



Memorandum

To: Wheat Variety Release and Recommendation Committee

From: Dr. Luther Talbert and Susan Lanning

Date: January 5, 2012

Motion

1) A MOTION TO REMOVE CONAN FROM THE MONTANA SPRING WHEAT RECOMMENDATION LIST.

2) A MOTION TO REMOVE FREYR FROM THE MONTANA SPRING WHEAT RECOMMENDATION LIST.

3) A MOTION TO RELEASE IMICHT79, HARD RED SPRING WHEAT.

4) A MOTION TO ADD IMICHT79 TO THE MONTANA HARD RED SPRING WHEAT RECOMMENDATION LIST FOR DISTRICTS 2-6 UNDER DRYLAND CONDITIONS WHERE THE WHEAT STEM SAWFLY IS A PROBLEM (EFFECTIVE February 2012)

5) A MOTION TO ADD DUCLAIR TO THE MONTANA HARD RED SPRING WHEAT RECOMMENDATION LIST FOR DRYLAND AREAS IN DISTRICTS 2-6 (EFFECTIVE February 2012)

6) A MOTION TO ADD BRENNAN TO THE MONTANA HARD RED SPRING WHEAT RECOMMENDATION LIST FOR DISTRICTS 1 AND 5 ON DRYLAND AND DISTRICT 6 UNDER IRRIGATION.(EFFECTIVE February 2012)

7) A MOTION TO ADD SY TYRA TO THE MONTANA HARD RED SPRING WHEAT RECOMMENDATION LIST FOR BOTH DRYLAND AND IRRIGATED AREAS IN DISTRICTS 1-6. (EFFECTIVE February 2012)

Basis for motions

1) Currently there are better varieties than Conan available and there has been no seed production for a number of years. WestBred-Monsanto has approved this motion.

2) Syngenta Seeds (formerly AgriPro) has approved the removal of Freyr from the recommendation list

Crop Science

Entomology

Horticulture

Plant Biology

Plant Genetics

Plant Pathology

**Department of Plant Sciences
and Plant Pathology**
College of Agriculture
119 Ag BioScience Building
PO Box 173150
Montana State University
Bozeman, MT 59717-3150

Telephone: 406-994-5171
Fax: 406-994-7600
plantsciences.montana.edu

3,4) IMICHT79

We propose IMICHT79 to be released with PVP title V protection. It is currently licensed exclusively to WestBred-Monsanto.

IMICHT79 was derived from the cross of Choteau*3//Choteau/IMI8134 made in 2004 to be used as a Clearfield wheat. IMI8134 was an experimental line derived from the cross of CDCTeal11A//McNeal/SWP965001 made in 2003. SWP965001 was a line developed by the Saskatchewan Wheat Pool from the cross of Grandin*3/FS4 (FS4 is Imi Fidel) that had one gene, A1s1, while the Canadian developed line, CDCTeal11A had a second gene, a1s2, which together conferred tolerance to the herbicide, Imazadol. This line was checked to be sure both genes were present through genotyping by PCR and for actual herbicide tolerance in field tests sprayed with Beyond herbicide.

IMICHT79 is an awned semidwarf hard red spring wheat heading one and a half days later than Choteau while plant height is 30 inches the same as Choteau. IMICHT79 has solid stems similar to Choteau averaging 20-23 over two years.

Over the last two years (2010-2011) in the Advanced Spring Wheat nursery IMICHT79 has yielded competitively across 17 locations. IMICHT79 averaged 57 bu/ac compared to 59.6, 58.3 and 58.5 bu/ac for Choteau, Reeder and Vida, respectively (page 5, Table 1). Across six 2010-2011 nurseries with low to moderate sawfly infestations, IMICHT79 averaged 16.5% cutting compared to 19, 12, 28 and 38 % for Choteau, Vida, Reeder and McNeal, respectively (page 15, Table 11). At four of these same nurseries, IMICHT79 averaged 42 bu/ac compared to 40, 44, 40 and 37 bu/ac for those same varieties (page 15, Table 11). IMICHT79 also yielded well across the state in the 2011 offstation spring wheat nurseries. Across seventeen sites, IMICHT79 yielded an average of 49.3 bu/ac compared to 47.7, 45.9, 49.4 bu/ac for Choteau, Reeder, and Vida (page 14, Table 10). (Agronomic summaries for individual locations on Tables 9-11)

IMICHT79 showed good resistance to prevalent races of stem rust at an inoculated nursery near Bozeman in 2010-2011. IMICHT79 has average test weight at 59.7 lb/bu and grain protein averaging 14.1 % across 16 locations (page 5, Table 1). IMICHT79 exhibits acceptable milling and baking quality traits (page 16, Table 12).

5) DUCLAIR

Duclair was released in 2011 with PVP title V protection.

Duclair was derived from the cross of Choteau//ND695/MT9433 made in 2004. ND695 and MT9433 were released in 1999 as “Reeder” and “Scholar” by North Dakota and Montana, respectively. Selection in early generations of development of Duclair was for solid stems, long grain fill duration, increased height and threshability relative to Choteau.

Duclair is an awned semidwarf hard red spring wheat heading one day earlier while growing one inch taller than Choteau. Duclair has solid stems generally more solid than Fortuna but slightly less than Choteau.

Over the last three years (2009-2011) in the Advanced Spring Wheat nursery Duclair has yielded competitively across 24 locations. Duclair averaged 60.9 bu/ac compared to 59.9, 60.9 and 62.1 bu/ac for Choteau, Reeder and Vida, respectively (page 6, Table 2). Across eight 2010-2011 offstation nurseries with low to moderate sawfly infestations, Duclair averaged 15% cutting compared to 17, 13, 24 and up to 34 % for Choteau, Vida, Reeder and McNeal, respectively (page 22, Table 18). At six of these same nurseries, Duclair averaged ~ 39 bu/ac compared to 37, 40, 37 and 35 bu/ac for those same varieties (page 22, Table 18). Duclair also yielded well across the state in the 2011 offstation spring wheat nurseries. Across seventeen sites, Duclair yielded an average of 49 bu/ac compared to 47, 46, 49 bu/ac for Choteau, Reeder, and Vida respectively (page 14, Table 10). (Agronomic summaries for individual locations on Tables 13-17)

Duclair showed good resistance to prevalent races of stem rust at an inoculated nursery near Bozeman in 2009-2011. It has also shown good resistance to stripe rust at Kalispell in 2010 and 2011. Duclair has average test weight at 59.5 lb/bu and grain protein averaging 14.0 % across 24 locations (page 6, Table 2). Duclair exhibits acceptable milling and baking quality traits (page 23, Table 19). Foundation seed is available for planting in the spring of 2012.

6) BRENNAN

Syngenta Seeds, Inc. requests that “Brennan” hard red spring wheat be considered for variety recommendation in the state of Montana. We move that Brennan be especially considered for crop reporting districts 1 and 5 dryland and district 6 under irrigation. In consideration of its combination of early maturity and high protein, Brennan could be considered in all other crop districts as well.

Brennan was developed by Syngenta Seeds, Inc. and released to AgriPro Associates in 2009. Certified seed was available to growers in 2010. PVP was issued in 2009. It is a hollow stemmed, semidwarf, hard red spring variety that has shown good adaptation across the northern plains including several areas in Montana. Brennan was derived from the cross “Reeder//China Scab #140/N90-0690”. The pedigree of N90-0690 is “Amidon//Norseman/Coteau”. China Scab #140 is a Chinese wheat used for its fusarium head blight tolerance.

Brennan has been tested in Montana State Trials for the past three seasons. Its best performances have been in dryland trials at Kalispell and Havre, and under irrigation at Sidney (page 17, Table 13.). Brennan would provide growers with an improvement in yield over Kelby while maintaining Kelby’s high test weight, early maturity and high protein. It has very high test weight, higher than all checks except Volt (page 7, Table 3). It has earlier heading than all checks, similar to Kelby and 2.5 days earlier than Vida (page 7, Table 3). It is a short semi-dwarf, similar to Kelby in height. Protein has averaged above all checks except Kelby (page 7, Table 3). (Agronomic summaries for individual locations on Tables 13-17)

The disease resistance of Brennan has been well documented from testing in North Dakota and Minnesota. It is resistant to stem and leaf rust and has good tolerance to leaf spotting diseases. Its scab rating is intermediate which would make it a good choice for use under irrigation. Based on Kalispell data from 2010 and 2011, it is moderately resistant to stripe rust and tolerant to the orange wheat blossom midge.

Brennan has acceptable overall breadmaking quality (page 23, Table 19). It has slightly shorter mixing time and slightly lower tolerance than average.

7) SY TYRA

Syngenta Seeds, Inc. requests that “SY Tyra” hard red spring wheat be considered for variety recommendation in the state of Montana. We move that SY Tyra be considered for all crop reporting districts for both dryland and irrigated conditions.

SY Tyra originated from a marker assisted backcross program at Montana State University. The purpose was to convert the high yielding hollowed stemmed Syngenta/AgriPro variety “Norpro” to a solid stem background using “Choteau” as the solid stem donor. F2 seed from marker screened F1 plants of the cross “Choteau/4*Norpro” were generated and transferred to Syngenta/AgriPro in 2005. Further selections on this material were made based on phenotypic stem solidness. SY Tyra has exhibited partial stem solidness which has provided reduced stem cutting compared to hollow stemmed varieties. SY Tyra was released to AgriPro Associates in 2011. PVP was applied for in 2011. Certified seed will be available to Montana growers for the 2012 season.

SY Tyra has been tested in Montana State Trials for the past three seasons. It has exhibited very good yields across the state on both dryland and irrigated trials (page 8, Table 4). It has very good test weight averaging 1.3 lbs above Vida (page 8, Table 4). It has medium heading, slightly earlier than Vida. Height is very short, slightly shorter than Kelby (page 8, Table 4). Protein is low, slightly below Volt and Kuntz and 0.4% lower than Vida (page 8, Table 4). (Agronomic summaries for individual locations on Tables 13-17)

Documentation of the disease resistance on SY Tyra has been limited to observations in the western areas. It has fair foliar disease tolerance. It is intermediate to leaf rust and moderately susceptible to stripe rust. It is susceptible to fusarium head blight. Midge tolerance is above average.

SY Tyra has acceptable overall breadmaking quality (page 23, Table 19).

TABLE 1. T-PAIRED RESULTS FOR COMPARING IMICHT79 TO OTHER SELECTED SPRING WHEATS GROWN ACROSS MONTANA

REFERENCE MEAN:	GRAIN YIELD (BU/AC)					TEST WEIGHT (LB/BU)					HEADING DATE (180 = JUNE 29)						
	IMICHT79 = 57.0 (N=17)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	IMICHT79 = 59.7 (N=17)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	IMICHT79 = 185.5 (N=17)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE
FORTUNA	50.5	17	-6.30	-4.40	0.000	60.0	17	0.30	1.30	0.206	185	17	-0.20	-0.90	0.394		
MCNEAL	53.9	17	-2.90	-1.60	0.133	59.2	17	-0.50	-2.20	0.046	186	17	0.50	2.30	0.036		
REEDER	58.3	17	1.50	0.70	0.495	60.5	17	0.80	3.50	0.003	184	17	-1.10	-3.80	0.002		
CONAN	52.2	17	-4.60	-3.40	0.004	60.2	17	0.50	1.90	0.079	185	17	-1.00	-6.40	0.000		
HANK	56.8	17	0.00	0.00	0.981	57.8	17	-1.90	-6.40	0.000	184	17	-2.00	-7.50	0.000		
CHOTEAU	59.6	17	2.80	2.00	0.066	59.7	17	0.00	0.00	0.961	184	17	-1.20	-5.10	0.000		
VIDA	58.5	17	1.70	1.00	0.354	59.4	17	-0.30	-1.50	0.165	185	17	-0.10	-0.60	0.544		
DUCLAIR	62.4	17	5.60	4.10	0.000	58.9	17	-0.80	-2.80	0.012	183	17	-2.70	-10.50	0.000		
CORBIN	56.7	17	-0.10	-0.10	0.919	59.6	17	-0.10	-0.20	0.852	184	17	-1.60	-5.70	0.000		
VOLT	59.6	17	2.80	1.20	0.242	61.2	17	1.60	7.20	0.000	187	17	1.60	4.80	0.000		
ONEAL	55.9	17	-1.00	-0.50	0.623	59.6	17	-0.10	-0.30	0.802	185	17	0.10	0.60	0.534		
JEDD	53.4	17	-3.50	-1.80	0.094	59.7	17	0.10	0.20	0.828	183	17	-1.90	-5.80	0.000		
KELBY	52.7	17	-4.10	-1.60	0.136	60.8	17	1.10	5.80	0.000	183	17	-2.60	-8.60	0.000		
KUNTZ	57.3	17	0.50	0.30	0.773	60.1	17	0.50	1.70	0.114	185	17	-0.60	-2.70	0.015		
AP604 CL	56.2	17	-0.60	-0.40	0.697	60.9	17	1.30	4.20	0.000	183	17	-2.40	-9.20	0.000		
REFERENCE MEAN:	PLANT HEIGHT (INCHES)					GRAIN PROTEIN (%)											
IMICHT79 = 30.9 (N=16)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	IMICHT79 = 14.1 (N=16)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE						
FORTUNA	37.8	16	7.00	16.10	0.000	14.4	16	0.20	1.80	0.084							
MCNEAL	32.7	16	1.80	3.80	0.002	13.6	16	-0.50	-2.40	0.030							
REEDER	32.2	16	1.30	3.30	0.005	14.2	16	0.00	0.20	0.819							
CONAN	30.0	16	-0.90	-2.90	0.012	14.1	16	0.00	0.00	0.983							
HANK	29.6	16	-1.20	-3.60	0.002	13.8	16	-0.30	-2.10	0.053							
CHOTEAU	30.7	16	-0.10	-0.40	0.704	14.2	16	0.10	0.60	0.562							
VIDA	31.6	16	0.70	1.70	0.103	13.7	16	-0.40	-2.30	0.038							
DUCLAIR	31.3	16	0.50	1.60	0.141	13.9	16	-0.30	-1.50	0.152							
CORBIN	31.2	16	0.40	1.10	0.278	13.8	16	-0.30	-2.90	0.011							
VOLT	30.2	16	-0.70	-1.70	0.115	13.4	16	-0.70	-4.30	0.001							
ONEAL	31.3	16	0.40	1.30	0.218	13.8	16	-0.30	-1.50	0.164							
JEDD	26.5	16	-4.40	-11.40	0.000	13.5	16	-0.60	-3.50	0.003							
KELBY	28.2	16	-2.70	-5.00	0.000	14.9	16	0.80	4.70	0.000							
KUNTZ	29.6	16	-1.30	-3.60	0.003	13.4	16	-0.80	-3.60	0.003							
AP604 CL	32.2	16	1.30	2.20	0.046	14	16	-0.20	-0.80	0.452							

