

**NDSU Williston Research Extension Center**

**MSU Eastern Agricultural Research Center**

*Serving the Mon-Dak Region*



## **2010 Agricultural Research Update**

**NDSU**  
North Dakota State University  
**ND Agricultural  
Experiment Station**

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**M**  
**MONTANA  
STATE UNIVERSITY**  
MONTANA AGRICULTURAL  
EXPERIMENT STATION

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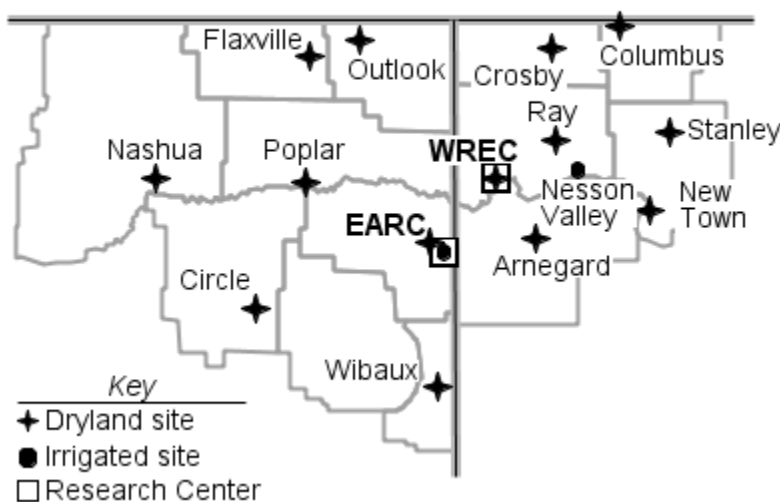
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Nesson Valley – Bill Sheldon – Potatoes  
New Town – Jerry Pennington – Agent Jim Hennessy  
Ray – Keith Daniel – Agent Warren Froelich  
Stanley – Wayne Johnson – Agent Jim Hennessy

## Location of Test Sites



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. ***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.

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## Hard Spring Wheat Variety Descriptions

Variety	Origin <sup>1</sup>	Height	Maturity	Resistance To <sup>2</sup>						Quality Factors	
				Straw Strength	Stem Rust	Leaf Rust	Foliar Disease	Head Scab	Sawfly	Test Weight	Grain Protein
AC Lillian	AC	tall	medium	MS	R	R	S	NA	R	m low	medium
Alsen	ND	medium	m early	MR	R	MR-MS	S	MR	S	medium	m high
AP 604 CL	AgriPro	medium	m early	MS	R	MS	MS	NA	S	high	medium
Barlow	ND	medium	m early	M	R	R	MR	M	S	m high	m high
Blade	WB/Sabre	medium	medium	MR	R	MR	MS	M	NA	m high	m high
Breaker	WB	medium	medium	MR	R	MR	MS	M	S	m high	m high
Brennan	AgriPro	short	m early	MR	R	MR	M	MS	S	medium	medium
Brick	SD	medium	m early	M	R	R	NA	MR	S	m high	m low
Briggs	SD	m tall	m early	MS	R/MR	R	MS	S	S	medium	medium
Brogan	WestBred	m short	medium	MR	MR	MR	MS	S	S	medium	medium
Choteau	MT	m short	m late	MS	R	MR	MR	S	R	medium	medium
Corbin	WB	medium	medium	M	NA	NA	NA	NA	MR	medium	medium
Cromwell	Thunder Seed	medium	m late	M	NA	MR	MR	S	NA	m high	m high
Edge	WB/Sabre	medium	m early	MR	NA	NA	NA	MS	S	low	m high
Faller	NDSU	m.tall	medium	M	R	R	MR	M	S	medium	low
Freyr	AgriPro	medium	medium	M	R	MR/MS	MS	MR	S	medium	m low
Glenn	ND	m.tall	m early	MR	R	R	M	MR	S	high	m high
Granite	WB	short	m late	R	R/MR	MR	S	MS	S	high	high
Hank	WB	short	early	M	R	MR	MS	NA	S	low	medium
Howard	ND	m.tall	medium	MS	R	R	M	M	S	m low	m low
Jedd	WB	m short	early	R	NA	NA	NA	NA	S	high	low
Jenna	AgriPro	m.short	m late	MR	R	MR	M	M	S	m low	m low
Kelby	AgriPro	short	medium	MR	MR	R	M	M	S	m high	medium
Knudson	AgriPro	m short	medium	M	MR	MR	MR	M	S	medium	m low
Kuntz	AgriPro	m.short	medium	M	R	MR	MS	M	S	m low	m low
McNeal	MT	medium	medium	M	MS	MS	M	VS	S	m low	medium
Mott	ND	tall	m late	M	MR	MS	MS	MS	R	medium	medium
ND901CL PLUS	ND	tall	medium	M	R/MR	MR/R	NA	M	S	m high	high
O'Neal	WB	medium	m late	R	NA	MS	MR	S	S	medium	m low
Outlook	MT	medium	m late	MR	MS	MR	MR	S	S	m low	m low
RB07	MN	m.short	m early	M	R	R	MS	MR	S	m high	medium
Reeder	ND	medium	medium	MR	R	MS	S	S	S	medium	medium
Rush	WB	m short	m early	MR	NA	NA	NA	NA	S	high	medium
Samson	WB	short	medium	R	R	MR-MS	MR-MS	S	NA	low	low
Select	SD	medium	m early	M	R/MR	R/MR	R/MR	MR	NA	medium	medium
Steele-ND	ND	medium	medium	MS	R	R	MS	M	S	medium	medium
SY605CL	AgriPro	medium	m early	MS	R/MR	S	MS	S	NA	m low	high
Traverse	SD	tall	m early	M	R	MR	NA	M	S	medium	m low
Trooper	WB	m short	m early	R	MR	MR	S	S	S	medium	m low
Vantage	WB	m.short	late	R	R	MR/MS	MS	MS	NA	high	high
Vida	MT	medium	medium	MR	MS	MS	S	S	MR	medium	medium
Volt	WB	medium	m late	R	NA	MR	MR	MS	S	high	low
WB Digger	WB	medium	medium	M	MR	MR/MS	NA	MS	NA	m low	low

<sup>1</sup> Refers to developer: AC = Agriculture Canada; WB = WestBred. CL refers to a Clearfield variety tolerant to Beyond herbicide family.

<sup>2</sup> R =resistant; MR =moderately resistant; M =intermediate; MS =moderately susceptible; S =susceptible; VS =very susceptible; NA = data not available.

## Hard White Spring Wheat Descriptions

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

<sup>1</sup> Refers to developer: CDC = Crop Development Center, University of Saskatchewan; AC = Agriculture Canada;

GM = General Mills, WB = WestBred, ID = University of Idaho

<sup>2</sup> 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.

**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 Spring Wheat  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Brennan	44.4	44.8	58.8	14.3	14.9
Reeder	44.5	44.1	59.0	13.9	15.4
Vida	44.0	43.7	55.9	14.7	15.4
Samson	40.2	42.6	55.3	15.3	15.4
Otis	43.3	42.5	58.2	13.2	14.6
Lolo	39.2	42.2	57.9	13.4	14.6
AC Vista	45.9	42.1	56.2	13.5	14.6
Kelby	43.5	41.9	59.5	13.8	15.0
Jenna	43.0	41.7	55.9	14.5	15.6
Sabin	44.3	41.7	58.5	14.2	15.6
RB07	42.7	41.7	59.1	14.1	15.5
Outlook	39.5	41.6	56.7	13.8	15.2
Kuntz	38.5	41.5	56.4	14.5	14.8
Corbin	40.0	41.4	56.0	14.7	15.1
Granger	38.0	41.4	58.4	13.5	15.0
Ulen	40.2	41.1	59.3	13.4	14.9
Barlow	42.8	41.0	59.3	14.1	15.2
Knudson	41.1	40.8	57.2	14.5	15.6
Agawam	41.4	40.8	59.3	13.6	14.4
Steele-ND	39.5	40.6	57.0	14.3	15.1
McNeal	39.5	40.6	56.4	14.5	15.6
Conan	40.4	40.5	58.3	14.9	15.3
Blade	37.5	40.1	59.5	15.1	16.0
Parshall	38.0	40.1	58.5	14.8	15.8
Howard	38.0	40.0	55.7	14.2	15.1
Tom	36.9	39.8	57.6	14.6	15.3
Freyr	40.7	39.8	58.4	14.2	15.2
Choteau	38.2	39.6	56.4	15.3	15.6
Alsen	38.7	39.6	58.8	14.4	15.7
Select	36.5	39.5	57.1	15.1	15.3
Briggs	36.8	39.5	58.4	14.6	15.4
Brick	35.1	39.4	58.8	14.6	15.3
AC Lillian	42.1	39.4	57.6	15.1	16.2
Glenn	37.9	39.4	61.7	14.4	15.6
Breaker	38.6	39.1	59.3	15.6	16.2
Vantage	36.2	39.0	60.1	17.8	17.3
Amidon	34.5	39.0	58.3	13.6	15.2
Cromwell	37.6	38.5	57.0	16.1	16.6
AP604CL	34.7	38.4	56.6	15.3	15.8
Granite	34.0	37.9	61.5	15.3	16.3
Mott	34.8	37.6	58.1	15.5	16.3
Dapps	35.7	36.9	57.1	15.1	16.3
Faller	36.1	36.6	54.7	13.9	15.3
Albany	37.5	--	56.7	13.3	--
Alpine	45.0	--	58.6	13.4	--
AP605CL	35.9	--	57.1	15.9	--
Brogan	39.7	--	58.6	14.7	--
Carberry	39.4	--	56.1	15.7	--
Choteau/Steele	41.7	--	56.3	14.4	--
Edge	41.0	--	55.3	15.9	--
Hat Trick	36.0	--	56.4	14.9	--
Mott/Steele-ND	37.4	--	55.5	15.5	--
Muchmore	41.5	--	55.3	15.0	--
ND901CL Plus	37.2	--	59.4	16.1	--
O'Neal	47.2	--	59.0	13.8	--
WB-Digger	45.0	--	56.3	13.8	--
LSD 5%	3.6	--	1.9	1.5	--

Planted: April 23

Harvested: August 4

Previous Crop: Soybean cover crop

**Dryland Fallow Spring Wheat  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	54.4	45.6	60.0	12.3	14.8
O'Neal	47.3	44.4	60.5	9.9	12.9
Reeder	50.5	44.1	61.5	12.3	14.5
Hank	41.9	42.0	59.5	10.7	13.0
Jedd	44.4	41.8	61.0	10.7	13.0
Kelby	39.3	41.7	61.0	13.4	14.7
Faller	44.4	41.4	60.5	11.7	13.5
Volt	44.8	41.4	61.5	11.0	13.7
Outlook	45.0	41.0	60.5	11.7	13.8
Briggs	50.8	41.0	61.0	11.2	14.0
Kuntz	35.6	40.6	60.0	12.6	13.8
McNeal	45.6	40.5	60.0	10.7	13.3
Freyr	40.6	40.5	61.5	12.8	14.1
Corbin	49.9	40.3	60.0	11.3	14.3
AP604CL	45.8	40.0	61.0	12.2	14.5
Granger	40.6	38.8	60.0	11.4	13.6
Choteau	46.1	38.7	61.0	11.9	14.3
Fortuna	38.4	36.7	61.0	11.7	14.2
Conan	33.5	35.9	62.0	11.7	13.8
Thatcher	37.4	35.9	59.5	12.2	13.6
Jenna	57.4	--	60.0	12.5	--
Barlow	43.4	--	62.5	11.5	--
Brennan	42.8	--	61.0	13.4	--
Mott	36.9	--	61.0	11.8	--

LSD 5% 12.7

Planted: April 21

Harvested: August 11

**Dryland Fallow HRS Wheat  
Nashua, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Kelby	44.9	30.1	58.0	15.2	16.0
Reeder	38.6	28.4	56.5	15.8	16.5
McNeal	38.8	27.8	56.5	14.7	15.5
Volt	35.1	27.1	58.0	14.5	15.3
Vida	40.8	27.1	56.0	14.7	16.3
O'Neal	31.2	26.5	56.5	15.2	16.1
Briggs	38.0	26.3	57.0	15.8	16.2
Granger	31.5	25.5	55.5	15.0	15.6
Jedd	29.0	24.6	57.0	14.4	15.5
Corbin	38.6	24.2	56.0	15.0	16.0
Kuntz	32.9	23.6	55.5	14.5	15.1
Outlook	28.1	22.6	55.5	14.9	15.6
Faller	24.2	21.2	53.5	16.1	16.3
Choteau	28.4	20.8	55.5	14.9	15.7
AP604CL	44.4	--	58.0	14.8	--
Barlow	32.6	--	56.5	14.4	--
Mott	18.0	--	56.5	15.2	--

LSD 5% 9.4

Planted: April 24

Harvested: Aug. 26

**Dryland Fallow HRS Wheat  
Poplar, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	2 yr		2010	2 yr
AP604CL	52.1	55.4	59.5	15.4	13.7
Kelby	54.0	54.6	58.0	16.2	14.8
Vida	47.7	53.7	57.5	15.6	14.0
Reeder	47.5	53.4	58.0	15.4	13.9
Choteau	47.6	52.8	55.5	15.3	13.8
Kuntz	48.3	52.5	57.5	14.8	13.5
Faller	39.3	51.4	54.0	16.0	13.7
O'Neal	43.9	51.0	57.0	16.4	14.0
Barlow	43.3	50.6	58.0	16.0	14.2
Jedd	52.5	50.3	57.5	14.9	13.3
Mott	37.4	48.5	56.5	15.6	13.8
Briggs	43.2	48.2	56.5	16.3	14.5
Corbin	41.6	47.0	57.0	15.5	13.9
Granger	33.2	46.0	56.5	15.7	13.7
Outlook	37.9	45.5	55.0	15.0	13.3
Volt	34.6	45.2	58.5	16.2	13.8
McNeal	38.8	44.8	56.0	14.9	13.1

LSD 5% 8.9

Planted: April 24

Harvested: Oct. 8

**Dryland Spring Wheat  
Various Classes -- Williston, ND**

Cultivar	Class	Yield - bu/a -		TW lb/bu	Protein -- % --	
		2010	3 yr		2010	3 yr
Reeder	HRS	42.8	41.3	60.6	15.8	15.2
Otis	HWS	45.1	40.9	60.8	13.5	14.3
Waikea	HWS	44.1	40.6	54.9	14.8	14.5
Alpine	HWS	43.4	40.5	59.4	15.1	14.8
Lochsa	HWS	43.5	40.3	54.2	15.0	14.5
Lolo	HWS	41.3	40.3	58.6	14.9	14.9
AC Vista	HWS	41.6	39.1	58.3	13.6	14.1
AC Karma	HWS	40.5	38.5	58.5	15.2	14.8
Agawam	HWS	44.7	38.3	60.8	14.5	14.2
Steele-ND	HRS	38.3	38.1	56.7	15.1	15.0
AC Snowstar	HWS	38.6	37.8	60.5	15.2	14.5
Glenn	HRS	39.3	37.5	61.6	16.0	15.6
AC Snowbird	HWS	39.9	37.4	59.1	15.6	15.2
ID0377S	HWS	39.8	37.2	57.2	15.4	14.9
Pennewawa	SWS	33.1	37.0	56.7	14.6	14.1
Diamond	HWS	38.1	36.5	60.7	14.6	15.0
Snow Crest	HWS	37.8	35.8	56.6	14.3	10.0
Golden 86	HWS	36.6	35.7	58.4	15.0	14.7
Kanata	HWS	35.5	35.5	60.0	15.9	15.6

LSD 5% --

3.2

--

1.4

0.8

--

**HWS**-Hard White Spring Wheat

**SWS**-Soft White Spring Wheat

**HRS**-Hard Red Spring Wheat

Planted: May 28

Harvested: August 6

Previous Crop: Soybean cover crop

**Dryland Fallow HRS Wheat  
Wibaux, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	2 yr		2010	2 yr
Volt	35.4	34.4	58.5	11.8	12.1
Vida	33.1	34.3	58.5	13.0	13.1
O'Neal	33.3	33.1	58.0	12.0	12.1
Reeder	30.8	32.4	58.5	12.5	12.8
Mott	31.1	30.6	58.0	12.0	12.2
Kuntz	32.4	30.3	59.0	12.7	12.8
Outlook	26.0	29.3	55.5	12.3	12.5
Jedd	28.4	28.5	59.0	12.3	12.3
Corbin	28.8	28.1	57.0	11.6	12.2
AP604CL	28.9	28.0	59.5	11.6	12.1
Faller	24.7	27.9	56.0	12.5	12.3
Choteau	27.4	27.6	57.5	12.4	12.8
Barlow	28.0	27.4	59.0	12.2	12.3
Granger	24.3	27.0	58.0	12.1	12.1
Kelby	28.2	26.6	57.5	11.8	13.3
McNeal	20.5	26.3	54.3	12.1	12.2
Briggs	23.0	22.4	57.0	12.0	12.4

LSD 5% 9.7

Planted: April 28

Harvested: Oct. 11

**Dryland Notill HRS Wheat  
Arnegard, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	50.5	51.9	58.0	12.0	13.9
Faller	47.0	47.9	58.7	12.6	13.9
Mott	45.7	47.7	60.6	12.5	14.0
Reeder	41.3	44.5	58.4	12.3	14.1
Howard	49.1	43.9	59.7	12.5	13.7
Steele-ND	45.8	43.8	60.3	13.1	14.2
AC Lillian	42.5	42.4	57.0	14.0	15.8
Choteau	46.0	41.8	59.0	13.0	14.3
ND901CL Plus	44.7	41.3	59.0	13.0	14.6
Glenn	41.6	40.9	62.6	13.4	14.4
Granger	37.9	39.4	59.6	12.6	14.2
Barlow	41.2	--	60.2	12.9	--
Brogan	42.4	--	58.5	11.6	--
Jenna	55.5	--	59.0	12.1	--
Kelby	32.1	--	59.7	13.7	--
RB07	47.3	--	60.1	12.2	--

LSD 5%

7.9

--

0.8

0.5

--

Planted: May 12

Harvested: Aug. 18

Previous Crop: HRS Wheat

Dryland Notill HRS Wheat  
Crosby, ND

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	65.3	55.7	60.8	13.9	12.9
Faller	59.5	51.7	59.5	13.6	12.9
Steele-ND	59.4	50.5	61.3	14.3	13.8
Reeder	53.0	49.9	61.1	14.0	13.6
Howard	49.8	46.1	60.9	13.9	13.2
ND901CL Plus	54.1	45.6	60.6	14.9	14.8
Granger	48.8	44.9	60.4	14.2	13.2
Mott	48.9	44.1	60.5	14.3	13.3
Glenn	50.6	43.8	63.4	15.1	14.1
Choteau	54.2	43.2	59.2	14.3	13.8
AC Lillian	42.4	38.5	58.3	15.4	13.6
Barlow	55.3	--	61.6	14.3	--
Brogan	63.7	--	61.2	14.7	--
Jenna	59.8	--	59.8	13.7	--
Kelby	43.4	--	60.6	14.8	--
RB07	59.6	--	60.0	14.7	--
LSD 5%	6.4	--	0.5	0.7	--
Planted: May 12			Harvested: Aug. 27		
Previous Crop: HRS Wheat					

Dryland Notill HRS Wheat  
Ray, ND

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	40.3	49.9	58.6	13.2	13.3
Reeder	40.2	48.9	58.1	13.2	13.4
Faller	34.8	44.2	58.0	12.4	12.7
Mott	27.2	43.1	59.0	11.8	13.6
AC Lillian	36.0	42.8	57.7	14.6	14.3
Choteau	30.5	41.9	59.6	12.8	13.4
Granger	25.8	40.7	58.6	11.8	12.7
Howard	30.0	40.3	59.7	13.0	13.6
Steele-ND	28.8	39.5	59.2	13.3	13.5
ND901CL Plus	28.4	39.4	59.3	14.4	14.8
Glenn	21.2	36.7	59.0	12.3	13.3
Barlow	28.9	--	58.8	13.8	--
Brogan	33.5	--	59.5	12.1	--
Jenna	37.6	--	59.8	12.9	--
Kelby	21.5	--	60.2	13.1	--
RB07	32.6	--	60.4	14.2	--
LSD 5%	4.7	--	1.4	1.4	--
Planted: May 11			Harvested: Aug. 19		
Previous Crop: Durum					

Dryland Notill HRS Wheat  
New Town, ND

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Reeder	76.5	58.1	58.6	13.6	14.1
Vida	75.6	56.9	59.0	12.7	13.7
Granger	75.8	55.8	60.6	12.5	13.8
Steele-ND	73.5	55.0	60.9	13.6	14.4
Faller	73.1	52.6	60.0	12.6	14.0
Glenn	65.8	52.6	62.4	13.7	14.4
Howard	64.1	51.9	60.1	13.2	14.2
ND901CL Plus	63.5	48.7	60.8	13.9	15.3
Choteau	66.0	48.3	59.0	13.5	14.2
Mott	59.9	48.1	59.2	13.4	14.6
AC Lillian	60.8	46.7	59.0	13.8	14.5
Barlow	72.4	--	59.9	13.8	--
Brogan	78.0	--	60.8	13.1	--
Jenna	67.7	--	60.2	13.4	--
Kelby	62.8	--	61.2	14.0	--
RB07	75.7	--	61.6	13.2	--
LSD 5%	11.0	--	1.0	0.6	--
Planted: May 10			Harvested: Aug. 13		
Previous Crop: Durum					

Dryland Notill HRS Wheat  
Stanley, ND

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	63.2	58.2	60.0	13.6	13.4
Steele-ND	65.8	58.0	61.9	14.8	14.6
Choteau	64.1	57.5	60.5	15.0	14.5
Howard	58.4	56.9	61.5	14.1	13.9
Mott	57.6	55.6	61.5	14.5	14.0
Reeder	57.5	55.6	61.1	14.2	14.4
Faller	61.4	55.0	60.4	14.2	14.3
Glenn	60.1	55.0	64.4	15.0	14.6
ND901CL Plus	58.7	52.4	61.6	15.4	14.9
Granger	55.2	50.2	61.8	14.2	14.3
AC Lillian	46.1	45.6	58.8	15.9	14.8
Brogan	64.9	--	62.0	14.6	--
Barlow	63.4	--	62.5	14.3	--
Jenna	68.0	--	60.8	14.0	--
RB07	64.6	--	61.5	14.4	--
Kelby	48.5	--	61.7	15.5	--
LSD 5%	9.9	--	0.7	0.6	--
Planted: May 10			Harvested: Aug. 26		
Previous Crop: Canola					



**Dryland Notill HRS Wheat  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	52.7	45.1	57.4	13.8	15.7
Howard	47.0	41.6	57.1	14.1	15.9
Outlook	49.2	41.2	57.3	14.1	16.2
Freyr	50.2	40.8	59.0	14.0	15.7
Barlow	49.6	40.5	59.6	13.9	15.9
Granger	44.1	39.8	57.6	15.0	16.2
Reeder	49.0	39.6	59.2	14.2	16.1
AC Lillian	44.9	39.5	58.3	15.3	16.9
Mott	45.6	38.7	59.9	15.0	16.7
Steele-ND	42.3	38.5	57.5	14.9	16.0
Faller	45.7	38.0	57.3	13.7	15.5
Briggs	43.7	38.0	59.8	14.4	16.1
ND901CL Plus	43.7	37.9	61.1	14.8	16.8
Glenn	41.8	37.7	61.6	14.8	16.4
Choteau	44.2	36.7	58.2	14.7	16.2
Agawam	48.1	--	61.1	13.3	--
Alpine	48.6	--	59.9	13.0	--
Brennan	50.2	--	60.4	14.6	--
Brogan	47.6	--	59.6	14.4	--
Jenna	47.3	--	58.0	13.9	--
Kelby	47.2	--	60.3	14.4	--
O'Neal	51.1	--	59.0	14.0	--
RB07	52.2	--	61.5	13.1	--
Select	46.1	--	60.4	13.7	--
LSD 5%	6.0	--	1.8	1.1	--
Planted: April 23		Harvested: Aug. 5			
Previous Crop: Durum					

**Dryland Recrop HRS Wheat  
Flaxville, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --
	2010	2010		
Reeder	45.4	60.0	14.8	
O'Neal	42.3	60.5	13.9	
Choteau	42.0	58.0	14.1	
Vida	41.5	60.0	14.6	
Kuntz	40.7	60.0	14.2	
Faller	37.7	60.0	14.2	
Outlook	37.3	56.5	13.7	
AP604CL	36.4	61.0	15.4	
Corbin	36.4	60.0	13.9	
Volt	35.4	61.5	13.5	
Barlow	35.0	61.0	15.5	
Jedd	34.1	59.5	14.4	
Kelby	34.0	60.0	15.7	
Briggs	32.8	60.5	16.0	
Granger	32.7	60.5	15.0	
McNeal	32.0	56.5	13.0	
Mott	31.3	60.0	14.6	
LSD 5%	7.5			
Planted: May 24		Harvested: Oct. 12		
Previous Crop: Spring Wheat				

**Dryland Recrop HRS Wheat  
Circle, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	13.9	22.0	62.0	11.8	13.3
O'Neal	12.3	18.1	58.5	13.5	14.4
Jedd	9.4	17.2	59.5	14.7	13.8
Reeder	10.1	16.3	62.5	12.8	14.3
Choteau	10.9	16.0	61.5	12.3	13.7
Corbin	10.3	15.2	61.5	13.9	14.9
McNeal	9.3	15.0	60.0	12.1	13.3
Kuntz	7.7	14.5	60.0	13.3	13.4
Outlook	9.9	14.4	61.0	12.3	13.5
Faller	12.0	14.3	61.5	13.0	14.1
Kelby	6.3	14.0	61.5	15.1	15.0
Briggs	9.3	13.3	62.0	14.6	14.6
Granger	9.0	12.8	61.5	12.6	13.6
Volt	4.6	12.2	61.0	12.8	13.6
Mott	12.6	--	62.0	13.5	--
Barlow	10.1	--	62.0	12.5	--
AP604CL	6.7	--	62.5	12.0	--
LSD 5%	2.3				
Planted: April 27		Harvested: Aug. 27			
Previous Crop: Spring Wheat					

