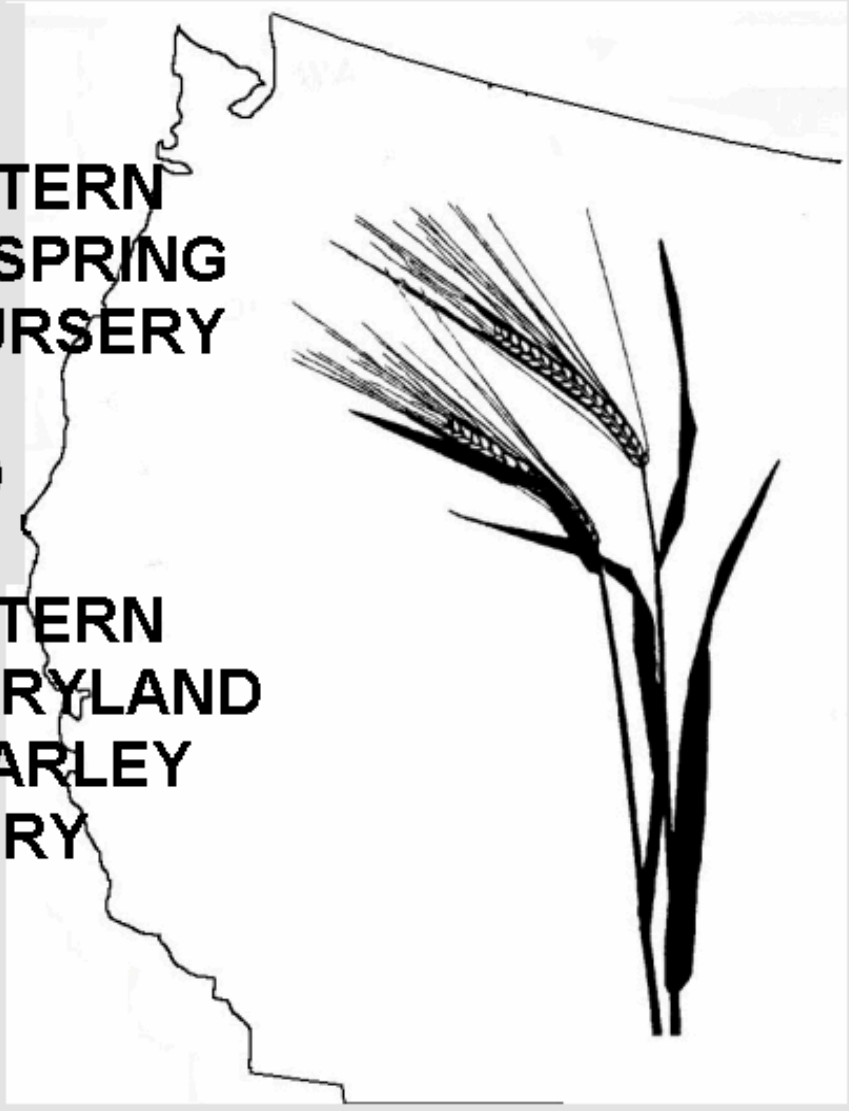
2008

THE WESTERN REGIONAL SPRING BARLEY NURSERY

AND

THE WESTERN REGIONAL DRYLAND SPRING BARLEY NURSERY



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTHERN PLAINS AND PACIFIC WEST REGIONS
in cooperation with
State Agricultural Experiment Stations

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WESTERN REGIONAL SPRING BARLEY NURSERY
and the
WESTERN REGIONAL DRYLAND SPRING BARLEY NURSERY

2008

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This report is compiled in electronic format intended for transmittal to the nursery cooperators. The files and their contents are as follows:

2008WRBNREPORT.doc: WORD© document explaining the contents of the report with the following sections:

- Cover Page and Contents Page
- Location of Experiments and Personnel
- Western Regional Spring Barley Nursery Narrative
  - Nursery contents and locations
  - General Information
  - Data Analysis
  - Data Highlights
  - Data Tables
- Western Regional Dryland Spring Barley Nursery Narrative
  - Nursery contents and locations
  - General Information
  - Data Analysis
  - Data Highlights
  - Data Tables

2008WRSBNDATA.xls: Excel© files containing data for the 2008 Western Regional Spring Barley Nursery in both English and metric format.
2008WRDSBNDATA.xls: Excel© files containing data for the 2008 Western Regional Dryland Spring Barley Nursery in both English and metric format.

This is a joint progress report of cooperative investigations underway in the State Agricultural Experiment Stations and the Agricultural Research Service of the U.S. Department of Agriculture. This report contains preliminary data which have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. This report is primarily a tool for use by cooperators, their official staffs and 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 as well as by the Agricultural Research Service and was compiled in the Northern Plains Area and the Pacific West Area, Agricultural Research Service, U.S. Department of Agriculture. 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.

National Small Grains Germplasm Research Facility, Aberdeen, Idaho, 2008

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LOCATION OF EXPERIMENTS AND PERSONNEL

California	Lee Jackson, lfjackson@ucdavis.edu
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Aberdeen (WRSBN)	Don Obert, Don.Obert@ars.usda.gov, Phil Bregizer, Phil.Bregizer@ars.usda.gov, hris Evans, Chris.Evans@ars.usda.gov, USDA-ARS
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Wyoming	
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Malting Quality (separate report) http://www.ars.usda.gov/mwa/madison/ccru	
Madison WI	A. D. Budde, Allen.Budde@ars.usda.gov , USDA-ARS

2008 WESTERN REGIONAL SPRING BARLEY NURSERY

This nursery is intended to be grown under irrigation, or in areas of high rainfall. It contains both 2- and 6-rowed feed and malting barley.

2008 nursery sites that were harvested and summarized for yield from 11 locations are:

(1) Aberdeen, ID
(2) Idaho Falls, ID
(3) Fairfield, MT
(4) Manhattan, MT
(5) Langdon, ND
(6) Williston, ND
(7) Klamath Falls, OR
(8) Logan, UT
(9) Pullman, WA
(10) Powell, WY
(11) Saskatoon, SK, Canada

An observation nursery was grown at Tammany, ID.

General Information

The entry list for the 2008 Western Regional Spring Barley Nursery is shown in Table 1. In 2008, commercial cultivars were again entered into the nursery, including those from: Busch Agricultural Resources (2 lines), Plant Breeders 1 (1 line), and Western Plant Breeders (3 lines + 1 check).

There were 27 entries in this nursery in 2008. 26 of the 35 entries (besides checks) in the 2007 test were dropped in 2008. These were: NZ102, tested 4 years; 2B00-2771-1, UT99B1669-3243, UT99B1670-3458, 01NZ392, and 01NZ706, all tested 3 years; 01Ab10055, 01Ab10062, 02WNZ-1015, and 02WNZ-1821, all tested 2 years; 2B99-2316-4, 2B99-2766-10, 2B99-2771-9, 01AB11107, PB1-04-2R-4262 , PB1-04-2R-4057, PB1-04-2R-4038, PB1-04-2R-4257, BZ504-129, BZ502-265, ND20299, ND20448, ND21306, 02WA-7052.9, 02WA-7018.13, and 02WNZ-1100, all tested 1 year. New entries in the test were: 2B02-2925, 2B03-3719, 02Ab17060, PB1 04-2R-4263, BZ504-093, BZ505-187, MT040073, UT03B1960-483, UT04B2041-42, 02WNZ-1095, 02WA-7028.9, 04WA-101.45, and 04WA-122.20.

Data Analysis

Computer software, in Excel© format, was used to obtain the cultivar means and period of years summary for all characteristics. With this software, we were also able to calculate the coefficient of variation (C.V.) and the Least Significant Difference (LSD) at the .05 level for grain yield. These two statistics are included to provide some indication of the variability in the individual test locations and an indication of cultivar rank at each location and the overall average.

Data Highlights

Seasonal measurements for the check cultivars Baronesse, Morex, Stander, Steptoe, and Harrington (Table 2), for 2001 through 2008, show that the check's mean grain yield for the 2008 season was lower than all but one of the previous 7 years and was lower than average for the years tested. Test weight was the lower than 5 of the years, plant height was .5 cm shorter than average, heading date was 2.7 days later than average, percent plump barley was the highest recorded at 5.1 percent higher than average, and protein was the lowest recorded.

In 2008 the highest yielding entry over all locations was the 2-rowed feed check Baronesse, at 6.10 Mg ha^{-1} (Table 3), followed by 04WA-122.20, a 2-rowed feed type, at 5.92 Mg ha^{-1}. The next highest was UT04B2041-42, a 6-rowed feed type, at 5.88 Mg ha^{-1}, and the forth highest was the BZ503-097, a 2-rowed feed type, at 5.77 Mg ha^{-1}. The highest yielding malting type barley was 2B03-3719, ranked 7th at 5.61 Mg ha^{-1}. The top 6 entries had statistically equal yields at the 95% confidence level. MT040073 had the highest test weight at 689.4 kg m^{-3}. 2ND22182 and 2ND22927, for the second consecutive year, had the highest percent plump barley at 98.5%.

In the period of years summary for 2007 through 2008 (Table 4), Baronesse was the highest yielding at 5.62 Mg ha^{-1} over the last 2 years. Only 2 years were summarized as none of the entries other than the checks had been in the nursery more than this period. BZ503-097, a 2-rowed feed type, was the next highest yielding entry with 2 years data at 5.35 Mg ha^{-1}. MT020204 was the highest yielding malting/feed type at 5.33 Mg ha^{-1}. Of the lines tested at least 2 years, BZ503-097 had the highest test weight at 681.7 kg m^{-3}, and 2ND22182 had the highest percent plump barley at 98.0%.