TABLE 2. T-PAIRED RESULTS FOR COMPARING DUCLAIR TO OTHER SPRING WHEATS

REFERENCE MEAN:	GRAIN YIELD (BU/AC)				TEST WEIGHT (LB/BU)				HEADING DATE (180 = JUNE 29)								
	DUCLAIR = 60.9 (N=24)	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	DUCLAIR = 59.5 (N=24)	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	DUCLAIR = 181 (N=24)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	
FORTUNA	51.5	24	-9.3	-5.9	0.000	60.6	24	1	6.7	0.000	182.8	24	1.8	6.1	0.000		
MCNEAL	55.9	24	-5	-2.8	0.009	59.9	24	0.3	1.7	0.101	184	24	3	12.9	0.000		
REEDER	60.9	24	0.1	0.1	0.952	60.9	24	1.4	7.2	0.000	182.6	24	1.6	6.1	0.000		
CONAN	51.5	24	-9.3	-5.2	0.000	60.6	24	1.1	4.2	0.000	182.4	24	1.4	8.4	0.000		
HANK	58.9	24	-1.9	-1.1	0.268	58.9	24	-0.6	-2.5	0.021	181.3	24	0.4	2	0.053		
CHOTEAU	59.9	24	-0.9	-1.1	0.284	60.1	24	0.6	3.5	0.002	182.1	24	1.1	4.5	0.000		
VIDA	62.1	24	1.2	0.7	0.500	59.8	24	0.3	1.4	0.166	183.2	24	2.2	9.1	0.000		
CORBIN	56.9	24	-3.9	-3.1	0.005	60.5	24	1	5.2	0.000	181.6	24	0.6	2.6	0.015		
VOLT	59.8	24	-1.1	-0.7	0.502	61.9	24	2.3	11.9	0.000	185	24	4	9.4	0.000		
ONEAL	59.5	24	-1.3	-0.6	0.553	60.5	24	1	3	0.006	183.5	24	2.5	11.7	0.000		
JEDD	55	24	-5.9	-2.6	0.017	60.8	24	1.3	4.1	0.000	181.3	24	0.4	1.4	0.168		
KELBY	52.2	24	-8.7	-4.2	0.000	61.2	24	1.7	8	0.000	180.8	24	-0.2	-0.9	0.353		
KUNTZ	57.3	24	-3.5	-2.3	0.034	60.7	24	1.2	5.4	0.000	182.8	24	1.9	9.7	0.000		
AP604 CL	55.6	24	-5.2	-2.9	0.008	61.4	24	1.9	9.2	0.000	180.9	24	-0.1	-0.3	0.765		
BRENNAN	55.7	24	-5.2	-2.5	0.020	61.5	24	2	8.5	0.000	180.7	24	-0.2	-1.2	0.261		
SY TYRA	61.6	24	0.8	0.5	0.642	61.1	24	1.5	5.6	0.000	182.9	24	1.9	7.5	0.000		
REFERENCE MEAN:	PLANT HEIGHT (INCHES)					GRAIN PROTEIN (%)											
	DUCLAIR = 30.2 (N=23)	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	DUCLAIR= 14.0 (N=24)	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE							
FORTUNA	36.3	23	6.1	16.2	0.000	14.3	24	0.4	2.2	0.042							
MCNEAL	31.3	23	1.1	2.9	0.008	13.9	24	0	-0.1	0.931							
REEDER	30.9	23	0.7	2	0.057	14.3	24	0.4	3.2	0.004							
CONAN	29	23	-1.2	-4.6	0.000	14.3	24	0.3	2	0.057							
HANK	28.6	23	-1.6	-7	0.000	13.8	24	-0.1	-1.1	0.298							
CHOTEAU	29.4	23	-0.8	-3.4	0.003	14.4	24	0.5	4.4	0.000							
VIDA	30.5	23	0.3	1	0.311	13.7	24	-0.3	-1.8	0.077							
CORBIN	29.9	23	-0.3	-1.1	0.281	13.9	24	0	-0.2	0.868							
VOLT	29.3	23	-0.9	-3.3	0.003	13.4	24	-0.5	-3.1	0.005							
ONEAL	30.3	23	0.1	0.3	0.791	13.8	24	-0.1	-0.7	0.494							
JEDD	25.4	23	-4.8	-17.9	0.000	13.7	24	-0.2	-1.6	0.130							
KELBY	27.5	23	-2.7	-11.5	0.000	15	24	1.1	5.9	0.000							
KUNTZ	28.6	23	-1.6	-6	0.000	13.4	24	-0.6	-4.3	0.000							
AP604 CL	30.4	23	0.2	0.5	0.609	14.3	24	0.4	2.6	0.016							
BRENNAN	27.6	23	-2.6	-7	0.000	14.6	24	0.7	4.5	0.000							
SY TYRA	26.7	23	-3.5	-15.5	0.000	13.3	24	-0.7	-5	0.000							

TABLE 3. T-PAIRED RESULTS FOR COMPARING BRENNAN TO OTHER SPRING WHEATS

REFERENCE MEAN:	GRAIN YIELD (BU/AC)					TEST WEIGHT (LB/BU)					HEADING DATE (180 = JUNE 29)				
	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
	BRENNAN = 55.7 (N=24)					BRENNAN = 61.5 (N=24)					BRENNAN = 180.7 (N=24)				
FORTUNA	51.50	24	-4.10	-2.50	0.022	60.6	24	-0.9	-4.3	0.000	182.8	24	2	7.1	0.000
MCNEAL	55.90	24	0.20	0.10	0.928	59.9	24	-1.6	-6.8	0.000	184	24	3.3	10.8	0.000
REEDER	60.90	24	5.30	3.50	0.002	60.9	24	-0.6	-2.8	0.010	182.6	24	1.9	5.9	0.000
CONAN	51.50	24	-4.10	-2.00	0.053	60.6	24	-0.9	-3.8	0.001	182.4	24	1.7	8.5	0.000
HANK	58.90	24	3.20	1.50	0.143	58.9	24	-2.6	-9.2	0.000	181.3	24	0.6	3.1	0.005
CHOTEAU	59.90	24	4.30	1.90	0.065	60.1	24	-1.3	-7	0.000	182.1	24	1.4	5.1	0.000
VIDA	62.10	24	6.40	3.10	0.005	59.8	24	-1.7	-8.1	0.000	183.2	24	2.5	9.6	0.000
DUCLAIR	60.90	24	5.20	2.50	0.020	59.5	24	-2	-8.5	0.000	181	24	0.2	1.2	0.261
CORBIN	56.90	24	1.20	0.60	0.527	60.5	24	-0.9	-3.9	0.001	181.6	24	0.8	4	0.000
VOLT	59.80	24	4.10	1.70	0.098	61.9	24	0.4	1.6	0.132	185	24	4.2	9.7	0.000
ONEAL	59.50	24	3.80	1.50	0.139	60.5	24	-1	-2.9	0.009	183.5	24	2.8	10.5	0.000
JEDD	55.00	24	-0.70	-0.30	0.786	60.8	24	-0.7	-2.6	0.017	181.3	24	0.6	2.9	0.008
KELBY	52.20	24	-3.50	-3.50	0.002	61.2	24	-0.3	-3.1	0.005	180.8	24	0	0.2	0.819
KUNTZ	57.30	24	1.70	1.10	0.301	60.7	24	-0.8	-3.7	0.001	182.8	24	2.1	10.8	0.000
AP604 CL	55.60	24	-0.10	-0.10	0.951	61.4	24	-0.1	-0.6	0.557	180.9	24	0.2	0.9	0.400
SY TYRA	61.60	24	5.90	3.10	0.005	61.1	24	-0.4	-1.7	0.112	182.9	24	2.1	8.6	0.000
	PLANT HEIGHT (INCHES)					GRAIN PROTEIN (%)									
	BRENNAN = 27.6 (N=23)					BRENNAN = 14.6 (N=24)									
REFERENCE MEAN:	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
FORTUNA	36.3	23	8.7	15.9	0.000	14.3	24	-0.3	-1.7	0.095	14.3	24	-0.3	-1.7	0.095
MCNEAL	31.3	23	3.7	7.3	0.000	13.9	24	-0.7	-3.7	0.001	13.9	24	-0.7	-3.7	0.001
REEDER	30.9	23	3.3	6.1	0.000	14.3	24	-0.3	-2.1	0.046	14.3	24	-0.3	-2.1	0.046
CONAN	29	23	1.4	3.9	0.000	14.3	24	-0.3	-2.6	0.016	14.3	24	-0.3	-2.6	0.016
HANK	28.6	23	1	3.2	0.004	13.8	24	-0.8	-4.3	0.000	13.8	24	-0.8	-4.3	0.000
CHOTEAU	29.4	23	1.7	4.2	0.000	14.4	24	-0.2	-1.2	0.232	14.4	24	-0.2	-1.2	0.232
VIDA	30.5	23	2.9	5.5	0.000	13.7	24	-0.9	-4.5	0.000	13.7	24	-0.9	-4.5	0.000
DUCLAIR	30.2	23	2.6	7	0.000	14	24	-0.7	-4.5	0.000	14	24	-0.7	-4.5	0.000
CORBIN	29.9	23	2.3	5.6	0.000	13.9	24	-0.7	-3.3	0.004	13.9	24	-0.7	-3.3	0.004
VOLT	29.3	23	1.7	3.5	0.002	13.4	24	-1.2	-6.4	0.000	13.4	24	-1.2	-6.4	0.000
ONEAL	30.3	23	2.6	7	0.000	13.8	24	-0.8	-3.4	0.003	13.8	24	-0.8	-3.4	0.003
JEDD	25.4	23	-2.2	-7.6	0.000	13.7	24	-0.9	-4.9	0.000	13.7	24	-0.9	-4.9	0.000
KELBY	27.5	23	-0.1	-0.3	0.762	15	24	0.4	5.3	0.000	15	24	0.4	5.3	0.000
KUNTZ	28.6	23	1	4.4	0.000	13.4	24	-1.2	-7.6	0.000	13.4	24	-1.2	-7.6	0.000
AP604 CL	30.4	23	2.8	5.1	0.000	14.3	24	-0.3	-1.7	0.098	14.3	24	-0.3	-1.7	0.098
SY TYRA	26.7	23	-0.9	-3.6	0.002	13.3	24	-1.3	-7.6	0.000	13.3	24	-1.3	-7.6	0.000

TABLE 4. T-PAIRED RESULTS FOR COMPARING SY TYRA TO OTHER SPRING WHEATS

REFERENCE MEAN:	GRAIN YIELD (BU/AC)						TEST WEIGHT (LB/BU)						HEADING DATE (180 = JUNE 29)					
	SY TYRA = 61.6 (N=24)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	SY TYRA = 61.1 (N=24)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	SY TYRA = 182.9 (N=24)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
FORTUNA	51.5	24	-10.1	-5.2	0.000	60.6	24	-0.5	-1.5	0.139	182.8	24	-0.1	-0.5	0.600			
MCNEAL	55.9	24	-5.7	-3.5	0.002	59.9	24	-1.2	-5.1	0.000	184	24	1.1	4	0.000			
REEDER	60.9	24	-0.7	-0.5	0.641	60.9	24	-0.1	-0.6	0.579	182.6	24	-0.3	-0.8	0.416			
CONAN	51.5	24	-10.1	-4.3	0.000	60.6	24	-0.5	-1.4	0.165	182.4	24	-0.5	-2.6	0.016			
HANK	58.9	24	-2.7	-1.7	0.108	58.9	24	-2.2	-9.5	0.000	181.3	24	-1.5	-7.8	0.000			
CHOTEAU	59.9	24	-1.7	-1	0.324	60.1	24	-0.9	-3.7	0.001	182.1	24	-0.8	-3.3	0.003			
VIDA	62.1	24	0.5	0.3	0.785	59.8	24	-1.2	-4.9	0.000	183.2	24	0.3	1.5	0.141			
DUCLAIR	60.9	24	-0.8	-0.5	0.642	59.5	24	-1.5	-5.6	0.000	181	24	-1.9	-7.5	0.000			
CORBIN	56.9	24	-4.7	-3.3	0.003	60.5	24	-0.5	-2.3	0.033	181.6	24	-1.3	-6.9	0.000			
VOLT	59.8	24	-1.8	-0.9	0.365	61.9	24	0.8	2.5	0.022	185	24	2.1	4.6	0.000			
ONEAL	59.5	24	-2.1	-1	0.342	60.5	24	-0.6	-1.7	0.109	183.5	24	0.6	2.7	0.012			
JEDD	55	24	-6.6	-3.1	0.006	60.8	24	-0.3	-1.3	0.218	181.3	24	-1.5	-8.6	0.000			
KELBY	52.2	24	-9.5	-4.8	0.000	61.2	24	0.1	0.4	0.684	180.8	24	-2.1	-10.8	0.000			
KUNTZ	57.3	24	-4.3	-3.1	0.005	60.7	24	-0.3	-2.2	0.037	182.8	24	0	-0.1	0.906			
AP604 CL	55.6	24	-6	-4	0.001	61.4	24	0.3	1.4	0.170	180.9	24	-2	-12.5	0.000			
BRENNAN	55.7	24	-5.9	-3.1	0.005	61.5	24	0.4	1.7	0.112	180.7	24	-2.1	-8.6	0.000			
REFERENCE MEAN:	PLANT HEIGHT (INCHES)						GRAIN PROTEIN (%)											
SY TYRA = 26.7 (N=23)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE	SY TYRA = 13.3 (N=24)	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE							
FORTUNA	36.3	23	9.6	21.9	0.000	14.3	24	1	5.6	0.000								
MCNEAL	31.3	23	4.6	13.3	0.000	13.9	24	0.6	3.9	0.000								
REEDER	30.9	23	4.2	11.7	0.000	14.3	24	1	8.8	0.000								
CONAN	29	23	2.3	11.9	0.000	14.3	24	1	5.8	0.000								
HANK	28.6	23	1.9	8.3	0.000	13.8	24	0.5	4.4	0.000								
CHOTEAU	29.4	23	2.7	9.1	0.000	14.4	24	1.1	7.2	0.000								
VIDA	30.5	23	3.8	10.5	0.000	13.7	24	0.4	2.1	0.049								
DUCLAIR	30.2	23	3.5	15.5	0.000	14	24	0.7	5	0.000								
CORBIN	29.9	23	3.2	11.2	0.000	13.9	24	0.6	3.6	0.001								
VOLT	29.3	23	2.6	7.7	0.000	13.4	24	0.2	1.1	0.299								
ONEAL	30.3	23	3.6	14.6	0.000	13.8	24	0.5	3.4	0.002								
JEDD	25.4	23	-1.3	-5.4	0.000	13.7	24	0.5	4.2	0.000								
KELBY	27.5	23	0.8	3.8	0.001	15	24	1.7	10.1	0.000								
KUNTZ	28.6	23	1.9	10.7	0.000	13.4	24	0.1	0.8	0.459								
AP604 CL	30.4	23	3.7	7.8	0.000	14.3	24	1	5.3	0.000								
BRENNAN	27.6	23	0.9	3.6	0.002	14.6	24	1.3	7.6	0.000								