**Dryland Recrop HRS Wheat  
Outlook, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --
	2010	2010		
McNeal	34.6	58.5	13.6	
Reeder	36.7	60.0	14.9	
Outlook	26.0	57.5	14.5	
Choteau	16.3	57.0	16.1	
Vida	38.0	59.0	14.3	
AP604CL	17.1	59.5	16.9	
Corbin	25.7	59.5	16.1	
Kelby	28.1	59.5	15.4	
Kuntz	38.7	59.5	13.9	
Volt	22.1	60.5	14.8	
Jedd	28.7	60.5	14.2	
O'Neal	38.0	60.0	13.5	
Mott	35.9	59.0	14.0	
Briggs	34.7	58.5	14.5	
Granger	32.7	58.5	13.1	
Faller	34.7	58.5	14.4	
Barlow	33.2	60.0	14.2	
LSD 5%	6.4			
Planted: May 24		Harvested: Oct. 12		
Previous Crop: Lentil				

**Dryland Recrop HRS Wheat  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Vida	53.8	30.0	60.0	12.6	15.4
Granger	51.3	26.9	60.5	12.0	14.8
O'Neal	43.9	26.7	60.5	12.4	14.5
Faller	44.7	25.8	60.0	12.0	14.6
Reeder	46.9	25.6	61.5	13.2	16.5
Outlook	47.6	25.3	59.5	11.8	15.0
Briggs	44.6	24.8	61.0	12.0	15.2
McNeal	40.1	24.3	60.0	11.7	14.7
Choteau	43.2	23.6	60.5	11.5	14.9
Jedd	40.8	23.2	61.0	10.3	14.0
Volt	37.8	23.1	61.0	11.2	14.6
Kelby	42.6	22.3	61.5	13.5	16.2
Kuntz	41.6	22.0	60.5	12.0	15.0
Corbin	43.7	21.0	59.5	11.8	16.0
Barlow	48.8	--	61.5	10.9	--
Mott	46.9	--	60.0	12.6	--
AP604CL	45.1	--	59.5	12.0	--

LSD 5% 10.4

Planted: April 23

Harvested: Aug. 10

Previous Crop: Spring Wheat

**Sprinkler Irrigation Spring Wheat  
Various Classes -- Sidney, MT**

Cultivar	Class	Yield - bu/a -		TW lb/bu	Protein -- % --	
		2010	3 yr		2010	3 yr
Alpine	HWS	97.5	99.3	57.0	14.6	14.1
Lolo	HWS	87.6	99.2	58.0	14.3	13.5
AC Vista	HWS	96.5	97.6	56.0	14.3	13.8
Steele ND	HRS	113.0	97.4	60.0	14.7	14.7
Otis	HWS	83.0	95.7	56.5	14.7	13.8
AC Karma	HWS	87.5	93.2	55.0	14.0	13.3
Glenn	HRS	105.0	92.0	62.5	15.3	15.4
Reeder	HRS	100.8	91.5	58.5	15.6	15.2
Waikea	HWS	71.4	89.4	50.0	15.1	13.8
Golden 86	HWS	66.8	85.0	56.0	14.5	14.4
Diamond	HWS	81.8	84.1	56.5	14.7	14.5
Agawam	HWS	69.4	84.0	57.5	14.0	13.3
AC Snowbird	HWS	84.5	81.2	58.0	15.4	15.6
Lochsa	HWS	45.9	78.6	46.0	14.7	14.2
Penewawa	SWS	46.1	78.6	50.5	14.3	13.4
Snow Crest	HWS	60.1	78.5	53.0	15.0	14.5
Kanata	HWS	55.5	66.4	55.5	15.7	15.3
AC Snowstar	HWS	81.8	--	59.0	14.0	--

LSD 5% 8.4

**HWS**-Hard White Spring Wheat    **SWS**-Soft White Spring Wheat

**HRS**-Hard Red Spring Wheat

Planted: May 12

Harvested: August 26

Previous Crop: Safflower

**Sprinkler Irrigated Spring Wheat  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Faller	87.9	100.5	58.5	14.3	13.9
Outlook	87.1	95.1	58.0	14.3	14.0
Freyr	84.8	94.2	59.0	14.3	13.9
Granger	98.5	92.4	60.0	14.7	13.7
Briggs	87.3	92.0	59.5	15.5	14.5
Reeder	86.9	91.7	59.0	15.2	14.4
Volt	76.0	91.0	60.0	14.8	13.1
O'Neal	67.2	90.0	54.5	14.7	13.8
Kuntz	78.7	89.7	58.0	14.3	13.8
Choteau	79.5	89.1	58.0	14.7	13.6
McNeal	65.5	88.9	57.5	13.4	13.7
Hank	65.3	88.4	55.5	14.0	13.2
Vida	69.0	85.9	56.5	16.3	14.8
Corbin	63.9	85.4	57.5	14.0	12.8
Kelby	74.7	84.6	59.5	15.2	14.4
AP604CL	70.5	84.1	59.5	14.0	13.4
Conan	75.5	82.4	60.0	14.6	14.1
Jedd	52.2	80.5	56.0	13.8	13.3
Fortuna	69.5	74.5	58.5	14.5	14.4
Thatcher	48.3	65.0	56.0	14.5	14.0
Jenna	96.8	--	59.5	14.4	--
Barlow	94.9	--	61.5	15.0	--
Brennan	84.1	--	60.0	15.4	--
Mott	67.3	--	59.0	13.3	--

LSD 5% 8.5

Planted: May 12

Harvested: August 25

Previous Crop: Safflower

**Irrigated HRS Wheat  
Nesson Valley, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Reeder	81.0	88.1	61.2	16.7	15.9
Faller	75.0	87.2	59.0	15.6	15.1
Vida	85.6	87.1	59.0	15.9	15.3
Tom	72.6	85.8	60.7	16.3	15.2
RB07	76.6	83.5	60.0	15.3	15.0
Howard	75.2	83.2	61.0	15.5	15.1
Knudson	76.7	83.0	60.6	15.3	14.8
Freyr	80.9	82.2	60.1	16.2	15.4
Steele-ND	70.8	81.8	60.9	15.6	15.2
Briggs	68.9	79.9	60.7	16.0	15.3
Glenn	65.1	77.0	63.3	17.4	16.2
Select	71.6	--	62.2	16.0	--
Sabin	77.4	--	60.2	16.2	--
O'Neal	74.9	--	59.5	15.1	--
Jenna	83.3	--	59.2	15.6	--
Hat Trick	71.6	--	60.5	14.4	--
Brennan	74.8	--	60.7	16.2	--
Barlow	78.6	--	61.9	16.3	--
Albany	78.4	--	59.6	13.8	--

LSD 5% 7.1

Planted: April 28

Harvested: Aug. 13

Previous Crop: Sugar beets

### Dryland Hard Red Spring Wheat Values Sidney, MT

Wheat prices summarized by G. Carlson and P. Lamb, NARC, Havre, MT, from 10-yr (2000-2009) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee

Cultivar	Yield		TW	Protein	\$/a
	bu/a 3 yr	lbs/bu 3 yr	lb/bu*	% 3 yr	+ or - Vida
Vida	45.6	59.4		14.8	0.00
Reeder	44.1	60.3		14.5	-11.25
Kelby	41.7	60.8		14.7	-23.52
O'Neal	44.4	60.8		12.9	-28.55
Briggs	41.0	60.3		14.0	-34.30
Volt	41.4	61.6		13.7	-35.26
AP604CL	40.0	60.3		14.5	-35.77
Corbin	40.3	60.0		14.3	-35.99
Freyr	40.5	60.3		14.1	-37.23
Outlook	41.0	58.8		13.8	-37.58
Faller	41.4	59.7		13.5	-38.58
Kuntz	40.6	60.3		13.8	-39.90
Hank	42.0	59.1		13.0	-41.87
Jedd	41.8	61.6		13.0	-42.98
Choteau	38.7	59.8		14.3	-45.48
McNeal	40.5	59.0		13.3	-46.95
Granger	38.8	59.5		13.6	-53.42
Fortuna	36.7	60.0		14.2	-57.34
Conan	35.9	60.8		13.8	-67.11
Thatcher	35.9	58.4		13.6	-69.98

### Irrigated Hard Red Spring Wheat Values Sidney, MT

Wheat prices summarized by G. Carlson and P. Lamb, NARC, Havre, MT, from 10-yr (2000-2009) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee

Cultivar	Yield		TW	Protein	\$/a
	bu/a 3 yr	lbs/bu 3 yr	lb/bu*	% 3 yr	+ or - Vida
Faller	100.5	60.9		13.9	71.96
Outlook	95.1	60.5		14.0	40.26
Freyr	94.2	61.5		13.9	34.97
Briggs	92.0	61.3		14.5	32.18
Reeder	91.7	61.8		14.4	30.39
Granger	92.4	61.1		13.7	17.02
O'Neal	90.0	60.0		13.8	3.12
Kuntz	89.7	61.3		13.8	1.38
Vida	85.9	59.9		14.8	0.00
McNeal	88.9	60.7		13.7	-3.25
Choteau	89.1	60.9		13.6	-9.22
Kelby	84.6	61.8		14.4	-12.07
Volt	91.0	62.6		13.1	-12.93
Hank	88.4	59.7		13.2	-20.29
Conan	82.4	61.6		14.1	-34.29
AP604CL	84.1	62.0		13.4	-37.77
Corbin	85.4	60.9		12.8	-47.43
Jedd	80.5	60.8		13.3	-64.76
Fortuna	74.5	61.2		14.4	-72.47
Thatcher	65.0	59.5		14.0	-136.43

### Dryland Spring Triticale & Emmer Williston, ND

Cultivar	Yield - bu/a -		TW lb/bu*	Protein -- % --	
	2010	3 yr	2010	2010	3 yr
<b>TRITICALE</b>					
Laser	41.4	43.0	52.1	13.7	17.3
TriCal 2700	40.0	42.7	47.2	16.2	19.0
Wapiti	41.1	42.6	51.8	15.1	18.6
Companion	41.2	42.1	51.9	14.7	17.6
Marvel	32.0	38.2	44.1	16.9	19.4
TriCal 141	36.7	--	46.6	18.9	--
Merlin	32.2	--	46.2	16.9	--
AC Ultima	45.8	--	51.3	12.8	--
LSD 5%	4.4	--	0.9	--	--
Planted: May 11					Harvested: August 20
Previous Crop: Soybean Cover Crop					

<b>EMMER</b>					
Cultivar	2010	3 yr	2010	2010	3 yr
Red Vernal	44.4	45.7	35.7	14.8	14.9
Lucille	40.2	45.6	35.7	14.9	14.5
ND Common	40.8	45.4	37.2	14.5	14.4
Common-M	30.3	38.3	35.4	14.7	14.6
Common-H	28.4	37.7	37.1	14.9	14.6
Bowman	28.3	35.3	36.9	14.7	14.5
Debra	35.2	--	57.1	14.3	--
Vernal	44.2	--	36.1	14.2	--
LSD 5%	10.9	--	0.4	--	--
Planted: May 14					Harvested: August 19
Previous Crop: Soybean Cover Crop					

\*Based on 50 and 40 lb/bu for Triticale & Emmer, respectively

### Dryland Millet Williston, ND

Cultivar	TW lb/bu	Yield ----- bu/a -----			
	2010	2008	2009	2010	3 yr
Horizon	53.5	1001	1493	2017	1504
Sunup	54.2	575	1015	1957	1182
Sunrise	52.9	406	1596	1908	1303
LSD 5%	0.4	58	375	NS	--
Planted: June 1					Harvested: Sept. 29
Previous Crop: Durum					

### Dryland Notill Buckwheat Williston, ND

Cultivar	TW lb/bu	Yield ----- lb/a -----			
	2010	2008	2009	2010	3 yr
Koma	40.3	765	1130	1951	1282
Manor	39.4	666	1163	1919	1249
Koto	39.1	--	1271	1759	--
LSD 5%	NS	118	105	NS	--
Planted: May 10					Harvested: Sept. 21
Previous Crop: Durum					

## Wheat Variety Comparisons --- Williston, ND

Column "\$/A" was arrived at by calculating a gross per acre income for each variety using market price and protein premiums obtained on Dec. 2, 2010. The base price for 14% protein wheat was \$7.44, and for terminal durum was \$6.35. All spring wheat varieties are compared to Glenn and durum varieties to Mountrail on a plus or minus \$/a basis.

Cultivar	3 Year Avg. (2008-10)			
	Yield bus/a	Protein %	Gross Ret \$/a	\$/A +or- Glenn
<b>Hard Red Spring Wheat</b>				
Reeder	44.1	15.4	\$400.13	\$40.62
Vida	43.7	15.4	\$397.22	\$37.71
Samson	42.6	15.4	\$386.38	\$26.87
Jenna	41.7	15.6	\$380.73	\$21.22
Sabin	41.7	15.6	\$380.40	\$20.89
RB07	41.7	15.5	\$380.30	\$20.79
Kelby	41.9	15.0	\$378.90	\$19.39
Outlook	41.6	15.2	\$376.06	\$16.55
Corbin	41.4	15.1	\$374.17	\$14.66
Granger	41.4	15.0	\$373.86	\$14.35
Knudson	40.8	15.6	\$371.97	\$12.46
Barlow	41.0	15.2	\$370.61	\$11.10
McNeal	40.6	15.6	\$369.97	\$10.46
Blade	40.1	16.0	\$368.61	\$9.10
Conan	40.5	15.3	\$368.07	\$8.56
Brennan	44.8	14.9	\$367.19	\$7.68
Parshall	40.1	15.8	\$366.95	\$7.44
Steele-ND	40.6	15.1	\$366.93	\$7.42
Vantage	39.0	17.3	\$365.48	\$5.97
AC Lillian	39.4	16.2	\$362.69	\$3.18
Tom	39.8	15.3	\$361.54	\$2.03
Howard	40.0	15.1	\$361.21	\$1.70
Choteau	39.6	15.6	\$360.97	\$1.46
Alsen	39.6	15.7	\$360.70	\$1.19
Freyr	39.8	15.2	\$359.70	\$0.19
Breaker	39.1	16.2	\$359.57	\$0.06
Glenn	39.4	15.6	\$359.51	\$0.00
Briggs	39.5	15.4	\$358.63	-\$0.88
Brick	39.4	15.3	\$357.99	-\$1.52
Cromwell	38.5	16.6	\$356.97	-\$2.54
Amidon	39.0	15.2	\$352.56	-\$6.95
AP604CL	38.4	15.8	\$351.71	-\$7.80
Granite	37.9	16.3	\$349.92	-\$9.59
Mott	37.6	16.3	\$347.21	-\$12.30
Dapps	36.9	16.3	\$340.74	-\$18.77
Kuntz	41.5	14.8	\$339.64	-\$19.87
Otis	42.5	14.6	\$339.02	-\$20.49
Ulen	41.1	14.9	\$336.99	-\$22.52
Lolo	42.2	14.6	\$335.99	-\$23.52
AC Vista	42.1	14.6	\$335.17	-\$24.34
Faller	36.6	15.3	\$332.24	-\$27.27
Agawam	40.8	14.4	\$313.62	-\$45.89

Cultivar	3 Year Avg. (2008-10)			
	Yield bus/a	Protein %	Gross Ret \$/a	\$/A +or- Mountrail
<b>Durum</b>				
Alkabo	38.8	15.4	\$246.40	\$15.60
Commander	37.9	15.9	\$240.81	\$10.01
Tioga	36.8	16.1	\$233.91	\$3.11
Grenora	36.6	15.6	\$232.11	\$1.31
Mountrail	36.3	15.9	\$230.80	\$0.00
Alzada	36.0	15.2	\$228.62	-\$2.18
Strongfield	35.8	16.7	\$227.12	-\$3.68
Ben	35.7	16.1	\$226.78	-\$4.02
Wales	35.7	15.4	\$226.65	-\$4.15
AC Navigator	35.7	15.6	\$226.63	-\$4.17
DG Star	35.7	15.1	\$226.55	-\$4.25
Grande D'oro	35.7	15.6	\$226.44	-\$4.36
AC Avonlea	35.5	16.0	\$225.36	-\$5.44
Belzer	35.2	15.3	\$223.82	-\$6.98
Plaza	35.0	15.5	\$222.53	-\$8.27
Lebsock	35.0	15.1	\$222.19	-\$8.61
Maier	35.0	15.9	\$222.12	-\$8.68
Dilse	34.9	16.4	\$221.91	-\$8.89
DG Max	34.9	15.5	\$221.40	-\$9.40
Divide	34.6	15.6	\$219.48	-\$11.32
Renville	34.4	15.5	\$218.36	-\$12.44
Pierce	34.3	15.3	\$217.59	-\$13.21
Kyle	34.1	16.2	\$216.66	-\$14.14
Ward	33.6	16.3	\$213.34	-\$17.46
CDC Verona	33.6	16.6	\$213.30	-\$17.50

# Durum Variety Descriptions

Variety	Origin <sup>1</sup>	Chaff Color	Height	Maturity	Lodging	Resistance To <sup>2</sup>				Quality Factors			Overall Quality
						Leaf Rust	Foliar Disease	Root Rot	Scab	Test Weight	Kernel Size <sup>3</sup>	Grain Protein	
AC Avonlea	Canada	white	med	m early	MS	R	MS	S	VS	med	large	m high	good
AC Commander	Canada	white	m short	late	M	R	MS	M	VS	med	large	m high	good
AC Napoleon	Canada	white	tall	med	MS	R	S	S	S	m high	m large	high	good
AC Navigator	Canada	white	m short	m late	M	R	M	S	S	med	v large	med	good
Alkabo	ND	white	med	med	R	R	M	M	MS	high	large	m low	good
Alzada	WB	white	short	early	M	MR	S	M	VS	med	large	med	excel
Belzer	ND	white	tall	m late	M	R	M	M	MR	m low	v large	med	good
Ben	ND	white	tall	med	MR	R	MR	M	S*	v high	v large	m high	average
CDC Verona	Canada	white	m tall	m late	M	R	MR	NA	S	med	large	m high	good
DG Max	DGP	white	m tall	med	M	MR	MR	NA	MS	high	med	m high	good
DG Star	DGP	white	m tall	m early	M	R	M	NA	NA	med	m small	med	good
Dilse	ND	white	m tall	late	M	R	M	M	MS	high	med	v high	excel
Divide	ND	white	m tall	m late	M	R	M	M	MR	med	med	m high	excel
Grande D'Oro	WB/DGP	white	m tall	med	MR	R	M	MS	NA	high	m small	med	average
Grenora	ND	white	med	m early	M	R	M	MR	MS	med	med	med	good
Kyle	Canada	white	tall	late	S	MR	M	S	VS	med	m large	med	good
Lebsock	ND	white	m tall	med	R	R	M	MS	MS	high	large	med	average
Maier	ND	white	m tall	m late	M	R	M	M	S*	high	med	high	average
Mountrail	ND	white	m tall	m late	M	R	M	M	S*	med	med	med	average
Pierce	ND	white	m tall	med	M	R	MS	MR	S	v high	med	med	excel
Plaza	ND	white	m short	late	MS	R	M	MS	MS	med	small	med	average
Primo D'Oro	WB/DGP	white	tall	m early	MS	R	MS	S	NA	high	med	m high	good
Strongfield	Canada	white	m tall	m late	M	R	MS	NA	S	med	m large	v high	good
Tioga	ND	white	tall	m late	MR	R	M	NA	MS	m high	med	m high	excel
Voss	AgriPro	white	short	med	R	MR	MS	MR	S	med	med	low	average
Wales	WB	white	med	med	R	R	M	NA	S*	high	m large	med	good
Westhope	WB	white	m tall	med	med	R	M	NA	S	m high	med	m high	NA

<sup>1</sup> Refers to developer. WB = WestBred. DGP = Dakota Growers Pasta.

<sup>2</sup> 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.

<sup>3</sup> 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.

## Dryland Fallow Statewide Durum Sidney, MT

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Strongfield	59.5	41.7	61.3	13.2	14.5
Saragolla	54.5	40.4	59.3	12.1	12.8
Grenora	58.3	40.2	60.0	12.7	13.8
Normanno	50.1	39.8	60.3	12.4	13.4
Mountrail	57.3	39.5	60.8	11.9	13.8
Divide	56.1	38.7	61.0	11.8	13.3
Alkabo	55.9	38.4	61.3	12.0	13.6
Levante	54.6	38.4	60.0	12.7	13.6
Alzada	51.9	38.4	60.8	12.8	13.9
Pierce	55.6	37.5	61.3	12.6	14.0
Tioga	56.0	--	60.5	12.4	--
LSD 5%	6.6	--	0.9	0.9	--
Planted: April 22	Harvested: August 16				

## Dryland Fallow Regional Durum Sidney, MT

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Divide	57.7	40.7	61.0	11.6	13.4
Alkabo	55.1	39.7	60.5	12.8	13.7
Tioga	53.4	39.3	60.5	12.4	13.8
Grenora	58.0	38.4	60.5	12.2	13.8
Mountrail	53.9	38.3	60.5	12.0	13.8
Lebsock	52.9	37.5	61.0	13.3	14.2
LSD 5%	5.7	--	--	--	--
Planted: April 22	Harvested: August 13				



**Dryland Fallow Durum  
Nashua, MT**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Alzada	19.6	23.5	54.0	14.2	14.4
Alkabo	24.1	22.2	57.0	14.6	14.8
Strongfield	19.7	21.6	55.5	14.7	15.2
Mountrail	21.4	21.5	56.0	14.3	15.0
Grenora	20.4	20.8	55.0	15.0	15.2
Pierce	17.4	20.8	56.5	14.5	15.0
Divide	15.6	19.3	56.0	14.1	14.8
Tioga	21.1	--	56.0	14.9	--
Normanno	16.8	--	55.5	14.2	--
LSD 5%	4.7	--	--	--	--

Planted: April 24

Harvested: August 26

**Dryland Fallow Durum  
Poplar, MT**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Grenora	34.0	39.1	55.0	14.6	14.6
Strongfield	33.5	38.5	56.0	15.4	15.3
Mountrail	36.5	36.9	57.0	14.5	14.7
Alkabo	35.9	36.6	57.5	14.8	15.1
Alzada	32.8	35.7	57.0	14.3	14.1
Divide	27.8	35.5	57.0	14.7	14.3
Pierce	26.0	33.7	57.0	14.5	14.7
Normanno	37.5	--	56.0	14.4	--
Tioga	27.7	--	56.5	15.1	--
LSD 5%	13.0	--	--	--	--

Planted: May 24

Harvested: October 8

**Dryland Recrop Durum  
Circle, MT**

Cultivar	Yield bu/a	Protein %	TW lb/bu
	2010	2010	2010
Strongfield	13.9	18.1	62.0
Alkabo	15.6	17.9	62.0
Grenora	9.7	17.5	60.5
Pierce	14.4	17.5	61.5
Divide	13.7	16.7	61.5
Mountrail	14.2	16.0	61.5
Alzada	10.7	15.6	61.0
Tioga	13.8	--	61.0
Normanno	10.9	--	61.5
LSD 5%	3.4	--	--

Planted: April 27      Harvested: August 27

Previous Crop: Spring Wheat

**Dryland Durum  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Alkabo	42.3	38.8	60.3	15.0	15.4
Commander	40.6	37.9	59.2	15.0	15.9
Tioga	37.7	36.8	59.5	15.5	16.1
Grenora	39.1	36.6	58.7	14.9	15.6
Mountrail	35.0	36.3	57.7	15.9	15.9
Alzada	36.8	36.0	58.2	15.1	15.2
Strongfield	39.6	35.8	58.1	15.5	16.7
Ben	36.3	35.7	60.0	16.2	16.1
Wales	39.4	35.7	60.2	14.9	15.4
AC Navigator	38.4	35.7	59.7	14.9	15.6
DG Star	36.5	35.7	60.3	13.6	15.1
Grande D'oro	37.1	35.7	60.4	15.2	15.6
AC Avonlea	37.1	35.5	59.0	15.0	16.0
Belzer	38.8	35.2	58.5	14.6	15.3
Plaza	36.1	35.0	58.5	14.9	15.5
Lebsock	37.1	35.0	61.3	14.0	15.1
Maier	37.4	35.0	59.6	14.4	15.9
Dilse	37.5	34.9	59.8	15.2	16.4
DG Max	38.3	34.9	60.9	14.5	15.5
Divide	32.9	34.6	59.4	15.4	15.6
Renville	36.2	34.4	59.3	14.5	15.5
Pierce	36.2	34.3	60.6	14.5	15.3
Kyle	37.2	34.1	59.1	14.9	16.2
Ward	34.5	33.6	59.5	16.0	16.3
CDC Verona	32.9	33.6	58.7	15.9	16.6
Rugby	33.6	--	59.7	15.6	--
Westhope	36.3	--	60.1	16.3	--
LSD 5%	4.2	--	0.7	1.3	--

Planted: April 27

Harvested: August 5

Previous Crop: Soybean Cover Crop

**Dryland Recrop Durum  
Flaxville, MT**

Cultivar	Yield bu/a	Protein %	TW lb/bu
	2010	2010	2010
Alkabo	32.7	14.5	59.5
Grenora	30.2	14.7	59.0
Tioga	28.1	14.9	59.5
Pierce	26.8	14.6	60.0
Divide	25.9	15.0	58.5
Mountrail	25.0	14.9	58.5
Normanno	23.2	15.0	53.5
Alzada	22.7	14.8	58.0
Strongfield	22.1	15.8	58.5
LSD 5%	5.5	--	--

Planted May 24

Harvested: Oct 12

Previous Crop: Spring Wheat

**Dryland Recrop Durum  
Outlook, MT**

Cultivar	Yield bu/a		Protein %	TW lb/bu
	2010	2010	2010	2010
Strongfield	33.6	57.0	67.3	
Normanno	33.6	55.5	55.0	
Divide	32.1	57.5	58.0	
Alkabo	31.3	58.0	57.7	
Mountrail	30.7	58.5	56.3	
Pierce	29.3	58.0	68.0	
Grenora	26.4	57.0	51.3	
Alzada	26.4	57.5	58.0	
Tioga	26.3	57.5	66.3	
LSD 5%	5.8	--	--	
Planted May 24			Harvested: Oct 12	
Previous Crop: Lentil				

