MSU EASTERN AGRICULTURAL RESEARCH CENTER
NDSU WILLISTON RESEARCH EXTENSION CENTER

2006 AGRICULTURAL RESEARCH UPDATE

Regional Report No. 12 December 2006

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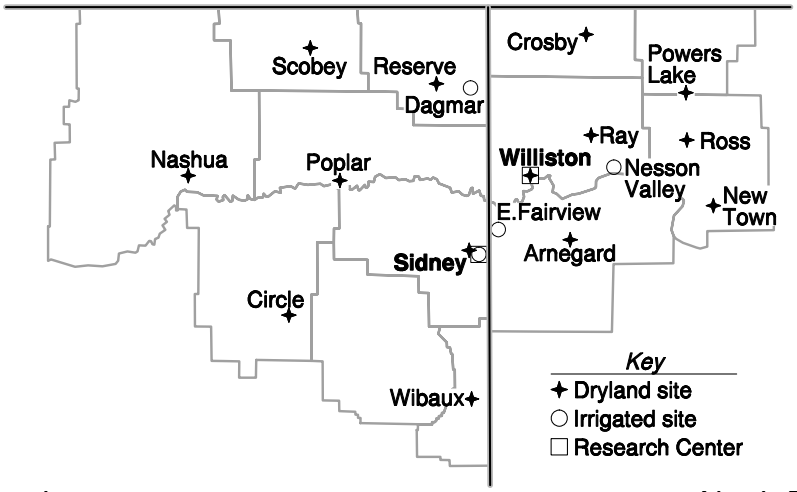

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WEATHER SUMMARY — SIDNEY, MT

Month	Precipitation 2006	Precipitation Avg	Temperature 2006	Temperature Avg	*
	- inches -		- degrees F -		
Oct-Dec. 2005	3.57	1.83			
January-March	1.68	1.31			
April	3.49	1.13	51.6	44.6	0
May	1.75	1.97	59.1	56.0	2
June	2.06	2.85	67.1	64.5	4
July	0.76	2.08	76.5	69.9	22
August	1.56	1.42	72.0	57.7	16
September	2.86	1.28	68.6	57.6	0
April-July	8.06	8.03			
April-Sept	12.48	10.73			
Total- Oct05-Sept06	17.73	13.87			

*Number of Days over 89° F

Last Spring Frost – May 11 (31° F)

First Fall Frost – Sept. 19 (29° F)

WEATHER SUMMARY — WILLISTON, ND

Month	Precipitation 2006	Precipitation Avg	Temperature 2006	Temperature Avg	*
	- inches -		- degrees F -		
Oct-Dec. 2005	1.97	1.71			
January-March	1.51	1.24			
April	2.49	1.16	51.6	43.2	0
May	1.44	2.07	58.9	55.3	3
June	1.70	2.74	67.2	64.9	5
July	0.46	2.28	77.5	70.8	23
August	1.32	1.55	73.1	68.9	16
September	1.60	1.36	59.1	56.6	0
April-July	6.09	8.27			
April-Sept	9.01	11.18			
Total- Oct05-Sept06	12.49	14.13			

*Number of Days over 89° F

Last Spring Frost – May 11 (30° F)

First Fall Frost – Sept. 19 (29° F)

OFF-STATION PRECIPITATION* — MONTANA

Site	April	May	June	July	Aug	Total
Circle	2.89	1.08	1.12	0.67	1.06	6.82
Dagmar	2.23	1.15	2.19	0.13	0.73	6.43
Nashua	1.16	1.51	1.45	0.20	1.42	5.74
Poplar	3.13	1.04	2.71	0.37	1.16	8.41
Reserve	2.23	1.15	2.19	0.13	0.73	6.43
Scobey	2.09	0.63	2.72	0.30	0.40	6.14
Wibaux	3.31	0.75	2.18	0.36	1.34	7.94

*Actual rainfall received at plot location may have been more or less.

OFF-STATION PRECIPITATION* — NORTH DAKOTA

Site	April	May	June	July	Aug	Total
Watford City	2.02	2.62	1.97	0.31	1.76	8.68
Bowbells	2.06	1.44	1.27	0.29	0.91	5.97
Crosby	2.26	1.57	2.72	0.14	0.60	7.29
Nesson Valley	1.27	2.27	1.73	0.56	1.81	7.64
Ross	1.27	2.01	1.78	0.40	2.35	7.81
Plaza	1.69	1.35	1.93	1.13	2.04	8.14

*Actual rainfall received at plot location may have been more or less.

OFF-STATION COOPERATORS – PRODUCERS – CES AGENTS

CIRCLE, MT
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Agent Ken Nelson

DAGMAR, MT
Steve Brekke
Agent Terry Angvick

NASHUA, MT
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RESERVE, MT
Max Aasheim
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SCOBEY, MT
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POPLAR, MT
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Agent Gina Snyder

ROSS, ND
West Dakota Feed & Seed
Agent Jim Hennessy

NEW TOWN, ND
Cliff & Allen Tollefson
Agent Jim Hennessy

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Milo Wisness
Agent Dale Naze

CROSBY, ND
Harlan Johnson
Agent Keith Brown

POWERS LAKE, ND
Dale Tinjum
Agent Dan Folske

RAY, ND
Keith Daniel
Agent Warren Froelich

FAIRVIEW, ND
Philip Hurley – sugarbeets

NESSON VALLEY, ND
Bill Sheldon – potatoes

We would like to take this opportunity to thank the County Agents, the County Ag Improvement Associations and especially the farm operators who permit the location of off-station plots on their land at no cost. ***A very big thank you to the Montana County Agents who went above and beyond the call of duty by harvesting the Montana off-station plots due to a shortage of Eastern Ag Research Center Staff this 2006 growing season.*** All are to be commended for their cooperative efforts in helping determine crops and variety performance in the MonDak region. Results from tillage, chemical fallow, and field scale no-till trials, as well as other management trials on other dryland and irrigated crops can be obtained by visiting with Center personnel.

HARD SPRING WHEAT VARIETY DESCRIPTIONS

						Resistance To[2]						Quality Factors	
Variety	Origin[1]	Height	Maturity	PVP[3]	Lodging	Stem Rust	Leaf Rust	Foliar Disease	Root Rot	Scab	Sawfly	Test Weight	Grain Protein
AC Amazon	AC	m tall	medium	no	MS	R	S	MS	NA	MS	S	medium	medium
AC Superb	AC	m short	m early	no	R	R	S	S	M	S	S	medium	medium
Ada	MN	m short	medium	yes	R	R	MR	MS	NA	MS	S	high	medium
Alsen	ND	m short	m early	yes	MR	R	MR	S	M	MR	S	m high	m high
Amidon	ND	medium	medium	no	MS	R	MR	M	MR	S	MS	medium	medium
Banton	Trigen	m short	m early	yes	R	R	NA	MS	NA	S	S	high	medium
Bigg Red	WB	m short	medium	no	M	R/MR	MS/S	MS	NA	MR	S	m high	m low
Briggs	SD	m tall	m early	yes	R	R	R	MS	S	S	S	m low	m high
Choteau	MT	medium	medium	yes	R	R	R	MR	NA	S	R	medium	medium
Corbin	WB	medium	medium	yes	MR	NA	NA	NA	NA	NA	MR	medium	medium
Dapps	ND	medium	m early	yes	MR	R	R	S	M	MS	S	medium	v high
Ernest	ND	medium	m early	yes	MS	R	MR	MS	MR	S	R	m high	m high
Freyr	AgriPro	m short	medium	yes	R	NA	MR	NA	NA	NA	S	m high	low
Glenn	ND	m short	m early	yes	R	R	R	M	NA	MR	S	v high	m high
Grandin	ND	m short	early	no	R	R	S	S	M	S	S	m high	m high
Granger	SD	m short	m early	yes	MR	NA	R	NA	NA	NA	S	m high	medium
Granite	WB	short	m late	yes	R	R	MR	S	NA	MS	S	v high	high
Gunner	AgriPro	medium	medium	yes	MR	R	S	M	S	M	S	high	high
Hank	WB	short	early	yes#	MR	R	MR	MS	MS	NA	S	low	medium
Hanna	AgriPro	medium	m early	yes	MS	MR	MS/MR	NA	MS	MS	S	v high	m high
Howard	ND	m short	medium	yes	R	R	R	M	NA	M	S	high	medium
Kelby	AgriPro	short	medium	yes	R	MR	R	NA	NA	MR	S	v high	medium
Keystone	WB	medium	m early	yes#	MR	R	MR	S	S	MS	S	high	m low
Knudson	AgriPro	m short	medium	yes	R	MR	MR	S	MS	M	S	high	m low
McNeal	MT	medium	medium	no	MR	MS	S	M	M	VS	S	m low	medium
Norpro	AgriPro	m short	early	yes	R	R	MS/MR	S	M	MS	S	medium	medium
Outlook	MT	medium	m late	yes	R	MR	MR	MR	NA	S	S	medium	medium
Parshall	ND	medium	m early	yes	MR	MR	MS	M	MS	M	S	m high	m high
Polaris	N. Star G.	medium	late	yes	R	NA	NA	NA	NA	NA	S	m low	low
Reeder	ND	m short	m early	yes	R	R	MS	M	M	S	S	medium	m high
Rush	WB	m short	m early	yes	R	NA	NA	NA	NA	NA	S	v high	medium
Russ	SD	medium	m early	yes	M	R	S	S	MS	S	S	medium	medium
Saturn	N. Star G.	medium	m late	yes	NA	NA	NA	NA	S	NA	S	low	medium
Scholar	MT	m tall	m late	yes#	MS	R	S	MR	S	S	R	m high	medium
Steele-ND	ND	m short	medium	yes	M	R	R	NA	MS	MR/MS	S	medium	m high
Traverse	SD	m short	m early	yes	MS	R	MR	NA	NA	MR	S	m low	low
Trooper	WB	m short	m early	yes	R	MR	MS	M	NA	MS	S	high	m low
Ulen	MN	m short	m early	yes	M	R	MR	MS	NA	S	S	m high	medium
Vida	MT	medium	medium	yes	MR	MS	MS	MR	NA	S	MR	medium	medium

WHITE SPRING WHEAT VARIETY DESCRIPTIONS

HW=Hard White SW=Soft White

AC Snowbird (HW)	AC	medium	medium	no	M	R	R	S	NA	S	S	low	medium
AC Vista (HW)	AC	m short	medium	yes	MR	R	S	S	NA	MS	S	low	medium
Agawam (HW)	WB	short	early	yes	R	NA	NA	NA	NA	S	R	m high	low
Argent (HW)	ND	m short	early	yes#	R	R	S	S	S	S	S	high	m high
Blanca Grande (HW)	GM	short	early	yes	R	NA	NA	NA	NA	S	S	high	low
Explorer (HW)	MT	m short	early	yes	MS	R	MR	MS	MS	S	MR	m low	m low
ID377S (HW)	ID	m short	early	yes	M	NA	S	S	NA	NA	S	low	v low
Lolo (HW)	ID	medium	medium	no	M	R	R	S	NA	S	S	m high	m low
Nick (SW)	WB	medium	medium	yes	R	NA	NA	NA	NA	S	S	m high	low
Plata (HW)	GM	short	medium	yes	R	NA	NA	NA	NA	S	S	m high	m low
Waikea (HW)	WB	m short	early	yes	R	NA	NA	NA	NA	S	S	low	m low

[1] Refers to developer: CDC = Crop Development Center, University of Saskatchewan; AC = Agriculture Canada; N.Star G= North Star Genetics; GM= General Mills, WB = WestBred.

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

[3] "yes" indicates the variety is protected and the seed may be sold for planting purposes only as a class of certified seed (Title V Option). "yes#" indicates that the variety is protected but does not have the Title V option. PVP = Plant Variety Protection.

All experiments are statistically designed so that the "real" yield differences can be separated from yield differences that occur by chance. LSD (Least Significant Difference) values are used for this purpose. When comparing the yield of another variety, the yield difference must exceed the LSD value (higher or lower) to be considered a "real" difference. It is advisable to use multi-year averages when choosing a variety or cropping sequence.

DRYLAND FALLOW SPRING WHEAT
SIDNEY, MT

	Yield - bus/a -		TW lb/b	Protein -- % --	
Cultivar	**2006**	**3 yr**	**2006**	**2006**	**3 yr**
Vida	60.6	60.5	59.3	14.0	13.8
Norpro	57.2	60.2	59.7	13.7	14.1
Reeder	59.7	58.8	59.5	14.6	14.7
Outlook	57.4	57.0	57.8	12.9	13.2
Hank	55.0	56.9	58.5	12.5	12.8
Knudson	52.1	55.7	60.3	13.6	13.6
McNeal	52.7	55.7	57.0	13.5	13.1
Freyr	55.0	55.6	61.0	13.4	14.2
Explorer (HW)	53.2	55.0	60.2	14.4	14.1
Scholar	51.5	54.2	59.7	14.1	14.0
Agawam (HW)	54.2	53.8	62.3	13.4	12.9
Corbin	54.4	53.7	59.8	14.2	13.5
Choteau	52.3	53.2	59.5	13.8	13.8
Steele ND	51.7	53.0	59.2	13.7	13.5
Granite	46.6	52.4	61.8	15.0	14.7
Hanna	49.8	52.0	60.2	13.2	13.4
Ernest	48.9	51.4	59.3	14.0	13.9
Conan	46.0	50.6	59.8	13.8	13.6
Fortuna	49.0	49.8	59.5	13.4	13.5
Dapps	48.0	47.2	58.5	14.4	14.3
Thatcher	37.6	42.9	54.3	14.1	14.2
Howard	55.8	--	60.8	13.0	--
Glenn	54.9	--	62.7	14.2	--
Trooper	53.8	--	62.0	12.8	--
Kelby	50.4	--	61.2	15.1	--
LSD 5%	**6.7**		**0.9**	**1.0**	

Planted: April 14 **Harvested: July 27**

HW = Hard White

DRYLAND FALLOW SPRING WHEAT
WILLISTON, ND

	Yield - bus/a -		TW lb/b	Protein -- % --	
Cultivar	**2006**	**3 yr**	**2006**	**2006**	**3 yr**
AC Vista (HW)	33.6	53.2	52.9	15.1	14.9
Ulen	33.6	51.3	57.3	15.6	15.6
Reeder	34.5	50.5	55.1	16.4	16.0
Outlook	31.6	50.5	54.0	16.1	15.5
Freyr	30.4	50.1	56.1	15.8	15.2
Norpro	32.3	49.2	55.5	15.6	15.7
Briggs	31.8	49.0	55.6	16.6	16.3
Trooper	32.9	48.9	56.3	15.5	15.4
Steele-ND	30.1	48.7	53.8	16.0	16.2
Saturn	29.3	48.6	52.2	18.0	16.8
Granger	31.6	48.4	54.1	16.5	16.1
Hanna	30.6	48.2	54.6	17.0	15.8
Knudson	32.0	47.6	55.9	16.4	16.2
Alsen	30.0	47.6	56.0	16.9	16.3
Howard	30.7	47.3	53.7	15.5	15.7
Hank	31.9	47.1	53.1	16.7	16.3
Ingot	33.3	46.6	58.1	15.8	16.1
Glenn	31.6	46.6	57.6	16.1	17.0
Parshall	31.6	46.6	55.9	16.7	16.6
Granite	30.7	46.6	58.6	17.8	17.0
Explorer	31.7	46.5	55.6	16.6	16.1
Polaris	25.0	46.5	53.9	17.2	15.7
McNeal	29.2	46.3	54.5	16.8	16.1
Amidon	33.0	46.1	54.6	16.0	16.1
Russ	30.4	46.1	55.0	16.5	16.1
Choteau	32.2	46.0	54.5	16.5	16.5
AC Superb	31.6	45.7	56.5	15.8	15.7
Oxen	34.7	45.4	54.7	16.0	16.0
Banton	31.9	45.3	58.2	16.2	15.9
AC Glenavon	29.0	44.8	52.1	16.4	16.1
AC Corrine	27.0	44.8	51.9	16.5	16.1
Argent (HW)	29.3	44.7	54.3	16.7	16.9
Dapps	28.7	44.7	52.4	17.1	17.1
Gunner	27.4	44.6	55.9	16.4	16.6
Scholar	29.9	43.3	55.5	17.2	16.8
Keene	26.4	43.1	55.5	16.8	16.2
Ernest	30.2	42.1	55.8	16.3	16.4
Vida	36.2	--	54.8	15.9	--
Kelby	33.7	--	58.2	15.9	--
Ada	32.5	--	55.8	16.1	--
Traverse	32.5	--	52.8	15.0	--
Express	31.6	--	54.1	16.3	--
Rush	31.6	--	60.5	16.6	--
Lolo (HW)	31.2	--	54.9	15.7	--
Bigg Red	30.9	--	58.2	16.2	--
Mercury	29.2	--	55.2	16.2	--
Fireball	28.5	--	55.4	18.2	--
AC Snowbird (HW)	27.9	--	52.9	16.1	--
Baker	24.1	--	53.7	17.4	--
LSD 5%	**2.2**	**--**	**1.2**	**0.8**	**--**

Planted: May 5 **Harvested: July 31**

HW = Hard White

DRYLAND RECROP SPRING WHEAT
SIDNEY, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Vida	37.6	35.9	57.2	15.3	16.1
Freyr	40.1	34.7	60.0	13.6	14.7
Steele-ND	36.7	34.2	58.7	13.7	14.6
Outlook	35.2	34.1	55.5	15.0	14.9
Reeder	35.7	34.1	58.0	15.1	16.3
Norpro	36.5	33.0	58.3	14.8	15.7
McNeal	35.0	31.6	56.0	13.5	14.4
Choteau	35.2	31.4	59.5	13.3	14.6
Granite	32.3	31.0	60.2	15.0	16.0
Hanna	32.5	30.9	58.5	14.3	14.5
Scholar	30.1	29.6	58.3	16.2	15.8
Dapps	29.1	25.7	57.8	15.0	16.6
Howard	37.7	--	57.7	13.8	--
Waikea (HW)	37.0	--	55.7	14.2	--
Agawam (HW)	35.8	--	61.5	12.0	--
Knudson	34.9	--	58.0	14.6	--
Glenn	34.1	--	59.8	15.5	--
Trooper	31.1	--	60.3	13.5	--
LSD 5%	**3.3**		**1.4**	**1.5**	

Planted: April 28 **Harvested: July 29**

Previous crop: spring wheat
HW = Hard White

FLOOD IRRIGATION SPRING WHEAT
SIDNEY, MT

Cultivar	Yield - b/a - 2006	Yield - b/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Reeder	84.7	80.7	60.8	14.5	14.9
Knudson	76.5	80.1	60.3	14.1	13.5
Norpro	73.5	79.1	60.0	14.2	14.1
Hank	69.6	78.2	56.5	14.9	14.0
Outlook	69.9	77.3	58.3	13.9	13.5
Freyr	76.6	75.9	59.7	14.6	14.6
Steele-ND	81.4	74.9	59.8	14.8	13.9
McNeal	69.0	73.5	57.3	14.2	13.0
Granite	69.1	73.1	61.2	16.7	15.7
Vida	77.5	72.2	58.8	15.4	14.4
Hanna	69.3	69.3	59.7	14.6	13.8
Ernest	69.2	68.8	59.0	15.3	14.4
Conan	71.9	68.8	56.7	14.6	14.3
Agawam (HW)	64.9	68.7	60.7	14.3	14.4
Dapps	67.3	67.5	58.7	16.6	15.8
Explorer (HW)	57.4	67.4	57.0	15.5	14.9
Choteau	70.3	67.1	58.2	14.5	13.9
Scholar	68.6	66.9	58.0	15.2	14.9
Corbin	67.4	64.6	59.0	14.6	14.2
Fortuna	60.5	62.3	59.5	15.0	14.3
Thatcher	49.2	59.3	57.3	15.5	14.0
Howard	84.1	--	60.0	14.2	--
Trooper	81.3	--	60.0	13.7	--
Glenn	76.3	--	61.5	15.4	--
Kelby	68.3	--	60.5	15.2	--
LSD 5%	**6.9**		**1.9**	**1.0**	

Planted: May 1 **Harvested: August 11**

Previous crop: safflower
HW = Hard White

DRYLAND RECROP SPRING WHEAT
WILLISTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Vista	38.9	42.9	54.3	14.8	14.5
Reeder	36.6	42.2	55.8	15.5	15.4
Norpro	38.0	41.5	56.6	15.0	15.3
Freyr	34.3	40.9	57.1	14.6	14.8
Granger	35.3	40.3	54.7	15.8	15.4
Outlook	37.4	40.1	55.0	15.2	15.2
Steele-ND	37.6	39.4	56.5	15.0	15.1
Briggs	33.8	38.6	56.6	15.0	15.4
Alsen	33.8	38.2	55.5	15.8	15.7
Choteau	32.2	38.1	57.1	15.3	15.5
McNeal	28.4	38.1	53.9	16.0	15.4
Amidon	30.3	37.5	56.2	14.4	14.7
Glenn	34.3	37.2	59.9	14.5	15.6
Parshall	31.4	37.1	56.0	15.2	15.6
Granite	33.6	36.7	60.0	16.5	16.7
Knudson	33.5	36.4	57.8	14.8	15.4
Ernest	29.5	33.8	56.8	15.7	16.0
Dapps	31.2	33.7	55.6	15.7	16.5
Howard	35.9	--	55.4	14.8	--
Bigg Red	32.8	--	60.0	14.3	--
LSD 5%	**2.7**	**--**	**2.3**	**1.2**	**--**

Planted: May 1 **Harvested: July 29**

Previous crop: durum

DRYLAND NOTILL SPRING WHEAT
WILLISTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Vista	34.7	49.3	52.0	16.2	14.5
Norpro	29.4	45.8	53.5	16.5	15.7
Reeder	31.6	44.4	53.7	17.0	16.0
Outlook	30.1	43.9	53.3	17.1	15.6
Granger	28.4	43.4	54.4	16.6	15.7
Freyr	26.8	43.4	56.2	16.3	15.9
Choteau	30.6	42.7	53.0	16.6	16.0
Parshall	27.5	42.3	54.5	17.2	15.7
Knudson	28.1	42.2	55.0	16.8	15.7
Amidon	28.6	42.1	53.9	16.6	15.8
Alsen	30.8	42.0	55.1	17.3	16.6
McNeal	25.7	41.2	53.6	17.5	15.9
Steele-ND	29.6	40.9	54.3	17.1	16.3
Briggs	28.9	40.8	54.1	17.0	15.9
Granite	25.5	40.7	57.2	17.9	16.8
Glenn	27.6	38.9	57.2	16.4	16.2
Dapps	25.7	38.5	51.9	17.9	17.0
Ernest	26.5	38.2	56.1	17.3	16.6
Howard	28.3	--	52.2	16.3	--
Bigg Red	24.7	--	58.3	16.7	--
LSD 5%	**3.0**	**--**	**1.6**	**0.8**	**--**

Planted: May 8 **Harvested: August 3**

Previous Crop: durum

Dryland Recrop Spring Wheat
Circle, MT

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
Reeder	12.9	27.2	58.3	16.0	14.6
Outlook	10.9	26.4	56.7	15.2	13.5
Vida	14.4	25.9	58.0	15.0	13.5
Scholar	10.5	24.3	59.8	14.7	14.4
Norpro	10.7	23.4	59.5	15.0	13.9
Freyr	11.1	23.3	58.8	15.1	13.9
McNeal	7.3	23.0	55.7	14.5	13.0
Steele-ND	10.7	22.1	58.5	15.4	14.3
Choteau	10.8	21.6	58.5	14.8	14.1
Granite	7.5	20.1	60.5	16.6	15.2
Hanna	8.3	18.4	58.5	15.6	14.1
Dapps	8.7	18.1	57.7	16.2	15.5
Knudson	12.8	--	59.7	15.7	--
Waikea (HW)	12.0	--	57.5	13.2	--
Howard	11.7	--	58.0	14.6	--
Glenn	10.6	--	60.8	15.1	--
Agawam (HW)	10.2	--	60.2	13.7	--
Trooper	9.7	--	60.3	14.5	--
LSD 5%	**2.6**		**1.4**	**0.9**	

Planted: May 5 **Harvested: Aug 4**

Previous crop: spring wheat

HW = Hard White

Dryland Fallow Spring Wheat
Nashua, MT

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
Outlook	32.6	50.8	57.7	12.2	12.1
Vida	37.2	49.7	59.0	13.8	13.9
Freyr	33.2	49.6	61.5	11.9	12.8
Norpro	31.2	48.8	58.8	13.6	12.3
Reeder	33.3	47.6	58.3	14.8	13.4
Scholar	31.2	46.1	60.3	12.0	12.0
McNeal	27.9	43.7	56.5	12.8	12.2
Granite	31.0	43.1	61.8	14.5	14.4
Steele ND	34.4	42.0	58.7	12.7	12.2
Choteau	30.2	42.0	60.0	13.1	12.8
Hanna	29.9	41.2	60.2	12.8	12.6
Dapps	28.4	41.1	59.5	13.6	14.3
Knudson	32.4	--	60.0	13.1	--
Howard	32.3	--	59.8	12.2	--
Waikea (HW)	30.8	--	58.0	11.8	--
Agawam (HW)	30.3	--	60.2	13.4	--
Glenn	29.9	--	62.7	12.6	--
Trooper	29.3	--	60.7	12.4	--
Tioga	26.6	--	60.0	12.4	--
LSD 5%	**3.4**		**2.8**	**ns**	

Planted: Apr 14 **Harvested: Aug 3**

HW = Hard White

Dryland Fallow Spring Wheat
Poplar, MT

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
Freyr	27.6	41.5	53.2	16.8	14.9
Norpro	29.7	41.4	50.8	16.9	14.6
Vida	30.1	41.2	51.7	17.6	15.5
Hanna	32.0	40.6	53.8	16.8	14.5
Outlook	29.9	40.0	51.0	17.1	14.8
Reeder	28.2	39.4	51.3	17.9	16.0
McNeal	27.5	37.9	50.5	17.3	15.2
Dapps	28.7	37.7	51.0	17.7	15.9
Granite	26.8	37.5	55.7	20.2	17.1
Scholar	26.8	36.2	53.2	17.6	15.6
Steele-ND	26.6	35.7	49.0	16.1	14.8
Choteau	22.9	34.8	51.5	16.9	15.2
Knudson	28.8	--	52.7	16.1	--
Waikea (HW)	28.3	--	49.7	16.6	--
Glenn	28.0	--	55.2	16.5	--
Agawam (HW)	27.4	--	56.5	15.2	--
Howard	26.7	--	49.3	16.3	--
Trooper	23.1	--	51.0	17.2	--
LSD 5%	**4.1**		**1.4**	**0.5**	

Planted: Apr 27 **Harvested: Aug 7**

HW = Hard White

Dryland Recrop Spring Wheat
Reserve, MT

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
Vida	27.9	41.6	58.0	16.0	15.1
Reeder	22.9	36.4	57.7	16.5	15.1
Outlook	24.6	36.2	57.0	14.8	13.9
Freyr	24.3	35.5	59.0	15.1	15.0
Norpro	22.7	34.7	57.5	16.2	15.5
Scholar	24.2	34.0	58.7	16.8	15.3
McNeal	21.9	33.4	56.4	14.8	14.1
Steele ND	24.9	33.2	57.7	15.4	15.3
Hanna	20.3	32.2	58.7	16.0	14.8
Choteau	24.1	31.2	57.8	15.8	15.1
Granite	20.7	30.8	60.7	17.7	16.5
Dapps	19.1	28.5	57.2	16.1	16.4
Agawam (HW)	22.7	--	60.3	14.3	--
Knudson	22.5	--	58.3	15.2	--
Glenn	22.1	--	60.7	16.0	--
Waikea (HW)	22.1	--	55.7	15.2	--
Howard	21.2	--	57.5	15.2	--
Trooper	17.7	--	58.3	15.4	--
LSD 5%	**3.2**		**1.2**	**0.8**	

Planted: Apr 28 **Harvested: Aug 8**

Previous crop: yellow pea

HW = Hard White

DRYLAND FALLOW SPRING WHEAT
SCOBEY, MT

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
McNeal	38.2	33.9	59.3	12.0	11.1
Vida	42.4	33.6	59.8	14.1	12.6
Scholar	37.5	32.6	60.8	13.1	11.2
Outlook	37.0	32.2	58.3	12.9	11.9
Reeder	42.3	31.1	61.3	12.8	12.6
Freyr	40.7	31.1	60.8	13.8	12.5
Choteau	37.9	30.0	60.8	12.8	11.8
Hanna	35.9	29.9	60.8	12.3	11.2
Norpro	40.4	29.6	61.0	11.8	11.2
Granite	34.8	26.8	62.7	14.6	13.2
Steele-ND	36.9	26.5	59.5	12.2	11.7
Dapps	34.4	26.4	58.3	16.5	13.9
Waikea (HW)	42.8	--	57.8	12.6	--
Howard	40.3	--	59.5	12.6	--
Knudson	39.6	--	60.3	12.6	--
Glenn	39.5	--	63.2	13.4	--
Trooper	39.2	--	61.2	13.0	--
Agawam (HW)	37.3	--	62.2	11.7	--
LSD 5%	**ns**		**1.8**	**2.6**	

Planted: Apr 27 **Harvested: Aug 15**

HW = Hard White

DRYLAND FALLOW SPRING WHEAT
WIBAUX, MT

The Wibaux nurseries were not harvested in 2006 due to hail damage.

The Eastern Agricultural Research Center would like to take this opportunity to give a very big "Thank You" to the Montana County Agents who went above and beyond the call of duty by harvesting the Montana off-station plots due to a shortage of staff at the Eastern Agricultural Research Center this 2006 growing season. Their assistance in this effort allowed us to give you results from the off-station trials.

