AG. REPORT NO. 25

TWENTY-FIFTH ANNUAL

2008 WESTERN DAKOTA CROPS DAY

RESEARCH REPORT

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Hettinger Research Extension Center
North Dakota State University
Hettinger, ND 58639
www.ag.ndsu.nodak.edu/hettinge/

25th Annual Western Dakota Crops Day
December 18, 2008
Hettinger Armory

MST

9:00 am Registration
Coffee and doughnuts. Free time to view exhibits and visit with Ag. Industry Program Sponsors.

10:00 Earlybird Drawing and Opening Announcements

10:15 Crop Variety Updates and Highlights of Ongoing Crop Production Research
Roger Ashley, Extension Agronomist, NDSU Dickinson Research Extension Center

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

John Rickertsen, Extension Agronomist, SDSU West River Ag. Center, Rapid City, SD

Eric Eriksmoen, Research Agronomist, NDSU Hettinger Research Extension Center

12:00 Lunch
Provided by Program Sponsors. Free time to visit with sponsors.

1:00 Ag Industry Update

1:30 Fertilizing with Higher Costs and Lower Crop Prices. Dr. David Franzen, Professor, NDSU Extension Soil Science, NDSU, Fargo

2:15 Developing Camelina as a Source of Renewable Fuels, Dr. Duane Johnson, VP Ag. Development, Great Plains Oil & Exploration: the Camelina Company, Bigfork, MT

2:45 Conclusion
Drawing for door prizes, coffee and opportunity to visit with sponsors.

Table of Contents

Oats

Fall Seeded and Alternative Small Grains

Alternative Crop Trials

Oilseeds

Grain Legumes

Corn, Millet and Buckwheat

Forage Trials

Plant Diseases

Plant Growth Enhancers

Weed Control and Herbicide Trials

Special Reports

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 Briggs 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 2008 Hettinger HRSW variety trial was 8.7 meaning that there was an 8.7 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.

2008 Growing Conditions
Hettinger Research Extension Center

Southwestern North Dakota continued to suffer from drought in 2008. The winter of 2007-08 was generally mild with very little snowfall. These conditions caused some winter kill in winter wheat. Spring temperatures were cool, causing delays in crop and weed emergence. Very little pre-plant burndown herbicide treatments were applied. These cool temperatures also delayed maturity in warm season crops. The number of frost free growing season days was 10 fewer than normal. Very little of the area's corn was harvested for grain.

The North Dakota / South Dakota state line was the dividing line for spring and summer precipitation with more rainfall to the south and less to the north. Hettinger received above normal precipitation in May (4") and June (4") while some areas to the north received very little of these rainfall events. Hay land and pastures remained green throughout the year in most of NW South Dakota, but were too short and thin to form a windrow in much of SW North Dakota. With rain, often comes hail, which was the case for several large areas causing severe crop losses. Hot and dry weather in July and August caused small grain crops to deteriorate, resulting in relatively low yields and very light test weight.

White sterile wheat heads caused by wheat stem maggot were again prevalent throughout the Western Dakota's. Wheat stem sawfly also continues to increase in both intensity and area and has quickly becoming a major production problem in wheat. A late season explosion of grasshoppers were reported in some areas. Foliar diseases were almost absent this year.

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

HRSW, durum and barley trials were treated post-emergence for both wild oats and for broadleaf weeds (kochia, Russian thistle and wild buckwheat). Most broadleaf crops were treated with a pre-emergence burn down, and with 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	April 25	May 11	May 18
Date of first frost	Oct. 7	Sept. 3	Sept. 20
Frost free days	165	115	125

Weather Data Summary - Hettinger

Precipitation					
Precipitation (inches)	2004 - 05	2005 - 06	2006 - 07	2007 - 08	53 Year Average
Sept. - Dec.	4.41	3.68	3.15	1.26	3.26
Jan. - March	0.98	2.34	2.18	0.87	1.44
April	0.75	2.12	1.09	0.98	1.63
May	2.30	0.97	5.97	4.01	2.61
June	5.10	2.53	3.04	4.08	3.32
July	1.31	0.58	1.62	1.23	2.02
August	1.38	1.75	3.65	1.75	1.67
Total	16.23	13.97	20.70	14.18	15.95

Air Temperature						
Average Temperature F°	2004	2005	2006	2007	2008	53 Year Average
April	45.4	45.5	47.8	40.2	40.1	42.8
May	51.3	50.7	55.6	56.2	52.0	53.9
June	59.5	64.0	65.2	62.7	59.7	63.3
July	69.2	71.9	77.3	75.4	71.1	70.2
August	63.4	68.0	71.3	68.8	70.0	68.9
September	60.2	60.4	56.4	60.9	56.6	57.7

Growing Degree Units - Corn						
Growing Degree Units (50-86)	2004	2005	2006	2007	2008	36 Year Average
May	242	226	323	272	207	264
June	371	430	465	452	346	422
July	558	609	678	672	606	588
August	441	513	593	533	579	539
September	335	388	276	353	340	313
Total	1947	2166	2335	2282	2078	2126

2008 Weather Summary for the Dickinson Research Extension Center, Main Station, Dickinson, ND.

	-----Maximum temp.-----		-----Minimum temp.-----		-----Precipitation -----		-----Small grains GDD[1]-----		-----Corn GDD[2] -----	
Month	Long Term 1897 - 2008	Current Year	Long Term 1897 - 2008	Current Year	Long Term 1897 - 2008	Current year	Long Term 1897 - 2008	Current year	Long Term 1897 - 2008	Current year
	----------°F ----------		----------°F ----------		----- inches -----					
November - 07	39.9	44.4	16.8	17.7	0.51	0.02				
December - 07	27.9	32.8	5.8	3.8	0.39	0.13				
January	23.0	28.5	0.1	-0.3	0.50	0.14				
February	27.1	30.0	3.9	2.5	0.40	0.11				
March	38.0	44.9	15.0	14.9	0.73	0.06				
April	54.7	54.9	28.4	25.1	1.42	0.26	346	367		
May	66.2	65.1	39.2	39.9	2.31	1.82	646	644	254	239
June	75.0	73.4	49.0	47.6	3.57	2.41	900	855	382	372
July	83.5	87.7	54.3	55.3	2.19	1.82	1146	1223	588	621
August	82.4	85.5	51.6	55.1	1.73	0.90	1085	1182	531	601
September	71.3	73.6	41.0	40.5	1.37	0.91	725	751	319	344
October	57.7	58.6	30.0	28.1	0.97	1.21				
Mean	53.9	56.6	27.9	27.5						
Total					16.08	9.79	4847	5020	2073	2176

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

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

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

North Dakota hard red spring wheat variety description table, agronomic traits, 2008.

Variety	Agent or Origin[1]	Year Released	Beard	Height	Straw Strength	Maturity	Reaction to Disease[2] Stem Rust	Leaf Rust	Foliar Disease	Root Rot	Head (Scab)
AC Superb	Can	2001	Yes	S.dwf.	Strong	M.early	R	S	S	M	S
AP 604 CL	AgriPro	2007	Yes	S.dwf.	M.strong	M.early	R	MS	MS	NA	NA
Ada	MN	2006	Yes	S.dwf.	Strong	Med.	R	MR	MS	NA	MS/S
Alsen	ND	2000	Yes	S.dwf.	Strong	M.early	R	MR-MS	S	M	MR
Bakker Gold	N. Star G.	2006	Yes	Med.	NA	Late	S	M	M	NA	M
Banton	Trigen	2004	Yes	S.dwf.	Strong	M.early	R	MR	MS	NA	S
Bigg Red	WestBred	2004	Yes	S.dwf.	Med.	Med.	R-MR	S	MS	NA	MR
Blade	WestBred/Sabre	2007	Yes	S.dwf.	M.strong	Med.	R	MR	MS	NA	NA
Breaker	**WestBred**	**2007**	**Yes**	**S.dwf.**	**Strong**	**Med.**	**R**	**MR**	**MS**	**NA**	**NA**
Briggs	SD	2002	Yes	S.dwf.	Med.	M.early	R-MR	R	MS	S	S
Choteau	MT	2004	Yes	S.dwf.	NA	M.early	NA	NA	NA	NA	NA
Cromwell	Thunder Seed	2007	Yes	S.dwf.	Strong	M.late	NA	MR	MR	NA	S
Dapps	ND	2003	Yes	S.dwf.	Med.	M.early	R	R	M	M	S
Faller	ND	2007	Yes	S.dwf.	Strong	Med.	R	R	MR	NA	MR/MS
FBC Dylan	FBC	2006	Yes	S.dwf.	Med.	Med.	NA	MR	S	NA	NA
Fireball	N. Star G.	2006	Yes	S.dwf.	NA	Med.	NA	R	NA	NA	NA
Freyr	AgriPro	2004	Yes	S.dwf.	Strong	Med.	R	MR-MS	MS	NA	MR
Glenn	ND	2005	Yes	S.dwf.	Strong	M.early	R	R	M	NA	MR
Granger	SD	2004	Yes	S.dwf.	M.strong	M.early	R	R	MS	NA	MS
Granite	WestBred	2002	Yes	S.dwf.	V.strong	M.late	R-MR	MR	S	NA	MS
Hanna	AgriPro	2002	Yes	Med.	Med.	M.early	MR	MS	MS	MS	MS
Hat Trick	**Trigen Seed**	**2007**	**Yes**	**S.dwf.**	**Strong**	**Med.**	**R**	**MR**	**M**	**NA**	**MS/S**
Howard	ND	2006	Yes	S.dwf.	Strong	Med.	R	R	M	NA	M
Kelby	AgriPro	2006	Yes	S.dwf.	Strong	M.early	MR	R	M	NA	MR
Knudson	AgriPro	2001	Yes	S.dwf.	Strong	Med.	MR	MR	MR	MS	M
Kuntz	AgriPro	2007	Yes	S.dwf.	Strong	M.early	R	MR	MS	NA	NA
ND 901CL	**ND**	**2007**	**Yes**	**S.dwf.**	**Strong**	**Med.**	**MR-**	**R-MR**	**MR-MS**	**NA**	**S**
Norpro	AgriPro	1999	Yes	S.dwf.	Strong	Med.	R	MS-S	M	M	S
Norwell	Thunder Seed	2007	Yes	Med.	M.strong	M.early	NA	MS	S	NA	NA
Oklee	MN	2003	Yes	S.dwf.	Med.	M.early	R	MS	MR	NA	M
Outlook	MT	2002	Yes	S.dwf.	Strong	M.early	NA	NA	NA	NA	NA
Parshall	ND	1999	Yes	Med.	Strong	M.early	MR	S	M	MS	M
Polaris	N. Star G.	2003	Yes	Med.	Strong	Late	NA	MS	MS	NA	S
RB07	MN	2007	Yes	S.dwf.	M.strong	M.early	R	R	MS	NA	NA
Reeder	ND	1999	Yes	S.dwf.	Strong	M.early	R	MS	S	M	S
Rush	WestBred	2006	Yes	S.dwf.	Strong	M.early	NA	NA	NA	NA	NA
Samson	WestBred	2007	Yes	S.dwf.	Strong	M.early	R	MR-MS	MR-MS	NA	S
Saturn	N.Star G.	2003	Yes	Med.	NA	M.late	NA	MR-MS	S	NA	S
Steele-ND	ND	2004	Yes	S.dwf.	Med.	Med.	R	R	MS	MS	M
Tom	**MN**	**2008**	**Yes**	**S.dwf.**	**M.strong**	**Med.**	**R**	**R**	**NA**	**NA**	**MR/MS**
Traverse	SD	2006	Yes	S.dwf.	Med.	M.early	R	MR	NA	NA	MR/MS
Trooper	WestBred	2004	Yes	S.dwf.	Strong	M.early	R	MR	S	NA	S
Ulen	MN	2005	Yes	S.dwf.	Med.	M.early	R	MR	MS	NA	S
Vantage	WestBred	2007	Yes	S.dwf.	V.strong	M.late	R	MR-MS	MS	NA	NA

1 Refers to agent or developer: Can = Agriculture Canada; CDC = Crop Development Center, University of Saskatchewan; FBC = Farm Breeders Club; M = University of Minnesota; MT = Montana State University; ND = North Dakota State University; N. Star G. = North Star Genetics;. 2 R = resistant; MR = moderately resistant; M = intermediate; MS = moderately susceptible; S = susceptible; VS = very susceptible. **Bold** varieties are those recently released. NA indicates insufficient info is available to make an accurate assessment.

2008 Hard Red Spring Wheat - Recrop	Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
AP 604 CL	73	18,310	25	59.8	17.3	--	53.0	32.8	113.72	42.9	--
Alsen	74	16,621	25	58.6	17.2	40.1	51.5	29.5	87.06	40.5	40.3
Blade	74	15,173	25	60.4	17.8	--	--	34.7	128.46	--	--
Breaker	74	14,691	27	59.9	17.1	--	--	36.4	142.16	--	--
Briggs	73	16,855	28	59.4	17.0	44.0	50.5	29.6	88.42	40.1	41.4
Choteau	73	16,865	23	59.0	16.6	41.2	48.5	34.2	124.66	41.4	41.3
Cromwell	74	16,853	23	59.9	17.6	--	--	31.1	100.31	--	--
FBC Dylan	74	16,234	24	58.8	16.4	39.4	46.4	29.2	85.26	37.8	38.3
Faller	75	16,415	24	57.5	16.1	42.4	52.8	29.8	89.51	41.3	41.7
Freyr	73	16,998	26	59.4	16.1	42.9	50.4	33.7	120.98	42.1	42.3
Glenn	73	17,023	27	60.9	16.3	41.6	52.7	31.0	99.62	41.9	41.8
Granger	74	16,181	26	59.4	16.5	43.7	51.2	31.1	99.90	41.1	42.0
Granite	76	17,713	24	61.0	16.9	42.0	46.9	34.8	129.09	40.8	41.2
Howard	74	17,271	26	58.5	16.1	43.6	53.6	30.9	98.26	42.2	42.7
Kelby	73	17,736	23	59.8	15.6	38.1	53.6	34.2	121.96	43.9	41.9
Knudson	74	15,600	24	59.9	17.1	41.4	53.7	32.2	108.73	43.0	42.4
Kuntz	73	19,541	24	58.5	15.5	--	50.8	31.3	97.62	41.0	--
ND901CL	73	18,317	27	60.0	17.0	--	--	33.8	121.78	--	--
Parshall	74	17,744	25	59.1	16.4	41.9	51.4	31.4	102.76	41.4	41.6
RB07	72	16,838	24	60.4	16.3	42.7	57.5	37.2	148.29	47.3	45.8
Reeder	75	19,369	23	58.8	17.4	40.8	43.8	28.4	78.63	36.1	37.7
Rush	72	16,871	24	61.0	16.6	36.9	45.6	29.7	89.05	37.6	37.4
Samson	74	17,087	25	58.4	16.8	--	--	34.6	127.83	--	--
Steele-ND	74	17,778	27	57.5	16.4	43.4	50.8	30.4	93.90	40.6	41.5
Tom	73	14,809	25	60.3	16.3	--	--	32.3	109.58	--	--
Traverse	72	16,408	26	56.9	15.9	41.3	53.9	34.4	124.34	44.2	43.2
Vantage	76	18,110	22	59.9	17.4	--	--	33.0	115.19	--	--
Trial Mean	73	17,117	26	59.2	16.6	41.3	50.5	32.1	107.72	--	--
CV %	1.2	3.9	5.6	1.0	2.3	7.9	6.7	10.5	--	--	--
LSD 0.05	1	941	2	0.9	0.8	4.6	4.7	4.7	--	--	--

Planting Date: April 14, 2008
Harvest Date: August 5, 2008
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $7.18/bu, for a grain protein concentration of 14%. An additional $.07/bu was paid for each additional 0.2% increase in grain protein up to 15%, 15% protein received an additional $.20/bu. An additional $.04/bu was paid for each additional 0.2% increase in grain protein up to 17% above which an additional premium was not paid. Grain was discounted $0.08/bu for each 0.2% reduction in grain protein from 14% to 11%,below which no additional discount was not assigned. Returns factored in discounts for grain with a test weight <58 lb/bu [-$0.02/bu for 0.5 lb/bu between 58 and 57 lb/bu; -$0.03/bu for 0.5 lb/bu between 57 and 55 lb/bu; -$0.04/bu for 0.5 lb/bu between 55 and 52 lb/bu; and -$0.05/bu for 0.5 lb/bu between 52 and 51 lb/bu]. Returns also deduct $146.49, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for spring wheat.

Hard Red Spring Wheat - Long Term Average Yields **Dickinson,ND**

Variety	Test Weight	Protein	Yield	Test Weight	Protein	Yield	years[1]
	lbs/bu	%	bu/ac	-----Percent of Reeder-----[2]			
Reeder	59.8	16.0	48.4	100.0	100.0	100.0	10
Parshall	60.5	15.9	46.0	101.1	99.4	95.6	10
Alsen	60.6	16.3	44.9	101.9	100.2	98.1	9
Steele-ND	59.2	16.0	42.9	99.9	96.3	101.6	7
Briggs	59.8	16.4	40.9	100.9	98.4	97.3	7
Knudson	60.7	15.9	42.5	102.5	95.7	100.8	7
Glenn	60.4	16.3	42.4	102.9	97.1	99.3	6
Granite	61.6	17.1	41.9	104.8	102.1	101.9	6
Howard	58.5	15.7	43.7	100.2	93.7	106.2	5
Granger	59.8	15.9	44.3	102.6	94.8	106.6	5
Faller	58.1	15.8	36.8	98.4	92.8	101.8	4
Choteau	59.1	16.6	35.6	100.1	98.1	99.2	4
Freyr	59.9	15.9	39.2	101.5	94.0	110.9	4
Traverse	57.4	14.7	43.2	97.2	89.3	115.2	3
FBC-Dylan	59.2	15.5	38.3	100.1	94.3	101.8	3
Kelby	60.3	15.7	41.9	102.0	95.5	112.0	3
RB07	61.1	15.2	45.8	103.5	92.4	122.3	3
Rush	61.5	16.2	37.4	104.1	98.6	99.7	3

[1] Number of years the variety was grown and used to calculate averages.
Reliability of variety performance is greater with more years of data represented.
years included in averages are 2008, 2007, 2006, 2004, 2003, 2002, 2001, 2000, 1999, and 1998

[2] Percent of Reeder for each variety is based only on the years in which that variety was grown in common with Reeder.

2008 Hard Red Spring Wheat – Continuously Cropped - No-till Hettinger

Variety	Days to Head	Plant Height	Lodg.	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	*	inches	0-9**	lbs/bu	%	---------- Bushels per acre ----------				
Briggs	76	37	2.0	56.2	16.5	39.2	47.1	43.9	45.5	43.4
Kelby	76	32	2.0	57.4	15.9	38.6	38.2	50.9	44.6	42.6
Steele-ND	78	38	0.8	54.3	16.0	38.1	41.2	48.1	44.6	42.5
RB07	76	34	1.5	57.0	15.8	35.8	39.0	51.6	45.3	42.1
Alsen	78	37	0.2	53.1	16.6	38.1	37.8	48.2	43.0	41.4
Freyr	78	39	0.0	51.8	16.1	38.0	35.7	47.9	41.8	40.5
Knudson	79	34	0.2	53.0	16.0	36.9	36.0	47.2	41.6	40.0
Granger	77	39	0.2	55.3	16.4	40.0	37.9	41.8	39.8	39.9
Reeder	77	37	1.0	52.6	16.8	40.8	38.5	38.3	38.4	39.2
Rush	77	35	0.5	56.8	16.2	31.0	35.4	50.8	43.1	39.1
Glenn	76	38	1.2	55.3	17.0	35.8	39.4	41.7	40.6	39.0
Parshall	77	40	0.5	53.9	16.8	37.3	37.4	41.7	39.6	38.8
Granite	82	34	0.0	51.5	17.8	33.6	37.2	42.8	40.0	37.9
Howard	78	38	1.0	54.1	16.2	36.3	37.2	39.3	38.2	37.6
Faller	79	37	0.2	51.2	16.7	33.2	42.3	37.0	39.6	37.5
ND901CL	78	38	0.8	54.8	16.5	33.1	35.9	43.1	39.5	37.4
Choteau	79	33	0.8	52.6	16.4	33.8	38.0	40.5	39.2	37.4
Traverse	77	39	0.8	51.2	15.9	38.6	36.4	36.0	36.2	37.0
Kuntz	78	34	1.5	54.7	15.6		37.4	44.4	40.9	
AP604CL	77	38	1.8	54.6	16.8		41.2	38.3	39.8	
Samson	79	34	0.5	54.0	16.3			48.7		
Breaker	79	36	0.0	53.2	16.4			47.8		
Cromwell	79	35	0.8	54.5	17.3			42.2		
Vantage	82	35	0.0	51.3	17.4			41.9		
Blade	78	37	0.5	52.6	16.9			39.4		
Diamond	78	38	1.8	54.9	16.1			33.7		
Trial Mean	78	37	0.8	53.7	16.5	35.9	37.3	42.7	--	--
C.V. %	0.8	3.8	79	1.7	2.2	7.3	7.4	8.7	--	--
LSD .05	1	2	0.9	1.2	0.5	3.6	3.8	5.2	--	--
LSD .01	1	3	1.2	1.6	0.7	4.8	5.1	6.8	--	--

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

Planting Date: April 14
Harvest Date: August 6
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007 = hrsw, 2006 = field pea, 2005 = soybean.
Note: The trial sustained late season heat and moisture stress.

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

Variety	Height Inches	Lodging 0-9*	Test Wt. Lb/Bu	Yield Bu/A	Protein %
ADA	28	0	57.4	26.4	14.5
ALBANY	27	0	54.0	29.6	14.6
ALSEN	31	0	54.5	28.5	13.6
BRIGGS	32	0	47.8	28.2	14.3
CHRIS	35	0	50.4	22.2	15.1
FALLER	31	0	49.4	25.7	14.6
GLENN	33	0	46.9	25.4	14.6
GRANGER	35	0	56.2	30.7	17.0
HAT TRICK	29	0	57.4	30.1	15.5
HOWARD	31	0	51.0	26.1	14.8
KELBY	27	0	56.9	32.8	14.1
KUNTZ	27	0	55.6	24.6	13.7
RB07	30	0	57.1	33.8	14.5
REEDER	29	0	54.1	25.5	15.0
SAMSON	29	0	53.4	28.8	13.7
STEELE-ND	32	0	47.2	26.7	14.0
TOM	29	0	51.2	23.6	14.4
TRAVERSE	34	0	53.6	30.1	14.5
ND 901CL	31	0	49.0	25.4	15.3
01S0042-10	26	0	57.8	27.8	14.5
ND SW0449	29	0	53.8	25.5	16.6
ND 806	32	0	53.7	24.8	15.2
ND 809	31	0	55.8	25.7	13.6
MN 03358-4	31	0	54.4	33.4	14.3
SD 3851	34	0	51.2	33.4	14.3
SD 3948	34	0	53.3	28.8	13.6
SD 3983	35	0	52.4	29.9	13.3
SD 3997	35	0	57.4	31.9	12.5
SD 4007	31	0	51.3	30.4	13.6
SD 4018	32	0	52.8	30.4	14.7
SD 4024	27	0	54.2	24.8	13.8
SD 4027	34	0	57.7	30.4	13.6
SD 4036	29	0	55.6	29.2	16.7
SD 4073	32	0	51.3	29.0	13.9
Average	31	0.0	53.4	28.2	14.5
LSD (P=.05)	2.7	0.0	2.8	6.7	.
CV	6.2	0.0	3.7	**17.0**	.

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

Planted: April 17, 2008 Herbicide: Starane NXT (20 oz/A)
Harvested: August 14, 2008 Additional Nitrogen: 50 Lb/A
Previous crop: Wheat, no-till planted.

2008 HRSW Variety Trial - Continuously Cropped - No-till Scranton

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Steele-ND	28	54.6	17.4	57.3	36.1	24.0	30.0	39.1
Howard	29	54.9	17.3	52.8	42.1	18.6	30.4	37.8
Granger	27	56.5	17.6	49.9	41.9	18.5	30.2	36.8
Glenn	29	58.4	17.6	52.9	38.2	18.2	28.2	36.4
Faller	23	55.1	17.1	44.1	36.2	18.7	27.4	33.0
Kelby	25	56.1	17.6		32.6	26.7	29.6	
Kuntz	23	57.1	17.1		30.4	24.8	27.6	
Choteau	23	57.9	17.5			22.0		
ND901CL	29	58.8	17.4			19.5		
Trial Mean	27	56.8	17.5	53.5	37.0	21.4	--	--
C.V. %	3.5	3.3	1.3	5.7	8.6	7.1	--	--
LSD .05	1	2.7	0.3	4.4	4.6	2.2	--	--
LSD .01	2	3.7	0.4	5.9	6.2	2.9	--	--

Planting Date: April 14, 2008 Harvest Date: August 5, 2008
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
Note: The 2008 trial sustained heat and moisture stress.

2008 HRSW Variety Trial - Continuously Cropped - No-till Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Howard	26	52.9	17.3	39.6	54.8	13.5	34.2	36.0
Glenn	26	54.8	17.4	38.0	48.0	14.6	31.3	33.5
Steele-ND	27	53.1	17.0	43.2	43.0	13.6	28.3	33.3
Faller	23	52.2	17.4	35.8	49.6	12.1	30.8	32.5
Granger	26	53.5	17.0	36.4	44.7	14.0	29.4	31.7
Kelby	24	58.0	16.8		58.5	19.6	39.0	
Kuntz	23	54.4	16.4		46.3	12.6	29.4	
Choteau	22	55.9	17.4			16.2		
ND901CL	26	57.2	17.4			14.9		
Trial Mean	25	55.6	17.3	38.4	49.4	15.0	--	--
C.V. %	10.3	3.5	2.2	7.3	9.7	20.9	--	--
LSD .05	4	2.8	0.6	5.1	1.4	NS	--	--
LSD .01	5	2.8	0.8	5.5	1.9	NS	--	--

Planting Date: April 21, 2008 Harvest Date: August 8, 2008
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2005, 2006 & 2007 = hrsw.
NS = no statistical difference between varieties.
Note: The 2008 trial sustained severe heat and moisture stress.

