those of Tilt.

Figure 2. Early season foliar fungicide applications, comparison of foliar applied products, Quilt (g), Stratego (>) and Headline (.) to Tilt (propiconazole) in southwest North Dakota in same trial 2000 – 2005.



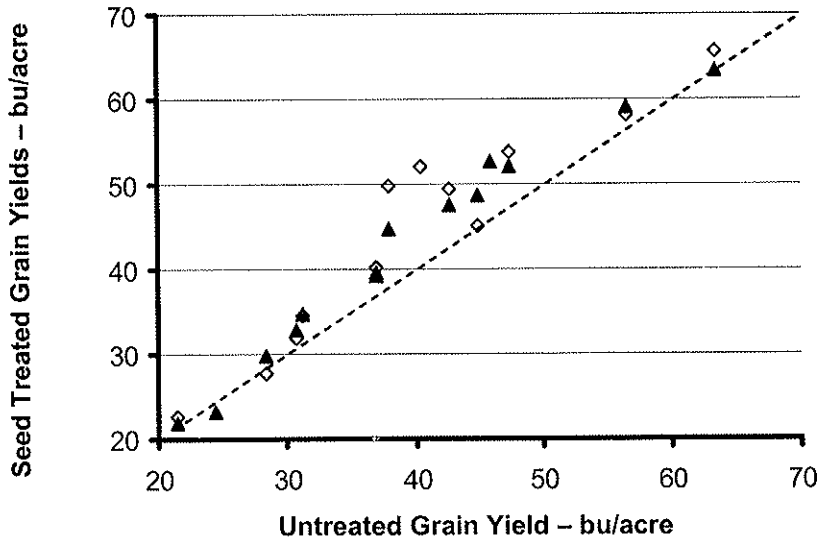
Grain yield points lying on dashed line (---) yielded the same as the Tilt treatment in the same trial.

In trials where the previous crop was not wheat, early season applied foliar fungicides did not increase grain yields. Tan spot infections did not start until later in the season and severity of infection was never as high as it was when wheat followed wheat.

**Do seed applied fungicides for the control of seed- and soil-borne diseases improve grain yields?** In trials conducted in southwest North Dakota over the past nine years in fields with two commonly used products in intensive wheat rotations, grain yields of fungicide protected seed produced grain yields that were higher about 70% of the time (Figure 3). Seed treatments used in these trials provide some protection from soil-borne diseases such as pythium, fusarium foot and crown rot, and common root rot. These treatments also provide some protection from seed-borne diseases such as loose and cover smut and common bunt.

As with any fungicide application, complete coverage of the seed at the recommended rate is required for control of diseases listed on the label. Failure of products to provide the expected results can be traced back to poor or no coverage of the seed with the fungicide. Well adjusted application equipment operated by an experienced operator can efficiently and effectively treat seed as it is augered into the grain drill.

Figure 3. Southwest North Dakota comparison of seed applied fungicides, Raxil MD (◊) and Dividend XL (>) treated seed grain yields to untreated check grain yields, 1998 – 2006.



Grain yield points lying above the dashed line (---) yielded more than the untreated check. Grain yield points lying on or below the dashed line yielded the same as or less than the untreated check in the same trial.

**Evaluation of Tank mixes with Axial Herbicide for Downy Brome Control at Hettinger, ND**

Eric Eriksmoen

'Reeder' HRSW was seeded on April 17. Treatments were applied on May 11 to 3 leaf wheat and to 6 leaf downy brome with 58° F, 33% RH, clear sky and north wind at 7 mph. Treatments were applied with a tractor mounted CO<sup>2</sup> propelled plot sprayer delivering 10 gpa at 40 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was sprayed with 16 oz/acre Widematch to control broadleaf weeds on May 25. The trial was a randomized complete block design with four replications. Downy brome population was 50+ plants per square foot in rep. 1 and 1.5 plants per square foot in the remaining reps. Plots were evaluated for crop injury on May 27, June 7 and on June 23, and were evaluated for downy brome control on June 7 and June 23. The trial was not harvested due to severe drought.

