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Weather Information

Weather Summary Sidney, MT

Month	Precipitation		Temperature		
	2012	Avg	2012	Avg	*
	- inches -		- degrees F -		
Oct-Dec. 2011	0.84	1.88			
January-March	0.35	1.31			
April	1.43	1.14	48.5	44.7	1
May	2.04	2.11	55.7	56.0	0
June	1.08	2.76	67.0	64.5	2
July	2.70	2.13	75.5	70.1	20
August	0.78	1.39	68.4	68.8	6
September	0.03	1.25	59.6	57.9	2
April-July	7.25	8.14			
April-Sept	8.06	10.78			
Total-					
Oct 11-Sept12	9.25	13.97			

*Number of Days over 89° F
 Last Spring Frost – May 12, 2012 (31.9° F)
 First Fall Frost – September 13, 2012 (32° F)

Weather Summary Williston, ND

Month	Precipitation		Temperature		
	2012	Avg	2012	Avg	*
	- inches -		- degrees F -		
Oct-Dec. 2011	0.90	1.73			
January-March	0.36	1.20			
April	1.64	1.18	48.7	43.2	0
May	2.08	2.21	55.9	55.3	2
June	2.23	2.68	65.9	64.9	2
July	3.32	2.25	76.3	70.8	23
August	0.67	1.55	70.9	68.9	11
September	0.09	1.32	62.7	56.6	5
April-July	9.27	8.32			
April-Sept	10.03	11.19			
Total-					
Oct 11 - Sept12	11.29	14.12			

*Number of Days over 89° F
 Last Spring Frost – May 11, 2012 (32° F)
 First Fall Frost – September 17, 2012 (32° F)

Off-Station Precipitation* Montana

Site	April	May	June	July	Aug	Total
Circle	1.03	2.02	1.76	2.62	1.43	8.86
Flaxville	1.16	3.26	2.09	1.63	1.82	9.96
Nashua	1.35	3.06	2.36	2.00	0.76	9.53
Poplar	1.22	2.24	2.71	1.56	0.52	8.25
Wibaux	1.68	2.60	1.36	2.16	1.53	9.33

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

Off-Station Precipitation* North Dakota

Site	April	May	June	July	Aug	Total
Bowbells	2.27	2.82	2.77	1.80	0.43	10.09
Crosby	0.46	2.31	3.18	2.41	0.15	8.51
Nesson Valley	1.09	2.92	5.13	2.31	0.62	12.02
Plaza	2.50	2.52	3.55	.55	1.05	10.17
Ross	1.65	3.32	4.66	1.02	0.61	11.26
Watford City	1.14	1.98	2.72	1.07	0.87	7.78

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

Hard Red Spring Wheat Variety Descriptions

Cultivar	Origin ¹	Height	Maturity	Lodging	Stem Rust	Leaf Rust	Foliar Disease	Head Scab	Sawfly	Resistance To ²	
										Test Weight	Grain protein
ADVANCE	SDSU	M SHORT	M EARLY	MS	MR	MR	NA	MS	NA	M HIGH	M-HIGH
AC LILLIAN	AG CANADA	TALL	MEDIUM	MS	R	R	S	NA	R	M LOW	MEDIUM
ALSEN	NDSU	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	NDSU	MEDIUM	M EARLY	M	R	R	MR	M	S	M HIGH	M HIGH
BREAKER	WESTBRED	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	SDSU	MEDIUM	M EARLY	M	R	R	NA	MR	S	M HIGH	M LOW
BRIGGS	SDSU	M TALL	M EARLY	MS	R/MR	R	MS	S	S	MEDIUM	MEDIUM
BUCK PRONTO	TIGREN SEED	M SHORT	EARLY	R	R	MR	NA	NA	S	MEDIUM	MEDIUM
CHOTEAU	MSU	M SHORT	M LATE	MS	R	MR	MR	S	R	MEDIUM	MEDIUM
CORBIN	WESTBRED	MEDIUM	MEDIUM	M	NA	NA	NA	NA	MR	MEDIUM	MEDIUM
DUCLAIR	MSU	MEDIUM	MEDIUM	R	NA	NA	NA	NA	R	MEDIUM	MEDIUM
EDGE	WB/SABRE	MEDIUM	M EARLY	MR	NA	NA	NA	MS	S	LOW	M HIGH
ELGIN	NDSU	TALL	MEDIUM	M	R	M	NA	M	NA	M LOW	LOW
FALLER	NDSU	M TALL	MEDIUM	M	R	R	MR	M	S	MEDIUM	LOW
FOREFRONT	SDSU	TALL	EARLY	M	MR	MR	NA	MR	NA	M LOW	HIGH
GLENN	NDSU	M TALL	M EARLY	MR	R	R	M	MR	S	HIGH	M HIGH
HOWARD	NDSU	M TALL	MEDIUM	MS	R	R	M	M	S	M LOW	M LOW
JEDD*	WESTBRED	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
LCS ALBANY	LIMAGRAIN	M SHORT	LATE	M	MR	S	MS	M	NA	M HIGH	M LOW
LCS BREAKAWAY	LIMAGRAIN	M SHORT	M EARLY	M	NA	R	MS	M	NA	M HIGH	MEDIUM
LCS POWERPLAY	LIMAGRAIN	MEDIUM	MEDIUM	M	NA	MR	MS	M	NA	LOW	M LOW
MOTT	NDSU	TALL	M LATE	M	MR	MS	MS	MS	R	MEDIUM	MEDIUM
ND901CL PLUS*	NDSU	TALL	MEDIUM	M	R/MR	MR/R	NA	M	S	M HIGH	HIGH
ONEAL	WESTBRED	MEDIUM	M LATE	R	NA	MS	MR	S	S	MEDIUM	M LOW
OUTLOOK	MSU	MEDIUM	M LATE	MR	MS	MR	MR	S	S	M LOW	M LOW
PROSPER	NDSU	MEDIUM	MEDIUM	MR	MR	MR	R	M	S	MEDIUM	M HIGH
RB07	MN	M.SHORT	M EARLY	M	R	R	MS	MR	S	M HIGH	MEDIUM
REEDER	NDSU	MEDIUM	MEDIUM	MR	R	MS	S	S	S	MEDIUM	MEDIUM
ROCKLAND	WESTBRED	SHORT	EARLY	R	MS	R	NA	MR	S	M HIGH	M HIGH
ROLLAG	MN	MEDIUM	MEDIUM	MR	R	MS	MR	MR	NA	M HIGH	M LOW
SAMSON	WESTBRED	SHORT	MEDIUM	R	R	MR	R	S	S	LOW	LOW
SELECT	SDSU	MEDIUM	M EARLY	M	R/MR	R/MR	R/MR	MR	NA	MEDIUM	MEDIUM
STEELE-ND	NDSU	MEDIUM	MEDIUM	MS	R	R	MS	M	S	MEDIUM	MEDIUM
SY SOREN	AGRIPRO	M.SHORT	M EARLY	R	R	R	MR	MR	S	M HIGH	MEDIUM
SY TYRA	AGRIPRO	M.SHORT	MEDIUM	R	R	M	MS	MS	R	MEDIUM	M LOW
SY605CL*	AGRIPRO	MEDIUM	M EARLY	MS	R/MR	S	MS	S	S	M LOW	HIGH
VANTAGE	WESTBRED	M.SHORT	LATE	R	R	MS	MR	MS	S	HIGH	HIGH
VELVA	NDSU	M SHORT	M LATE	R	MR	MR	R	MS	S	MEDIUM	MEDIUM
VIDA	MSU	MEDIUM	MEDIUM	MR	MS	MS	S	S	MR	MEDIUM	MEDIUM
VOLT	WESTBRED	MEDIUM	M LATE	R	NA	MR	MR	MS	S	HIGH	LOW
WB-DIGGER	WESTBRED	MEDIUM	MEDIUM	M	MR	MR/MS	NA	MS	S	M LOW	LOW
WB GUNNISON	WESTBRED	MEDIUM	M EARLY	R	NA	NA	NA	S	S	M HIGH	MEDIUM
WB MAYVILLE	WESTBRED	SHORT	M EARLY	R	R	MR	MS	MS	S	M HIGH	M HIGH

*Clearfield wheat with imidazolinone tolerance

^{1/} R =resistant; MR =moderately resistant; M =intermediate; MS =moderately susceptible; S =susceptible; VS =very susceptible;

NA = data not available

“Our farmers deserve praise, not condemnation; and their efficiency should be cause for gratitude, not something for which they are penalized.”

John F. Kennedy

Hard White Spring Wheat Descriptions

Cultivar	Origin ¹	Height	Maturity	Lodging	Stem Rust	Resistance To ²				Quality Factors	
						Leaf Rust	Foliar Disease	Scab	Sawfly	Test Weight	Grain Protein
AC KANATA	AC	M SHORT	MEDIUM	R	MS	MR	S	MS	S	M HIGH	HIGH
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
AGAWAM	WB	SHORT	EARLY	R	NA	NA	NA	S	R	M HIGH	LOW
ALPINE	AGRIPRO	MEDIUM	MEDIUM	M	R	S	M	MR	S	MEDIUM	M LOW
BLANCA GRANDE	GM	SHORT	EARLY	R	NA	NA	NA	S	S	HIGH	LOW
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
IDAMAX	WB	MEDIUM	MEDIUM	M	NA	R	NA	MR	S	MEDIUM	MEDIUM
LOLO	ID	MEDIUM	MEDIUM	M	R	R	S	S	S	M HIGH	MEDIUM
LOSHSA	ID	MEDIUM	MEDIUM	R	NA	NA	NA	S	S	V LOW	MEDIUM
OTIS	WSU	TALL	MEDIUM	M	NA	NA	NA	NA	S	M HIGH	M LOW
PALOMA	WB	M SHORT	M EARLY	R	NA	R	NA	MR	S	HIGH	M HIGH
PLATA	GM	SHORT	MEDIUM	R	NA	NA	NA	S	S	M HIGH	M LOW
PRESTEA	WB	MEDIUM	MEDIUM	MR	NA	NA	NA	MR	MS	M HIGH	M HIGH
SNOW CREST	WB	SHORT	V EARLY	NA	NA	R	NA	MR	S	M LOW	M LOW
WAIKEA	WB	M SHORT	EARLY	R	NA	NA	NA	S	S	V LOW	M LOW

¹ REFERS TO DEVELOPER: CDC = CROP DEVELOPMENT CENTER, UNIVERSITY OF SASKATCHEWAN;

AC = AGRICULTURE CANADA;

GM = GENERAL MILLS, WB = WESTBRED, ID = UNIVERSITY OF IDAHO

² R = RESISTANT; MR = MODERATELY RESISTANT; M = INTERMEDIATE; MS = MODERATELY SUSCEPTIBLE; S = SUSCEPTIBLE; VS = VERY SUSCEPTIBLE;

NA = DATA NOT AVAILABLE. *INDICATES YIELD AND/OR /QUALITY HAVE OFTEN BEEN HIGHER THAN EXPECTED BASED ON VISUAL HEAD BLIGHT SYMPTOMS ALONE

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.



“The farmer has to be an optimist or he wouldn’t still be a farmer.”

Will Rogers

**Dryland Recrop HRS Wheat
Circle, MT**

**Sprinkler Irrigated Spring Wheat
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr		2012	3 yr
Vida	17.9	25.7	57.0	12.2	13.2
Outlook	20.1	25.1	55.5	12.3	13.1
Reeder	17.3	24.5	58.5	13.0	13.7
ONeal	14.5	24.4	57.5	13.2	14.0
Mott	14.7	24.1	57.5	13.1	13.7
Duclair	15.1	23.9	56.0	12.8	12.7
Choteau	13.7	23.6	57.5	13.2	13.5
Jedd	17.0	22.2	56.5	13.4	14.2
AP604CL	15.4	21.6	56.0	13.9	14.0
Corbin	12.8	21.2	54.5	14.5	14.3
Volt	14.5	21.0	53.5	15.9	14.2
McNeal	13.1	20.7	55.0	14.2	13.5
Kelby	15.4	19.8	56.0	14.4	15.3
SY Tyra	18.5	--	60.5	11.3	--
Hank	17.6	--	55.5	12.5	--
IMICHT79	16.2	--	56.5	12.9	--
Gunnison	15.9	--	58.0	12.2	--
Prosper	13.6	--	55.0	13.4	--

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr		2012	3 yr
Reeder	71.7	67.2	58.7	15.4	15.7
SY605CL	65.3	66.0	59.9	15.5	16.1
Brennan	71.3	65.3	59.7	15.6	15.9
Duclair	61.0	62.4	56.6	15.2	15.2
SY Tyra	64.3	61.1	60.1	14.0	14.3
McNeal	66.5	60.9	56.4	15.7	14.7
Vida	66.7	60.2	57.9	14.2	15.5
WB-Gunnison	67.7	58.8	59.1	14.2	14.7
ONeal	68.0	58.2	57.9	15.0	15.1
Choteau	56.9	58.2	56.9	15.3	15.4
Conan	57.9	57.1	58.6	15.8	15.5
Mott	54.3	56.8	58.2	15.0	14.6
Kelby	49.3	53.4	58.8	16.4	16.4
Corbin	61.5	53.2	58.6	15.0	15.0
Jedd	71.0	52.7	59.1	14.9	14.9
AP604CL	39.0	50.8	59.9	15.5	15.2
Volt	38.7	50.6	57.6	14.8	15.0
Fortuna	51.1	49.6	58.3	15.1	15.4
Thatcher	53.7	45.9	55.9	15.4	15.0
WB Mayville	64.4	--	59.7	15.9	--
WB Rockland	54.7	--	57.2	15.4	--
SY Soren	53.1	--	58.0	15.1	--
Vantage	52.7	--	60.0	16.2	--
Buck Pronto	48.4	--	57.4	16.6	--

LSD 5% 3.0 -- -- -- --
Planted: May 3, 2012 **Harvested:** September 6, 2012
Previous Crop: Spring wheat

LSD 5% 16.5 -- -- -- --
Planted: April 23, 2012 **Harvested:** August 20, 2012
Previous Crop: Safflower

**Dryland Fallow HRS Wheat
Nashua, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr		2012	3 yr
Kelby	29.6	40.2	59.5	15.9	15.4
Vida	25.5	38.4	57.5	14.6	14.9
AP604CL	25.6	37.8	59.0	15.2	14.9
Reeder	23.7	35.8	57.5	15.6	15.9
Corbin	26.2	35.6	58.5	15.5	15.2
Volt	23.9	35.1	57.0	15.5	14.7
McNeal	20.5	34.6	56.5	16.3	15.1
ONeal	25.2	34.5	59.0	15.2	15.0
Jedd	27.6	33.4	59.0	14.5	14.4
Outlook	20.9	30.3	56.5	15.8	14.9
Choteau	20.9	29.9	56.5	16.7	15.4
Mott	23.4	27.8	58.0	15.3	15.1
Duclair	20.8	27.5	57.0	14.7	14.5
Prosper	29.5	--	57.0	14.3	--
Hank	28.2	--	56.5	14.7	--
Gunnison	25.6	--	59.5	14.1	--
SY Tyra	24.1	--	60.0	14.1	--
IMICHT79	22.0	--	58.0	15.4	--

LSD 5% 5.2 -- -- -- --
Planted: May 3, 2012 **Harvested:** September 7, 2012

"The first farmer was the first man. All historic nobility rests on the possession and use of land."

Ralph Waldo Emerson

**Dryland Fallow Spring wheat
Sidney, MT**

Cultivar	Yield - bus/a -		TW lb/b	Protein -- % --	
	2012	3 yr	2012	2012	3 yr
Reeder	42.0	46.9	58.5	12.7	13.9
Vida	39.1	46.8	57.0	13.3	14.1
Duclair	39.1	44.5	57.0	12.6	13.4
Brennan	44.5	44.3	60.0	13.6	14.4
Kelby	44.8	43.8	60.0	13.5	14.4
Corbin	39.8	43.5	58.0	13.9	13.4
ONeal	35.8	43.3	58.5	13.6	13.0
AP604CL	36.6	42.4	59.0	13.7	13.9
Choteau	36.7	42.2	57.5	13.5	13.6
SY Tyra	35.3	42.0	59.0	13.0	13.2
SY605 CL	34.1	41.9	57.5	15.7	14.7
Jedd	36.2	39.8	59.5	12.8	13.1
McNeal	33.6	38.7	56.0	14.1	13.7
Mott	31.2	37.2	56.5	15.4	14.1
Volt	30.3	37.0	58.0	14.7	13.9
WB-Gunnison	38.7	36.9	58.5	13.4	13.8
Fortuna	38.2	36.8	58.5	12.8	13.7
Conan	29.1	33.2	58.5	14.1	13.9
Thatcher	27.5	32.4	55.0	14.2	14.0
SY Soren	40.4	--	58.0	13.9	--
WB Mayville	34.1	--	58.0	14.4	--
WB Rockland	33.7	--	56.5	15.4	--
Buck Pronto	32.2	--	56.0	15.2	--
Vantage	30.4	--	59.0	16.3	--
LSD 5%	6.2	--	--	--	--

Planted: April 11, 2012 **Harvested:** August 2, 2012

*"Farming with live animals is a 7 day a week, legal
form of slavery."
George Segal*

**Dryland Fallow HRS Wheat
Poplar, MT**

Cultivar	Yield - bus/a -		TW lb/b	Protein -- % --	
	2012	2 yr	2012	2012	2 yr
Kelby	44.1	54.2	59.0	16.3	16.1
Vida	49.0	53.5	56.0	15.3	15.2
Duclair	46.8	53.5	56.0	15.8	15.2
AP604CL	50.1	53.2	58.5	15.9	15.2
Jedd	45.5	52.2	57.0	16.0	14.9
Choteau	44.2	50.1	56.0	16.5	15.2
Reeder	47.0	49.7	58.0	15.9	15.5
Mott	47.2	49.5	57.0	16.0	15.2
Outlook	42.7	47.8	56.5	14.5	14.4
ONeal	40.0	47.3	55.5	16.9	15.8
McNeal	43.8	47.1	55.5	16.5	14.9
Corbin	38.7	45.8	56.5	16.2	15.4
Volt	41.3	45.1	59.0	15.2	14.9
IMICHT79	48.0	--	56.5	16.4	--
Prosper	46.9	--	56.0	15.5	--
SY Tyra	45.7	--	57.0	14.8	--
Gunnison	44.2	--	57.0	15.5	--
Hank	42.3	--	53.0	16.9	--
LSD 5%	9.7	--	--	--	--

Planted: May 2, 2012 **Harvested:** September 10, 2012

**Dryland Recrop Spring Wheat
Sidney, MT**

Cultivar	Yield - bus/a -		TW lb/b	Protein -- % --	
	2012	3 yr	2012	2012	3 yr
Vida	8.4	35.1	54.5	13.7	14.2
Reeder	13.6	33.0	55.5	13.6	14.4
Outlook	9.5	32.4	54.0	12.7	13.0
Duclair	10.4	31.5	54.0	14.2	13.3
AP604CL	11.5	31.1	54.0	14.5	13.4
Mott	8.9	30.6	55.0	16.7	15.1
McNeal	9.9	30.0	54.5	14.6	13.7
O'Neal	8.4	29.7	52.5	16.2	14.3
Choteau	11.7	29.2	56.0	13.5	13.3
Jedd	12.3	29.1	58.5	12.1	12.2
Corbin	9.0	29.1	55.0	15.0	13.9
Volt	11.6	27.9	58.5	11.0	12.4
Kuntz	11.5	25.2	58.5	12.5	12.9
Hank	13.3	--	53.0	13.8	--
Gunnison	10.6	--	57.0	13.0	--
IMICHT79	9.0	--	56.5	13.2	--
SY Tyra	8.1	--	57.5	13.7	--
Prosper	7.9	--	52.5	14.0	--
LSD 5%	3.1	--	--	--	--

Planted: April 6, 2012 **Harvested:** August 8, 2012
Previous Crop: Spring wheat

**Dryland HRS Wheat
Williston, ND**

Cultivar	Yield		TW lb/bu	Protein	
	--- bu/a ---			--- % ---	
	2012	3 yr	2012	2012	3 yr
Vida	39.8	39.2	55.8	13.6	14.5
Reeder	36.9	38.8	56.0	15.3	15.0
RB07	39.0	38.0	57.7	14.4	14.7
Barlow	36.8	37.9	57.4	14.3	14.6
WB-Digger	37.7	37.8	54.9	14.7	14.7
Alpine	36.3	37.6	56.1	14.3	14.3
Brennan	38.1	37.5	58.1	15.5	15.4
Kelby	37.3	37.4	58.7	15.2	15.1
Velva	35.2	36.6	54.8	15.0	15.2
Jenna	34.9	36.5	54.0	15.2	15.2
Rollag	36.0	36.0	55.1	15.7	15.7
Edge	34.5	35.9	55.5	15.3	15.8
Knudson	34.6	35.2	55.7	15.5	15.4
Select	34.7	35.1	56.8	15.3	15.0
Freyr	33.0	34.8	55.5	15.9	15.3
Steele-ND	32.4	34.5	54.5	15.4	15.1
Breaker	34.6	33.7	58.1	15.3	15.8
Albany	33.3	33.7	54.5	15.6	15.0
Glenn	34.5	33.6	59.0	15.0	15.1
ND901CL Plus	32.6	33.6	57.4	15.7	16.3
Agawam	31.6	33.5	57.3	14.7	14.3
Briggs	33.6	33.4	56.0	15.5	15.1
AC Lillian	32.7	33.2	55.2	16.5	16.2
Alsen	34.4	32.9	56.3	14.9	15.3
Howard	31.8	32.8	54.2	14.9	15.0
Faller	30.5	32.7	52.8	14.9	14.8
Conan	32.2	32.5	55.9	16.0	15.8
Choteau	32.1	32.3	55.4	15.5	15.8
Brick	32.4	31.5	58.0	14.7	14.9
Prosper	30.7	31.5	53.7	15.1	15.1
Vantage	31.1	31.5	58.6	16.7	17.2
Mott	29.3	30.9	55.5	16.5	16.3
Forefront	39.2	--	57.6	14.6	--
SY Soren	37.7	--	56.0	15.1	--
Samson	37.1	--	56.2	15.1	--
WB-Mayville	36.1	--	56.5	15.3	--
Powerplay	35.1	--	55.1	14.6	--
Elgin	34.9	--	54.8	15.0	--
Norden	34.9	--	56.5	14.5	--
SY Tyra	34.7	--	56.8	15.3	--
WB-Gunnison	34.5	--	55.6	15.2	--
Duclair	34.5	--	54.5	15.5	--
McKenzie	33.7	--	54.8	15.1	--
Breakaway	33.5	--	57.1	15.7	--
Advance	32.6	--	56.0	15.3	--
LSD 5%	3.1	--	0.8	1.1	--

Planted: April 25, 2012

Harvested: August 2, 2012

Previous Crop: Soybean

**Dryland Notill HRS Wheat
Williston, ND**

Cultivar	Yield		TW lb/bu	Protein	
	--- bu/a ---			--- % ---	
	2012	3 yr	2012	2012	3 yr
Brennan	39.0	45.8	55.6	17.8	16.2
Kelby	39.4	44.6	55.4	18.1	16.3
Vida	34.0	43.7	52.1	18.0	15.8
RB07	33.2	43.3	54.1	17.7	15.5
Alpine	35.6	42.4	53.4	17.1	15.1
Barlow	32.2	41.9	54.4	18.1	16.0
O'Neal	31.6	41.6	52.3	19.1	16.3
Reeder	32.1	41.5	52.5	17.5	15.8
Freyr	29.6	41.4	52.7	18.1	15.7
Select	32.5	41.0	52.6	17.9	15.9
Jenna	30.7	40.6	50.0	19.2	16.6
Briggs	30.8	39.2	52.6	18.9	16.5
Howard	29.7	38.0	50.5	18.2	16.1
Glenn	32.6	37.8	55.2	17.7	15.9
ND901CL Plus	27.4	37.2	53.9	18.4	16.6
Faller	26.6	36.6	48.4	18.3	16.0
Steele-ND	29.1	36.5	50.4	18.3	16.3
Mott	25.9	36.4	51.2	19.8	17.3
Choteau	30.5	36.3	53.4	18.4	16.6
Rollag	36.0	--	53.2	18.7	--
SY Soren	33.4	--	53.0	18.8	--
Duclair	32.7	--	51.9	18.1	--
Velva	32.7	--	51.9	17.3	--
Albany	30.8	--	49.9	19.7	--
Elgin	30.7	--	49.2	18.9	--
Prosper	30.1	--	50.1	17.5	--
WB-Gunnison	29.6	--	54.0	17.3	--
SY605CL	29.4	--	52.5	19.7	--
SY Tyra	28.9	--	51.1	18.4	--
LSD 5%	5.0	--	1.2	1.1	--

Planted: April 18, 2012

Harvested: July 31, 2012

Previous Crop: Soybean

*“Realize deeply that the present moment is all you
ever have.”
Eckhart Tolle*

**Sprinkler Irrigated HRS Wheat
Nesson Valley, ND**

Cultivar	Yield		TW lb/bu	Protein	
	--- bu/a ---			--- % ---	
	2012	3 yr		2012	3 yr
Vida	85.2	67.9	58.9	15.3	16.5
Jenna	80.0	67.9	58.4	15.7	16.5
Freyr	84.5	67.4	59.7	15.3	16.4
Albany	82.2	67.4	57.1	15.0	15.5
Reeder	83.9	65.3	59.6	16.1	17.2
RB07	79.4	64.6	60.5	15.4	16.3
Barlow	78.2	64.2	60.9	15.6	16.8
Brennan	79.1	64.0	60.2	15.6	16.5
Sabin	77.0	62.9	59.4	15.9	17.2
Faller	72.9	62.2	56.1	15.3	16.3
Howard	69.3	59.6	56.6	15.9	16.6
Glenn	75.9	59.4	61.5	16.2	17.3
O'Neal	69.4	59.3	56.3	16.0	16.3
Steele-ND	71.3	57.8	58.8	15.9	16.7
Kelby	82.3	--	60.8	16.0	--
SY Soren	76.9	--	57.1	16.5	--
Rollag	73.2	--	59.3	16.9	--
Mott	74.0	--	59.7	15.8	--
Outlook	74.0	--	55.4	15.3	--
Prosper	75.4	--	58.4	15.4	--
Duclair	70.6	--	57.1	16.0	--
Pivot	68.6	--	52.8	16.3	--
ND901CL Plus	66.7	--	60.1	16.6	--
LSD 5%	7.2	--	1.9	0.9	--
Planted: April 24, 2012			Harvested: July 31, 2012		
Previous Crop: Potato					

**Dryland Notill HRS Wheat
Crosby, ND**

Cultivar	Yield		TW lb/bu	Protein	
	--- bu/a ---			--- % ---	
	2012	3 yr		2012	3 yr
Jenna	56.7	47.7	58.0	14.1	14.5
Vida	55.3	47.0	57.9	14.4	14.7
Reeder	52.2	45.6	58.9	14.8	14.8
RB07	54.0	44.2	59.3	15.1	15.7
Velva	49.3	43.9	57.1	15.0	14.9
Faller	50.4	43.3	59.0	14.9	14.8
ND901CL Plus	52.4	42.9	58.2	16.3	16.1
Steele-ND	47.2	41.7	60.5	15.0	15.4
Barlow	53.4	41.5	51.4	15.4	15.5
Glenn	55.2	41.2	58.1	15.3	15.7
Mott	50.6	41.1	58.3	14.3	15.1
Prosper	52.9	40.9	59.4	14.1	14.8
Choteau	49.2	39.9	56.5	15.5	15.6
Howard	49.0	39.1	60.5	15.1	15.2
Kelby	57.3	38.8	60.1	15.3	16.0
Brennan	58.6	--	60.1	15.5	--
SY Soren	57.7	--	60.4	14.9	--
Elgin	54.8	--	58.6	14.7	--
SY605CL	54.7	--	61.4	16.0	--
Duclair	52.3	--	58.6	14.9	--
WB-Gunnison	47.4	--	58.7	14.3	--
O'Neal	44.9	--	55.1	14.9	--
SY Tyra	43.9	--	58.5	14.4	--
LSD 5%	7.1	--	1.2	1.4	--
Planted: May 15, 2012			Harvested: August 29, 2012		
Previous Crop: Field pea					