2008 HRSW Variety Trial - Continuously Cropped - No-till New Leipzig

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Steele-ND	30	56.5	15.0	15.3	31.9	17.7	24.8	21.6
Glenn	32	58.4	15.1	15.0	32.0	17.5	24.8	21.5
Howard	30	56.4	15.2	15.9	29.7	16.9	23.3	20.8
Faller	27	55.2	14.8	12.1	32.6	15.3	24.0	20.0
Granger	31	58.0	14.4	10.1	28.2	17.9	23.0	18.7
Kelby	25	56.3	16.2		28.6	18.5	23.6	
Kuntz	25	55.4	15.2		28.5	16.2	22.4	
Choteau	25	55.4	15.5			22.3		
ND901CL	30	60.4	16.2			19.0		
Trial Mean	29	56.9	15.3	13.9	30.8	18.5	--	--
C.V. %	3.1	4.0	3.9	13.0	14.9	7.4	--	--
LSD .05	1	3.3	0.9	2.6	NS	2.0	--	--
LSD .01	2	NS	1.2	4.8	NS	2.7	--	--

Planting Date: April 23, 2008 Harvest Date: August 8, 2008
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
NS = no statistical difference between varieties.
Note: The 2006 & 2008 trials sustained severe heat and moisture stress.

2008 HRSW Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Granger	41	56.3	14.5	30.4	58.8	64.2	61.5	51.1
Glenn	39	57.8	15.0	30.2	64.6	56.2	60.4	50.3
Steele-ND	37	54.6	14.8	29.6	58.2	59.5	58.8	49.1
Howard	36	55.2	14.6	30.4	59.3	57.6	58.4	49.1
Faller	35	54.3	14.4	20.5	60.4	58.5	59.4	46.5
Kelby	30	56.9	14.7		61.1	67.6	64.4	
Kuntz	32	56.4	14.0		60.1	67.7	63.9	
Choteau	32	54.3	15.0			60.5		
ND901CL	38	55.9	15.4			58.9		
Trial Mean	36	55.5	14.8	29.7	59.0	61.7	--	--
C.V. %	2.3	1.5	3.4	9.3	5.3	6.0	--	--
LSD .05	1	1.2	NS	4.7	5.3	5.4	--	--
LSD .01	2	1.7	NS	6.3	7.3	7.2	--	--

NS = no statistical difference between varieties.

Planting Date: April 22, 2008 Harvest Date: August 12, 2008
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.

2008 Hannover Spring Wheat	Dickinson, ND

Variety	Seeds per Pound	Test Weight	Protein	Grain Yield 2005	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield[2] 2 Year	Average Yield[2] 3 Year
		lbs/bu	%	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
Choteau	15,198	60.0	15.9	31.1	32.5	33.7	119.11	33.1	32.4
Faller	15,183	58.8	16.2	--	30.8	30.9	98.50	30.9	--
Glenn	15,475	62.4	16.2	36.4	30.6	29.2	85.43	29.9	32.1
Howard	15,275	59.8	15.7	35.6	30.4	30.3	91.39	30.4	32.1
Kelby	17,016	60.6	16.2	--	28.6	31.9	106.15	30.2	--
Kuntz	17,824	59.8	15.1	--	--	28.9	77.17	--	--
ND901CL	16,554	60.5	16.4	--	--	30.4	94.80	--	--
Steele-ND	15,687	60.3	16.2	32.3	29.8	29.4	87.03	29.6	30.5
Traverse	15,336	57.9	15.3	--	30.9	32.9	109.35	31.9	--
Trial Mean	15,918	60.0	16.0	35.7	29.6	31.7	103.42	--	--
CV %	3.1	0.9	1.4	11.9	8.6	9.9	--	--	--
LSD 0.05	706	0.8	0.5	6.1	3.7	NS	--	--	--

Planting Date: April 22, 2008
Harvest Date: August 18, 2008
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $7.18/bu, for a grain protein concentration of 14%. An additional $.07/bu was paid for each additional 0.2% increase in grain protein up to 15%, 15% protein received an additional $.20/bu. An additional $.04/bu was paid for each additional 0.2% increase in grain protein up to 17% above which an additional premium was not paid. Grain was discounted $0.08/bu for each 0.2% reduction in grain protein from 14% to 11%,below which no additional discount was not assigned. Returns factored in discounts for grain with a test weight <58 lb/bu [-$0.02/bu for 0.5 lb/bu between 58 and 57 lb/bu; -$0.03/bu for 0.5 lb/bu between 57 and 55 lb/bu; -$0.04/bu for 0.5 lb/bu between 55 and 52 lb/bu; and -$0.05/bu for 0.5 lb/bu between 52 and 51 lb/bu]. Returns also deduct $146.49, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for spring wheat.

[2]Average yields are from 2005, 2007, and 2008 since wheat was not grown in 2006.

2008 Glen Ullin Spring Wheat — Dickinson, ND

Variety	Seeds per Pound	Test Weight	Protein	Grain Yield 2005	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield[2] 2 Year	Average Yield[2] 3 Year
		lbs/bu	%	---------bu/ac----------			$/ac	----bu/ac----	
Choteau	14,485	61.2	13.7	53.7	39.3	46.1	177.48	42.7	46.4
Faller	13,462	61.0	13.9	--	37.3	46.1	180.88	41.7	--
Glenn	14,873	63.8	14.7	66.6	35.5	40.5	152.86	38.0	47.5
Howard	15,357	61.2	14.3	57.7	38.2	42.1	158.77	40.1	46.0
Kelby	14,696	62.3	14.5	--	23.8	43.8	173.86	33.8	--
Kuntz	16,406	61.8	13.6	--	--	40.2	132.76	--	--
ND901CL	15,125	62.0	14.8	--	--	44.0	181.54	--	--
Steele-ND	14,651	61.7	14.7	57.9	37.1	42.9	170.34	40.0	45.9
Traverse	14,563	59.2	12.9	--	39.7	46.8	167.30	43.3	--
Trial Mean	14,914	61.6	14.0	60.9	35.1	45.2	175.47	--	--
CV %	3.1	1.0	3.1	4.8	8.8	6.8	--	--	--
LSD 0.05	779	1.0	1.0	4.2	4.4	5.2	--	--	--

Planting Date: April 22, 2008
Harvest Date: August 18, 2008
Previous Crop: Chemical Fallow
Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $7.18/bu, for a grain protein concentration of 14%. An additional $.07/bu was paid for each additional 0.2% increase in grain protein up to 15%, 15% protein received an additional $.20/bu. An additional $.04/bu was paid for each additional 0.2% increase in grain protein up to 17% above which an additional premium was not paid. Grain was discounted $0.08/bu for each 0.2% reduction in grain protein from 14% to 11%,below which no additional discount was not assigned. Returns factored in discounts for grain with a test weight <58 lb/bu [-$0.02/bu for 0.5 lb/bu between 58 and 57 lb/bu; -$0.03/bu for 0.5 lb/bu between 57 and 55 lb/bu; -$0.04/bu for 0.5 lb/bu between 55 and 52 lb/bu; and -$0.05/bu for 0.5 lb/bu between 52 and 51 lb/bu]. Returns also deduct $146.49, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for spring wheat.

[2]Average yields are from 2005, 2007, and 2008 since wheat was not grown in 2006.

WHEAT STEM SAWFLY

Sawfly damage occurs annually in North Dakota. This insect primarily affects wheat in the central and western areas of the state. The larvae tunnel in the stem, reducing grain yield by 10% to 14%. Additional loss occurs when infested stems lodge, rendering the grain unharvestable. Larvae overwinter in the wheat stubble making infested sites the source of next year's problems.

Managing Wheat Stem Sawfly:

Chemical control . . . None is currently recommended.

Harvesting . . . Swath the most heavily infested fields at 30% to 35% moisture before significant lodging occurs. This requires field surveys to determine infestation levels. Infested stems have a reddish-brown spot below the second or third node. Examine 50 consecutive stems in a drill row from at least two sites (one near the field margin, another near the center). Determine the percent of stems infested at each site. If >6% of the stems are infested, swath to reduce lodging losses within infested sites.

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

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

Resistant wheat varieties . . . Resistant wheats have a solid stem trait which is unsuitable for sawfly development. **Wheat Stem Sawfly Resistant Wheat Variety Descriptions**

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

*indicates semi-solid lines that provide partially resistance.

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

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

[3]Yields are relative to sawfly resistant varieties.

2008 Sawfly Variety Trails in SW North Dakota*

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	Grain Yield
	**	cm	lbs/bu	%	bu/ac
Hard Red Spring Wheat					
AC Lillian	75	72	52.5	17.7	17.5
Agawam	65	65	54.2	16.0	20.2
Choteau	70	64	52.4	17.0	16.0
Conan	69	64	51.3	17.0	16.0
Ernest	69	70	52.3	17.3	14.6
Steele-ND	68	68	51.2	17.3	18.3
Vida	70	65	50.0	16.8	19.7
Glenn	66	74	55.0	17.3	16.3
Howard	70	69	51.3	17.1	14.9
Reeder	69	69	53.0	17.2	17.1
Durum Wheat					
Plaza	70	61	53.0	17.9	15.6
Strongfield	73	68	50.7	18.2	15.4
Divide	73	72	50.9	17.2	15.5
Mountrail	73	65	50.1	17.4	16.0
Alkabo	72	64	52.0	17.4	13.6

*Hettinger REC, Hettinger – Rose Farm, Scranton, Regent, New Leipzig.
**Days to Head = the # of days from planting to head emergence from the boot.
Note: All trials sustained severe heat and moisture stress.

2008 Hard White Spring Wheat – Continuously Cropped - No-till Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	%	---------- Bushels per acre ----------				
AC Vista	77	34	46.7	16.0	40.9	58.5	36.4	47.4	45.3
Peerless	81	33	41.9	17.0	41.7	45.6	30.7	38.2	39.3
Otis	78	35	43.6	17.0	38.3	45.1	32.0	38.6	38.5
Pennewawa	78	30	45.2	16.6	35.4	42.8	32.7	37.8	37.0
Diamond	77	33	46.2	16.7	42.7	36.6	30.5	33.6	36.6
Lolo	78	29	43.9	16.4	36.7	39.9	31.4	35.6	36.0
Explorer	75	30	48.7	17.2	30.4	37.2	32.4	34.8	33.3
Golden 86	76	30	47.8	16.5	28.6	40.2	29.2	34.7	32.7
AC Snowbird	77	37	48.8	16.6	32.0	35.6	29.9	32.8	32.5
Snow Crest	74	27	42.4	17.1		47.0	33.7	40.4	
Agawam	74	31	46.5	16.1		42.0	37.7	39.8	
AC Karma	76	29	45.1	16.5		43.6	36.1	39.8	
Waikea	76	33	41.4	16.2		42.9	33.2	38.0	
Lochsa	77	32	45.0	16.0		43.5	31.3	37.4	
Kanata	78	36	47.3	16.4		38.8	33.9	36.4	
Alpine	77	35	33.8	16.6			43.6		
AC Snowstar	76	34	49.2	16.5			30.9		
IDO377S	76	34	45.2	16.9			30.7		
Hard Red Spring Wheat									
Glenn	75	37	49.3	15.8	42.1	48.7	35.9	42.3	42.2
Reeder	76	34	46.8	17.0	36.9	49.0	34.3	41.6	40.1
Steele-ND	78	35	46.4	16.3		39.3	34.8	37.0	
Trial Mean	77	33	45.3	16.5	36.0	42.6	33.4	--	--
C.V. %	0.9	4.5	9.0	4.8	8.3	10.5	11.0	--	--
LSD .05	1	2	5.8	NS	4.9	7.4	5.2	--	--
LSD .01	1	3	7.7	NS	6.6	9.9	6.9	--	--

* Days to Head = the number of days from planting to head emergence from the boot.
NS = no statistical difference between varieties.

Planting Date: April 14, 2008
Harvest Date: August 1, 2008
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2007 = barley, 2006 & 2005 = hrsw.
Note: The trial sustained late season heat and moisture stress.

2008 Commercial White Wheat - Recrop — Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	-----Grain Yield----- 2007	2008	2 Year Average
			in	lbs/bu	%	-----bu/ac-----		bu/ac
AC Karma	71	15,591	24	58.9	15.8	40.5	29.6	35.0
AC Snowbird	73	18,237	26	58.8	16.7	41.4	26.2	33.8
AC Vista	71	14,319	24	57.6	15.8	47.0	28.0	37.5
Agawam	70	12,328	23	60.8	16.2	49.9	24.8	37.4
Alpine	72	15,399	25	60.5	15.6	--	34.0	--
Diamond	72	14,510	25	60.8	16.7	44.3	28.1	36.2
Explorer	70	17,363	23	59.3	16.6	45.8	29.7	37.7
Glenn (hrsw)	71	15,814	24	61.5	16.8	49.4	27.5	38.4
Golden 86	70	13,703	23	60.3	16.4	45.8	24.4	35.1
IDO377S	72	17,107	25	57.5	16.6	--	27.3	--
Kantana	72	18,467	25	60.4	17.0	36.4	24.7	30.6
Lochsa	71	15,010	24	57.5	16.3	46.6	27.5	37.1
Lolo	72	15,070	25	58.8	15.9	47.8	29.8	38.8
Otis	72	15,877	25	59.9	16.0	46.4	27.8	37.1
Peerless	75	16,930	28	60.5	15.9	42.0	28.1	35.0
Penewawa	73	16,264	26	56.3	14.6	42.3	29.1	35.7
Reeder (hrsw)	74	18,908	27	59.8	17.0	45.5	26.8	36.1
Snow Crest	70	16,242	23	56.5	16.9	40.8	25.1	33.0
Steele-ND (hrsw)	72	16,719	25	58.4	16.5	47.2	26.7	36.9
Waikea	70	13,046	23	57.4	16.0	52.6	27.7	40.2
Trial Mean	72	15,956	25	59.0	16.3	44.9	27.6	--
CV %	0.7	6.9	2.1	2.0	1.3	5.6	6.8	--
LSD 0.05	1	1,546	1	1.7	0.5	3.6	2.7	--

Planting Date: April 14, 2008
Harvest Date: August 7, 2008
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac

North Dakota durum wheat variety descriptions, agronomic traits, 2008.

Variety	Agent or Origin[1]	Year Released	Chaff Color	Height	Straw Strength	Maturity	Reaction to Disease[2]			
							Stem Rust	Leaf Rust	Foliar Disease	Scab
AC Avonlea	Can.	1997	white	med.	med.	med.	R	R	MS	S
AC Commander	Can.	2002	white	s.dwf.	med.	med.	R	R	MS	NA
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 Napoleon	Can.	2001	white	s.dwf.	med.	med.	R	R	S	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	R	S	VS
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
DG Max	DGP	2008	white	med.	strong	med.	R	MR	MR	MS
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.	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*
Strongfield	Can	2004	white	med.	med.	med.	R	R	MS	NA
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
Wales	Westbred	2008	white	med.	m.strong	med.	R	R	M	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 often have been higher than would be expected based on visual symptoms. NA = Not adequately tested.

2008 Durum Variety Trial at Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	Grain Protein	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Average Yield 2 year	Average Yield 3 year
	*	inches	0 - 9**	lbs/bu	%	Bushels per acre				
Alzada	77	38	2.0	55.7	17.1	35.6	40.7	39.1	39.9	38.5
Grenora	80	38	1.2	54.4	17.5	35.3	36.9	33.3	35.1	35.2
Ben	80	40	2.5	53.7	17.8	34.9	40.1	28.2	34.2	34.4
Alkabo	81	39	1.2	54.2	17.5	30.5	37.5	30.3	33.9	32.8
Dilse	81	42	2.2	55.2	17.7	30.9	37.7	28.4	33.0	32.3
Pierce	80	40	2.2	54.0	17.4	32.2	36.3	27.5	31.9	32.0
Mountrail	82	40	1.5	51.9	17.9	34.5	38.4	23.2	30.8	32.0
Divide	82	39	2.2	54.2	17.2	34.2	30.7	30.3	30.5	31.7
Rugby	82	40	1.8	55.6	16.7	31.1	30.1	27.3	28.7	29.5
AC Commander	81	37	1.0	56.0	15.6		43.3	45.1	44.2	
DG Star	78	40	1.5	55.8	17.2		37.6	37.1	37.4	
AC Navigator	80	39	2.0	55.8	16.9		37.1	37.5	37.3	
Maier	81	39	1.8	55.7	16.4		40.6	31.0	35.8	
Lebsock	79	40	1.0	53.4	16.8	33.4		33.8	33.6	
Grande D'oro	80	40	1.2	55.4	17.6	36.8		28.1	32.4	
Strongfield	82	42	1.8	54.1	17.4	30.2		32.2	31.2	
AC Napoleon	81	40	1.2	54.2	17.5		33.7	25.9	29.8	
Wales	80	40	1.5	55.5	17.9			25.9		
Trial Mean	81	40	1.6	54.9	17.2	31.6	36.6	31.8	--	--
C.V. %	0.8	4.0	33.9	2.0	1.9	8.4	13.0	11.6	--	--
LSD .05	1	2	0.8	1.6	0.4	3.7	6.6	5.1	--	--
LSD .01	1	3	1.0	2.1	0.6	4.9	8.8	6.8	--	--

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

Planting Date: April 14
Harvest Date: August 13
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2007 & 2006 = HRSW, 2005 = soybean.
Note: The 2008 trial sustained late season heat and moisture stress.

2008 Durum - Recrop	Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
AC Commander	81	11,460	17	60.6	17.7	--	61.4	12.3	-58.60	36.9	--
AC Napoleon	81	13,663	18	59.3	18.5	--	46.9	13.8	-45.24	30.3	--
AC Navigator	81	11,540	18	61.0	17.2	54.9	48.3	12.7	-54.60	30.5	38.6
Alkabo	82	12,658	19	60.8	16.9	54.6	46.9	13.5	-47.47	30.2	38.4
Alzada	78	11,718	19	60.3	16.7	--	--	17.5	-11.98	--	--
Ben	80	13,137	20	60.1	18.2	47.2	45.1	13.2	-50.60	29.1	35.2
DG Star	81	13,034	18	59.3	18.0	--	--	11.2	-68.09	--	--
DG Max	81	12,970	18	60.6	18.0	--	--	12.5	-56.75	--	--
Dilse	82	12,997	18	59.6	19.1	48.3	46.8	13.6	-47.23	30.2	36.2
Divide	81	12,871	19	60.3	17.1	50.4	44.7	16.6	-20.51	30.6	37.2
Grande D'oro	82	11,982	18	59.5	17.2	--	--	11.5	-65.66	--	--
Grenora	81	12,596	18	59.8	17.6	52.2	47.8	13.7	-46.03	30.7	37.9
Lebsock	81	13,362	19	60.4	17.4	50.1	45.9	15.0	-34.63	30.4	37.0
Maier	80	13,023	19	60.4	18.4	49.8	45.2	14.7	-37.32	29.9	36.6
Mountrail	81	13,990	17	59.3	18.2	53.2	46.6	12.4	-57.79	29.5	37.4
Pierce	80	13,853	19	60.9	17.1	49.1	46.5	17.5	-12.54	32.0	37.7
Rugby	80	14,233	20	60.0	17.9	46.5	43.6	14.3	-40.51	29.0	34.8
Strongfield	81	12,741	20	59.8	18.9	54.6	46.7	13.2	-50.70	29.9	38.2
Wales	80	12,593	18	60.1	17.5	--	--	14.2	-41.53	--	--
Trial Mean	81	13,002	19	60.1	17.7	49.6	48.4	13.6	-46.82	--	--
CV %	1.0	3.9	8.4	0.8	--	11.7	6.7	19.5	--	--	--
LSD 0.05	1	704	NS	0.6	--	NS	4.57	NS	--	--	--

Planting Date: April 15, 2008
Harvest Date: August 13, 2008
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $9.75/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 $0.05/bu per 0.5 lb/bu reduction between 54 and 50 lb/bu. Returns also deduct $167.90, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for durum.

SDSU Durum Wheat Variety Trial - Perkins County (Bison), 2008.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Yield Bu/A	Protein %
ALKABO	30	0	52.2	22.3	15.8
BEN	35	0	49.5	**27.1**	14.0
DIVIDE	32	0	51.5	**24.9**	13.3
GRENORA	29	0	49.8	**27.7**	15.3
LEBSOCK	33	0	53.0	**28.3**	15.3
MOUNTRAIL	31	0	47.5	**27.9**	14.7
Average	32	0.0	50.6	26.4	14.7
LSD (P=.05)	2.3	0.0	2.4	3.3	--
CV	4.1	0.0	2.6	6.9	--

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

Planted: April 17, 2008 Herbicide: Starane NXT (20 oz/A)
Harvested: August 14, 2008 Additional Nitrogen: 50 Lb/A
Previous crop: Wheat, no-till planted.

2008 Durum Variety Trial - Continuously Cropped - No-till Scranton

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Alkabo	25	57.4	19.1	54.3	26.7	17.9	22.3	33.0
Divide	25	57.0	19.2	52.1	28.4	17.8	23.1	32.8
Mountrail	23	56.1	19.7	55.2	21.0	16.6	18.8	30.9
Grenora	23	55.0	19.3	55.8	18.2	18.3	18.2	30.8
Ben	28	54.9	19.8	53.1	21.9	15.2	18.6	30.1
Lebsock	25	57.9	19.0	52.3	--	20.2		
Trial Mean	25	56.4	19.4	53.8	23.3	17.6	--	--
C.V. %	3.8	3.6	1.9	3.9	9.1	16.2	--	--
LSD .05	1	NS	0.6	NS	3.3	NS	--	--
LSD .01	2	NS	NS	NS	4.6	NS	--	--

NS = no statistical difference between varieties.

Planting Date: April 14, 2008
Harvest Date: August 5, 2008
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
Note: The 2008 trial sustained heat and moisture stress.

2008 Durum Variety Trial - Continuously Cropped - No-till Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Grenora	21	57.8	15.6	35.1	55.6	10.5	33.0	33.7
Alkabo	24	--	15.6	29.8	52.2	8.9	30.6	30.3
Mountrail	23	51.7	16.4	29.7	47.2	10.0	28.6	30.0
Divide	24	56.6	15.5	31.1	46.7	10.0	28.4	29.3
Ben	27	58.3	17.2	29.7	45.2	11.5	28.4	28.8
Lebsock	23	--	15.8	31.6	--	7.1		
Trial Mean	24	56.1	16.1	31.2	49.4	9.7	--	--
C.V. %	5.0	--	14.1	5.3	4.7	50.6	--	--
LSD .05	2	--	NS	2.5	3.6	NS	--	--
LSD .01	2	--	NS	3.5	5.0	NS	--	--

NS = no statistical difference between varieties.

Planting Date: April 21, 2008 Harvest Date: August 8, 2008
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2005, 2006 & 2007 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2008 Durum Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	%	---------- Bushels per acre ----------				
Ben	42	55.3	15.5	28.6	61.6	55.1	58.4	48.4
Alkabo	39	55.5	14.7	28.1	56.1	60.2	58.2	48.1
Mountrail	40	54.1	15.7	27.3	59.6	56.9	58.2	47.9
Grenora	37	54.5	15.0	25.7	57.3	57.7	57.5	46.9
Divide	40	54.9	15.6	26.7	54.2	55.8	55.0	45.6
Lebsock	40	56.0	15.5	27.5	--	57.0		
Trial Mean	40	55.0	15.3	27.3	57.8	57.1	--	--
C.V. %	2.7	1.2	2.7	7.6	4.5	6.0	--	--
LSD .05	2	1.0	0.6	NS	4.9	NS	--	--
LSD .01	2	1.4	NS	NS	NS	NS	--	--

NS = no statistical difference between varieties.

Planting Date: April 22, 2008 Harvest Date: August 12, 2008
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.

2008 Hannover Durum Recrop									Dickinson, ND
	Seeds							Average Yield[2]	
	per	Test		------Grain Yield------				2	3
Variety	Pound	Weight	Protein	2005	2007	2008	Returns[1]	Year	Year
		lbs/bu	%	-------bu/ac-------			$/ac	----bu/ac----	
Alkabo	11,395	60.0	14.7	39.6	38.6	34.3	166.01	36.45	37.5
Ben	11,316	59.6	15.3	41.0	38.3	29.9	123.15	34.12	36.4
DG Star	12,042	58.6	15.6	--	--	32.1	143.20	--	--
Divide	12,245	59.0	15.3	38.4	37.5	34.2	163.80	35.81	36.7
Grenora	12,089	59.0	15.1	42.7	37.5	35.6	177.47	36.56	38.6
Mountrail	12,636	59.0	15.6	--	40.3	32.4	147.04	36.37	--
Trial Mean	11,954	59.2	15.3	40.4	38.5	33.1	153.45	--	--
CV %	3.9	0.6	--	9.1	4.5	10.0	10.0	--	--
LSD 0.05	696	0.5	--	NS	NS	NS	NS	--	--

Planting Date: April 22, 2008
Harvest Date: August 18, 2008
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac

2008 Glen Ullin Durum Fallow									Dickinson, ND
	Seeds							Average Yield[2]	
	per	Test		------Grain Yield------				2	3
Variety	Pound	Weight	Protein	2005	2007	2008	Returns[1]	Year	Year
		lbs/bu	%	-------bu/ac-------			$/ac	----bu/ac----	
Alkabo	11,539	61.8	13.1	57.6	35.7	36.4	187.01	36.07	43.2
Ben	11,799	61.9	14.2	60.5	42.4	35.7	180.34	39.03	46.2
DG Star	11,746	60.8	13.5	--	--	32.1	144.97	--	--
Divide	11,252	61.8	11.8	59.1	36.2	42.9	250.26	39.53	46.1
Grenora	11,791	61.3	13.9	62.3	38.4	37.6	199.14	38.03	46.1
Mountrail	13,223	60.8	13.3	--	44.6	37.0	192.77	40.78	--
Trial Mean	11,892	61.4	13.3	60.3	39.5	37.0	192.42	--	--
CV %	5.5	1.4	--	6.5	8.6	23.1	23.1	--	--
LSD 0.05	986	NS	--	NS	5.2	NS	NS	--	--

Planting Date: April 22, 2008
Harvest Date: August 18, 2008
Previous Crop: Chemical Fallow
Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $9.75/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 $0.05/bu per 0.5 lb/bu reduction between 54 and 50 lb/bu. Returns also deduct $167.90, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for durum.