DRYLAND FALLOW* SPRING WHEAT
ARNEGARD, ND

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
Granger	41.3	55.8	59.0	13.3	12.8
Outlook	44.7	52.5	56.0	13.0	12.7
Steele-ND	42.9	51.9	58.3	13.7	13.5
Freyr	41.8	51.5	59.6	13.7	13.5
Norpro	44.1	50.4	58.7	13.2	12.8
Choteau	42.5	49.8	59.3	13.9	13.6
Reeder	44.2	49.7	58.2	13.5	13.0
Knudson	38.7	49.6	59.8	14.5	13.2
Amidon	42.3	48.4	57.9	13.7	13.2
Glenn	40.9	48.1	62.3	13.6	13.5
Dapps	38.8	47.7	56.5	14.7	14.0
Parshall	39.1	46.8	60.2	14.1	13.4
Granite	37.6	46.7	58.7	15.3	14.5
Alsen	39.4	46.0	59.9	14.4	14.0
McNeal	40.2	43.6	57.0	13.9	12.9
Howard	43.9	--	59.5	13.4	--
LSD 5%	**NS**	**--**	**2.2**	**1.1**	**--**

Planted: May 9 **Harvested: August 4**

*Chemical fallow

DRYLAND RECROP SPRING WHEAT
CROSBY, ND

Cultivar	Yield 2006	Yield 3 yr	TW 2006	Protein 2006	Protein 3 yr
	- bus/a -		lb/b	-- % --	
Steele-ND	47.8	69.8	61.7	12.1	13.6
Norpro	50.2	69.3	61.3	11.6	13.0
Outlook	46.1	66.1	58.8	11.7	13.4
Freyr	44.7	65.2	60.2	13.3	13.6
Knudson	42.6	63.7	61.5	12.5	12.9
Reeder	49.0	63.4	61.5	13.5	13.7
Amidon	46.7	62.5	59.3	13.8	14.0
Choteau	46.1	62.3	60.0	14.0	14.3
Granger	48.2	62.0	61.1	11.3	13.1
Alsen	44.1	61.8	60.4	12.6	13.8
Parshall	43.3	61.7	62.8	11.9	13.2
Glenn	43.3	61.1	62.4	14.2	14.7
Granite	43.4	59.6	62.0	14.8	15.1
Dapps	39.3	58.2	59.1	16.0	15.3
McNeal	39.5	55.7	57.8	15.1	14.2
Howard	50.1	--	59.9	13.9	--
LSD 5%	**6.4**	**--**	**NS**	**NS**	**--**

Planted: May 11 **Harvested: August 12**

Previous crop: durum

DRYLAND RECROP SPRING WHEAT
NEW TOWN/PARSHALL, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Knudson	31.4	44.2	60.1	16.4	15.2
Steele-ND	34.2	43.7	57.8	15.8	14.9
Norpro	32.3	43.5	59.2	15.2	14.8
Granite	28.8	43.2	60.8	17.2	16.8
Granger	33.3	43.1	59.0	16.0	15.6
Freyr	31.0	42.8	59.6	16.2	15.3
Alsen	29.4	42.0	61.0	16.2	15.4
Reeder	31.2	41.3	58.1	16.5	15.4
Amidon	32.2	40.8	58.5	15.5	15.0
Glenn	29.2	38.1	61.2	16.2	15.5
Parshall	30.4	37.6	59.5	16.4	15.6
Dapps	25.0	36.7	57.3	16.8	16.5
Outlook	30.7	--	58.0	16.0	--
Howard	30.3	--	58.9	16.2	--
Choteau	29.3	--	57.5	16.9	--
McNeal	28.4	--	57.1	15.7	--
LSD 5%	**3.8**	**--**	**1.0**	**0.9**	**--**

Planted: May 10 **Harvested: August 7**
Previous crop: field pea

DRYLAND RECROP SPRING WHEAT
POWERS LAKE/FLAXTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 2 yr*	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 2 yr*
Amidon	37.8	61.0	58.3	14.8	15.1
Glenn	42.0	60.5	61.8	15.4	15.6
Norpro	39.4	59.7	57.1	15.1	14.7
Parshall	38.1	57.9	59.0	15.6	15.2
Steele-ND	39.2	57.2	58.6	14.7	15.0
Knudson	38.0	56.7	58.7	15.5	14.9
Freyr	35.5	56.5	59.5	14.5	14.5
Howard	36.2	55.3	58.2	14.8	14.8
Granger	38.8	54.5	58.1	14.8	14.7
Outlook	42.3	53.4	57.6	14.7	14.6
Alsen	35.1	52.7	58.2	15.9	15.8
Granite	34.5	52.6	61.2	16.6	16.3
Dapps	32.7	52.6	56.7	16.3	16.2
Reeder	38.3	49.7	59.1	14.8	14.7
Choteau	34.7	49.7	58.9	15.5	15.3
McNeal	32.8	45.6	56.6	14.9	14.5
LSD 5%	**5.3**	**--**	**1.3**	**0.8**	**--**

Planted: May 12 **Harvested: August 11**
Previous crop: field pea * 2005, 2006

DRYLAND FALLOW SPRING WHEAT
RAY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Granger	32.4	50.4	55.4	16.4	14.3
Reeder	33.3	48.8	54.9	16.7	14.8
Knudson	29.9	48.0	57.6	15.7	13.9
Outlook	31.6	47.5	55.3	15.7	14.1
Freyr	30.8	47.3	55.9	16.3	14.5
Steele-ND	31.3	47.0	53.8	16.1	14.5
Norpro	31.3	46.2	55.8	15.0	14.1
Glenn	31.0	45.3	57.9	16.5	15.0
Choteau	29.5	45.3	56.1	16.3	14.9
McNeal	30.6	45.2	55.4	16.6	14.7
Granite	30.7	44.8	59.8	18.0	15.6
Alsen	26.9	44.7	55.7	17.1	15.1
Dapps	27.0	44.5	53.2	17.4	15.6
Parshall	26.9	44.4	55.1	17.0	15.0
Amidon	29.3	43.9	56.0	15.1	14.2
Howard	29.7	--	54.7	16.3	--
LSD 5%	**3.6**	**--**	**2.0**	**NS**	**--**

Planted: May 12 **Harvested: August 8**

DRYLAND RECROP SPRING WHEAT
ROSS, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Granger	47.9	51.3	60.1	13.2	12.7
Amidon	42.9	51.0	58.3	13.5	13.1
Steele-ND	45.1	49.6	58.1	12.8	13.4
Norpro	49.2	49.1	59.3	13.4	13.0
Glenn	44.0	49.1	61.8	13.7	13.2
Reeder	44.7	48.3	57.9	14.8	13.5
Parshall	50.1	47.9	61.4	14.6	13.2
Freyr	43.6	47.3	56.8	14.8	13.7
Knudson	49.1	45.8	61.0	14.2	14.1
Granite	42.8	45.2	57.2	14.1	14.1
Alsen	44.2	44.2	59.0	13.7	13.7
Dapps	36.0	42.2	57.6	14.3	13.9
Choteau	49.5	--	61.1	14.0	--
Howard	46.9	--	58.8	15.6	--
Outlook	44.7	--	54.8	13.1	--
McNeal	42.5	--	58.0	13.6	--
LSD 5%	**6.0**	**--**	**3.3**	**NS**	**--**

Planted: May 10 **Harvested: August 7**
Previous crop: durum

Sprinkler Irrigation Spring Wheat
Dagmar, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Reeder	70.1	55.2	60.3	17.1	15.1
Choteau	73.4	51.2	59.8	16.0	14.2
Outlook	61.2	50.6	59.0	15.9	14.0
McNeal	61.1	47.7	59.3	15.1	13.4
Scholar	60.4	43.8	60.5	16.3	14.5
Vida	70.8	--	59.3	17.0	--
Granite	69.2	--	61.8	18.1	--
Hanna	68.3	--	61.2	16.8	--
Trooper	68.2	--	60.8	15.8	--
Knudson	68.2	--	60.5	15.6	--
Freyr	67.5	--	60.7	16.0	--
Norpro	67.2	--	60.2	15.6	--
Steele ND	66.5	--	59.7	16.5	--
Howard	65.3	--	60.3	16.0	--
Waikea (HW)	63.3	--	57.2	14.6	--
Glenn	61.5	--	62.3	17.6	--
Dapps	59.9	--	60.0	18.1	--
Agawam (HW)	56.6	--	60.7	14.2	--
LSD 5%	**8.1**		**0.9**	**0.6**	

Planted: Apr 28 **Harvested: Aug 30**

Previous crop: yellow pea

HW = Hard White

Various Classes of Spring Wheat
Dryland Fallow Williston, ND

Cultivar	class	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Vista	HWS	31.9	42.9	52.4	15.5	14.9
Reeder	HRS	30.7	42.9	54.6	16.9	16.2
IDO377S	HWS	29.2	41.2	54.9	16.5	16.0
McNeal	HRS	27.9	39.6	53.7	17.2	16.4
Alsen	HRS	26.2	39.1	54.8	17.1	16.8
Pennewawa	SWS	22.9	39.1	54.0	17.3	14.7
Lolo	HWS	31.0	38.5	55.0	16.2	15.2
MT9420	HWS	27.9	37.8	53.3	16.1	15.6
Argent	HWS	28.0	37.0	53.6	16.6	16.8
Winsome	HWS	20.5	36.8	53.2	17.7	15.7
Golden 86	HWS	26.5	34.8	56.7	16.8	16.3
Pristine	HWS	29.5	33.6	57.4	16.4	16.1
Glenn	HRS	30.2	--	56.9	16.4	--
Otis	HWS	28.8	--	54.2	17.0	--
Explorer	HWS	28.7	--	55.6	17.0	--
Choteau	HRS	28.6	--	54.3	17.0	--
AC Snowbird	HWS	24.7	--	51.4	17.2	--
LSD 5%		**2.3**	**--**	**0.6**	**0.7**	**--**

Planted: May 8 **Harvested: August 4**

HWS-hard white spring wheat
HRS-hard red spring wheat
SWS-soft white spring wheat

Sprinkler Irrigation Spring Wheat
Nesson Valley, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Briggs	65.4	--	57.8	16.6	--
AC Vista (HW)	62.6	--	53.5	15.2	--
Reeder	60.6	--	55.6	16.8	--
Freyr	58.6	--	56.9	16.3	--
Knudson	57.2	--	56.0	16.1	--
Amidon	56.2	--	56.6	16.7	--
Granger	55.8	--	57.4	17.0	--
Granite	55.8	--	59.7	18.5	--
Bigg Red	55.0	--	60.1	16.5	--
Parshall	54.6	--	57.8	17.1	--
Steele-ND	54.3	--	53.1	16.7	--
Norpro	54.1	--	54.4	16.7	--
McNeal	53.5	--	55.5	16.8	--
Glenn	53.3	--	58.7	17.2	--
Alsen	51.8	--	55.8	17.4	--
Howard	51.6	--	53.9	16.5	--
LSD 5%	**6.6**	**--**	**1.7**	**0.6**	**--**

Planted: May 11 **Harvested: August 9**

Previous crop: potato

HW = Hard White

Various Classes of Spring Wheat
Flood Irrigation Sidney, MT

Cultivar	class	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Lolo	HWS	81.7	90.5	60.8	14.0	13.8
AC Vista	HWS	76.5	89.5	57.8	14.5	14.5
ID377S	HWS	68.2	88.1	59.1	14.3	14.1
Winsome	HWS	66.0	83.9	57.5	14.0	13.9
Penewawa	SWS	51.6	83.5	56.3	13.4	12.9
McNeal	HRS	69.6	82.3	58.9	13.1	13.6
Reeder	HRS	78.3	79.1	61.4	14.8	15.8
MT9420	HWS	56.4	76.5	58.3	14.8	14.6
Parshall	HRS	72.1	75.2	61.6	15.2	16.1
Alsen	HRS	61.4	74.8	61.3	15.0	15.4
Explorer	HWS	55.6	71.1	58.5	15.2	15.3
Argent	HWS	61.4	70.4	59.5	15.6	16.3
Pristine	HWS	69.2	69.9	61.4	14.3	16.0
Golden 86	HWS	56.9	67.5	60.0	15.1	15.6
Otis	HWS	76.2	--	60.3	13.4	--
Choteau	HRS	68.6	--	59.9	14.0	--
Glenn	HRS	67.8	--	63.5	15.1	--
AC Snowbird	HWS	51.0	--	58.3	15.5	--
LSD 5%		**6.4**		**1.3**	**1.0**	

Planted: May 4 **Harvested: August 11**

HWS-hard white spring wheat
HRS-hard red spring wheat
SWS-soft white spring wheat

DRYLAND HARD RED SPRING WHEAT VALUES SIDNEY, MT

Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1996-2005) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee

Cultivar	Yield bu/a 3 yr	TW lbs/bu 3 yr	Protein % 3 yr	$/a + or - McNeal
Reeder	58.8	61.6	14.7	37.78
Norpro	60.2	61.4	14.1	36.70
Vida	60.5	60.9	13.8	33.87
Freyr	55.6	61.9	14.2	17.35
Outlook	57.0	60.0	13.2	9.72
Scholar	54.2	60.9	14.0	8.56
Knudson	55.7	61.8	13.6	7.80
Granite	52.4	62.9	14.7	6.93
Hank	56.9	59.9	12.8	3.58
Choteau	53.2	61.3	13.8	0.14
McNeal	55.7	59.3	13.1	0.00
Corbin	53.7	61.5	13.5	-1.30
Steele ND	53.0	61.5	13.5	-4.49
Ernest	51.4	61.0	13.9	-4.57
Hanna	52.0	61.4	13.4	-9.04
Conan	50.6	61.3	13.6	-15.41
Fortuna	49.8	60.9	13.5	-19.05
Dapps	47.2	60.4	14.3	-22.38
Thatcher	42.9	56.6	14.2	-42.72

IRRIGATION HARD RED SPRING WHEAT VALUES SIDNEY, MT

Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1996-2005) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee

Cultivar	Yield bu/a 3 yr	TW lbs/bu 3 yr	Protein % 3 yr	$/a + or - McNeal
Reeder	80.7	62.0	14.9	68.06
Norpro	79.1	61.6	14.1	46.84
Hank	78.2	60.0	14.0	42.62
Knudson	80.1	61.9	13.5	40.32
Freyr	75.9	61.7	14.6	38.66
Granite	73.1	63.3	15.7	31.13
Outlook	77.3	60.4	13.5	27.58
Steele ND	74.9	61.9	13.9	27.14
Vida	72.2	61.1	14.4	20.98
Ernest	68.8	61.2	14.4	4.72
Dapps	67.5	60.7	15.8	3.91
Conan	68.8	60.5	14.3	1.28
Scholar	66.9	60.8	14.9	0.99
McNeal	73.5	60.5	13.0	0.00
Hanna	69.3	61.5	13.8	-3.97
Choteau	67.1	61.0	13.9	-9.44
Corbin	64.6	61.7	14.2	-18.58
Fortuna	62.3	61.2	14.3	-29.46
Thatcher	59.3	59.8	14.0	-46.02

HARD RED SPRING WHEAT/DURUM VARIETY COMPARISONS WILLISTON, ND

Column "$/A" was arrived by calculating a gross per acre income for each variety using market price and protein premiums obtained on Nov. 29, 2006. The base price for 14% protein wheat was $4.64, and for milling durum was $4.80. All varieties are compared to Reeder on a plus or minus $/a basis.

Cultivar	Yield bus/a 3 yr	Protein % 3 yr	Gross Net $/a 3 yr	$/A +or- Reeder
Hard Red Spring Wheat				
Ulen	51.3	15.6	$241.11	$2.75
Reeder	50.5	16.0	$238.36	$0.00
Outlook	50.5	15.5	$237.35	$-1.01
Freyr	50.1	15.2	$234.47	$-3.89
Briggs	49.0	16.3	$231.28	$-7.08
Norpro	49.2	15.7	$231.24	$-7.12
Steele-ND	48.7	16.2	$229.86	$-8.50
Granger	48.4	16.1	$228.45	$-9.91
Hanna	48.2	15.8	$227.02	$-11.34
Alsen	47.6	16.3	$224.67	$-13.69
Knudson	47.6	16.2	$224.67	$-13.69
Hank	47.1	16.3	$222.31	$-16.05
Howard	47.3	15.7	$222.31	$-16.05
Glenn	46.6	16.3	$219.95	$-18.41
Granite	46.6	17.0	$219.95	$-18.41
Parshall	46.6	16.6	$219.95	$-18.41
McNeal	46.3	16.1	$218.54	$-19.82
Amidon	46.1	16.1	$217.59	$-20.77
Russ	46.1	16.1	$217.59	$-20.77
Choteau	46.0	16.5	$217.12	$-21.24
Dapps	44.7	17.1	$210.98	$-27.38
Gunner	44.6	16.6	$210.51	$-27.85
Scholar	43.3	16.8	$204.38	$-33.98
Keene	43.1	16.2	$203.43	$-34.93
Ernest	42.1	16.4	$198.71	$-39.65
Durum				
Alkabo	43.3	15.9	$207.84	$-25.80
Grenora	42.1	15.8	$202.08	$-31.56
Divide	41.6	16.5	$199.68	$-33.96
Lebsock	40.7	16.0	$195.36	$-38.28
Mountrail	40.7	16.1	$195.36	$-38.28
AC Avonlea	40.2	16.5	$192.96	$-40.68
Maier	40.1	16.9	$192.48	$-41.16
Ben	40.0	17.0	$192.00	$-41.64
Pierce	39.3	16.2	$188.64	$-45.00
Dilse	39.2	17.6	$188.16	$-45.48
Plaza	39.1	17.8	$187.68	$-45.96
Kyle	38.9	16.9	$186.72	$-46.92
Renville	38.7	16.7	$185.76	$-47.88
Ward	38.5	17.7	$184.80	$-48.84
AC Navigator	37.6	16.4	$180.48	$-53.16
AC Napolean	36.6	17.7	$175.68	$-57.96

DURUM VARIETY DESCRIPTIONS

Variety	Origin[1]	Chaff Color	Height	Maturity	PVP[4]	Lodging	Resistance To [2]: Leaf Rust	Foliar Disease	Root Rot	Scab	Quality Factors: Test Weight	Kernel Size[3]	Grain Protein	Overall Quality
AC Avonlea	Canada	white	med	med	yes	MS	R	M	S	S	med	m large	m high	good
AC Napolean	Canada	white	tall	m late	no	MS	R	NA	S	NA	med	m large	high	NA
AC Navigator	Canada	white	m short	late	no	S	R	M	S	S	med	m large	med	good
AC Pathfinder	Canada	white	med	med	no	S	R	M	MS	S	med	m large	m low	good
Alkabo	ND	white	med	med	yes	R	R	M	NA	MS	v high	m large	med	good
Alzada	WB	white	short	early	yes	R	NA	NA	NA	NA	med	large	m low	NA
Belzer	ND	white	tall	m late	yes	MS	R	M	M	M	m low	large	m low	good
Ben	ND	white	med	med	yes	MR	R	MR	M	MS	v high	large	m high	excel
Commander	Canada	white	short	m early	no	MR	R	NA	NA	NA	high	m large	med	NA
Dilse	ND	white	med	late	yes	MR	R	M	M	MS	high	med	v high	excel
Divide	ND	white	med	med	yes	R	R	M	NA	MR	high	large	v high	excel
Dressler	AgriPro	white	tall	med	yes	MS	MR	NA	MR	VS	m high	large	med	good
Grande D'Oro	WB/DGP	white	med	med	yes	MR	R	M	NA	NA	high	NA	m low	NA
Grenora	ND	white	m early	m early	yes	R	R	M	NA	MS	m high	m large	m high	good
Kyle	Canada	white	tall	late	no	VS	MR	M	S	VS	med	m large	high	good
Lebsock	ND	white	med	med	yes	MR	R	M	MS	MS	v high	large	med	good
Maier	ND	white	med	m late	yes	MR	R	M	M	S*	high	med	v high	excel
Monroe	ND	white	med	early	no	MS	R	M	M	VS	med	large	m high	good
Mountrail	ND	white	med	m late	yes	MR	R	M	M	MS	high	med	med	average
Munich	ND	white	m short	med	yes	R	R	MR	M	S*	m high	small	med	good
Pierce	ND	white	med	med	yes	MR	R	MS	MR	MS	v high	m large	m low	good
Plaza	ND	white	m short	late	yes	MR	R	M	MS	MS	med	small	m low	average
Plenty	Canada	white	tall	late	no	S	R	M	M	MS	med	med	high	good
Primo D'Oro	WB/DGP	white	tall	m early	yes	M	R	MS	NA	NA	high	NA	m high	NA
Renville	ND	white	m tall	med	no	MS	R	M	M	S*	med	med	med	good
Rugby	ND	tan	tall	med	no	MR	R	MR	MS	S*	m high	med	med	poor
Strongfield	Canada	white	med	m late	yes	MR	NA	MS	NA	S	med	m large	high	good
Utopia	WWW	tan	short	early	yes	R	MR	VS	NA	S	m low	m large	m low	NA
Vic	ND	white	m tall	m early	no	MS	R	MR	M	S*	high	large	m high	good
Voss	AgriPro	white	short	med	yes	R	MR	MS	MR	S	med	med	low	average
Ward	ND	tan	m tall	med	no	MR	R	MR	MS	S	m high	med	m high	poor

[1] Refers to developer. WWW = World Wide Wheat. WB = WestBred. DGP = Dakota Growers Pasta.
[2] R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, NA = data not available. All varieties are resistant to current stem rust races.
[3] Number seeds/lb: Large = less than 11,000; medium = 11,000-12,000; small = more than 12,000
* Indicates yield and/or quality have been higher than would be expected based on visual head blight symptoms alone.
[4] "yes" indicates the variety is protected and the seed may be sold for planting purposes only as a class of certified seed (Title V Option).

DRYLAND FALLOW STATEWIDE DURUM
SIDNEY, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Avonlea	33.8	47.6	58.2	14.1	13.9
Maier	32.2	47.5	56.7	14.7	13.7
Mountrail	34.4	46.3	57.3	14.4	13.2
Dilse	34.2	45.9	57.0	14.4	13.8
Pierce	34.4	45.3	57.8	14.1	13.3
Kyle	29.5	45.1	57.8	13.8	13.5
Plaza	28.8	44.6	56.7	14.2	13.4
Alzada	33.3	44.4	58.0	13.2	13.2
Svevo	36.9	--	57.0	14.9	--
Alkabo	35.8	--	57.5	14.9	--
Normanno	34.0	--	57.2	13.7	--
Divide	32.9	--	57.0	14.1	--
Grenora	32.4	--	56.7	13.6	--
Levante	32.4	--	57.7	14.0	--
Strongfield	31.6	--	54.8	16.0	--
LSD 5%	**4.6**		**1.7**	**1.1**	

Planted: April 26 **Harvested: August 2**

DRYLAND FALLOW REGIONAL DURUM
SIDNEY, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	45.7	49.0	59.8	13.1	12.9
Alkabo	46.4	48.9	60.8	12.9	12.7
Maier	44.0	48.2	59.7	13.7	13.4
Grenora	45.7	47.8	59.0	13.3	13.2
Divide	41.5	46.3	59.8	12.9	12.8
Pierce	42.8	45.3	60.3	13.3	13.2
Lebsock	47.6	44.8	60.8	13.4	13.3
LSD 5%	**4.2**		**0.8**	**0.9**	

Planted: April 14 **Harvested: July 28**

The greatest service which can be rendered to any country is to add a useful plant to its culture.

Thomas Jefferson, 1790

Dryland Fallow Durum
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Alkabo	28.0	43.3	58.1	15.9	15.6
Grenora	26.9	42.1	56.7	15.8	15.7
Divide	26.3	41.6	57.2	16.5	16.1
Mountrail	27.8	40.7	56.8	16.1	16.0
Lebsock	26.2	40.7	58.8	16.0	15.6
AC Avonlea	26.4	40.2	57.6	16.5	16.7
Maier	26.1	40.1	57.5	16.9	17.0
Ben	26.7	40.0	58.2	17.0	16.7
Munich	24.5	40.0	56.4	16.9	16.5
Pierce	26.5	39.3	58.2	16.2	15.8
Dilse	23.9	39.2	57.2	17.6	17.3
Plaza	22.5	39.1	57.2	17.8	16.7
Kyle	23.8	38.9	57.4	16.9	16.5
Voss	24.2	38.8	57.7	16.4	15.8
Belzer	24.1	38.8	54.8	17.2	16.4
Renville	25.7	38.7	56.8	16.7	16.4
Primo D'oro	25.3	38.7	58.2	16.7	16.2
Ward	24.8	38.5	57.0	17.7	17.1
Rugby	24.7	38.2	56.9	17.5	16.9
AC Navigator	26.4	37.6	58.7	16.4	16.0
AC Napolean	24.0	36.6	55.8	17.7	17.2
Vic	22.4	34.7	58.7	16.3	16.4
Alzada	29.3	--	57.5	15.4	--
Commander	28.5	--	58.3	16.4	--
Grande D'oro	24.8	--	58.3	16.6	--
Strongfield	24.0	--	56.8	17.1	--
LSD 5%	**1.7**	**--**	**0.8**	**0.8**	**--**

Planted: May 6 **Harvested: August 2**

Dryland Recrop Durum
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Avonlea	31.7	28.2	57.5	15.0	16.2
Dilse	30.4	26.6	59.7	14.1	15.8
Plaza	28.4	26.6	57.3	14.7	15.6
Pierce	29.1	25.9	59.0	14.5	15.5
Mountrail	32.0	25.7	57.8	15.0	16.6
Kyle	30.9	23.6	58.0	14.7	16.2
Alkabo	33.4	--	59.2	14.1	--
Alzada	32.4	--	58.3	13.8	--
Divide	31.9	--	58.7	14.0	--
Grenora	30.6	--	57.0	14.6	--
Strongfield	29.3	--	58.8	14.2	--
LSD 5%	**2.4**		**2.0**	**1.5**	

Planted: April 28 **Harvested: July 29**
previous crop: spring wheat

Dryland Notill Durum
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Alkabo	23.4	41.8	58.9	17.8	16.0
Lebsock	22.3	41.6	59.6	17.1	15.9
Mountrail	21.6	41.3	57.4	17.8	16.1
AC Pathfinder	23.7	41.1	58.5	17.0	15.7
Maier	23.2	40.9	58.1	18.5	17.0
AC Avonlea	23.9	40.7	56.7	18.4	16.7
Grenora	25.3	40.5	57.1	17.6	16.1
Ben	24.3	40.1	58.9	18.1	16.7
Divide	20.5	39.9	59.0	17.6	16.3
Plaza	18.6	39.0	58.8	18.2	16.1
AC Navigator	25.6	38.7	59.9	16.5	15.5
Kyle	21.7	38.4	59.0	18.2	16.4
Pierce	23.1	38.0	58.5	17.0	16.1
Dilse	20.0	38.0	57.6	18.6	17.2
AC Napolean	20.2	37.4	57.0	18.3	16.9
Commander	25.5	--	58.1	17.0	--
Alzada	23.1	--	58.9	16.3	--
Primo D'Oro	22.1	--	58.4	18.0	--
Grande D'Oro	20.7	--	59.0	17.3	--
Strongfield	18.0	--	56.7	19.3	--
LSD 5%	**NS**	**--**	**1.4**	**1.0**	**--**

Planted: May 8 **Harvested: August 7**
Previous crop: durum

Dryland Recrop Durum
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Maier	31.6	35.7	58.3	15.8	16.4
Grenora	31.1	35.3	57.5	15.3	15.4
Lebsock	30.4	35.3	59.5	14.7	15.2
Divide	31.9	35.0	59.0	14.0	14.9
Mountrail	31.8	34.9	56.8	15.4	15.7
Plaza	31.1	34.8	58.3	15.0	15.1
Dilse	28.3	34.5	58.3	15.6	16.3
Alkabo	33.5	34.1	59.3	14.4	15.2
AC Navigator	31.3	33.9	59.7	14.9	15.4
Pierce	30.3	33.8	59.4	14.5	15.2
Ben	31.1	33.2	58.8	15.3	15.9
AC Avonlea	29.7	33.1	57.5	16.5	16.1
AC Pathfinder	29.3	32.7	59.5	14.7	14.9
Kyle	29.4	32.1	58.1	15.9	15.5
AC Napolean	30.6	30.7	56.5	15.7	16.6
Commander	33.5	--	59.0	14.8	--
Grande D'Oro	30.4	--	59.5	15.1	--
Alzada	30.3	--	58.4	14.0	--
Primo D'Oro	28.1	--	59.2	15.0	--
Strongfield	28.0	--	57.6	16.4	--
LSD 5%	**3.0**	**--**	**0.8**	**0.9**	**--**

Planted: May 1 **Harvested: August 3**
Previous crop: durum

Dryland Recrop Durum
Circle, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Plaza	11.0	22.4	59.5	14.3	12.9
AC Avonlea	13.9	21.4	60.2	14.0	12.9
Mountrail	11.2	21.3	58.0	14.7	13.0
Kyle	12.3	19.9	60.3	13.9	12.7
Pierce	12.0	19.6	59.7	14.6	13.2
Dilse	11.7	18.8	58.5	15.3	13.7
Alzada	13.7	--	59.7	13.7	--
Grenora	13.2	--	58.5	14.3	--
Alkabo	13.1	--	59.7	14.8	--
Strongfield	12.9	--	59.0	15.1	--
Divide	11.7	--	59.2	14.6	--
LSD 5%	**2.2**		**1.2**	**0.9**	

Planted: May 5 **Harvested: Aug 4**
Previous crop: spring wheat

Dryland Fallow Durum
Poplar, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	21.7	36.9	51.2	19.0	15.9
Kyle	21.5	36.0	53.3	17.9	15.0
AC Avonlea	23.3	35.7	51.5	18.2	15.7
Pierce	20.8	35.2	52.5	18.7	15.8
Dilse	21.5	34.4	52.5	18.5	16.0
Plaza	17.0	33.1	50.5	18.9	15.6
Alzada	25.4	--	53.2	17.0	--
Alkabo	22.5	--	53.0	19.4	--
Divide	21.4	--	53.3	17.9	--
Strongfield	21.1	--	50.7	19.6	--
Grenora	21.1	--	51.0	18.0	--
LSD 5%	**3.1**		**1.2**	**0.8**	

Planted: Apr 27 **Harvested: Aug 7**

Dryland Fallow Durum
Scobey, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Avonlea	43.5	39.1	61.8	11.9	12.1
Mountrail	44.8	38.6	60.5	12.9	11.7
Plaza	42.8	35.5	60.3	12.7	11.5
Kyle	35.7	33.7	61.7	11.9	11.4
Dilse	38.8	32.7	61.2	12.7	12.2
Pierce	40.1	32.2	62.0	12.5	11.8
Strongfield	45.1	--	61.2	13.0	--
Alkabo	44.4	--	62.0	11.8	--
Divide	42.9	--	61.0	12.6	--
Grenora	42.7	--	61.2	12.3	--
Alzada	37.0	--	61.2	11.5	--
LSD 5%	**4.0**		**1.3**	**ns**	

Planted: Apr 27 **Harvested: Aug 15**

Dryland Fallow Durum
Nashua, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	30.1	46.1	59.3	12.9	11.5
Dilse	30.0	45.4	61.3	12.7	11.9
Kyle	32.1	45.1	60.8	12.6	11.0
Plaza	31.4	45.0	59.0	13.4	11.5
AC Avonlea	31.7	44.8	60.0	14.1	12.0
Pierce	32.1	44.0	60.3	14.0	11.5
Strongfield	33.5	--	60.0	13.6	--
Grenora	32.2	--	59.8	13.2	--
Divide	29.1	--	60.0	12.4	--
Alkabo	28.5	--	60.0	13.2	--
Alzada	27.5	--	59.0	12.7	--
LSD 5%	**ns**		**1.1**	**ns**	

Planted: April 14 **Harvested: Aug 3**

Dryland Recrop Durum
Reserve, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	23.5	37.1	56.5	16.2	14.2
AC Avonlea	24.0	36.3	58.2	14.9	14.2
Kyle	22.9	35.8	58.5	14.5	13.2
Pierce	22.1	35.5	58.2	15.6	14.2
Plaza	22.2	34.8	57.0	15.7	14.0
Dilse	22.3	33.7	58.5	15.2	14.1
Alkabo	23.5	--	59.0	15.6	--
Grenora	23.5	--	57.8	14.9	--
Alzada	23.0	--	58.5	14.3	--
Strongfield	22.9	--	57.2	16.1	--
Divide	22.2	--	58.0	15.3	--
LSD 5%	**2.1**		**0.9**	**0.8**	

Planted: Apr 28 **Harvested: Aug 8**
Previous crop: yellow pea

Dryland Fallow Durum
Wibaux, MT

The Wibaux nurseries were not harvested in 2006 due to hail damage.

