

**MISSISSIPPI VALLEY UNIFORM REGIONAL BARLEY
NURSERY**

2012

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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTHERN PLAINS AREA
AND
COOPERATING STATE AGRICULTURAL EXPERIMENT STATIONS

MISSISSIPPI VALLEY UNIFORM REGIONAL BARLEY NURSERY 2012

Compiled by Michael C. Edwards

This is a joint progress report of cooperative investigations underway in the State Agricultural Experiment Stations and the Agricultural Research Service of the United States Department of Agriculture containing preliminary data that have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is primarily a tool for use of cooperators and their official staffs and to those persons having direct and special interest in the development of agricultural research programs.

This report includes data furnished by the State Agricultural Experiment Stations, the provinces of Manitoba and Saskatchewan, Agriculture and Agri-Food Canada, and the Agricultural Research Service, and was compiled in the USDA-ARS Cereal Crops Research Unit at North Dakota State University. The report is not intended for publication and should not be referred to in literature citations nor quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

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List of Stations and Cooperators

2012 Mississippi Valley Uniform Regional Barley Nursery

<u>Stations</u>	<u>Cooperators</u>
Aberdeen, Idaho	Gongshe Hu, Chris Evans, USDA, Agricultural Research Service
Brandon, Manitoba	Ana Badea, Bill Legge, Agriculture Canada
Winnipeg, Manitoba	J. Gilbert, T. Fetch, A. Tekauz, Agriculture Canada
Crookston, Minnesota	Kevin Smith, University of Minnesota
Morris, Minnesota	Kevin Smith, University of Minnesota
Bottineau, North Dakota	J. Butler, S. Askelson, C. Allen, Busch Agricultural Resources
Sidney, Montana	J. Butler, S. Askelson, C. Allen, Busch Agricultural Resources
Carrington, North Dakota	R. D. Horsley, North Dakota State University
Fargo, North Dakota	R. D. Horsley, North Dakota State University
Osnabrock, North Dakota	R. D. Horsley, North Dakota State University
Saskatoon, Saskatchewan	A. Beattie, B. L. Harvey, T. Zatorski University of Saskatchewan
Madison, Wisconsin	Shawn Conley, John Mochon, University of Wisconsin

2012 Mississippi Valley Barley Nursery

Summary

It was a much better year for the barley nursery than last year when only four locations were able to contribute useable data for the report. Much drier weather prevailed during this growing season. The reader is referred to the "Nursery Conditions" section immediately following this summary for comments concerning specific locations.

Average planting date was April 24th, 4 days earlier than the 30-year average, while average heading date was the same as the 30-year average (June 26th). Average planting date was 8 days earlier than last year, but heading date was only a few days earlier than last year.

Average yield (3929 kg/ha or 73 bu/a) was below both the 30-year average and last year's average of 4555 kg/ha. Entries with the best yields were 2ND28131, 6B08-3210, 2ND28065, M154, and 6B09-4021.

Average test weight was 62.4 kg/hl, slightly higher than the 30-year average of 61.3. Entries with the highest test weights were 2ND27440, 2ND28065, M145, M148, 2ND26333, 2ND27421. No test weights were reported last year.

Lodging data were not reported. Average plant height was 80.2 cm – slightly under the 30-year average. Shortest entries were ND28993, 2ND26333, 2ND27421, 6B09-4235, and SR448.

Disease data from the Cereal Research Centre in Winnipeg are posted in Table 18. The Brandon location also reported disease data that can be found in Tables 19 and 20.

A summary of data from the nursery grown at Aberdeen is in Table 21. Finally, a list of entries and their parentage is in Table 22.

NURSERY CONDITIONS

MANITOBA:

BRANDON: Previous crop: .
Soil type: .
Fertilizer available: Fall soil test indicated approximately 75 - 80 lbs./acre N in the soil.
added: 15lbs/acre N applied spring 2012 as 46-0-0, 30 lbs/acre P & 6 lbs/acre N applied with seed as 11-52-0
Achieve liquid at 0.20L/acre on June 13, 2012
Prestige A at 0.30L/acre on June 13, 2012
Prestige B at 0.80L/acre on June 13, 2012
Remarks: Data were not used due to deer damage in some plots and spills. Normal spring with good moisture, hot & dry summer in July and August. There was no differential lodging.

MINNESOTA:

CROOKSTON: Previous crop: soybeans
Soil type: Wheatville, silt-loam.
Fertilizer available: 15 lbs/a N; 14 lbs/a P; 346 lbs/a K.
added: 200 lbs/A of 46-0-0.
Remarks: The nursery had dry conditions early, but good growing conditions through harvest. No lodging occurred this year.

MORRIS: Previous crop: soybeans.
Soil type: Nutley clay.
Fertilizer available: pH 6.6; Bray P 25 ppm; K 150 ppm.
added: none.
Remarks: The nursery had favorable planting and early growing conditions, but was dry through harvest. No lodging occurred this year.

NORTH DAKOTA:

CARRINGTON: Previous crop: dry edible beans.
Soil type: Heimdahl-Emrick, loam
Fertilizer available: 127 lbs/a N; 19 lbs/a P; 203 lbs/a K
added: 28 lbs/a N
Remarks: Planting date was typical for this location. Plant emergence and establishment was excellent. Weather was abnormally hot and dry for the 2012 growing season. Barley samples from Carrington are not suitable for malting due to high protein levels.

FARGO: Previous crop: soybeans

Soil type: Fargo, silty clay loam
Fertilizer available: 63 lbs/a N; 50 lbs/a P; 490 lbs/a K.
added: 47 lbs N.
Remarks: Planting date was typical for this location. Dry conditions after planting caused uneven emergence of plants within plots. The 2012 growing season was the second warmest and tenth driest on record in Fargo.

OSNABROCK: Previous crop: Canola
Soil type: Barnes-Svea loam.
Fertilizer available: 21 lbs/a N; 14 lbs/a P; 236 lbs/a K.
added: 93 lbs N, 37 lbs P.
Remarks: Planting date was normal for this area. Plant emergence and establishment was normal. Fusarium head blight was a problem at this location despite abnormally hot and dry weather conditions. Unacceptable levels of DON were detected in grain samples from the Osnabrock location.

BOTTINEAU: Previous crop: canola.
Soil type: .
Fertilizer available: .
added: .
Remarks: The nursery was seeded into a good seedbed with excellent moisture. The early summer progressed normally and the nursery had good plant development. Just prior to harvest the weather turned hot and dry. The crop never really finished, it just died. The nursery had an abundance of volunteer wheat in making the samples unsuitable for malting. Harvest went well, but with sub-par yields, high thins and high proteins.

MONTANA:

SIDNEY: Previous crop: barley.
Soil type: .
Fertilizer available: .
added: .
Remarks: The nursery was seeded into a nice seedbed with good moisture. The growing season progressed normally with excellent plant development and little disease or lodging. Harvest went well, with dry conditions, good yields and acceptable statistics.

WISCONSIN:

MADISON: Previous crop: soybeans
Soil type: St. Charles, loam
Fertilizer available: .

added: none
Remarks: Data were not used (CV>15). 2012 started out as a very early season with much promise, after one of the warmest winters on record. Planting was done on April 6. Germination looked good with even stands. In early May a wave of leafhoppers migrated through the region and spread Aster Yellows throughout the trials at Madison and Arlington. Outlying stations were not as badly hit. Since AY is not a common disease here, it created much symptomology and growth retardation, i.e. a lack of tillers and chlorosis. Just as plants were rebounding from this event we got into a bad drought that lasted 6 weeks, combined with very high temperatures during late June and July. April's mean temperature was 47.0 F with 2.3 inches of rain. Mean temperature for May was 62.7 F and we had 2.8 inches of rainfall. High temperatures began in June, which had a mean temperature of 71.6 F with 0.87 inches of rain. July and August stayed hot with less than adequate rainfall. July's mean temperature was 78.3 F (13 days of highs above 90.0 F) and August had a mean temperature of 70.0 F. Total rainfall for July and August combined was 5.7 inches. The high temperatures and disease pressure caused yields to be low. Bushel weights were more normal. Lodging pressure was light. Levels of BYDV and powdery mildew were low.

SASKATCHEWAN:

KERNEN: Previous crop: .
Soil type: .
Fertilizer
available: .
added:
Remarks: .

TABLE 1. AVERAGE OVER ALL STATIONS FOR THE INDICATED VARIABLES.