"I know of no pursuit in which more real and important services can be rendered to any country than by improving its agriculture, its breed of useful animals, and other branches of a husbandman's cares."
George Washington

**Dryland Notill HRS Wheat
Arnegard, ND**

Cultivar	Yield bu/a 2012	TW lb/bu 2012	Protein % 2012
Brennan	57.4	58.9	14.2
Reeder	54.2	57.8	14.0
Vida	52.5	54.3	13.1
Kelby	52.3	59.1	14.3
RB07	51.4	59.0	13.3
SY Soren	50.6	57.3	15.3
SY Tyra	47.2	56.1	13.3
Steele-ND	46.7	57.1	13.9
Velva	46.0	55.4	13.3
SY605CL	46.0	58.2	14.0
Jenna	45.5	55.1	14.8
Glenn	42.1	60.4	14.4
Howard	41.7	56.2	13.6
O'Neal	41.7	55.2	13.5
Choteau	41.4	54.9	14.6
Elgin	41.1	54.7	15.1
Barlow	40.4	57.3	14.5
Duclair	38.7	55.1	13.3
Prosper	37.5	55.7	14.5
Faller	37.5	56.4	12.8
ND901CL Plus	35.9	59.0	14.5
Mott	33.9	57.6	14.3
WB-Gunnison	29.3	56.3	14.2

LSD 5% 9.0 2.4 1.5
Planted: May 10, 2012 **Harvested:** August 9, 2012
Previous Crop: Spring wheat

**Dryland Notill HRS Wheat
New Town, ND**

Cultivar	Yield bu/a 2012	TW lb/bu 2012	Protein % 2012
Faller	43.9	57.4	13.4
Prosper	39.7	56.9	13.2
Barlow	39.5	58.9	14.3
Jenna	38.7	58.4	12.5
Mott	36.8	58.0	14.1
Reeder	36.2	58.2	14.1
Vida	35.9	58.5	13.3
Duclair	35.6	56.7	12.5
SY605CL	34.4	59.2	13.0
Elgin	33.9	57.9	13.9
Velva	33.9	57.6	13.2
SY Tyra	33.6	56.2	12.1
Steele-ND	33.6	57.5	14.7
RB07	33.5	58.5	13.9
SY Soren	32.9	59.7	13.6
Kelby	32.6	58.7	14.6
Howard	31.8	58.3	14.2
Choteau	30.8	53.9	13.3
ND901CL Plus	30.3	58.7	14.0
WB-Gunnison	28.5	57.4	13.9
Glenn	27.6	59.0	14.7
O'Neal	26.0	55.3	13.6
Brennan	25.6	59.9	13.3

LSD 5% 9.8 1.6 1.3
Planted: May 14, 2012 **Harvested:** August 28, 2012
Previous Crop: Canola

“The farmer is the only man in our economy who buys everything at retail, sells everything at wholesale, and pays the freight both ways.”
John F. Kennedy

**Dryland HRS Wheat Values
Sidney, MT**

Cultivar	Yield bu/a 3 yr	TW lb/bu 3 yr	Protein % 3 yr	\$/a + or - Vida
Reeder	46.9	59.8	13.9	0.68
Vida	46.8	58.3	14.1	0.00
Brennan	44.3	60.7	14.4	-8.76
Kelby	43.8	60.3	14.4	-12.29
SY605 CL	41.9	59.5	14.7	-21.52
Duclair	44.5	57.8	13.4	-27.37
AP604CL	42.4	60.0	13.9	-30.23
Corbin	43.5	58.8	13.4	-33.98
Choteau	42.2	59.5	13.6	-42.58
ONeal	43.3	59.3	13.0	-47.00
SY Tyra	42.0	60.0	13.2	-49.36
McNeal	38.7	58.0	13.7	-60.68
Mott	37.2	59.2	14.1	-65.96
Volt	37.0	59.8	13.9	-67.33
Jedd	39.8	60.0	13.1	-69.19
WB-Gunnison	36.9	59.7	13.8	-72.81
Fortuna	36.8	59.3	13.7	-73.49
Conan	33.2	60.0	13.9	-93.44
Thatcher	32.4	57.7	14.0	-98.93

Wheat prices summarized by P. Lamb, NARC, Havre, MT, from 10-yr (2002-2011) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee

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

Cultivar	Yield bu/a 3 yr	TW lbs/bu 3 yr	Protein % 3 yr	\$/a + or - Vida
SY605CL	66.0	60.0	16.1	98.36
Reeder	67.2	59.1	15.7	93.72
Brennan	65.3	59.9	15.9	90.40
Duclair	62.4	57.0	15.2	6.69
Vida	60.2	57.3	15.5	0.00
Choteau	58.2	57.1	15.4	-21.40
Conan	57.1	59.4	15.5	-33.17
McNeal	60.9	57.3	14.7	-42.45
Kelby	53.4	59.1	16.4	-43.39
ONeal	58.2	56.6	15.1	-52.83
WB-Gunnison	58.8	59.4	14.7	-63.20
SY Tyra	61.1	59.7	14.3	-73.47
Mott	56.8	59.1	14.6	-97.72
Corbin	53.2	57.9	15.0	-103.63
Jedd	52.7	58.0	14.9	-108.71
Fortuna	49.6	57.6	15.4	-113.42
AP604CL	50.8	60.1	15.2	-114.30
Volt	50.6	58.2	15.0	-130.04
Thatcher	45.9	56.0	15.0	-177.81

Wheat prices summarized by P. Lamb, NARC, Havre, MT, from 2-yr (2010-2011) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee.

*“There are three easy ways of losing money – racing is the quickest, women the most pleasant, and farming the most certain.”
Lord Amherst*

*“If your enemy wrongs you, buy each of his children a drum.”
Old Farmers Almanac, 2002*



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 December 10, 2012. The base price for 14% protein wheat was \$8.50, and for terminal durum was \$8.25. All spring wheat varieties are compared to Glenn and durum varieties to Ben on a plus or minus \$/a basis.

Cultivar	3 Year Avg. (2010-12)			
	Yield bu/a	Protein %	Gross Ret \$/a	\$/A +or- Glenn
Hard Spring Wheat				
Vida	39.2	13.6	\$333.20	\$47.60
Reeder	38.8	15.3	\$329.80	\$44.20
RB07	38.0	14.7	\$323.00	\$37.40
Barlow	37.9	14.6	\$322.15	\$36.55
WB-Digger	37.8	14.7	\$321.30	\$35.70
Alpine	37.6	14.3	\$319.60	\$34.00
Brennan	37.5	15.4	\$318.75	\$33.15
Velva	36.6	15.0	\$311.10	\$25.50
Jenna	36.5	15.2	\$310.25	\$24.65
Rollag	36.0	15.7	\$306.00	\$20.40
Edge	35.9	15.8	\$305.15	\$19.55
Select	35.1	15.0	\$298.35	\$12.75
Freyr	34.5	15.3	\$293.25	\$7.65
Steele-ND	34.5	15.1	\$293.25	\$7.65
Breaker	33.7	15.8	\$286.45	\$0.85
Albany	33.7	15.0	\$286.45	\$0.85
Glenn	33.6	15.5	\$285.60	\$0.00
ND901CL	33.6	16.3	\$285.60	\$0.00
Agawam	33.5	14.3	\$284.75	-\$0.85
Briggs	33.4	15.1	\$283.90	-\$1.70
AC Lillian	33.2	16.2	\$282.20	-\$3.40
Alsen	32.9	15.3	\$279.65	-\$5.95
Howard	32.8	15.0	\$278.80	-\$6.80
Faller	32.7	14.8	\$277.95	-\$7.65
Conan	32.5	15.8	\$276.25	-\$9.35
Choteau	32.3	15.8	\$274.55	-\$11.05
Brick	31.5	14.9	\$267.75	-\$17.85
Prosper	31.5	15.1	\$267.75	-\$17.85
Vantage	31.5	17.2	\$267.75	-\$17.85
Mott	30.9	16.3	\$262.65	-\$22.95

Cultivar	3 Year Avg. (2010-12)			
	Yield bu/a	Protein %	Gross Ret \$/a	\$/A +or- Ben
Durum				
AC Commander	36.2	15.8	\$298.65	\$28.87
Maier	35.2	15.2	\$290.40	\$20.62
DG Max	34.7	15.1	\$286.28	\$16.50
Wales	34.7	15.0	\$286.28	\$16.50
Alkabo	34.4	15.3	\$283.80	\$14.02
Grenora	33.8	15.4	\$278.85	\$9.07
Strongfield	33.5	15.8	\$276.38	\$6.60
Tioga	33.3	16.0	\$274.73	\$4.95
Alzada	33.3	15.3	\$274.73	\$4.95
AC Navigator	33.2	15.6	\$273.90	\$4.12
Westhope	33.2	16.0	\$273.90	\$4.12
Rugby	32.9	15.9	\$271.14	\$1.36
Ben	32.7	16.2	\$269.78	\$0.00
Pierce	32.5	15.3	\$268.13	-\$1.65
Dilse	32.3	16.1	\$266.48	-\$3.30
Divide	32.1	15.4	\$264.83	-\$4.95
DG Star	32.1	14.7	\$264.83	-\$4.95
Mountrail	31.0	15.9	\$255.75	-\$14.03
Lebsock	30.8	15.2	\$254.10	-\$15.68
CDC Verona	29.4	16.5	\$242.55	-\$27.23



Durum Variety Descriptions

CULTIVAR	ORIGIN ¹	HEIGHT	MATURITY	LODGING	RESISTANCE TO ²				TEST WEIGHT	QUALITY FACTORS		OVERALL QUALITY
					LEAF RUST	FOLIAR DISEASE	ROOT ROT	SCAB		KERNEL SIZE ³	GRAIN PROTEIN	
AC AVONLEA	CANADA	MED	M EARLY	MS	R	MS	S	VS	MED	LARGE	M HIGH	GOOD
AC COMMANDER	CANADA	M SHORT	LATE	M	R	MS	M	VS	MED	LARGE	M HIGH	GOOD
AC NAPOLEAN	CANADA	TALL	MED	MS	R	S	S	S	M HIGH	M LARGE	HIGH	GOOD
AC NAVIGATOR	CANADA	M SHORT	M LATE	M	R	M	S	S	MED	V LARGE	MED	GOOD
ALKABO	ND	MED	MED	R	R	M	M	MS	HIGH	LARGE	M LOW	GOOD
ALZADA	WB	SHORT	EARLY	M	MR	S	M	VS	MED	LARGE	MED	EXCEL
BELFIELD	WB	SHORT	EARLY	R	NA	S	NA	S	MED	M LARGE	M LOW	GOOD
BELZER	ND	TALL	M LATE	M	R	M	M	MR	M LOW	V LARGE	MED	GOOD
BEN	ND	TALL	MED	MR	R	MR	M	S*	V HIGH	V LARGE	M HIGH	AVERAGE
CDC VERONA	CANADA	M TALL	M LATE	M	R	MR	NA	S	MED	LARGE	M HIGH	GOOD
CARPIO	ND	M TALL	M LATE	M	NA	NA	NA	MR	MED	LARGE	M HIGH	EXCELLENT
DG MAX	DGP	M TALL	MED	M	MR	MR	NA	MS	HIGH	MED	M HIGH	GOOD
DG STAR	DGP	M TALL	M EARLY	M	R	M	NA	NA	MED	M SMALL	MED	GOOD
DILSE	ND	M TALL	LATE	M	R	M	M	MS	HIGH	MED	V HIGH	EXCEL
DIVIDE	ND	M TALL	M LATE	M	R	M	M	MR	MED	MED	M HIGH	EXCEL
GRANDE D'ORO	WB/DGP	M TALL	MED	MR	R	M	MS	NA	HIGH	M SMALL	MED	AVERAGE
GRENORA	ND	MED	M EARLY	M	R	M	MR	MS	MED	MED	MED	GOOD
KRONOS	APB	SHORT	M EARLY	R	NA	NA	NA	NA	MED	LARGE	MED	GOOD
KYLE	CANADA	TALL	LATE	S	MR	M	S	VS	MED	M LARGE	MED	GOOD
LEBSOCK	ND	M TALL	MED	R	R	M	MS	MS	HIGH	LARGE	MED	AVERAGE
MAIER	ND	M TALL	M LATE	M	R	M	M	S*	HIGH	MED	HIGH	AVERAGE
MOUNTRAIL	ND	M TALL	M LATE	M	R	M	M	S*	MED	MED	MED	AVERAGE
PIERCE	ND	M TALL	MED	M	R	MS	MR	S	V HIGH	MED	MED	EXCEL
PLAZA	ND	M SHORT	LATE	MS	R	M	MS	MS	MED	SMALL	MED	AVERAGE
PRIMO D'ORO	WB/DGP	TALL	M EARLY	MS	R	MS	S	NA	HIGH	MED	M HIGH	GOOD
SILVER	MSU	SHORT	EARLY	R	NA	M	NA	S	M HIGH	MED	M HIGH	GOOD
STRONGFIELD	CANADA	M TALL	M LATE	M	R	MS	NA	S	MED	M LARGE	V HIGH	GOOD
TIOGA	ND	TALL	M LATE	MR	R	M	NA	MS	M HIGH	MED	M HIGH	EXCEL
VOSS	AGRIPRO	SHORT	MED	R	MR	MS	MR	S	MED	MED	LOW	AVERAGE
WALES	WB	MED	MED	R	R	M	NA	S*	HIGH	M LARGE	MED	GOOD
WESTHOPE	WB	M TALL	MED	M	R	M	NA	S	M HIGH	M LARGE	MED	GOOD
WESTMORE	APB	SHORT	EARLY	R	NA	MS	NA	NA	M LOW	MED	MED	GOOD

¹ Refers to developer. WWW=World Wide Wheat; WB=WestBred; DGP =Dakota Growers Pasta; ND=North Dakota State University.

² R = resistant, MR = moderately resistant, M = intermediate, MS = moderately susceptible, S = susceptible, VS = very susceptible, NA = data not available. All varieties are resistant to current stem rust races.

³ Number seeds/lb: Large = less than 11,000; medium = 11,000-12,000; small = more than 12,000

* Indicates yield and/or quality have been higher than would be expected based on visual head blight symptoms alone.

Dryland Fallow Regional Durum Sidney, MT

Cultivar	Yield - bus/a -		TW lb/b	Protein -- % --	
	2012	3 yr	2012	2012	3 yr
Tioga	40.4	41.2	58.5	13.1	12.9
Divide	35.4	40.6	59.5	12.8	12.7
Alkabo	37.2	37.7	59.5	12.3	13.2
Mountrail	36.6	37.8	59.5	13.8	13.2
Carpio	38.9	38.9	58.0	14.7	13.0
Grenora	35.2	37.9	57.0	14.2	13.3

LSD 5%

5.8

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Planted: April 16, 2012

Harvested: August 7, 2012

*"Sowing is not as difficult as reaping."
Johann Wolfgang Von Goethe*

**Dryland Fallow Statewide Durum
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr	2012	2012	3 yr
Tioga	36.2	44.4	58.8	14.2	14.0
Mountrail	34.2	44.2	57.2	14.9	14.2
Alkabo	37.4	43.8	59.0	14.6	14.2
Strongfield	32.7	43.0	57.8	13.9	14.5
Grenora	32.9	43.0	57.7	14.3	14.3
Alzada	38.7	42.8	58.0	12.9	13.7
Divide	33.3	42.6	58.8	14.7	14.0
Belfield	34.3	41.6	58.2	13.4	14.0
Silver	31.9	37.0	57.7	14.4	14.4
Kronos	44.7	--	58.2	13.1	--
DG Max	39.0	--	59.8	12.9	--
Westmore	37.2	--	56.3	13.7	--
Westhope	36.9	--	59.5	14.6	--
Normanno	36.0	--	57.8	13.2	--
LSD 5%	5.8	--	1.2	1.7	--

Planted: April 16, 2012 **Harvested:** August 7, 2012

**Dryland Recrop Durum
Circle, MT**

Cultivar	Yield bu/a		TW 2012	Protein %	
	2012	3 yr	2012	2012	3 yr
Tioga	17.2	25.8	55.5	14.7	13.3
Strongfield	13.4	24.7	56.5	15.0	13.5
Alkabo	13.5	24.3	57.5	12.8	12.7
Pierce	15.2	23.7	58.0	13.9	13.4
Divide	14.0	23.5	58.0	12.0	12.1
Mountrail	12.9	23.4	59.0	11.9	12.5
Grenora	16.4	22.8	56.0	12.6	12.8
Silver	11.8	19.7	56.0	13.8	13.7
Alzada	12.5	19.7	60.0	11.2	12.4
Westhope	14.3	--	55.5	15.0	--
Normanno	12.0	--	54.5	13.7	--
Belfield	10.7	--	56.0	14.1	--
LSD 5%	2.7	--	--	--	--

Planted: May 3, 2012 **Harvested:** September 6, 2012
Previous Crop: Spring wheat

**Dryland Recrop Durum
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr	2012	2012	3 yr
Divide	3.8	30.7	55.0	15.5	13.4
Alkabo	8.7	30.3	56.5	15.0	13.7
Silver	8.5	29.1	53.0	18.2	14.7
Mountrail	7.0	29.1	53.5	17.3	13.9
Grenora	4.2	29.1	53.5	16.1	13.6
Normanno	9.5	28.8	56.0	11.9	11.5
Tioga	4.1	28.5	55.0	17.4	14.2
Strongfield	4.9	28.2	54.0	18.2	15.1
Pierce	3.3	27.8	54.5	16.9	14.2
Alzada	6.7	26.7	53.0	15.1	13.4
Belfield	9.8	--	55.5	14.8	--
Westhope	5.0	--	55.0	18.7	--
LSD 5%	2.2	--	--	--	--

Planted: April 6, 2012 **Harvested:** August 8, 2012
Previous Crop: Spring wheat

**Dryland Fallow Durum
Nashua, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr	2012	2012	3 yr
Alkabo	20.9	29.4	58.5	14.5	14.1
Grenora	25.8	29.0	57.5	14.2	14.8
Silver	25.7	28.7	59.0	14.2	14.6
Mountrail	18.3	28.3	58.5	13.9	14.3
Strongfield	20.8	27.8	58.5	15.0	15.0
Alzada	25.4	27.2	58.0	13.5	14.1
Pierce	22.5	27.1	59.5	14.7	14.2
Divide	22.0	26.6	59.0	14.0	14.2
Tioga	19.1	25.4	58.5	14.5	14.8
Belfield	26.4	--	60.5	13.6	--
Normanno	25.1	--	58.5	13.1	--
Westhope	24.9	--	59.5	13.7	--
LSD 5%	4.0	--	--	--	--

Planted: May 3, 2012 **Harvested:** September 7, 2012

**Dryland Fallow Durum
Poplar, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012	3 yr		2012	3 yr
Mountrail	32.2	47.0	56.0	17.4	15.4
Alkabo	38.6	44.0	58.5	16.3	15.0
Silver	37.6	43.4	55.0	18.1	15.7
Pierce	44.0	41.8	58.5	16.5	15.0
Divide	38.8	41.4	57.5	17.4	15.4
Grenora	38.7	41.0	56.5	17.2	15.1
Alzada	36.4	39.9	55.5	16.7	15.0
Tioga	36.1	38.9	57.0	18.0	15.7
Strongfield	32.3	38.7	56.0	18.9	16.2
Westhope	42.4	--	58.5	18.2	--
Normanno	38.2	--	55.5	18.0	--
Belfield	37.6	--	57.0	16.8	--
LSD 5%	7.0	--	--	--	--

Planted: May 6, 2012 **Harvested:** August 29, 2012

**Dryland Notill Durum
Crosby, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Protein --- % ---	
	2012	3 yr		2012	3 yr
Westhope	58.3	43.0	60.1	14.3	14.2
Wales	58.0	42.1	60.1	14.2	14.2
Grenora	52.9	39.6	57.5	14.4	14.4
Strongfield	50.7	38.7	57.6	16.0	15.8
Mountrail	40.8	38.6	56.2	16.2	15.3
Carpio	50.7	38.5	58.2	14.7	14.5
Pierce	49.8	37.8	58.1	15.0	14.9
Alkabo	49.4	37.6	58.0	14.6	14.5
Tioga	43.8	36.9	56.8	14.5	14.5
Divide	48.0	36.3	56.8	15.2	15.2
Ben	36.3	36.0	55.6	15.7	15.5
Lebsock	55.6	35.7	58.4	14.2	14.7
Maier	51.2	35.4	57.3	15.0	15.6
DG Star	45.8	33.3	59.2	14.4	15.1
Commander	38.3	32.8	55.2	14.4	14.8
DG Max	40.2	32.5	58.3	16.0	15.4
AC Navigator	33.2	32.1	55.1	14.8	14.7
Silver	44.4	-	57.3	15.1	-
CDC Verona	44.2	-	58.2	15.7	-
Alzada	35.3	-	55.5	14.9	-
LSD 5%	8.9	--	1.4	0.8	--

Planted: May 15, 2012 **Harvested:** August 29, 2012
Previous Crop: Field pea

**Sprinkler Irrigated Durum
Sidney, MT**

Cultivar	Yield - bus/a -		TW lb/b	Protein -- % --	
	2012	3 yr		2012	3 yr
Grenora	76.9	67.1	58.7	13.4	13.9
Mountrail	82.6	66.1	59.0	14.1	14.0
Tioga	70.4	64.5	59.5	14.0	14.2
Divide	73.2	63.5	59.8	14.3	14.4
Alkabo	78.2	62.4	58.0	13.5	13.9
Strongfield	66.0	56.6	59.0	15.2	15.0
Silver	66.6	47.9	57.5	14.2	14.8
Alzada	58.5	38.9	57.7	14.6	15.0
Belfield	57.1	36.6	58.8	14.4	14.7
DG Max	77.3	--	60.2	14.2	--
Westhope	75.7	--	59.7	14.5	--
Westmore	72.0	--	57.3	15.2	--
Normanno	69.1	--	57.2	14.0	--
Kronos	67.3	--	565.8	14.3	--
LSD 5%	7.2	--	1.5	0.6	--

Planted: April 23, 2012 **Harvested:** August 20, 2012
Previous Crop: Safflower

*“Life on a farm is a school of patience; you can’t hurry
the crops or make an ox in two days.”
Henri Alain*

**Dryland Durum
Williston, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Protein --- % ---	
	2012	3 yr	2012	2012	3 yr
AC Commander	38.8	36.2	55.9	17.1	15.8
Maier	38.5	35.2	56.3	16.3	15.2
DG Max	37.0	34.7	57.6	15.9	15.1
Wales	34.5	34.7	57.8	15.9	15.0
Alkabo	35.3	34.4	56.8	16.2	15.3
Grenora	33.1	33.8	54.6	16.6	15.4
Strongfield	34.8	33.5	55.5	16.4	15.8
Tioga	31.0	33.3	55.1	17.8	16.0
Alzada	38.3	33.3	55.6	15.8	15.3
AC Navigator	35.3	33.2	56.2	16.6	15.6
Westhope	34.8	33.2	58.1	16.9	16.0
Rugby	34.0	32.9	56.1	16.8	15.9
Ben	32.5	32.7	55.9	17.0	16.2
Pierce	32.6	32.5	56.8	16.6	15.3
Dilse	34.6	32.3	56.1	17.5	16.1
Divide	34.0	32.1	56.4	16.1	15.4
DG Star	32.5	32.1	56.8	15.8	14.7
Mountrail	32.0	31.0	54.7	17.2	15.9
Lebsock	31.1	30.8	56.6	16.9	15.2
CDC Verona	29.8	29.4	55.2	18.1	16.5
VT Peak	37.8	--	58.3	15.5	--
Normanno	37.4	--	55.2	16.2	--
Silver	34.4	--	55.2	16.1	--
WB-Belfield	33.8	--	55.9	16.3	--
Carpio	32.1	--	55.1	16.9	--
LSD 5%	3.2	--	0.8	1.1	--

Planted: April 17, 2012

Harvested: August 6, 2012

Previous Crop: Soybean

"Hope sustains the farmer."