**Dryland Recrop Durum  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr	2010	2010	3 yr
Divide	48.6	31.3	59.5	11.6	13.5
Mountrail	43.7	29.5	60.5	10.9	13.8
Strongfield	42.7	28.6	59.0	12.7	14.6
Alkabo	44.3	28.1	60.5	12.4	13.7
Alzada	41.7	26.4	60.5	11.3	13.8
Grenora	46.2	25.6	60.0	11.4	13.9
Pierce	44.0	23.7	61.0	12.3	14.6
Tioga	46.0	--	60.0	12.2	--
Normanno	42.8	--	59.5	11.0	--
LSD 5%	6.5		--	--	
Planted: April 23				Harvested: August 11	
Previous Crop: Spring Wheat					

**Dryland Notill Durum  
Arnegard, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr	2010	2010	3 yr
Alkabo	49.5	47.1	60.6	11.9	13.4
Divide	44.1	46.9	59.9	12.0	13.8
Mountrail	48.7	45.8	60.1	12.1	13.7
Strongfield	50.1	44.6	60.9	13.1	14.7
Pierce	46.3	43.0	61.2	11.8	13.1
Grenora	42.5	42.9	59.6	12.3	13.6
Commander	39.8	42.8	59.1	12.8	13.7
AC Navigator	39.5	41.7	60.2	12.6	13.7
Lebsock	31.3	39.9	60.2	12.8	14.1
Ben	39.2	39.2	60.7	12.6	14.6
Maier	39.4	38.8	59.3	12.4	14.4
DG Star	34.5	34.4	58.9	12.4	13.9
DG Max	33.6	--	60.1	12.4	--
Tioga	44.5	--	60.2	12.5	--
Wales	46.0	--	59.8	12.2	--
Westhope	41.5	--	59.3	12.4	--
LSD 5%	10.2	--	0.7	NS	--
Planted: April 29				Harvested: Aug.18	
Previous Crop: Hard Red Spring Wheat					

**Dryland Notill Durum  
Crosby, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr	2010	2010	3 yr
Mountrail	48.7	44.9	59.1	14.8	12.7
Strongfield	49.0	40.9	60.0	15.9	13.7
Alkabo	49.5	40.8	60.5	14.3	12.8
Divide	43.9	40.7	59.1	15.4	13.4
Ben	49.0	40.3	60.4	15.0	13.3
Grenora	48.5	40.3	59.0	14.2	13.4
AC Navigator	47.1	40.0	60.2	14.5	12.9
Commander	42.1	39.5	59.2	15.2	13.5
Maier	41.1	37.7	59.3	16.2	13.7
Pierce	41.9	37.6	59.5	15.3	13.4
DG Star	40.5	37.1	59.7	15.4	13.3
Lebsock	37.3	37.1	60.0	15.4	13.1
DG Max	41.6	--	59.2	14.5	--
Tioga	50.7	--	59.4	14.3	--
Wales	46.8	--	59.8	14.7	--
Westhope	50.3	--	60.0	14.5	--
LSD 5%	6.5	--	0.8	--	--
Planted: May 12				Harvested: Aug. 27	
Previous Crop: Hard Red Winter Wheat					

**Dryland Notill Durum  
New Town, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Grenora	78.4	53.6	60.1	13.6	14.6
Commander	67.8	53.1	59.2	13.4	14.2
Mountrail	75.5	51.4	60.3	12.9	14.8
Divide	66.9	50.5	60.4	13.6	14.3
Ben	74.8	50.4	61.3	14.2	14.6
DG Star	71.2	50.4	61.2	13.2	14.0
Lebsock	67.1	50.2	60.8	13.4	13.2
Alkabo	68.1	49.3	61.6	12.5	13.2
Maier	64.8	48.0	61.3	13.7	13.9
Strongfield	66.4	47.8	60.9	13.5	14.6
Pierce	66.0	47.5	60.8	13.3	14.3
AC Navigator	64.5	47.1	60.3	14.0	14.0
DG Max	73.8	--	61.4	13.8	--
Tioga	73.0	--	61.4	12.9	--
Wales	72.5	--	61.4	13.2	--
Westhope	66.8	--	61.6	13.3	--
LSD 5%	NS	--	1.3	NS	--
Planted: May 10			Harvested: Aug. 13		
Previous Crop: Durum					

**Dryland Notill Durum  
Stanley, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Commander	64.9	59.2	60.7	14.0	14.3
Alkabo	67.9	58.5	62.4	14.2	14.3
Divide	67.4	58.5	61.7	14.2	14.4
Strongfield	70.6	57.6	61.1	15.0	15.4
Grenora	64.9	57.5	60.8	14.2	14.4
Mountrail	66.2	57.2	61.1	14.1	14.4
Lebsock	64.7	54.8	62.5	14.3	14.4
Maier	66.6	54.6	61.9	15.0	15.5
AC Navigator	63.5	53.6	61.7	14.4	14.2
Ben	60.8	53.3	62.2	15.0	15.2
DG Star	62.1	52.7	61.3	14.0	14.3
Pierce	57.5	49.8	62.1	14.3	14.2
DG Max	60.1	--	62.4	14.4	--
Tioga	69.1	--	62.0	14.2	--
Wales	68.0	--	61.7	14.4	--
Westhope	69.8	--	62.1	14.4	--
LSD 5%	NS	--	0.5	0.6	--
Planted: May 10			Harvest: August 26		
Previous Crop: Canola					

**Dryland Notill Durum  
Ray, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Mountrail	38.7	46.3	59.0	12.5	13.4
AC Navigator	30.1	42.2	56.8	13.2	13.4
Strongfield	34.5	42.2	59.1	13.0	13.8
Grenora	32.0	40.6	58.8	10.9	12.9
Ben	36.7	40.5	60.6	12.4	13.7
Alkabo	34.9	40.4	59.3	12.2	13.1
Pierce	33.9	40.2	57.5	12.3	13.1
Divide	33.2	40.0	57.7	11.4	12.9
Commander	29.7	39.8	57.3	12.7	13.3
Lebsock	31.2	39.4	57.6	13.2	13.7
Maier	26.3	38.2	57.6	13.7	14.1
DG Star	22.8	34.7	55.6	13.0	13.9
DG Max	28.8	--	58.6	11.7	--
Tioga	31.0	--	57.7	10.8	--
Wales	34.7	--	58.4	12.5	--
Westhope	31.9	--	58.8	11.3	--
LSD 5%	5.1	--	1.6	1.5	--
Planted: May 11			Harvested: Aug. 19		
Previous Crop: Durum					

**Dryland Notill Durum  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Grande D'oro	42.7	36.6	60.3	15.3	16.2
Mountrail	39.1	36.1	57.6	15.2	16.5
Wales	38.5	34.9	59.3	15.3	16.0
Commander	37.1	34.3	58.1	15.8	16.3
Alkabo	40.3	34.0	60.3	14.7	15.7
Ben	42.9	33.9	60.6	14.4	16.1
Kyle	38.9	33.9	58.9	15.0	16.6
Grenora	39.8	33.7	58.5	15.1	15.9
Maier	36.7	33.3	59.0	15.6	17.0
AC Navigator	38.8	33.1	59.3	15.1	15.7
Lebsock	37.3	33.0	59.9	15.2	16.0
Dilse	34.4	32.7	59.0	16.4	17.3
Pierce	36.8	32.2	59.6	14.7	15.9
DG Star	35.3	32.1	59.3	15.0	16.0
Divide	38.9	31.8	59.3	14.7	16.1
Strongfield	36.5	31.8	57.3	16.3	17.4
Alzada	40.9	--	58.7	14.1	--
Westhope	38.4	--	59.7	15.4	--
DG Max	38.0	--	60.1	15.2	--
Tioga	37.7	--	58.8	16.4	--
CDC Verona	36.2	--	58.1	16.7	--
LSD 5%	4.0	--	0.7	1.1	--
Planted: April 23			Harvested: Aug. 5		
Previous Crop: Durum					

**Sprinkler Irrigated Regional Durum  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Mountrail	64.4	102.3	59.0	14.0	12.9
Grenora	66.0	100.9	58.5	14.2	13.2
Divide	74.1	100.2	58.0	13.6	12.4
Tioga	72.7	97.5	59.0	14.1	13.0
Alkabo	52.7	82.8	59.5	14.0	12.2
Lebsock	62.1	85.4	60.0	14.3	12.5
LSD 5%	6.1	--	--	--	--
Planted: May 13		Harvested: September 3			
Previous Crop: Safflower					

**Sprinkler Irrigated Statewide Durum  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Divide	73.2	90.7	58.5	13.4	12.4
Mountrail	61.2	90.1	57.3	12.9	12.6
Alkabo	59.4	88.4	57.5	13.0	12.3
Grenora	70.5	86.6	57.8	13.1	12.9
Pierce	71.2	84.6	59.2	13.0	12.7
Strongfield	59.3	83.4	56.7	13.6	12.9
Normanno	48.7	76.6	54.2	13.5	12.7
Saragolla	35.0	70.5	54.2	13.7	12.6
Levante	35.2	68.3	51.7	13.6	12.9
Alzada	27.0	63.6	53.2	14.1	13.1
Tioga	73.1	--	56.8	13.4	--
LSD 5%	9.6	--	2.7	0.4	--
Planted: May 13		Harvested: September 3			
Previous Crop: Safflower					

**Sprinkler Irrigated Durum  
Nesson Valley, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
Divide	72.2	86.0	60.5	15.0	15.0
Alkabo	73.9	86.0	60.8	14.8	14.8
Grenora	70.8	85.0	59.3	15.2	15.0
Mountrail	71.6	82.5	59.9	14.6	14.9
Plaza	64.8	79.4	59.1	14.7	14.3
Lebsock	59.2	79.3	60.7	15.4	15.0
Pierce	68.6	78.8	61.1	14.9	14.8
Commander	61.9	77.9	58.2	15.1	14.9
Strongfield	65.5	74.1	60.2	16.0	15.7
Maier	60.4	73.7	60.0	16.4	15.8
AC Navigator	60.7	72.2	60.3	14.8	14.9
Tioga	72.9	--	60.7	14.9	--
Wales	65.9	--	59.7	15.2	--
Westhope	67.9	--	59.6	15.5	--
LSD 5%	7.2	--	1.0	0.8	--
Planted: April 28		Harvested: Aug. 13			
Previous Crop: Sugarbeets					

## Hard Red Winter Wheat Variety Descriptions

Variety	Origin <sup>1</sup>	Height	Maturity	Winter Hardiness <sup>3</sup>	Lodging	Resistance To <sup>2</sup>			Quality Factors	
						Stem Rust	Leaf Rust	Foliar Disease	Test Weight	Grain protein
Above**	Colorado	short	early	poor	R	R	S	MS	medium	med
Accipter	W. Ag	short	medium	good	R	R	MS	S	medium	medium
Art	AgriPro	m short	m early	fair	R	R	R	MS	high	m high
Bauermeister	WA	medium	late	fair	R	NA	MR	NA	low	m high
Big Sky	MT	tall	medium	good	MR	R	MR	R	high	medium
BondCL**	CO	m short	early	poor	R	MS	MS	NA	low	m high
Boomer	WB	medium	medium	good	R	NA	MR	NA	high	medium
Bynum*/**	MT/WB	m tall	medium	fair	NA	NA	NA	NA	low	high
CDC Buteo	Canada	medium	medium	good	M	MR	MS	NA	high	m low
CDC Falcon	Canada	m short	medium	good	M	R	MS	MS	medium	m low
CDC Kestrel	Canada	m tall	medium	good	MS	S	S	MS	m low	m low
CDC Raptor	Canada	m short	medium	fair	R	MR	MR	S	medium	m low
Darrell	SD	medium	medium	good	R	R	S	MR	m high	medium
Decade	MT/ND	medium	m early	good	R	R	S	M	medium	medium
Expedition	SD	medium	medium	fair	R	R	MS	MS	low	medium
Genou*	MT	medium	medium	poor	MS	MS	S	NA	m low	medium
Harding	SD	medium	m early	good	MR	NA	MS-MR	MR	medium	m high
Hawken	AgriPro	v short	m early	poor	R	MR	MR	NA	medium	medium
Hatcher	CO	short	m early	fair	R	MR	MS	NA	medium	m high
Jagalene	AgriPro	short	early	poor	R	MR	S	S	high	medium
Jerry	ND	medium	medium	good	MR	R	MR	M	medium	m high
Ledger	WB	short	m early	fair	R	NA	NA	NA	medium	m high
Lyman	SD	medium	medium	fair	M	R	R	MR	m high	m high
Mace	ARS-NE	short	m early	poor	R	R	MS	NA	low	medium
McClintock	Canada	medium	m early	fair	MR	R	R	R	high	medium
Morgan	CO	medium	m late	good	MR	NA	S	M	medium	m high
Neeley	ID	medium	m late	fair	MR	S	S	M	m low	m low
Norris**	MT/WB	m tall	medium	good	NA	NA	NA	NA	m high	medium
Norstar	Canada	tall	late	v good	MS	S	S	R	high	medium
Paul	MT	short	m late	good	R	R	MS	MR	m low	m low
Peregrine	W Ag	medium	m late	v good	MR	R	MR	NA	m high	m low
Radiant	Canada	tall	late	good	R	S	S	NA	medium	m low
Rampart*	MT	medium	m late	fair	R	R	S	MR	medium	high
Roughrider	ND	tall	m late	v good	MS	R	S	M	medium	high
Striker	WB	medium	medium	good	R	NA	MR	NA	medium	m high
Tiber	MT	tall	m late	fair	MS	S	S	MR	m high	medium
WB-Matlock	WB	medium	medium	good	MR	NA	MS	M	medium	medium
Yellowstone	MT	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	medium	m late	fair	MR	NA	NA	NA	medium	low
Hyalite**	MT	m short	m early	fair	MR	R	S	NA	medium	medium
NuDakota	AgriPro	short	medium	poor	R	MR	MR	NA	medium	medium
NuFrontier	GM/AgriPro	m short	early	fair	R	NA	NA	NA	m high	low
NuHorizon	GM/AgriPro	short	early	poor	R	NA	NA	NA	high	m low
NuSky	MT	medium	m late	good	R	MR	S	MR	medium	medium
NuWest	MT/GM	medium	medium	good	R	MR	S	MR	m low	medium
Wendy	SD	short	early	good	NA	NA	NA	NA	medium	medium

<sup>1</sup> Refers to developer: AC = Agriculture Canada, GM = General Mills, WPB = Western Plant Breeders., WB = WestBred, ID = Idaho

<sup>2</sup> R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, NA = data not available.

<sup>3</sup> Varieties with fair to poor winter hardiness should not be seeded on bare soil.



## Winter Rye Variety Descriptions

Variety	Origin	Year Released	Height	Straw Strength	Maturity	Seed Color	Seed Size	Test Weight	Winter Hardness
AC Rifle	Can	1998	med	v good	late	blue	large	med	v good
AC Remington	Can	1998	short	v good	med	NA	med	good	good
Dacold	ND	1989	med	v good	v late	bl-grn	med	low	v good
Frederick	SD	1984	tall	fair	late	tan	med	high	good
Musketeer	Can	1980	tall	good	m early	blue	large	med	v good
Prima	Can	1984	tall	good	med	blue	large	med	v good
Spooner	WI	1993	tall	v good	med	tan	NA	high	NA
Wheeler	MI	1971	tall	fair	med		large	low	fair

Dryland fallow Winter Wheat plots at WREC had 0-10% winter survival, and were abandoned.

### Dryland Fallow Winter Wheat Sidney, MT

Cultivar	% Surv	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	2010	3 yr	2010	2010	3 yr
Jerry	69.1	64.0	56.3	58.5	13.0	13.6
Decade	55.3	60.9	53.7	58.8	13.0	13.9
CDC Falcon	66.1	60.1	53.5	59.3	11.0	12.6
Wahoo	58.6	70.5	53.4	57.8	12.0	12.8
Yellowstone	50.5	61.8	51.2	58.0	11.8	12.8
Rocky	51.5	59.6	47.5	60.2	11.4	12.7
Carter	39.8	50.9	46.4	60.0	12.5	13.7
Pryor	43.3	46.2	46.0	57.0	12.3	13.5
Hyalite (CL)*	55.2	59.1	45.1	59.5	11.4	13.5
Neeley	48.0	53.1	45.0	59.3	11.1	12.8
Jagalene	40.6	48.3	44.0	61.2	12.2	13.2
Norris (CL)	53.1	55.9	43.8	61.5	11.9	13.3
Promontory	43.7	57.2	43.8	59.8	12.3	13.0
Ledger	43.2	47.6	43.0	59.3	12.0	13.2
Genou	48.3	48.3	39.3	59.3	12.4	14.4
Bynum (CL)	35.1	42.2	35.3	60.0	12.2	14.1
Rampart	31.7	38.1	33.7	59.5	12.2	13.6
Accipiter	71.8	70.8	--	59.5	11.3	--
Broadview	71.5	67.4	--	59.2	11.8	--
Overland	52.9	65.2	--	60.7	12.2	--
Striker	61.1	63.4	--	60.2	11.9	--
Boomer	56.7	58.4	--	58.0	11.4	--
Radiant	61.8	57.2	--	59.2	11.8	--
Peregrine	78.1	55.0	--	59.5	12.0	--
Settler (CL)	44.3	52.6	--	60.2	12.1	--
Curlew	44.0	50.8	--	58.3	12.4	--
Art	36.6	48.4	--	59.8	12.5	--
LSD 5%	10.5	3.4	--	--	--	--

Planted: Sept. 30 2009      Harvested: Aug. 3 2010

\*Hard white wheat

No data from 2009, severe winter kill.

### Dryland Notill Hard Red Winter Wheat Williston, ND

Cultivar	% Surv	Yield - bu/a -		TW lb/bu	Protein -- % --	
	3 yr	2010	3 yr	2010	2010	3 yr
CDC Perigrine	80.2	48.2	39.5	57.3	13.0	14.1
CDC Accipiter	82.3	42.9	37.3	56.2	13.7	14.8
Yellowstone	70.9	34.9	37.0	54.6	14.0	14.7
Morgan	81.4	46.1	35.9	56.7	13.5	15.3
Jerry	71.3	31.4	32.7	55.8	13.9	14.9
Hawken	69.5	32.9	32.6	59.0	11.7	14.0
Radiant	66.9	34.7	31.3	56.5	14.0	14.9
CDC Falcon	68.6	26.8	30.4	55.7	14.3	14.9
Wendy	62.9	25.8	30.0	57.3	13.8	15.2
Alice	61.5	29.3	28.9	58.2	13.5	14.8
Norstar	69.1	21.0	28.6	55.7	14.4	15.1
Roughrider	67.4	25.4	28.3	57.4	14.7	15.7
CDC Buteo	75.6	30.8	27.1	59.1	12.2	14.7
Wesley	65.1	22.6	26.2	58.7	13.2	15.4
Kestrel	51.7	17.1	25.8	58.0	13.1	14.8
Millenium	61.4	15.7	25.8	57.5	13.4	15.0
Darrell	59.4	15.5	25.4	57.8	13.2	15.0
Overland	60.2	12.0	25.4	59.1	13.2	14.9
Jagalene	56.3	8.0	24.1	56.3	13.7	14.7
Lyman	57.9	17.9	22.5	58.1	13.1	15.4
Art	--	4.7	--	58.7	13.4	--
Boomer	--	32.5	--	57.3	12.2	--
Carter	--	24.0	--	57.7	13.5	--
Decade	--	19.3	--	56.3	13.0	--
Mace	--	16.1	--	56.7	13.0	--
Norris	--	25.3	--	56.9	13.3	--
Striker	--	24.7	--	58.2	13.4	--
LSD 5%	--	18.5	--	2.2	1.3	--

Planted: Sept. 15

Harvested: July 27

Previous Crop: Crambe

**Sprinkler Irrigated Hard Red Winter Wheat  
Nesson Valley, ND**

<b>Cultivar</b>	<b>% Surv 2010</b>	<b>Yield bu/a 2010</b>	<b>TW lb/bu 2010</b>	<b>Protein -- % -- 2010</b>
Radiant	53.8	69.3	58.5	13.3
CDC Peregrine	45.0	63.0	59.5	12.4
Boomer	37.5	61.7	56.7	13.7
Jerry	43.8	55.6	58.4	14.2
Striker	36.3	55.0	58.0	14.0
Roughrider	33.8	54.6	59.3	14.3
CDC Buteo	37.5	52.0	59.6	13.3
CDC Accipiter	16.3	45.1	58.0	13.3
Yellowstone	22.5	39.4	54.7	13.9
Darrell	6.5	19.6	57.0	13.9
Decade	11.5	18.9	53.5	15.4
Lyman	7.8	18.7	57.3	15.4
Wesley	4.5	14.2	53.3	15.5
Overland	0.5	6.8	55.8	13.8
CDC Falcon	1.8	5.1	55.7	14.4
Jagalene	0.5	2.9	52.9	14.8
LSD 5%	16.3	13.9	2.3	0.8

Planted: September 29                      Harvested: August 13

Previous Crop: Potatoes

**Dryland Hard Red Winter Wheat Values  
Sidney, MT**

<b>Cultivar</b>	<b>Yield bu/a 3 yr</b>	<b>TW lb/bu 3 yr</b>	<b>Protein % 3 yr</b>	<b>\$/a + or - Falcon</b>
<b>Hard red winter wheat</b>				
Jerry	56.3	58.9	13.6	19.68
Decade	53.7	60.1	13.9	5.38
Wahoo	53.4	58.0	12.8	1.59
CDC Falcon	53.5	58.8	12.6	0.00
Yellowstone	51.2	58.5	12.8	-10.42
Rocky	47.5	59.9	12.7	-30.62
Carter	46.4	60.3	13.7	-34.77
Pryor	46.0	58.2	13.5	-36.97
Neeley	45.0	59.3	12.8	-44.27
Jagalene	44.0	61.5	13.2	-47.97
Norris (CL)	43.8	60.5	13.3	-49.07
Promontory	43.8	60.8	13.0	-49.07
Ledger	43.0	60.0	13.2	-53.47
Genou	39.3	58.9	14.4	-73.82
Bynum (CL)	35.3	59.9	14.1	-95.82
Rampart	33.7	59.8	13.6	-104.62

Wheat prices summarized by G. Carlson and P. Lamb, NARC, Havre, MT, from 10-yr (2000-2009) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee.

**Dryland Notill Winter Rye, Winter Wheat,  
Spelt, & Triticale - Williston, ND**

<b>Cultivar</b>	<b>Yield - bu/a -</b>		<b>TW lb/bu</b>	<b>Protein -- % --</b>	
	<b>2010</b>	<b>3 yr</b>	<b>2010</b>	<b>2010</b>	<b>3 yr</b>
<b><i>RYE</i></b>					
DR02	56.2	43.1	53.0	10.7	12.2
Rymin	46.9	39.7	53.0	13.6	14.0
Aroostook	41.9	--	53.7	14.8	--
Boreal	33.0	--	50.1	15.2	--
Dacold	50.6	--	51.6	10.9	--
Hancock	56.2	--	54.8	11.6	--
Spooner	47.6	--	53.9	13.1	--
Wheeler	23.7	--	50.3	17.3	--
<b><i>HRWW</i></b>					
Jerry	42.9	--	56.4	13.6	--
<b><i>SPELT</i></b>					
PI348159	47.9	49.1	24.6	--	--
Frank	50.8	48.4	26.1	--	--
<b><i>TRITICALE</i></b>					
NE426GT	48.5	42.0	49.7	15.7	18.9
Boreal	23.7	32.4	45.0	17.8	19.0
Pika	55.9	--	51.8	16.2	--
LSD 5%	13.0	--	1.0	1.5	--

Planted: Sept. 17                                      Harvested July 29

Previous Crop: Crambe

# Barley Variety Descriptions

Variety	Origin <sup>1</sup>	Use <sup>2</sup>	Height	Maturity	Lodging	Stem Rust	Resistance To <sup>3</sup>			Quality Factors	
							Loose Smut	Net Blotch	Spot Blotch	Test Weight	Grain Protein
Two-Row											
AC Metcalfe*	Canada	F/M	medium	m late	M	MR	MR	MS	MS	medium	medium
Baronesse	WB	F	m short	medium	R	S	S	MR	MR	m high	low
Boulder	WB	F	medium	medium	MR	NA	S	NA	NA	m high	m high
Bowman	ND	F	medium	early	MS	S	S	S	MS-S	high	m high
Calgary	France	F	short	medium	R	NA	S	NA	NA	m low	low
CDC Copeland*	Canada	MT	tall	m late	MS	MR	S	MS	VS	low	medium
Champion	WB	F	m tall	m late	MR	NA	NA	NA	NA	m high	Med
Conlon*	ND	F/M	m short	early	MS	S	S	MR	MS	m high	m low
Conrad*	BARI	F/M	m short	m late	MR	NA	S	NA	NA	m high	m low
Craft*	MT	F/M	tall	medium	MR	NA	S	S	NA	m high	m high
Eslick	MT	F	medium	m late	MS	S	NA	NA	MS	medium	m low
Geraldine	MT	F/M	m short	m late	MR	NA	S	NA	NA	m high	m high
Harrington*	Canada	F/M	m short	late	S	S	S	MS	S	medium	m low
Haxby	MT	F	m tall	medium	MS	S	S	S	MS	v high	medium
Hockett	MT	F/M	medium	medium	MS	S	S	NA	NA	medium	m high
Merit*	BARI	F/M	m tall	late	MS	MS	S	MS	S	low	medium
Pinnacle	ND	MT	medium	m late	MR	S	S	MS	MR	high	low
Rawson	ND	F	medium	medium	MR	S	S	MR	MR	high	m low
Scarlett	German	M	short	late	M	S	NA	NA	NA	medium	medium
Xena	WB	F	m short	m late	R	MS	S	S	VS	medium	high
Six-Row											
Celebration	BARI	MT	m short	medium	R	S	S	MS-S	MR/R	medium	medium
Drummond*	ND	F/M	m short	medium	R	S	S	MS-S	MR/R	medium	medium
Innovation	BARI	MT	m short	medium	MR	S	S	MS/S	MR/R	medium	medium
Lacey *	MN	F/M	m short	medium	MR	S	S	MS-S	MR/R	medium	medium
Legacy*	BARI	F/M	medium	m late	MR	S	S	MS-S	MR/R	medium	medium
Morex	MN	F/M	tall	m early	MS	S	S	S	MR	medium	m high
Rasmusson	MN	F/M	m short	medium	R	S	S	MS-S	MR/R	medium	m low
Robust*	MN	F/M	tall	medium	MS	S	S	MS-S	MR/R	medium	m high
Stellar-ND*	ND	M/F	m short	medium	R	S	S	MS-S	MR/R	medium	m low
Tradition*	BARI	M/F	medium	medium	R	S	S	MS-S	MR/R	medium	m low
Specialty											
Haybet	MT	H	tall	medium	S	NA	S	NA	NA	low	medium
Hays	MT	H	m tall	medium	MS	NA	NA	NA	NA	low	medium
Stockford	WB	H	m tall	medium	MS	NA	NA	MS	MS	low	medium
Wanubet	MT	WH	medium	late	S	S	S	S	S	high	High
Westford	WB	H	tall	medium	S	NA	NA	NA	NA	--	--

<sup>1</sup> Refers to developer: BARI = Busch Ag Resources, Inc., WB = WestBred, MT = Montana State University, ND = North Dakota State University, MN = University of Minnesota

<sup>2</sup> F = feed, M = malt, H = hay, WH = waxy hulless, EVF = enhanced value feed. MT = being tested for malt and brewing quality.