Variety/ Entry	Yield ¹ kg/ha	Test Wt ² kg/hl	Height ³ cm	Lodging ⁴ %	Heading ⁵ 5/31=0	Ripe ⁶ 5/31=0
MOREX	3366.5	60.9	87.8		24.5	
ROBUST	3688.8	62.2	86.5		25.2	
LEGACY	3827.4	60.6	80.9		26.1	
LACEY	4175.2	63.1	81.2		24.8	
TRADITION	3807.2	62.6	82.6		26.1	
PINNACLE	3764.8	60.8	77.6		26.3	
2ND25276	4054.1	63.0	83.7		25.9	
M145	4056.1	64.0	90.0		25.3	
2ND26333	3218.5	63.4	71.2		27.8	
M150	3923.6	63.1	82.9		25.3	
ND23898	3610.1	63.1	81.3		26.0	
ND25652	3803.8	60.6	83.1		26.7	
ND27245	3667.3	62.7	84.6		26.3	
2ND27421	3807.2	63.4	72.5		24.4	
2ND27440	3665.9	65.1	80.2		27.6	
SR440	4132.8	61.9	76.3		25.2	
M148	3906.1	63.6	85.4		26.6	
M151	4109.9	61.6	83.7		25.2	
M153	3838.1	62.2	79.8		25.3	
M154	4240.4	62.6	84.8		25.7	
ND26891	4027.2	61.3	80.2		25.9	
ND27177	3889.9	61.2	82.3		24.8	
ND28993	3900.7	62.3	70.3		24.6	
2ND28065	4426.8	64.8	79.1		25.6	
2ND28131	4508.2	63.3	76.7		24.2	
6B08-3210	4461.1	62.5	82.3		26.5	
6B09-3531	3887.9	63.2	78.5		24.1	
6B09-3580	4066.2	61.9	76.6		24.9	
6B09-3655	4064.9	62.3	78.7		24.6	
6B09-4021	4214.2	62.8	76.5		24.2	
6B09-4235	3843.5	61.8	74.8		25.4	
SR446	3959.9	61.6	79.5		26.1	
SR447	3814.6	61.2	78.7		24.4	
SR448	3846.9	60.8	76.1		24.7	
HIGH MEAN	4508.2	65.1	90.0		27.8	
LOW MEAN	3218.5	60.6	70.3		24.1	
EXP MEAN	3928.7	62.4	80.2		25.5	
C.V. %	9.1	1.1	4.5		4.2	
LSD 5%	349.3	1.4	3.6		1.2	
LSD 1%	459.1	1.9	4.7		1.6	
# of Loc	8	2	8		6	

1 all

2 Bottineau, Sidney

3 all

4 none

5 Crookston, Morris, Fargo, Carrington, Osnabrock, Saskatoon

6 None

TABLE 2. AVERAGE OVER STATIONS AT MANITOBA, MINNESOTA, AND NORTH DAKOTA.

Variety/ Entry	Yield ¹ kg/ha	Test Wt ² kg/hl	Height ³ cm	Lodging ⁴ %	Heading ⁵ 5/31=0	Ripe ⁶
MOREX	3237.4	60.6	82.8		19.7	
ROBUST	3659.0	61.3	83.1		20.6	
LEGACY	3687.7	60.0	76.7		21.1	
LACEY	4083.2	61.9	77.3		20.1	
TRADITION	3628.5	61.1	78.6		21.7	
PINNACLE	3472.4	59.1	72.9		21.9	
2ND25276	3839.3	61.5	79.4		21.3	
M145	3926.3	63.3	84.8		20.5	
2ND26333	2888.4	62.2	67.4		23.5	
M150	3750.4	62.8	77.9		20.5	
ND23898	3449.0	62.3	76.8		21.4	
ND25652	3666.1	60.0	78.3		22.7	
ND27245	3552.2	61.5	80.2		21.8	
2ND27421	3587.2	62.0	69.0		19.7	
2ND27440	3419.4	64.6	74.9		23.3	
SR440	3976.5	60.9	71.7		20.5	
M148	3754.9	62.4	80.8		21.9	
M151	3964.8	60.8	79.9		20.4	
M153	3716.4	61.9	75.9		20.6	
M154	4180.1	61.5	81.8		21.0	
ND26891	3990.9	61.4	76.6		21.3	
ND27177	3817.7	60.9	78.3		20.3	
ND28993	3737.9	62.2	67.4		19.9	
2ND28065	4278.8	64.9	75.0		20.9	
2ND28131	4344.3	62.3	73.1		19.5	
6B08-3210	4347.0	60.9	78.0		21.7	
6B09-3531	3655.4	62.7	75.3		19.3	
6B09-3580	3829.4	61.0	73.1		20.3	
6B09-3655	3798.9	61.3	75.3		19.9	
6B09-4021	4007.9	62.2	74.3		19.7	
6B09-4235	3659.9	60.5	71.7		20.9	
SR446	3772.0	60.8	75.9		21.5	
SR447	3665.2	60.4	75.1		19.7	
SR448	3718.2	60.8	73.0		19.8	
HIGH MEAN	4347.0	64.9	84.8		23.5	
LOW MEAN	2888.4	59.1	67.4		19.3	
EXP MEAN	3766.5	61.6	76.2		20.9	
C.V. %	9.6		4.5		5.2	
LSD 5%	408.9		3.9		1.3	
LSD 1%	537.4		5.1		1.8	
# of Loc	6	1	6		5	

- 1 all
- 2 Bottineau
- 3 all
- 4 none
- 5 Crookston, Morris, Fargo, Carrington, Osnabrock
- 6 none

TABLE 4. AVE. STA. YIELD (KG/HA). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

ENT. NO.	VARIETY OR SELECTION	AVERAGE RANK	8 STA.	CROOKSTN MINN	MORRIS MINN	FARGO ND	CARRNGTN ND	OSNABRCK ND	BOTTNEAU ND	SIDNEY MT
1	MOREX	33	3366.5	4574.8	1598.5	3229.3	3912.8	3471.5	2637.2	4930.0
2	ROBUST	29	3688.8	4757.8	2249.7	3557.6	4483.3	3907.4	2997.8	5075.3
3	LEGACY (6B93-2978)	23	3827.4	5565.1	1614.6	3880.5	4569.4	3390.7	3105.5	5532.8
4	LACEY (M98)	6	4175.2	6081.8	2319.7	3584.5	5107.6	4214.2	3191.6	5640.5
5	TRADITION(6B95-2482)	25	3807.2	4714.7	963.4	4187.3	4262.6	4386.4	3256.2	5764.3
6	PINNACLE (2ND21863)	28	3764.8	4348.8	1361.7	3972.0	3611.4	4138.9	3401.5	5721.2
7	2ND25276	12	4054.1	4429.5	1539.3	4241.1	4456.4	4725.5	3643.7	5640.5
8	M145	11	4056.1	5258.3	2260.5	3966.6	4617.9	4063.5	3390.7	5597.4
9	2ND26333	34	3218.5	3826.7	635.1	3320.8	2890.2	3541.4	3116.3	5172.2
10	M150	15	3923.6	4332.6	2734.1	3509.1	4876.2	3767.5	3283.1	5732.0
11	ND23898	32	3610.1	4607.1	1598.5	3632.9	3810.5	3573.7	3471.5	5226.0
12	ND25652	27	3803.8	4591.0	2125.9	4181.9	3794.4	3977.4	3326.2	5366.0
13	ND27245	30	3667.2	5263.7	1819.2	3584.5	3885.9	3746.0	3014.0	5473.6
14	2ND27421	26	3807.2	5269.1	618.9	4031.2	3805.2	4332.6	3466.1	4913.9
15	2ND27440	31	3665.9	4817.0	1060.3	3848.2	3837.5	3848.2	3105.5	4940.8
16	SR440	7	4132.8	5263.7	2599.6	3444.6	4741.7	4375.7	3433.8	5333.7
17	M148	16	3906.1	4219.6	2115.2	3740.6	5037.7	3853.6	3563.0	5801.9
18	M151	8	4109.9	4870.8	2185.1	3993.5	5430.6	4165.8	3143.2	5699.7
19	M153	22	3838.1	4784.7	1921.4	3692.1	4704.0	3934.3	3261.6	5231.4
20	M154	4	4240.4	5349.8	2384.3	3923.6	5134.6	4967.7	3320.8	5796.6
21	ND26891	13	4027.2	4881.6	1980.6	4165.8	4714.7	4650.2	3552.2	5403.7
22	ND27177	18	3889.9	5075.3	2099.0	3853.6	4316.5	4424.1	3137.8	5398.3
23	ND28993	17	3900.7	4827.8	2072.1	3950.5	4338.0	3794.4	3444.6	4973.1
24	2ND28065	3	4426.8	6001.1	2416.6	4752.4	4714.7	4451.0	3336.9	5549.0
25	2ND28131	1	4508.2	5538.2	2308.9	4639.4	4774.0	4779.3	4025.8	6135.6
26	6B08-3210	2	4461.1	5640.5	2701.8	4386.4	5296.0	4580.2	3476.9	6044.1
27	6B09-3531	19	3887.9	4488.7	1490.9	3961.2	4203.4	4655.5	3132.4	5758.9
28	6B09-3580	9	4066.2	4531.8	2002.2	3912.8	4811.6	4332.6	3385.4	5904.2
29	6B09-3655	10	4064.9	4585.6	1942.9	4085.0	4854.7	4128.1	3197.0	5958.0
30	6B09-4021	5	4214.2	4887.0	2265.9	4079.7	4983.9	4246.5	3584.5	5845.0
31	6B09-4235	21	3843.5	5344.5	1307.9	4375.7	3772.9	4133.5	3024.8	5543.6
32	SR446	14	3959.9	4913.9	1808.4	3611.4	4564.0	4364.9	3369.2	5715.8
33	SR447	24	3814.6	4601.7	1463.9	3622.2	4967.7	4268.0	3067.8	5575.9
34	SR448	20	3846.9	4752.4	1722.3	4128.1	4300.3	3918.2	3487.6	5349.8
AVERAGE			3928.7	4911.7	1861.4	3913.1	4458.3	4150.3	3304.5	5521.9