**Dryland Notill Durum
Arnegard, ND**

Cultivar	Yield bu/a	TW lb/bu	Protein %
	2012	2012	2012
Lebsock	52.4	58.3	14.2
Westhope	51.4	59.6	13.9
Maier	48.4	58.0	16.7
Silver	45.7	56.7	13.5
Pierce	45.2	58.8	13.8
Grenora	44.9	55.9	14.2
Tioga	43.8	56.0	11.8
Carpio	43.0	54.9	13.7
DG Max	42.0	57.5	13.8
Strongfield	41.6	56.5	12.7
Wales	40.5	57.2	14.3
Divide	40.2	58.1	13.8
Ben	39.9	56.7	14.9
Commander	39.0	58.2	13.4
AC Navigator	38.3	55.3	14.4
Alkabo	36.9	57.6	11.9
CDC Verona	35.8	55.9	14.5
DG Star	34.5	57.7	12.0
Alzada	30.2	53.5	14.3
Mountrail	27.5	51.1	14.4

LSD 5%

16.7

3.9

3.0

Planted: May 10, 2012

Harvested: August 9, 2012

Previous Crop: Spring wheat

**Dryland Notill Durum
New Town, ND**

Cultivar	Yield bu/a	TW lb/bu	Protein %
	2012	2012	2012
Wales	36.3	59.1	13.8
Pierce	32.1	57.7	14.1
Grenora	31.5	56.2	13.5
CDC Verona	31.4	58.2	14.7
Westhope	31.0	59.2	13.9
DG Star	30.5	58.1	14.9
Alkabo	30.3	57.3	13.6
Lebsock	29.7	56.1	13.3
Divide	27.9	57.4	14.2
Maier	27.9	56.9	14.5
Carpio	27.3	58.5	14.0
DG Max	27.1	58.0	15.0
Mountrail	24.9	54.5	15.2
Strongfield	24.2	56.6	15.0
Tioga	22.7	56.7	13.7
Ben	22.5	54.6	14.6
Commander	22.3	52.9	14.5
Alzada	21.7	52.0	13.9
Silver	19.0	57.2	14.8
AC Navigator	18.7	53.1	14.6
LSD 5%	9.9	2.5	1.3

Planted: May 14, 2012

Harvested: August 28, 2012

Previous Crop: Canola

**Dryland Notill Durum
Williston, ND**

Cultivar	Yield		TW lb/bu	Protein	
	--- bu/a ---			--- % ---	
	2012	3 yr	2012	2012	3 yr
Ben	28.1	35.8	55.6	18.5	16.7
Grenora	29.7	35.6	54.2	17.2	16.1
Alzada	30.3	35.6	54.6	16.5	15.4
Alkabo	28.1	35.6	55.8	16.4	15.7
Maier	29.3	35.5	54.8	17.8	16.6
Westhope	30.1	35.5	57.5	16.1	15.9
DG Max	31.5	35.3	57.4	16.6	16.1
AC Navigator	28.7	35.2	55.8	17.4	16.1
Wales	29.9	35.1	57.8	16.8	16.1
Divide	31.3	35.0	57.0	15.3	15.5
AC Commander	32.6	35.0	55.4	17.4	16.6
Pierce	27.3	34.3	56.4	16.8	16.0
DG Star	28.9	33.1	57.2	14.8	15.5
Tioga	26.6	33.1	55.5	17.0	16.6
Lebsock	25.6	32.4	56.4	16.2	15.7
Strongfield	28.5	32.1	54.4	17.7	17.1
Mountrail	25.0	32.1	53.4	18.8	16.8
Kyle	27.8	31.7	55.9	18.3	16.5
Dilse	26.8	30.4	55.3	17.9	17.1
CDC Verona	25.0	30.2	56.0	18.0	17.7
VT Peak	30.4	--	57.7	16.4	--
Carpio	28.8	--	56.9	14.6	--
WB-Belfield	25.1	--	54.3	17.1	--
LSD 5%	3.6	--	1.2	2.0	--
Planted: April 18, 2012		Harvested: July 31, 2012			
Previous Crop: Soybean					

**Sprinkler Irrigated Durum
Nesson Valley, ND**

Cultivar	Yield		TW lb/bu	Protein	
	--- bu/a ---			--- % ---	
	2012	3 yr	2012	2012	3 yr
Tioga	62.1	56.4	57.8	15.8	16.0
Divide	57.8	54.7	57.3	16.4	16.1
Grenora	58.1	54.3	56.7	15.4	15.9
Mountrail	58.7	54.3	56.0	16.5	16.2
Alkabo	61.2	54.1	57.9	15.7	15.9
Pierce	62.3	53.8	58.5	15.4	15.9
Strongfield	57.1	50.5	56.4	17.5	17.5
Wales	58.4	50.1	58.0	16.3	16.5
Lebsock	59.3	49.6	58.2	15.5	16.1
Commander	56.3	47.2	54.5	16.3	16.3
Maier	60.6	--	57.8	16.4	--
DG Star	60.3	--	57.7	15.6	--
Rugby	60.3	--	58.3	16.4	--
DG Max	59.7	--	59.5	16.2	--
Carpio	58.6	--	57.4	16.2	--
Ben	58.5	--	58.6	15.9	--
Westhope	58.4	--	57.7	16.8	--
Dilse	58.2	--	58.6	16.6	--
Alzada	56.2	--	55.9	15.7	--
CDC Verona	52.8	--	56.0	18.2	--
AC Navigator	52.7	--	55.2	16.4	--
Silver	50.5	--	54.7	16.3	--
LSD 5%	4.5	--	1.6	1.1	--
Planted: April 24, 2012		Harvested: August 6, 2012			
Previous Crop: Potato					

*“There are only three things that can kill a farmer: lightning, rolling over in a tractor, and old age.”
Bill Bryson*

Hard Red Winter Wheat Variety Descriptions

Cultivar	Origin ¹	Height	Maturity	Winter Hardiness ³	Lodging	Resistance To ²			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

¹ Refers to developer: WB = WestBred,

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

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

“Pharmaceuticals, paint, fuel, cosmetics, crayons, X-ray films, adhesives, ink, toothpaste – these are just some of the everyday products made possible by U.S. farming.”

Hard White Winter Wheat Variety Descriptions

CULTIVAR	ORIGIN ¹	HEIGHT	MATURITY	WINTER HARDINESS ³	LODGING	RESISTANCE TO ²			QUALITY FACTORS	
						STEM RUST	LEAF RUST	FOLIAR DISEASE	TEST WEIGHT	GRAIN PROTEIN
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/WB	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

*CLEARFIELD WHEAT WITH IMIDAZOLINONE TOLERANCE

¹ Refers to developer: WB = WestBred,

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

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

Winter Rye Variety Descriptions

CULTIVAR	ORIGIN ¹	HEIGHT	STRAW STRENGTH	MATURITY	SEED COLOR	SEED SIZE	TEST WEIGHT	WINTER HARDINESS
AC RIFLE	CAN	SHORT	V GOOD	MED	BLUE	MED	MED	V GOOD
AC REMINGTON	CAN	SHORT	V GOOD	MED	NA	MED	GOOD	GOOD
AROOSTOK	USDA	TALL	FAIR	EARLY	NA	SMALL	HIGH	V GOOD
DACOLD	ND	MED	GOOD	V LATE	BL-GRN	MED	LOW	V GOOD
FREDERICK	SD	TALL	FAIR	LATE	TAN	MED	HIGH	GOOD
HANCOCK	WI	TALL	GOOD	MED	TAN	LARGE	HIGH	FAIR
MUSKETEER	CAN	TALL	GOOD	M EARLY	BLUE	LARGE	MED	V GOOD
PRIMA	CAN	TALL	GOOD	MED	BLUE	LARGE	MED	V GOOD
RYMIN	MN	TALL	V GOOD	LATE	GRN-GRAY	LARGE	HIGH	FAIR
SPOONER	WI	TALL	V GOOD	MED	TAN	NA	HIGH	GOOD
WHEELER	MI	TALL	FAIR	MED	NA	LARGE	LOW	GOOD

¹ Refers to developer: Can=Canada; MI-Michigan State University; ND=North Dakota State University; SD=South Dakota State University; WI=Wisconsin-Madison; MN=University of Minnesota



**Dryland Fallow Winter Wheat
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Protein %	
	2012*	3 yr	2012	2012	3 yr
Overland	56.8	66.5	60.5	11.1	11.9
Jerry	66.0	66.3	58.0	11.4	12.4
Yellowstone	63.7	65.0	59.5	12.2	12.4
Accipiter	59.4	63.4	56.0	11.2	11.6
Broadview	58.2	61.2	57.5	10.7	12.0
Decade	55.4	60.7	60.0	11.9	12.3
CDC Falcon	62.0	60.3	58.5	12.5	12.1
Promontory	64.4	58.0	60.5	11.6	12.0
Norris (CL)	54.8	57.4	60.5	11.6	12.1
Peregrine	54.4	55.4	57.5	12.4	12.2
Bearpaw	60.4	55.2	58.0	11.3	11.4
Radiant	56.0	55.2	56.0	10.5	11.8
Pryor	62.4	55.2	57.5	10.0	11.9
Jagalene	57.4	54.2	60.5	11.4	12.2
Curlew	58.4	53.8	59.0	11.7	12.4
Carter	49.9	51.1	59.5	11.5	12.5
Judee	51.9	49.4	58.0	11.0	12.4
Genou	53.4	48.7	59.0	13.9	13.6
WB Quake	49.4	48.6	56.5	13.3	12.4
Art	46.8	48.0	60.5	11.9	12.7
Ledger	46.3	46.4	58.5	11.3	12.0
Rampart	44.0	42.3	57.5	11.5	12.3
Bynum (CL)	48.3	42.1	59.5	12.6	13.1
Robidoux	56.4	--	58.5	11.7	--
SY Wolf	54.2	--	60.5	10.6	--
McGill	53.6	--	58.5	11.5	--

LSD 5% 9.6 -- -- -- --

Planted: October 13, 2011 **Harvested:** July 31, 2012

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

Cultivar	Yield	TW	Protein	\$/a
	bu/a	lbs/bu	%	+ or - Falcon
	3 yr	3 yr	3 yr	
Overland	66.5	60.2	11.9	37.89
Jerry	66.3	58.3	12.4	45.28
Yellowstone	65.0	58.7	12.4	37.17
Accipiter	63.4	58.2	11.6	8.80
Broadview	61.2	58.4	12.0	5.50
Decade	60.7	59.6	12.3	6.09
CDC Falcon	60.3	58.4	12.1	0.00
Promontory	58.0	60.6	12.0	-14.05
Norris (CL)	57.4	60.5	12.1	-17.72
Peregrine	55.4	58.8	12.2	-26.61
Bearpaw	55.2	58.6	11.4	-39.99
Radiant	55.2	58.1	11.8	-36.68
Pryor	55.2	57.8	11.9	-31.16
Jagalene	54.2	60.4	12.2	-34.02
Curlew	53.8	58.6	12.4	-32.72
Carter	51.1	59.7	12.5	-49.57
Judee	49.4	58.3	12.4	-60.17
Genou	48.7	58.6	13.6	-59.19
WB Quake	48.6	57.8	12.4	-65.17
Art	48.0	59.6	12.7	-66.51
Ledger	46.4	58.9	12.0	-84.93
Rampart	42.3	58.8	12.3	-107.44
Bynum (CL)	42.1	59.7	13.1	-101.09

Wheat prices summarized by and P. Lamb, NARC, Havre, MT,
from 10-yr (2002-2011) average daily market values for PNW,
supplied by the Montana Wheat and Barley Committee.

*“Farming looks mighty easy when your plow is a pencil, and you’re a thousand miles from the corn field.”
Dwight D. Eisenhower*

Dryland Notill HRW Wheat
Williston, ND

Cultivar	Yield --- bu/a ---		TW lb/bu	Protein --- % ---	
	2012	3 yr		2012	3 yr
Peregrine	67.1	58.1	58.9	10.8	12.1
Accipiter	65.8	56.1	58.7	11.4	12.4
CDC Falcon	69.4	53.5	58.4	11.3	12.7
Boomer	62.8	52.6	56.1	13.2	12.7
Jerry	64.3	52.3	56.9	13.9	13.2
Carter	59.9	51.7	57.3	13.2	13.1
Radiant	59.4	51.7	59.4	11.0	12.5
Overland	67.0	51.4	58.1	13.8	12.9
Decade	61.4	49.8	57.4	13.1	12.8
Hawken	56.3	47.8	59.6	12.7	12.1
Wesley	47.7	47.2	57.6	12.0	12.7
Darrell	59.4	45.8	59.3	13.4	13.0
Striker	54.3	45.3	56.4	14.8	13.4
Lyman	48.0	43.8	58.6	15.1	13.5
Roughrider	50.6	42.0	57.7	13.6	13.8
Art	48.7	41.1	58.8	14.0	13.2
Robidoux	67.9	--	59.4	11.7	--
AC Broadview	64.4	--	57.3	13.6	--
Ideal	62.1	--	58.8	11.3	--
SY Wolf	61.7	--	59.3	11.3	--
WB Matlock	61.7	--	57.8	14.2	--
McGill	53.9	--	59.1	12.1	--

LSD 5% 9.2 -- 0.8 1.8 --
Planted: Sept 13, 2011 **Harvested:** July 19, 2012
Previous Crop: Durum

Dryland Fallow HRW Wheat
Williston, ND

Cultivar	Winter Survival 2012	Yield --- bu/a ---		TW lb/bu	Protein --- % ---	
		2012	3 yr*		2012	3 yr*
Boomer	58.8	55.0	54.8	57.5	11.3	12.3
Accipiter	46.3	56.7	54.7	59.0	10.3	11.9
CDC Falcon	52.5	55.2	54.7	59.1	10.9	12.0
Decade	47.5	54.4	54.7	59.7	13.4	--
Yellowstone	26.3	52.4	54.3	57.8	11.7	12.4
Overland	58.8	51.5	54.3	59.0	13.1	13.2
Jerry	72.5	57.1	54.2	57.9	13.1	13.3
Peregrine	38.8	45.5	52.2	57.3	11.8	12.1
Radiant	55.0	50.5	51.7	58.3	11.3	12.5
Darrell	36.3	41.6	48.9	58.5	12.5	13.0
Millenium	33.8	45.6	48.8	59.0	13.4	13.1
Lyman	28.8	44.2	47.8	58.8	13.0	13.3
Roughrider	50.0	44.4	46.5	58.3	13.1	13.4
Wesley	47.5	41.6	46.2	58.2	13.7	13.6
Hawken	25.0	34.7	44.5	57.7	13.4	13.1
Art	22.5	30.6	44.4	57.7	14.2	13.6
Expedition	28.8	35.8	44.0	58.2	13.0	12.9
WB-Quake	40.0	57.6	--	46.6	12.8	--
AC Broadview	53.8	52.7	--	58.4	11.4	--
WB-Matlock	58.8	51.7	-	59.0	12.2	--
Ideal	38.8	45.5	--	58.2	12.1	--
McGill	55.0	45.5	--	58.8	12.3	--
Robidoux	22.5	43.5	--	58.8	11.9	--
Carter	30.0	39.1	--	57.9	12.9	--
SY Wolf	17.5	34.9	--	58.8	13.0	--

LSD 5% 28.0 9.5 -- 1.6 1.1 --
Planted: Sept 16, 2011 **Harvested:** July 25, 2012
Previous Crop: Soybean

*3 yr averages based on 2009, 2011 and 2012

Sprinkler Irrigated HRW Wheat

Cultivar	Yield bu/a	TW lb/bu	Protein %
	2012	2012	2012
Carter	97.6	58.1	13.1
WB Matlock	89.5	59.3	12.2
Ideal	87.8	58.9	12.8
Overland	86.6	58.4	13.3
CDC Falcon	84.9	58.5	12.5
Yellowstone	84.2	56.3	11.9
Millennium	83.8	59.8	12.6
Darrell	82.1	58.7	13.7
Decade	81.3	59.0	13.6
Wesley	79.3	58.8	13.0
Jerry	79.1	56.7	12.8

CONTINUED NEXT COLUMN

Nesson Valley, ND

Cultivar	Yield bu/a	TW lb/bu	Protein %
	2012	2012	2012
Accipiter	76.6	56.5	12.7
Boomer	74.8	55.6	12.9
Art	74.2	58.9	12.7
SY Wolf	73.0	59.3	12.1
Hawken	72.2	60.3	12.4
Peregrine	69.9	56.8	13.6
Expedition	67.0	59.7	11.9
Lyman	64.3	58.3	13.9
Striker	62.8	54.4	12.8
LSD 5%	22.7	4.0	2.4

Planted: Sept 26, 2011 **Harvested:** July 25, 2012
Previous Crop: Durum wheat

Barley Variety Descriptions

Cultivar	Origin ¹	Use ²	Height	Maturity	Lodging	Stem Rust	Resistance To ³			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
Amsterdam	MT		m short	medium	MR	NA	NA	NA	NA	m low	m high
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	F/M	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
Lilly	Germany	F	short	medium	MR	S	NA	S	MR	medium	medium
Merit	BARI	F/M	m tall	late	MS	MS	S	MS	S	low	medium
Pinnacle	ND	F/M	medium	m late	MR	S	S	MS	MR	high	low
Rawson	ND	F	medium	medium	MR	S	S	MR	MR	high	m low
Scarlett	Germany	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	F/M	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
Quest	MN	M	m tall	m early	MS	S	S	MR	MS	m low	medium
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
Valier	MT	EVF	medium	m late	MS	S	S	MR	MS	high	high
Wanubet	MT	WH	medium	late	S	S	S	S	S	high	high
Westford	WB	H	tall	medium	S	NA	NA	NA	NA	--	--

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

2 F = feed, M = malt, H = hay, WH = waxy hullless, EVF = enhanced value feed. MT = being tested for malt and brewing quality.

* Recommended as malting in western US.

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

"If you eat, you are involved with agriculture."

Dryland Barley
Williston, ND

Cultivar	Yield bu/a		TW lb/bu	Plump %	Protein %	
	2012	3 yr	2012	2012	2012	3 yr
Two Row						
Haxby	65.5	73.2	48.1	43.4	15.0	15.3
Rawson	65.8	72.4	50.0	89.1	13.9	13.6
Conlon	57.3	72.1	49.1	84.4	14.9	15.2
Conrad	57.3	67.7	45.4	49.6	16.0	15.7
Pinnacle	57.7	66.6	45.1	61.0	14.7	14.1
AC Metcalfe	52.8	59.4	43.3	43.3	17.1	16.7
CDC Copeland	52.8	58.2	44.6	35.6	15.6	16.8
Geraldine	47.4	56.5	45.1	25.4	14.7	16.1
Harrington	46.7	55.1	44.5	49.1	15.0	15.9
Scarlett	53.1	--	47.1	34.7	15.2	--
Six Row						
Celebration	59.2	70.0	43.2	25.5	17.5	16.5
Innovation	61.1	69.8	44.9	42.2	15.8	15.5
Tradition	59.7	69.5	46.3	49.1	14.2	14.5
Rasmusson	59.0	67.6	44.5	27.3	15.1	15.1
Quest	49.8	65.5	44.4	33.6	16.6	15.7
Robust	57.6	64.8	44.8	26.5	15.8	15.3
Lacey	55.4	64.2	43.7	25.4	16.3	15.6
Stellar-ND	57.6	63.5	43.5	37.5	14.6	14.7
Drummond	57.8	63.1	45.1	35.5	14.7	15.3
LSD 5%	9.0	--	1.5	12.5	1.6	--
Planted: April 18, 2012			Harvested: July 26, 2012			
Previous Crop: Soybean						

Sprinkler Irrigated Barley
Nesson Valley, ND

Cultivar	Yield bu/a		TW lb/bu	Plump %	Protein %	
	2012	2012	2012	2012	2012	2012
TWO ROW						
Pinnacle	82.4	50.2	61.7	14.0		
Conrad	79.1	51.2	61.1	17.1		
AC Metcalfe	73.3	49.7	51.5	17.1		
CDC Copeland	71.9	48.8	47.0	16.6		
Conlon	70.2	50.1	63.0	15.8		
Lilly	68.0	49.7	52.5	15.9		
Geraldine	63.6	48.5	43.7	15.5		
Haxby	60.5	51.4	58.0	16.2		
SIX ROW						
Lacey	85.2	49.8	49.0	16.1		
Stellar-ND	76.1	48.4	53.4	15.5		
Innovation	73.9	50.8	56.4	16.1		
Tradition	72.1	49.0	49.5	15.7		
Quest	71.7	50.2	50.5	16.1		
Celebration	71.5	49.0	50.4	17.3		
LSD 5%	19.7	1.4	7.4	0.8		
Planted: April 24, 2012			Harvested: July 31, 2012			
Previous Crop: Sugarbeet						

Dryland Notill Barley
Crosby, ND

Cultivar	Yield -- bu/a --		TW lb/bu	Plump %	Protein -- % --	
	2012	3 yr	2012	2012	2012	3 yr
TWO ROW						
Pinnacle	94.6	81.1	52.1	92.8	12.2	11.8
Conrad	79.2	74.1	51.9	88.7	14.8	14.3
AC Metcalfe	84.3	72.2	52.1	85.8	15.1	14.7
Conlon	68.9	64.6	52.1	94.3	15.1	14.5
Rawson	88.2	60.0	52.9	91.9	13.5	--
SIX ROW						
Lacey	84.9	78.0	50.2	89.7	15.0	14.0
Stellar-ND	89.3	75.1	49.4	88.0	14.7	13.8
Tradition	78.3	73.1	50.1	88.1	15.6	14.0
Celebration	77.3	71.2	49.8	88.5	16.6	15.2
Innovation	77.7	--	49.8	91.0	15.2	--
Quest	76.4	--	50.4	87.3	14.9	--
LSD 5%	16.4	--	1.1	5.6	1.3	--
Planted: May 15, 2012			Harvested: August 29, 2012			
Previous Crop: Field pea						

"Agriculture is America's number one export."

**Dryland Notill Barley
Williston, ND**

Cultivar	Yield		TW lb/bu	Plump %	Protein	
	bu/a	3 yr			2012	3 yr
TWO ROW						
Haxby	43.4	70.1	43.0	17.8	16.5	14.6
Rawson	45.2	66.5	43.8	75.5	14.6	12.9
Conrad	42.3	66.1	42.2	44.8	16.5	14.9
Conlon	30.7	63.2	43.8	72.1	16.1	13.8
Pinnacle	39.8	63.1	40.3	45.8	15.7	13.7
CDC Copeland	39.9	59.3	41.8	37.1	17.5	14.8
AC Metcalfe	36.0	59.3	40.7	36.5	17.2	15.4
SIX ROW						
Innovation	43.3	68.8	43.3	37.0	15.2	13.8
Rasmusson	40.6	67.9	41.6	25.9	15.9	14.3
Tradition	42.2	66.9	43.7	33.2	15.2	14.8
Quest	42.4	64.3	43.6	37.3	15.5	14.5
Lacey	38.1	63.2	41.7	26.6	16.6	14.7
Stellar-ND	41.1	62.1	40.4	37.5	15.4	14.1
Celebration	42.7	61.8	41.9	36.8	16.0	15.3
LSD 5%	11.3	--	3.1	13.6	2.8	--
Planted: April 23, 2012 Harvested: July 26, 2012						
Previous Crop: Soybean						

**Dryland Notill Barley
New Town, ND**

Cultivar	Yield		TW lb/bu	Plump %	Protein %
	bu/a	3 yr			
TWO ROW					
Conrad	76.6		88.8	49.5	11.9
Pinnacle	67.1		90.0	50.0	11.6
Rawson	66.6		90.5	50.4	12.7
AC Metcalfe	63.3		80.3	48.4	13.7
Conlon	59.1		93.6	49.9	12.8
SIX ROW					
Innovation	75.0		83.5	48.1	12.8
Quest	67.6		77.3	47.7	13.4
Celebration	64.7		80.4	47.2	13.2
Tradition	64.2		82.3	48.2	13.9
Stellar-ND	63.0		83.5	47.4	13.2
Lacey	62.5		87.5	48.8	13.1
LSD 5%	17.7		9.2	2.1	1.1
Planted: May 14, 2012 Harvested: August 28, 2012					
Previous Crop: Canola					

**Dryland Notill Barley
Arnegard, ND**

Cultivar	Yield	Plump %	TW lb/bu	Protein %
	bu/a			
TWO ROW				
Pinnacle	69.9	81.6	44.0	12.4
Rawson	55.5	81.5	45.5	14.0
Conrad	53.8	75.8	43.8	15.3
AC Metcalfe	53.2	67.0	43.4	15.1
Conlon	45.8	87.3	44.7	14.3
SIX ROW				
Lacey	75.8	61.3	45.2	14.6
Stellar-ND	72.7	61.1	42.1	14.7
Innovation	68.3	74.6	45.7	13.7
Celebration	66.3	65.4	43.6	16.2
Quest	64.2	56.7	44.5	15.0
Tradition	49.8	76.5	44.5	13.8
LSD 5%	17.2	11.8	2.4	1.8
Planted: May 10, 2012 Harvested: August 9, 2012				
Previous Crop: Spring wheat				

**Sprinkler Irrigated Barley
Sidney, MT**

Cultivar	Yield		TW lb/bu	Plump %	Protein %	
	bu/a	3 yr			2012	3 yr
Haxby	58.1	77.9	49.0	74	14.4	13.9
Craft	49.6	71.7	48.0	81	15.0	13.7
Conrad	52.8	70.4	46.0	74	16.0	14.4
Tradition	47.6	69.5	45.0	72	14.2	13.1
Geraldine	45.0	67.3	46.5	56	15.4	14.4
Harrington	51.8	69.1	47.0	72	14.4	13.6
Hockett	60.2	70.7	48.0	75	13.8	12.9
Metcalfe	38.2	65.9	46.5	67	15.5	14.5
Scarlett	58.4	70.2	46.5	74	14.4	13.8
Pinnacle	56.9	69.2	47.0	83	12.5	12.6
Amsterdam	42.4	50.9	46.0	65	15.1	14.3
Eslick	69.1	--	47.0	53	14.7	--
Expedition	45.9	--	46.5	67	14.1	--
Hays	41.0	--	44.0	38	16.0	--
Cowboy	32.6	--	48.0	71	15.1	--
LSD 5%	14.0	--	--	--	--	--
Planted: April 23, 2012 Harvested: August 16, 2012						
Previous Crop: Safflower						

**Dryland Fallow Barley
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Plump %	Protein %	
	2012	3 yr	2012	2012	2012	3 yr
Conrad	40.0	58.8	46.0	47	13.7	14.3
Hockett	31.5	56.9	47.0	64	11.9	12.2
Scarlett	38.5	55.1	46.5	43	13.3	12.5
Craft	33.8	52.3	45.0	20	13.0	12.2
Haxby	38.6	51.6	49.5	40	12.0	11.6
Tradition	37.6	51.6	45.5	46	11.4	11.9
Harrington	27.4	50.6	43.0	48	14.0	12.3
Metcalfe	30.2	48.7	48.5	80	12.5	11.9
Pinnacle	28.0	47.3	45.0	65	12.7	11.2
Geraldine	33.1	47.0	46.0	36	13.6	14.9
Amsterdam	24.0	45.4	46.0	47	15.3	13.9
Eslick	38.1	--	46.0	22	13.8	--
Expedition	34.6	--	49.0	62	12.5	--
Hays*	31.5	--	43.0	32	12.5	--
Cowboy*	17.2	--	45.0	31	13.2	--
LSD 5%	5.8	--	--	--	--	--

Planted: April 10, 2012 **Harvested:** July 31, 2012

*forage barley

**Dryland Recrop Barley
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Plump %	
	2012	3 yr*	2012	2012	
Haxby	21.5	37.6	48.0	6	--
Conrad	14.9	35.6	45.5	44	--
Hockett	16.9	37.1	44.0	18	--
Gallatin	19.0	35.9	42.0	8	--
Metcalfe	15.5	35.0	43.0	7	--
Harrington	18.8	34.4	42.5	5	--
Geraldine	14.5	33.6	43.5	7	--
Tradition	19.9	29.6	46.0	33	--
Amsterdam	14.9	29.7	44.5	22	--
Champion	21.2	--	41.5	7	--
Eslick	16.7	--	42.5	1	--
Cowboy*	14.0	--	44.0	24	--
LSD 5%	3.2	--	--	--	--

Planted: April 6, 2012 **Harvested:** August 8, 2012

Previous Crop: Spring wheat

* forage barley

**Sprinkler Irrigated Malt Barley
Sidney, MT**

Cultivar	Yield - bu/a -		TW lb/bu	Plump %	Protein %	
	2012	3 yr	2012	2012	2012	3 yr
Innovation	108.3	98.3	47.5	79	14.2	12.8
Rasmussen	107.3	96.7	47.5	68	14.4	13.3
Lacey	105.0	96.1	48.5	84	13.9	12.8
Rawson	104.3	94.9	47.5	83	12.8	12.6
Stout	102.7	89.3	46.5	82	13.6	12.8
Quest	93.3	89.1	47.0	73	14.7	13.4
Lilly	94.0	89.0	48.5	78	14.0	13.1
Tradition	90.3	88.3	47.5	74	14.3	12.9
Haxby	95.3	88.1	48.5	62	13.1	12.9
Robust	94.6	86.9	49.0	76	14.8	13.8
Conlon	87.3	83.7	49.5	88	13.1	13.2
Celebration	87.1	83.5	46.0	76	15.4	14.1
Copeland	76.2	52.4	46.5	76	15.2	13.3
Pinnacle	93.1	80.0	48.0	87	11.6	11.8
Stellar-ND	94.5	79.2	47.5	83	13.2	12.6
AC Metcalfe	72.7	73.5	47.0	69	13.8	13.4
Conrad	93.5	--	47.5	73	15.5	--
Merit	91.1	--	47.0	76	15.3	--
Merit 57	75.2	--	46.5	68	14.6	--
LSD 5%	15.5	--	--	--	--	--