Dryland Fallow Spring Triticale Variety
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
RSI 310	33.0	54.4	50.5	16.8	15.3
Wapiti	29.0	51.8	51.2	17.9	16.0
Companion	28.5	51.7	51.2	17.1	15.5
Lazer	29.2	50.8	51.2	16.3	14.8
Trical 2700	25.7	50.8	47.7	18.7	16.5
Marvel	21.7	41.3	42.5	18.5	16.7
LSD 5%	**4.3**	**--**	**1.6**	**1.2**	**--**

Planted: May 8 **Harvested: August 7**

DRYLAND FALLOW* DURUM
ARNEGARD, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Maier	39.8	49.6	60.0	13.6	13.6
Lebsock	34.6	47.9	61.3	12.7	12.4
Pierce	39.9	47.6	60.8	11.8	12.4
Mountrail	37.4	46.9	58.9	13.4	12.9
Alkabo	40.1	46.8	60.9	12.9	12.7
Grenora	42.1	46.1	58.6	13.7	13.3
Ben	35.5	45.0	60.7	13.6	13.4
AC Avonlea	34.9	44.1	59.9	14.2	13.5
AC Napolean	34.2	42.2	57.7	14.4	13.3
Dilse	31.9	42.0	59.7	14.5	13.9
Kyle	35.8	40.3	58.8	14.9	13.5
AC Navigator	38.1	--	60.4	13.6	--
Strongfield	38.1	--	59.4	14.3	--
Commander	37.0	--	59.2	14.5	--
Divide	36.5	--	58.8	13.3	--
Alzada	34.0	--	59.7	14.3	--
Primo D'Oro	33.2	--	60.2	14.8	--
Grande D'Oro	33.1	--	58.6	14.3	--
LSD 5%	**5.6**	**--**	**1.6**	**NS**	**--**

Planted: May 9 **Harvested: August 4**

*Chemical fallow

DRYLAND RECROP DURUM
CROSBY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	44.6	66.0	61.4	10.9	13.3
Maier	44.4	64.1	60.5	14.4	15.0
Grenora	43.8	63.6	61.9	11.6	13.3
Lebsock	43.4	62.5	62.6	10.9	13.3
Alkabo	43.6	61.6	61.6	10.8	13.0
Pierce	42.2	61.0	60.4	13.5	14.1
Dilse	39.0	60.5	61.0	12.4	14.6
Ben	41.5	59.5	61.4	13.6	14.5
AC Avonlea	41.4	57.5	61.8	13.1	14.7
AC Napolean	38.5	56.6	58.7	12.2	14.0
Kyle	40.0	54.7	61.5	13.8	14.7
Commander	45.5	--	62.5	12.1	--
Primo D'Oro	42.6	--	60.4	13.5	--
AC Navigator	41.3	--	60.9	12.9	--
Strongfield	39.5	--	61.4	13.0	--
Alzada	39.4	--	61.9	11.3	--
Divide	39.4	--	61.0	13.4	--
Grande D'Or	34.2	--	58.1	12.4	--
LSD 5%	**5.1**	**--**	**1.6**	**NS**	**--**

Planted: May 11 **Harvested: August 12**

Previous crop: durum

DRYLAND RECROP DURUM
NEW TOWN/PARSHALL, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	29.7	50.2	57.5	16.6	15.4
Grenora	29.2	49.4	58.4	16.7	15.2
Alkabo	28.5	49.1	59.9	16.0	15.3
Maier	24.4	47.9	58.6	16.7	15.5
Lebsock	27.3	47.8	60.0	15.5	15.0
AC Napolean	25.7	46.1	57.3	16.9	15.3
Ben	26.4	45.9	60.6	16.4	15.6
Pierce	26.0	45.3	59.6	16.1	14.8
Dilse	25.2	42.2	58.6	18.0	16.6
Kyle	28.4	40.2	59.8	16.1	15.0
AC Avonlea	28.2	38.7	58.9	16.3	15.6
Commander	33.1	--	59.4	15.0	--
Alzada	29.1	--	59.5	14.6	--
Grande D'Oro	28.4	--	60.2	15.3	--
Divide	27.6	--	59.7	16.4	--
Primo D'Oro	26.6	--	59.9	16.8	--
AC Navigator	26.5	--	60.5	16.5	--
Strongfield	25.4	--	57.0	16.9	--
LSD 5%	**3.4**	**--**	**1.5**	**NS**	**--**

Planted: May 10 **Harvested: August 7**

Previous crop: field pea

DRYLAND RECROP DURUM
POWERS LAKE/FLAXTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr*	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr*
Mountrail	38.0	60.8	58.0	16.1	15.2
Pierce	33.4	59.5	59.9	16.4	15.0
AC Napolean	32.9	59.5	58.4	15.4	14.9
Grenora	36.3	59.0	59.8	15.0	14.5
Lebsock	33.5	57.2	59.8	16.1	15.2
Maier	34.3	56.0	59.2	17.4	16.1
AC Avonlea	37.6	54.7	59.9	15.8	15.8
Ben	35.2	53.7	60.9	15.5	15.2
Kyle	34.9	52.6	60.1	14.1	14.8
Dilse	29.5	50.8	59.1	17.2	16.4
Commander	39.4	--	60.0	15.1	--
Alkabo	37.0	--	59.6	16.6	--
AC Navigator	36.3	--	60.4	14.7	--
Alzada	33.5	--	59.1	15.0	--
Divide	33.5	--	59.9	15.4	--
Strongfield	32.8	--	59.0	16.3	--
Grande D'Oro	32.5	--	60.5	16.1	--
Primo D'Oro	29.5	--	60.6	14.9	--
LSD 5%	**5.4**	**--**	**NS**	**NS**	**--**

Planted: May 12 **Harvested: August 11**

Previous crop: field pea * 2003, 2005, 2006

DRYLAND FALLOW DURUM
RAY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Avonlea	30.2	42.6	58.4	14.9	14.6
Alkabo	29.2	42.2	57.7	16.0	14.1
Mountrail	27.2	41.9	55.2	17.2	14.6
Kyle	24.9	41.9	58.4	15.8	14.1
Maier	27.6	41.5	57.8	17.3	14.6
Grenora	30.3	41.4	57.0	16.1	14.2
Lebsock	28.7	41.3	59.2	15.4	13.9
Pierce	28.3	40.8	57.5	17.0	14.7
Ben	27.6	40.7	58.2	16.6	14.8
Dilse	25.9	40.2	57.8	17.4	14.6
AC Napolean	26.4	39.7	57.4	16.6	14.7
Alzada	32.5	--	58.1	15.2	--
Commander	31.4	--	58.2	15.2	--
AC Navigator	29.3	--	59.1	16.3	--
Primo D'Oro	28.1	--	57.2	17.3	--
Strongfield	27.3	--	56.7	17.0	--
Grande D'Oro	27.2	--	58.4	14.6	--
Divide	26.7	--	57.8	16.7	--
LSD 5%	**3.5**	**--**	**1.8**	**1.5**	**--**

Planted: May 12 **Harvested: August 8**

DRYLAND RECROP DURUM
ROSS, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	46.9	53.2	59.1	13.0	12.7
Lebsock	45.0	49.4	60.7	13.1	12.9
Maier	45.5	48.5	60.3	13.9	13.4
Pierce	46.6	48.4	59.6	13.8	13.3
Alkabo	48.0	47.7	61.2	13.3	13.1
AC Napolean	45.4	47.6	58.5	12.8	13.9
Ben	47.5	47.4	60.2	14.7	13.8
Grenora	45.2	46.4	60.1	13.3	13.0
AC Avonlea	46.1	44.7	60.4	12.8	13.4
Dilse	37.4	44.6	58.5	15.7	14.4
Kyle	41.8	44.0	59.2	13.6	13.4
Commander	50.0	--	60.4	12.4	--
Divide	44.5	--	60.5	12.4	--
Alzada	43.8	--	59.3	12.5	--
Grande D'Oro	43.2	--	59.9	13.7	--
AC Navigator	43.0	--	59.7	14.0	--
Strongfield	40.5	--	59.2	13.5	--
Primo D'Oro	40.3	--	58.9	14.3	--
LSD 5%	**5.2**	**--**	**NS**	**NS**	**--**

Planted: May 10 **Harvested: August 7**
Previous Crop: durum

SPRINKLER IRRIGATION DURUM
NESSON VALLEY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Alkabo	55.6	--	59.2	17.3	--
Pierce	52.0	--	59.3	17.3	--
AC Pathfinder	51.7	--	59.8	16.9	--
Mountrail	51.1	--	57.4	17.7	--
Grenora	50.7	--	57.7	17.2	--
AC Avonlea	49.9	--	58.8	18.2	--
AC Navigator	49.9	--	58.8	17.3	--
Maier	49.7	--	59.1	18.1	--
Primo D'Oro	49.7	--	58.6	17.5	--
Commander	48.2	--	58.0	17.6	--
Dilse	47.6	--	58.1	18.2	--
Strongfield	47.3	--	58.5	18.3	--
Lebsock	46.7	--	59.2	17.1	--
Alzada	46.0	--	57.9	16.5	--
Ben	45.4	--	59.6	17.9	--
AC Napolean	45.3	--	58.5	17.8	--
Divide	45.1	--	59.4	17.8	--
Grande D'Oro	45.0	--	59.3	17.4	--
Plaza	41.5	--	56.7	18.4	--
LSD 5%	**NS**	**--**	**1.7**	**NS**	**--**

Planted: May 11 **Harvested: August 9**
Previous crop: potato

FLOOD IRRIGATION STATEWIDE DURUM
SIDNEY, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Pierce	88.4	76.2	60.8	12.0	13.2
Mountrail	88.3	72.0	61.0	11.6	13.1
Dilse	84.4	71.3	61.5	12.4	13.3
Kyle	73.5	67.8	60.8	12.2	12.9
AC Avonlea	81.5	66.9	60.8	12.0	13.4
Alzada	63.1	65.8	59.8	12.1	12.6
Maier	78.5	63.3	61.2	11.8	13.2
Plaza	67.6	62.0	59.8	11.5	12.8
Alkabo	87.2	--	60.8	11.9	--
Divide	86.1	--	60.7	11.7	--
Grenora	83.4	--	60.2	12.1	--
Svevo	78.0	--	60.5	12.4	--
Levante	77.8	--	59.8	11.3	--
Normanno	72.8	--	60.0	11.4	--
Strongfield	69.3	--	61.0	12.3	--
LSD 5%	**6.7**		**0.9**	**0.8**	

Planted: May 1 **Harvested: August 14**
Previous crop: safflower

Sprinkler Irrigation Durum
Dagmar, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Mountrail	60.8	48.5	59.3	13.5	13.0
AC Avonlea	59.9	47.6	59.2	14.1	13.4
Plaza	55.3	46.0	57.5	13.9	13.1
Pierce	58.0	45.1	60.5	13.3	13.0
Kyle	52.7	44.5	60.2	13.3	13.1
Dilse	58.0	43.1	59.8	14.1	13.8
Strongfield	62.1	--	58.7	14.2	--
Divide	60.9	--	59.7	13.7	--
Alkabo	60.9	--	60.0	13.7	--
Grenora	58.9	--	59.2	13.7	--
Alzada	38.0	--	58.7	13.3	--
LSD 5%	**7.1**		**0.9**	**0.4**	

Planted: Apr 28 **Harvested: Aug 30**

Previous crop: yellow pea

Dryland Fallow Winter Wheat
Sidney, MT

Cultivar	Winter Survival % 2006	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Pryor	73.2	55.6	60.4	60.8	13.2	12.5
Jerry	86.0	56.6	58.6	61.0	14.6	13.3
Yellowstone	76.0	57.2	58.1	60.7	13.6	12.7
CDC Falcon	80.3	61.7	57.5	61.5	13.4	12.6
Paul	79.0	58.2	57.1	60.3	13.6	12.9
Morgan	86.4	58.7	55.7	60.8	13.6	12.9
NuSky (HW)	82.1	59.7	55.3	60.7	14.7	13.1
Wahoo	85.2	57.9	54.6	61.0	14.5	13.0
Millenium	78.3	50.8	54.0	61.3	14.3	13.2
Neeley	68.8	55.9	53.5	60.8	13.7	12.5
NuWest (HW)	65.5	53.4	52.8	60.3	13.7	12.4
MDM (HW)	57.9	49.3	52.3	55.2	12.5	12.5
Rocky	72.4	49.5	51.7	62.3	13.2	12.2
BigSky	79.5	49.4	50.1	61.7	14.9	13.3
NuFrontier (HW)	66.1	52.6	48.9	62.2	12.4	11.7
Promontory	67.1	50.3	48.1	61.8	14.2	13.0
Bauermeister	42.5	42.0	47.6	57.8	13.4	13.0
Tiber	76.2	49.3	47.5	61.0	14.6	13.7
Jagalene	74.6	49.1	46.5	63.3	15.0	13.7
Genou	71.0	52.8	46.2	61.2	15.1	13.3
Ledger	55.7	48.9	43.4	61.7	14.3	13.1
Vanguard	63.9	51.1	43.0	60.8	15.2	13.8
Rampart	55.5	43.1	42.7	60.2	15.9	14.3
Golden Spike (HW)	57.6	42.7	41.8	59.7	13.4	12.9
Above (IMI)	56.9	43.1	41.4	60.3	14.4	13.1
CDC Buteo	77.1	57.5	--	62.3	14.4	--
Hyalite	69.8	55.1	--	61.0	15.2	--
Norris (IMI)	74.4	51.1	--	62.0	14.2	--
NuDakota (HW)	68.0	50.3	--	60.2	14.4	--
Bond CL (IMI)	59.7	46.7	--	61.0	14.1	--
Wendy (HW)	77.5	46.0	--	61.8	15.0	--
Willow Creek	88.2	45.8	--	57.5	14.0	--
Hatcher	43.0	43.6	--	61.5	13.2	--
Bynum (IMI)	54.6	42.6	--	60.7	15.1	--
LSD 5%	**11.2**	**7.0**		**1.1**	**1.0**	

Planted: September 20, 2005 **Harvested: July 24, 2006**

HW = Hard White

IMI = Imidazolinone tolerance

Flood Irrigation Regional Durum
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Grenora	91.1	89.2	61.0	11.9	12.6
Mountrail	92.4	88.4	61.8	11.5	12.6
Alkabo	79.7	82.8	61.3	11.5	12.1
Divide	84.0	81.4	61.5	12.4	13.1
Maier	74.6	81.2	61.8	11.9	13.0
Pierce	83.4	79.0	62.2	11.8	12.7
Lebsock	74.1	76.1	62.0	11.5	12.7
LSD 5%	**8.7**		**0.6**	**0.7**	

Planted: May 1 **Harvested: August 14**

Previous crop: safflower

Dryland Fallow Winter Rye Variety
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
AC Remington	54.7	--	55.8	13.0	--
Dacold	51.9	--	52.6	13.0	--
Rymin	49.6	--	55.3	13.9	--
Spooner	45.4	--	55.9	13.9	--
Hancock	45.3	--	55.2	14.4	--
Musketeer	43.6	--	55.7	14.2	--
Wheeler	25.7	--	53.4	17.2	--
Roughrider – HRWW	29.2	--	59.3	19.2	--
Jerry – HRWW	27.7	--	58.1	18.0	--
Yellowstone – HRWW	24.4	--	56.0	17.7	--
LSD 5%	**5.1**	**--**	**0.7**	**0.5**	**--**

Planted: Sept 14, 2005 **Harvested: July 24. 2006**

Dryland Hard Red Winter Wheat Values
Sidney, MT

Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1996-2005) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee

Cultivar	Yield bu/a 3 yr	TW lbs/bu 3 yr	Protein % 3 yr	$/a + or - Falcon
Pryor	60.4	60.8	12.5	12.50
Jerry	58.6	60.5	13.3	9.43
Yellowstone	58.1	60.3	12.7	4.92
Paul	57.1	60.0	12.9	2.85
CDC Falcon	57.5	61.0	12.6	0.00
Morgan	55.7	60.5	12.9	-3.30
Wahoo	54.6	60.1	13.0	-8.13
Millenium	54.0	61.3	13.2	-10.76
Neeley	53.5	61.0	12.5	-17.24
Rocky	51.7	61.5	12.2	-27.06
BigSky	50.1	62.2	13.3	-27.88
Promontory	48.1	61.8	13.0	-36.66
Bauermeister	47.6	55.7	13.0	-38.86
Tiber	47.5	61.4	13.7	-39.30
Jagalene	46.5	62.9	13.7	-43.68
Genou	46.2	61.0	13.3	-45.00
Ledger	43.4	61.1	13.1	-57.29
Vanguard	43.0	61.0	13.8	-59.05
Rampart	42.7	60.6	14.3	-60.37
Above (IMI)	41.4	60.5	13.1	-66.07

HARD RED WINTER WHEAT VARIETY DESCRIPTIONS

Variety	Origin[1]	PVP[4]	Height	Maturity	Winter Hardiness[3]	Lodging	Resistance To [2] Stem Rust	Leaf Rust	Foliar Disease	Quality Factors Test Weight	Grain protein
Above**	Colorado	yes	short	early	poor	R	R	S	MS	good	med
Arapahoe	NE	yes	medium	early	fair	MR	MR	MR	M	medium	medium
Bauermeister	WA	yes	medium	late	fair	R	NA	MR	NA	low	m high
Big Sky	MT	yes	tall	medium	good	MR	R	MR	R	high	medium
BondCL**	CO	yes	m short	early	fair	R	MS	MS	NA	low	m high
Bynum*/**	MSU/WB	yes	m tall	medium	fair	NA	NA	NA	NA	low	high
CDC Butoe	Canada	no	medium	medium	good	M	NA	MS	NA	high	low
CDC Falcon	Canada	yes	m short	medium	good	R	R	R	MR	medium	low
CDC Kestrel	Canada	no	m tall	medium	good	MS	S	S	MS	m low	low
CDC Raptor	Canada	no	m short	medium	fair	R	MR	MR	S	medium	m low
Crimson	SD	yes	medium	medium	fair	MR	MS	S	MR	high	medium
Elkhorn	ND	yes#	medium	medium	good	MS	MR	MR	M	medium	m high
Expedition	SD	yes	medium	medium	fair	R	MS	R	MS	low	medium
Genou*	MT	yes	medium	medium	poor	NA	NA	NA	NA	m low	medium
Goodstreak	NE	yes	tall	m early	fair	MS	MR	S	MS	high	medium
Harding	SD	yes	medium	medium	good	MR	NA	MS-MR	MR	medium	m high
Hatcher	CO	yes	short	m early	fair	R	MR	MS	NA	medium	m high
Jagalene	AgriPro	yes	short	early	poor	R	MR	S	MS	high	medium
Jerry	ND	yes#	medium	medium	good	MR	R	MR	R	medium	m high
Ledger	WB	yes	short	m early	fair	NA	NA	NA	NA	medium	m high
McClintock	Canada	no	medium	m early	fair	MR	NA	S	R	high	medium
Millenium	NE/SD	yes	m short	medium	fair	MR	MR	MS	MS	medium	m low
Morgan	CO	yes#	medium	m late	good	MR	NA	S	M	medium	m high
Neeley	ID	no	medium	m late	fair	MR	S	S	M	m low	m low
Nekota	SD/NE	no	v short	early	good	R	MR	MS	M	m high	m low
Norris**	MSU/WB	yes	m tall	medium	good	NA	NA	NA	NA	m high	medium
Norstar	Canada	no	tall	late	v good	MS	S	S	R	high	medium
Paul	MT	no	short	m late	good	R	R	MS	MR	m low	m low
Radiant	Canada	no	tall	late	fair	R	S	S	NA	medium	m low
Rampart*	MT	no	medium	m late	fair	R	R	S	MR	medium	high
Ransom	ND	yes#	medium	m early	good	MS	NA	R	M	m high	m low
Roughrider	ND	no	tall	medium	v good	MS	R	S	M	medium	high
Seward	ND	no	medium	medium	good	MS	R	S	MS	m high	medium
Tandem	SD	yes	medium	early	fair	MS	NA	S	MR	high	medium
Tiber	MT	no	tall	m late	fair	MS	S	S	MR	m high	medium
Wahoo	NE/WY	yes	medium	medium	fair	MR	S	R	M	medium	m high
Yellowstone	MT	yes	medium	medium	good	M	S	MS	M	low	m high

* Sawfly resistant **Clearfield wheat with imidazolinone tolerance

HARD WHITE WINTER WHEAT VARIETY DESCRIPTIONS

Alice	SD	?	short	early	fair	MR	MR	S	NA	m high	m low
Gary	ID	yes	medium	m late	fair	MR	NA	NA	NA	medium	low
Golden Spike	UT/GM	yes	medium	late	fair	MR	NA	NA	NA	low	low
NuFrontier	GM/AgriPro	yes	m short	early	fair	R	NA	NA	NA	m high	low
NuHorizon	GM/Agripro	yes	short	early	poor	R	NA	NA	NA	high	m low
Nuplains	NE	yes	short	medium	poor	MR	MS	S	NA	high	m high
NuSky	MT	no	medium	m late	good	R	MR	S	MR	medium	medium
Nuwest	MT/GM	yes	medium	medium	good	R	MR	S	MR	m low	medium
Wendy	SD	yes	short	early	good	NA	NA	NA	NA	medium	medium

[1] Refers to developer: AC = Agriculture Canada, GM = General Mills, WPB = Western Plant Breeders., WB = WestBred, ID = Idaho
[2] R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, NA = data not available.
[3] Varieties with fair winter hardiness should not be seeded on bare soil.
[4] "yes" indicates the variety is protected and the seed may be sold for planting purposes only as a class of certified seed (Title V Option).
"yes#" indicates that the variety is protected but does not have the Title V option. PVP = Plant Variety Protection.

WINTER RYE VARIETY DESCRIPTIONS

Variety	Origin	PVP	Year Released	Height	Straw Strength	Maturity	Seed Color	Seed Size	Test Weight	Winter hardiness
AC Rifle	Can	no	1998	med	v good	late	blue	large	med	v good
AC Remington	Can	no	1998	short	v good	med	NA	med	good	good
Dacold	ND	no	1989	med	v good	v late	bl-grn	med	low	good
Frederick	SD	no	1984	tall	fair	late	tan	med	high	good
Musketeer	Can	no	1980	tall	good	m early	blue	large	med	v.good
Prima	Can	no	1984	tall	good	med	blue	large	med	v.good
Spooner	WI	yes	1993	tall	v good	med	tan	NA	high	NA

HARD RED WINTER WHEAT VALUES
WILLISTON, ND

Cultivar	Yield bu/a 3 yr	Protein % 3 yr	Gross $/a	$/a + or - Norstar
Morgan	69.6	14.2	301	$39
Yellowstone	69.3	13.9	299	$37
Jerry	66.8	14.1	289	$27
CDC Falcon	66.3	13.3	286	$24
Wendy (HW)	65.6	14.3	283	$21
NuSky	64.9	14.2	280	$18
Paul	64.9	13.9	280	$18
Ransom	64.8	13.7	280	$18
Millennium	64.2	13.8	277	$15
Harding	62.6	14.3	270	$8
McClintock	62.5	14.0	270	$8
Jagalene	61.8	13.8	267	$5
Expedition	61.6	13.6	266	$4
Wesley	60.7	14.2	262	$0
Norstar	60.6	14.5	262	$0
Elkhorn	58.5	14.7	253	-$9
Roughrider	58.1	14.6	251	-$11
Arapahoe	56.1	14.7	242	-$20

Prices from elevator in Williston, ND on 11/29/06
HW = Hard White

DRYLAND FALLOW WINTER WHEAT VARIETY
WILLISTON, ND

Cultivar	Yield - bus/a - 2006	3 yr	TW lb/b 2006	Protein -- % -- 2006	3 yr
Morgan	41.6	69.6	56.9	13.9	14.2
Yellowstone	40.4	69.3	59.0	14.1	13.9
Jerry	36.1	66.8	59.1	13.1	14.1
CDC Falcon	38.5	66.3	58.3	12.9	13.3
Wendy (HW)	39.1	65.6	60.9	13.9	14.3
NuSky (HW)	39.4	64.9	57.5	14.5	14.2
Paul	36.3	64.9	55.5	14.5	13.9
Ransom	38.0	64.8	57.5	13.3	13.7
Millennium	42.1	64.2	59.4	13.3	13.8
Harding	36.3	62.6	57.6	14.0	14.3
McClintock	34.0	62.5	58.6	14.2	14.0
Jagalene	38.3	61.8	61.2	13.8	13.8
Expedition	36.8	61.6	61.2	13.2	13.6
Wesley	36.7	60.7	59.4	14.1	14.2
Norstar	39.8	60.6	57.7	14.2	14.5
Elkhorn	36.5	58.5	56.9	13.9	14.7
Roughrider	39.4	58.1	57.4	14.3	14.6
Arapahoe	18.2	56.1	56.8	14.0	14.7
CDC Buteo	46.0	--	61.5	12.9	--
CDC Kestrel	45.8	--	58.4	13.9	--
Radiant	37.7	--	57.4	13.6	--
Genou	36.8	--	57.3	15.1	--
Good Streak	34.6	--	57.5	12.3	--
Alice (HW)	31.5	--	60.4	13.3	--
Tiber	29.1	--	57.6	14.7	--
LSD 5%	**5.6**	**--**	**1.6**	**0.6**	**--**

Planted: Sept 14, 2005 **Harvested: July 25. 2006**

DRYLAND NOTILL WINTER WHEAT VARIETY
WILLISTON, ND

Cultivar	Yield - bus/a - 2006	3 yr	TW lb/b 2006	Protein -- % -- 2006	3 yr
Yellowstone	35.4	38.8	60.8	13.3	13.7
McClintock	31.4	36.2	61.9	13.6	13.6
Millennium	33.3	35.7	62.6	13.9	13.6
Wendy (HW)	32.1	35.2	62.8	14.0	13.4
Morgan	33.1	35.1	59.6	14.1	13.9
Jerry	31.6	35.0	60.1	13.9	13.7
Jagalene	30.0	34.5	63.8	14.0	13.7
Harding	27.9	34.5	60.2	14.1	14.2
NuSky (HW)	33.4	34.3	61.4	14.3	13.9
CDC Falcon	28.3	33.8	60.4	13.0	13.3
Paul	29.5	33.6	59.7	14.2	13.9
Roughrider	31.2	33.3	61.2	14.5	14.6
Ransom	27.7	33.0	59.3	13.5	13.4
Wesley	30.5	32.0	61.6	14.4	14.1
Norstar	28.6	31.9	59.2	14.1	14.2
Elkhorn	29.4	31.2	60.2	13.2	13.9
Expedition	28.6	31.0	62.3	13.5	13.5
Arapahoe	18.9	30.1	59.0	14.2	14.2
CDC Kestrel	32.1	--	60.7	14.2	--
CDC Buteo	31.7	--	62.9	13.6	--
Tiber	29.3	--	60.6	14.5	--
Radiant	27.6	--	59.2	14.0	--
Genou	25.9	--	60.2	14.6	--
Good Streak	24.3	--	60.4	12.9	--
Alice (HW)	18.9	--	62.1	13.9	--
LSD 5%	**5.5**	**--**	**0.9**	**0.7**	**--**

Planted: Sept 15, 2005 **Harvested: July 21. 2006**
Previous crop: durum
HW = Hard White

DRYLAND WINTER TRITICALE, SPELT AND WINTER RYE VARIETY WILLISTON, ND

Cultivar	Yield - bus/a - 2006	3 yr	TW lb/b 2006	Protein -- % -- 2006	3 yr
Dacold – RYE	38.1	56.3	54.0	12.3	12.3
AC Rifle – RYE	37.2	51.1	55.8	14.1	13.9
Hancock – RYE	36.2	--	56.5	13.9	--
Rymin – RYE	35.2	--	56.2	13.4	--
AC Remington – RYE	33.7	--	56.6	13.5	--
Musketeer – RYE	32.8	--	56.5	14.2	--
Spooner – RYE	31.7	--	56.5	14.0	--
Wheeler – RYE	20.0	--	54.7	17.4	--
PI348159 – SPELT	38.1	--	28.9	13.8	--
PI3483206 – SPELT	37.4	--	28.8	14.4	--
Frank – SPELT	32.6	--	42.9	14.6	--
PI348145 – SPELT	31.2	--	27.1	13.1	--
Windrift – TRITICALE	34.4	44.5	56.1	15.1	14.7
Frostat – TRITICALE	29.8	37.5	53.8	14.4	14.2
Boreal – TRITICALE	31.5	--	50.9	15.2	--
Jerry – HRWW	25.0	36.5	60.9	17.2	16.6
LSD 5%	**4.2**	**--**	**0.4**	**0.6**	**--**

Planted: Sept 15, 2005 **Harvested: July 24. 2006**
Previous crop: durum

BARLEY VARIETY DESCRIPTIONS

Variety	Origin[1]	Use[2]	Height	Maturity	Lodging	PVP	Resistance To[3] Stem Rust	Loose Smut	Net Blotch	Spot Blotch	Quality Factors Test Weight	Grain Protein
Two-Row												
AC Metcalfe	Canada	F/M	medium	medium	M	no	NA	MR	MS	NA	medium	medium
Baronesse	WPB	F	m short	medium	R	yes#	S	S	MR	MR	m high	low
Boulder	WB	F	medium	medium	MR	yes	NA	S	NA	NA	m high	m high
Bowman	ND	F	medium	early	MS	no	S	S	S	MS	high	m high
Calgary	France	F	short	medium	R	yes	NA	S	NA	NA	m low	low
CDC Bold	Canada	F	short	late	MR	no	MS	S	S	NA	m high	m high
CDC Select	Canada	F	medium	medium	M	no	MS	S	MS	NA	medium	m high
Conlon	ND	F/M	m short	early	MS	yes	S	S	MR	MS	m high	m low
Conrad	BARI	F/M	m short	m late	MR	yes	NA	S	NA	NA	m high	m low
CDC Copeland	Canada	F/M	tall	m late	MS	yes	NA	S	NA	NA	low	medium
Craft	MT	F/M	tall	medium	MR	yes	NA	S	NA	NA	m high	m high
Eslick	MT	F	medium	m late	MS	no	S	NA	NA	NA	medium	m low
Geraldine	MT	F/M	m short	m late	MR	yes	NA	S	NA	NA	m high	m high
Harrington*	Canada	F/M	m short	late	S	no	S	S	MR	S	medium	m low
Haxby	MT	F	m tall	medium	MS	no	S	S	S	S	v high	medium
Hockett	MT	F/M	medium	medium	MS	yes	NA	S	NA	NA	m high	low
Kendall	Canada	F/M	medium	m late	MR	yes	MR	S	MR	NA	m low	m high
Merit	BARI	F/M	m tall	late	MS	yes	NA	S	NA	NA	low	medium
Rawson	ND	F	medium	medium	MR	no	S	S	MR	MR	v high	m low
Xena	WPB	F	m short	m late	R	yes	S	S	MS	NA	medium	high
Six-Row												
Drummond	ND	F/M	m short	medium	R	yes	S	S	MS	MR	medium	medium
Excel	MN	F/M	medium	m early	MR	yes	S	S	MS	MR	low	m low
Foster	ND	F/M	m short	early	MR	yes	S	S	MS	MR	m low	medium
Lacey	MN	F/M	m short	medium	MR	yes	S	S	MS	MR	medium	medium
Legacy	BARI	F/M	medium	m late	MR	yes	S	S	MS	MR	medium	medium
Morex	MN	F/M	tall	m early	MS	no	S	S	S	MR	medium	m high
Robust	MN	F/M	tall	medium	MS	yes	S	S	MS	MR	medium	m high
Stellar-ND	ND	MP/F	m short	medium	R	yes	S	S	MS/S	MR/R	medium	m low
Tradition	BARI	M/F	medium	medium	R	yes	S	S	MS	MR	medium	m low
Specialty												
Haybet	MT	H	tall	medium	S	no	NA	S	NA	NA	--	--
Hays	MT	H	m tall	medium	MS	yes	NA	NA	NA	NA	low	medium
Stockford	WB	H	m tall	medium	MS	yes	NA	NA	MS	MS	NA	NA
Valier	MT	EVF	medium	m late	MS	yes	S	S	MR	MR	high	high
Wanubet	MT	WH	medium	late	S	no	S	S	S	S	high	high
Westford	WPB	H	tall	medium	S	yes#	NA	NA	NA	NA	--	--

[1] Refers to developer: WPB = Western Plant Breeders, BARI = Busch Ag Resources, Inc., WB = WestBred
[2] F = feed, M = malt, H = hay, WH = waxy hulless, EVF = enhanced value feed. * Recommended as malting in western US.
[3] R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, NA = data not available.
[4] "yes" indicates the variety is protected and the seed may be sold for planting purposes only as a class of certified seed (Title V Option).
"yes#" indicates that the variety is protected but does not have the Title V option.