[2]Average yields are from 2005, 2007, and 2008 since durum was not grown in 2006.

2008 North Dakota barley variety descriptions.

Variety	Use[1]	Origin[2]	Year Released	Awn Type[3]	Rachilla Hair Length[4]	Aleurone Color	Height	Straw Strength	Relative Maturity	Reaction to Disease[5]			
										Stem Rust	Loose Smut	Spot Blotch	Net Blotch
Six-rowed													
Azure	M/F	ND	1982	S	L	Blue	Med.	M.strg.	M.early	S	S	MR-R	MS-S
Celebration	MT	BARI	2008	S	S	White	M.short	Strg.	Med.	S	S	MR-R	MS-MS
Drummond	M/F	ND	2000	S	L	White	M.short	V.strg.	Med.	S	S	MR-R	MS-S
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	MN	1999	S	S	White	M.short	Strg.	Med.	S	S	MR-R	MS-S
Legacy	M/F	BARI	2000	S	L	White	Med.	Strg.	M.late	S	S	MR-R	MS-S
MNBrite[6]	F	MN	1997	S	S	White	Tall	Med.	Early	S	S	MR-R	MS-S
Morex	M/F	MN	1978	S	S	White	Tall	Med.	Early	S	S	MR	S
Rasmusson	MT	MN	2008	S	S	White	M.short	Strg.	Med.	S	S	MR-R	MS-S
Robust	M/F	MN	1983	S	S	White	Med.	M.strg.	Med.	S	S	MR-R	MS-S
Stander	F	MN	1993	S	S	White	M.short	V.strg.	M.late	S	S	MR-R	MS-S
Stellar-ND	M/F	ND	2005	S	L	White	M.short	V.strg.	Med.	S	S	MR-R	MS-S
Tradition	M/F	BARI	2003	S	L	White	M.short	V.strg.	Med.	S	S	MR-R	MS-S
Two-rowed													
AC Metcalfe	M	Can	1997	R	L	White	Med.	Med.	Late	S	NA	MS	MS
Bowman	F	ND	1984	S	L	White	M.short	Med.	Early	S	S	MS-S	S-MS
CDC Copeland	M	Can	1999	R	L	White	Tall	Med.	M.late	S	S	MS	MR
Conlon[7]	M/F	ND	1996	S	L	White	M.short	Med.	Early	S	S	MS	MR-R
Conrad	M	BARI	2007	R	L	White	Tall	M.weak	Late	S	NA	NA	NA
Eslick	F	MT	2003	R	L	White	Med.	M.weak	M.late	S	NA	MS	NA
Gallatin	F	MT	1986	R	L	White	Med.	Med.	Late	S	S	MS-S	MS
Harrington[8]	F	Can	1981	R	L	White	Med.	M.weak	V.late	S	S	S	MS
Haxby	F	MT	2003	R	L	White	Med.	Med.	Med.	S	NA	MS	NA
Logan	F	ND	1995	S	L	White	Med.	Strg.	Med.	S	S	MR	MR
Pinnacle	MT	ND	2006	S	L	White	Med.	Strg.	M.late	S	S	MR	MS
Rawson	F	ND	2005	R	L	White	Med.	Med.	Med.	S	S	MR	MS
Scarlett	M	Germany	1995	R	L	White	Short	Med.	Late	S	NA	NA	NA
Stark	F	ND	1991	S	L	White	M.tall	Med.	Late	S	S	S-MS	MS-S
Valier	F	Can	1999	R	L	White	Med.	M.weak	M.late	S	NA	MS	NA
Specialty													
Wanubet	SP	MT	1990	R	L	White	Med.	Weak	Late	S	S	S	S

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

2008 Barley Variety Trial – Continuously Cropped - No-till

Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	% Plump	Grain Protein	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Avg. Yield 2 yr	Avg. Yield 3 yr
	*	Inches	**	lbs/bu	>6/64	%	Bushels per acre				
2 Row Types											
Haxby	77	39	4.0	46.0	88	16.5	84.6	97.6	91.1	94.4	91.1
Bowman	73	41	4.5	47.8	86	14.6	80.3	95.1	88.1	91.6	87.8
Conlon	73	42	1.0	47.7	94	14.9	78.3	78.0	102.7	90.4	86.3
Eslick	78	39	3.8	45.6	77	14.0	77.4	90.7	86.3	88.5	84.8
Pinnacle	76	38	1.2	47.2	91	13.5	82.2	75.6	94.0	84.8	83.9
Rawson	74	42	3.0	45.7	87	13.8	75.5	90.9	80.6	85.8	82.3
AC Metcalfe	78	44	4.2	42.5	62	16.6	74.7	75.9	67.4	71.6	72.7
Harrington	80	41	4.0	40.2	31	16.9	59.7	74.3	58.7	66.5	64.2
Conrad	79	38	2.5	44.7	81	15.9		89.8	78.3	84.0	
Scarlett	81	35	3.0	44.6	81	14.5		76.0	89.5	82.8	
Hockett	78	38	4.2	43.2	58	16.2		82.8	75.1	79.0	
Geraldine	79	38	3.2	43.9	70	14.3		85.7	70.4	78.0	
CDC Copeland	80	42	2.8	42.4	69	15.3		76.1	73.9	75.0	
6 Row Types											
Tradition	76	40	4.8	45.7	82	14.6	73.9	87.1	88.0	87.6	83.0
Lacey	76	40	6.0	43.5	64	14.2	79.3	88.9	76.7	82.8	81.6
Legacy	78	42	7.8	40.5	50	14.8	77.1	78.0	69.0	73.5	74.7
Stellar-ND	75	40	8.5	40.0	60	14.9	74.0	86.4	60.4	73.4	73.6
Drummond	75	41	6.5	44.1	75	14.8	72.1	81.7	66.2	74.0	73.3
Robust	77	44	6.5	46.6	59	14.8	70.8	79.5	64.2	71.8	71.5
Rasmusson	76	39	6.8	43.5	41	15.0		86.9	63.7	75.3	
Trial Mean	76	40	4.7	44.2	70	15.0	76.0	81.8	76.5	--	--
C.V. %	0.9	3.5	47.1	2.5	12.8	4.6	9.7	7.6	8.4	--	--
LSD .05	1	2	3.1	1.5	13	1.0	10.4	8.8	9.0	--	--
LSD .01	1	3	4.1	2.0	17	1.3	13.8	11.7	12.0	--	--

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

Planting Date: April 14
Harvest Date: August 6
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2007 = hrsw, 2006 = field pea, 2005 = fallow.
Note: Hot and dry weather conditions in July caused low test weights.

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	% Plump	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	>6/64	----------bu/ac----------			$/ac	----bu/ac----	
Six Row												
Drummond	71	14,419	25	42.9	15.2	64.9	89.9	71.2	53.8	23.77	62.5	71.7
Lacey	73	15,248	22	43.9	14.2	56.8	88.4	79.3	53.6	23.64	66.5	73.8
Legacy	74	15,600	23	41.3	14.5	61.1	76.0	68.1	51.7	13.39	59.9	65.3
Rasmusson	72	14,862	23	43.0	14.0	62.8	103.1	75.1	53.5	22.43	64.3	77.2
Robust	73	16,039	25	44.1	14.8	57.9	89.8	70.8	49.2	11.15	60.0	69.9
Stellar-ND	73	13,468	23	41.1	13.8	67.5	83.8	69.3	50.4	8.73	59.8	67.8
Tradition	72	14,455	24	42.3	14.7	66.8	82.3	75.4	53.3	20.55	64.4	70.3
Two Row												
AC Metcalfe	75	13,514	22	45.2	14.7	87.1	88.6	70.9	52.3	22.86	61.6	70.6
Bowman	74	11,550	24	46.3	15.1	87.8	85.8	70.6	55.4	33.39	63.0	70.6
CDC Copeland	77	13,180	22	43.4	15.5	81.9	80.9	68.7	45.8	-0.60	57.2	65.1
Conlon	71	10,743	25	46.7	14.6	95.2	82.3	63.9	49.1	13.58	56.5	65.1
Conrad	76	13,035	21	47.0	15.8	83.1	--	76.3	52.7	25.09	64.5	--
Eslick	76	11,756	21	47.3	14.6	81.3	98.1	78.7	58.5	43.18	68.6	78.4
Geraldine	78	13,603	21	44.8	15.9	57.4	--	70.8	51.6	19.31	61.2	--
Harrington	76	13,796	22	43.8	15.8	74.5	78.6	63.3	47.5	5.83	55.4	63.1
Haxby	74	11,917	22	48.7	15.3	83.4	94.0	76.7	55.1	32.67	65.9	75.3
Hockett	74	11,642	21	46.7	14.4	86.8	--	71.9	55.1	32.13	63.5	--
Pinnacle	74	11,100	24	47.2	13.3	92.5	93.1	69.3	54.1	29.42	61.7	72.2
Rawson	73	10,527	25	47.5	13.7	93.3	91.1	66.4	54.9	31.83	60.7	70.8
Scarlett	77	13,151	18	46.4	15.0	89.0	--	76.7	50.4	17.89	63.6	--
Trial Mean	74	13,437	23	44.6	14.7	75	87.7	71.8	52.3	20.79	--	--
CV %	1.0	5.7	6.2	3.0	--	7.0	11.1	9.7	7.1	7.1	--	--
LSD 0.05	1	1,087	2	1.9	--	7	13.6	NS	5.2	16.16	--	--

Planting Date: April 14, 2008
Harvest Date: July 30, 2008
Previous Crop: Field Pea
Seeding Rate: 1.2 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yields by the price paid for feed barley minus the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $3.15/bu for grain with test weights heavier than 45 lb/bu. Grain with a test weight of 45 lb/bu was discounted $.03/bu, with an additional discount of $.04/bu per pound down to 42 lb/bu. Below 42 lb/bu, an additional discount of $.05/bu occurred per pound. Returns also deduct $141.02, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for barley.

Barley - Long Term Average Yields									Dickinson,ND
Variety	Test Weight	Protein	% Plump	Yield	Test Weight	Protein	% Plump	Yield	years[1]
	lbs/bu	%	>6/64	bu/ac	-------Percent of Drummond-------[2]				
Six Row									
Drummond	44.2	15.0	74.7	80.5	100.0	100.0	100.0	100.0	11
Legacy	42.2	14.3	68.9	79.5	95.4	96.0	91.5	100.7	11
Robust	45.3	14.8	72.8	77.5	102.5	98.9	98.0	96.6	11
Lacey	44.7	14.4	75.3	79.7	101.2	94.9	100.2	101.8	10
Stellar-ND	42.4	14.3	77.7	77.6	96.7	94.9	104.7	99.2	9
Tradition	44.1	14.8	69.9	77.9	99.9	97.1	102.3	100.5	6
Rasmusson	43.9	13.3	68.0	83.9	100.2	92.7	100.5	107.1	4
Two Row									
Bowman	47.3	15.0	86.3	73.3	107.1	100.8	117.6	94.5	11
Conlon	47.3	14.4	89.4	72.1	107.1	96.3	122.5	89.4	11
Harrington	43.6	15.1	67.0	70.0	98.6	100.6	89.9	88.6	11
Rawson	48.8	13.5	94.7	78.5	110.4	89.3	140.5	101.0	6
AC Metcalfe	45.4	15.2	80.9	70.9	103.2	101.6	114.9	100.9	5
Eslick	46.7	14.4	73.8	79.8	106.1	96.3	103.6	113.2	5
Haxby	48.4	14.7	76.2	76.5	110.0	98.2	107.3	110.8	5
Pinnacle	47.1	13.3	88.9	80.5	107.5	92.7	131.2	103.0	4

[1] Number of years the variety was grown and used to calculate averages.
Reliability of variety performance is greater with more years of data represented.
years included in averages are 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, and 1998

[2] Percent of Drummond for each variety is based only on years in which that variety was grown in common with Drummond.

SDSU Spring Barley Variety Trial - Perkins County (Bison), 2008.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Yield Bu/A	Protein %
TWO ROW					
CONLON +	32	0	**	13.4	11.5
ESLICK	26	0	43.4	**60.8**	12.3
PINNACLE	31	0	46.6	38.5	10.9
RAWSON +	33	0	**	10.1	11.3
SIX ROW					
LACEY	31	0	48.7	19.0	11.9
TRADITION	33	0	48.3	41.3	11.5
STELLAR-ND	31	0	44.6	36.7	10.9
DRUMMOND	34	0	45.7	21.0	11.9
RASMUSSON	31	0	46.3	34.2	11.2
ROBUST	34	0	45.9	23.6	12.2
M122	33	0	46.0	35.0	11.1
Average	31	0.0	45.8	32.9	11.6
LSD (P=.05)	2.2	0.0	2.5	8.8	--
CV	7.0	0.0	3.2	15.8	--

+ Colon and Rawson yields were adversely affected by wildlife damage.
* 0 = no lodging, 9 = 100% lodged.
** Not enough sample for a test weight.
Planted: April 17, 2008 Herbicide: Starane NXT (20 oz/A)
Harvested: August 21, 2008 Additional Nitrogen: 50 Lb/A
Previous crop: Wheat, no-till planted.

2008 Barley Variety Trial - Continuously Cropped - No-till **Scranton**

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Rawson	27	42.2	28	15.1	90.5	65.4	22.1	43.8	59.3
Pinnacle	24	43.8	51	16.8	85.5	59.6	20.6	40.1	55.2
Conlon	28	--	46	17.1	82.0	42.1	4.3	23.2	42.8
6 Row Types									
Stellar-ND	24	39.2	35	15.9	77.3	68.7	15.6	42.2	53.9
Robust	27	40.5	35	16.6	77.9	43.1	15.8	29.4	45.6
Trial Mean	26	41.7	39	16.5	85.2	61.1	17.2	--	--
C.V. %	4.1	3.0	52	3.8	6.0	5.4	28.5	--	--
LSD .05	2	1.9	NS	0.9	7.4	4.9	7.4	--	--
LSD .01	2	2.7	NS	1.3	10.1	6.6	10.2	--	--

NS = no statistical difference between varieties.
Planting Date: April 14, 2008, Harvest Date: August 5, 2008
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2008 Barley Variety Trial - Continuously Cropped - No-till — Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	% Plump	Grain Protein	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Average Yield 2 yr	Average Yield 3 yr
	inches	lbs/bu	>6/64	%	Bushels per acre				
2 Row Types									
Rawson	26	40.7	72	12.3	61.0	86.0	23.8	54.9	56.9
Pinnacle	24	39.0	53	13.1	54.3	84.8	20.5	52.6	53.2
Conlon	28	44.4	77	13.4	57.5	84.2	12.3	48.2	51.3
6 Row Types									
Stellar-ND	23	40.0	34	12.6	53.8	69.0	13.9	41.4	45.6
Robust	26	33.7	29	13.0	48.3	64.5	9.6	37.0	40.8
Trial Mean	25	40.5	50	13.1	57.4	80.0	16.1	--	--
C.V. %	9.8	--	14.3	7.1	5.5	4.5	27.4	--	--
LSD .05	NS	--	11	NS	4.6	5.3	6.6	--	--
LSD .01	NS	--	15	NS	6.2	7.2	9.2	--	--

NS = no statistical difference between varieties.

Planting Date: April 21, 2008 Harvest Date: August 8, 2008
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2005 = hrww, 2006 & 2007 = hrsw.
Note: The 2008 trial sustained severe heat and moisture stress.

2008 Barley Variety Trial - Continuously Cropped - No-till — New Leipzig

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	% Plump	Grain Protein	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Average Yield 2 yr	Average Yield 3 yr
	inches	lbs/bu	>6/64	%	Bushels per acre				
2 Row Types									
Rawson	27	46.4	92	12.2	30.3	59.0	30.4	44.7	39.9
Pinnacle	27	45.3	86	12.9	26.4	63.9	28.6	46.2	39.6
Conlon	28	46.9	93	13.5	25.7	45.9	25.6	35.8	32.4
6 Row Types									
Stellar-ND	26	42.4	70	13.3	24.7	66.8	33.3	50.0	41.6
Robust	28	45.4	74	14.2	24.9	58.0	28.8	43.4	37.2
Trial Mean	27	45.5	84	13.3	28.2	64.4	30.0	--	--
C.V. %	2.6	4.4	7.4	1.8	9.8	4.7	9.8	--	--
LSD .05	1	NS	9	0.4	4.0	4.4	4.4	--	--
LSD .01	1	NS	13	0.5	5.5	6.0	6.1	--	--

NS = no statistical difference between varieties.

Planting Date: April 23, 2008 Harvest Date: August 8, 2008
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
Note: The 2006 & 2008 trials sustained severe moisture stress.

2008 North Dakota oat variety descriptions.

Variety	Origin[1]	Year Released	Grain Color	Height	Straw Strength	Maturity[2]	Reaction to Diseases: Stem Rust[3]	Crown Rust[3]	Barley Y.Dwf[4]	Bu/Wt.	Protein[5]
AC Assiniboia	Can. Proven Seed	1997	Red	Med.	Strong	L	S	S	T	Good	ML
AC Gwen	Can. SeCan	2000	Hulless	Tall	Strong	L	S	S	R	Good	L
AC Kaufman	Can.	2000	Yellow	Tall	Strong	L	S	S	MT	V.good	ML
AC 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. strg.	L	S	S	T	V.good	M
Beach	ND	2004	White	Tall	M.strg.	ML	S	MR/MS	MS	V.good	M
Buff	SD	2002	Hulless	Med.	M.strg.	L	S	MR/MS	MT	Good	H
CDC 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 Minstrel	Sask.	2006	White	Tall	M.strg.	L	S	S	S	Good	M
CDC Orrin	Can. QAS Cargill	2001	White	Tall	Strong	L	S	S	S	Good	ML
CDC Pacer	Sask. Value Added	1996	White	Tall	M.strg.	L	S	S	S	Good	L
CDC Weaver	Can.	2005	White	Med.	M.strg.	L	R	R	S	Good	M
Drumlin	WI	2003	Yellow	Med.	Strong	M	S	MR	VT	Good	M
Ebeltoft	ND	1999	White	Tall	Strong	V	S	MS	S	V.good	M
Excel	IN	2006	White	Med.	Strong	M	S	MR	T	V.good	M
Furlong	AAFC Winnipeg	2003	Red	Tall	M.strg.	L	S	S	T	V.good	M
HiFi	ND	2001	White	Tall	Strong	L	MR/MS	R	T	Good	M
Hytest	SD	1986	White	Tall	M.strg.	E	S	MS	S	V.good	H
Jerry	ND	1994	White	Tall	Strong	M	S	MS	MT	V.good	M
Jud	ND	1997	Ivory	Tall	Med.	L	R	MR/MS	T	Good	MH
Killdeer	ND	2000	White	Med.	Strong	M	S	MS	MT	Good	M
Leggett	AAFC Winnipeg	2005	White	Tall	M.strg.	L	MR	R	S	Good	M
Leonard	MN	2001	Yellow	Tall	M.strg.	L	S	S	T	Fair	ML
Loyal	SD	2000	Ivory	Tall	M.strg.	L	S	MR	T	Good	MH
Maida	ND	2005	Yellow	Med.	Strong	M	R	S	MS	V.good	MH
Monida	MT/ID	1985	White	M.tall	Strong	L	S	S	NA	Good	ML
Morton	ND	2001	White	Tall	V.strg.	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	Hulless	V.tall	Strong	L	R	MR/MS	T	Good	H
Reeves	SD	2002	White	M.tall	Med.	E	S	MR	MT	Good	H
Sesqui	MN	2001	Yellow	M.tall	Strong	L	S	S	T	Good	M
Souris	ND	2006	White	Med.	Strong	M	MS	R	MS	V.good	M
Stallion	SD	2006	White	Tall	Med.	L	S	MR	NA	V.good	M
Stark	ND	2004	Hulless	Tall	M.strg.	L	R	MR/MS	T	V.good	M
Vista	WI	2000	Yellow	Tall	Strong	L	S	R	MT	Good	M
Youngs	ND	1999	White	Med.	Strong	L	S	MS/S	MT	Good	M

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

2008 Oat Variety Trial – No-till

Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	*	inches	0 – 9**	lbs/bu	---------- Bushels per acre ----------				
Stallion	78	40	4.8	34.8	109.8	77.1	111.1	94.1	99.3
AC Pinnacle	82	40	3.5	33.5	103.4	72.9	115.3	94.1	97.2
Killdeer	77	34	1.8	34.2	104.7	78.0	101.7	89.8	94.8
Monida	81	37	7.0	29.7	100.0	67.6	112.8	90.2	93.5
Maida	77	41	4.0	34.5	90.0	68.9	108.6	88.8	89.2
HiFi	79	37	4.8	34.0	88.6	69.0	108.8	88.9	88.8
Souris	78	36	5.5	34.4	82.3	74.7	108.2	91.4	88.4
Jerry	76	40	4.2	36.2	92.4	70.4	101.4	85.9	88.1
Beach	77	40	4.0	37.0	87.9	65.9	108.7	87.3	87.5
Youngs	80	42	5.5	31.6	87.5	64.9	106.7	85.8	86.4
Hytest	76	38	3.8	37.6	88.2	70.5	96.5	83.5	85.1
CDC Dancer	79	39	3.8	34.4	77.4	64.7	110.7	87.7	84.3
Morton	78	37	2.0	33.9	79.0	74.3	98.1	86.2	83.8
Otana	80	40	3.8	33.3	84.6	47.4	90.7	69.0	74.2
Buff***	74	38	2.0	39.9	67.2	52.2	82.0	67.1	67.1
Stark***	81	38	4.0	33.0	63.6	47.8	75.8	61.8	62.4
Paul***	82	36	2.5	35.5	40.6	29.2	62.3	45.8	44.0
Furlong	82	36	1.8	34.1			115.4		
CDC Minstrel	78	38	4.2	33.2			112.0		
Trial Mean	79	38	4.2	34.6	87.3	65.6	105.9	--	--
C.V. %	0.9	4.0	37.1	2.2	7.6	10.3	5.3	--	--
LSD .05	1	2	2.2	1.1	9.3	9.5	7.8	--	--
LSD .01	1	3	2.9	1.4	12.3	12.6	10.4	--	--

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

Planting Date: April 14 Harvest Date: August 6
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2007 = fallow, 2006 = HRSW, 2005 = fallow.

2008 Oat - Recrop **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Grain Yield 2006	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
AC Pinnacle	76	13,324	26	38.6	108.1	108.5	55.2	-16.29	81.8	90.6
Beach	75	13,680	28	39.6	94.4	102.4	51.2	-24.12	76.8	82.7
Buff*	71	17,397	26	38.5	60.9	71.5	48.9	-29.10	60.2	60.4
CDC Dancer	74	14,472	27	39.0	96.0	112.2	57.8	-10.40	85.0	88.6
CDC Minstrel	74	14,039	27	38.4	--	--	52.1	-22.36	--	--
Furlong	75	12,196	27	36.9	--	--	57.4	-13.38	--	--
HiFi	74	14,885	27	36.0	87.9	93.9	50.7	-28.79	72.3	77.5
Hytest	72	13,898	28	39.0	90.5	96.3	57.0	-11.94	76.7	81.3
Jerry	73	13,298	28	38.1	90.5	110.0	53.5	-19.39	81.7	84.6
Killdeer	74	14,530	24	37.1	93.5	115.6	56.3	-15.26	86.0	88.5
Maida	74	13,198	29	37.6	84.2	100.6	50.4	-26.47	75.5	78.4
Monida	76	15,759	26	36.0	104.8	96.5	60.1	-9.73	78.3	87.1
Morton	75	14,831	29	38.3	97.2	104.6	49.2	-28.47	76.9	83.7
Otana	74	15,657	30	39.4	96.3	109.7	66.0	6.90	87.9	90.7
Paul*	75	17,067	26	40.4	58.5	81.7	33.7	-61.60	57.7	58.0
Souris	74	15,659	24	37.0	97.0	112.9	55.9	-16.73	84.4	88.6
Stallion	74	15,918	29	38.9	100.2	109.5	61.8	-1.90	85.6	90.5
Stark*	76	16,611	27	42.0	68.1	73.3	39.9	-48.00	56.6	60.4
Youngs	75	12,547	28	36.5	98.0	116.8	52.1	-25.38	84.5	89.0
Trial Mean	74	14,425	27	37.9	93.0	104.3	52.8	-22.17	--	--
CV %	1.2	6.2	5.3	3.0	9.8	10.1	9.3	9.7	--	--
LSD 0.05	1	1,248	2	1.6	12.7	14.8	6.9	14.88	--	--

Planting Date: April 14, 2008
Harvest Date: July 30, 2008
* Hulless
Previous Crop: Field Pea
Seeding Rate: 1 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by the test weight discount paid at the Southwest Grain Terminal located in Gladstone on September 9. The price paid was $2.10/bu for grain with a test weight greater than 37 lb/bu. Grain with a test weight of 37 lb/bu was discounted $.04/bu, with an additional discount of $.04/bu per pound to 30 lb/bu. Below 30 lb/bu, an additional discount of $.07/bu occurred per pound. Returns also deduct $131.72, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for oats.

Oat - Long Term Average Yields

Dickinson, ND

Variety	Test Weight	Yield	Test Weight	Yield	years[1]
	lbs/bu	bu/ac	-----Percent of Jerry-----[2]		
Hytest	37.6	90.5	110.2	86.9	11
Jerry	35.6	94.4	104.2	89.1	11
Killdeer	34.2	105.9	100.0	100.0	11
Monida	31.3	107.5	91.4	101.5	11
Morton	34.4	96.5	100.8	91.0	11
Otana	34.7	106.9	101.3	102.4	11
Paul*	40.1	66.6	117.7	62.8	11
Youngs	32.5	103.6	95.1	97.6	11
Beach	36.3	100.5	106.2	94.0	10
HiFi	33.5	96.2	98.1	90.2	10
Stark*	37.1	81.9	108.4	76.9	10
Souris	34.3	100.2	100.9	97.4	9
ND 970651	34.5	95.5	103.5	95.3	8
AC Pinnacle	33.9	98.7	100.3	101.6	6
Buff*	39.3	67.0	116.7	69.7	6
CDC Dancer	35.2	88.0	101.9	96.5	5
Maida	34.5	79.9	100.0	86.8	5

[1] Number of years the variety was grown and used to calculate averages.
Reliability of variety performance is greater with more years of data represented.
years included in averages are 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, and 1998

[2] Percent of Jerry for each variety is based only on the years in which that variety was grown in common with Jerry.