Planted: April 23, 2012 **Harvested:** August 16, 2012

Previous Crop: Safflower

**Non Irrigated Malt Barley
Sidney, MT**

Cultivar	Yield bu/a		TW lb/bu	Plump %	Protein %	
	2012	3 yr	2012	2012	2012	3 yr
Rawson	71.2	--	47.5	91	12.3	--
Celebration	69.1	--	44.0	57	15.8	--
Stout	65.1	--	44.5	73	13.4	--
Lacey	65.0	--	45.0	57	14.7	--
Innovation	64.7	--	46.5	75	13.8	--
Rasmussen	64.6	--	44.0	58	14.5	--
Stellar-ND	63.7	--	45.5	61	13.4	--
Quest	61.7	--	46.5	66	14.6	--
Conlon	61.7	--	49.0	87	13.1	--
Robust	59.7	--	44.5	51	15.1	--
Tradition	59.5	--	45.0	58	14.6	--
Copeland	58.2	--	44.0	58	15.0	--
Haxby	58.0	--	48.5	61	16.1	--
Pinnacle	53.4	--	44.5	70	12.8	--
Conrad	53.1	--	45.5	72	16.1	--
Lilly	52.9	--	46.0	84	14.9	--
Merit	50.5	--	45.0	51	16.4	--
AC Metcalfe	50.4	--	45.0	48	16.0	--
Merit 57	49.2	--	43.5	42	16.9	--
LSD 5%	11.6	--	--	--	--	--

Planted: April 23, 2012 **Harvested:** August 16, 2012

Previous Crop: Spring wheat

Oat Variety Descriptions

CULTIVAR	ORIGIN ¹	GRAIN COLOR	HEIGHT	MATURITY	LODGING	RESISTANCE TO ²		QUALITY FACTORS		
						STEM RUST	CROWN RUST	BARLEY YELLOW DWARF	TEST WEIGHT	GRAIN PROTEIN
AC GWEN	CAN SECAN	HULLESS	TALL	LATE	MR	S	S	R	HIGH	M LOW
AC KAUFMAN	CAN SECAN	YELLOW	TALL	LATE	MR	S	S	MT	HIGH	M LOW
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	MEDIUM	M LATE	MR	S	MR/MS	MS	MEDIUM	M HIGH
BUFF	SD	HULLESS	MED	EARLY	MS	S	MR	MT	V HIGH	HIGH
CDC DANCER	CAN CARGILL	WHITE	TALL	LATE	MR	S	MS	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	MR	S	S	S	MEDIUM	MEDIUM
FURLONG	AAFC WINNIPEG	RED	TALL	LATE	MR	S	S	T	HIGH	MEDIUM
HIFI	ND	WHITE	TALL	LATE	MR	MR	R	T	M HIGH	MEDIUM
HORSEPOWER	SD	WHITE	MEDIUM	MEDIUM	R	MR	MR	NA	MEDIUM	MEDIUM
HYTEST	SD	WHITE	TALL	EARLY	MS	S	MS	S	V HIGH	HIGH
JERRY	ND	WHITE	TALL	MED	MR	S	MS	MT	M HIGH	MEDIUM
JUD	ND	IVORY	TALL	LATE	MS	R	MS	T	MEDIUM	M HIGH
JURY	ND	WHITE	M TALL	LATE	MS	R	R	NA	M HIGH	MEDIUM
KILLDEER	ND	WHITE	MED	MED	MR	S	MS	MT	M HIGH	MEDIUM
LEGGETT	AAFC WINNIPEG	WHITE	TALL	LATE	MR	MR	R	S	MEDIUM	MEDIUM
LEONARD	MN	YELLOW	TALL	LATE	MR	S	S	T	M LOW	M LOW
MAIDA	ND	YELLOW	MED	MEDIUM	R	R	R	MS	HIGH	M HIGH
MINSTREL	SASK.	WHITE	M TALL	LATE	MR	MS	S	S	MEDIUM	MEDIUM
MONICO	ID/MT	IVORY	M TALL	M EARLY	MS	NA	NA	NA	M HIGH	MEDIUM
MONIDA	ID/MT	WHITE	M TALL	M LATE	S	S	S	S	M LOW	M LOW
MORTON	ND	WHITE	TALL	LATE	R	S	S	MT	HIGH	MEDIUM
NEWBURG	ND	WHITE	TALL	LATE	MS	R	R	MT	MEDIUM	MEDIUM
OTANA	MT	WHITE	TALL	M LATE	S	S	S	S	HIGH	MEDIUM
PAUL	ND	HULLESS	TALL	LATE	MS	R	MR	T	V HIGH	HIGH
ROCKFORD	ND	WHITE	TALL	LATE	R	S	R	MT	M HIGH	MEDIUM
SESQUI	MN	YELLOW	M TALL	LATE	R	S	S	T	MEDIUM	MEDIUM
SHELBY 427	SD	WHITE	M TALL	EARLY	R	MS	S	NA	MEDIUM	M HIGH
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	MS	T	HIGH	M HIGH
SUMMIT	AAFC WINNIPEG	WHITE	MED	LATE	R	S	R	MT	MEDIUM	MEDIUM
YOUNGS	ND	WHITE	MED	LATE	R	S	MS	MT	MEDIUM	MEDIUM

1 REFERS TO DEVELOPER: AC = AGRICULTURE CANADA; SVA = SASKATCHEWAN VALUE ADDED; PS = PROVEN SEED OF CANADA.

2 R = RESISTANT, MR = MODERATELY RESISTANT, M = INTERMEDIATE, MS = MODERATELY SUSCEPTIBLE, S = SUSCEPTIBLE, VS = VERY SUSCEPTIBLE, T = TOLERANT MT = MODERATELY TOLERANT, NA = DATA NOT AVAILABLE.

“The problem, then, is how to bring about a striving for harmony with land among a people, many of whom have forgotten that there is any such thing as land, among whom education and culture have become almost synonymous with landlessness. This is the problem with conservation education.”
Aldo Leopold, *A Sand County Almanac*, 1949.

**Dryland Fallow Oat
Williston, ND**

Cultivar	Yield bu/a		TW lb/bu 2012	Protein %	
	2012	3 yr		2012	3 yr
AC Pinnacle	85.5	80.4	33.3	16.7	14.6
Souris	81.0	77.4	32.7	18.0	15.3
Leggett	80.5	76.4	34.7	19.7	16.7
AC Furlong	81.5	75.3	35.0	18.3	15.8
Newburg	75.3	72.9	33.5	18.8	16.2
Jury	72.7	72.4	35.0	19.6	16.6
Beach	82.5	72.1	32.9	18.2	15.9
Stallion	78.9	72.0	31.4	19.2	16.7
Rockford	75.9	71.8	33.9	19.8	16.7
CDC Dancer	83.9	70.8	33.1	17.7	14.9
Otana	82.9	69.7	32.8	18.5	16.1
HiFi	68.8	69.5	33.0	18.7	15.6
CDC Minstrel	83.1	68.4	34.3	16.9	14.1
Kil;deer	74.9	67.0	33.1	17.8	15.0
Morton	73.7	65.5	33.9	18.7	16.2
Hyttest	65.1	56.2	37.9	21.2	18.6
Stark	53.8	53.6	38.8	26.2	20.8
Buff	42.3	40.2	42.3	25.7	20.3
Shelby427	80.2	--	35.9	19.3	--
Horsepower	85.3	--	34.3	18.3	--
LSD 5%	7.4	--	2.1	1.8	--

Planted: April 25, 2012 **Harvested:** August 7, 2012

Previous Crop: Soybean

**Dryland Notill Oat
Williston, ND**

Cultivar	Yield bu/a		TW lb/bu 2012	Protein %	
	2012	3 yr*		2012	3 yr
Stallion	59.4	86.1	30.9	19.6	17.0
Killdeer	55.0	79.3	33.6	18.4	15.4
Rockford	54.5	75.0	34.9	20.4	16.7
Pinnacle	57.1	74.4	32.8	17.5	14.6
Otana	61.7	74.2	33.8	18.8	16.2
Morton	55.6	73.4	32.3	19.5	16.6
Beach	52.2	71.7	35.5	19.8	16.4
HiFi	51.6	68.6	32.9	19.8	16.0
Souris	61.5	67.2	34.5	18.5	15.7
Hyttest	51.5	66.7	35.9	22.6	19.2
Stark	39.8	58.8	36.6	26.3	21.2
Newburg	55.9	--	33.6	19.2	--
CDC Dancer	64.3	--	33.4	19.2	--
Horsepower	60.3	--	34.2	18.8	--
Jury	54.2	--	35.4	19.8	--
LSD 5%	5.1	--	1.8	--	--

Planted: April 23, 2012 **Harvested:** August 7, 2012

Previous Crop: Soybean

**Sprinkler Irrigated Oat
Nesson Valley, ND**

Cultivar	Yield -- bu/a --		TW lb/bu 2012	Protein -- % --	
	2012	3 yr		2012	3 yr
Souris	131.9	114.0	40.2	16.5	15.7
Killdeer	122.1	111.1	37.5	15.3	15.4
HiFi	113.6	107.6	39.6	17.2	16.4
Rockford	117.2	104.1	38.8	18.2	17.2
Beach	123.2	99.7	40.9	17.6	16.3
Morton	118.3	95.8	39.5	18.1	17.1
Jury	117.0	--	40.8	16.9	--
Horsepower	133.4	--	41.1	16.7	--
Pinnacle	131.3	--	38.2	15.3	--
Newburg	123.2	--	39.9	16.7	--
LSD 5%	13.2	--	0.8	0.6	--

Planted: April 24, 2012 **Harvested:** August 7, 2012

Previous Crop: Potato

"Burn your cities, save your farms and your cities will grow back as if by magic. Burn your farms, and grass will grow in the streets of every city in America."

William Jennings Bryan, 1897

Flax Variety Descriptions

Variety ¹	Origin	PVP ²	Year Released	Relative Maturity	Seed Color	Plant Height	Wilt	Relative Yield
AC Carnduff	Can.	no	1998	m late	brown	m tall	MR	v good
AC Lightning	Can.	no	2002	late	brown	m tall	R	v good
Carter	ND	yes	2004	mid	yellow	medium	MR	v good
Cathay	ND	no	1998	mid	brown	medium	MR	v good
CDC Arras	Can.	no	1999	mid	brown	medium	MR	good
CDC Bethume	Can.	no	1999	m late	brown	m tall	MR	v good
CDC Mons	Can.	no	2003	m late	brown	medium	MR	v good
CDC Sorrel	Can.	no	2007	m late	brown	m tall	MR	v good
Hanley	Can.	no	2002	m early	brown	medium	R	v good
Linton	ND	no	1985	early	brown	medium	R	v good
Neche	ND	no	1988	mid	brown	medium	R	good
Nekoma	ND	no	2002	late	brown	medium	MR	v good
Omega	ND	no	1989	mid	yellow	medium	MS	good
Pembina	ND	no	1998	mid	brown	medium	MR	good
Prairie Blue	Can.	no	2006	m late	brown	medium	NA	good
Prairie Grande	Can.	no	2008	m early	brown	medium	MR	v good
Prairie Thunder	Can.	no	2006	medium	brown	short	NA	good
Prompt	SD	no	1988	early	brown	medium	MR	good
Selby	SD	no	2000	late	brown	tall	MR	good
Taurus	Can.	yes	2003	m late	brown	medium	MR	v good
Webster	SD	no	1998	late	brown	tall	MR	good
York	ND	no	2002	late	brown	medium	R	v good

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

² PVP = Plant Variety Protection

Safflower Variety Descriptions

Cultivar	Origin ¹	PVP ⁶	Hull Type ²	Oil Type ³	Irrigated Yield ⁴	Dryland Yield ⁴	TWT ⁴	Oil ³	Maturity	Tolerance ⁵	
										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

¹ STI = Safflower Technologies International, MT = Montana, ND = North Dakota

² STP = striped, N = normal, RED = reduced

³ Lino - linoleic

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

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

⁶ "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 Flax
Williston, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Oil --- % ---	
	2012	3 yr		2012	3 yr
YELLOW					
Carter	12.6	13.7	54.2	39.6	38.5
Omega	10.3	12.4	54.0	40.3	38.8
BROWN					
York	11.6	13.6	53.5	39.9	38.1
Prairie Thunder	11.8	13.4	54.3	39.7	38.4
Pembina	10.8	13.3	53.5	40.8	39.5
CDC Sorrel	10.2	13.3	52.8	41.0	39.4
Webster	10.7	13.2	53.6	41.0	39.2
Nekoma	11.4	13.2	54.0	40.6	39.1
Hanely	12.7	13.1	53.7	39.6	38.1
Neche	10.8	12.9	53.7	40.9	39.0
CDC Arras	10.3	12.9	53.9	40.6	38.8
Linott	10.2	12.6	53.4	39.7	38.4
CDC Bethume	9.2	12.5	53.6	40.3	39.1
McGregor	10.6	12.5	53.6	40.0	38.3
Bison	10.5	12.5	53.4	40.2	38.6
Rehab 94	10.4	12.5	52.9	40.3	39.1
Prairie Grande	10.7	12.2	53.4	40.5	39.1
AC Lightning	10.3	12.2	53.2	40.7	39.1
Prairie Blue	8.4	12.1	53.5	40.7	39.2
Prairie Sapphire	12.2	--	52.8	42.3	--
Shape	11.4	--	53.1	42.2	--
CDC Sanctuary	11.4	--	53.7	40.5	--
CDC Glas	10.3	--	53.0	41.7	--
LSD 5%	2.5	--	0.7	0.4	--

Planted: May 11, 2012 **Harvested:** August 23, 2012
Previous Crop: Soybean



**Sprinkler Irrigated Flax
Nesson Valley, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Oil --- % ---	
	2012	3 yr		2012	3 yr
YELLOW					
Carter	22.6	23.5	52.7	40.7	39.7
Omega	19.4	21.1	52.6	41.6	40.0
BROWN					
York	26.0	28.0	53.1	40.6	39.3
Prairie Thunder	24.6	25.9	52.5	41.5	39.7
Nekoma	25.4	24.8	53.3	41.4	39.8
Neche	20.6	19.8	52.6	41.0	39.9
LSD 5%	4.1	--	0.5	0.4	--

Planted: April 25, 2012 **Harvested:** August 22, 2012
Previous Crop: Spring wheat

**Dryland Safflower
Williston, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Oil --- % ---	
	2012	3 yr		2012	3 yr
Hybrid 1601	1838	1816	42.3	35.5	34.3
Cardinal	1697	1702	44.3	35.4	34.5
Hybrid 9049	1391	1513	43.6	30.7	29.4
Mondak	1537	1490	30.6	35.0	33.3
MT 2003	1355	1381	42.7	37.1	35.2
MT 2004	1251	1331	41.4	35.0	33.4
Finch	1251	1317	42.1	36.9	35.5
Nutrasaff	1005	1193	38.1	47.1	45.3
Morlin	1185	1164	42.0	38.4	36.1
Hybrid 200	1909	--	45.2	31.4	--
Hybrid 605	1793	--	39.9	38.9	--
Hybrid 528	1570	--	35.4	43.5	--
MT 2001	1303	--	40.5	36.9	--
LSD 5%	186.9	--	12.2	0.7	--

Planted: May 2, 2012 **Harvested:** September 6, 2012
Previous Crop: Soybean

Sprinkler Irrigated Safflower
Nesson Valley, ND

Cultivar	Yield --- bu/a ---		TW lb/bu	Oil --- % ---	
	2012	3 yr	2012	2012	3 yr
Hybrid 1601	1873	1714	36.8	31.9	32.4
MT 2003	1648	1460	37.7	34.2	32.6
Cardinal	1508	1452	39.5	31.0	30.9
Mondak	1431	1343	37.9	32.2	30.8
Hybrid 9049	1261	1123	38.9	29.1	28.2
Finch	1035	1103	38.0	32.4	32.4
Nutrasaff	1129	1077	36.0	43.8	43.0
Hybrid 605	1947	--	36.3	37.9	--
Hybrid 528	1900	--	33.6	41.2	--
Hybrid 200	1734	--	40.9	29.9	--
Morlin	1472	--	36.3	35.0	--
MT 2001	1105	--	30.5	33.0	--
MT 2004	751	--	35.5	31.2	--
LSD 5%	429.7	--	1.0	1.4	--

Planted: April 24, 2012 **Harvested:** October 15, 2012

Previous Crop: Spring wheat

Fungicide Safflower Trial (4 yr avg)
Sidney, MT

Number of Foliar Apps.	Test Wt. lbs/bu	Oil Content % ^{2/}	Yield lbs/A ⁵	Disease ¹ Rating Alternaria
No spray	34.6	34.0	1304	7.7
One spray ³	38.2	37.6	1920	4.8
Two spray ⁴	39.2	38.1	2091	2.4

Previous crop: Sugarbeet

1/ Disease ratings in 2011, 1-9 with 9 most susceptible

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

3/ Fungicide applied: 10 oz/A Headline or Quadris Fungicide at first flower

4 /Fungicide applied: 10 oz/A Headline or Quadris Fungicide at first flower and 14 days later

5/ (2009 - 2012)

Dryland Fallow Safflower*
Sidney, MT

Cultivar	Yield lb/a		Test Wt lb/bu		Oil %*	
	2011	3 Yr	2011	3 Yr	2011	3 Yr
Hybrid 9049	2115	1919	44.3	43.9	33.6	31.7
Hybrid 1601	2165	2238	41.7	41.2	38.9	36.8
MT 2000	1664	1552	41.8	41.0	41.8	39.4
Nutrasaff	1456	1526	40.0	38.2	50.0	48.4
MT 2003	2030	1790	43.3	42.4	39.5	37.8
MT 2004	2082	1752	42.3	41.0	38.9	37.5
Morlin	1795	1666	40.7	39.5	40.3	39.5
Finch	1736	1712	45.7	45.0	38.8	37.4
Cardinal	2187	2010	44.5	44.1	37.9	36.7
Mondak	2236	2026	43.8	43.0	37.0	35.8
LSD (.05)	296		0.5		0.7	

Planted: May 19, 2011 **Harvested:** October 11, 2011

*Oil content reported on an oven dry basis

* **2012** crop yields drastically reduced by grasshoppers and are not reported.

Montana Irrigated Safflower
Sidney, MT

Cultivar	Yield --- bu/a ---		TW lb/bu	Oil --- % ---	
	2012	3 yr	2012	2012	3 yr
Hybrid 1601	2522	2656	37.3	39.9	38.3
Cardinal	2440	2330	42.0	38.9	37.7
MT 2003	2341	2516	39.8	42.1	40.4
Hybrid 9049	2235	2115	40.5	38.5	33.9
MonDak	2112	2204	38.3	39.5	37.4
Morlin	2070	1812	38.0	38.7	39.3
Finch	2026	1973	40.5	39.1	38.5
Mt 2004	1878	1983	37.8	38.5	37.5
Mt 2001	1784	1762	35.5	41.9	39.2
Nutrasaff	1651	1720	37.3	49.6	50.0
Hybrid 200	2965	--	41.0	35.2	--
Hybrid 605	2169	--	36.5	44.0	--
Hybrid 528	2511	--	34.3	47.0	--
LSD 5%	385		1.7	2.5	

Planted : May 8, 2012 **Harvested:** September. 25, 2012

Previous Crop: Spring wheat

**Sprinkler Irrigated Canola
Sidney, MT**

Cultivar	Shatter	TW	Oil	Yield*
	% 2012	lb/bu 2012	% 2012	lb/a 2012
DKL 30-30	18	49.5	40.9	282
DKL 30-42	23	50.0	40.2	376
DKL 51-45	27	49.5	41.8	189
DKL 55-55	27	50.2	43.6	407
DKL 70-07	27	48.7	41.7	342
HYCLASS 955	25	50.7	43.7	404
HYCLASS 947	25	49.2	42.6	281
HYCLASS 988	23	47.7	40.3	332
Gem CL	10	49.0	37.2	109
Invigor L130	30	50.5	38.5	290
Invigor L150	37	50.7	37.9	267
Invigor L120	33	48.7	39.7	390
Mean	24.9	49.7	40.8	310.7
LSD 5%	15.09	1.54	2.43	197

Planted: June 2, 2012 **Harvested:** September 8, 2012

Previous Crop: Sugarbeet

*Poor yield due to 100° F temperatures during flowering.

**Dryland Chickpea
Williston, ND**

Cultivar	Yield --- lb/a ---		TW lb/bu 2012
	2012	3 yr	
LARGE KABULI			
CDC Frontier	1422	1251	61.8
Sawyer	1114	979	61.0
CDC Luna	1050	834	61.5
Siera	704	587	59.5
Dylan	565	459	57.5
Troy	382	293	56.4
SMALL KABULI			
B-90	1432	1154	62.6
DESI			
CDC Anna	1221	1011	59.7
LSD 5%	156.1	--	1.1

Planted: April 24, 2012 **Harvested:** September 4, 2012

Previous Crop: Soybean

**Dryland Notill Roundup Ready Canola
Williston, ND**

Brand/Cultivar*	Yield lb/a		TW lb/bu 2012	Oil %	
	2012	3 yr		2012	3 yr
DK DKL52-41	681	1047	49.2	43.8	46.3
DK DKL30-03	830	--	50.1	45.7	--
DK DKL30-42	847	1084	50.4	45.5	46.7
DK DKL55-55	870	--	49.4	46.9	--
DK DKL72-55	718	1094	36.4	45.6	47.4
DK DKL70-07	689	--	47.8	46.9	--
BY 6070 RR	637	--	47.7	45.5	--
BY 6040 RR	715	1047	47.2	44.6	43.3
IF Integra 7150	814	--	49.4	45.8	--
IF Integra 7152	628	--	49.8	46.2	--
MS Nexera 1012RR	731	--	47.0	45.5	--
MS Nexera 1016RR	676	--	47.8	45.9	--
CG HyClass 930	695	--	48.9	48.0	--
CG HyClass 947	713	--	48.8	47.2	--
CG HyClass 955	891	--	50.0	47.3	--
CG HyClass 988	546	--	45.3	45.5	--
LSD 5%	244.3	--	7.4	1.78	--

Planted: May 1, 2012 **Harvested:** August 2, 2012

Previous Crop: Soybean

*DK=DeKalb;BY=Breet Young;IF=Integra Fortified
Seed;MS+Monsanto;CG=Croplan Genetics

**Sprinkler Irrigated Chickpea
Nesson Valley, ND**

Cultivar	Yield lb/a	TW lb/bu
	2012	2012
LARGE KABULI		
CDC Frontier	1333	59.1
CDC Luna	755	57.6
Sawyer	551	59.0
Siera	211	57.3
Troy	141	60.9
Dylan	59	57.6
SMALL KABULI		
B-90	1509	61.1
DESI		
CDC Anna	1789	60.6
LSD 5%	607.8	3.2

Planted: April 25, 2012 **Harvested:** August 31, 2012

Previous Crop: Spring wheat

*"A nation that destroys its soil, destroys itself."
Franklin D. Roosevelt, 1937*

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

Company	Cultivar	Yield bu/a 2012	TW lb/bu 2012	Oil % 2012	Protein % 2012
Syngenta	S06-R9	62.7	57.6	17.5	31.1
Croplan	R2T0091	61.7	57.3	17.4	30.6
Proseed	P2 10-08	60.4	57.5	17.2	30.7
Croplan	R2T0085	59.1	56.7	18.4	29.5
NuTech	6043	58.8	57.0	17.6	31.9
Syngenta	S06-H5	58.3	57.3	17.7	32.3
PFS	12R03	57.8	57.4	17.6	31.2
NuTech	6025	57.0	56.7	18.2	32.1
Syngenta	S06W2	55.3	57.2	16.9	31.9
Syngenta	S02-B4	55.0	57.5	18.0	30.6
Syngenta	S00-A7	54.5	56.0	18.2	32.2
NuTech	6012	54.1	57.0	18.3	30.5
Croplan	R2T0231	54.0	57.8	16.9	32.3
NuTech	0090	54.0	56.7	18.7	31.7
PFS	12R06	53.8	57.2	17.1	32.4
NuTech	6009	52.1	56.5	18.3	32.0
Proseed	P2 11-07	50.4	56.3	18.2	31.3
Proseed	50-07	47.1	56.8	18.5	30.7
Proseed	P2 20-08	47.0	56.4	17.6	30.4
LSD 5%		8.7	0.4	0.6	1.0

Planted: May 23, 2012 **Harvested:** October 9, 2012

Previous Crop: Sunflower

PFS=Peterson Farms Seed

**Dryland Roundup Ready Soybean
Williston, ND**

Company	Cultivar	Yield bu/a 2012	TW lb/bu 2012	Oil % 2012	Protein % 2012
PFS	12R03	20.7	57.0	21.6	30.8
Hefty	H007Y12	19.1	56.5	22.9	30.0
NuTech	6009	18.4	56.1	22.3	32.0
Hefty	H008Y11	17.7	57.0	22.2	29.8
Proseed	P2 10-08	17.6	57.4	22.3	29.6
Proseed	P2 20-08	17.4	56.5	22.4	29.1
Proseed	P2 11-07	16.9	56.4	22.5	30.9
Syngenta	S00-A7	16.7	56.6	21.8	31.5
Croplan	R2T0231	16.4	57.5	22.1	30.3
PFS	12R06	16.0	56.5	21.6	31.5
Croplan	R2T00832	16.0	56.3	22.2	29.8
NuTech	6012	16.0	57.0	22.6	29.0
NuTech	6043	15.7	57.2	22.2	31.3
Hefty	H004Y12	15.6	56.6	22.4	30.2
Syngenta	S06-H5	15.3	56.9	22.3	31.4
NuTech	0090	15.0	56.7	22.6	31.7
Syngenta	S02-B4	13.8	57.7	22.1	29.9
Hefty	H00Y12	13.5	56.0	22.1	31.3
Croplan	R2T0091	13.1	57.6	22.2	29.8
Syngenta	S06-R9	12.8	57.6	21.4	31.3
NuTech	6025	12.8	57.4	21.6	31.7
LSD 5%		2.1	0.5	0.6	1.6

Planted: May 17, 2012 **Harvested:** September 25, 2012

Previous Crop: Durum

PFS=Peterson Farms Seed

**Sprinkler Irrigated Conventional Soybean
Nesson Valley, ND**

Brand/ Company	Cultivar	Yield		TW lb/bu 2012	Oil % 2012	Protein % 2012
		--- bu/a --- 2012	3 yr			
NDSU	Sheyenne	66.5	60.6	57.6	17.4	29.1
NDSU	Ashtabula	54.0	54.7	57.0	19.0	27.9
SKFI	SK972	59.0	53.4	57.8	18.0	29.1
NDSU	Traill	48.5	51.4	58.3	17.8	31.1
NDSU	Cavalier	48.5	50.1	57.7	17.9	27.4
NDSU	ND1005T	44.3	48.4	57.7	18.1	31.0
NDSU	ProSoy	41.5	45.6	57.4	17.2	32.6
SKFI	SK0786	45.5	--	57.4	17.2	32.5
SKFI	SK0796	42.0	--	57.0	17.5	32.1
SKFI	SK0034	41.6	--	56.9	18.4	26.1
SKFI	SK0007	33.2	--	58.6	18.0	30.2
LSD 5%		8.7	--	0.8	1.2	2.2

Planted: May 23, 2012 **Harvested:** October 9, 2012

Previous Crop: Spring wheat

NDSU=North Dakota State University; SKFI=SK Food International

**Dryland Conventional Soybean
Williston, ND**

Cultivar	Yield		TW lb/bu 2012	Oil % 2012	Protein % 2012
	--- bu/a --- 2012	3 yr			
Sheyenne	14.5	14.3	57.8	21.1	31.6
ND1005T	13.3	13.5	58.0	20.3	36.7
ProSoy	9.9	13.3	56.5	20.3	35.0
Ashtabula	12.6	13.1	57.3	21.1	32.0
Traill	9.9	12.8	57.2	20.2	34.3
Cavalier	10.2	11.7	57.6	20.3	32.8
LSD 5%	3.2	--	0.8	1.3	2.1