IRRIGATION MALT BARLEY GROWN IN COOPERATION WITH RICH HORSLEY - NDSU

		sprinkler				flood			
variety	**rows**	**Yield**	**TW**	**Protein**	**% Plump**	**Yield**	**TW**	**Protein**	**% Plump**
Lacey	6	112.2	49.8	12.4	70	93.9	47.8	11.8	46
Tradition	6	111.7	49.2	11.7	76	104.0	48.2	10.9	72
Drummond	6	105.9	47.7	13.1	64	95.3	46.7	11.3	79
Legacy	6	103.5	47.2	11.8	59	88.0	45.8	10.3	69
Robust	6	103.0	50.0	12.8	70	86.6	47.2	12.3	38
Stander	6	101.6	49.7	11.9	76	92.4	48.8	11.6	86
Conlon	2	100.6	51.3	13.0	87	88.0	48.8	12.2	91
Stellar	6	99.1	46.5	11.9	78	86.1	44.5	12.1	57
Bowman	2	95.3	51.3	13.6	85	81.3	51.0	12.3	92
Morex	6	90.0	47.7	12.8	58	85.6	46.7	11.0	54
Rawson	2	89.5	50.7	13.1	95	86.1	49.8	12.1	96
Metcalfe	2	76.0	49.2	14.7	77	62.9	47.5	13.2	75
LSD 5%		**13.3**	**1.2**	**0.7**		**8.6**	**1.8**	**1.1**	

Planted: May 4 Harvested: Aug 4
Previous crop: safflower

Planted: May 4 Harvested: Aug 3
Previous crop: safflower

Dryland Fallow Malt Barley
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	plump -%- 2006	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Haxby	81.1	92.3	73	53.0	12.8	12.1
Craft	90.9	90.4	84	50.8	13.3	12.5
Tradition	90.9	88.3	91	50.7	11.5	11.2
Hockett	81.6	87.4	87	50.8	11.3	10.9
Metcalfe	85.8	88.0	89	50.5	12.2	11.7
Kendall	79.6	87.3	85	48.8	12.8	11.7
Legacy	85.8	91.1	79	49.0	10.6	10.8
Morex	87.4	87.8	86	50.7	12.2	12.1
Drummond	86.1	86.9	87	50.2	12.4	11.8
Harrington	73.5	84.4	74	46.8	11.8	11.3
Robust	79.5	83.6	78	50.2	11.8	11.7
Merit	81.9	83.4	75	46.2	12.0	11.5
Copeland	68.0	80.4	73	46.8	12.5	11.5
Conrad	82.3	--	81	48.7	12.3	--
Xena	83.4	--	53	47.7	12.7	--
Stellar	76.0	--	90	49.5	10.9	--
Eslick	76.5	--	70	49.0	12.4	--
Boulder	84.7	--	87	52.0	12.7	--
Geraldine	76.4	--	60	48.0	12.2	--
Calgary	74.3	--	71	48.3	12.4	--
LSD 5%	**12.5**		**9.6**	**1.8**	**1.4**	

Planted: April 13 **Harvested: July 26**

Dryland Recrop Barley
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Haxby	59.1	47.8	49.3	10.7	11.2
Tradition	54.4	45.0	47.0	10.1	12.5
Xena	53.3	44.5	45.7	10.6	12.1
Metcalfe	54.0	43.8	44.7	12.3	12.0
Hockett	53.0	43.0	46.3	10.7	10.8
Eslick	54.2	42.3	45.8	11.7	12.1
Craft	53.9	41.4	48.8	12.0	12.2
Copeland	54.3	41.0	43.0	11.3	11.1
Harrington	51.4	39.1	44.0	10.9	12.0
Geraldine	44.9	38.2	46.2	11.4	11.7
Hays	47.8	35.8	44.2	11.8	11.5
Stellar	59.7	--	46.5	10.0	--
Drummond	53.2	--	47.0	10.6	--
Legacy	52.6	--	45.8	9.8	--
Boulder	50.9	--	50.3	10.6	--
Robust	50.8	--	46.3	10.7	--
Kendall	50.4	--	44.8	11.6	--
Conrad	47.6	--	45.0	11.9	--
Merit	42.6	--	42.8	11.0	--
LSD 5%	**9.1**		**1.9**	**1.5**	

Planted: April 28 **Harvested: July 29**

Previous crop: spring wheat

Dryland Fallow Barley
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Lacey	57.8	83.6	43.0	13.4	13.4
Conlon	56.4	82.8	47.0	13.5	13.2
Haxby	54.9	82.3	46.2	14.1	13.8
Eslick	51.1	80.1	43.4	14.2	13.6
Excel	50.7	79.5	42.1	14.3	13.6
Xena	47.0	78.9	43.0	13.8	13.4
Valier	50.0	78.6	44.3	14.9	14.4
Tradition	58.3	78.2	43.1	13.8	13.8
Rawson	57.8	77.9	44.8	10.8	11.2
Bowman	55.3	77.9	47.7	13.4	13.7
Stellar-ND	50.7	77.6	41.7	13.9	13.2
Drummond	49.2	77.4	41.4	14.0	13.7
Robust	50.3	77.3	41.3	14.0	13.9
Stark	52.4	77.1	46.3	14.0	13.6
AC Metcalfe	43.7	75.6	44.1	15.6	14.6
CDC Bold	45.7	75.5	42.5	15.2	14.1
Logan	49.8	75.2	44.3	NA	--
Morex	49.6	75.2	43.6	13.0	13.5
CDC Kendal	45.6	74.8	42.2	14.7	14.4
Legacy	46.1	73.2	41.6	13.5	13.6
CDC Select	43.8	72.4	44.1	14.8	14.3
MN Brite	43.0	67.2	41.4	16.0	16.1
Harrington	43.8	65.3	43.0	14.9	14.0
LSD 5%	**4.8**	**--**	**2.0**	**1.0**	**--**

Planted: May 1 **Harvested: July 26**

Dryland Recrop Barley
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Haxby	56.0	69.4	47.2	12.4	12.7
Stellar-ND	54.1	64.7	44.8	12.0	12.1
Eslick	50.1	64.2	43.2	13.8	13.2
Conlon	54.7	63.9	46.7	11.9	12.2
Tradition	51.6	63.4	46.3	12.7	12.9
CDC Bold	47.7	63.2	43.4	14.1	13.8
Lacey	52.6	62.9	45.3	12.4	12.9
Rawson	52.6	61.9	47.1	11.1	11.3
Valier	43.8	59.6	44.5	14.9	13.8
Robust	46.6	58.7	45.3	12.4	12.6
Drummond	45.8	58.0	42.3	12.7	13.2
Legacy	48.0	57.9	43.6	12.4	12.5
AC Metcalfe	43.2	57.6	44.2	14.3	14.0
CDC Select	46.2	57.1	43.4	14.2	13.6
Morex	45.5	56.6	43.0	12.8	12.3
Harrington	45.6	56.1	43.5	13.1	12.9
LSD 5%	**7.0**	**--**	**1.7**	**1.4**	**--**

Planted: April 29 **Harvested: July 27**

Previous crop: durum

DRYLAND FALLOW BARLEY
SIDNEY, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	Plump -%- 2006	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Tradition	81.7	86.3	92	50.2	11.6	11.5
Haxby	83.0	88.9	79	51.8	12.4	12.0
Eslick	81.4	86.6	81	49.2	11.0	11.3
Craft	77.2	82.3	83	50.8	12.6	12.4
Baronesse	81.4	84.7	79	47.8	11.8	11.2
Xena	84.7	86.1	55	47.7	12.0	11.5
Conrad	82.5	85.7	81	47.3	12.5	11.4
Hockett	83.0	82.7	81	50.3	11.6	11.1
Boulder	74.7	82.4	93	51.8	11.9	12.1
Harrington	77.3	82.3	78	48.3	10.7	10.5
Geraldine	73.6	81.3	68	48.2	12.1	11.5
Metcalfe	77.4	--	81	49.8	12.7	--
LSD 5%	**11.1**			**1.6**	**1.1**	

Planted: April 13 **Harvested: July 25**

DRYLAND FALLOW (CHEMICAL) BARLEY
ARNEGARD, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Lacey	79.6	83.0	47.2	11.3	10.2
Stellar-ND	79.4	82.6	46.0	10.5	9.8
Tradition	80.2	81.5	49.3	10.1	9.8
Conlon	82.6	78.7	50.2	10.9	10.6
Robust	73.3	76.8	46.6	11.5	10.4
Rawson	69.8	76.5	47.9	10.4	9.7
AC Metcalfe	65.5	76.2	46.0	12.7	10.4
Drummond	69.5	75.0	47.9	11.3	10.4
Legacy	61.8	71.7	45.4	10.9	9.7
Harrington	67.8	66.6	46.8	11.5	9.9
Haxby	77.0	--	50.4	10.7	--
LSD 5%	**6.9**	**--**	**2.7**	**NS**	**--**

Planted: May 9 **Harvested: August 4**

DRYLAND RECROP BARLEY
CROSBY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Tradition	69.6	99.3	49.2	9.6	11.3
Rawson	63.1	95.8	49.3	11.7	10.8
Lacey	70.1	94.8	45.3	10.5	11.4
Drummond	58.9	89.5	49.1	11.1	11.5
Legacy	62.6	87.8	43.7	9.9	11.3
Robust	57.6	86.8	47.3	11.6	12.5
Stellar-ND	57.5	85.2	45.7	10.2	11.5
Harrington	57.2	83.0	49.6	11.2	12.1
AC Metcalfe	58.6	79.7	49.6	9.5	11.7
Conlon	50.0	73.6	50.2	11.3	11.8
Haxby	67.7	--	52.8	11.3	--
LSD 5%	**10.4**	**--**	**4.0**	**NS**	**--**

Planted: May 15 **Harvested: August 12**
Previous crop: durum

DRYLAND NOTILL BARLEY
WILLISTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Haxby	49.4	70.1	49.7	13.7	13.7
Eslick	53.6	68.1	45.9	12.9	13.3
Conlon	54.0	67.9	47.8	13.2	13.0
Tradition	55.2	66.1	46.0	13.5	13.5
Stellar-ND	49.4	63.1	44.5	13.4	13.3
Rawson	50.6	62.4	47.8	11.6	11.5
CDC Bold	44.2	61.1	43.6	15.3	14.7
Lacey	46.2	60.0	44.9	13.5	13.9
Morex	49.3	59.5	43.7	13.7	13.6
Drummond	47.6	58.3	44.7	13.5	13.5
Robust	43.0	57.9	45.4	13.7	14.0
AC Metcalfe	39.6	57.9	44.8	16.1	15.0
Valier	30.2	57.8	46.4	16.2	15.3
Legacy	44.0	57.0	43.3	13.5	13.5
CDC Select	39.4	54.1	45.5	14.4	14.1
Harrington	39.6	51.6	44.6	14.5	14.4
LSD 5%	**7.9**	**--**	**1.7**	**1.3**	

Planted: May 1 **Harvested: July 28**
Previous crop: durum

The staff at the WREC would like to express their appreciation to area NDSU County Extension Agents for their assistance with the off-station sites. Keith Brown, Warren Froelich, Dan Folske, Jim Hennessy and Dale Naze, along with Chet Hill, Ag Diversification Specialist at WREC, selected the sites, soil sampled and planted all the plots at these sites in a timely manner. Their coordinated effort is greatly appreciated.

DRYLAND RECROP BARLEY
NEW TOWN/PARSHALL, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Tradition	50.3	63.8	42.0	14.7	13.5
Drummond	43.7	62.3	45.3	14.9	14.1
Lacey	49.8	60.1	43.6	13.1	13.7
Rawson	51.7	59.8	49.1	12.0	11.4
Stellar-ND	49.6	59.7	42.1	12.8	13.2
AC Metcalfe	41.8	57.0	46.8	16.1	15.0
Conlon	54.5	56.6	48.1	12.7	12.9
Robust	43.1	55.5	43.4	13.7	14.1
Legacy	42.6	55.2	42.0	14.2	14.4
Harrington	45.1	48.2	45.3	15.9	14.4
Haxby	58.9	--	46.6	15.1	--
LSD 5%	**5.9**	**--**	**3.7**	**2.3**	**--**

Planted: May 10 **Harvested: August 7**
Previous crop: field pea

DRYLAND RECROP BARLEY
POWERS LAKE/FLAXTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 2 yr*	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 2 yr*
Rawson	66.6	94.2	48.9	10.7	10.4
Drummond	65.7	91.6	46.4	12.7	11.8
Haxby	65.9	88.2	49.3	12.6	11.6
Tradition	69.0	85.1	48.4	11.8	11.7
Lacey	60.2	81.3	44.2	13.3	12.9
AC Metcalfe	50.2	79.4	44.4	14.6	13.4
Legacy	54.6	75.7	43.1	11.8	12.0
Harrington	55.2	74.7	45.6	12.8	12.6
Stellar-ND	46.1	74.1	40.4	12.8	12.2
Robust	46.6	68.2	44.2	12.9	12.8
Conlon	59.3	50.8	49.3	12.2	12.0
LSD 5%	**9.5**	**--**	**1.6**	**0.9**	**--**

Planted: May 12 **Harvested: August 11**
Previous crop: field pea * 2005, 2006

DRYLAND FALLOW BARLEY
RAY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Tradition	52.7	78.4	43.7	13.4	11.5
Rawson	61.4	77.5	45.7	12.0	10.4
Lacey	48.2	73.0	39.3	14.9	11.8
Stellar-ND	46.6	72.3	38.4	13.9	11.1
Conlon	61.2	70.6	46.3	12.6	11.3
AC Metcalfe	42.0	70.2	44.7	16.5	12.4
Drummond	50.2	69.0	42.3	13.2	11.6
Robust	42.8	68.7	42.0	13.8	11.6
Legacy	41.4	67.9	39.6	14.6	11.4
Harrington	46.2	66.4	42.8	14.8	12.0
Haxby	57.4	--	45.3	13.7	--
LSD 5%	**5.7**	**--**	**1.5**	**1.3**	**--**

Planted: May 12 **Harvested: August 8**

DRYLAND RECROP BARLEY
ROSS, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Rawson	81.6	81.9	51.5	10.4	10.3
Tradition	76.8	81.2	48.5	12.4	10.8
Lacey	68.7	76.6	46.3	12.1	11.3
Stellar-ND	68.4	75.3	45.7	11.7	10.8
Drummond	67.8	74.8	48.6	11.7	11.1
AC Metcalfe	65.1	74.3	49.7	13.5	11.9
Legacy	66.7	71.9	44.9	12.6	11.7
Conlon	70.1	70.7	51.2	12.2	11.5
Robust	68.9	69.8	48.4	12.4	11.1
Harrington	69.0	67.3	48.9	13.8	11.8
Haxby	72.9	--	51.5	12.8	--
LSD 5%	**NS**	**--**	**1.9**	**NS**	**--**

Planted: May 10 **Harvested: August 7**
Previous crop: durum

FLOOD IRRIGATION BARLEY
SIDNEY, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	plump -%- 2006	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Haxby	99.5	121.8	66	48.3	12.6	12.1
Conrad	113.3	117.2	88	48.3	12.2	11.9
Calgary	101.3	116.7	74	46.7	11.1	11.8
Tradition	112.7	116.5	73	47.2	10.7	10.7
Eslick	104.2	116.1	76	47.0	11.8	11.5
Xena	87.0	113.8	53	44.8	11.7	11.5
Baronesse	106.4	113.4	70	47.7	11.0	11.6
Geraldine	98.2	112.7	61	47.0	11.7	11.6
Craft	97.4	111.3	75	47.5	12.1	11.6
Boulder	109.9	110.5	82	50.5	12.8	11.8
Hockett	89.8	106.9	74	45.3	10.5	10.7
Harrington	97.6	104.4	78	43.8	11.4	11.5
Metcalfe	85.0	--	71	45.8	11.9	--
LSD 5%	**12.9**			**1.9**	**1.2**	

Planted: May 1 **Harvested: August 10**
Previous crop: safflower

Ten (thousand years) ago we lived in hunter-gatherer tribes just hearing about a hot new high-tech approach: agriculture. Our numbers then took off under the most important of all technological revolutions.

Gregory Benford, 1999

SPRINKLER IRRIGATION BARLEY
NESSON VALLEY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Conlon	75.0	--	--	--	--
Rawson	74.9	--	--	--	--
Bowman	72.9	--	--	--	--
Tradition	71.3	--	--	--	--
Drummond	66.2	--	--	--	--
Stellar-ND	64.4	--	--	--	--
Morex	61.6	--	--	--	--
Lacey	60.9	--	--	--	--
Stander	56.2	--	--	--	--
AC Metcalfe	53.1	--	--	--	--
Legacy	50.3	--	--	--	--
Robust	49.3	--	--	--	--
LSD 5%	**3.0**	**--**	**--**	**--**	**--**

Planted: May 3 **Harvested: August 8**
Previous crop: potato

Flood Irrigation Malt Barley
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	plump -%- 2006	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Legacy	110.4	126.4	71	45.7	10.7	11.8
Geraldine	98.8	123.8	79	48.0	11.8	11.9
Tradition	113.6	122.9	90	48.0	11.2	12.3
Drummond	111.6	122.7	78	46.2	12.0	12.6
Haxby	97.6	120.9	76	49.8	12.0	12.6
Copeland	104.2	119.9	80	46.8	11.5	11.6
Robust	112.5	115.5	85	48.0	11.6	12.5
Hockett	98.9	113.9	87	48.3	10.9	11.6
Craft	99.9	113.8	86	50.2	13.2	13.1
Merit	91.5	113.1	81	44.8	12.3	12.0
Kendall	98.9	113.1	90	47.3	11.9	12.5
Metcalfe	94.1	112.4	87	47.8	12.2	12.0
Morex	97.2	110.6	65	45.0	11.6	12.8
Harrington	93.5	106.0	90	47.7	11.0	11.3
Conrad	109.2	--	89	48.8	12.4	--
Calgary	107.1	--	84	47.8	13.0	--
Eslick	105.0	--	83	48.7	11.7	--
Boulder	104.7	--	89	50.8	12.3	--
Xena	103.9	--	78	47.7	11.8	--
Stellar	103.0	--	80	44.5	11.0	--
LSD 5%	**12.0**		**8.3**	**1.6**	**1.1**	

Planted: May 1 **Harvested: August 11**

Previous crop: safflower

Dryland Recrop Oat
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
CDC Orrin	70.2	92.0	28.3	13.3	12.7
CDC Pacer	66.6	88.4	28.8	12.1	12.1
Monida	74.3	85.8	25.3	11.7	12.5
CDC Dancer	66.1	80.8	31.9	12.5	12.8
Killdeer	64.6	80.7	30.5	12.9	14.0
AC Morgan	65.0	80.2	28.1	11.4	11.9
Beach	61.8	74.8	32.7	14.2	14.6
Jerry	62.0	71.1	29.8	14.1	14.6
Morton	60.1	69.9	30.3	13.3	14.9
Stark	38.2	55.5	35.1	17.9	17.7
Paul	29.5	46.1	39.6	21.0	20.5
Souris	64.7	--	30.4	12.5	--
Hytest	61.4	--	35.0	13.6	--
Maida	58.6	--	30.9	15.7	--
HiFi	54.6	--	28.2	14.3	--
LSD 5%	**8.3**	**--**	**2.4**	**2.9**	**--**

Planted: April 29 **Harvested: August 1**

Previous crop: durum

Dryland Fallow Oat
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
CDC Orrin	71.9	112.4	29.1	13.2	13.0
Monida	76.9	109.2	27.4	12.1	12.3
Sesqui	75.9	108.2	33.4	16.1	16.4
AC Pinnacle	71.5	107.5	30.7	12.0	11.4
CDC Pacer	65.6	107.3	27.5	12.6	12.3
AC Ronald	66.9	106.9	34.3	14.8	13.2
AC Morgan	65.4	105.6	28.7	12.1	11.5
CDC Boyer	69.3	105.0	31.4	13.3	12.7
Killdeer	65.6	104.0	29.6	12.6	12.5
Leonard	65.2	103.9	29.0	14.0	14.3
CDC Dancer	67.3	103.0	32.0	13.2	12.4
AC Medallion	66.7	102.7	30.1	13.0	13.2
AC Kaufman	65.1	102.0	30.5	12.1	12.0
Souris	61.7	101.9	31.7	14.0	12.9
Beach	67.7	101.6	33.0	12.8	13.1
Ebeltoft	60.0	100.9	27.4	11.1	12.2
HiFi	61.7	100.5	31.6	12.9	13.0
Otana	64.6	99.5	29.8	14.3	14.5
Youngs	61.3	97.9	30.1	14.2	14.3
Morton	65.3	94.8	32.1	14.5	14.3
Maida	64.5	94.4	32.6	12.8	14.4
AC Assiniboia	52.6	85.8	27.8	12.9	13.2
Hytest	66.5	83.4	35.3	16.4	17.0
Jerry	67.6	82.3	31.6	12.4	14.2
AC Gwen	40.4	75.0	31.6	13.4	13.1
Stark	38.5	74.0	35.8	20.5	17.1
Buff	38.6	69.8	37.6	22.0	18.8
Paul	29.2	66.3	39.8	21.2	19.2
CDC Weaver	71.3	--	31.0	13.0	--
AC Furlong	66.9	--	31.7	11.2	--
Stallion	66.5	--	30.7	14.4	--
LSD 5%	10.1	--	2.3	1.8	--

Planted: May 1 Harvested: August 1

Dryland Fallow Oat
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Monico	114.0	138.3	32.8	13.1	12.7
Killdeer	112.9	135.2	32.7	12.3	12.0
Monida	110.4	132.6	29.0	12.9	12.6
Otana	108.6	126.3	33.2	13.2	12.7
CDC Pacer	106.4	125.8	32.5	12.6	12.3
Cayuse	100.5	124.1	29.7	13.1	12.7
Powell	94.9	123.4	28.7	13.2	12.7
Ajay	101.2	119.2	31.3	14.7	14.0
Maverick	102.4	131.0	29.0	14.0	12.9
CDC Dancer	105.9	129.0	34.5	13.2	12.4
Beach	100.7	--	34.3	13.7	--
Morton	98.2	--	32.8	14.0	--
Stark	65.8	--	35.7	15.7	--
LSD 5%	**6.7**		**1.1**	**1.7**	

Planted: April 14 **Harvested: July 27**

Dryland Notill Oat
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
CDC Orrin	53.0	101.0	27.6	12.2	12.3
CDC Pacer	46.3	97.7	27.2	12.6	12.7
AC Morgan	51.4	97.2	27.6	11.8	11.9
Killdeer	51.7	93.6	28.4	13.0	13.2
Monida	62.5	92.5	26.1	11.5	11.9
CDC Dancer	48.9	86.7	28.9	12.4	12.8
Morton	49.4	84.9	28.4	12.5	14.1
Beach	47.6	82.8	31.9	14.1	14.1
Jerry	46.7	79.2	29.2	12.8	14.6
Stark	22.5	65.2	36.1	18.6	16.8
Paul	11.7	50.3	40.0	18.8	19.5
Souris	51.9	--	30.5	12.9	--
Maida	46.7	--	29.4	15.3	--
HiFi	46.2	--	28.2	12.5	--
Hytest	44.6	--	31.2	15.5	--
LSD 5%	**5.6**	**--**	**1.2**	**1.5**	**--**

Planted: May 1 **Harvested: August 10**
Previous crop: durum

Dryland Recrop Oat
Powers Lake/Flaxton, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 2 yr*	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 2 yr*
Maida	63.9	117.2	34.9	14.0	12.5
Killdeer	67.8	108.1	33.0	12.2	10.0
Morton	64.7	100.1	35.0	12.7	12.2
CDC Orrin	65.0	98.7	33.4	11.8	9.8
Beach	60.9	94.1	37.4	12.3	10.2
Jerry	64.4	86.7	35.4	12.5	10.5
Monida	84.4	84.8	30.0	11.2	9.2
Stark	39.1	80.1	34.4	14.2	12.9
Paul	35.6	66.8	40.6	17.2	14.8
Souris	72.8	--	33.9	11.9	--
Hytest	64.3	--	37.7	15.2	--
HiFi	61.5	--	32.8	12.9	--
LSD 5%	**13.6**	**--**	**2.2**	**2.0**	**--**

Planted: May 12 **Harvested: August 11**
Previous crop: field pea * 2005, 2006

Flood Irrigation Oat
Sidney, MT

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Monico	162.7	184.8	34.5	12.6	12.1
CDC Dancer	157.7	183.6	33.5	12.2	11.5
Monida	164.7	182.2	29.5	13.0	12.0
Killdeer	165.1	178.3	33.2	12.8	12.5
CDC Pacer	152.6	177.1	30.3	13.2	12.1
Otana	151.2	175.2	33.7	13.4	12.6
Maverick	149.3	165.9	31.5	12.7	12.2
Beach (hulless)	157.2	--	35.3	12.8	--
Stark (hulless)	104.6	--	38.5	14.7	--
LSD 5%	**16.6**		**1.5**	**0.9**	

Planted: May 1 **Harvested: August 10**
Previous crop: safflower

Dryland Fallow (Chemical) Oat
Arnegard, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Monida	93.3	108.2	27.3	11.1	10.2
Killdeer	91.0	107.5	32.3	11.9	11.5
Morton	88.9	104.6	33.2	12.8	12.4
Beach	85.0	100.7	33.1	12.1	12.1
Jerry	84.2	96.5	31.1	14.0	13.0
Stark	47.8	74.7	35.4	16.0	14.0
Paul	49.3	64.7	40.7	16.0	16.9
CDC Orrin	100.4	--	29.4	12.2	--
Hytest	91.1	--	36.8	13.5	--
Souris	86.2	--	33.1	11.7	--
Maida	85.0	--	31.1	14.9	--
HiFi	82.2	--	30.3	12.4	--
LSD 5%	**12.5**	**--**	**2.6**	**NS**	**--**

Planted: May 9 **Harvested: August 4**

Dryland Fallow Oat
Ray, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Monida	68.0	122.8	26.3	12.0	10.6
Killdeer	63.0	114.7	29.3	14.7	11.4
Beach	55.7	103.9	33.2	15.5	13.3
Morton	63.9	100.6	31.4	15.8	13.2
Jerry	60.2	98.0	33.0	15.1	13.2
Stark	32.4	82.9	37.9	20.1	15.8
Paul	29.8	70.0	42.6	21.2	18.5
CDC Orrin	65.1	--	29.3	14.5	--
Souris	61.5	--	30.9	13.7	--
Maida	61.3	--	30.4	15.8	--
Hytest	55.3	--	36.3	17.9	--
HiFi	52.4	--	30.8	13.9	--
LSD 5%	**6.7**	**--**	**2.5**	**1.8**	**--**

Planted: May 12 **Harvested: August 8**

Sprinkler Irrigation Oat Variety
Nesson Valley, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Killdeer	131.2	--	30.7	13.2	--
Stallion	120.9	--	32.2	14.6	--
AC Morgan	116.9	--	29.3	12.4	--
Souris	116.9	--	34.1	13.5	--
HiFi	114.0	--	33.8	13.8	--
Maida	113.1	--	32.5	15.2	--
Jerry	112.0	--	33.7	14.5	--
Morton	107.2	--	34.4	15.6	--
Beach	106.7	--	35.2	14.5	--
AC Ronald	103.3	--	31.9	15.5	--
LSD 5%	**NS**	**--**	**2.4**	**0.7**	**--**

Planted: May 11 **Harvested: August 9**
Previous crop: potato

OAT VARIETY DESCRIPTIONS

Variety	Origin[1]	Grain Color	Height	Maturity	PVP[3]	Lodging	Resistant To[2]: Stem Rust	Resistant To[2]: Crown Rust	Resistant To[2]: Barley Yellow Dwarf	Quality Factors: Test Weight	Quality Factors: Grain Protein
Ajay	ID/MT	white	short	med	no	R	NA	NA	NA	medium	m high
AC Assinaboia	PS	red	med	late	no	MR	R	R	T	high	low
AC Kaufman	Canada	yellow	tall	late	no	MR	R	R	T	m high	m low
AC Medallion	Cargill	white	tall	late	no	MS	R	R	T	high	low
AC Morgan	Canada	white	med	late	no	MR	S	S	S	medium	m low
AC Pinnacle	Canada	white	tall	late	no	MS	R	R	S	medium	low
AC Ronald	Canada	white	m short	late	no	R	R	R	T	high	medium
Beach	ND	white	tall	m late	no	MR	S	MR/MS	MT	m high	medium
Buff	SD	hulless	med	early	no	MS	S	MR	MT	v high	high
CDC Dancer	Cargill	white	tall	late	no	MR	S	S	S	high	medium
CDC Orrin	Cargill	white	tall	late	no	MR	S	S	S	medium	m low
CDC Pacer	SVA	white	m tall	m early	no	MS	S	S	S	medium	m low
HiFi	ND	white	tall	late	yes	MR	R	R	T	m high	medium
Hytest	SD	white	tall	early	no	MS	S	MS	S	v high	high
Jerry	ND	white	tall	med	yes#	MR	R	MS	MT	m high	medium
Killdeer	ND	white	med	med	no	MR	R	MR	MT	m high	medium
Loyal	SD	ivory	tall	late	no	MR	MS	R-MR	T	m high	high
Maida	ND	yellow	med	medium	no	R	R	R	NA	high	m high
Maverick	ID/MT	white	short	medium	no	R	NA	NA	NA	medium	medium
Monico	ID/MT	ivory	m tall	m early	no	MS	NA	NA	NA	m high	medium
Monida	ID/MT	white	tall	m late	no	S	S	S	S	medium	m low
Morton	ND	white	tall	late	yes#	R	R	R	MT	high	medium
Otana	MT	white	tall	m late	no	S	S	S	S	high	medium
Paul	ND	hulless	tall	late	yes#	S	R	MR	T	v high	high
Powell	WY/MT	cream	short	m late	no	MR	NA	NA	NA	low	medium
Rio Grande	ID/CO	white	m short	early	no	MR	NA	NA	NA	medium	medium
Sesqui	MN	yellow	m tall	late	no	R	S	S	T	high	medium
Souris	NDSU	white	med	med	no	R	MS	R	MS	high	medium
Stallion	SD	white	tall	late	no	M	S	MR	NA	high	medium
Stark	ND	hulless	tall	late	yes#	MR	R	MR/MS	T	high	m high

[1] Refers to developer: AC = Agriculture Canada; SVA = Saskatchewan Value Added; PS = Proven Seed of Canada.
[2] R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, T = tolerant, MT = moderately tolerant, NA = data not available.
[3] "yes" indicates the variety is protected and the seed may be sold for planting purposes only as a class of certified seed (Title V Option). "yes#" indicates that the variety is protected but does not have the Title V option. PVP= Plant Variety Protection.