Tables 5 through 12 present the 2008 WRSBN data summarized over locations for grain yield, test weight, height, heading date, plump barley, lodging, percent protein, and TKW/disease ratings/visual ratings.

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Table 1: 2008 Western Regional Spring Barley Nursery, Entry List

Seed Source	Entry Number		Entry	Parentage	TYPE	Grade
WSU	1		Steptoe	CI 15229	6 row	feed
WPB	2		Baronesse	PI 568246	2 row	feed
USDA-ARS	3		Morex	CI 15773	6 row	malting
USDA-ARS	4		Stander	PI 564743	6 row	malting
USDA-ARS	5		Harrington		2 row	malting
BARI	6	*	2B02-2925	MERIT/2B97-4527	2 row	malting
BARI	7	*	2B03-3719	2B96-5038/2B97-4796	2 row	malting
USDA-ARS	8	*	02Ab17060	91Ab3148/90Ab321	2-Row	feed
PB1	9	*	PB1 04-2R-4263	PB1 96-2R-6123 X PB1 97-2R-7090	2 row	feed
WPB	10		BZ503-097	Xena/Dolly	2 row	feed
WPB	11	*	BZ504-093	Salute/Boulder	2 row	feed
WPB	12	*	BZ505-187	CDC Trey/Salute	2 row	feed
MSU	13		MT010158	MT920041/Harrington	2 row	feed/malting
MSU	14		MT010160	MT920041/Harrington	2 row	feed/malting
MSU	15		MT020155	MT960225/H1851195	2 row	feed/malting
MSU	16		MT020204	MTLB 32/H1851195	2 row	feed/malting
MSU	17		MT030042	MT910189/MT960099	2 row	feed/malting
MSU	18	*	MT040073	MT960045/Harrington	2 row	feed/malting
NDSU	19		2ND21867	ND18172/ND19130	2 row	malting
NDSU	20		2ND22182	ND18413/ND19134//ND19164	2 row	malting
NDSU	21		2ND22927	ND19119-1/ND19931	2 row	malting
USU	22	*	UT03B1960-483	OR741209//ID633019/Woodvale/3/short2//ID633019/Woodvale/4/Brigham	6 row	feed
USU	23	*	UT04B2041-42	Goldeneye/Columbia	6 row	feed
WSU	24	*	02WNZ-1095	Camas/Baronesse	2 row	feed
WSU	25	*	02WA-7028.9	Camas/Baronesse	2 row	feed
WSU	26	*	04WA-101.45	WA8608-97/Baronesse	2 row	feed
WSU	27	*	04WA-122.20	85AB2323/Baronesse	2 row	feed

* new entries

Table 2: Check Seasonal Measurements (2001-2008) of the Western Regional Spring Barley Nursery

Average of adjusted means of checks Baronesse, Morex, Stander, Steptoe, and Harrington

Grain Yield		
Year	Station Years	Mg ha^{-1}
2004	13	6.631
2003	13	5.876
2005	12	5.674
2006	14	5.336
2007	11	5.282
2001	13	5.255
2008	10	5.126
2002	11	4.434
Adj. Mean	97	5.483

Test Weight		
Year	Station Years	kg m^{-3}
2001	13	657.8
2004	13	657.2
2006	11	656.4
2003	13	656.2
2002	11	653.2
2008	9	651.3
2005	12	649.9
2007	10	638.1
Adj. Mean	92	653.0

Plant Height		
Year	Station Years	cm
2004	11	90.5
2005	8	85.5
2007	8	84.6
2008	8	79.5
2003	12	78.7
2001	14	76.1
2006	11	76.0
2002	11	75.0
Adj. Mean	83	80.3

Heading Date		
Year	Station Years	from 1/1
2007	9	172.0
2004	10	173.9
2006	10	176.4
2001	9	176.5
2002	10	177.2
2003	9	179.1
2008	8	179.6
2005	9	181.5
Adj. Mean	74	176.9

Percent Plump Barley		
Year	Station Years	%
2008	8	94.7
2002	10	91.4
2004	13	91.3
2006	9	89.7
2003	13	88.4
2001	9	87.6
2007	9	87.4
2005	11	86.7
Adj. Mean	82	89.6

Percent Protein		
Year	Station Years	%
2008	5	12.0
2004	2	12.0
2007	5	12.0
2006	5	12.0
2003	3	12.1
2005	5	12.1
2002	2	13.5
2001	1	19.6
Adj. Mean	28	12.4

Table 3: 2008 Western Regional Spring Barley Nursery, Means Summary

Entry	CULTIVAR/	GRAIN YIELD		TEST WEIGHT	HEADING DATE	PLANT HEIGHT	PLUMP BARLEY*	PROTEIN
Number	DESIGNATION	Mg ha^{-1}	Rank	kg m^{-3}	From 1/1	cm	%	%
	Number of Locations**	10		9	8	8	7***	5
1	**Steptoe, check**	5.238	18	625.6	177.7	76.2	96.1	11.1
2	**Baronesse, check**	6.097	1	666.4	183.0	73.6	94.7	11.9
3	**Morex, check**	4.052	27	652.7	176.1	89.0	93.0	12.5
4	**Stander, check**	5.047	25	652.9	179.0	81.7	94.1	12.6
5	**Harrington, check**	5.198	19	658.7	182.4	77.0	95.4	12.0
6	**2B02-2925**	5.244	17	664.2	182.8	76.6	95.3	11.9
7	**2B03-3719**	5.609	7	656.6	182.3	78.5	97.4	11.7
8	**02Ab17060**	5.584	8	663.5	182.0	71.2	96.1	12.0
9	**PB1 04-2R-4263**	5.450	13	681.9	181.9	72.5	97.6	11.8
10	**BZ503-097**	5.771	4	685.6	182.3	78.5	97.2	12.0
11	**BZ504-093**	5.497	12	666.5	182.9	74.6	97.6	13.1
12	**BZ505-187**	5.121	22	670.4	183.2	72.1	93.6	12.6
13	**MT010158**	5.021	26	669.6	182.7	74.1	95.3	12.6
14	**MT010160**	5.179	20	667.8	183.3	77.9	94.5	12.3
15	**MT020155**	5.314	15	662.8	177.6	78.4	94.9	12.0
16	**MT020204**	5.568	9	677.2	179.6	75.7	94.8	12.3
17	**MT030042**	5.111	24	679.8	181.5	72.8	89.8	11.5
18	**MT040073**	5.343	14	689.4	183.1	76.3	95.1	12.1
19	**2ND21867**	5.264	16	673.6	178.8	76.5	97.9	12.3
20	**2ND22182**	5.507	11	674.3	175.6	73.9	98.5	11.7
21	**2ND22927**	5.115	23	660.6	179.6	79.9	98.5	11.2
22	**UT03B1960-483**	5.131	21	631.1	175.3	86.3	96.1	11.3
23	**UT04B2041-42**	5.875	3	650.0	179.7	78.6	95.0	11.1
24	**02WNZ-1095**	5.684	6	670.3	184.2	74.6	92.1	11.2
25	**02WA-7028.9**	5.711	5	671.2	183.4	77.9	96.3	12.0
26	**04WA-101.45**	5.544	10	674.8	183.3	77.9	98.2	12.0
27	**04WA-122.20**	5.924	2	667.4	183.8	75.9	95.1	12.2
	MEAN:	5.378		665.37	181.00	76.97	95.57	11.97
	CHECK MEAN:	5.126		651.26	179.64	79.48	94.66	12.02
	CV %	11.52		2.22	1.44	6.22	2.96	5.24
	LSD (.05)	0.472		11.87	2.22	4.08	2.58	0.68

* Percent over sieve, 2-rowed >2.4mm, 6-rowed >2.2mm

** does not include data from Saskatoon due to missing entry

***does not include Williston due to very low location mean

Table 4: Summary Across Locations and Years, Western Regional Spring Barley Nursery, 2007-2008.

Entry Number	CULTIVAR/ DESIGNATION	Grain Yield			Test Weight	Plant Height	Heading Date	Plump Barley*	Protein
		Station Years	Mg ha^{-1}	RANK	kg m^{-3}	cm	From 1/1	%	%
1	**Steptoe, check**	22	**5.250**	14	616.6	77.9	173.7	92.6	10.967
2	**Baronesse, check**	22	**5.621**	4	661.8	76.3	178.3	90.1	11.948
3	**Morex, check**	22	**4.223**	27	642.9	92.8	172.4	87.9	12.472
4	**Stander, check**	22	**4.880**	24	650.2	84.9	175.2	91.0	12.413
5	**Harrington, check**	22	**4.883**	23	650.2	78.2	178.4	91.4	12.292
6	**2B02-2925**	11	**5.244**	15	664.2	76.6	182.8	95.3	11.924
7	**2B03-3719**	11	**5.609**	5	656.6	78.5	182.3	97.4	11.744
8	**02Ab17060**	11	**5.584**	6	663.5	71.2	182.0	96.1	11.966
9	**PB1 04-2R-4263**	11	**5.450**	9	681.9	72.5	181.9	97.6	11.826
10	**BZ503-097**	22	**5.351**	11	681.7	80.2	177.7	94.8	12.35
11	**BZ504-093**	11	**5.497**	8	666.5	74.6	182.9	97.6	13.086
12	**BZ505-187**	11	**5.121**	19	670.4	72.1	183.2	93.6	12.554
13	**MT010158**	22	**4.680**	26	666.6	75.5	177.7	93.2	12.473
14	**MT010160**	22	**4.867**	25	663.6	80.4	178.4	90.7	12.397
15	**MT020155**	22	**5.134**	17	658.1	80.3	173.6	91.1	12.283
16	**MT020204**	22	**5.328**	13	675.4	78.6	175.4	90.5	12.358
17	**MT030042**	22	**4.907**	22	680.7	74.0	176.8	88.4	11.573
18	**MT040073**	11	**5.343**	12	689.4	76.3	183.1	95.1	12.084
19	**2ND21867**	22	**4.918**	21	668.6	76.5	174.8	96.7	12.332
20	**2ND22182**	22	**5.199**	16	672.1	73.9	172.2	98.0	11.77
21	**2ND22927**	22	**4.988**	20	656.3	82.7	175.3	97.9	11.413
22	**UT03B1960-483**	11	**5.131**	18	631.1	86.3	175.3	96.1	11.336
23	**UT04B2041-42**	11	**5.875**	2	650.0	78.6	179.7	95.0	11.084
24	**02WNZ-1095**	11	**5.684**	3	670.3	74.6	184.2	92.1	11.224
25	**02WA-7028.9**	22	**5.433**	10	663.1	74.8	178.8	92.9	11.805
26	**04WA-101.45**	11	**5.544**	7	674.8	77.9	183.3	98.2	12.004
27	**04WA-122.20**	11	**5.924**	1	667.4	75.9	183.8	95.1	12.156
	MEAN:		**5.412**		**692.8**	**82.3**	**185.9**	**98.0**	**12.6**
	CHECK MEAN:		**4.971**		**644.3**	**82.0**	**175.6**	**90.6**	**12.0**

