TWENTY SECOND ANNUAL

AG. REPORT NO. 22

WESTERN DAKOTA

CROPS DAY

RESEARCH REPORT

HETTINGER ARMORY

DECEMBER 15, 2005

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22nd Annual Western Dakota Crops Day
December 15, 2005
Hettinger Armory

MST

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

10:00 Earlybird Drawing

10:20 Opening Announcements

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

Roger Ashley, Extension Agronomist, Dickinson

Dr. Pat Carr, Agronomist, Dickinson Research Extension Center

Eric Eriksmoen, Agronomist, Hettinger Research Extension Center

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

1:00 Ag Industry Update

1:30 Intensive Winter Wheat Management, Blake Vander Vorst, Agronomist, Ducks Unlimited, Bismarck

2:00 Corn Production in the Western Dakota's - Critical Growth Periods, Steve Dvorak, General Manager, GroLand Inc., Bismarck

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

Acknowledgments

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

2005 Western Dakota Crops Day Sponsors

Hettinger Area Chamber of Commerce
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Proseed
Meridian Seeds LLC

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

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Interpreting Statistical Analysis

Field research involves the testing of one or more variables such as crop varieties, fertilizers, tillage methods, etc. Field testing of such variables are conducted in order to determine which variety, tillage method, or fertilizer etc. is best for the particular area of production. The main objectives of crop production research are to determine the best means of producing the 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.

One of these tools is the Coefficient of Variability (C.V.). This statistic gives an indication of the amount of variation in an experimental trial and is a measure of the precision or effectiveness of the trial and the procedures used in conducting it. Attempts are made to control human error and some environmental conditions such as soil variability by replicating the variable in question. For example, there were four plots (replications) of the variety Reeder grown in the Hettinger HRSW variety trial. The plots are mixed and dispersed throughout the trial to help eliminated 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 2005 Hettinger HRSW trial was 10.7 meaning that there was a 10.7 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, tillage practices, or any other variable and determine whether or not they are actually different. The LSD 1% value is always larger and gives you more precision than the LSD 5% value. Little confidence can be placed in variety or treatment differences unless the results differ by more than the LSD value.

2005 Weather Summary for the Dickinson Research Extension Center, Dickinson, ND.

Month	Maximum temp. Long Term 1897 - 2004	Maximum temp. Current Year	Minimum temp. Long Term 1897 - 2004	Minimum temp. Current Year	Precipitation Long Term 1897 - 2004	Precipitation Current year	Small grains GDD[1] Long Term 1897 - 2005	Small grains GDD[1] Current year	Corn GDD[2] Long Term 1897 - 2005	Corn GDD[2] Current year
	°F		°F		inches					
November - 04	39.8	47.7	16.8	19.9	0.51	0.19				
December - 04	27.8	34.6	5.8	11.0	0.39	0.06				
January	22.7	23.7	-0.1	-0.9	0.51	0.11				
February	27.0	39.4	3.8	11.4	0.40	0.07				
March	37.8	43.1	14.8	20.9	0.74	0.92				
April	54.6	59.6	28.4	32.0	1.42	0.40	345	465		
May	66.2	61.1	39.1	38.6	2.30	4.40	645	587	253	203
June	75.0	73.8	48.9	52.6	3.62	7.74	899	936	381	420
July	83.4	83.8	54.1	56.4	2.21	1.38	1141	1179	583	596
August	82.4	81.6	51.5	50.5	1.74	1.19	1083	1054	529	515
September	71.2	75.5	41.0	42.0	1.37	0.41	725	804	319	381
October	57.7	58.0	30.0	29.0	0.96	0.96				
Mean	53.8	56.8	27.8	30.3						
Total					16.18	17.83	4838	5024	2066	2115

[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.

Growing Conditions
Hettinger Research Extension Center
2005

The 2005 growing season was again challenging, starting out relatively warm and dry and ending relatively warm and dry. Almost 4 ½ inches of Fall precipitation was received, with most of that being received in September and October. This provided for excellent winter wheat development going into winter. The winter months were generally mild with little snow cover. Relatively warm and dry Spring conditions allowed for seeding to begin during the first part of April and continued with few weather related interruptions. Hard frosts almost every night from April 23 through May 4 caused some crop damage, especially to mustard, canola, flax and alfalfa, but small grains, field peas and safflower appeared unaffected. Windy conditions in May and June caused delays in pesticide applications. Over 5 inches of rain was received in June, providing relief to small grain crops just as they were beginning to head. Hot and dry conditions prevailed throughout July, causing kernels of small grain crops to shrivel and ultimately causing very light test weights. These same hot temperatures were ideal for corn and other warm season crops. The sunflower variety trial located near Reeder was hailed out on July 24. Harvest began during the first week of August, but was interrupted by wet weather through mid-August.

White sterile wheat heads caused by wheat stem maggot were prevalent throughout the Western Dakota's with reports as high as 25% infection. Reports of wheat stem sawfly continue to increase. Warm temperatures in April brought out a heavy infestation of flea beetles on newly emerged canola. Foliar diseases were abundant with tan spot and septoria being most prevalent followed by leaf rust and stripe rust. There were also reports of scab infections in both spring and winter wheat. Almost all fields of field pea were infected with bacterial blight caused by windy conditions during pod fill.

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

All HRSW, durum and barley trials were treated post-emergence for both grassy weeds (foxtails and wild oats) and for broadleaf weeds (kochia, Russian thistle and wild buckwheat). Most broadleaf crops were treated with a pre-emergence burn down, and with either a pre-emergence or a post-emergence herbicide for grassy weeds and broadleaf weeds when possible.

Weather Data Summary - Hettinger

Frost Free Days			
	28 F	32 F	Normal 32 F
Date of last frost	May 14	May 15	May 18
Date of first frost	Oct. 6	Sept. 23	Sept. 20
Frost free days	145	131	125

Weather Data Summary - Hettinger

Precipitation					
Precipitation (inches)	2001 - 02	2002 - 03	2003 - 04	2004 - 05	50 Year Average
Sept. - Dec.	1.69	1.49	6.88	4.41	3.31
Jan. - March	1.11	3.83	1.83	0.98	1.41
April	1.14	1.38	0.54	0.75	1.65
May	0.80	3.18	1.00	2.30	2.59
June	1.34	1.99	0.46	5.10	3.31
July	1.36	0.37	3.43	1.31	2.08
August	1.11	0.44	1.13	1.38	1.63
Total	8.55	12.60	15.27	16.23	15.98

Air Temperature						
Average Temperature F	2001	2002	2003	2004	2005	50 Year Average
April	43.0	40.2	46.7	45.4	45.5	42.7
May	55.2	49.6	52.9	51.3	50.7	54.0
June	62.7	65.4	60.2	59.5	64.0	63.3
July	71.6	76.2	72.4	69.2	71.9	70.0
August	73.0	67.5	73.7	63.4	68.0	68.9
September	59.1	61.1	57.6	60.2	60.4	57.5

Growing Degree Units - Corn						
Growing Degree Units (50 - 86)	2001	2002	2003	2004	2005	33 Year Average
May	285	245	212	242	226	264
June	401	476	349	371	430	422
July	652	707	612	558	609	583
August	631	549	655	441	513	536
September	357	387	294	335	388	312
Total	2326	2364	2186	1947	2166	2117

2005 North Dakota hard red spring wheat variety description table, agronomic traits.

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)
2375	NDSURF	1990	yes	sdwf	med	m.early	R-MR	S	S	M	MS
AC Amazon	Can	2001	no	med/tall	med	med	R	S	MS	NA	MS
AC Intrepid	Canterra	1999	no	med	med	med	R	MR	MS	M	S
AC Superb	Can	2001	yes	sdwf	strg	m.early	R	S	S	M	S
Alsen	ND	2000	yes	sdwf	strg	m.early	R	MR	S	M	MR
Amidon	ND	1988	yes	med	med	med	R	MR	M	MR	S
Argent[3]	ND	1998	yes	sdwf	strg	early	R	S	S	M	S
Aurora	N. Star G.	1999	yes	sdwf	strg	m.early	R	NA	S	NA	S
Banton	Trigen	2004	yes	sdwf	strg	m.early	R	NA	MS	NA	S
Bigg Red	WestBred	2004	yes	sdwf	med	med	R-MR	MS-S	MS	NA	MR
Briggs	SD	2002	yes	sdwf	strg	m.early	R-MR	R	MS	S	S
Choteau	MT	2004	yes	sdwf	NA	m.early	NA	NA	NA	NA	NA
Dapps	NDSU	2003	yes	sdwf	med	m.early	R	R	S	M	MS
Express	WestBred	1991	yes	sdwf	strg	med	R	S	MS	NA	VS
Forge	SD	1997	yes	sdwf	m.strg.	early	R	S	MR	MS	MS
Freyr	AgriPro	2004	yes	sdwf	strong	med	R	MR	MS	NA	MR
Glenn	**ND**	**2005**	**yes**	**sdwf**	**strong**	**m.early**	**R**	**R**	**M**	**NA**	**MR**
Glupro	ND	1995	yes	tall	med	m.late	R	MS	S	NA	VS
Grandin	ND	1989	yes	sdwf	strg.	early	R	S	S	M	S
Granger	SD	2004	yes	sdwf	m.strg.	m.early	R	R	MS	NA	MS
Granite	WestBred	2002	yes	sdwf	v.strg	m.late	R-MR	MR	S	NA	MS
Gunner	AgriPro	1995	yes	med	m.strg.	med	R-MR	S	M	S	M
Hanna	AgriPro	2002	yes	med	med	m.early	MRMS	MS/MR	MS	MS	MS
HJ98	MN	1998	yes	sdwf	strg.	m.early	R	S	MS	MR	S
Ingot	SD	1998	yes	sdwf	med	early	R	S	S	M	MS
Keystone	WPB	2001	yes	med	med	m.early	R	MR	S	S	MS
Knudson	AgriPro	2001	yes	sdwf	strg	med	MRMS	MR	M	MS	M
McKenzie	Cenex	1998	yes	med	med	m.early	R	MR	S	M	S
McNeal	MT	1995	yes	med	strg.	m.early	MS	S	M	M	VS
Mercury	N. Star G.	1999	yes	sdwf	strg	m.early	R	MS	S	S	S
Norpro	AgriPro	1999	yes	sdwf	strg	med	R	MS/MR	M	M	S
Oklee	MN	2003	yes	sdwf	med	m.early	R	MS	MR	NA	M
Oxen	SD	1996	yes	sdwf	strg.	m.early	MR	MS	S	MS	S
Parshall	ND	1999	yes	med	strg.	m.early	MR	MS	M	MS	M
Polaris	N. Star G.	2003	yes	med	strg.	late	NA	NA	MS	NA	S
Reeder	ND	1999	yes	sdwf	strg.	m.early	R	MS	M	M	S
Russ	SD	1995	yes	med	med	m.early	R	MS	S	MS	S
Saturn	N.Star G.	2003	yes	med	NA	m.late	NA	NA	S	NA	S
Steele-ND	ND	2004	yes	sdwf	med	med	R	R	MS	MS	MS
Trenton	ND	1995	yes	med	med	med	R	MS	MS	S	S
Trooper	WestBred	2004	yes	sdwf	strong	m.early	R	MS	S	NA	S
Ulen	**MN**	**2005**	**yes**	**sdwf**	**med**	**m.early**	**R**	**MR**	**MS**	**NA**	**S**
Walworth	SD	2001	yes	sdwf	med	m.early	R	S	S	M	S

1 Refers to agent or developer: NDSURF = North Dakota State University Research Foundation; CDC = Crop Development Center, University of Saskatchewan; Can = Agriculture Canada.; N. Star G.= North Star Genetics. 2 R = resistant; MR = moderately resistant; M = intermediate; MS = moderately susceptible; S = susceptible; VS = very Susceptible. 3 Argent is a hard white wheat with good bread making qualities. 4 MR in artificially induced epidemics. 5 M in artificially induced epidemics. 6 MS in artificially induced epidemics. **Bold** varieties are those released in 2005.

2005 Hard Red Spring Wheat -- Continuously Cropped - No-till Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		inches	Lbs/bu	%	---------- Bushels per acre ----------				
Reeder	78	30	55.8	16.2	49.8	49.3	50.2	49.8	49.8
Mercury	78	28	58.1	15.7	52.5	46.4	47.2	46.8	48.7
Oxen	77	31	56.2	15.1	54.7	40.4	49.8	45.1	48.3
Steele-ND	78	32	58.2	16.4	48.1	49.8	46.2	48.0	48.0
Norpro	79	25	54.2	15.9	46.0	49.0	45.8	47.4	46.9
Briggs	76	29	57.0	15.8	45.7	49.4	45.0	47.2	46.7
Glenn	78	32	57.8	16.2	48.0	47.2	43.6	45.4	46.3
Outlook	80	30	54.9	16.2	48.4	49.0	40.8	44.9	46.1
Ingot	76	32	59.1	16.3	51.9	44.0	41.7	42.8	45.9
Parshall	79	34	56.2	16.2	46.2	47.9	42.3	45.1	45.5
AC Superb	80	32	53.6	16.8	48.0	46.8	36.9	41.8	43.9
Russ	79	33	54.4	16.3	44.9	44.2	42.3	43.2	43.8
Knudson	80	28	57.3	16.3	49.0	44.9	36.6	40.8	43.5
Keene	79	32	57.6	15.8	47.6	46.3	36.2	41.2	43.4
Hanna	79	34	54.6	16.1	41.7	47.8	40.3	44.0	43.3
AC Amazon	82	34	54.2	15.9	46.7	46.0	36.4	41.2	43.0
Dapps	78	32	56.0	16.5	42.9	46.5	39.1	42.8	42.8
Gunner	80	32	56.9	17.2	43.6	46.1	38.3	42.2	42.7
Alsen	78	30	57.8	16.6	46.9	41.7	39.4	40.6	42.7
Granite	81	29	58.0	17.6	45.1	46.2	36.6	41.4	42.6
Burnside	81	31	52.2	17.0	44.5	39.5	38.8	39.2	40.9
Fryer	78	30	57.5	15.2		46.6	46.0	46.3	
Trooper	76	25	55.0	15.7		48.1	41.3	44.7	
Banton	78	30	59.8	15.8		39.7	45.0	42.4	
Laser	76	33	54.2	15.9		41.7	37.3	39.5	
Buck Pronto	76	29	55.8	16.3			46.2		
Oklee	76	30	57.9	16.7			43.6		
Express	77	27	54.3	16.0			42.9		
Ulen	78	30	57.4	15.8	48.8		42.1		
Granger	77	33	57.5	15.6	40.8		41.7		
Big Red	78	30	60.0	15.5			39.9		
AP CL630	80	29	56.8	17.2			39.2		
Polaris	82	28	54.3	16.7			35.4		
Saturn	82	30	52.6	17.5			35.2		
Trial Mean	78	31	56.2	16.1	47.8	46.5	41.8	--	--
C.V. %	1.5	7.4	2.5	3.1	9.8	8.5	10.7	--	--
LSD .05	2	3	2.0	0.7	6.6	5.5	6.2	--	--
LSD .01	2	4	2.6	0.9	8.7	7.3	8.2	--	--

Planting Date: April 4, 2005 Harvest Date: August 1, 2005
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: soybean.
Notes: The 2003 and 2005 trials sustained late season heat and moisture stress.
The 2004 trial sustained hard frosts in May and June.

2005 HRSW Variety Trial - Continuously Cropped - No-till Scranton

Cooperators: Neal and Monte Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Oxen	30	57.4	14.9	42.9	70.2	54.3	62.2	55.8
Mercury	26	57.0	15.3	43.2	72.3	50.4	61.4	55.3
Reeder	31	53.3	15.1	40.8	67.7	51.9	59.8	53.5
Steele-ND	30	58.9	15.6	41.6	63.1	50.1	56.6	51.6
Parshall	33	58.2	15.5	34.3	62.8	47.4	55.1	48.2
Briggs	30	56.6	15.4	36.3	62.8	44.4	53.6	47.8
Granite	28	55.3	16.2		57.9	39.1	48.5	
Fryer	30	53.6	15.5			48.0		
Glenn	30	55.6	15.9			47.3		
Granger	31	58.0	15.2			41.8		
Trial Mean	30	56.8	15.4	39.1	63.5	48.0	--	--
C.V. %	4.3	2.6	1.4	11.3	5.2	9.1	--	--
LSD .05	2	2.1	0.3	6.4	4.7	6.3	--	--
LSD .01	3	2.9	0.4	8.7	6.3	8.5	--	--

Planting Date: April 8, 2005 Harvest Date: August 8, 2005

2005 HRSW Variety Trial - Continuously Cropped - No-till Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2002	2003	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Mercury	30	57.7	14.4	32.7	63.6	56.6	60.1	51.0
Oxen	32	56.6	14.4	30.0	63.2	56.8	60.0	50.0
Reeder	35	57.0	14.4	32.1	58.2	53.8	56.0	48.0
Briggs	34	59.3	15.0	27.1	56.3	54.2	55.2	45.9
Parshall	39	58.9	14.8	28.4	53.6	53.2	53.4	45.1
Steele-ND	37	59.0	15.1		56.6	55.3	56.0	
Glenn	37	59.9	15.9			61.1		
Fryer	34	58.9	14.6			59.4		
Granger	37	59.8	15.0			59.4		
Granite	32	61.3	15.9			51.6		
Trial Mean	35	58.9	14.9	30.6	57.0	56.5	--	--
C.V. %	3.2	2.3	3.0	8.5	7.8	6.1	--	--
LSD .05	2	1.9	0.6	3.8	6.5	5.0	--	--
LSD .01	2	2.6	0.9	NS	8.8	6.7	--	--

Planting Date: April 8, 2005 Harvest Date: August 8, 2005

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: Lentil
NS = no statistical difference between varieties.

2005 HRSW Variety Trial - Continuously Cropped - No-till New Leipzig

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Oxen	31	49.0	16.1	36.1	26.6	36.9	31.8	33.2
Briggs	33	53.0	17.3	31.8	31.0	28.8	29.9	30.5
Parshall	35	51.3	17.2	37.3	26.6	27.3	27.0	30.4
Reeder	31	50.6	16.7	35.2	22.7	33.1	27.9	30.3
Steele-ND	33	52.2	17.1	30.9	29.7	27.8	28.8	29.5
Mercury	27	53.0	17.3	30.1	23.0	31.3	27.2	28.1
Granite	30	55.8	19.4		24.4	31.6	28.0	
Fryer	31	52.9	17.0			31.7		
Granger	35	52.4	16.9			30.2		
Glenn	34	54.2	17.4			28.0		
Trial Mean	32	52.4	17.1	32.9	26.8	30.4	--	--
C.V. %	3.2	1.3	1.6	10.8	14.0	8.3	--	--
LSD .05	1	1.0	0.4	5.2	5.4	3.7	--	--
LSD .01	2	1.3	0.5	7.0	7.2	4.9	--	--

Planting Date: April 14, 2005 Harvest Date: August 16, 2005

2005 HRSW Variety Trial - Continuously Cropped - No-till Selfridge

Cooperator: Dale Hepper, Selfridge

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Briggs	33	55.4	15.2	30.8	61.3	51.0	56.2	47.7
Mercury	30	53.2	15.4	32.0	61.2	48.3	54.8	47.2
Oxen	33	50.6	14.4	30.8	61.0	45.8	53.4	45.9
Steele-ND	35	53.9	15.2	25.5	58.9	43.3	51.1	42.6
Reeder	34	51.2	15.0	26.8	53.1	44.3	48.7	41.4
Parshall	37	53.2	15.0	28.1	50.9	39.6	45.2	39.5
Granite	31	56.5	17.0		50.4	46.0	48.2	
Fryer	35	54.9	15.1			52.6		
Granger	37	56.2	14.8			50.1		
Glenn	36	56.6	15.7			46.0		
Trial Mean	34	54.3	15.2	29.0	55.0	46.8	--	--
C.V. %	3.6	2.0	3.1	10.4	8.2	7.1	--	--
LSD .05	2	1.6	0.7	4.4	6.6	4.8	--	--
LSD .01	2	2.2	0.9	6.0	8.8	6.5	--	--

Planting Date: April 14, 2005 Harvest Date: August 15, 2005

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

2005 Glen Ullin Hard Red Spring Wheat Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2004	Grain Yield 2005	Returns	Average Yield
		in	lbs/bu	%	---bu/ac---		$/ac	---bu/ac---
Alsen	13,843	36	60.8	15.9	24.6	62.0	235.09	43.3
Choteau	16,068	33	57.9	15.2	--	53.7	200.88	--
Dapps	13,883	37	59.3	16.6	24.2	57.8	221.37	41.0
Freyr	14,039	35	59.8	15.4	28.8	66.6	251.16	47.7
Glenn	14,043	36	62.6	16.0	--	66.6	253.19	--
Granger	12,621	39	60.3	15.3	--	67.9	255.45	--
Outlook	14,427	36	58.4	14.7	--	55.8	203.67	--
Parshall	14,401	38	60.8	15.7	28.7	60.6	229.07	44.7
Reeder	16,255	38	60.0	16.4	29.7	56.2	214.65	42.9
Steele-ND	14,551	36	59.9	15.4	30.9	57.9	218.36	44.4
Ulen	13,967	34	60.8	15.3	--	59.6	223.95	--
Trial Mean	14,301	36	60.1	15.5	27.8	60.9	227.89	--
CV %	4.0	4.4	1.3	1.8	12.5	4.8	--	--
LSD 0.05	823	2	1.1	0.6	5.0	4.2	--	--

Planting Date: April 15, 2005
Harvest Date: August 23, 2005
Seeding Rate: 1.2 million live seeds/ac
Returns were calculated by multiplying the 2005 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 6. The price paid on this date was $3.50/bu, assuming that grain protein concentration was 14%. An additional $.05/bu was paid for each additional 0.2% increase in grain protein up to 15%. $.01/bu was paid for each additional 0.2% increase in grain protein from 15% to 17% protein, above which an additional premium was not paid. Grain was discounted $0.06/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].