TABLE 5. 2010-2011 GRAIN YIELD (BU/AC) SUMMARY FOR IMICHT79 COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1	DISTRICT 2	DISTRICT 2	DISTRICT 3			DISTRICT 3	DISTRICT 4		
	KALISPELL 2010	BOZEMAN DRY 2011	BOZEMAN IRR 2011	HUNTLEY DRY 2010	HUNTLEY DRY 2011	HUNTLEY DRY ave.	HUNTLEY IRR 2011	MOCCASIN 2010	MOCCASIN 2011	MOCCASIN ave.
FORTUNA	86.3	43.0	57.8	62.9	46.8	54.8	55.5	38.1	22.7	30.39
MCNEAL	84.2	51.7	71.2	72.5	39.9	56.2	55.1	40.8	24.4	32.55
REEDER	103.2	50.3	68.7	68.5	52.5	60.5	65.9	41.2	25.4	33.28
CONAN	77.2	37.5	60.1	71.8	45.9	58.9	62.3	41.1	22.8	31.94
HANK	88.9	50.0	70.0	80.7	51.4	66.0	71.2	42.8	26.1	34.43
CHOTEAU	95.0	50.1	72.5	74.6	54.0	64.3	69.6	40.2	24.2	32.19
VIDA	99.2	55.5	66.9	75.5	54.7	65.1	64.1	41.5	25.6	33.56
DUCLAIR	101.2	52.3	72.9	72.4	56.7	64.6	79.9	42.1	27.7	34.9
CORBIN	95.0	50.4	70.3	72.8	50.0	61.4	65.7	37.6	26.4	31.96
VOLT	113.6	53.5	73.8	78.6	54.9	66.8	66.0	38.4	24.2	31.33
ONEAL	70.6	52.1	70.9	74.5	41.4	58.0	64.4	43.9	25.5	34.71
JEDD	71.1	52.4	75.3	75.9	47.1	61.5	68.8	41.4	24.8	33.08
KELBY	98.4	42.5	54.4	68.9	47.3	58.1	60.6	45.4	19.9	32.65
KUNTZ	94.3	49.2	77.7	74.4	49.8	62.1	65.0	38.0	24.1	31.04
AP604 CL	97.8	49.0	64.4	73.0	57.5	65.3	65.5	33.6	24.3	28.97
IMICHT79	86.3	48.7	69.3	69.5	51.8	60.7	70.5	41.3	25.3	33.28
AVERAGE	91.4	49.3	68.5	72.9	50.12	61.5	65.6	40.5	24.6	32.52
C.V.						6.8				7.55
F-value (entry)						1.51 ns				.85 ns
LSD (.05)						8.92				5.23

ID	DISTRICT 5 HAVRE			DISTRICT 5 CONRAD DRY			DISTRICT 5 CONRAD IRR	DISTRICT 6 SIDNEY DRYLAND			DISTRICT 6 SIDNEY IRR			OVERALL		
	2010	2011	ave.	2010	2011	ave.	2011	2010	2011	ave.	2010	2011	AVE	AVE	YRS	RANK
FORTUNA	48.7	39.8	44.3	55.0	62.6	58.8	67.0	43.2	32.9	38.0	68.2	28.3	48.2	50.5	17	16
MCNEAL	48.8	37.1	42.9	58.4	66.8	62.6	70.7	39.4	39.2	39.3	66.2	50.8	58.5	53.9	17	12
REEDER	55.2	42.0	48.6	57.7	69.4	63.6	66.1	47.4	49.0	48.2	85.0	43.4	64.2	58.3	17	5
CONAN	51.1	42.7	46.9	61.2	62.1	61.7	66.1	38.2	36.9	37.6	73.3	37.8	55.5	52.2	17	15
HANK	56.2	41.5	48.9	65.7	58.8	62.3	69.3	44.0	45.0	44.5	65.3	38.6	51.9	56.8	17	8
CHOTEAU	54.8	38.7	46.7	81.2	80.6	80.9	71.6	45.6	42.8	44.2	79.4	38.0	58.7	59.6	17	3
VIDA	59.3	43.8	51.6	60.7	66.4	63.6	69.6	53.2	46.2	49.7	68.0	44.9	56.5	58.5	17	4
DUCLAIR	53.6	42.8	48.2	79.7	78.2	79.0	90.3	52.9	34.0	43.5	85.3	38.5	61.9	62.4	17	1
CORBIN	52.8	45.0	48.9	69.2	68.9	69.0	76.9	47.2	40.2	43.7	61.6	33.9	47.7	56.7	17	9
VOLT	49.0	49.9	49.5	56.5	72.5	64.5	81.2	46.0	37.2	41.6	80.8	37.2	59.0	59.6	17	2
ONEAL	59.2	46.9	53.0	59.8	64.9	62.3	71.8	48.7	47.8	48.3	67.6	39.6	53.6	55.9	17	11
JEDD	52.6	40.7	46.6	60.2	56.8	58.5	68.5	46.1	39.8	43.0	51.0	34.6	42.8	53.4	17	13
KELBY	47.3	41.2	44.2	43.9	67.1	55.5	61.6	39.7	48.2	43.9	74.0	36.0	55.0	52.7	17	14
KUNTZ	44.4	41.8	43.1	59.2	69.2	64.2	77.5	39.5	45.5	42.5	78.7	46.1	62.4	57.3	17	6
AP604 CL	52.3	40.3	46.3	58.3	63.3	60.8	71.8	45.5	44.0	44.8	71.3	43.0	57.1	56.2	17	10
IMICHT79	54.0	39.9	47.0	75.2	62.5	68.9	80.8	42.6	37.6	40.1	72.1	38.6	55.3	57.0	17	7
AVERAGE	52.5	42.1	47.3	62.6	66.9	64.8	72.6	44.9	41.7	43.3	71.7	39.3	55.5	56.3	17	0
C.V.			6.99			9.7				10.8			11.9	8.73		
F-value (entry)			1.48 ns			2.39**				1.13 ns			1.48 ns	5.08*		
LSD (.05)			7.05			13.36				9.96			14.1	4.36		

TABLE 6. 2010-2011 TEST WEIGHT (LB/BU) SUMMARY FOR IMICHT79 COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1	DISTRICT 2	DISTRICT 2	DISTRICT 3			DISTRICT 3	DISTRICT 4		
	KALISPELL	BOZEMAN DRY	BOZEMAN IRR	HUNTLEY DRY			HUNTLEY IRR	MOCCASIN		
	2010	2011	2011	2010	2011	ave.	2011	2010	2011	ave.
FORTUNA	59.1	61.4	62.1	61.9	59.3	60.6	58.0	60.2	61.2	61
MCNEAL	59.5	58.9	60.3	62.1	56.8	59.5	58.3	58.4	60.6	60
REEDER	60.3	59.2	61.6	63.1	58.4	60.7	60.7	60.5	61.7	61
CONAN	59.4	59.9	61.1	61.9	59.2	60.6	59.1	58.6	61.4	60
HANK	56.2	59.9	60.3	60.5	55.1	57.8	55.4	57.0	59.0	58
CHOTEAU	58.9	60.3	60.8	62.5	57.4	59.9	60.6	60.2	61.0	61
VIDA	59.4	60.3	61.3	62.2	56.7	59.5	58.1	59.8	60.9	60
DUCLAIR	58.9	59.9	60.3	61.8	57.1	59.4	58.3	57.8	59.7	59
CORBIN	59.3	62.1	62.3	62.5	57.7	60.1	57.2	58.4	60.8	60
VOLT	60.7	62.2	63.4	63.2	60.3	61.7	60.4	61.5	62.0	62
ONEAL	57.9	60.4	61.4	63.4	57.7	60.5	57.2	59.8	60.5	60
JEDD	57.2	62.2	61.7	63.0	57.6	60.3	58.3	59.8	62.5	61
KELBY	59.4	61.7	62.3	62.6	59.8	61.2	60.3	61.1	62.9	62
KUNTZ	59.5	61.7	62.6	62.3	56.4	59.4	60.7	60.2	62.1	61
AP604 CL	59.4	62.6	63.1	63.6	59.3	61.4	61.9	59.6	62.1	61
IMICHT79	58.4	60.2	61.1	62.5	58.5	60.5	58.8	61.3	61.0	61
AVERAGE	59.0	60.8	61.6	62.4	57.9	60.2	59.0	59.6	61.2	60
C.V.						1.34				1.04
F-value (entry)						2.85*				5.74**
LSD (.05)						1.72				1.34

ID	DISTRICT 5			DISTRICT 5			DISTRICT 5	DISTRICT 6			DISTRICT 6			OVERALL		
	HAVRE			CONRAD DRY			CONRAD IRR	SIDNEY DRYLAND			SIDNEY IRR			AVE	YRS	RANK
	2010	2011	ave.	2010	2011	ave.	2011	2010	2011	ave.	2010	2011	AVE	AVE		
FORTUNA	57.8	60.8	59.3	59.8	61.3	60.5	63.0	61.0	58.5	59.8	58.5	56.0	57.3	60.0	17	7
MCNEAL	57.6	59.1	58.3	59.7	59.4	59.5	61.7	60.0	58.0	59.0	57.5	58.0	57.8	59.2	17	14
REEDER	58.0	61.2	59.6	60.0	60.7	60.4	62.8	61.5	59.5	60.5	59.0	59.5	59.3	60.5	17	4
CONAN	58.3	61.3	59.8	60.4	60.3	60.4	61.4	62.0	59.5	60.8	60.0	59.5	59.8	60.2	17	5
HANK	55.8	59.5	57.7	58.1	56.3	57.2	60.4	59.5	58.0	58.8	55.5	56.5	56.0	57.8	17	16
CHOTEAU	56.5	59.6	58.0	59.5	60.4	60.0	61.5	61.0	60.0	60.5	58.0	56.5	57.3	59.7	17	9
VIDA	57.5	60.8	59.1	59.2	59.8	59.5	61.6	60.0	58.0	59.0	56.5	57.5	57.0	59.4	17	13
DUCLAIR	56.8	59.2	58.0	58.6	59.9	59.2	62.0	60.0	56.5	58.3	58.5	56.0	57.3	58.9	17	15
CORBIN	57.1	61.2	59.2	59.5	58.6	59.1	63.3	60.0	58.5	59.3	57.5	57.5	57.5	59.6	17	11
VOLT	57.9	63.2	60.6	63.0	61.5	62.2	63.2	61.5	60.0	60.8	60.0	57.0	58.5	61.2	17	1
ONEAL	59.0	61.1	60.1	62.2	59.6	60.9	61.5	60.5	59.0	59.8	54.5	57.5	56.0	59.6	17	12
JEDD	57.5	61.4	59.4	59.3	58.1	58.7	61.6	61.0	59.5	60.3	56.0	59.0	57.5	59.7	17	8
KELBY	58.2	62.3	60.2	59.6	61.3	60.5	62.4	61.0	60.0	60.5	59.5	59.0	59.3	60.8	17	3
KUNTZ	56.6	60.0	58.3	60.7	60.1	60.4	62.4	60.0	59.5	59.8	58.0	59.5	58.8	60.1	17	6
AP604 CL	58.0	60.9	59.4	59.9	60.4	60.2	63.5	61.0	60.0	60.5	59.5	61.0	60.3	60.9	17	2
IMICHT79	56.8	60.3	58.5	60.5	59.4	59.9	61.2	60.5	58.5	59.5	58.0	57.5	57.8	59.7	17	10
AVERAGE	57.5	60.7	59.1	60.0	59.8	59.9	62.1	60.7	58.9	59.8	57.9	58.0	57.9	59.8	17	0
C.V.			1.05			1.5				0.86			2.22	1.25		
F-value (entry)			3.92**			2.89*				4.59**			1.89 ns	13.94**		
LSD (.05)						1.95				1.1				0.63		

TABLE 7. 2010-2011 HEADING DATE (180=JUNE 29) SUMMARY FOR IMICHT79 COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1	DISTRICT 2	DISTRICT 2	DISTRICT 3			DISTRICT 3	DISTRICT 4		
	KALISPELL	BOZEMAN DRY	BOZEMAN IRR	HUNTLEY DRY			HUNTLEY IRR	MOCCASIN		
	2010	2011	2011	2010	2011	ave.	2011	2010	2011	ave.
FORTUNA	182	192	192	170	180	175	183	184	190	187
MCNEAL	184	195	193	171	180	176	183	185	190	188
REEDER	180	193	191	170	179	174	181	185	188	186
CONAN	181	192	190	170	179	174	182	184	190	187
HANK	180	192	190	169	177	173	181	183	188	186
CHOTEAU	181	191	190	171	179	175	182	184	189	187
VIDA	181	193	192	170	179	174	183	186	191	189
DUCLAIR	180	191	188	168	176	172	179	182	188	185
CORBIN	181	191	191	169	178	173	182	184	188	186
VOLT	182	196	195	170	180	175	186	187	191	189
ONEAL	183	194	192	171	179	175	183	184	190	187
JEDD	180	191	191	168	177	173	181	184	188	186
KELBY	179	190	190	168	176	172	180	183	187	185
KUNTZ	181	191	191	170	179	174	182	185	190	188
AP604 CL	180	190	190	168	176	172	179	184	189	186
IMICHT79	182	193	191	171	180	175	183	185	191	188
AVERAGE	181	192	191	170	178	174	182	184	189	187
C.V.						0.27				0.35
F-value (entry)						13.78**				6.18**
LSD (.05)						1.0				1.4