\* Recommended as malting in western US.

<sup>3</sup> R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, NA = data not available.

\*Recommended as malting in Western US.

**Dryland Barley  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Plump %	Protein -- % --	
	2010	3 yr			2010	2010
<b><u>Two Row</u></b>						
Scarlett	75.5	75.2	48.2	52.4	16.0	14.8
Conlon	91.1	73.5	52.4	84.4	16.3	14.6
Haxby	85.2	72.9	51.1	37.7	16.1	14.8
Rawson	83.7	69.2	50.5	77.3	14.2	13.3
Xena	78.0	68.2	48.7	44.6	16.2	14.6
Pinnacle	75.2	67.4	48.8	60.4	15.2	13.7
Hockett	73.5	66.6	48.7	40.9	17.5	15.2
Baronesse	74.1	66.6	47.5	39.4	16.9	15.6
Salute	74.6	65.5	49.1	57.6	19.3	17.2
Conrad	76.3	64.3	47.9	50.0	16.8	15.8
Harrington	68.7	64.0	46.8	38.6	16.2	14.8
Geraldine	64.8	63.4	47.7	23.9	18.0	16.2
AC Metcalfe	68.2	61.9	48.0	35.4	17.4	15.6
Enduro	69.7	61.1	52.1	25.6	19.5	17.9
CDC Copeland	63.6	59.1	46.8	30.7	18.5	16.4
Champion	80.0	--	49.7	29.0	15.7	--
Lilly	81.0	--	49.4	37.0	16.5	--
Sunshine	67.5	--	46.6	35.4	18.3	--
<b><u>Six Row</u></b>						
Tradition	82.5	69.6	49.8	42.0	15.7	15.1
Celebration	78.8	66.0	49.7	40.0	17.3	16.1
Lacey	74.5	65.3	48.7	30.1	16.7	15.2
Quest(M122)	75.7	65.1	48.9	34.7	17.2	15.5
Drummond	78.2	64.9	49.7	33.0	16.7	15.6
Rasmusson	73.2	64.8	47.2	25.4	16.8	15.0
Legacy	69.8	62.8	46.7	23.2	15.2	14.8
Stellar-ND	73.6	62.5	47.8	32.0	15.4	14.4
Robust	75.7	62.2	49.3	33.4	15.5	14.7
Innovation	80.2	--	49.6	40.6	16.6	--
LSD 5%	5.3	--	1.3	9.8	1.5	--
Planted: April 21				Harvested: July 21		
Previous crop: Soybean Cover Crop						

**Dryland Fallow Malt Barley  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Plump %	Protein -- % --	
	2010	3 yr			2010	2010
Champion	76.1	67.4	50.5	88	11.8	12.5
Conrad	70.5	59.6	48.5	88	11.6	13.6
Pinnacle	65.0	59.9	50.0	89	16.2	13.9
Geraldine	64.8	58.3	50.0	91	13.3	14.1
Haxby	73.2	58.5	49.0	92	13.8	14.3
AC Metcalfe	62.5	53.3	47.0	91	12.6	14.3
Hockett	59.7	55.2	49.0	94	11.7	13.4
Harrington	63.7	55.0	45.0	93	13.9	14.4
Goldeneye	67.1	--	47.0	94	12.8	--
Gallatin	60.8	--	47.0	82	15.0	--
LSD 5%	7.7	--	--	--	--	--
Planted: April 20				Harvested: Aug.9		

**Dryland Fallow Barley  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Plump %	Protein -- % --	
	2010	3 yr			2010	2010
Conrad	92.5	67.4	48.8	88	12.5	13.5
Hockett	90.9	66.3	50.5	88	12.5	13.0
AC Metcalfe	79.0	66.2	50.5	89	9.8	12.3
Harrington	80.1	64.4	50.0	91	10.2	12.5
Haxby	71.7	64.0	54.0	92	9.3	12.4
Baronesse	80.2	63.3	53.0	91	11.8	13.9
Amsterdam	77.8	63.3	52.0	94	11.8	14.0
Tradition	77.7	59.9	50.5	93	9.5	11.8
Craft	71.7	58.3	52.0	94	10.6	13.8
Geraldine	66.5	54.2	49.0	82	12.7	14.0
Scarlett	86.0	--	49.0	90	9.2	--
CDC Copeland	81.8	--	49.5	92	11.2	--
Pinnacle	78.3	--	51.5	95	8.8	--
Karma*	44.3	--	62.0	94	12.4	--
LSD 5%	16.8	--	--	--	--	--
Planted: April 21				Harvested: Aug.10		
* hulless barley						

**Dryland Notill Barley  
Arnegard, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
<b><u>Six Row</u></b>					
Rasmusson	58.1	65.6	49.0	12.4	13.6
Stellar-ND	52.9	64.9	48.8	12.4	13.7
Lacey	48.1	64.9	49.9	12.6	14.1
Tradition	44.1	63.1	50.7	12.3	13.9
Legacy	47.1	61.0	47.8	12.6	13.5
Drummond	44.8	60.4	50.2	12.6	14.1
Celebration	38.2	--	48.5	13.4	--
<b><u>Two Row</u></b>					
Pinnacle	37.7	70.8	48.8	10.9	12.3
CDC Copeland	54.0	68.6	45.8	12.0	13.5
Conrad	42.0	67.5	45.6	12.9	13.9
AC Metcalfe	47.3	66.8	48.4	12.0	13.5
Conlon	37.3	62.5	50.6	12.9	12.1
Hockett	63.7	--	50.3	10.7	--
LSD 5%	11.9	--	2.3	NS	--
Planted: May 29				Harvested: Aug. 3	
Previous Crop: Hard Red Spring Wheat					

Dryland Notill Barley  
Crosby, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
<b><u>Six Row</u></b>					
Lacey	114.9	87.6	52.7	13.5	12.0
Rasmusson	109.2	86.1	51.5	13.8	11.7
Drummond	107.8	77.4	52.0	14.1	12.0
Tradition	107.6	79.9	52.1	13.2	11.6
Legacy	99.4	79.2	50.7	13.8	--*
Stellar-ND	104.2	80.1	50.5	13.4	11.8
Celebration	109.1	--	51.8	14.5	--
<b><u>Two Row</u></b>					
Pinnacle	119.8	95.3	49.8	11.5	10.1
CDC Copeland	103.6	79.5	50.9	14.0	11.2
AC Metcalfe	111.2	83.6	53.1	14.2	12.3
Conrad	100.4	80.8	51.7	14.4	12.1
Conlon	101.6	64.0	53.8	13.4	14.7
Hockett	111.3	--	53.5	13.2	--

LSD 5% NS -- NS 0.5 --  
Planted: May 12 Harvested: Aug. 11  
Previous Crop: Hard Red Winter Wheat  
\*Covered smut caused discoloration of the seed so % protein could not be read by NIR.

Dryland Notill Barley  
New Town, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
<b><u>Six Row</u></b>					
Rasmusson	112.0	84.0	52.5	12.1	12.0
Tradition	106.4	83.5	52.5	11.7	12.3
Drummond	97.5	82.8	50.2	13.0	12.7
Stellar-ND	103.1	79.3	51.6	12.2	12.1
Lacey	97.4	78.5	51.8	11.9	12.3
Legacy	105.5	77.4	51.5	12.5	--*
Celebration	97.1	--	49.7	13.1	--
<b><u>Two Row</u></b>					
Pinnacle	101.3	85.3	51.8	10.8	11.4
Conrad	102.1	81.3	51.6	12.5	13.2
Conlon	88.6	78.9	52.5	12.4	12.6
CDC Copeland	95.2	76.7	49.6	12.6	13.1
AC Metcalfe	88.3	73.4	50.5	12.7	12.9
Hockett	105.9	--	53.0	11.3	--

LSD 5% NS -- NS NS --  
Planted: May 10 Harvested: Aug. 13  
Previous Crop: Durum  
\*Covered smut caused discoloration of the seed so % protein could not be read by NIR.

Dryland Notill Barley  
Ray, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
<b><u>Six Row</u></b>					
Rasmusson	61.9	72.8	50.8	10.7	11.8
Lacey	51.4	70.4	50.3	10.3	11.7
Legacy	59.0	69.6	48.4	10.1	11.5
Drummond	54.0	69.4	50.0	12.4	12.6
Tradition	56.2	68.2	49.8	12.1	12.2
Stellar-ND	55.0	64.6	50.3	11.4	12.0
Celebration	55.1	--	50.0	10.6	--
<b><u>Two Row</u></b>					
Pinnacle	71.4	80.2	50.2	10.1	10.4
Conrad	64.6	74.6	48.8	12.0	12.5
Conlon	50.9	64.2	51.8	11.5	11.6
CDC Copeland	70.2	77.7	50.0	11.5	12.3
AC Metcalfe	57.8	70.7	51.0	11.1	12.1
Hockett	64.2	--	50.9	10.3	--

LSD 5% 11.5 -- NS NS --  
Planted: May 11 Harvested: Aug. 12  
Previous Crop: Durum

Dryland Notill Barley  
Williston, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Plump %	Protein -- % --	
	2010	3 yr			2010	3 yr
<b><u>Two Row</u></b>						
Conlon	91.6	68.5	54.2	97.1	12.4	14.7
Rawson	87.3	68.3	52.1	95.7	12.3	13.1
Hockett	88.1	67.2	52.7	83.7	12.1	15.2
Pinnacle	88.8	66.3	51.4	85.8	12.5	13.6
Conrad	95.3	65.9	51.1	89.1	12.7	16.0
AC Metcalfe	86.6	59.2	50.2	66.1	13.4	15.9
CDC Copeland	78.8	48.9	49.9	78.7	12.4	15.5
Haxby	96.4	71.0	52.5	72.9	13.1	15.2
Innovation	89.0	--	52.3	70.2	12.9	--
<b><u>Six Row</u></b>						
Tradition	86.1	70.1	50.4	63.6	14.4	16.1
Rasmusson	88.3	68.6	51.9	78.6	12.9	15.3
Lacey	85.5	66.6	52.2	81.2	12.7	15.1
Stellar-ND	80.3	64.0	51.2	76.7	12.7	14.4
Drummond	81.4	63.9	51.7	82.9	13.4	15.3
Legacy	76.7	60.0	49.9	69.6	12.4	14.6
Celebration	73.4	--	50.3	71.1	14.9	--
Quest	87.6	--	51.3	72.4	13.5	--

LSD 5% 7.2 -- 1.2 -- 1.1 --  
Planted: April 23 Harvested: July 27  
Previous Crop: Durum





**Sprinkler Irrigated NDSU Malt Barley  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Plump %	Protein -- % --	
	2010	3 yr	2010	2010	2010	3 yr
Rasmussen	127.3	108.5	48.7	89	11.8	12.7
Copeland	122.5	107.0	48.2	90	11.1	12.2
Pinnacle	109.0	101.9	46.8	93	11.4	12.0
Tradition	114.2	101.4	47.3	86	11.2	12.3
Haxby	112.4	100.6	48.5	89	12.0	13.4
Legacy	105.4	99.3	46.3	84	11.7	12.3
Quest	120.3	97.1	46.5	86	12.1	13.5
Rawson	114.0	96.8	47.7	95	11.7	12.4
Conlon	113.3	95.9	49.2	94	12.5	13.4
Lacey	124.6	95.3	47.8	88	11.9	13.2
Drummond	122.8	94.2	46.7	90	12.1	13.0
AC Metcalfe	107.2	93.7	48.3	84	12.7	13.5
Celebration	115.0	93.0	45.2	83	12.2	13.7
Stellar	102.8	90.3	45.0	91	10.8	12.6
Robust	113.0	82.5	47.8	88	12.8	13.3
Innovation	124.3	--	46.0	85	11.3	--
Lilly	123.8	--	48.2	87	11.6	--
Sunshine	112.7	--	48.7	89	11.8	--
Jennifer	100.4	--	48.5	93	12.0	--
LSD 5%	16.1	--	3.5	1.8	0.9	--
Planted: May 11				Harvested: Aug.24		
Previous Crop: Safflower						

**Flood Irrigated NDSU Malt Barley  
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Plump %	Protein -- % --	
	2010	3 yr	2010	2010	2010	3 yr
Pinnacle	102.7	123.0	47.2	96	10.1	10.5
Rasmussen	92.8	115.5	46.8	86	8.9	9.8
Quest	95.6	114.3	48.2	88	9.6	10.9
Tradition	84.8	112.3	47.2	92	9.7	10.6
Legacy	80.4	112.0	47.3	88	9.3	10.0
AC Metcalfe	96.1	110.9	48.2	92	10.8	10.7
Lacey	91.4	108.6	50.0	91	9.6	9.9
Celebration	90.3	107.3	46.8	91	10.3	11.0
Stellar-ND	89.5	105.7	49.7	93	9.3	10.2
Rawson	79.4	105.2	48.3	98	10.5	11.2
Copeland	94.0	103.6	49.5	93	9.4	10.2
Robust	92.2	103.3	51.5	89	10.0	10.8
Drummond	83.6	102.1	47.8	94	10.3	11.2
Conlon	87.4	102.1	47.5	98	10.9	11.7
Haxby	81.9	100.3	49.0	93	10.1	11.1
Sunshine	101.9	--	49.3	96	10.1	--
Jennifer	85.6	--	49.7	97	9.9	--
Innovation	85.4	--	48.5	93	9.3	--
Lilly	75.1	--	47.5	94	9.9	--
LSD 5%	14.3	--	1.0	2.3	0.7	--
Planted: May 11			Harvested: Aug. 18			
Previous Crop: Sugarbeet						

**Oat Variety Descriptions**

Variety	Origin <sup>1</sup>	Grain Color	Height	Maturity	Lodging	Resistance To <sup>2</sup>			Quality Factors	
						Stem Rust	Crown Rust	Barley Yellow Dwarf	Test Weight	Grain Protein
Ajay	ID/MT	white	short	med	R	NA	NA	NA	medium	m high
AC Pinnacle	Can QAS	white	tall	late	MS	R	R	S	medium	low
AC Ronald	Can SeCan	white	m short	late	R	R	R	T	high	medium
Beach	ND	white	tall	m late	MR	S	MR/MS	MT	m high	medium
Buff	SD	hulless	med	early	MS	S	MR	MT	v high	high
CDC Dancer	Can Cargill	white	tall	late	MR	S	S	S	high	medium
CDC Minstrel	Sask.	white	tall	late	MR	S	S	S	m high	medium
CDC Orrin	Can QAS	white	tall	late	MR	S	S	S	medium	m low
CDC Weaver	Canada	yellow	medium	late	--	R	R	S	medium	low
Furlong	AAFC Winnipeg	red	tall	late	MR	S	S	T	high	medium
HiFi	ND	white	tall	late	MR	R	R	T	m high	medium
Hyttest	SD	white	tall	early	MS	S	MS	S	v high	high
Jerry	ND	white	tall	med	MR	R	MS	MT	m high	medium
Killdeer	ND	white	med	med	MR	R	MR	MT	m high	medium
Maida	ND	yellow	med	medium	R	R	R	NA	high	m high
Maverick	ID/MT	white	short	medium	R	NA	NA	NA	medium	medium
Monico	ID/MT	ivory	m tall	m early	MS	NA	NA	NA	m high	medium
Monida	ID/MT	white	tall	m late	S	S	S	S	medium	m low
Morton	ND	white	tall	late	R	R	R	MT	high	medium
Otana	MT	white	tall	m late	S	S	S	S	high	medium
Paul	ND	hulless	tall	late	S	R	MR	T	v high	high
Powell	WY/MT	cream	short	m late	MR	NA	NA	NA	low	medium
Rio Grande	ID/CO	white	m short	early	MR	NA	NA	NA	medium	medium
Rockford	ND	white	tall	late	R	S	R	MT	m high	medium
Sesqui	MN	yellow	m tall	late	R	S	S	T	high	medium
Souris	ND	white	med	med	R	MS	R	MS	high	medium
Stallion	SD	white	tall	late	M	S	MR	NA	high	medium
Stark	ND	hulless	tall	late	MR	R	MR/MS	T	high	m high

<sup>1</sup> Refers to developer: AC = Agriculture Canada; CDC=Crop Development Center

<sup>2</sup> R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, T = tolerant MT = moderately tolerant, NA = data not available.

**Dryland Notill Oats  
Arnegard, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Killdeer	83.8	104.9	42.9	12.2	12.7
Souris	82.2	95.1	43.0	13.2	12.4
Morton	55.7	87.2	41.6	14.1	14.1
Maida	76.3	87.0	42.7	13.6	14.0
Jerry	50.5	81.2	41.6	13.6	13.1
Rockford	76.9	--	43.7	13.7	--
LSD 5%	NS	--	NS	--	--
Planted: April 29			Harvested: Aug. 18		
Previous Crop: HRS Wheat					

**Dryland Notill Oats  
Ray, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Killdeer	72.4	108.1	41.0	14.2	13.3
Souris	64.0	98.7	41.4	13.1	13.4
Morton	59.5	96.7	39.7	14.1	14.5
Jerry	56.8	92.2	40.9	15.2	15.0
Maida	58.3	89.9	40.9	14.2	14.4
Rockford	72.3	--	40.6	15.7	--
LSD 5%	8.5	--	0.8	8.5	--
Planted: May 11			Harvested: Aug. 19		
Previous Crop: Durum					

**Dryland Notill Oats  
Crosby, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Killdeer	77.3	80.7	41.5	14.3	12.3
Morton	61.6	77.4	43.0	16.3	13.5
Souris	58.4	72.6	43.3	15.2	12.3
Jerry	63.7	75.3	42.4	15.5	13.0
Maida	73.7	82.0	42.0	15.4	13.7
Rockford	68.8	--	43.7	17.7	--
LSD 5%	9.0	--	NS	--	--
Planted: May 12			Harvested: Aug. 27		
Previous Crop: HRW Wheat					

**Dryland Notill Oats  
Stanley, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Morton	161.6	137.0	43.4	16.8	14.2
Killdeer	154.7	136.6	41.5	13.6	12.1
Jerry	170.8	131.7	43.6	15.8	13.7
Maida	151.3	123.4	42.3	16.7	14.0
Souris	139.4	115.3	43.3	15.4	13.0
Rockford	164.9	--	43.1	15.5	--
LSD 5%	NS	--	NS	--	--
Planted: May 10			Harvested: Aug. 26		
Previous Crop: Canola					

**Dryland Notill Oats  
New Town, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Souris	165.8	122.1	44.2	14.6	13.4
Morton	163.4	121.2	43.8	15.9	14.6
Maida	161.4	109.5	42.6	15.6	15.3
Killdeer	175.9	130.2	42.5	13.0	12.6
Jerry	158.8	116.8	44.7	15.9	15.0
Rockford	164.8	--	44.8	15.9	--
LSD 5%	NS	--	NS	--	--
Planted: May 10			Harvested: Aug. 13		
Previous Crop: Durum					

**Sprinkler Irrigated Oats  
Nesson Valley, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	3 yr		2010	3 yr
Souris	136.0	182.0	45.9	14.8	13.5
Hifi	137.3	178.6	45.4	14.5	13.5
Beach	126.0	175.6	46.7	15.0	13.6
Killdeer	143.6	175.4	45.8	14.9	13.0
Jerry	115.8	166.1	45.8	16.4	14.1
Maida	124.4	166.0	44.7	16.4	14.7
Stallion	129.7	165.1	45.8	15.9	14.7
Morton	111.4	160.4	44.3	15.6	14.9
Rockford	151.6	--	46.0	15.9	--
LSD 5%	NS	--	1.1	1.2	--
Planted: April 28			Harvested: Aug. 17		
Previous Crop: Sugarbeets					

**Oats** at the Williston location were not harvested due to severe shatter damage caused by wind and hail on August 1, 2010.



**Dryland Notill Flax  
New Town, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Oil -- % --	
	2010	3 yr		2010	3 yr
<b>Yellow Seeded</b>					
Omega	33.8	23.4	54.1	39.1	38.9
Carter	33.0	23.0	54.0	38.5	38.2
<b>Brown Seeded</b>					
Neche	32.0	22.6	53.2	38.5	38.7
Nekoma	29.7	22.5	53.5	38.5	38.5
York	25.9	21.2	50.6	37.7	37.6
Prairie Thunder	33.9	--	52.7	38.8	--

LSD 5% NS -- 1.0 -- --  
Planted: May 10 Harvested: October 5

Previous Crop: Durum

Oil percentages from NMR machine on a 9% moisture basis.

**Dryland Notill Flax  
Stanley, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Oil -- % --	
	2010	3 yr		2010	3 yr
<b>Yellow Seeded</b>					
Carter	7.1	20.6	53.7	39.0	39.3
Omega	8.5	18.5	53.2	39.6	39.5
<b>Brown Seeded</b>					
York	6.4	19.8	53.4	38.5	38.4
Nekoma	5.7	17.8	53.3	39.1	39.3
Neche	5.0	14.8	53.5	39.0	39.3
Prairie Thunder	5.9	--	53.6	39.1	--

LSD 5% 1.9 -- -- -- --  
Planted: May 10 Harvested: October 5

Previous Crop: Canola

Oil percentages from NMR machine on a 9% moisture basis.

**Dryland Notill Flax  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Oil -- % --	
	2010	3 yr		2010	3 yr
<b>Yellow Seeded</b>					
Carter	16.6	13.2	52.5	38.4	37.5
Omega	15.5	12.8	52.9	39.1	38.2
<b>Brown Seeded</b>					
Nekoma	14.8	13.8	52.6	38.5	37.7
York	11.8	12.8	53.8	37.3	37.3
Neche	14.0	12.6	52.2	38.5	37.9
Prairie Thunder	14.2	--	52.7	38.1	--

LSD 5% NS -- 0.8 0.5 --  
Planted: April 23 Harvested: July 26

Previous Crop: Durum

Oil percentages from NMR machine on a 9% moisture basis.

**Dryland Flax  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Oil -- % --	
	2010	3 yr		2010	3 yr
<b>Yellow Seeded</b>					
Carter	15.2	15.3	53.7	37.7	38.6
Omega	14.3	14.4	54.2	37.9	39.0
<b>Brown Seeded</b>					
CDC Sorrel	15.9	15.8	53.8	38.5	39.1
Prairie Thunder	15.1	15.7	53.3	37.8	38.4
CDC Bethune	15.5	15.6	53.2	38.4	38.8
Prairie Blue	15.0	15.5	53.4	38.3	39.0
Bison	15.5	15.5	53.2	37.7	38.3
York	16.6	15.2	53.8	37.1	37.9
Neche	15.2	15.2	53.3	37.8	38.5
CDC Arras	16.6	15.2	53.5	37.9	38.7
Nekoma	14.9	15.1	53.8	38.1	38.7
Webster	15.4	15.1	53.6	38.2	39.0
Rahab 94	14.6	14.8	53.2	38.3	39.0
Lightning	14.3	14.8	53.5	37.9	38.6
Linott	15.2	14.8	53.5	37.9	38.4
McGregor	14.1	14.5	53.7	37.2	37.9
Hanley	14.9	14.5	53.0	37.1	37.4
Pembina	15.1	14.4	53.2	38.9	39.6
Flor	11.9	--	53.4	37.5	--
Prairie Grande	13.5	--	53.2	38.4	--

LSD 5% 2.1 -- 0.5 0.4 --

Planted: May 14 Harvested: July 26

Previous Crop: Soybean Cover Crop

Oil percentages from NMR machine on a 9% moisture basis.

**Sprinkler Irrigated Flax  
Nesson Valley, ND**

Cultivar	Yield - bu/a -		TW lb/bu 2010	Oil -- % --	
	2010	3 yr		2010	3 yr
<b>Yellow Seeded</b>					
Carter	30.3	36.6	50.5	37.8	37.9
Omega	26.2	30.7	47.5	37.5	38.2
<b>Brown Seeded</b>					
York	34.2	34.8	50.0	37.2	36.7
Nekoma	31.3	33.4	47.9	37.2	37.7
Neche	28.7	28.6	48.0	37.6	37.9
Prairie Thunder	31.2	--	48.4	37.2	--

LSD 5% 4.3 -- NS NS --

Planted: May 29\* Harvested: Sept. 8

Previous Crop: Sugarbeets

\* First planted April 28. Replanted due to emergence and stand problems caused by Leatherjacket larvae.

Oil percentages from NMR machine on a 9% moisture basis.