2005 Hannover Hard Red Spring Wheat Recrop	Dickinson, ND

Variety	Seeds per Pound	Plant Height	Test Weight	Protein	-----Grain Yield----- 2004	2005	Returns	Average Yield
		in	lbs/bu	%	---bu/ac---		$/ac	---bu/ac---
Alsen	17,659	33	55.0	17.3	39.8	36.0	132.69	37.9
Choteau	20,361	31	51.9	16.6	--	31.1	105.08	--
Dapps	17,395	37	54.0	17.2	36.2	35.8	129.13	36.0
Freyr	18,079	35	55.3	16.6	41.3	37.7	138.47	39.5
Glenn	18,684	34	58.0	17.3	--	36.4	140.06	--
Granger	16,015	36	57.0	16.5	--	42.9	162.09	--
Outlook	18,597	35	54.5	16.9	--	34.1	123.94	--
Parshall	19,737	37	54.6	16.2	52.4	35.7	128.99	44.1
Reeder	21,908	35	55.8	17.9	45.2	29.3	109.18	37.3
Steele-ND	19,667	33	53.4	17.6	42.7	32.3	113.88	37.5
Ulen	17,076	34	55.5	16.2	--	34.3	126.11	--
Trial Mean	18,713	35	54.9	16.8	41.6	35.7	129.78	--
CV %	7.3	6.9	2.8	4.9	15.6	11.9	--	--
LSD 0.05	1,960	3	2.2	NS	NS	6.1	--	--

Planting Date: April 15, 2005
Harvest Date: August 23, 2005
Seeding Rate: 1.2 million live seeds/ac
Returns were calculated by multiplying the 2005 yield by protein premium or discount paid at the Southwest Grain Terminal located at Gladstone on September 6. The price paid on this date was $3.50/bu, assuming that grain protein concentration was 14%. An additional $.05/bu was paid for each additional 0.2% increase in grain protein up to 15%. $.01/bu was paid for each additional 0.2% increase in grain protein from 15% to 17% protein, above which an additional premium was not paid. Grain was discounted $0.06/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].

SDSU Hard Red Spring Wheat Variety Trial - Harding County (Ralph), 2005.

Variety	Height	Lodging	Test Wt.	Protein	Yield	Bu/A
	Inches	0-9*	Lb/Bu	Percent	2005	3 Year
ALSEN	31	0	63.0	14.2	**32.6**	**39**
BANTON	30	0	64.4	14.2	31.7	--
BRIGGS	32	0	61.3	13.7	30.8	**39**
CHRIS	36	0	60.7	14.7	22.7	30
DANDY	32	0	63.0	15.3	31.1	--
DAPPS	35	0	61.4	15.1	26.2	33
EXPRESS	25	0	61.0	13.7	**35.0**	--
FORGE	33	0	61.8	12.8	**34.2**	**42**
FREYR	33	0	64.5	13.9	**35.8**	36
GLENN	33	0	60.0	14.1	30.8	--
GRANGER	34	0	62.9	13.7	**33.8**	**39**
GRANITE	30	0	64.2	15.6	28.8	37
INGOT	35	0	65.0	13.4	30.6	35
KNUDSON	28	0	63.8	13.1	31.4	**38**
MERCURY	27	0	62.4	14.1	30.9	--
NORPRO	29	0	62.7	13.4	28.6	**39**
OKLEE	30	0	64.0	14.0	**32.1**	34
OXEN	29	0	60.2	13.4	**32.1**	**38**
REEDER	30	0	62.1	13.4	31.4	**39**
RUSS	34	0	60.9	12.8	31.8	**40**
STEELE-ND	32	0	63.5	14.2	31.7	**40**
TROOPER	27	0	60.4	13.0	**32.7**	--
ULEN	30	0	63.6	13.8	29.6	35
WALWORTH	31	0	60.5	13.0	29.6	**38**
Average	31.9	0.0	62.0	13.7	31.6	37
LSD (P=.05)	1.9	0.0	2.3	--	3.6	4
CV	4.3	0.0	2.6	--	8.2	11

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

Planted: April 14, 2005 Herbicide: Starane ($^2/_3$ pint/A) + Puma ($^2/_3$ pint /A)
Harvested: August 8, 2005 Additional Nitrogen: 50 lb/A
Previous crop: Conventional fallow

2005 HRSW Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Briggs	37	57.2	14.8	40.8	45.7	66.3	56.0	50.9
Mercury	29	55.8	14.7	42.3	43.5	57.6	50.6	47.8
Oxen	33	51.0	14.8	45.8	41.7	49.3	45.5	45.6
Reeder	35	54.7	13.9	40.7	45.0	49.3	47.2	45.0
Parshall	39	56.6	14.4	40.5	42.0	50.2	46.1	44.2
Granite	33	57.0	16.0		32.2	48.5	40.4	
Fryer	35	56.5	14.1			64.8		
Glenn	39	59.9	15.1			63.7		
Granger	38	58.0	14.5			63.3		
Steele ND	35	58.0	15.2			62.0		
Trial Mean	35	56.7	14.7	40.5	40.1	58.7	--	--
C.V. %	2.6	1.7	2.4	7.3	9.4	7.3	--	--
LSD .05	2	1.6	0.6	4.3	6.4	7.2	--	--
LSD .01	2	2.2	0.8	NS	8.6	9.8	--	--

Planting Date: April 11, 2005 Harvest Date: August 15, 2005
Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).
Previous Crop: 2003 & 2004 = Barley, 2005 = Lentil.
NS = no statistical difference between varieties.

2005 Specialty Wheat Variety Trial - Continuously Cropped - No-till, Regent

Cooperator: Larry Willnow, Regent

Variety	Type	Plant Height	% Lodg.	Test Weight	Grain Protein	Grain Yield
	*	inches	**	Lbs/bu	%	Bu/Ac
Choteau	SF	32	20	55.6	15.4	51.3
Ernest	SF	37	40	56.8	15.8	42.1
AC Snowbird	HW	38	68	57.0	16.2	39.7
Lolo	HW	34	45	52.8	14.2	40.1
Keene	HR	38	45	55.2	15.2	43.3
Parshall	HR	38	25	57.4	15.9	47.2
Reeder	HR	35	18	55.8	15.6	52.0
Trial Mean		36	32	55.5	15.5	45.2
C.V. %		3.5	31.1	2.3	1.3	6.8
LSD 5%		2	14	1.8	0.3	4.4
LSD 1%		2	19	2.5	0.4	6.0

* Type: SF = sawfly tolerant, HW = hard white, HR = hard red.
** Percent stem lodging caused by sawfly.

Planting Date: April 8, 2005 Harvest Date: August 8, 2005
Previous Crop: HRSW

2005 Commercial White Wheat Nursery at Hettinger
Continuously Cropped No-till

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	Grain Yield
		inches	Lbs/bu	%	bu/Ac
Hard Red Spring					
Choteau	78	32	53.8	17.0	44.3
Parshall	77	35	56.7	16.6	39.3
Reeder	75	32	55.6	16.8	47.2
Alsen	75	33	57.4	17.1	38.0
McNeal	77	31	53.3	16.4	34.2
White Spring					
Lolo	77	30	54.4	16.5	36.5
Winsome	78	28	54.0	16.2	40.5
Explorer	75	31	54.2	16.4	39.3
Pristine	75	28	57.4	16.9	32.2
IDO377s	76	32	52.9	16.9	40.3
Argent	77	34	55.1	17.2	34.4
AC Vista	77	33	54.7	15.8	45.6
Golden 86	74	28	57.1	16.3	35.8
Pennewawa	77	29	53.7	15.2	38.1
AC Snowbird	74	34	55.5	17.2	36.2
Trial Mean	76	32	54.8	16.5	38.7
C.V. %	1.4	6.9	2.3	2.4	8.8
LSD .05	2	4	2.1	0.6	5.7
LSD .01	2	5	2.8	0.9	7.6

Planting Date: April 6, 2005 Harvest Date: August 1, 2005
Previous Crop: barley
Note: The trial sustained heat and moisture stress in July.

2005 Hard Red Spring Wheat in the West River Region	Combined Means

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Protein	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Avg. Yield 2 year	Avg. Yield 3 year
		inches		lbs/bu	%	bu/ac				
Oxen	75	31	14,585	54.4	14.7	45.6	43.9	46.4	45.2	45.3
Mercury	75	28	17,060	56.7	15.3	46.5	42.1	46.0	44.0	44.9
Reeder	78	33	19,649	55.6	15.4	43.5	42.8	44.4	43.6	43.6
Briggs	75	33	15,967	57.1	15.3	42.0	41.9	45.8	43.8	43.2
Steele-ND	77	34	17,073	57.4	15.8	41.2	42.8	45.2	44.0	43.1
Parshall	77	36	16,671	56.2	15.6	40.7	41.6	44.5	43.0	42.3
Alsen	77	32	16,302	59.2	16.0	40.6	40.2	42.5	41.4	41.1
Granite	80	30	18,385	58.3	16.8	41.8	40.1	40.3	40.2	40.7
Fryer	78	33	16,059	57.1	15.3			49.2		
Granger	77	36	14,318	58.0	15.3			47.9		
Glenn	78	35	16,364	58.3	16.0			47.1		
# of locations	3	9	5	9	9	13	10	9	19	32

Locations: 2005 = Hettinger, Scranton, Regent, New Leipzig, Selfridge, Mandan, Hannover, Glen Ullin, Ralph, SD.

2004 = Hettinger, Dickinson, Scranton, Selfridge, New Leipzig, Mandan, Hannover, Glen Ullin, Ralph SD and Bison SD.

2003 = Hettinger, Dickinson, Scranton, Regent, Selfridge, New Leipzig, Mandan, Beulah, Hannover, Glen Ullin, Richardton (organic), Ralph SD and Bison SD.

2005 North Dakota durum wheat variety descriptions, agronomic traits.

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	M	S
AC Melita	Can.	1995	white	tall	med.	med.	R	NA	NA	S
AC Morse	Can.	1996	white	s.dwf.	strong	med.	R	R	M	NA
AC Navigator	Can.	1999	white	s.dwf.	weak	med.	R	R	M	S
AC Pathfinder	Can.	1999	white	med.	weak	med.	R	R	M	S
Alkabo	**ND**	**2005**	**white**	**med.**	**v.strong**	**med.**	**R**	**R**	**M**	**MS**
Alzada	WB	2004	White	s.dwf	strong	early	R	NA	NA	NA
Belzer	ND	1997	white	tall	med.	late	R	R	M	MR
Ben	ND	1996	white	med.	strong	med.	R	R	MR	S*
Cando	ND	1975	tan	s.dwf.	v.strong.	med.	R	R	M	VS
Dilse	ND	2002	white	med.	strong	late	R	R	M	MS
Divide	**ND**	**2005**	**white**	**med.**	**strong**	**med.**	**R**	**R**	**M**	**MR**
Dressler	AgriPro	1996	white	tall	med.	med.	R	MR	NA	VS
Fjord	AgriPro	1986	white	tall	strong	m.early	R	R	M	S
Grande D'Oro	**WB/DGP**	**2005**	**white**	**med.**	**m.strong**	**med.**	**R**	**R**	**M**	**NA**
Grenora	**ND**	**2005**	**white**	**med.**	**strong**	**med.**	**R**	**R**	**M**	**MS**
Kari	AgriPro	1998	white	med	strong	med	R	R	M	S
Kyle	Can.	1984	white	tall	weak	med.	R	MR	M	NA
Laker	WB	1985	white	s.dwf.	strong	med.	R	MR	S	S
Lebsock	ND	1999	white	med	strong	med	R	R	M	MS
Lloyd	ND	1983	white	s.dwf.	v.strong	med.	R	MR	S	VS
Maier	ND	1998	white	med	strong	m-late	R	R	M	S*
Medora	Can.	1983	white	tall	strong	m.early	R	R	MS	VS
Monroe	ND	1985	white	tall	med.	early	R	R	M	VS
Mountrail	ND	1998	white	med	strong	late	R	R	M	S*
Munich	ND	1995	white	med.	v.strong	med.	R	R	MR	S*
Pierce	ND	2001	white	med.	m.strong	med.	R	R	MS	S
Plaza	ND	1999	white	s.dwf.	v. strong	late	R	R	M	MS
Plenty	Can.	1990	white	tall	weak	late	R	R	MR	MS
Primo D'Oro	WB/DGP	2004	white	tall	med.	m.early	R	R	MS	NA
Renville	ND	1988	white	tall	med.	med.	R	R	M	S*
Rugby	ND	1973	tan	tall	strong	m.early	R	R	MR	S*
Vic	ND	1979	white	tall	med.	m.early	R	R	MR	S*
Voss	AgriPro	1994	white	s.dwf.	v.strong	med.	R	MR	MS	S

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

2 R = resistant; MR = moderately resistant (slow rusters); M = intermediate; MS = moderately susceptible; S = susceptible; VS = very susceptible; Foliar Disease = reaction to tan spot and septoria leaf spot complex. Letter ratings for head blight (scab) based on visual head symptoms. * Indicates yields and/or quality have often been higher than would be expected based on visual symptoms. **Bolded** varieties were released in 2005.

2005 Durum Variety Trial - Continuously Cropped - No-till Hettinger

Variety	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		inches	Lbs/bu	%	---------- Bushels per acre ----------				
Grenora	79	32	53.7	17.5	43.4	35.7	47.8	41.8	42.3
Mountrail	81	32	52.7	18.0	44.3	36.1	45.8	41.0	42.1
Lebsock	79	31	57.4	16.9	44.2	32.2	46.0	39.1	40.8
Ben	80	32	54.4	17.6	43.8	33.4	43.0	38.2	40.1
Maier	81	32	55.9	18.0	38.2	32.1	49.7	40.9	40.0
AC Avonlea	79	35	52.4	18.3	39.9	38.7	40.4	39.6	39.7
Divide	79	29	54.0	17.8	41.5	33.7	42.3	38.0	39.2
Alkabo	79	32	57.3	17.6	39.8	32.5	45.3	38.9	39.2
Munich	80	31	52.7	18.3	43.8	32.7	40.4	36.6	39.0
Belzer	81	34	52.4	17.1	39.5	33.5	41.4	37.4	38.1
Pierce	79	33	55.3	17.5	38.0	29.9	45.1	37.5	37.7
Renville	81	35	53.5	18.1	40.4	32.5	39.6	36.0	37.5
Plaza	80	28	52.2	17.5	36.5	29.8	41.4	35.6	35.9
Dilse	82	31	54.4	19.2	36.6	32.5	37.0	34.8	35.4
Rugby	80	35	54.5	18.2	38.9	29.2	33.0	31.1	33.7
Primo D'Oro	79	35	56.0	17.5		32.4	43.4	37.9	
Grande D'Oro	80	34	55.7	17.6		30.4	45.4	37.9	
AC Navigator	80	33	56.0	17.2			46.0		
Trial Mean	80	32	54.7	17.7	39.8	32.9	44.2	--	--
C.V. %	0.9	6.9	2.2	3.5	10.4	9.6	8.2	--	--
LSD .05	1	3	1.7	0.9	5.8	4.4	5.1	--	--
LSD .01	1	4	2.2	1.1	7.7	5.8	6.7	--	--

Planting Date: April 4, 2005 Harvest Date: August 2, 2005
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: soybean.
Notes: The 2003 and 2005 trials sustained late season heat and moisture stress.
The 2004 trial sustained hard frosts in May and June.

2005 Durum - Alfalfa burn down **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Returns	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	%	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
AC Avonlea	67	14,228	35	56.3	15.5	61.4	30.0	49.2	157.04	49.2	46.9
AC Navigator	70	13,064	33	59.0	14.3	--	27.1	45.8	156.68	45.8	--
Alzada	67	14,280	31	55.5	14.7	--	23.2	43.0	128.27	43.0	--
Belzer	71	13,378	39	55.6	14.7	55.9	26.9	51.4	163.15	51.4	44.7
Ben	69	11,822	38	57.3	15.1	55.6	28.6	47.7	159.42	47.7	44.0
Alkabo	69	12,602	35	58.0	14.1	57.9	33.5	47.4	160.71	47.4	46.3
Divide	70	12,958	36	57.6	15.0	60.3	27.3	50.3	166.71	50.3	45.9
Grenora	68	12,600	32	56.5	14.7	61.4	30.1	50.2	162.24	50.2	47.2
Dilse	70	13,469	35	57.3	15.4	55.5	35.4	47.3	155.77	47.3	46.1
Grande Doro	70	12,914	37	58.8	15.5	--	--	46.1	158.04	--	--
Lebsock	68	13,259	34	58.6	14.7	56.0	28.7	48.6	166.21	48.6	44.4
Maier	67	13,245	33	56.9	14.8	60.6	28.1	51.3	167.74	51.3	46.7
Mountrail	70	14,478	34	56.5	15.1	56.2	32.1	48.5	155.27	48.5	45.6
Munich	68	16,332	34	54.4	15.9	56.6	30.5	45.6	137.30	45.6	44.2
Pierce	69	15,264	36	57.0	15.8	58.0	31.0	49.6	162.06	49.6	46.2
Plaza	70	14,888	31	55.9	15.3	56.4	28.0	47.3	149.04	47.3	43.9
Primo D'Oro	66	13,537	44	56.9	17.3	--	30.1	44.9	147.28	44.9	--
Renville	66	13,185	37	55.4	15.1	48.9	28.1	41.9	131.21	41.9	39.6
Rugby	68	14,176	37	57.5	14.4	53.3	29.9	41.0	136.00	41.0	41.4
Trial Mean	69	13,754	36	56.7	15.1	56.7	28.8	47.3	153.32	--	--
CV %	1.3	5.6	7.7	2.1	5.5	8.0	14.3	8.8	10.7	--	--
LSD 0.05	1	1,076	4	1.7	1.7	6.4	5.8	5.81	22.86	--	--

Planting Date: April 22, 2005
Harvest Date: August 19, 2005
Previous Crop: Alfalfa burn down
Seeding Rate: 1.2 million live seeds/ac
Returns were calculated by multiplying the 2005 yield by the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 6. The price paid on this date was $3.30/bu, assuming 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.

2005 Durum Variety Trial - Continuously Cropped - No-till Scranton

Cooperators: Neal and Monte Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Mountrail	31	59.0	14.7	38.2	65.1	54.6	59.8	52.6
Ben	31	58.8	14.8	35.8	65.1	52.0	58.6	51.0
Lebsock	30	59.2	14.6	36.1	64.8	45.9	55.4	48.9
Grenora	29	57.4	14.3		68.3	49.6	59.0	
Divide	30	58.3	14.6			53.0		
Alkabo	30	58.0	14.0			50.4		
Trial Mean	30	58.4	14.5	35.7	63.1	50.9	--	--
C.V. %	2.9	2.0	1.3	3.3	5.7	7.2	--	--
LSD .05	1	NS	0.3	1.8	NS	NS	--	--
LSD .01	NS	NS	0.4	NS	NS	NS	--	--

Planting Date: April 8, 2005
Harvest Date: August 8, 2005
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: Lentil
NS = no statistical difference between varieties.

2005 Durum Variety Trial - Continuously Cropped - No-till Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2002	2003	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Mountrail	36	55.6	14.9	27.6	44.6	54.3	49.4	42.2
Ben	37	58.6	14.8	26.4	45.6	51.1	48.4	41.0
Lebsock	36	58.7	14.3	28.0	45.0	49.0	47.0	40.7
Alkabo	36	58.6	14.2			52.8		
Divide	36	56.6	15.0			49.4		
Grenora	35	56.8	14.4			48.1		
Trial Mean	36	57.5	14.6	26.2	43.5	50.8	--	--
C.V. %	3.3	1.7	2.3	6.8	5.4	7.1	--	--
LSD .05	NS	1.5	0.5	NS	NS	NS	--	--
LSD .01	NS	2.0	NS	NS	NS	NS	--	--

Planting Date: April 8, 2005
Harvest Date: August 8, 2005
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: Lentil
NS = no statistical difference between varieties.

2005 Durum Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Ben	41	57.3	15.1	44.9	34.4	68.7	51.6	49.3
Mountrail	38	55.2	14.4	42.4	37.6	67.2	52.4	49.1
Lebsock	38	57.6	14.8	40.4	32.6	68.5	50.6	47.2
Grenora	36	55.5	14.1		38.3	67.6	53.0	
Alkabo	38	57.3	14.1			69.1		
Divide	39	55.4	14.3			67.0		
Trial Mean	38	56.4	14.5	41.7	34.8	68.0	--	--
C.V. %	3.4	1.1	5.1	2.8	13.5	2.4	--	--
LSD .05	2	1.2	NS	1.7	NS	NS	--	--
LSD .01	NS	1.7	NS	2.4	NS	NS	--	--

Planting Date: April 11, 2005 Harvest Date: August 15, 2005
Seeding Rate: 1.25 million live seeds / acre (approx. 2.2 bu/A).
Previous Crop: 2003 & 2004 = Barley, 2005 = Lentil.
NS = no statistical difference between varieties.