Treatment	Application Rate	--- Crop injury ---			--- Dobr ---	
		5/27	6/7	6/23	6/7	6/23
	oz/Ac	----- % -----				
1 Untreated	0	0	0	0	0	0
2 Axial + Adigor*	8.2 + 9.6	0	0	0	0	2
3 Olympus + NIS	0.6 + 0.5% v/v	0	0	0	90	71
4 Maverick + NIS	0.66 + 0.5% v/v	0	1	0	88	71
5 Rimfire + MSO	2.25 + 24	0	0	0	89	59
6 Everest + NIS	0.6 + 0.25% v/v	0	1	0	85	55
7 Axial + Olympus	8.2 + 0.6	0	0	0	75	58
8 Axial + Maverick	8.2 + 0.66	0	0	0	62	48
9 Axial + Rimfire	8.2 + 2.25	0	1	0	62	52
10 Axial + Everest	8.2 + 0.6	0	0	0	50	48
11 Axial + MCPA ester	8.2 + 12	0	1	0	9	4
12 Axial + Olympus + MCPA	8.2+0.6+12	0	0	0	76	58
13 Axial + Maverick + MCPA	8.2+0.66+12	0	0	0	55	42
14 Axial + Rimfire + MCPA	8.2+2.25+12	0	0	0	55	35
15 Axial + Everest + MCPA	8.2+0.6+12	0	0	0	28	42
Trial Mean		0	0	0	55	43
C.V. %		0	343	0	33.4	31.8
LSD .05		NS	NS	NS	37	20

\*Adigor adjuvant was applied at 0.6 pt/A to all Axial treatments.

**Summary**

Crop injury was very minor. Treatments were applied to relatively large downy brome plants. Axial + Olympus (trt 7) and Axial + Maverick (trt 8) treatments had considerably lower levels of downy brome control than Olympus or Maverick treatments alone. The addition of Axial to Rimfire (trt 9) and Everest (trt 10) did not change the efficacy of downy brome control. The addition of MCPA did not enhance or reduce downy brome control of any treatment.

## 2006 Evaluation of Everest and Axial Herbicide Combinations on HRSW at Hettinger

Eric Eriksmoen

Reeder hard red spring wheat was seeded on April 17. Pre-emergence (PRE) treatments were applied on April 21. Post-applied (POST) treatments were applied on May 23 to 4 leaf wheat, 3 leaf wild oats (wiot), heading downy brome (dobr), 5 leaf Japanese brome (jabr) and to 2 leaf Persian darnel (puda) with 71° F, 66% RH, partly cloudy sky and SE wind at 11 mph. Treatments were applied with a tractor mounted CO<sup>2</sup> propelled plot sprayer delivering 10 gpa at 30 psi to 5 foot wide by 20 foot long plots. Weed populations per ft<sup>2</sup> were 1.7 for wild oats, 30 for downy brome, 17 for Japanese brome and 3.7 (in patches) for Persian darnel. The experiment was a randomized complete block design with four replications. Glyphosate treatments 16, 17 and 18 were applied on April 21, May 11 and on May 23, respectively, to help differentiate weed flushes. The trial was oversprayed with 16 oz/A WideMatch herbicide for broadleaf weed control on June 6. Soil analysis (0-6"): pH = 6.2, OM = 3.8%, sand = 15.3%, silt = 52% and clay = 32.7% (silty clay loam). Plots were evaluated for crop injury on May 31 and for weed control on June 19 and July 15. The trial was not harvested due to poor crop stands and severe drought.

### Summary

Crop injury was not observed. Downey brome and Japanese brome tended to out-compete the crop and other weed species. Multiple weed flushes were not observed. The 0.4 oz/A Everest rate consistently provided a higher level of wild oat and downy brome control than the 0.3 oz/A rate. Japanese brome control was excellent at both rates of Everest. Wild oat control tended to increase with higher rates of Axial. Persian darnel was not uniformly dispersed throughout the trial site, but control ratings were collected when observed. Persian darnel control tended to increase with higher rates of Axial.