TABLE 4. AVE. STA. YIELD (KG/HA). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

ENT. NO.	VARIETY OR SELECTION	AVERAGE RANK	8 STA.	SASKTOON SASK
1	MOREX	33	3366.5	2578.0
2	ROBUST	29	3688.8	2481.2
3	LEGACY (6B93-2978)	23	3827.4	2960.2
4	LACEY (M98)	6	4175.2	3261.6
5	TRADITION(6B95-2482)	25	3807.2	2922.5
6	PINNACLE (2ND21863)	28	3764.8	3563.0
7	2ND25276	12	4054.1	3756.7
8	M145	11	4056.1	3293.9
9	2ND26333	34	3218.5	3245.4
10	M150	15	3923.6	3153.9
11	ND23898	32	3610.1	2960.2
12	ND25652	27	3803.8	3067.8
13	ND27245	30	3667.2	2551.1
14	2ND27421	26	3807.2	4020.5
15	2ND27440	31	3665.9	3869.8
16	SR440	7	4132.8	3869.8
17	M148	16	3906.1	2917.1
18	M151	8	4109.9	3390.7
19	M153	22	3838.1	3175.5
20	M154	4	4240.4	3046.3
21	ND26891	13	4027.2	2868.7
22	ND27177	18	3889.9	2814.9
23	ND28993	17	3900.7	3805.2
24	2ND28065	3	4426.8	4192.7
25	2ND28131	1	4508.2	3864.4
26	6B08-3210	2	4461.1	3563.0
27	6B09-3531	19	3887.9	3412.3
28	6B09-3580	9	4066.2	3649.1
29	6B09-3655	10	4064.9	3767.5
30	6B09-4021	5	4214.2	3821.3
31	6B09-4235	21	3843.5	3245.4
32	SR446	14	3959.9	3331.5
33	SR447	24	3814.6	2949.4
34	SR448	20	3846.9	3116.3
AVERAGE			3928.7	3308.4

TABLE 5. INFORMATION ON PLOT TYPE.

LOCATION	# REPS	DATE SOWN	LSD 5%		SQ. METERS HARVESTED	CM. BET. ROWS	DATE HARVESTED
			KG/HA	BU/A			
BRANDON	3	5/14	[not used]		4.6	22.9	8/9
BOTTINEAU	3	4/25	242.1	4.5	3.35	21.6	8/1
CARRINGTON	4	5/2	449.8	8.4	3.72	19	7/27
FARGO	4	4/25	567.6	10.6	3.72	19	8/2
SIDNEY	3	4/18	312.	5.8	3.35	21.6	7/27
OSNABROCK	4	5/9	610.6	11.4	3.72	19	8/24
CROOKSTON	3	4/23	984.5	18.3	2.8	19	7/23
MADISON	3	4/6	[CV > 15; not used]		4.9	30.5	7/9
MORRIS	3	4/5	328.2	6.1	3.72	18	7/16
SASKATOON	3	6/1					

TABLE 6 . PERIOD OF YEARS SUMMARY - MISSISSIPPI VALLEY.

ENT VARIETY/ NO. SELECTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	STA ADJ.		MEAN RANK	
											YR	YRS		
YIELD (AVERAGE KILOGRAMS PER HECTARE)														
1 MOREX	4013	5329	3644	4547	4149	4180	5511	4301	4107	3367	10	82	4325.7	34
2 ROBUST	4377	5687	4075	5092	4262	4768	5537	4566	4250	3689	10	82	4661.8	30
BASE AVERAGES	4195	5508	3860	4819	4205	4474	5524	4434	4178	3528				
3 LEGACY (6B93-2978)	4739	6199	4190	5142	4751	5061	6351	5145	4638	3827	10	82	5029.0	17
4 LACEY (M98)	4770	6183	4483	5357	4712	5323	6132	5102	4783	4175	10	82	5124.0	12
5 TRADITION	4743	5924	4435	5392	4732	5090	6127	4968	4595	3807	10	82	5008.3	18
6 PINNACLE (2ND21863)			4658	5584	4596	5397	6185	5397	4683	3765	8	61	5180.3	7
7 2ND25276							6041	5219	4474	4054	4	26	5080.6	13
8 M145								5040	4403	4056	3	19	5068.8	14
9 2ND26333								5304	4480	3219	3	19	4811.8	28
10 M150									4769	3924	2	11	5038.2	16
11 ND23898									4352	3610	2	11	4624.0	32
12 ND25652									4476	3804	2	11	4835.8	27
13 ND27245									4288	3667	2	11	4653.1	31
14 2ND27421									4320	3807	2	11	4787.2	29
15 2ND27440									4062	3666	2	11	4577.1	33
16 SR440									4575	4133	2	11	5158.6	10
17 M148										3906	1	8	4975.8	19
18 M151										4110	1	8	5235.5	6
19 M153										3838	1	8	4889.2	25
20 M154										4240	1	8	5401.7	4
21 ND26891										4027	1	8	5130.0	11
22 ND27177										3890	1	8	4955.2	21
23 ND28993										3901	1	8	4968.9	20
24 2ND28065										4427	1	8	5639.1	3
25 2ND28131										4508	1	8	5742.8	1
26 6B08-3210										4461	1	8	5682.8	2
27 6B09-3531										3888	1	8	4952.6	22
28 6B09-3580										4066	1	8	5179.7	8
29 6B09-3655										4065	1	8	5178.0	9
30 6B09-4021										4214	1	8	5368.3	5
31 6B09-4235										3844	1	8	4896.1	24
32 SR446										3960	1	8	5044.3	15
33 SR447										3815	1	8	4859.2	26
34 SR448										3847	1	8	4900.4	23
NO. OF STATIONS	11	10	8	9	9	9	7	8	3	8				

ADJ. MEAN = VARIETY TOTAL FOR YEARS GROWN X 4493.7 /BASE AVERAGE FOR SAME YEARS

TABLE 7. AVE. STA. TEST WEIGHT (KG/HL). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