SDSU Durum Wheat Variety Trial – Harding County (Ralph), 2005.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Protein Percent	Yield 2005	Bu/A 3 Year
AC Avonlea	32	0	54.2	16.9	21.5	33.5
Ben	33	0	55.0	15.3	24.8	31.4
Dilse	31	0	54.0	16.9	21.1	30.8
Lebsock	32	0	56.7	15.1	22.6	30.0
Divide	31	0	54.1	15.6	22.2	--
Maier	31	0	51.9	16.1	16.3	31.2
Mountrail	32	0	52.1	15.0	23.9	32.4
Plaza	32	0	52.3	16.1	21.5	--
Renville	35	0	54.9	16.9	19.1	30.0
Vic	35	0	54.5	16.0	22.3	29.7
Average	32.4	0.0	54.0	16.0	21.5	31.1
LSD (P=.05)	2.2	0.0	**NS**	--	3.8	**NS**
CV	3.9	0.0	5.8	--	12.0	16.5

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

Planted: April 14, 2005
Harvested: August 8, 2005
Previous crop: Durum wheat, no-till planted

2005 Glen Ullin Durum Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Protein	Returns	Grain Yield
		in	lbs/bu	%	$/ac	bu/ac
Alkabo	12,968	37	57.4	14.6	182.58	57.6
Ben	11,324	39	58.6	15.2	196.27	60.5
Dilse	11,884	38	58.0	16.2	198.95	61.9
Divide	12,965	37	56.9	15.9	185.02	59.1
Grenora	12,014	35	56.9	15.0	194.87	62.3
Trial Mean	12,231	37	57.6	15.4	191.54	60.3
CV %	5.4	3.7	1.0	1.7	6.5	6.5
LSD 0.05	1,008	2	0.9	0.7	NS	NS

Planting Date: April 15, 2005
Harvest Date: Aug. 23, 2005
Seeding Rate: 1.2 million live seeds/ac

2005 Hannover Durum Recrop **Dickinson, ND**

Variety	Seeds per Pound	Plant Height	Test Weight	Protein	Returns	Grain Yield
		in	lbs/bu	%	$/ac	bu/ac
Alkabo	16,129	37	53.3	16.2	112.64	39.6
Ben	15,173	37	53.6	17.1	117.40	41.0
Dilse	17,376	38	53.9	17.3	110.92	38.4
Divide	15,842	36	52.4	17.5	117.20	42.7
Grenora	16,377	35	52.4	17.2	111.11	40.6
Trial Mean	16,179	36	53.1	17.1	113.85	40.4
CV %	6.4	4.3	2.5	2.5	9.0	9.1
LSD 0.05	NS	NS	NS	NS	NS	NS

Planting Date: April 15, 2005
Harvest Date: Aug. 23, 2005
Seeding Rate: 1.2 million live seeds/ac

Returns were calculated by multiplying the 2005 yield by the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 6. The price paid on this date was $3.30/bu, assuming 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.

2005 Durum Wheat in the West River Region **Combined Means**

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Protein	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Avg. Yield 2 year	Avg. Yield 3 year
		inches		lbs/bu	%	bu/ac				
Mountrail	76	34	13,410	55.2	15.4	39.8	40.2	49.0	44.6	43.0
Ben	75	36	12,262	56.7	15.6	39.2	37.2	48.6	42.9	41.7
Lebsock	75	34	12,234	58.0	15.1	38.8	36.1	46.8	41.4	40.6
Grenora	74	33	13,664	55.6	15.3			52.3		
Alkabo	74	35	13,900	57.1	15.0			51.7		
Divide	74	34	13,922	55.7	15.7			48.2		
# of locations	4	8	4	8	8	12	8	8	16	28

Locations: 2005 = Hettinger, Dickinson, Scranton, Regent, Mandan, Hannover, Glen Ullin and Ralph, SD.
2004 = Hettinger, Dickinson, Scranton, Selfridge, New Leipzig, Mandan, Ralph SD & Bison SD.
2003 = Hettinger, Dickinson, Scranton, Regent, Selfridge, New Leipzig, Mandan, Beulah, Hannover, Glen Ullin, Ralph SD and Bison SD.

2005 North Dakota barley variety descriptions.

Variety	Use[1]	Origin	Year Released	Awn Type[2]	Rachilla hair length[6]	Aleurone Color	Height	Straw Strength	Relative Maturity	Reaction to Disease[3] Stem Rust	Loose Smut	Spot Blotch	Net Blotch
Six-row													
Azure	M/F	ND	1982	S	L	blue	med.	m.strg.	m.early	S	S	MR-R	MS-S
Drummond	M/F	ND	2000	S	L	white	m.short	v.strg.	med.	S	S	MR-R	MS-S
Excel	M/F	MN	1990	S	L	white	m.short	strg.	med.	S	S	MR-R	MS-S
Foster	M/F	ND	1995	S	L	white	m.short	strg.	med.	S	S	MR-R	MS-S
Hazen	F	ND	1984	S	L	white	med.	m.strg.	med.	S	S	MR-R	MS-S
Lacey	M/F†	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*	F	MN	1997	S	S	white	tall	med.	early	S	S	MR-R	MS-S
Morex	M/F	MN	1978	S	S	white	tall	med.	early	S	S	MR	S
Robust	M/F	MN	1983	S	S	white	med.	m.strg.	med.	S	S	MR-R	MS-S
Stander	F	MN	1993	S	S	white	m.short	v.strg.	m.late	S	S	MR-R	MS-S
Stellar-ND	**MP/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-row													
AC Metcalfe†	M	Can	1997	R	L	white	med.	med.	late	S	NA	NA	NA
Bowman	F	ND	1984	S	L	white	m.short	med.	early	S	S	MS-S	S-MS
Conlon[4]	M/F†	ND	1996	S	L	white	m.short	med.	early	S	S	MS	MR-R
Eslick	F	MT	2003	R	L	white	med.	med.	m.late	S	NA	NA	NA
Gallatin	F	MT	1986	R	L	white	med.	med.	late	S	S	MS-S	MS
Harrington[5]	F	Can.	1981	R	L	white	med.	m.weak	v.late	S	S	S	MR-MS
Haxby	F	MT	2003	R	L	white	med.	med.	med.	S	NA	NA	NA
Logan	F	ND	1995	S	L	white	med.	strg.	med.	S	S	MS-MR	MR
Rawson	**F**	**ND**	**2005**	**R**	**L**	**white**	**med.**	**med.**	**med.**	**S**	**S**	**MR**	**MR**
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.	med.	m.late	S	NA	NA	NA
Specialty													
Wanubet	SP	MT	1990	R	L	white	med.	weak	late	S	S	S	S

†Not being used by all major U.S. brewers.
*Moderately resistant to Fusarium head blight
1 M = malting; F = feed; SP = special uses (hulless), MP = malt status pending
2 Rough or smooth awned.
3 R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible; N/A = not available.
4 Lower DON accumulations than other varieties tested.
5 Recommended as a malting barley in western U.S.
6 S = short, L = long
Varieties in bold were released in 2005.

2005 Barley Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Days to Head	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
Two Row Types										
Logan	75	30	45.0	73	13.9	90.8	68.1	66.7	67.4	75.2
Stark	78	32	46.4	81	13.8	84.9	70.2	67.7	69.0	74.3
Rawson	76	31	44.2	89	12.3	90.3	64.3	65.2	64.8	73.3
Bowman	74	32	46.6	88	13.8	84.3	63.5	66.8	65.2	71.5
Conlon	74	32	46.1	89	13.8	96.4	44.5	63.9	54.2	68.3
Harrington	82	29	41.0	42	15.9	63.4	69.4	52.6	61.0	61.8
Haxby	79	28	47.3	76	13.8		76.9	76.8	76.8	
Eslick	83	27	42.7	57	14.4		78.3	63.6	71.0	
AC Metcalfe	81	30	43.1	64	15.6		68.3	60.6	64.4	
Six Row Types										
Drummond	78	30	43.1	62	13.5	79.4	62.4	64.5	63.4	68.8
Legacy	79	27	41.9	58	13.5	82.6	67.2	55.4	61.3	68.4
Lacey	80	27	43.6	61	13.6	68.7	67.6	65.4	66.5	67.2
Stellar	79	28	41.5	71	13.2	75.7	64.0	60.1	62.0	66.6
Tradition	80	26	41.3	62	13.9	77.3	62.0	56.7	59.4	65.3
Excel	80	27	41.5	68	13.4	71.1	66.7	56.4	61.6	64.7
Robust	80	28	43.8	67	14.1	74.7	62.6	52.8	57.7	63.4
Trial Mean	78	29	43.6	70	13.5	77.2	66.7	64.6	--	--
C.V. %	1.4	7.0	2.1	11.6	4.0	7.1	5.8	10.5	--	--
LSD .05	2	3	1.3	11	0.8	7.8	5.4	9.5	--	--
LSD .01	2	4	1.7	15	1.0	10.4	7.1	12.6	--	--

Planting Date: April 4, 2005 Harvest Date: August 2, 2005
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: soybean.
Notes: The 2005 trial sustained late season heat and moisture stress. The 2004 trial sustained hard frosts in May and June.

2005 Barley - Alfalfa burn down **Dickinson, ND**

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Protein	% Plump	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Returns	Avg. Yield 2 Year	Avg. Yield 3 Year
			in	lbs/bu	%	>6/64	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
Six Row												
Drummond	66	13,543	33	44.9	14.3	76	110.4	47.8	95.4	120.99	71.6	84.5
Excel	66	14,357	32	43.0	13.7	64	110.6	57.5	94.9	115.03	76.2	87.7
Foster	66	12,708	32	44.0	14.2	80	116.3	45.2	93.0	114.31	69.1	84.8
Lacey	66	12,806	30	46.9	14.1	86	111.3	46.2	97.7	127.05	72.0	85.1
Legacy	68	14,326	35	43.5	14.4	66	107.8	57.2	94.8	116.47	76.0	86.6
M 109	65	13,500	32	45.0	14.3	73	--	--	104.0	130.79	--	--
Robust	66	12,925	33	44.9	14.3	74	106.2	40.4	93.2	117.88	66.8	79.9
Stellar	66	13,312	33	44.1	14.1	82	112.0	44.9	101.5	125.96	73.2	86.1
Tradition	67	14,329	34	43.7	13.3	72	116.4	52.1	88.0	108.95	70.0	85.5
Two Row												
AC Metcalfe	70	13,470	33	45.3	14.4	67	--	57.6	85.1	107.81	71.3	--
Bowman	65	12,984	31	44.1	14.6	68	98.0	62.9	69.2	85.92	66.1	76.7
Conlon	64	10,867	32	48.5	14.0	91	93.6	34.4	76.0	98.77	55.2	68.0
Rawson	67	9,747	35	49.2	12.9	90	114.2	52.6	91.6	119.12	72.1	86.1
Eslick	70	12,392	34	46.7	14.0	73	--	63.1	100.8	129.55	81.9	--
Harrington	71	15,038	37	41.3	13.9	46	95.0	45.0	75.4	85.57	60.2	71.8
Haxby	68	13,495	32	46.3	14.1	65	--	72.5	83.9	109.11	78.2	--
Logan	66	11,808	31	47.7	13.9	73	112.6	60.3	83.6	108.71	72.0	85.5
Stark	67	11,616	35	48.0	14.6	80	116.3	60.5	91.7	118.55	76.1	89.5
Trial Mean	67	12,907	32	45.3	14.0	77	106.9	50.6	90.1	113.30	--	--
CV %	1.6	4.4	6.6	2.9	--	6.5	9.5	18.6	5.9	7.6	--	--
LSD 0.05	2	793	3	1.8	--	7	14.3	NS	7.4	12.08	--	--

Planting Date: April 21, 2005
Harvest Date: August 5, 2005
Previous Crop: Alfalfa burn down
Seeding Rate: 1.2 million live seeds/ac
Returns were calculated by multiplying the 2005 yields by the price paid for feed barley minus the test weight discount paid at the Southwest Grain Terminal located at Gladstone on September 6. The price paid on this date was $1.30/bu, assuming that the test weight was 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.

2005 Barley Variety Trial - Continuously Cropped - No-till — Scranton

Cooperators: Neal and Monte Freitag, Scranton

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Rawson	27	45.0	91	10.2		81.9	66.7	74.3	
Eslick	26	46.7	87	11.4			76.7		
Haxby	26	48.6	88	12.2			68.9		
Conlon	26	46.0	89	12.2			39.9		
6 Row Types									
Robust	26	46.0	88	12.4	58.5	75.4	62.6	69.0	65.5
Drummond	26	45.1	86	11.6		89.9	65.6	77.8	
Tradition	24	45.3	86	11.7		81.1	68.9	75.0	
Stellar	25	45.3	89	11.0			67.2		
Trial Mean	26	46.0	88	11.6	64.3	82.1	64.6	--	--
C.V. %	5.2	2.3	3.4	2.7	11.5	6.5	10.3	--	--
LSD .05	NS	1.6	NS	0.5	--	8.5	9.8	--	--
LSD .01	NS	2.1	NS	0.6	--	12.2	13.3	--	--

Planting Date: April 8, 2005 Harvest Date: August 8, 2005

2005 Barley Variety Trial - Continuously Cropped - No-till — Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2002	2003	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Conlon	29	47.2	88	12.1	31.4	76.4	53.7	65.0	53.8
Eslick	27	46.6	76	11.8			74.3		
Haxby	29	48.9	81	12.4			73.5		
Rawson	30	47.2	91	10.8			65.1		
6 Row Types									
Robust	30	47.1	85	12.7	32.2	58.3	60.6	59.4	50.4
Stellar	29	47.9	93	12.0			70.4		
Drummond	30	47.2	83	12.1			68.3		
Tradition	28	47.2	87	12.0			65.8		
Trial Mean	29	47.4	86	12.0	34.1	66.8	66.5	--	--
C.V. %	6.6	2.7	5.3	3.9	6.0	5.5	6.8	--	--
LSD .05	NS	NS	6.7	0.7	NS	5.7	6.7	--	--
LSD .01	NS	NS	9.1	0.9	NS	8.0	9.1	--	--

Planting Date: April 8, 2005 Harvest Date: August 8, 2005

Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: Lentil.
NS = no statistical difference between varieties.

2005 Barley Variety Trial - Continuously Cropped - No-till New Leipzig

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Conlon	30	45.6	92	13.0	44.2	27.4	41.5	34.4	37.7
Rawson	31	43.7	93	11.6		38.3	53.6	46.0	
Haxby	29	46.7	81	13.1			71.7		
Eslick	28	42.3	65	13.6			63.2		
6 Row Types									
Robust	29	45.0	82	13.7	43.1	32.6	47.4	40.0	41.0
Drummond	29	44.0	81	13.1		38.9	55.5	47.0	
Tradition	26	43.8	78	13.0		34.7	47.2	41.0	
Stellar	27	44.0	84	12.7			49.4		
Trial Mean	29	44.4	82	13.0	46.0	34.2	53.6	--	--
C.V. %	4.9	1.1	6.5	4.6	5.7	11.1	12.0	--	--
LSD .05	2	0.7	8	0.9	NS	5.9	9.5	--	--
LSD .01	3	1.0	11	1.2	NS	8.3	12.9	--	--

Planting Date: April 14, 2005 Harvest Date: August 16, 2005

2005 Barley Variety Trial - Continuously Cropped - No-till Selfridge

Cooperator: Dale Hepper, Selfridge

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Conlon	33	46.1	88	11.8	58.6	81.7	66.4	74.0	68.9
Rawson	32	44.4	90	10.6		86.9	68.5	77.7	
Haxby	33	47.0	78	11.8			75.7		
Eslick	33	45.2	76	12.2			71.9		
6 Row Types									
Robust	37	47.2	86	12.7	50.6	66.3	60.8	63.6	59.2
Tradition	32	46.2	80	11.8		87.9	73.3	80.6	
Drummond	34	46.2	83	12.0		87.4	71.4	79.4	
Stellar	34	46.2	86	11.8			72.9		
Trial Mean	33	46.0	83	11.8	57.3	82.0	70.1	--	--
C.V. %	3.9	1.8	5.1	2.8	7.0	7.5	4.5	--	--
LSD .05	2	1.2	6	0.5	6.1	9.5	4.7	--	--
LSD .01	3	1.6	8	0.7	NS	13.3	6.3	--	--

Planting Date: April 14, 2005 Harvest Date: August 15, 2005

Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: Lentil.
NS = no statistical difference between varieties.

2005 Barley Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	% Plump	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	inches	Lbs/bu	>6/64	%	---------- Bushels per acre ----------				
2 Row Types									
Conlon	33	45.0	89	11.6	42.9	24.7	37.3	31.0	35.0
Rawson	33	45.4	93	10.8		48.2	79.5	63.8	
Haxby	33	46.3	84	11.4		56.1	60.0	58.0	
Eslick	32	46.5	87	11.1			76.6		
6 Row Types									
Robust	36	46.4	89	11.9	43.5	43.2	47.2	45.2	44.6
Tradition	33	45.8	89	10.5		41.3	65.9	53.6	
Drummond	35	45.2	91	11.7		48.1	33.8	41.0	
Stellar	33	45.9	95	11.3			72.4		
Trial Mean	34	45.8	90	11.3	45.2	43.6	59.1	--	--
C.V. %	5.5	1.6	2.4	4.0	11.7	16.3	13.3	--	--
LSD .05	NS	NS	4	0.8	NS	12.9	13.8	--	--
LSD .01	NS	NS	5	NS	NS	18.4	19.1	--	--

Planting Date: April 11, 2005 Harvest Date: August 15, 2005
Seeding Rate: 750,000 live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2003 & 2004 = barley, 2005 = lentil.
NS = no statistical difference between varieties.

SDSU Spring Barley Variety Trial - Harding County (Ralph), 2002-2005.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Protein Percent	Yield 2005	Bu/A 3 Year
TWO ROW						
CONLON	27	0		11.8	5.7*	35
ESLICK	26	0	44.7	11.5	**59.7**	**58**
HAXBY	27	0	47.4	9.7	**58.8**	**50**
VALIER	28	0	47.8	10.6	**58.8**	**56**
SIX ROW						
DRUMMOND	30	0	46.1	11.0	51.3	**48**
EXCEL	27	0	45.4	9.7	55.7	**54**
LACEY	27	0	46.8	11.2	55.2	**52**
LEGACY	29	0	43.1	11.1	54.4	**56**
ROBUST	32	0	46.4	9.9	46.6	**42**
STELLAR	28	0	45.3	10.0	53.1	**48**
TRADITION	30	0	47.1	11.1	**62.8**	--
Average	28.3	0.0	45.8	10.7	51.3	50
LSD (P=.05)	2.2	0.0	1.2	--	5.7	**NS**
CV	5.3	0.0	1.9	--	7.7	11

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

* The plots for the variety Conlon were destroyed by wildlife before harvest, this variety has performed well in prior years at Ralph.

Planted: April 14, 2005 Harvested: August 8, 2005
Previous crop: Conventional fallow

2005 Barley in the West River Region **Combined Means**

Variety	Days to Head	Plant Height	Seeds / Pound	Test Weight	Protein	Plump Seed	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Avg. Yield 2 year	Avg. Yield 3 year
		inches		lbs/bu	%	%	bu/ac				
Two Row Types											
Conlon	69	30	10,867	46.4	12.5	89	59.5	44.8	54.1	49.4	52.8
Eslick	76	29	12,392	45.2	12.5	74			73.4		
Haxby	74	30	13,495	47.3	12.3	79			71.2		
Rawson	72	31	9,747	45.6	11.3	91			70.0		
Six Row Types											
Tradition	74	29	14,329	45.0	12.2	79	72.1	56.6	66.1	61.4	64.9
Drummond	72	31	13,543	45.2	12.4	80	61.0	58.9	63.2	61.0	61.0
Robust	73	31	12,925	45.8	12.7	82	58.3	49.0	58.9	54.0	55.4
Stellar	72	30	13,312	45.0	12.0	86			68.4		
# of locations	2	8	1	8	8	7	12	8	8	16	28

Locations: 2005 = Hettinger, Dickinson, Scranton, Regent, Selfridge, New Leipzig, Mandan, Ralph SD.
2004 = Hettinger, Dickinson, Scranton, Selfridge, New Leipzig, Mandan, Ralph SD and Bison SD.
2003 = Hettinger, Dickinson, Scranton, Regent, Selfridge, New Leipzig, Mandan, Beulah, Hannover, Glen Ulin, Ralph SD and Bison SD.