* Percent over sieve, 2-rowed >2.4mm, 6-rowed >2.2mm

Table 5: 2008 Western Regional Spring Barley Nursery, Grain Yield (Mg ha^{-1})

Entry NO.	CULTIVAR/ DESIGNATION	AVERAGE* Mg ha^{-1}	AVERAGE* Rank	Rank Ave.	Aberdeen ID	Idaho Falls ID	Fairfield MT	Manhattan MT	Langdon ND	Williston ND	Klamath Falls OR	Logan UT	Pullman WA	Powell WY	Saskatoon SK, CAN
1	**Steptoe, check**	**5.238**	18	15.4	5.284	8.069	6.395	4.918	3.811	3.234	6.343	2.203	5.321	6.799	3.719
2	**Baronesse, check**	**6.097**	1	5.8	5.800	8.473	7.328	5.870	3.760	5.449	7.240	4.351	5.859	6.842	4.884
3	**Morex, check**	**4.052**	27	25.5	4.311	6.036	5.962	2.800	3.320	2.444	5.196	3.189	4.461	2.800	4.048
4	**Stander, check**	**5.047**	25	18.8	4.440	7.396	6.070	4.746	3.153	3.027	6.419	3.657	5.590	5.972	3.925
5	**Harrington, check**	**5.198**	19	17.4	4.768	7.640	5.962	5.773	3.479	4.222	6.556	2.649	5.214	5.719	4.000
6	**2B02-2925**	**5.244**	17	14.4	5.633	8.166	6.981	5.359	3.512	3.177	6.330	1.153	5.698	6.429	4.315
7	**2B03-3719**	**5.609**	7	13.0	6.326	7.377	7.328	5.542	3.625	5.683	6.160	2.111	5.590	6.353	3.972
8	**02Ab17060**	**5.584**	8	12.0	5.999	8.829	7.284	5.552	3.611	2.852	6.116	3.812	5.053	6.735	4.436
9	**PB1 04-2R-4263**	**5.450**	13	12.9	5.294	8.323	7.674	4.821	3.870	2.763	6.092	3.217	5.053	7.391	
10	**BZ503-097**	**5.771**	4	9.1	5.359	8.778	7.609	5.719	3.850	5.129	6.203	2.943	5.268	6.848	4.850
11	**BZ504-093**	**5.497**	12	13.0	4.875	8.239	7.393	5.413	3.725	4.273	6.047	3.618	5.751	5.638	4.131
12	**BZ505-187**	**5.121**	22	17.1	5.096	7.672	6.070	4.553	3.808	3.932	5.896	2.292	5.590	6.300	4.481
13	**MT010158**	**5.021**	26	19.0	5.042	8.201	7.349	4.547	3.415	2.164	5.259	2.406	5.483	6.348	4.279
14	**MT010160**	**5.179**	20	17.2	5.214	7.239	6.721	4.676	3.594	3.371	6.270	3.479	5.321	5.902	4.132
15	**MT020155**	**5.314**	15	14.7	4.757	7.127	6.894	4.940	3.928	4.000	6.449	3.533	5.214	6.300	4.110
16	**MT020204**	**5.568**	9	12.2	4.988	7.724	6.981	5.074	3.885	3.032	6.405	5.369	5.966	6.257	3.951
17	**MT030042**	**5.111**	24	18.7	5.053	7.610	6.287	4.961	3.633	3.775	6.035	2.706	4.784	6.262	4.143
18	**MT040073**	**5.343**	14	14.2	5.407	8.375	6.829	4.649	4.057	3.225	5.846	3.615	5.268	6.160	4.324
19	**2ND21867**	**5.264**	16	15.4	5.504	8.546	6.460	5.300	3.482	3.790	5.582	2.248	5.321	6.412	4.335
20	**2ND22182**	**5.507**	11	14.0	4.881	8.826	6.807	4.289	3.926	6.222	5.279	3.232	5.106	6.498	4.413
21	**2ND22927**	**5.115**	23	17.8	4.875	8.242	6.330	5.020	3.633	2.499	6.346	2.880	4.945	6.375	4.106
22	**UT03B1960-483**	**5.131**	21	16.7	4.784	8.729	5.268	3.800	3.429	3.602	6.769	4.152	5.429	5.343	4.033
23	**UT04B2041-42**	**5.875**	3	8.0	6.154	8.933	6.547	5.805	3.745	3.201	7.527	4.593	6.235	6.009	4.709
24	**02WNZ-1095**	**5.684**	6	8.9	6.197	8.659	7.436	5.681	3.958	2.668	7.203	3.337	4.515	7.181	4.622
25	**02WA-7028.9**	**5.711**	5	8.9	5.757	8.155	7.805	5.289	3.836	2.046	6.973	4.250	6.128	6.875	4.754
26	**04WA-101.45**	**5.544**	10	11.6	5.214	8.308	7.609	5.488	3.812	3.155	5.773	2.998	5.751	7.326	3.949
27	**04WA-122.20**	**5.924**	2	6.3	5.832	8.831	7.328	5.552	3.770	3.318	6.602	5.291	5.751	6.966	4.330
	Location Mean	**5.378**			**5.348**	**8.104**	**6.841**	**5.042**	**3.690**	**3.565**	**6.275**	**3.307**	**5.410**	**6.300**	**4.267**
	Check Mean	**5.126**			**4.920**	**7.523**	**6.343**	**4.821**	**3.505**	**3.675**	**6.351**	**3.210**	**5.289**	**5.627**	**4.115**
	C.V. (%)	**11.5**			**6.4**	**9.7**	**7.7**	**7.1**	**4.6**	**13.0**	**6.7**	**15.5**	**7.1**	**9.4**	**7.6**
	LSD $_{.05}$	**0.472**			**0.559**	**1.285**	**0.855**	**0.590**	**0.234**	**0.763**	**0.686**	**0.839**	**0.523**	**0.968**	**0.449**

* does not include data from Saskatoon due to missing entry

Table 6: 2008 Western Regional Spring Barley Nursery, Test Weight (kg m^{-3})

Entry Number	CULTIVAR/ DESIGNATION	Average* kg m^{-3}	Average* Rank	Aberdeen ID	Idaho Falls ID	Fairfield MT	Manhattan MT	Williston ND	Klamath Falls OR	Logan UT	Pullman WA	Powell WY	Saskatoon SK, CAN
1	Steptoe, check	625.6	27	646.1	616.1	604.2	680.8	563.9	640.2	643.1	624.2	611.3	636.0
2	Baronesse, check	666.4	16	693.7	661.9	674.6	700.1	593.8	672.8	676.5	662.8	661.5	691.0
3	Morex, check	652.7	24	668.0	640.5	644.7	691.1	617.4	690.9	664.1	635.8	621.6	669.0
4	Stander, check	652.9	23	695.0	647.0	642.0	691.1	609.8	652.9	676.2	630.6	631.9	678.0
5	Harrington, check	658.7	21	696.3	631.9	661.0	700.8	587.5	698.7	662.6	649.9	639.6	685.0
6	2B02-2925	664.2	17	696.3	668.2	653.8	695.6	598.3	695.7	652.4	658.9	658.9	681.0
7	2B03-3719	656.6	22	689.8	658.7	662.8	707.9	604.1	677.2	591.9	653.8	662.8	684.0
8	02Ab17060	663.5	18	695.0	670.0	659.6	693.7	602.4	646.0	697.3	652.5	655.1	683.0
9	PB1 04-2R-4263	681.9	3	718.1	681.5	683.3	716.9	605.9	664.9	698.8	693.7	674.4	
10	BZ503-097	685.6	2	698.8	678.2	686.4	725.2	625.6	698.1	684.6	691.1	682.1	700.0
11	BZ504-093	666.5	15	657.7	664.6	664.6	705.9	599.7	689.6	703.9	664.1	648.6	688.0
12	BZ505-187	670.4	10	675.7	658.7	665.1	686.6	644.6	684.5	680.0	684.7	653.8	685.0
13	MT010158	669.6	12	701.4	642.9	665.5	692.4	607.6	691.2	689.7	674.4	661.5	690.0
14	MT010160	667.8	13	705.3	657.4	669.6	686.6	592.1	686.4	680.7	664.1	668.0	687.0
15	MT020155	662.8	19	691.1	663.3	657.8	699.5	622.3	695.0	636.5	655.1	644.8	677.0
16	MT020204	677.2	5	706.6	661.4	674.6	713.6	602.1	681.2	709.1	683.4	662.8	694.0
17	MT030042	679.8	4	716.9	661.9	671.0	702.1	625.5	686.0	689.1	684.7	680.8	692.0
18	MT040073	689.4	1	709.1	684.2	684.6	722.7	632.9	705.2	697.0	687.3	682.1	710.0
19	2ND21867	673.6	8	704.0	671.9	666.9	694.3	623.1	700.3	686.5	683.4	631.9	694.0
20	2ND22182	674.3	7	680.8	669.6	652.4	698.8	633.9	722.0	693.5	682.1	635.8	696.0
21	2ND22927	660.6	20	693.7	655.6	643.2	688.5	576.5	712.2	686.0	658.9	630.6	672.0
22	UT03B1960-483	631.1	26	643.5	621.5	605.1	666.7	565.8	638.3	676.4	662.8	599.7	637.0
23	UT04B2041-42	650.0	25	670.5	656.9	632.4	687.3	574.9	673.7	674.6	655.1	624.2	655.0
24	02WNZ-1095	670.3	11	711.7	661.0	659.2	705.9	617.3	666.6	699.9	655.1	656.4	668.0
25	02WA-7028.9	671.2	9	692.4	672.3	676.4	698.8	603.7	657.9	695.1	682.1	661.5	691.0
26	04WA-101.45	674.8	6	695.0	686.0	680.6	695.0	614.0	661.2	677.1	688.5	675.7	699.0
27	04WA-122.20	667.4	14	695.0	668.2	669.1	704.6	591.4	654.8	670.8	683.4	669.2	701.0
	Location Mean	**665.4**		**690.6**	**659.7**	**659.7**	**698.2**	**605.0**	**679.4**	**677.5**	**667.2**	**651.2**	**682.4**
	Check Mean	**651.3**		**679.8**	**639.5**	**645.3**	**692.8**	**594.5**	**671.1**	**664.5**	**640.7**	**633.2**	**671.8**
	C.V. (%)	**2.2**						**1.8**	**1.5**		**1.1**	**2.5**	
	LSD $_{.05}$	**11.9**						**18.3**	**16.6**		**10.0**	**27.0**	