ENT. NO.	VARIETY OR SELECTION	RANK	AVERAGE 2 STA.	BOTTNEAU ND	SIDNEY MT
1	MOREX	30	60.9	60.6	61.1
2	ROBUST	21	62.2	61.3	63.1
3	LEGACY (6B93-2978)	34	60.6	60.0	61.1
4	LACEY (M98)	10	63.1	61.9	64.4
5	TRADITION(6B95-2482)	16	62.6	61.1	64.0
6	PINNACLE (2ND21863)	32	60.8	59.1	62.6
7	2ND25276	12	62.9	61.5	64.4
8	M145	3	64.0	63.3	64.6
9	2ND26333	6	63.4	62.2	64.6
10	M150	11	63.1	62.8	63.3
11	ND23898	9	63.1	62.3	64.0
12	ND25652	33	60.6	60.0	61.3
13	ND27245	14	62.7	61.5	63.9
14	2ND27421	6	63.4	62.0	64.8
15	2ND27440	1	65.1	64.6	65.5
16	SR440	23	61.9	60.9	62.8
17	M148	4	63.6	62.4	64.8
18	M151	26	61.6	60.8	62.4
19	M153	21	62.2	61.9	62.4
20	M154	15	62.6	61.5	63.7
21	ND26891	27	61.3	61.4	61.1
22	ND27177	29	61.2	60.9	61.5
23	ND28993	18	62.3	62.2	62.4
24	2ND28065	2	64.8	64.9	64.8
25	2ND28131	7	63.3	62.3	64.2
26	6B08-3210	17	62.5	60.9	64.1
27	6B09-3531	8	63.2	62.7	63.7
28	6B09-3580	23	61.9	61.0	62.7
29	6B09-3655	19	62.3	61.3	63.3
30	6B09-4021	13	62.8	62.2	63.5
31	6B09-4235	24	61.8	60.5	63.1
32	SR446	26	61.6	60.8	62.4
33	SR447	29	61.2	60.4	62.0
34	SR448	32	60.8	60.8	60.9
AVERAGE			62.4	61.6	63.2

TABLE 8. PERIOD OF YEARS SUMMARY - MISSISSIPPI VALLEY.

ENT VARIETY/ NO. SELECTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	STA		ADJ.	
											YR	YRS	MEAN	RANK
TEST WEIGHT (KILOGRAMS PER HECTOLITER)														
1 MOREX	64.2	48.0	59.6	62.2	59.7	58.0	69.5	61.0	63.1	60.9	10	34	61.0	32
2 ROBUST	65.1	52.2	62.4	64.1	55.6	60.6	71.7	62.8	63.1	62.2	10	34	62.0	21
BASE AVERAGES	64.6	50.1	61.0	63.1	57.6	59.3	70.6	61.9	63.1	61.5				
3 LEGACY (6B93-2978)	63.3	50.0	61.2	62.5	53.3	58.5	72.1	62.5	63.1	60.6	10	34	60.7	34
4 LACEY (M98)	67.6	54.6	63.0	64.5	62.3	64.0	72.6	64.3	63.1	63.1	10	34	64.2	3
5 TRADITION	65.2	53.4	62.1	64.2	61.5	59.3	73.0	63.1	63.1	62.6	10	34	62.9	8
6 PINNACLE (2ND21863)			63.4	64.9	64.3	62.8	74.7	63.9	63.1	60.8	8	28	64.3	2
7 2ND25276							71.7	62.8	63.1	62.9	4	12	62.2	16
8 M145								64.2	63.1	64.0	3	9	62.8	9
9 2ND26333								66.5	63.1	63.4	3	9	63.4	5
10 M150									63.1	63.1	2	6	62.0	20
11 ND23898									63.1	63.1	2	6	62.0	19
12 ND25652									63.1	60.6	2	6	61.2	29
13 ND27245									63.1	62.7	2	6	61.9	22
14 2ND27421									63.1	63.4	2	6	62.1	18
15 2ND27440									63.1	65.1	2	6	62.6	11
16 SR440									63.1	61.9	2	6	61.6	25
17 M148										63.6	1	2	63.5	4
18 M151										61.6	1	2	61.6	27
19 M153										62.2	1	2	62.1	17
20 M154										62.6	1	2	62.6	12
21 ND26891										61.3	1	2	61.2	28
22 ND27177										61.2	1	2	61.2	31
23 ND28993										62.3	1	2	62.3	14
24 2ND28065										64.8	1	2	64.8	1
25 2ND28131										63.3	1	2	63.2	6
26 6B08-3210										62.5	1	2	62.5	13
27 6B09-3531										63.2	1	2	63.2	7
28 6B09-3580										61.9	1	2	61.8	23
29 6B09-3655										62.3	1	2	62.3	15
30 6B09-4021										62.8	1	2	62.8	10
31 6B09-4235										61.8	1	2	61.7	24
32 SR446										61.6	1	2	61.6	27
33 SR447										61.2	1	2	61.2	31
34 SR448										60.8	1	2	60.8	33
NO. OF STATIONS	4	2	4	3	5	4	3	3	4	2				

ADJ. MEAN = VARIETY TOTAL FOR YEARS GROWN X 61.5 /BASE AVERAGE FOR SAME YEARS

TABLE 9. AVE. STA. HEIGHT (CM). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

ENT. NO.	VARIETY OR SELECTION	AVERAGE RANK	8 STA.	CROOKSTN MINN	MORRIS MINN	FARGO ND	CARRNGTN ND	OSNABRCK ND	BOTTNEAU ND	SIDNEY MT
1	MOREX	33	87.8	74.3	66.9	71.7	92.5	92.2	99.1	108.0
2	ROBUST	32	86.5	71.5	70.3	70.2	95.2	87.2	104.1	104.1
3	LEGACY (6B93-2978)	19	80.9	73.8	65.2	68.2	88.5	71.7	92.7	105.0
4	LACEY (M98)	20	81.2	72.3	64.3	64.2	87.5	81.5	94.0	100.8
5	TRADITION(6B95-2482)	24	82.6	67.7	59.3	68.5	89.7	87.0	99.1	103.3
6	PINNACLE (2ND21863)	10	77.6	68.3	61.8	67.0	83.5	73.2	83.8	92.3
7	2ND25276	27	83.7	67.3	66.0	73.8	93.8	85.2	90.2	100.8
8	M145	34	90.0	75.0	71.1	75.2	96.5	88.3	102.9	115.1
9	2ND26333	2	71.2	61.7	55.9	62.5	77.5	63.0	83.8	87.2
10	M150	25	82.9	63.2	68.6	67.7	97.5	75.2	95.3	100.8
11	ND23898	21	81.3	68.8	65.2	66.8	88.7	74.8	96.5	105.8
12	ND25652	26	83.1	65.3	68.6	71.0	90.0	78.5	96.5	106.7
13	ND27245	29	84.6	73.5	67.7	68.8	92.7	85.5	92.7	106.7
14	2ND27421	3	72.5	57.3	60.1	61.2	78.2	72.0	85.1	83.8
15	2ND27440	17	80.2	69.7	62.7	68.2	86.7	76.8	85.1	98.2
16	SR440	6	76.3	63.3	61.8	59.3	83.7	77.2	85.1	94.0
17	M148	31	85.4	72.8	70.3	71.0	94.8	79.5	96.5	107.5
18	M151	28	83.7	71.0	68.6	72.0	94.3	78.2	95.3	104.1
19	M153	16	79.8	65.2	66.9	65.0	90.5	79.0	88.9	95.7
20	M154	30	84.8	76.8	70.3	67.5	92.2	92.8	91.4	105.0
21	ND26891	18	80.2	63.7	62.7	65.2	88.5	89.0	90.2	99.9
22	ND27177	23	82.3	66.3	66.9	65.7	89.8	87.3	94.0	99.9
23	ND28993	1	70.3	57.0	59.3	56.8	78.5	68.8	83.8	82.1
24	2ND28065	14	79.1	70.0	67.7	69.8	88.2	70.2	83.8	94.8
25	2ND28131	9	76.7	62.7	66.9	65.7	83.7	75.8	83.8	88.1
26	6B08-3210	23	82.3	68.3	66.9	69.7	90.5	81.0	91.4	102.4
27	6B09-3531	11	78.5	62.2	61.8	63.0	88.3	87.8	88.9	93.1
28	6B09-3580	8	76.6	63.7	62.7	59.2	87.8	77.5	87.6	95.7
29	6B09-3655	13	78.7	63.3	63.5	65.7	90.3	80.0	88.9	98.2
30	6B09-4021	7	76.5	60.7	63.5	62.7	88.5	82.5	87.6	92.3
31	6B09-4235	4	74.8	62.8	54.2	63.8	84.5	78.2	86.4	94.8
32	SR446	15	79.5	68.2	62.7	67.7	88.3	79.7	88.9	99.1
33	SR447	12	78.7	59.7	61.0	64.0	88.3	85.0	92.7	96.5
34	SR448	5	76.1	62.5	60.1	62.5	87.2	78.0	87.6	96.5
AVERAGE			80.2	66.8	64.5	66.5	88.7	80.0	91.0	98.8

TABLE 9. AVE. STA. HEIGHT (CM). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