Planted: May 17, 2012 **Harvested:** September 25, 2012

Previous Crop: Durum

*"A farmer is always going to be rich next year."
Philemon*

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

Brand	Cultivar	Yield*		TW lb/bu	Protein	
		2012 --- bu/a ---	2 yr		2012 --- % ---	2 yr
G2NT	5H-080	184.4	164.9	54.6	6.9	7.5
NT	5N-183	191.8	162.6	57.6	7.4	8.1
REA	2V550	163.1	155.8	57.6	8.6	8.3
PFS	PFS 76F82	164.5	153.0	60.7	9.3	9.4
G2NT	5H-279	150.0	147.7	55.8	8.4	8.2
DGS	D23VP35	196.5	--	57.0	7.4	--
G2NT	5H-587	195.1	--	57.0	7.6	--
REA	2B404-RIB	187.3	--	58.5	8.1	--
REA	1R801	179.2	--	59.9	7.4	--
DGS	D20VP73	170.9	--	59.5	8.5	--
S2	2771RR	168.1	--	57.7	7.6	--
REA	2V830	167.3	--	57.2	8.7	--
G2NT	3A-080	159.6	--	55.3	6.8	--
DG	D19RR91	155.1	--	58.3	8.3	--
PFS	PFS 71C80	154.9	--	58.9	8.2	--
REA	1V770	149.2	--	60.7	6.6	--
NT	5B-782	140.9	--	56.9	7.6	--
LSD 5%		32.1	--	1.1	1.6	--

Planted: May 16, 2012 **Harvested:** October 25, 2012

Previous Crop: Soybean

*Yields adjusted to 15.5% moisture

NT=NuTech Seed LLC; G2NT=G2 Genetics/NuTech Seed; S2=Seeds 2000; PFS=Peterson Farms Seed; DGS=Dyna-Gro Seed; REA= REA Hybrids

**Dryland Hybrid Corn
Williston, ND**

Brand	Cultivar	Yield*		TW lb/bu	Protein	
		2012 --- bu/a ---	2 yr		2012 --- % ---	2 yr
NT	5N-183	97.1	74.0	56.0	12.4	11.5
G2NT	5H-080	92.5	68.5	51.6	12.3	11.4
G2NT	3A-080	84.5	68.3	52.2	12.5	11.5
G2NT	5H-279	91.6	65.4	54.7	12.8	11.4
S2	2771RR	100.7	--	56.0	12.9	--
HSC	079-F3VT3P	98.2	--	55.4	12.4	--
PFS	PFS 71C80	91.8	--	56.5	12.5	--
DGS	D20VP73	89.0	--	54.4	12.4	--
G2NT	5H-587	88.8	--	54.7	12.3	--
HSC	C081-H2VT3	88.7	--	56.1	12.6	--
HSC	079-S2VT3	87.0	--	58.2	12.3	--
DGS	D19RR91	85.6	--	55.9	12.4	--
DGS	D23VP35	84.6	--	54.7	11.7	--
HSC	077-S3RR	81.4	--	56.5	12.8	--
NT	5B-782	78.8	--	54.9	11.4	--
PFS	PFS 76F82	75.5	--	58.2	12.7	--
LSD 5%		24.8	--	1.5	0.9	--

Planted: May 21, 2012 **Harvested:** October 5, 2012

Previous Crop: Durum

*Yields adjusted to 15.5% moisture

NT=NuTech Seed LLC; G2NT=G2 Genetics/NuTech Seed; S2=Seeds 2000; HSC=Hefty Seed Company; PFS=Peterson Farms Seed; DGS=Dyna-Gro Seed

**Sprinkler Irrigated Dry Bean
Sidney, MT**

Cultivar	Bean Type	Yield		SW ¹ gm	Harvest Date
		2012 --cwt/a--	2 yr		
Othello	P	36.2	37.0	40.8	Sep 04, 2012
Majesty	DRK	33.8	35.3	68.2	Sep 14, 2012
Stampede	P	32.8	36.1	38.4	Sep 04, 2012
Coyne	GN	32.1	34.6	38.4	Sep 04, 2012
Long's Peak	P	27.7	31.5	35.8	Sep 04, 2012
Rexeter	N	31.5	29.7	18.3	Sep 14, 2012
CA Early	LRK	29.8	27.8	59.5	Sep 14, 2012
T39	B	24.3	28.9	20.7	Sep 04, 2012
Rio Rojo	R	33.5	--	35.1	Sep 04, 2012
Rosetta	PN	30.4	--	32.1	Sep 04, 2012
LSD 5%		4.2	--	3.7	

Planted: May 15, 2012 **Previous Crop:** Sugarbeet

¹100-seed weight

Type: P=pinto, N=navy, B=black, LRK=light red kidney, GN=great northern, DRK=dark red kidney, PN=pink, R=red

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

Cultivar	Yield		TW lb/bu	
	2012 --- cwt/a ---	3 yr		
Lariat	26.2	27.8	60.0	
Windbreaker	25.1	26.9	58.7	
Maverick	25.9	26.1	59.2	
LaPaz	22.9	25.8	62.5	
Stampede	16.1	24.5	59.1	
ND-307	22.5	23.7	58.5	
Medicine Hat	17.8	20.6	60.2	
LSD 5%		5.84	--	1.1

Planted: May 30, 2012 **Harvested:** Sept 27, 2012

Previous Crop: Spring wheat

Sprinkler Irrigated Navy Bean
Nesson Valley, ND

Cultivar	Yield --- cwt/a ---		TW lb/bu
	2012	3 yr	2012
Ensin	28.8	26.1	64.8
Avalanche	23.5	24.9	64.9
HMS Medalist	27.9	24.8	64.9
Vista	28.3	24.2	64.5
T9905	34.5	--	64.4
Navigator	28.7	--	64.7
Norstar	21.3	--	65.6
LSD 5%	569	--	1.6

Planted: May 30, 2012 **Harvested:** Sept 27, 2012

Previous Crop: Spring wheat

Sprinkler Irrigated Dry Bean
Nesson Valley, ND

Cultivar	Yield --- cwt/a ---		TW lb/bu
	2012	3 yr	2012
BLACK			
Eclipse	32.5	29.6	64.6
Zorro	34.5	28.6	65.0
Loreto	31.8	27.7	64.2
SMALL RED			
Merlot	25.2	24.3	61.7
PINK			
Sedona	27.4	26.7	59.8
LSD 5%	497.8	--	0.7

Planted: May 30, 2012 **Harvested:** Sept 27, 2012

Previous Crop: Spring wheat

LENTIL VARIETY DESCRIPTIONS

Variety	Origin	Seed Color	relative maturity	relative height	seed size	Resistance to	
						Ascochyta	Anthraxnose
Brewer	USDA	green	early	medium	m large	S	S
CDC Glamis	Canada	green	m late	tall	large	R	S
CDC Greenland	Canada	green	early	medium	v. large	R	S
CDC Impact*	Canada	red	early	short	small	R	MS
CDC LeMay	Canada	green	early	short	small	MS	S
CDC Meteor	Canada	green	medium	medium	medium	R	S
CDC Milestone	Canada	green	early	medium	small	R	S
CDC Redberry	Canada	red	medium	medium	small	R	R
CDC Red Rider	Canada	red	m early	medium	small	MR	MS
CDC Richlea	Canada	green	m late	medium	medium	S	S
CDC Rosetown	Canada	red	early	short	small	MR	MR
CDC Rouleau	Canada	red	medium	medium	small	MR	MS
CDC Vantage	Canada	green	medium	m tall	medium	R	S
Crimson	USDA	red	early	m short	small	S	S
Essex	USDA	green	medium	m tall	medium	NA	NA
Eston	Canada	green	early	medium	small	S	S
Laird	Canada	green	late	tall	v. large	MR	S
Merritt	USDA	green	m late	medium	large	NA	NA
Pennell	USDA	green	medium	medium	large	NA	NA
Red Chief	USDA	red	early	short	medium	S	S
Riveland	USDA	green	m late	tall	v. large	NA	NA

*Clearfield lentil with imidazolinone tolerance

"I have found the best way to give advice to your children is to find out what they want and then advise them to do it."
Harry S. Truman

**Dryland Clearfield Lentil
Williston, ND**

Cultivar	Yield --- lb/a ---		TW lb/bu	Protein %
	2012	2 yr		
MEDIUM GREEN				
CDC Impress CL	1145	1268	60.4	24.4
CDC Imigreen CL	1151	--	60.5	26.4
SMALL RED				
CDC Maxim CL	1108	1264	61.8	24.4
CDC Impact CL	1090	1124	63.1	27.8
EXTRA SMALL RED				
CDC Imperial CL	1032	1216	62.6	28.0
CDC Impala CL	1049	1208	63.0	27.6
LSD 5%	17.2	--	0.6	2.3
Planted: April 24, 2012		Harvested: July 31, 2012		
Previous Crop: Durum				

**Irrigated Clearfield Lentil
Nesson Valley, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Protein %
	2012	3 yr		
MEDIUM GREEN				
CDC Impress-CL	1445	1096	58.2	25.4
CDC Imigreen-CL	1190	--	57.1	26.9
SMALL RED				
CDC Maxim-CL	1864	1570	60.8	26.2
CDC Impact-CL	1627	1395	60.6	30.8
EXTRA SMALL RED				
CDC Imperial-CL	1909	1598	60.6	28.8
CDC Impala-CL	1550	1506	61.8	29.1
LSD 5%	286.8	--	0.6	0.78
Planted: April 25, 2012		Harvested: August 31, 2012		
Previous Crop: Spring wheat				

**Dryland Fallow Lentil
Sidney, MT**

Cultivar	Type	Yield		Test wt -lb/bu-	100-seed wt -gm-	
		2012	3 yr		2012	3 yr
Essex	green	729	1571	60.3	4.3	4.4
LC01602300R	green	717	1552	60.2	4.8	5.0
CDC Richlea	green	654	1401	59.3	4.8	5.1
CDC Redberry	red	660	1482	61.7	3.9	4.0
Riveland	green	580	1206	56.7	6.4	7.0
Merrit	green	329	1055	57.7	5.8	6.2
Crimson	red	511	1138	62.5	3.4	3.4
Brewer	green	255	912	59.8	5.2	5.6
CDC Greenland	green	582	--	57.2	6.0	--
Morena	brown	731	--	63.3	3.7	--
Eston	green	548	--	62.8	3.2	--
CDC Impact	red	596	--	63.3	3.3	--
LSD 5%		152	--	0.8	0.2	--
Planted: April 17, 2012		Harvested: August 8, 2012				

*"If you can solve your problem, then what is the need
of worrying? If you cannot solve it, then what is the
use of worrying?"
Shantideva*

**Irrigated Lentil
Nesson Valley, ND**

Cultivar	Yield		TW lb/bu	Protein %
	lb/a	3 yr		
	2012	2012	2012	2012
LARGE GREEN				
CDC Greenland	1652		57.2	25.9
Pennell	1180		54.9	28.4
Riveland	938		55.4	26.3
MEDIUM GREEN				
CDC Richlea	1491		58.5	24.7
SMALL GREEN				
CDC Viceroy	1853		61.8	28.9
Essex	1429		59.1	25.3
SMALL RED				
CDC Red Rider	1841		59.7	27.4
CDC Redberry	1517		60.7	27.1
CDC Rouleau	1349		59.4	24.4
EXTRA SMALL RED				
CDC Rosetown	1772		62.5	28.2
FRENCH				
CDC LeMay	1921		61.3	23.5
PARDINA				
Morena	1383		60.9	25.5
LSD 5%	382.8	1.1	1.1	
Planted: April 25, 2012 Harvested: August 31, 2012				
Previous Crop: Spring wheat				

**Dryland Notill Lentil
Williston, ND**

Cultivar	Yield		TW lb/bu	Protein %
	lb/a	3 yr		
	2012	2012	2012	2012
LARGE GREEN				
CDC Greenland	918	1168	57.9	26.3
Pennell	833	1131	57.3	28.6
Riveland	748	1059	56.6	26.7
MEDIUM GREEN				
CDC Richlea	880	1342	59.3	26.0
SMALL GREEN				
Essex	1082	1329	61.5	26.3
CDC Viceroy	1014	1300	62.4	28.7
SMALL RED				
CDC Red Rider	923	1306	61.8	26.4
CDC Redberry	957	1080	61.2	26.2
CDC Rouleau	765	1048	61.3	25.5
EXTRA SMALL RED				
CDC Rosetown	862	1248	62.7	28.4
FRENCH				
CDC Lemay	922	--	62.7	26.6
PARADINA				
Morena	1052	--	63.6	27.9
LSD 5%	421.0	--	0.5	1.3
Planted: April 24, 2012 Harvested: July 31, 2012				
Previous Crop: Durum				

**Dryland Notill Clearfield Lentil
Crosby, ND**

Cultivar	Yield		TW lb/bu	Protein %
	lb/a	3 yr		
	2012	2012	2012	2012
MEDIUM GREEN				
CDC Impress-CL	2044	1775.9	61.6	23.9
CDC Imigreen-CL	1565	--	61.9	25.0
SMALL RED				
CDC Maxim-CL	1941	1771.1	63.3	24.1
CDC Impact-CL	1589	1513.1	64.0	27.5
EXTRA SMALL RED				
CDC Impala-CL	2215	1802.2	64.4	25.9
CDC Imperial-CL	1813	1610.1	64.1	26.5
LSD 5%	263.8	--	0.4	0.6
Planted: May 15, 2012 Harvested: August 29, 2012				
Previous Crop: Field pea				

**Dryland Notill Clearfield Lentil
Arnegard, ND**

Cultivar	Yield		TW lb/bu	Protein %
	lb/a	3 yr		
	2012	2012	2012	2012
MEDIUM GREEN				
CDC Impress-CL	1599		60.6	22.2
CDC Imigreen-CL	1426		60.6	25.0
SMALL RED				
CDC Impact-CL	1816		62.8	27.3
CDC Maxim-CL	1729		61.5	23.1
EXTRA SMALL RED				
CDC Imperial-CL	1671		62.6	27.6
CDC Impala-CL	1236		62.1	26.7
LSD 5%	462.0		0.8	1.0
Planted: May 10, 2012 Harvested: August 9, 2012				
Previous Crop: Spring wheat				

**Dryland Notill Lentil
Crosby, ND**

Cultivar	Yield --- lb/a ---		TW lb/bu 2012	Protein % 2012
	2012	3 yr		
LARGE GREEN				
CDC Greenland	935	1333	60.0	24.9
Pennell	919	1152	59.2	27.2
Riveland	779	1112	59.4	24.9
MEDIUM GREEN				
CDC Richlea	941	1419	61.0	23.6
SMALL GREEN				
CDC Viceroy	1033	1539	62.0	27.5
Essex	824	--	62.1	23.0
SMALL RED				
CDC Rouleau	617	1484	61.8	22.6
CDC Redberry	817	1392	61.1	24.5
CDC Red Rider	913	1305	62.1	23.7
EXTRA SMALL RED				
CDC Rosetown	1114	1460	63.7	24.8
FRENCH				
CDC Lemay	929	1352	63.3	23.6
PARADINA				
Morena	296	--	63.1	23.7
LSD 5%	215.9	--	1.3	2.0

Planted: May 15, 2012 **Harvested:** August 29, 2012
Previous Crop: Field pea

**Dryland Notill Lentil
New Town, ND**

Cultivar	Yield lb/a 2012	TW lb/bu 2012	Protein % 2012
LARGE GREEN			
Pennell	1656	56.1	27.3
CDC Greenland	1553	57.5	24.8
Riveland	1181	55.5	25.2
MEDIUM GREEN			
CDC Richlea	1530	57.7	24.1
SMALL GREEN			
CDC Viceroy	1732	61.6	27.9
Essex	1713	59.0	25.1
SMALL RED			
CDC Redberry	2055	61.0	25.1
CDC Rouleau	1619	61.1	23.8
CDC Red Rider	1579	61.0	25.7
EXTRA SMALL RED			
CDC Rosetown	1676	61.9	27.9
FRENCH			
CDC Lemay	1463	61.4	24.6
PARADINA			
Morena	1378	61.0	26.7
LSD 5%	626.4	1.4	1.0

Planted: May 14, 2012 **Harvested:** August 28, 2012
Previous Crop: Canola

**Dryland Notill Clearfield Lentil
New Town, ND**

Cultivar	Yield lb/a 2012	TW lb/bu 2012	Protein % 2012
MEDIUM GREEN			
CDC Impress-CL	1524	60.2	23.4
CDC Imigreen-CL	1390	60.0	26.2
SMALL RED			
CDC Maxim-CL	2235	61.9	24.6
CDC Impact-CL	1992	62.4	29.7
EXTRA SMALL RED			
CDC Imperial-CL	1859	62.0	29.2
CDC Impala-CL	1628	62.1	27.9
LSD 5%	438.8	1.0	0.5

Planted: May 14, 2012 **Harvested:** August 28, 2012
Previous Crop: Canola

“To own a bit of ground, to scratch it with a hoe, to plant seeds, and to watch the renewal of life – this is the commonest delight of the race, the most satisfying thing a man can do.”
Charles Dudley Warner.

FIELD PEA VARIETY DESCRIPTIONS

Cultivar	Origin	Vine Habit ¹	Growth Habit ²	Vine Length	Relative Maturity	Seed Size	Resistance to Powdery Mildew
Yellow cotyledon							
AC Agassiz	Canada	SL	SD	tall	medium	medium	R
AC Thunderbird	Canada	SL	SD	m short	medium	m small	R
Bridger		SL	SD	medium	medium	medium	NA
CDC Centennial	Canada	SL	SD	medium	m late	large	R
CDC Golden	Canada	SL	SD	m tall	medium	medium	R
CDC Handel	Canada	SL	SD	m short	late	m small	R
CDC Meadow	Canada	SL	SD	medium	early	medium	R
CDC Mozart	Canada	SL	SD	short	medium	medium	R
CDC Treasure	Canada	SL	SD	medium	early	small	R
Delta	Netherlands	SL	SD	medium	medium	medium	MR
DS Admiral	Canada	SL	SD	tall	medium	large	R
Integra		SL	SD	medium	medium	large	S
Jetset		SL	SD	medium	Medium	M small	R
Korando		SL	SD	medium	early	medium	R
Mystique		SL	SD	m short	m late	m small	MR
Spider		SL	SD	medium	medium	large	R
SW Midas	Sweden	SL	SD	short	m late	small	R
SW Salute	Sweden	SL	SD	medium	medium	medium	MR
SW Trapeze	Sweden	SL	SD	m short	medium	medium	NA
Vegas		SL	SD	short	m late	large	NA
Green cotyledon							
Aragorn		SL	SD	m short	m early	m large	NA
Arcadia	Pulse USA	SL	SD	medium	early	small	MS
CDC Patrick	Canada	SL	SD	medium	medium	small	R
CDC Striker	Canada	SL	SD	medium	medium	m large	S
Cruiser	WA	SL	SD	medium	medium	m small	S
Daytona		SL	SD	medium	late	medium	R
K-2	Legume Logic	SL	SD	medium	early	m smalll	NA
Majoret	Sweden	SL	SD	medium	m late	medium	S
Medora	WA	SL	SD	m tall	m late	medium	R
Stirling	WA	SL	SD	short	early	medium	R
Viper		SL	SD	m short	m early	medium	NA

¹/SL=semi-leafless. ²/SD=semi-dwarf

**Dryland Field Peas
Williston, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Protein --- % ---	
	2012	3 yr		2012	3 yr
YELLOW COTYLEDON TYPE					
SW Salute	20.2	31.8	63.9	30.2	26.3
Korando	18.7	29.6	64.7	29.2	26.1
Spider	18.6	29.6	65.0	29.5	26.1
SW Trapeze	14.7	29.2	63.3	30.3	26.5
SW Midas	16.9	28.6	63.9	30.6	25.8
Agassiz	16.7	28.3	63.5	29.8	26.1
DS Admiral	18.9	28.0	64.3	29.9	25.8
CDC Golden	18.5	27.8	64.8	30.5	26.2
Thunderbird	14.9	27.5	64.1	30.4	26.5
CDC Meadow	18.5	27.0	64.3	28.8	25.8
Bridger	21.2	--	64.1	29.0	--
Navarro	19.4	--	64.6	30.1	--
CDC Treasure	19.1	--	65.2	28.2	--
Jetset	18.2	--	64.8	29.2	--
Nette	18.2	--	65.3	27.9	--
Mystique	16.4	--	64.7	29.8	--
Vegas	15.1	--	64.7	29.4	--
Mozart	15.1	--	65.2	28.7	--
CDC Handel	14.2	--	64.5	30.0	--
Gunner	13.5	--	64.1	29.8	--
Salamanca	13.4	--	64.3	30.3	--
Intergra	13.2	--	62.8	30.7	--
Torch	11.2	--	64.2	28.9	--
GREEN COTYLEDON TYPE					
SW Arcadia	19.6	32.4	64.1	28.9	25.8
Bluemoon	18.3	29.2	64.1	30.3	26.2
CDC Patrick	15.1	28.9	63.8	30.0	26.1
K2	17.5	27.1	64.0	30.0	26.2
Aragorn	15.8	26.2	62.8	29.8	26.0
CDC Striker	16.4	25.4	64.2	29.0	26.5
Majoret	13.4	25.1	64.5	30.3	26.9
Cruiser	16.9	24.8	62.8	31.1	25.9
Viper	17.8	--	63.7	29.5	--
Daytona	16.7	--	64.9	28.7	--
Shamrock	11.8	--	65.3	28.4	--
LSD 5%	3.4	--	0.7	1.4	--
Planted: May 8, 2012			Harvested: July 30, 2012		
Previous Crop: Durum					

**Dryland Fallow Field Pea
Sidney, MT**

Cultivar	Type	Yield -lb/a-		100-seed wt -gm-	
		2012	3 yr	2012	3 yr
SW Midas	Yellow	1570	2597	19.3	20.0
Stirling	Green	2039	2595	18.9	20.7
Delta	Yellow	1464	2408	21.6	22.5
Majoret	Green	1335	2302	20.9	22.0
CDC Striker	Green	1121	2245	21.3	23.1
DS Admiral	Yellow	1157	2228	22.1	23.3
K2	Green	1434	2159	20.5	21.6
Cruiser	Green	1201	2079	19.7	20.5
Agassiz	Yellow	1618	--	21.3	--
Montech 4152	Yellow	1585	--	24.0	--
Arcadia	Green	1301	--	19.0	--
Spider	Yellow	1296	--	22.0	--
Bridger	Yellow	1248	--	20.9	--
LSD 5%		395	--	1.5	--
Planted: April 17, 2012		Harvested: July 30, 2012			

**Irrigated Field Pea
Nesson Valley, ND**

Cultivar	Yield --- bu/a ---		TW lb/bu	Protein --- % ---	
	2012	3 yr		2012	3 yr
YELLOW COTYLEDON TYPE					
Agassiz	68.1	50.5	61.8	25.8	25.1
DS Admiral	65.5	45.1	61.9	24.0	23.9
CDC Golden	55.6	41.9	63.2	25.1	25.1
GREEN COTYLEDON TYPE					
CDC Striker	70.6	48.2	61.6	25.5	25.5
Cruiser	57.3	40.1	61.8	25.3	24.7
Majoret	59.8	--	61.9	26.3	--
LSD 5%	9.9	--	0.8	1.0	--
Planted: April 25, 2012			Harvested: August 9, 2012		
Previous Crop: Winter wheat					

*"In no other country do so few people produce so much food, to feed so many, at such reasonable prices."
Dwight D. Eisenhower*

**Dryland Notill Field Pea
Crosby, ND**

Cultivar	Yield bu/a 2012	TW lb/bu 2012	Protein % 2012
YELLOW COTYLEDON TYPE			
CDC Golden	40.2	65.3	22.9
Spider	33.0	64.3	23.3
Bridger	32.1	65.0	22.8
DS Admiral	31.6	65.6	21.1
Agassiz	26.3	63.4	22.1
GREEN COTYLEDON TYPE			
Majoret	33.0	64.9	23.7
CDC Striker	32.4	64.7	21.2
SW Arcadia	29.8	64.2	22.4
Cruiser	25.2	64.2	22.8
LSD 5%	8.2	0.7	1.3

Planted: May 15, 2012 **Harvested:** August 29, 2012
Previous Crop: Field pea

**Dryland Notill Field Pea
New Town, ND**

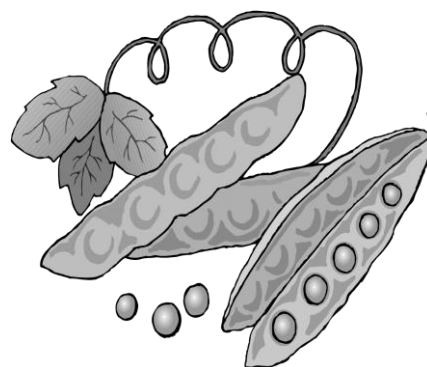
Cultivar	Yield lb/a 2012	TW lb/bu 2012	Protein % 2012
YELLOW COTYLEDON TYPE			
Agassiz	49.6	62.9	25.1
CDC Golden	49.6	64.3	24.7
Spider	38.3	62.6	25.8
DS Admiral	35.0	62.5	24.0
Bridger	30.2	60.9	25.0
GREEN COTYLEDON TYPE			
CDC Striker	46.3	62.0	24.9
SW Arcadia	39.0	61.6	25.9
Cruiser	38.9	62.2	26.2
Majoret	38.8	62.8	26.5
LSD 5%	16.1	1.1	1.0

Planted: May 14, 2012 **Harvested:** August 28, 2012
Previous Crop: Canola

**Dryland Notill Field Pea
Arnegard, ND**

Cultivar	Yield bu/a 2012	TW lb/bu 2012	Protein % 2012
YELLOW COTYLEDON TYPE			
Spider	39.9	61.9	28.3
CDC Golden	35.6	63.9	27.2
Bridger	35.5	61.8	26.6
Agassiz	33.0	60.9	28.4
DS Admiral	29.8	61.5	26.9
GREEN COTYLEDON TYPE			
CDC Striker	35.5	61.9	27.2
SW Arcadia	33.8	61.8	28.1
Cruiser	28.6	61.6	27.3
Majoret	28.5	62.2	28.0
LSD 5%	9.5	0.9	1.4

Planted: May 10, 2012 **Harvested:** August 9, 2012
Previous Crop: Spring Wheat



*“If and ‘when’ were planted and ‘nothing’ grew.”
Old Farmers Almanac, 2002*

**Sprinkler Irrigated Sugarbeet Seed Treatment Study
Sidney, MT¹**

Treatments/Products	Seedling Stand, Plants/ac	Harvest Stand, Plants/acre	Percent Sucrose	Root yld, T/ac	Sucrose yld, lb/ac
Apron/Maxim/Poncho Beta /Penthiopyrad 7	34360	32310	17.54	42.8	15000
Apron/Maxim/Poncho Beta /Penthiopyrad 28	33030	32310	17.29	41.3	14260
Cruiser/Apron/Maxim	30730	28800	18.09	38.9	14080
Cruiser/Apron/Maxim/Tach 20	31340	29770	17.66	38.2	13470
Cruiser/Apron/Maxim/Tach 20 /Penthiopyrad 14	32190	30370	18.00	37.3	13420
Nipsit Tach 20	30980	28920	17.51	39.4	13770
Nipsit Tach 20 /Penthiopyrad 14	30490	28920	17.38	39.3	13640
Nipsit/Apron/Thiram	32070	29890	18.07	39.4	14200
Poncho Beta/Apron/Maxim	30490	27830	17.73	39.3	13940
Poncho Beta/Apron/Thiram	32310	29160	17.80	35.9	12770
Poncho Beta/Apron/Thiram /Tach 20	30490	28680	17.97	36.8	13180
Poncho Beta/Apron/Thiram /Tach 20/Penthiopyrad 14	31100	28680	17.89	38.3	13720
LSD 0.05	2857	2881	0.52	4.3	1493
Planted: April 26, 2012				Harvested: September 21, 2012	

¹ Barry Jacobsen, MSU – Bozeman, Joyce Eckhoff and Charles Flynn, MSU Eastern Agricultural Research Center

**Flood Irrigated Fusarium Screen
Approved sugarbeet varieties for 2013**

Cultivar	Disease rating¹		Average
	Hurley site	Steffen site	
BTS 49RR1N	1.63	1.50	1.56
Crystal RR022NT	2.25	1.88	2.06
Crystal RR052	2.50	2.38	2.44
BTS 42RR65	2.50	2.38	2.44
SX 0409RR	2.63	2.38	2.50
SV36046RR	2.63	2.75	2.69
Crystal RR081	2.68	2.75	2.72
SX 0491RR	2.88	3.00	2.94
BTS 47RR41	3.13	2.88	3.00
BTS 47RR31	4.00	4.00	4.00
HM 4010RR	5.75	6.50	6.12
LSD 5%	0.8	0.7	
Planted:	April 23, 2012	April 20, 2012 - Replanted May 15, 2012	
Disease Rating:	September 17, 2012	September 20, 2012	
Previous Crop:	Small grain	Alfalfa	

¹ Scale of 1-9 where 1 is a full stand of symptomless plants and 9 is totally dead.