* does not include data from Saskatoon due to missing entry

Table 7: 2008 Western Regional Spring Barley Nursery, Plant Height (cm)

Entry Number	CULTIVAR/ DESIGNATION	Average* cm	Average* Rank	Idaho Falls ID	Tammany ID	Langdon ND	Williston ND	Klamath Falls OR	Logan UT	Pullman WA	Powell WY	Saskatoon SK, Can
1	Steptoe, check	76.2	12	99.1	73.7	72.6	61.8	58.4	66.0	74.2	103.6	29.0
2	Baronesse, check	73.6	5	99.1	68.6	64.3	53.3	66.9	76.2	70.6	89.7	27.0
3	Morex, check	89.0	27	124.5	83.8	91.7	71.1	78.7	63.5	83.3	115.3	33.0
4	Stander, check	81.7	25	116.8	78.7	77.5	64.3	72.8	66.0	73.2	104.1	31.0
5	Harrington, check	77.0	16	104.1	68.6	75.9	60.1	66.0	73.7	70.4	96.8	27.0
6	2B02-2925	76.6	15	106.7	73.7	70.1	61.0	64.3	73.7	69.9	93.5	29.0
7	2B03-3719	78.5	22	109.2	71.1	71.4	56.7	70.3	76.2	75.7	97.8	28.0
8	02Ab17060	71.2	1	101.6	68.6	63.8	57.6	54.2	76.2	64.3	83.3	27.0
9	PB1 04-2R-4263	72.5	3	99.1	68.6	67.3	57.6	60.1	73.7	66.0	87.4	
10	BZ503-097	78.5	21	101.6	71.1	71.6	63.5	73.7	76.2	72.4	97.5	28.0
11	BZ504-093	74.6	9	99.1	71.1	59.2	55.9	70.3	73.7	69.9	97.8	28.0
12	BZ505-187	72.1	2	96.5	63.5	59.4	55.9	67.7	76.2	69.9	87.4	25.0
13	MT010158	74.1	7	109.2	71.1	66.8	56.7	58.4	73.7	68.6	88.6	28.0
14	MT010160	77.9	19	111.8	71.1	71.6	61.8	66.9	71.1	69.3	99.8	28.0
15	MT020155	78.4	20	106.7	76.2	73.9	65.2	65.2	68.6	74.2	97.3	30.0
16	MT020204	75.7	10	101.6	76.2	70.6	57.6	62.7	68.6	71.1	97.3	30.0
17	MT030042	72.8	4	96.5	71.1	66.3	55.9	68.6	73.7	64.8	85.9	28.0
18	MT040073	76.3	13	99.1	73.7	69.3	61.0	64.3	76.2	69.3	97.8	29.0
19	2ND21867	76.5	14	111.8	76.2	63.2	55.9	71.1	71.1	69.9	92.7	30.0
20	2ND22182	73.9	6	96.5	76.2	67.8	58.4	69.4	63.5	68.6	90.4	30.0
21	2ND22927	79.9	24	111.8	73.7	79.5	64.3	64.3	71.1	74.9	99.3	29.0
22	UT03B1960-483	86.3	26	116.8	78.7	89.9	75.4	71.1	63.5	87.6	107.7	31.0
23	UT04B2041-42	78.6	23	109.2	63.5	75.2	61.0	66.0	73.7	80.5	100.1	25.0
24	02WNZ-1095	74.6	8	104.1	68.6	63.5	56.7	66.9	76.2	66.0	94.7	27.0
25	02WA-7028.9	77.9	17	109.2	71.1	72.4	60.1	61.8	76.2	77.0	95.0	28.0
26	04WA-101.45	77.9	18	116.8	66.0	63.2	58.4	66.0	76.2	71.9	104.4	26.0
27	04WA-122.20	75.9	11	109.2	68.6	68.3	54.2	63.5	76.2	70.4	96.5	27.0
	Location Mean	**77.0**		**106.2**	**72.0**	**70.6**	**60.1**	**66.3**	**72.2**	**71.7**	**96.3**	**28.3**
	Check Mean	**79.5**		**108.7**	**74.7**	**76.4**	**62.1**	**68.6**	**69.1**	**74.3**	**101.9**	**29.4**
	C.V. (%)	**6.22**				**4.35**	**6.33**	**8.47**		**4.16**	**4.00**	
	LSD $_{.05}$	**4.08**				**5.03**	**5.29**	**9.19**		**4.08**	**6.35**	

* does not include data from Saskatoon due to missing entry

Table 8: 2008 Western Regional Spring Barley Nursery, Heading Date (Days after Jan. 1)

Entry Number	CULTIVAR/ DESIGNATION	Average* From 1/1	Average* Rank	Aberdeen ID	Fairfield MT	Langdon ND	Williston ND	Klamath Falls OR	Logan UT	Pullman WA	Powell WY	Saskatoon SK, CAN
1	Steptoe, check	177.7	5	174	186	181	175	212	147	172	174	194
2	Baronesse, check	183.0	20	179	190	189	183	214	151	179	180	197
3	Morex, check	176.1	3	177	186	179	175	198	146	174	174	196
4	Stander, check	179.0	7	178	188	183	178	206	147	173	180	196
5	Harrington, check	182.4	16	178	192	187	180	212	150	179	181	197
6	2B02-2925	182.8	18	180	191	190	181	214	150	175	181	197
7	2B03-3719	182.3	15	179	193	187	181	209	151	177	181	197
8	02Ab17060	182.0	13	176	189	186	180	217	151	175	182	196
9	PB1 04-2R-4263	181.9	12	180	189	184	179	221	150	176	177	
10	BZ503-097	182.3	14	179	189	188	181	210	151	179	181	196
11	BZ504-093	182.9	19	179	190	189	183	216	150	175	181	197
12	BZ505-187	183.2	22	178	190	186	183	221	151	175	181	196
13	MT010158	182.7	17	180	190	187	182	219	150	177	177	196
14	MT010160	183.3	23	179	191	189	181	217	149	179	181	196
15	MT020155	177.6	4	174	186	182	175	205	148	175	176	193
16	MT020204	179.6	8	175	186	184	177	210	148	176	181	195
17	MT030042	181.5	11	177	189	185	181	212	150	177	181	195
18	MT040073	183.1	21	179	190	186	181	220	151	176	182	196
19	2ND21867	178.8	6	177	188	183	178	200	149	174	181	196
20	2ND22182	175.6	2	175	188	180	172	197	146	171	176	193
21	2ND22927	179.6	9	178	186	183	180	204	149	175	182	195
22	UT03B1960-483	175.3	1	173	186	181	174	197	146	171	174	192
23	UT04B2041-42	179.7	10	178	188	186	178	207	150	174	177	196
24	02WNZ-1095	184.2	27	180	189	190	182	223	151	177	181	196
25	02WA-7028.9	183.4	25	179	189	189	180	222	151	176	181	197
26	04WA-101.45	183.3	24	181	191	187	183	216	151	177	181	196
27	04WA-122.20	183.8	26	180	191	190	183	217	151	178	180	197
	Location Mean	**181.00**		**178.0**	**188.9**	**185.6**	**179.4**	**211.7**	**149.4**	**175.7**	**179.4**	**195.7**
	Check Mean	**179.64**		**177.2**	**188.4**	**183.8**	**178.1**	**208.3**	**148.2**	**175.4**	**177.8**	**195.7**
	C.V. (%)	**1.44**		**0.60**		**0.83**	**0.55**	**1.47**		**0.30**		**0.38**
	LSD $_{.05}$	**2.22**		**2.30**		**2.53**	**1.36**	**5.11**		**0.91**		**1.04**