FLAX VARIETY DESCRIPTIONS

Variety[1]	Origin	PVP[2]	Year Released	Relative Maturity	Seed Color	Plant Height	Wilt	Relative Yield
AC Emerson	Can.	no	1994	mid	brown	medium	VR	good
Carter	ND	no	2004	mid	yellow	medium	MR	v good
Cathay	ND	no	1998	mid	brown	medium	MR	v good
CDC Arras	Can.	no	1999	mid	brown	medium	MR	good
CDC Bethume	Can.	no	1999	m late	brown	m tall	MR	v good
CDC Carnduff	Can.	no	1998	m late	brown	m tall	MR	v good
CDC Mons	Can.	--	2003	m late	brown	medium	MR	v good
Hanley	Can.	no	2002	m early	brown	medium	R	v good
Lightning	Can	--	2002	late	brown	m tall	R	v good
Linton	ND	no	1985	early	brown	medium	R	v good
McDuff	Can.	no	1993	late	brown	m tall	R	v good
Neche	ND	no	1988	mid	brown	medium	R	good
Nekoma	ND	no	2002	late	brown	medium	MR	v good
Omega	ND	no	1989	mid	yellow	medium	MS	good
Pembina	ND	no	1998	mid	brown	medium	MR	good
Prompt	SD	no	1988	early	brown	medium	MR	good
Selby	SD	no	2000	late	brown	tall	MR	good
Taurus	Can.	yes	2003	m late	brown	medium	MR	v good
Webster	SD	no	1998	late	brown	tall	MR	good
York	ND	no	2002	late	brown	medium	R	v good

[1] All varieties have resistance to prevalent races of rust; all have good oil yield and oil quality.
[2] PVP = Plant Variety Protection

Dryland Fallow Flax
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Yellow Seeded					
Carter	10.3	16.8	52.1	38.6	39.9
Omega	11.3	16.8	51.6	39.4	40.5
Brown Seeded					
CDC Arras	11.1	17.6	50.8	38.8	40.3
Prairie Blue	10.9	17.2	51.8	39.1	40.5
Neche	9.2	17.0	51.9	39.3	40.3
Webster	8.3	16.9	51.3	39.7	41.1
AC Watson	10.5	16.8	51.3	37.9	39.5
Bison	9.8	16.5	50.1	38.9	39.6
CDC Bethune	8.8	16.4	51.5	39.4	40.5
Cathay	8.6	16.4	50.8	40.1	41.0
Rahab94	11.0	16.3	51.3	39.5	40.6
Nekoma	9.1	16.2	52.2	38.9	40.3
Linott	9.9	16.1	51.3	39.4	40.4
York	9.6	16.0	52.2	38.6	39.3
Hanley	10.8	15.5	51.8	36.1	37.8
McGregor	8.7	15.5	51.8	37.8	39.1
Pembina	9.7	15.3	50.7	40.8	41.4
AC Lightning	10.3	--	51.0	39.3	--
LSD 5%	**1.7**	**--**	**1.0**	**0.5**	**--**

Planted: May 10 **Harvested: August 15**

Dryland Fallow (Chemical) Flax
Arnegard, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 2 yr*	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 2 yr*
York	15.2	20.0	51.5	39.8	38.9
Nekoma	13.8	18.5	51.7	41.1	39.8
Carter	15.9	18.3	52.5	39.0	38.6
Neche	12.6	14.7	52.0	40.1	39.2
Omega	14.0	12.9	51.5	41.3	40.1
Pembina	13.9	--	49.9	41.8	--
LSD 5%	**NS**	**--**	**0.9**	**--**	**--**

Planted: May 15 **Harvested: August 12**

Dryland Recrop Flax
New Town/Parshall, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Neche	14.1	20.6	52.9	40.6	40.0
York	13.1	19.9	53.8	39.5	38.9
Carter	13.8	19.8	53.5	39.8	39.7
Pembina	10.1	18.7	52.6	41.9	41.1
Omega	12.8	18.4	52.7	41.0	40.8
Nekoma	11.2	16.8	53.0	40.3	39.5
LSD 5%	**NS**	**--**	**0.6**	**--**	**--**

Planted: May 10 **Harvested: August 7**

Previous crop: durum

Dryland Recrop Flax
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Omega	6.1	13.0	47.4	40.3	40.0
Neche	6.1	12.4	48.0	38.6	39.2
Pembina	5.5	12.2	47.3	40.5	40.4
York	5.9	11.6	48.5	38.4	38.2
Nekoma	5.9	11.5	48.4	38.7	39.2
Carter	6.2	11.4	49.1	38.6	39.0
LSD 5%	**NS**	**--**	**NS**	**1.3**	**--**

Planted: May 10 **Harvested: August 15**

Previous crop: durum

Dryland Notill Flax
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
York	12.2	21.6	51.7	38.2	39.5
Omega	10.9	20.2	51.4	39.9	41.0
Carter	11.9	20.0	53.5	38.8	40.3
Pembina	11.5	20.0	51.1	41.1	41.8
Neche	11.8	19.8	51.8	39.3	40.8
Nekoma	10.2	17.9	52.2	39.4	40.8
LSD 5%	**NS**	**--**	**NS**	**0.8**	**--**

Planted: May 10 **Harvested: August 15**

Previous crop: durum

Dryland Recrop Flax
Crosby, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
York	22.8	32.9	51.5	42.2	40.5
Carter	21.0	31.7	54.3	41.2	41.1
Pembina	21.1	30.0	53.3	42.4	42.3
Omega	20.9	29.5	53.5	42.0	41.7
Nekoma	22.2	28.6	54.2	42.5	41.5
Neche	20.6	28.1	53.6	43.0	42.0
LSD 5%	**NS**	**--**	**1.2**	**--**	**--**

Planted: May 15 **Harvested: August 12**

Previous crop: durum

DRYLAND RECROP FLAX
POWERS LAKE/FLAXTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 2 yr*	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 2 yr*
Pembina	11.5	32.5	51.5	42.0	40.4
York	13.2	28.9	52.3	40.4	40.1
Nekoma	11.1	28.3	52.9	41.0	40.5
Neche	11.0	27.0	52.5	41.3	40.6
Omega	11.2	25.5	52.2	41.7	40.8
Carter	11.1	23.3	53.1	41.1	40.3
LSD 5%	**NS**	**--**	**NS**	**--**	**--**

Planted: May 12 **Harvested: August 11**
Previous crop: field pea * 2005, 2006

DRYLAND FALLOW FLAX
RAY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Carter	14.6	16.4	53.1	40.5	41.2
York	11.6	15.9	49.9	40.4	40.4
Omega	13.1	15.8	52.8	41.2	41.7
Nekoma	12.2	15.3	51.4	41.3	41.6
Pembina	11.5	15.2	50.9	42.0	42.1
Neche	12.3	14.7	51.8	41.7	41.7
LSD 5%	**NS**	**--**	**1.5**	**--**	**--**

Planted: May 12 **Harvested: October 2**

SAFFLOWER VARIETY DESCRIPTIONS

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

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

DRYLAND FALLOW SAFFLOWER VARIETY TRIAL
SIDNEY, MT

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	Test Wt -lb/b - 2006	Test Wt -lb/b - 3 yr	Oil* -- % -- 2006	Oil* -- % -- 3 yr
97B 1744	1789	1907	44.5	44.6	38.0	36.7
95B 3538	1629	1854	43.5	42.7	39.0	37.0
01B 9104	1622	1844	43.3	43.5	35.7	34.8
02B 6081	1746	1822	42.7	42.7	39.4	37.6
S-541	1756	1774	42.2	41.3	44.2	42.4
95B 7446	1509	1732	43.3	43.0	37.9	36.6
Centennial	1563	1646	41.3	40.2	45.0	43.1
Montola 2003	1333	1608	42.8	42.3	39.5	38.2
Montola 2004	1447	1589	41.8	41.2	38.8	37.5
Nutrasaff	1433	1571	38.0	37.7	49.0	48.3
Montola 2000	1563	1525	41.5	40.8	40.8	39.2
02B 6655	1355	1519	39.3	38.2	45.3	44.0
Finch	1499	1512	45.3	44.6	38.4	37.0
01B 7113	1330	1506	38.8	38.1	45.1	44.2
Morlin	1438	1480	41.7	40.2	38.9	38.4
Hybrid 9049	1859	--	44.3	--	33.6	--
02B7619	1447	--	42.7	--	37.3	--
02B 6381	1274	--	38.3	--	45.7	--
LSD (.05)	**275**		**0.63**		**1.1**	

Planted: May 4 **Harvested September 5**
* Oil Content reported on an oven dry weight basis

DRYLAND FALLOW SAFFLOWER
WILLISTON, ND

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
95B 3538	1215	1522	43.0	35.4	33.8
97B 1744	1214	1437	44.6	35.9	33.6
95B 7446	1201	1366	42.9	35.0	32.9
S-541	1243	1355	41.8	40.8	38.3
Montola 2003	1084	1266	42.4	36.6	34.6
Finch	1075	1245	45.4	36.0	34.4
Montola 2004	1123	1229	41.8	35.7	33.7
Nutrasaff	993	1173	38.1	46.0	43.2
Centennial	1229	1121	41.8	41.0	38.4
Montola 2000	1132	1116	41.4	38.2	34.8
Morlin	953	1102	41.5	37.8	36.3
02B 6081	1343	--	42.4	37.2	--
Hybrid 9049	1262	--	44.7	30.8	--
01B 7353	1188	--	43.9	35.8	--
02B 7619	1184	--	42.7	35.0	--
01B 9104	1136	--	42.7	34.0	--
01B 7113	1060	--	38.5	42.4	--
02B 6381	1010	--	37.1	43.3	--
LSD 5%	**104**	**--**	**0.6**	**0.5**	**--**

Planted: April 28 **Harvested: August 28**

DRYLAND RECROP SAFFLOWER
SIDNEY, MT

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	Test Wt - lb/b - 2006	Test Wt - lb/b - 3 yr	Oil[1/] -- % -- 2006	Oil[1/] -- % -- 3 yr
95B 3538	987	976	43.3	42.2	38.1	36.1
Montola 2003	902	967	42.8	41.8	39.3	37.4
97B 1744	944	948	44.7	43.7	38.6	36.9
Nutrasaff *	876	941	38.7	37.7	49.5	48.4
Finch	892	914	45.3	44.4	39.3	36.7
Centennial	845	887	42.2	40.9	45.6	42.9
Montola 2000	834	865	41.5	40.1	40.1	38.4
Morlin	963	838	41.8	39.9	41.0	38.5
02B 6081	1104	1129	42.5	41.5	38.8	37.2
Montola 2004	1075	1110	42.5	41.6	37.3	36.6
S-541	1153	1055	42.3	41.0	45.2	42.9
95B 7446	861	1025	43.0	42.6	38.3	36.5
01B 9104	925	--	43.5	--	35.9	--
02B 6655	811	--	39.3	--	42.8	--
02B 7619	605	--	43.0	--	36.6	--
02B 6381	505	--	39.0	--	44.4	--
01B7113	488	--	39.2	--	44.1	--
Hybrid 9049	1315	--	46.2	--	33.1	--
LSD(.05)	**288.3**		**1.10**		**1.02**	

Planted: May 5 **Harvested: August 30**

[1/] Oil Content reported on an oven dry weight basis

Previous crop: Durum

* Moderate variety-specific bird damage by American Goldfinches observed and noted on variety Nutrasaff in 2006

DRYLAND RECROP SAFFLOWER
WILLISTON, ND

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
S-518	1344	1327	39.7	41.4	37.7
Finch	1164	1255	45.5	35.8	34.1
S-719	1359	1249	42.5	37.2	35.2
95B7446	1250	1232	43.1	35.4	33.4
97B1744	1165	1211	44.7	35.9	33.6
Montola 2004	1086	1198	41.5	36.1	33.9
Montola 2003	1000	1198	42.5	36.7	34.5
Centennial	1259	1124	42.2	41.3	38.5
Montola 2000	1084	1047	41.2	38.5	35.9
Nutrasaff	994	955	38.4	45.8	42.9
Morlin	842	916	41.4	37.8	35.2
S-541	1227	--	42.2	41.2	--
01B7353	1196	--	43.9	36.0	--
01B9104	1169	--	43.5	34.6	--
02B6081	1114	--	42.9	36.8	--
02B7619	1099	--	42.8	35.3	--
95B3538	1086	--	44.0	34.9	--
02B6381	1033	--	38.2	42.5	--
LSD 5%	**124**	**--**	**0.7**	**0.6**	**--**

Planted: May 8 **Harvested: August 29**

Previous crop: durum

IRRIGATION YELLOWSTONE VALLEY SAFFLOWER VARIETY TRIAL
SIDNEY, MT 2006

Cultivar	Yield ----lbs/a---- Quadris applied[1/]	Yield ----lbs/a---- Quadris none	Yield ----lbs/a---- 3 yr avg	Test Wt ----lbs/bushel---- Quadris applied[1/]	Test Wt ----lbs/bushel---- Quadris none	Test Wt ----lbs/bushel---- 3 yr avg	Oil[2/] ----%---- Quadris applied[1/]	Oil[2/] ----%---- Quadris none	Oil[2/] ----%---- 3 yr avg
01B 9104	3570	3217	3160	44.5	41.5	42.8	36.2	36.0	36.0
95B 3538	3687	3191	3061	45.0	42.0	42.2	39.0	38.6	37.4
95B 7446	3837	2241	3039	44.5	41.0	41.4	37.8	37.5	37.7
MT 2003	3922	2801	2992	45.0	40.0	40.6	39.5	38.1	38.6
02B 6081	4297	2533	2888	44.0	39.0	41.1	36.9	36.2	37.1
Nutrasaff *	3140	2114	2853	40.3	36.0	38.7	47.7	46.5	47.4
01B7113	3018	2941	2755	40.8	39.5	38.9	44.7	45.6	44.0
Montola 2000	3763	2452	2665	42.5	37.0	38.4	40.9	37.0	38.9
97B 1744	3094	3052	2664	45.5	42.0	42.4	39.0	38.8	37.0
02B 6655	3290	2565	2536	40.8	39.0	39.1	44.5	43.5	43.6
Finch	2809	2157	2535	46.8	40.5	43.6	39.3	38.3	37.4
S-541	3505	2024	2489	42.5	38.0	39.3	42.6	41.4	41.8
Morlin	3044	2254	2404	43.0	39.0	40.2	40.2	37.8	39.0
Montola 2004	2974	2454	2376	43.3	40.0	38.6	37.2	36.7	35.9
Centennial	3524	2525	2330	42.3	37.5	38.6	42.9	41.3	41.6
02B 6381	3319	2237	--	39.0	36.0	--	46.7	45.4	--
02B 7619	3795	3416	--	44.5	44.0	--	37.5	36.8	--
Hybrid 9049	3789	3282	--	45.0	44.5	--	32.8	32.0	--
Mean	3453	2795		43.4	40.5		39.5	38.9	
LSD	524			1.29			1.50		

Planted: May 13 Harvested: September 14 Previous crop: Sugarbeets

Irrigation schedule: 5-17 (0.5"), 6-28 (1.25"), 7-12 (1.25)

1/ Quadris Fungicide applied: 9.3 oz/A at first flower

2/ Oil content reported on an oven dry weight basis

* Moderate variety specific bird damage by American Goldfinches observed and noted on variety Nutrasaff in 2005, 2006

DRYLAND RECROP SAFFLOWER FORAGE
SIDNEY, MT

Cultivar	Height Inches 2006	Height Inches 3 yr	Moisture[a] --%-- 2006	Moisture[a] --%-- 3 yr	Protein[b] --%-- 2006	Protein[b] --%-- 3 yr	Yield[b] tons/a 2006	Yield[b] tons/a 3yr	Relative Feed Value 2006	Relative Feed Value 3yr
Hybrid 9022*	26.4	28.1	57	55	8.5	7.6	1.8	2.5	203	163
Hybrid 9049*	24.0	26.4	57	54	8.6	7.3	2.0	3.0	196	159
Centennial	23.8	26.2	58	56	8.4	7.3	1.9	2.4	224	174
95B1313**	21.5	--	59	--	8.8	--	1.9	--	229	--
95B 1402	22.0	26.5	60	57	9.5	7.8	2.0	2.4	202	160
95B 1427	20.9	24.6	58	56	9.0	7.6	2.2	2.8	215	172
95B 2812	21.3	25.1	59	58	8.7	7.8	1.7	2.5	200	165
95B 2896	21.1	25.2	59	56	8.8	7.5	2.0	2.6	213	181
95B 2898	20.5	25.0	60	56	9.1	7.4	1.9	2.6	220	169
96B3009**	19.4	--	60	--	8.9	--	2.0	--	206	--
97B 1744	20.3	24.0	60	57	9.2	8.0	1.8	2.7	210	173
98B 1544	24.9	28.0	58	55	7.5	7.2	2.0	2.5	180	152
LSD (0.05)	**2.21**		**2.1**		**1.06**		**0.57**		**38.1**	

Planted: April 26 **Harvested: July 29** **Previous Crop: Barley**

IRRIGATION SAFFLOWER FORAGE
SIDNEY, MT

Cultivar	Height inches 2006	Height inches 3 yr	Moisture[a] --%-- 2006	Moisture[a] --%-- 3 yr	Protein[b] --%-- 2006	Protein[b] --%-- 3 yr	Yield[b] tons/a 2006	Yield[b] tons/a 3yr	Relative Feed Value 2006	Relative Feed Value 3 yr
Hybrid 9022*	27.0	32	72	70	11.6	9.5	3.8	4.0	151	151
Hybrid 9049*	26.0	30	71	69	12.2	9.9	3.8	4.1	150	151
Centennial	24.9	29	72	69	11.9	9.8	3.7	3.4	165	157
95B 1313**	25.7	--	74	--	12.6	--	4.0	--	156	--
95B 1402	25.1	30	71	69	11.8	9.3	3.9	3.6	149	150
95B 1427	26.0	29	71	68	12.1	9.5	3.9	4.0	166	159
95B 2812	26.0	30	75	71	12.8	10.1	3.4	3.8	156	151
95B 2896	25.5	30	73	70	10.3	9.1	4.0	3.9	160	162
95B 2898	26.4	30	74	71	12.5	9.5	3.9	3.8	160	153
96B 3009**	24.9	--	73	--	11.3	--	3.8	--	157	--
97B 1744	24.4	29	73	70	11.0	9.5	3.9	3.7	148	158
98B 1544	28.0	34	73	71	11.1	9.6	3.9	3.8	129	131
LSD (0.05)	**1.60**		**3.32**		**1.54**		**0.64**		**22.6**	

Planted: May 18 **Harvested: July 26-27** **Previous Crop: Sugarbeets**

[a] Harvested when Centennial at 50% bloom
[b] 8% Moisture
* Entry 1&2 - 25 lb/a seeding rate (others 35 lb/a)
** 2 years of data only

IRRIGATION SAFFLOWER FOLIAR FUNGICIDE* TRIAL
SIDNEY, MT

/1 Untreated

/2 Quadris (azoxystrobin 0.10 lbs/A) at first sign of disease, at first flower, and 14 days later

/3 Quadris (azoxystrobin 0.10 lbs/A) at first flower

/4 Quadris (azoxystrobin 0.10 lbs/A) at first flower plus 14 days later

/5 Quadris (azoxystrobin 0.10 lbs/A) at first flower

/6 Headline (pyraclostrobin 0.10 lbs/A) at first flower

/7 Pristene (pyraclostrobin 0.048 lbs/A + boscalid 0.0945 lbs/A) at first flower

/8 Quadris (azoxystrobin 0.10 lbs/A) plus Omega (fluazinam 0.2 lbs/A) at first flower

/9 Headline (pyraclostrobin 0.148 lbs/A + boscalid 0.0945 lbs/A) at first flower

/10 Leafspot rating of 1-9, 9 being most susceptible/11 Mean of MT 2004, Centennial, Hybrid 9049

Treatment Mean /[11]	Test Wt - lb/b - 2006	Test Wt - lb/b - 4 yr	Oil -- % -- 2006	Oil -- % -- 4 yr	Yield - lb/a - 2006	Yield - lb/a - 4 yr	Leaf Spot Rating[/10] 2006	Leaf Spot Rating[/10] 4 yr
Check /1	38.8	33.9	36.6	33.3	2486	1702	6.7	6.3
Quadris 3 App /2	42.1	38.3	38.3	36.0	3307	2462	3.3	3.9
Quadris 1 App /3	41.8	37.9	38.1	36.4	3129	2297	3.5	4.7
Quadris 2 App /4	41.6	38.0	38.4	36.5	3074	2302	3.0	4.3
Quadris 1 App /5	41.7	38.0	37.7	36.5	3070	2299	3.4	4.5
Headline 1 App /6	41.8	38.3	38.2	36.4	3218	2361	3.3	4.3
Bas 516 1 App /7	41.8	38.1	38.2	36.6	3082	2308	3.8	4.6
Quadris+Omega /8	41.8	38.1	38.1	36.6	3279	2351	3.4	4.5
Headline+Bas 516 /9	41.9	39.1	38.2	36.2	3276	2592	3.0	2.5
LSD 5%	**0.35**		**0.34**		**202**		**0.65**	

Date Planted: May 18 Date Harvested: October 6 Previous Crop: Sugarbeets

*ONLY QUADRIS HAD A SECTION 18-C REGISTRATION FOR USE OF SAFFLOWER IN 2006

SAFFLOWER SEEDING RATE STUDY – WILLISTON, ND

N. RIVELAND[1] AND G. BRADBURY[1]

The objective of this study was to determine if hybrid safflower should be planted at the same seeding rate as other safflower varieties. Three cultivars of safflower were used: Finch, a normal white hulled bird seed variety; Montola 2003, a high oleic oil type having mostly normal white hulls and Hybrid 9049, a hybrid having normal white hulls. Seeding rates used were 2, 3, 4, 6, 8 and 10 PLS seeds per square foot or 87120, 130680, 174240, 261360, 348480, and 435600 PLS/a. Established stands averaged only 65 to 75% of the planted seeds. This is not an uncommon occurrence with safflower and other crops, even small grains. The hybrid did establish better stands at the lowest seeding rate compared to the standard varieties. A higher percentage of Finch seed germinated at the higher seeding rates than at the lower seeding rates while Montola 2003 generally maintained a 70–80% establishment rate until dropping off at the two higher seeding rates. The 2 PLS seeds/ft^2 seeding rate yielded significantly less than the other higher seeding rates. Seeding at least 3 PLS/ft^2 resulted in good yields, though the higher seeding rates of 8 and 10 PLS/ft^2 tended to yield more than other lower seeding rates with no adverse effect on seed oil content, test weight or flower date. Trifluralin applied at 0.9 lb/a ai PPI. Oil percentages from NMR machine adjusted to 8.0% seed moisture content.

Cultivar	Seed Germ	Seed Rate	Established Plant	Established Density	Flower Date	Plant Height	Test Weight	Seed Oil	Yield	Plant Density
	%	PLS/ft^2	#/ft^2	% of SR	fr pltng	inch	lb/b	%	lb/a	plts/a
Hyb 9049	91	2	1.93	96	65.8	20.4	45.1	30.8	1219	84071
Finch	96	2	0.95	48	67.3	21.2	45.6	35.8	1010	41382
Mont2003	85	2	1.48	74	68.8	19.5	43.0	36.3	843	64469
		AVG.	**1.45**	**73**	**67.3**	**20.4**	**44.6**	**34.3**	**1024**	**63162**
Hyb 9049	91	3	2.15	71	65.0	20.7	44.8	31.3	1434	93654
Finch	96	3	1.92	64	67.3	21.4	45.8	36.2	1165	83635
Mont2003	85	3	2.40	80	68.5	19.1	42.8	36.5	943	104544
		AVG.	**2.16**	**72**	**66.9**	**20.4**	**44.5**	**34.6**	**1181**	**94090**
Hyb 9049	91	4	2.80	70	65.3	20.4	44.4	31.9	1328	121968
Finch	96	4	2.52	63	66.5	19.9	46.0	36.2	1152	109771
Mont2003	85	4	3.25	81	68.3	17.8	42.9	36.5	986	141570
		AVG.	**2.86**	**72**	**66.7**	**19.4**	**44.5**	**34.9**	**1155**	**124582**
Hyb 9049	91	6	4.55	76	65.0	20.4	44.2	31.6	1432	198198
Finch	96	6	3.05	51	66.8	21.2	45.6	36.0	1114	132858
Mont2003	85	6	4.02	67	68.5	18.4	43.1	36.6	1037	175111
		AVG.	**3.88**	**65**	**66.8**	**20.0**	**44.3**	**34.7**	**1194**	**169013**
Hyb 9049	91	8	5.42	68	64.8	19.4	44.2	31.9	1370	236095
Finch	96	8	5.83	73	66.8	20.2	45.5	36.0	1197	253955
Mont2003	85	8	5.37	67	68.3	16.9	42.8	36.6	1051	233917
		AVG.	**5.54**	**69**	**66.6**	**18.8**	**44.2**	**34.8**	**1206**	**241322**
Hyb 9049	91	10	6.37	64	65.0	19.3	43.8	31.8	1487	277477
Finch	96	10	7.55	76	66.8	19.2	44.9	35.7	1164	328878
Mont2003	85	10	4.97	50	68.0	18.6	42.7	36.5	1036	216493
		AVG.	**6.30**	**63**	**66.6**	**19.0**	**43.8**	**34.7**	**1229**	**274428**
Exp Mean			3.70	67	66.8	19.7	44.3	34.8	1165	161172
C.V.% (RCBD)					0.7	5.4	0.8	0.9		34
LSD 5% (compare all values, not AVG's)					0.6	1.5	0.5	NS		78408
LSD 5% (comparing seed rate AVG's)					0.3	0.8	0.3	0.2		46174

Planted: May 8 on tilled recrop **Harvested: August 29** **Previous Crop: Durum**

[1] **NDSU Williston Research Extension Center, Williston, ND**

DRYLAND FALLOW HYBRID SUNFLOWER
WILLISTON, ND

Brand/Cultivar		Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
IS	IS4575 NS/CL	1258	1589	35.9	43.1	43.4
IS	Hysun 521	1149	1463	35.0	42.6	41.8
SD2	Viper CL NS	1222	1423	35.6	43.1	43.1
IS	HyOleic 120	970	1380	33.7	45.9	46.1
IS	IS4704 NS	1064	1371	34.0	41.7	41.1
SD2	Defender DMR	1132	1329	34.4	42.1	41.6
ND	Hybrid 894	953	1287	36.8	43.4	41.2
IS	EXP106	1323	--	35.9	44.0	--
CG	3080 DMR,NS	1267	--	32.4	46.3	--
MS	8H350DM	1241	--	33.5	48.1	--
IS	IS4668 NS/CL	1226	--	35.3	40.1	--
MS	8N270	1206	--	33.4	42.4	--
TR	Triumph 845HO	1203	--	33.2	47.7	--
MS	8N337DM	1168	--	34.7	47.5	--
SD2	Defender Plus DMR	1167	--	33.8	41.2	--
MS	8H419CL	1155	--	33.8	47.1	--
IS	IS4540 NS	1100	--	35.8	43.0	--
MS	8N358CL	1095	--	34.4	45.2	--
IS	IS5880 NS/CL	1094	--	35.2	43.9	--
MS	8N453DM	1089	--	36.0	46.9	--
CG	343 DMR	1077	--	34.9	40.6	--
IS	IS5770 NS/DM	1027	--	36.1	41.5	--
LSD 5%		**198**	**--**	**1.3**	**1.2**	**--**

Planted: May 7 **Harvested: October 6**

CG = Croplan Genetics; IS = Interstate Seeds;
MS = Mycogen Seeds; ND = NDSU;
SD2 = Seeds 2000; TR = Triump Seed Co.