**2006 Evaluation of Everest and Axial Herbicide Combinations on HRSW at Hettinger**

Treatment	Application Timing	Product Rate oz/Ac	----- June 19 -----				----- July 15 -----				
			inj	wiot	dobr	jabr	puda	wiot	dobr	jabr	puda
			----- % Control -----								
1	Untreated	0	0	0	0	0	0	0	0	0	0
2	Everest + NIS	0.3 + 0.25%	0	20	38	94	--	0	39	96	--
3	Everest + NIS	0.4 + 0.25%	0	99	45	94	0	87	42	96	--
4	Everest + NIS / Axial + Adigor	0.3 + 0.25%	0	94	42	95	--	91	19	97	--
5	Everest + NIS / Axial + Adigor	0.4 + 0.25%	0	98	62	92	99	96	50	96	99
6	Everest + NIS / Axial + Adigor	0.3 + 0.25%	0	30	30	92	--	1	1	96	0
7	Everest + NIS / Axial + Adigor	0.4 + 0.25%	0	77	50	91	--	65	38	94	--
8	Everest + NIS / Axial + Adigor	0.3 + 0.25%	0	20	38	94	--	0	54	92	--
9	Everest + NIS / Axial + Adigor	0.4 + 0.25%	0	70	10	90	0	2	25	89	0
10	Everest + NIS / Everest + NIS	0.3 + 0.25%	0	99	38	95	0	96	58	96	0
11	Everest + NIS + Axial + Adigor	0.4 + 0.25% + 2.05 + 2.4	0	90	42	94	0	98	50	92	0
12	Axial + Adigor	1.0 + 1.2	0	21	0	0	--	18	0	0	--
13	Axial + Adigor	2.05 + 2.4	0	42	0	0	50	30	0	0	80
14	Axial + Adigor	4.1 + 4.8	0	91	0	0	99	97	0	0	99
15	Axial + Adigor	8.2 + 9.6	0	99	0	0	99	99	0	0	99
16	Glyphosate	24	0	0	92	90	0	0	99	97	8
17	Glyphosate	24	100	100	100	100	90	98	99	99	87
18	Glyphosate	24	100	100	100	99	100	99	99	98	99
C.V. %			0	17	30	5	--	21	32	4	--
LSD .05			1	15	16	4	--	17	17	4	--



## **2006 Durum Tolerance to Axial Herbicide at Hettinger, ND**

Eric Eriksmoen

Fifteen varieties of durum wheat were seeded on April 10. 10 oz/A Axial herbicide + 10 oz/A Adigor adjuvant were applied on May 25 to 5 leaf durum with 75° F, 36% RH, clear sky and 6 mph W wind. Application was made with a pickup mounted sprayer delivering 10 gpa at 40 psi to 5 foot wide by 10 foot long unreplicated strips. The strips were evaluated for crop injury on May 31, June 7 and on June 15. No injury was observed on any of the varieties.

<b>Variety</b>	<b>Inj1</b>	<b>Inj2</b>	<b>Inj3</b>
Ben	0	0	0
Mountrail	0	0	0
Lebsock	0	0	0
Alkabo	0	0	0
Grenora	0	0	0
Divide	0	0	0
Rugby	0	0	0
Belzer	0	0	0
Maier	0	0	0
Plaza	0	0	0
Pierce	0	0	0
Dilse	0	0	0
Primo D'oro	0	0	0
Grande Doro	0	0	0
DG13141	0	0	0

**2006 Evaluation of Pre-emergence Applied Everest Herbicide on HRSW at Hettinger**

Eric Eriksmoen

Reeder hard red spring wheat was seeded on April 17. Pre-emergence (PRE) treatments were applied on April 21 to 2 leaf downy brome (dobr) with 63° F, 40% RH, clear sky and SE wind at 4 mph. Post-applied (POST) treatments were applied on May 11 to 2 leaf wheat and to downy brome in the boot stage with 56° F, 35% RH, clear sky and W wind at 7 mph. Treatments were applied with a tractor mounted CO<sub>2</sub> propelled plot sprayer delivering 10 gpa at 30 psi to 5 foot wide by 20 foot long plots. Downy brome populations were 1.5 plants per ft<sup>2</sup>. The experiment was a randomized complete block design with four replications. Glyphosate treatments 9 and 10 were applied on May 11 (2 leaf HRSW) and on May 31 (6 leaf HRSW), respectively, to help differentiate weed flushes. The trial was oversprayed with 16 oz/A WideMatch herbicide for broadleaf weed control on June 6. Plots were evaluated for crop injury and downy brome control on May 27, June 16 and on July 3. The trial was harvested on July 18.