* does not include data from Saskatoon due to missing entry

Table 9: 2008 Western Regional Spring Barley Nursery, Percent Plump Barley*

Entry Number	CULTIVAR/ DESIGNATION	Average** %	Average** Rank	Aberdeen ID	Idaho Falls ID	Fairfield MT	Manhattan MT	Klamath Falls OR	Pullman WA	Powell WY	Williston ND	Saskatoon SK, CAN
1	Steptoe, check	96.1	11	97.9	91.5	96.5	97.5	99.2	91.0	99.2	24.4	87.3
2	Baronesse, check	94.7	21	98.0	92.6	96.0	95.3	99.4	85.0	96.9	36.8	88.0
3	Morex, check	93.0	25	90.9	92.8	97.0	97.4	99.3	74.0	99.2	39.2	88.2
4	Stander, check	94.1	23	95.0	96.2	97.0	95.1	98.4	78.0	99.0	37.0	93.5
5	Harrington, check	95.4	13	97.6	89.6	97.0	96.6	99.1	89.0	98.7	27.4	85.9
6	2B02-2925	95.3	15	95.9	97.4	96.1	95.9	99.1	84.0	98.4	37.1	89.2
7	2B03-3719	97.4	7	95.6	97.2	98.5	96.9	99.3	95.0	99.3	19.3	95.2
8	02Ab17060	96.1	10	96.8	96.0	95.9	97.8	98.6	89.0	98.9	37.4	90.6
9	PB1 04-2R-4263	97.6	5	97.8	96.1	97.6	97.4	98.0	97.0	99.5	23.7	
10	BZ503-097	97.2	8	94.5	97.4	98.2	97.8	99.4	94.0	99.3	26.3	96.0
11	BZ504-093	97.6	6	98.5	96.2	98.8	97.5	99.2	94.0	98.8	18.4	94.9
12	BZ505-187	93.6	24	91.1	91.9	97.6	96.4	99.1	82.0	97.4	40.2	90.1
13	MT010158	95.3	14	95.5	90.7	97.1	96.4	98.6	90.0	99.0	35.5	90.4
14	MT010160	94.5	22	96.5	90.6	96.4	95.1	98.4	87.0	97.4	37.8	89.1
15	MT020155	94.9	19	95.9	91.6	96.3	95.2	99.5	90.0	95.9	30.5	86.1
16	MT020204	94.8	20	97.7	88.8	95.8	96.9	99.3	88.0	96.8	38.8	87.0
17	MT030042	89.8	27	91.3	81.1	90.7	91.1	99.0	78.0	97.6	37.3	91.3
18	MT040073	95.1	17	96.6	93.0	96.5	98.2	99.3	85.0	97.2	30.9	88.2
19	2ND21867	97.9	4	98.1	96.8	97.6	97.6	99.1	97.0	98.9	23.6	93.3
20	2ND22182	98.5	1	99.0	99.1	98.8	96.3	99.5	98.0	98.9	5.2	98.4
21	2ND22927	98.5	2	98.8	98.4	99.0	97.5	98.5	98.0	99.1	11.3	97.4
22	UT03B1960-483	96.1	12	94.5	96.1	97.3	97.2	98.5	90.0	98.9	46.6	91.3
23	UT04B2041-42	95.0	18	94.2	95.4	94.7	94.5	98.7	89.0	98.5	50.2	84.8
24	02WNZ-1095	92.1	26	97.8	92.0	94.1	92.0	98.6	74.0	96.6	45.1	82.4
25	02WA-7028.9	96.3	9	98.3	94.8	96.5	96.2	98.5	91.0	98.5	35.4	92.6
26	04WA-101.45	98.2	3	98.3	98.1	98.7	95.8	98.5	99.0	99.3	17.1	95.6
27	04WA-122.20	95.1	16	96.5	92.2	96.2	94.4	98.7	89.0	98.9	44.4	91.9
	Location Mean	**95.6**		**96.2**	**93.8**	**96.7**	**96.1**	**98.9**	**88.7**	**98.0**	**39.7**	**90.7**
	Check Mean	**94.7**		**95.9**	**92.6**	**96.7**	**96.4**	**99.1**	**83.4**	**98.6**	**32.9**	**88.6**
	C.V. (%)	**2.96**						**0.31**	**3.37**	**0.90**	**8.56**	
	LSD $_{.05}$	**2.58**						**0.50**	**4.08**	**1.40**	**5.79**	

* Percent over sieve, 2-rowed >2.4mm, 6-rowed >2.2mm

** does not include data from Saskatoon due to missing entry and Williston due to low location average.

Table 10: 2008 Western Regional Spring Barley Nursery, Percent Protein

Entry Number	CULTIVAR/ DESIGNATION	Average %	Average Rank	Idaho Falls ID	Fairfield MT	Manhattan MT	Williston ND	Pullman WA
1	Steptoe, check	11.1	2	11.5	10.2	10.6	12.5	11.0
2	Baronesse, check	11.9	10	13.0	9.0	10.8	15.0	11.5
3	Morex, check	12.5	23	13.4	11.1	11.4	15.5	11.4
4	Stander, check	12.6	25	13.2	11.4	11.4	15.5	11.4
5	Harrington, check	12.0	14	13.3	9.9	10.0	14.8	12.1
6	2B02-2925	11.9	11	13.0	9.2	10.5	15.9	11.1
7	2B03-3719	11.7	8	12.9	9.4	10.4	14.4	11.7
8	02Ab17060	12.0	13	12.2	9.8	10.1	16.1	11.6
9	PB1 04-2R-4263	11.8	9	12.1	9.8	10.5	15.1	11.7
10	BZ503-097	12.0	17	13.1	10.5	10.6	14.4	11.6
11	BZ504-093	13.1	27	14.3	10.3	11.8	16.8	12.3
12	BZ505-187	12.6	24	13.4	10.6	11.4	15.4	12.0
13	MT010158	12.6	26	13.8	10.2	11.1	16.5	11.4
14	MT010160	12.3	20	13.5	10.3	10.9	15.2	11.6
15	MT020155	12.0	16	13.0	10.3	11.9	13.5	11.4
16	MT020204	12.3	22	14.0	9.8	10.8	15.7	11.4
17	MT030042	11.5	6	12.1	10.0	10.1	14.5	10.8
18	MT040073	12.1	18	13.4	10.6	10.6	14.4	11.5
19	2ND21867	12.3	21	13.0	10.3	11.0	15.6	11.8
20	2ND22182	11.7	7	12.2	11.4	10.3	13.2	11.6
21	2ND22927	11.2	3	12.0	10.2	9.5	13.0	11.1
22	UT03B1960-483	11.3	5	11.6	10.1	10.5	13.9	10.6
23	UT04B2041-42	11.1	1	12.4	8.8	10.9	13.4	10.0
24	02WNZ-1095	11.2	4	11.5	8.9	10.6	13.6	11.6
25	02WA-7028.9	12.0	12	12.5	9.5	11.0	15.1	11.8
26	04WA-101.45	12.0	15	13.4	9.3	11.4	14.4	11.6
27	04WA-122.20	12.2	19	12.9	9.2	11.1	16.2	11.4
	Location Mean	12.0		12.8	10.0	10.8	14.8	11.5
	Check Mean	12.0		12.9	10.3	10.8	14.6	11.5
	C.V. (%)	5.24					3.50	5.12
	LSD $_{.05}$	0.68					0.88	0.80

Table 11: 2008 Western Regional Spring Barley Nursery, Lodging

Entry Number	CULTIVAR/ DESIGNATION	Average %	Average Rank	Idaho Falls ID	Fairfield MT	Manhattan MT	Williston ND	Pullman WA
1	Steptoe, check	2.3	25	1.0	0.0	1.4	5.0	4.0
2	Baronesse, check	1.7	21	0.0	1.7	1.3	5.0	0.5
3	Morex, check	5.0	27	5.0	1.3	5.7	7.0	6.0
4	Stander, check	1.8	22	3.0	0.0	0.0	3.0	3.0
5	Harrington, check	1.3	14	0.0	0.0	0.0	6.0	0.3
6	2B02-2925	0.8	4	0.0	0.0	0.0	3.0	0.8
7	2B03-3719	0.8	7	0.0	0.0	0.0	4.0	0.1
8	02Ab17060	0.8	5	0.0	0.0	0.0	3.0	1.0
9	PB1 04-2R-4263	0.9	10	1.0	0.0	0.0	2.0	1.5
10	BZ503-097	0.4	1	0.0	0.0	0.0	1.0	0.8
11	BZ504-093	1.1	12	0.0	0.0	0.0	4.0	1.5
12	BZ505-187	1.1	13	1.0	0.0	0.0	3.0	1.5
13	MT010158	1.6	19	0.0	0.0	1.7	4.0	2.5
14	MT010160	1.4	16	0.0	0.0	0.0	5.0	2.0
15	MT020155	2.2	24	0.0	0.0	1.8	5.0	4.0
16	MT020204	2.0	23	0.0	0.0	5.0	3.0	2.0
17	MT030042	1.6	18	0.0	0.0	2.3	4.0	1.5
18	MT040073	2.3	26	0.0	0.0	5.0	5.0	1.5
19	2ND21867	0.7	3	0.0	0.0	0.0	2.0	1.5
20	2ND22182	0.8	6	0.0	0.0	0.0	2.0	2.0
21	2ND22927	0.5	2	0.0	0.0	0.0	2.0	0.3
22	UT03B1960-483	1.7	20	1.0	0.0	3.2	3.0	1.2
23	UT04B2041-42	1.3	15	0.0	0.0	3.0	2.0	1.5
24	02WNZ-1095	1.5	17	0.0	0.0	0.0	5.0	2.5
25	02WA-7028.9	0.9	9	1.0	0.0	0.0	3.0	0.3
26	04WA-101.45	0.8	8	0.0	0.0	0.0	4.0	0.1
27	04WA-122.20	1.0	11	0.0	0.0	3.0	2.0	0.1
	Location Mean	**1.41**		**0.40**	**0.11**	**0.80**	**3.59**	**1.63**
	Check Mean	**2.41**		**1.80**	**0.60**	**1.68**	**5.20**	**2.76**
	C.V. (%)	**76.33**		**111.50**	**628.18**	**145.07**		
	LSD $_{.05}$	**1.16**		**NSD**	**NSD**	**NSD**		