Sprinkler Irrigated Coded Sugarbeet Variety Trial
Sidney, MT
Approved varieties for 2013

Cultivar	Root yield -T/a-		Sucrose -%-		Sucrose yield -lbs/a-		Extractable sucrose -lbs/a-	
	2012	3 yr	2012	3 yr	2012	3 yr	2012	3 yr
Crystal RR052	36.7	38.0	17.75	16.50	13020	12510	12340	11693
Crystal RR081	36.8	36.6	18.06	16.85	13310	12347	12710	11623
BTS 49RR1N	36.1	35.7	18.02	16.43	12960	11697	12380	11017
Crystal RR022NT	34.5	34.7	18.03	16.85	12420	11667	11780	11003
SV 36046RR	34.1	35.3	17.75	16.17	12140	11393	11560	10663
SX 0491RR	30.6	33.2	17.80	16.57	10900	10983	10450	10343
BTS 47RR31	31.9	32.8	18.15	16.67	11570	10897	11070	10299
HM 4010RR	32.6	33.2	17.82	16.52	11590	10957	11050	10292
SX 0409RR	31.9	33.6	17.59	16.08	11220	10777	10670	10097
BTS 47RR41	31.9	32.2	17.56	16.41	11200	10566	10640	9928
BTS 42RR65	30.4	--	18.42	--	11190	--	10740	--

LSD 5%

2.5

0.56

959

927

Planted: April 25, 2012

Thinned: June 4, 2012

Harvested: September 20, 2012

Previous Crop: Small grain

Flood Irrigated Coded Sugarbeet Variety Trial
East Fairview, ND
Approved varieties for 2013

Cultivar	Root yield -T/a-		Sucrose -%-		Sucrose yield -lbs/a-		Extractable sucrose -lbs/ac	
	2012	3 yr	2012	3 yr	2012	3 yr	2012	3 yr
BTS 49RR1N	33.2	34.9	17.86	16.51	11850	11487	11420	10877
Crystal RR081	31.7	33.1	17.95	16.73	11410	11038	10990	10425
SX 0409RR	31.9	33.8	18.03	16.38	11510	11033	11090	10423
Crystal RR052	31.0	33.7	17.94	16.32	11130	10924	10720	10256
Crystal RR022NT	28.7	32.6	18.12	16.54	10410	10713	9982	10080
SV 36046RR	31.0	32.8	17.68	16.26	10920	10580	10480	9965
BTS 47RR31	28.8	31.2	17.91	16.71	10300	10363	9922	9805
BTS 47RR41	28.7	31.6	17.39	16.33	9958	10250	9599	9682
SX 0491RR	26.8	32.6	17.92	15.93	9592	10224	9273	9559
HM 4010RR	25.8	29.1	17.59	16.33	9051	9428	8732	8874
BTS 42RR65	27.8	--	18.47	--	10280	--	9946	--

LSD 5%

3.1

0.43

1060

1016

Planted: April 23, 2012

Thinned: June 6, 2012

Harvested: September 24, 2012

Previous Crop: Small grain



Timing of the First Application of Roundup When Barley is used as a Cover Crop for Sugarbeet Seedlings

Joyce Eckhoff and Charles Flynn, MSU Eastern Agricultural Research Center

This three-year study evaluated barley as a cover crop for emerging sugarbeet seedlings. Barley was planted 2-7 days before planting sugarbeet at a rate of 30-50 lbs/A. The barley was planted in a direction perpendicular to the direction of the sugarbeet rows. A treatment with no cover crop was included. Sugarbeet were sprayed with Roundup when they were in the two-leaf, four-leaf or six-leaf stage.

Delaying the application of Roundup increased the amount of impurities, which reduced sucrose extraction. Root yield was also reduced when application of Roundup was delayed.

The cover crop itself reduced root yield significantly. Sugarbeet yield when Roundup was sprayed at the two-leaf or four-leaf stages when there was no cover crop was significantly greater than yield of sugarbeet with a cover crop were sprayed at the two-leaf stage.

Table 1. Yield and quality of sugarbeet with and without barley as a cover crop. Roundup was applied when the sugarbeet were at the two-leaf, four-leaf or six-leaf stage.

SB stage sprayed	Cover Crop	Sucrose Percent	Na, ppm	K, ppm	Amino-N, ppm	Percent Extraction	Root Yield, T/ac	Sucrose Yield, lb/ac
2-leaf	yes	16.70	285 a	1400 a	73	95.3 c	27.9 b	9364 b
4-leaf	yes	16.52	310 ab	1467 a	77	95.0 bc	22.1 a	7335 a
6-leaf	yes	16.20	292 a	1655 b	79	94.5 ab	23.5 a	7682 ab
2-leaf	no	16.21	378 bc	1443 a	88	94.7 b	34.6 c	11281 c
4-leaf	no	16.19	367 bc	1443 a	84	94.7 b	31.3 c	10176 bc
6-leaf	no	15.82	415 c	1668 b	97	93.8 a	29.6 cb	9435 bc

Means followed by different letters within a column are significantly different at probability = 0.05.

“The farmer works the soil. The agriculturalist works the farmer.”
Eugene F. Ware

Micronutrients on Sugarbeet

Joyce Eckhoff, MSU Eastern Agricultural Research Center

Studies in Indiana and Kansas showed that application of glyphosate on Roundup Ready soybeans sometimes resulted in Manganese (Mn) deficiencies in the soybeans. It was suggested that because glyphosate is a chelating agent, that application of glyphosate tied up Mn in the plant cells. In contrast, a greenhouse study found no evidence of deleterious effects of glyphosate on Mn uptake or distribution in Roundup Ready soybeans.

Soil characters can have some effect on Mn content in the plant. Mn availability to the plant generally decreases as soil pH increases and soil moisture decreases. Soil pH in the lower Yellowstone River Valley is typically 7.8 or greater.

While studies evaluating response of Roundup Ready sugarbeet to Mn have not been reported, Mn-containing products for use on Roundup Ready sugarbeet are available and are being advertised to sugarbeet producers.

This two-year study tested two sources of micronutrients on Roundup Ready sugarbeet. Each treatment was applied to sugarbeet treated with Roundup and to sugarbeet that were hand-weeded with no applied herbicide.

Roundup treated sugarbeet had a significantly greater yield than the hand-weeded sugarbeet. This may have been because weed control was better in the herbicide-treated beets than in the hand-weeded beets. The application of micronutrients did not have an effect on the yield or quality of sugarbeet.

Table 1. Yield and quality across two-years of Roundup Ready sugarbeet with and without the application of Roundup when micronutrients were applied.

Micro Nutrient	Weed Control	Year	Percent Sucrose	Na, ppm	K, ppm	Amino-N, ppm	Percent Extraction	Root Yld, T/ac	Sucrose Yld, lb/ac
			18.14	209	1640	128	97.1	30.9	11250
			17.94	208	1662	122	97.1	30.9	11100
			18.15	196	1625	122	97.2	31.2	11350
			NS	NS	NS	NS	NS	NS	NS
	Roundup		17.99	197	1608	121	97.2	31.6	11370
	hand weeded		18.17	212	1676	127	97.1	30.4	11100
			NS	NS	67	NS	NS	1.1	NS
		2011	17.71	252	1531	98	95.2	26.4	9344
		2012	18.45	156	1754	150	99.1	35.6	13130
		LSD 0.05	0.32	30	67	9	0.2	1.1	415

*“For a happy marriage, never shout at each other unless the house is on fire.”
Old Farmers Almanac, 2002*

CROP PERFORMANCE COMPARISONS ON DRYLAND - WILLISTON, ND

CHET HILL, NDSU WILLISTON RESEARCH EXTENSION CENTER

CROP	VARIETY	2012 SELLING	3 Yr AVE	Gross	\$ GR. RET/A + OR - STEELE-ND	
		PRICE \$/BU	YIELD BUS /AC	Return \$/ac		
HRS WHEAT	REEDER	8.50	38.8	\$330	+\$37	
	STEELE-ND	8.50	34.5	\$293	0	
HRW WHEAT	JERRY	8.10	52.3	\$424	+\$131	
DURUM WHEAT	MOUNTRAIL	8.25	31.0	\$256	-\$37	
	ALKABO	8.25	34.4	\$284	-\$9	
BARLEY (FEED)	RAWSON	5.25	72.4	\$380	+\$87	
	(MALTING)	TRADITION	6.50	69.5	\$452	+\$159
	(MALTING)	PINNACLE	6.50	66.6	\$433	+\$140
OATS	KILLDEER	2.25	79.3	\$178	-\$115	
CORN (GRAIN)	AVERAGE	6.50	48.1	\$313	+\$20	
FLAX (BROWN)	NECHE	13.50	14.8	\$200	-\$93	
	(YELLOW - FOOD)	CARTER	14.50	16.3	\$236	-\$57
SOYBEANS	SHEYENNE	13.50	20.4	\$275	-\$18	
FIELD PEAS (GREEN)	CRUISER	10.50	30.7	\$322	+\$29	
	(YELLOW)	MOZART	8.50	32.5	\$276	-\$17
		\$/CWT	LBS/AC			
CAMELINA	BLAINE CREEK	14.00	986	\$138	-\$155	
BROWN MUSTARD	AVG.	35.00	951	\$333	+\$40	
YELLOW MUSTARD	TILNEY	41.00	1002	\$411	+\$118	
CANOLA	HYOLA 357 MAG	28.00	1075	\$301	+\$8	
SAFFLOWER	AVG OF 3 VARIETIES	33.00	1503	\$496	+\$203	
SUNFLOWER (OIL)	AVG OF 2 VARIETIES	23.00	1425	\$328	+\$35	
BUCKWHEAT	MANOR	32.00	1249	\$400	-\$107	
LENTILS (SM. GREEN)	CDC VICEROY	22.50	1299	\$293	\$0	
	(MED. GREEN)	AC RICHLEA	17.00	1342	\$228	-\$65
	(LG. GREEN)	RIVELAND	20.00	1059	\$212	-\$81
	(RED)	ROULEAU	18.00	1048	\$189	-\$104
CHICKPEAS (DESI)	CDC ANNA	28.00	1011	\$283	-\$10	
	(KABULI)	CDC FRONTIER	31.00	1251	\$388	+\$95
	(SMALL KABULI)	B-90	39.00	1154	\$450	+\$157
PINTO BEANS	MAVERICK	34.00	386	\$131	-\$162	
NAVY BEANS	NORSTAR	40.00	359	\$144	-\$149	

"There is nothing grateful as the earth; you cannot do too much for it; it will continue to repay tenfold the pains and labor bestowed upon it."

Henry Thomas Liddell.

Development of Durum Varieties for the MonDak Region

Joyce Eckhoff, MSU Eastern Agricultural Research Center

Development of solid-stemmed varieties has been a priority for this project for the last several years. A population with the genetics for the solid-stem character was developed and has been maintained each year at the EARC. Each year, lines with solid-stems and other desirable characteristics such as low cadmium, resistance to new strains of stem rust, and good quality are crossed onto the population. Solid-stemmed F₃ plants are selected each year. Lines are continued to the F₇ generation, selecting for solid stems, disease resistance and quality.

This year, we tested 25 solid and semi-solid stemmed lines in early yield trials. Yields of some were similar to yield of Mountrail. In a range of 5-25, with 5 being completely hollow and 25 being completely solid, stem solidness ranged from 15 to 24, with an average rating of 21. Mountrail had a stem-solidness rating of 8, and Alzada had a stem-solidness rating of 12.5. More solid-stemmed lines are in development.

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 accounting for up to 20% of the daily intake. 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. The European Union has adopted this level of Cd as the maximum allowed in domestic and imported durum, and is considering lowering the level to 0.15. 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.

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. We tested 104 low-Cd lines from these crosses in preliminary yield trials this year. Yields of some were the same as or better than yield of Mountrail. Quality was good to excellent.

Most durum varieties grown in Montana are day length sensitive and need a long day for flowering to be initiated. The further south the day length sensitive varieties are planted, the later in the season is the long day needed for flower initiation, causing later flowering and later maturity. Day length insensitive or day neutral varieties are more appropriate for production in areas of Montana south of the Missouri. We released a day length insensitive line tentatively named Silver. This is a short variety with early maturity. It had medium to good yield and good quality.

*"The greatest service which can be rendered to any country is to add a useful plant to its culture."
Thomas Jefferson, 1790*

Irrigated Crop Budgets at Nesson Valley

Cameron Wahlstrom, NDSU Williston Research Extension Center

This year, WREC developed crop budgets for net returns when grown at Nesson Valley under the different research and cropping systems. The first research study was the Water Use Efficiency study, at using different water amounts during the crop year to conserve water in barley, spring wheat, sugarbeet, and potatoes. A 100%, 67%, 33%, and 0% irrigation rate was used. This translates to, 1" of water for the 100% rate, 0.67" at the 67% rate, 0.33" at the 33% rate, and 0.00" at the 0% rate. In the crop budget, the only values that change are irrigation power and irrigation repairs for direct cost along with, irrigation depreciation and irrigation investment for indirect costs. In an actual cropping system for the different amounts of water being applied, a producer would also vary seeding rates, fungicide rates, fertilizer amounts, and crop insurance rates. But in this research, the time and resources available to accurately abide by all of these variables are limited. The dollar amounts used in the crop budgets are actual inputs and prices received with some estimated prices from the NDSU Crop Budget website, www.ag.ndsu.edu/farmmanagement/crop-budget-archive. This website provides budgets for each region in North Dakota to project the most accurate budgets for each region.

Malt Barley	\$ Amounts per Acre			
	100% Water	67% Water	33% Water	0% Water
Market Yield (bushels)	61.0	58.1	52.7	51.5
Market price	6.50	6.50	6.50	6.50
MARKET INCOME	396.50	377.65	342.55	334.75
DIRECT COSTS				
-Seed	36.76	36.76	36.76	36.76
-Herbicides	30.70	30.70	30.70	30.70
-Fungicides	2.00	2.00	2.00	2.00
-Insecticides	0.00	0.00	0.00	0.00
-Fertilizer	36.40	36.40	36.40	36.40
-Crop Insurance	25.70	25.70	25.70	25.70
-Fuel & Lubrication	14.00	14.00	14.00	14.00
-Repairs	13.00	13.00	13.00	13.00
-Irrigation Power	26.40	17.60	8.69	0.00
-Irrigation Repairs	10.00	6.70	3.30	0.00
-Drying	0.00	0.00	0.00	0.00
-Miscellaneous	5.00	5.00	5.00	5.00
-Operating Interest	0.00	0.00	0.00	0.00
SUM OF LISTED DIRECT COSTS	199.96	187.86	175.55	163.56
INDIRECT (FIXED) COSTS				
-Misc. Overhead	15.00	15.00	15.00	15.00
-Machinery Depreciation	10.00	10.00	10.00	10.00
-Machinery Overhead	10.00	10.00	10.00	10.00
-Irrigation Depreciation	39.96	39.96	39.96	0.00
-Irrigation Investment	29.30	29.30	29.30	0.00
-Land Charge	0.00	0.00	0.00	0.00
SUM OF LISTED INDIRECT COSTS	104.26	104.26	104.26	35.00
SUM OF ALL LISTED COSTS	304.22	292.12	279.81	198.56
RETURN TO LABOR & MANAGEMENT	92.28	85.53	62.74	136.19
	100% Water	67% Water	33% Water	0% Water

Spring Wheat	\$ Amounts per Acre			
	100% Water	67% Water	33% Water	0% Water
Market Yield (bushels)	80.7	65.8	62.2	54.7
Market price	9.00	9.00	9.00	9.00
MARKET INCOME	726.30	592.20	559.80	492.30
DIRECT COSTS				
-Seed	43.08	43.08	43.08	43.08
-Herbicides	30.70	30.70	30.70	30.70
-Fungicides	2.00	2.00	2.00	2.00
-Insecticides	0.00	0.00	0.00	0.00
-Fertilizer	126.35	126.35	126.35	126.35
-Crop Insurance	23.60	23.60	23.60	23.60
-Fuel & Lubrication	14.00	14.00	14.00	14.00
-Repairs	13.00	13.00	13.00	13.00
-Irrigation Power	27.50	18.42	9.07	0.00
-Irrigation Repairs	10.00	6.70	3.30	0.00
-Drying	0.00	0.00	0.00	0.00
-Miscellaneous	5.00	5.00	5.00	5.00
-Operating Interest	0.00	0.00	0.00	0.00
SUM OF LISTED DIRECT COSTS	295.23	282.85	270.10	257.73
INDIRECT (FIXED) COSTS				
-Misc. Overhead	15.00	15.00	15.00	15.00
-Machinery Depreciation	10.00	10.00	10.00	10.00
-Machinery Overhead	10.00	10.00	10.00	10.00
-Irrigation Depreciation	39.96	39.96	39.96	0.00
-Irrigation Investment	29.30	29.30	29.30	0.00
-Land Charge	0.00	0.00	0.00	0.00
SUM OF LISTED INDIRECT COSTS	104.26	104.26	104.26	35.00
SUM OF ALL LISTED COSTS	399.49	387.11	374.36	292.73
RETURN TO LABOR & MANAGEMENT	326.81	205.09	185.44	199.57
	100% Water	67% Water	33% Water	0% Water

Sugarbeet		\$ Amounts per Acre			
		100% Water	67% Water	33% Water	0% Water
Market Yield (tons)	32.1	28.1	23.3	15.7	
Market price	66.15	66.15	66.15	66.15	
MARKET INCOME	2123.48	1858.87	1541.34	1038.59	
DIRECT COSTS					
-Seed	126.00	126.00	126.00	126.00	
-Herbicides	12.00	12.00	12.00	12.00	
-Fungicides	0.00	0.00	0.00	0.00	
-Insecticides	0.00	0.00	0.00	0.00	
-Fertilizer	76.30	76.30	76.30	76.30	
-Crop Insurance	0.00	0.00	0.00	0.00	
-Fuel & Lubrication	14.00	14.00	14.00	14.00	
-Repairs	13.00	13.00	13.00	13.00	
-Irrigation Power	82.66	55.38	27.27	0.00	
-Irrigation Repairs	10.00	6.70	3.30	0.00	
-Drying	0.00	0.00	0.00	0.00	
-Miscellaneous	5.00	5.00	5.00	5.00	
-Trucking	396.00	396.00	396.00	396.00	
-Operating Interest	0.00	0.00	0.00	0.00	
SUM OF LISTED DIRECT COSTS	734.96	704.38	672.87	642.30	
INDERECT (FIXED) COSTS					
-Misc. Overhead	15.00	15.00	15.00	15.00	
-Machinery Depreciation	10.00	10.00	10.00	10.00	
-Machinery Overhead	10.00	10.00	10.00	10.00	
-Irrigation Depreciation	39.96	39.96	39.96	0.00	
-Irrigation Investment	29.30	29.30	29.30	0.00	
-Land Charge	0.00	0.00	0.00	0.00	
SUM OF LISTED INDIRECT COSTS	104.26	104.26	104.26	35.00	
SUM OF ALL LISTED COSTS	839.22	808.64	777.13	677.30	
RETURN TO LABOR & MANAGEMENT	1284.26	1050.23	764.21	361.29	
	100% Water	67% Water	33% Water	0% Water	

When looking at these tables, one can see that the values are split into four different columns; each column represents a different watering rate. Estimated irrigation power direct cost values based off approximately \$5.50 for each 1" of water applied through the sprinkler irrigation system. The irrigation power rate is considerably less for small grains than potatoes and sugarbeets due to the lower water requirements.

The crop budgets for corn and soybeans are for the tillage comparisons for conventional tillage, minimal tillage, and no-till cropping systems. Exact yields produced in 2012 were used, even though statistically the three cropping systems have no significant difference in yields. Based on 2012 commodity prices, it takes only a few bushels to affect the budgets, positively or negatively. The 2 values that were changed,

Potato		\$ Amounts per Acre			
		100% Water	67% Water	33% Water	0% Water
Market Yield (cwt)	452.4	374.2	314.1	242	
Market price	8.58	8.58	8.58	8.58	
MARKET INCOME	3881.59	3210.64	2694.98	2076.36	
DIRECT COSTS					
-Seed	300.00	300.00	300.00	300.00	
-Herbicides	34.74	34.74	34.74	34.74	
-Fungicides	41.40	41.40	41.40	41.40	
-Insecticides	14.84	14.84	14.84	14.84	
-Fertilizer	76.30	76.30	76.30	76.30	
-Crop Insurance	40.00	40.00	40.00	40.00	
-Fuel & Lubrication	40.00	40.00	40.00	40.00	
-Repairs	20.00	20.00	20.00	20.00	
-Irrigation Power	76.61	51.32	25.28	0.00	
-Irrigation Repairs	15.00	10.05	4.95	0.00	
-Drying	0.00	0.00	0.00	0.00	
-Miscellaneous	22.00	22.00	22.00	22.00	
-Trucking	1131.00	935.50	785.25	605.00	
-Harvest/Digging/Planting/Spraying	120.00	120.00	120.00	120.00	
SUM OF LISTED DIRECT COSTS	1931.89	1706.15	1524.76	1314.28	
INDERECT (FIXED) COSTS					
-Misc. Overhead	15.00	15.00	15.00	15.00	
-Machinery Depreciation	10.00	10.00	10.00	10.00	
-Machinery Overhead	10.00	10.00	10.00	10.00	
-Irrigation Depreciation	39.96	39.96	39.96	0.00	
-Irrigation Investment	29.30	29.30	29.30	0.00	
-Land Charge	0.00	0.00	0.00	0.00	
SUM OF LISTED INDIRECT COSTS	104.26	104.26	104.26	35.00	
SUM OF ALL LISTED COSTS	2036.15	1810.41	1629.02	1349.28	
RETURN TO LABOR & MANAGEMENT	1845.44	1400.23	1065.96	727.08	
	100 % Water	67% Water	33% Water	0% Water	

depending on tillage type, were direct costs: fuel and lubrication and repairs. Values were obtained by multiplying the direct cost by 1 for conventional tillage, by 0.67 for minimal tillage, and by 0.33 for no-till. These values were used because with a no-till cropping system one only crosses a field 1 time to seed, 1-2 times to spray, and 1 time for harvest, whereas with a conventional tillage system, one will travel across the field multiple times, just for seedbed preparation. With added wear and tear on equipment and the hours of added field work no-till requires only one third the work and time of conventional tillage. With different cropping systems, over time one could begin to change their seeding rates, herbicide rates, and fertilizer rates to become more efficient. However, in this research, the time and resources available to accurately abide by all of these variables are limited

Corn	\$ Amounts per Acre		
	177	178	173
Market Yield (bushels)	177	178	173
Market price	7.00	7.00	7.00
MARKET INCOME	1239.00	1246.00	1211.00
DIRECT COSTS			
-Seed	93.75	93.75	93.75
-Herbicides	12.00	12.00	12.00
-Fungicides	0.00	0.00	0.00
-Insecticides	0.00	0.00	0.00
-Fertilizer	126.35	126.35	126.35
-Crop Insurance	36.88	36.88	36.88
-Fuel & Lubrication	40.00	26.80	13.20
-Repairs	15.00	10.05	4.95
-Irrigation Power	63.41	63.41	63.41
-Irrigation Repairs	10.00	10.00	10.00
-Drying	0.00	0.00	0.00
-Miscellaneous	5.00	5.00	5.00
-Operating Interest	0.00	0.00	0.00
SUM OF LISTED DIRECT COSTS	402.39	384.24	365.54
INDERECT (FIXED) COSTS			
-Misc. Overhead	15.00	15.00	15.00
-Machinery Depreciation	10.00	10.00	10.00
-Machinery Overhead	10.00	10.00	10.00
-Irrigation Depreciation	39.96	39.96	39.96
-Irrigation Investment	29.30	29.30	29.30
-Land Charge	0.00	0.00	0.00
SUM OF LISTED INDIRECT COSTS	104.26	104.26	104.26
SUM OF ALL LISTED COSTS	506.65	488.50	469.80
RETURN TO LABOR & MANAGEMENT	732.35	757.50	741.20
	Conv-Till	Min-Till	No-Till

Soybean	\$ Amounts per Acre		
	51	49	51
Market Yield (bushels)	51	49	51
Market price	15.00	15.00	15.00
MARKET INCOME	765.00	735.00	765.00
DIRECT COSTS			
-Seed	71.42	71.42	71.42
-Herbicides	18.00	18.00	18.00
-Fungicides	0.00	0.00	0.00
-Insecticides	0.00	0.00	0.00
-Fertilizer	0.00	0.00	0.00
-Crop Insurance	0.00	0.00	0.00
-Fuel & Lubrication	40.00	26.80	13.20
-Repairs	15.00	10.05	4.95
-Irrigation Power	58.68	58.68	58.68
-Irrigation Repairs	10.00	10.00	10.00
-Drying	0.00	0.00	0.00
-Miscellaneous	5.00	5.00	5.00
-Operating Interest	0.00	0.00	0.00
SUM OF LISTED DIRECT COSTS	218.10	199.95	181.25
INDERECT (FIXED) COSTS			
-Misc. Overhead	15.00	15.00	15.00
-Machinery Depreciation	10.00	10.00	10.00
-Machinery Overhead	10.00	10.00	10.00
-Irrigation Depreciation	39.96	39.96	39.96
-Irrigation Investment	29.30	29.30	29.30
-Land Charge	0.00	0.00	0.00
SUM OF LISTED INDIRECT COSTS	104.26	104.26	104.26
SUM OF ALL LISTED COSTS	322.36	304.21	285.51
RETURN TO LABOR & MANAGEMENT	442.64	430.79	479.49
	Conv-Till	Min-Till	No-Till

These crop budgets are estimates to calculate the net returns of different cropping systems. Crop budgets are very important in a farming operation, especially with the economy, higher commodity prices, increasing input costs, and the volatility involved in input and market prices. Crop budgets are a very important tool to assess all input costs, projected market income, and net returns on a per acre basis. Once a crop budget is completed, an individual producer has a very good idea of what cropping systems will provide a positive net return. When managing a farming operation and to be as efficient as possible, it doesn't take as many bushels or as high of prices, as an individual thinks, to make a comfortable net return. Positive net returns come down to, the types of cropping systems used, crop management, and the good luck of cooperating weather.