Treatment	Application Timing	Product Rate oz/Ac	inj	5/27	6/16	7/3	Grain Yield bu/A
				dobr	dobr	dobr	
1 Untreated	--	0	0	0	0	0	7.4
2 Glyphosate + NIS + AMS	PRE	17 + 0.5% + 1%	0	98	97	95	11.2
3 Everest + Glyph. + NIS + AMS	PRE	0.4 + 17 + 0.5% + 1%	0	98	97	96	9.6
4 Everest + Glyph. + NIS + AMS	PRE	0.6 + 17 + 0.5% + 1%	0	98	96	95	11.4
5 Everest + Glyph. + NIS + AMS / Everest + Bronate	PRE POST	0.3 + 17 + 0.5% + 1% / 0.3 + 16	0	96	95	95	13.7
6 Everest + Glyph. + NIS + AMS / Everest + Bronate	PRE POST	0.2 + 17 + 0.5% + 1% / 0.4 + 16	0	98	97	97	10.0
7 Glyphosate + NIS + AMS / Everest + Bronate	PRE POST	17 + 0.5% + 1% / 0.4 + 16	0	97	88	81	13.7
8 Glyphosate + NIS + AMS / Puma + Bronate	PRE POST	17 + 0.5% + 1% / 10.6 + 16	0	97	96	95	10.3
9 Glyphosate	5/11	24	100	100	100	100	0.0
10 Glyphosate	5/31	24	100	--	100	100	0.0
C.V. %			0	1.9	5.5	8.2	15.2
LSD .05			1	2	7	10	2.3

**Summary**

Crop injury was not observed. Multiple weed flushes were not observed. Unfortunately wild oats and foxtails were not present in this trial. The trial sustained severe heat and moisture stress resulting in very poor yields. Downy brome was effectively controlled by the pre-emergence application of glyphosate. The addition of Everest to the pre-emergence application of glyphosate and the split applications did not enhance downy brome control. Evaluation of Everest's residual weed control was not possible due to a lack of multiple weed flushes following the pre-emergence treatments. This trial re-emphasizes the importance of early control of downy brome.

## 2006 Weed Control Systems in Clearfield Spring Wheat at Hettinger, ND

Eric Eriksmoen

'AP630CL' HRSW was seeded on April 13. Treatments were applied on May 10 to 4 leaf wheat, to downy brome (dobr) in the boot stage, to 6" tall tansy mustard (tamu), to 2" tall wild buckwheat (wibw), to 3 leaf wild oats (wiot), to 3 leaf Japanese brome (jap) and to 2 leaf Persian darnel (puda) with 39° F, 93% RH, partly cloudy sky and W wind at 10 mph. Treatments were applied with a tractor mounted CO<sub>2</sub> 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. Downy brome, tansy mustard, wild buckwheat, wild oats, Japanese brome and Persian darnel populations were 15, 0.3, 0.25, 10, 5 and 3 plants per square foot respectively. Plots were evaluated for crop injury and weed control on May 31, June 15 and June 29. The trial was harvested on July 18.

### Summary

Crop injury was not observed on any treatment. Beyond alone (trt 1) tended to be weaker on broadleaf weeds (tansy mustard and wild buckwheat) than the other herbicide treatments. Grassy weed control was excellent for all herbicide treatments. Grain yields were very low due to extremely hot and dry growing conditions but tended to be significantly higher than that of the untreated check

**2006 Weed Control Systems in Clearfield Spring Wheat at Hettinger, ND**

Treatment	Application Rate oz/AC	May 31			June 15			June 29			Grain Yield bu/A			
		hrs	tamu	dobr	wibw	wiot	dobr	puda	jap	wiot		dobr	puda	jap
1 Beyond + NIS + UAN	4 + 0.25% + 2.5%	0	73	63	60	99	57	99	96	98	93	96	93	8.0
2 ClearMax + NIS + UAN	12 + 0.25% + 2.5%	0	88	68	85	99	90	98	92	96	96	93	93	9.5
3 ClearMax + Bromoxynil	12 + 8	0	92	43	60	99	92	98	95	93	95	98	95	6.1
4 ClearMax + Starane	12 + 6	0	82	82	78	99	62	98	94	96	90	92	95	6.6
5 ClearMax + Widematch	12 + 8	0	82	82	81	99	91	99	95	97	98	96	96	9.7
6 Untreated		0	0	0	0	0	0	0	0	0	0	0	0	5.2
C.V. %		0	9.2	15.5	14.9	0	12.1	1.8	2.5	3.6	5.1	2.8	4.2	16.8
LSD .05		NS	10	14	15	1	13	2	3	5	6	4	5	2.0