2005 North Dakota Oat Variety Descriptions

Variety	Origin	Year Released	Grain Color	Height	Straw Strength	Maturity[2]	Reaction to Diseases: Stem rust	Crown rust	Barley Y.Dwf[4]	bu/Wt	Protein[3]
AC Assiniboia	Can. Proven Seed	1997	Red	med	strong	L	S	R	T	good	ML
AC Gwen	Can. SeCan	2000	hulless	tall	strong	L	S	R	R	good	L
AC Kaufman	Can.	2000	yellow	tall	strong	L	S	R	MT	v.good	ML
AC Medallion	Can. Cargill	1997	white	tall	med.	L	S	R	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	R	S	v.good	L
AC Ronald	Can. SeCan	2001	white	m. short	v. strong	L	S	R	T	v.good	M
Beach	NDSU	2004	white	tall	m.strg.	ML	S	MR/MS	MS	v.good	M
Buff	SD	2002	hulless	med.	m.strg.	L	S	MR/MS	MT	good	H
CDC Boyer	Sask. Value Added	1994	white	tall	m.strg.	L	S	MS	S	v.good	ML
CDC Dancer	Can. Cargill	2000	white	tall	strong	L	S	S	S	v.good	M
CDC Orrin	Can. QAS Cargill	2001	white	tall	strong	L	S	S	S	good	ML
CDC Pacer	Sask. Value Added	1996	white	tall	m.strg.	L	S	S	S	good	L
Ebeltoft	ND	1999	white	tall	strong	VL	S	MR/MS	S	v.good	M
Gem	WI	1996	yellow	tall	strong	L	S	R	MT	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	T	good	MH
Killdeer	ND	2000	white	med.	strong	M	S	MS	MT	good	M
Leonard	MN	2001	yellow	tall	m.strong	L	S	R	T	fair	ML
Loyal	SD	2000	ivory	tall	m.strong	L	S	MR	T	good	MH
Maida	**ND**	**2005**	**yellow**	**med.**	**strong**	**M**	**R**	**R**	**NA**	**v.good**	**MH**
Monida	MT/ID	1985	white	m.tall	strong	L	S	S	NA	good	ML
Morton	ND	2001	white	tall	v.strong	L	S	R	MT	v.good	M
Otana	MT	1977	white	m.tall	m.weak	L	S	S	S	v.good	ML
Paul	ND	1994	naked	v.tall	strong	L	R	R/MR	T	good	H
Reeves	SD	2002	white	m.tall	med.	E	S	MR	MT	good	H
Richard	MN	2000	yellow	tall	strong	M	S	MS	T	good	M
Sesqui	MN	2001	yellow	m.tall	strong	L	S	R	T	good	M
Stark	NDSU	2004	naked	tall	m.strg.	L	R	MR/MS	T	v.good	M
Triple Crown	Canterra	1998	white	tall	strong	L	S	S	S	good	L
Vista	WI	2000	yellow	tall	strong	L	S	R	MT	good	M
Wabasha	MN	2001	white	tall	v.strong	M	S	R	T	good	M
Whitestone	ND	1994	white	short	strong	L	S	MS	MT	good	L
Youngs	ND	1999	white	med.	strong	L	S	MS/S	MT	good	M

1 Reaction to NA-67 currently the most prevalent race of stem rust.
2 E = early; M = medium; L = late.
3 H = high; M = medium; L = low; V = very; VL = very low.
4 S = susceptible; MS = moderately susceptible; MT = moderately tolerant; T = tolerant. Varieties rated MT or T have a relatively good degree of protection against barley yellow dwarf virus.
† Resistant to the new race of stem rust that is gaining in importance in the state.
Varieties in bold were released in 2005.

2005 Oat Variety Trial – Continuously Cropped No-till — Hettinger

Variety	Days to Head	Plant Height	Lodging	Test Weight	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		inches	0 – 9*	Lbs/bu	---------- Bushels per acre ----------				
Sesqui	85	34	3.5	31.4	78.1	83.9	87.7	85.8	83.2
Killdeer	82	33	6.0	30.2	72.4	84.4	89.3	86.8	82.0
CDC Pacer	85	34	3.8	27.7	66.8	88.0	85.3	86.6	80.0
HiFi	82	32	7.0	31.4	65.1	74.9	98.1	86.5	79.4
Monida	85	35	6.5	24.2	73.4	82.2	79.9	81.0	78.5
Beach	82	36	4.0	33.4	72.3	74.2	87.5	80.8	78.0
AC Pinnacle	88	35	5.0	27.6	69.2	83.5	81.0	82.2	77.9
Youngs	84	34	4.0	27.6	66.1	82.6	82.7	82.6	77.1
Otana	84	35	3.5	28.2	68.7	78.6	82.3	80.4	76.5
Jerry	80	35	3.8	33.4	76.2	67.7	84.9	76.3	76.3
AC Assiniboia	84	37	5.0	31.1	67.4	75.4	83.1	79.2	75.3
Hytest	81	36	3.5	35.9	71.1	63.0	91.2	77.1	75.1
AC Kaufman	85	36	5.0	29.6	66.9	77.8	77.9	77.8	74.2
Ebeltoft	85	32	2.2	27.5	63.5	74.7	82.8	78.8	73.7
Morton	84	35	5.8	29.2	69.0	75.2	76.0	75.6	73.4
AC Ronald	87	35	2.8	32.1	68.7	63.4	87.2	75.3	73.1
Buff**	80	32	1.2	39.9	44.9	61.1	78.5	69.8	61.5
Stark**	87	34	4.0	33.4	36.9	61.7	59.2	60.4	52.6
Paul**	88	36	3.8	35.1	33.7	56.6	44.8	50.7	45.0
Maida	83	35	4.8	31.3		70.0	77.7	73.8	
CDC Dancer	84	33	4.2	30.4		68.2	74.2	71.2	
AC Gwen**	86	36	5.5	30.5		60.1	46.2	53.2	
Weaver	87	35	4.2	28.9			87.1		
Trial Mean	84	35	4.4	30.9	67.2	74.6	82.2	--	--
C.V. %	1.3	9.2	58.5	4.5	8.3	10.4	10.4	--	--
LSD .05	2	NS	NS	1.9	7.8	10.9	12.0	--	--
LSD .01	2	NS	NS	2.5	10.3	14.4	15.8	--	--

* Naked (hulless) type.
** Lodging: 0 = none, 9 = laying flat on ground.
NS = no statistical difference between varieties.
Planting Date: April 4, 2005 Harvest Date: August 2, 2005
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: soybean.
Notes: The 2003 and 2005 trials sustained late season heat and moisture stress.
The 2004 trial sustained hard frosts in May and June.

2005 Oat - Alfalfa burn down	Dickinson, ND

Variety	Days to Head	Seeds per Pound	Plant Height	Test Weight	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Returns	Average Yield 2 Year	Average Yield 3 Year
			in	lbs/bu	bu/ac	bu/ac	bu/ac	$/ac	bu/ac	bu/ac
AC Assiniboia	75	12,777	37	30.9	103.8	55.9	130.1	94.01	93.0	96.6
AC Gwen*	73	14,442	40	35.5	--	44.3	93.3	91.47	68.8	--
AC Kaufman	71	14,460	39	31.8	112.3	41.5	103.8	77.97	72.7	85.9
AC Pinnacle	73	13,977	39	32.4	124.8	60.1	135.8	112.05	97.9	106.9
AC Ronald	72	15,210	39	34.6	120.1	48.3	124.2	111.74	86.2	97.5
Beach	73	15,681	42	34.2	120.1	46.2	121.9	103.82	84.1	96.1
Buff*	68	17,385	37	42.0	103.5	37.3	80.1	79.97	58.7	73.6
CDC Dancer	72	15,054	42	32.6	--	52.1	121.8	94.32	86.9	--
CDC Pacer	71	13,656	42	33.1	125.2	54.4	119.2	100.60	86.8	99.6
Ebeltoft	73	12,443	36	32.9	109.1	53.5	132.1	111.58	92.8	98.2
HiFi	71	17,225	42	31.5	121.6	49.4	114.5	84.49	81.9	95.2
Hytest	69	13,763	41	36.7	122.9	51.6	101.2	96.15	76.4	91.9
Jerry	70	16,062	42	33.3	124.2	46.1	115.2	92.49	80.6	95.1
Killdeer	70	15,478	36	33.2	127.7	56.8	137.9	113.65	97.3	107.5
Leonard	71	16,297	38	29.7	--	58.0	124.6	81.53	91.3	--
Maida	72	12,963	41	32.3	--	46.4	118.0	92.23	82.2	--
Monida	75	16,619	41	29.6	127.5	56.0	131.8	88.01	93.9	105.1
Morton	72	14,618	41	32.5	114.7	49.8	121.7	96.43	85.8	95.4
Otana	73	15,992	43	33.7	130.3	62.9	124.3	105.87	93.6	105.8
Paul*	75	17,437	43	41.3	73.5	42.0	82.9	85.13	62.5	66.1
Sesqui	72	16,919	39	33.6	131.6	57.7	121.5	100.88	89.6	103.6
Stark*	73	20,265	41	36.7	106.9	43.8	89.0	83.64	66.4	79.9
Weaver	74	13,215	39	30.6	--	--	107.5	74.56	--	--
Youngs	72	13,173	41	31.2	119.3	52.8	114.3	81.98	83.5	95.5
Trial Mean	72	15,228	40	33.4	118.0	51.1	116.5	94.60	--	--
CV %	2.4	9.0	5.7	5.9	4.4	17.9	10.6	20.5	--	--
LSD 0.05	2	1,910	3	2.8	7.4	NS	17.4	NS	--	--

Planting Date: April 22, 2005
Harvest Date: August 8, 2005
* Hulless
Previous Crop: Alfalfa burn down
Seeding Rate: 1 million live seeds/ac
Returns were calculated by multiplying the 2005 yield by the test weight discount paid at the Southwest Grain Terminal located in Gladstone on September 6. The price paid was $1.00/bu, assuming that the test weight was heavier 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 down to 30 lb/bu. Below 30 lb/bu, an additional discount of $.07/bu occurred per pound.

2005 Oat Variety Trial - Continuously Cropped - No-till Selfridge

Cooperator: Dale Hepper, Selfridge

Variety	Plant Height	Test Weight	Grain Yield 2001	Grain Yield 2004	Grain Yield 2005	Average Yield 2 yr	Average Yield 3 yr
	inches	Lbs/bu	Bushels per acre				
Killdeer	37	32.9	104.4	104.0	110.2	107.1	106.2
Morton	45	33.0	111.7	105.4	97.7	101.6	104.9
Beach	43	34.3		110.4	92.3	101.4	
Sesqui	40	34.0			107.5		
Maida	42	34.4			101.0		
Trial Mean	41	33.8	119.4	100.0	101.4	--	--
C.V. %	4.3	2.2	17.0	8.2	8.4	--	--
LSD .05	3	1.1	NS	NS	NS	--	--
LSD .01	4	NS	NS	NS	NS	--	--

Planting Date: April 14, 2005
Harvest Date: August 15, 2005
Seeding Rate: 750,000 live seeds / acre (approx. 1.7 bu/A).
Previous Crop: Lentil
NS = no statistical difference between varieties.

2005 Oats in the West River Region **Combined Means**

Variety	Days to Head	Plant Height	Lodg.	Seeds / Pound	Test Weight	Grain Yield 2003	Grain Yield 2004	Grain Yield 2005	Avg. Yield 2 year	Avg. Yield 3 year
		inches	0-9*		lbs/bu	bu/ac				
Killdeer	76	35	6.0	15,478	32.1	91.7	88.9	112.5	100.7	97.7
Morton	78	40	5.8	14,618	31.6	78.7	76.4	98.5	87.4	84.5
Beach	78	40	4.0	15,681	34.0		81.5	100.6	91.0	
Sesqui	78	38	3.5	16,919	33.0			105.6		
Maida	78	39	4.8	12,963	32.7			98.9		
# of locations	2	3	1	1	3	11	6	3	9	20

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

Locations: 2005 = Hettinger, Dickinson and Selfridge.
2004 = Hettinger, Dickinson, Scranton, Selfridge, Mandan, and Bison SD.
2003 = Hettinger, Dickinson, Scranton, Regent, New Leipzig, Mandan, Beulah, Glen Ullin, Hannover, Richardton (organic), and Bison SD.

Origin, year of release and agronomic traits of hard red winter wheat varieties, 2005

Variety	Agent or Origin	Year	Quality[1]	Leaf Rust	Stem Rust[2]	Scab[3]	Maturity	Straw Strength	Height	Winter[4] Hardiness
Agassiz	ND	1983	Average	S	R	NA	Med.	Med.	Med.	Good
Alliance	NE	1997	Poor	S	NA	NA	Early	Strong	Short	Good
Arapahoe	NE	1989	Poor	MS	MR	NA	Med.	Med	Med.	Fair
CDC Buteo	Can/WB	2004	NA	MS	NA		Med	Med	Med	Good
CDC Falcon	Can/WB	2000	NA	MS	NA		Med.	M. strong	Short	Good
CDC Kestrel	Can.	1994	Poor	S	S	NA	Med.	M. strong	Med.	Good
CDC Raptor	Can.	2002	NA	MS	NA	NA	Med.	M. strong	M. short	Good
Crimson	SD	1997	Good	S	MS	NA	Med.	M. strong	Med.	Fair-Good
Culver	NE	1998	Poor	MS	MR	NA	M. early	M. strong	Med.	Good
Elkhorn	ND	1995	Average	MR	R[5]	NA	Med.	Med.	Med.	Good
Erhardt	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Good
Expedition	SD	2002	Average	MS	R		Med.	Strong	Med.	Good
Goodstreak	NE	2002	Average	S	MR		M. early	Med	Tall	Fair
Harding	SD	1999	Average	MS	NA		Med.	M. strong	Med.	Good
Harry	NE	2002	Poor	MR	MR	NA	Med.	Strong	Med.	Poor
Jagalene	Agripro	2002	NA	S	MR	VS	Early	Strong	Short	Fair
Jerry	ND	2001	Good	MR	R		Med.	Strong	Med.	Good
McClintock	Can	2003	Average	S	NA	1	Med.	Strong	Med.	Fair
Millenium	NE/SD	1999	Average	MS	MR		Med.	Strong	M. short	Fair
Morgan	WB	1996	NA	S	NA		Med.	M. strong	Med.	Good
Nekota	SD/NE	1997	Good	MS	MR	NA	Early	V. strong	V. short	Good
Norstar	Can.	1977	Average	S	S	NA	Late	Med.	Tall	Good
Nuplains[5]	NE	2000	Average	S	MS	VS	Med.	M. strong	Short	Fair-Poor
NySky[5]	MT	2001	Avg-Good	S	NA	NA	Med.	M. strong	Med.	Fair
Paul	MT	2003	Average	S	NA		Med.	Med.	Med.	Fair
Rampart[6]	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Poor
Ransom	ND	1998	Good	MR	NA		M. early	Med.	Med.	Good
Rose	SD	1981	Poor	S	MS	NA	Early	V. strong	Short	Fair
Roughrider	ND	1975	Good	S	R		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		Med.	M. strong	Med.	Fair
Wendy[5]	SD	2004	NA	MS	MR	VS	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		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
[3]Based on data collected in 2005 from several locations.
[4]Varieties with less than good winter hardiness should be seeded only in tall stubble.
[5]White wheat
[6]Saw fly resistant

2005 Winter Wheat Variety Trial - Continuously Cropped - No-till — Hettinger

Variety	Winter Surv.	Days to Head	Plant Height	Test Weight	Grain Protein	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
	%	From 1/1	inches	Lbs/bu	%	---------- Bushels per acre ----------				
Jerry	95	167	36	57.7	13.8	51.7	64.6	70.8	67.7	62.4
Harding	98	165	37	57.0	13.3	54.2	60.6	71.1	65.8	62.0
Millennium	98	165	36	56.7	12.6	47.5	55.4	66.9	61.2	56.6
McClintock	98	169	38	57.8	13.1	46.9	53.7	63.3	58.5	54.6
CDC Falcon	93	167	32	55.7	13.2	52.5	41.5	66.7	54.1	53.6
Arapahoe	98	166	38	57.3	13.4	44.4	42.6	69.6	56.1	52.2
Ransom	92	168	37	55.8	13.1	43.8	46.7	64.5	55.6	51.7
Expedition	96	160	32	54.4	12.9	54.2	43.2	55.7	49.4	51.0
Wesley	96	160	29	56.5	13.8	37.2	44.3	68.7	56.5	50.1
Roughrider	98	167	42	58.5	13.4	38.0	50.2	60.8	55.5	49.7
Jagalene	96	164	32	57.3	13.0	18.3	42.4	61.3	51.8	40.7
Yellowstone	96	169	35	55.2	12.6		57.0	68.2	62.6	
NuSky*	95	168	35	55.1	12.5		55.4	48.5	52.0	
CDC Buteo	93	167	36	57.7	13.1			65.8		
Wendy*	96	159	30	57.3	13.2			61.7		
Wahoo	98	164	33	**	**	47.7	49.1	**		
Trial Mean	96	166	35	56.5	13.2	44.8	44.8	64.0	--	--
C.V. %	3.5	0.8	4.6	2.9	3.2	17.1	19.5	4.5	--	--
LSD .05	NS	2	3	NS	0.7	12.5	NS	4.7	--	--
LSD .01	NS	3	4	NS	0.9	16.6	NS	6.3	--	--

* Hard white winter wheat
** Wahoo was not harvested due to severe infestation of common bunt.

Planting Date: September 20, 2004 Harvest Date: July 28, 2005
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2003 & 2004 = soybean, 2005 = barley.

2005 Winter Wheat - Recrop **Dickinson, ND**

Variety	Heading Date[1]	Seeds per Pound	Plant Height	Test Weight	Protein	Grain Yield 2002	Grain Yield 2003	Grain Yield 2005	Returns	Average Yield[2] 2 Year	Average Yield[2] 3 Year
	June		in	lbs/bu	%	---------bu/ac---------			$/ac	----bu/ac----	
Arapahoe	15	16,678	35	57.6	13.4	46.9	69.1	58.0	165.39	63.6	58.0
CDC Buteo	16	17,645	33	59.9	12.5	--	--	58.3	165.67	--	--
CDC Falcon	15	19,717	31	57.6	13.1	55.4	83.4	61.4	173.73	72.4	66.7
Expedition	10	16,156	32	58.1	13.4	50.3	70.8	52.4	149.93	61.6	57.8
Harding	14	16,445	36	59.3	12.7	52.5	70.3	65.6	186.35	68.0	62.8
Jagalene	13	18,835	28	54.8	14.3	--	76.2	38.9	106.18	57.5	--
Jerry	15	15,913	34	58.6	13.4	43.3	76.7	66.0	189.36	71.3	62.0
Yellowstone	16	19,028	31	52.9	14.0	--	--	41.1	105.12	--	--
McClintock	17	18,910	35	57.9	13.0	--	83.8	50.2	142.19	67.0	--
Millennium	13	16,207	34	60.0	12.9	49.3	79.4	69.0	197.20	74.2	65.9
NuSky	17	21,039	34	55.4	13.0	--	--	39.3	106.12	--	--
Ransom	15	16,829	35	56.6	12.8	44.6	80.3	60.7	168.88	70.5	61.9
Roughrider	16	18,272	37	58.3	13.2	22.8	66.6	46.9	133.56	56.7	45.4
Wahoo*	14	19,215	31	54.9	13.1	48	83.3	48.9	130.60	66.1	60.1
Wendy	10	18,730	28	57.3	13.9	--	--	44.1	125.72	--	--
Wesley	11	15,789	28	55.9	14.1	45.2	65.9	48.7	135.40	57.3	53.3
Trial Mean	15	17,711	33	57.1	13.2	42.8	75.0	53.3	148.94	--	--
CV %	6.0	6.1	4.9	1.5	--	12.4	9.5	9.3	--	--	--
LSD 0.05	1	1,518	2	1.2	--	8.2	10.0	7.0	--	--	--

Planting Date: September 24, 2004
Harvest Date: August 2, 2005
[1]Winterkill notes were not recorded since little winter injury was observed.
[2]Average yields are from 2002, 2003, and 2005 since winter wheat was not grown in 2004.
* Wahoo was severely infected with Stinking Smut.
Previous Crop: Oat Hay
Seeding Rate: 75 pounds per acre

2005 Winter Wheat Variety Trial - Continuously Cropped - No-till Mandan

Cooperator: USDA-ARS, Mandan

This trial was funded by Ducks Unlimited, Bismarck

Variety	Winter Surv.	Plant Height	Test Weight	Grain Protein	Grain Yield 2004	Grain Yield 2005	Avg Yield 2 Year
	%	inches	Lbs/bu	%	--- Bushels per acre ---		
Harding	67	38	56.4	11.7	52.6	52.8	52.7
Jerry	62	36	53.8	12.0	54.3	46.1	50.2
Millennium	32	32	55.9	11.9	55.0	40.0	47.5
Ransom	60	35	51.2	12.2	51.1	32.2	41.6
Arapahoe	44	39	54.0	12.4	51.9	29.4	40.6
Roughrider	57	42	55.7	11.5	44.2	36.1	40.2
Expedition	72	30	52.5	11.5	50.0	27.4	38.7
CDC Falcon	17	29	51.4	13.0	48.0	16.9	32.4
Wahoo	20	29	48.9	12.5	50.0	14.4	32.2
Wesley	43	25	50.7	12.9	49.5	12.8	31.2
Jagalene	12	No harvest data			52.2		
CDC Buteo	63	34	54.6	11.8		32.8	
McClintock	20	36	52.1	12.4		21.7	
Wendy*	20	27	51.2	12.8		17.8	
NuSky*	35	36	51.2	12.5		15.6	
Yellowstone	38	31	47.6	13.1		12.5	
Trial Mean	44	33	52.4	12.1	51.0	27.4	--
C.V. %	37.6	5.6	1.1	2.1	6.7	20.7	--
LSD .05	35	3	0.9	0.4	5.7	9.5	--
LSD .01	46	4	1.3	0.6	7.6	12.9	--

* Hard white winter wheat

Planting Date: September 21, 2004 Harvest Date: August 15, 2005
Seeding Rate: 1 million live seeds / acre (approx. 1.4 bu/A).
Previous Crop: 2004 = barley, 2005 = lentil.