*"Farming without a financial motive is just gardening."
Russ Parsons*

Evaluating Fertilizer Timing in Durum and Barley

(Nesson Valley 2012)

Tyler Tjelde, NDSU Williston Research Extension Center

Objectives

This project investigated the crop response to applying urea granular fertilizer at different times throughout the growing season. Maximizing crop fertilizer uptake and minimizing urea loss in an irrigated system is very important environmentally as well as financially. This project was initiated as a result of grower interest to determine if supplemental applications would be more beneficial than one application at planting time.

Methods

The project was designed to compare five fertilizer timing treatments with Tradition barley and Alkabo durum. The experimental design was a randomized complete block replicated four times. Buffer plots were planted between each treatment. Each individual treatment plot was soil sampled (0-12", 12-24", 24-36") prior to planting and fertilizer applications to determine available soil NO₃-N. The previous crop was sugarbeets. Durum and barley yield goals were 80 and 120 bushels and planting populations were 1.5 million and 1.25 million PLS per acre respectively. The trial was planted on 24 April. Fertilizer was applied using a barber granular spreader and incorporated by applying a minimum of .50 inches with overhead irrigation. All cultural practices (tillage, planting populations, chemical, irrigation, and fungicide applications) were the same for each treatment to minimize the effects of other variables. The durum and barley were harvested 30 July using a small plot combine.

Results & Discussion

2012 Nesson Valley Durum Fertilizer Timing

Treatment	Soil Test (0-36") NO ₃ -N (lb/A)	Fertilizer* lbs N / acre	Yield bu/A	Test Wt lb/bu	Protein %
Check (no fertilizer applied)	34.0	0	38.7 c	61.6 a	12.9 c
ALL PRE	39.5	160.5	51.6 a	60.6 b	16.0 ab
PRE/POST1	41.0	79.5,79.5	49.7 ab	59.6 c	16.7 a
PRE/POST1/POST2	36.0	55,55,55	47.1 ab	59.6 c	16.4 ab
PRE/POST1/POST2/POST3	48.0	38,38,38,38	47.5 ab	60.2 bc	15.4 b
POST1/POST2/POST3	40.5	0,53,53,53	44.9 b	59.7 c	16.8 a

CV %

8.0 0.7 4.8

*1st application ALL PRE - April 24 (planting)

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

2nd application POST1 - May 25 (5 leaf T2 stage)

3rd application POST2 - June 15 (flag leaf stage)

4th application POST3 - June 29 (heading stage)

2012 Nesson Valley Barley Fertilizer Timing

Treatment	Soil Test (0-36") NO ₃ -N (lb/A)	Fertilizer* lbs N / acre	Yield bu/A	Test Wt lb/bu	Protein %
Check (no fertilizer applied)	63.5	0	63.2 c	49.9 ab	11.0 c
ALL PRE	64.0	116	74.1 abc	48.6 d	12.6 b
PRE/POST1	55.5	62,62	81.4 ab	49.4 c	13.6 ab
PRE/POST1/POST2	64.5	38,38,38	78.2 ab	49.6 bc	13.4 ab
PRE/POST1/POST2/POST3	65.5	29,29,29,29	82.7 a	49.6 bc	12.8 ab
POST1/POST2/POST3	48.5	0,44,44,44	71.6 bc	50.1 a	13.8 a

CV %

9.6 0.6 5.2

*1st application ALL PRE - April 24 (planting)

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

2nd application POST1 - May 25 (5.5 leaf T2 stage)

3rd application POST2 - June 15 (flag leaf stage)

4th application POST3 - June 29 (heading stage)

This project will be conducted again in 2013. Additional years of research are needed to fully assess the effects of fertilizer timing on small grain production. A site will be selected that has a lower soil NO₃-N. Irrigation needs and N needs will be monitored more closely to maintain efficient use of fertilizer crop use. As always remember that one year's data should always be used with caution.

Comparing Tillage Systems (conventional, minimum, no-till) With Overhead Irrigation Using a 3-Year Crop Rotation of Corn, Soybean, and Barley (Nesson Valley 2012)

Tyler Tjelde and James Staricka, NDSU Williston Research Extension Center

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 we hope to answer include. How is tillage going to affect the quality of our soil? Will soil quality affect crop production when irrigation is involved? What are the benefits of selecting the proper tillage to match the specific crop?

Methods

A three-year crop rotation of corn, soybean, and barley was initiated in the spring of 2008. The plots are setup in strips, 50 feet by 200 feet, and replicated four times in a split block design. Tillage of the conventional plots was initiated in the fall following harvest. In the spring, additional tillage was done to the conventional tillage plots. Conventional tillage consisted of multiple passes (6 total) with a disc, ripper, and mulcher resulting in <30 % residue left. Minimum tillage varied (≤ 2 passes) based on previous crop and was done in the spring prior to planting. Corn residue was aggressively disked (5mph) cutting at a depth of 4 inches while still maintaining >30% residue cover and mulched for firmer seed bed. Barley residue was also disked but ground speed and depth were reduced to maintain the > 30% residue cover and mulched to firm soil seedbed. 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. Crops were seeded with commercial field equipment and each



No-till corn

crop was treated identically regardless of the tillage system during the growing season. 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, and stand counts were measured after planting/crop emergence. Residue amounts are recorded after planting using the Line Transect Method. Residue amounts are in parenthesis in the results section following each tillage treatment. Soil water content, shown in Figure 1, is measured in all three crops and tillage systems to identify crop water needs. Representative areas within the plots are sampled with a plot combine for data collection. Grain yield, proteins, and test weights were measured after harvest. All crop and data analysis is done at the WREC.

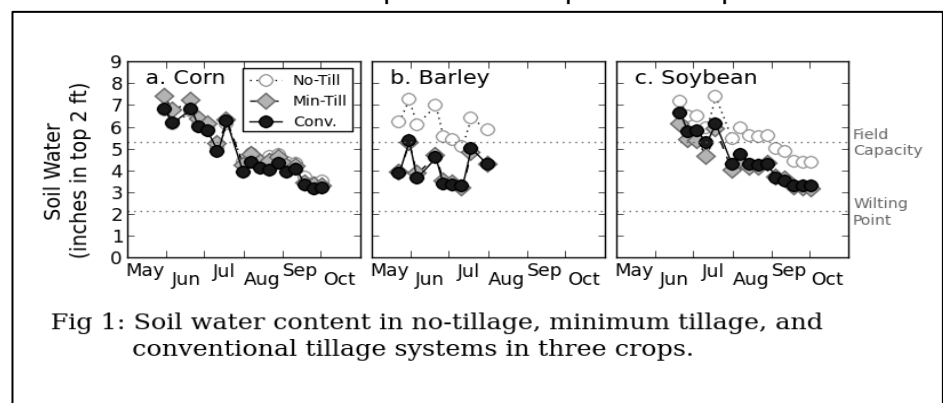
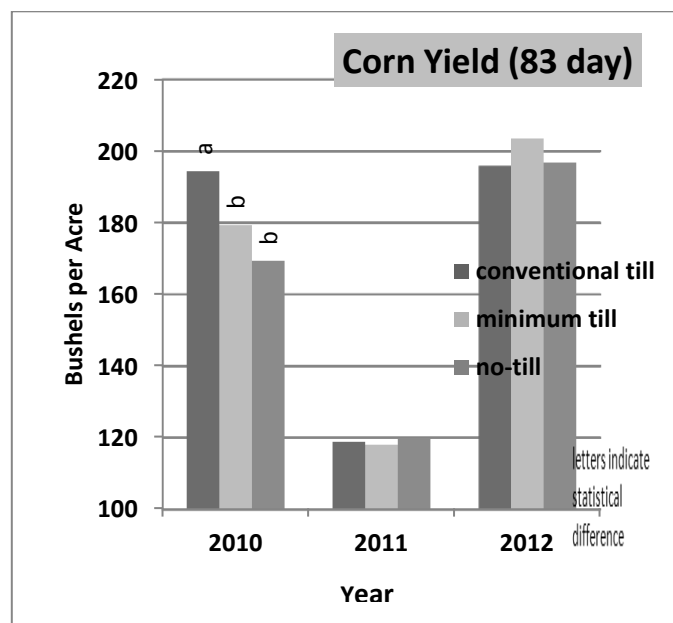
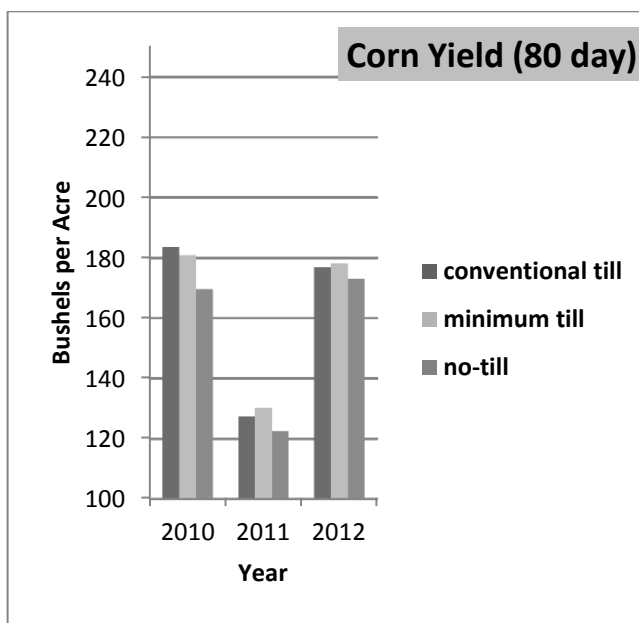


Fig 1: Soil water content in no-tillage, minimum tillage, and conventional tillage systems in three crops.

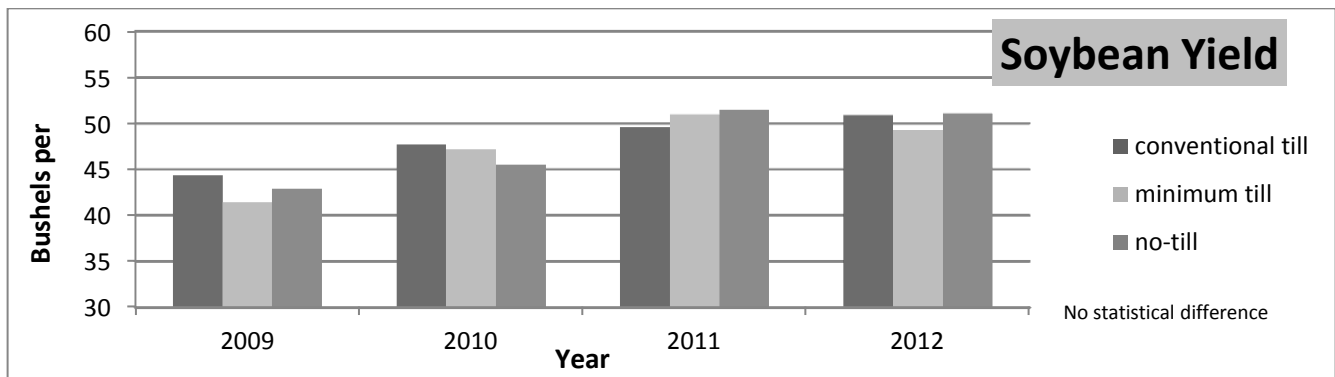
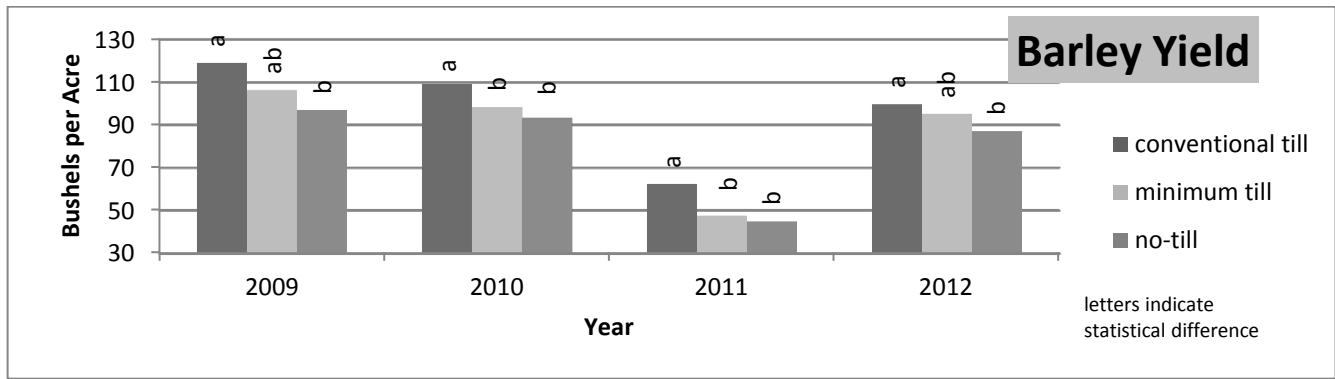
Results

2012 Corn Performance						
Tillage (residue cover)	80-day variety			83-day variety		
	Yield	Test wt.	Moisture	Yield	Test wt.	Moisture
	<i>bu/A</i>	<i>lb/bu</i>	%	<i>bu/A</i>	<i>lb/bu</i>	%
Conventional till (10.8 %)	177 a	59.8 a	15.7 a	196 a	57.6 ab	17.1 b
Minimum till (33.3%)	178 a	59.8 a	15.4 a	203 a	58.4 a	17.2 b
No - till (81.5%)	173 a	59.5 a	15.8 a	197 a	56.9 b	17.5 a
CV (%)	4.5	0.6	4.9	2.3	0.9	0.5
Previous Crop: Barley		Planted: May 10, 2012		Harvested: October 25, 2012		
In the tables, numbers followed by the same letter are not significantly different (0.05)						



2012 Barley Performance			
Tillage (residue cover)	Yield	Test wt.	Protein
	<i>bu/A</i>	<i>lb/bu</i>	%
Conventional till (20.0 %)	99.6a	48.5a	11.9a
Minimum till (57.5%)	95.2ab	49.2a	11.3b
No - till (88.5%)	87.1b	49.3a	10.9b
CV (%)	7.2	1.2	1.8
Planted: April 10, 2012		Harvested : August 2, 2012	
Previous Crop: Soybean			
In the tables, numbers followed by the same letter are not significantly different (0.05)			

2012 Soybean Performance			
Tillage (residue cover)	Yield	Test wt.	Protein
	<i>bu/A</i>	<i>lb/bu</i>	%
Conventional till (21.8 %)	50.9a	57.1a	32.1a
Minimum till (45.0%)	49.3a	57.1a	31.9a
No - till (87.0%)	51.1a	57.1a	31.7a
CV (%)	8.7	0.9	1.3
Planted: May 23, 2012		Harvested: October 12, 2012	
Previous Crop: Corn			
In the tables, numbers followed by the same letter are not significantly different (0.05)			



Quantifying water use (Water Use Efficiency) in irrigated barley, wheat, potato, sugarbeet, and lentil production on Lihen fine sandy loam soils (Nesson Valley 2012)

Tyler Tjelde and James Staricka, NDSU Williston Research Extension Center

Objectives

The objectives of this project are to investigate different irrigation rates in crop production to improve water use efficiency and refine irrigation scheduling recommendations.

Methods

The experimental design is a Randomized Complete Block Design (RCBD) with four replications of four treatments. Each plot was 50 ft by 60 ft.

The treatments consist of four irrigation rates (100%, 67%, 33%, 0%). The amounts of irrigation to be applied for the 100% treatment rate were determined using the North Dakota Ag Weather Network (NDAWN) irrigation scheduler (<http://ndawn.ndsu.nodak.edu>). The NDAWN scheduler is a checkbook system using soil properties (thickness of soil layers and the water holding capacity of each layer), weather parameters (average daily air temperature, daily solar radiation, daily rainfall), crop properties (root depth and water use based on growth stage, planting date and emergence date), and user-supplied irrigation information (dates and amounts). An observation station of the NDAWN system, listed as "Hofflund" on the NDAWN records, is located on the research site.

Soil water content of top two feet was determined within each plot using a neutron depth moisture gauge. These weekly soil moisture measurements were used to calibrate the checkbook irrigation scheduling system.

A data logging rain gauge was placed within each sugarbeet plot and within the 33%, 67%, and 100% treated potato plots. Rain gauges were adjacent to the neutron gauge access tube. These logging rain gauges are battery-powered and automatically record the date and time of each 0.01 inch of rainfall or irrigation. Data from the gauges were used to determine rain and irrigation rates and duration. The data also provided a means to verify that each plot received the correct irrigation amount.

Total rainfall amount from 1 May to 1 October was normal but June rainfall was above normal and August and September rainfall was below normal (Table 1). The growing season temperatures were normal for the 2012 growing season.

All cultural practices (tillage, fertilizer, planting populations, chemical, and fungicide applications) are the same for all treatments within a crop to minimize the effects of variables other than water usage. Yield and quality analysis for the all crops was done by the WREC except when mentioned otherwise.

Table 1: Rainfall at Nesson Valley

Month	Rainfall	
	Normal	2012
	----- inches -----	
May	2.23	2.92
June	3.08	5.13
July	2.73	2.32
August	1.64	0.62
September	1.22	0.02
Total	10.90	11.01

Results

Sugarbeet

The sugarbeet trial was planted 26 April. The emergence date was 7 May. There were 19 irrigations between planting and harvest, the first on 18 May and the final on 10 September. The amount of water applied to sugarbeet for the four irrigation treatments (100%, 67%, 33% and 0%) was 15.0, 10.0, 5.0, and 0.0 inches, respectively. Rainfall during this time was 11.5 inches, so that the total water received by the four treatments was 26.5, 21.5, 16.5, and 11.5 inches, respectively.

The rainfall and irrigation amounts measured by the recording rain gauges (Fig. 1a) were lower than what was expected. This discrepancy was likely caused by the tendency of tipping-bucket style rain gauges to under-measure intense rainfalls.

The soil was slightly wetter than field capacity for all four treatments on June 5 (Fig 1b). There was little difference in soil water amounts between the 5 June and 22 June readings. The 3.59 inches of rain during this period was probably in excess of crop use and kept the soil from drying.

From 22 June to 18 September, the soil water content in all treatments decreased rapidly and steadily, except for the 18 July measurement date. The 18 July measurement date was less than 24 hours after 1.90 inches of rain occurred.

By July 31, the soil in the non-irrigated treatment had dried to wilting point and lost only a minimal amount of water after that. The soil water content in the other irrigation treatments continued to decrease, but at a slower rate than before. The soil in the full irrigation treatment did not dry appreciatively until after the last irrigation. This indicates that the full (100%) irrigation rate during this time was sufficient to meet the water demand.

Sugarbeet were harvested on 24 September. A sample of sugarbeet from ten feet of row was obtained by hand from each plot and the number of beets was counted. These counts (beets/10ft) were used to determine final plant populations. The yield samples were analyzed at the Sidney Sugars laboratory and tons per acre and sugar and nitrate percentages were determined. Statistically significant differences in yield and sugar existed among the treatments (Table 2).

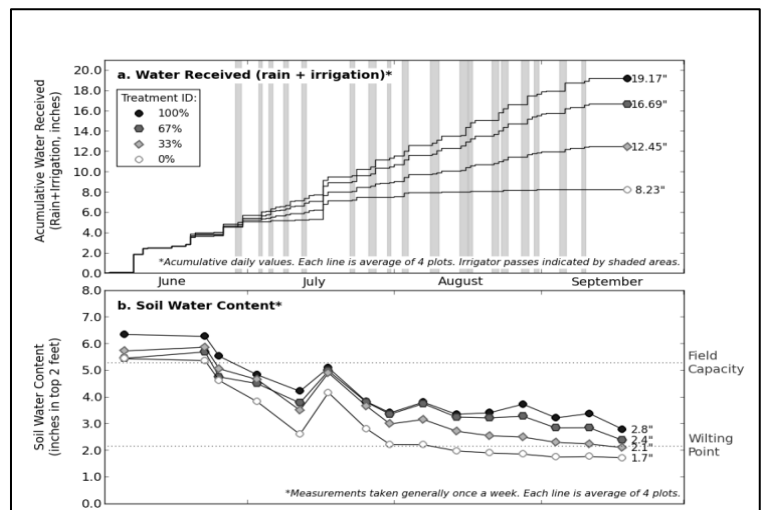


Figure 1: Rainfall, irrigation, and soil water content in sugarbeet.

Table 2. Sugarbeet Performance

Irrigation	Population <i>beets/10ft</i>	Yield <i>ton/a</i>	Sugar <i>%</i>
0%	20.0 <i>a</i>	15.7 <i>__c</i>	22.9 <i>a__</i>
33%	21.0 <i>a</i>	23.3 <i>_b_</i>	21.7 <i>ab_</i>
67%	21.3 <i>a</i>	28.1 <i>ab_</i>	20.2 <i>_bc</i>
100%	19.8 <i>a</i>	32.1 <i>a__</i>	19.4 <i>__c</i>
CV (%)	13.0	16.2	4.6

Numbers within a column followed by the same letter are not significantly different at the 5% probability level.

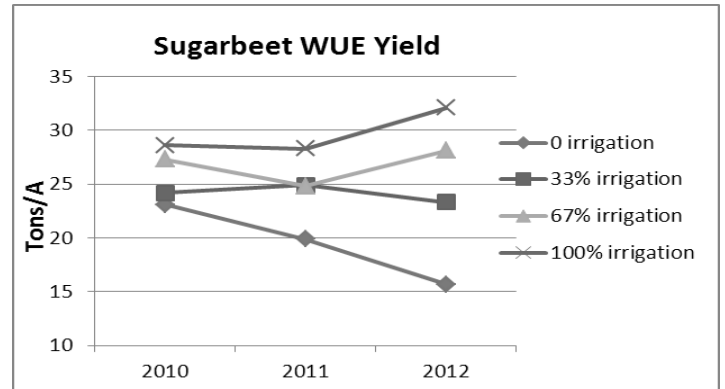


Figure 2: Trends in sugarbeet yield.

Potato

The Potato WUE trial was planted 1 May. The emergence date was 6 June. There were 19 irrigations between planting and harvest, the first on 18 May and the final on 10 September. The amount of water applied for the four the irrigation treatments (100%, 67%, 33% and 0%) was 14.7, 9.8, 4.9, and 0.0 inches, respectively. Rainfall during this time was 11.0 inches, so that the total water received by the four treatments was 25.7, 20.8, 15.9, and 11.0 inches, respectively.

Irrigation amounts and timing for potato (Fig. 3a) were similar to those for sugarbeet. As with the sugarbeet, the amounts measured by the recording rain gauges were lower than what was expected.

The trends in soil water content for potato (Fig. 3b) were similar to those for sugarbeet except for two marked differences. First, the soil in the potato plots did not dry as much as the soil in the sugarbeet plots. Even in the non-irrigated plots the soil did not dry to the wilting point. Second, unlike in the sugarbeet, where the ending soil water contents of the four treatments were spread out evenly, in the potato, the ending soil water contents of the four treatments were segregated into two groups. The soil water content of the two dry treatments differed by less than 0.25 inches as did the soil water content of the two wet treatments. However, the two groups differed by more than each other by 1.75 inches. The cause of this segregation is unknown.

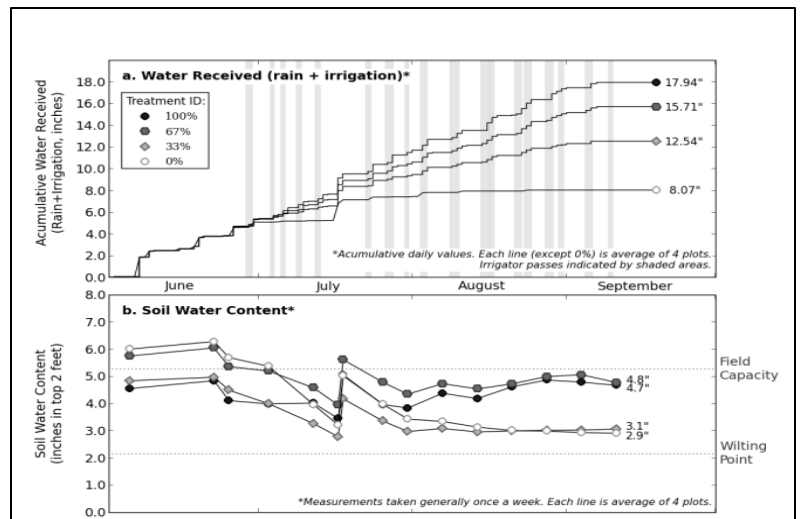


Figure 3: Rainfall, irrigation, and soil water content in potato.

Potatoes were harvested on 11 September. Potatoes from ten feet of row were hand harvested and the tubers were sized and analyzed from each plot treatment. Yield and quality analyses were done at the WREC and J.R. Simplot laboratories. Statistically significant differences in potato yield existed among the treatments (Table 3).

Table 3. Potato performance

Irrigation	Yield <i>cwt</i>	Specific Gravity
0%	242.0 <i>__c</i>	1.084 <i>a</i>
33%	314.1 <i>_b_</i>	1.078 <i>a</i>
67%	374.2 <i>_b_</i>	1.084 <i>a</i>
100%	452.4 <i>a__</i>	1.082 <i>a</i>
CV(%)	12.3	0.4

Numbers within a column followed by the same letter are not significantly different at the 5% probability level.

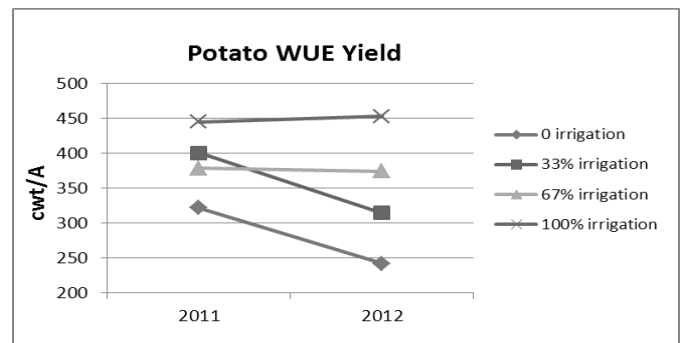


Figure 4: Trends in potato yield.

Barley

Barley WUE trial was planted 10 April. The emergence date was 27 April. The first irrigation for barley occurred on 18 May and the final irrigation occurred on 13 July. There were a total of 8 irrigations, which resulted in 5.1, 3.4, 1.7, and 0.0 inches of water applied, respectively for the irrigation rates of 100%, 67%, 33% and 0%. Total water received (irrigation plus rain) from planting through harvest was 16.4, 14.7, 13.0, and 11.3 inches respectively.

At the beginning of the season, the soil was drier in the barley plots (Fig. 5) than in was in the plots of sugarbeet and potato. The soil wetted up after three rainfalls of more than an inch each (1.4 inches on 27 May; 1.8 inches on 7 June; and 1.55 inches on 17 July). This resulted in the soil being slightly wetter on the last measurement date than on the first. Differences in soil water content among the four treatments on the last measurement date were as expected.

Barley was harvested on 2 August. Yield and quality samples were obtained from each plot using a small plot combine. Statistically significant differences in barley yield and quality occurred among watering treatments (Table 4). Several issues adversely affected barley growth and production this year including considerable amounts of disease late in the growing season.

Table 4. Barley performance

Irrigation	Yield	TW	Plump	Protein
	bu/A	lbs/bu	%	%
0%	51.5 <i>_b</i>	43.7 <i>_b</i>	70.3 <i>_c</i>	12.8 <i>a_</i>
33%	52.7 <i>_b</i>	44.5 <i>_b</i>	72.0 <i>_bc</i>	12.6 <i>a_</i>
67%	58.1 <i>a_</i>	45.4 <i>ab</i>	75.7 <i>_b_</i>	12.0 <i>ab</i>
100%	60.9 <i>a_</i>	47.0 <i>a_</i>	81.2 <i>a_</i>	11.1 <i>_b</i>
CV (%)	5.9	2.4	4.1	5.9

Numbers within a column followed by the same letter are not significantly different at the 5% probability level.