ClearMax = 4 oz/A Beyond + 8 oz/A MCPA ester

## **Evaluation of Safflower Tolerance to Spartan Herbicide in No-till and Conventional Tillage Systems at Hettinger**

Eric Eriksmoen

Pre-plant treatment (trt 1) was applied on April 6. Finch safflower was seeded on April 15 into no-till barley stubble and into barley stubble which had been spring tilled with a light cultivator. Pre-emergence treatments (trts 2 – 6) were applied on April 20. Treatments were applied with a tractor mounted CO<sub>2</sub> 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. Plots were sprayed with 10 ounces/A of Assure II herbicide for grassy weed control on May 29 and were sprayed with 7 ounces/A of Headline fungicide to prevent diseases on July 4 (diseases were not observed but there were reports of alternaria in the area). Each tillage system was a randomized complete block design with four replications and was analyzed separately. Soil analysis indicated a soil pH and soil organic matter of 6.0 and 3.0% in the no-till system and 6.3 and 4.0% in the conventional till system. Plots were evaluated for crop stand on May 20, for crop injury on May 20 and June 15, for plant height on June 2, June 27 and September 20, for crop biomass on July 26, and for date of 10% bloom and crop maturity. The trial was harvested on September 20.

### **Summary**

Plant stands were not significantly affected by herbicide treatments. Crop injury tended to increase with increasing herbicide rates and tended to diminish over time. Significant crop injury was observed with pre-plant applied Spartan (trt 1) in the conventional tillage system but not in the no-till system. This difference may be partly due to compounding seedling stresses during emergence. Seeds were planted a little deeper in the conventional tilled system than in the no-till system (1 ½ to 2" vs. 1 – 1 ½"). Plant heights tended to be shorter with increasing herbicide rates early in the growing season but leveled off by physiologic maturity. Date of bloom tended to be delayed with increasing herbicide rates in the conventional tillage system but not in the no-till system and did not affect the date of physiologic maturity. Plant biomass was not significantly affected by herbicide treatments. Significant differences between treatments for test weight were observed but no trends were detected. Differences in oil concentrations were not observed. Seed yields were not significantly different than the untreated check in either tillage system, although yields tended to increase with increasing herbicide rates in the no-till system. Also, seed yields were significantly lower for the two lowest herbicide rates and the pre-plant treatment (trts 1, 2 & 3) than the hand weeded check in the no-till system.

In summary, enhanced safflower seed yields may be achieved by the application of moderate rates of Spartan herbicide to control kochia in a no-till system and this benefit appears to outweigh the level of crop injury caused by this chemical.

**Evaluation of Safflower Tolerance to Spartan Herbicide in a No-till System at Hettinger**

Treatment	Product Rate	App. Timing	Plant Stand	5/20 Inj.	6/2 Ht.	6/15 Inj.	6/27 Ht.	Date of Bloom	Biomass	Date of Matur.	9/20 Ht.	Test Weight	Oil Content	Seed Yield
	oz/AC		# / ft <sup>2</sup>	%	cm	%	cm	July	oz / 5 plants	Sept.	cm	lbs/ bu	%**	lbs/ac
1 Spartan*	3.0	PP	3.7	0	7	0	55	22	14	2	65	44.9	35.7	1307
2 Spartan	1.5	PE	2.9	18	7	0	56	22	16	2	62	44.8	36.0	1320
3 Spartan	2.25	PE	3.1	25	7	2	51	23	17	2	64	45.5	35.7	1387
4 Spartan	3.0	PE	2.3	60	7	12	50	23	17	2	66	45.3	35.7	1467
5 Spartan	3.75	PE	2.6	60	6	10	50	22	12	2	65	45.2	35.6	1527
6 Spartan	4.5	PE	2.9	68	6	20	52	22	18	2	64	44.9	35.9	1487
7 Untreated			3.9	0	8	0	56	22	10	2	65	42.6	36.0	1433
8 Hand Weeded			4.0	0	7	0	57	22	13	2	66	45.3	35.7	1620
C. V. %			35.5	33.7	12.8	135	5.5	4.3	36.1	0	6.7	1.8	0.6	8.5
LSD .05			NS	14	NS	11	4	NS	NS	NS	NS	1.2	NS	181