ID	DISTRICT 5			DISTRICT 5			DISTRICT 5	DISTRICT 6			DISTRICT 6			OVERALL		
	HAVRE			CONRAD DRY			CONRAD IRR	SIDNEY DRYLAND			SIDNEY IRR			AVE	YRS	RANK
	2010	2011	ave.	2010	2011	ave.	2011	2010	2011	ave.	2010	2011	AVE			
FORTUNA	181	184	182	187	194	191	200	178	184	181	180	190	185	185	17	6
MCNEAL	180	184	182	187	192	190	199	180	185	183	181	191	186	186	17	2
REEDER	180	185	182	182	191	187	199	178	184	181	179	190	185	184	17	9
CONAN	180	184	182	184	192	188	198	177	185	181	180	190	185	184	17	8
HANK	180	183	182	182	190	186	196	177	184	180	179	188	184	184	17	13
CHOTEAU	179	184	182	185	189	187	197	179	184	181	179	189	184	184	17	10
VIDA	181	184	183	186	193	190	199	179	184	182	180	190	185	185	17	5
DUCLAIR	179	182	181	181	189	185	196	177	184	180	178	188	183	183	17	16
CORBIN	179	183	181	181	192	186	198	178	184	181	179	189	184	184	17	11
VOLT	181	186	183	187	195	191	201	179	187	183	185	192	188	187	17	1
ONEAL	181	184	183	187	193	190	199	179	186	182	180	190	185	186	17	3
JEDD	179	185	182	182	191	186	197	176	185	180	178	188	183	184	17	12
KELBY	179	182	180	181	191	186	195	177	184	180	177	189	183	183	17	15
KUNTZ	181	185	183	184	192	188	199	179	185	182	179	190	184	185	17	7
AP604 CL	178	182	180	182	191	187	197	177	184	180	178	187	182	183	17	14
IMICHT79	180	184	182	186	192	189	199	179	185	182	181	191	186	185	17	4
AVERAGE	180	184	182	184	192	188	198	178	185	181	180	189	185	185	17	0
C.V.			0.31			0.65							0.42	0		
F-value (entry)			4.93**			4.64**							3.06*	36.9**		
LSD (.05)			1.21			2.59							1.64	0.58		

TABLE 8. 2010-2011 PLANT HEIGHT (INCHES) SUMMARY FOR IMICHT79 COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1	DISTRICT 2	DISTRICT 2	DISTRICT 3			DISTRICT 3	DISTRICT 4		
	KALISPELL	BOZEMAN DRY	BOZEMAN IRR	HUNTLEY DRY			HUNTLEY IRR	MOCCASIN		
	2010	2011	2011	2010	2011	ave.	2011	2010	2011	ave.
FORTUNA	45.1	36.6	38.1	42.7	41.3	42.0	41.9	37.5	31.6	34.56
MCNEAL	41.1	30.9	35.0	39.8	31.5	35.7	34.1	32.6	26.0	29.27
REEDER	39.4	30.4	33.5	40.2	34.5	37.3	35.1	32.6	23.9	28.25
CONAN	36.8	27.8	30.2	36.9	31.2	34.0	33.5	30.1	23.9	27.02
HANK	35.2	28.6	30.1	35.0	32.2	33.6	33.4	30.2	24.5	27.32
CHOTEAU	36.2	29.1	31.7	37.0	33.1	35.0	32.3	31.4	23.3	27.3
VIDA	38.7	29.6	32.9	39.9	33.5	36.7	34.7	31.3	24.4	27.85
DUCLAIR	36.5	30.6	32.6	38.5	33.2	35.9	34.8	31.7	26.1	28.91
CORBIN	37.5	30.2	32.2	38.5	34.0	36.3	34.5	31.5	24.4	27.95
VOLT	36.2	29.7	32.9	36.6	33.2	34.9	32.1	31.0	23.8	27.4
ONEAL	36.8	29.9	31.9	36.5	30.8	33.7	35.1	33.4	25.3	29.33
JEDD	30.8	24.9	26.8	33.1	28.0	30.6	30.7	26.7	22.8	24.76
KELBY	33.2	26.8	27.9	36.1	30.3	33.2	29.0	31.5	23.1	27.3
KUNTZ	34.1	27.9	30.2	37.5	31.5	34.5	31.0	29.0	23.7	26.37
AP604 CL	39.0	29.8	32.3	42.9	37.8	40.4	34.5	34.3	25.4	29.84
IMICHT79	35.6	29.4	31.9	37.6	32.2	34.9	36.6	29.7	24.5	27.11
AVERAGE	37.0	29.5	31.9	38.05	33.01	35.5	34.0	31.5	24.8	28.16
C.V.						3.18				3.59
F-value (entry)						11.68**				8.73**
LSD (.05)						2.4				2.16

ID	DISTRICT 5	DISTRICT 5			DISTRICT 5	DISTRICT 6			DISTRICT 6			OVERALL		
	HAVRE	CONRAD DRY			CONRAD IRR	SIDNEY DRYLAND			SIDNEY IRR			AVE	YRS	RANK
	2010	2010	2011	ave.	2011	2010	2011	ave.	2010	2011	AVE			
FORTUNA	40.0	42.7	41.3	42.0	41.9	30.5	30.4	30.5	34.0	32.8	33.4	37.8	16	1
MCNEAL	33.6	39.8	31.5	35.7	34.1	25.1	26.3	25.7	31.2	29.3	30.3	32.7	16	2.0
REEDER	33.5	40.2	34.5	37.3	35.1	22.5	25.7	24.1	30.9	27.8	29.4	32.2	16	4.0
CONAN	32.5	36.9	31.2	34.0	33.5	22.5	23.7	23.1	28.7	24.3	26.5	30.0	16	12
HANK	30.8	35.0	32.2	33.6	33.4	23.6	25.1	24.4	28.4	22.8	25.6	29.6	16	13
CHOTEAU	31.6	37.0	33.1	35.0	32.3	24.6	24.5	24.6	30.8	26.1	28.4	30.7	16	10
VIDA	30.7	39.9	33.5	36.7	34.7	25.6	25.6	25.6	30.8	22.9	26.9	31.6	16	5
DUCLAIR	31.4	38.5	33.2	35.9	34.8	25.6	24.0	24.8	31.0	25.0	28.0	31.3	16	6
CORBIN	32.5	38.5	34.0	36.3	34.5	24.5	25.1	24.8	29.3	25.1	27.2	31.3	16	8
VOLT	29.5	36.6	33.2	34.9	32.1	22.4	22.1	22.2	31.1	26.3	28.7	30.2	16	11
ONEAL	32.1	36.5	30.8	33.7	35.1	25.8	25.2	25.5	30.1	24.8	27.4	31.3	16	7
JEDD	26.9	33.1	28.0	30.6	30.7	22.1	21.6	21.8	23.9	19.4	21.6	26.5	16	16
KELBY	29.6	36.1	30.3	33.2	29.0	22.9	22.1	22.5	27.3	23.2	25.3	28.2	16	15
KUNTZ	31.0	37.5	31.5	34.5	31.0	24.2	25.2	24.7	29.8	24.7	27.3	29.6	16	14
AP604 CL	33.5	42.9	37.8	40.4	34.5	23.1	26.3	24.7	30.0	23.5	26.7	32.2	16	3
IMICHT79	31.4	37.6	32.2	34.9	36.6	23.9	24.9	24.4	31.3	25.5	28.4	30.9	16	9
AVERAGE	31.9	38.1	33.0	35.5	34.0	24.3	24.9	24.6	29.9	25.2	27.6	31.0	16	0
C.V.				3.2				3.89			4.23	3.79		
F-value (entry)				11.68**				8.45**			9.22**	66.9**		
LSD (.05)				2.4				2.03			2.49	0.82		

TABLE 9. 2010-2011 GRAIN PROTEIN (%) SUMMARY FOR IMICHT79 COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1	DISTRICT 2	DISTRICT 2	DISTRICT 3			DISTRICT 3	DISTRICT 4		
	KALISPELL	BOZEMAN DRY	BOZEMAN IRR	HUNTLEY DRY			HUNTLEY IRR	MOCCASIN		
	2010	2011	2011	2010	2011	ave.	2011	2010	2011	ave.
FORTUNA	14.4	15.1	16.0	11.7	14.9	13.3	18.8	12.1	15.3	13.7
MCNEAL	15.2	15.0	16.0	10.6	13.6	12.1	15.6	12.2	14.8	13.5
REEDER	15.2	14.8	15.2	10.9	14.7	12.8	17.6	12.6	15.6	14.1
CONAN	14.4	15.2	15.1	12.1	14.7	13.4	18.5	11.5	16.0	13.8
HANK	13.7	13.8	14.5	10.7	15.1	12.9	18.0	11.8	15.8	13.8
CHOTEAU	15.0	14.3	15.7	11.6	14.6	13.1	17.0	11.5	15.6	13.5
VIDA	15.0	14.3	15.2	10.4	15.1	12.8	17.5	11.5	14.6	13
DUCLAIR	14.9	14.3	14.7	10.7	14.3	12.5	16.5	11.3	15.1	13.2
CORBIN	14.2	13.9	14.7	10.5	14.1	12.3	18.0	11.3	15.1	13.2
VOLT	13.5	13.3	14.2	10.8	13.8	12.3	17.3	12.4	15.0	13.7
ONEAL	14.8	14.7	15.2	9.9	14.6	12.3	17.1	13.2	15.8	14.5
JEDD	13.7	13.7	14.3	10.5	14.0	12.3	16.9	12.3	15.8	14
KELBY	15.1	16.0	15.8	12.6	14.7	13.7	18.5	12.0	16.5	14.2
KUNTZ	14.5	12.3	14.2	10.8	13.9	12.4	16.1	11.7	15.1	13.4
AP604 CL	13.7	14.8	15.9	11.0	14.7	12.9	16.1	11.6	15.6	13.6
IMICHT79	15.1	14.7	15.6	11.3	13.8	12.6	18.4	11.9	15.7	13.8
AVERAGE	14.5	14.4	15.1	11	14.41	12.7	17.4	11.9	15.5	13.7
C.V.										
F-value (entry)										
LSD (.05)										

ID	DISTRICT 5			DISTRICT 5			DISTRICT 5	DISTRICT 6			DISTRICT 6			OVERALL		
	2010	HAVRE	AVE	2010	CONRAD DRY	ave.	CONRAD IRR	2010	SIDNEY DRYLAND	2010	SIDNEY IRR	AVE	AVE	YRS	RANK	
FORTUNA	13.0	14.1	13.6	14.7	13.6	14.2	13.3	11.4	14.4	16.9	15.7	14.4	16	2		
MCNEAL	12.6	13.8	13.2	13.4	13.1	13.3	11.9	11.0	13.6	15.9	14.8	13.6	16	13.0		
REEDER	12.7	14.2	13.5	13.9	13.8	13.9	12.7	12.2	14.5	15.9	15.2	14.2	16	4.0		
CONAN	12.1	14.1	13.1	13.8	13.1	13.5	12.9	11.6	14.6	16.3	15.5	14.1	16	5		
HANK	12.9	14.1	13.5	13.5	13.3	13.4	12.1	10.7	14.1	16.3	15.2	13.8	16	11		
CHOTEAU	13.0	14.5	13.8	13.6	13.2	13.4	14.2	11.7	14.9	17.1	16.0	14.2	16	3		
VIDA	11.5	13.4	12.5	13.6	12.5	13.1	12.6	11.2	15.0	15.4	15.2	13.7	16	12		
DUCLAIR	12.8	14.3	13.6	13.9	13.2	13.6	13.7	12.1	14.1	15.9	15.0	13.9	16	8		
CORBIN	12.5	13.8	13.2	13.3	14.7	14.0	13.2	10.9	13.8	16.5	15.2	13.8	16	10		
VOLT	11.5	13.4	12.5	13.5	13.0	13.3	13.2	10.2	14.2	15.9	15.1	13.5	16	15		
ONEAL	12.3	13.6	13.0	12.9	13.8	13.4	12.2	10.5	14.8	16.1	15.5	13.8	16	9		
JEDD	12.1	13.7	12.9	13.0	13.1	13.1	11.5	10.7	14.4	16.4	15.4	13.5	16	14		
KELBY	14.0	15.0	14.5	14.7	13.6	14.2	14.3	13.4	15.1	17.7	16.4	14.9	16	1		
KUNTZ	12.0	13.1	12.6	13.6	12.8	13.2	12.5	11.7	14.0	15.5	14.8	13.4	16	16		
AP604 CL	13.1	13.9	13.5	14.2	14.0	14.1	12.7	11.9	13.9	16.3	15.1	14.0	16	7		
IMICHT79	12.8	14.5	13.7	13.6	13.9	13.8	13.4	10.9	14.0	16.4	15.2	14.1	16	6		
AVERAGE	12.6	14.0	13.3	13.7	13.4	13.6	12.9	11.4	14.3	16.3	15.3	13.9	16	0		
C.V.												3.70				
F-value (entry)												7.52**				
LSD (.05)												0.44				