# Safflower Variety Descriptions

Variety	Origin <sup>1</sup>	PVP <sup>6</sup>	Hull Type <sup>2</sup>	Oil Type <sup>3</sup>	Irrigated Yield <sup>4</sup>	Dryland Yield <sup>4</sup>	TWT <sup>4</sup>	Oil <sup>3</sup>	Maturity	Tolerance <sup>5</sup>	
										Alt.	BB
Cardinal	MT/ND	yes	N	high lino	v good	v good	high	fair	med	T	MT
Finch	MT/ND	no	N	linoleic	good	v good	v high	fair	m early	MS	T
Hybrid 1601	STI	Yes	STP	high oleic	v good	v good	med	good	m late	MT	MT
Hybrid 9049	STI	Yes	N	high oleic	v good	v good	v high	fair	med	MT	MT
MonDak	MT/ND	yes	N	high oleic	good	v good	high	fair	m early	T	MT
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
Morlin	MT/ND	yes	STP	high linoleic	v good	good	med	good	m late	T	T
Nutrasaff	MT/ND	yes	RED	linoleic	good	good	med	high	med	T	MT

<sup>1</sup> STI = Safflower Technologies International, MT = Montana, ND = North Dakota

<sup>2</sup> STP = striped, N = normal, RED = reduced

<sup>3</sup> Lino - linoleic

<sup>4</sup> Relative ratings of yield, test weight, and oil will vary under conditions of moderate-severe disease infestation

<sup>5</sup> Alt = Alternaria leaf spot disease, BB = bacterial blight, S = susceptible, MS = moderately susceptible, MT = moderately tolerant, T = tolerant

<sup>6</sup> "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 Safflower Variety Williston, ND

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	3 yr		2010	2010
Hybrid 1601	1487	1532	38.0	32.3	32.8
Cardinal	1526	1503	41.7	33.1	33.6
Hybrid 9049	1563	1354	41.0	28.2	28.5
MonDak	1215	1195	38.4	30.7	31.6
Finch	1228	1171	41.4	34.0	34.6
Montola 2004	1161	1103	37.2	30.8	32.6
Montola 2003	1208	1074	37.1	31.9	33.5
Nutrasaff	1125	1074	36.8	43.1	44.8
Morlin	902	935	36.3	33.1	35.1
Montola 2000	947	909	34.0	31.0	33.5

LSD 5% 209 -- 0.9 1.1 --

Planted: April 29

Harvested: Sept. 8

Previous Crop: Soybean cover crop

\*Oil content on an 8% moisture basis.

## Dryland Fallow Safflower Sidney, MT

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	3 yr		2010	2010
Montola 2003	2443	2361	39.9	40.3	39.1
Hybrid 1601	2576	2197	37.5	38.5	37.2
Cardinal	2196	2154	41.5	36.8	37.0
MonDak	1871	1996	38.3	36.5	35.9
Montola 2004	2139	1950	38.3	37.7	36.5
Hybrid 9049	1715	1878	41.0	32.3	31.2
Finch	1823	1830	42.3	38.1	38.1
Morlin	1473	1774	37.0	39.9	39.8
Montola 2000	1629	1764	37.8	38.5	38.6
Nutrasaff	1668	1744	38.1	51.2	50.4

LSD 5% 421 -- 1.9 1.9 --

Planted: May 10

Harvested: Oct. 1

\*Oil content on an oven dry basis.

Fungicide was applied at first flower for alternaria disease control.

## Dryland Recrop Safflower Variety Williston, ND

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	3 yr		2010	2010
Hybrid 1601	1525	1340	38.9	33.9	33.7
Hybrid 9049	1454	1219	41.0	29.1	29.4
S-518	1301	1197	34.5	37.2	39.0
MonDak	1264	1163	39.8	32.5	32.3
Cardinal	1333	1163	42.9	33.9	33.6
Finch	1270	1047	42.0	35.0	34.7
MT 2003	1134	1035	38.7	34.1	34.0
Centennial	920	1024	36.5	38.8	39.3
MT 2000	1062	1016	37.7	34.8	35.5
S-541	1050	990	37.7	39.5	39.8
MT 2004	1073	877	37.6	32.7	32.1
Nutrasaff	943	866	37.3	45.3	45.0

LSD 5% 200 -- 0.8 0.6 --

Planted: April 29

Harvested: Sept. 8

Previous Crop: Durum

\*Oil content on an 8% moisture basis.

## Sprinkler Irrigated Safflower Nesson Valley, ND

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	2 yr		2010	2010
MonDak	1657	1889	38.4	29.7	28.4
Hybrid 1601	1444	1817	35.2	31.2	30.5
Montola 2003	1346	1645	36.3	29.4	28.3
Cardinal	1342	1512	37.9	29.1	27.1
Hybrid 9049	1094	1376	37.1	26.1	32.4
Finch	1145	1251	38.1	29.8	29.5
Nutrasaff	956	1216	34.8	41.0	35.7
Montola 2004	1172	1022	32.7	28.2	25.8
Morlin	1347	--	34.9	32.8	--
Montola 2000	910	--	34.9	30.7	--

LSD 5% 267 -- 1.2 0.9 --

Planted: May 10

Harvested: Sept. 17

Previous Crop: Barley

\*Oil content on an 8% moisture basis.

**Irrigated Safflower Foliar Fungicide Trial  
Sidney, MT**

Treatment	Test WT lbs/bu		OIL%		Yield lbs/A		Leaf Spot Rating	
Check <sup>/1</sup>	33.3	a	31.4	a	1144	a	7.4	a
Switch 2 App <sup>/2</sup>	33.8	a	31.3	a	1539	ab	7.1	a
Endura 2 app <sup>/3</sup>	35.9	b	33.3	b	1688	bc	7.0	a
Endura 1 app <sup>/4</sup>	36.8	b	33.8	b	2470	c	7.1	a
Quadris+Omega <sup>/5</sup>	41.0	d	36.9	d	2212	e	3.8	c
Quadris 1 App <sup>/6</sup>	39.6	c	35.5	c	1291	de	5.3	b

LSD (0.05)

1.2

0.8

288

1.1

Date Planted: May 20

Date Harvested: Oct 1

Variety: Finch

<sup>/1</sup> Untreated

<sup>/2</sup> Switch 12 oz at first flower and again 7 days later on Aug 2 and Aug 9

<sup>/3</sup> Endura 5.5 oz/A at first flower, and 7 days later on Aug 2 and Aug 9

<sup>/4</sup> Endura 5.5 oz/A at first flower on Aug 9,

<sup>/5</sup> Quadris (azoxystrobin 0.15 lbs/A) plus Omega (fluazinam 8 oz) on Aug 2 and Aug 9

<sup>/6</sup> Quadris (azoxystrobin 0.15 lbs/A) at first flower on Aug 9

**Valley Fungicide Safflower Variety Trial  
Sidney, MT**

*Mean of 36 Varieties*

# Treatment	Number of Foliar Apps.	Test <sup>1/</sup> Wt. lbs/bu		Oil <sup>1/</sup> Content % <sup>3/</sup>		Yield <sup>1/</sup> lbs/A		Disease <sup>1/</sup> Rating Alternaria	
1	No spray	33.0	a	35.5	a	774	a	7.7	a
2	One spray	37.4	b	40.6	b	1918	b	4.8	b
3	Two spray	38.5	c	41.4	c	2225	c	2.4	c
<b>LSD (0.05)</b>		0.9		0.7		99		0.8	

Date Seeded: May 10

Date Harvested: Oct. 1

Previous crop: Sugarbeets

<sup>1/</sup> Numbers in the same column followed by a different letter are different at a probability level of >0.05

<sup>2/</sup> Oil content reported on an oven dry weight basis.

Fungicide applied: 10 oz/A Headline on 7/21/10 for treatment 2

Fungicide applied: 10 oz/A Headline on 7/21/10 plus 10 oz/A Quadris on 8/10/10 for treatment 3

**Dryland Safflower Variety Planting Date Trial  
Sidney, MT**

*Mean of 12 Safflower Varieties*

Planting Date	Stand %		Bloom Date		Height cm		Test Wt lbs/bu		OIL%		Yield lbs/A		Harvest Date
22-Apr	82	A	7/24	A	59	A	41.5	A	37.6	A	2003	A	14-Sep
13-May	67	C	7/29	B	52	B	41.1	A	38.0	A	1871	B	30-Sep
2-Jun	74	B	8/7	C	52	B	40.1	B	37.4	B	1603	C	13-Oct
15-Jun	57	D	8/18	D	52	B	34.2	C	32.7	C	760	D	20-Oct
<b>Mean</b>	70		8/4		53.8		39.2		36.4		1559		
<b>LSD (0.05)</b>	4.3		0.25		2.7		0.4		0.4		98		

Values in the same column followed by a different letter are statistically different at the 5% level of significance.

Fungicide was applied at first flower for alternaria disease control.

**Valley Safflower**  
Sidney, MT

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	3 yr	2010	2010	3 yr
Hybrid 1601	2812	2632	37.5	37.7	36.5
Cardinal	2405	2549	42.0	32.3	31.2
Montola 2003	2254	2302	37.4	36.8	48.1
Hybrid 9049	2423	2263	39.8	51.2	50.4
Morlin	1367	2167	36.0	38.5	37.2
Finch	2146	2083	41.0	36.5	35.9
Nutrasaff	1679	1898	37.9	40.3	39.1
Mondak	2036	1878	36.8	39.9	39.8
Montola 2004	1883	1855	37.3	38.1	38.1
Montola 2000	1329	1682	33.3	38.5	38.6
LSD 5%	615	--	2.1	1.7	--
Planted: May 14			Harvested: Oct. 19		
Previous Crop: Spring Wheat					
*Oil content on an oven dry basis.					

**Dryland Recrop Camelina**  
Williston, ND

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	2 yr	2010	2010	2 yr
Ligena	1406	1470	52.0	34.5	34.1
Calena	1370	1459	53.0	33.3	33.5
Galena	1368	1450	52.9	33.8	33.7
CO 46	1250	1339	51.1	34.2	33.5
Robinson	1297	1333	52.8	33.5	33.5
CO 54-97	1228	1282	53.1	33.3	33.0
Blaine Creek	1118	1265	52.9	33.4	33.2
Suneson	1246	1255	53.4	34.3	34.2
Blaine Creek @2.5lb/a	1088	1221	52.9	33.5	33.2
Blaine Creek @2.0lb/a	1131	--	52.7	33.5	--
GP-07	1130	--	51.9	33.8	--
SO-5	1335	--	53.0	34.0	--
LSD 5%	130	--	0.3	0.7	--
Planted: April 23			Harvested: July 26		
Previous Crop: Durum					

**Dryland Camelina**  
Williston, ND

Cultivar	Yield - bu/a -		TW lb/bu	Oil -- % --	
	2010	3 yr	2010	2010	3 yr
Ligena	1743	1337	52.1	33.8	34.8
Calena	1626	1321	53.0	32.8	34.4
Blaine Creek	1754	1234	52.5	33.8	34.2
Suneson	1609	1143	53.1	33.2	34.8
GP-07	1569	--	51.9	33.7	--
GP-10	1691	--	52.9	33.4	--
GP-12	1448	--	52.5	33.1	--
GP-42	1701	--	52.9	33.4	--
GP-43	1577	--	52.9	33.5	--
GP-68	1571	--	52.4	33.5	--
GP-69	1576	--	52.3	34.0	--
GP-73	1625	--	52.1	34.2	--
SO-11	1696	--	51.7	33.4	--
SO-12	1683	--	52.8	34.1	--
SO-5	1752	--	52.9	33.3	--
SO-7	1611	--	51.8	33.8	--
SO-8	1699	--	52.2	33.0	--
SO-9	1666	--	53.0	33.2	--
LSD 5%	133	--	0.2	0.5	--
Planted: April 23			Harvested: July 26		
Previous Crop: Soybean Cover Crop					

**Dryland Fallow Camelina Trial**  
Sidney, MT

Variety	Yield lbs/a		Test wt lbs/bu		Oil Content %	
	2010	2 yr	2010	2 yr	2010	2 yr
Blaine Creek	776	1368	51.0	51.8	36.0	34.9
Calena	777	1394	52.0	53.4	36.4	34.8
Ligena	968	1495	51.3	51.7	35.2	34.2
Suneson	805	1230	52.3	52.8	35.5	34.2
LSD (0.05)	389	--	1.0	--	1.4	--
Planted: April 22			Harvested: Aug 4			

**Mustard and Canola** at the Williston location were not harvested due to severe shatter damage caused by wind and hail on August 1, 2010.

**Dryland Chickpea Variety  
Williston, ND**

Cultivar	TW	Yield			
	lb/bu	lb/a			
	2010	2008	2009	2010	3 yr
<b>LARGE KABULI</b>					
CDC Frontier	59.6	1116	1723	901	1247
Sawyer	59.1	874	1526	819	1073
HB19	57.0	927	1384	785	1032
Sierra	58.4	769	841	680	763
HB14	58.5	1107	451	915	824
Dylan	55.2	742	428	700	623
Troy	55.2	461	627	343	477
CDC Luna	59.5	--	1532	786	--
<b>SMALL KABULI</b>					
B-90	60.4	1106	1558	820	1161
<b>DESI</b>					
CDC Anna	59.8	1034	1290	677	1000
LSD 5%	NS	118	105	NS	--
Planted: May 17			Harvested: Aug. 26		
Previous Crop: Durum					

**Dryland Sunflowers  
Williston, ND**

Brand/Cultivar	Yield		TW	Oil	
	- lbs/a -	3 yr	lb/bu	2010	3 yr
SYN 7120 HO/DM	1062	1594	31.6	44.0	42.8
SYN 2930 NS/DM	813	1525	30.0	39.4	42.1
SYN 3433 NS/DM	1300	1496	33.2	41.5	43.0
SYN 3480 NS/CL/DM	959	1479	32.8	42.2	42.2
SD2 Defender Plus	877	1370	31.8	37.8	39.5
ND Hybrid 894	578	1151	32.9	40.4	40.8
SD2 X9866	1120	--	31.3	40.2	--
TR 610CLD	1006	--	32.1	43.5	--
TR s671	1001	--	34.3	45.0	--
SD2 X9828	953	--	32.2	39.3	--
SD2 Cobra	831	--	28.6	40.1	--
TR s673	948	--	32.0	43.2	--
LSD 5%	NS	--	0.4	0.8	--
Planted: May 18			Harvested: Oct. 5		
Previous Crop: Durum					
SYN = Syngenta; SD2 = Seeds 2000; TR = Triumph; ND = NDSU					
CL = Clearfield; NS = NuSun; HO = High Oleic					
DM = Downy Mildew Resistant					

**Irrigated Sunflower Trial  
Sidney, MT**

Variety	Height inches	Test Wt. lbs/bu	Oil Content %	Yield lbs/A Variety	
USDA 412/377	55	34.8	47.6	2236	
USDA 445/377	47	33.3	38.8	1534	
Hybrid TRX S870					
HCL	58	35.5	47.6	1778	
Hybrid TRX S8420	53	34.3	43.8	1958	
Hybrid TRX S671	49	35.8	46.4	2903	
TRX 7435 HO	56	33.0	42.9	1347	
Mean	53.0	34.5	44.5	1959	
LSD (0.05)	7.72	1.43	1.48	365	
Date Seeded: May13		Date Harvested: October 7			
Previous crop: Sugarbeets		Plot Size: 40 sq ft"			

**Dryland Conventional Soybean  
Williston, ND**

Cultivar	Yield		TW	Oil	
	- bu/a -	3 yr	lb/bu	2010	3 yr
Sheyenne	8.8	19.0	58.2	20.1	20.0
ProSoy	9.5	17.9	57.5	18.7	18.7
Ashtabula	9.5	17.6	57.9	19.6	20.0
Traill	8.9	17.1	58.8	18.4	19.3
Cavalier	7.5	16.2	58.3	18.8	19.4
AG 00501	10.4	--	57.9	19.8	--
AG 00603	8.0	--	58.5	18.5	--
Jim	4.3	--	57.0	19.5	--
ND1002T	7.2	--	59.5	16.9	--
ND1005T	9.0	--	58.1	17.9	--
Pembina	6.9	--	57.6	19.0	--
Walsh	7.5	--	57.3	19.0	--
LSD 5%	NS	--	1.2	0.7	--
Planted: May 10			Harvested: Sept. 29		
Previous Crop: Durum					

**Dryland Roundup Ready Soybean  
Williston, ND**

Cultivar	Yield		TW	Oil	
	- bu/a -	2 yr	lb/bu	2010	2 yr
AG 0202	21.2	23.4	55.6	19.8	19.8
AG 00501	21.1	23.3	54.1	20.1	20.5
AG 00603	21.3	22.3	56.1	19.2	19.9
AG 00901	19.7	21.7	56.3	19.7	20.0
PFS 1002 RR	22.0	--	55.2	20.4	--
PFS 0806 RR	23.6	--	56.0	20.8	--
AG 0331	23.7	--	56.1	19.0	--
AG 0401	20.7	--	54.7	20.8	--
AG 0430	21.8	--	55.9	19.3	--
PFS 04009 RR	20.0	--	55.0	19.4	--
LSD 5%	NS	--	NS	1	--
Planted: May 18			Harvested: Sept. 29		
Previous Crop: Durum					
PFS = Peterson Farms Seeds; AG = ASGROW					

**Sprinkler Irrigation Soybeans  
Sidney, MT**

Variety	Maturity Group	Oil %		Test WT --lbs/bu--		Protein ---%---		Yield --bu/a--	
		2010	3 yr	2010	3yr	2010	3yr	2010	3yr
Nannonatto	0.4	18.8	18.2	58.5	57.7	39.1	35.0	24.4	28.6
Walsh	0.3	19.8	19.5	59.5	57.8	37.6	34.4	27.9	35.7
Cavalier	0.7	19.5	19.0	59.0	58.4	38.7	35.2	34.3	34.1
Prosoy	0.8	19.3	18.9	57.0	57.4	39.9	38.2*	36.6	36.4
SK972	0.3	21.2	21.0	58.3	57.7	37.6	37.1	53.9	46.2
SK046*	0.4	19.0	19.4*	58.5	58.3*	35.0	34.4*	26.5	26.4*
LS 0624	0.6	21.6	20.8	58.3	57.3	33.6	35.5	44.8	40.2
SK0033	0.8	17.9	--	58.0	--	39.2	--	32.2	--
SK0786	0.7	19.2	--	57.7	--	38.6	--	41.7	--
LS 0065	0.6	22.1	--	58.0	--	35.5	--	41.7	--
LS 0087	0.8	22.0	--	58.0	--	35.1	--	43.8	--
LS 009R20	0.9	21.4	--	59.0	--	33.7	--	39.5	--
Ashtabula	0.4	21.8	--	58.7	--	34.7	--	41.2	--
LSD (0.05)		1.01		0.84				10.2	

Planted: May 17  
Previous Crop: Sugarbeets

\*2yrs only

Harvested: October 5  
Irrigation Dates: 7-18 (1.6")

**Irrigated Conventional Soybean  
Nesson Valley, ND**

Cultivar	Yield	TW	Oil	Protein
	- bu/a - 2010	lb/bu 2010	-- % -- 2010	-- % -- 2010
Jim	63.4	57.6	18.7	31.1
Sheyenne	61.6	57.0	19.5	31.5
ProSoy	60.9	58.3	18.7	32.4
Pembina	57.7	57.2	19.2	33.2
Walsh	56.8	58.7	17.8	35.5
AG 00603	55.6	56.7	17.2	37.0
Trall	55.3	58.8	16.2	36.0
Cavalier	52.3	57.8	16.7	37.7
AG 00501	51.0	57.1	18.5	32.9
ND1002T	50.3	57.8	16.6	35.7
Ashtabula	42.2	59.1	19.1	33.5
ND1005T	41.2	58.1	16.7	33.2
LSD 5%	4.9	0.5	0.3	1.2

Planted: May 18  
Previous Crop: Durum

Harvested: Oct. 5

**Sprinkler Irrigated Roundup Ready Soybean  
Nesson Valley, ND**

Cultivar	Yield		TW	Protein	Oil
	- bu/a - 2010	2 yr	lb/bu 2010	% 2010	% 2010
AG 0202	68.8	61.3	58.1	31.1	19.1
AG 00901	65.0	61.1	58.6	31.7	19.4
AG 00603	65.3	60.3	58.2	32.8	18.9
AG 00501	67.8	58.9	57.6	31.6	19.7
PFS 0806 RR	70.9	--	57.6	31.1	--
PFS 1002 RR	70.3	--	57.1	31.1	--
AG 0331	73.2	--	56.9	33.0	--
AG 0401	67.8	--	56.6	31.9	--
AG 0430	72.6	--	57.7	33.3	--
LSD 5%	NS	--	0.4	0.8	0.3

Planted: May 18  
Previous Crop: Durum

Harvested: Oct. 5

PFS = Peterson Farms Seeds; AG = ASGROW

**Sprinkler Irrigated Grain Corn  
Sidney, MT**

Cultivar	Company	Moisture %	TW <sup>1</sup> lb/bu	Yield <sup>2</sup> - bu/a -
315-03	Curry	28.0	52.0	186.1
9895	Legend Seeds	26.9	55.2	183.6
9780	Legend Seeds	25.7	55.2	176.9
9787	Legend Seeds	24.8	52.7	157.5
9887	Legend Seeds	25.9	53.3	148.6
35-43	DeKalb	25.5	55.2	137.4
30-20	DeKalb	25.3	56.8	127.5
36-08	DeKalb	<b>31760</b>	54.8	124.1
33-54	DeKalb	24.6	55.2	106.6
LSD 5%		1.1	2.9	2.9

Planted: May 17  
Previous Crop: Safflower

Harvested: Oct. 26

<sup>1</sup> oven dried basis      <sup>2</sup> adjusted to 13.5% moisture

**Dryland Notill Corn  
Williston, ND**

Brand/Cultivar	Yield		TW	Protein	
	- bu/a - 2010	2 yr	lb/bu 2010	-- % -- 2010	2 yr
REA 1T345	49.0	54.4	55.8	9.7	11.0
REA 1T114	42.8	--	54.8	8.8	--
REA 2T320	53.3	--	56.1	8.8	--
REA 2T149	45.1	--	55.2	9.3	--
REA 1R 880	56.4	--	55.2	9.0	--
PFS 21A78	53.4	--	55.0	9.6	--
PFS 54M83	56.9	--	55.5	9.2	--
S2 2781 RR	44.7	--	54.6	10.1	--
S2 2823 CBLL	59.4	--	51.2	8.7	--
LSD 5%	10.5	--	1.0	0.6	--

Planted: May 20  
Previous Crop: Durum

Harvested: Oct. 15

PFS = Peterson Farms Seeds; REA = REA Seeds; S2 = Seeds 2000

**Sprinkler Irrigated Hybrid Corn  
Nesson Valley, ND**

Brand/Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	2 yr		2010	2 yr
LS LS 9887	226.0	197.3	54.7	7.3	8.9
LS LS 9787	209.7	190.2	52.6	8.1	9.2
REA 2T425	212.6	181.4	56.6	7.8	9.2
DK DKC33-54	217.4	181.0	57.3	7.9	9.1
DG 51V57	218.3	180.9	53.2	8.3	9.5
CY 315-03	207.7	--	52.8	7.8	--
DK DKC30-20	219.4	--	58.6	8.0	--
DG 50K21	209.5	--	57.2	8.5	--
DG 51V45	212.2	--	57.0	8.7	--
PFS 21A78	199.5	--	57.8	7.9	--
PFS 54M83	214.0	--	57.6	8.0	--
REA 1A218	201.4	--	56.7	9.2	--
REA 2T149	226.9	--	57.6	8.0	--
REA 2T320	209.7	--	56.9	7.4	--
REA 2T687	202.2	--	56.6	7.4	--
LS LS 9780	216.8	--	55.2	8.1	--
LSD 5%	16.1	--	0.7	0.5	--

All cultivars are Roundup Ready hybrids.

Planted: June 7

Harvested: Oct. 17

Previous Crop: Barley

CY = Curry; DK = DeKalb; DG = Dyna-Gro; LS = Legend Seeds;

PFS = Peterson Farms Seeds; REA = REA seeds

**Sprinkler Irrigated Silage Corn  
Sidney, MT**

Cultivar	Company	Stand - plants/a -	Moisture - % -	Yield <sup>1</sup> - T/a -
9895	Legend Seeds	39480	0.62	37.3
315-03	Curry	43110	0.63	29.7
9780	Legend Seeds	41290	0.63	29.1
9787	Legend Seeds	39020	0.56	27.9
36-08	DeKalb	31760	0.59	27.8
9887	Legend Seeds	33120	0.62	25.4
33-54	DeKalb	36750	0.53	25.4
35-43	DeKalb	34940	0.63	22.7
30-20	DeKalb	31760	0.59	19.0
LSD 5%		7186	0.05	10.4
Planted: May 17			Harvested: Sept. 26	
Previous Crop: Safflower				
<sup>1</sup> adjusted to 70% moisture				

**Sprinkler Irrigated Dry Edible Bean  
Nesson Valley, ND**

Cultivar	Yield ----- lb/a -----		TW lb/bu 2010
	2010	3 yr	
<b>BLACK</b>			
T-39	2798	2826	63.6
Eclipse	3220	2781	63.8
Jaguar	2896	2743	64.9
Loreto	2834	--	64.0
Zorro	2888	--	63.7
<b>GREAT NORTHERN</b>			
Matterhorn	3063	2867	61.4
<b>SMALL RED</b>			
Merlot	2732	2523	62.5
<b>PINK</b>			
Sedona	2871	2299	61.6
LSD 5%	NS	--	0.4

Planted: June 6

Harvested: Sept. 30

Previous Crop: Durum

**Sprinkler Irrigated Dry Edible Bean  
Sidney, MT**

Cultivar	Bean Type	Yield --cwt/a--		SW <sup>1</sup> gm date	Harvest date
		2010	2 yr		
Max	Pinto	29.0	30.8	38.7	Sep 1
Othello	Pinto	32.4	30.6	37.5	Sep 1
Santa Fe	Pinto	28.6	29.5	40.7	Sep 1
Stampede	Pinto	28.6	29.3	36.1	Sep 1
Avalanche	Navy	28.3	28.0	19.0	Sep 1
Jackpot	Pinto	26.0	27.7	37.4	Sep 1
Lightning	Navy	28.6	27.5	20.0	Sep 1
Eclipse	Black	27.0	27.1	19.7	Sep 1
Zorro	Black	21.8	25.7	18.7	Sep 1
Lariat	Pinto	24.8	25.6	37.2	Sep 1
Sequoia	Pinto	24.9	24.3	33.6	Sep 1
Odyssey	Pinto	29.9	--	34.6	Sep 1
CELRK	LRK	25.2	--	56.0	Sep 1
Bellagio	Cran	22.7	--	57.3	Sep 14
LSD 5%	--	3.8	--	--	--

Planted: May 20

Previous Crop: Sugarbeets

<sup>1</sup>100-Seed Weight



**Sprinkler Irrigated Navy Bean  
Nesson Valley, ND**

Cultivar	Yield ----- lb/a -----		TW lb/bu
	2010	3 yr	2010
Vista	2921	2990	64.7
Avalanche	3159	2981	65.3
Ensign	2894	2953	65.1
Navigator	2724	2632	64.6
Seahawk	2819	2556	65.3
Norstar	2425	2170	65.6
HMS Medalist	2864	--	64.9
Mayflower	2989	--	64.7
Octane	2327	--	66.1
Skyline	2441	--	66.3
LSD 5%	358		0.6
Planted: June 6		Harvested: Sept. 30	
Previous Crop: Durum			

**Sprinkler Irrigated Pinto Bean  
Nesson Valley, ND**

Cultivar	Yield ----- lb/a -----		TW lb/bu
	2010	3 yr	2010
La paz	3146	3218	62.4
Lariat	3005	3199	61.3
Buster	2991	3127	61.7
Stampede	3371	2751	61.7
Maverick	2714	2521	60.7
GTS-900	2602	2510	61.7
Othello	1951	2208	62.2
Mariah	2445	--	61.9
Medicine Hat	2612	--	60.6
ND 307	2385	--	59.7
Santa Fe	2571	--	60.8
Sonora	2872	--	61.1
Windbreaker	3203	--	60.2
LSD 5%	381		0.6
Planted: June 6		Harvested: Sept. 30	
Previous Crop: Durum			

Dryland **beans** and **lentils** at the Williston location were not harvested due to severe damage caused by wind and hail on August 1, 2010.