* Hulless

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

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Yield Bu/A	Protein %
BUFF (hulless)	33	0	42.6	60.8	19.4
STARK (hulless)	32	0	36.4	44.5	20.7
SD 020301-20 (hulless)	38	0	42.8	61.1	19.9
BEACH	37	0	36.6	73.8	16.1
DON	32	0	37.8	59.7	16.8
HIFI	36	0	33.8	**77.5**	16.8
HYTEST	39	0	40.7	58.9	18.6
JERRY	37	0	37.0	**81.1**	17.7
MORTON	38		35.6	**79.7**	16.3
REEVES	40	0	38.1	49.3	17.7
SOURIS	33	0	35.6	**84.2**	16.7
STALLION	36	0	36.2	70.1	17.0
		0			
SD 020883-29	35	0	39.9	70.1	17.7
SD 020883-109	35	0	40.7	71.8	17.8
SD 031128-245	38	0	39.9	**83.4**	16.9
SD 031128-330	38	0	39.6	74.1	16.6
SD 041405	34	0	38.3	**78.6**	16.8
SD 060966	33	0	41.1	76.3	17.7
Average	36	0.0	38.5	69.7	17.6
LSD (P=.05)	3.0	0.0	1.6	7.5	--
CV	5.0	0.0	3.0	7.6	--

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

Planted: April 17, 2008 Herbicide: Starane NXT (20 oz/A)
Harvested: August 21, 2008 Additional Nitrogen: 50 Lb/A
Previous crop: Wheat, no-till planted.

2008 Oat Variety Trial - Continuously Cropped - No-till New Leipzig

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	------ Grain Yield ------ 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	---------- Bushels per acre ----------				
Maida	29	34.6	24.2	80.4	43.9	62.2	49.5
Morton	28	35.6	22.3	63.9	48.6	56.2	44.9
Beach	28	37.8	23.1	59.5	47.5	53.5	43.4
Killdeer	27	34.6	25.8	65.1	37.4	51.2	42.8
Jerry	29	37.8	25.0	71.4	36.1	53.8	44.2
Souris	24	36.5	15.2	66.8	37.1	52.0	39.7
Stark*	27	40.2		33.7	30.9	32.3	
Trial Mean	28	36.7	22.6	63.0	40.2	--	--
C.V. %	9.0	3.6	13.8	11.9	9.7	--	--
LSD .05	NS	2.0	4.7	11.1	5.8	--	--
LSD .01	NS	2.7	6.5	15.2	8.0	--	--

* Naked (hulless) type

NS = no statistical difference between varieties.

Planting Date: April 23, 2008 Harvest Date: August 8, 2008
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
Note: The 2006 & 2008 trials sustained severe moisture stress.

2008 Oat Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS NGP Research Center, Mandan

Variety	Plant Height	Test Weight	------ Grain Yield ------ 2006	2007	2008	Average Yield 2 yr	3 yr
	inches	lbs/bu	---------- Bushels per acre ----------				
Souris	37	32.5	50.4	141.5	137.0	139.2	109.6
Killdeer	36	29.6	53.3	124.5	142.1	133.3	106.6
Maida	40	29.1	51.1	136.8	119.0	127.9	102.3
Beach	43	33.3	44.4	126.1	130.5	128.3	100.3
Jerry	41	32.0	54.8	111.5	127.2	119.4	97.8
Morton	43	32.4	47.0	119.9	124.6	122.2	97.2
Stark*	41	32.6		87.7	102.7	95.2	
Trial Mean	40	31.6	50.2	121.9	126.2	--	--
C.V. %	3.1	4.6	11.3	6.5	6.0	--	--
LSD .05	2	2.2	NS	13.9	11.3	--	--
LSD .01	3	3.0	NS	19.3	15.5	--	--

*Stark is a naked (hulless) type.

NS = no statistical difference between varieties.

Planting Date: April 22, 2008 Harvest Date: August 12, 2008
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.
Note: The 2006 trial sustained moderate heat and moisture stress.

2008 North Dakota hard winter wheat variety description table, agronomic traits.

Variety	Agent or Origin	Year	Quality[1]	Reaction to Disease[2] Leaf Rust	Stem Rust	Scab[3]	Maturity	Straw Strength	Height	Winter[4] Hardiness
Accipiter	Can	2008	Good	MS	R	NA	Med.	Strong	Short	Good
Agassiz	ND	1983	Average	S	R	NA	Med.	Med.	Med.	Good
Alice[5]	SD	2006	Good	S	MR	S	Early	M. strong	Short	Fair
Arapahoe	NE	1989	Poor	MS	MR	MS	Med.	Med.	Med.	Fair
CDC Buteo	Can/WB[5]	2004	Average	MS	NA	S	Med.	Med.	Med.	Good
CDC Falcon	Can/WB	2000	Average	MS	NA	S	Med.	M. strong	Short	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
Darrell	SD	2006	Average	MS	R	MS	Med.	Strong	Med.	Good
Elkhorn	ND	1995	Average	MR	R	NA	Med.	Med.	Med.	Good
Erhardt	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Good
Expedition	SD	2002	Average	MS	R	S	Med.	Strong	Med.	Good
Goodstreak	NE	2002	Average	S	MR	S	M. early	Med.	Tall	Fair
Harding	SD	1999	Average	MS	NA	S	Med.	M. strong	Med.	Good
Harry	NE	2002	Poor	MR	MR	NA	Med.	Strong	Med.	Poor
Hawken	Agripro	2007	Good	MR	MR	NA		Strong	V. short	Fair-Poor
Jagalene	Agripro	2002	Average	S	MR	VS	Early	Strong	Short	Fair
Jerry	ND	2001	Good	MR	R	MS	Med.	Strong	Med.	Good
McClintock	Can	2003	Average	S	NA	S	Med.	Strong	Med.	Fair
Millennium	NE/SD	1999	Average	MR	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
NuDakota[6]	Agripro	2006	Average	MR	MR	NA	M. early	Strong	Short	Poor
Nuplains[6]	NE	2000	Average	S	MS	VS	Med.	M. strong	Short	Fair-Poor
NuSky[5]	MT	2001	Avg-Good	S	NA	S	Med.	M. strong	Med.	Fair
Overland	NE	2006	Avg-Fair	MR/R	MR	NA	Med.	Strong	Short	Fair
Paul	MT	2003	Average	S	NA	NA	Med.	Med.	Med.	Fair
Peregrine	Can.	2008	Average	MR	R	NA	Med.	Strong	Med.	Good
Radiant[7]	Can.	2005	Average	S	S	S	Late	V. strong	Tall	Good
Rampart[8]	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[6]	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

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

Variety	Heading Date	Winter Survival	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2005	Grain Yield 2007	Grain Yield 2008	Returns[1]	Average Yield[2] 2 Year	Average Yield[2] 3 Year
	June	%		in	lbs/bu	%	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
Accipiter	22	93	20,433	22	55.4	16.0	--	--	18.6	-27.67	--	--
Alice	19	80	19,681	21	56.4	15.2	--	79.0	15.4	-47.36	47.2	--
CDC Buteo	22	90	18,706	23	58.5	15.5	58.3	82.7	17.6	-31.34	50.2	--
CDC Falcon	22	87	20,479	21	55.0	16.1	61.4	79.8	17.9	-32.58	48.9	53.0
Darrell	21	90	16,588	23	56.9	15.3	54.0	79.9	19.4	-20.70	49.7	51.1
Expedition	17	77	18,291	21	56.6	14.9	52.4	71.0	15.0	-50.45	43.0	46.1
Harding	24	77	18,144	23	55.8	16.5	65.6	74.0	14.5	-53.81	44.3	51.4
Hawken	20	60	18,790	20	54.0	15.6	--	--	13.9	-59.66	--	--
Jagalene	23	70	18,184	23	57.0	15.5	38.9	64.5	16.4	-40.40	40.5	39.9
Jerry	21	90	16,746	23	56.5	16.1	66.0	82.9	18.3	-28.39	50.6	55.7
Millennium	20	90	17,021	22	57.4	15.0	69.0	86.7	17.6	-32.29	52.1	57.7
NuDakota	24	37	20,180	19	51.9	15.6	--	80.2	10.1	-85.73	45.2	--
Overland	19	93	16,865	21	58.3	14.9	--	--	21.4	-6.50	--	--
Peregrine	24	97	19,984	25	56.1	15.2	--	--	17.5	-34.15	--	--
Radiant	24	93	16,811	23	57.0	15.2	--	70.7	19.5	-19.95	45.1	--
Roughrider	23	83	20,206	22	56.4	16.3	46.9	63.3	12.4	-67.70	37.8	40.8
Lyman	18	93	16,964	21	57.5	15.4	--	--	18.2	-28.20	--	--
Wesley	17	87	17,619	21	56.1	15.8	48.7	78.9	14.1	-56.57	46.5	47.2
Yellowstone	24	90	16,739	24	56.6	15.9	41.1	75.4	18.8	-24.87	47.1	45.1
Trial Mean	21	84	18,371	22	56.3	15.5	53.3	77.7	16.9	-38.06	--	--
CV %	7.4	9.5	2.5	8.7	1.1	2.2	9.3	10.4	12.8	--	--	--
LSD 0.05	2	13	944	3	0.9	0.7	7.0	11.4	3.1	--	--	--

Planting Date: September 18, 2007

Harvest Date: July 31, 2008

Previous Crop: Oat

Seeding Rate: 1 million live seeds/ac

[1]Returns were calculated by multiplying the 2008 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 9. The price paid on this date was $6.55/bu for a grain protein concentration of 12%. $.01/bu was paid for each additional 0.2% increase in grain protein up to 15%, above which an additional premium was not paid. Grain was discounted $0.03/bu for each 0.2% reduction in grain protein from 12% to 10%, below which no additional discount was assigned. Returns factored in discounts for grain with a test weight < 60 lb/bu [-$0.01/bu for 0.5 lb/bu between 60 and 58 lb/bu; -$0.02/bu for 0.5 lb/bu between 58 and 57 lb/bu; -$0.03/bu for 0.5 lb/bu between 57 and 55 lb/bu; -$0.04/bu for 0.5 lb/bu between 55 and 52 lb/bu; and -$0.05/bu for 0.5 lb/bu between 52 and 51 lb/bu]. Returns also deduct $149.03, the sum of all listed costs from the December 2007 Farm Management Planning Guide Projected 2008 Crop Budgets South West North Dakota for winter wheat.

[2]Average yields are from 2005, 2007, and 2008 since winter wheat was not grown in 2006.

2008 Winter Wheat Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Winter Surv.	Heading Date	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	%	June	inches	lbs/bu	%	---------- Bushels per acre ----------				
Radiant	96	17	37	53.9	11.7	41.7	59.5	48.1	53.8	49.8
CDC Buteo	99	17	34	58.8	12.1	36.9	60.1	43.8	52.0	46.9
Harding	98	14	36	56.4	11.1	27.0	59.5	50.6	55.0	45.7
Jerry	91	18	39	55.2	11.2	24.8	59.3	49.0	54.2	44.4
Yellowstone	97	18	36	53.3	13.1	20.4	59.3	51.5	55.4	43.7
CDC Falcon	97	16	33	58.2	11.4	8.7	65.9	53.2	59.6	42.6
Jagalene	87	17	35	57.8	11.4	20.9	60.5	46.1	53.3	42.5
Wesley	98	9	30	56.8	12.2	19.1	57.8	50.5	54.2	42.5
Expedition	97	11	34	56.1	11.6	19.4	60.5	47.2	53.8	42.4
Millennium	99	12	37	58.6	11.0	8.7	63.0	49.4	56.2	40.4
Alice*	96	15	33	59.1	10.8	14.7	54.3	49.7	52.0	39.6
Roughrider	93	17	38	55.3	12.3	28.3	49.5	35.6	42.6	37.8
Hawken	98	10	32	57.8	10.9		63.0	48.4	55.7	
NuDakota*	97	14	29	56.1	10.8		55.5	52.6	54.0	
Darrell	95	12	36	57.6	11.6		57.0	50.3	53.6	
Overland	99	12	33	58.3	9.4			50.0		
Accipiter	96	19	34	54.9	11.4			49.8		
AP503CL2	98	14	31	59.5	10.5			49.1		
Norris	98	12	36	58.6	9.2			48.8		
Peregrine	99	16	41	56.2	10.8			45.1		
Lyman	94	12	34	58.7	11.1			42.8		
Trial Mean	97	15	35	56.9	11.3	22.1	58.1	48.3	--	--
C.V. %	5.1	14.0	6.0	2.5	9.8	46.1	6.7	6.8	--	--
LSD .05	NS	3	3	2.0	1.5	17.0	5.5	4.6	--	--
LSD .01	NS	4	4	2.6	2.1	NS	7.2	6.1	--	--

* Hard white winter wheat.
NS = No Statistical difference between varieties.

Planting Date: September 11, 2007 Harvest Date: July 28, 2008
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2005 = soybean, 2006 = field pea, 2007 = durum.
Notes: The 2006 trial sustained severe heat and moisture stress.

2008 Winter Wheat Variety Trial - Continuously Cropped - No-till — Mandan

Cooperator: USDA-ARS, Northern Great Plains Research Lab., Mandan
This Trial was funded by Ducks Unlimited, Bismarck

Variety	Winter Surv.	Plant Height	WSMV*	Test Weight	Grain Protein	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	%	inches	%	lbs/bu	%	---------- Bushels per acre ----------				
Millennium	99	32	12	53.9	12.8	36.9	84.2	55.5	69.8	58.9
Jagalene	96	29	2	55.4	12.7	42.0	60.1	56.7	58.4	52.9
CDC Buteo	99	32	4	56.2	12.6	38.3	70.7	49.2	60.0	52.7
Harding	99	31	3	52.5	12.2	36.5	69.1	52.3	60.7	52.6
Jerry	97	33	0	53.0	13.2	39.1	60.5	57.7	59.1	52.4
Wesley	91	25	20	51.3	13.7	41.1	73.1	38.0	55.6	50.7
Radiant	97	34	0	53.8	11.9	36.5	55.7	57.3	56.5	49.8
Alice**	81	26	10	52.1	12.4	43.5	61.6	42.1	51.8	49.1
CDC Falcon	98	27	9	53.3	11.7	37.4	54.1	52.6	53.4	48.0
Roughrider	98	37	0	52.1	13.2	37.2	66.0	38.6	52.3	47.3
Expedition	98	29	13	53.5	12.2	36.9	55.7	47.9	51.8	46.8
Yellowstone	91	31	2	52.9	12.6	34.5	50.6	53.6	52.1	46.2
Darrell	97	30	0	53.8	12.8		73.5	60.1	66.8	
Hawken	71	25	2	54.0	13.4		74.3	39.1	56.7	
NuDakota**	82	25	2	51.7	12.8		67.2	45.4	56.3	
Overland	98	30	0	54.3	12.1			58.9		
Accipiter	99	29	16	54.1	12.0			55.0		
Peregrine	98	37	20	53.4	12.4			52.3		
AP503CL2	70	27	2	54.0	12.7			44.1		
Lyman	94	30	18	52.2	12.8			43.5		
Norris	77	31	0	51.8	12.9			36.9		
Trial Mean	93	30	7	53.3	12.7	37.5	62.7	49.2	--	--
C.V. %	12.4	4.5	242	3.3	3.9	16.5	14.3	14.0	--	--
LSD .05	16	2	NS	2.5	0.7	NS	14.7	9.7	--	--
LSD .01	21	3	NS	3.3	0.9	NS	19.6	12.9	--	--

* % of plants infested with Wheat Streak Mosaic Virus
** Hard white winter wheat.
NS = No Statistical difference between varieties.

Planting Date: September 12, 2007 Harvest Date: August 12, 2008
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2005 & 2006 = HRWW, 2007 = soybean.

SDSU Hard Winter Wheat Variety Trial - Perkins County (Bison), 2008.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Yield Bu/A	Protein %
Hard Red					
ARAPAHOE	34	0	53.3	37.3	12.9
EXPEDITION	35	0	55.9	56.4	12.4
DARRELL	35	0	55.4	48.6	13.0
FULLER	33	0	55.0	53.0	13.0
HARDING	38	0	53.8	36.7	14.0
HATCHER	32	0	54.7	48.0	11.8
HAWKEN	32	0	56.4	52.0	13.0
JAGALENE	34	0	56.7	48.0	13.1
JERRY	38	0	54.5	36.1	14.3
MILLENNIUM	37	0	56.2	46.0	12.8
OVERLAND	34	0	58.0	48.6	12.1
SMOKY HILL	31	0	56.8	46.4	13.3
TANDEM	39	0	56.1	41.5	13.5
WAHOO	34	0	52.1	46.6	12.5
WESLEY	31	0	54.2	49.4	14.0
LYMAN	36	0	52.0	43.0	14.0
SETTLER CL	32	0	53.9	45.2	13.6
INFINITY CL	36	0	54.2	48.2	12.6
SD01058	37	0	54.4	48.4	12.7
SD01273	39	0	56.6	51.6	13.0
Hard White					
ALICE	30	0	58.3	43.2	13.3
NUDAKOTA	30	0	54.4	48.6	12.3
WENDY	33	0	56.6	55.2	12.8
RONL	34	0	57.3	51.0	12.4
THUNDER CL	34	0	55.4	47.8	12.8
SD98W175-1	34	0	56.7	46.6	12.8
SD05118	37	0	54.0	49.6	13.3
SD05210	34	0	52.9	40.5	13.2
SD05W012	34	0	54.5	48.0	12.7
SD05W018	34	0	55.1	42.2	12.8
Average	34.3	0.0	55.2	46.8	13.0
LSD (P=.05)	3.7	0.0	2.2	13.9	--
CV	6.6	0.0	2.4	**18.1**	--

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

Planted: September 19, 2007
Harvested: August 14, 2008
Previous crop: Wheat, no-till planted.

Herbicide: Starane NXT (20 oz/A)
Additional Nitrogen: 100 Lb/A

2008 North Dakota winter rye variety descriptions.

Variety	Origin[1]	Year Released	Height	Straw Strength	Maturity	Seed Color	Seed Size	Test Weight	Winter Hardines
AC Rifle	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[2]	V.late	Bl-grn.	Med.	Low	Good
Frederick	SD	1984	Tall	Fair	Late	Tan	Med.	High	Good
Hancock	WI	1979	Tall	Good	Med.	Tan	Large	High	Fair[3]
Musketeers	Can.	1980	Tall	Good	M.early	Blue	Large	Med.	V.good
Prima	Can.	1984	Tall	Good	Med.	Blue	Large	Med.	V.good
Rymin	MN	1973	Tall	V.good	Late	Grn-gray	Large	High	Fair[3]
Spooner	WI	1993	Tall	V.good	Med.	Tan	Large	High	Good
Wheeler	MI	1971	Tall	Fair	Med.	--	Large	Low	Good

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

2008 Winter Rye Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Winter Surv.	Heading Date	Plant Height	Lodg.	Test Weight	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	%	June	inches	0 – 9*	lbs/bu	---------- Bushels per acre ----------				
AC Remington	55	10	49	1	50.8	47.6	52.1	36.2	44.2	45.3
DR02	87	8	53	1	51.3	52.0	60.4	35.0	47.7	49.1
DR0207	89	8	54	1	50.7			37.7		
Rymin	99	8	50	1	50.7			31.4		
Trial Mean	81	9	52	1	50.9	41.0	46.1	35.1	--	--
C.V. %	10.2	0.1	4.6	40	1.1	7.5	7.7	9.5	--	--
LSD .05	13	1	4	NS	NS	4.5	5.2	NS	--	--
LSD .01	19	1	NS	NS	NS	NS	7.2	NS	--	--

* Lodging: 0 = none, 9 = lying flat on ground.
NS = No Statistical difference between varieties.

Planting Date: September 24, 2007 Harvest Date: July 30, 2008
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2005 = soybean, 2006 = field pea, 2007 = durum.
Notes: The 2008 trial sustained late season heat and moisture stress.

2008 Winter Triticale Variety Trial — Hettinger

Variety	Winter Survival	Heading Date	Plant Height	Test Weight	Grain Yield
	%	June	inches	lbs/bu	bu/A
Windrift	87	18	53	48.7	44.1
Boreal	85	19	55	43.4	36.6
HR003	98	14	43	48.8	51.3
NE426GT	99	11	42	48.0	63.3
Trial Mean	92	16	48	47.2	48.8
C.V. %	12.8	14.1	5.4	7.2	8.3
LSD .05	NS	4	4	NS	6.5
LSD .01	NS	5	6	NS	9.3

NS = no statistical difference between varieties.

Planting Date: September 24
Harvest Date: July 30
Previous Crop: Durum
Note: The trial sustained severe late season heat and moisture stress.
Grain yields are based on a bushel weight of 50 lbs/bu.

2008 Winter Spelt Variety Trial — Hettinger

Variety	Winter Survival	Heading Date	Plant Height	Test Weight	Grain Yield
	%		inches	lbs/bu	lbs/A
Frank	85	6/30	43	46.6	2620
PI348145	75	7/01	43	42.8	2264
PI348159	88	6/30	46	46.8	2782
PI348377	42	6/30	43	48.4	2659
Trial Mean	72	6/30	43	46.1	2582
C.V. %	17.1	1.7	3.0	3.7	5.5
LSD .05	20	NS	2	2.7	228
LSD .01	29	NS	NS	3.9	328

NS = no statistical difference between varieties.

Planting Date: September 24
Harvest Date: August 1
Previous Crop: Durum
Note: The trial sustained severe late season heat and moisture stress.

2008 Spring Emmer Variety Trial Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	Grain Yield
	*	inches	0-9**	lbs/bu	lbs/A
Common H	89	41	5.2	38.6	2552
Lucille	91	44	3.0	30.2	2465
Bowman	88	42	3.0	31.9	2398
Common	89	43	3.2	31.8	2362
Red Vernal	90	42	3.0	30.3	2216
Common M	89	41	3.5	31.5	1837
Common R	88	40	4.2	32.5	1678
Trial Mean	89	42	3.6	32.4	2215
C.V. %	0.3	6.0	38.4	3.8	12.2
LSD .05	1	NS	NS	1.8	402
LSD .01	1	NS	NS	2.5	551

* Days to Head = the number of days from planting until head emergence from the boot.
** Lodging: 0 = none, 9 = lying flat on ground.
NS = no statistical difference between varieties.

Planting Date: April 14 Harvest Date: August 13
Previous Crop: HRSW
Note: The trial sustained severe late season heat and moisture stress.

2008 Spring Triticale Variety Trial – Continuously Cropped No-till, Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	*	inches	0-9**	lbs/bu	---------- bushels per acre ----------				
RSI 310	74	46	0.8	45.4	40.6	62.4	58.5	60.4	53.8
Companion	74	46	1.2	40.6	36.7	48.8	46.6	47.7	44.0
Laser	76	48	1.2	44.0	31.7	51.8	44.9	48.4	42.8
Wapiti	75	49	1.5	40.8	39.9	39.7	45.1	42.4	41.6
Trical 2700	79	45	1.8	37.8	32.2	51.9	39.6	45.8	41.2
Marvel	77	48	2.2	37.2	28.1	41.2	46.5	43.8	38.6
Trial Mean	76	47	1.5	41.0	34.9	49.3	46.9	--	--
C.V. %	1.2	5.3	55.9	5.3	9.9	5.9	8.7	--	--
LSD .05	1	NS	NS	3.3	5.2	4.4	6.2	--	--
LSD .01	2	NS	NS	4.5	7.2	6.0	8.5	--	--

* Days to Head = the number of days from planting to head emergence from the boot.
** Lodging: 0 = none, 9 = lying flat on ground.
NS = no statistical difference between varieties.

Planting Date: April 14, 2008 Harvest Date: August 1, 2008
Seeding Rate: 1 million live seeds / acre.
Previous Crop: 2005 = soybean, 2006 = field pea, 2007 = durum.
Note: The 2008 trial sustained severe late season heat and moisture stress.

SDSU Spring Triticale Variety Trial - Perkins County (Bison), 2008.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Yield Lb/A	Protein %
TRICAL 96	26	0	47.9	2226	12.5
TRICAL 98	28	0	43.1	**2518**	12.5
TRICAL 116	28	0	43.2	**2494**	12.8
TRIMARK 118	29	0	50.0	**2761**	12.5
		0			
03T63063	28	0	42.3	1934	13.0
03T63111	29		45.7	2165	13.5
01T40264	28	0	48.1	2226	14.2
03T63037	25	0	44.6	2153	12.7
03T63053	26	0	49.1	2214	12.5
02T71211	26	0	45.6	1764	13.0
37812	27	0	45.4	2323	13.0
		0			
MAH 2601	33		41.4	2129	13.4
FL9707-01H1	32	0	43.3	1764	13.7
MAH20555-8/	34	0	39.2	2019	13.6
MAH28246	38	0	41.1	2177	12.0
177956	41	0	43.0	1727	13.9
163927	36	0	42.3	2153	12.8
180476	29	0	40.7	1776	14.2
BRIGGS (Spring Wheat)	35	0	46.4	1958	14.7
GLENN (Spring Wheat)	36	0	50.4	1897	14.5
Average	31	0.0	44.7	2119	13.3
LSD (P=.05)	3.0	0.0	3.4	355	.
CV	5.8	0.0	4.7	10.1	.

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

Planted: April 17, 2008 Herbicide: Starane NXT (20 oz/A)
Harvested: August 14, 2008 Additional Nitrogen: 50 Lb/A
Previous crop: Wheat, no-till planted.