Table 12: 2008 Western Regional Spring Barley Nursery, Thousand Kernel Weight (KWT) and Disease Ratings

Entry Number	CULTIVAR/ DESIGNATION	Saskatoon SK, CAN	Saskatoon SK, CAN	Fairfield MT	Tammany ID
		KWT	Visual Score	SCALD	Leaf area Yellowed
		g	1-9	0-10*	%
1	Steptoe, check	45.6	1.0	3	5
2	Baronesse, check	44.4	8.0	6	5
3	Morex, check	43.8	4.7	5	tr
4	Stander, check	42.9	5.7	5	tr
5	Harrington, check	46.3	6.3	5	8
6	2B02-2925	47.4	6.0	4	8
7	2B03-3719	47.8	4.7	5	10
8	02Ab17060	49.3	4.7	6	12
9	PB1 04-2R-4263			5	8
10	BZ503-097	51.8	7.7	2	12
11	BZ504-093	45.9	6.3	3	60
12	BZ505-187	41.7	5.7	1	12
13	MT010158	48.7	4.0	6	12
14	MT010160	47.2	6.0	6	15
15	MT020155	45.6	7.0	7	8
16	MT020204	46.3	6.0	7	3
17	MT030042	47.2	3.0	7	2
18	MT040073	48.4	5.3	6	8
19	2ND21867	50.8	4.7	5	tr
20	2ND22182	57.8	5.0	4	12
21	2ND22927	54.6	3.3	5	10
22	UT03B1960-483	44.7	5.7	5	20
23	UT04B2041-42	40.0	3.0	6	35
24	02WNZ-1095	45.3	5.3	8	5
25	02WA-7028.9	48.4	5.3	6	8
26	04WA-101.45	52.7	6.3	7	8
27	04WA-122.20	50.5	6.7	8	5
	Location Mean	**47.50**	**5.3**	**5.3**	**12.1**
	Check Mean	**44.60**	**5.13**	**4.80**	**6.00**

WESTERN REGIONAL SPRING DRYLAND BARLEY NURSERY, 2008

This nursery is intended to be grown under dryland conditions. It contains both 2- and 6-rowed feed and malting barley. 2008 nursery sites that were harvested and summarized for yield from 6 locations are:

1) Tetonia, ID
2) Conrad, MT
3) Hettinger, ND
4) Minot, ND
5) Williston, ND
6) Mt. Stirling, UT

Several of the locations which normally grow both the WRSBN and WRDBN only grew the WRSBN as there was just one entry in the WRDSBN not in the WRSBN.

General Information

The entry list for the 2008 Western Regional Dryland Spring Barley Nursery is shown in Table 13. In 2008, commercial cultivars were again entered into the nursery, including those from: Busch Agricultural Resources (2 lines + 1 check).

There were 21 entries in this nursery in 2008. Entries in the 2007 test that were dropped in 2008 were: 2B99-2771-1 and UT99B1669-3243, tested 3 years; 01Ab10055, 01Ab10062, and UT99B1670-3458, tested 2 years; and 2B99-2316-4, 2B99-2766-10, 2B99-2771-9, 01AB11107, ND20666, 02WA-7052.9, 02WA-7018.13, and 02WNZ-1100, tested 1 year. Of the 21 entries in the 2008 test 7 were new to this nursery. These included the lines 2B02-2925, 2B03-3719, 01Ab7163, 02Ab17060, MT040073, UT03B1960-483, and UT04B2041-42.

Data Analysis

Computer software, in Excel© format, was used to obtain the cultivar means and period of years summary for all characteristics. With this software, we were also able to calculate the coefficient of variation (C.V.) and the Least Significant Difference (LSD) at the .05 level for grain yield. These two statistics are included to provide some indication of the variability in the individual test locations and an indication of cultivar rank at each location and the overall average.

Data Highlights

Comparison of the check data is given in Table 14. Check grain yield and test weights were lower than the previous three years in 2008; plant heights were taller than average by 5.3 cm; heading dates were 6.6 days later; plump barley was below the average by 18.2%; and protein also was slightly higher than average.

In 2008 the highest yielding line over locations was MT20204, a 2-rowed feed/malting barley, at 3.47 Mg ha^{-1} (Table 15). The next highest yielding line was Baronesse, the 2-rowed feed check, at 3.44 Mg ha^{-1}. The highest yielding malting barley was 2ND22927, a 2-rowed type, ranked 8^{th} at 3.43 Mg ha^{-1}. The top 13 lines were statistically equal.

In the period of years summary for 2006 through 2008 (Table 16), the checks Steptoe and Baronesse were the highest yielding lines of the 16 entries grown for 2 or more years. The highest yielding experimental line was 2ND21867, a 2-rowed malting barley at 3.74 Mg ha^{-1}, followed

closely by 2ND22927, also a 2-rowed malting type. 2ND22182 had the highest test weight and 2ND22927 had the highest percent plump of the non-check lines grown 2 or more years.

Tables 17 through 22 present the 2008 WRDSBN data for individual locations for grain yield, test weight, height, heading date, plump barley, and percent protein, respectively.

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Table 13: 2008 Western Regional Dryland Spring Barley Nursery, Entry List

Seed Source	Entry No.		Entry	Type	Parentage	Grade
WSU	1		Steptoe	6 row	CI 15229	feed
WPB	2		Baronesse	2 row	PI 568246	feed
USDA-ARS	3		Morex	6 row	CI 15773	malting
USDA-ARS	4		Harrington	2 row		malting
BARI	5		Legacy	6 row		malting
NDSU	6		Conlon	2 row		malting
BARI	7	*	2B02-2925	2 row	MERIT/2B97-4527	Malting
BARI	8	*	2B03-3719	2 row	2B96-5038/2B97-4796	Malting
USDA-ARS	9	*	01Ab7163	2 row	85Ab2323/FR96503	Malting
USDA-ARS	10	*	02Ab17060	2 row	91Ab3148/90Ab321	malting
MSU	11		MT010158	2 row	MT920041/Harrington	malting
MSU	12		MT010160	2 row	MT920041/Harrington	malting
MSU	13		MT020155	2 row	MT960225/H1851195	feed
MSU	14		MT020204	2 row	MTLB 32/H1851195	feed/malting
MSU	15		MT030042	2 row	MT910189/MT960099	feed/malting
MSU	16	*	MT040073	2 row	MT960045/Harrington	feed/malting
NDSU	17		2ND21867	2 row	ND18172/ND19130	feed/malting
NDSU	18	*	2ND22182	2 row	ND18413/ND19134//ND19164	feed/malting
NDSU	19		2ND22927	2 row	ND19119-1/ND19931	malting
USU	20	*	UT03B1960-483	6 row	OR741209//ID633019/Woodvale/3/short2//ID633019/Woodvale/4/Brigham	malting
USU	21	*	UT04B2041-42	6 row	Goldeneye/Columbia	malting

* new entries

Table 14: Check Seasonal Measurements (2005-2008) of the Western Regional Dryland Spring Barley Nursery

Variety or Selection	Grain Yield	Test Weight	Heading Date	Plant Height	Plump Barley*	Protein
	Mg ha^{-1}	kg m^{-3}	From 1/1	cm	%	%
2006						
Number of Locations	10	8	6	8	7	2
Steptoe	4.760	631.3	178.1	68.4	91.0	10.9
Baronesse	4.760	667.9	180.9	64.4	90.3	13.0
Morex	4.016	647.8	177.4	73.9	79.5	12.8
Harrington	4.342	665.8	180.7	69.8	89.2	12.9
Legacy	4.306	650.0	180.2	74.0	84.1	12.5
Conlon	4.176	681.1	176.7	68.0	97.2	12.8
2006 AVERAGE	**4.393**	**657.3**	**179**	**69.8**	**88.5**	**12.5**
2005						
Number of Locations	8	8	7	7	7	4
Steptoe	3.643	577.3	181.1	72.4	83.8	12.9
Baronesse	3.642	623.1	186.2	64.1	70.1	15.8
Morex	3.119	604.8	180.9	79.3	68.3	15.2
Harrington	3.171	609.8	186.0	68.4	64.5	15.9
Legacy	3.082	590.7	183.1	73.9	64.9	15.3
Conlon	3.646	649.1	157.5	71.8	90.1	13.9
2005 AVERAGE	**3.384**	**609.1**	**179.1**	**71.7**	**73.6**	**14.8**
2007						
Number of Locations	7	5	5	4	4	2
Steptoe	3.523	601.4	174.1	74.6	85.5	12.3
Baronesse	3.438	645.1	178.4	65.2	74.5	13.8
Morex	3.044	621.2	173.4	82.9	62.4	14.4
Harrington	3.097	636.6	178.0	73.9	77.4	13.6
Legacy	3.275	624.7	175.3	76.6	69.0	13.1
Conlon	3.358	671.7	172.3	71.8	96.0	13.7
2007 AVERAGE	**3.289**	**633.4**	**175.3**	**74.2**	**77.5**	**13.5**
2008						
Number of Locations	6	5	4	4	4	3
Steptoe	3.147	564.6	184.9	75.2	57.3	12.3
Baronesse	3.437	626.9	189.4	70.9	55.9	15.6
Morex	2.584	599.4	183.6	86.5	47.8	15.1
Harrington	3.063	611.3	188.6	75.5	62.8	14.5
Legacy	3.180	583.1	187.1	79.8	41.0	14.4
Conlon	3.309	637.4	182.8	78.7	83.2	13.7
2008 AVERAGE	**3.120**	**603.8**	**186.1**	**77.8**	**58.0**	**14.3**
BASE AVERAGE						
Number of Locations	31	26	22	23	22	11
Steptoe	3.880	596.1	179.4	71.9	81.6	12.3
Baronesse	3.917	641.8	183.6	65.6	74.7	14.9
Morex	3.288	620.1	178.7	79.3	67.1	14.6
Harrington	3.511	632.5	183.2	71.1	74.4	14.6
Legacy	3.539	614.0	181.3	75.4	67.4	14.1
Conlon	3.687	661.0	170.7	71.7	92.2	13.6
BASE AVERAGE	**3.637**	**627.6**	**179.5**	**72.5**	**76.2**	**14.0**