Wheat

The WUE trial was planted 16 April. The emergence date was 30 April. There were a total of eight irrigations to wheat. The first irrigation was 18 May and the final irrigation was on 13 July. The irrigation rates of 100%, 67%, 33% and 0% from 5 July to 7 September resulted in 5.3, 3.5, 1.8, and 0.0 inches of water applied respectively. Total water received from planting through harvest was 16.6, 14.8, 13.0 and 11.3 inches respectively. Soil water content in the wheat plots was near field capacity on the first measurement date (25 May) and decreased steadily till the last measurement date (31 July) except for measurements occurring after large rains (Fig 7). The spread in the soil water content among treatments on the last measurement date was similar to that occurring in sugarbeet and barley.

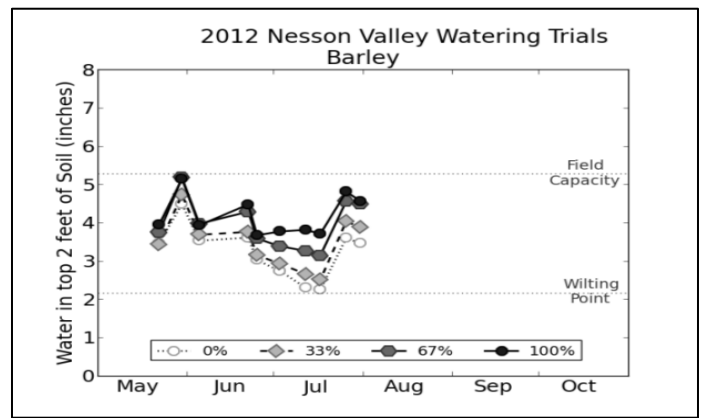


Figure 5: Soil water content in barley.

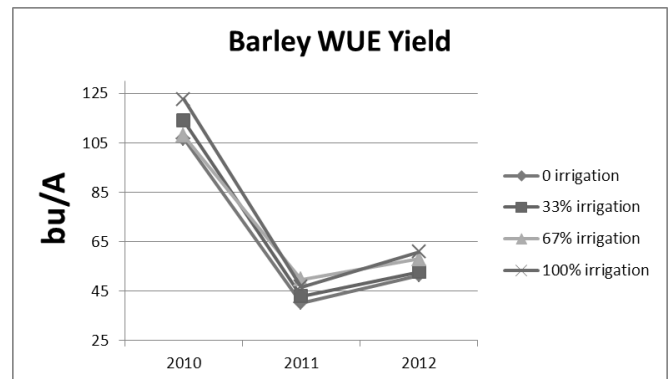


Figure 6: Trends in barley yield.

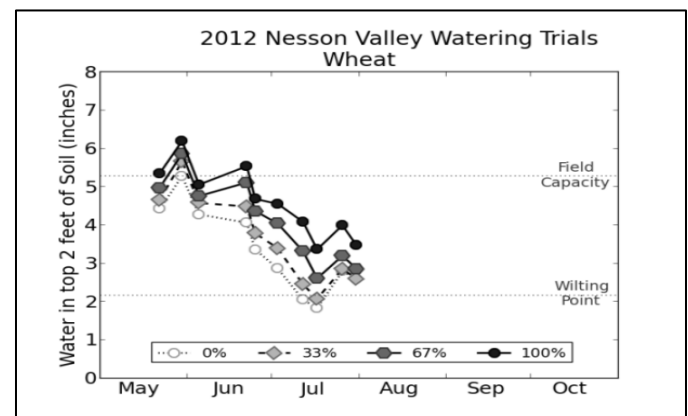


Figure 7: Soil water content in wheat.

Wheat was harvested on 6 August. Yield and quality samples were obtained from each plot using a small plot combine. Statistically significant differences in barley yield and quality occurred among watering treatments (Table 5).

Table 5. Wheat Performance

Irrigation	Yield	TW	Protein
	<i>bu/A</i>	<i>lbs/bu</i>	<i>%</i>
0%	54.7 <i>_b</i>	49.6 <i>_c</i>	16.9 <i>a_</i>
33%	62.2 <i>_b</i>	52.2 <i>_bc</i>	15.9 <i>ab</i>
67%	65.8 <i>_b</i>	54.5 <i>ab_</i>	15.6 <i>ab</i>
100%	80.7 <i>a_</i>	56.2 <i>a_</i>	15.0 <i>_b</i>
CV (%)	10.9	4.5	4.9

Numbers within a column followed by the same letter are not significantly different at the 5% probability level.

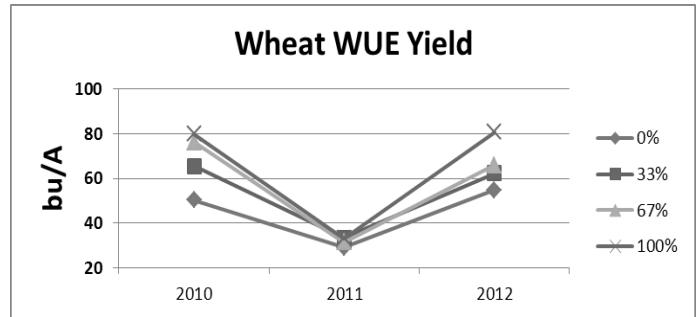


Figure 8: Trends in wheat yield.

**Sprinkler Irrigated Onion
Sidney, MT**

Cultivar	Color	Stand, Plants/ac	% Single Centers	Average Weight, oz	Average Diameter Inches	% < 2.25 Inches Diameter	% > 3 Inches Diameter	Yield lbs/ac
Ruffian	yellow	42540	70.0	9.10	3.05	14.8	62.4	26300
Montero	yellow	43220	72.5	9.45	3.03	21.5	58.1	25660
T-866	yellow	44240	36.8	9.20	3.03	14.4	61.3	25250
Swale	yellow	40840	57.5	9.63	3.05	16.5	65.2	24650
Maverick	yellow	38120	45.0	9.58	3.03	20.2	60.0	22910
Granero	yellow	35390	52.5	10.50	3.15	9.3	61.7	22180
Barbero	yellow	28250	67.5	12.40	3.30	8.0	71.8	22110
Belmar	yellow	41180	57.5	8.53	2.90	15.7	52.0	22100
Campero	yellow	37430	52.5	8.45	3.00	10.9	55.9	22090
Cruiser	yellow	49350	27.5	6.63	2.68	28.4	42.0	20480
Valero	yellow	35730	57.5	7.98	2.95	15.5	54.3	20390
Frontina	yellow	34710	65.0	9.20	3.15	21.7	59.2	19860
Ventura	yellow	46960	47.5	6.28	2.58	26.5	25.7	18510
NiZ 37-81	yellow	33010	95.0	8.03	2.80	24.1	58.3	16610
Outlaw	yellow	39480	47.5	6.63	2.58	30.2	35.8	16260
Elbrus	yellow	41180	42.5	6.18	2.65	30.0	33.7	16000
Hendrix	yellow	41520	37.5	5.88	2.48	31.7	27.4	15130
Marenge	red	32330	50.0	6.95	2.78	23.5	48.1	13990
Trekker	yellow	36070	40.0	5.83	2.60	18.2	26.6	13210
Marquette	yellow	33690	72.5	6.03	2.65	20.2	34.0	12800
Frontier	yellow	51390	22.5	4.53	2.38	42.3	15.2	12460
Ruby Ring	red	37090	47.5	5.08	2.45	31.1	18.0	12080
Trailblazer	yellow	38800	30	4.15	2.35	47.9	11.8	10110
LSD 0.05		9292	23.0	2.07	0.32	24.1	13.8	5568

Planted: May 2, 2012

Harvested: September 25, 2012

Previous Crop: Sugarbeet

Horticulture Program

Kim Holloway, NDSU Williston Research Extension Center

After a dry, short winter the 2012 growing season began early and ended late. A total of 9.89-inches of precipitation fell, a 0.56-inch deficit from normal. The WREC received no rain from August 25 - September 26. There were no days of 100 degree F, but many in the 80's and 90's, especially during this time (August 25- September 26) when no rain was received.

Grapes

We conducted 3 studies of grapes, which were harvested between September 6th and September 18th, 2012:

1. Variety trial: Comparison of 21 different varieties grown under the same conditions as part of a study of cold climate grapes.
2. Depth of planting: Assessment of 3 planting depths: 1 foot, 2 foot, and 3 foot and two varieties (St. Croix and Edelweiss) to determine which planting depth shows most plant vigor, grape production, disease- and pest-resistance.
3. Irrigation study: How much does water play into vine health? What is the optimum amount for our semi-arid area?

The 2012 grape crop produced well in all the trials, even without irrigation. The vines were healthy, without disease or obvious pests. We harvested, altogether, 387.6 lbs. (from 392 available plants, 195 grapevines produced grapes).

Variety Trial:

The trial contained 240 plants, of which 74 produced grapes with no apparent diseases. These seventy-four vines produced good-looking, small-berried clusters of tightly held fruit. Even though we netted the vines at veraison, the birds ate approximately 50% of the berries, so yield was significantly reduced. The birds preferred red grapes, but caused damage to all the varieties.

Variety Trial	Brix ¹	pH ¹	RU ²	Yield			3-yr. Avg.	# Vines Producing
				2010	2011	2012		
ES 5-4-71	16.0	3.4	186.1	0.7	1.0	0.3	3.8	3
La Crescent	23.2	3.3	255.7	2.3	19.1	7.1	9.5	9
Frontenac Gris	23.9	3.3	252.2	2.4	6.8	2.2	3.8	4
Valiant	21.8	3.4	247.6	18.8	22.9	6.7	16.1	10

*"If you are constantly looking behind you, you will run into something you didn't see."
Rusty O'Neill*

Variety Trial	Brix ¹	pH ¹	RU ²	Yield			3-yr Avg.	# Vines Producing
Variety				2010	2011	2012		
St. Croix	20.0	3.3	223.1	2.2	10.0	1.3	4.5	7
Frontenac	26.6	3.2	279.2	7.2	14.5	0.8	7.5	7
King of the North	23.2	3.3	251.8	8.4	12.7	5.1	8.7	11
ES 12-6-18	25.7	3.3	272.8	11.5	13.5	0.1	8.4	10
MN1200	28.0	*	*	2.6	10.4	0.0	4.3	4
MN 1131	28.0	3.3	303.1	9.7	11.6	0.8	7.7	4
ES 15-53	*	*	0.0	7.1	13.1	0.4	6.9	1
Brianna	*	*	0.0	0.0	0.0	0.0	0.0	1
Petite Amie	24.4	3.3	267.3	0.0	0.0	0.1	0.0	1
Marechal Foch	20.2	3.5	240.4	0.0	0.0	0.1	0.0	1
Somerset Seedless	*	*	0.0	3.0	5.6	0.0	2.9	0
Sabrevois	*	*	0.0	1.5	4.5	0.0	2.0	0
River Grape	*	*	0.0			0.0	0.0	0
Prairie Star	*	*	0.0	0.1	0.3	0.0	.1	0
Bluebell	*	*	0.0	2.7	3.5	0.0	6.2	0
Baltica	*	*	0.0	1.4	9.9	0.2	3.8	1
Total	--	--	--	81.6	159.3	25.0	--	74

¹ Brix and pH measured at harvest.

² RU = Brix * pH² (target for white grapes = 200, for red grapes = 260).

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

Depth of Planting Study:

Fifty-seven vines of two different grapes (Edelweiss and St. Croix) with no applied fertilizer or irrigation water produced roughly 80% of the grapes harvested (310.5 lbs.). For the Edelweiss, the 2 foot depth produced the best at 58 lbs., and for St. Croix, the 1 foot depth produced best at 81 lbs. Interestingly, the Edelweiss 3 foot depth had the least production, yet the 4-3 foot depth vines produced 35.5 lbs. (almost 9lbs/plant). For this study the average yield of grapes per plant was 5.91 lbs. per vine.

Variety	Brix	pH	RU	Yield (lbs.)			3-yr Avg.	# Vines Producing
				2010	2011	2012		
Edelweiss 1'	16.6	3.4	195.2	.2	6.0	49.9	18.7	11
Edelweiss 2'	16.4	3.4	193.7	.2	2.2	58.0	20.1	9
Edelweiss 3'	18.0	3.4	211.8	.4	11.1	35.5	23.4	4
St. Croix 1'	20.7	3.5	252.5	18.7	29.0	81.0	42.9	12
St. Croix 2'	20.0	3.5	245.0	3.2	8.9	46.7	19.6	11
St. Croix 3'	22.0	3.4	260.3	4.6	28.5	48.3	27.1	10

Irrigation Study:

This study consists of Frontenac grapes with 4 different irrigation water phases. No irrigation was applied. Our sprinkler system wasn't completed in time. The 64 available vines produced 52 lbs. of grapes.

Raspberries

The WREC grows 4 raspberry varieties; Boyne, Reveille, Nova, and K81-6. The taste-test favorite was Boyne. The raspberries were harvested this year between June 6th and July 10th, 2012. Next year we plan to assess if raspberries under the high tunnel protection begin growing and ripening earlier and producing more than those not covered.

Juneberries

We began the growing season this year by establishing over 250 Juneberry plants. In 2013 data will be collected to determine which varieties perform best in our climate. We're very excited about the possibilities for growing Juneberries in our area. Check back next year!

Hops

Six different varieties (4 vines each) produced almost 4 lbs. of spicy hops. Each year we hope to obtain greater yields from each vine. Centennial and Willamette produced green growth, but had fewer, smaller hops than the other varieties. We will continue to monitor their production in 2013 and are excited to collect information on the new variety Nugget.

Hops Yields			
Yield (grams)	2010	2011	2012
Cascade	335	370	425
Centennial	305	175	95
Chinook	300	400	712
Glacier	205	290	125
Willamette	165	210	75
Nugget			360
Total	1310	1445	1792

Rhubarb

Five different rhubarb varieties were harvested on June 7-8, 2012. The early spring resulted in a harvest of 82.2 lbs.

Sweet Potato (Nesson Valley, irrigated)

The first planting of a sweet potato trial occurred on June 11, 2012 and the second planting on June 21, 2012. The plots were harvested for yield on September 12 and 13, 2012.

Trial #1

Variety	#1 cwt/a	Petite cwt/a	Jumbo cwt/a	Com. Cwt/a	Total cwt/a
Georgia Jet	31.4	8.4	9.7	99.2	148.8
Carolina Ruby	60.6	18.4	0.0	42.3	121.3
Beauregard	144.0	40.0	4.6	56.6	245.3
Covington	99.4	87.2	0.0	35.0	221.6
O'Henry	45.9	189.9	2.2	17.6	255.5
Total	381.3	413.6	16.5	250.7	--

Trial #2

Variety	#1 cwt/a	Petite cwt/a	Jumbo cwt/a	Com. cwt/a	Total cwt/a
Beauregard	11.6	4.4	0.0	8.4	24.3
Carolina Ruby	2.9	2.2	8.7	3.6	17.4
Covington	15.1	10.9	0.0	1.8	27.9
Manhan/Bradshaw	31.9	4.7	0.0	2.5	39.2
B-18	23.2	21.8	0.0	24.3	69.3
Maryland 810	4.0	5.1	0.0	20.0	29.0
MD-7-93	0.0	1.1	0.0	0.0	1.1
MD-253	5.8	16.0	0.0	23.0	45.1
Totals	94.6	66.1	8.7	83.9	--

Onion Trial (Nesson Valley, irrigated)

Variety	30 onions cut per variety							
	wt. (lb)	lb/acre	Center		Size			
			Single cell	Dbl cell	<2.25"	2.25-3"	3-4"	>4"
Ruby Ring	30.7	4954.6	17	3	10	10	0	0
Campero	80.8	13029.3	22	8	9	20	1	0
Ventura	83.2	13426.2	20	10	6	17	7	0
Marengo	101.5	16378.6	21	9	10	19	1	0
Cruiser	71.6	11557.9	24	6	10	15	4	0
Marquette	24.9	4020.4	25	5	13	15	2	0
Trailblazer	110.2	17783.8	23	7	7	13	10	0
Valero	109.5	17664.4	22	8	9	14	7	0
Belmar	83.9	13535.9	8	12	4	11	6	0
Swale	76.5	12340.4	27	3	9	9	10	0
Granero	69.5	11204.6	23	7	7	16	7	0
Maverick	89.1	14366.7	24	6	8	14	8	0
Frontino	62.5	10075.3	30	0	17	12	1	0
Trekker	85.4	13777.9	27	3	12	14	4	0
NiZ 37-81	46.0	7413.3	18	2	2	13	3	2
Hendrix	66.2	10672.2	14	6	6	11	3	0
Outlaw	75.4	12159.7	26	4	6	21	3	0
Elbrus	59.0	9510.6	20	10	6	18	6	0
T-866	84.8	13682.7	22	8	9	19	2	0
Ruffian	86.2	13898.9	28	2	11	16	3	0
Montero	65.1	10504.4	20	10	6	18	6	0
Barbero	39.2	6325.9	27	3	7	17	6	0
Frontier	49.6	7998.9	21	9	14	14	2	0
Totals	1650.5		509	141	198	346	102	2

Twenty-three varieties of onions were planted on May 9th, 2012 and harvested on September 12th, 2012.

Demonstration beds

The demonstration flower beds highlighted annual flowers available from Ball-Pan American Seeds and others. The flowers included varieties of petunias, sweet peas, zinnias and many others. Some lasted beautifully well past first frost.

All–America Selections Demonstration

We entered the landscape contest for our new addition's garden and anticipate doing the same next year. If interested, the winning gardens can be viewed at <http://www.all-americanselections.org>. The flowers used in the design were similar to what was used in the demonstration beds, including AAS winners from several different years. We enjoyed lovely colors, textures, and sizes all summer long.

"Flowers always make people better, happier, and more helpful; They are sunshine, food and medicine for the soul."
Luther Burbank

Tomatoes and Peppers

One hundred thirty-two tomato plants produced 300.4 lbs. of sweet, delicious slicing-, cherry-, and grape tomatoes.

Forty-eight pepper plants produced 69.8 lbs. of orange, yellow, red, and brown peppers. They ranged in flavor from mild and sweet to hot and hotter. My two favorites had qualities of both the sweet and the hot. They tasted good raw in salads or cooked in any kind of dish and made the **best** fresh salsa!

2012 Tomatoes	Total Wt.(lbs.)	Total # Fruits
Indeterminate		
Super Beefsteak	14.3	30
Endless Summer	1.9	17
Burpee's Big Boy Hybrid	1.8	9
Kada Hybrid VFFAST	15.2	82
Quimbaya Hybrid	2.1	15
Purple Russian	0.7	4
Porter	2.2	47
Power Pops	22.8	1651
Cherry Punch	0.0	0
Solar Power	0.0	0
Gretel'/tomande	4.4	307
Semi-Determinate		
Celebrity Hybrid VFFNAsT	17.7	75
Lizzano F1	14.6	822
Determinate		
Celebration	6.1	15
Marglobe	14.0	114
Viva Italia Hybrid VFFNAsT	43.1	268
Saucey	18.6	166
Martino's Roma	14.7	154
Golden Fresh Salsa Hybrid	13.2	112
MiRoma Hybrid VFFN	32.5	178
Margherita Hybrid VF	26.0	213
Capaya Hybrid VFAsTTSWV	1.1	13
Health Kick Hybrid VFFAsT	0.1	1
Terenzo F1	12.0	649
Burpee's Summer Choice	0.0	0
Tomande	21.4	1559
Total	300.4	6501

2012 Peppers	Total Wt.(lbs.)	Total # Fruits
Orange Blaze	11.1	106
Cayennetta	6.6	474
Mariachi	8.7	107
Sweet Heat	10.6	174
Holy Mole	6.2	80
Golden Treasure	12.7	101
Carmen	11.0	68
Cajun Bell	2.9	89
Total	69.8	1199



*"A good garden may have some weeds."
Thomas Fuller*

North Dakota Home Garden Variety Trial 2012

Every year Tom Kalb, NDSU Extension, offers home gardeners the chance to try some new and older varieties of flowers, vegetables, melons, and herbs. The WREC joined over 200 participating North Dakota gardeners in planting melons, cucumbers, eggplant, squash, pumpkins, cabbage, beans, flowers and more. What fun! WREC planted everything, grew, and harvested so much produce we couldn't give it away fast enough. So we dried everything we had left. Soup this winter! If you are a gardener interested in joining this study, contact Mr. Kalb at tom.kalb@ndsu.edu for more information. To view 2011 results, go to <http://www.dakotagardener.com/trials/>. Results from 2012 will be out sometime soon.

NEWS ON AGRICULTURE DIVERSIFICATION/PROCESSING

CHET HILL, NDSU AREA AG DIVERSIFICATION EXTENSION SPECIALIST

If we thought 2011 was a different weather year with all the snow, well 2012 was the exact opposite. The region received less than 20 inches of snow. This spring planting started earlier with some growers planting in March. We got some much needed moisture during planting but the warm weather that followed affected crops in the blooming stage reducing yields.

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

CROPS – The cool spring and timely early rain brought very good yields for the winter wheat crop in the region. Spring wheat and durum yields were all over the board depending when one planted. The early seeded crop did well while the later planted spring wheat yields were poor due to the lack of moisture. There were reports of isolated areas with fusarium headblight or scab. Also with the dry fall and winter several reports of herbicide residual symptoms were noticed early this spring but the crops seemed to grow out of it as the season progressed. Field pea acres in North Dakota remained around 82,000 acres and lentils acres doubled to 152,000. The bright spot is grain prices rebounded, but many producers do not have the bushels to sell.

For the producers utilizing irrigation the warm late season crops like corn, soybeans, sunflowers did well this year. The warmer summer weather assisted in the maturing of the full season crops. Many producers indicated they received excellent yields and were able to get the crop off earlier than normal. Disease scouting and fungicide management are still the keys to improve yield and quality management. Pulse and oilseed crops work but growers need to apply best management practices including crop rotation and scouting fields frequently to stay on top of potential disease pressure and disease control. Tools are available like the NDAWN weather system website, <http://ndawn.ndsu.nodak.edu/>, to assist producers on the risk of disease based on weather conditions.

There is still a strong push of switching from flood irrigation to pivot irrigation especially in the Lower Yellowstone Valley. As farms are getting larger, higher grain market prices and a shrinking labor force, producers are switching to the more efficient pivot irrigation.

This year WREC conducted off-station plots at Arnegard, New Town and Crosby. Barley, spring wheat, durum, field peas, conventional lentils and

Clearfield lentils were included in the sites. A cover crop demonstration plot was also planted at each off-station plot. Fall seeded cover crops have seen limited success in our region. Fall seeded cover crops mixes should be planted by mid-August so that adequate growth can occur. Adequate soil moisture and insect issues are the biggest concerns with fall seeded cover crops. The spring/summer seeded cover crops yields continue to generate three to four tons of biomass.

WREC – Gordy Bradbury, Agronomy Research Specialist, and Lorna Bradbury, Horticulturist, retired in August and moved to Minnesota. As a result, WREC is currently searching for an agronomy research specialist and a horticulturist in addition to an agronomist.

As in the past I utilize the off-station variety trial plots along with the same varieties here at the center to develop information that would assist a producer in making variety selections. Each of tables has overall averages both in ranking and yield to compare how a particular variety performed among the rest of the varieties. You will find these results at the Williston R/E Center website - <http://www.ag.ndsu.nodak.edu/williston/>

PROJECTS – I continue to receive inquiries from pulse crop processors to determine the viability of Mondak locations for possible processing plants. An interesting project I was involved with was updating the map for the Mondak region showing the number and location of irrigation pivots. The objective of the irrigation map and crop acre tables is to provide updated information to companies considering locating a process plant in our region and the potential irrigated acres available to provide needed product. Currently, there are approximately 700 pivots in the region that stretches from Glasgow, MT to Stanley, ND and from Fortuna, ND to Miles City, MT. The Mondak region has the opportunity to expand irrigated acres by another 250,000 acres.

WREC FOUNDATION SEED INCREASE UPDATE

Kyle Dragseth, Sanford Qvale, Kaitlyn Stromme, NDSU Williston Research Extension Center

Hello to all! We hope you all had a great 2012 growing season and are getting geared up for another great year in 2013. Our foundation seed increase program is keeping plenty busy during the winter months cleaning grain and preparing for what we hope is another successful year!

We are very excited that through a cooperative effort with the North Dakota Game and Fish Department we have acquired a lease on 886 acres located on the River bottoms of the Lewis and Clark Wildlife Management Area. This parcel of land is located only 2 miles south of our existing Research Extension Center and will serve as a useful addition to our Seed Increase Program, allowing us to grow more varieties and volume of new and existing varieties.

As most of you probably know the 2012 year started out with excellent moisture up until July when it started to dry out. Due to the dry conditions the existing WREC land yielded average to below average, however, the Wildlife Management Unit area crops were able to tap down into sub soil moisture and yields were outstanding.

Listed below are the varieties available for sale. Please contact the WREC at 701-774-4315, by writing to the Williston Research Extension Center at 14120 Hwy 2, Williston, ND 58801, or by email to NDSU.Williston.REC@ndsu.edu with any questions on the varieties and for pricing and availability. If you are looking to grow a variety not listed please contact us and we will see if that variety is available at one of our other Research Extension Centers or other sources.

Williston Research Extension Center Foundation Seed Increase

Varieties include the following:

<u>HRSW</u>	<u>DURUM</u>	<u>BARLEY</u>	<u>SAFFLOWER</u>	<u>LENTIL</u>	<u>HRWW</u>
Barlow	Alkabo	Conlon	Finch	Riveland	Decade
Mott	Carpio		MonDak		Ideal
Elgin	Tioga				Jerry
Velva	Mountrail				

Eastern Agricultural Research Center Foundation Seed Increase

Varieties include the following:

<u>HRSW</u>	<u>BARLEY</u>
Vida	Hays
DuClair	

Seed availability and prices can be obtained by calling 406-433-2208, by writing to the Eastern Agricultural Research Center, 1501 N Central Avenue, Sidney, MT 59270, or by email at msu.earc@montana.edu.

Eastern Ag Research Center Staff

Ron Brown	Farm Mech/Research Asst.
Joyce Eckhoff	Agronomist/Superintendent
Charles Flynn	Chemist
Rebecca Garza	Research Assistant
Cherie Gatzke	Administrative Assistant
Calla Kowatch-Carlson	Research Assistant
Mary Schaff	Research Assistant
Renee Sundheim	Research Assistant

Seasonal Employees:

Natalie Conlin	Richard "Red" Lovec
Thomas Gross	Charles "Chuck" Lowman

Summer Employees:

Jorden Cotter	Devin Johnson
Laura Kowatch	Alisha Steffan

Williston Research/Ext Center Staff

Jerald Bergman	Director
Gorden Bradbury	Ag Research Specialist
Lorna Bradbury	Horticulturist
Kyle Dragseth	Ag Research Tech
Chet Hill	Ag Diversification Ext Spec
Kim Holloway	Ag/Horticulture Technician
Justin Loomer	Ag Technician
Sara Loomer	Research Specialist
Rowena Nelson	Administrative Assistant
Chelsey Penuel	Ag/Research Specialist
Sanford Qvale	Seed Production Spec
James Staricka	Soil Scientist
Katie Stromme	Irrigation Research Tech
Tyler Tjelde	Irrigation Scientist
Cameron Wahlstrom	Irrigation Research Spec

Seasonal Employees:

Adam Kemp	Brook Paulson
Eddie Miller	Lynn Staricka
Sandy Spurlock	Greta Stangl
Travis Kuhn	Clara Reinke
Tyler Kolden	