2008 Canola Variety Trial – Continuously Cropped – No-till — Hettinger

Brand	Variety	Days to Bloom	Duration of Flowering	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield 2007	Seed Yield 2008
			days		inches	lbs/bu	%	--- lbs/A ---	
Roundup Ready Varieties									
Brett Young	4362RR	56	14	88	46	48.2	34.3		818
	6051RR	56	15	90	43	49.8	37.4		1104
	6235RR	58	14	90	44	48.9	37.1		1085
Croplan	HyCLASS 924	55	16	86	43	51.0	36.4	1643	1202
Genetics	HyCLASS 940	55	14	87	38	51.3	37.0	1725	1162
	HyCLASS 410	57	14	88	45	53.0	37.1	1314	1259
Dekalb	DKL 71-55	56	14	90	42	50.1	39.1		1429
	DKL 52-41	56	14	88	41	51.7	37.2	1314	1169
	DKL 3042	55	14	88	40	50.8	37.3		1303
Interstate	IS3057RR	53	16	84	40	50.1	37.8	1725	1197
Seed	IS7145RR	57	15	90	45	49.2	37.5	1602	1104
Monsanto	Z4409	56	14	88	43	50.9	37.2		1202
	G7003	56	14	87	42	50.4	37.0		1070
	G72061	57	14	90	41	49.8	38.0		1059
	G64034	57	14	89	42	52.9	37.4		1406
	G75011	56	14	88	43	50.6	37.3		1282
	G75449	56	15	88	44	49.9	36.0		1248
	G67012	56	14	89	42	49.8	37.3		1242
	G72021	55	15	88	40	51.9	39.1		1548
Pioneer	45H21	57	13	89	42	50.4	37.4		1219
Hi-Bred	06N530R	56	13	88	46	50.8	37.8		1288
Proseed	50 Calibre	55	16	90	41	49.5	37.4	1396	1620
	30 Calibre	58	14	91	43	49.0	37.5	1232	1410
	2066	56	14	86	43	50.0	37.6	1150	1210
	2030	55	16	90	41	49.7	38.0		1564
Liberty Link Varieties									
Croplan Gen.	Freedom 84S01	56	14	87	40	49.0	38.6	2054	1192
Trial Mean		56	14	88	42	50.3	37.4	1539	1246
C.V. %		0.7	4.7	1.2	9.0	4.0	1.9	15.2	11.2
LSD .05		1	1	1	NS	NS	1.0	333	197
LSD .01		1	1	2	NS	NS	1.3	443	262

NS = no statistical difference between varieties.

Planting Date: April 23 Harvest Date: July 31 Previous Crop: Field pea

2008 Dormant Seeded Canola Trial - No-till — Hettinger

Type	Variety	Date of First Bloom	Date of Last Bloom	Test Weight	Oil Content	Seed Yield
Fall Seeded: Nov. 16				lbs/bu	%	lbs/A
Winter	HyCLASS 107w	June 29	July 22	--	--	0
Spring	IS 357 Mag	June 9	July 4	50.7	39.0	1337
Winter	Visby		Poor spring emergence			0
Spring Seeded: April 9						
Winter	HyCLASS 107w	July 10	July 22	--	--	0
Spring	IS 357 Mag	June 14	July 4	50.8	38.6	1562
W. x Spg	Sprinter	June 18	July 11	49.7	38.6	792
C.V. %		0.5	0.5	3.5	2.8	10.2
LSD .05		1 day	1 day	NS	NS	216

NS = no statistical difference between varieties or seeding dates.

Seeding Rate: 500,000 live seeds/A
Harvest Date: August 4
Note: The trial sustained severe late season heat and moisture stress.

2008 Safflower Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Plant Height	Test Weight	Oil Content	---- Seed Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	*	inches	lbs/bu	%	---------- pounds per acre ----------				
Linoleic Types									
Cardinal	91	31	43.0	34.6	1387	2270	1377	1824	1678
S-541	92	28	37.1	41.2	967	2279	1071	1675	1439
Finch	89	29	41.6	35.6	847	1958	1357	1658	1387
NutraSaff	89	30	32.5	42.7	127	1400	612	1006	713
Oleic Types									
MonDak	90	28	38.3	37.6	978	1801	1386	1594	1388
Montola 2000	88	25	36.1	40.2	860	1500	1474	1487	1278
Montola 2003	91	27	38.6	38.0	622	1994	1141	1568	1252
Hybrid 9049	87	27	42.8	32.3			1665		
Hybrid 1601	88	28	40.4	37.4			1637		
Trial Mean	89	28	38.2	38.1	870	1815	1319	--	--
C.V. %	0.7	3.8	2.0	1.8	13.6	9.7	7.7	--	--
LSD .05	1	2	1.1	1.0	171	253	147	--	--
LSD .01	1	2	1.5	1.4	230	342	198	--	--

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

Planting Date: April 28, 2008 Harvest Date: September 5, 2008
Seeding Rate: 300,000 live seeds / acre (approx. 22 lbs/A).
Previous Crop: 2005 = barley, 2006 & 2007 = hrsw.
Notes: The 2006 trial sustained moderate moisture stress.

2008 Dormant Seeded Safflower Trial — Hettinger

Variety	Flowering Date	Plant Height	Test Weight	Oil Content	Seed Yield 2005	Seed Yield 2006	Seed Yield 2008	Seed Yield Avg.
	July	inches	lbs/bu	%	pounds per acre			
Fall Seeded								
Finch	21	25	42.3	35.6	2036	1547	1388	1657
Montola 2003	24	21	39.0	37.3	2240	1545	1082	1622
MonDak	23	26	39.8	36.3	--	--	1684	--
Cardinal	24	26	43.1	34.8	--	--	1379	--
S-541	--	--	--	--	1893	1113	--	1503
Mean	23	24	41.0	36.0	2056	1402	1383	1614
Spring Seeded								
Finch	28	28	41.2	36.1	1627	2333	1364	1775
Montola 2003	30	28	36.9	38.0	1907	1513	939	1453
MonDak	29	28	37.4	36.0	--	--	1322	--
Cardinal	29	30	40.9	33.9	--	--	1354	--
S-541	--	--	--	--	1567	2167	--	1867
Mean	29	28	39.1	36.0	1700	2004	1245	1650
C.V. %	2.1	3.9	1.8	1.6	13.3	8.2	7.0	--
LSD .05	1	2	1.1	0.9	381	212	136	--
LSD .01	1	2	1.5	1.2	532	293	184	--

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

Seeding Rate: 400,000 live seeds / acre.

2008 Crambe Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Days to Mature	Plant Height	Test Weight	Oil Content	Yield 2006	Yield 2007	Yield 2008	Avg. Yield 2 yr	Avg. Yield 3 yr
	*	*	inches	lbs/bu	%	lbs / ac				
BelAnn	54	84	33	26.3	27.0	933	1837	1513	1675	1428
Meyer	51	82	31	24.8	27.3	1176	1111	1367	1239	1218
Trial Mean	52	82	33	25.6	28.1	1089	1459	1600	--	--
C.V. %	0.9	1.2	7.3	4.7	5.6	14.6	13.7	8.4	--	--
LSD .05	1	1	NS	NS	NS	230	286	197	--	--
LSD .01	1	2	NS	NS	NS	NS	382	266	--	--

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

NS = no statistical difference between varieties.

Planting Date: Mat 5, 2008 Harvest Date: August 4, 2008
Seeding rate: 25 lbs/A
Previous Crop: 2005 = soybean, 2006 = barley, 2007 = hrsw.

2008 Spring Camelina Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Duration of Flowering	Days to Mature	Plant Height	Test Weight	Oil Content	----- Grain Yield ----- 2007	2008	Avg.
	*	Days	*	inches	lbs/bu	%	- pounds per acre -		
Robinson	60	16	84	29	50.1	32.7	1707	832	1270
Ligera	60	14	85	31	48.8	34.8	1360	1136	1248
Galina	60	15	83	29	51.3	33.3	1387	899	1143
Celine	62	14	86	31	46.3	33.9	1173	899	1036
Suneson	60	15	84	29	49.7	33.5	1173	828	1000
Gold of Pleasure	60	15	84	31	46.3	34.4	800	1018	909
Blaine Creek	60	17	84	30	48.3	31.7	1013	733	873
Calena	60	14	83	28	47.1	33.3		930	
Trial Mean	60	15	84	30	48.5	33.6	--	886	--
C.V. %	0.8	5.8	0.9	6.5	4.2	2.8	--	13.0	--
LSD .05	1	1	1	NS	2.9	1.4	--	168	--
LSD .01	1	2	1	NS	4.0	1.9	--	226	--

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

Planting Date: April 23, 2008.Harvest Date: July 28, 2008.
Seeding Rate: 6 lbs / acre.
Previous Crop: 2006 = barley, 2007 = hrsw.
Note: The 2008 trial sustained severe late season heat and moisture stress.

2008 Spring Camelina Seeding Rate Trial - No-till — Hettinger

Seeding Rate	Plant Stand	Days to Bloom	Duration of Flowering	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield
lbs/A	# / sq ft	*	Days	*	inches	lbs/bu	%	lbs/A
2	7.0	60	16	87	30	46.8	34.2	687
4	7.6	60	16	88	32	49.8	34.2	850
6	13.0	60	16	84	29	47.6	33.9	662
8	12.4	60	14	83	30	45.7	33.6	783
10	12.9	60	14	82	31	47.9	33.3	799
Trial Mean	10.6	60	15	85	30	47.6	33.8	756
C.V. %	27.3	0.8	6.8	2.9	5.1	3.9	3.0	17.4
LSD .05	4.4	NS	NS	4	NS	NS	NS	NS
LSD .01	NS	NS	NS	NS	NS	NS	NS	NS

* Days to Bloom and Days to Mature = the number of days from planting to 10% bloom or maturity.
NS = no statistical difference between seeding rates.

Variety = Suneson
Planting Date: April 23 Harvest Date: July 28
Previous Crop: hrsw
Note: The 2008 trial sustained severe late season heat and moisture stress.

2008 Spring Camelina Nitrogen Fertility Trial - No-till — Hettinger

Nitrogen Fertility	Plant Stand	Days to Bloom	Duration of Flowering	Days to Mature	Plant Height	Test Weight	Oil Content	Seed Yield
lbs/A*	# / sq ft	**	Days	**	inches	lbs/bu	%	lbs/A
60	6.6	60	15	90	26	48.2	32.7	1018
100	5.6	60	15	90	27	49.7	34.6	974
150	6.1	59	16	90	27	49.9	34.5	907
Trial Mean	6.1	60	15	90	27	49.2	33.9	966
C.V. %	31.1	0.6	5.9	0.6	11.6	1.9	4.8	7.3
LSD .05	NS	NS	NS	NS	NS	NS	NS	NS

*Nitrogen Fertility = pounds per acre of actual N from residual soil N (0 – 24") + N fertilizer (46-0-0).
** Days to Bloom and Days to Mature = the number of days from planting to 10% bloom or maturity.
NS = no statistical difference between nitrogen rates.

Variety = Suneson
Planting Date: April 23 Harvest Date: July 28 Previous Crop: hrsw
Note: The 2008 trial sustained severe late season heat and moisture stress.

2008 Tame Mustard Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodg	Test Weight	Yield 2006	Yield 2007	Yield 2008	Avg. Yield 2 yr	Avg. Yield 3 yr
		days		inches	0-9*	lbs/bu	lbs / ac				
Yellow Types											
Tilney	54	21	83	40	6.2	--	625	1027	619	823	757
Andante	53	21	83	42	3.5	54.4	927	616	681	648	741
AC Pennant	55	20	84	41	1.8	--	570	821	510	666	634
Ace	54	20	84	37	5.2	--	722	534	452	493	569
Oriental Types											
Forge	60	18	90	46	5.8	49.8	404	863	1137	1000	801
Brown Types											
Duchess	60	18	90	47	1.0	51.4		1109	1168	1138	
Common Brown	59	18	89	46	1.0	51.7		945	1208	1076	
Trial Mean	56	19	86	43	3.5	51.3	650	845	825	--	--
C.V. %	1.0	5.1	1.0	12.7	44	2.8	10.7	20.6	21.8	--	--
LSD .05	1	1	1	NS	2.3	NS	107	259	267	--	--
LSD .01	1	2	2	NS	3.1	NS	150	354	365	--	--

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

Planting Date: April 23, 2008 Harvest Date: July 30, 2008
Seeding rate: 610,000 pls/A (approx. Yellow = 12 lbs/A, Oriental & Brown = 6 lbs/A)
Previous Crop: 2005 & 2007 = hrsw, 2006 = soybean
Note: The 2006 and 2008 trials sustained severe moisture stress.

2008 Oil Type Sunflower Variety Trial – Continuously Cropped, No-till Hettinger, N. Dakota

Brand	Hybrid	Oil Type & Traits	Days to Bloom	Days to Mature	Test Weight	Oil Content	----- Seed Yield ----- 2007	2008	Avg.
		*	**	**	lbs/bu	%	--- pounds / acre ---		
DynaGro	92N53	NS	82	131	29.0	45.2		1094	
	91H44	HO	81	134	31.5	42.6		804	
	93H11	HO	80	126	30.0	42.7		998	
	94C38	NS, CL	88	133	27.8	41.7		1225	
	94N82	NS	88	137	27.2	43.5		1295	
Croplan	528CL	NS, CL	83	126	28.5	44.0	1545	710	1128
Genetics	325DMR	NS, DMR	83	128	26.9	43.2		994	
	369DMR	NS, DMR	83	132	25.8	41.5		1259	
	551CL	NS, CL	83	130	28.5	42.4		1115	
	3080DMR	NS, DMR	80	127	29.4	40.1	1319	1066	1192
	564CL	NS, CL	87	135	28.9	42.9	940	998	969
	803DMR	NS, DMR	78	124	25.1	43.6	1172	779	976
	356	NS	87	134	29.4	41.7	1701	1172	1436
	306DMR	NS, DMR	82	132	28.2	42.3		1157	
Integra	536NSDM	NS, DMR	81	132	27.9	42.8	1138	1000	1069
Seed	IX0834NSDM	NS, DMR	84	132	33.3	43.4		858	
	735NSCLDM	NS, CL, DMR	83	128	29.2	45.0	1014	897	956
	737NSCLDM	NS, CL, DMR	86	137	27.3	45.6	1392	1186	1289
Seeds 2000	Blazer	NS, CL	89	135	27.0	42.9	2021	1207	1614
	Barracuda	NS, CL	86	133	31.0	42.2	1485	1203	1344
	Sierra	HO	88	135	26.4	42.0	1929	1577	1753
	Firebird	NS, SU	88	136	28.4	40.7	1647	1580	1614
Triumph	s678	NS, SS	89	138	28.4	45.9	1839	1448	1644
Seed	s878	HO, SS	88	137	28.4	41.5		1220	
	s671	NS, SS	88	133	29.3	43.6		1683	
	s7322	NS, SS, DMR	88	132	28.7	41.0		1403	
	s672	NS,SS	84	132	29.3	42.2		1309	
Mycogen	8H449DM	HO, DMR	86	136	29.0	42.2	1904	1636	1770
Seed	8H350DM	HO, DMR	82	128	28.8	43.4		1255	
	8N453DM	NS, DMR	84	133	29.9	43.4	1374	1639	1506
	8N337DM	NS DMR	77	126	28.7	43.8	1232	900	1066
	8N358CLDM	NS, CL, DMR	83	127	30.4	42.1	1447	1494	1470
	8D481	NS	83	132	28.3	42.7		1655	
Pioneer	63M91	NS	78	132	29.9	42.9		1210	
Hi-Bred	63N82	NS, SU	82	134	29.2	43.4		1408	
Monsanto	MH7633	NS, DMR	86	131	29.6	41.8		1075	
	MH7632	NS, DMR	87	133	29.1	43.5		1061	
	MH6640	NS, DMR	84	127	29.9	42.2		1092	
	MH6643	NS, DMR	78	128	29.1	42.0	1712	843	1278

continued

Brand	Hybrid	Oil Type & Traits	Days to Bloom	Days to Mature	Test Weight	Oil Content	------ Seed Yield ------ 2007	2008	Avg.
		*	**	**	lbs/bu	%	--- pounds / acre ---		
Dekalb	DFF29-30	NS, DMR	77	124	27.0	43.2	997	726	862
	DKF34-33	NS, DMR	88	129	30.5	41.1	1381	980	1180
	IS6131	NS, DMR	80	124	26.1	42.8	1012	644	828
	IS7120	HO, DMR	79	124	26.1	42.8	1171	825	998
	DKF39-80CL	NS, CL	86	134	30.3	40.0		1127	
	DKF34-80CL	NS, CL, DMR	82	129	31.9	45.2	1262	1070	1166
	DKF37-31	NS	83	133	29.8	43.0	1141	1010	1078
	DKF38-45	NS	83	128	30.2	44.7	1637	1393	1515
Proseed	6007	NS, CL	89	135	30.4	41.4		1038	
	6008	NS, CL	88	133	28.2	41.3		1160	
	6481	NS	84	128	29.5	41.8	1380	871	1126
	7016	NS, CL	90	136	28.5	45.2		939	
	7025	NS, CL	89	132	28.6	44.0		822	
	7052	NS, CL	88	132	30.1	40.6		1223	
	7069	NS, CL	88	134	29.9	44.3		885	
	7207	NS, CL	88	132	28.6	43.6		903	
E. mat. check	Hysun 311		78	121	28.6	42.7		627	
M. mat. check	Carg. 270		82	126	29.8	43.0		975	
L. mat. check	P6451		89	138	27.1	43.6		968	
Oil check	USDA 894		83	132	28.7	43.6		834	
Trial Mean			84	131	28.9	42.8	1333	1106	--
CV %			1.3	1.3	3.4	4.4	13.3	8.5	--
LSD .05			1	2	1.4	2.6	248	131	--
LSD .01			2	3	1.9	3.4	328	173	--

* Oil Type: NS = NuSun, HO = high oleic
* Traits: CL = Clearfield, DMR = downy mildew resistant, SU = Express herbicide tolerant, SS = short stature.
** Days to Bloom and Days to Mature = the number of days from planting to 10% Bloom and seed maturity.

Planting Date: May 14, 2008
Harvest Date: October 8, 2008
Seeding Rate: 21,000 seeds / acre, thinned to 18,650 plants / acre.
Row Spacing: 28" Previous Crop: HRSW Soil Type: Sandy Loam
Notes: Oil content and seed yields are based on 10% moisture. The 2008 trial sustained moderate late season moisture stress.

2008 North Dakota flax variety descriptions.

Variety[1]	Origin[2]	Year Released	Relative Maturity	Seed Color	Plant Height	Wilt[3]
AC Carnduff	Can.	1998	Med. Late	Brown	Med. Tall	MR
AC Emerson	Can.	1994	Med.	Brown	Med.	R
AC Lightning	Can.	2002	Late	Brown	Med. Tall	R
AC Linora	Can.	1993	Late	Brown	Tall	R
AC Watson	Can.	1996	Early	Brown	Short	MR
Carter	ND	2004	Med.	Yellow	Med.	R
Cathay	ND	1998	Med.	Brown	Med.	MR
CDC Arras	Can.	1999	Med.	Brown	Med.	MR
CDC Bethune	Can.	1999	Med. Late	Brown	Med. Tall	MR
CDC Mons	Can.	2003	Med. Late	Brown	Med.	MR
CDC Normandy	Can.	1995	Med.	Brown	Short	MR
CDC Sorrel	Can.	2007	Med. Late	Brown	Med. Tall	MR
CDC Valour	Can.	1996	Early	Brown	Short	MR
Flanders	Can.	1989	Late	Brown	Med.	MS
Hanley	Can.	2002	Med. Early	Brown	Med.	R
McDuff	Can.	1993	Late	Brown	Med. Tall	MR
Neche	ND	1988	Med.	Brown	Med.	R
Nekoma	ND	2002	Late	Brown	Med.	MR
NorLin	Can.	1982	Early	Brown	Med.	MS
Omega	ND	1989	Med.	Yellow	Med.	MS
Pembina	ND	1998	Med.	Brown	Med.	MR
Prairie Blue	Can.	2003	Med. Late	Brown	Med. Tall	MR
Prairie Grande	Can.	2008	Med. Early	Brown	Med.	MR
Prairie Thunder	Can.	2006	Med.	Brown	Short	MR
Prompt	SD	1988	Early	Brown	Med.	MR
Rahab 94	SD	1994	Med.	Brown	Med.	MR
Selby	SD	2000	Late	Brown	Tall	MR
Taurus	Can.	2003	Med. Late	Brown	Med.	MR
Webster	SD	1998	Late	Brown	Tall	MR
York	ND	2002	Late	Brown	Med.	R

[1] All varieties have resistance to prevalent races of rust; all have good oil yield and oil quality.
[2] Can. = Canada; ND = North Dakota State University; SD = South Dakota State University.
[3] R = resistant; MR = moderately resistant; MS = moderately susceptible; NA = not available.

2008 Flax Variety Trial - Continuously Cropped - No-till Hettinger

Variety	Days to Bloom	Plant Height	----- Grain Yield ----- 2006	2007	2008	Average Yield 2 yr	3 yr
	**	inches	---------- Bushels per acre ----------				
CDC Arras	58	20	14.8	20.4	12.4	16.4	15.9
Nekoma	59	20	14.4	18.1	11.2	14.6	14.6
York	60	21	12.5	17.3	13.4	15.4	14.4
Webster	62	23	12.3	18.7	11.1	14.9	14.0
Neche	62	25	14.4	19.5	6.9	13.2	13.6
Rahab 94	61	22	12.9	17.0	10.3	13.6	13.4
Prairie Blue	62	23	11.3	18.6	9.5	14.0	13.1
Pembina	58	22	11.3	15.8	11.6	13.7	12.9
CDC Bethume	61	21	11.4	16.6	10.1	13.4	12.7
Hanley	57	21	12.0	15.8	9.6	12.7	12.5
Carter*	60	21	9.9	14.6	11.3	13.0	11.9
Omega*	63	20	6.2	9.7	4.7	7.2	6.9
Prairie Thunder	59	22		17.5	8.2	12.8	
Lightning	57	21			12.3		
Prairie Grande	57	22			11.6		
CDC Sorrel	61	24			10.4		
Trial Mean	60	22	12.1	16.5	10.5	--	--
C.V. %	1.5	3.6	11.2	10.9	11.8	--	--
LSD .05	1	1	2.0	2.6	1.8	--	--
LSD .01	2	2	2.6	3.4	2.4	--	--

*Yellow seed type

** Days to Bloom = the number of days from planting until 10% of the plants are flowering.

Planting Date: May 5
Harvest Date: August 13
Seeding Rate: 40 lbs / acre.
Previous Crop: 2007 & 2006 = hrsw, 2005 = soybean.
Note: The 2008 trial had a poor stand and sustained late season heat and moisture stress.

Origin, traits, and disease reactions for field pea entries tested in 2006.

Variety	Rel.* mat.	Seed color	Leaf# type	Ht.## (inch)	Lodging (0-10)~	Powdery mildew@	Mycos-phaerella blight@	Fusarium Wilt@	Seeds per lb	PVP$ or PBR Status
DS-Admiral	E	Yellow	SL	25	1	VG	F	F	2000	Yes
Aragorn	M	Green	SL	-	-	-	-	-	2200	
AP-18	M	Green	SL	22	1	-	-	-	2100	
SW Cabot	E	Yellow	SL	-	-	P	P	P	1900	
Camry	M	Green	SL	19	1	VG	F	F	2000	Yes
CEB 1093	M	Green	SL	-	-	-	-	-	1700	
SW Capri	E	Yellow	SL	-	-	P	F	P	2200	
Carneval	M	Yellow	SL	22	0	F	F	P	2100	Yes
Cooper	L	Green	SL	26	0	VG	F	F	1700	Yes
Cruiser	M	Green	SL	24	3	P	F	P	2200	
Eclipse	M	Yellow	SL	23	1	VG	F	F	1900	Yes
Fusion	M	Yellow	SL	-	-	-	-	-	2000	
Grenda	M	Yellow	N	28	6	P	F	P	2300	Yes
Integra	E	Yellow	SL	25	1	P	P	F	1900	
K2	M	Green	SL	-	-	-	-	-	2200	
Majoret	E	Green	SL	24	1	P	F	P	2100	Yes
SW Marquee	E	Yellow	SL	26	0	-	-	-	2300	
SW Midas	E	Yellow	SL	24	0	VG	F	F	2200	Yes
CDC Mozart	M	Yellow	SL	22	4	VG	P	F	2100	
Polstead	M	Yellow	SL	-	-	-	-	-	1900	
SW Salute	E	Yellow	SL	28	3	VG	F	P	2000	Yes
Stratus	M	Green	SL	21	5	VG	F	P	1900	Yes
CDC Striker	M	Green	SL	-	-	F	F	G	1900	
Tamora	L	Green	SL	-	-	-	-	-	1700	
Topaka	E	Yellow	SL	21	6	VG	F	P	2100	Yes
Tudor	M	Yellow	SL	27	0	VG	P	F	1700	Yes

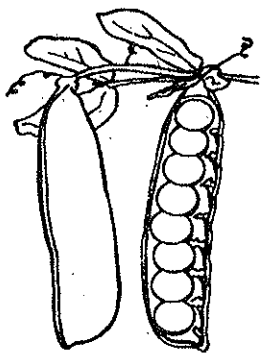
$ Plant variety protection (PVP, US) or Plant breeders rights (PBR, CAN) application is pending or anticipated.

* Early- E, medium- M, or late- L maturity.

Normal- N or semi-leafless- SL leaf type.

~ 1 = all plants erect, 3 = 50% lodged at 45° angle, 5 = all flat.