TABLE 10. 2011 GRAIN YIELD (BU/AC) SUMMARY FOR IMICHT79 COMPARED TO SELECTED SPRING WHEATS IN THE OFFSTATION SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	PEDIGREE	NARC			WTARC				CARC		
		TURNER	LORING	CUT BANK	DEVON	THE "KNEES"	CONRAD IRR	MOCC NO-TILL	DENTON	GERALDINE	
AC52610	VOLT	26.3	34.6	62.7	42.5	37.1	81.2*	27.2	16.2	27.8*	
AGRI12	SY TYRA	25.6	34.0	40.5	25.7	26.4	81.9*	23.0	16.4	23.1	
AGRI06	KELBY	24.5	33.3	55.0*	31.8	36.0	61.6	30.3	15.5	24.0	
AGRI07	KUNTZ	24.8	33.0	51.3	32.8	32.2	77.5	23.8	15.9	24.1	
AGRI08	AP604CL	29.4	31.9	55.0*	33.4	29.1	71.8	28.0	16.2	23.4	
BZ902413	WB GUNNISON	33.0*	34.9	54.2*	41.4*	40.5	85.0*	26.1	16.9	28.6*	
BZ992322	HANK	24.2	32.8	30.7	30.2	26.6	69.3	27.1	16.6	27.1*	
BZ992588	CONAN	30.5*	32.4	43.4	36.0	33.4	66.1	31.3	16.9	27.5*	
BZ996434	CORBIN	32.4*	36.6	51.7	40.0*	39.0	76.9	24.8	15.9	30.1*	
BZ999592	ONEAL	30.1*	40.5	34.5	35.8	28.8	71.8	33.5	16.3	27.9*	
BZ9M1044	JEDD	26.5	32.5	25.2	32.0	21.1	68.5	29.9	16.8	24.1	
CI 13596	FORTUNA	29.2	34.3	42.4	41.9*	33.9	67.0	32.3	15.6	24.6	
IMICHT79	CHOTEAU ³ CHOTEAUIM8134	35.0	38.9*	46.1	37.8*	41.0	80.8*	26.6	15.7	27.6*	
ND 695	REEDER	27.3	34.9	46.4	34.4	34.8	66.1	32.1	17.1	26.7	
NDSW0449	MOTT	31.8*	37.4*	41.6	32.7	34.5	54.8	28.5	16.3	24.2	
PI574642	MCNEAL	28.0	33.2	29.7	31.6	33.1	70.7	27.2	15.8	26.2	
PI632252	OUTLOOK	30.3*	37.0*	38.5	35.3	40.6	55.4	28.6	17.5	27.9*	
PI633974	CHOTEAU	30.6*	34.2	56.9*	34.8	41.3*	71.6	28.3	15.5	27.2*	
PI642366	VIDA	34.7*	38.0*	46.3	40.8*	35.7	69.6	32.0	17.7	30.8	
PI660981	DUCLAIR	31.4*	33.5	45.9	36.4	44.6	90.3	32.0	15.4	26.6	
*****	SITE MEAN *****	29.3	35.0	44.9	35.4	34.5	71.9	28.6	16.3	26.5	
	C.V.	10.39	6.74	14.39	9.61	6.21	9.66	17.29	14.67	8.67	
	LSD (.05)	5.02	3.90	10.68	5.62	3.54	11.48	ns	ns	3.79	

ID	PEDIGREE	SARC			OVERALL ¹				OVERALL ²			
		MOLT DRY	HYSHAM IRR	FROMBERG IRR	HUNTLEY DRY	HUNTLEY IRR	HUNTLEY IRR	AVG	CIRCLE	NASHUA	POPLAR	AVG
AC52610	VOLT	13.8	98.0	124.6	58.2	66.0	66.0	51.2	43.9	46.2	59.5	50.9
AGRI12	SY TYRA	16.2	83.0	97.2	48.2	67.7	67.7	43.5	42.6	45.2	62.4	44.6
AGRI06	KELBY	10.3	70.5	111.4	52.8	60.6	60.6	44.1	37.7	46.0	64.6	45.1
AGRI07	KUNTZ	13.8	84.0	116.0*	55.0	65.0	65.0	46.4	40.2	48.0	67.9	47.4
AGRI08	AP604CL	14.6	84.3	107.2	63.2	65.5	65.5	46.6	42.8	43.5	57.3	46.9
BZ902413	WB GUNNISON	11.3	82.7	108.7	51.9	67.5	67.5	48.8	39.0	36.8	54.5	47.8
BZ992322	HANK	14.1	84.8	97.3	54.9	71.2	43.4	43.4	-	-	-	-
BZ992588	CONAN	12.2	72.5	105.0	49.7	62.3	44.2	44.2	-	-	-	-
BZ996434	CORBIN	13.3	90.8*	111.8	54.5	65.7	48.8*	48.8*	40.4	41.9	57.0	48.4
BZ999592	ONEAL	15.1	89.5*	93.4	51.9	64.4	45.3	45.3	46.3	47.0	57.9	46.2
BZ9M1044	JEDD	11.9	75.6	91.0	52.3	68.8	41.2	41.2	40.2	43.5	58.9	42.3
CI 13596	FORTUNA	11.9	72.9	90.5	52.8	55.5	43.2	43.2	-	-	-	-
IMICHT79	CHOTEAU ³ CHOTEAUIM8134	18.0	87.1*	102.2	60.0*	70.5	49.1*	49.1*	43.6	42.4	64.3	49.3
ND 695	REEDER	16.2	74.9	104.3	53.4	65.9	45.3	45.3	46.2	45.1	54.5	45.9
NDSW0449	MOTT	16.9	92.8*	100.4	50.0	57.9	44.3	44.3	44.9	41.9	64.0	45.3
PI574642	MCNEAL	17.3	90.0*	88.2	41.8	55.1	42.0	42.0	39.6	44.4	58.7	43.0
PI632252	OUTLOOK	15.6	85.9	106.4	53.9	67.8	45.8	45.8	45.3	42.0	62.9	46.5
PI633974	CHOTEAU	15.1	78.1	106.8	55.3	69.6	47.5*	47.5*	46.2	40.4	58.4	47.7
PI642366	VIDA	18.0	85.1	106.9	61.5*	64.1	48.7*	48.7*	45.4	48.8	63.8	49.4
PI660981	DUCLAIR	16.2	87.9*	97.9	59.1*	70.9	49.8*	49.8*	42.2	35.9	61.4	49.2
*****	SITE MEAN *****	14.6	83.5	102.1	54.0	65.6	45.9	45.9	42.7	43.5	60.5	46.8
	C.V.	19.30	8.80	5.20	5.20	7.50	11.44	11.44	6.30	9.80	10.10	10.10
	LSD (.05)	ns	12.00	9.50	4.70	8.10	3.91	3.91	4.50	ns	ns	ns

¹The first overall average includes nurseries from NARC, WTARC, CARC and SARC

²The second overall average includes nurseries from NARC, WTARC, CARC, SARC and EARC

Means with the highest yield are underlined and wheats that are not significantly different at the .05 level are followed by an asterisk

TABLE 11. 2010-2011 Stem solidness, sawfly damage and grain yields under sawfly pressure

STEM SOLIDNESS				
BOZEMAN				
VARIETY	2010 DRY	2011 DRY	2011 IRR	AVE
DUCLAIR	20.7	21.5	18	20.1
FORTUNA	17.7	21.9	16.5	18.7
MCNEAL	7.1	8.5	6.4	7.3
REEDER	6.3	8.4	6.7	7.1
CHOTEAU	20.1	23.6	20.4	21.4
VIDA	13	11.1	7.6	10.6
HANK	8.1	8.9	7.9	8.3
CONAN	10.1	12.8	10.6	11.2
CORBIN	9.4	13.5	9.6	10.8
VOLT	8.8	8.2	6.1	7.7
ONEAL	8.4	12.5	7.1	9.3
JEDD	7.8	10	8.1	8.6
KELBY	6.1	8.9	7	7.3
KUNTZ	6.3	9.1	6.3	7.2
MOTT	17	18.1	16.2	17.1
IMICHT79	23	23.5	20.3	22.3
SY TYRA	14.8	19.1	11.7	15.2

SAWFLY DAMAGE (% STEMS CUT)							
VARIETY	2010			2011			AVE
	HAVRE	LORING	TURNER	HAVRE	LOMA	AMSTERDAM	
DUCLAIR	16.1	15.0	33.3	26.6	5.0	0.0	16.0
FORTUNA	22.4	6.7	28.3	19.2	0.0	0.0	12.8
MCNEAL	26.9	20.0	80.0	35.6	15.0	50.0	37.9
REEDER	29.6	18.3	53.3	15.8	10.0	40.0	27.8
CHOTEAU	29.4	16.7	36.7	30.3	2.0	0.0	19.2
VIDA	8.4	18.3	26.7	11.1	2.0	5.0	11.9
HANK	32.2	11.7	58.3	15.7	50.0	15.0	30.5
CONAN	12.2	13.3	23.3	3.9	2.0	5.0	10.0
CORBIN	13.5	10.0	21.7	7.1	10.0	10.0	12.1
VOLT	61.5	23.3	93.3	16.8	60.0	60.0	52.5
ONEAL	10.9	16.7	40.0	10.2	10.0	0.0	14.6
JEDD	21.9	10.0	43.3	8.1	10.0	60.0	25.6
KELBY	25.3	15.0	30.2	14.7	10.0	90.0	30.9
KUNTZ	56.0	20.0	61.7	15.4	60.0	80.0	48.9
MOTT	10.3	5.0	5.0	12.8	0.0	0.0	5.5
IMICHT79	18.3	13.3	40.0	27.2	0.0	0.0	16.5
SY TYRA	19.9	15.0	46.0	8.7	40.0	5.0	22.4

GRAIN YIELD (BU/AC)					
VARIETY	2010		2011		AVE
	HAVRE	LORING	TURNER	HAVRE	
DUCLAIR	53.6	33.5	31.4	42.8	40.3
FORTUNA	48.7	34.3	29.2	39.8	38.0
MCNEAL	48.8	33.2	28.0	37.1	36.8
REEDER	55.2	34.9	27.3	42.0	39.9
CHOTEAU	54.8	34.2	30.6	38.7	39.6
VIDA	59.3	38.0	34.7	43.8	44.0
HANK	56.2	32.8	24.2	41.5	38.7
CONAN	51.1	32.4	30.5	42.7	39.2
CORBIN	52.8	36.6	32.4	45.0	41.7
VOLT	49.0	34.6	26.3	49.9	40.0
ONEAL	59.2	40.5	30.1	46.9	44.2
JEDD	52.6	32.5	26.5	40.7	38.1
KELBY	47.3	33.3	24.5	41.2	36.6
KUNTZ	44.4	33.0	24.8	41.8	36.0
MOTT	51.5	37.4	31.8	41.1	40.5
IMICHT79	54.0	38.9	35.0	39.9	42.0
SY TYRA	51.7	34	25.6	40.7	30.4

TABLE 12. 2010 Mill and Bake quality summary for IMICHT79 compared to selected varieties grown in the advanced spring wheat nursery across Montana
(Means Across Locations: Havre, Sidney, Moccasin & Huntley)

VARIETY	GRAIN		KERNEL		FLOUR		WHEAT		MIXOGRAPH		BAKE		LOAF		CRUMB-GRAIN SCORE (1-10)
	PROTEIN (%)		HARDNESS (%)		YIELD (%)	PROTEIN (%)	ASH (%)	ASH (%)	TOLERANCE (%)	TIME (MIN.)	ABSORPTION (%)	TIME (MIN.)	ABSORPTION (%)	VOLUME (CC)	
FORTUNA	12.9		68.5		68.3	11.3	0.43	1.63	4.0	4.1	62.8	5.0	73.0	985.0	7.8
MCNEAL	12.0		80.9		66.2	10.6	0.43	1.68	5.0	7.3	64.2	10.8	76.6	1023	8.0
REEDER	12.5		71.4		66.6	10.9	0.41	1.60	3.8	4.9	63.2	6.1	73.0	986	7.3
CHOTEAU	12.6		65.4		66.5	11.1	0.41	1.57	3.8	4.2	63.4	5.1	73.3	1035	7.8
VIDA	12.0		70.5		67.9	10.5	0.42	1.54	4.3	5.4	62.9	6.4	73.2	990	7.5
HANK	12.2		68.5		66.1	10.5	0.42	1.65	4.5	6.9	63.6	10.0	74.4	1040	7.3
CONAN	12.6		69.3		64.6	10.7	0.42	1.75	4.0	6.5	63.5	8.9	74.7	1050	7.5
CORBIN	11.8		65.8		66.7	10.1	0.42	1.69	4.0	6.2	62.1	8.4	72.7	921	7.3
VOLT	11.7		75.8		65.1	10.1	0.44	1.73	5.3	7.1	62.9	11.2	74.6	896	7.3
ONEAL	11.7		77.9		65.9	10.0	0.41	1.64	4.5	6.8	62.6	10.7	75.5	995	7.0
JEDD	12.1		75.5		66.4	10.6	0.42	1.63	4.5	5.7	64.4	9.3	75.0	985	7.5
FREYR	12.6		76.1		66.9	10.8	0.43	1.62	4.8	4.8	63.8	6.4	73.4	986	7.5
KELBY	13.4		64.6		64.3	11.6	0.43	1.62	3.8	5.4	65.6	7.5	75.1	1040	7.5
KUNTZ	12.2		74.4		67.0	10.7	0.41	1.61	5.0	5.7	64.2	8.7	74.5	1015	7.5
AP604 CL	12.5		69.4		66.1	10.9	0.42	1.55	4.3	5.1	64.1	7.8	74.2	1015	8.0
MOTT	12.5		70.4		67.5	11.0	0.41	1.66	4.5	6.3	65.2	10.8	75.6	1001	8.0
DUCLAIR	12.5		70.3		66.9	10.9	0.43	1.50	4.3	5.9	64.0	7.5	74.2	1014	7.0
IMICHT79	12.2		64.3		64.5	10.7	0.42	1.56	3.0	4.5	63.9	5.6	73.2	995	6.3
NURSERY MEAN	12.3		71.2		66.3	10.7	0.4	1.6	4.3	5.6	63.8	8.0	74.3	998.0	7.5
C.V.	4.7		9.3		2.3	4.7	7.6	4.4	16.7	20.6	2.2	23.4	2.6	4.8	8.0
F-VALUE (ENTRY)	2.37**		2.1*		1.92*	2.48**	1.42	3.7**	2.19*	2.76**	1.8*	4.40**	1.22	2.34**	1.91*
LSD (.05)	0.81		9.36		2.17	0.72	0.04	0.1	1.01	1.64	1.98	2.66	2.78	68.4	0.84