CONVENTIONAL AND IRRIGATION CANOLA
WILLISTON, ND

Brand/Cultivar		Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Conventional fallow						
IS	Hylite 618CL	789	1064	52.8	38.7	38.3
IS	Hyola 357	1087	--	53.1	38.9	--
IS	Hyola 401	1084	--	53.6	38.9	--
IS	Hyola 514 RR	1005	--	52.4	40.7	--
IS	SW Marksman RR	997	--	51.1	41.1	--
IS	Hyola 420	961	--	53.3	39.9	--
IS	Hyola 440	948	--	52.6	41.6	--
CG	Minot RR	720	--	52.6	41.1	--
Irrigated						
IS	Hylite 618CL	2243	--	50.1	42.7	--
LSD 5%		**112**	**--**	**0.6**	**0.8**	**--**

Conv. Planted: April 29 **Harvested: July 26**
Irrig. Planted: May 10 **Harvested: August 9**

CG = Croplan Genetics; IS = Interstate Seeds;
Previous crop: potatoes

DRYLAND NOTILL ROUNDUP READY CANOLA
WILLISTON, ND

Brand/Cultivar		Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
IS	Hyola 357	936	1351	53.0	39.6	38.1
IS	SW Patriot RR	771	1205	51.3	38.5	38.0
IS	SW Marksman	701	1161	51.3	39.1	39.1
CG	Hyclass 767 SW	707	1055	53.1	37.6	37.4
DK	DKL 34-55	650	1051	52.7	39.1	39.5
CG	Minot RR	520	1021	52.5	38.9	38.4
IS	IS 7145 RR	913	--	53.2	39.6	--
MS	Z5052	859	--	49.9	38.4	--
MS	MB52143	853	--	52.7	40.5	--
MS	SW-PF-02-3910	823	--	53.3	36.4	--
IS	SW Titan RR	806	--	52.0	37.1	--
DK	DKL 52-10	790	--	52.8	36.8	--
MS	MB52141	783	--	53.1	38.2	--
IS	IS 3465 RR	772	--	50.7	37.8	--
DK	DKL 38-25	769	--	51.2	39.6	--
IS	Hyola 514 RR	761	--	52.4	39.1	--
SW	SW-PI 02-1212	749	--	53.4	38.1	--
CG	Hyclass 712 RR	734	--	51.6	38.4	--
CG	Hyclass 910 RR	716	--	52.8	37.7	--
CG	Hyclass 431 RR	684	--	51.1	39.9	--
CG	Hyclass 924 RR	674	--	51.5	37.8	--
MS	SW-PF-02-3902	664	--	53.2	37.5	--
MS	SW H5263RR	592	--	51.0	40.8	--
MS	MB51105	501	--	51.6	37.4	--
MD	SW H5278 RR	377	--	52.1	38.6	--
MD	SW 5272 RR	368	--	51.8	35.8	--
MD	Meridian 1818	277	--	54.0	37.5	--
LSD 5%		**113**	**--**	**0.6**	**1.1**	**--**

Planted: May 1 **Harvested: July 31**

CG = Croplan Genetics; IS = Interstate Seeds;
MS = Monsanto; MD = Meridian Seeds
DK = DeKalb; SW = SW Seed Ltd.
Previous crop: durum

DRYLAND FALLOW CAMELINA
WILLISTON, ND

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
CO 46	644	--	49.1	34.4	--
CO 54	288	--	48.2	34.2	--
CO 54-97	503	--	49.2	33.5	--
Pleasure #1	547	--	49.7	33.7	--
Robinson	647	--	50.8	32.0	--
LSD 5%	**82**	**--**	**NS**	**0.6**	**--**

Planted: May 10 **Harvested: July 29**

DRYLAND FALLOW CRAMBE VARIETY
WILLISTON, ND

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
BelAnn	1114	1699	23.8	29.1	26.1
Meyer	1201	1553	24.7	30.8	27.0
Galactica	1262	--	24.5	29.9	--
Nebula	1132	--	25.1	31.1	--
LSD 5%	**128**	**--**	**1.3**	**2.1**	**--**

Planted: May 6 **Harvested: July 25**

DRYLAND FALLOW SPRING TRITICALE
WILLISTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
RSI 310	33.0	54.4	50.5	16.8	15.3
Wapiti	29.0	51.8	51.2	17.9	16.0
Companion	28.5	51.7	51.2	17.1	15.5
Lazer	29.2	50.8	51.2	16.3	14.8
Trical 2700	25.7	50.8	47.7	18.7	16.5
Marvel	21.7	41.3	42.5	18.5	16.7
LSD 5%	**4.3**	**--**	**1.6**	**1.2**	**--**

Planted: May 8 **Harvested: August 7**

DRYLAND FALLOW BUCKWHEAT VARIETY
WILLISTON, ND

Cultivar	TW lb/b 2006	Yield - - - - - - - lbs/ac - - - - - - - 2004	Yield 2005	Yield 2006	Yield 3 yr
Koto	40.3	2781	544	649	1325
Manor	39.8	2675	421	743	1279
Mancan	40.9	2650	439	681	1257
Koma	40.8	--	--	588	--
Kade 2	39.4	--	--	481	--
Kade 1	39.5	--	--	295	--
LSD 5%	**NS**	**NS**	**71**	**215**	**--**

Planted: May 18 **Harvested: September 14**

DRYLAND FALLOW CHICKPEA VARIETY
WILLISTON, ND

Cultivar	TW lb/b 2006	Yield - - - - - - - lbs/ac - - - - - - - 2004	Yield 2005	Yield 2006	Yield 3 yr
Dwelly - Lg Kabuli	62.4	1870	1139	493	1167
Sierra - Lg Kabuli	60.3	1848	1144	499	1164
Dylan - Lg Kabuli	57.9	--	1371	962	--
CDC Xena - Lg Kabuli	61.6	--	--	757	--
Troy - Lg Kabuli	NA	--	--	716	--
CDC Frontier-Lg Kabuli	62.6	--	2314	1001	--
Amit (B-90)-Sm Kabuli	64.6	2558	1848	922	1776
Myles - Desi	59.2	2005	1911	911	1609
LSD 5%	**2.8**	**272**	**304**	**226**	**--**

Planted: May 15 **Harvested: August 22**

DRYLAND FALLOW MUSTARD VARIETY
WILLISTON, ND

Cultivar	Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Yellow mustard					
Tilney	716	1068	57.4	16.2	19.6
Andante	723	1058	57.5	16.0	19.2
Ace	737	1037	57.1	16.4	19.8
AC Pennant	632	998	57.4	16.6	20.1
Oriental mustard					
Forge	498	780	54.5	21.3	26.1
Brown mustard					
Commercial	643	1054	54.9	21.0	25.0
LSD 5%	**112**	**--**	**0.5**	**0.9**	**--**

Planted: April 29 **Harvested: July 26**

SPRINKLER IRRIGATION OILSEED CROP TRIAL
SIDNEY, MT

Crop	Variety	Harvest Date	TW lb/b	Oil %	Yield lb/a	Oil lb/a
Sunflower	NuSun	9/15	33.8	41.4	2806	1165
Sunflower	Sclero. R.	9/15	34.2	49.7	3057	1518
Sunflower	CROPLAND 378	9/15	34.0	43.4	2961	1286
Sunflower	MYCOGEN 8N270	9/15	33.2	45.6	3093	1411
Flax	CARTER	10/13	54.5	36.0	1360	490
Flax	NECHE	10/13	54.0	36.5	1251	457
Flax	OMEGA	10/13	54.2	36.0	1065	384
Flax	YORK	10/13	53.2	35.9	1231	441
Crambe	MEYER	8/8	12.5	23.8	178	39
Canola	HYOLA 420	8/8	51.5	41.6	421	176
Camelina	MT102	8/8	48.7	31.8	253	81
Camelina	TCI	8/8	50.8	32.1	325	105
Camelina	CELINE	8/8	50.7	31.1	413	128
Camelina	MT101	8/8	50.2	30.9	329	102
Safflower	01B 7113	9/8	40.0	46.2	3443	1589
Safflower	02B 6655	9/8	40.0	45.8	3118	1427
Safflower	MT 2004	9/8	40.5	39.6	3423	1353
Safflower	NUTRASAFF *	9/8	39.8	48.6	3011	1464
Safflower	95B 7446	9/8	42.0	39.8	4070	1620
	LSD (0.05)		4.215	1.583	392.3	175.6

Planted: May 13 **Irrigated**: 5-17(0.5"), 6-28(1.25"), 7-12(1.25")
Previous Crop: Sugarbeets * Moderate variety bird damage noted

DRYLAND FALLOW HYBRID CORN VARIETY
WILLISTON, ND

Brand/Cultivar		Yield - lbs/a - 2006	Yield - lbs/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Lege	LR 9483RRYGT	38.1	--	57.8	10.6	--
Lege	LR 9584RB	23.7	--	56.5	10.2	--
Lege	LR 9385RB	23.8	--	56.9	11.1	--
Lege	LR 9391RRYGT	39.0	--	55.3	10.6	--
REA	REA 1823ARR	32.9	--	56.7	10.3	--
REA	REA 1796ARR	25.5	--	58.2	11.3	--
REA	REA 1772ARR	31.3	--	56.0	11.0	--
LSD 5%		**6.0**	**--**	**1.2**	**0.5**	**--**

Planted: May 18 **Harvested: October 12**
Leg = Legend; REA = REA Hybrids

ALTERNATIVE CROP PERFORMANCE ON FALLOW
WILLISTON, ND

Crop	Variety	2006 Selling Price $/bu	6 Yr Ave Yield bus /ac	Gross* Return $/ac	$ Gr. Ret/a + or - Reeder
HRS Wheat	Reeder	4.50	58.5	263	0
	Alsen	4.50	55.8	251	-12
HRW Wheat	Jerry	4.10	55.0	226	-37
Durum Wheat	Mountrail	4.75	56.1	266	+3
	Lebsock	4.75	52.6	247	-16
Barley (feed)	Rawson	2.25	86.6	195	-68
(malting)	Stellar-ND	2.80	82.1	230	-33
(malting)	Conlon	2.80	86.8	243	-20
Oats	Monida	1.75	113.4	198	-65
Corn (grain)	Best hybrid	2.85	68.2	194	-69
Flax (brown)	Neche	5.50	16.5	91	-182
(yellow – food)	Omega	5.75	14.1	81	-192
Soybeans	Avg of two varieties	5.70	18.6	106	-157
Field Peas (green)	Nitouche	3.60	35.6	128	-135
(yellow)	Mozart	3.60	44.1	159	-104
(feed)	Avg.	2.75	40.8	112	-151
		$/CWT	**lbs/ac**		
Brown Mustard	Avg.	14.00	1132 **	158	-105
Yellow Mustard	Tilney	14.50	1080	157	-106
Canola	Hyola 357 Mag	12.50	1483	185	-78
Crambe	Meyer	10.00	1443	149	-114
Safflower	Avg of 3 varieties	14.00	1350	189	-74
Sunflower (oil)	Avg of 2 varieties	11.50	1598	184	-79
Buckwheat	Koto	11.50	1051	121	-142
Lentils (green)	AC Richlea	11.50	1332	153	-110
(red)	Crimson	12.90	1066	137	-126
Chickpeas (desi)	Myles	18.25	1706	311	+48
(kabuli)	Dwelly	27.50	948	261	-2
(small kabuli)	B-90	22.00	1789	394	+131
Pinto Beans	Maverick	19.00	732	139	-124
Navy Beans	Norstar	16.00	708	113	-150

* Does not include any LDP payments ** 4 yr avg only HRS Wheat at 14% protein HRW Wheat at 12% protein

DRYLAND COOL SEASON FORAGE
WILLISTON, ND

Brand/Cultivar	DM Yield - T/a - 2006	DM Yield - T/a - 3 yr	RFV 2006	% Crude Protein 2006
Hayes (Barley)	1.7	2.7	133	12.5
Haybet (Barley)	1.6	2.5	119	11.8
Jerry (Oat)	1.5	2.3	118	13.0
Centennial (Safflower)	0.6	1.3	162	13.9
Haybet/Arvika	1.6	--	123	12.3
Stark (Oat)	1.3	--	113	12.6
Paul (Oat)	1.3	--	114	11.8
Paul/Arvika (Oat/Pea)	1.3	--	119	12.6
Paul/Indianhead	1.3	--	114	12.5
Westford (Barley)	1.3	--	121	12.4
Horsford (Barley)	1.1	--	122	13.1
Arvika (Pea)	0.8	--	174	13.9
Indianhead (Lentil)	0.4	--	185	16.1
Lazer (Triticale)	0.3	--	167	20.8
Berseem (Clover)	0.3	--	147	13.4
Zorro (Italian Ryegrass)	0.3	--	145	16.3
LSD 5%	**0.3**	**--**	**12**	**1.8**

Planted: May 16 **Harvested: July 12**

DRYLAND ALFALFA YIELD TRIAL
WILLISTON, ND

Brand/Cultivar		DM Yield - T/a - 2006	DM Yield - T/a - 3 yr	RFV 2006	% Crude Protein 2006
AA	Ameristand 403T	1.2	2.9	185	16.6
REA	REA 401T	1.3	3.0	187	16.9
CG	Legendary YPQ	1.3	3.0	186	16.5
CG	4M124	1.3	3.0	195	17.8
CG	Maxigraze GT	1.3	2.9	183	17.0
KS	Sustain	1.3	3.0	188	16.7
KS	Haymaker II Sup	1.3	3.0	194	17.3
Pub	Vernal	1.3	3.0	185	16.9
LSD 5%		**NS**	**--**	**NS**	**NS**

Planted: June 17, 2003 Harvested: June 13, 2006

CG = Croplan Genetics; REA = REA Hybrids;
AA = America's Alfalfa; KS = Kusemaul Seeds;
Pub = Public

Flood Irrigation Dry Edible Bean
Sidney, MT

Cultivar		Harvest Date 2006	Yield --cwt/a- 2006	Yield --cwt/a- 3 yr	SW[1] gm 2006
Matterhorn	GN	Aug 22	41.1	39.0	36.4
Othello	PT	Aug 22	37.1	37.0	38.3
Condor	BL	Aug 28	33.5	33.9	33.5
OAC Rex	NV	Aug 28	35.0	33.0	35.0
Seahawk	NV	Aug 22	34.5	31.4	34.5
Merlot	RD	Aug 22	33.0	31.4	33.0
CA Early	LRK	Aug 28	29.6	24.1	46.6
Seabiskit	NV	Aug 28	39.8	--	18.7
Capri	CN	Aug 28	30.8	--	47.2
Jet Black	BL	Aug 28	29.6	--	22.5
Sedona	PN	Aug 22	28.7	--	35.4
LSD 5%			**5.6**		**2.4**

Planted: May 16 Previous crop: small grain

[1]100-seed weight PT=pinto; GN=great northern; NV=navy; BL=black; PN=pink; RD=red; LRK=light red kidney; CN=cranberry

Dryland Fallow Navy and Black Bean
Williston, ND

Cultivar	TW lb/b 2006	Yield - - - - - - - lbs/ac - - - - - - - 2004	Yield 2005	Yield 2006	Yield 3 yr
Navy Beans					
Seahawk	61.2	776	912	323	670
Navigator	60.8	827	619	318	588
Vista	62.7	565	879	284	576
Norstar	63.1	748	454	344	515
Black Bean					
T-39	60.2	792	875	440	702
Eclipse	50.0	--	--	205	--
LSD 5%	**1.6**	**NS**	**214**	**84**	**--**

Planted: May 18 **Harvested: October 2**

Dryland Fallow Pinto Bean
Williston, ND

Cultivar	TW lb/b 2006	Yield - - - - - - - lbs/ac - - - - - - - 2004	Yield 2005	Yield 2006	Yield 3 yr
Othello	58.1	843	651	510	668
Rally	54.9	916	692	288	632
Buster	51.9	951	675	262	629
Maverick	53.4	992	581	278	617
Topaz R	50.9	853	601	328	594
GTS 900	48.5	944	601	178	574
LSD 5%	**1.4**	**NS**	**NS**	**78**	**--**

Planted: May 18 **Harvested: October 2**

Dryland Soybean Performance
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Oil -- % -- 2006	Oil -- % -- 3 yr
Conventional on fallow					
Jim	11.2	11.2	56.1	19.5	19.8
Lamoure	10.7	--	56.2	19.2	--
Pembina	11.5	--	57.5	19.8	--
Traill	13.0	--	57.1	19.4	--
Walsh	13.4	--	56.2	19.6	--
Barnes	13.6	--	56.0	20.0	--
RG 405 RR	9.9	--	56.2	20.0	--
RG 200 RR	11.3	--	57.2	19.0	--
LSD 5%	**1.9**	**--**	**0.8**	**NS**	**--**

Planted: May 18 **Harvested: August 8 & 14**

Roundup Ready Notill					
RG 405 RR	16.6	16.9	56.9	19.5	19.6
RG 200 RR	12.4	13.5	57.5	18.9	19.2
LSD 5%	**2.4**	**--**	**NS**	**NS**	**--**

Planted: May 17 **Harvested: October 2**

Previous crop: durum

Sprinkler Irrigation Food Soybeans
Sidney, MT

Variety	Maturity Group	Height inches 2006	Oil % 2006	Test Wt -- lbs/bu -- 2006	Test Wt -- lbs/bu -- 3 yr	Protein -- % -- 2006	Protein -- % -- 3 yr	Yield -- bu/a -- 2006	Yield -- bu/a -- 3 yr
Danatto	0.4	36.6	17.8	57.8	58.0	34.7	33.9	65.7	44.8
Walsh	0.0	34.6	20.6	56.0	58.0	34.0	34.8	59.6	42.8
Nornatto	0.3	36.6	18.8	57.3	57.5	34.0	32.7	61.7	42.8
Nannonatto	0.3	32.5	20.0	55.7	57.3	35.4	34.5	59.7	43.2
Nor Pro	0.6	31.9	18.8	56.8	57.0	37.6	37.2	54.9	43.2
Barnes	0.3	31.6	19.1	56.5	56.6	37.5	34.6	51.7	41.2
Prosoy		38.3	18.5	57.3	-----	36.8	-----	57.7	-----
Prudence		36.4	20.7	56.7	-----	34.3	-----	61.7	-----
Noto		36.4	20.2	56.0	-----	34.1	-----	62.8	-----
LSD (0.05)		**13.00**	**1.96**	**1.42**		**2.36**		**7.21**	

Planted: May 3 **Harvested: October 6** **Previous Crop: Safflower**

Irrigation Dates: 6-5 (1"), 6-23 (1.25"), 7-12 (1.25"), and 7-26 (1.75")

DRYLAND FALLOW LENTILS
WILLISTON, ND

Cultivar	TW lb/b 2006	Yield - - - - - - - lbs/ac - - - - - - - 2004	2005	2006	3 yr
Red					
CDC Blaze	63.6	1287	1449	477	1071
Crimson	62.2	1172	1399	500	1024
CDC Robin	63.6	1207	1316	443	989
CDC Redberry	62.4	--	--	651	--
CDC Rouleau	62.5	--	--	558	--
LC 01602062T	62.6			414	
Morton	63.5	--	--	327	--
Green (small)					
CDC Milestone	62.0	1507	1777	631	1305
CDC Viceroy	62.7	--	--	707	--
Green (medium)					
CDC Richlea	60.1	1538	1784	674	1332
Merrit	58.6	1171	1543	720	1145
Green (large)					
Laird	59.2	1486	1687	582	1252
CDC Sovereign	60.8	1520	1595	553	1223
CDC Sedley	60.5	1276	1766	552	1198
Pennell	58.2	1416	1614	553	1194
CDC Plato	58.9	--	--	725	--
CDC Glamis	59.3	--	1713	654	--
CDC Meteor	60.5	--	--	628	--
CDC Grandora	59.2	--	--	434	--
LC 860616L	58.0			553	
Green (French)					
CDC LeMay	63.1	--	--	469	--
Brown (Spanish)					
Pardina	64.5	1316	1414	511	1080
LSD 5%	**1.0**	**204**	**260**	**99**	**--**

Planted: May 6 **Harvested: July 24 & August 3**

DRYLAND RECROP LENTILS
WILLISTON, ND

Cultivar	TW lb/b 2006	Yield - - - - - - - lbs/ac - - - - - - - 2004	2005	2006	3 yr
Red					
Crimson	63.1	2309	1826	605	1580
LC 01602062T	63.4	--	--	635	--
CDC Redberry	61.9	--	1608	631	--
CDC Blaze	63.5	--	1550	629	--
CDC Rouleau	61.8	--	1565	622	--
CDC Robin	63.0	--	1525	490	--
Morton	64.1	--	--	469	--
Green (small)					
CDC Viceroy	62.4	--	1696	742	--
CDC Milestone	62.1	--	1771	672	--
Green (medium)					
CDC Richlea	60.3	2634	1795	763	1731
Merrit	58.2	2319	1707	600	1542
Green (large)					
Pennell	57.9	2269	1703	649	1540
CDC Glamis	59.1	--	1807	713	--
CDC Meteor	60.7	--	--	705	--
CDC Plato	58.7	--	--	694	--
CDC Sedley	59.8	--	1695	653	--
LC 860616L	57.9	--	--	596	--
CDC Sovereign	60.1	--	1679	593	--
Laird	58.2	--	1730	557	--
CDC Grandora	58.2	--	--	468	--
Green (French)					
CDC LeMay	62.6	--	1672	538	--
Brown (Spanish)					
Pardina	64.3	--	1753	559	--
LSD 5%	**0.8**	**NS**	**NS**	**118**	

Planted: May 6 **Harvested: July 24 & August 3**

Previous Crop: tilled recrop

DRYLAND LENTIL VARIETY
CROSBY, ARNEGARD, NEW TOWN, ND

Cultivar	Crosby Yield - bus/a - 2006	Arnegard Yield - bus/a - 2006	New Town Yield -bus/a- 2006
Red			
CDC Blaze	678	490	703
Green (small)			
CDC Milestone	694	494	689
Green (medium)			
CDC Richlea	808	543	734
Green (large)			
CDC Plato	809	474	617
Pennell	641	387	596
LSD 5%	**114**	**NS**	**NS**
Planted:	**May 15**	**May 9**	**May 10**
Harvested:	**Aug 12**	**Aug 4**	**Aug 7**

SPRINKLER IRRIGATION FIELD PEA
NESSON VALLEY, ND

Cultivar	Yield - bus/a - 2006	3 yr	TW lb/b 2006	Protein -- % -- 2006	3 yr
Yellow Cotyledon					
CDC Mozart	47.5	--	65.8	23.6	--
DS Admiral	44.7	--	65.4	24.2	--
Green Cotyledon					
Majoret	37.6	--	63.8	24.7	--
Scuba	37.3	--	63.2	24.0	--
LSD 5%	**7.6**	**--**	**1.5**	**NS**	**--**

Planted: May 11 **Harvested: August 9**

Previous crop: potato

Dryland Fallow Field Pea
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
CDC Mozart	26.9	44.3	64.1	21.6	20.0
Eclipse	24.4	40.3	63.9	22.0	20.9
DS Admiral	23.0	39.5	63.6	22.5	20.6
PS 01102958	25.9	--	63.9	22.1	--
Miami	25.5	--	63.4	23.9	--
Green cotyledon					
Nitouche	24.3	39.1	63.3	22.3	20.7
Stirling	25.2	38.7	63.6	21.7	20.6
Majoret	19.2	38.7	63.5	22.8	20.9
Cruiser	23.0	37.3	62.9	22.7	20.9
Scuba	20.8	35.0	64.5	22.0	20.0
Medora	21.1	--	63.0	21.7	--
LSD 5%	**2.7**	**--**	**NS**	**NS**	**--**

Planted: April 28 **Harvested: July 19**

Dryland Fallow (Chemical) Field Pea
Arnegard, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
Miami	10.3	--	64.1	22.8	--
CDC Mozart	8.6	--	64.2	22.3	--
Eclipse	6.5	--	64.6	23.2	--
DS Admiral	3.1	--	55.3	23.2	--
Green cotyledon					
Stirling	11.8	--	64.9	22.4	--
Cruiser	9.8	--	63.9	21.9	--
Majoret	5.6	--	64.4	23.5	--
Nitouche	4.9	--	62.6	21.3	--
LSD 5%	**4.5**	**--**	**2.5**	**--**	**--**

Planted: May 9 **Harvested: August 4**

Dryland Recrop Field Pea
New Town/ Parshall, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
PS 01102958	22.8	--	65.9	23.1	--
DS Admiral	20.4	--	64.6	20.6	--
Miami	17.7	--	66.4	20.7	--
Eclipse	17.0	--	66.6	19.0	--
CDC Mozart	16.1	--	66.3	17.8	--
Green cotyledon					
Stirling	20.4	--	65.0	20.4	--
Medora	18.1	--	63.9	17.8	--
Nitouche	16.6	--	64.1	17.6	--
Cruiser	15.8	--	64.8	20.6	--
Majoret	13.6	--	65.4	18.4	--
LSD 5%		**--**			**--**

Planted: May 10 **Harvested: August 7**

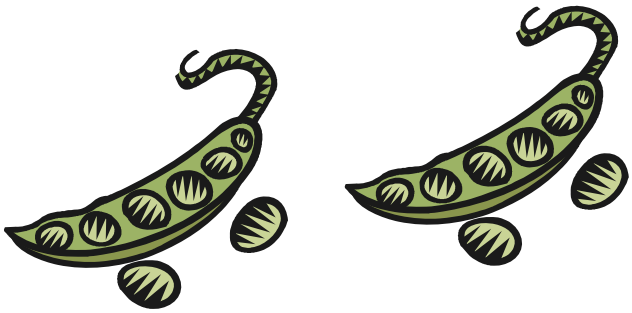
Previous crop: durum

Dryland Recrop Field Pea Variety
Williston, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
CDC Mozart	27.6	41.6	64.1	20.5	19.5
DS Admiral	24.9	40.5	63.1	19.3	18.9
SW Salute	28.3	--	64.6	19.1	--
Tudor	28.3	--	63.7	18.7	--
CDC Golden	28.1	--	64.6	20.7	--
SW Midas	27.6	--	63.8	17.8	--
CEB 4132	27.5	--	63.2	20.7	--
Miami	27.1	--	64.1	20.4	--
PS 01102958	26.5	--	63.7	22.8	--
SW Marque	26.5	--	63.7	21.2	--
CEB 4133	26.4	--	64.3	18.3	--
SW Capri	26.0	--	64.2	18.4	--
Eclipse	25.4	--	64.2	20.8	--
CDC Sonata	21.3	--	61.4	20.4	--
CEB 4149	21.2	--	64.2	21.1	--
CDC Bronco	20.9	--	63.1	20.6	--
Green cotyledon					
Majoret	23.2	37.2	64.1	19.9	20.2
Stirling	25.3	36.1	63.4	19.4	19.5
Cruiser	24.4	35.5	63.5	19.3	19.2
Nitouche	26.2	35.4	62.6	20.0	19.4
Scuba	17.1	30.7	64.5	18.1	17.8
Camry	29.6	--	62.9	19.3	--
Cooper	28.3	--	63.3	20.4	--
Monterro	26.7	--	64.3	19.4	--
CDC Striker	26.0	--	64.6	21.4	--
PRO-011-3172	25.1	--	63.7	16.9	--
Aragon	24.8	--	63.4	18.9	--
CEB 1090	24.4	--	62.7	19.6	--
K-2	23.6	--	64.1	19.3	--
SW C-6198	22.4	--	63.8	19.1	--
AP-18	21.3	--	63.2	19.6	--
Medora	19.7	--	63.2	18.3	--
CDC Sage	17.9	--	62.7	18.1	--
Marrowfat					
Orka	22.0	--	62.5	18.2	--
LSD 5%	**2.3**	**--**	**0.7**	**1.1**	**--**

Planted: April 28 **Harvested: July 19**

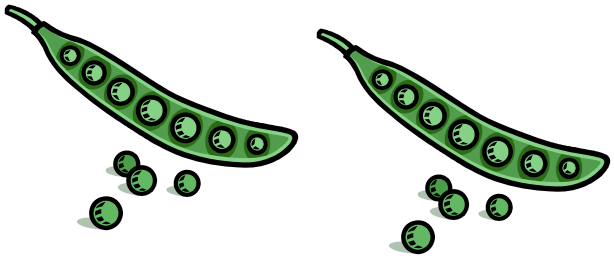
Previous Crop: durum



DRYLAND RECROP FIELD PEA VARIETY
POWERS LAKE/FLAXTON, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
CDC Mozart	19.9	--	65.6	21.6	--
PS 01102958	19.8	--	63.8	23.2	--
Miami	18.5	--	65.8	21.4	--
DS Admiral	18.3	--	64.6	20.7	--
Eclipse	16.6	--	64.5	22.0	--
Green cotyledon					
Nitouche	20.8	--	62.6	21.7	--
Stirling	20.8	--	65.2	22.2	--
Medora	20.6	--	64.6	20.6	--
Cruiser	16.3	--	63.8	21.7	--
Majoret	15.9	--	63.6	22.0	--
LSD 5%	**3.4**	**--**	**1.5**	**--**	**--**

Planted: May 12 **Harvested: August 11**
Previous crop: field pea



PLANT VARIETY PROTECTION

Many varieties are protected with the Title V option and can only be sold as a class of certified seed. Certification permits a person in possession of the variety to sell it as a seed product, unless the owner of the variety places specific restrictions on the sale of the variety. Varieties that require certification are identified in the variety listing of this publication.

If a variety is not protected with the Title V option, the owner of the variety still has the exclusive right to determine who can produce and market the variety as a seed product.

A majority of the varieties are now protected under the 1994 amendments of the Plant Variety Protection Act. Varieties protected under the 1994 amendments do not allow for an exemption that would allow the limited sale of uncertified or unauthorized seed that existed prior to the 1994 amendments.

DRYLAND FALLOW FIELD PEA VARIETY
RAY, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
PS 01102958	20.7	--	64.8	26.0	--
DS Admiral	19.6	--	64.4	22.6	--
CDC Mozart	19.2	--	65.8	22.2	--
Miami	18.5	--	64.7	23.1	--
Eclipse	17.0	--	64.9	23.0	--
Green cotyledon					
Medora	18.9	--	63.1	20.7	--
Nitouche	18.0	--	63.3	21.1	--
Stirling	17.6	--	64.9	23.9	--
Majoret	16.9	--	64.9	21.5	--
Cruiser	16.8	--	62.7	21.7	--
LSD 5%	**NS**	**--**	**1.7**	**--**	**--**

Planted: May 12 **Harvested: August 8**

DRYLAND RECROP FIELD PEA VARIETY
ROSS, ND

Cultivar	Yield - bus/a - 2006	Yield - bus/a - 3 yr	TW lb/b 2006	Protein -- % -- 2006	Protein -- % -- 3 yr
Yellow cotyledon					
Miami	28.4	--	65.2	20.6	--
CDC Mozart	26.0	--	65.9	19.1	--
Eclipse	25.0	--	66.1	20.1	--
DS Admiral	23.6	--	65.5	22.7	--
Green cotyledon					
Stirling	25.5	--	65.5	20.2	--
Nitouche	25.3	--	63.5	20.1	--
Cruiser	24.2	--	63.9	18.5	--
Majoret	22.3	--	64.8	19.0	--
LSD 5%	**3.2**	**--**	**0.6**	**--**	**--**

Planted: May 10 **Harvested: August 7**
Previous crop: durum

The Plant Variety Protection Act allows purchasers of authorized seed the right to save seed from the production of that "authorized" seed and plant it back on their own farm for an unspecified period of time. The right to use saved seed is applicable **only** if the initial purchase of the variety was with the authority of the owner of the variety or was originally acquired as a class of certified seed.

The listing of protected varieties in this publication is not an official list. **It is the responsibility of the buyer or seller of any seed product to determine the protected status of the variety**. It is illegal for anyone to purchase "grain" of a protected variety and utilize it for planting purposes.

FURROW FLOOD IRRIGATION SUGARBEETS – SIDNEY, MT
APPROVED SUGARBEET VARIETIES FOR 2007 – SIDNEY SUGARS INC., SIDNEY, MT

	Root yield -T/a-		Sucrose -%-		Sucrose yield -lbs/a-		Extractable sucrose -lbs/a-	
Cultivar	**2006**	**3 yr**	**2006**	**3 yr**	**2006**	**3 yr**	**2006**	**3 yr**
HH 112	39.8	33.1	16.72	18.55	13,300	12,180	12,340	11,480
VDH 46519 RZ	41.8	34.2	15.92	17.80	13,310	12,040	12,410	11,330
VDH 66556	37.6	31.5	16.89	18.95	12,690	11,810	11,800	11,163
HM Unite	37.4	31.6	16.87	18.63	12,620	11,680	11,770	11,033
Beta 1733R	36.8	31.5	16.78	18.61	12,360	11,613	11,600	10,993
Crystal 928	37.5	30.9	17.38	19.01	13,030	11,607	12,160	10,983
HH 153	38.8	31.8	16.90	18.47	13,120	11,633	12,200	10,977
HM 1642	37.0	31.8	16.72	18.36	12,390	11,593	11,580	10,973
Crystal 927	34.8	30.4	17.16	18.95	11,940	11,457	11,110	10,828
SX Thunder	37.2	30.9	16.70	18.60	12,440	11,400	11,590	10,753
Crystal R390	36.9	30.9	16.97	18.49	12,550	11,310	11,690	10,644
HH 319RZ	39.6	--	16.83	--	13,290	--	12,410	--
Beta 1511R	39.3	--	16.44	--	12,960	--	12,090	--
SX Alpine	38.6	--	16.39	--	12,650	--	11,790	--
Beta 1344N	41.1	--	15.50	--	12,750	--	11,550	--
SX0419*	35.3	--	17.42	--	12,290	--	11,490	--
Beta 8400R	38.7	--	16.23	--	12,550	--	11,460	--
LSD 5%	**3.1**		**0.69**		**1186**		**1155**	

Planted: May 5 **Thinned: June 6-7** **Harvested: September 21** **Previous crop: small grains**

FURROW FLOOD IRRIGATION SUGARBEETS –EAST FAIRVIEW, ND
APPROVED SUGARBEET VARIETIES FOR 2007 – SIDNEY SUGARS INC., SIDNEY, MT

	Root yield -T/a-		Sucrose -%-		Sucrose yield -lbs/a-		Extractable sucrose -lbs/a-	
Cultivar	**2006**	**3 yr**	**2006**	**3 yr**	**2006**	**3 yr**	**2006**	**3 yr**
VDH 46519 RZ	28.7	28.2	16.93	17.52	9,735	9,888	9,315	9,427
Crystal 928	26.4	26.2	18.40	18.73	9,703	9,834	9,331	9,421
HH 153	27.1	26.5	17.27	18.17	9,352	9,612	8,949	9,188
SX Thunder	26.6	26.3	17.67	18.29	9,377	9,604	8,907	9,149
Crystal R390	25.5	26.1	17.69	18.36	9,012	9,567	8,616	9,143
HH 112	28.0	26.6	17.29	18.01	9,684	9,576	9,236	9,125
Crystal 927	26.7	25.7	18.23	18.52	9,707	9,519	9,351	9,118
HM 1642	27.6	26.6	17.17	17.77	9,502	9,449	9,110	9,034
VDH 66556	25.2	25.6	17.47	18.36	8,781	9,377	8,407	8,966
HM Unite	24.7	25.3	18.19	18.49	8,976	9,339	8,603	8,928
Beta 1733R	26.6	25.4	17.69	18.36	9,393	9,320	9,027	8,927
Beta 1344N	35.2	--	16.89	--	11,900	--	11,240	--
Beta 1511R	28.0	--	17.25	--	9,657	--	9,231	--
HH 319RZ	27.3	--	17.48	--	9,523	--	9,155	--
SX0419	25.3	--	18.02	--	9,100	--	8,765	--
SX Alpine	25.9	--	17.32	--	8,971	--	8,625	--
Beta 8400R	25.6	--	16.55	--	8,481	--	8,056	--
LSD 5%	**3.3**		**0.45**		**1221**		**1163**	

Planted: May 8 **Thinned: June 7** **Harvested: September 28** **Previous Crop: small grains**

FINE-TUNING A NITROGEN BUDGET SYSTEM FOR SUGARBEETS PRODUCED UNDER SPRINKLER AND FLOOD IRRIGATION

J. ECKHOFF[1], J. BERGMAN[1], C. FLYNN[1], AND K. RASMUSSEN[2]

Previous crops were malt barley in 2005, sugarbeets in 2004, and durum in 2003. The test site was fall-irrigated on August 30, 2005. Residual soil N to 4 feet was 46 lb/ac, residual soil P to 6 inches was 27 ppm and residual soil K to 6 inches was 436 ppm. Five rates of liquid 28-0-0 were applied May 11, 2006, and incorporated immediately. A check treatment with no applied N was included. Plots were planted to stand with the variety AC927 on May 11 with a commercial six-row planter. Ro-Neet 6E (3.5 lb AI/ac) and Counter (1 lb AI/ac) were applied in 7" bands at planting. Upbeet (0.2 oz/A), Progress (14 oz/A), Select (3 oz/A), and Stinger (1.5 oz/A) were applied on May 31. Plots were hand-weeded on June 18, July 7, and July 31.