** Very good- VG, good- G, fair- F, poor- P disease resistance.



2008 Field Pea Variety Trial – Continuously Cropped - No-till

Hettinger

Brand	Variety	Days to Bloom	Days to Mature	Lodg.	1000 Seed wt.	Test Weight	--- Seed Yield ---- 2006	2007	2008	Avg. Yield 2 yr	3 yr
				0-9*	grams	lbs/bu	--------- bushels per acre ---------				
Yellow Cotyledon Types											
Crop Dev. Ctr.	CDC Mozart	67	89	1	197	61.4	56.8	47.4	46.6	47.0	50.3
Pulse USA	DS Admiral	67	89	1	197	59.8	59.0	50.5	41.6	46.0	50.4
Pulse USA	Eclipse	68	92	2	188	55.9	53.7	50.1	37.5	43.8	47.1
Meridian Seeds	SW Capri	68	89	0	184	58.9		46.3	40.9	43.6	
Meridian Seeds	Fusion	67	94	2	203	57.6		42.4	31.1	36.8	
Meridian Seeds	Agassiz	66	89	1	157	58.5			45.7		
Limagrain Adv.	Alezon	66	89	4	197	60.1			43.4		
Meridian Seeds	Thunderbird	73	93	0	197	57.5			41.6		
Limagrain Adv.	Spider	67	91	1	224	59.0			38.6		
Green Cotyledon Types											
Pulse USA	Majoret	68	92	2	167	58.6	50.7	48.6	41.3	45.0	46.9
Alt. Seed Strat.	CDC Striker	68	92	1	205	59.3	50.9	48.3	38.1	43.2	45.8
Pulse USA	Cruiser	66	90	2	197	59.4	48.8	49.4	36.4	42.9	44.9
Meridian Seeds	Cooper	71	96	1	241	57.9		49.2	39.7	44.4	
Limagrain Adv.	Matrix	70	93	0	215	58.3			38.5		
Trial Mean		68	91	1	198	58.7	51.1	46.4	40.1	--	--
C.V. %		0.5	0.6	55.3	7.8	2.0	6.0	9.3	6.1	--	--
LSD .05		1	1	1	22	1.7	4.4	6.1	3.5	--	--
LSD .01		1	1	1	29	2.2	5.8	8.0	4.6	--	--

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

Planting Date: April 23, 2008
Harvest Date: July 31, 2008
Seeding Rate: 250,000 live seeds / acre.
Previous Crop: HRSW

2008 Field Pea Variety Trial – Continuously Cropped - No-till Wilton

Cooperator: Legume Logic

Variety	1000 KWT	Test Weight	---- Seed Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	g	lbs/bu	---------- bushels per acre ----------				
Yellow Cotyledon Types							
CDC Mozart	228	61.2	64.9	75.0	42.3	58.6	60.4
Eclipse	265	61.2	56.6	74.5	45.8	60.2	59.0
Spider	246	62.0	56.9	75.6	40.8	58.2	57.8
SW Marquee	207	61.2	50.7	79.2	40.1	59.6	56.7
DS Admiral	254	60.4	56.5	70.4	42.3	56.4	56.4
SW Midas	213	61.2	52.7	73.5	42.8	58.2	56.3
Green Cotyledon Types							
Matrix	267	60.8	51.0	82.1	43.9	63.0	59.0
Cruiser	233	61.2	51.0	72.2	41.4	56.8	54.9
Aragorn	199	62.0	51.5	73.6	38.0	55.8	54.4
Majoret	255	62.0	52.3	72.7	36.3	54.5	53.8
K2	225	62.0	48.2	72.5	39.5	56.0	53.4
Arcadia	211	61.2		75.1	39.8	57.4	
CDC Striker	220	62.0			43.5		
SW Sargent	219	61.2			42.8		
Marrowfat							
Orka	335	59.2	50.1	71.3	37.0	54.2	52.8
Trial Mean	249	61.3	54.1	72.1	40.1	--	--
C.V. %	3.5	--	11.1	6.5	10.1	--	--
LSD .05	14	--	8.4	6.6	6.6	--	--
LSD .01	19	--	11.1	8.6	8.8	--	--

Planting Date: April 22, 2008
Harvest Date: August 12, 2008
Seeding Rate: 300,000 live seeds / acre.
Previous Crop: hrsw.

2008 Chickpea Variety Trial – Continuously Cropped – No-till

Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	1000 Seed wt.	Test Weight	Seed Size (mm) >9	8-9	<8	Seed Yield 2006	2007	2008	2 yr	3 yr
	*	days	*	inches	grams	lbs/bu	%			pounds per acre				
Large Kaboli Types														
Sierra	62	12	94	17	509	45.1	32	42	26	1550	1726	1933	1830	1736
Dylan	58	16	95	14	527	47.0	40	42	18	1634	1576	1933	1754	1714
Troy	63	12	96	14	556	44.5	58	27	15	980	1874	1468	1671	1441
Small Kaboli Type														
CDC Frontier	62	14	95	17	402	50.1	--	--	--		2599	2112	2356	
B-90	62	14	94	16	298	49.0	--	--	--	2138	--	2314		
Desi Type														
CDC Anna	61	16	92	18	237	41.2	--	--	--		2569	2311	2440	
Trial Mean	61	14	94	16	455	47.1	38	38	24	1652	1984	1920	--	--
C.V. %	0.7	5.1	0.9	6.7	3.9	1.7	18.1	13.3	21.6	6.8	9.7	8.8	--	--
LSD .05	1	1	1	2	26	1.2	10	8	8	168	283	245	--	--
LSD .01	1	1	2	2	35	1.6	14	10	10	233	385	331	--	--

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

Planting Date: April 28, 2008
Harvest Date: August 15, 2008
Seeding Rate: 175,000 live seeds / acre.
Previous Crop: 2005 = barley, 2006 & 2007 = hrsw.

2008 Lentil Variety Trial – Continuously Cropped - No-till Hettinger

Variety	Days to Bloom	Days to Mature	Plant Ht.	1000 Seed wt.	---- Seed Yield ---- 2006	2007	2008	Average Yield 2 yr	3 yr
	*	*	inches	grams	---------- pounds per acre ----------				
Large Green Types									
Pennell	63	91	10	66.6	1453	1494	1095	1294	1347
CDC Plato	63	94	12	69.8	1737	1070	1063	1066	1290
Riveland	60	93	14	74.4	1258	1095	1098	1096	1150
CDC Improve-CL	62	93	14	72.7		1469	985	1227	
CDC Greenland	62	92	11	68.4			1315		
Medium Green Types									
CDC Richlea	62	93	10	55.4	2135	1742	1355	1548	1744
CDC Meteor	62	93	11	49.8	2054	1394	1205	1300	1551
CDC Impress-CL	62	92	11	55.0			1364		
Small Green Types									
CDC Viceroy	63	91	10	39.4	1972	1693	1295	1494	1653
Small Red Types									
Crimson	62	90	10	39.6	1989	1046	939	992	1325
CDC Rouleau	61	92	9	45.2	1526	1195	1247	1221	1323
CDC Impact-CL	60	92	10	43.4		1120	537	828	
CDC Maxim-CL	60	92	10	46.2			1227		
Extra Small Red Type									
CDC Imperial-CL	62	92	10	39.3		647	758	702	
CDC Rosetown	62	91	9	37.8			851		
CDC Impala-CL	62	94	10	38.8			729		
French Green Type									
CDC Lemay	62	92	12	48.0	1591	1319	1294	1306	1401
Trial Mean	62	92	11	54.7	1727	1130	1056	--	--
C.V. %	1.8	1.0	13.6	4.1	6.2	12.5	13.2	--	--
LSD .05	1	1	2	2.1	151	232	197	--	--
LSD .01	2	2	3	2.8	200	309	262	--	--

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

Planting Date: April 28, 2008
Harvest Date: August 11, 2008
Seeding Rate: 550,000 live seeds / acre.
Previous Crop: 2005 = barley, 2006 & 2007 = hrsw.

2008 Lentil Seeding Rate Trial – Continuously Cropped - No-till

Hettinger

Seeding Rate	Plant Stand	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	1000 Seed wt.	Test Weight	Seed Yield 2003	2004	2005	2006	2008	Avg.
seeds/ft^2	plants/ft^2	*	Days	*	inches	grams	lbs/bu	pounds per acre					
28	22	54	16	85	11	55.2	58.3	--	--	--	--	1103	--
24	23	54	15	86	11	54.6	57.7	--	--	2660	2240	1192	2031
20	22	54	16	86	13	55.4	58.2	--	--	2623	2194	1249	2022
16	18	55	15	86	13	53.8	58.3	--	--	2464	2063	1308	1945
12	13	55	15	86	12	54.8	58.5	1307	2233	2352	2110	1241	1849
8	12	55	16	86	12	54.2	58.3	999	1960	1979	1895	965	1560
4	--	--	--	--	--	--	--	719	1591	--	--	--	1155
C.V. %	20.8	0.7	3.9	0.5	14.2	2.2	1.5	8.2	6.2	7.3	10.0	11.7	--
LSD .05	6	NS	NS	NS	NS	NS	NS	134	184	270	NS	207	--
LSD .01	8	NS	NS	NS	NS	NS	NS	188	258	378	NS	286	--

* Days to Bloom and Days to Mature = the number of days from planting to 10% bloom and to maturity.
NS = no statistical difference between seeding rates.

Planting Date: May 5, 2008
Harvest Date: August 11, 2008
Variety = 2003, 04, 05 & 08 = CDC Richlea (medium green type), 2006 = CDC Blaze (small red type).

2008 Roundup Ready Soybean Variety Trial – Continuously Cropped, No-till at Hettinger

Brand	Variety	Maturity Group	Test Weight	Oil Content	Protein Content	Seed Yield
			lbs/bu	%	%	bu/A
Croplan	RT0383	0.3	57.4	17.5	39.0	16.8
	RT0669	0.6	53.0	18.0	38.7	10.8
Proseed	70-30	0.3	56.7	17.0	40.9	15.6
	60-40	0.4	54.4	18.4	40.8	14.6
Integra	97009R	0.09	--	18.4	37.0	6.5
	79031	0.4	56.4	18.2	40.9	14.4
Monsanto	AG0301	0.3	54.1	18.4	38.0	13.1
NDSU	RG7008RR	00.7	--	17.7	38.7	7.8
	RG6008RR	00.8	--	18.4	39.6	5.7
	RG600RR	00.0	--	18.6	37.7	11.7
	RG601NRR	0.1	--	18.8	40.2	12.7
	RG603RR	0.3	--	17.5	39.6	7.0
Trial Mean			55.3	18.0	39.2	11.1
C.V. %			0.9	2.3	1.2	9.8
LSD .05			0.7	0.6	0.7	1.6
LSD .01			1.0	0.9	1.0	2.3

Planting Date: May 14
Harvest Date: September 19
Seeding Rate: 250,000 pls/A (approx. 1.5 bu/A)
Row Spacing: 7"
Previous Crop: field pea

2008 Conventional Soybean Variety Trial – Continuously Cropped, No-till at Hettinger

Brand	Variety	Maturity Group	Test Weight	Oil Content	Protein Content	Seed Yield
			lbs/bu	%	%	bu/A
NDSU	Cavalier	00.7	52.5	16.9	38.2	15.5
	Walsh	0.3	54.1	17.0	40.6	18.1
	Barnes	0.3	54.8	17.3	39.1	20.5
	Sheyenne	0.8	55.3	17.2	37.4	24.1
Pioneer	P9071	0.7	54.9	16.7	37.7	24.6
Trial Mean			54.6	17.1	38.7	20.8
C.V. %			1.6	2.0	1.0	7.8
LSD .05			1.3	NS	0.6	0.6
LSD .01			1.8	NS	0.8	0.8

NS = no statistical difference between varieties.

Planting Date: May 14
Harvest Date: September 19
Seeding Rate: 250,000 pls/A (approx. 1.5 bu/A)
Row Spacing: 7"
Previous Crop: HRSW

2008 Faba Bean Variety Trial Hettinger

Variety	Days to Bloom	Plant Height	1000 Seed wt.	Test Weight	Grain Yield
	*	inches	grams	lbs/bu	lbs/A
Flaxen	56	24	294	45.4	1245
NPZ 4-7540	58	22	262	51.4	805
NPZ 5-7680	58	27	299	52.9	1143
Trial Mean	57	25	285	49.9	1064
C.V. %	1.1	4.8	3.4	2.8	11.3
LSD .05	NS	2	17	2.4	207
LSD .01	NS	3	25	3.7	314

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

Planting Date: April 28
Harvest Date: August 15
Previous Crop: HRSW
Note: The trial sustained severe late season heat and moisture stress.

2008 Dry Bean Variety Trial Hettinger

Variety	Type	Seed Yield
		lbs/A
Buster	Pinto	515
GTS 900	Pinto	539
Maverick	Pinto	552
Othello	Pinto	696
Topaz R	Pinto	595
La paz	Pinto	628
Stampede	Pinto	626
Lariat	Pinto	568
Navigator	Navy	428
Norstar	Navy	544
Seahawk	Navy	453
Vista	Navy	544
Avalanche	Navy	447
Ensign	Navy	504
Eclipse	Black	449
Jaguar	Black	377
T-39	Black	391
Matterhorn	Great Northern	548
Merlot	Red	525
Sedona	Pink	391
Trial Mean		516
C.V. %		22.7
LSD .05		165
LSD .01		NS

NS = no statistical difference between varieties.

Planting Date: June 9
Harvest Date: September 30
Previous Crop: HRSW
Note: The trial sustained severe heat and moisture stress.

2008 Roundup Ready Corn Trial - Continuously Cropped - No-till Hettinger

Brand	Hybrid	GDU's	Relative Maturity	Days to Silk	Test Weight	----- Grain Yield ---- 2007	2008	Avg.
		*	days		lbs/bu	- bushels per acre -		
IntegraSeed	6385 R	2060	85	88	50.6	78.8	27.7	53.2
	6385 VT3	2060	85	88	50.4		29.3	
	9361 VT3	2185	86	88	51.5		26.7	
	6780 R	1930	80	84	49.2	82.4	25.5	54.0
Mycogen	2P174	2220	85	88	48.6		26.5	
	2J272	2250	87	90	53.2	78.5	27.0	52.8
	2D326	2370	92	90	48.6	68.6	34.7	51.6
	2T220	2240	87	90	50.3		32.1	
Peterson	54M83	2030	83	88	53.3		35.3	
Farm Seed	27L84	2035	84	88	48.6		26.8	
Proseed	581RRBtCRW	1970	83	89	50.2	59.8	21.0	40.4
	884 VT3	2150	92	88	57.3		34.0	
	787 VT3	2030	87	88	50.0		21.0	
Trial Mean				88	50.9	74.4	28.3	--
C.V. %				0.9	3.1	7.5	8.2	--
LSD 5%				1	2.3	8.3	3.3	--
LSD 1%				2	3.1	11.4	4.5	--

*Growing Degree Units to Black Layer.

Planting Date: May 14, 2008
Harvest Date: October 8, 2008
Seeding Rate: 26,500 seeds / acre, thinned to 24,000 plants / acre.
Row Spacing: 28"
Soil Type: Sandy Loam
Previous Crop: HRSW
Note: Yields are adjusted to 13.5% moisture. The 2008 trial sustained severe moisture stress.

2008 Proso Millet Variety Trial - Continuously Cropped - No-till, Hettinger

Variety	Days to Head	Test Weight	----- Seed Yield ----- 2007	2008	Avg.
	*	lbs/bu	-------- lbs/Ac --------		
Horizon	68	50.5	2530	1347	1938
Sunrise	67	50.5	2280	1377	1828
Sunup	69	52.1	2032	1401	1716
Red Waxy	77	45.7		477	
Trial Mean	70	49.7	2281	1150	--
C.V. %	0.5	2.4	10.5	10.8	--
LSD 5%	1	1.9	415	199	--
LSD 1%	1	2.8	NS	286	--

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

Planting Date: June 9, 2008
Harvest Date: September 29, 2008
Previous Crop: 2006 & 2007 = hrsw.
NS = no statistical difference between varieties.

2008 Buckwheat Variety Trial – Continuously Cropped No-till, Hettinger

Variety	Days to Bloom	Test Weight	1000 Seed Weight	---- Grain Yield ---- 2005	2006	2008	Average Yield 2 yr	3 yr
	*	lbs/bu	grams	---------- Pounds per acre ----------				
Manor	36	31.0	24.6	666	588	762	675	672
Mancan	36	28.6	24.2	776	560	649	604	662
Koma	38	27.8	26.2		775	765	770	
Trial Mean	37	29.1	25.0	587	613	726	--	--
C.V. %	0.0	6.3	5.1	30.2	17.3	15.3	--	--
LSD .05	1	NS	NS	NS	160	NS	--	--

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

Planting Date: June 9, 2008
Harvest Date: September 19, 2008
Seeding Rate: 700,000 live seeds / acre.
Previous Crop: 2004 & 2005 = barley, 2007 = hrsw.
NS = no statistical difference between varieties.

2008 Hay Barley Variety Trial - Continuously Cropped – No-till — Hettinger

Variety	Days to Head	Plant Height	Harvest Moisture	Crude Protein	ADF	NDF	TDN	RFV	Yield 2006	Yield 2007	Yield 2008	Yield 2 yr	Yield 3yr
	*	inches	%	%	%	%	%		Tons / acre**				
Stockford	72	38	40	14.8	31	50	68	122	2.33	1.86	5.15	3.50	3.11
Haybet	72	38	46	13.1	30	50	69	122	2.33	1.60	4.01	2.80	2.65
Drummond	68	39	47	14.2	26	46	73	138	1.93	1.67	4.12	2.90	2.57
Westford	74	37	53	15.3	30	50	69	123	2.21	1.65	3.30	2.48	2.39
Rawson	67	41	45	12.9	28	46	71	137		1.74	4.71	3.22	
Trial Mean	71	38	46	13.9	29	48	69	130	2.17	1.67	4.36	--	--
C.V. %	0.6	4.2	13.5	--	--	--	--	--	7.8	13.5	12.2	--	--
LSD .05	1	2	NS	--	--	--	--	--	0.26	0.33	0.79	--	--
LSD .01	1	3	NS	--	--	--	--	--	NS	0.44	1.08	--	--

* Days to Head = the number of days from planting to head emergence from the boot.
** Forage yields reported on a dry matter (DM) basis.
ADF = Acid Detergent Fiber
NDF = Neutral Detergent Fiber
TDN = Total Digestible nutrients
RFV = Relative Feed Value using NFTA guidelines
NS = no statistical difference between varieties

Planting Date: April 15, 2008
Harvest Date: July 15, 2008 (soft dough)
Seeding Rate: 750,000 live seeds/acre.
Previous Crop: 2005 = soybean, 2006 = hrsw, 2007 = barley.

Alfalfa Variety Test in Saline Soil Conditions

Roger Ashley, Area Extension Agronomist
Ashley Krause, Golden Valley Extension Agent
Glenn Martin, Research Specialist

Alfalfa, like many legumes of economic importance in North Dakota, is sensitive to salt, thus adversely affecting germination and growth. Few varieties have shown tolerance to salt in National Alfalfa Variety Review Board Standard Tests comparing performance in NaCl solutions. These tests include germination, whole plant or both. NaCl solutions are used to identify those varieties with the potential to germinate and grow in salt-affected soils but do not necessarily indicate actual performance under field conditions. Field salts are highly variable, therefore performance data are limited. Salt-tolerant alfalfa may provide the desired effect for a period of time but if salt concentrations increase, even salt-tolerant alfalfa will be affected adversely by salt. Producers need to understand the underlying causes of increasing salt levels and develop management practices that address reduction or elimination of the problem.

Soils on the Golden Valley County Conservation District Farm were analyzed for salt concentration. In the Plot area surface soils had an EC reading of less than 2 deciSiemans per meter(dSm^{-1}) indicating that salt concentration should not reduce germination. However, sufficient salt concentrations as indicated by EC readings between 7 and 19 dSm^{-1} are present from 18 inches to at least 36 inches deep and will restrict root development compared to alfalfa grown on a non-saline sites. Results from released varieties are presented in the table below. An experimental line grown in this trial produced a yield 60% greater than Vernal. This line is currently undergoing further tests and seed is being increased prior to release.

Variety	Agent or origin	2007 Yield[1]	2008 Yield[1]	Total 2 cuttings
		tons/acre	tons/acre	tons/acre
Vernal	Public	1.07	1.74	2.81
Bullseye	Target Seed LLC	1.41	2.25	3.66
Rugged	Target Seed LLC	1.52	2.71	4.23
TS4002	Target Seed LLC	1.45	2.37	3.82
PGI 437	Cal West Seeds/PGI	1.53	2.17	3.70
PGI 427	Cal West Seeds/PGI	1.76	2.52	4.28
PGI 459	Cal West Seeds/PGI	1.65	2.20	3.85
Mean		1.53	2.38	-
CV%		23.7	18.2	-
LSD .05		NS	NS	-
LSD.10		0.44	0.52	-
SE		0.073	0.087	-
Trt F Prob		0.0884	0.0919	-
Rep F Prob		0.5370	0.0005	-

[1] Yield on a dry matter basis

Planted 22 June 2007

Harvested 30 Aug 2007

Harvested 24 Jun 2008

SDSU Cool Season Annual Forage Trial - Harding County (Ralph), 2008.

Entry	July 2, 2008		July 9, 2008		July 16, 2008	
	Crop Stage	Yield (DM) Ton/Ac	Crop Stage	Yield (DM) Ton/Ac	Crop Stage	Yield (DM) Ton/Ac
Pea (*Arvika*)	Flowering	1.2	Late bloom/early pod fill	1.7	Pods green, leaves turning yellow	1.3
Pea (*Mozart*)	Early pod	1.2	Mid pod fill	1.8	Pods yellow, leaves turning yellow	1.4
Hairy Vetch	No blooms	0.2	10% bloomed	0.4	Bloom 80% / early pod	0.5
Oat (*Troy*)	Headed	**1.9**	Late anthesis	**2.5**	Late milk stage	2.8
Oat/Pea (60% Oat/40% Pea)		1.7		2.2		2.3
Barley (*Haybet*)	Headed	**2.1**	Late milk to soft dough	**3**	Soft dough	2.9
Barley/Pea (60%/40%)		**2**		2.2		2.5
Spring Triticale (*Common*)	Late bloom/early heading	**1.8**	Anthesis	**2.6**	Late anthesis	2.9
Spring Triticale/Pea (60%/40%)		1.3		2		2.1
Spring Wheat (*Traverse*)	Headed	1.7	Late anthesis	2.3	Late milk stage	2.5
Average		1.5		2.1		2.1
LSD (P=.05)		0.3		0.5		0.4
CV		15.2		17.2		14.1

Planted: April 17, 2008 Harvested: July 2,9,16, 2007 Herbicide: None
Additional Nitrogen: 50 Lb/A Previous crop: Conventional Fallow

SDSU Warm Season Forage Trial - Harding County (Ralph), 2008.

Entry	Crop Stage	Moisture %	Yield (DM) Ton/Ac
Tiffany (Teff Grass)	Hard dough to ripe	65	0.9
Manta (Foxtail Millet)	Hard dough to ripe	55	1.3
Golden German (Foxtail Millet)	Dough	72	1.3
White Wonder (Foxtail Millet)	Dough	71	1.0
Sunup (Proso Millet)	Tops ripe	62	1.2
Producers Pro Millet (Pearl Millet)	Just heading	73	0.9
Honey Sweet (Sorghum Sudan)	Heading to flower	72	1.3
Honey Sweet 2 (Sorghum Sudan)	No heads	71	1.0
Honey Sweet BMR (Sorghum Sudan)	No heads	73	0.9
Red Ripper (Cowpea)	Dead from hail	0	0.0
Average		62	1.0
LSD (P=.05)		3.0	0.3
CV		3.4	18.4

Note: This trial suffered severe hail damage on July 17th, 2008; the results show the amount of regrowth that occurred after that.
Planted: June 18, 2008 Harvested: August 27, 2008 Herbicide: None
Additional Nitrogen: 50 Lb/A Previous crop: Conventional Fallow

2008 Spring Wheat Variety Tolerance to Foliar Diseases at Hettinger

Amanda Schoch & Kayla Hutzenbiler, IPM Crops Scout, Dickinson Res. Ext. Center

Variety	Wheat Stem Maggot	------ Leaf Rust ----- Incidence	Severity	------ Tan Spot ------ Incidence	Severity	---- Septoria ---- Incidence	Severity
	%	%	%	%	%	%	%
Glenn	10	0	0	40	2	20	1
Steele-ND	0	0	0	20	1	40	1
Howard	20	0	0	40	1	10	1
Faller	10	0	0	30	1	0	0
ND901CL	0	0	0	10	1	40	2
Granger	0	0	0	10	1	30	10
Kelby	0	0	0	40	2	20	3
Kuntz	10	20	1	40	7	10	1
Choteau	0	0	0	30	1	10	1
Alsen	30	0	0	40	1	0	0
Reeder	0	0	0	50	3	20	6
Parshall	0	0	0	0	0	50	4
Briggs	10	0	0	40	1	20	1
Fryer	40	0	0	20	1	30	2
Knudson	40	0	0	30	1	50	3
Granite	10	0	0	50	1	30	1
RB07	10	0	0	0	0	10	1
AP604CL	20	40	1	0	0	30	1
Rush	20	0	0	40	6	20	2
Traverse	0	0	0	40	1	30	6
Samson	40	10	1	40	2	20	1
Vantage	20	0	0	30	1	60	4
Breaker	10	0	0	40	3	10	1
Blade	20	0	0	10	1	40	3
Cromwell	10	0	0	40	1	30	1
Diamond	20	0	0	0	0	30	2

Wheat Stem Maggot = percent of stems infected with maggot (white heads).
Disease Incidence = percent of plants infected with disease.
Disease Severity = percent of flag leaf area infected by disease.

Date of observations: July 16 – soft dough stage
Planting Date: April 14
Previous Crop: hrsw

2008 Durum Wheat Variety Tolerance to Foliar Diseases at Hettinger

Amanda Schoch & Kayla Hutzenbiler, IPM Crops Scouts, Dickinson Res. Ext. Center

Variety	Wheat Stem Maggot	------ Tan Spot ------		---- Septoria ----	
		Incidence	Severity	Incidence	Severity
	%	%	%	%	%
Mountrail	0	60	2	0	0
Ben	20	40	2	0	0
Lebsock	30	20	1	0	0
Grenora	20	40	2	0	0
Divide	10	30	1	0	0
Alkabo	10	60	3	0	0
Maier	20	60	2	0	0
Pierce	0	60	4	0	0
Dilse	20	50	4	0	0
Alzada	20	90	3	80	2
AC Navigator	20	60	2	40	2
Ac Napoleon	20	50	5	30	1
AC Commander	0	60	2	30	1
Rugby	40	70	3	50	2
DG Star	20	60	3	50	2
Wales	30	90	4	20	1
Grande Doro	10	60	3	30	1
Strongfield	10	30	1	30	2

Wheat Stem Maggot = percent of stems infected with maggot (white heads).
Disease Incidence = percent of plants infected with disease.
Disease Severity = percent of flag leaf area infected by disease.