TABLE 13. 2009-2011 GRAIN YIELD (BU/AC) SUMMARY FOR DUCLAIR, BRENNAN AND SY TYRA COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1 KALISPELL			DISTRICT 2 BOZEMAN DRY			DISTRICT 2 BOZEMAN IRR.			DISTRICT 3 HUNTLEY DRY				DISTRICT 4 MOCCASIN			
	2009	2010	ave.	2009	2011	ave.	2009	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.
FORTUNA	78.3	86.3	82.3	63.6	43.0	53.3	62.6	57.8	60.2	45.6	62.9	46.8	51.8	26.2	38.1	22.7	29.0
MCNEAL	77.8	84.2	81.0	64.6	51.7	58.1	68.9	71.2	70.1	47.2	72.5	39.9	53.2	33.9	40.8	24.4	33.0
REEDER	99.9	103.2	101.6	72.1	50.3	61.2	82.6	68.7	75.6	51.1	68.5	52.5	57.3	30.5	41.2	25.4	32.3
CONAN	63.3	77.2	70.3	58.7	37.5	48.1	60.0	60.1	60.0	40.4	71.8	45.9	52.7	29.6	41.1	22.8	31.1
HANK	89.6	88.9	89.3	69.7	50.0	59.9	79.2	70.0	74.6	55.3	80.7	51.4	62.4	31.1	42.8	26.1	33.3
CHOTEAU	92.1	95.0	93.5	73.9	50.1	62.0	80.3	72.5	76.4	45.7	74.6	54.0	58.1	24.4	40.2	24.2	29.6
VIDA	91.9	99.2	95.6	78.7	55.5	67.1	81.4	66.9	74.1	57.1	75.5	54.7	62.5	34.3	41.5	25.6	33.8
DUCLAIR	90.4	101.2	95.8	71.2	52.3	61.7	74.9	72.9	73.9	40.9	72.4	56.7	56.7	29.0	42.1	27.7	32.9
CORBIN	87.0	95.0	91.0	67.1	50.4	58.7	65.0	70.3	67.7	48.0	72.8	50.0	56.9	26.6	37.6	26.4	30.2
VOLT	75.4	113.6	94.5	79.0	53.5	66.2	87.2	73.8	80.5	44.6	78.6	54.9	59.4	28.2	38.4	24.2	30.3
ONEAL	94.3	70.6	82.4	71.9	52.1	62.0	80.6	70.9	75.7	55.9	74.5	41.4	57.3	31.2	43.9	25.5	33.6
JEDD	95.3	71.1	83.2	69.5	52.4	60.9	72.1	75.3	73.7	50.0	75.9	47.1	57.7	26.4	41.4	24.8	30.9
KELBY	80.0	98.4	89.2	49.3	42.5	45.9	51.1	54.4	52.7	36.2	68.9	47.3	50.8	25.5	45.4	19.9	30.3
KUNTZ	81.1	94.3	87.7	61.0	49.2	55.1	64.8	77.7	71.3	50.5	74.4	49.8	58.2	29.1	38.0	24.1	30.4
AP604cl	97.2	97.8	97.5	49.8	49.0	49.4	58.0	64.4	61.2	48.1	73.0	57.5	59.5	27.4	33.6	24.3	28.5
BRENNAN	95.3	99.0	97.2	51.9	45.1	48.5	55.7	62.8	59.2	43.2	66.4	56.0	55.2	25.5	40.6	21.3	29.1
SY TYRA	105.2	112.6	108.9	65.6	58.2	61.9	69.0	80.7	74.9	51.6	77.0	43.9	57.5	30.1	38.9	24.6	31.2
AVERAGE	87.9	93.39	90.6	65.7	49.6	58.1	70.2	68.8	69.5	47.7	73	50.0	56.9	28.8	40.3	24.3	31.1
C.V.			11.1			8.8			9.1				8.6				7.38
F-value (entry)			1.65 ns			3.26*			3.14*				1.38 ns				1.67 ns
LSD (.05)			21.3			10.76			13.34				8.15				3.82

ID	DISTRICT 5 HAVRE				DISTRICT 5 CONRAD DRY				DISTRICT 6 SIDNEY DRYLAND				DISTRICT 6 SIDNEY IRR				OVERALL		
	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	ave	yrs	rank
FORTUNA	46.3	48.7	39.8	44.9	62.8	55.0	62.6	60.1	39.7	43.2	32.9	38.6	75.5	68.2	28.3	57.3	51.5	24	17
MCNEAL	42.4	48.8	37.1	42.8	74.7	58.4	66.8	66.6	45.0	39.4	39.2	41.2	95.3	66.2	50.8	70.8	55.9	24	11
REEDER	49.0	55.2	42.0	48.7	78.7	57.7	69.4	68.6	44.5	47.4	49.0	47.0	95.7	85.0	43.4	74.7	60.9	24	3
CONAN	43.3	51.1	42.7	45.7	62.2	61.2	62.1	61.8	37.4	38.2	36.9	37.5	82.7	73.3	37.8	64.6	51.5	24	16
HANK	46.7	56.2	41.5	48.1	75.3	65.7	58.8	66.6	42.8	44.0	45.0	43.9	99.2	65.3	38.6	67.7	58.9	24	8
CHOTEAU	40.7	54.8	38.7	44.7	75.0	81.2	80.6	79.0	39.8	45.6	42.8	42.7	94.8	79.4	38.0	70.7	59.9	24	5
VIDA	53.8	59.3	43.8	52.3	85.5	60.7	66.4	70.9	49.5	53.2	46.2	49.6	96.0	68.0	44.9	69.7	62.1	24	1
DUCLAIR	41.2	53.6	42.8	45.9	77.5	79.7	78.2	78.5	43.8	52.9	34.0	43.6	101.4	85.3	38.5	75.0	60.9	24	4
CORBIN	45.9	52.8	45.0	47.9	72.5	69.2	68.9	70.2	39.2	47.2	40.2	42.2	93.4	61.6	33.9	63.0	56.9	24	10
VOLT	42.5	49.0	49.9	47.1	74.7	56.5	72.5	67.9	39.8	46.0	37.2	41.0	96.9	80.8	37.2	71.6	59.8	24	6
ONEAL	48.6	59.2	46.9	51.6	85.4	59.8	64.9	70.0	46.8	48.7	47.8	47.8	100.5	67.6	39.6	69.2	59.5	24	7
JEDD	43.3	52.6	40.7	45.5	68.2	60.2	56.8	61.7	42.3	46.1	39.8	42.8	82.5	51.0	34.6	56.0	55.0	24	14
KELBY	44.0	47.3	41.2	44.2	60.6	43.9	67.1	57.2	42.4	39.7	48.2	43.4	88.3	74.0	36.0	66.1	52.2	24	15
KUNTZ	44.4	44.4	41.8	43.5	72.4	59.2	69.2	66.9	45.9	39.5	45.5	43.6	95.2	78.7	46.1	73.4	57.3	24	9
AP604cl	42.1	52.3	40.3	44.9	60.7	58.3	63.3	60.8	43.5	45.5	44.0	44.3	90.2	71.3	43.0	68.2	55.6	24	13
BRENNAN	55.1	53.3	36.9	48.4	60.2	46.3	72.2	59.6	43.2	42.2	46.1	43.8	94.5	83.3	40.4	72.7	55.7	24	12
SY TYRA	43.9	51.7	40.7	45.4	80.6	69.6	68.1	72.8	50.0	45.3	46.0	47.1	104.4	76.8	44.0	75.1	61.6	24	2
AVERAGE	45.5	52.4	41.9	46.6	72.2	61.3	67.5	67.0	43.3	44.9	42.4	43.5	93.3	72.7	39.7	68.6	57.4	24	0
C.V.				7.2				9.7				8.52				8.6	7.64		
F-value (entry)				1.86 ns				2.83**				2.13*				2.75**	6.27**		
LSD (.05)				5.59				10.81				6.18				9.91	4.21		

TABLE 14. 2009-2011 TEST WEIGHT (LB/BU) SUMMARY FOR DUCLAIR, BRENNAN, AND SY TYRA COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1 KALISPELL			DISTRICT 2 BOZEMAN DRY			DISTRICT 2 BOZEMAN IRR.			DISTRICT 3 HUNTLEY DRY				DISTRICT 4 MOCCASIN			
	2009	2010	ave.	2009	2011	ave.	2009	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.
FORTUNA	63.4	59.1	61.3	62.4	61.4	61.9	62.8	62.1	62.5	60.3	61.9	59.3	60.5	58.7	60.2	61.2	60.0
MCNEAL	61.9	59.5	60.7	60.0	58.9	59.5	61.7	60.3	61.0	60.5	62.1	56.8	59.8	61.3	58.4	60.6	60.1
REEDER	62.5	60.3	61.4	61.7	59.2	60.5	62.2	61.6	61.9	61.6	63.1	58.4	61.0	60.9	60.5	61.7	61.0
CONAN	61.3	59.4	60.3	59.8	59.9	59.9	61.2	61.1	61.2	60.4	61.9	59.2	60.5	61.5	58.6	61.4	60.5
HANK	62.2	56.2	59.2	59.9	59.9	59.9	60.4	60.3	60.4	60.1	60.5	55.1	58.6	58.1	57.0	59.0	58.0
CHOTEAU	62.7	58.9	60.8	61.8	60.3	61.1	62.5	60.8	61.7	60.1	62.5	57.4	60.0	58.5	60.2	61.0	59.9
VIDA	61.4	59.4	60.4	60.6	60.3	60.5	59.6	61.3	60.5	60.4	62.2	56.7	59.8	59.3	59.8	60.9	60.0
DUCLAIR	62.0	58.9	60.5	61.4	59.9	60.7	61.2	60.3	60.8	60.1	61.8	57.1	59.7	58.2	57.8	59.7	58.6
CORBIN	63.4	59.3	61.4	62.1	62.1	62.1	62.8	62.3	62.6	60.8	62.5	57.7	60.3	60.6	58.4	60.8	59.9
VOLT	63.1	60.7	61.9	63.3	62.2	62.8	64.1	63.4	63.8	62.1	63.2	60.3	61.9	61.7	61.5	62.0	61.7
ONEAL	61.5	57.9	59.7	61.1	60.4	60.8	61.5	61.4	61.5	62.2	63.4	57.7	61.1	60.9	59.8	60.5	60.4
JEDD	63.8	57.2	60.5	62.6	62.2	62.4	63.6	61.7	62.7	61.8	63.0	57.6	60.8	60.9	59.8	62.5	61.0
KELBY	64.0	59.4	61.7	63.0	61.7	62.4	62.5	62.3	62.4	59.7	62.6	59.8	60.7	60.1	61.1	62.9	61.3
KUNTZ	63.4	59.5	61.5	62.5	61.7	62.1	62.5	62.6	62.6	60.9	62.3	56.4	59.9	59.8	60.2	62.1	60.7
AP604cl	64.1	59.4	61.8	62.2	62.6	62.4	63.0	63.1	63.1	61.4	63.6	59.3	61.4	60.3	59.6	62.1	60.7
BRENNAN	64.1	59.2	61.7	62.9	62.1	62.5	62.6	62.6	62.6	60.5	62.9	59.2	60.9	61.4	60.8	63.3	61.8
SY TYRA	63.5	59.6	61.6	62.5	62.1	62.3	62.8	61.7	62.3	61.6	63.3	55.2	60.0	61.6	60.6	63.3	61.8
AVERAGE	62.8	59.1	61.0	61.8	61.0	61.4	62.2	61.7	61.9	60.9	62.5	57.8	60.4	60.2	59.6	61.4	60.4
C.V.			1.58			0.84			0.95				1.5				1.27
F-value (entry)			1.28 ns			9.18**			5.28**				2.13*				5.58**
LSD (.05)			2.04			1.09			1.25				1.54				1.28

ID	DISTRICT 5 HAVRE				DISTRICT 5 CONRAD DRY				DISTRICT 6 SIDNEY DRYLAND				DISTRICT 6 SIDNEY IRR				OVERALL		
	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	AVE	yrs	rank
FORTUNA	59.5	57.8	60.8	59.4	63.3	59.8	61.3	61.5	62.7	61.0	58.5	60.7	61.4	58.5	56.0	58.6	60.55	24	10
MCNEAL	58.5	57.6	59.1	58.4	62.7	59.7	59.4	60.6	62.5	60.0	58.0	60.2	61.7	57.5	58.0	59.1	59.86	24	14
REEDER	59.9	58.0	61.2	59.7	63.3	60.0	60.7	61.4	63.6	61.5	59.5	61.5	62.2	59.0	59.5	60.2	60.92	24	6
CONAN	59.8	58.3	61.3	59.8	62.7	60.4	60.3	61.1	63.3	62.0	59.5	61.6	61.6	60.0	59.5	60.4	60.59	24	9
HANK	58.8	55.8	59.5	58.0	63.1	58.1	56.3	59.2	62.8	59.5	58.0	60.1	60.8	55.5	56.5	57.6	58.89	24	17
CHOTEAU	57.9	56.5	59.6	58.0	63.2	59.5	60.4	61.0	63.2	61.0	60.0	61.4	60.9	58.0	56.5	58.5	60.13	24	13
VIDA	58.9	57.5	60.8	59.0	62.5	59.2	59.8	60.5	62.8	60.0	58.0	60.3	60.3	56.5	57.5	58.1	59.81	24	15
DUCLAIR	57.8	56.8	59.2	57.9	62.8	58.6	59.9	60.5	62.8	60.0	56.5	59.8	61.1	58.5	56.0	58.5	59.52	24	16
CORBIN	59.9	57.1	61.2	59.4	64.5	59.5	58.6	60.9	63.6	60.0	58.5	60.7	62.0	57.5	57.5	59.0	60.53	24	11
VOLT	59.8	57.9	63.2	60.3	65.2	63.0	61.5	63.2	65.0	61.5	60.0	62.2	63.1	60.0	57.0	60.0	61.86	24	1
ONEAL	60.6	59.0	61.1	60.2	63.4	62.2	59.6	61.7	64.1	60.5	59.0	61.2	61.9	54.5	57.5	58.0	60.48	24	12
JEDD	59.7	57.5	61.4	59.5	63.7	59.3	58.1	60.4	65.0	61.0	59.5	61.8	61.8	56.0	59.0	58.9	60.77	24	7
KELBY	59.5	58.2	62.3	60.0	63.5	59.6	61.3	61.5	63.7	61.0	60.0	61.6	61.7	59.5	59.0	60.1	61.18	24	4
KUNTZ	58.4	56.6	60.0	58.3	63.6	60.7	60.1	61.4	64.4	60.0	59.5	61.3	62.6	58.0	59.5	60.0	60.71	24	8
AP604cl	59.8	58.0	60.9	59.6	64.2	59.9	60.4	61.5	64.8	61.0	60.0	61.9	62.7	59.5	61.0	61.1	61.37	24	3
BRENNAN	59.3	58.0	62.4	59.9	63.9	59.8	62.3	62.0	64.0	61.0	61.0	62.0	62.0	60.0	60.0	60.7	61.47	24	2
SY TYRA	59.4	56.9	60.1	58.8	64.9	59.4	59.4	61.2	65.0	61.0	60.0	62.0	62.6	59.0	60.0	60.5	61.06	24	5
AVERAGE	59.3	57.5	60.8	59.2	63.6	59.9	60.0	61.2	63.7	60.7	59.2	61.2	61.8	58.1	58.2	59.4	60.57	24	0
C.V.				0.94				1.5				0.97				1.82	0.89		
F-value (entry)				6.3**				2.45*				4.89**				2.92**	17.6**		
LSD (.05)				0.92				1.57				0.99				1.8	0.51		