2005 Roundup Ready Canola Variety Trial at Hettinger

Continuously Cropped – Minimum-till

Brand	Variety	Type*	% Plant Stand	Days to Bloom	Duration of Flowering	Days to Mature	Plant Height	Lodging	Oil Content	Yield
			**		days		inches	0-9***	%	lbs/A
Croplan	Crosby	OP	41	73	17	103	32	2.5	41.2	422
	HyCLASS 712	S	76	74	17	104	35	1.8	41.2	904
	HyCLASS 767	S	80	70	19	103	33	1.0	39.0	1151
	HyCLASS 905	H	81	73	18	104	37	1.0	40.9	963
	HyCLASS 910	H	76	73	16	104	33	1.0	41.2	1046
	Minot RR	OP	85	71	18	103	32	1.2	40.5	833
	O4S31	S	78	72	17	103	36	1.2	39.8	895
Dekalb	DKL 34-55	OP	81	71	18	103	38	1.2	41.6	703
	DKL 38-25	H	85	70	18	103	36	1.0	40.5	1152
Interstate	HyLite 225RR	OP	64	70	18	103	33	1.8	40.5	832
	Hyola 357 Mag	H	69	67	20	104	29	1.2	39.2	923
	Hyola 514 RR	H	59	74	18	82	35	2.5	41.7	582
	SW Marksman RR	OP	78	70	19	103	35	1.2	40.6	848
	SW Patriot RR	S	95	70	18	103	36	1.8	39.4	1149
	SW Titan RR	H	74	70	19	104	34	1.8	39.4	1067
Monsanto	AV 9525 RR	H	90	70	18	104	35	1.0	41.2	1009
	PR 9040 RR	OP	78	71	20	104	34	1.0	40.1	878
	SW 5269 RR	H	96	70	18	104	38	1.0	38.6	1386
	Z 2409 RR	H	92	72	18	104	38	1.0	41.0	1207
Proseed	Roughrider Plus	S	50	72	18	104	29	1.5	44.2	715
	RR 2066	H	43	71	18	103	31	2.0	40.4	625
Trial Mean			76	71	18	103	34	1.4	40.6	919
C.V. %			26.1	1.0	3.3	10.6	8.4	41.4	2.5	15.2
LSD .05			28	1	1	NS	4	0.8	1.5	197
LSD .01			37	1	1	NS	5	1.1	1.9	262

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

** % Plant Stand: Visual estimation of surviving plant stand on May 17.

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

Planting Date: April 6, 2005 Harvest Date: July 28, 2005 Previous Crop: Barley

Note: Hard frosts every night from April 23 – May 4 reduced plant stands and delayed plant growth.

2005 Safflower Variety Trial – Continuously Cropped - No-till — Hettinger

Variety	Days to Bloom	Plant Height	Test Weight	*Oil Content	---- Seed Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		inches	lbs/bu	%	---------- Pounds per acre ----------				
Linoleic Types									
S-541	108	25	41.0	40.4	1207	2387	1567	1977	1720
Finch	105	25	43.8	35.3	1280	2000	1627	1814	1636
Nutrasaff	106	26	37.8	44.7		1973	1680	1826	
Oleic Types									
S-518	106	22	39.1	38.2	1227	2355	2207	2281	1930
Montola 2004	104	23	40.1	34.4	1267	1853	1753	1803	1624
Montola 2003	107	24	41.0	35.7	1000	1900	1907	1904	1602
Montola 2000	107	22	39.0	36.8	987	1880	1367	1624	1411
Trial Mean	106	24	41.0	36.7	1221	2100	1736	--	--
C.V. %	1.6	6.4	1.7	0.9	14.2	13.5	8.8	--	--
LSD .05	NS	2	1.0	0.5	250	409	221	--	--
LSD .01	NS	3	1.4	0.6	337	NS	298	--	--

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

Planting Date: April 6, 2005 Harvest Date: September 20, 2005
Seeding Rate: 400,000 live seeds / acre.
Previous Crop: 2003 & 2005 = barley, 2004 = HRSW
NS = no statistical difference between varieties.

2005 Dormant Seeded Safflower Trial — Hettinger

Variety	Flowering Date	Plant Height	Test Weight	Oil Content	Grain Yield
	July	inches	lbs/bu	%	Lbs/ac
Seeding Date: November 9, 2004					
S-541	20	23	40.6	39.2	1893
Finch	19	27	43.9	34.8	2036
Montola 2003	22	21	40.6	34.7	2240
Mean	20	24	41.7	36.2	2056
Seeding Date: April 6, 2005					
S-541	22	25	41.0	40.4	1567
Finch	20	25	43.8	35.4	1627
Montola 2003	22	24	41.0	35.7	1907
Mean	21	25	41.9	37.2	1700
C.V. %	7.7	13.5	1.4	1.8	13.3
LSD .05	2	NS	0.9	1.0	381
LSD .01	NS	NS	1.3	1.4	532

Harvest Date: September 20, 2005 Seeding Rate: 400,000 live seeds / acre.
Previous Crop: Barley NS = no statistical difference between varieties.

2005 Soybean Variety Trial - Continuously Cropped - No-till Hettinger

Brand	Variety	Rel. Mat.	Type	Days to Bloom	Test Weight	Oil	Protein	Yield
					Lbs/bu	%	%	Bu/Ac
DynaGro	33T06	0.6	RR	55	53.3	19.1	36.4	22.6
	33J05	0.5	RR	55	54.4	20.3	37.4	16.5
Monsanto	AG0301	0.3	RR	55	55.0	21.2	35.0	25.2
	AG0801	0.8	RR	55	56.9	19.9	36.1	30.3
	AG0401	0.4	RR	55	54.0	20.1	37.8	22.4
	DKB08-51	0.8	RR	55	56.8	20.2	35.8	26.2
NDSU	Pembina	00.5	Conv	57	56.0	21.2	35.7	21.8
	Jim	00.7	Conv	56	55.2	20.2	36.9	15.2
	Traill	0.0	Conv	55	56.8	20.3	36.5	21.2
	Walsh	0.2	Conv	55	55.7	20.4	36.9	14.8
	Barnes	0.3	Conv	57	56.9	20.8	36.3	20.1
	LaMoure	0.7	Conv	56	55.7	19.2	37.2	22.4
	ProSoy	0.8	Conv	56	55.3	18.8	39.6	18.6
Proseed	RR00-69	0.6	RR	55	56.3	20.3	35.2	24.8
	RR20-40	0.4	RR	55	55.3	19.9	37.5	23.1
Roughrider	RG200RR	0.0	RR	55	56.7	20.0	37.1	17.8
Gen.	RG405RR	0.5	RR	55	56.0	21.0	35.2	20.7
Trial Mean				55	55.7	20.2	36.6	21.4
C.V. %				1.4	--	--	--	17.0
LSD 5%				1	--	--	--	6.1
LSD 1%				NS	--	--	--	8.2

NS = no statistical difference between varieties.
Planting Date: May 16, 2005
Harvest Date: September 20, 2005
Seeding Rate: 220,000 seeds / acre.
Row Spacing: 7"
Previous Crop: Soybean

2005 Chickpea Variety Trial - No-till **Hettinger**

Variety	Days to First Flower	Duration of Bloom	Days to Matur.	Dis.	Plant Height	Test Weight	1000 Seed Weight	Seed Size (mm) <9	8 - 9	>8	Yield 2002	2003	2005	Average 2 yr	3 yr
		Days		0 - 9*	inches	lbs/bu	grams	%			lbs/ac				
Large Kabuli:															
Dwelley	78	10	118	1.2	19	60.4	460	58	31	11	693	1227	2455	1841	1458
Sierra	76	12	117	1.8	18	59.5	436	49	35	16	640	1373	2399	1886	1471
CA99901C04C	75	13	117	1.2	14	56.0	386	49	34	17			2492		
Small Kabuli:															
CDC Chico	75	15	111	1.0	16	61.8	229	--	--	--	1153	2060	3389	2724	2201
B-90	77	14	112	1.2	18	62.0	257	--	--	--	1007	2060	3342	2701	2136
Small Desi:															
Myles	75	14	112	1.0	14	56.6	167	--	--	--	1027	2220	3108	2664	2118
Trial Mean	76	13	114	1.2	17	59.4	323	52	32	15	816	1866	2864	--	--
C.V. %	0.4	4.5	1.5	25.3	8.8	0.8	5.3	4.4	9.0	12.1	19.7	9.1	7.2	--	--
LSD .05	1	1	3	0.5	2	0.7	26	4	NS	3	228	243	311	--	--
LSD .01	1	1	3	NS	3	1.0	36	7	NS	NS	305	325	430	--	--

* Disease (ascochyta blight): 0 = none, 9 = dead.
Planting Date: April 6, 2005
Harvest Date: August 31, 2005
Previous Crop: barley

2005 Lentil Seeding Rate Trial – Continuously Cropped - No-till **Hettinger**

This project was funded by the North Dakota Dry Pea and Lentil Association.

Seeding Rate		Plant Stand	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Bdlf Weeds	Lodg.	1000 Seed wt.	Test Weight	----- Seed Yield -----		
											2003	2004	2005
#/ft^2	Lbs/a	#/ft^2		Days		inches	*	**	grams	lbs/bu	- Pounds per acre -		
24	132	18	74	17	105	9	1.0	3.2	42.6	57.4			2660
20	110	19	74	17	105	9	1.0	3.0	44.3	57.4			2623
16	88	11	74	17	105	8	1.2	3.0	43.2	57.4			2464
12	66	11	74	17	106	9	1.2	2.5	44.6	57.7	1307	2233	2352
8	44	4	74	17	107	10	3.0	1.8	43.6	57.4	999	1960	1979
4	22										719	1591	
Trial Mean		12.5	74	17	105	9	1.5	2.7	43.7	57.4	1005	1922	2416
C.V. %		27.7	0.0	0.0	0.9	20.0	18.3	17.6	3.6	1.6	8.2	6.2	7.3
LSD .05		5	NS	NS	1	NS	0.4	0.7	NS	NS	134	184	270
LSD .01		7	NS	NS	NS	NS	0.6	1.0	NS	NS	188	258	378

* Broadleaf Weeds (mainly Russian Thistle): 1 = few, 2 = some, 3 = many.
** Lodging: 0 = none, 9 = lying flat on ground.
Planting Date: April 7, 2005
Harvest Date: August 5, 2005
Variety = CDC Richlea
Previous Crop: barley
NS = no statistical difference between seeding rates.

2005 Lentil Variety Trial – Continuously Cropped - No-till

Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodging	1000 Seed wt.	Test Weight	---- Seed Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		days		inches	0-9*	grams	Lbs/bu	---------- Pounds per acre ----------				
Chilean												
CDC Richlea	74	16	105	7	5.8	40.4	56.6	952	2436	2143	2290	1844
Pennell	75	15	102	7	6.0	51.2	55.5	905	2614	1908	2261	1809
Merrit	71	18	105	10	5.2	44.4	53.8	1279	1951	1364	1658	1531
Laird	74	16	106	7	5.2	51.2	55.4	719	2194	1534	1864	1482
CDC Sedley	74	14	104	7	4.8	57.8	57.0		2268	1883	2076	
CDC Sovereign	74	16	104	9	5.8	46.8	56.2			1794		
CDC Glamis	74	14	104	6	7.0	45.4	55.7			1745		
Persian												
CDC Milestone	74	16	102	7	6.5	29.8	60.0	1148	2203	2378	2290	1910
Pardina	71	17	102	5	7.5	34.2	61.1	859	1596	2378	1987	1611
CDC Robin	74	15	103	9	4.8	22.4	60.2	1195	1382	1956	1669	1511
Crimson	73	16	101	6	7.8	31.4	60.9	775	1148	1981	1564	1301
CDC Blaze	74	14	102	6	4.2	29.0	61.2		1587	2370	1978	
CDC Rouleau	74	18	104	8	4.8	31.4	60.0			2508		
CDC Redberry	73	16	103	12	2.2	35.4	60.3			2492		
CDC Viceroy	74	17	103	8	5.2	27.2	61.0			2386		
CDC LeMay	74	15	102	5	6.0	28.6	60.9			2135		
Trial Mean	73	16	103	7	5.5	37.9	58.5	881	1938	2060	--	--
C.V. %	0.6	7.6	1.1	25.8	16.3	6.0	1.3	14.4	10.6	8.5	--	--
LSD .05	1	2	2	3	1.3	3.3	1.1	184	297	251	--	--
LSD .01	1	2	2	4	1.7	4.3	1.5	248	402	335	--	--

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

Planting Date: April 7, 2005 Harvest Date: August 5, 2005
Seeding Rate: 550,000 live seeds / acre.
Previous Crop: barley

2005 Field Pea Variety Trial – Continuously Cropped - Minimum-till Hettinger

Variety	Days to Bloom	Duration of Bloom	Days to Mature	Plant Height	Lodg.	1000 Seed wt.	Test Weight	--- Seed Yield ---- 2003	2004	2005	Avg. Yield 2 yr	3 yr
		days		inches	0-9*	grams	Lbs/bu	--------- bushels per acre ---------				
Yellow Cotyledon												
CDC Mozart	73	12	101	19	6.0	209	62.4	41.2	29.2	72.3	50.8	47.6
DS Admiral	73	12	100	26	1.5	228	61.6	39.6	29.8	59.1	44.4	42.8
Eclipse	74	12	102	21	3.8	231	62.4		21.2	68.3	44.8	
Delta	74	12	100	20	4.8	228	62.0			61.1		
Green Cotyledon												
Majoret	74	10	100	21	2.8	234	59.2	35.4	33.7	66.4	50.0	45.2
Cruiser	73	12	100	22	2.2	202	61.9	38.4	29.2	67.7	48.4	45.1
Nitouche	74	11	102	25	2.0	243	61.0		42.6	66.4	54.5	
Toledo	75	10	101	21	0.5	218	60.4		34.4	51.3	42.8	
Stirling	71	14	103	15	7.8	207	62.0		20.0	59.3	39.6	
Trial Mean	75	11	101	18	4.8	217	61.4	38.8	32.3	59.6	--	--
C.V. %	0.5	4.7	0.9	12.4	24.7	4.3	2.4	6.3	6.7	8.9	--	--
LSD .05	1	1	1	3	1.7	13	NS	3.7	3.1	7.5	--	--
LSD .01	1	1	2	4	2.3	18	NS	5.1	4.3	10.0	--	--

* Lodging: 0 = none, 9 = lying flat on ground.
NS = no statistical difference between varieties.
Planting Date: April 4, 2005
Harvest Date: July 29, 2005
Seeding Rate: 250,000 live seeds / acre.
Previous Crop: barley.

2005 Field Pea Variety Trial – Continuously Cropped - No-till Regent

Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	1000 Seed wt.	Grain Yield
	inches	Lbs/bu	grams	Lbs/ac
Yellow Cotyledon				
CDC Mozart	15	65.6	217	40.5
DS Admiral	17	64.8	219	35.9
Delta	13	63.5	209	28.9
Green Cotyledon				
Majoret	18	64.8	198	46.2
Cruiser	18	63.9	187	40.5
Stirling	15	63.7	193	16.3
Trial Mean	16	64.4	204	34.7
C.V. %	12.0	0.9	10.6	9.4
LSD .05	3	0.8	NS	4.9
LSD .01	4	1.2	NS	6.8

Planting Date: April 8, 2005
Harvest Date: August 8, 2005
Seeding Rate: 250,000 live seeds / acre
Previous Crop: Lentil
NS = no statistical difference between varieties.

2005 Field Pea Variety Trial – Continuously Cropped - No-till New Leipzig

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	1000 Seed wt.	Grain Yield
	inches	Lbs/bu	grams	Lbs/ac
Yellow Cotyledon				
CDC Mozart	20	60.0	203	28.9
DS Admiral	22	60.0	226	26.1
Green Cotyledon				
Cruiser	23	59.8	188	17.4
Majoret	23	60.2	207	24.4
Stirling	17	60.0	180	19.9
Trial Mean	21	60.0	201	24.3
C.V. %	9.8	0.5	3.2	18.1
LSD .05	3	NS	10	NS
LSD .01	4	NS	14	NS

NS = no statistical difference between varieties.

Planting Date: April 14, 2005 Harvest Date: August 16, 2005

Seeding Rate: 250,000 live seeds / acre Previous Crop: Lentil

2005 Field Pea Variety Trial – Continuously Cropped - No-till Selfridge

Cooperator: Dale Hepper, Selfridge

Variety	Plant Height	Test Weight	1000 Seed wt.	Grain Yield
	inches	Lbs/bu	grams	Lbs/ac
Yellow Cotyledon				
CDC Mozart	15	60.4	191	41.2
DS Admiral	19	60.3	195	39.4
Delta	17	59.8	193	35.2
Green Cotyledon				
Majoret	15	60.2	200	39.1
Cruiser	15	60.5	174	36.3
Stirling	10	60.0	167	19.3
Trial Mean	15	60.2	187	35.1
C.V. %	10.8	0.9	7.0	10.2
LSD .05	2	NS	20	5.4
LSD .01	3	NS	NS	7.5

NS = no statistical difference between varieties.

Planting Date: April 14, 2005 Harvest Date: August 15, 2005

Seeding Rate: 250,000 live seeds / acre Previous Crop: Lentil

2005 Field Pea Variety Trial at Wilton

This trial was funded by Legume Logic, Crosby

Variety	Type	N	1000 Seed wt	Test Weight	Seed Yield 2004	2005	2yr Avg.
	*	**	grams	lbs/bu	-- Bushels per Acre --		
SW Marquee	Y	2	148	64.2	79.4	71.9	75.6
SW Salute	Y	1	175	63.8	82.0	62.2	72.1
SW Midas	Y	2	211	64.4	75.9	52.6	64.2
Carneval	Y	2	182	63.8	76.6	49.2	62.9
CDC Mozart	Y	2	224	64.2	80.9	44.5	62.7
DS Admiral	Y	2	195	64.7	69.2	55.4	62.3
Majoret	G	2	188	63.4	74.6	48.5	61.6
Nitouche	G	1	152	62.3	72.4	41.1	56.8
SW Circus	Y	4	192	63.6	72.0	38.3	55.2
Integra	Y	3	196	61.8	72.7	37.3	55.0
Stirling	G	1	209	62.9	72.3	26.1	49.2
Cruiser	G	2	141	63.4	64.9	24.3	44.6
Eclipse	Y	1	250	64.3		64.1	
Alezan	Y	2	182	63.0		55.4	
CDC Golden	Y	4	213	65.0		43.3	
Aragorn	G	1	164	61.9		41.1	
Cutless	Y	4	214	62.5		38.6	
CDC Bronco	Y	4	187	64.8		36.6	
CDC Striker	G	4	202	62.7		35.3	
Trial Mean			197	63.4	73.6	47.5	--
C.V. %			9.6	0.9	7.5	21.0	--
LSD .05			27	0.8	7.7	14.2	--
LSD .01			36	1.0	10.2	18.9	--

* Type: Y = yellow, G = green

** N: Number of harvested plots (replications) in 2005.

Planting Date: April 29, 2005

Harvest Date: August 15, 2005

Seeding rate: 250,000 live seeds/A

Previous crop: Triticale

SDSU Field Pea Variety Trial – Perkins County (Ralph), 2005.

Variety	Height Inches	Lodging 0-9*	Test Wt Lb/Bu	Yield Bu/A
Arvika	44	9	59.0	17.6
Grande	27	4	55.7	20.2
Salute	25	2	56.8	27.0
Cruiser	24	1	54.8	19.6
Average	29.9	3.8	56.6	21.1
LSD (P=.05)	2.8	0.9	3.3	6.6
CV	5.9	15.4	3.2	**19.6**

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

Planted: April 14, 2005
Harvested: August 8, 2005
Previous crop: Conventional fallow

Herbicide: Pursuit (3 oz/A), Poast (1 pint/A)
Additional Nitrogen: Inoculated

2005 Field Peas in the West River Region **Combined Means**

Variety	Plant Height	Lodg.	Test Weight	1000 Seed Wt.	Seed Yield
	inches	0 - 9*	lbs/bu	grams	bu/A
Yellow Types					
CDC Mozart	17	6.0	62.5	209	45.5
DS Admiral	18	1.5	62.3	213	43.2
Delta	18	4.8	61.8	210	41.7
Green Types					
Majoret	17	2.8	61.6	205	44.9
Cruiser	20	2.2	61.9	178	37.2
Stirling	14	7.8	61.7	191	28.2
# of locations	5	1	5	5	5

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

Locations: Hettinger, Regent, Selfridge, New Leipzig and Wilton.