**Evaluation of Safflower Tolerance to Spartan Herbicide in a Conventional-till System at Hettinger**

Treatment	Product Rate	App. Timing	Plant Stand	5/20 Inj.	6/2 Ht.	6/15 Inj.	6/27 Ht.	Date of Bloom	Biomass	Date of Matur.	9/20 Ht.	Test Weight	Oil Content	Seed Yield
	oz/AC		# / ft <sup>2</sup>	%	cm	%	cm	July	oz / 5 plants	Sept.	cm	lbs/ bu	%**	lbs/ac
1 Spartan*	3.0	PP	3.9	55	7	0	56	21	14	2	64	42.3	35.6	1133
2 Spartan	1.5	PE	2.7	25	7	2	56	22	17	2	68	43.8	35.6	1320
3 Spartan	2.25	PE	2.4	65	6	19	54	21	17	2	64	43.0	35.7	1233
4 Spartan	3.0	PE	2.7	40	6	11	51	22	18	2	64	44.2	35.7	1380
5 Spartan	3.75	PE	1.6	58	6	6	53	22	16	2	63	43.1	35.5	1227
6 Spartan	4.5	PE	2.6	60	5	32	48	23	21	2	65	44.2	34.9	1220
7 Untreated			3.3	0	8	0	54	21	13	2	64	39.2	35.0	1093
8 Hand Weeded			2.9	0	8	0	58	21	18	2	65	45.0	35.6	1240
C. V. %			40.5	47.7	15.5	85.2	9.9	3.9	19.3	0	7.3	1.8	1.6	10.7
LSD .05			NS	27	2	11	NS	1	NS	NS	NS	1.1	NS	NS

\* Spartan 4F

\*\* Oil Content is based on 8% moisture.

## **2006 Evaluation of No-Till Field Pea Herbicide Programs at Hettinger**

Eric Eriksmoen, Research Agronomist  
NDSU Hettinger Research Extension Center

Pre-plant treatments (PP) were applied on April 15. 'DS Admiral' yellow field pea was seeded on April 23. Post-emergence (POST) treatments were applied to 6 node peas (3"), tillering volunteer hrsw, 2" tall Russian thistle (ruth) and to 2" tall kochia (kocz) on May 25 with 52°F, 87% RH clear sky and 4 mph NW wind. HRSW, Russian thistle and kochia populations were 1, 4 and 0.3 plants / ft<sup>2</sup>, respectively. Treatments were applied with a tractor mounted CO<sup>2</sup> propelled plot sprayer delivering 10 gpa at 30 psi to 5 foot wide by 20 foot long plots. The experiment was a randomized complete block design with four replications. Plots were evaluated for days to bloom, for crop injury on June 7 and June 20, and for weed control on June 7, June 20 and on July 14. The trial was harvested on July 14.

### **Summary**

Pre-plant treatments did not appear to cause problems with seed germination or seedling emergence. Although crop injury (chlorosis) was observed on June 7, it was statistically not significant and diminished quickly. All herbicide treatments provided excellent season long weed control resulting in significantly higher seed yields than the untreated check. Test weight was not significantly different than the untreated check. Although not statistically significant, 1000 seed weights tended to be heavier for all herbicide treatments than for the untreated check.

**2006 Evaluation of No-Till Field Pea Herbicide Programs at Hettinger**

Treatment	Application Timing	Product Rate	Days to		June 7		June 20				
			Bloom	days	injury	hrsw	injury	hrsw	injury	hrsw	
1	Glyphosate+Prowl H2O /	PP / 24 + 48 /	56		16	100	100	0	98	97	99
2	Rezult + Raptor + COC + 28-0-0	PP / 24 + 4 /	56		6	95	100	0	99	97	99
3	Glyphosate + Prowl H2O /	PP / 24 + 48 /	56		11	98	100	0	98	96	99
4	Rezult + Raptor + COC + 28-0-0	PP / 24 /	56		9	100	100	1	98	97	97
5	Untreated	0	55		0	0	0	0	0	0	0
C.V. %			1.1		113	4.7	0	0	343	1.9	5.1
LSD .05			NS		NS	6	1	1	NS	2	6

Treatment	Application Timing	Product Rate	July 14		Test		1000	
			hrsw	ruth	hrsw	Weight	Seed wt.	Seed Yield
1	Glyphosate+Prowl H2O /	PP / 24 + 48 /	99	94	99	60.9	217	26.3
2	Rezult + Raptor + COC + 28-0-0	PP / 24 + 4 /	99	99	99	62.1	204	29.7
3	Glyphosate + Prowl H2O /	PP / 24 + 48 /	99	99	97	61.8	212	29.9
4	Rezult + Raptor + COC + 28-0-0	PP / 24 /	99	96	98	61.6	216	26.4
5	Untreated	0	0	0	0	61.0	186	21.2
C.V. %			0	3.4	2.9	1.9	7.6	7.9
LSD .05			1	4	3	NS	NS	3.3