Sprinkler plots were irrigated Jun 30, Jul 5, Jul 13, Aug 3, Aug 15, and Aug 30. Flood irrigated plots were irrigated on Jul 24, Jul 31, Aug 14, and Aug 29. Precipitation for the crop year (October 2005 – September 2006) was 17.06 inches. Average crop year precipitation (58-year average) is 13.87 inches. Precipitation for April 1 – September 30 in 2006 was 11.81 inches. Average precipitation for April – September period (58-year average) is 10.73 inches. Plots were harvested on September 26.

Stand, yield, and quality of sugarbeets under flood and sprinkler irrigation with six rates of available N 2006.

available N to 4 ft, lb/ac	Irrigation	Harvest Stand, plants/ac	Percent sucrose	Root Yield T/acre	Sucrose Yield, Lb/acre	Na ppm	K ppm	Amino-N ppm	sucrose loss to molasses	Extract-able Sucrose, Lb/acre
46	flood	28980	17.89	43.2	15450	190	1711	116	0.91	14670
100	flood	31160	17.24	45.3	15620	249	1554	166	0.95	14770
125	flood	28560	17.06	45.9	15660	270	1735	178	1.05	14700
150	flood	30270	16.80	46.3	15540	322	1610	240	1.12	14520
175	flood	30070	16.54	49.7	16420	370	1640	264	1.19	15240
200	flood	23940	16.72	41.6	13910	315	1488	244	1.07	13020
LSD0.05		4344	0.62	4.6	1746	100	ns	83	0.23	ns
46	sprinkler	32370	17.49	38.2	13330	222	1502	142	0.88	12650
100	sprinkler	28590	16.81	41.7	14020	340	1641	164	1.03	13160
125	sprinkler	25160	16.84	42.2	14210	315	1617	197	1.06	13320
150	sprinkler	26830	16.63	39.9	13270	348	1727	189	1.10	12390
175	sprinkler	22060	16.32	39.8	12970	371	1533	183	1.03	12150
200	sprinkler	21260	16.11	38.7	12470	363	1535	206	1.06	11660
LSD0.05		6020	0.95	ns	ns	ns	ns	ns	ns	1548

Stand, yield, and quality of sugarbeets under flood and sprinkler irrigation with six rates of available N, 2003-2006.

available N to 4 ft, lb/ac	Irrigation	Harvest Stand, plants/ac	Percent sucrose	Root Yield T/acre	Sucrose Yield, Lb/acre	Na ppm	K ppm	Amino-N ppm	sucrose loss to molasses	Extract-able Sucrose, Lb/acre
*	flood	31700	18.93	30.5	11430	242	1647	142	0.95	10860
100	flood	32000	18.79	31.5	11690	253	1608	165	0.97	11080
125	flood	32480	18.84	32.3	11990	269	1625	176	1.00	11340
150	flood	31880	18.63	32.5	11920	293	1631	201	1.05	11230
175	flood	31550	18.50	33.7	12240	288	1643	215	1.07	11500
200	flood	30780	18.39	31.6	11490	306	1632	210	1.07	10820
LSD0.05		ns	0.29	1.2	500	44	ns	24	0.06	492
*	sprinkler	36270	19.13	30.3	11480	266	1617	169	0.99	10880
100	sprinkler	35350	18.59	31.9	11740	321	1754	211	1.13	11020
125	sprinkler	35550	18.60	32.9	12110	314	1729	219	1.13	11370
150	sprinkler	34910	18.47	31.9	11690	330	1711	226	1.14	10960
175	sprinkler	32900	18.34	31.4	11360	345	1682	221	1.13	10650
200	sprinkler	32790	18.20	31.0	11170	356	1699	231	1.15	10460
LSD0.05		2449	0.37	1.6	593	60	75	38	0.09	573

*** 46 lb/ac in 2006, 73 lb/a in 2005, 28 lb/ac in 2004, 45 lb/ac in 2003**

[1]Montana State University, Eastern Agricultural Research Center, Sidney, Montana
[2]Sidney Sugars (American Crystal), Sidney, Montana

SUGARBEET CERCOSPORA FUNGICIDE TRIAL – SIDNEY, MT

BARRY JACOBSEN[1]

Treatment	% Disease	Ton/A	% Sucrose	Extractable Sucrose lb/A
1. UTC	**6.24 a**	**39.1 ab**	**16.9 bcd**	**13070 a**
2. Gem 500 SC 2.87 oz/A, then SuperTin 80 WP 5 oz/A, then Proline SC 5 oz/A + Induce 0.125% v/v	**1.49 cde**	**41.6 ab**	**17.8 abc**	**14605 a**
3. Gem 500 SC 2.87 oz/A, then SuperTin 80 WP 5 oz/A, then Eminent 13 oz/A	**1.71 cde**	**41.0 ab**	**18.2 a**	**14786 a**
4. Proline SC 5 oz/A + Induce 0.125% v/v, then SuperTin 80 WP 5 oz/A, then Gem 500 SC 2.87 oz/A	**1.33 de**	**38.9 ab**	**17.2 abcd**	**13223 a**
5. Proline SC 5 oz/A + Induce 0.125% v/v, then Gem 500 SC 2.87 oz/A	**1.91 cde**	**40.9 ab**	**16.9 cd**	**13606 a**
6. Proline SC 5 oz/A + Induce 0.125% v/v, then Gem 500 SC 2.87 oz/A, then SuperTin 5 oz/A	**1.61 cde**	**40.5 ab**	**16.5 d**	**13290 a**
7. Eminent 13 oz/A, then Headline 9 oz/A	**1.96 cde**	**43.1 ab**	**17.1 bcd**	**14537 a**
8. Eminent 9.75 oz/A, then SuperTin 80 WP 3.75 oz/A	**1.58 cde**	**40.1 ab**	**17.1 bcd**	**13539 a**
9. Headline 9.0 oz/A, then Eminent 13 oz/A, then SuperTin 5.0 oz/A	**0.85 e**	**40.3 ab**	**17.5 abcd**	**13953 a**
10. A7402 7.0 oz/A	**1.54 cde**	**42.6 ab**	**17.7 abc**	**14889 a**
11. A7402 7.0 oz/A, then Headline 9.0 oz/A	**1.91 cde**	**44.8 a**	**16.9 cd**	**15059 a**
12. A7402 7.0 oz/A, then SuperTin 5 oz/A	**1.76 cde**	**40.0 ab**	**18.0 ab**	**14236 a**
13. A13703 8.5 oz/A, then SuperTin 5 oz/A	**1.89 cde**	**39.7 ab**	**16.7 cd**	**13148 a**
14. Eminent 13 oz/A	**2.69 bcd**	**41.2 ab**	**17.5 abcd**	**14229 a**
15. Tilt 4 oz/A	**4.09 b**	**44.0 ab**	**17.4 abcd**	**15062 a**
16. Bac J + Headline 9.0 oz/A, Bac J, Bac J	**1.70 cde**	**39.5 ab**	**17.6 abc**	**13791 a**
17. Osprey 1E7 spores/ml	**3.84 b**	**39.9 ab**	**17.2 abcd**	**13644 a**
18. Lab produced lot 805 1E7/ml	**3.08 bc**	**38.3 ab**	**16.9 cd**	**12706 a**
19. Butte production lot 406 1E7/ml	**4.27 b**	**41.4 ab**	**17.0 bcd**	**13931 a**
20. Osprey 1/5 rate 2E6 spores/ml	**1.75 cde**	**38.1 b**	**17.3 abcd**	**13029 a**
LSD (0.05)	**1.62**	**6.6**	**1.1**	**2384**

Planted: May 4 Harvested: Sept. 28 Variety AC 927 Previous Crop: small grains

Herbicide Applications: May 25th Progress (2pt/A), Upbeet (0.5oz/A), Select (4.4oz/A), Quest (3.3oz/A)
May 31st Upbeet (0.2oz/A), Progress (2.0oz/A), Stinger (1.5oz/A), Select (1.5oz/A)

Plots were flood irrigated on Jul 6, Jul 17, Jul 31, Aug 14

Fungicide Applications: 7/19/06 1st spray sunny 75F calm
8/02/06 2nd spray sunny 80F 5-7 mph out of N plants had dew
8/16/06 3rd spray sunny 77F 7-10 mph out of NW plants had dew

Fungicide Applications were made using a CO2 sprayer @ 30 PSI with a 4 nozzle boom with 8002 VS nozzles

[1]Montana State University – Bozeman, Montana

SPRINKLER IRRIGATION COMMERCIAL RUSSET BURBANK POTATO NESSON VALLEY, ND [/1]

Variety	Tuber Type	Tuber Flesh	Specific gravity	Yield cwt/ac
Russet Burbank	white	white	1.081	538

Planted: April 29 **Harvested: October 4** **Previous Crop:** Barley

[/1] The results of a 2006 University of Minnesota cooperative potato variety trial at the Nesson Valley irrigation site was not yet available for inclusion in this report. Potato types included were Russet, Red, Long White, and Round White with white, cream, or yellow flesh for the fresh and/or processing markets.

DURUM VARIETAL DEVELOPMENT FOR THE MONDAK REGION

J. ECKHOFF[1] AND E. ELIAS[2]

A conventional, non-GMO durum breeding effort between North Dakota State University and Montana State University began in 1997. We used F2 populations from several sources, including two composite cross populations that were developed and maintained at the Eastern Agricultural Research Center under irrigated and dryland conditions. Each year, plants were selected from the F2 populations based on heading date, plant height, disease tolerance, and general agronomic appearance. F3 progeny from the selected plants were grown in the greenhouse at Sidney during the winter to identify day-length insensitive lines. Plants that produced seed during the winter months in Montana were considered to be day-length insensitive. All day-length insensitive lines were planted in head rows in the following summer and evaluated for bloom date, height, and disease reaction. We harvested spikes from the best plants in the best rows. The rest of each selected row was harvested in bulk and evaluated in the lab for test weight, protein content, seed weight, gluten strength, and hard vitreous amber color. This is a continuing process, with crosses made for new populations each year.

We tested 100 F8 lines in 2006 in preliminary yield trials under irrigated and dryland conditions. Additionally, 60 advanced lines were tested in Sidney under irrigated and dryland conditions, and in Williston under dryland conditions. These will be tested for semolina and pasta quality at Fargo during the winter. Ten experimental lines were included in the Montana statewide durum yield trial. These will be tested for semolina and pasta quality at Fargo during the winter. Data from these trials will be used to determine which experimental lines will be considered for release. Three lines were tested in quality strips in Williston for inclusion in quality testing in Fargo.

Semolina color is an extremely important character for pasta producers. Last winter, lines were evaluated at the California Wheat Commission Lab for semolina color. These data were used to calibrate the NIR to estimate semolina color. This character will be determined in all generations and yield trials and used in the selection process beginning with early generations.

Cadmium (Cd) is a natural element that causes health problems for some people. Some durum genotypes accumulate Cd, resulting in pasta that contains Cd. The European Union has restricted Cd levels in domestic and imported durum to levels below 0.2 ppm. Most durum produced in Montana and North Dakota has levels of Cd greater than 0.2 ppm. Low Cd-accumulating durum genotypes were used as parents in crosses to develop a composite cross population with low Cd accumulation. Fourteen durum lines from Cimmyt were evaluated for quality and Cd accumulation. The best of these will be used as parents in the composite cross population.

[1]MSU Eastern Agricultural Research Center, Sidney, MT
[2]NDSU Department of Plant Sciences, Fargo, ND

WHEAT AND BARLEY FOR ETHANOL PRODUCTION

CHARLES FLYNN[1], JOYCE ECKHOFF[1], JERALD BERGMAN[1]

Objectives:

- compare starch levels in wheat and barley types, varieties and genetic lines
- determine effects of barley hull removal on starch yields

Table 1. Starch yield of hulled and dehulled barley grown under sprinkler and flood irrigation, 2005.

entry	% hull	yield, lb/ac*	yield, lb/ac dehulled*	starch %	starch %, dehulled	starch yield, lb/ac*	starch yield, dehulled, lb/ac*
FLOOD							
M109	9.1	5830	5296	61.2	69.1	3561	3660
Lacey	9.7	5535	5000	61.2	69.0	3388	3451
Conlon	10.3	5436	4876	59.7	68.7	3253	3357
Stellar	11.2	5203	4624	58.2	68.8	3024	3186
Drummond	10.8	5356	4779	59.4	66.3	3181	3170
Foster	12.4	5267	4608	57.2	68.0	3010	3137
Tradition	8.2	5215	4785	60.9	65.0	3175	3111
Stander	9.5	5058	4578	59.3	66.2	3000	3027
Legacy	10.0	5056	4550	59.5	65.2	3007	2965
Morex	6.6	4599	4293	63.0	66.7	2899	2862
Robust	9.3	4571	4149	61.2	67.8	2791	2827
AC Metcalfe	9.6	4659	4212	59.2	66.7	2759	2807
Bowman	9.6	4660	4211	61.2	66.0	2855	2776
LSD 0.05	3.2	461	452	2.9	4.9	292	407
SPRINKLER							
Lacey	9.5	5410	4895	60.1	67.3	3247	3291
M109	10.6	5393	4823	61.0	67.7	3288	3264
Conlon	7.6	5067	4676	59.6	66.9	3018	3121
Tradition	7.5	5019	4639	60.3	66.7	3024	3093
Bowman	9.7	4984	4500	60.2	67.5	3004	3038
Stellar	11.5	5149	4556	62.3	65.6	3206	2985
Legacy	9.7	4917	4439	58.8	67.0	2889	2974
Foster	8.9	4911	4473	59.1	66.4	2905	2972
Stander	9.0	4939	4494	61.4	65.1	3034	2926
Robust	10.9	4712	4200	61.1	66.2	2879	2783
Drummond	10.2	4927	4427	58.7	62.6	2894	2774
AC Metcalfe	9.3	4193	3804	58.7	67.8	2463	2579
Morex	10.2	4184	3759	58.9	65.3	2454	2463
LSD 0.05	3.6	422	394	2.7	3.8	273	286

* dry weight basis

Removing hulls from normal hulled feed and malt barley lines did not reduce starch yield per acre. (Table 1). About 10% of grain yield was lost to dehulling, but percent starch of the dehulled material was about 7% greater, resulting in similar starch yields per acre.

Table 2. Starch yield of small grain grown under dryland and irrigated conditions, 2005.

entry	type	grain protein percent	test weight, lb/bu	percent starch	grain yield, lb/ac*	starch yield, lb/ac*
Dryland						
Nick	SWSW	10.47	61.2	73.6	3256	2400
BZ602-017	SWSW	11.62	60.5	71.8	2936	2108
Haxby	feed barley	10.59	50.0	64.3	3266	2102
MT020016	hulless barley	10.76	55.0	68.7	3007	2063
Conlon	malt barley	11.10	50.5	64.0	3092	1976
Penewawa	SWSW	11.00	60.0	71.0	2781	1974
Reeder	HRSW	15.31	62.5	64.5	3023	1951
BZ602-015	SWSW	10.69	59.8	73.5	2652	1950
Penewawa-X	SWSW	11.60	60.5	66.2	2833	1878
MT010105	hulless barley	12.34	58.0	61.5	2990	1841
MT020015	hulless barley	10.45	56.3	67.6	2706	1829
Plaza	durum	12.16	61.7	64.7	2709	1752
Mountrail	durum	11.63	61.8	63.3	2762	1745
McNeal	HRSW	11.89	61.0	63.5	2736	1737
MT01617	durum	12.24	60.8	65.0	2624	1706
LSD 0.05		1.40	1.8	2.8	259	193
Irrigated						
Nick	SWSW	12.08	62.0	68.7	5107	3507
BZ602-017	SWSW	13.14	61.0	66.3	4798	3186
Mountrail	durum	12.34	62.2	61.3	4759	2914
Penewawa	SWSW	12.29	61.5	68.8	4192	2882
BZ602-015	SWSW	13.44	61.0	66.9	4211	2819
Conlon	malt barley	13.21	50.7	58.4	4773	2793
Plaza	durum	12.94	62.0	64.1	4344	2786
Haxby	feed barley	12.67	51.5	59.1	4627	2738
Penewawa-X	SWSW	14.12	60.7	63.2	4310	2725
MT010105	hulless	14.53	55.0	61.5	4353	2678
McNeal	HRS	15.45	61.5	59.7	4337	2588
MT020015	hulless	12.87	56.3	63.8	3935	2513
MT020016	hulless	12.68	55.5	65.8	3694	2427
MT01617	durum	13.12	61.0	59.9	3927	2350
Reeder	HRS	17.04	61.7	59.8	3911	2340
LSD 0.05		1.63	1.4	1.8	841	533

*dry weight basis

Soft white wheat had greatest starch content, with the three lines averaging 69.0% starch across irrigated and dryland sites (Table 2). The hard red spring wheat lines averaged 61.9% starch across sites. Hulled barley averaged 61.4 % starch across sites, while hulless barley averaged 64.8% starch across sites. Durum averaged 63.0% starch. The hulless barley generally had lower grain yields than the hullled barley lines, resulting in lower starch yield per hectare.

[1]**MSU Eastern Agricultural Research Center, Sidney, MT**

DURUM SEEDING RATE – SIDNEY, MT

J.L.A. ECKHOFF[1]

Four seeding rates were tested using two durum varieties grown under dryland fallow, sprinkler irrigated and flood irrigated conditions. Seeding rates were based on number of pure live seed planted per acre. Sprinkler irrigated plots were irrigated on June 5, June 23, and July 5. Flood irrigated plots were irrigated on June 7 and June 21. Under dryland condition in 2006, higher seeding rate resulted in earlier heading. Under both sprinkler and flood irrigation, higher seeding rate resulted in increased lodging.

Response of durum to four seeding rates in 2006.

Dryland fallow		Planted: April 14				Harvested: July 28	
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Grain Protein %	HVAC1	Test wt, lb/bu	Yield Bu/ac
Plaza		65.9	64.8	13.58	66.6	59.3	37.2
Mountrail		65.1	72.8	13.34	69.7	60.0	41.1
LSD 0.05		0.3	2.5	ns	2.9	0.5	1.5
	750,000	66.0	68.5	13.54	69.2	59.4	37.1
	1,000,000	65.5	68.8	13.52	70.3	59.5	39.5
	1,250,000	65.5	68.5	13.31	66.0	59.9	40.0
	1,500,000	64.9	69.4	13.47	67.4	59.8	40.0
LSD 0.05		0.4	ns	ns	ns	ns	2.1

Sprinkle irrigated	Previous crop: safflower		Planted: May 5			Harvested: August 10		
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	HVAC1	Test wt, lb/bu	Yield Bu/ac
Plaza		53.0	81.8	0.1	12.79	92.8	60.9	74.1
Mountrail		50.4	102.3	2.0	12.63	96.6	61.7	93.5
LSD 0.05		0.3	4.1	0.5	ns	1.7	0.3	3.0
	1,000,000	51.8	92.6	0.2	12.66	94.4	61.2	81.1
	1,250,000	51.8	91.3	0.5	12.68	94.2	61.3	82.1
	1,500,000	51.8	91.9	1.4	12.89	95.7	61.2	83.9
	2,000,000	51.6	92.3	2.0	12.61	94.4	61.4	88.2
LSD 0.05		ns	ns	0.7	ns	ns	ns	4.2

Flood irrigated	Previous crop: safflower		Planted: May 4			Harvested: August 11		
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	HVAC2	Test wt, lb/bu	Yield Bu/ac
Plaza		52.9	84.8	0.0	12.53	78.6	61.5	75.7
Mountrail		51.8	99.6	1.6	12.50	86.0	62.1	93.5
LSD 0.05		0.4	3.4	0.3	ns	3.7	0.3	4.1
	1,000,000	53.0	91.9	0.4	12.41	81.8	61.7	79.8
	1,250,000	52.4	93.1	0.6	12.59	82.2	61.8	84.7
	1,500,000	52.3	91.1	0.9	12.58	83.2	61.8	83.9
	2,000,000	51.8	92.5	1.3	12.47	82.1	62.0	90.0
LSD 0.05		0.5	ns	0.4	ns	ns	ns	5.8

[1] Hard vitreous amber color

When analyzed across six years under dryland conditions, higher seeding rate resulted in earlier bloom, reduced height, lower hard vitreous amber color and greater test weight. Greatest yield was achieved with a seeding rate of 1,000,000 seed/ac. When analyzed across four years under sprinkler irrigated conditions, higher seeding rate resulted in earlier bloom, greater lodging, lower grain protein and lower hard vitreous amber color. Greatest yield was achieved with a seeding rate of 1,500,000 seed/ac. When analyzed across seven years under flood irrigation, higher seeding rate resulted in earlier bloom and greater lodging. Greatest yield was achieved with a seeding rate of 1,250,000 seed/ac.

Response of durum to four seeding rates across years.

Dryland, 2001-2006							
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Grain Protein %	HVAC1	Test wt, lb/bu	Yield Bu/ac
Plaza		66.4	68.8	13.40	79.6	60.2	45.7
Mountrail		66.5	77.6	13.47	83.2	60.2	48.3
LSD 0.05		ns	1.3	ns	1.5	ns	1.7
	750,000	66.8	74.5	13.44	82.8	60.0	45.8
	1,000,000	66.6	73.2	13.48	81.9	60.2	46.9
	1,250,000	66.4	72.5	13.33	80.5	60.3	46.8
	1,500,000	65.9	72.8	13.48	80.4	60.4	48.6
LSD 0.05		0.4	1.8	ns	2.1	0.3	2.3

Sprinkle irrigated, 2003-2006								
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	HVAC1	Test wt, lb/bu	Yield Bu/ac
Plaza		59.2	86.8	0.1	12.50	90.6	62.3	92.9
Mountrail		58.6	101.4	1.0	12.90	94.5	62.6	99.8
LSD 0.05		0.2	2.0	0.2	0.2	1.9	0.2	1.9
	1,000,000	59.1	94.7	0.3	12.70	94.1	62.5	95.4
	1,250,000	59.0	93.5	0.3	12.84	93.5	62.4	94.7
	1,500,000	58.7	93.6	0.6	12.74	92.4	62.4	96.6
	2,000,000	58.7	94.7	1.0	12.52	90.2	62.5	98.5
LSD 0.10		0.3	ns	0.3	0.3	2.7	ns	2.7

Flood irrigated, 2000-2006								
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	HVAC1	Test wt, lb/bu	Yield Bu/ac
Plaza		57.4	85.0	0.0	11.92	63.2	62.5	85.2
Mountrail		57.5	95.3	0.8	11.79	59.6	62.6	91.9
LSD 0.05		ns	0.9	0.1	0.1	ns	ns	1.6
	1,000,000	57.8	90.6	0.3	11.83	63.9	62.5	86.3
	1,250,000	57.6	89.6	0.3	11.85	62.0	62.5	88.6
	1,500,000	57.3	90.0	0.5	11.90	59.9	62.5	89.3
	2,000,000	57.0	90.4	0.4	11.82	59.7	62.7	90.1
LSD 0.05		0.3	ns	0.1	ns	ns	ns	2.6

[1] Hard vitreous amber color, 2003-2006 only

[1]MSU Eastern Agricultural Research Center, Sidney, MT

MALT BARLEY SEEDING RATE – SIDNEY, MT

J.L.A. ECKHOFF[1]

Four seeding rates were tested using two malt barley varieties grown under dryland fallow, sprinkler irrigated and flood irrigated conditions. Seeding rates were based on number of pure live seed planted per acre. Sprinkler irrigated plots were irrigated on June 5, June 23, July 5 . Flood irrigated plots were irrigated on June 7 and June 21. Under dryland condition in 2006, higher seeding rate reduced plant height. Under sprinkler irrigation, higher seeding rate resulted in earlier bloom and lower percent protein. Under flood irrigation, higher seeding rate resulted in earlier bloom.

Response of malt barley to four seeding rates in 2006.

Dryland fallow		Planted: April 13				Harvested: July 26	
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Grain Protein %	Percent plump	Test wt, lb/bu	Yield Bu/ac
Legacy		60.2	65.6	11.18	69.3	47.8	74.0
Coors 37		63.4	54.0	12.44	85.8	49.7	78.7
LSD 0.05		0.6	3.4	0.5	4.4	0.6	ns
	750,000	62.0	60.8	11.82	76.9	48.6	71.8
	1,000,000	62.0	63.0	11.78	76.3	48.4	76.2
	1,250,000	61.8	58.3	11.94	79.0	49.1	77.8
	1,500,000	61.5	57.1	11.70	77.9	49.0	79.5
LSD 0.05		ns	4.8	ns	ns	ns	7.0

Sprinkle irrigated	Previous crop: Safflower		Planted: May 5			Harvested: August 8		
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	Percent plump	Test wt, lb/bu	Yield Bu/ac
Legacy		47.8	85.5	8.3	12.73	46.8	45.6	95.3
Coors 37		49.6	71.0	1.8	15.18	78.4	48.4	102.2
LSD 0.05		0.3	3.6	0.9	0.34	2.9	0.5	5.7
	1,000,000	48.9	79.2	4.8	14.30	62.9	47.1	96.0
	1,250,000	48.9	79.6	4.9	13.90	64.9	47.2	99.3
	1,500,000	48.8	76.7	5.4	13.83	61.3	46.9	99.2
	2,000,000	48.3	77.4	5.2	13.78	61.4	46.8	100.5
LSD 0.05		0.4	ns	ns	0.48	ns	ns	ns

Flood irrigated	Previous crop: Safflower		Planted: May 1			Harvested: August 10		
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	Percent plump	Test wt, lb/bu	Yield Bu/ac
Legacy		51.1	80.4	0.0	11.19	64.6	47.5	107.7
Coors 37		53.3	65.9	0.0	12.78	83.7	50.2	105.8
LSD 0.05		0.3	3.4	ns	0.59	3.7	0.6	ns
	1,000,000	52.6	70.8	0.0	12.13	73.6	48.7	97.5
	1,250,000	52.6	75.4	0.0	12.07	72.0	48.5	105.2
	1,500,000	51.8	73.1	0.0	11.92	75.3	49.0	111.9
	2,000,000	51.9	73.4	0.0	11.81	75.6	49.2	112.4
LSD 0.05		0.4	ns	ns	ns	ns	ns	7.8

When analyzed across five years, higher seeding rate on dryland fallow conditions resulted in slightly earlier bloom date. Greatest yield was achieved with a seeding rate of 1,000,000 pure live seed/acre. When analyzed across five years, higher seeding rates under sprinkler irrigation resulted in earlier bloom date, reduced height, greater lodging, reduced protein, and reduced percent plump seed. Greatest yield achieved with a seeding rate of 1,500,000 seed/acre. When analyzed across five years under flood irrigation, higher seeding rate resulted in earlier bloom, greater lodging, and reduced percent plump seed. Highest yield was achieved with a seeding rate of 1,500,000 seed/acre.

Response of malt barley to four seeding rates across five years.

Dryland , 2002-2006							
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Grain Protein %	Percent plump	Test wt, lb/bu	Yield Bu/ac
Legacy		61.1	73.0	11.37	64.3	47.3	77.0
Coors 37		65.1	57.2	12.57	75.5	48.3	76.1
LSD 0.05		0.3	1.3	0.37	3.3	0.5	ns
	750,000	63.5	65.3	12.22	71.1	47.8	73.9
	1,000,000	63.0	66.1	12.02	69.1	47.6	75.9
	1,250,000	63.0	65.1	11.84	71.6	47.9	78.3
	1,500,000	62.9	64.1	11.82	67.9	47.7	78.0
LSD 0.05		0.5	ns	ns	ns	ns	3.5

Sprinkle irrigated, 2002-2006								
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	Percent plump	Test wt, lb/bu	Yield Bu/ac
Legacy		55.4	89.5	3.3	13.32	80.4	47.9	113.0
Coors 37		58.5	76.8	2.6	13.68	85.1	48.7	105.5
LSD 0.05		0.2	1.2	0.6	0.20	1.7	0.4	3.0
	1,000,000	57.2	83.9	2.3	13.65	84.5	48.5	107.9
	1,250,000	57.0	84.1	3.0	13.63	82.3	48.1	106.6
	1,500,000	56.9	82.5	3.2	13.37	82.4	48.5	110.9
	2,000,000	56.6	82.0	3.4	13.36	81.8	48.1	111.7
LSD 0.05		0.2	1.7	0.8	0.28	2.4	ns	2.9

Flood irrigated, 2002-2006								
variety	Seeding Rate Seed/ac	Heading, days from planting	Height cm	Lodging index	Grain Protein %	Percent plump	Test wt, lb/bu	Yield Bu/ac
Legacy		56.4	88.0	2.5	10.83	80.7	47.5	113.6
Coors 37		59.2	70.5	0.5	11.53	89.0	49.3	111.2
LSD 0.05		0.2	1.3	0.3	0.31	0.9	0.2	1.6
	1,000,000	58.2	79.6	1.1	11.21	86.4	48.5	109.8
	1,250,000	58.0	79.4	1.5	11.16	84.0	48.5	110.9
	1,500,000	57.5	79.4	1.4	11.40	85.3	48.3	113.9
	2,000,000	57.4	78.6	1.8	10.95	83.6	48.3	115.1
LSD 0.05		0.3	ns	0.4	ns	1.3	ns	2.3

[1]**MSU Eastern Agricultural Research Center, Sidney, MT**

WHEAT PERFORMANCE FOLLOWING ANNUAL LEGUMES COMPARED TO SUMMER FALLOW

JAMES A. STARICKA[1]

Replacing summer fallow with an annual legume is an option being considered by some producers. Possible benefits include reduction of fertilizer inputs (due to biological fixation of nitrogen), reduction of pesticide inputs (due to disruption of pest life cycles), improved labor and machinery efficiency, and risk reduction through crop diversification.