2005 Hybrid Corn Trial - Continuously Cropped - No-till Hettinger

Brand	Hybrid	GDU's to BL	Trait	Days to Silk	Ear Height	Test Weight	Grain Yield
		*	**		inches	Lbs/bu	Bu/Ac
Dekalb	DKC35-02	2250	RR, Bt	83	30	52.9	39.9
	DKC35-51	2250	RR, Bt	84	28	54.4	41.5
	DKC37-14	2270	RR	84	30	55.1	36.8
	DKC40-05	2310	Con, Bt	90	29	54.4	37.3
Dyna-Gro	51P33	2100	RR, Bt	86	32	56.6	43.6
	CX04179	1960	RR	85	28	56.2	34.2
IntegraSeed	Int6183	2172	RR	88	31	54.7	57.8
	Int6688	2165	RR	88	33	50.2	42.3
	Int6385RR	2085	RR	86	27	55.8	63.5
	Int6680RR	1880	RR	85	29	55.5	28.8
Pioneer	39F61	1790	Con, Bt	82	29	58.4	61.5
	39D82	2040	Con, Bt	83	31	55.0	54.7
Proseed	RRET83Bt	--	RR, Bt	86	22	55.1	51.3
	RRS83Bt	--	RR, Bt	85	30	53.9	49.3
	RR585	--	RR	83	28	54.9	53.4
	RRXES86Bt	--	RR, Bt	90	31	48.0	47.4
	RR586	--	RR	89	27	53.1	40.4
Seeds 2000	2821RR/Bt	2060	RR, Bt	86	31	55.9	72.3
Trial Mean				86	29	54.4	47.6
C.V. %				1.3	8.2	3.5	10.7
LSD 5%				2	4	3.1	8.4
LSD 1%				3	5	4.2	11.3

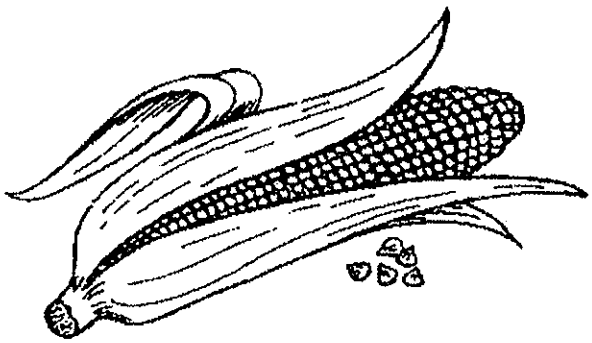
*Growing Degree Units to Black Layer.
**Trait: RR = Roundup Ready, Bt = Corn Borer Tolerance, Con = Conventional.
Planting Date: May 3, 2005
Harvest Date: October 3, 2005
Seeding Rate: 26,500 seeds / acre, thinned to 24,000 plants / acre.
Row Spacing: 28"
Previous Crop: Oat
Growing Season Heat Units May 1 – Sept. 30 (GDD): 2234
Precipitation Sept. 04 – Sept. 05: 16.86 inches

2005 Hybrid Corn Trial - Continuously Cropped - No-till, Regent

Cooperators: August and Perry Kirschmann

Brand	Hybrid	GDU's to BL	Trait	Ear Height	Test Weight	Grain Yield
		*	**	inches	Lbs/bu	Bu/Ac
Dyna-Gro	51P33	2100	RR, Bt	30	55.2	101.4
Pioneer	39T66	1840	RR, Bt	30	58.1	80.4
	39H83	1890	RR	31	56.8	68.5
	39D80	1940	RR	29	55.1	69.0
Proseed	RRET83Bt	--	RR, Bt	25	56.3	76.7
	RRS83Bt	--	RR, Bt	30	52.0	92.4
	RR585	--	RR	30	52.5	72.7
	RRXES86Bt	--	RR, Bt	31	47.8	91.0
	RR586	--	RR	30	54.0	88.0
Trial Mean				29	54.2	82.2
C.V. %				11.4	2.3	9.1
LSD 5%				NS	1.8	11.0
LSD 1%				NS	2.5	14.9

*Growing Degree Units to Black Layer.
**Trait: RR = Roundup Ready, Bt = Corn Borer Tolerance.
NS = no statistical difference between hybrids.
Planting Date: April 28, 2005
Harvest Date: October 3, 2005
Seeding Rate: 26,500 seeds / acre, thinned to 24,000 plants / acre.
Row Spacing: 28"
Previous Crop: HRSW



Corn Row Spacing at Hettinger, North Dakota

Eric Eriksmoen, Research Agronomist

Research on corn production conducted at the Hettinger Research Extension Center in 1998 – 2001 showed maximum grain yields were achieved when corn was seeded in wide rows (28" or greater) and at higher plant populations (24,000 vs. 18,000 plants per acre). It is believed that wider row spacing provide corn plants with more area from which to draw soil moisture during dry periods and higher plant populations allow for increased yield potential.

Row Spacing 1998 – 2001 Combined Means*		
Row Spacing	Test Weight	Grain Yield
inches	Lbs/bu	Bu/Ac
14	56.1	49.7
28	56.7	55.2
42	56.2	55.7
LSD .05	NS	3.9

*Combined means of 3 hybrids and 4 plant populations over 3 years.

In 2003, research was conducted on "twin row" configurations, a concept where two rows are seeded relatively close together with a wider row spacing between twin rows. This type of row configuration provided for wider in-row spacing between plants while maintaining a wide between-row spacing. The 2003 growing season was marred by a severe drought resulting in very poor yields, however, the twin row configuration out yielded the conventional row spacing by 16%. Area growers expressed interest in the concept, however could not justify the cost of the specially designed planter.

2003 Twin Row Configurations Combined Means*		
Row Spacing	Test Weight	Grain Yield
inches	Lbs/bu	Bu/Ac
7" twin rows	54.6	24.8
14" twin rows	54.2	21.0
Conventional 28" rows	53.8	21.4
LSD .05	NS	2.2

*Combined means of 2 hybrids and 2 plant populations.

In 2004, research was initiated on a "skip row" configuration, where rows are seeded at a conventional row spacing but every third row is left blank. This configuration gives each planted row an adjacent wide row spacing (56") and is achieved with the use of existing conventional corn seeding equipment. The 2004 growing season was marred by a hard frost on June 18 and relatively cool and dry conditions throughout the rest of the shortened season. Grain maturity was not achieved, resulting in very poor yields and light test weights. Despite the adverse growing conditions, grain yields were

almost 60% higher for corn grown with the skip row configuration compared to the conventional row configuration.

2004 Skip Row Configurations	**Combined Means***	
Row Configuration	Test Weight	Grain Yield
	Lbs/bu	Bu/Ac
Skip Row	41.5	16.1
Conventional 28" rows	42.6	10.2
LSD .05	NS	1.3

*Combined means of 2 hybrids and 2 plant populations.

In 2005, research was expanded on this concept to include four different row configurations: two planted rows with one skipped row (2 x 1), one planted row with one skipped row (1 x 1), two planted rows with two skipped rows (2 x 2) and a conventional 28" row configuration. The trial was seeded with one hybrid at a population of 24,000 plants per acre. The 2005 growing season was generally warm and dry, and grain maturity was achieved. The 2x1 and 1x1 row configurations out yielded the conventional row configuration by 39% and 26% respectively. The 2x2 row configuration yielded considerably less than the other row configurations. This may be due to detrimental in-row plant competition caused by corn plants being spaced too close together (as row spacing increases, in-row spacing between plants narrows).

2005 Skip Row Configurations		**Means**
Row Configuration	Test Weight	Grain Yield
	Lbs/bu	Bu/Ac
Conventional 28" rows	53.5	32.2
2 planted x 1 skipped	53.3	44.9
1 planted x 1 skipped	54.2	40.6
2 planted x 2 skipped	52.6	22.8
LSD .05	NS	10.9

In conclusion, the use of wide row spacing is an important management decision for optimizing grain yields in the Western Dakota's where late season moisture stress is typical. Relatively high plant populations (20,000 plants/acre or higher) need to be maintained, regardless of row spacing, to optimize grain yield potential. Some skip row configurations appears to have merit, but additional research needs to be conducted to further verify and refine this concept.

2005 Buckwheat Variety Trial – Continuously Cropped No-till Hettinger

Variety	Days to Bloom	Test Weight	1000 Seed Weight	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		Lbs/bu	grams	---------- Pounds per acre ----------				
AC Manisoba	40	38.2	31.2	381	1007	608	808	665
AC Springfield	40	37.2	30.9	393	991	547	769	644
Mancan	39	40.2	29.3	373	745	776	760	631
Koto	40	40.9	33.3	361	905	464	684	577
Manor	40	36.9	27.2		732	666	699	
Trial Mean	40	38.0	30.5	367	839	587	--	--
C.V. %	0.9	--	6.6	31.6	11.9	30.2	--	--
LSD .05	NS	--	3.5	NS	146	NS	--	--

Planting Date: May 16, 2005 Harvest Date: September 20, 2005
Seeding Rate: 700,000 live seeds / acre.
Previous Crop: 2003 & 2005 = soybean, 2004 = barley.
NS = no statistical difference between varieties.

2005 Spring Triticale Variety Trial – Continuously Cropped No-till, Hettinger

Variety	Days to Head	Plant Height	Lodg.	Test Weight	---- Grain Yield ---- 2003	2004	2005	Average Yield 2 yr	3 yr
		inches	0-9*	Lbs/bu	---------- Bushels per acre ----------				
RSI 310	78	35	1.0	50.6	43.4	51.9	45.0	48.4	46.8
Companion	78	43	2.0	49.6	37.9	53.4	39.3	46.4	43.5
Laser	79	41	1.5	49.8	42.3	55.1	30.3	42.7	42.6
Wapiti	78	42	1.8	50.2	27.9	57.4	41.0	49.2	42.1
Trical 2700	84	42	1.5	45.8	30.2	55.2	28.8	42.0	38.1
Marvel	79	44	3.2	42.8	30.4	49.5	30.0	39.8	36.6
Trial Mean	79	41	1.8	48.1	35.4	53.8	35.7	--	--
C.V. %	1.1	5.4	34.0	1.9	9.6	5.4	8.6	--	--
LSD .05	1	3	0.9	1.4	5.1	4.4	4.7	--	--
LSD .01	2	5	1.3	1.9	7.1	6.1	6.4	--	--

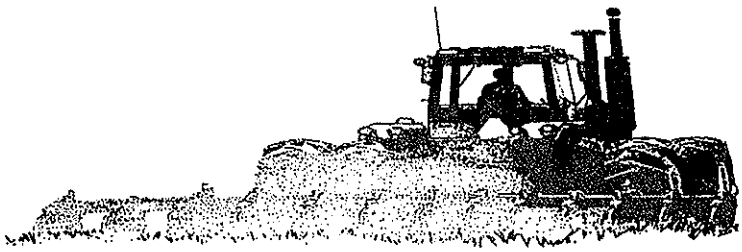
*Lodging: 0 = none, 9 = lying flat on ground.
Planting Date: April 4, 2005 Harvest Date: August 2, 2005
Seeding Rate: 1 million live seeds / acre.
Previous Crop: soybean.

2005 Hay Barley Variety Trial – Continuously Cropped – No-till, Hettinger

Cooperators: WestBred LLC, Bozeman & Paulson Premium Seed, Bowman

Variety	Days to Head	Plant Height	Harvest Moist.	Yield 2003	2004	2005	2 yr.	3 yr.
		inches	%	---------- Tons / Acre* ----------				
Dillon	84	27	70	4.32	1.96	2.29	2.12	2.86
Bestford	85	33	67	3.61	2.12	2.44	2.28	2.72
Westford	86	29	69	3.41	2.15	2.25	2.20	2.60
Hays	84	28	62			4.06		
Stockford	84	29	63			3.97		
Haybet	82	31	60			3.65		
Virden	84	30	63			3.25		
Robust	81	30	61			2.83		
Trial Mean	84	30	65	3.86	2.17	3.09	--	--
C.V. %	0.8	7.9	7.2	4.4	11.8	13.8	--	--
LSD .05	1	NS	7	0.26	NS	0.63	--	--
LSD .01	1	NS	NS	0.37	NS	0.85	--	--

*Hay yields are adjusted to a 0% moisture basis.
Planting Date: April 4, 2005
Harvest Date: July 11, 2004 (milk stage)
Seeding Rate: 750,000 live seeds/acre.
Previous Crop: soybean
NS = no statistical difference between varieties.



2005 Oat/Barley Forage Trial - Recrop **Dickinson, ND**

Variety	Species	Plant Height	Harvest Moisture	12% Moisture Yield	----- Dry Matter Yield----- 2004	2005	2 Year Average
		in	%	tons/ac	tons/ac		tons/ac
2700	triticale	39	71	2.6	--	2.3	--
AC Assiniboia	oat	34	77	2.8	1.1	2.4	1.8
AC Ronald	oat	31	75	2.5	0.9	2.2	1.6
	barley	30	78	1.9	--	1.6	--
	triticale	33	77	1.6	--	1.4	--
	triticale	32	70	2.2	--	2.0	--
Conlon	barley	31	79	1.5	--	1.3	--
Ebeltoft	oat	31	75	2.6	1.1	2.3	1.7
Forage Plus	oat	35	77	3.1	1.3	2.7	2.0
Haybet	barley	34	76	2.5	1.3	2.2	1.7
Hays	barley	30	71	2.5	1.2	2.2	1.7
HiFi	oat	31	82	1.6	1.2	1.4	1.3
Jerry	oat	32	73	2.5	1.1	2.2	1.7
Killdeer	oat	29	75	2.5	1.3	2.2	1.8
Morton	oat	32	75	2.6	1.3	2.3	1.8
Odie	oat	31	73	2.7	--	2.3	--
Odie II	oat	33	76	2.5	--	2.2	--
Odie III	oat	33	76	2.7	--	2.4	--
Otana	oat	31	75	2.7	--	2.4	--
Paul	oat	36	76	2.6	1.2	2.3	1.8
Robust	barley	33	82	1.8	--	1.6	--
Stark	oat	35	76	2.6	1.3	2.3	1.8
Triple Crown	oat	34	78	2.6	--	2.3	--
Trial Mean		33	76	2.4	1.2	2.1	--
CV %		9.2	2.9	16.3	18.0	16.3	--
LSD 0.05		4	3	NS	0.3	NS	--

Planting Date: April 28, 2005
Harvest Growth Stage: Soft Dough
Previous Crop: Oat Hay

2005 Cool Season Forage Trial - Recrop **Dickinson, ND**

Variety	Species	Plant Height	Harvest Moisture	12% Moisture Yield	----- Dry Matter Yield----- 2004	2005	2 Year Average
		in	%	tons/ac	tons/ac		tons/ac
	triticale	32	66	2.6	1.3	2.3	1.8
	triticale	34	63	2.4	--	2.1	--
Bestford	barley	35	76	2.4	1.1	2.1	1.6
Haybet	barley	33	79	2.2	1.4	1.9	1.7
Hays	barley	29	71	2.6	1.2	2.3	1.8
Horsford	barley	35	81	2.2	--	1.9	--
	spelt	31	66	2.7	--	2.4	--
Lucile	emmer	38	60	3.0	1.1	2.7	1.9
	barley	28	67	2.6	--	2.3	--
	barley	32	79	1.9	--	1.7	--
	barley	31	73	2.8	--	2.5	--
	triticale	33	71	2.1	--	1.9	--
Mondak	emmer	43	61	2.1	--	1.8	--
Red 1	triticale	36	64	2.9	1.5	2.6	2.0
SK3P	spelt	38	63	2.1	1.7	1.8	1.8
	triticale	35	66	2.9	--	2.6	--
Stockford	barley	29	80	1.7	--	1.5	--
Westford	barley	33	76	2.7	1.1	2.4	1.7
Trial Mean		34	70	2.4	1.3	2.1	--
CV %		6.8	2.5	12.5	15.5	12.5	--
LSD 0.05		4	3	0.5	0.3	0.4	--

Planting Date: April 28, 2005
Harvest Growth Stage: Soft Dough
Previous Crop: Oat Hay

2005 HRS Wheat Variety Tolerance to Foliar Diseases at Hettinger

Wesley Messer and Josh Seekins, IPM Crops Scouts, Dickinson Res. Ext. Center

	----- Leaf Rust -----		Stripe Rust	------ Tan Spot ------	
Variety	Incidence	Severity	Incidence	Incidence	Severity
	%	%	%	%	%
Mercury	50	1	15	100	2
Granite	50	1	85	95	2
Fryer	45	>1	0	95	2
Oxen	90	2	0	100	2
Briggs	0	0	45	100	2
Granger	55	1	70	100	2
Reeder	45	2	20	65	1
Parshall	70	2	15	65	2
Steele-ND	10	>1	30	100	2
Glenn	0	0	35	100	3
Gunner	65	2	0	55	2
Russ	10	1	15	100	2
Ingot	90	2	50	100	3
Norpro	15	>1	85	95	2
Alsen	10	>1	30	100	4
AC Amazon	25	1	0	50	1
AC Superb	55	2	35	95	2
Knudson	10	>1	95	80	2
Hanna	20	1	85	95	2
Oklee	55	1	0	100	2
Dapps	0	0	100	95	2
Burnside	0	0	0	100	2
Trooper	10	>1	100	95	2
Polaris	5	>1	5	65	2
Saturn	10	>1	10	60	2
Banton	10	>1	0	90	3
AP630CL	0	0	0	45	1
Keene	80	2	0	65	1
Laser	40	2	95	90	1
Outlook	15	1	55	100	2
Ulen	20	1	5	90	2
Express	20	1	5	100	3
Big Red	60	1	5	100	2
Buck Pronto	25	2	10	90	2
Trial Mean	27	1	40	88	2
C.V. %	90.6	80.2	46.7	20.8	42.5
LSD .05	50	1	38	NS	NS
LSD .01	66	NS	50	NS	NS

Disease Incidence = percent of plants infected with disease.
Disease Severity = percent of flag leaf area infected by disease.
Planting Date: April 4, 2005 Previous Crop: Soybean

2005 Durum Variety Tolerance to Foliar Diseases at Hettinger

Wesley Messer and Josh Seekins, IPM Crops Scouts, Dickinson Res. Ext. Center

	----- Leaf Rust -----		Stripe Rust	------ Tan Spot ------	
Variety	Incidence	Severity	Incidence	Incidence	Severity
	%	%	%	%	%
Rugby	0	0	0	95	2
Renville	0	0	15	100	2
Munich	0	0	15	100	2
Ben	0	0	0	100	2
Belzer	0	0	0	100	3
Maier	0	0	0	100	3
Mountrail	0	0	20	55	2
Lebsock	0	0	15	100	4
Plaza	0	0	0	100	2
Pierce	0	0	0	100	2
Dilse	0	0	0	100	2
Alkabo	0	0	30	100	2
Grenora	0	0	0	100	2
Divide	0	0	0	100	2
Primo D'Oro	0	0	30	100	2
Grande D'Oro	0	0	30	100	3
AC Avonlea	0	0	0	100	3
AC Navigator	0	0	0	100	4
Trial Mean	0	0	9	97	3
C.V. %	0	0	176	15.6	28.6
LSD .05	--	--	NS	NS	NS

Disease Incidence = percent of plants infected with disease.
Disease Severity = percent of flag leaf area infected by disease.

Planting Date: April 4, 2005
Previous Crop: Soybean

2005 Winter Wheat Variety Tolerance to Foliar Diseases at Hettinger

Wesley Messer and Josh Seekins, IPM Crops Scouts, Dickinson Res. Ext. Center

	----- Leaf Rust -----		Stripe Rust	------ Tan Spot ------	
Variety	Incidence	Severity	Incidence	Incidence	Severity
	%	%	%	%	%
Jerry	60	2	40	100	7
Harding	3	>1	80	100	3
Millennium	57	2	73	100	6
McClintock	57	2	10	100	3
CDC Falcon	37	2	20	100	9
Arapahoe	87	3	93	100	3
Ransom	0	0	13	100	6
Expedition	63	2	17	100	8
Wesley	80	3	30	100	4
Roughrider	90	7	90	93	5
Jagalene	100	12	27	100	4
Yellowstone	100	8	33	100	6
NuSky*	100	9	100	77	2
CDC Buteo	73	4	66	100	6
Wendy*	100	5	80	100	4
Wahoo	33	2	73	100	6
Trial Mean	68	4	56	99	5
C.V. %	34.9	52.2	51.5	9.0	44.2
LSD .05	39	3	47	NS	4
LSD .01	53	5	63	NS	5

* Hard white winter wheat

Disease Incidence = percent of plants infected with disease.
Disease Severity = percent of flag leaf area infected by disease.

Planting Date: September 20, 2004
Previous Crop: Barley

Evaluation of foliar fungicide treatments for control of tan spot in durum wheat at New England, ND, 2005

R.O. Ashley and M.P. McMullen

The experiment was conducted in a producer's field near New England, ND with a previous cropping history of wheat in 2003. A randomized complete block design with four replications was used. Plots were 6.2 ft wide by 25 ft long with a 3 ft buffer strip of durum wheat seeded between each plot. (Fertilizer information). On 27 Apr, the crop was seeded using a direct seeding method into wheat residue. Fungicide applications at Feekes growth stage 3 were made on 3 Jun and applications at Feekes growth stage 10 were done on 2 Jul. All treatments were applied in 19.1 gal/A water plus non-ionic surfactant (Activator 90) at 30 psi using a CO_2 pressurized hand-held spray boom equipped with 8002VS flat fan nozzles. Early season disease evaluation was conducted on 10 Jun and late season evaluation was on 12 Jul. Evaluations consisted of observations made on ten consecutive plants in the center row of each plot. Incidence was recorded as the percent of plants with a least one lesion observed, and severiety was recoreded as the average leaf area covered by lesions for all leaves for the early season evaluation and only for the top three leaves for the late season evaluation. Crop injury observations were made on 10 Jun for the early application and 9 Jul for the late season sppplication. Rainfall was 208, 190 33, and 61% of normal for May, Jun, Jul, and Aug respectively. Plots were hand harvested on 23 Aug and bundles hung up to dry. Grain was threshed from each bundle with a stationary combine on 8 Sep and then cleaned and weighed. All data was statistically analyzed using SAS Statistical software version 8.02 Proc ANOVA.

Treatment[1]	Early season evaluation			Late season evaluation			Grain	
	Crop injury	Incidence	Severity	Crop injury	Incidence	Severity	Yield	Test weight
	(%)	(%)	(%)	(%)	(%)	(%)	(bu/A)	(lb/bu)
Control	0.0	9.0	26.8	0.0	10.0	61.3	48.1	59.3
Stratego FGS2/4 Fl oz	0.0	6.0	6.0	0.0	10.0	40.0	56.5	59.4
Stratego FGS2/5 Fl oz	0.0	5.5	4.8	0.0	10.0	37.0	53.4	58.9
Absolute 500 SC FGS2/2 Floz	0.0	5.3	3.5	0.0	10.0	53.8	52.7	58.5
Headline FGS2/ 3 Fl oz	0.0	5.8	3.5	0.0	10.0	43.0	51.5	59.1
Stratego FGS10/ 10 Fl oz	0.0	8.5	26.0	2.0	10.0	31.8	47.9	58.1
Folicur 3.6F FGS10/ 4 Fl oz	0.0	8.5	24.8	1.3	10.0	18.0	44.8	58.6
Tilt FGS2/ 2 Fl oz	0.0	6.3	6.0	0.0	10.0	38.3	50.0	58.9
Absolute 500 SC FGS 2 + FGS10/ 2 + 2 Fl oz	0.0	6.3	3.5	2.0	10.0	19.3	55.8	59.3
Mean	0.0	6.8	11.6	0.6	10.0	38.0	51.1	58.9
CV%	-	12.2	30.3	154.7	-	35.2	9.7	1.0
LSD .05	-	1.2	5.1	1.3	-	19.5	7.2	NS

1 Treatment name is fungicide product name, Feekes growth stage (FGS), and application rate.

We want to thank Dean Wandler, New England for allowing us to use his field in this demonstration and Gregg Fitterer, for his help in developing this demonstration.