Table 15: 2008 Western Regional Dryland Spring Barley Nursery, Means Summary

Entry Number	CULTIVAR/ DESIGNATION	Grain Yield		Test Weight	Heading Date	Plant Height	Plump Barley*	Protein
		Mg ha^{-1}	Rank	kg m^{-3}	From 1/1	cm	%	%
	Number of Locations	6		5	4	4	4	3
1	**Steptoe**	3.147	11	564.6	185	75.2	57.3	12.3
2	**Baronesse**	3.437	2	626.9	189	70.9	55.9	15.6
3	**Morex**	2.584	21	599.4	184	86.5	47.8	15.1
4	**Harrington**	3.063	14	611.3	189	75.5	62.8	14.5
5	**Legacy**	3.180	9	583.1	187	79.8	41.0	14.4
6	**Conlon**	3.309	6	637.4	183	78.7	83.2	13.7
7	**2B02-2925**	3.010	17	606.5	188	69.8	54.9	14.7
8	**2B03-3719**	3.141	12	605.2	189	69.6	67.2	15.0
9	**01Ab7163**	3.030	16	602.5	189	69.6	49.8	14.5
10	**02Ab17060**	3.323	4	608.4	187	68.0	50.6	15.1
11	**MT010158**	2.902	19	616.6	189	70.5	55.5	15.7
12	**MT010160**	3.177	10	623.8	189	76.3	52.9	15.9
13	**MT020155**	3.316	5	602.4	184	76.2	48.0	15.1
14	**MT020204**	3.467	1	625.6	187	74.3	49.8	16.6
15	**MT030042**	3.123	13	629.0	188	73.1	50.4	14.8
16	**MT040073**	3.385	3	645.1	190	70.4	52.4	15.2
17	**2ND21867**	3.036	15	628.3	186	72.7	64.4	15.4
18	**2ND22182**	2.998	18	638.6	183	73.0	74.0	14.1
19	**2ND22927**	3.181	8	609.1	187	75.9	73.3	14.3
20	**UT03B1960-483**	2.895	20	590.0	182	88.2	47.6	13.7
21	**UT04B2041-42**	3.261	7	579.1	186	73.4	42.1	13.9
	LOCATION MEAN:	**3.141**		**611.1**	**186.7**	**74.65**	**56.23**	**14.73**
	CHECK MEAN:	**3.120**		**603.8**	**186.1**	**77.78**	**57.99**	**14.26**
	CV %	**11.72**		**2.74**	**0.90**	**5.08**	**16.26**	**7.33**
	LSD (.05)	**0.366**		**18.22**	**2.04**	**4.61**	**11.13**	**1.52**

* Percent over sieve, 2-rowed >2.4mm, 6-rowed >2.2mm

Table 16: Summary Across Locations and Years, Western Regional Dryland Spring Barley Nursery, 2006-2008.

ENTRY NO.	CULTIVAR/ DESIGNATION	STATION YEARS	GRAIN YIELD		TEST WEIGHT	HEADING DATE	PLANT HEIGHT	PLUMP BARLEY*	PROTEIN
			Mg ha^{-1}	Rank	kg m^{-3}	From 1/1	cm	%	%
1	Steptoe	23	3.963	2	604.5	178.6	72.2	80.5	11.9
2	Baronesse	23	4.012	1	650.2	182.2	66.5	76.9	14.3
3	Morex	23	3.347	11	627.0	177.7	80.1	66.5	14.2
4	Harrington	23	3.629	7	642.6	181.7	72.6	79.1	13.8
5	Legacy	23	3.699	6	624.4	180.4	76.4	68.6	13.5
6	Conlon	23	3.701	5	666.4	176.8	72.1	93.1	13.4
7	2B02-2925	6	3.010	20	606.5	187.7	69.8	54.9	14.7
8	2B03-3719	6	3.141	17	605.2	188.9	69.6	67.2	15.0
9	01Ab7163	6	3.030	19	602.5	189.4	69.6	49.8	14.5
10	02Ab17060	6	3.323	12	608.4	187.3	68.0	50.6	15.1
11	MT010158	13	3.039	18	633.0	182.8	69.1	65.6	15.4
12	MT010160	13	3.201	15	634.7	183.0	76.1	64.7	15.0
13	MT020155	13	3.467	9	623.1	178.0	74.6	63.3	14.4
14	MT020204	13	3.513	8	638.9	180.1	72.8	60.3	15.2
15	MT030042	13	3.310	13	650.7	181.4	69.4	62.1	14.4
16	MT040073	6	3.385	10	645.1	189.9	70.4	52.4	15.2
17	2ND21867	23	3.744	3	662.1	179.2	69.7	85.8	13.9
18	2ND22182	13	3.187	16	653.5	177.0	69.7	84.6	13.4
19	2ND22927	23	3.707	4	644.3	180.2	73.3	89.3	13.5
20	UT03B1960-483	6	2.895	21	590.0	182.3	88.2	47.6	13.7
21	UT04B2041-42	6	3.261	14	579.1	185.7	73.4	42.1	13.9
OBSERVATION MEAN:			**3.533**		**635.9**	**180.8**	**72.6**	**72.8**	**14.1**
CHECK MEAN:			**3.725**		**635.8**	**179.6**	**73.3**	**77.4**	**13.5**

* Percent over sieve, 2-rowed >2.4mm, 6-rowed >2.2mm

Table 17: 2008 Western Regional Dryland Spring Barley Nursery, Grain Yield (Mg ha^{-1})

ENTRY NO.	CULTIVAR/ DESIGNATION	Average	Rank	Rank Average	Tetonia ID	Conrad MT	Hettinger ND	Minot ND	Williston ND	Mt. Sterling UT
1	Steptoe, check	3.147	11	10.5	1.043	4.098	2.826	4.128	3.811	2.985
2	Baronesse, check	3.437	2	5.0	2.241	3.683	3.684	4.521	3.760	2.737
3	Morex, check	2.584	21	19.2	1.656	3.011	2.371	3.102	3.320	2.044
4	Harrington, check	3.063	14	12.5	2.225	3.231	3.007	4.548	3.479	1.895
5	Legacy, check	3.180	9	11.2	1.989	3.541	2.778	5.066	3.341	2.368
6	Conlon, check	3.309	6	8.7	2.150	3.305	4.384	3.590	3.964	2.463
7	2B02-2925	3.010	17	13.2	1.822	3.515	2.861	4.222	3.512	2.127
8	2B03-3719	3.141	12	10.5	2.172	3.470	3.425	4.146	3.625	2.010
9	01Ab7163	3.030	16	14.5	1.930	3.265	2.939	4.943	3.472	1.637
10	02Ab17060	3.323	4	7.7	1.983	3.893	3.304	5.079	3.611	2.070
11	MT010158	2.902	19	15.0	2.177	3.266	3.006	3.780	3.415	1.767
12	MT010160	3.177	10	11.7	2.102	3.256	2.990	4.765	3.594	2.358
13	MT020155	3.316	5	7.2	2.322	3.482	3.117	5.009	3.928	2.041
14	MT020204	3.467	1	4.7	2.182	3.606	3.120	5.368	3.885	2.644
15	MT030042	3.123	13	11.3	1.693	3.625	3.507	4.472	3.633	1.814
16	MT040073	3.385	3	7.2	1.822	4.086	3.294	4.864	4.057	2.191
17	2ND21867	3.036	15	14.5	1.924	3.430	2.757	4.830	3.482	1.796
18	2ND22182	2.998	18	12.5	1.838	2.803	3.176	4.143	3.926	2.106
19	2ND22927	3.181	8	10.2	1.983	3.468	2.993	4.530	3.633	2.482
20	UT03B1960-483	2.895	20	14.8	1.903	3.380	2.010	4.132	3.429	2.519
21	UT04B2041-42	3.261	7	9.2	1.371	3.742	2.806	5.362	3.745	2.544
	LOCATION MEAN:	3.141			1.914	3.501	3.064	4.505	3.649	2.219
	CHECK MEAN:	3.120			1.884	3.478	3.175	4.159	3.612	2.415
	CV %	11.72			15.80	6.35	15.71	14.597	4.19	14.50
	LSD (.05)	0.366			0.495	0.366	0.794	1.085	0.215	0.538

Table 18: 2008 Western Regional Dryland Spring Barley Nursery, Test Weight (kg m^{-3})