This study was started in 1995 at the Williston Research Extension Center. The crop sequences being compared are wheat grown continuously and wheat alternating with summer fallow, safflower, field pea, grain lentil, or forage lentil. For each legume species both harvested and green-manured treatments are included.

Two continuous wheat treatments are included. One of these treatments receives the recommended N rate based on soil testing, while the second receives a lesser rate. This lesser rate is determined by using the N recommendation for wheat following fallow. The green manure treatments for each legume species also are duplicated to allow for different N fertilizer rates on the subsequent wheat. In one set of the green manure treatments, the wheat crop receives the recommended N rate; in the second set, the wheat receives more than the recommended rate of N. This greater rate is determined by using the N recommendation for continuous wheat. All the other wheat treatments receive the recommended N rates based on soil test results for a 40-bu/a wheat crop.

The actual rates of N applied this year are given in Table 3. In addition, monoammonium phosphate (MAP; 11-52-0) was applied as starter fertilizer to all crops. The rates were 20 lb/a with wheat and the legume crops and 25 lb/a with safflower. Field pea was planted on May 9, grain and forage lentil on May 10, wheat on May 11, and safflower on May 15. Poor stand establishment necessitated replanting of grain lentil, which was done on June 1. Field pea and grain lentil were green manured on July 3 and forage lentil was green manured on July 11. Forage lentil was swathed on July 12. Field pea and grain lentil were harvested on July 26, wheat on August 10, and safflower on September 7. Above ground biomass was determined for all crops at the time of green manuring and at harvest. Protein content was determined for wheat and field pea. Oil content was determined for safflower.

The biomass of forage lentil, grain lentil, and field pea at both green manuring and harvest this year was less than the 11-yr average (Table 1). The grain yields of grain lentil, field pea, and safflower also were all less than the 11-year average (Table 2). Safflower oil content this year was near the 11-yr average.

Table 1: Biomass legume crops at green manure and harvest.

	2006		1996-2006 Average	
Crop	Green manure	Harvest	Green manure	Harvest
	---------- lb/a dry matter ----------			
Forage Lentil	1651	1416	2434	3103
Grain Lentil	794	1128	1897	2743
Field Pea	2146	2600	2321	3776

Table 2: Grain performance of non-wheat crops.

	2006			1996-2006 Average		
Crop	Yield	Protein	Oil	Yield	Protein	Oil
	lb/a	%	%	lb/a	%	%
Grain Lentil	223	*N.A.*	--	1028	*N.A.*	--
Field Pea	926	25.0	--	1471	*N.A.*	--
Safflower	323	--	32.2	656	--	31.9

Wheat yields from all treatments this year were less than the corresponding long-term (1994-2004) averages (Table 3). This year applying insufficient N to continuous wheat did not significantly decrease yields, however, insufficient N has significantly decrease yields in six of nine previous years (1996-2004). Applying excessive N to wheat following green manure did not significantly increase wheat yield this year or any of the previous twenty-seven cases (i.e., three legume species × nine years). The finding that insufficient N usually reduced yield and that excess N seldom increased yield supports the validity of fertilizer recommendations based on soil testing.

Table 3: HRSW performance in the WREC Annual Legume Study

	N	2006			1996-2006† Avg.	
Previous Crop	Treatment	N	Yield	Protein	Yield	Protein
		lb/a	bu/a	%	bu/a	%
Wheat	Recommended	30	20.2	18.3	31.5	15.6
Wheat	Insufficient	0	19.6	12.7	23.7	12.4
Fallow	Recommended	0	28.4	17.1	37.7	16.0
Safflower	Recommended	60	20.4	18.9	29.4	16.4
Forage Lentil	Recommended	60	20.7	18.5	29.8	16.4
Green Manure [F.L.]	Recommended	0	23.7	17.9	37.0	16.1
Green Manure [F.L.]	Excessive	30	23.5	18.6	37.2	16.8
Grain Lentil	Recommended	30	21.4	17.8	29.5	16.5
Green Manure [G.L.]	Recommended	0	23.0	18.0	37.7	15.6
Green Manure [G.L.]	Excessive	30	22.9	19.0	37.5	16.8
Field Pea	Recommended	30	19.4	17.3	32.6	15.9
Green Manure [F.P.]	Recommended	0	24.3	17.7	36.6	16.0
Green Manure [F.P.]	Excessive	30	27.7	18.7	37.7	16.7
Average			22.7	17.7	33.7	15.9
LSD (5%)			3.6	1.0		

† The wheat crop in 2005 was lost to wheat streak mosaic.

The overall average wheat protein content was greater this year than the long-term average (Table 3). This was true for each of the individual treatments as well. Applying insufficient N to continuous wheat significantly reduced wheat grain protein this year and in eight of nine previous years (1996-2004). Applying excessive N to wheat following green manure significantly increased wheat grain protein in two cases this year (the grain lentil and field pea green manure treatments), and in fifteen of the previous twenty-seven cases (i.e., three legume species × nine years). This suggests that although protein content is maximized at a greater N rate than is yield, applying more N than recommended inconsistently increases protein content and may not be economically beneficial.

This year (2006) is expected to be the final year of this study. A multiyear analysis of the data is being performed; the results will be published upon completion. Suggestions for follow-up studies are welcomed.

[1] **NDSU Williston Research Extension Center, Williston, ND**

CHANGES IN SOIL WATER CONTENT UNDER FALLOW, WHEAT, AND SAFFLOWER

JAMES A. STARICKA[1]

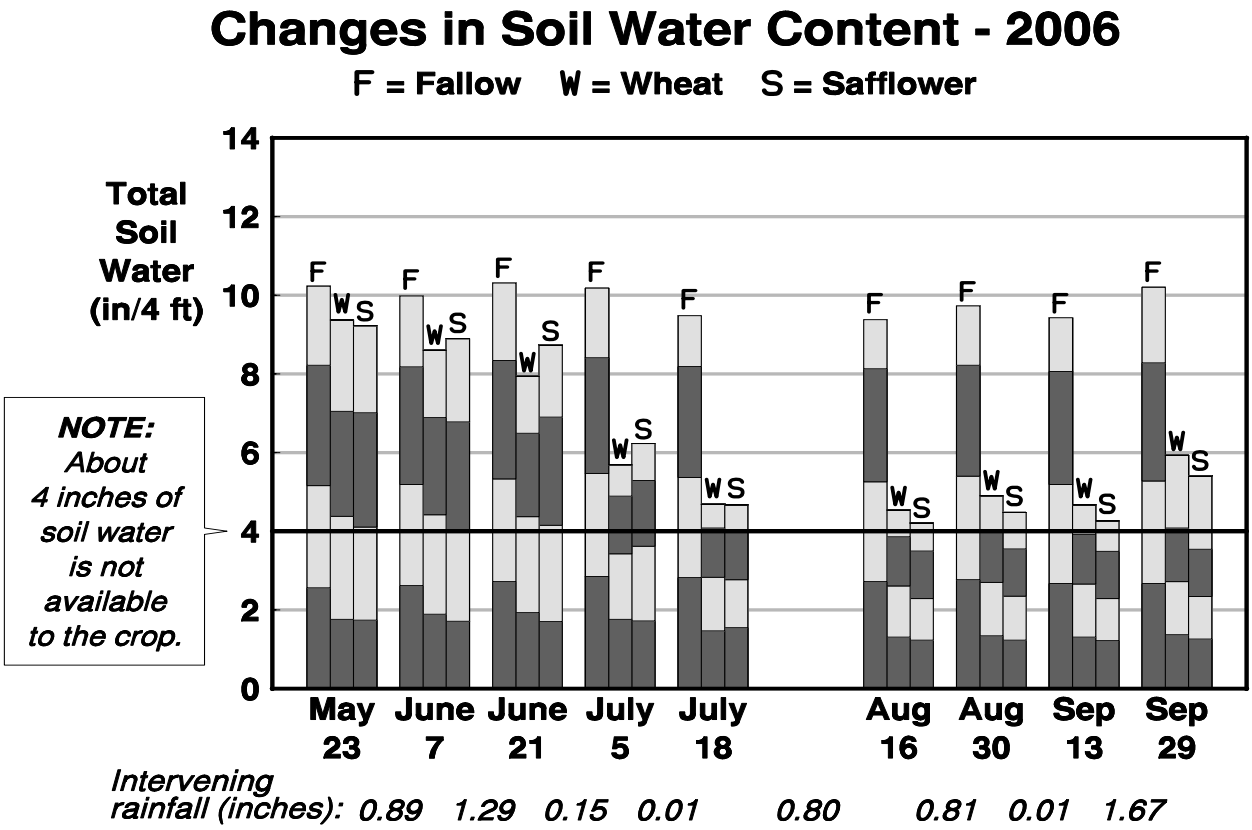
The accompanying graph shows the soil water content for summer fallow, spring wheat, and safflower at approximately 2-week intervals during the 2006 growing season. For each cropping treatment, measurements were taken from three plots and averaged. All the cropping treatments being compared have been grown alternately with spring wheat since 1995. On the graph, each bar is divided into four sections that represent the water content in each of the 1-ft depth increments down to 4 feet. Alternating sections have been shaded to improve the clarity of the graph. The amounts of rain received between measurement dates are listed below the date labels.

At the start of the growing season, there was little difference in soil water content among the three treatments. The amount of water in the top 4 ft of soil was 10.2 inches in the plots to be fallowed, 9.4 inches in the plots to be planted to wheat, and 9.2 inches in the plots to be planted to safflower. In all three treatments, the 1 to 2-ft depth was the wettest.

From the first measurement date (May 23) through mid-August, the amount of soil water in the wheat and safflower treatments continually decreased while the amount of soil water in the fallow treatment remained relatively steady. From mid-August through the last measurement date (September 29), the soil water remained relatively steady in all three treatments, fluctuating slightly in response to rain.

From the first to the last measurement date, the fallow treatment plots had no overall change in soil water content, whereas the wheat plots had lost 3.5 inches of water, and the safflower plots had lost 3.8 inches of water. During the same time, 5.6 inches of rain were received at the site. Thus fallow had a net water loss of 5.6 inches, while wheat had a net water use of 9.1 inches and safflower had a net water use of 9.4 inches.

While on the last measurement date soil in the fallow plots did have an additional 4.3 inches of water for carryover compared to wheat, this may not be of much benefit. During the five previous falls (2001-2005), fallow has been wetter than wheat by a very similar amount: 4.4 inches (5-yr average). Yet by the following spring, the difference had decreased to only 1.3 inches (5-yr average). These data illustrate the inefficiency of fallow at providing additional water for a subsequent crop.



[1] NDSU Williston Research Extension Center, Williston, ND

PREVIOUS CROPPING EFFECTS ON SPRING SOIL WATER

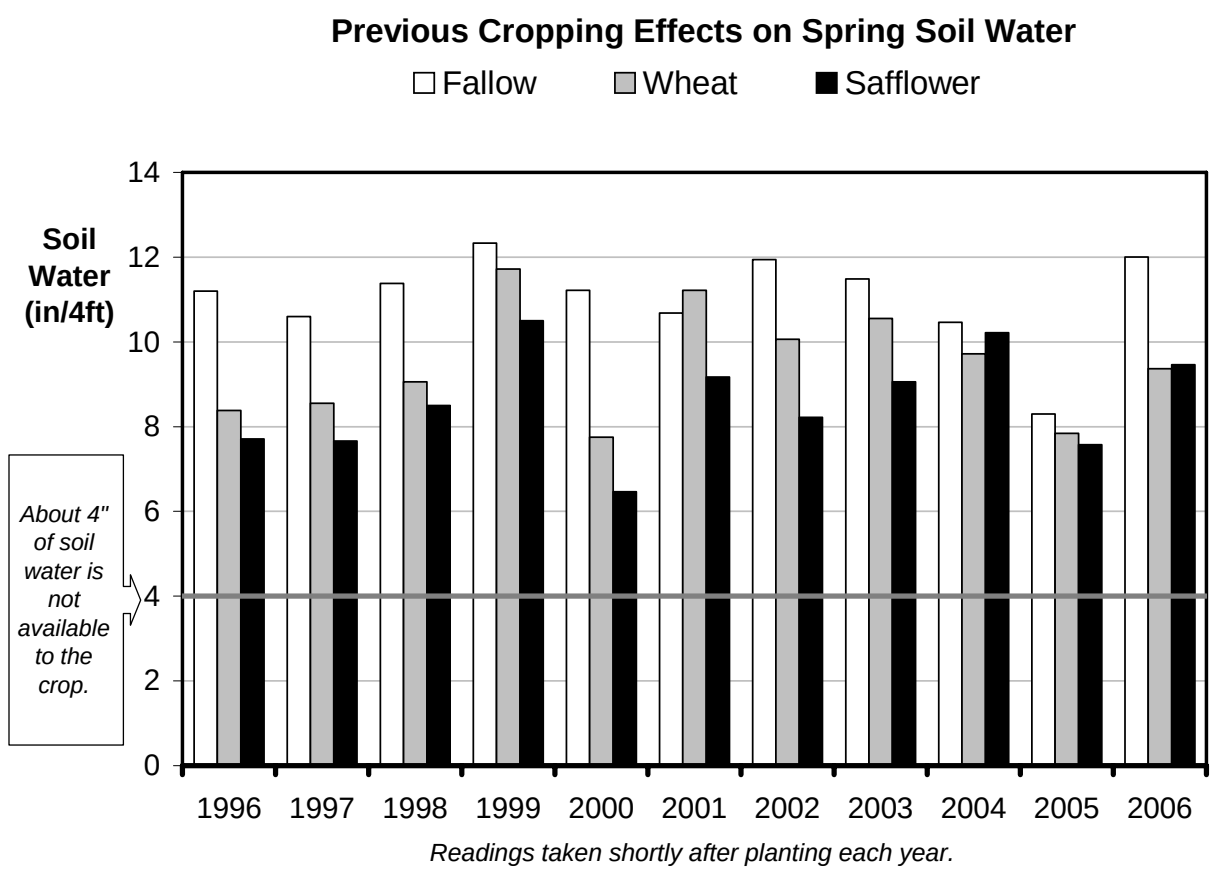
JAMES A. STARICKA[1]

Previous crop has a large effect on spring soil water content. The graph below illustrates data collected during the past eleven years (1996-2006) as part of a crop rotation study. Each spring, soil water is measured in plots of three different treatments: plots that were fallowed the previous year, plots where spring wheat was grown the previous year, and plots where safflower was grown the previous year. Each reported value (i.e., each bar on the graph) is the average of three field plots.

This spring (2006), the soil was much wetter after fallow than it was after wheat or after safflower. The soil has been the wettest after fallow for ten of the past eleven years. This spring, there was little difference in soil wetness between the plots following wheat and those following safflower. The difference between the wheat and safflower treatments has been smaller in recent years than it had been in the earlier years of this study. In terms of soil water content, this was one of the wetter springs for the fallow and safflower treatments, but was a near average spring for the wheat treatment.

For the eleven-year period, the amount of water in the top four feet of soil has averaged 11.1 inches after fallow, 9.5 inches after wheat, and 8.6 inches after safflower. About 4 inches of this water is held too tightly by the soil to be available to the crop.

During the eleven-year period, the year-to-year variability in soil water content has been less after fallow than it has been after wheat or after safflower. This explains, in part, why yields are generally more consistent following fallow compared to following wheat or safflower. Producers need to determine if the higher yield potential resulting from increased soil water after fallow compensates for the loss of production from fallowed land.



[1] NDSU Williston Research Extension Center, Williston, ND

HORTICULTURE PROGRAM

L. BRADBURY[1]

HORTICULTURE in North Dakota presents many opportunities as well as many challenges. Fruits, vegetables, flowers and trees for home use are often the main focus, but these products can also become a wonderfully fulfilling home-based or commercial enterprise as well. There are several examples of successful business ventures in North Dakota that are using horticultural crops for supplemental if not main income sources. The Williston Research Extension Center has extensive collections of trees, shrubs, and perennial flowers and is cooperating with several researchers at NDSU on commercially viable horticultural crops.

One of our newest projects involves growing small fruits for the fledgling winemaking industry. Grapes are the main crop in winemaking, and the WREC, in cooperation with Dr. Harlene Hatterman-Valenti and Lisa Duppong of NDSU, has a collection of 16 different varieties of grapes, some useful for wine making and some for juices, jellies and fresh table grapes. These were planted in the spring of 2004 and all varieties did survive the winter of '04-'05, although several varieties were injured by the cold weather in the spring of 2005. All varieties survived the winter of '05-'06 as well and with a milder spring, all but LaCrescent were able to produce at least a few grapes. Despite the fact that we covered all the vines with netting, birds still managed to eat all the late maturing varieties. We did determine that the vines will need supplemental water to survive a long dry period.

VARIETY	USE	VARIETY	USE
Valiant	Red, fresh, juice, jelly	LaCrescent	White dessert or cocktail wine
Bluebell	Bluish, table, juice, jelly	Sabrevois	Red wine
King of the North	Red, juice, Rustic table wine	Hasansky Sladky	Nice fruity light red wine
Somerset Seedless	Orange table	MN 1131	White wine
St. Croix	Red Wine	MN 1200	Red wine
Frontenac	Red Wine	ES 5-4-71	White wine, good table grape
Frontenac Gris	Nearly white, dessert wine	ES 12-18-06	Red, dense, dark wine
Prairie Star	White table wine	ES 1553	variety used as a rootstock

Other fruits that are used for winemaking are apples, plums, strawberries, raspberries, juneberries or saskatoons and rhubarb. We are growing several varieties of each, looking at survival, watering techniques, disease, insect problems and yields. This project is funded by grants from Williston Basin RC&D and Wal-Mart. The apples and plums and one variety of juneberry are grown as dryland crops with no supplemental irrigation. The strawberries, grapes, raspberries, rhubarb and two varieties of juneberry are grown under drip irrigation using well water.

The named varieties of juneberries were donated by the Juneberry Patch in Harvey, ND. We are working with winemaker George Nickoloff of Culbertson, MT to help with quality and management issues for winemaking.

The plum and apple harvest have been poor in the last few years due to the late spring snowstorms that have hit right during blossom time. This year, the hot, dry late summer took its toll on the fruit crop. We are considering adding irrigation in the orchard as well. The juneberries in the windbreak and hybrids produced a crop which was promptly devoured by robins as soon as they showed any pink. Next year we will cover them better.

CROP	VARIETY	YIELD lb/ac 2005	YIELD lb/ac 2006
Raspberries	Boyne Inside High Tunnel		3492
	Outside High Tunnel	0	2100
	Latham Inside tunnel		310
	Outside tunnel	0	150
	Heritage Inside tunnel		932
	Outside tunnel	1252	459
Strawberries	Quinault	11144	5295
	Ozark Beauty	4055	644
	Delmarvel Delicious	2007	4509
	Honeoye	11012	4501
	Winona Giant	757	1906
	Surecrop	952	3420
	Earliglow	5479	4722
Juneberry	Smokey	Birds ate all	
	Martin	Birds ate all	
Rhubarb	Crimson	2151	9659
	Victoria	planted 5/05	

Late snowstorms and bird predation led to our newest project, an investigation into high tunnel agriculture. High tunnels are unheated greenhouse type structures that use roll up sides for ventilation. They are used to help add growing degree days for tender crops during early spring and late fall, thus allowing for earlier harvests, extending the growing season, and possibly allowing for less hardy crop production. Birds can be excluded from crops by closing the structure or screening it. Crop management for insect and disease problems needs to be investigated further. An infestation of spider mites was controlled using a spray application of plain water in

July. It was noted in the spring that the plants inside the tunnel were taller (Boyne averaged 13 inches taller and Latham averaged 3.5 inches taller) and more numerous (about 50% more canes per plant) than those outside. Yields inside the tunnel were about double compared to outside the tunnel. Maturity of the crop was actually a day or two later inside the tunnel, but the quality of the fruit was much better and the fruits were bigger. The high tunnel and the small fruit projects are funded by grants from our local RC&D.

At least one question that was raised by potential growers has been answered. Small fruits must have supplemental water in order to survive year one. Strawberries need supplemental water provided on a regular and timely basis to produce quality fruit. If the roots dry out, so will the fruit. The potential problems of using well water for irrigation on a long term basis will be investigated in the coming years.

Small fruits need wind protection to produce well. The WREC has been cooperating with the local NRCS for many years with a planting of experimental varieties of windbreak trees. Our latest windbreak was planted in 1997 and includes a study on tillage practices for windbreak establishment. The section with the plastic fabric mulch grew the best in the first few years, but now all treatments seem to be doing about the same. Another question we are trying to answer is whether planting grass between the tree rows is a good idea and if so, is warm season grass better than cool season grass? That study is being conducted by Dr. Joe Zeleznik of NDSU and Craig Stange of the ND NRCS with help from WREC's soil scientist, Dr. James Staricka. This study is in its fourth year.

Dr. Zeleznik is also studying shrubs for use as woody florals and we are helping to establish a demonstration planting of dogwoods and willows using four different types of weed control fabrics. That planting was done in April 2004 and we expect our first harvest in 2007.

We are cooperating with Dr. Ron Smith, NDSU Extension Horticulturist, and Barb Laschkewitsch on field trials of All America Selections of annual flowers, a tomato variety trial and a planting of the World Collection of Daylilies. Tomato harvest began on July 31, 2006 and ended on September 14th.

The landscaping in the front of the Ernie French Center is an example of Xeric planting, with Miscanthus sinensis, Calamagrostis acutiflora "Karl Foerster" Blue fescue, Big Bluestem "Goldstrike", Russian Sage, Helianthus, Gaillardia, Salvia, Snow in Summer, Missouri Primrose, Tree Lilacs, Camassia, and Sedums. This planting is only watered by the runoff from the roof of the center. Another flower bed bordering the parking lot holds a collection of various types of lilies, iris and hostas.

Tomato Variety	# Plants	# Fruits	Lbs
Jolly	6	758	52
Sugary	6	2020	24
Juliet	6	1586	57
Persimmon	12	107	68
Big Beef	12	277	109
Bush Celebrity	12	112	26
Health Kick	12	303	23
Better Boy	12	156	62
Totals		**5319**	**421**

We have an ornamental shrub trial which was planted between 1970 and 1990. These mature shrubs are available to tour on a self-guided basis so that homeowners can see what these varieties might do in a home landscape.

For weed control, we do some tillage with both hand hoes and tractor or self propelled tillers. We take advantage of any grass clippings we can get for mulch and also use plastic mulches wherever they fit. We used some Preen in the All America Selections on any varieties listed on the label.

Robins have been our biggest pest to date on the fruit crops. Covering strawberries and juneberries has been the only effective method of protection for these crops. The juneberries had to be covered to the point that the robins could not get in under the covers where the strawberries only needed to be covered enough that the robins could not see them. We erected a plastic mesh deer fence around the grape planting which has been effective so far in keeping deer out. Raccoons went over it and rabbits ate a hole in it during the summer of 2006. We have not had high snow banks yet so do not know if the deer and rabbits will be able to walk over the fence in a snowy winter. As of the fall of 2006, there have been no deer inside the fenced area.

The gardens are open to the public for tours from Monday through Friday from 8 to 5 Central Time. Any one desiring a guided tour should call ahead to arrange a time. Self guided tour packets can be obtained by stopping at the office located in the Ernie French Center.

[1] **NDSU Williston Research Extension Center, Williston, ND**

NEWS ON AGRICULTURE DIVERSIFICATION AND PROCESSING

CHET HILL[1]

It has been another exciting year in agriculture in the MonDak region from agricultural businesses to two new processing facilities constructed primarily because of a larger diversification of crops being planted in this region. Another key component of this position is working with the Research Extension Centers in both Williston and Sidney, MT to relay research results to producers and determine the feasibility of different crops and their compatibility in a crop rotation. Here is a summary of some of the projects I have assisted with this past year.

PULSE CROPS – Dry peas and lentils have again increased in acres this past year. In North Dakota dry pea acres jumped from 540,892 in 2005 to over 601,048 acres. At the same time, lentil acres increased from 147,480 acres to 156,267. Montana saw the same response with dry pea acres jumping from 153,799 in 2005 to over 237,107 acres this year. Lentils saw a small decrease from 146,200 to 139,000 acres during that same time period. Marketing options continue to expand since our local processors have more commodities to sell. The 2007 Farm Bill will dictate the direction of the pulse industry. Producers are seeing more feeding opportunities of dry peas to beef and dairy cattle. Many educational talks this winter will emphasize the ease and advantage of feeding dry peas.

CORN - Corn grain acres continue to climb. A large percentage of the current corn acres are needed for the existing livestock feedlot operations. The local dairies continue to expand the need for corn silage and grain. With the announcement of Yellowstone Ethanol in the area, corn production will have another avenue for marketing. Varieties are being developed that are more suitable to our region based on maturity, Growing Degree Days and weather and storage concerns.

MALT BARLEY - Barley acreage and production has stabilized over the past couple years. We continue to work with Busch Agricultural Resources on improving variety and production practices to increase yield and quality in the MonDak region. Busch Ag is committed to building the irrigation infrastructure in the region in order to receive a more consistent supply of malt barley. The western malt barley project is proceeding well. Within the next few years new varieties will be developed for this region under dryland and irrigation conditions which will improve production and quality traits. Check with local elevators and other malt barley companies to see which varieties they are marketing. Cargill Malt out of Spiritwood, ND also has announced contracts for 2-row malt barley in the region.

SMALL FRUIT PRODUCTION - Small fruit production has seen a unique interest in the region. With wineries in Culbertson, MT, and Burlington, ND, the need for small fruit has increased dramatically. This past year North Dakota formed its own grape organization due to the sizeable interest in grapes and wine production. The Williston Research Extension Center has received grant monies to research variety response of fruits as well as different planting depths to determine what depth is most effective and realistic to plant the grapes and protect the crown. Two years ago, 16 grape varieties were planted along with rhubarb, strawberries, and other fruits. We harvested a small amount of fruit off the plants this year.

CROPS – Producers having irrigation are trying crops such as sunflowers, dry peas, flax, corn, canola, soybeans, in addition to traditional alfalfa and barley. Elevators and processors recognize this diversification and continue to gear up to handle more of these crops. We have two companies in the region, West Dakota Feed and Seed and Specialty Exports, looking for non-GMO soybeans. Irrigated pastures are an idea some growers are thinking about because of high cattle prices and the hay yields coming off the irrigation. Dryland producers are looking at more broadleaf crops in their rotations (ie. flax, peas, mustard, safflower, lentils, and corn). Producers need to seek out markets for these different commodities. Over the last 15 years, fallow acres have decrease by about 60 percent in the region indicating that continuous cropping practices are being utilized by growers.

WORKSHOPS - Many workshops were conducted that promote production agriculture as well as value added processing of commodities. This past year's workshops include: National Hard Spring Wheat Show, MonDak Pulse Day and summer field tour, an Irrigation workshop to improve yield and quality potential, several different Ag Days in the region discussing crop and livestock opportunities, Gateway to Opportunity in Dickinson promoting entrepreneurship, and the MonDak Ag Open promoting the region's resources to bring in other agricultural businesses, and summer Research Center field days. We will have many of those workshops again this year so watch for further information.

DAIRY – Because irrigation has increased opportunities to produce high quality forage and grain for dairy production, the MonDak region has seen renewed interest from the dairy industry. Bostana Dairy near Crane, MT is doing very well. Greenway Dairy is growing and getting established near Savage, MT. These projects boost the need for production of

high quality alfalfa and other feeds which are vital to maximize milk production for dairies creating a competitive market price for the alfalfa producers in the region. And as more dairies locate in the region, others will follow as favorable opportunities exist to work together on transportation costs, feeds, milk prices and other factors.

ETHANOL – Ethanol has become a topic of interest as we are looking to utilize more natural resources to curb our dependence on petroleum. Yellowstone Ethanol announced a 57 million gallon facility to be located southwest of Trenton, ND. To produce 57 million gallons of ethanol, over 18 million bushels of corn will be utilized. The distillers grain that is generated from making ethanol will be a great benefit in the backgrounding of beef calves and to the area dairy industry as a supplemental feed source. Other grains being considered to produce ethanol are barley, wheat, triticale, and peas.

MEAT PROCESSORS – The meat processors in western ND are developing an alliance to work together to improve marketing capabilities, make distribution more efficient, and utilize each others resources. The alliance is named Prairie Partners Premium Meats. The idea is to take one to three of each processor's top products and market them under one name and logo. This coming year you will start seeing their product.

[1] **NDSU Williston Research Extension Center**
Williston, ND

WILLISTON RESEARCH EXTENSION CENTER FOUNDATION SEED INCREASE

Seed availability and prices can be obtained by calling 701-774-4315 or by email at expwill@ndsu.edu.

HRSW	DURUM	BARLEY	SAFFLOWER	PEA/LENTIL	HRWW
Dapps	Alkabo	Conlon	Finch	Crimson	Jerry
Ernest	Ben	Rawson	Montola 2000	Mozart	
Glenn	Dilse	Stellar-ND	Montola 2003	Stirling	
Howard	Divide	Tradition		Pennell	
Reeder	Grenora				
Steele-ND	Maier				
	Mountrail				

EASTERN AGRICULTURAL RESEARCH CENTER FOUNDATION SEED INCREASE

Seed availability and prices can be obtained by calling 406-433-2208 or by email at jjensen@sidney.ars.usda.gov.

HRSW	BARLEY	SAFFLOWER	HRWW
Ernest	Hays	Montola 2001	Yellowstone
McNeal	Valier	Montola 2004	
Outlook		Morlin	
Choteau		Nutrasaff	
Vida			

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Lorna Bradbury	Horticulturalist
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Jim Jenks	Ag Research Tech
Marilyn Krogen	Ag Research Tech
Sanford Qvale	Seed Production Spec
Neil Riveland	Asst Director/Agronomist
James Staricka	Soil Scientist

UPCOMING EVENTS
YEAR 2007

JANUARY 3TH	IRRIGATION WORKSHOP – SIDNEY
JANUARY 4TH	GATEWAY TO OPPORTUNITY - GLENDIVE
JANUARY 9TH	NEW TRENDS IN AGRICULTURE – GLASGOW
JANUARY 9TH – 12TH	CROPPING DECISIONS 2007 -- COUNTY AGENT MEETINGS CROSBY-WATFORD CITY-BOWBELLS-WILLISTON STANLEY-RUGBY-DRAKE-WESTHOPE-MOHALL-MINOT
JANUARY 12TH -13TH	MONDAK AG DAYS – SIDNEY
JANUARY 17TH	MARKETPLACE FOR ENTREPRENEURS – FARGODOME
JANUARY 18TH	FEEDLOT SCHOOL – WILLISTON ERNIE FRENCH CENTER
JANUARY 22ND – 23RD	NORTHERN PULSE GROWERS ASSOC. MEETING – MINOT
FEBRUARY 5TH – 7TH	NATIONAL HARD SPRING WHEAT SHOW WILLISTON AIRPORT INTERNATIONAL INN
FEBRUARY 21ST	MONDAK PULSE DAY WILLISTON AIRPORT INTERNATIONAL INN
MARCH 7TH	SUGARBEET GROWER PRODUCTION MEETINGS – SIDNEY
MARCH 13TH – 14TH	KUMV FARM & RANCH SHOWCASE – RAYMOND FAMILY COMMUNITY CENTER
JULY 12TH	WILLISTON RESEARCH EXTENSION CENTER CENTENNIAL FIELD DAY 1907 – 2007
JULY 18TH	EASTERN AG RESEARCH CENTER FIELD DAY SIDNEY
AUGUST 7TH – 9TH	MONDAK REGIONAL AG OPEN – WILLISTON