TABLE 15. 2009-2011 HEADING DATE (180=JUNE 29) SUMMARY FOR DUCLAIR, BRENNAN AND SY TYRA COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1 KALISPELL			DISTRICT 2 BOZEMAN DRY			DISTRICT 2 BOZEMAN IRR.			DISTRICT 3 HUNTLEY DRY				DISTRICT 4 MOCCASIN			
	2009	2010	ave.	2009	2011	ave.	2009	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.
FORTUNA	184	182	183	190	192	191	190	192	191	168	170	180	172	182	184	190	186
MCNEAL	185	184	185	193	195	194	193	193	193	170	171	180	174	184	185	190	186
REEDER	185	180	183	194	193	194	193	191	192	169	170	179	172	183	185	188	185
CONAN	184	181	182	191	192	192	190	190	190	168	170	179	172	182	184	190	185
HANK	181	180	181	189	192	191	188	190	189	168	169	177	171	182	183	188	184
CHOTEAU	183	181	182	191	191	191	190	190	190	169	171	179	173	181	184	189	185
VIDA	184	181	182	192	193	193	192	192	192	169	170	179	173	184	186	191	187
DUCLAIR	183	180	181	189	191	190	189	188	189	167	168	176	171	181	182	188	184
CORBIN	183	181	182	191	191	191	189	191	190	167	169	178	171	181	184	188	185
VOLT	190	182	186	196	196	196	196	195	196	169	170	180	173	182	187	191	187
ONEAL	185	183	184	192	194	193	192	192	192	169	171	179	173	183	184	190	186
JEDD	181	180	181	189	191	190	189	191	190	168	168	177	171	181	184	188	184
KELBY	182	179	181	188	190	189	188	190	189	167	168	176	171	181	183	187	184
KUNTZ	185	181	183	191	191	191	190	191	191	170	170	179	173	183	185	190	186
AP604 CL	182	180	181	189	190	190	188	190	189	167	168	176	171	181	184	189	185
BRENNAN	183	180	181	187	190	189	188	188	188	167	167	176	170	181	185	188	184
SY TYRA	183	182	182	191	193	192	189	192	191	169	170	180	173	182	185	191	186
AVERAGE	184	181	182	191	192	191	190	191	191	168	169	178	172	182	184	189	185
C.V.			0.68						0.52				0.33				0.41
F-value (entry)			2.86**			11.1**			7.1**				13.5**				5.26**
LSD (.05)			2.63			1.74			2.1				0.95				1.26

ID	DISTRICT 5 HAVRE				DISTRICT 5 CONRAD DRY				DISTRICT 6 SIDNEY DRYLAND				DISTRICT 6 SIDNEY IRR				OVERALL		
	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	AVE	YRS	RANK
FORTUNA	177	181	184	181	179	187	194	187	173	178	184	178	177	180	190	182	183	24	7
MCNEAL	180	180	184	181	180	187	192	186	174	180	185	180	178	181	191	183	184	24	2
REEDER	177	180	185	180	179	182	191	184	172	178	184	178	175	179	190	181	183	24	8
CONAN	178	180	184	181	180	184	192	185	172	177	185	178	176	180	190	182	182	24	9
HANK	178	180	183	180	179	182	190	184	170	177	184	177	175	179	188	181	181	24	12
CHOTEAU	177	179	184	180	179	185	189	184	171	179	184	178	175	179	189	181	182	24	10
VIDA	178	181	184	181	180	186	193	186	173	179	184	179	176	180	190	182	183	24	4
DUCLAIR	176	179	182	179	179	181	189	183	172	177	184	178	175	178	188	181	181	24	14
CORBIN	177	179	183	180	178	181	192	184	170	178	184	177	175	179	189	181	182	24	11
VOLT	180	181	186	182	180	187	195	187	173	179	187	180	179	185	192	185	185	24	1
ONEAL	179	181	184	181	180	187	193	187	173	179	186	179	177	180	190	182	183	24	3
JEDD	177	179	185	180	179	182	191	184	169	176	185	177	175	178	188	180	181	24	13
KELBY	176	179	182	179	178	181	191	183	169	177	184	177	174	177	189	180	181	24	16
KUNTZ	179	181	185	181	179	184	192	185	173	179	185	179	177	179	190	182	183	24	6
AP604cl	176	178	182	179	179	182	191	184	170	177	184	177	174	178	187	180	181	24	15
BRENNAN	177	178	183	179	178	181	190	183	170	177	184	177	175	178	188	180	181	24	17
SY TYRA	178	181	186	181	180	184	194	186	172	178	185	179	176	179	189	181	183	24	5
AVERAGE	178	180	184	180	179	184	192	185	172	178	185	178	176	179	189	181	182	24	0
C.V.				0.39				0.66				0.48				0.34	0.37		
F-value (entry)				6.68**				4.13**				4.2**				14.9**	29.3**		
LSD (.05)				1.18				2.04				1.41				1.04	0.64		

TABLE 16. 2009-2011 PLANT HEIGHT (INCHES) SUMMARY FOR DUCLAIR, BRENNAN AND SY TYRA COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1 KALISPELL			DISTRICT 2 BOZEMAN DRY				DISTRICT 2 BOZEMAN IRR.		DISTRICT 3 HUNTLEY DRY				DISTRICT 4 MOCCASIN			
	2009	2010	ave.	2009	2010	2011	ave.	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.
FORTUNA	40.1	45.1	42.6	35.9	38.6	36.6	37.0	38.1	38.1	40.5	42.7	41.3	41.5	29.3	37.5	31.6	32.8
MCNEAL	30.8	41.1	35.9	30.1	33.1	30.9	31.4	35.0	35.0	32.9	39.8	31.5	34.7	27.3	32.6	26.0	28.6
REEDER	33.7	39.4	36.5	32.3	31.2	30.4	31.3	33.5	33.5	34.5	40.2	34.5	36.4	25.3	32.6	23.9	27.3
CONAN	30.6	36.8	33.7	29.4	31.5	27.8	29.6	30.2	30.2	31.5	36.9	31.2	33.2	24.6	30.1	23.9	26.2
HANK	29.9	35.2	32.5	28.1	30.7	28.6	29.1	30.1	30.1	31.9	35.0	32.2	33.0	23.6	30.2	24.5	26.1
CHOTEAU	30.6	36.2	33.4	29.0	32.4	29.1	30.2	31.7	31.7	31.4	37.0	33.1	33.8	21.3	31.4	23.3	25.3
VIDA	32.1	38.7	35.4	31.0	31.8	29.6	30.8	32.9	32.9	34.2	39.9	33.5	35.9	23.7	31.3	24.4	26.5
DUCLAIR	30.7	36.5	33.6	29.8	32.7	30.6	31.0	32.6	32.6	33.6	38.5	33.2	35.1	24.1	31.7	26.1	27.3
CORBIN	31.9	37.5	34.7	30.5	32.6	30.2	31.1	32.2	32.2	33.4	38.5	34.0	35.3	21.5	31.5	24.4	25.8
VOLT	31.7	36.2	34.0	30.9	32.5	29.7	31.0	32.9	32.9	32.3	36.6	33.2	34.0	24.4	31.0	23.8	26.4
ONEAL	31.9	36.8	34.3	30.5	33.6	29.9	31.3	31.9	31.9	33.0	36.5	30.8	33.4	25.0	33.4	25.3	27.9
JEDD	25.9	30.8	28.4	25.7	28.0	24.9	26.2	26.8	26.8	28.2	33.1	28.0	29.8	19.9	26.7	22.8	23.1
KELBY	28.7	33.2	31.0	27.0	29.9	26.8	27.9	27.9	27.9	31.4	36.1	30.3	32.6	22.1	31.5	23.1	25.6
KUNTZ	29.1	34.1	31.6	28.4	30.0	27.9	28.8	30.2	30.2	32.0	37.5	31.5	33.7	25.1	29.0	23.7	25.9
AP604cl	31.6	39.0	35.3	28.9	29.0	29.8	29.2	32.3	32.3	34.6	42.9	37.8	38.4	23.1	34.3	25.4	27.6
BRENNAN	28.0	32.3	30.2	26.2	28.8	27.0	27.3	28.9	28.9	31.0	36.3	29.6	32.3	24.4	30.0	23.9	26.1
SY TYRA	27.3	32.4	29.9	26.6	27.9	26.6	27.0	28.5	28.5	29.7	35.9	28.1	31.2	22.7	27.9	21.5	24.0
AVERAGE	30.9	36.5	33.7	29.4	31.4	29.2	30.0	31.5	31.5	32.7	37.8	32.6	34.4	24.0	31.3	24.6	26.6
C.V.			3.00														4.43
F-value (entry)			20.6**														9.35**
LSD (.05)			2.14														1.96

ID	DISTRICT 5 HAVRE			DISTRICT 5 CONRAD DRY				DISTRICT 6 SIDNEY DRYLAND				DISTRICT 6 SIDNEY IRR				OVERALL		
	2009	2010	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	AVE	YRS	RANK
FORTUNA	30.1	40.0	35.0	35.0	43.3	39.4	39.2	24.0	30.5	30.4	28.3	37.9	34.0	32.8	34.9	36.3	23	1
MCNEAL	24.7	33.6	29.1	31.0	38.0	34.0	34.4	22.0	25.1	26.3	24.5	34.5	31.2	29.3	31.7	31.3	23	2
REEDER	25.8	33.5	29.6	29.0	37.8	33.5	33.4	19.8	22.5	25.7	22.7	33.4	30.9	27.8	30.7	30.9	23	3
CONAN	26.2	32.5	29.3	28.0	33.6	31.7	31.1	21.9	22.5	23.7	22.7	29.1	28.7	24.3	27.4	29.0	23	11
HANK	24.7	30.8	27.8	28.0	34.6	30.4	31.0	21.2	23.6	25.1	23.3	28.2	28.4	22.8	26.5	28.6	23	12
CHOTEAU	24.4	31.6	28.0	27.0	35.3	32.8	31.7	20.8	24.6	24.5	23.3	30.8	30.8	26.1	29.2	29.4	23	9
VIDA	26.4	30.7	28.5	33.0	37.8	33.8	34.9	21.1	25.6	25.6	24.1	30.3	30.8	22.9	28.0	30.5	23	4
DUCLAIR	27.9	31.4	29.7	29.0	36.5	32.6	32.7	20.5	25.6	24.0	23.4	30.8	31.0	25.0	28.9	30.2	23	7
CORBIN	25.8	32.5	29.2	27.0	35.8	33.2	32.0	21.5	24.5	25.1	23.7	30.3	29.3	25.1	28.2	29.9	23	8
VOLT	25.6	29.5	27.6	27.0	33.3	31.4	30.6	20.1	22.4	22.1	21.5	29.7	31.1	26.3	29.0	29.3	23	10
ONEAL	26.0	32.1	29.1	30.0	36.9	32.4	33.1	22.4	25.8	25.2	24.5	31.8	30.1	24.8	28.9	30.3	23	6
JEDD	22.0	26.9	24.4	24.0	31.0	27.7	27.6	19.5	22.1	21.6	21.0	26.0	23.9	19.4	23.1	25.4	23	17
KELBY	25.6	29.6	27.6	25.0	32.7	28.7	28.8	20.3	22.9	22.1	21.8	27.5	27.3	23.2	26.0	27.5	23	15
KUNTZ	24.8	31.0	27.9	26.0	33.7	29.8	29.8	21.1	24.2	25.2	23.5	28.1	29.8	24.7	27.5	28.6	23	13
AP604cl	25.4	33.5	29.4	28.0	38.1	32.3	32.8	20.6	23.1	26.3	23.3	30.5	30.0	23.5	28.0	30.4	23	5
BRENNAN	24.2	31.7	27.9	24.0	32.1	29.1	28.4	20.4	25.9	24.6	23.7	26.1	27.2	23.3	25.6	27.6	23	14
SY TYRA	23.7	29.5	26.6	25.0	31.5	29.3	28.6	18.9	22.1	22.3	21.1	28.0	26.4	22.1	25.5	26.7	23	16
AVERAGE	25.5	31.8	28.6	28.0	35.4	31.9	31.8	20.9	24.3	24.7	23.3	30.2	29.5	24.9	28.2	29.5	23	0
C.V.			4.47															
F-value (entry)			5.42**															
LSD (.05)			2.72															

TABLE 17. 2009-2011 GRAIN PROTEIN (%) SUMMARY FOR DUCLAIR, BRENNAN AND SY TYRA COMPARED TO SELECTED SPRING WHEATS IN THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

VARIETY	DISTRICT 1 KALISPELL			DISTRICT 2 BOZEMAN DRY			DISTRICT 2 BOZEMAN IRR.			DISTRICT 3 HUNTLEY DRY				DISTRICT 4 MOCCASIN			
	2009	2010	ave.	2009	2011	ave.	2009	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.
FORTUNA	14.5	14.4	14.5	14.1	15.1	14.6	14.6	16.0	15.3	12.5	11.7	14.9	13.0	15.2	12.1	15.3	14.2
MCNEAL	14.6	15.2	14.9	13.8	15.0	14.4	13.9	16.0	15.0	12.8	10.6	13.6	12.3	15.7	12.2	14.8	14.2
REEDER	14.2	15.2	14.7	14.4	14.8	14.6	14.8	15.2	15.0	13.5	10.9	14.7	13.0	16.3	12.6	15.6	14.8
CONAN	15.3	14.4	14.9	14.3	15.2	14.8	14.7	15.1	14.9	13.8	12.1	14.7	13.5	15.7	11.5	16.0	14.4
HANK	13.7	13.7	13.7	13.7	13.8	13.8	13.9	14.5	14.2	12.3	10.7	15.1	12.7	16.7	11.8	15.8	14.8
CHOTEAU	14.2	15.0	14.6	14.3	14.3	14.3	15.3	15.7	15.5	13.4	11.6	14.6	13.2	16.9	11.5	15.6	14.7
VIDA	14.2	15.0	14.6	13.6	14.3	14.0	14.3	15.2	14.8	10.9	10.4	15.1	12.1	15.8	11.5	14.6	14.0
DUCLAIR	14.1	14.9	14.5	14.0	14.3	14.2	14.8	14.7	14.8	12.6	10.7	14.3	12.5	17.0	11.3	15.1	14.5
CORBIN	14.3	14.2	14.3	13.2	13.9	13.6	14.3	14.7	14.5	13.0	10.5	14.1	12.5	17.9	11.3	15.1	14.8
VOLT	13.4	13.5	13.5	13.0	13.3	13.2	13.8	14.2	14.0	12.9	10.8	13.8	12.5	15.1	12.4	15.0	14.2
ONEAL	14.1	14.8	14.5	14.1	14.7	14.4	14.8	15.2	15.0	11.7	9.9	14.6	12.1	16.6	13.2	15.8	15.2
JEDD	14.0	13.7	13.9	13.4	13.7	13.6	14.1	14.3	14.2	12.9	10.5	14.0	12.5	17.2	12.3	15.8	15.1
KELBY	14.9	15.1	15.0	15.4	16.0	15.7	14.9	15.8	15.4	16.0	12.6	14.7	14.4	16.3	12.0	16.5	14.9
KUNTZ	13.5	14.5	14.0	13.1	12.3	12.7	13.9	14.2	14.1	12.5	10.8	13.9	12.4	14.6	11.7	15.1	13.8
AP604cl	15.3	13.7	14.5	14.5	14.8	14.7	15.6	15.9	15.8	12.2	11.0	14.7	12.6	16.2	11.6	15.6	14.5
BRENNAN	14.5	14.7	14.6	15.0	15.5	15.3	15.0	15.5	15.3	14.6	12.3	14.6	13.8	16.1	11.2	16.2	14.5
SY TYRA	13.1	13.6	13.4	13.0	13.6	13.3	13.3	13.5	13.4	12.9	10.2	14.1	12.4	16.3	12.6	15.0	14.6
AVERAGE	14.2	14.45	14.3	13.9	14.4	14.2	14.5	15.0	14.8	12.97	11.02	14.4	12.8	16.2	11.9	15.5	14.5
C.V.																	
F-value (entry)																	
LSD (.05)																	