Evaluation of Foliar Fungicides on HRSW at Hettinger

This project was funded by BASF Corp.

Eric Eriksmoen

Reeder hard red spring wheat was seeded on April 18. Treatments 2 through 7 and 11 through 16 were applied on June 3 to wheat in the 4 leaf growth stage. Treatments 6 through 9 were applied on June 21 to wheat in the flag leaf growth stage. Treatments 4, 5, 10, 15, 16 and 17 were applied on June 30 to flowering wheat. Treatments were applied with a tractor mounted CO^2 propelled plot sprayer delivering 20 gpa at 40 psi to 5 foot wide by 20 foot long plots. The experiment was a randomized complete block design with four replications. Plots were evaluated for foliar diseases on the flag leaf on July 5. The trial was harvested on August 5.

Summary

Leaf rust, stripe rust and tan spot were observed on most plants, however, their severity of infection was very minor. Hot and dry weather conditions throughout much of the growing season was not conducive to disease progression or crop production. Most fungicide treatments significantly lowered the incidence of leaf and stripe rust but not tan spot. Grain yields were significantly higher than the untreated check for all fungicide treatments with the exception of Tilt applied alone (trt 11). Interestingly, this was the only treatment that appeared to provide complete control of leaf rust and very good control of stripe rust and tan spot. In general, test weights and grain yields did not correspond to the level of foliar disease control in this trial.

Evaluation of Foliar Fungicides on HRSW at Hettinger

	Treatment	Application Timing	Product Rate	Leaf Rust Inc.	Leaf Rust Sev	Stripe Rust Inc.	Tan Spot Inc.	Tan Spot Sev.	Test Weight	Grain Yield
			oz/Ac	%	%	%	%	%	Lbs/bu	Bu/Ac
1	Untreated			92	3	45	85	1	47.8	13.8
2	Headline	4 leaf	3	60	2	20	85	1	46.9	16.9
3	Headline + Puma + Bronate Adv.	4 leaf	3 + 10.6 + 12.8	60	2	18	92	2	47.2	15.5
4	Headline / Folicur	4 leaf / flowering	3 / 4	22	1	8	78	1	48.3	17.7
5	Headline / Caramba + NIS	4 leaf / flowering	3 / 13.5 + 0.25%	85	3	20	75	1	46.2	18.3
6	Headline / Headline + NIS	4 leaf / Flag leaf	3 / 3 + 0.25%	60	2	28	88	1	48.8	17.2
7	Headline / Headline + NIS	4 leaf / Flag leaf	3 / 6 + 0.25%	92	2	22	65	2	48.5	16.8
8	Headline + NIS	Flag leaf	6 + 0.25%	32	1	18	85	2	48.9	18.7
9	Caramba + NIS	Flag leaf	13.5 + 0.25%	80	2	25	66	1	48.8	18.5
10	Caramba + NIS	Flowering	13.5 + 0.25%	62	1	8	85	2	48.4	17.5
11	Tilt	4 leaf	2	0	0	5	20	1	48.5	15.2
12	Tilt + Puma + Bronate Adv.	4 leaf	2 + 10.6 + 12.8	78	2	42	62	1	48.0	16.3
13	Stratego	4 leaf	5	70	2	8	62	2	46.0	15.4
14	Stratego + Puma + Bronate Adv.	4 leaf	5 + 10.6 + 12.8	68	2	18	62	1	47.6	16.2
15	Tilt / Folicur	4 leaf / flowering	2 / 4	55	1	0	48	1	47.3	16.4
16	Stratego / Folicur	4 leaf / flowering	5 / 4	72	3	10	55	1	45.8	17.4
17	Folicur	Flowering	4	15	1	8	75	1	49.4	16.5
Trial Mean				59	2	18	70	1	47.8	16.7
C.V. %				26.7	50.5	55.7	23.4	40.9	2.5	6.2
LSD .05				22	1	14	23	NS	1.7	1.5
LSD .01				30	2	19	31	NS	2.3	2.0

Evaluation of barley seed applied fungicides on root disease at Mott, ND, 2005

R.O. Ashley and G. Martin

This experiment was conducted in a field located near Mott, ND (46.59728 N, 102.28103 W). The previous crop was winter wheat. Soil samples taken on 14 Apr indicated there were 200 propagules (Low) of Fusarium per gram of soil, 340 propagules (Moderate) of Pythium per gram of soil and no Rhizoctonia propagules were detected. Urea (46-0-0) was broadcast applied on 8 Apr at the rate of 100 pounds per acre. Barley seed with a known *Ustilago nuda* infection rate of 6% was treated with various fungicide treatments prior to planting. Prior to seeding a germination test was performed for each treatment. On 26 Apr, seed was planted using no-till methods into wheat residue after gylphosate was applied to control volunteer wheat and weeds. A herbicide application of 0.4 oz of Harmony GT XP + 0.66 pt of Puma + 0.75 pt MCP ester per acre was applied on 28 May when the crop was at Haun stage 2 to 2.5. Plant counts were made on 19 May and on 26 May. Initial plant evaluations were made on 21 Jun and the root and crown evaluation at soft dough was done on 22 Jul. Loose smut head evaluation was done on 9 Jul by counting the number of smutted heads per 50 heads and the results recorded. Soil samples taken at soft dough and analyzed for soil-borne disease propagules indicated that there were 1220 propagules (High) of Fusarium per gram of soil, 240 propagules (Moderate) of Pythium per gram of soil, and 30 propagule (Moderate) of Rhizoctonia per gram of soil. Harvest was with a Massy Ferguson 8EXP combine on 22 Aug. Grain yield and test weight were adjusted to 12% moisture basis. All data was statistically analyzed using SAS Statistical software version 9.1. Only currently registered products are listed in this report. Dividend XL is not registered for use in barley.

Stand counts for Drummond barley with various seed treatments.

		---------- Initial[1] ----------		---------- Second[2] ----------	
Treatment	Germination	Stand count	Vigor	Stand count	Vigor
	%	m^{-2}		m^{-2}	
Check	91.3	154.0	5.0	276.8	5.3
Raxil MD/324	92.7	146.6	6.8	266.8	6.5
Dividend XL/63.4	96.7	156.5	6.5	282.3	7.0
Mean	93.3	156.7	6.4	269.4	6.6
CV%	4.8	18.0	11.9	12.1	13.8
LSD .05	NS	NS	1.1	NS	NS

[1] Initial count performed on 9 Nov 2004.
[2] Second count performed on 25 May 2005.
[3] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole + 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.

Initial root/plant and soft dough evaluations of Drummond barley with various seed treatments.

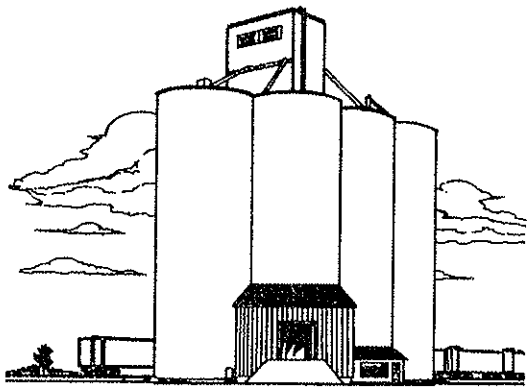
	---------- Initial evaluation[1] ----------						-- Soft dough evaluation[2] -		
Treatment[3]	Plant length	Stage	Tiller	SCI[4]	Seminal root	Crown root	SCI[4]	Root color[5]	Root mass[6]
	mm	Haun	no plant^{-1}		no plant^{-1}	no plant^{-1}			
Check	303.2	5.1	1.9	1.2	1.1	13.3	1.7	2.2	2.0
Raxil MD/324	261.7	5.1	2.1	1.1	1.2	12.7	1.3	1.9	2.3
Dividend XL/63.4	277.2	5.2	2.0	1.1	1.0	13.6	1.5	1.9	2.5
Mean	276.2	5.0	2.0	1.1	1.2	13.1	1.3	1.9	2.3
CV%	9.4	7.4	17.8	9.1	62.8	11.2	10.5	6.6	11.0
LSD .05	NS	NS	NS	NS	NS	NS	0.2	0.2	NS

[1] Initial evaluation performed 1 Jun 2005.
[2] Soft dough evaluation performed on 14 Jul 2005.
[3] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole and 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.
4 Subcrown internode rating, 1-4. 1 = less than 25% of the internode infected, 2 = 25-50% of the internode infected, 3 = 50 – 75% of the internode infected, multiple lesions, and 4 = 75-100% of the internode infected lesions coalesced.
[5] Root color rating, 1-4. 1 = white roots, 4 = dark roots.
[6] Root mass rating, 1-4. 1= few roots, 4 = many roots.

Grain yield, test weight, protein, height, and head density of Drummond barley grown under various seed treatments.

				-------- Grain[1] --------	
Treatment[2]	Smutted heads[3]	Head density	Plant height	Yield	Test weight
	%	no m^{-1}	mm	bu/a	lb/bu
Check	22.5	218.6	661.3	51.8	43.8
Raxil MD/324	3.0	234.6	690.0	52.9	44.0
Dividend XL/63.4	7.5	222.6	651.3	55.1	44.1
Mean	5.2	220.6	656.5	54.8	43.9
CV%	25.0	12.2	3.5	4.9	1.2
LSD .05	3.9	NS	33.4	3.9	NS

[1] Grain yield, test weight, and protein were adjusted to a 12% moisture basis.
[2] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole and 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.
3 Original means presented. Square root transformation was used in analysis. Values with same letter are not different.



Evaluation of seed applied fungicides on Winter Wheat at Taylor, ND, 2005

R.O. Ashley and G. Martin

This experiment was conducted in a field located near Taylor ND. Fungicide treatments were applied to seed prior to planting. Soil test prior sampled on 16 Sep 2004 indicated the soil contained 22lb/A N, 3 ppm P, 240 ppm K, pH 6.5, EC 0.45 mmhos/cm, 2.7% OM and 63 lb/A Cl. At planting 110 lbs/A of 11-52-0 per acre was applied in a separate band away from the seed and an additional 230 pounds of 44-0-0 was applied on 28 Apr. On 28 Sep 2004, seed was planted using no-till methods into wheat residue after gylphosate was applied to control volunteer wheat and weeds. A herbicide/foliar fungicide application of 12 fl oz of Double-up B + D herbicide (bromoxynil + 2, 4-D) + 4 fl oz of Stratego (propiconazole + trifloxystrobin) applied on May 23, 2005 at Zadoks growth stage 30. Plant counts were made on 9 Nov and on 25 May. Initial plant evaluations were made on 1 Jun and the root and crown evaluation at soft dough were done on 14 Jul. Harvest was with a Massy Ferguson 8EXP combine on 8 Aug. Grain protein content was analyzed at Southwest Grain, Gladstone, ND. Grain yield, test weight and protein were adjusted to 12% moisture basis. Soil samples taken at soft dough and analyzed for soil-borne disease propagules indicated that there were 300 propagules of Pythium per gram of soil which is rated as moderate and 1580 propagules of Fusarium spp. per gram of soil which is rated as high. Experimental products used in this trial are not listed in this report, only registered compounds.

Stand counts for CDC Falcon HRWW with various seed treatments.

	---------- Initial[1] ----------		---------- Second[2] ----------	
Treatment[3]	Stand count	Vigor	Stand count	Vigor
	m^{-2}		m^{-2}	
Check	134.6	5.3	232.7	4.8
Raxil MD/324	157.5	6.5	231.2	6.3
Dividend XL/63.4	200.7	7.5	292.3	8.8
Mean	179	6.4	259.9	6.6
CV%	39.0	18.7	14.6	18.7
LSD .05	NS	NS	NS	1.8

[1] Initial count performed on 9 Nov 2004.
[2] Second count performed on 25 May 2005.
[3] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole + 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.

Initial root/plant and soft dough evaluations of CDC Falcon HRWW with various seed treatments.

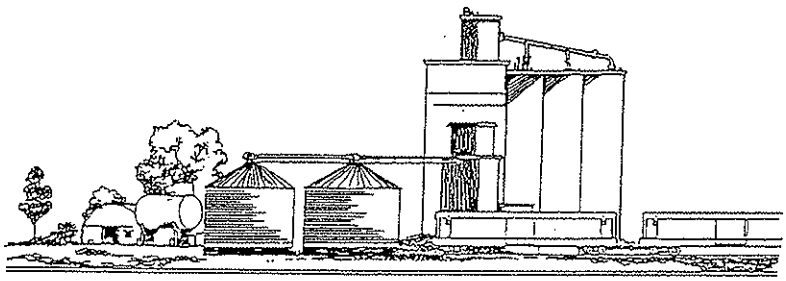
	---------- Initial evaluation[1] ----------						-- Soft dough evaluation[2] - -		
Treatment[3]	Plant length	Stage	Tiller	SCI[4]	Sem root	Crown root	SCI[4]	Root color[5]	Root mass[6]
	mm	Zadoks	no plant^{-1}		no plant^{-1}	no plant^{-1}			
Check	302.4	30.0	2.1	1.57	3.05	8.34	1.3	3.0	1.9
Raxil MD/324	304.3	30.8	3.1	1.61	3.63	14.63	1.3	2.3	2.2
Dividend XL/63.4	357.0	31.0	2.2	1.50	4.20	10.77	1.2	1.8	2.5
Mean	341.8	30.8	2.5	1.4	3.9	11.7	1.3	2.2	2.3
CV%	13.1	1.3	31.5	15.9	12.4	28.8	14.7	10.9	13.6
LSD .05	NS	NS	NS	NS	0.7	NS	NS	0.3	NS

[1] Initial evaluation performed 1 Jun 2005.
[2] Soft dough evaluation performed on 14 Jul 2005.
[3] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole and 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.
4 Subcrown internode rating, 1-4. 1 = less than 25% of the internode infected, 2 = 25-50% of the internode infected, 3 = 50 – 75% of the internode infected, multiple lesions, and 4 = 75-100% of the internode infected lesions coalesced.
[5] Root color rating, 1-4. 1 = white roots, 4 = dark roots.
[6] Root mass rating, 1-4. 1= few roots, 4 = many roots.

Grain yield, test weight, protein, height, and head density of CDC Falcon HRWW grown under various seed treatments.

			---------- Grain[1] ----------		
Treatment[2]	Head density	Plant height	Yield	Test weight	Protein
	no/m	mm	bu/a	lb/bu	%
Check	446.8	675.6	38.0	55.2	11.1
Raxil MD/324	460.3	683.8	44.8	54.3	11.2
Dividend XL/63.4	447.4	691.3	49.8	54.5	11.1
Mean	424.4	666.0	44.5	54.3	11.3
CV%	9.6	2.9	9.1	3.0	4.0
LSD .05	NS	27.7	5.9	NS	NS

[1] Grain yield, test weight, and protein were adjusted to a 12% moisture basis.
[2] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole and 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.



Evaluation of seed applied fungicides on Barley at Mott, ND, 2005

R.O. Ashley and G. Martin

This experiment was conducted in a field located near Mott, ND (46.59728 N, 102.28103 W). The previous crop was winter wheat. Urea (46-0-0) was broadcast applied on 8 Apr at the rate of 100 pounds per acre. Barley seed with a known *Ustilago nuda* infection rate of 6% was treated with various fungicide treatments prior to planting. Prior to seeding a germination test was performed for each treatment. On 26 Apr, seed was planted using no-till methods into wheat residue after gylphosate was applied to control volunteer wheat and weeds. A herbicide application of 0.4 oz of Harmony GT XP + 0.66 pt of Puma + 0.75 pt MCP ester per acre was applied on 28 May when the crop was at Haun stage 2 to 2.5. Plant counts were made on 19 May and on 26 May. Loose smut head evaluation was done on 9 Jul by counting the number of smutted heads per 50 heads and the results recorded. Harvest was with a Massy Ferguson 8EXP combine on 22 Aug. Grain yield and test weight were adjusted to 12% moisture basis. All data was statistically analyzed using SAS Statistical software version 9.1. Experimental products are not listed here, only registered products. **Dividend XL is not registered for use on barley.**

Stand counts for Drummond barley with various seed treatments.

	Seed	---------- Initial[1] ----------		---------- Second[2] ----------	
Treatment[3]	Germination	Stand count	Vigor	Stand count	Vigor
	%	m^{-2}		m^{-2}	
Check	91.3	121.1	5.0	235.9	5.8
Raxil MD/324	95.3	108.1	7.3	232.9	7.5
Dividend XL/63.4	94.7	111.7	7.3	238.4	7.0
Mean	93.0	118.8	7.2	234.6	7.2
CV%	4.2	18.1	12.0	9.7	15.3
LSD .05	NS	NS	1.2	NS	NS

[1] Initial count performed on 19 May.
[2] Second count performed on 26 May.
[3] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole + 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.

Smutted heads, grain yield, test weight, height, and head density of Drummond barley grown under various seed treatments.

				-------- Grain[4] --------	
Treatment[2]	Smutted heads[3]	Head density	Plant height	Yield	Test weight
	%	m^{-1}	mm	bu/a	lb/bu
Check	19.0	211.3	648.8	51.4	44.3
Raxil MD/324	1.0	212.8	645.0	53.0	44.1
Dividend XL/63.4	10.0	198.7	620.0	50.0	43.5
Mean	4.7	208.6	651.7	54.1	43.8
CV%	86.7	7.8	5.2	5.4	1.2
LSD .05	5.9	NS	NS	NS	NS

[1] Grain yield, test weight, and protein were adjusted to a 12% moisture basis.
[2] Treatment is product/application rate in ml/100 Kg. Dividend XL contains 16.5% difenoconazole and 1.38% (R) – [2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester. Raxil MD contains 0.48% tebuconazole + 0.64% metalaxyl.
[3] Original means presented. Square root transformation was used in analysis. Values with same letter are not different.
[4] Grain yield and test weight adjusted to a 12 percent moisture basis.

Evaluation of Foliar Fungicides on Field Pea at Hettinger

This project was funded by BASF Corp.

Eric Eriksmoen

'CDC Mozart' yellow field pea was seeded on April 18. Treatments were applied on June 21 to peas at the 5% bloom stage. Foliar diseases were not observed. Treatments were applied with a tractor mounted CO^2 propelled plot sprayer delivering 20 gpa at 40 psi to 5 foot wide by 20 foot long plots. The trial was sprayed with 9 oz/acre Assure II to control grassy weeds on May 19. The trial was a randomized complete block design with four replications. Plots were evaluated for pod diseases and crop injury 15 days after treatment (July 6) and 30 days after treatment (July 20). The trial was harvested on July 29.

	Treatment	Application Rate	- 15 DAT - Pea	- 15 DAT - Dis.	- 30 DAT - Pea	- 30 DAT - Dis.	Test Weight	Seed Yield
		oz/Ac	-------- % Injury --------				lbs/bu	bu/ac
1	Headline	6	0	0	0	0	61.4	23.3
2	Headline + NIS	6 + 0.25%	0	0	0	0	61.8	23.1
3	Endura + NIS	8 + 0.25%	0	0	0	0	62.1	23.5
4	Kumulus	80	0	0	0	0	62.4	22.9
5	Amistar	3	0	0	0	0	62.2	24.0
6	Quadris Opti	25.6	0	0	0	0	61.2	21.7
7	Untreated		0	0	0	0	62.4	21.9
Trial Mean			0	0	0	0	61.9	22.9
C.V. %			0	0	0	0	1.7	14.4
LSD .05			--	--	--	--	NS	NS

Summary

Fungal diseases were not observed on leaf or pod tissue. Bacterial blight was observed on pods late in the season but hot and dry weather conditions were not favorable for secondary fungal infections. None of the treatments caused any noticeable crop injury. Test weights and seed yields were not significantly different than the untreated check.

Management of *Ascochyta* Blight in Chickpea and Sensitivity to Fungicides at Hettinger

'Dylan', a large kaboli type chickpea, was seeded on April 6. Treatments 10 and 11 were applied on June 3 (25 days after emergence). Treatment 12 was applied on June 16 (38 days after emergence). Treatments 2 – 9 were applied on June 22 (10% bloom). A second application to treatments 2 – 9 and 11 was on July 11 (90% bloom). Treatments were applied with a tractor mounted CO^2 propelled plot sprayer delivering 20 gpa at 40 psi to 5 foot wide by 20 foot long plots. The experiment was a randomized complete block design with four replications. The trial was harvested on August 5.