ENT. NO.	VARIETY OR SELECTION	RANK	AVERAGE 8 STA.	SASKTOON SASK
1	MOREX	33	87.8	97.3
2	ROBUST	32	86.5	89.3
3	LEGACY (6B93-2978)	19	80.9	82.3
4	LACEY (M98)	20	81.2	85.0
5	TRADITION(6B95-2482)	24	82.6	86.0
6	PINNACLE (2ND21863)	10	77.6	91.0
7	2ND25276	27	83.7	92.3
8	M145	34	90.0	96.0
9	2ND26333	2	71.2	78.3
10	M150	25	82.9	94.7
11	ND23898	21	81.3	83.7
12	ND25652	26	83.1	88.3
13	ND27245	29	84.6	89.3
14	2ND27421	3	72.5	82.3
15	2ND27440	17	80.2	94.3
16	SR440	6	76.3	86.3
17	M148	31	85.4	90.7
18	M151	28	83.7	86.0
19	M153	16	79.8	87.0
20	M154	30	84.8	82.0
21	ND26891	18	80.2	82.7
22	ND27177	23	82.3	88.3
23	ND28993	1	70.3	75.7
24	2ND28065	14	79.1	88.0
25	2ND28131	9	76.7	87.0
26	6B08-3210	23	82.3	88.0
27	6B09-3531	11	78.5	83.0
28	6B09-3580	8	76.6	78.7
29	6B09-3655	13	78.7	79.7
30	6B09-4021	7	76.5	74.0
31	6B09-4235	4	74.8	73.7
32	SR446	15	79.5	81.7
33	SR447	12	78.7	82.3
34	SR448	5	76.1	74.3
AVERAGE			80.2	85.3

TABLE 10 . PERIOD OF YEARS SUMMARY - MISSISSIPPI VALLEY.

ENT VARIETY/ NO. SELECTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	STA		ADJ.	
											YR	YRS	MEAN	RANK
HEIGHT (CENTIMETERS)														
1 MOREX	82.6	102.5	91.2	81.7	86.8	91.8	94.2	93.6	88.7	87.8	10	75	90.1	33
2 ROBUST	83.3	100.8	89.4	80.3	85.2	90.3	90.8	92.3	83.5	86.5	10	75	88.6	32
BASE AVERAGES	82.9	101.	90.3	81.0	86.0	91.0	92.5	92.9	86.1	87.1				
3 LEGACY (6B93-2978)	80.8	95.1	85.7	78.2	82.7	88.5	87.7	87.8	81.0	80.9	10	75	85.1	27
4 LACEY (M98)	76.1	92.4	85.2	74.7	77.8	83.4	82.7	83.2	78.7	81.2	10	75	81.7	17
5 TRADITION	78.6	92.8	82.8	74.7	79.7	85.9	84.4	86.8	77.3	82.6	10	75	83.0	20
6 PINNACLE (2ND21863)			86.0	75.1	76.4	84.1	80.9	82.8	74.2	77.6	8	57	80.8	13
7 2ND25276							84.5	86.2	74.8	83.7	4	25	83.0	21
8 M145								93.2	83.7	90.0	3	18	90.5	34
9 2ND26333								76.9	66.3	71.2	3	18	73.0	3
10 M150									82.2	82.9	2	10	85.0	26
11 ND23898									78.7	81.3	2	10	83.0	22
12 ND25652									78.3	83.1	2	10	84.4	25
13 ND27245									81.0	84.6	2	10	86.2	29
14 2ND27421									65.0	72.5	2	10	73.0	2
15 2ND27440									75.2	80.2	2	10	81.4	15
16 SR440									73.3	76.3	2	10	77.8	5
17 M148										85.4	1	8	87.6	31
18 M151										83.7	1	8	85.8	28
19 M153										79.8	1	8	81.8	18
20 M154										84.8	1	8	86.9	30
21 ND26891										80.2	1	8	82.3	19
22 ND27177										82.3	1	8	84.4	24
23 ND28993										70.3	1	8	72.0	1
24 2ND28065										79.1	1	8	81.1	14
25 2ND28131										76.7	1	8	78.7	9
26 6B08-3210										82.3	1	8	84.4	24
27 6B09-3531										78.5	1	8	80.5	10
28 6B09-3580										76.6	1	8	78.6	8
29 6B09-3655										78.7	1	8	80.7	12
30 6B09-4021										76.5	1	8	78.4	7
31 6B09-4235										74.8	1	8	76.7	4
32 SR446										79.5	1	8	81.6	16
33 SR447										78.7	1	8	80.7	11
34 SR448										76.1	1	8	78.0	6
NO. OF STATIONS	9	9	6	9	8	9	7	8	2	8				

ADJ. MEAN = VARIETY TOTAL FOR YEARS GROWN X 89.3 /BASE AVERAGE FOR SAME YEARS

TABLE 11. AVE. STA. LODGING (IN %). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

NO DATA PROVIDED

TABLE 12. PERIOD OF YEARS SUMMARY - MISSISSIPPI VALLEY.

ENT VARIETY/ NO. SELECTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	STA YR YRS	ADJ. MEAN RANK
LODGING (PERCENT)												
1 MOREX	56.1	44.3	63.3	54.0	16.9	24.6	32.5	12.0	0.0	0.0	10 37	26.6 33
2 ROBUST	48.9	34.8	43.3	38.0	9.7	24.4	24.9	0.0	0.0	0.0	10 37	20.6 7
BASE AVERAGES	52.5	39.5	53.3	46.0	13.3	24.5	28.7	6.00	.000	.000		
3 LEGACY (6B93-2978)	36.5	30.4	25.6	45.5	5.9	19.9	29.8	0.0	0.0	0.0	10 37	17.2 6
4 LACEY (M98)	35.4	16.8	32.2	29.0	5.8	16.9	29.4	0.0	0.0	0.0	10 37	14.1 5
5 TRADITION	29.9	18.2	23.3	31.5	6.5	9.7	23.3	0.0	0.0	0.0	10 37	12.1 3
6 PINNACLE (2ND21863)			24.4	21.5	4.5	11.8	37.9	0.0	0.0	0.0	8 28	13.1 4
7 2ND25276							33.7	25.0	0.0	0.0	4 15	34.4 34
8 M145								0.0	0.0	0.0	3 13	0.0 2
9 2ND26333								0.0	0.0	0.0	3 13	0.0 2
10 M150								0.0	0.0		2 12	23.6 32
11 ND23898								0.0	0.0		2 12	23.6 32
12 ND25652								0.0	0.0		2 12	23.6 32
13 ND27245								0.0	0.0		2 12	23.6 32
14 2ND27421								0.0	0.0		2 12	23.6 32
15 2ND27440								0.0	0.0		2 12	23.6 32
16 SR440								0.0	0.0		2 12	23.6 32
17 M148									0.0		1 8	23.6 32
18 M151									0.0		1 8	23.6 32
19 M153									0.0		1 8	23.6 32
20 M154									0.0		1 8	23.6 32
21 ND26891									0.0		1 8	23.6 32
22 ND27177									0.0		1 8	23.6 32
23 ND28993									0.0		1 8	23.6 32
24 2ND28065									0.0		1 8	23.6 32
25 2ND28131									0.0		1 8	23.6 32
26 6B08-3210									0.0		1 8	23.6 32
27 6B09-3531									0.0		1 8	23.6 32
28 6B09-3580									0.0		1 8	23.6 32
29 6B09-3655									0.0		1 8	23.6 32
30 6B09-4021									0.0		1 8	23.6 32
31 6B09-4235									0.0		1 8	23.6 32
32 SR446									0.0		1 8	23.6 32
33 SR447									0.0		1 8	23.6 32
34 SR448									0.0		1 8	23.6 32
NO. OF STATIONS	3	6	3	2	3	5	2	1	4	8		

ADJ. MEAN = VARIETY TOTAL FOR YEARS GROWN X 23.6 /BASE AVERAGE FOR SAME YEARS

TABLE 13. AVE. STA. HEADING (FROM MAY 31). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