**Dryland Notill Lentil  
Ray, ND**

Cultivar	TW lb/bu	Yield ----- lb/a -----			
	2010	2008	2009	2010	3 yr
<b>LARGE GREEN</b>					
Pennell	58.0	1254	1611	1590	1485
Riveland	55.8	1060	1514	1463	1346
CDC Greenland	59.3	--	1681	2180	--
<b>MEDIUM GREEN</b>					
CDC Richlea	60.1	1091	1913	1867	1624
CDC Impress CL	60.0	--	1498	1678	--
<b>SMALL RED</b>					
CDC Rouleau	61.8	1228	1683	1903	1605
CDC Maxim CL	62.8	--	1213	1880	--
CDC Red Rider	62.1	--	--	2047	--
CDC Redberry	62.0	--	1107	1806	--
<b>SMALL GREEN</b>					
CDC Viceroy	63.1	1385	1725	1998	1703
<b>EXTRA SMALL RED</b>					
CDC Rosetown	63.4	--	--	1893	--
<b>FRENCH</b>					
CDC LeMay	63.2	--	--	2004	--
LSD 5%	0.9	--	259	386	--
Planted: May 10			Harvested: Aug. 12		
Previous Crop: Durum					

**Dryland Notill Lentil  
Stanley, ND**

Cultivar	TW lb/bu	Yield ----- lb/a -----			
	2010	2008	2009	2010	3 yr
<b>LARGE GREEN</b>					
Pennell	58.4	1023	1394	1595	1337
Riveland	58.8	754	1384	1856	1331
CDC Greenland	59.4	--	1269	2065	--
<b>MEDIUM GREEN</b>					
CDC Richlea	60.0	885	1482	1182	1183
CDC Impress CL	58.8	--	972	1069	--
<b>SMALL RED</b>					
CDC Rouleau	62.2	1061	1264	1229	1185
CDC Maxim CL	62.8	--	1168	1693	--
CDC Red Rider	62.7	--	--	1301	--
CDC Redberry	61.8	--	1182	1328	--
<b>SMALL GREEN</b>					
CDC Viceroy	62.6	780	1240	1189	1070
<b>EXTRA SMALL RED</b>					
CDC Rosetown	63.8	--	--	1711	--
<b>FRENCH</b>					
CDC LeMay	62.9	--	--	1134	--
LSD 5%	2.0	404	NS	399	--
Planted: May 10			Harvested: Aug. 19		
Previous Crop: Canola					

Dryland Notill Lentil  
Arnegard, ND

Cultivar	TW lb/bu	Yield ----- lb/a -----			
		2010	2008	2009	2010
<b>LARGE GREEN</b>					
Pennell	58.4	1816	1212	1595	1541
Riveland	58.8	1369	1009	1856	1411
CDC Greenland	59.4	--	1220	2065	--
<b>MEDIUM GREEN</b>					
CDC Richlea	60.0	1460	1467	1182	1370
CDC Impress CL	58.8	--	964	1069	--
<b>SMALL RED</b>					
CDC Rouleau	62.2	1419	1206	1229	1285
CDC Maxim CL	62.8	--	1114	1693	--
CDC Red Rider	62.7	--	--	1301	--
CDC Redberry	61.8	--	1311	1328	--
<b>SMALL GREEN</b>					
CDC Viceroy	62.6	1741	1581	1189	1504
<b>EXTRA SMALL RED</b>					
CDC Rosetown	63.8	--	--	1711	--
<b>FRENCH</b>					
CDC LeMay	62.9	--	--	1134	--
LSD 5%	2.0	293	366	399	--
Planted: May 10			Harvested: Aug. 19		
Previous Crop: Canola					

Dryland Notill Lentil  
Crosby, ND

Cultivar	TW lb/bu	Yield ----- lb/a -----			
		2010	2007	2008	2010
<b>LARGE GREEN</b>					
Pennell	56.9	1385	1852	1482	1573
Riveland	58.0	1175	1873	1867	1638
CDC Greenland	58.3	--	--	2506	--
<b>MEDIUM GREEN</b>					
CDC Richlea	60.4	1229	2126	2548	1967
CDC Impress CL	60.7	--	--	2426	--
<b>SMALL RED</b>					
CDC Maxim CL	63.0	--	--	2211	--
CDC Red Rider	62.0	--	--	2032	--
CDC Redberry	62.4	--	2074	2120	--
CDC Rouleau	62.2	--	1646	2485	--
<b>SMALL GREEN</b>					
CDC Viceroy	62.7	1306	2285	2353	1981
<b>EXTRA SMALL RED</b>					
CDC Rosetown	63.3	--	--	2213	--
<b>FRENCH</b>					
CDC LeMay	62.5	--	--	2461	--
LSD 5%	0.4	256	223	477	--
Planted: May 12			Harvested: Aug. 11		
Previous Crop: HRW Wheat					

Dryland Notill Lentil  
New Town, ND

Cultivar	TW lb/bu	Yield ----- lb/a -----			
		2010	2008	2009	2010
<b>LARGE GREEN</b>					
Pennell	29.1	944	1403	2012	1453
Riveland	28.6	802	1507	1348	1219
CDC Greenland	29.3	--	1436	2087	--
<b>MEDIUM GREEN</b>					
CDC Impress CL	60.5	--	1270	2175	--
CDC Richlea	60.3	764	1947	2321	1677
<b>SMALL RED</b>					
CDC Maxim CL	62.4	--	1402	2477	--
CDC Red Rider	61.6	--	--	2205	--
CDC Redberry	62.0	--	1525	2421	--
CDC Rouleau	62.0	911	1413	2634	1652
<b>SMALL GREEN</b>					
CDC Viceroy	62.4	686	1516	2115	1439
<b>EXTRA SMALL RED</b>					
CDC Rosetown	63.1	--	--	2247	--
<b>FRENCH</b>					
CDC LeMay	62.6	--	--	2101	--
LSD 5%	0.4	256	223	477	--
Planted: May 10			Harvested: Aug. 13		
Previous Crop: Durum					

Sprinkler Irrigated Lentil  
Nesson Valley, ND

Cultivar	Yield	TW
	lb/a	lb/bu
<b>LARGE GREEN</b>		
Riveland	1238	56.4
CDC Greenland	1146	58.1
Pennell	1080	58.5
<b>MEDIUM GREEN</b>		
CDC Impress CL	1611	60.2
CDC Richlea	1547	59.5
<b>SMALL RED</b>		
CDC Maxim CL	1878	62.2
CDC Redberry	1373	61.2
CDC Red Rider	1208	60.2
CDC Rouleau	1171	61.0
<b>SMALL GREEN</b>		
CDC Viceroy	1723	62.9
<b>EXTRA SMALL RED</b>		
CDC Rosetown	1920	63.7
<b>FRENCH</b>		
CDC LeMay	1496	62.6
LSD 5%	460	1.1
Planted: May 29		Harvested: Aug. 26
Previous Crop: Sugarbeets		

Clearfield Lentil							
New Town, Arnegard, Ray, Stanley, Crosby, & Nesson Valley, ND							
Cultivar	New T.	Arneg.	Ray	Stan.	Cros.	N.V.	Ave.
	Yield (lb/a)						
	a	b	c	d	e	f	
<b>LARGE GREEN</b>							
CDC Improve-CL	2219	1970	2173	1586	2547	1110	<b>1934</b>
<b>MEDIUM GREEN</b>							
CDC Impress-CL	2171	2037	2288	1787	2653	1374	<b>2051</b>
<b>SMALL RED</b>							
CDC Maxim-CL	2108	2161	2212	1089	2510	1895	<b>1996</b>
CDC Impact-CL	2065	1659	2233	1484	2096	1943	<b>1913</b>
<b>EXTRA SMALL RED</b>							
CDC Impala-CL	2259	2075	2046	1427	2421	1594	<b>1970</b>
CDC Imperial-CL	2129	1804	2000	1500	2188	1734	<b>1892</b>
LSD 5%	NS	NS	NS	NS	NS	NS	--

a Notill. Planted May 10. Previous crop: Durum. Harvested August 13.

b Notill. Planted April 29. Previous crop: HRS wheat. Harvest August 3.

c Notill. Planted May 11. Previous crop: Durum. Harvested August 12.

d Notill. Planted May 10. Previous crop: Canola. Harvested August 19.

e Notill. Planted May 12. Previous crop: HRW Wheat. Harvested Aug. 11.

f Irrigated. Planted April 28th, then replanted May 29 because emergence and stand problems. Harvested August 11. Previous crop: Sugarbeets.

### Dryland Fallow Lentil Sidney, MT

Cultivar	Yield -lb/a-		TW lb/bu	100 seed wt -gm-	
	2010	2 yr	2010	2010	3 yr
<b>GREEN</b>					
LC01602307E	2249	2009	61.7	4.6	4.7
CDC Meteor	2070	1913	61.0	4.8	5.3
LC01602300R	2167	1910	61.2	5.1	5.2
CDC Richlea	1957	1828	60.8	5.2	5.3
Merrit	1349	1378	59.0	6.3	6.9
CDC Vantage	1905	1750	61.0	4.9	5.2
Pennell	1794	1611	59.7	6.3	6.8
Riveland	1563	1475	57.8	7.2	7.6
Brewer	1422	1263	59.5	6.1	6.4
<b>RED</b>					
CDC Redberry	2184	1758	62.5	4.3	4.5
Crimson	1923	1380	62.5	3.5	3.7
LC01602062T	1773	1329	62.5	4.4	4.8
<b>PARDINA</b>					
LC01602245P	1478	1095	63.8	3.9	4.2
LSD 5%	390	--	0.7	0.2	--
Planted: April 20			Harvested: Aug. 11		

### Dryland Fallow Field Peas Sidney, MT

Cultivar	Yield -lb/a-		TW lb/bu	100 seed wt -gm-	
	2010	2 yr	2010	2010	3 yr
<b>YELLOW COTYLEDON TYPE</b>					
Mozart	4021	2632	65.0	23.2	23.8
PS9910140	3793	2371	62.3	22.8	24.3
PS0010836	3536	2224	64.0	25.8	26.4
Delta	3102	2136	64.3	23.7	24.0
Admiral	3013	1949	65.2	23.5	23.9
PS01102958	3050	1876	64.3	25.9	25.5
Trapeze	4015	--	64.0	25.3	--
Centennial	3925	--	64.2	24.6	--
Golden	3732	--	64.8	22.1	--
Midas	3636	--	65.0	20.4	--
Salute	3398	--	64.7	22.6	--
Meadow	3265	--	65.3	21.2	--
<b>GREEN COTYLEDON TYPE</b>					
Majoret	3340	2156	63.7	21.4	22.1
Medora	2895	2043	63.5	22.0	23.1
Cruiser	2817	2007	64.0	20.9	21.1
Stirling	3049	1955	63.8	21.4	21.0
Striker	3405	--	64.5	24.5	--
Patrick	3374	--	63.8	18.8	--
K2	2749	--	64.7	22.0	--
LSD 5%	488	--	0.8	0.8	--
Planted: April 20			Harvested: Aug. 4		

Dryland Notill Pea  
Arnegard, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	2 yr		2010	2 yr
<b>YELLOW COTYLEDON TYPE</b>					
Agassiz	42.4	--	64.2	22.5	--
CDC Golden	36.2	40.1	64.6	22.4	21.1
CDC Meadow	33.6	42.2	65.1	22.1	21.0
DS Admiral	25.9	31.6	64.9	22.0	21.4
<b>GREEN COTYLEDON TYPE</b>					
Arcadia	33.3	--	64.5	21.8	--
CDC Striker	35.4	38.0	65.1	23.4	22.5
Cruiser	33.3	34.9	63.8	22.5	21.0
K-2	30.0	33.4	65.1	21.5	20.8
Majoret	31.6	33.9	65.2	23.2	21.5
LSD 5%	5.9	--	NS	0.9	--
Planted: April 29			Harvested: Aug. 11		
Previous Crop: HRW Wheat					

Dryland Notill Pea  
New Town, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	2 yr		2010	2 yr
<b>YELLOW COTYLEDON TYPE</b>					
Agassiz	32.8	--	62.2	23.4	--
CDC Golden	29.8	37.3	64.1	23.1	22.9
CDC Meadow	23.9	37.5	63.5	23.2	23.0
DS Admiral	26.7	32.4	63.2	22.4	22.6
<b>GREEN COTYLEDON TYPE</b>					
Arcadia	26.5	--	62.2	22.8	--
CDC Striker	24.9	32.7	65.0	23.6	22.8
Cruiser	24.8	32.5	63.3	23.2	22.4
K-2	21.5	31.3	63.1	22.8	22.1
Majoret	29.8	34.8	63.3	23.7	22.6
LSD 5%	NS	--	0.9	NS	--
Planted: May 10			Harvested: Aug. 13		
Previous Crop: Durum					

Dryland Notill Pea  
Stanley, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	2 yr		2010	2 yr
<b>YELLOW COTYLEDON TYPE</b>					
DS Admiral	27.8	33.0	65.6	23.0	22.8
Agassiz	32.0	--	64.6	23.2	--
CDC Golden	37.1	42.5	65.3	23.7	--
CDC Meadow	31.3	41.9	66.0	22.8	--
<b>GREEN COTYLEDON TYPE</b>					
Cruiser	38.3	39.9	64.3	22.5	21.0
Majoret	29.0	36.8	65.6	23.0	21.5
CDC Striker	22.9	31.4	65.5	23.8	22.4
K-2	25.3	35.6	64.6	21.8	20.8
Arcadia	32.1	--	64.8	22.3	--
LSD 5%	8.8	--	65.1	--	--
Planted: May 10			Harvested: Aug. 12		
Previous Crop: Canola					

Dryland Notill Pea  
Crosby, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	2 yr		2010	2 yr
<b>YELLOW COTYLEDON TYPE</b>					
DS Admiral	51.0	41.9	64.4	21.6	21.6
Agassiz	64.1	--	64.1	21.6	--
CDC Golden	56.7	--	64.0	21.9	--
CDC Meadow	55.5	45.0	65.2	21.8	21.1
CDC Mozart	48.7	--	63.8	21.6	--
<b>GREEN COTYLEDON TYPE</b>					
CDC Striker	52.5	38.3	64.8	22.7	23.4
K-2	44.5	38.5	63.9	21.6	22.0
Arcadia	53.2	45.9	63.7	21.0	21.1
Cruiser	48.4	--	64.3	21.8	--
Majoret	47.1	--	64.5	22.5	--
Pro 071-6101	47.6	--	63.8	22.0	--
Pro 071-6102	47.1	--	63.1	21.7	--
Pro 071-6103	51.8	--	63.7	21.9	--
Pro 071-7111	43.6	--	63.5	21.5	--
Pro 081-6118	54.1	--	63.5	21.7	--
LSD 5%	8.0	--	0.5	0.3	--
Planted: May 12			Harvested: Aug. 11		
Previous Crop: HRW Wheat					

Dryland Notill Pea  
Ray, ND

Cultivar	Yield - bu/a -		TW lb/bu 2010	Protein -- % --	
	2010	2 yr		2010	2 yr
<b>YELLOW COTYLEDON TYPE</b>					
Agassiz	29.3	--	62.9	23.0	--
CDC Golden	27.8	31.0	62.8	23.4	21.4
CDC Meadow	22.1	29.9	63.2	22.9	20.6
DS Admiral	22.0	25.9	63.0	22.9	21.3
CDC Mozart	19.7	31.6	62.6	23.0	21.2
<b>GREEN COTYLEDON TYPE</b>					
CDC Striker	25.6	29.2	62.4	24.2	22.0
Majoret	23.7	29.5	62.2	24.2	21.6
Pro 071-6101	22.5	--	62.4	23.1	--
Pro 081-6118	21.3	--	62.1	23.4	--
K-2	20.9	23.1	62.1	22.5	20.8
Arcadia	20.7	--	61.9	23.8	--
Pro 071-6102	20.5	--	61.8	23.4	--
Pro 071-6103	20.2	--	62.0	24.1	--
Cruiser	18.6	22.6	61.4	23.2	20.9
Pro 071-7111	16.9	--	62.7	23.6	--
LSD 5%	5.1	--	NS	0.6	--
Planted: May 11			Harvested: Aug. 12		
Previous Crop: Durum					

**Dryland Pea Variety  
Williston, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	3 yr		2010	3 yr
<b>YELLOW COTYLEDON TYPE</b>					
SW Salute	38.0	30.1	65.9	24.0	23.7
Agassiz	35.8	29.2	65.1	23.7	23.3
CDC Mozart	39.4	28.9	66.3	23.0	23.2
SW Midas	37.4	28.6	65.6	23.1	23.1
CDC Meadow	36.1	28.6	66.3	24.1	23.8
Thunderbird	35.9	28.2	65.3	23.9	23.8
CDC Golden	35.7	27.0	66.1	23.6	23.8
Spider	34.9	26.4	66.6	24.5	24.2
DS Admiral	33.6	25.5	66.3	23.2	23.5
Audit	32.2	--	66.2	25.6	--
Avantgarde	36.7	--	65.6	23.4	--
Capri	35.3	--	65.0	24.1	--
CDC Centennial	40.3	--	66.0	23.1	--
Korando	34.3	--	64.8	24.2	--
Marquee	35.7	--	65.2	24.0	--
Trapeze	35.6	--	65.1	24.5	--
LL 11209	37.2	--	65.7	23.9	--
LL 11809	35.3	--	65.8	24.6	--
LL 1709	29.7	--	65.0	24.5	--
LL 1809	33.8	--	66.0	23.8	--
LN4206	37.7	--	65.3	24.0	--
PUSA 09008	30.3	--	65.9	24.7	--
<b>GREEN COTYLEDON TYPE</b>					
Arcadia	36.8	30.1	65.3	23.7	23.4
Cooper	39.6	29.0	64.7	22.7	23.0
Cruiser	31.5	24.8	64.6	23.0	23.4
K2	31.1	24.7	65.0	24.4	23.8
Majoret	31.0	24.6	66.3	24.6	24.1
Aragorn	31.3	24.3	64.3	23.8	23.9
CDC Striker	28.0	23.6	65.9	25.0	24.5
APCM 03018	29.8	--	65.7	24.3	--
Blue Moon	33.7	--	65.6	23.7	--
CDC Patrick	35.2	--	65.3	23.7	--
Nitouche	33.2	--	65.0	23.4	--
Stirling	34.2	--	65.4	23.1	--
LAN 1103	30.3	--	64.7	24.0	--
LL 22209	32.6	--	65.8	23.7	--
LSD 5%	3.4	--	0.5	0.8	--
Planted: April 22			Harvested: July 29		
Previous Crop: Durum					

**Sprinkler Irrigated Pea  
Nesson Valley, ND**

Cultivar	Yield - bu/a -		TW lb/bu	Protein -- % --	
	2010	2 yr		2010	2 yr*
<b>YELLOW COTYLEDON TYPE</b>					
Agassiz	52.4	--	64.3	23.0	--
CDC Golden	46.7	--	65.6	23.2	--
CDC Meadow	50.2	--	65.9	23.0	--
DS Admiral	39.6	47.8	65.4	22.3	23.2
<b>GREEN COTYLEDON TYPE</b>					
Arcadia	39.6	--	65.2	22.6	--
CDC Striker	50.4	53.6	65.8	23.2	24.0
Cruiser	42.6	47.5	64.7	23.0	23.3
Integra	33.8	--	64.9	22.8	--
K-2	40.1	48.5	65.2	22.0	22.9
Majoret	44.7	--	66.0	23.4	--
LSD 5%	5.5	--	0.5	0.6	--
Planted: May 29**			Harvested: Aug. 17		
Previous Crop: Sugarbeets					
* 2008 and 2010					
** First planted April 28. Replanted due to emergence and stand problems caused by Leatherjacket larvae.					

**Dryland Cool Season Forage  
Williston, ND**

Cultivar	DM Yield -tons/a-		RFV %	% Crude Protein
	2010	3 yr		
Hayes (Barley)	2.8	2.0	125.8	10.3
Haybet (Barley)	3.0	2.1	113.3	10.7
Lavina (Barley)	3.0	--	126.0	10.0
Trical Merlin (Triticale)	2.1	--	127.1	12.2
Everleaf (Oat)	1.9	1.5	115.7	13.3
Kona (Oat)	2.3	--	107.1	10.9
HiFi (Oat)	2.2	--	110.3	10.4
Morton (Oat)	2.2	--	107.8	10.5
Arvika (Pea)	1.3	1.0	225.1	15.3
Morton / Arvika	2.0	--	112.7	10.8
Haybet / Arvika	2.3	1.8	134.4	11.9
Merlin / Arvika	1.8	--	126.3	12.3
Morton + Turnip	2.1	--	107.8	11.5
Morton + H. Vetch	2.2	--	106.4	10.7
Morton+ AWP + HV	2.2	--	108.8	10.6
Paul (Oat)	1.8	--	111.5	11.3
LSD 5%	0.3		11	1.1
Planted: May 18			Harvested: July 19	
Previous Crop: Durum				
AWP-Austrian Winter Pea; HV-Hairy Vetch; Merlin -Triticale.				