\* Application Timing: PP (pre-plant) = April 15, POST (post emergence) = May 25



## 2006 Lentil Tolerance to linuron, diuron and KIH-485 at Hettinger

Eric Eriksmoen

'CDC Richlea' lentil was seeded on April 23 into no-till barley stubble. All herbicide treatments were applied pre-emergence on April 29. Treatments were applied with a tractor mounted CO<sub>2</sub> propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to 5 foot wide by 28 foot long plots. The trial was sprayed with 16 ounces/A of glyphosate on April 29 and with 16 ounces/A of Poast herbicide for grassy weed control on June 6. These broadcast applications resulted in relatively low weed populations. The trial was a randomized complete block design with four replications. Soil analysis indicated a pH of 6.3 and organic matter of 3.5%. Plots were evaluated for crop stand (stand) on May 26, for crop injury (inj) on May 26 and June 20, for plant height (ht) on June 7 and July 10, for Russian thistle (ruth) and kochia (kocz) control on June 20, July 3 and July 29, and for days from planting to 10% bloom (bloom). The trial was harvested on August 2.

### Summary

Plant stands and plant height were not significantly affected by herbicide treatments. Although crop injury was observed, it was generally minor and not significant. Significant differences were detected for days to bloom but these differences did not follow a trend. Prowl alone (trt 1) provided very effective season long control of kochia and marginal control of Russian thistle. Linuron alone (trt 11) provided relatively poor season long control of both kochia and Russian thistle. The combination of Prowl and linuron (trts 2 – 4) appears to provide some synergistic control of Russian thistle. This control does not appear to be rate dependant. Diuron alone (trt 12) provided good season long control of Russian thistle and very good season long control of kochia. Weed control tended to increase with increasing rates of diuron (trts 5 – 7). The combination of Prowl with diuron did not enhance weed control over levels provided by each herbicide alone. KIH-485 alone (trt 13) provided excellent season long control of both kochia and Russian thistle. Russian thistle control tended to be rate dependant with KIH-485 (trts 8 - 10). The combination of Prowl and KIH-485 did not provide significantly enhanced season long weed control over either herbicide alone. Linuron and KIH-485 do not appear to affect 1000 seed weights or test weights but there does appear to be an inverse relationship between rates of diuron and 1000 seed weights and test weights. None of the herbicide treatments appear to be detrimental to seed yields.

**2006 Lentil tolerance to linuron, diuron and KIH-485 at Hettinger**

Treatment	Product Rate oz/Ac	Plant Stand #/ft <sup>2</sup>	5/26		6/7		Days to Bloom		6/20		7/3		7/10		7/29		1000		Test lbs/bu	Yield lbs/ac
			Inj.	%	Ht cm	days	Inj.	ruth	% Control	kocz	ruth	cm	% Control	kocz	ruth	grams	Seed wt	Wt.		
1 Prowl	42	16	2.5	14	54	0	94	96	91	29	81	92	32.2	58.3	933					
2 Prowl + Linuron	42 + 8	15	0.5	14	54	0	88	94	90	31	88	90	35.6	58.4	1008					
3 Prowl + Linuron	42 + 16	12	4.0	15	54	0	94	96	92	32	91	94	31.5	58.1	1083					
4 Prowl + Linuron	42 + 32	18	0.2	14	55	2.5	86	90	86	31	86	85	36.6	59.1	952					
5 Prowl + Diuron	42 + 24	20	1.2	14	54	0	88	86	88	32	81	72	34.1	58.2	896					
6 Prowl + Diuron	42 + 32	15	5.2	13	56	12.5	97	94	89	31	86	91	32.3	57.7	859					
7 Prowl + Diuron	42 + 40	16	0	14	55	2.5	91	94	90	30	90	90	30.6	56.1	849					
8 Prowl + KIH-485	42 + 0.42	14	2.5	14	56	0	96	96	95	32	88	90	34.2	58.2	747					
9 Prowl + KIH-485	42 + 0.63	22	2.8	14	55	2.5	94	90	91	30	90	84	29.2	56.4	756					
10 Prowl + KIH-485	42 + 0.85	20	0.2	14	54	1.2	94	96	94	29	91	90	32.4	57.8	877					
11 Linuron	16	16	4.0	14	55	2.5	76	86	85	31	75	59	31.8	55.9	747					
12 Diuron	40	19	1.2	15	55	5.0	88	90	90	29	86	91	30.9	57.7	831					
13 KIH-485	0.42	17	0.2	16	54	2.5	98	95	94	30	90	91	34.6	58.4	1111					
14 Weed Free		15	0	14	55	0	99	99	100	29	100	99	36.3	59.7	1176					
15 Untreated		19	0	14	54	0	0	0	0	30	0	0	34.8	56.1	747					
C. V. %		27.7	205	NS	10.6	1.6	230	8.2	7.4	6.1	6.6	9.4	12.6	7.1	1.7	16.2				
LSD .05		NS	NS	NS	1	NS	10	9	7	NS	11	15	3.4	1.4	209					