	Treatment	Product Rate	Plant Disease 7/15	Plant Disease 7/27	Grain Yield	Test Weight	1000 Seed Weight	Disease on Seed	Seed Size (mm) >9	Seed Size (mm) 8 - 9	Seed Size (mm) <8
		Oz/A	----- 0-9* -----		Lbs/A	Lbs/bu	grams	0 – 9**	--------- % ---------		
1	Untreated	0	3.0	3.2	951	56.1	316	5.8	31	38	30
2	Bravo / Bravo	32 / 32	1.0	2.2	1907	55.3	439	1.2	60	27	13
3	Headline / Headline	7.2 / 7.2	2.0	2.8	1700	55.1	380	2.8	56	28	16
4	Endira / Endura	8 / 8	0.5	2.0	1902	55.3	400	2.5	59	27	13
5	JAU6476 / JAU6476	5.7 / 5.7	0.5	2.2	2147	55.0	405	2.0	62	26	12
6	Quilt / Quilt	7 / 7	2.0	2.8	1688	54.6	394	2.0	52	32	16
7	Quadris / Quadris	6.2 / 6.2	1.5	1.8	1773	55.2	396	2.2	54	29	16
8	Bravo / Headline	22 / 7.2	0.8	2.2	2047	55.1	400	1.2	63	27	10
9	Bravo / Quadris	22 / 6.2	1.8	2.8	1822	55.2	397	1.8	57	30	13
10	Headline – 25 DAE	7.2	1.2	2.5	1580	55.6	376	2.5	50	31	19
11	Head.25 / Headline	7.2 / 7.2	0.8	2.0	1967	55.2	421	1.5	63	26	10
12	Headline – 38 DAE	7.2	2.5	2.8	1627	55.6	354	2.8	48	33	20
Trial Mean			1.5	2.4	1773	55.3	390	2.4	54	30	16
C.V. %			54.2	24.9	16.4	0.8	9.9	58.9	17.0	13.9	40.1
LSD .05			1.1	NS	419	0.7	56	2.0	13	6	9
LSD .01			1.5	NS	565	NS	75	2.7	18	8	12

*Plant Disease: 0 = none, 9 = plants completely dead.
**Disease on Seed: 0 = none, 9 = disease on all seed.

Summary

The trial was located on a site that had a severe infestation of chickpea ascochya 4 years previously. Weather conditions were generally dry through May resulting in minor disease symptoms. June was relatively wet and disease symptoms became more prevalent at the end of this month. July and August were relatively hot and dry, and were not conducive to disease progression. All fungicide treatments provided significant disease control onto the seed resulting in significantly higher yields and seed quality than the untreated check. Applications prior to initiation of flowering (trts 10 and 12) provided relatively poorer disease protection. Applications at 90% bloom (July 11) appear to have been the key timing for preventing disease movement onto the pods.

Broadleaf Weed Control in Wheat at Hettinger

Eric Eriksmoen

Reeder hard red spring wheat was seeded on April 18. Treatments were applied to 3 ½ leaf wheat, ¼" kochia and 1 ½" wild buckwheat on May 24 with 65°F, 40% RH, cloudy sky and 8 mph N wind. 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 experiment was a randomized complete block design with four replications. Kochia and wild buckwheat populations were 23 and 1 plants per ft^2, respectively. Plots were evaluated for crop injury on June 9 and for weed control on June 9, June 23 and July 22. The trial was harvested on August 5.

	Treatment	Product Rate	June 9 HRSW	June 9 Kocz	June 9 Wibw	June 23 Kocz	June 23 Wibw	7/22 Kocz	Grain Yield
		oz/Ac	% Control						bu/Ac
1	Starane & Salvo	16	0	88	50	95	91	99	15.5
2	Starane & Sward	12.3	0	84	48	94	88	96	14.2
3	Bronate Advance	12.8	0	91	91	95	96	99	16.0
4	Bromoxynil & 2,4-D	16	0	92	91	95	94	99	14.5
5	Aim + Clarity	0.5 + 2.0	0	92	45	94	50	99	14.7
6	Aim + Harmony XP + Salvo	0.5 + 0.3 + 8.5	0	92	85	94	90	96	14.2
7	WideMatch	16	0	91	81	96	92	99	17.4
8	WideMatch	10.7	0	85	50	94	90	99	15.1
9	WideMatch + Aim	10.7 + 0.5	0	91	52	97	94	99	16.8
10	WideMatch + Harmony XP	10.7 + 0.3	0	91	91	92	94	97	16.7
11	WideMatch + Bronate Adv.	10.7 + 9.6	0	94	91	97	98	99	15.0
12	WideMatch + Salvo	10.7 + 8.5	0	90	52	92	94	97	15.9
13	Untreated		0	0	0	0	0	0	11.0
C.V. %			0	4.7	13.9	4.2	5.3	2.7	12.5
LSD .05			--	6	13	5	6	4	2.7

Kocz = kochia, Wibw = wild buckwheat.

Summary

No crop injury was observed. All herbicide treatments provided excellent season long kochia control. Treatments containing bromoxynil (trts 3, 4, 11) or Harmoney XP (trts 6 and 10) tended to have better activity on wild buckwheat however, all treatments, with the exception of Aim + Clarity (trt 5), provided very good season long control. Grain yields of all herbicide treatments were significantly higher than the untreated check.

Broadleaf Weed Control with ET Herbicide in Wheat at Hettinger

This project was funded by Nichino America.

Eric Eriksmoen

Reeder hard red spring wheat was seeded on April 18. Treatments were applied to 5 leaf wheat, 1" kochia, 3" wild buckwheat and 4" field bindweed on June 3 with 70°F, 57% RH, mostly sunny sky and 2 mph W wind. 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 experiment was a randomized complete block design with four replications. Kochia, wild buckwheat and field bindweed populations were 28, 4 and 1 plants per ft^2, respectively. Plots were evaluated for crop injury on June 9 and June 17, and for weed control on June 9, June 17, July 1 and July 22. The trial was harvested on August 5.

Summary

Significant crop injury was observed on 2,4-D + ET treatments (trts 4 and 5) and on ET alone treatments (trts 8 and 9), and probably caused grain yield reductions. Injury symptoms appeared as leaf burning and leaf chlorosis which diminished over time. All treatments with the exception of the ET alone treatments (trts 8 and 9) provided excellent season long wild buckwheat control. All treatments except for the Harmony GT alone and the ET alone treatments (trts 2, 8 and 9) provided excellent season long field bindweed control. All treatments except for the Harmony GT alone and Harmony GT + ET treatments (trts 2 and 6) provided excellent season long kochia control. None of the treatments provided significantly higher or lower grain yields than the untreated check.

Broadleaf Weed Control with ET Herbicide in Wheat at Hettinger, North Dakota

	Treatment	Product Rate	June 9				June 17				July 1			7/22	Grain Yield
			HRSW	kocz	wibw	fibw	HRSW	kocz	wibw	fibw	kocz	wibw	fibw	kocz	
		oz/Ac	% Control												bu/Ac
1	2,4-D (LV4) + NIS	12 + 0.25%	2	69	48	50	0	70	84	89	94	95	94	91	16.5
2	Harmony GT + NIS	0.3 + 0.25%	2	38	90	35	0	32	92	60	30	94	72	45	16.2
3	Harmony GT + 2,4-D + NIS	0.3 + 8 + 0.25%	0	74	86	45	0	55	96	58	88	94	94	91	16.6
4	2,4-D + ET + NIS	8 + 0.25 + 0.25%	20	62	90	88	0	84	90	90	95	95	95	92	13.4
5	2,4-D + ET + NIS	8 + 1.0 + 0.25%	29	80	50	90	2	80	89	91	95	92	92	96	13.2
6	Harmony GT + ET + NIS	0.3 + 0.5 + 0.25%	5	82	90	86	0	45	91	91	85	90	91	82	15.7
7	2,4-D+Harm. GT+ET+NIS	8+0.3+0.5+ 0.25%	5	82	88	88	0	78	94	95	92	91	92	94	16.6
8	ET + NIS	1.0 + 0.25%	14	50	55	50	0	59	42	61	90	50	45	96	14.8
9	ET + NIS	2.0 + 0.25%	28	79	90	89	2	85	91	91	92	81	84	97	14.6
10	Untreated		0	0	0	0	0	0	0	0	0	0	0	0	15.0
C. V. %			17.5	16.0	6.3	10.4	233	25.2	7.2	15.0	6.9	7.3	14.0	7.6	8.1
LSD .05			3	14	6	9	1	21	8	16	14	8	15	9	1.8

kocz = kochia, wibw = wild buckwheat, fibw = field bindweed.

Application Timing of Everest Herbicide in Spring Wheat at Hettinger, North Dakota

This project was funded by Arysta LifeSciences North America.

(Eriksmoen). Fall treatments (trts 5 - 12) were applied to 1 ½ leaf downy brome on October 21, 2004. Pre-plant treatments (trts 9, 12 - 17) were applied to tillering downy brome and 1 leaf Japanese brome on April 7, 2005. Pre-emergence treatments (trts 18 - 22) were applied to 1 leaf wild oats, jointing downy brome and tillering Japanese brome on April 20. Post-emergence treatments (trts 2 - 4, 10 & 11) were applied to 3 ½ leaf wheat, to 2 ½ leaf wild oats, to downy brome in the boot and to jointing Japanese brome on May 24 with 63°F, 46 % RH, cloudy sky and 8 mph NW wind. Reeder hard red spring wheat was seeded on April 18. All treatments were applied with a tractor mounted CO^2 propelled plot sprayer delivering 10 gpa at 40 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The experiment was a randomized complete block design with four replications. Wild oat and cheatgrass (downy brome and Japanese brome combined) populations were 9 and 10 plants per sq. ft, respectively. Evaluations for crop injury were on June 9, and for weed control on June 23 and July 22. The trial was harvested on August 5.

Summary

Crop injury was relatively minor on all herbicide treatments. Fall treatments (trts 5,6 & 7) did not provide adequate downy brome, Japanese brome or wild oat control. Split applications, pre-plant, pre-emergence and post-emergence applications all provided excellent season long grassy weed control regardless of application rate except for the pre-plant Roundup application (trt 15) which did not provide adequate control of wild oats, the low rate post-emergence treatment (trt 2) which was weaker on downy brome and the fall/low rate pre-plant split treatment (trt 12) which also did not provide adequate control of wild oats. All treatments had significantly higher yields than the untreated check except for the lower fall applied rates (trts 5 & 6). In general, crop yields and weed control tended to increase as rates increased and with later application dates.

	Treatment	Rate	Timing	June 9	6/23		July 22			8/5
				HRSW	dobr	wiot	wiot	dobr	Jabr	Yield
		oz/A		% Control						bu/A
1	Untreated	0		0	0	0	0	0	0	10.5
2	Everest	0.2	POST	1	84	99	99	80	97	14.9
3	Everest	0.4	POST	0	90	99	99	91	99	15.0
4	Everest	0.6	POST	1	94	99	99	96	99	17.5
5	Everest	0.2	Fall	0	0	0	0	0	8	9.7
6	Everest	0.4	Fall	0	34	12	15	17	40	12.2
7	Everest	0.6	Fall	0	25	0	37	30	32	13.6
8	Roundup Ult. Max	16	Fall	2	32	25	25	20	28	13.3
9	R'up / Everest	16 / 0.4	Fall / PP	8	95	90	95	99	99	15.2
10	Everest / Everest	0.4 / 0.2	Fall / POST	1	90	99	99	97	99	16.4
11	Everest / Everest	0.2 / 0.4	Fall / POST	2	92	87	97	90	94	15.1
12	Everest / Everest	0.4 / 0.2	Fall / PP	3	86	78	89	70	98	14.8
13	Everest	0.4	PP	12	88	90	93	99	99	14.5
14	Everest	0.6	PP	8	90	96	95	98	96	13.9
15	Roundup Ult. Max	16	PP	0	90	45	57	97	91	13.8
16	Everest + R'up	0.4 + 16	PP	4	99	94	96	99	99	14.3
17	Everest + R'up	0.6 + 16	PP	6	99	98	98	99	99	15.1
18	Roundup Ult. Max	16	PRE	0	92	92	86	95	92	15.4
19	Everest	0.4	PRE	5	89	84	90	87	96	14.3
20	Everest	0.6	PRE	6	92	97	96	98	93	14.1
21	Everest + R'up	0.4 + 16	PRE	5	99	91	94	99	99	15.8
22	Everest + R'up	0.6 + 16	PRE	4	91	84	87	96	94	15.2
C.V. %				114	23	22	23	26	21	13.2
LSD 5%				5	25	22	25	28	23	2.7

wiot = wild oat, dobr = downy brome, Jabr = Japanese brome.

Evaluation of Chemical Weed Control and Application Timing on Field Pea at Hettinger

Eric Eriksmoen

This project was funded by the North Dakota Dry Pea and Lentil Association.

Fall treatments (Fall) were applied on October 12, 2004. Pre-plant treatments (PP) were applied on April 7, 2005. 'CDC Mozart' yellow field pea was seeded on April 18. Pre-emergence treatments (PRE) were applied on April 20. Pea emergence was on May 10. Post-emergence (POST) treatments were applied on May 24 to 5 node peas (3 ½"), ¼" kochia and to 1 leaf wild buckwheat. Kochia and wild buckwheat populations were 12 and 0.25 plants / ft^2, respectively. Treatments were applied with a tractor mounted CO^2 propelled plot sprayer delivering 10 gpa at 30 psi to 5 foot wide by 20 foot long plots. The experiment was a randomized complete block design with four replications. The trial was sprayed with 9 oz/A Assure II on May 19 to control grassy weeds. Soil pH was 6.6 and soil organic matter was 3.1%. Plots were evaluated for crop stand on May 23, for crop injury on May 25 and on June 10, and for weed control on May 25, June 10 and on July 22. The trial was harvested on July 29.

Summary

Crop stands were very uniform across the trial and Fall, pre-plant and pre-emergence treatments did not appear to cause problems with seed germination or seedling emergence. Crop injury caused by herbicide treatments were inconsistent and very minor when observed. Spartan herbicide applied alone at a low rate in the Fall (trt 2) did not provide adequate season long weed control, however, Fall applied Spartan at the 4 oz/A rate (trt 3) significantly improved weed control and seed yield. Low rates of Fall applied Spartan followed with a spring treatment (trts 7 – 10) provided excellent season long kochia and wild buckwheat control. Spartan treatments applied either pre-plant (trts 6, 11 and 12) or pre-emergence (trts 13 and 14) also provided excellent season long kochia and buckwheat control, regardless of the rate applied. Pursuit herbicide treatments (trts 4 and 23) and Extreme herbicide (which is a pre-mixture of Pursuit and glyphyosate) treatment 16, were very effective at controlling wild buckwheat but did not provide adequate control of kochia. The addition of Spartan to these herbicides (trts 5 and 8) picked up kochia control, providing for an excellent herbicide combination. Harmony GT (trt 17), Express (trt 18) and Roundup (trt 19) applied pre-emergence, and Rezult (trt 21) applied post emergence did not provide adequate kochia or wild buckwheat control and seed yields were similar to the untreated check. The pre-emerge Prowl H_2O treatment (trt 20) provided excellent kochia control but was relatively weak on wild buckwheat. The post emergence Raptor + Basagran treatment (trt 22) provided adequate wild buckwheat control but tended to be weaker on kochia. The kochia population in this study is believed to be ALS resistant (resistant to Pursuit, Raptor, Express and Harmony GT herbicides).

In general, Spartan herbicide applied in the Fall, pre-plant or pre-emergence was very effective in controlling kochia and wild buckwheat in this study. Higher rates of Spartan and the addition of Pursuit in Fall applications tended to enhance weed control. Harmony GT and Express herbicides applied pre-emergence did not cause crop injury and did not provide adequate weed control.

Evaluation of Chemical Weed Control and Application Timing on Field Pea at Hettinger

	Treatment	Application Timing	Product Rate	Crop Stand	May 25 Inj.	May 25 kocz	May 25 wibw	June 10 Inj.	June 10 kocz	June 10 wibw	July 22 kocz	July 22 wibw	Seed Yield
		*	oz/ac	#/ft^2	% Control								Bu/ac
1	Untreated			4	0	0	0	0	0	0	0	0	16.2
2	Spartan	Fall	2	5	0	92	95	0	89	50	82	42	16.7
3	Spartan	Fall	4	4	0	91	95	0	96	94	91	82	20.3
4	Pursuit	Fall	2	4	0	81	82	0	80	99	59	96	23.0
5	Pursuit / Spartan	Fall / PP	2 / 2	4	0	94	92	0	99	97	97	95	21.8
6	Roundup / Spartan	Fall / PP	16 / 2	3	0	94	94	0	98	95	91	88	22.3
7	Spartan / Roundup	Fall / PRE	2 / 16	4	0	92	92	0	90	90	90	86	25.5
8	Spartan / Extreme	Fall / PRE	2 / 24	4	0	95	94	0	93	94	92	97	27.6
9	Spartan / Spartan + Roundup	Fall / PRE	2 / 2 + 16	3	0	96	95	0	99	97	98	97	22.2
10	Spartan / Prowl H_2O	Fall / PP	2 / 32	4	1	92	94	0	94	96	92	97	22.3
11	Spartan + Roundup	PP	2 + 16	3	0	92	95	0	96	96	89	94	22.1
12	Spartan + Roundup	PP	6 + 16	3	0	95	95	0	99	94	99	97	20.4
13	Spartan + Roundup	PRE	2 + 16	4	0	90	95	0	96	99	90	91	21.8
14	Spartan + Roundup	PRE	6 + 16	4	0	95	95	0	99	99	99	97	22.5
15	Spartan + Prowl H_2O	PP	2 + 32	4	0	94	91	0	91	90	90	92	20.2
16	Extreme	PP	24	3	0	69	90	0	78	98	50	90	22.3
17	Harmony GT + Roundup	PRE	1/6 + 16	3	0	0	0	0	30	28	22	0	16.2
18	Express + Roundup	PRE	1/10 + 16	4	0	0	0	0	0	0	12	0	15.4
19	Roundup	PRE	16	3	0	0	0	0	12	0	9	0	18.8
20	Prowl H_2O + Roundup	PRE	32 + 16	5	0	90	95	0	86	52	94	45	22.0
21	Rezult	POST	51	3	--	--	--	0	78	5	55	0	16.5
22	Raptor + Basagran	POST	2 + 16	4	--	--	--	0	88	85	81	86	24.0
23	Pursuit	POST	2	4	--	--	--	0	85	79	75	89	22.1
24	Spartan / Basagran	PP / POST	2 + 16	4	0	92	94	0	97	92	98	90	24.4
Trial Mean				4	0	64	66	0	78	72	73	69	21.1
C.V. %				29.8	566	9.1	7.1	980	7.9	7.2	10.5	10.2	9.7
LSD .05				NS	NS	8	7	NS	9	7	11	10	2.9
LSD .01				NS	NS	11	9	NS	12	10	14	13	3.8

* Application Timing: Fall = 10/12/04, PP (pre-plant) = 4/7/05, PRE (pre-emergence) = 4/20/05, POST (post emergence) = 5/24/05

Grassy Weed Control with Axial Herbicide in Spring Wheat at Hettinger, North Dakota

This project was funded by Syngenta Crop Protection.

(Eriksmoen) Reeder hard red spring wheat was seeded on April 18. Treatments were applied to 4 leaf wheat (HRSW), 3 ½ leaf wild oats (wiot), heading downy brome (dobr), tillering Japanese brome (jabr) and to seedling (exact size was not recorded) Persian darnel (pdar) on May 29 with 43° F, 94% RH, cloudy sky and 6 mph N wind. Treatments were applied with a tractor mounted CO^2 propelled plot sprayer delivering 10 gpa at 40 psi through PK-01E80 nozzles to a 5 foot wide area the length of 10 by 28 foot plots. The experiment was a randomized complete block design with four replications. Wild oat, cheatgrass (Japanese and downy brome combined) and Persian darnel populations were 9, 10 and 5 plants per sq. foot, respectively. Evaluations for crop injury were on June 15 and June 27, and for weed control on June 15, June 27 and July 22. The trial was harvested on August 5.

	Treatment	Rate	June 15		June 27				July 22			Grain yield
			HRSW	dobr	HRSW	wiot	dobr	pdar	wiot	jabr	pdar	
		oz/A	% Control									bu/A
1	Axial	8.2	0	55	0	100	65	98	100	45	99	15.4
2	Axial + Bronate Adv.	8.2 + 12.8	2	59	0	100	64	97	100	64	99	16.6
3	Discover NG + Bro Adv	12.8 + 12.8	2	55	0	100	61	93	100	68	99	14.4
4	Everest + Bro Adv	0.6 + 12.8	4	54	0	100	81	13	100	99	0	14.6
5	Everest+Dis NG+Bro Adv	0.6 + 12.8 + 12.8	2	79	0	100	89	81	100	99	99	17.7
6	Everest + Axial + Bro Adv	0.6 + 8.2 + 12.8	1	76	0	100	86	98	100	99	99	16.3
7	Olympus + Bro Adv	0.6 + 12.8	0	65	0	100	86	0	100	99	0	15.5
8	Olympus+Dis NG+Bro Adv	0.6 + 12.8 + 12.8	2	82	0	100	91	95	100	99	99	14.1
9	Olympus + Axial + Bro Adv	0.6 + 8.2 + 12.8	2	88	0	100	81	98	100	99	99	14.8
10	Untreated	--	0	0	0	0	0	0	0	0	0	8.3
C.V. %			182	33	0	0	27	15	0	26	0	14
LSD 5%			NS	29	NS	1	28	15	1	30	1	2.9

dobr = downy brome, wiot = wild oat, pdar = Persian darnel, jabr = Japanese brome

Summary

Crop injury was minor. Downy brome and Japanese brome had stunted growth caused by Axial and Discover NG (trts 1, 2 and 3). Treatments with Everest and Olympus had relatively good downy brome control and excellent Japanese brome control. The downy brome germinated during the Fall and was relatively large at the time of application, whereas, the Japanese brome germinated during the Spring and was relatively small. Wild oat control was excellent for all herbicide treatments. Everest and Olympus treatments alone (trts 3 and 7) did not have any efficacy on Persian darnel. Axial and Discover NG treatments provided excellent control of Persian darnel. All herbicide treatments had significantly higher yields than the untreated check and several of them had twice the yields of the untreated check.

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