ENT. NO.	VARIETY OR SELECTION	RANK	AVERAGE 6 STA.	CROOKSTN MINN	MORRIS MINN	FARGO ND	CARRNGTN ND	OSNABRCK ND	SASKTOON SASK
1	MOREX	6	24.4	13.3	13.0	17.7	24.7	30.0	48.0
2	ROBUST	14	25.2	14.3	14.0	18.3	25.7	30.7	48.0
3	LEGACY (6B93-2978)	25	26.1	14.0	14.0	19.3	26.0	32.0	51.0
4	LACEY (M98)	11	24.8	14.0	13.0	18.0	25.0	30.7	48.0
5	TRADITION(6B95-2482)	26	26.1	15.0	17.0	20.7	25.7	30.0	48.0
6	PINNACLE (2ND21863)	28	26.3	15.0	15.0	20.7	26.3	32.7	48.0
7	2ND25276	23	25.9	14.0	14.0	21.3	26.0	31.3	49.0
8	M145	17	25.3	14.0	14.0	18.7	25.0	31.0	49.0
9	2ND26333	34	27.8	15.7	16.0	25.0	26.7	34.3	49.0
10	M150	16	25.3	14.7	12.0	18.3	25.3	32.3	49.0
11	ND23898	24	26.0	14.0	12.0	22.3	26.7	32.0	49.0
12	ND25652	32	26.7	13.7	13.0	24.7	27.3	34.7	47.0
13	ND27245	29	26.3	14.7	15.0	20.3	26.7	32.3	49.0
14	2ND27421	5	24.4	12.3	13.0	17.3	24.7	31.0	48.0
15	2ND27440	33	27.6	16.0	17.0	23.7	27.0	33.0	49.0
16	SR440	15	25.2	13.3	14.0	18.7	25.3	31.0	49.0
17	M148	31	26.6	16.0	18.0	18.0	25.7	31.7	50.0
18	M151	13	25.1	13.3	15.0	17.3	25.0	31.3	49.0
19	M153	18	25.3	14.0	13.0	18.7	25.3	32.0	49.0
20	M154	21	25.7	15.0	16.0	17.7	25.7	30.7	49.0
21	ND26891	22	25.9	14.7	17.0	18.3	25.7	30.7	49.0
22	ND27177	10	24.8	14.3	14.0	18.0	25.0	30.3	47.0
23	ND28993	7	24.6	12.3	13.0	17.7	25.0	31.3	48.0
24	2ND28065	20	25.6	14.0	14.0	18.3	25.7	32.7	49.0
25	2ND28131	3	24.2	12.0	11.0	17.7	25.7	31.0	48.0
26	6B08-3210	30	26.4	14.7	16.0	20.3	26.0	31.7	50.0
27	6B09-3531	1	24.1	12.7	12.0	17.3	25.0	29.7	48.0
28	6B09-3580	12	24.9	14.0	14.0	17.7	25.0	30.7	48.0
29	6B09-3655	8	24.6	13.7	13.0	17.7	25.0	30.3	48.0
30	6B09-4021	3	24.2	12.7	13.0	17.7	25.0	30.0	47.0
31	6B09-4235	19	25.4	14.0	16.0	18.3	26.0	30.3	48.0
32	SR446	27	26.1	15.3	15.0	20.0	26.0	31.3	49.0
33	SR447	5	24.4	13.0	13.0	17.0	25.0	30.3	48.0
34	SR448	9	24.7	13.0	14.0	17.0	25.0	30.0	49.0
AVERAGE			25.5	14.0	14.2	19.1	25.6	31.3	48.6

TABLE 14 . PERIOD OF YEARS SUMMARY - MISSISSIPPI VALLEY.

ENT VARIETY/ NO. SELECTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	STA		ADJ.	
											YR	YRS	MEAN	RANK
DATE HEADED (FROM MAY 31)														
1 MOREX	27.5	28.8	25.8	17.8	25.0	25.9	38.7	27.8	27.2	24.4	10	78	26.8	2
2 ROBUST	28.7	29.6	27.2	19.4	26.5	27.4	39.8	29.1	29.7	25.2	10	78	28.1	15
BASE AVERAGES	28.1	29.2	26.5	18.6	25.7	26.6	39.2	28.4	28.4	24.8				
3 LEGACY (6B93-2978)	29.0	30.6	27.9	21.0	27.4	27.9	40.7	29.9	29.9	26.1	10	78	28.9	28
4 LACEY (M98)	28.0	29.1	26.9	19.3	26.2	27.0	39.3	29.0	28.9	24.8	10	78	27.7	12
5 TRADITION	28.0	30.2	26.8	19.9	26.4	27.7	40.1	28.9	29.1	26.1	10	78	28.2	18
6 PINNACLE (2ND21863)			27.9	20.0	26.7	27.6	40.2	29.6	30.3	26.3	8	59	28.7	26
7 2ND25276							41.0	29.4	30.0	25.9	4	24	28.6	24
8 M145								29.3	29.3	25.3	3	16	28.2	19
9 2ND26333								29.6	30.7	27.8	3	16	29.5	33
10 M150									29.8	25.3	2	9	28.2	20
11 ND23898									28.6	26.0	2	9	28.3	21
12 ND25652									29.7	26.7	2	9	29.2	29
13 ND27245									30.9	26.3	2	9	29.4	31
14 2ND27421									28.3	24.4	2	9	27.1	6
15 2ND27440									32.2	27.6	2	9	30.7	34
16 SR440									29.5	25.2	2	9	28.1	16
17 M148										26.6	1	6	29.4	32
18 M151										25.1	1	6	27.8	13
19 M153										25.3	1	6	28.0	14
20 M154										25.7	1	6	28.4	23
21 ND26891										25.9	1	6	28.7	25
22 ND27177										24.8	1	6	27.4	10
23 ND28993										24.6	1	6	27.2	7
24 2ND28065										25.6	1	6	28.3	22
25 2ND28131										24.2	1	6	26.8	4
26 6B08-3210										26.4	1	6	29.3	30
27 6B09-3531										24.1	1	6	26.7	1
28 6B09-3580										24.9	1	6	27.6	11
29 6B09-3655										24.6	1	6	27.2	8
30 6B09-4021										24.2	1	6	26.8	4
31 6B09-4235										25.4	1	6	28.1	17
32 SR446										26.1	1	6	28.9	27
33 SR447										24.4	1	6	27.0	5
34 SR448										24.7	1	6	27.3	9
NO. OF STATIONS	11	8	8	9	9	9	8	7	3	6				

ADJ. MEAN = VARIETY TOTAL FOR YEARS GROWN X 27.4 /BASE AVERAGE FOR SAME YEARS

TABLE 15. AVE. STA. RIPE (FROM MAY 31). 2012 MISSISSIPPI VALLEY BARLEY NURSERY

NO DATA PROVIDED

TABLE 16. AVE. STA. YIELD - MANITOBA, MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA

ENT. NO.	VARIETY OR SELECTION	RANK	AVERAGE 6 STA.	CROOKSTN MINN	MORRIS MINN	FARGO ND	CARRNGTN ND	OSNABRCK ND	BOTTNEAU ND
1	MOREX	33	3237.4	4574.8	1598.5	3229.3	3912.8	3471.5	2637.2
2	ROBUST	25	3659.0	4757.8	2249.7	3557.6	4483.3	3907.4	2997.8
3	LEGACY (6B93-2978)	21	3687.7	5565.1	1614.6	3880.5	4569.4	3390.7	3105.5
4	LACEY (M98)	5	4083.2	6081.8	2319.7	3584.5	5107.6	4214.2	3191.6
5	TRADITION(6B95-2482)	27	3628.5	4714.7	963.4	4187.3	4262.6	4386.4	3256.2
6	PINNACLE (2ND21863)	30	3472.4	4348.8	1361.7	3972.0	3611.4	4138.9	3401.5
7	2ND25276	11	3839.3	4429.5	1539.3	4241.1	4456.4	4725.5	3643.7
8	M145	10	3926.3	5258.3	2260.5	3966.6	4617.9	4063.5	3390.7
9	2ND26333	34	2888.4	3826.7	635.1	3320.8	2890.2	3541.4	3116.3
10	M150	17	3750.4	4332.6	2734.1	3509.1	4876.2	3767.5	3283.1
11	ND23898	31	3449.0	4607.1	1598.5	3632.9	3810.5	3573.7	3471.5
12	ND25652	22	3666.1	4591.0	2125.9	4181.9	3794.4	3977.4	3326.2
13	ND27245	29	3552.2	5263.7	1819.2	3584.5	3885.9	3746.0	3014.0
14	2ND27421	28	3587.2	5269.1	618.9	4031.2	3805.2	4332.6	3466.1
15	2ND27440	32	3419.4	4817.0	1060.3	3848.2	3837.5	3848.2	3105.5
16	SR440	8	3976.5	5263.7	2599.6	3444.6	4741.7	4375.7	3433.8
17	M148	16	3754.9	4219.6	2115.2	3740.6	5037.7	3853.6	3563.0
18	M151	9	3964.8	4870.8	2185.1	3993.5	5430.6	4165.8	3143.2
19	M153	20	3716.4	4784.7	1921.4	3692.1	4704.0	3934.3	3261.6
20	M154	4	4180.1	5349.8	2384.3	3923.6	5134.6	4967.7	3320.8
21	ND26891	7	3990.9	4881.6	1980.6	4165.8	4714.7	4650.2	3552.2
22	ND27177	13	3817.7	5075.3	2099.0	3853.6	4316.5	4424.1	3137.8
23	ND28993	18	3737.9	4827.8	2072.1	3950.5	4338.0	3794.4	3444.6
24	2ND28065	3	4278.8	6001.1	2416.6	4752.4	4714.7	4451.0	3336.9
25	2ND28131	2	4344.3	5538.2	2308.9	4639.4	4774.0	4779.3	4025.8
26	6B08-3210	1	4347.0	5640.5	2701.8	4386.4	5296.0	4580.2	3476.9
27	6B09-3531	26	3655.4	4488.7	1490.9	3961.2	4203.4	4655.5	3132.4
28	6B09-3580	12	3829.4	4531.8	2002.2	3912.8	4811.6	4332.6	3385.4
29	6B09-3655	14	3798.9	4585.6	1942.9	4085.0	4854.7	4128.1	3197.0
30	6B09-4021	6	4007.9	4887.0	2265.9	4079.7	4983.9	4246.5	3584.5
31	6B09-4235	24	3659.8	5344.5	1307.9	4375.7	3772.9	4133.5	3024.8
32	SR446	15	3772.0	4913.9	1808.4	3611.4	4564.0	4364.9	3369.2
33	SR447	23	3665.2	4601.7	1463.9	3622.2	4967.7	4268.0	3067.8
34	SR448	19	3718.2	4752.4	1722.3	4128.1	4300.3	3918.2	3487.6
AVERAGE			3766.5	4911.7	1861.4	3913.1	4458.3	4150.3	3304.5

TABLE 17 . PERIOD OF YEARS SUMMARY - MISSISSIPPI VALLEY.

ENT VARIETY/ NO. SELECTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	STA ADJ.			
											YR	YRS	MEAN	RANK
AVE. YIELD (KG/HA) - MANITOBA, MINN, ND, AND SD														
1 MOREX	3960	4953	3305	4477	4437	4197	5982	4227	4023	3237	10	54	4274.0	34
2 ROBUST	4247	5438	3889	5031	4545	5121	6168	4518	4007	3659	10	54	4674.3	29
BASE AVERAGES	4104	5196	3597	4754	4491	4659	6075	4373	4015	3448				
3 LEGACY (6B93-2978)	4626	5980	4193	5106	5253	5576	7021	5102	4268	3688	10	54	5093.1	12
4 LACEY (M98)	4627	5959	4321	5352	5049	5716	6717	5089	4443	4083	10	54	5144.1	9
5 TRADITION	4711	5688	4315	5320	5142	5553	6755	4922	4142	3628	10	54	5035.4	14
6 PINNACLE (2ND21863)			4666	5814	5076	5798	6402	5480	4268	3472	8	39	5212.3	5
7 2ND25276							6737	5288	4265	3839	4	18	5094.4	11
8 M145								5057	4107	3926	3	14	5057.2	13
9 2ND26333								5495	4077	2888	3	14	4759.2	25
10 M150								4580	3750		2	8	4932.8	17
11 ND23898								4037	3449		2	8	4481.7	32
12 ND25652								4322	3666		2	8	4773.5	24
13 ND27245								3921	3552		2	8	4542.1	31
14 2ND27421								4018	3587		2	8	4605.0	30
15 2ND27440								3652	3419		2	8	4334.1	33
16 SR440								4551	3976		2	8	5134.9	10
17 M148									3755		1	6	4872.2	20
18 M151									3965		1	6	5144.6	8
19 M153									3716		1	6	4822.2	23
20 M154									4180		1	6	5423.9	4
21 ND26891									3991		1	6	5178.3	7
22 ND27177									3818		1	6	4953.7	16
23 ND28993									3738		1	6	4850.1	21
24 2ND28065									4279		1	6	5552.0	3
25 2ND28131									4344		1	6	5636.9	2
26 6B08-3210									4347		1	6	5640.4	1
27 6B09-3531									3655		1	6	4743.0	28
28 6B09-3580									3829		1	6	4968.8	15
29 6B09-3655									3799		1	6	4929.2	18
30 6B09-4021									4008		1	6	5200.4	6
31 6B09-4235									3660		1	6	4748.8	27
32 SR446									3772		1	6	4894.3	19
33 SR447									3665		1	6	4755.8	26
34 SR448									3718		1	6	4824.5	22
NO. OF STATIONS	8	7	4	6	6	5	4	6	2	6				

ADJ. MEAN = VARIETY TOTAL FOR YEARS GROWN X 4474.2 /BASE AVERAGE FOR SAME YEARS

TABLE 18. Growth Chamber Disease data from A. Tekauz, Cereal Research Centre, Agriculture and Agri-Food Canada, Winnipeg MB

Entry	Net Blotch			Scald	Septoria	Spot Blotch
	102 ^a	858 ^a	857 ^b	2275 ^c	1998 ^d	1903 ^e
MOREX	9 ^f	9	5	S		6 ⁱ
ROBUST	8	9	3	S		5
LEGACY	9	6	3	S		3
LACEY	9	8	7	S		5
TRADITION	10	8	7	S		5
PINNACLE	9	9	5	S		4
2ND25276	7	9	5	S		4
M145	8	7	3	S		7
2ND26333	8	8	2	**		4
M150	9	7	5	S		6
ND23898	9	8?	3	S		5
ND25652	10	9	7	S		4
ND27245	10	9	7	S		6
2ND27421	7B	8	7	S		5
2ND27440	4	8	3	S		3
SR440	9	9	3	S		5
M148	8	9	2	S		4
M151	8	8	3	S		5
M153	9	7	3	S		5
M154	7	8	2	S		5
ND26891	9	8	5	S		3
ND27177	8	8	5	MS		4
ND28993	7	9	3	**		3
2ND28065	8	9	2	S		3
2ND28131	7	8	2	MS		3
6B08-3210	4	6	2	**		4
6B09-3531	4	7	5	S		8
6B09-3580	6	9	5	MS		7
6B09-3655	4	8	5	S		6
6B09-4021	4	8	5	MR		7
6B09-4235	4	7	3	**		3
SR446	8	6	3	S		4
SR447	8	9	2(5)	S		4
SR448	9	9	5	S		4

a *Pyrenophora teres* net-form isolates

b *Pyrenophora teres* spot-form isolate

c *Rhynchosporium secalis* isolate

d *Septoria passerinii* isolate

e *Cochliobolus sativus* isolate

f Reaction categories: 10=VS, 9=S, 7=MS, 5=MR-MS, 3=MR, 1=R

g Reaction categories: R, MR, MS, S

h Reaction categories: R, (MR), (MS), S; () rarely-used categories

i Reaction categories: 0-9 scale: 0=no visible lesions; 4= small; 9= very large, coalescing

x\y = segregating; x(y)= one plant only segregating or seed mix

B= blotchy symptoms

? = equivocal, based on one plant only, or plants small and difficult to read

**= no reading, no or poor emergence

TABLE 19. FHB Nursery, Brandon, MB (n=3)

No.	ENTRY	HEAD	FHB	DON
1	MOREX	47.0	3.3	2.5
2	ROBUST	48.3	3.7	4.2
3	LEGACY	48.7	4.3	1.9
4	LACEY	48.3	4.7	2.6
5	TRADITION	46.0	4.0	6.8
6	PINNACLE	49.0	2.7	1.1
7	2ND25276	49.7	1.5	0.6
8	M145	48.7	4.0	1.4
9	2ND26333	59.0	1.8	0.8
10	M150	48.3	3.3	1.4
11	ND23898	46.7	3.5	2.3
12	ND25652	46.7	3.8	3.8
13	ND27245	47.7	3.3	2.0
14	2ND27421	48.0	2.7	0.7
15	2ND27440	51.7	2.5	0.7
16	SR440	48.3	4.2	1.8
17	M148	49.0	2.7	1.8
18	M151	48.7	2.8	0.7
19	M153	47.7	3.7	0.7
20	M154	47.7	4.0	1.7
21	ND26891	49.7	3.8	2.5
22	ND27177	47.7	4.2	2.0
23	ND28993	46.7	5.0	1.8
24	2ND28065	51.0	1.7	0.4
25	2ND28131	47.0	2.3	0.3
26	6B08-3210	52.3	3.3	1.6
27	6B09-3531	49.0	4.3	2.2
28	6B09-3580	47.7	3.8	3.2
29	6B09-3655	46.7	4.2	3.5
30	6B09-4021	47.3	4.3	3.3
31	6B09-4235	46.7	4.5	4.5
32	SR446	48.7	3.5	1.6
33	SR447	47.0	4.0	5.3
34	SR448	46.7	4.3	5.2

HEAD = Days to 80% heading.