**2010 Statewide Alfalfa Yield Trial  
Flood Irrigation, Sidney, MT**

Cultivar	Yield, T/AC dwb					Crude Protein			Relative Feed Value		
	2010				2-year average	2010			2010		
	1 <sup>st</sup> cut	2 <sup>nd</sup> cut	3 <sup>rd</sup> cut	Total			1 <sup>st</sup> cut	2 <sup>nd</sup> cut	3 <sup>rd</sup> cut	1 <sup>st</sup> cut	2 <sup>nd</sup> cut
Rebound 5.0	2.40	2.51	1.34	6.24	5.94	19.7	18.5	21	129.5	128.8	188.2
DKA43-13	2.05	2.48	1.15	5.68	5.51	18.9	17.5	19.9	121.2	113.2	163.5
54V09	2.32	2.54	1.42	6.27	6.05	20.1	18.2	21.4	134.8	125.3	192.5
FSG229CR	2.20	2.56	1.41	6.16	5.97	20.4	17.2	19.9	138.0	113.8	161.8
FSG429SN	2.24	2.44	1.37	6.05	5.93	19.6	17.9	21.3	124.9	121.9	186.9
FSG408DP	2.16	2.58	1.37	6.11	6.06	19.5	18.1	21.1	129.6	132.3	188.8
Ladak-65	2.18	2.55	1.20	5.93	5.66	19.8	17.9	20.8	124.3	121.6	173.4
Melton	2.21	2.55	1.37	6.13	5.84	19.3	17.8	20.7	119.0	120.4	167.8
Shaw	2.33	2.60	1.46	6.38	6.10	20.4	17.6	19.6	137.0	117.5	154.7
LSD 5%	ns	ns	0.15	--	--	ns	ns	ns	ns	ns	ns

Planted May 29, 2008 2010 Harvest Dates: June 15, August 5, October 14

**Irrigated Sugarbeet Fusarium Screen  
Sidney, MT  
Approved Sugarbeet Varieties for 2011**

Entry	% Survival at Harvest - Dige site -	% Survival at Harvest - Hurley site -	Average
BTS 48RR7N	93.2	97.6	95.4
BTS 49RR1N	93.8	95.8	94.8
Crystal RR493	89.6	92.9	91.2
Crystal RR123	89.5	68.1	78.8
BTS 47RR41	72.8	60.2	66.5
Crystal RR497	68.0	63.5	65.8
Crystal RR826	62.2	66.8	64.5
Crystal RR156	77.3	49.2	63.2
SX 0491RR	64.1	57.1	60.6
BTS 47RR31	58.8	58.6	58.7
BTS 49RR35	63.5	48.1	55.8
HM 4125RR	51.8	47.6	49.7
SV36944RR	59.4	37.7	48.6
SV36741RR	42.9	39.9	41.4
HM 4113RR	45.8	33.6	39.7
HM 4010RR	29.2	34.8	32.0



**Sprinkler Irrigated Coded Sugarbeet Variety Trial**  
**Sidney, MT**  
**Approved Sugarbeet Varieties for 2011**

Cultivar	Root yield -T/a-		Sucrose -%-		Sucrose yield -lbs/a-		Extractable sucrose -lbs/a-	
	2010	3 yr	2010	3 yr	2010	3 yr	2010	3 yr
BTS 47RR31	35.1	33.0	15.71	17.50	11020	11487	10280	10727
HM4010RR	35.0	32.9	16.01	17.19	11190	11257	10360	10447
HM4113RR	32.5	32.1	15.78	17.31	10270	11117	9458	10336
Crystal RR826	37.1	33.7	15.24	16.58	11330	11087	10430	10243
BTS 47RR41	33.9	32.7	16.12	16.86	10930	10970	10190	10179
HM4125RR	33.1	31.6	15.94	17.29	10550	10887	9811	10175
SV36741 RR	36.3	34.0	14.62	16.27	10600	11017	9680	10147
Crystal RR123	35.1	33.7	14.67	16.31	10300	10940	9386	10125
Crystal RR156	35.0	32.4	15.70	16.85	10970	10819	10150	9998
BTS 48RR7N	37.3	32.8	15.34	16.60	11460	10793	10620	9954
BTS49RR35	36.3	--	16.11	--	11650	--	10920	--
SX0491RR	35.6	--	16.35	--	11630	--	10910	--
SV36944RR	37.1	--	15.50	--	11480	--	10650	--
BTS49RR1N	36.3	--	15.48	--	11220	--	10360	--
CrystalRR497	34.6	--	15.77	--	10910	--	10100	--
CrystalRR493	32.0	--	16.04	--	10160	--	9448	--

LSD 5%

3.1

0.79

1067

1050

Planted: May 10

Thinned: Jun 23

Harvested: Sep 27

Previous Crop: Small Grain

**Furrow Flood Irrigated Coded Sugarbeet Variety Trial**  
**East Fairview, ND**  
**Approved Sugarbeet Varieties for 2011**

Cultivar	Root yield -T/a-		Sucrose -%-		Sucrose yield -lbs/a-		Extractable sucrose -lbs/a-	
	2010	3 yr	2010	3 yr	2010	3 yr	2010	3 yr
BTS 47RR31	37.0	32.1	15.64	16.98	11600	10843	10760	10157
BTS 48RR7N	38.3	32.3	15.39	16.52	11780	10587	10950	9823
Crystal RR826	38.1	32.0	14.87	16.31	11310	10348	10370	9608
BTS 47RR41	38.0	30.7	15.51	16.68	11770	10149	10880	9448
Crystal RR156	40.2	31.4	14.65	16.27	11760	10086	10650	9312
SV36741 RR	38.7	31.3	14.41	16.15	11180	9976	10250	9244
HM4125RR	35.2	29.2	15.39	16.81	10850	9723	10040	9068
HM4010RR	38.1	29.4	15.58	16.66	11840	9706	10910	9037
Crystal RR123	38.2	31.4	14.04	15.63	10710	9700	9714	8951
HM4113RR	32.5	28.6	15.26	16.71	9912	9483	9166	8868
BTS49RR1N	39.0	--	15.53	--	12070	--	11210	--
BTS49RR35	40.1	--	15.20	--	12200	--	11210	--
SV36944RR	40.0	--	15.03	--	12010	--	11050	--
SX0491RR	38.0	--	14.58	--	11080	--	10080	--
CrystalRR493	33.9	--	15.76	--	10700	--	9910	--
CrystalRR497	35.6	--	14.83	--	10580	--	9677	--

LSD 5%

3.1

0.58

1016

971

Planted: April 28

Thinned: Jun 16

Harvested: Sep 23

Previous Crop: Small Grain

# Irrigated Sugarbeet Cercospora Fungicide Trials

## Sidney, MT

Treatment- oz product/A	Disease Rating 8-19-2010	Disease Rating 9-2-2010	Disease Rating 10-4-2010	Area Under the Disease Progress Curve	% Sugar	Recoverable Sugar LBS/A
1 Untreated	4.5 a	5.3 a	5.0 b	406 a	15.6 a b	11270 c
2 1) Inspire at 7 oz, 2)Supertin at 5 oz, 3)Headline at 9 oz	1.5 c d	2.0 b c	4.0 b-e	175 b c	16.6 a b	11333 b c
3 1) Quadris Top at 8.5 oz,2) Supertin at 5 oz, 3)Quadris Top at 8.5 oz	2.0 b c	1.0 c d e	2.8 d e f	144 b c	15.6 a b	11838 a b c
4 1)SuperTin at 5 oz,2) Inspire at 7 oz, 3)Topsin at 7.6 oz+Supertin 3.75 oz, 4)Headline at 9 oz	0.8 d	1.3 b c d e	3.5 b-f	138 b c	15.2 b	11220 c
5 1-4)Inspire XT at 7 oz	2.0 b c	1.3 b c d e	2.5 e f	144 b c	16.0 a b	12506 a b
6 1-4 YT669 at 6oz NIS at 0.25v/v	0.5 d	1.8 b c d	3.3 c-f	138 b c	16.5 a	12663 a
7 1-4) YT669 at 9 oz NIS at 25v/v	1.3 c d	1.8 b c d	5.0 b	200 b c	16.3 a b	12306 a b c
8 1-4)YT669 at 12 oz NIS at.25v/v	1.0 c d	1.2 c d e	3.3 c-f	134 b c	16.2 a b	12241 a b c
9 1-4) Headline at 12 oz IS at .5v/v	1.5 c d	2.0 b c	4.3 b c d	194 b c	16.3 a	11803 a b c
10 1-4)Headline at 6 oz ,2-4) BMJ	1.3 c d	2.3 b	3.5 b-f	181 b c	16.4 a	12016 a b c
11 1-4)BMJ	0.8 d	2.3 b	4.5 b c	213 b	15.8 a b	11472 a b c
12 1) Headline at 6 oz, 2-4)BMJ	0.8 d	2.0 b c	3.5 b-f	194 b c	16.4 a	11929 a b c
13 1-4)Supertin at 5 oz	0.5 d	1.3 b c d e	3.8 b-f	138 b c	15.7 a b	11770 a b c
14 1-4)Inspire at 3.5 oz+ BMJ	0.75 d	1.5 b c d e	3.5 b-f	144 b c	15.8 a b	11735 a b c
15 1-4) Eminent at 6.5 oz +BMJ	0.5 d	0.8 d e	3.5 b-f	138 b c	15.4 a b	11673 a b c
16 1-4)Eminent at 13 oz+ BMJ	0.5 d	0.9 d e	3.00 c-f	109 b c	16.3 a b	12577 a
17 1)Headline 9oz , 2)Eminent 3oz, 3)Headline 9oz , 4)Eminent 13oz	0.5 d	0.5 e	2.3 f	81 c	16.1 a b	12131 a b c
18 1-4) Inspire at 3.5 oz	1.3 c d	1.5 b c d e	2.5 e f	150 b c	15.6 ab	11778 a b c
19 1-4)Eminent at 6.5 oz	1.0 c d	0.8 d e	3.3c-f	125 b c	15.9 a b	11859 a b c
LSD 5%	1.2	1.1	1.5	111.9	1.2	1199

Spray application # Sprayed: 1) July 8, 2) July 27, 3)August 17, 4) September 1

1) Sprayed CO<sub>2</sub> Sprayer 35 PSI 8002 nozzles, 18 gallon/A

2) Randomized complete Block design- 4 replicates harvest middle 2 rows of 30ft plots- plots 6 rows- 4 rows sprayed 2 border rows unsprayed

3) Planted May 5, Harvested Oct 4

Disease ratings KWS 0-9 scale (0= no disease, 9= complete defoliation)

Different letters in the same column indicate significant difference at p=0.05.

## 2010 Sugarbeet Seed Treatments -- Sidney, MT

Barry Jacobsen<sup>1</sup>

Treatment	Rate/seed unit (100,000 seed+1kg)	stand @45 days post plant 43560 seeds planted/A	Final Stand Plants/A	root yield, Ton/A	Recoverable sucrose lb/A
1. Untreated		40874	35320	43.1	11637
2. NipSit	60gm. ai	34049	31581	42.5	11402
3. Poncho-Beta	60-8 gm. ai	24103	36990	43.6	11639
4. Cruiser	60gm. ai	34921	32888	42.3	11568
5. NipSit Thiram Allegiance-FL	60 gm ai 4.8 gm ai 0.15 gm ai	32234	33759	47.7	11640
6. NipSit / V-10209	60gm. Ai / 0.15 gr ai	31726	34267	40.4	10665
7. NipSit / V-10208	60gm. Ai / 25 gm ai	32452	32307	41.0	11641
8. NipSit / V-10208	60gm. Ai / 25.15 gm ai	33686	31037	37.4	9864
9. Poncho- Beta Tachigaren Dynasty MSU 341-16-5 (Bp)	60-8 gm ai 20 gm product 2.5 ml product 10 gm	31726	34086	45.4	11642
10. NipSit / V-10116	60gm. Ai / 0.2 gm ai	36953	31290	40.6	9267
11. NipSit / V-10256	60gm. Ai / 0.35 gm ai	30492	33759	42.4	11643
12. NipSit / V-10250	60gm. Ai / 25.2 gm ai	25991	29076	40.8	11388
13. NipSit V-10116 V-10280	60gm. Ai 0.2 gm ai 25.15 gm ai	29548	30129	40.8	11644
14. NipSit / V-10287	60gm. Ai / 0.46 gm ai	26789	31871	42.6	11814
15. Poncho-Beta / Stamina	60gm. Ai / 0.5 ml	35647	36409	42.3	11645
16. Poncho-Beta / Stamina	60gm. Ai / 0.75 ml	29693	32852	42.1	11300
17. Poncho-Beta Stamina Tachigaren	60-8 gm. Ai 0.75 ml 20 gm product	37534	36409	44.8	11646
18. Poncho-Beta Stamina Tachigaren	60gm. Ai 75 ml 20 gm product	37534	31436	43.2	11173
19. Poncho-Beta Stamina Acquire	60-8 gm. Ai 0.5 ml 20.7 ml product	37752	34993	41.9	10294
20. Poncho-Beta Stamina Acquire	60-8 gm. Ai 0.75 ml 20.7 ml product	34340	33178	35.0	11648
21. Cruiser Maxim Apron XL Dynasty	60 gm ai 0.1 ml product 0.42 ml 2.5 ml product	32815	34957	42.8	11992
22. Poncho-Beta Apron XL Thiram Yara Teprosyn ZN/P	60-8 gm ai 0.42 ml 4.8 gm ai	31581	34739	44.3	11649
23. Poncho-Beta Apron XL Thiram Yara Teprosyn MN	60-8 gm ai 0.42 ml 4.8 gm ai	39277	34739	44.0	11262
24. Poncho-Beta Apron XL Thiram T-22	60-8 gm ai 0.42 ml 4.8 gm ai	34993	34775	44.4	11650
25. Poncho-Beta T-22 MSU 341-16-5 (Bp)	60-8 gm ai 10gm	28532	34230	41.7	11650
LSD 0.05		11.2	3049	4.0	1037

<sup>1</sup> Department of Plant Science and Plant Pathology, Montana State University, Bozeman, MT

## Crop Performance Comparisons on Dryland - Williston, ND

Chet Hill and Neil Riveland<sup>1</sup>

<b>Crop</b>	<b>Variety</b>	<b>2010 Selling Price \$/bu</b>	<b>3 Yr Ave Yield bus /ac</b>	<b>Gross Return \$/ac</b>	<b>\$ Gr. Ret/a + or - Steele-ND</b>
HRS Wheat	Reeder	7.50	44.1	\$331	+\$27
	Steele-ND	7.50	40.6	\$304	0
HRW Wheat	Jerry	6.50	32.7	\$212	-\$92
Durum Wheat	Mountrail	7.00	36.7	\$254	-\$48
	Alkabo	7.00	38.8	\$272	-\$32
Barley (feed)	Rawson	3.50	69.2	\$242	-\$62
	(malting) Tradition	4.50	69.6	\$313	+\$8
	(malting) Pinnacle	4.50	67.4	\$303	-\$1
Oats	Monida	2.10	102.4	\$215	-\$25
Corn (grain)	Average	4.00	46.1	\$184	-\$120
Flax (brown)	Neche	12.00	15.2	\$182	-\$122
	(yellow – food) Carter	14.00	15.3	\$214	-\$90
Soybeans	Sheyenne	12.00	19.0	\$228	-\$76
Field Peas (green)	Cruiser	7.00	24.8	\$174	-\$130
	(yellow) Mozart	5.50	28.9	\$159	-\$145
		<b>\$/CWT</b>	<b>lbs/ac</b>		
Camelina	Blaine Creek	15.00	1234	\$185	-\$119
Brown Mustard	Avg.	18.00	951	\$171	-\$143
Yellow Mustard	Tilney	21.00	1002	\$210	-\$94
Canola	Hyola 357 Mag	22.00	1021	\$225	-\$70
Crambe	Meyer	14.00	1128	\$158	-\$146
Safflower	Avg of 3 varieties	19.00	1240	\$236	-\$68
Sunflower (oil)	Avg of 2 varieties	20.00	1399	\$280	-\$24
Buckwheat	Manor	20.00	1249	\$250	-\$54
Lentils (sm. green)	CDC Viceroy	31.00	1083	\$335	+\$31
	(med. green) AC Richlea	32.00	1142	\$371	+\$67
(lg. green)	Rivelandl	30.00	1046	\$314	+\$10
(red)	Rouleau	23.00	1053	\$242	-\$62
Chickpeas (desi)	CDC Anna	25.00	1000	\$250	-\$54
	(kabuli) CDC Frontier	28.00	1247	\$349	+\$45
	(small kabuli) B-90	26.00	1161	\$302	-\$2
Pinto Beans	Maverick	18.00	386	\$69	-\$235
Navy Beans	Norstar	21.00	359	\$75	-\$229

<sup>1</sup>NDSU - Williston Research Extension Center

## Development of Durum Varieties for the MonDak Region

J. Eckhoff<sup>1</sup> and E. Elias<sup>2</sup>

Cadmium (Cd) is a nonessential heavy metal that may cause health problems for some people. Diet is the main source of Cd for nonsmokers, with cereal products, including durum, accounting for up to 20% of the daily intake of Cd. The current official standard for maximum level of Cd in wheat grain as stated by the Codex Alimentarius Commission (a part of the World Health Organization), is 0.2 ppm, and the European Union has adopted this level of Cd as the maximum allowed in domestic and imported durum.

Cadmium levels were screened in durum grain samples from plots grown across Montana in 2005. Sites included research centers and several off-station sites in eastern Montana. Cadmium levels ranged from 0.055 ppm to 0.259 ppm. Soil characters affect the amount of Cd taken up by durum. Additionally, genetics play a role in accumulation of Cd in the grain. Most durum genotypes grown in Montana accumulate Cd in the grain. A low Cd-accumulation trait does exist in durum and is caused by a single dominant gene.

Europeans have traditionally purchased durum from the desert Southwest. That area is no longer a reliable source of durum because of urban sprawl and decreasing water availability. Additionally, southwest durum often has a high amount of cadmium. European durum buyers are looking for another source of high quality durum with low Cd levels. Montana and North Dakota produce high quality durum, and may fill the market required by European durum buyers. Because of the European Union's restriction on Cd levels in imported durum, incorporating the low Cd-accumulating character has become a top priority. One Canadian variety has been identified as having low Cd accumulation. Several dozen lines from the CIMMYT (International Maize and Wheat Improvement Center) program were evaluated for Cd accumulation and quality. A total of 11 lines with low Cd accumulation and good quality were identified. Emasculated crosses were made using high quality lines as female parents and low Cd-accumulation lines as male parents in 2007. Currently we have 83 low-Cd F6 lines growing in the greenhouse. These will be selected next year for yield evaluations in the following year.

Eighty-four solid-stemmed lines from the World Collection were identified in 2004 and crossed onto a male sterile facilitated recurrent selection population in 2005 to develop a solid-stemmed population. This solid-stemmed population has been continued and maintained using solid stemmed, high quality, and low Cd-accumulating lines as male parents. Plants were selected from the F2 population based on stem-solidness and other agronomic characters. We currently have 35 F7 solid-stemmed lines that will be evaluated for yield in 2011.

<sup>1</sup>MSU Eastern Agricultural Research Center, Sidney, MT

<sup>2</sup>NDSU Department of Plant Sciences, Fargo, ND

## Barley for Ethanol Production

Charles Flynn, Jerald Bergman, and Joyce Eckhoff

### Objectives:

- Determine effects of barley hull removal on starch yields
- Compare starch levels in barley types, varieties and genetic lines

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

Flood 2005-2009		Hulled			Dehulled		
Entry	% Hull	Grain Yield lb/ac*	% Starch*	Starch Yield lb/ac*	Grain Yield lb/ac*	% Starch*	Starch Yield lb/ac*
Stellar-ND	10.6	4166	55.7	2339	3806	61.6	2350
ND20448	10.6	4041	57.1	2330	3698	62.5	2322
Lacey	9.9	4375	55.8	2476	4014	61.2	2488
Rawson	10.5	4094	56.2	2309	3757	62.2	2352
Legacy	9.9	4421	55.1	2461	4077	61.2	2506
Robust	10.2	3929	55.3	2194	3614	60.5	2199
Rasmussen	9.6	4625	56.2	2628	4269	62.3	2687
AC Metcalfe	9.9	3951	55.4	2202	3650	61.2	2251
Conlon	11.1	4102	57.4	2379	3729	63.6	2396
Tradition	9.8	4548	56.1	2576	4202	60.9	2566
Drummond	10.4	4299	54.9	2383	3934	62.8	2483
Average	10.2	4232	55.9	2389	3886	61.8	2418
Sprinkler 2005-2009		Hulled			Dehulled		
Robust	10.7	3688	55.4	2083	3392	61.0	2094
Rasmussen	9.5	4538	55.4	2546	4228	61.3	2597
Tradition	9.6	4442	55.6	2483	4140	60.9	2543
ND20448	10.3	3952	55.8	2219	3662	62.0	2274
lacey	10.1	4241	54.9	2357	3922	61.7	2456
Stellar-ND	10.4	4109	56.3	2336	3790	61.0	2341
Legacy	10.5	4354	54.4	2391	4044	61.0	2497
Rawson	11.1	3703	56.5	2098	3423	61.8	2128
AC Metcalfe	10.0	3687	55.2	2040	3425	61.2	2115
Drummond	10.4	4039	54.6	2224	3724	60.3	2252
Conlon	10.3	4170	57.2	2402	3885	61.9	2419
Average	10.3	4084	55.6	2289	3785	61.3	2338

\* dry weight basis

Removing hulls from normal hulled feed and malt barley lines did not reduce starch yield per acre. About 10.2% of grain yield was lost to dehulling, but percent starch of the dehulled material was almost 6% greater. Dehulling did not remove starch.



# Using Zinc to Reduce Cadmium Accumulation in Durum Grain

J. Eckhoff<sup>1</sup>

Cadmium (Cd) is a nonessential heavy metal that may cause health problems in some people. Diet is the main source of Cd for nonsmokers, with cereal products, including durum, accounting for up to 20% of the daily intake of Cd by adults. The current official standard for maximum level of Cd in durum wheat grain as stated by the Codex Alimentarius Commission is 0.2 ppm (2) and the European Union has adopted this level as the maximum allowed in domestic and imported durum. Other durum buyers may also adopt this maximum level.

Cadmium levels were screened in durum grain samples from plots grown across Montana in 2005. Sites included research centers and several off-station sites in eastern Montana. The Cd levels ranged from 0.055 ppm to 0.259 ppm.

Cadmium is found naturally in some soils. Soil characteristics, such as pH and chloride content affect Cd uptake. A greenhouse study conducted in Saskatchewan reported that zinc (Zn) applied to soil prior to planting significantly reduced Cd in durum plant tissue, while Zn applied foliarly at the four-leaf stage or at flowering had no effect on grain Cd concentration. The objective of this study was to evaluate the use of Zn to reduce cadmium accumulation in durum grain in the field.

Two experimental sites at the Eastern Agricultural Research Center were used, one on the dryland farm and one on the irrigated farm. Nitrogen and phosphorus were uniformly broadcast at rates determined by soil tests. Two varieties of durum were used, one that accumulates Cd in the grain (Alzada) and one that does not (Strongfield).

Treatments were 1) Zn applied with the seed in the form of zinc sulfate at a rate of 1 lb Zn/ac; 2) Zn applied with the seed in the form of zinc sulfate at a rate of 1 lb Zn/ac plus Zn applied foliarly at the boot stage as chelated Zn at a rate of 1 gal/ac (0.97 lb Zn/acre); and 3) no applied Zn. The chelated zinc was EDTA 9% chelated zinc.

Data were analyzed across the three years for each site. The zinc treatments had no effect on grain yield, test weight or grain protein content on either the dryland or irrigated sites. Zinc applied with the seed had no effect on grain cadmium or zinc content. Chelated Zn applied foliarly at the boot stage reduced grain cadmium content by about 25% at the dryland site and by about 13% at the irrigated site. Grain cadmium content was reduced similarly in both varieties. The Cd level dropped from above the 0.2 ppm limit to below that limit on the dryland site.

Grain yields, test weights, grain protein, grain cadmium and grain zinc content of durum grown at the dryland and irrigated sites and averaged across three years (2007-2009).

Treatment	Variety	Dryland site					Irrigated site				
		% grain protein	test wt, lb/bu	yield, bu/ac	Cd, ppm	Zn, ppm	% grain protein	test wt, lb/bu	yield, bu/ac	Cd, ppm	Zn, ppm
Zn with seed		14.1	60.8	46.1	0.248b	23.6a	15.8	60.4	74.6	0.196b	31.4a
Zn with seed + foliar Zn		14.0	60.6	45.0	0.177a	26.0b	15.7	60.3	76.4	0.158a	34.4b
No Zn		14.1	60.9	44.7	0.245b	22.9a	15.7	60.5	78.3	0.182b	30.5a
LSD 005		ns	ns	ns	0.038	1.2	ns	ns	ns	0.025	2.0
	Alzada	13.7a	60.9	44.8	0.290b	23.8	15.4a	60.2a	73.1a	0.217b	31.9
	Strongfield	14.4b	60.6	45.8	0.157a	24.6	16.0b	60.6b	79.8b	0.141a	32.3
LSD 0.05		0.3	ns	ns	0.031	ns	0.2	0.3	4.6	0.021	ns

Different letters in the same column indicate significant difference at  $p < 0.05$ . ns indicates no significant difference.

<sup>1</sup>MSU Eastern Agricultural Research Center, Sidney, MT

## Irrigation Research at Nesson Valley 2010

Tyler Tjelde<sup>1</sup>

Greetings, well another growing season has seemed to fly by, but one that didn't go unnoticed. I believe this could be my eulogy referencing Nesson Valley for years to come. This would be obvious to most people, but in three years I have come to the conclusion that there are certain things that you absolutely cannot control and Mother Nature and research, well they don't always co-exist. It only took an M.S. in Agronomy to figure that out. Overall it was a very productive year and each year I get more excited for the next.

The Nesson Valley project continues to expand as we are in the process of converting the third linear to an automated Variable Rate Irrigation (VRI) system. Developing this linear system will give us another 35 irrigated acres to expand our research at the Nesson site from 70 acres to 105 acres and allow us to conduct irrigated research on each of the three linear systems every year. For those not familiar with the VRI system I will explain briefly. The VRI system divides the linear into 22 separate controlled banks (every 50 feet). Each bank can apply a different rate of water as the linear moves across the field allowing for a multitude of cropping systems. Without this, the linear system would only be able to apply one rate over the entire field. Again last year we had up to twelve different crops under one linear.

In 2010 we were excited to have the opportunity to use both water sources (surface and ground) and have set up an experiment on approximately 15 acres comparing both sources. This is one area of research that has not seen a lot of work over the years. This long-term project is very dependent on the lake level maintaining a level that we can pump from. We would like to look at each water source and what, if any, are the effects on soil properties and are there any production altercations that could alter plant growth.

Water is an important resource for high value crops in the MonDak region. Although it may not be a limiting resource for production in all regions of the state, it is vital to the MonDak region. In the past, producers viewed irrigation as an abundant, supplement water source with little incentive to conserve it. Now with water shortages becoming a concern in many parts of the country, there is an increase in awareness among producers to integrate more efficient irrigation practices into their farming systems to optimize production while sustaining water resources. At the Nesson Valley Research project we are looking at this not only in sugarbeet production but in wheat, barley, lentil, and potato. In the future we would like to look at additional crops.

Our vision at the Nesson Valley site is to further advance irrigation practices, improve crop production within an irrigated system and develop alternative cropping systems to improve water, nutrient and pest management. I encourage producers to contact me if you have any questions on what we are currently researching. I would also encourage anyone to share any ideas they may have for irrigated research so we can advance agronomic productivity for this region. Our goal is to improve production for you! The date for the 2011 Nesson Valley field tour is set for July 28th 2011. Look forward to seeing you there!



# Comparing Tillage Systems (conventional, minimum, no-till) With Overhead Irrigation Using a 3 Year Crop Rotation of Corn, Soybean, and Barley (Nesson Valley 2010).

Tyler Tjelde<sup>1</sup>

## Objectives

This project examines the interaction between tillage systems and soil quality and the interaction between crop production and tillage to better understand the benefits of overhead irrigation on production and tillage. Questions that we hope to answer include how tillage is going to affect the quality of our soil and will this soil quality affect crop production when irrigation is involved. What are the benefits of selecting the proper tillage to match the specific crop? With things constantly changing, how can the interrelationships between crop rotation/production and tillage systems be defined?

## Methods

Plots strips were 50 feet by 200 feet and replicated four times in a split block design. Fertilizer was spring-applied at recommended rates determined by soil testing. Weeds were managed with herbicides to minimize their impact on production. Percent residue cover, soil temperature, stand counts, grain yield, proteins, and test weights were measured. Tillage was done in the spring. Conventional tillage consisted of multiple passes with a disc and cultivators resulting in <30 % residue left. Minimum tillage varied based on previous crop. Corn residue was aggressively disked (5mph) cutting at a depth of 4 inches while still maintaining >30% residue cover. Barley residue was also disked but ground speed and depth were reduced to maintain the > 30% residue cover. A field cultivator was used to till the soil in soybean residue, leaving most of the residue on the soil surface. Only trash wipers (residue managers) were used in the no till system to move residue from seed row.