Date of observations: July 16 – soft dough stage
Planting Date: April 14
Previous Crop: hrsw

2008 "Seed Prod+" and "Crop Prod" on HRSW at Hettinger, ND
Continuously Cropped, No-till

Treatment	Heading Date	Plant Height	Test Weight	Grain Protein	Grain Yield
	July	inches	lbs/bu	%	bu/Ac
Seed Prod +	5	36	50.8	17.4	27.9
Crop Prod	4	35	55.3	17.1	38.6
Seed Prod +/ Crop Prod	5	35	54.4	16.3	38.2
Untreated	5	35	55.3	16.7	39.0
Trial Mean	5	35	54.0	16.9	35.9
C.V. %	0.1	0.8	1.4	5.0	11.6
LSD .05	NS	1	1.6	NS	NS

Application Info: Seed Prod + applied to seed at 1.6 oz / 100 lbs of seed
Crop Prod applied on June 16 at 10 oz/A with 10 gal water/A
Planting Date: May 5
Harvest Date: August 13
Variety: Howard
Seeding Rate: 1.1 million live seeds / acre.
Previous Crop: hrsw
Note: Trial sustained late season heat and moisture stress.
NS = No Statistical difference between treatments.

2008 Soil Restoration, LLC on HRSW at Hettinger, ND
Continuously Cropped, No-till

Treatment	Rate	Heading Date	Plant Height	Lodging	Test Weight	Grain Protein	Grain Yield
	oz/A	July	inches	0 – 9*	lbs/bu	%	bu/Ac
Arbor T&O + Ocean Trace	32 + 10	4	32	1	58.7	15.2	41.6
Microbalancer + Ocean Trace	32 + 10	4	32	1	58.1	14.8	36.3
Untreated	0	4	31	1	58.6	14.8	39.3
Trial Mean		4	36	1	58.5	14.9	39.1
C.V. %		0.1	3.0	0	1.4	3.7	5.0
LSD .05		NS	NS	NS	NS	NS	3.4

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

Application Info: May 5, pre-plant, 10 gal water/A
Planting Date: May 5
Harvest Date: August 13
Variety: Howard
Seeding Rate: 1.1 million live seeds / acre.
Previous Crop: barley
NS = No Statistical difference between treatments.

Variety Trial Yields: A Look into the Past

Jeff J. Gunderson, Patrick M. Carr and Glenn B. Martin
North Dakota State University Dickinson Research Extension Center

SUMMARY

Small-grain variety trials have been conducted at the Dickinson Research Extension Center for decades, but there has been no modern attempt to evaluate yield levels over time. We compared grain yield trends of hard red spring wheat, durum wheat, barley, and oat over almost 70 years (only HRSW and barley are shown here). Grain yields increased over time, with a relatively large increase following the switch from clean-till crop-fallow management to intensified, no-till management during the 1990s. Results of this evaluation support the continued adoption of no-till farming methods by crop producers in southwestern North Dakota.

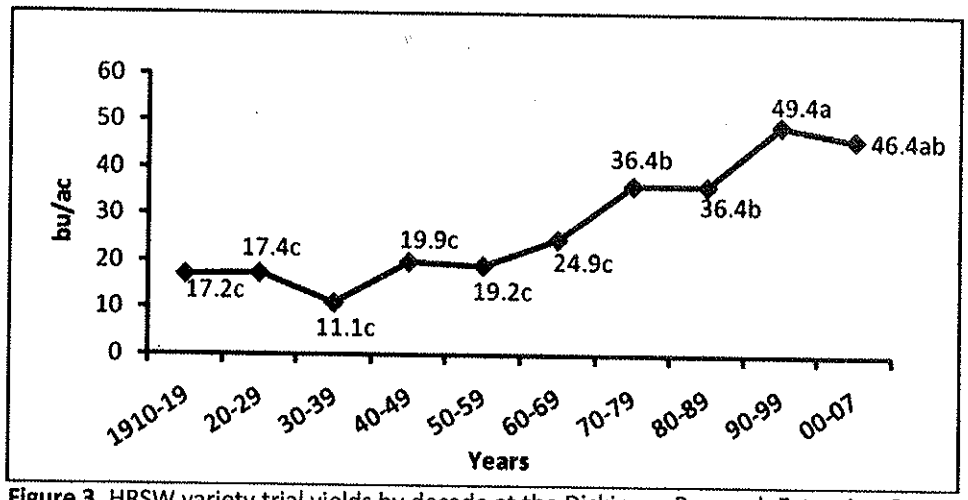


Figure 3. HRSW variety trial yields by decade at the Dickinson Research Extension Center.

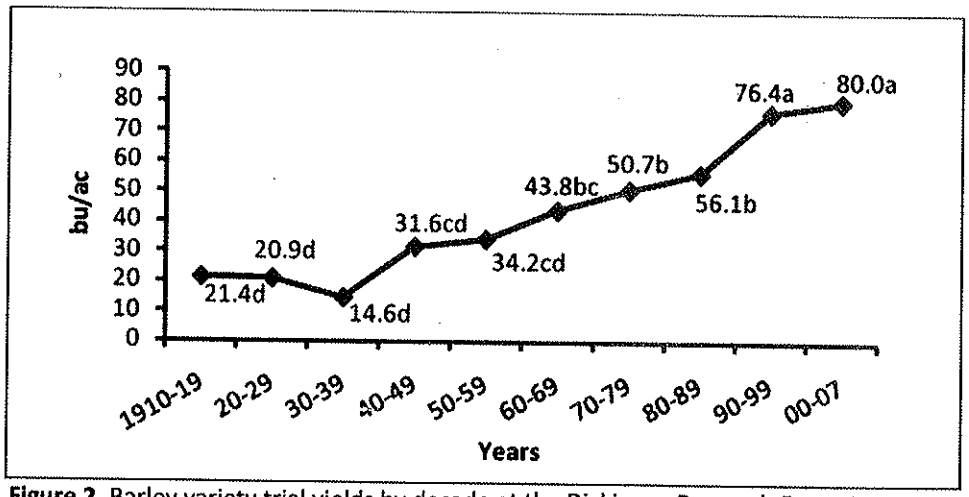


Figure 2. Barley variety trial yields by decade at the Dickinson Research Extension Center.

An efficacy trial of potential herbicides for use in organic systems.

Jeff J. Gunderson, Patrick M. Carr and Timothy Winch

SUMMARY

A few 'non-synthetic' herbicides are available for organic growers in selected states. The National Organic Program, and most organic grower groups, place emphasis on preventative and cultural measures for weed control. These measures are an important component of a weed control strategy and can be effective in reducing severe weed problems; however, in almost all cases weed control will still be necessary at some point during the growing season. Tillage is relied on heavily for weed control in many organic cropping systems, and can be an effective method of eliminating weeds. However, it is well known that excessive tillage can lead to problems with soil erosion and can negatively impact soil structure, organic matter content and humus formation. Furthermore, tillage can reduce soil water retention in comparison with no-till management, a fact that could have significant implications in low-rainfall, drought prone regions. Having a burn-down herbicide option could provide organic growers in dryland regions with a useful tool for pre-emergence weed control that retains the benefits of minimized soil disturbance. A few herbicides are registered for use under the National Organic Standards, but little research has been conducted as to their efficacy. Moreover, none of these products are presently labeled for use in North Dakota.

The objective of this study was to evaluate potential herbicides for use in organic systems. Three products were evaluated: Racer™ bio-herbicide (40% Ammonium Nonanoate, Falcon Labs LLC, Wilmington, DE), Nature's Guide® Vinegar (20% Acetic Acid, Harvest Supply Company, Fort Worth, TX) and Nature's Guide® Corn Gluten Meal (Harvest Supply Company, Fort Worth, TX). Racer and vinegar have potential as non-selective, contact herbicides, while corn gluten meal is a byproduct of corn processing that has shown potential as a germination inhibitor of small-seeded plant species in research trials. Corn gluten meal (CGM) was applied early in the season in an attempt to reduce weed seed germination. Field pea was seeded approximately one week later, with Racer and Vinegar applied the day before seeding.

RESULTS

Corn gluten meal produced the least control of broadleaf weeds (Fig. 1). Racer suppressed broadleaf weed biomass compared with CGM and weedy check plots, but field pea growth was reduced in plots where Racer was applied compared with weed-free (hand-weeded) plots. The reduced pea growth in Racer plots compared with weed-free plots probably reflects greater competition from weeds in the Racer plots, even though no difference in broadleaf weed biomass was detected statistically between the Racer treatment (weed biomass ≈ 793 lb/acre) and the weed-free treatment (weed biomass ≈ 24 lb/ac). We were unable to detect any difference in broadleaf weed growth in plots where vinegar or CGM was applied and plots where no weed control was attempted. Grass weeds were low in abundance and showed to no response to treatment effects.

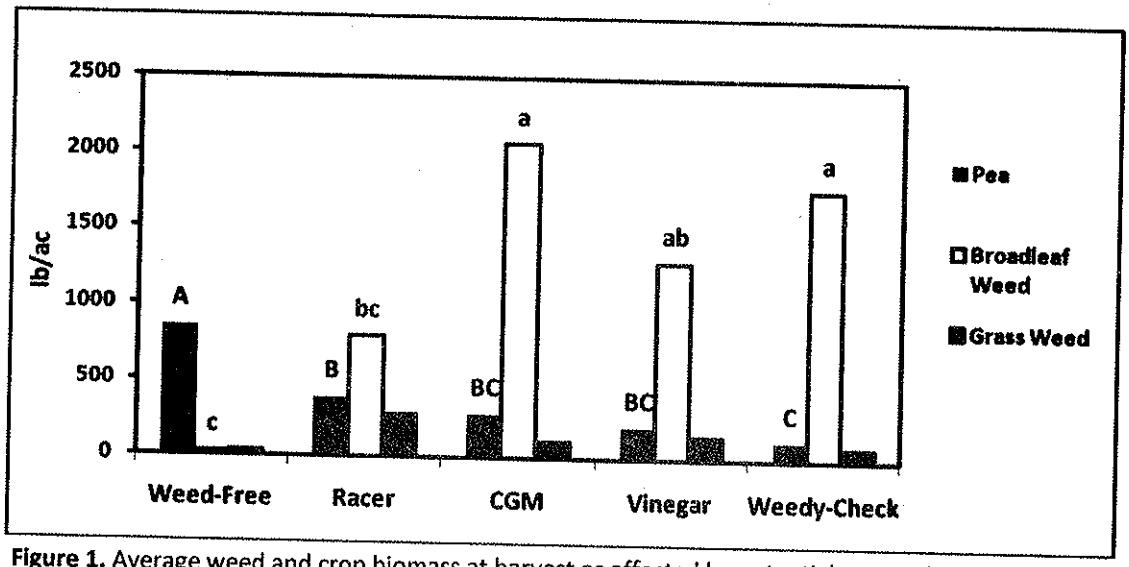


Figure 1. Average weed and crop biomass at harvest as affected by potential organic herbicides. Different uppercase letters denote significant between treatment differences in field pea biomass. Different lowercase letters denote significant between treatment differences in broadleaf weed biomass.

Impact of fall-seeded cover crops and cover crop termination method on weed biomass in the ensuing crop.

Jeff J. Gunderson, Patrick M. Carr, Timothy Winch and Glenn B. Martin

SUMMARY

Incorporating cover crops into a rotation is an excellent strategy for building organic matter and enhancing soil health, while also providing fertility and weed and disease suppression. The positive effects of cover cropping have been long recognized, but have grown in favor only recently as input costs rise. Cover crops are typically either relay-intercropped with a cash crop, or grown over a full season to provide a break in pest cycles. In either case, the crop provides an actively growing soil cover, which suppresses weeds while still promoting soil microbiological activity, and serves as a source of organic matter and essential nutrients upon termination. In order to maximize the supply of nutrients added to the soil, leguminous cover crops are often incorporated into rotations, due to their ability to fix significant amounts of nitrogen. Cover crops not only provide weed suppression through competition, but some crops exude chemicals that can actively suppress the germination of weeds. These chemicals are referred to as allelopathic compounds. The crop most commonly cited for its allelopathic potential is rye, which is often used by organic growers as a weed suppressant and catch crop.

Research suggests that allelopathic compounds synthesized by a rye cover crop may not only provide weed control while the crop is growing, but can remain effective germination-inhibitors of small-seeded weeds for some time after termination of the crop. However, incorporation of residues lead to more rapid decomposition and dissolution of these allelopathic compounds, as compared with leaving the residue on the soil surface, which allows the chemicals to leach more slowly from the residues . As a result, a management system has evolved in which a roller/crimper is used to terminate rye. The roller/crimper consists of a cylindrical drum with parallel chevron-shaped ridges which crushes but does not cut the stalk of the growing crop, ideally resulting in a firmly packed mulch on the soil surface into which the subsequent crop can be no-till seeded. This method can be used with other cover crops as well, and has achieved some success in several areas within the United States. However, it generally is necessary for rye (or any other crop) to have reached at least the onset of flowering before rolling can effectively kill the plant.

The ability of cover crops to enhance fertility, serve as a catch crop, and provide ground cover to sustain ecosystem services during periods of non-cash cropping suggest many benefits if they are incorporated into cropping systems. A potential fit for cover crops in the northern plains is seeding these crops post harvest and terminating in the spring prior to seeding a cash crop. The objective of the current study was to screen a number of different species for use as cover crops, including winter rye (WR), winter wheat (WW) and hairy vetch (HV) sown individually, as well as winter rye/hairy vetch (WR+HV) and winter wheat/hairy vetch (WW+HC) intercrops. Crops were evaluated for their ability to reduce weed densities in a variety of subsequent cash crops (buckwheat, sweet corn, navy bean and wheat) without interfering with crop performance. A coincident goal of the study was to determine which method of termination - disking, wide sweep/noble blade, or roller/crimper - was most effective at killing the cover crop and also resulted in the least amount of weed pressure in the subsequent crop.

RESULTS

An overall effect of cover crop on grass weed biomass in the subsequent crop was observed, with more weeds by weight being present in crops following HV and WR covers than in crops following WW and the WR+HV intercrop (Fig. 1). No other effects of cover crop or termination on grass weed biomass were found.

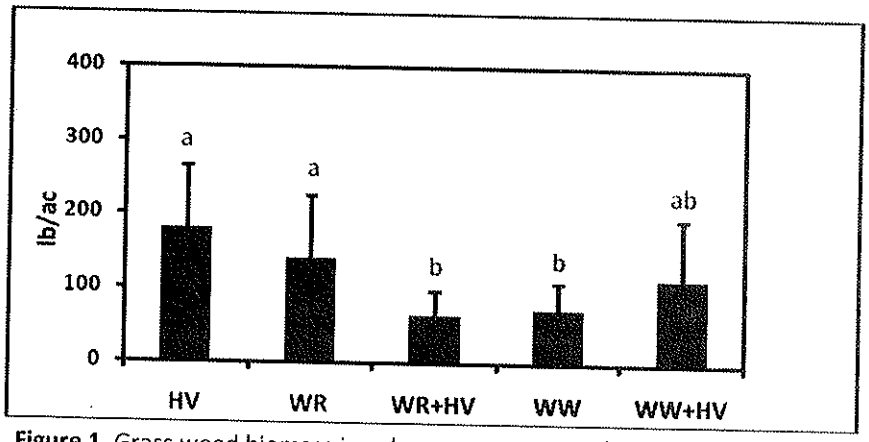


Figure 1. Grass weed biomass in subsequent crop as influenced by cover crop. Quantities with the same letter do not differ.

An effect of cover crop and termination treatments on broadleaf weed biomass was observed. Weed biomass was greater following the HV in the Roller treatment compared with weed biomass following HV in the two other tillage treatments. This effect was also observed in the WW and the WW+HV treatments (Fig. 2). To clarify, hairy vetch, winter wheat and the winter wheat/hairy vetch intercrop suppressed weeds in the subsequent crop to a greater extent when terminated with the disk or wide sweep than with the roller. Broadleaf weed suppression by WR and the WR+HV intercrop was not affected by termination method. Within the Roller treatment, more broadleaf weeds were present in-crop following HV than following WW or WW+HV, while the lowest weed densities in the Roller treatment followed WR and WR+HV. No effect of cover crop was seen within the other two tillage treatments. The effect of cover crop and termination treatments on broadleaf weed biomass was investigated further and treatments were ranked in order from that which had the greatest weed biomass in the subsequent crop to that which had the least (Table 1).

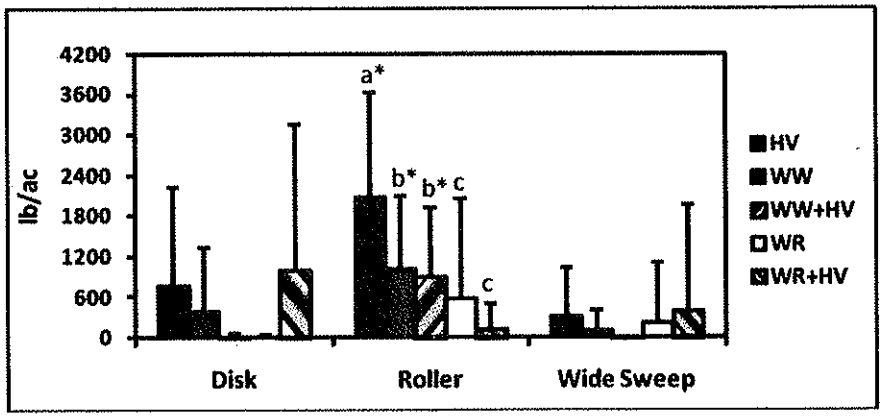


Figure 2. Broadleaf biomass in subsequent crop as influenced by cover crop and termination method. Quantities with the same letter do not differ within the Roller termination treatment. An asterisk denotes quantities that are greater in the Roller termination treatment than in either of the other two termination treatments.

Table 1. Cover crop x termination method treatment effect on broadleaf weed biomass.

Treatment	Weed biomass (lb/ac)
Roller HV	1610.78a†
Roller WW	670.67b
Roller WW+HV	572.23bc
Disk HV	252.52bcd
Disk WR+HV	216.34bcde
Roller WR	169.92cdef
Disk WW	92.83def
Wide Sweep HV	83.90def
Wide Sweep WR+HV	38.65def
Roller WR+HV	31.39def
Wide Sweep WR	23.09def
Wide Sweep WW	13.48ef
Disk WW+HV	4.63f
Disk WR	2.35f
Wide Sweep WW+HV	0.86f

†Quantities with the same letter are not significantly different.

Chickling Vetch Response to Spartan and Beyond Herbicides

Eric Eriksmoen, Hettinger, ND

'AC Greenfix' chickling vetch was seeded on May 4. Pre-emergence (PRE) treatments were applied on May 8 with 58° F, 69% RH, clear sky and northwest wind at 4 mph. Post-emergence (POST) treatments were applied on May 24 to 6 node (2" tall) chickling vetch, to one inch tall kochia (kocz), 2 leaf Persian darnel (peda) and to 2 leaf wild oat (wiot) with 59° F, 37% RH, mostly clear sky and northwest wind at 9 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to 3 by 23 foot plots. The trial was a randomized complete block design with four replications. Kochia, Persian darnel and wild oat populations averaged 14, 18 and 4 plants per square foot, respectively. Plots were evaluated for crop injury on June 9, for crop establishment on June 20 and for crop injury and weed control on June 26. Persian darnel was evaluated only in one rep. The trial was harvested on August 8.

	Treatment	Application Rate	App. timing	Crop Stand	6/9 inj	June 26 inj	June 26 kocz	June 26 peda	June 26 wiot	Seed Yield
		product oz/A		#/ft^2	% control					lbs/A
1	Spartan	4	PRE	7	2	0	99	0	0	1656
2	Spartan	8	PRE	7	2	0	99	0	0	2359
3	Beyond + NIS + UAN	4 + 0.25% + 2.5%	POST	6	2	0	50	99	99	1299
4	Beyond + NIS + UAN	8 + 0.25% + 2.5%	POST	7	2	0	50	99	99	1591
5	Spartan /	4 /	PRE							
	Beyond + NIS + UAN	4 + 0.25% + 2.5%	POST	7	4	0	96	99	99	1672
6	Spartan /	8 /	PRE							
	Beyond + NIS + UAN	8 + 0.25% + 2.5%	POST	6	3	0	99	99	99	1640
7	Untreated	0		7	0	0	0	0	0	990
	C.V. %			26.3	107	0	2.4	--	0	15.5
	LSD 5%			NS	NS	NS	3	--	1	368

Summary

Crop injury was minor with slight leaf chlorosis which quickly diminished. Crop stands were not affected by treatments. The kochia population in this trial was known to have ALS resistant biotypes. Beyond treatments alone (trts 3 & 4) provided relatively poor kochia control but provided excellent season long Persian darnel and wild oat control. Spartan alone treatments (trts 1 & 2) provided excellent kochia control but did not control Persian darnel or wild oats. The combination of these two herbicides provided excellent season long control of kochia, Persian darnel and wild oats. All treatments had significantly higher seed yields than the untreated check except for the low rate of Beyond alone (trt 3). Chickling vetch appears to have excellent tolerance to Spartan and Beyond herbicides.

PrePare Herbicide in Spring Wheat

Eric Eriksmoen, Hettinger, ND

Pre-plant treatments (PP) were applied on May 4 to 2" tall mixed bromus species (downy brome and Japanese brome) with 46° F, 66% RH, clear sky and northwest wind at 5 mph. 'Dapps' HRSW was seeded on May 28. Post-emergence treatments (POST) were applied on June 16 to 3 leaf wheat and to flowering downy brome (dobr), Japanese brome (jabr) in the late boot, 4 ½ leaf wild oat (wiot) and to 4 leaf Persian darnel (peda) with 48° F, 90% RH, clear sky and south wind at 2 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was a randomized complete block design with four replications. Downy brome, Japanese brome, wild oat and Persian darnel populations averaged 22, 6, 0.1 and 2 plants per square foot, respectively. The trial was located on a clay loam soil with 24% sand, 42% silt and 34% clay. Plots were evaluated for crop injury and weed control on June 10, June 26 and on August 1, and for plant height on July 18. The trial was not harvested due to poor crop development caused by drought.

Summary

Crop injury was not observed on any treatment (data not shown). Glyphosate alone (trt 1) provided excellent season long control of both bromus species but did not control either wild oat or Persian darnel which had not emerged prior to the pre-plant application. The addition of PrePare + Banvel with glyphosate (trt 2) did not enhance grassy weed control above the glyphosate alone treatment. POST applied Everest treatments (trt 3 & 4) provided some activity on Persian darnel with the higher rate (trt 4) providing comparable control to Discover NG (trt 6) but not as good as the Axial XL treatment (trt 7). All POST application treatments provided excellent wild oat control. There were no significant differences for plant height between treatments.

	Treatment	Product rate	App. timing	- June 10 - dobr	jabr	------ June 26 ------ dobr	jabr	peda	Plant height	---------- August 1 ---------- dobr	jabr	peda	wiot
		oz/A		---------- % control ----------					cm	--------- % control ---------			
1	Glyphosate + AMS	11.4 + 1lb	PP	99	99	99	99	0	48	99	99	0	0
2	Glyph + AMS + PrePare + Banvel	11.4 + 1lb + 0.306 + 2.0	PP	99	99	99	99	0	49	99	99	0	0
3	Glyph + AMS + PrePare + Banvel / Everest + Basic Blend	11.4 + 1lb + 0.306 + 2.0 / 0.204 + 1%	PP / POST	99	99	99	99	20	48	99	99	0	96
4	Glyph + AMS + PrePare + Banvel / Everest + Basic Blend	11.4 + 1lb + 0.306 + 2.0 / 0.306 + 1%	PP / POST	99	99	99	99	48	46	99	99	42	94
5	Glyph + AMS + PrePare + Banvel / Olympus + Basic Blend	11.4 + 1lb + 0.306 + 2.0 / 0.2 + 1%	PP / POST	99	99	99	99	0	48	99	99	0	94
6	Glyph + AMS + PrePare + Banvel / Discover NG	11.4 + 1lb + 0.306 + 2.0 / 6.4	PP / POST	99	99	99	99	45	44	97	99	42	97
7	Glyphosate + AMS / Axial XL	11.4 + 1lb / 16.4	PP / POST	99	99	99	99	82	46	94	94	98	98
	C.V. %			0	0	0	0	74	6.9	2.5	2.0	50	4.4
	LSD 5%			NS	NS	NS	NS	30	NS	NS	3	20	5

NS = no statistical difference between treatments.

PrePare Herbicide on Light Soils in Spring Wheat

Eric Eriksmoen, Hettinger, ND

Howard' HRSW was seeded on April 30. Pre-emergence treatments (PRE) were applied on May 5 to 2" tall mixed bromus species (downy brome and Japanese brome) with 71° F, 22% RH, partly cloudy sky and west wind at 8 mph. Post-emergence treatments (POST) were applied on June 1 to 4 leaf wheat and to heading downy brome (dobr), tillering Japanese brome (jabr), 2 leaf wild buckwheat (wibw) and to 3 leaf volunteer canola (cano) with 61° F, 64% RH, clear sky and northwest wind at 4 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was a randomized complete block design with four replications. Bromus species, wild buckwheat and volunteer canola populations averaged 10, 2.75 and 2 plants per square foot, respectively. The trial was located on a loamy soil with 41% sand, 35% silt and 24% clay. Plots were evaluated for crop injury on June 12, for plant height on July 18 and for weed control on June 12 and August 1. The trial was harvested on August 9.

Summary

Crop injury was initially observed on all treatments but at very low levels. There were significant differences between treatments for plant height, however, there did not appear to be any trends associated with these differences. There were no significant differences for weed control between herbicide treatments. Test weights from the herbicide treatments were all significantly higher than the untreated check, with the exception of treatment 12. All herbicide treatments were significantly higher in grain yield than the untreated check. There were also significant differences between herbicide treatments, however, there did not appear to be any clear trends associated with these differences.