FHB = FHB visual score (0-5)

0 = no infection

1 = incidence low, up to 5% of spikes;

severity low, 1 or 2 kernels per spike affected (up to 7% of head)

2 = incidence low to moderate, 5 to 15% of spikes infected;

severity low to moderate, 1 to 4 kernels (up to 15% of head)

3 = incidence moderate, 15 to 30% of heads;

severity moderate, 2 to 8 kernels (up to 25% of head)

4 = incidence moderate to high, 30 to 50% of spikes infected;

severity moderate to high, 4 to 12 kernels (up to 40% of head)

5 = incidence high, 50% or more spikes affected;

severity high, 5 to 15+ kernels (up to 50%+ of head diseased)

DON = Deoxynivalenol content as analyzed by ELISA technique at AAFC-ECORC

TABLE 20. Leaf disease nursery, Brandon, MB (n=2)

No.	ENTRY	Spot Blotch
1	MOREX	5.0
2	ROBUST	3.0
3	LEGACY	3.5
4	LACEY	2.5
5	TRADITION	4.0
6	PINNACLE	8.5
7	2ND25276	5.0
8	M145	4.0
9	2ND26333	5.0
10	M150	4.5
11	ND23898	6.5
12	ND25652	3.5
13	ND27245	3.5
14	2ND27421	8.5
15	2ND27440	7.0
16	SR440	3.5
17	M148	3.0
18	M151	3.0
19	M153	4.0
20	M154	3.5
21	ND26891	3.0
22	ND27177	3.0
23	ND28993	4.0
24	2ND28065	4.0
25	2ND28131	5.5
26	6B08-3210	2.0
27	6B09-3531	7.0
28	6B09-3580	6.0
29	6B09-3655	6.5
30	6B09-4021	5.5
31	6B09-4235	3.5
32	SR446	3.5
33	SR447	2.0
34	SR448	3.5

Spot Blotch = *Cochliobolus sativus*, rating scale 1-9 where 9 is susceptible.

Checks:	Spot Blotch
ARGYLE	3.0
Cerveza	3.2
Norman	8.0
Major	4.2

TABLE 21. Summary of data for the nursery grown at Aberdeen, ID.

No.	Entry	Yield	TWT	Plump			
				6/64	Heading	Height	Lodging
1	Morex	119.4	49.5	58	170	44	4
2	Robust	121.6	51.8	78	171	47	4
3	Legacy	143.2	49.6	57	172	42	4
4	Lacey	140.2	52.8	84	168	44	2
5	Tradition	174.6	52.4	91	173	43	2
6	Pinnacle	160.8	53.9	95	173	44	0
7	2ND25276	147.9	52.7	93	173	45	1
8	M145	149.6	49.7	71	168	47	3
9	6Ab07-X020029-45	166.1	46.4	61	169	43	3
10	M150	129.8	50.5	71	167	42	3
11	6Ab07-X04M172-29	166.2	49.8	90	172	42	3
12	04Ab034-62	181.1	51.8	85	171	44	3
13	ND27245	160.9	52.6	89	172	43	2
14	2ND27421	137.5	53.7	96	167	37	0
15	2ND27440	141.7	54.2	96	174	42	2
16	SR440	127.4	50.2	71	168	37	4
17	M148	136.0	50.6	81	169	40	4
18	M151	147.3	49.1	65	168	40	4
19	M153	169.7	50.8	72	168	45	2
20	M154	163.0	52.7	94	167	43	1
21	ND26891	160.6	52.7	92	172	44	3
22	ND27177	172.3	52.2	93	172	42	2
23	ND28993	180.3	52.1	92	169	40	0
24	2ND28065	145.9	53.7	84	172	43	3
25	2ND28131	155.1	51.7	91	171	40	3
26	6B08-3210	157.1	51.6	82	172	43	3
27	6B09-3531	180.0	53.0	89	168	40	0
28	6B09-3580	174.5	51.3	90	172	41	2
29	6B09-3655	191.4	50.8	94	170	41	2
30	6B09-4021	157.5	51.4	96	169	40	1
31	6B09-4235	172.4	52.3	94	174	38	0
32	SR446	161.2	NA	NA	171	41	3
33	SR447	176.3	50.3	75	169	41	3
34	SR448	156.1	51.8	90	168	39	3
35	01Ab9663	164.2	52.0	89	172	42	2
36	6Ab07-X031057-33	156.5	47.6	77	171	40	3
37	6Ab07-X020049-13	148.0	48.3	55	170	42	4
38	6Ab07-X020030-37	182.5	49.6	71	170	39	3
39	6Ab07-X04M238-13	178.2	48.0	52	169	38	4
40	6Ab08-X05M115-44	176.8	48.0	82	172	41	2
GRAND MEAN		158.3	51.1	81.7	170.3	41.7	2.4
Max. Mean		191.4	54.2	96.0	174.0	47.0	4.0
Min. Mean		119.4	46.4	52.0	167.0	37.0	0.0
CV		9.9	3.6	15.7	1.2	5.7	51.2
LSD		21.2	0.0	0.0	0.0	0.0	0.0

Table 22. Parentage and origin of entries in the 2012 Mississippi Valley Uniform Regional Barley Nursery.

Entry	Cl# or Contributor	Name	Pedigree
1	15773	MOREX	Cree/Bonanza
2	476976	ROBUST	MOREX/MANKER
3	Busch Ag.Res.	LEGACY	BUM/KARL//BUM/MAN/3/BUM/KARL/4/EXCEL
4	PI 613603	LACEY	M78/M79
5	Busch Ag.Res.	TRADITION	6B89-2126/ND10981
6	North Dakota	PINNACLE	ND18172/ND19130
7	North Dakota	2ND25276	ND20802/3/ND19922//ND19929/ND20177
8	Minnesota	M145	FEG144-17 / Quest (M122)
9	North Dakota	2ND26333	ND22032-2/ND21972
10	Minnesota	M150	M01-65 / Quest
11	North Dakota	ND23898	Drummond/ND17643
12	North Dakota	ND25652	Stellar-ND/ND20477
13	North Dakota	ND27245	Quest/ND23497
14	North Dakota	2ND27421	2ND24253/2ND24519
15	North Dakota	2ND27440	2ND24190/2ND22895
16	Saskatchewan	SR440	SM03760/SM03191
17	Minnesota	M148	M128 / M132
18	Minnesota	M151	Quest / M129
19	Minnesota	M153	FEG175-48 / M135
20	Minnesota	M154	M143 / M137
21	North Dakota	ND26891	ND21376/ND20299
22	North Dakota	ND27177	Stellar-ND/ND23530
23	North Dakota	ND28993	ND22466/ND22783
24	North Dakota	2ND28065	2ND21867/2ND24238
25	North Dakota	2ND28131	2ND24238/2ND24321
26	Busch Ag.Res.	6B08-3210	6B03-4452 / CDC YORKTON
27	Busch Ag.Res.	6B09-3531	6B98-9558 / 6B04-0096 // 6B01-2205 / SM03720
28	Busch Ag.Res.	6B09-3580	6B04-0325 / 6B04-0421
29	Busch Ag.Res.	6B09-3655	6B04-0012 / 6B04-0421
30	Busch Ag.Res.	6B09-4021	6B04-0421 / 6B04-0292
31	Busch Ag.Res.	6B09-4235	6B04-0007 / 6B04-0421
32	Saskatchewan	SR446	6B04-0075/CDC Clyde
33	Saskatchewan	SR447	6B04-0441/CDC Clyde
34	Saskatchewan	SR448	6B04-0441/CDC Clyde

Additional pedigree info:

M01-65 = M99-02 / M111

FEG175-48 = Quest / M123