ID	DISTRICT 5 HAVRE				DISTRICT 5 CONRAD DRY				DISTRICT 6 SIDNEY DRYLAND				DISTRICT 6 SIDNEY IRR				OVERALL AVERAGE
	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	2009	2010	2011	ave.	
FORTUNA	14.8	13.0	14.1	14.0	14.2	14.7	13.6	14.2	14.4	11.4	16.5	14.1	15.1	14.4	16.9	15.5	14.3
MCNEAL	15.0	12.6	13.8	13.8	13.8	13.4	13.1	13.4	14.1	11.0	15.4	13.5	14.8	13.6	15.9	14.8	13.9
REEDER	14.6	12.7	14.2	13.8	14.4	13.9	13.8	14.0	13.9	12.2	15.5	13.9	15.7	14.5	15.9	15.4	14.3
CONAN	14.9	12.1	14.1	13.7	13.9	13.8	13.1	13.6	14.1	11.6	16.2	14.0	14.9	14.6	16.3	15.3	14.3
HANK	14.6	12.9	14.1	13.9	13.3	13.5	13.3	13.4	13.6	10.7	15.4	13.2	14.2	14.1	16.3	14.9	13.8
CHOTEAU	15.4	13.0	14.5	14.3	14.6	13.6	13.2	13.8	15.0	11.7	15.4	14.0	15.6	14.9	17.1	15.9	14.4
VIDA	14.2	11.5	13.4	13.0	13.7	13.6	12.5	13.3	14.2	11.2	15.0	13.5	14.1	15.0	15.4	14.8	13.7
DUCLAIR	14.9	12.8	14.3	14.0	14.2	13.9	13.2	13.8	13.7	12.1	14.1	13.3	14.0	14.1	15.9	14.7	14.0
CORBIN	14.6	12.5	13.8	13.6	13.8	13.3	14.7	13.9	15.0	10.9	15.0	13.6	14.0	13.8	16.5	14.8	13.9
VOLT	14.2	11.5	13.4	13.0	13.0	13.5	13.0	13.2	13.8	10.2	15.4	13.1	13.5	14.2	15.9	14.5	13.5
ONEAL	14.6	12.3	13.6	13.5	13.4	12.9	13.8	13.4	12.8	10.5	15.0	12.8	13.0	14.8	16.1	14.6	13.8
JEDD	15.0	12.1	13.7	13.6	13.8	13.0	13.1	13.3	12.8	10.7	15.2	12.9	13.9	14.4	16.4	14.9	13.8
KELBY	15.0	14.0	15.0	14.7	16.3	14.7	13.6	14.9	13.8	13.4	16.2	14.5	15.4	15.1	17.7	16.1	15.0
KUNTZ	14.2	12.0	13.1	13.1	13.6	13.6	12.8	13.3	13.5	11.7	13.8	13.0	13.9	14.0	15.5	14.5	13.4
AP604cl	14.7	13.1	13.9	13.9	16.1	14.2	14.0	14.8	14.5	11.9	15.2	13.9	15.0	13.9	16.3	15.1	14.3
BRENNAN	14.8	12.7	14.6	14.0	15.9	14.1	13.8	14.6	13.6	13.1	15.3	14.0	15.1	15.1	17.3	15.8	14.6
SY TYRA	13.7	12.6	13.3	13.2	13.5	12.6	12.0	12.7	12.4	11.3	14.2	12.6	13.5	13.5	15.3	14.1	13.3
AVERAGE	14.7	12.6	13.9	13.7	14.2	13.7	13.3	13.7	13.8	11.5	15.2	13.5	14.5	14.4	16.3	15.0	14.0
C.V.																	
F-value (entry)																	
LSD (.05)																	

TABLE 18. 2009-2011 Stem solidness, sawfly damage and grain yields under sawfly pressure

VARIETY	STEM SOLIDNESS					AVE
	BOZEMAN		BOZEMAN			
	2009 DRY	2009 IRR	2010 DRY	2011 DRY	2011 IRR	
DUCLAIR	17.0	15.7	20.7	21.5	18	18.6
FORTUNA	19.8	15.6	17.7	21.9	16.5	18.3
MCNEAL	5.4	6.4	7.1	8.5	6.4	6.8
REEDER	5.4	5.3	6.3	8.4	6.7	6.4
CHOTEAU	23.4	21.2	20.1	23.6	20.4	21.7
VIDA	8.1	9.0	13	11.1	7.6	9.8
HANK	6.5	5.5	8.1	8.9	7.9	7.4
CONAN	8.7	7.3	10.1	12.8	10.6	9.9
CORBIN	8.4	6.8	9.4	13.5	9.6	9.5
VOLT	5.9	5.4	8.8	8.2	6.1	6.9
ONEAL	5.5	5.7	8.4	12.5	7.1	7.8
JEDD	6.9	5.9	7.8	10	8.1	7.7
KELBY	5.6	5.5	6.1	8.9	7	6.6
KUNTZ	6.2	5.5	6.3	9.1	6.3	6.7
MOTT	14.2	15.9	17	18.1	16.2	16.3
SY TYRA	11.5	10.6	14.8	19.1	11.7	13.5

VARIETY	SAWFLY DAMAGE (% STEMS CUT)								
	2010			2011			LOMA	AMSTERDAM	AVE
	LORING	TURNER	HAVRE	LORING	TURNER	HAVRE			
DUCLAIR	10.0	13.7	16.1	15.0	33.3	26.6	5.0	0.0	15.0
FORTUNA	11.7	8.3	22.4	6.7	28.3	19.2	0.0	0.0	12.1
MCNEAL	20.0	25	26.9	20.0	80.0	35.6	15.0	50.0	34.1
REEDER	10.3	16.7	29.6	18.3	53.3	15.8	10.0	40.0	24.3
CHOTEAU	8.3	13.3	29.4	16.7	36.7	30.3	2.0	0.0	17.1
VIDA	10.0	18.3	8.4	18.3	26.7	11.1	2.0	5.0	12.5
HANK	5.0	8.3	32.2	11.7	58.3	15.7	50.0	15.0	24.5
CONAN	1.0	3.7	12.2	13.3	23.3	3.9	2.0	5.0	8.1
CORBIN	5.3	10.3	13.5	10.0	21.7	7.1	10.0	10.0	11.0
VOLT	15.0	21.7	61.5	23.3	93.3	16.8	60.0	60.0	44.0
ONEAL	2.3	2.3	10.9	16.7	40.0	10.2	10.0	0.0	11.6
JEDD	2.3	3.7	21.9	10.0	43.3	8.1	10.0	60.0	19.9
KELBY	3.7	8.7	25.3	15.0	30.2	14.7	10.0	90.0	24.7
KUNTZ	10.0	18.3	56.0	20.0	61.7	15.4	60.0	80.0	40.2
MOTT	1.0	3.7	10.3	5.0	5.0	12.8	0.0	0.0	4.7
SY TYRA	5.0	15	19.9	15.0	46.0	8.7	40.0	5.0	19.3

VARIETY	GRAIN YIELD (BU/AC)						
	2010			2011			AVE
	LORING	TURNER	HAVRE	LORING	TURNER	HAVRE	
DUCLAIR	34.9	36.7	53.6	33.5	31.4	42.8	38.8
FORTUNA	26.4	24.4	48.7	34.3	29.2	39.8	33.8
MCNEAL	29.3	32.7	48.8	33.2	28.0	37.1	34.9
REEDER	32.9	30.9	55.2	34.9	27.3	42.0	37.2
CHOTEAU	29.6	32.6	54.8	34.2	30.6	38.7	36.8
VIDA	36.9	25.6	59.3	38.0	34.7	43.8	39.7
HANK	30.2	36.5	56.2	32.8	24.2	41.5	36.9
CONAN	22.8	31.4	51.1	32.4	30.5	42.7	35.2
CORBIN	30.5	32.7	52.8	36.6	32.4	45.0	38.3
VOLT	34.7	27.2	49.0	34.6	26.3	49.9	37.0
ONEAL	36.3	37.1	59.2	40.5	30.1	46.9	41.7
JEDD	36.2	41.5	52.6	32.5	26.5	40.7	38.3
KELBY	35.1	32.9	47.3	33.3	24.5	41.2	35.7
KUNTZ	30.1	32.4	44.4	33.0	24.8	41.8	34.4
MOTT	32.8	30.3	51.5	37.4	31.8	41.1	37.5
SY TYRA	35.7	33.0	51.7	34.0	25.6	40.7	36.8

TABLE 19. 2009-2010 Mill and Bake quality summary for Duclair, Brennan and SyTyra compared to selected varieties grown in the advanced spring wheat nursery across Montana
(Means Across Locations: Havre, Sidney, Moccasin & Huntley)

VARIETY	GRAIN		KERNEL		FLOUR		FLOUR		FLOUR		WHEAT		MIXOGRAPH		BAKE		LOAF		CRUMB-GRAIN	
	PROTEIN (%)	PROTEIN (%)	HARDNESS (%)	YIELD (%)	PROTEIN (%)	ASH (%)	PROTEIN (%)	ASH (%)	PROTEIN (%)	ASH (%)	TOLERANCE (%)	TIME (MIN.)	ABSORPTION (%)	TIME (MIN.)	ABSORPTION (%)	VOLUME (CC)	SCORE (1-10)	VOLUME (CC)	SCORE (1-10)	
FORTUNA	13.8	13.8	65.1	69.5	12.5	0.43	1.57	3.38	3.56	64.41	4.76	74.11	1042.5	7.50						
MCNEAL	13.3	13.3	80.2	66.7	12.2	0.42	1.64	4.88	7.23	66.61	10.68	78.13	1126.9	8.00						
REEDER	13.7	13.7	69.0	67.5	12.4	0.42	1.53	3.25	4.21	64.88	5.40	74.64	1068.1	7.25						
OUTLOOK	13.5	13.5	83.7	67.6	12.3	0.42	1.57	4.00	4.83	65.39	5.90	75.09	1105.0	7.13						
CHOTEAU	14.1	14.1	63.0	67.1	12.9	0.41	1.54	3.75	3.89	66.00	4.88	75.33	1118.1	7.38						
VIDA	13.3	13.3	69.7	69.6	12.1	0.43	1.48	3.25	4.45	65.40	5.78	74.60	1097.5	7.38						
HANK	13.4	13.4	64.8	67.3	12.1	0.43	1.60	4.00	6.36	65.46	9.36	75.66	1093.1	7.50						
CONAN	13.7	13.7	68.1	65.5	12.1	0.42	1.67	4.25	5.85	65.65	8.26	76.41	1117.5	7.75						
CORBIN	13.4	13.4	64.0	68.1	12.0	0.42	1.66	3.75	5.59	65.16	9.36	75.43	1008.1	7.38						
VOLT	13.0	13.0	77.2	67.1	11.6	0.43	1.63	5.38	7.21	65.90	14.65	78.16	988.1	7.75						
ONEAL	13.2	13.2	78.8	67.7	11.9	0.42	1.55	5.00	7.05	64.94	11.55	77.14	1131.3	7.38						
JEDD	13.4	13.4	75.5	67.5	12.3	0.42	1.64	4.50	5.30	66.33	8.61	76.53	1072.5	7.50						
FREYR	13.6	13.6	72.7	68.5	12.3	0.43	1.56	4.25	4.50	65.83	6.75	75.53	1071.3	7.75						
KELBY	14.2	14.2	66.2	65.7	12.8	0.45	1.56	3.88	4.59	66.85	6.66	76.49	1093.1	7.63						
KUNTZ	13.1	13.1	74.8	68.3	11.9	0.42	1.57	5.00	5.35	65.76	8.63	76.21	1061.9	7.50						
MOTT	13.6	13.6	71.0	68.6	12.3	0.40	1.60	4.00	5.21	67.28	9.70	76.85	1092.5	7.50						
DUCLAIR	13.7	13.7	66.0	67.2	12.2	0.42	1.51	4.25	4.99	65.81	6.58	75.14	1102.5	6.63						
BRENNAN	13.9	13.9	68.8	66.9	12.2	0.43	1.54	3.90	4.25	66.70	5.85	76.60	1059.5	7.65						
SY TYRA	12.9	12.9	77.6	67.6	11.5	0.42	1.47	4.00	4.50	65.90	7.10	76.05	1069.0	8.00						
MEAN	13.5	13.5	71.4	67.6	12.2	0.4	1.6	4.1	5.2	65.8	7.9	76.0	1056.3	7.5						
C.V.	3.86	3.86	7.75	1.89	4.55	6.33	4.86	18.83	18.16	2.19	25.8	2.48	4.69	11.7						
F-VALUE	3.2**	3.2**	9.83**	5.52**	2.6**	1.19 ns	3.51**	4.98**	11.48**	2.14**	13.9**	2.91**	5.06**	1.43 ns						
LSD (.05)	0.52	0.52	5.44	1.26	0.55	0.03	0.08	0.77	0.93	1.43	1.99	1.87	49.9	0.86						