	Treatment	Product rate	App. timing	June 12 inj.	June 12 brom	June 12 cano	June 12 wibw	Plant height	August 1 jabr	August 1 dobr	August 1 wibw	Test weight	Grain yield
		oz/A		% control				cm	% control			lbs/bu	bu/A
1	Untreated	–	–	0	0	0	0	64	0	0	0	52.9	8.2
2	Glyphosate + AMS / Widematch + MCPA	11.4 + 1lb / 16 + 8	PRE / POST	2	94	91	94	67	98	97	95	56.4	16.6
3	Glyph + AMS + PrePare / Widematch + MCPA	11.4 + 1lb + 0.204 / 16 + 8	PRE / POST	3	96	92	94	69	99	95	92	57.6	19.1
4	Glyph + AMS + PrePare / Widematch + MCPA	11.4 + 1lb + 0.306 / 16 + 8	PRE / POST	2	92	92	97	72	96	94	95	57.9	20.9
5	Glyph + AMS + PrePare + Banvel / Widematch + MCPA	11.4 + 1lb + 0.204 + 2.0 / 16 + 8	PRE / POST	2	91	91	92	68	97	93	92	57.9	19.0
6	Glyph + AMS + PrePare + Banvel / Widematch + MCPA	11.4 + 1lb + 0.306 + 2.0 / 16 + 8	PRE / POST	4	96	94	95	71	99	96	95	56.2	17.4
7	Glyph + AMS + PrePare + ET / Widematch + MCPA	11.4 + 1lb + 0.204 + 1.0 / 16 + 8	PRE / POST	1	94	94	95	72	99	94	96	59.6	18.4
8	Glyph + AMS + PrePare + ET / Widematch + MCPA	11.4 + 1lb + 0.306 + 1.0 / 16 + 8	PRE / POST	2	92	92	95	71	99	94	96	58.7	15.7
9	Glyph + AMS + PrePare / Everest + Widematch + MCPA	11.4 + 1lb + 0.204 / 0.204 + 16 + 8	PRE / POST	2	95	94	95	69	99	94	95	57.4	18.3
10	Glyph + AMS + PrePare / Everest + Widematch + MCPA	11.4 + 1lb + 0.306 / 0.204 + 16 + 8	PRE / POST	2	94	95	96	71	98	96	96	57.6	16.6
11	Glyph + AMS + PrePare / Discover NG + Widematch + MCPA	11.4 + 1lb + 0.204 / 6.4 + 16 + 8	PRE / POST	3	92	91	94	71	99	98	95	58.0	17.6
12	Glyph + AMS + PrePare / Discover NG + Widematch + MCPA	11.4 + 1lb + 0.306 / 6.4 + 16 + 8	PRE / POST	2	92	92	96	72	99	92	95	56.0	17.5
13	Glyph + AMS / Everest + Widematch + MCPA	11.4 + 1lb / 0.408 + 16 + 8	PRE / POST	6	95	95	95	67	99	96	92	58.3	16.3
14	Glyph + AMS / Discover NG + Widematch + MCPA	11.4 + 1lb / 12.8 + 16 + 8	PRE / POST	4	89	92	95	69	97	94	95	58.7	16.5
	C.V. %			125	3.7	3.0	2.5	4.7	2.7	4.9	2.3	3.9	12.1
	LSD 5%			NS	5	4	3	5	3	6	3	3.2	2.9

NS = no statistical difference between treatments.

Evaluation of Fall and Spring Applications of PowerFlex Herbicide for Tough Grassy Weed Control in Winter Wheat

Eric Eriksmoen, Hettinger, ND

'Jerry' HRWW was seeded on September 14, 2007. Fall treatments were applied on October 4 to two leaf winter wheat and to one leaf downy brome (dobr) with 51° F, 49% RH, cloudy sky and north wind at 7 mph. Winter crop survival was very poor (<15%). Spring treatments were applied on May 4 to 3 ½ leaf winter wheat and to tillering downy brome, 3 leaf Japanese brome (jabr) and to one leaf wild oat (wiot) with 54° F, 51% RH, clear sky and west wind at 9 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was sprayed with 10 oz/A Starane to control broadleaf weeds on June 16. The trial was a randomized complete block design with four replications. Downy brome, Japanese brome, wild oat and Persian darnel populations averaged 22, 6, 0.1 and 2 plants per square foot, respectively. Plots were evaluated for crop injury on October 11, May 12, June 10 and on July 2, and for grassy weed control on June 10, July 2 and on July 31. The trial was not harvested.

Summary

Crop injury was not observed. Initial observations showed excellent downy brome control from all treatments except for the fall applied Olympus Flex treatment (trt 3), however, later observations of this treatment also showed excellent control. All treatments provided excellent season long control of Japanese brome. All treatments provided excellent wild oat control except for the fall applied PowerFlex treatment (trt 1). Fall applied Maverick (trt 4) and spring applied PowerFlex (trt 5) were the only treatments that had significant activity on Persian darnel.

	Treatment	Product rate	App. timing	10/11 inj	5/12 inj.	---- June 10 ----- inj	dobr	jabr	---------- July 2 ---------- inj	dobr	jabr	wiot	peda	------- July 31 ------ dobr	jabr	peda
		oz/A		---------- % control ----------												
1	PowerFlex+Agral 90+AMS	3.5+0.5%+1.7kg	Fall	0	0	0	97	99	0	97	99	77	0	94	99	0
2	Olympus + Agral 90	0.9 + 0.5%	Fall	0	0	0	98	99	0	82	99	96	0	94	99	0
3	Olympus Flex+Agral 90+AMS	3.17+0.5%+1.7kg	Fall	0	0	0	74	99	0	74	97	93	0	97	99	0
4	Maverick + Agral 90	0.67 + 0.5%	Fall	0	0	0	94	99	0	99	99	90	60	97	99	88
5	PowerFlex + Agral 90 + AMS	3.5+0.5%+1.7kg	Spg	0	0	0	99	99	0	94	99	94	72	94	99	58
6	Olympus + Agral 90	0.9 + 0.5%	Spg	0	0	0	97	99	0	94	97	99	8	92	99	0
7	Olympus Flex+Agral 90+AMS	3.17+0.5%+1.7kg	Spg	0	0	0	97	99	0	90	99	97	12	94	99	5
8	Maverick + Agral 90	0.67 + 0.5%	Spg	0	0	0	99	99	0	62	99	92	5	84	87	0
9	Untreated	0		0	0	0	0	0	0	0	0	0	0	0	0	0
	C.V. %			0	0	0	12	0	0	15	2	11	61	10	9	38
	LSD 5%			NS	NS	NS	15	1	NS	17	3	13	16	12	12	9

NS = no statistical difference between treatments.

HRSW and Durum Varietal Tolerance to Olympus Herbicide

Eric Eriksmoen, Hettinger, ND

Thirty spring wheat and 13 durum varieties were treated with 0.6 oz/A Olympus herbicide at the 4 ½ leaf + 2 tiller growth stage on May 24 with 60° F, 32% RH, clear sky and north wind at 6 mph. Treatments were applied with a pickup mounted sprayer delivering 10 gpa at 40 psi through 8004 EVS nozzles to one half of 10 foot by 100 foot un-replicated strips. Varieties were evaluated for crop injury on June 9 and for maturity differences, plant stunting, head abnormalities and leaf chlorosis on June 25.

Spring Wheat	June 9 % Crop Injury
Faller	0
Howard	0
Glen	0
Steele-ND	0
Reeder	0
Traverse	0
Granger	0
Kuntz	0
Kelby	0
Freyr	0
Rush	2
AP 603 CL	0
AP 604 CL	2
Trooper	0
Briggs	5
Granite	0
Knudson	0
Parshall	0
Mercury	0
Alsen	0
AC Superb	0
Ingot	0
Oxen	0
Gunner	0
Russ	0
RB07	0
AC Vita	0
Norpro	0
FBC Dylan	0
ND809	2

Durum	June 9 % Crop Injury
Mountrail	0
Ben	0
Lebsock	0
Grenora	0
Divide	0
Alkabo	0
Maier	0
Pierce	0
Dilse	0
AC Navigator	0
AC Napoleon	0
AC Commander	0
Rugby	0

Summary

Crop injury (stunting) was initially observed on 4 spring wheat varieties and on no durum varieties. There were no visual differences between treated and untreated strips on June 25 (data not shown). Although varieties were not tested for yield differences, it appears that both spring wheat and durum have very good tolerance to Olympus herbicide.

ET Herbicide for In-Crop Applications in Wheat at Hettinger, ND

Eric Eriksmoen

'Howard' HRSW was seeded on April 30. Treatments were applied on June 1 to 4 ½ leaf wheat and to 2" kochia (kocz), 2" Russian thistle (ruth) and to 2 leaf wild buckwheat (wibw) with 69° F, 58% RH, clear sky and NW wind at 3 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was a randomized complete block design with three replications. HRSW, kochia, Russian thistle and wild buckwheat populations were 8, 29, 3 and 0.7 plants per square foot, respectively. Plots were evaluated for crop injury on June 10 and June 18 and for weed control on June 10, June 18 and on August 1. The trial was harvested on August 8.

			June 10				June 18				8/1	Test	Crop
	Treatment*	Rate	inj	kocz	ruth	wibw	inj	kocz	ruth	wibw	kocz	Weight	Yield
		oz/A	% Control									lbs/bu	bu/a
1	ET + MCPA ester	0.75 + 16	13	87	98	95	0	91	93	95	93	46.2	31.8
2	ET + Buctril	0.75 + 24	10	93	96	95	0	92	96	96	98	47.9	29.7
3	ET + 2,4-D ester	0.75 + 16	17	90	92	55	0	90	95	96	90	47.7	20.3
4	ET + Ally Extra	0.75 + 0.1	3	80	98	90	0	76	96	99	91	45.6	24.3
5	ET + Ally Extra	0.75 + 0.2	2	60	93	92	0	80	96	85	82	49.1	26.7
6	MCPA ester	16	0	30	37	0	0	91	90	7	77	45.3	26.3
7	Untreated	--	0	0	0	0	0	0	0	0	0	43.3	22.5
	C.V.%		49	17	15	24	337	14	8	9	13	7.4	19.8
	LSD .05		6	19	20	26	NS	19	11	11	18	NS	NS

Summary

Crop injury (leaf spotting) was quite evident initially but diminished quickly. All herbicide treatments except for ET + 0.2 oz/A Ally Extra (trt 5) and MCPA alone (trt 6) provided excellent season long kochia control. MCPA alone (trt 6) was not effective on wild buckwheat but when combined with ET herbicide (trt 1), control was excellent. All herbicide treatments provided excellent Russian thistle control. Test weights were very light due to late season heat and moisture stress. Although there were no statistical differences for grain yield between treatments, all herbicide treatments with the exception on ET + 2,4-D (trt 3) had higher yields than the untreated check.

Tank Mixes with Orion Herbicide in Wheat at Hettinger, ND

Eric Eriksmoen

'Howard' HRSW was seeded on April 30. Treatments were applied on May 31 to 4 leaf wheat and to 2" kochia (kocz) and 2" Russian thistle (ruth) with 65° F, 55% RH, clear sky and west wind at 2 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was a randomized complete block design with three replications. HRSW, kochia and Russian thistle populations were 8, 17 and 3 plants per square foot, respectively. The trial was sprayed with 16 oz/A Axial XL on June 16 to control wild oats. Plots were evaluated for crop injury on June 18 and for weed control on August 1. The trial was harvested on August 8.

	Treatment	Product Rate	6/18 inj	-- Aug. 1-- kocz	ruth	Test Weight	Grain Yield
		oz/A	---- % Control -----			lbs/bu	bu/A
1	A15351A + Adigor	8.85 + 9.6	0	60	99	52.6	12.3
2	Orion	17	0	73	99	53.0	18.5
3	Orion + Starane	17 + 5.33	0	99	98	55.9	16.9
4	Orion + Buctril	17 + 16	0	90	99	51.7	15.9
5	Orion + Stinger	17 + 5.33	0	73	99	54.3	17.2
6	Orion + Axial XL	17 + 16.4	0	72	99	54.1	16.7
7	Bronate Adv.	12.8	0	73	94	53.3	15.3
8	Huskie	11	0	88	96	52.6	18.6
9	WideMatch + MCPA	16 + 8	0	99	99	58.3	17.0
10	Affinity TM + MCPA	0.6 + 8	0	72	99	54.9	18.5
11	Untreated	--	0	0	0	52.0	15.0
	C.V.%		0	19	3	4.9	11.6
	LSD .05		NS	24	20	NS	3.3

Summary

Crop injury was not observed. A15351A, Orion alone, Orion + Stinger, Orion + Axial XL, Bronate Advance and Affinity treatments only provided partial control of kochia. Orion + Starane, Orion + Buctril and WideMatch treatments provided excellent season long kochia control. All herbicide treatments provided excellent Russian thistle control. The trial sustained late season heat and moisture stress which significantly impacted test weights and grain yields. Orion alone, Huskie and Affinity treatments had significantly higher yields than the untreated check.

2008 Kixor Herbicide Applied Pre-Plant to Hard Red Spring Wheat at Hettinger, ND (Eriksmoen)

Treatments were applied on May 6 to 1/2" kochia (kocz), 1/2" Russian thistle (ruth), 1 leaf wild buckwheat (wibw), 1 leaf field bindweed (fibw) and volunteer canola (cano) had not emerged with 57 deg. F, 57% RH, heavy dew, cloudy sky and south wind at 7 mph. 'Howard' HRSW was seeded on May 14. Treatments were applied with a tractor mounted CO2 propelled plot sprayer delivering 10 gpm at 30 psi through PK-01E80 nozzles to 5' by 28' plots. The trial was a randomized complete block design with three replications. Kochia, Russian thistle, wild buckwheat, canola and field bindweed populations were 25, 27, 8, 3 and 0.25 plants per sq. ft, respectively. Plots were evaluated for crop injury and weed control on May 13, May 27, June 10, June 29 and on July 27. The trial was harvested on August 7.

Treatment	Product Rate	May 13				May 27					June 10					
		kocz	ruth	wibw	fibw	inj	kocz	ruth	wibw	cano	inj	kocz	ruth	wibw	fibw	cano
	oz/A	% control														
1 Untreated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 Glyphosate + NIS + AMS	32 + 0.25% + 17 lbs	30	47	43	23	0	57	96	47	0	0	50	90	3	0	0
3 Kixor + Glyphosate + COC + AMS	0.72 + 32 + 1% + 17 lbs	57	80	73	30	0	68	99	99	0	0	57	95	95	0	0
4 2,4-D + Glyphosate + NIS + AMS	16 + 32 + 0.25% + 20 lbs	60	47	80	53	0	68	99	98	83	0	47	93	87	2	47
CV %		24	8	12	51	0	11	4	13	35	0	9	9	10	346	65
LSD 5%		17	7	12	27	NS	11	5	16	15	NS	7	12	9	NS	15

continued:

Treatment	Product Rate	June 29						July 27						Grain
		inj	kocz	ruth	wibw	fibw	cano	inj	kocz	ruth	wibw	fibw	cano	yield
		% control												bu/A
1 Untreated	0	0	0	0	0	0	0	0	0	0	0	0	0	7.6
2 Glyphosate + NIS + AMS	32 + 0.25% + 17 lbs	0	53	50	0	0	0	0	50	50	0	0	0	10.1
3 Kixor + Glyphosate + COC + AMS	0.72 + 32 + 1% + 17 lbs	0	53	90	77	0	0	0	80	83	57	0	0	9.7
4 2,4-D + Glyphosate + NIS + AMS	16 + 32 + 0.25% + 20 lbs	0	67	92	3	3	80	0	80	90	0	0	96	8.4
CV %		0	18	4	20	346	0	0	0	5	41	0	11	13.8
LSD 5%		NS	16	5	8	NS	1	NS	1	6	12	NS	5	2.4

Summary: Crop injury was not observed. Kochia and Russian thistle populations were very high and hindered stand establishment. The addition of Kixor or 2,4-D to glyphosate (trts 3 and 4) enhanced season long kochia and Russian thistle control over glyphosate alone (trt 2). All treatments provided some initial supression (leaf burn) of wild buckwheat and field bindweed but these symptoms tended to deminish over time. Treatments were applied prior to canola emergence, however, there appeared to be enough residual 2,4-D in treatment 4 to provide significant season long control of canola. Grain yields were very poor due to hot and dry growing conditions and due to a poor stand caused by intense weed competition during crop emergence.

Kixor Herbicide on Tough Broadleaf Weeds in Summer Fallow at Hettinger, ND

Eric Eriksmoen

Treatments were applied on June 25 to flowering field bindweed (fibw), flowering wild buckwheat (wibw) and to flowering dandelion (dali) with 74° F, 40% RH, clear sky and west wind at 5 mph. Treatments were applied with a tractor mounted CO_2 propelled plot sprayer delivering 10 gpa at 30 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The trial was a randomized complete block design with four replications. Plots were evaluated for weed control on July 2 and on July 30.

	Treatment	Product Rate	July 2 wibw	July 2 fibw	July 2 dali	July 30 wibw	July 30 fibw
		oz/A	% control				
1	Untreated	0	0	0	0	0	0
2	Glyphosate + NIS + AMS	32 + 0.25% + 17 lbs	0	18	1	2	5
3	2,4-D + glyphosate + NIS + AMS	16 + 32 + 0.25% + 20 lbs	18	6	19	21	8
4	Kixor + glyphosate + COC + AMS	1.0 + 32 + 1% + 17 lbs	85	97	80	85	78
5	Kixor + glyphosate + COC + AMS	1.5 + 32 + 1% + 17 lbs	92	99	94	97	91
6	Kixor + glyphosate + COC + AMS	2.0 + 32 + 1% + 17 lbs	91	99	93	94	97
	C.V.%		9	14	21	19	9
	LSD .05		7	14	16	15	8

Summary

Treatments were applied to large and 'older' weeds. Glyphosate alone (trt 2) and 2,4-D + glyphosate (trt 3) had very poor activity on these weeds. The 1 oz/A rate of Kixor (trt4) provided relatively good initial weed control but this control tended to diminished over time. The 1.5 and 2.0 oz/A rates of Kixor (trts 5 & 6) provided excellent season long control of these tough broadleaf weeds.

2008 Kixor Herbicide Applied Pre-Plant to Lentil at Hettinger, ND (Eriksmoen)

Treatments were applied on May 6 to 1/2" kochia (kocz), 1/2" Russian thistle (ruth), 1 leaf wild buckwheat (wibw), 1 leaf field bindweed (fibw) and volunteer canola (cano) had not emerged with 57 deg. F, 57% RH, heavy dew, cloudy sky and south wind at 7 mph. 'CDC Richlea' lentil was seeded on May 14. Treatments were applied with a tractor mounted CO2 propelled plot sprayer delivering 10 gpm at 30 psi through PK-01E80 nozzles to 5' by 28' plots. The trial was a randomized complete block design with three replications. Kochia, Russian thistle, wild buckwheat, canola and field bindweed populations were 25, 27, 8, 3 and 0.25 plants per sq. ft, respectively. Plots were evaluated for crop injury and weed control on May 13, May 27, June 10, June 29 and on July 27. The trial was harvested on August 7.

Treatment	Product Rate	May 13					May 27					June 10			
		kocz	ruth	wibw	cano	fibw	inj	kocz	ruth	wibw	cano	inj	kocz	ruth	wibw
	oz/A	% control													
1 Untreated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 Kixor + COC + AMS	0.72 + 1% + 17 lbs	30	40	68	0	10	0	40	88	96	0	0	37	73	92
3 Glyphosate + NIS + AMS	32 + 0.25% + 17 lbs	43	62	70	0	43	2	60	99	96	0	0	30	82	40
4 Kixor + Glyphosate + COC + AMS	0.72 + 32 + 1% + 17 lbs	63	72	80	0	47	0	78	98	99	0	0	73	77	93
5 Aim + Glyphosate + COC + AMS	0.54 + 32 + 1% + 20 lbs	63	63	67	0	50	0	78	99	99	0	0	67	83	30
CV %		30	20	27	0	50	387	18	5	4	0	0	32	18	24
LSD 5%		23	18	29	NS	28	NS	17	7	7	NS	NS	25	21	23

continued:

Treatment	Product Rate	June 10		June 26					July 29						Seed
		fibw	cano	inj	kocz	ruth	wibw	cano	inj	kocz	ruth	wibw	fibw	cano	yield
	oz/A	% control													lbs/A
1 Untreated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	138
2 Kixor + COC + AMS	0.72 + 1% + 17 lbs	2	0	0	43	60	73	0	0	47	50	77	0	0	221
3 Glyphosate + NIS + AMS	32 + 0.25% + 17 lbs	2	0	0	40	73	40	0	0	40	33	7	0	0	447
4 Kixor + Glyphosate + COC + AMS	0.72 + 32 + 1% + 17 lbs	2	0	2	72	90	83	0	0	57	50	77	0	0	316
5 Aim + Glyphosate + COC + AMS	0.54 + 32 + 1% + 20 lbs	3	0	0	50	83	40	0	0	57	50	27	0	0	388
CV %		155	0	387	19	20	29	0	0	38	19	31	0	0	14
LSD 5%		NS	NS	NS	15	23	26	NS	NS	29	13	22	NS	NS	81

Summary: Crop injury was very minor when observed. The addition of Kixor or Aim to glyphosate (trts 4 & 5) tended to enhance kochia and Russian thistle control. These two weeds accounted for intense competition to the crop even with good levels of control. The most evidant Strength of Kixor appears to be on wild buckwheat. Treatments were applied prior to canola emergence. None of the treatments provided any residual canola control. All of the herbicide treatments provided temporary field bindweed control (leaf burn). All seed yields were very poor but were significantly higher than the untreated check.

NDAWN – Crop Management Tool

Roger Ashley, Area Extension Agronomist

The North Dakota Agricultural Network (NDAWN) provides both real time and historical weather data from eight locations in southwest North Dakota. Through careful site selection it is assumed that each station adequately represents all weather data except rainfall in a 20 mile radius area or approximately 804,000 acres around each site. Weather data provided includes air and soil temperature, wind speed and direction, relative humidity, and solar radiation. Biological processes are weather dependent so weather data can be used to predict various events in the field such as crop and pest development. NDAWN not only provides users weather data, NDAWN calculates growing degree days, estimate crop growth stage of five major crops (barley, canola, corn, sunflower, and wheat), water use of nine crops, and forecast the risk of disease in canola (sclerotinia), potato (late blight), wheat (tan spot, septoria, rust, and fusarium headblight) and insect degree days.

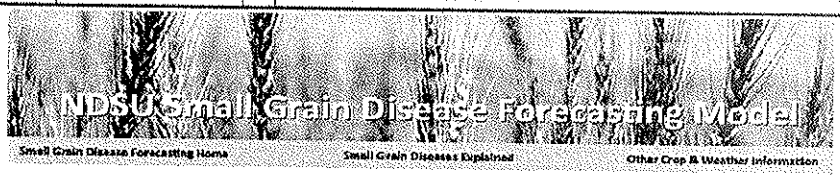
Foliar Fungicide – To Apply or not – 2007 Example.

The return from late season fungicide applications flag leaf (FGS 9) for rust and septoria and at early flower (FGS 10.51) for fusarium head blight in western North Dakota is highly variable because weather and the absence or presence of of the disease causing agent may not support disease development. An application of fungicide made at flag leaf or heading can mean the difference between a high grain yield with a good test weight or a low yielding poor quality crop. Applying a fungicide when it isn't needed can also result in reducing the net return on an acre of spring wheat when the fungicide isn't needed. In the following example only leaf rust will be considered to simplify the example but often times more than one disease may be present therefore a more through examination of weather, field conditions, the presence of spores and the suseptibility of the crop and variety to specific diseases will need to be considered.

In 2007 if the spring wheat crop were seeded on April 25 the flag leaf appeared about June 15. The question is will a foliar fungicide application pay for itself and return additional revenue to the producer to pay for the additional cost in making the fungicide application (materials, labor, and equipment)? The producer will need to answer three questions prior to deciding if a foliar fungicide should be applied. New infections of leaf and stem rust originate in the southern states each year and spores are blown north. Sometimes rust infections are not supported in the south by weather conditions so wind blown spores may not be present or likely to be present when the crop is most susceptible to rust. Information on the rust throughout the plains states can be found in a weekly bulletin published on Fridays by the Cereal Disease Laboratory, Agricultural Research Service, University of Minnesota. Subscribe to this newsletter through there website at: http://www.ars.usda.gov/mwa/cdf. The May 30, 2007 report indicated, "Wheat leaf rust is wide spread with high severity throughout the Great Plains." The second question producers should ask , "Is the variety I planted suceptible to rust?" Rust ratings that were current at the time of publication are listed in the Western Dakota Crop Day Research Report. However, over time the rust causing fungus can evolve to overcome rust resistance found in a variety so keep up-to-date on new races of rust and what varieties now appear susceptible through review of the Cereal Rust Bulletin. The final question to answer is, "Are weather conditions supporting infection or expected to support infection?" NDAWN can help you answer that question. The figure shown on the next page provides the answer. In the Hettinger, ND area on June 15, 2007, the risk of a rust infection occurred in four days of the previous two weeks. Fungicide applications for Leaf rust requires about four infection periods while Tan spot and Septoria blotch require six. In this case a fungicide application for Leaf rust is advised and as shown in data generated in foliar fungicide trials published in the 2007 Western Dakota Crops Day Research Report that this application paid for itself.

In 2008 the disease forecast indicated that fungicide applications made at flag leaf time would not be necessary and results from these trials in those areas indicate that this was the case.

Further information on diseases affecting wheat can be found on the NDAWN site. http://ndawn.ndsu.nodak.edu/



HETTINGER, ND - FLAGGING

June 15, 2007

Infection periods of tan spot, Stagonspora (Septoria) blotch and leaf rust

Interpretation: Yes = infection likely, No = infection unlikely. First, select the date when 50% of the flag-2 (or flag-1) leaves had disease symptoms. Then, consider a fungicide wh 8 infection periods ("Yes" days) have accumulated. (More)

Model	6/14	6/13	6/12	6/11	6/10	6/9	6/8	6/7	6/6	6/5	6/4	6/
Tan Spot	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Blotch	No	Yes	No	No	No	No	No	Yes	No	No	No	N
Leaf Rust	Yes	No	No	Yes	Yes	No	No	No	Yes	No	No	N

Weather

Interpretation: Factors that most influence plant diseases are given here to help you mentally adjust for environmental differences between your field and the weather station. Mor complete environmental information from NDAWN, the latest doppler radar image, and one of many weather forecasting services are linked below. (More)

	6/14	6/13	6/12	6/11	6/10	6/9	6/8	6/7	6/6	6/5	6/4
Rain (in)	0	0.21	0.09	0	0	0	0	2.18	0	0	0.16

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