NS = No significant differences between treatments.

## 2006 Lentil Tolerance to 2,4-DB at Hettinger

Eric Eriksmoen

'CDC Richlea' lentil was seeded on April 23 into no-till barley stubble. A pre-emergence burndown with 16 ounces/A glyphosate was applied on April 29. Treatments were applied on May 31 to 8 node (3 ½" tall) lentil, to 3 inch tall kochia (kocz) and to 2 inch tall Russian thistle (ruth) with 62° F, 65% RH, clear sky and 6 mph west wind. Treatments were applied with a tractor mounted CO<sub>2</sub> propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to 5 foot wide by 28 foot long plots. Kochia and Russian thistle populations were 1.25 and 2.25 plants per square foot, respectively. The trial was sprayed with 16 ounces/A of Poast herbicide for grassy weed control on June 6. The trial was a randomized complete block design with four replications. Soil analysis indicated a pH of 6.3 and organic matter of 3.5%. Plots were evaluated for crop stand (stand) on May 26, for crop injury (inj) on June 7 and June 29, for plant height (ht) on June 29, for kochia and Russian thistle control on July 3, and for days from planting to 10% bloom (bloom). The trial was harvested on August 2.

Treatment	Product Rate	Plant Stand	6/7 Inj.	6/29 Inj.	Days to Bloom	6/29 Ht	7/3 kocz	7/3 ruth	1000 kwt	Seed Yield
	oz/Ac	# / ft <sup>2</sup>	%	%	days	cm	% Control	% Control	grams	lbs/ac
1 Weed Free		18	0	0	55	28	100	100	40.0	644
2 2,4-DB	11	22	1.2	0	55	30	45	48	40.1	401
3 2,4-DB	22	19	2.5	2.5	56	28	72	78	40.6	364
4 2,4-DB + Assure II*	11 + 8	22	12.5	5.0	56	28	58	52	39.6	308
5 2,4-DB + Assure II*	22 + 8	22	13.8	6.2	55	26	82	81	38.2	355
6 Untreated		17	0	0	56	27	0	0	40.8	327
C. V. %		14.2	135	138	0.9	6.6	16.1	16.4	4.0	26.8
LSD .05		NS	10	5	NS	NS	14	15	NS	161

\*Crop Oil Concentrate at 1% v/v was added to this treatment.

NS = No significant differences between treatments.

### Summary

Plant height, days to bloom and 1000 seed weights were not significantly affected by herbicide treatments. Crop injury caused by 2,4-DB treatments alone (trts 2 and 3) were very minor and not significantly different than the untreated check. The combination of 2,4-DB and Assure II + COC caused significantly higher crop injury than the untreated check. Control of both kochia and Russian thistle tended to increase with increasing rates of 2,4-DB, however, neither rate provided adequate control of either weed. Seed yields of all of the herbicide treatments were not significantly different than the untreated check.



the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million (1990-2000) (Office for National Statistics 2002).

There is a growing awareness of the need to address the health care needs of the elderly population. The Department of Health (2001) has set out a strategy for the NHS to meet the needs of the elderly population. This strategy is based on the following principles:

- To ensure that the NHS is able to meet the needs of the elderly population.
- To ensure that the NHS is able to provide a high quality of care for the elderly population.
- To ensure that the NHS is able to provide a range of services to meet the needs of the elderly population.

The NHS is committed to providing a high quality of care for the elderly population. This commitment is reflected in the following objectives:

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1000 copies of this publication were printed at the approximate cost of \$1.40 each.