## Results

Corn Variety	A		B		A		B	
	Yield		Test Weight		Protein			
<i>Tillage treatment</i>	<i>Bu/A</i>		<i>Lb/bu</i>		<i>%</i>			
Conventional till (10.8 %)	183.7 a	194.4 a	57.8 a	57.1 a	8.4 a	7.3 ab		
Minimum till (33.3%)	180.9 a	179.3 ab	57.0 a	56.1 b	8.4 a	7.6 a		
No - till (81.5%)	169.7 a	169.3 b	56.8 a	55.0 c	8.0 a	6.8 b		
<b>CV (%)</b>	<b>7.1</b>	<b>5.3</b>	<b>1.1</b>	<b>0.8</b>	<b>3.7</b>	<b>5.4</b>		

Previous crop: barley

Soybean	Yield		Test weight	Population
	<i>Bu/A</i>	<i>Lb/bu</i>	<i>X 1,000</i>	
Conventional till (22.5%)	47.7 a	57.2 a	176.5 ab	
Minimum till (54.0%)	47.2 a	56.8 b	172.0 b	
No - till (91.8%)	45.5 a	57.3 a	180.5 a	
<b>CV (%)</b>	<b>9.9</b>	<b>0.3</b>	<b>2.6</b>	

Previous crop: corn

Barley	Yield		Test weight	Protein
	<i>Bu/A</i>	<i>Lb/bu</i>	<i>%</i>	
Conventional till (5.3%)	109.1 a	53.3 a	13.8 a	
Minimum till (32.0%)	98.3 b	53.3 a	13.4 ab	
No - till (56.0%)	93.5 b	52.7 b	12.3 b	
<b>CV (%)</b>	<b>5.9</b>	<b>0.5</b>	<b>5.6</b>	

Previous crop: soybean

In the tables, numbers followed by the same letter are not significantly different (0.05)

Numbers followed by a different letter are significantly different at alpha 0.05



# Quantifying Water Use in Irrigated Sugarbeet Production on Sandy Soils

Nesson Valley 2010

James Staricka and Tyler Tjelde<sup>1</sup>

## Objectives

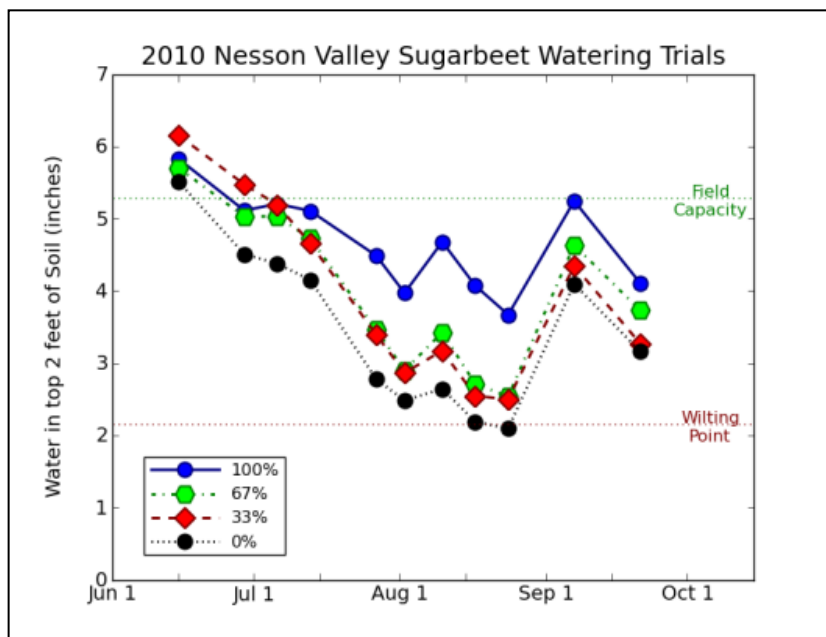
The objectives of this project are to investigate different irrigation rates in sugarbeet production to improve water use efficiency, determine critical stages of water use in sugarbeet production, and refine irrigation scheduling recommendations.

## Methods

The experimental design is a Randomized Complete Block Design (RCBD) with four replications. Each plot will be 50 ft. by 60 ft. with watering rates randomized for each plot. The treatments consist of four irrigation rates (100%, 66%, 33%, 0%) and two sugarbeet varieties. Crop water use determined by using the North Dakota Ag Weather Network (NDAWN) and neutron probe moisture sensors. The irrigation rates determined using an irrigation scheduler (<http://ndawn.ndsu.nodak.edu>). This checkbook system uses soil properties, (texture, thickness of soil layers and water holding capacity of each layer), weather parameters (average daily air temperature, daily solar radiation, date and amount of rain), crop properties (root depth, water use based on growth stage, planting date and emergence date), and irrigation information (rate applied). Neutron probe access tubes will be located within each plot and a neutron probe moisture meter used once a week to reflect moisture deficiency within the checkbook system. All cultural practices (tillage, fertilizer, planting populations, chemical, and fungicide applications) will be the same for the sugarbeet varieties to minimize the effects of variables other than water usage.

## Results

Variety A and B were planted 10 May 2010. The emergence date for both varieties was 19 May 2010. The first irrigation occurred on 14 May 2010 (this was a pre-emergence irrigation with all plots receiving .70 inches) with the final irrigation 3 September 2010. There were a total of 19 irrigations from 14 May – 3 September. Rainfall amounts were recorded from 01 May – 01 October and were above normal. The growing season temperatures were average for the 2010 growing season. The irrigation rates of 100%, 66%, 33% and 0% from 14 May – 3 September resulted in 11.4, 7.5, 3.8, and 0.7 inches of water applied respectively. Throughout the growing season the neutron probe readings of top two feet were taken weekly from the different water treatments. The graph shows the variation in soil moisture readings between the four treatments.



Samples were harvested on 21 September 2010. Sugarbeets from ten feet of row were hand harvested and the numbers of beets were counted. These stands (beets/10ft) were used for tallying final plant populations. These samples were analyzed at the Sidney Sugars factory laboratory. Tons per acre, sugar and nitrate percentages were analyzed from these treatments. The results, for 2010, show that there were no significant differences between watering treatments and sugarbeet yield. The only significant difference that was recognized this season was percent sugar. These results were tested using Analysis of Variance at the alpha 0.05 level.

Treatment	Irrigation Amounts	Rainfall Amounts	Total Water
0%	0.7*	12.49	13.19
33%	3.8	12.49	16.29
66%	7.5	12.49	19.99
100%	11.4	12.49	23.89

Rainfall amounts and Total Water are for May 1- Oct. 1

\*Irrigation amount reflects an after planting irrigation but prior to emergence.

The other treatments also include this 0.7 inches.

## Results

### Variety A planted 5/10

Water Trt (%)	beets/10ft	Net T/A	Sugar %	Nitrates
0	17.0 a	22.2 a	18.45 ab	22.5 a
33	16.8 a	25.9 a	18.79 a	27.4 a
66	15.5 a	28.1 a	18.59 a	24.5 a
100	16.3 a	28.6 a	18.09 b	26.7 a
CV(%)	16.9	19.1	1.29	50.6

### Variety B planted 5/10

Water Trt (%)	beets/10ft	Net T/A	Sugar %	Nitrates
0	18.0 a	23.1 a	17.13 b	15.9 a
33	17.5 a	24.2 a	17.96 a	15.7 a
66	19.3 a	27.3 a	17.26 ab	17.4 a
100	17.0 a	28.6 a	17.27 ab	31.0 a
CV(%)	20.4	15.8.	2.7	72.1

In the table, numbers followed by the same letter are not significantly different (0.05)

Numbers followed by a different letter are significantly different at alpha 0.05

We are not only looking at water use efficiency in sugarbeets but also looking at potato, wheat, barley, safflower, and lentil systems. In the future we hope to expand on this project and incorporate crops such as corn, soybean and other pulse crops.

<sup>1</sup>NDSU Williston Research Extension Center – Nesson Valley



## News on Agriculture Diversification/Processing

Chet Hill, NDSU Area Ag Diversification Extension Specialist

After reading last year's update, I thought many things changed during the 2010 crop year. The weather this year went from cool and wet in the spring to warm and still wet conditions during the summer making for crop disease conditions to develop in the region. Many areas in the region received over 20 inches of moisture. A key component of this position is working with the Research 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. Both research centers are moving forward in expanding their facilities to better serve our clientele and develop future research that will improve crop production in the region. The irrigation research at Nesson Valley has drastically improved over the last couple of years and now producers need to take advantage of that research.

Here is a summary of some of the projects I have assisted with this past year.

**CROPS** – What a difficult growing season for producers in the region – frost, cool weather, wet conditions throughout the growing season, and hail to name a few. As a result, many producers saw record yields but I suspect we lost somewhere between 5 – 10 bushels per acre with many of the crops due to the disease conditions that developed during growing season. Pulse crops continue to become stronger in appearance in the region with again lentil acres seeing the biggest growth in acres. Quality concerns during harvest brought discounts to reap its ugly head, making a dismal situation worse because of already low commodity prices at the start of harvest. Prices have rebounded, but many of us do not have the quality to take advantage of the premium side of the markets.

For the producers utilizing irrigation, I have been impressed on all the different crops being produced. This fall roughly 30 new pivots are being constructed in the Mondak region. I receive many calls on if pulse crops and different oilseed crops will perform well under irrigation. Overall, we are still in the learning stage of that question. Pulse and oilseed crops will work but we need to better manage the rotation of those crops and scout the fields more frequently to stay on top of potential disease pressure. Tools are available on the NDSU website to evaluate these conditions. For example, the NDAWN weather system website, allows producers to check weather conditions across the state and determine the risk of disease pressure on crops.

On the dry land side, pulse crop acres expanded dramatically. In MT, lentil acres doubled from 118,000 acres to over 250,000 acres. There is still much discussion with cover crops. I worked with Keith Brown, Divide County Extension Agent, and Jim Hennessy, Mountrail County Extension Agent, on putting together cover crop plots to explore and demonstrate to producers

the possible opportunities with cover crops. Fall seeded cover crops are very marginal in production but spring/summer seeded cover crops yield many benefits. Corn acres continue to expand.

**WREC** - Neil and I receive many calls asking which variety in durum, spring wheat and barley do well in this region. That is a difficult question to answer because so many factors come into play when selecting a variety – soils and moisture conditions seem to be the most important. Two years ago, I decided to take the off-station data for the different crops and varieties along with the Williston data to develop information that would assist a producer in making variety selections. First, I ranked the varieties (1, 2, 3, etc.) based how on their 3-year average yield or try to fit that variety in the ranking if it only had one or two years of data. Second, I show the 3- year average yields for the different varieties. Each of the tables then have overall averages both in ranking and yield so that one can see how that particular variety stood up among the rest of the varieties. You will find it on the Williston R/E Center website - <http://www.ag.ndsu.edu/WillistonREC/>

Acres of several crops in the Mondak region can also be found on the website.

**PROJECTS** – The Mondak Energy Alliance that was created last year made a huge stride this past year. We were able to meet with the Governors of North Dakota and Montana concerning the new oil pipeline that will be constructed through Montana. The governor of Montana has worked with the company constructing the pipeline to include a branch pipeline that will come east to connect into a possible refinery here or transload into the pipeline. Many projects are still on the blackboard including an ethanol plant, diesel topping plant, oil refinery, coal to liquid plant, biodiesel plant and a potato plant.



## Horticulture Program

Lorna Bradbury<sup>1</sup>

The 2010 growing season was cool, cloudy and damp. May and June had 30 days of rain events with 10 days of significant rainfall. Over the 5 month growing season, from May 1 to September 30 we received 12.44 inches of rain compared to a normal of 10.45 inches. There were no days of 100° F or more and only 9 days when the recorded maximum temperature reached 90° F or more. On July 29, we had a thunderstorm that included 1.23 inches of rain and wind gusts in excess of 50 mph and on August 1, we had another storm that brought another 1.08 inches of rain, wind gusts over 60 mph and quarter size hail. Our last frost date was May 10 with a low temperature of 31° F, and the first killing frost in September was on the 18th with a low of 27° F.

**Grapes** -- Grapes were fertilized with ammonium sulfate (21-0-0) fertilizer on April 22, 2010, at a rate of about 60 lb N per acre. Petiole samples showed lower N content than last year but still improved from 2008. Soil samples showed N levels still much lower than optimum. Growth of the vines still seemed to be far more dependent on water availability and weed control than on available N.

All varieties except GR7 and Elvira had survived the winter and were alive in the spring of 2010. Pruning started the last week of April and continued as weather permitted through May. Due to the August 1 hail event, much of this year's crop was destroyed. Because the summer was cooler than normal and frost came September 18, there were just not enough heat units to ripen the grapes. We left them on the vines until early to mid-October, hoping to make ice wine but they began to shatter before they could concentrate the sugars enough. We picked the last variety on October 14. Our first snowfall occurred on October 26.

Grape Cultivar Name	Brix <sup>1</sup>	pH <sup>1</sup>	RU <sup>2</sup>	Yield (lbs)		# of producing plants
				2009	2010	
Prairie Star*	21			0.71	.13	1
St Croix	21	3.11	174	2.57	2.20	9
Bluebell	18	2.94	156	0.46	2.71	11
Valiant	21	2.95	183	20.22	18.79	12
LaCrescent	20	2.96	175	5.47	2.30	12
Frontenac	22	2.90	185	7.46	7.24	12
Somerset Seedless	21	3.33	233	3.10	2.98	8
Sabrevois	17	2.98	151	4.12	1.48	10
Frontenac Gris	26	2.77	199	4.11	2.41	7
King of the North	23	2.90	185	7.13	8.43	12
Hasansky Sladky	26	2.95	226	6.31	1.37	7
MN 1131	26	3.05	242	13.43	9.70	11
MN 1200	24	3.00	216	5.35	2.59	12
ES 5-4-71	17	3.24	178	0.24	0.73	7
ES 12-18-06	25	2.75	189	17.04	11.52	12
ES 15-53	21	2.95	184	5.68	7.05	10

<sup>1</sup> Brix and pH measured at harvest.

<sup>2</sup> RU = Brix \* pH<sup>2</sup> ( target for white grapes = 200, for red grapes = 260)

\* These cultivars had very few grapes so no Brix or pH was done for them

The St Croix in the depth of planting trial survived the winter, grew rampantly, and set a promising load of fruit. The three year old Edelweiss vines also set some fruit and we were able to sample some of it before the raccoons found them. Between the raccoons and the hail, both the depth of planting and the irrigation trial were wiped out.

**Raspberries** -- The raspberries did not produce enough berries to record yield data in 2010.

**Strawberries** -- This year we covered the strawberries – first with floating row covers, then with bird netting and surrounded the bed with rabbit fence. We started picking June 24 and ended July 26. Cavendish yielded the most berries and was rated the highest by our taste testers.

Strawberry Variety Trial 2010								
Variety	Cavendish	Brunswick	Kent	Mesabi	Honeoye	Glooscap	Annapolis	Itasca
Avg Yield (lb)	9.8	6.6	6.2	5.8	5.5	5.4	5.4	3.4
lb/a	8939	6005	5586	5266	5019	4913	4912	3127

LSD 5% - NS

**AAS Flowers** -- Our first year as an official All America Selections Display Garden was a success. The plants had a slow start in the cool cloudy early summer, but had filled in and were in full bloom when the hailstorm struck. They looked quite shattered after that, but all recovered and bloomed nicely until our first frost.

**Extension Vegetable Program** -- We took part in the NDSU Extension garden research project and enjoyed taste testing and rating the many vegetable varieties that were supplied to us by Extension Horticulturist Tom Kalb. We tested several varieties of beans, carrots, cucumbers, mizuna, kohlrabi, lettuce, melons, cantaloupe, spinach, squash, and watermelon. The results of the home garden vegetable trials will be available at the following web site [www.dakotagardener.com/trials/index.html](http://www.dakotagardener.com/trials/index.html)

**Sweet Potatoes** -- Sweet potato varieties Beauregard, Georgia Jet, O'Henry, Centennial, and Vardaman were planted on June 1 at Nesson Valley under sprinkler irrigation in a randomized complete block design. They were harvested September 17 just before our first killing frost. The roots were cured and then graded for size. Beauregard produced the most quantity of roots but the only variety that met the sizing criteria for fries was Georgia Jet.

**Georgia Jet Sweet Potato Yield 2010**

	Rep 1	Rep 2*	Rep 3	Rep 4
# of Roots	5	0	14	4
Weight	5.2	0.0	12.1	3.1

\* Rep 2 did not have any plants growing in it.

**Hops** -- Four rhizomes each of five cultivars of hops, Cascade, Centennial, Chinook, Glacier, and Willamette were planted in 2009 and in 2010 all had survived the winter with the help of a layer of straw mulch. They all produced hops that were harvested in mid-September. The flowers were then dried in a dryer oven, placed in plastic bags and stored in a freezer.

**Tomato Demonstration** -- We planted 66 Celebrity tomato plants and mulched them with 10 different types of mulch from plastics to natural materials, leaving one set of 6 with no mulch treatment as a control. We treated them all the same after that with drip irrigation and a small amount of liquid fertilizer. The whole planting was badly damaged by hail on August 1, but we were still able to harvest a small number of tomatoes from each plot. The mulch that produced the healthiest tomato plants and the most fruit was a thick layer of grass clippings. The tomatoes that looked the worst and produced the least fruit were mulched with pine needles, straw or woos chips.

Tomato Mulch Demonstration 2010 Williston Research Extension Center											
MulchType	Black Woven	Clear Plastic	Red Plastic	Black Plastic	Straw	Grass Clippings	Wood Chips	Pine Needles	No Mulch	Packing Peanuts	Paper
Yield (lb)	5.4	5.4	3.5	7.2	0	18.4	0	1	2	2	2.3

# Composition and Production of Perennial Grasses for Biofuel Production in Central and Western North Dakota

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Kris Nichols<sup>7</sup> and Mark Liebig<sup>7</sup>, Anne Nyren<sup>2</sup>, Bob Patton<sup>2</sup>.

A ten-year field study was initiated in 2006 to evaluate ten entries of perennial grasses and mixtures in two harvest scenarios (annual and biennial). The experimental design was a randomized complete block design with 4 replications. The plots were seeded at five locations in NDSU Research Extension Centers across central and western North Dakota. Among the five locations, long term growing season precipitation varies from 12.5" at Williston to 17" at Carrington. However, the variation of mean temperature is small across locations from west to east. At the Williston location, the plots were seeded and managed under both dryland and irrigated conditions. The plots at the other four locations were managed under dryland condition. In total, the grasses/mixtures were grown in six environments.

## Acknowledgements

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Williston Dryland	Annual Harvest				Biennial Harvest	
	2007	2008	2009	2010	2007	2009
Alkar Tall Wheatgrass	0.96	0.70	1.05	1.08	1.03	1.16
CRP Mix (Intermediate & Tall Wheatgrass)	1.04	0.72	1.05	1.15	1.10	1.40
CRP Mix (Wheatgrasses+Alfalfa+Sweetclover)	0.87	0.62	0.78	1.14	0.83	0.95
Dakota Switchgrass	0.35	0.60	0.84	1.13	0.33	1.16
Haymaker Intermediate Wheatgrass	1.23	0.79	1.27	1.32	1.10	1.22
Magnar Basin+Mustang Altai wildrye	0.27	0.61	0.90	1.00	0.28	1.22
Sunburst Switchgrass	0.27	0.50	0.93	1.03	0.00	1.35
Sunburst Switchgrass+Mustang Altai wildrye	0.31	0.75	0.85	0.99	0.38	1.31
Sunburst Switchgrass+Sunnyview Big Bluestem	0.35	0.69	1.00	1.07	0.31	1.15
Sunburst Switchgrass+Tall Wheatgrass	1.06	0.68	0.93	1.05	0.89	1.24
LSD 0.05	0.67	NS	0.26	NS	0.63	NS
<b>Williston Irrigated</b>						
Alkar Tall Wheatgrass	4.98	3.16	3.84	3.23	5.06	5.48
CRP Mix (Intermediate & Tall Wheatgrass)	4.50	3.24	2.80	3.41	4.55	4.18
CRP Mix (Wheatgrasses+Alfalfa+Sweetclover)	3.72	2.80	3.48	2.75	4.16	3.82
Dakota Switchgrass	4.31	4.91	4.75	4.25	4.33	5.43
Haymaker Intermediate Wheatgrass	4.20	3.35	3.72	2.51	4.02	3.93
Magnar Basin+Mustang Altai wildrye	4.19	3.06	3.31	3.43	3.82	6.57
Sunburst Switchgrass	5.83	7.28	5.76	5.33	5.68	6.96
Sunburst Switchgrass+Mustang Altai wildrye	5.85	5.69	5.72	5.44	6.92	7.09
Sunburst Switchgrass+Sunnyview Big Bluestem	4.92	5.87	5.02	5.11	5.01	8.23
Sunburst Switchgrass+Tall Wheatgrass	5.61	4.27	3.92	3.95	5.85	6.12
LSD 0.05	1.03	0.59	1.04	0.87	1.84	1.62

<sup>1</sup>North Dakota State University (NDSU), Mandan, ND

<sup>2</sup>NDSU Central Grasslands Research Extension Center, Streeter

<sup>3</sup>NDSU Carrington Research Extension Center

<sup>4</sup>NDSU Williston Research Extension Center

<sup>5</sup>NDSU Hettinger Research Extension Center

<sup>6</sup>NDSU North Central Research Extension Center, Minot

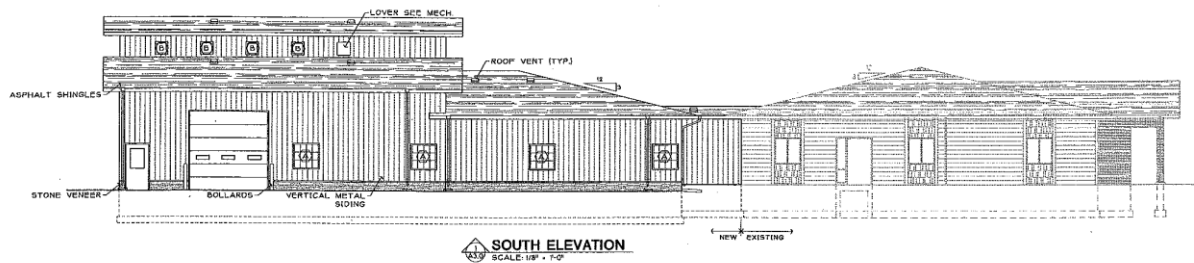
<sup>7</sup>USDA-ARS, Mandan, ND.



# NDSU-WREC Building Addition

- ✓ **Research Laboratories – Irrigation, Soils, & Horticulture**
- ✓ **Agronomy Labs for Small Plot Sample Processing**
- ✓ **Additional Office Space**

STATE FUNDS OF 1.68M WERE APPROVED BY THE 2008-09 NORTH DAKOTA LEGISLATIVE ASSEMBLY FOR THE CONSTRUCTION OF A SEED SAMPLE PROCESSING FACILITY, RESEARCH LABORATORIES, AND ADDITIONAL OFFICES AT THE NDSU WILLISTON RESEARCH EXTENSION CENTER. MAY 31, 2011 IS THE TARGETED CONSTRUCTION COMPLETION DATE.



**Grand Opening will be during the WREC field day  
July 14<sup>th</sup>, 2010**



# MSU-EARC Ag Research and Outreach Facility

- ✓ **Research Laboratories**
- ✓ **Greenhouses**
- ✓ **Video-Conference Meeting Room**
- ✓ **MSU-EARC / County Extension Offices**

STATE FUNDS OF 1.68M WERE APPROVED BY THE 2006-07 MONTANA LEGISLATIVE ASSEMBLY TOWARD THE CONSTRUCTION OF A NEW 2.5M FACILITY AT THE MONTANA STATE UNIVERSITY EASTERN AGRICULTURAL RESEARCH CENTER. ADDITIONAL FUNDS WERE RAISED THROUGH A CAPITAL FUND-RAISING CAMPAIGN.



GRAND OPENING WILL BE  
DURING THE EARC FIELD  
DAY JULY 26<sup>TH</sup>

THE RICHLAND COUNTY COMMISSIONERS, THE MSU-EARC/NDSU-WREC JOINT ADVISORY BOARD, AND THE 2009 MONTANA LEGISLATURE APPROVED AND AUTHORIZED THE COMBINING OF THE MAES EASTERN AGRICULTURAL RESEARCH CENTER AND THE RICHLAND COUNTY EXTENSION SERVICE INTO ONE FACILITY TO ENHANCE EFFICIENCY AND FURTHER IMPROVE RESEARCH AND EDUCATION OPPORTUNITIES FOR THE MONDAK REGION AND ITS CITIZENS.



# Upcoming Events for 2011

<b>January 12<sup>th</sup></b>	New Trends in Agriculture – Glasgow
<b>January 13<sup>th</sup>- 14<sup>th</sup></b>	MonDak Ag Days – Sidney
<b>January 24<sup>th</sup>- 25<sup>th</sup></b>	Northern Pulse Growers Assoc. Conference – Minot
<b>February 11<sup>th</sup>- 12<sup>th</sup></b>	GATE – Glendive
<b>February 17<sup>th</sup></b>	MonDak Pulse Day – Williston – Airport International Inn
<b>March 15<sup>th</sup>- 16<sup>th</sup></b>	KUMV – TV Farm & Ranch Showcase – Williston
<b>March 15<sup>th</sup>- 16<sup>th</sup></b>	Western Crop/Pest Management School – Dickinson
<b>March 18<sup>th</sup>- 19<sup>th</sup></b>	NE Montana Ag Expo – Plentywood
<b>July 14<sup>th</sup></b>	Williston Research Ext. Center Field Day – Williston
<b>July 26<sup>th</sup></b>	Eastern Ag Research Center Field Day – Sidney
<b>July 28<sup>th</sup></b>	Nesson Valley Irrigation Field Day – Nesson Valley
<b>August 2<sup>nd</sup>- 4<sup>th</sup></b>	MonDak Regional Ag Open - Williston