ENTRY NO.	CULTIVAR/ DESIGNATION	Average	Rank	Tetonia ID	Conrad ID	Hettinger MT	Williston ND	Mt. Sterling UT
1	Steptoe, check	564.6	21	617.8	622.4	395.2	563.9	623.5
2	Baronesse, check	626.9	6	682.1	659.6	522.5	593.8	676.4
3	Morex, check	599.4	17	658.9	641.1	462.9	617.4	616.5
4	Harrington, check	611.3	10	684.7	645.0	464.2	587.5	675.1
5	Legacy, check	583.1	19	643.5	623.3	423.6	574.6	650.7
6	Conlon, check	637.4	3	668.0	657.8	505.0	672.8	683.3
7	2B02-2925	606.5	13	680.8	651.5	452.4	598.3	649.6
8	2B03-3719	605.2	14	656.4	639.6	479.2	604.1	646.5
9	01Ab7163	602.5	15	674.4	638.7	464.6	579.3	655.6
10	02Ab17060	608.4	12	661.5	645.0	471.3	602.4	661.5
11	MT010158	616.6	9	675.7	656.9	488.0	607.6	654.8
12	MT010160	623.8	8	698.8	661.0	498.1	592.1	669.1
13	MT020155	602.4	16	662.8	644.7	447.4	622.3	634.8
14	MT020204	625.6	7	684.7	652.8	499.1	602.1	689.4
15	MT030042	629.0	4	688.5	668.7	501.9	625.5	660.3
16	MT040073	645.1	1	692.4	691.9	508.6	632.9	699.9
17	2ND21867	628.3	5	692.4	677.7	500.3	623.1	647.9
18	2ND22182	638.6	2	705.3	661.4	500.5	633.9	692.0
19	2ND22927	609.1	11	674.4	648.3	493.0	576.5	653.5
20	UT03B1960-483	590.0	18	656.4	644.7	402.6	565.8	680.4
21	UT04B2041-42	579.1	20	638.4	622.4	436.0	574.9	623.9
	LOCATION MEAN:	611.1		671.3	650.2	472.2	602.4	661.0
	CHECK MEAN:	603.8		659.2	641.5	462.2	601.7	654.3
	CV %	2.74				5.22	1.85	
	LSD (.05)	18.2				40.7	19.2	

Table 19: 2008 Western Regional Dryland Spring Barley Nursery, Plant Height (cm)

ENTRY NO.	CULTIVAR/ DESIGNATION	Average	Rank	Hettinger ND	Minot ND	Williston ND	Mt. Stirling UT
1	Steptoe, check	75.2	13	103.3	85.1	61.8	50.8
2	Baronesse, check	70.9	7	88.3	86.1	53.3	55.9
3	Morex, check	86.5	20	103.7	110.2	71.1	61.0
4	Harrington, check	75.5	14	95.0	91.2	60.1	55.9
5	Legacy, check	79.8	19	99.3	100.3	63.5	55.9
6	Conlon, check	78.7	18	103.0	89.9	63.5	58.4
7	2B02-2925	69.8	4	84.7	82.8	61.0	50.8
8	2B03-3719	69.6	2	90.7	85.1	56.7	45.7
9	01Ab7163	69.6	3	87.0	87.4	58.4	45.7
10	02Ab17060	68.0	1	88.0	80.8	57.6	45.7
11	MT010158	70.5	6	93.3	86.4	56.7	45.7
12	MT010160	76.3	17	94.3	98.3	61.8	50.8
13	MT020155	76.2	16	92.7	96.3	65.2	50.8
14	MT020204	74.3	12	93.7	95.0	57.6	50.8
15	MT030042	73.1	10	96.0	89.7	55.9	50.8
16	MT040073	70.4	5	85.7	84.1	61.0	50.8
17	2ND21867	72.7	8	91.0	90.7	55.9	53.3
18	2ND22182	73.0	9	97.0	88.4	58.4	48.3
19	2ND22927	75.9	15	93.0	90.4	64.3	55.9
20	UT03B1960-483	88.2	21	99.3	106.9	75.4	71.1
21	UT04B2041-42	73.4	11	89.7	91.9	61.0	50.8
	LOCATION MEAN:	74.7		93.7	91.3	61.0	52.7
	CHECK MEAN:	77.8		98.8	93.8	62.2	56.3
	CV %	5.08		3.20	7.079	5.94	
	LSD (.05)	4.61		5.00	10.67	5.09	

Table 20: 2008 Western Regional Dryland Spring Barley Nursery, Heading Date (days from Jan. 1)

ENTRY NO.	CULTIVAR/ DESIGNATION	Average	Rank	Tetonia ID	Hettinger ND	Minot ND	Williston ND
1	Steptoe, check	185	6	204	177	184.0	175
2	Baronesse, check	189	19	207	184	184.0	183
3	Morex, check	184	4	202	176	181.7	175
4	Harrington, check	189	15	208	182	184.0	180
5	Legacy, check	187	11	205	181	183.3	179
6	Conlon, check	183	3	207	175	178.7	170
7	2B02-2925	188	13	207	178	184.3	181
8	2B03-3719	189	16	207	181	186.3	181
9	01Ab7163	189	20	207	182	186.0	183
10	02Ab17060	187	12	208	177	184.0	180
11	MT010158	189	18	208	183	184.0	182
12	MT010160	189	17	207	183	185.3	181
13	MT020155	184	5	204	177	180.7	175
14	MT020204	187	9	207	178	184.0	177
15	MT030042	188	14	208	178	185.0	181
16	MT040073	190	21	211	183	185.0	181
17	2ND21867	186	8	207	176	183.0	178
18	2ND22182	183	2	204	175	179.7	172
19	2ND22927	187	10	207	177	183.7	180
20	UT03B1960-483	182	1	200	175	179.7	174
21	UT04B2041-42	186	7	204	177	184.0	178
	LOCATION MEAN:	186.7		206.14	178.73	183.35	178.32
	CHECK MEAN:	186.1		205.5	179.2	182.6	176.9
	CV %	0.90			0.36	0.55	0.58
	LSD (.05)	2.04			1.00	1.66	1.45

Table 21: 2008 Western Regional Dryland Spring Barley Nursery, Percent Plump Barley*

ENTRY NO.	CULTIVAR/ DESIGNATION	Average	Rank	Tetonia ID	Conrad MT	Hettinger ND	Williston ND
1	Steptoe, check	57.3	7	65.4	93.1	25.8	44.9
2	Baronesse, check	55.9	8	84.9	90.8	15.3	32.6
3	Morex, check	47.8	18	64.7	91.1	10.6	24.7
4	Harrington, check	62.8	6	77.3	89.1	38.3	46.7
5	Legacy, check	41.0	21	56.4	84.3	8.7	14.5
6	Conlon, check	83.2	1	83.9	96.7	64.6	87.5
7	2B02-2925	54.9	10	74.5	94.0	18.5	32.8
8	2B03-3719	67.2	4	86.1	96.0	29.4	57.5
9	01Ab7163	49.8	16	63.6	88.7	12.3	34.8
10	02Ab17060	50.6	13	64.9	88.8	15.9	32.7
11	MT010158	55.5	9	73.3	89.6	26.6	32.3
12	MT010160	52.9	11	68.6	90.5	20.2	32.5
13	MT020155	48.0	17	57.3	90.1	6.6	38.1
14	MT020204	49.8	15	74.1	86.7	7.4	31.2
15	MT030042	50.4	14	73.9	87.5	5.7	34.4
16	MT040073	52.4	12	74.0	94.1	10.0	31.3
17	2ND21867	64.4	5	88.2	95.0	22.6	51.7
18	2ND22182	74.0	2	96.3	94.4	20.5	84.8
19	2ND22927	73.3	3	93.4	97.5	32.2	70.2
20	UT03B1960-483	47.6	19	61.8	93.1	6.5	29.2
21	UT04B2041-42	42.1	20	59.1	82.1	5.0	22.1
	LOCATION MEAN:	56.23		73.41	91.11	19.20	41.23
	CHECK MEAN:	57.99		72.10	90.86	27.22	41.78
	CV %	16.26					9.46
	LSD (.05)	11.13					6.71

* Percent over sieve, 2-rowed >2.4mm, 6-rowed >2.2mm

Table 22: 2008 Western Regional Dryland Spring Barley Nursery, Percent Protein

ENTRY NO.	CULTIVAR/ DESIGNATION	Average	Rank	Conrad MT	Hettinger ND	Williston ND
1	Steptoe, check	12.3	1	11.6	12.8	12.5
2	Baronesse, check	15.6	18	13.4	18.3	15.0
3	Morex, check	15.1	14	13.1	16.8	15.5
4	Harrington, check	14.5	9	13.4	15.4	14.8
5	Legacy, check	14.4	7	12.6	15.5	15.0
6	Conlon, check	13.7	3	13.0	14.9	13.2
7	2B02-2925	14.7	10	13.0	15.3	15.9
8	2B03-3719	15.0	12	13.4	17.1	14.4
9	01Ab7163	14.5	8	12.4	15.9	15.1
10	02Ab17060	15.1	15	12.8	16.5	16.1
11	MT010158	15.7	19	13.4	17.2	16.5
12	MT010160	15.9	20	13.3	19.1	15.2
13	MT020155	15.1	13	13.6	18.1	13.5
14	MT020204	16.6	21	13.5	20.7	15.7
15	MT030042	14.8	11	11.1	18.9	14.5
16	MT040073	15.2	16	12.6	18.6	14.4
17	2ND21867	15.4	17	13.2	17.3	15.6
18	2ND22182	14.1	5	12.8	16.2	13.2
19	2ND22927	14.3	6	12.2	17.8	13.0
20	UT03B1960-483	13.7	2	11.6	15.6	13.9
21	UT04B2041-42	13.9	4	11.3	16.9	13.4
	LOCATION MEAN:	14.73		12.73	16.90	14.57
	CHECK MEAN:	14.26		12.85	15.62	14.31
	CV %	7.33				3.59
	LSD (.05)	1.52				0.90