

2014

WESTERN REGIONAL SPRING BARLEY NURSERY



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



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WESTERN REGIONAL SPRING BARLEY NURSERY

2014

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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:

2014WRBNREPORT.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

2014WRSBNDATA.xls: Excel[®] files containing data for the 2014 Western Regional 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, 2014

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Locations are shown on Fig. 1, page 19.

2014 WESTERN REGIONAL SPRING BARLEY NURSERY

The **Western Regional Spring Barley Nursery** is intended to be grown under all climatic conditions in the Pacific Northwest and Northern Great Plains. It contains both 2- and 6-rowed feed and malting barley.

2014 nursery sites that were harvested and summarized for yield and/or agronomic characters from 14 locations are:

- | | | |
|---------------------|-------------------|----------------------------|
| (1) Tulelake, CA | (7) McVille, ND | (13) Powell, WY |
| (2) Aberdeen, ID | (8) Minot, ND | (14) Saskatoon, SK, Canada |
| (3) Idaho Falls, ID | (9) Williston, ND | |
| (4) Bozeman, MT | (10) Logan, UT | |
| (5) Fairfield, MT | (11) Almira, WA | |
| (6) Hettinger, ND | (12) Pullman, WA | |

Disease observation nurseries were grown at St. Paul, MN, Pullman, WA, Mt. Vernon, WA, and Njoro, Kenya. Data was not available from the Teton, ID location. The Ug99 disease ratings were not available from Njoro at the time of publication and will be sent to the cooperators. The barley malting data can be accessed on the USDA-ARS Cereal Crops Research malting barley research program website listed above.

General Information

The entry list for the 2014 Western Regional Spring Barley Nursery is shown in Table 1. In 2014, commercial cultivars were again entered into the nursery, including those from Busch Agricultural Resources (5 lines) and Highland Specialty Grains (2 lines)

There were 33 entries in this nursery in 2014. Twelve of the 32 entries (besides checks) in the 2013 WRSBN nursery were dropped in 2014. These were: 2ND25276 (NDSU), tested 4 years; UT6R2120-14 (USU), tested 3 years; 2B10-4465, and 2B10-4480 (BARI); 2Ab08-X04M282-48, Ab08-X04M278-35, and 08ID2661 (USDA-ARS); UT2170-16 (USU); X06G07-T43, X05013-T1, 09WA-203.26, and 09WA-249.9 (WSU), all tested 1 year. There were 15 new entries in the test. These were: 2B10-4378, 2B11-4949, and 2B11-5166 (BARI); BZ509-216 and BZ509-448 (HSG); 2Ab04-X01084-27, 2Ab09-X06F084-51, and 2Ab09-X06F058HL-31 (USDA-ARS); 2ND30724 (NDSU); UT2183-85 and UT2136-96 (USU); 10WA-105.33, 10WA-106.19, 10WA-113.16, and 10WA-106.18 (WSU).

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, Steptoe, Harrington, and CDC Metcalfe (Table 2), for 2009 through 2014, show that the check's mean grain yield for the 2014 season was higher than average for the years tested and 3nd highest of the six years; Test weight was lower than average and 2nd lowest of the six years, plant height was shorter than average, heading date was 9 days earlier than average, percent plump barley was slightly lower than average, and protein was slightly (.051%) lower than average.

There were malting, feed and food types of barley In the 2014 nursery. The highest yielding entry over all locations was the 2-rowed feed cultivar 09WA-203.24 at 5.94 Mg ha⁻¹ (Table 3), followed by BZ509-216 at 5.83 Mg ha⁻¹, 10WA-106.18 at 5.77 Mg ha⁻¹, 09WA-228.13 at 5.74 Mg ha⁻¹, 10WA-105.33 at 5.7174 Mg ha⁻¹, and 10WA-106.19 at 5.64 Mg ha⁻¹, all 2-rowed feed type barleys. These 6 entries had statistically equal yields at the 95% confidence level. The highest yielding malting barley was 2B10-4162, ranked 7th at 5.60 Mg ha⁻¹ and the next highest malting barley was 2B11-5166 ranked 8th at 5.59 Mg ha⁻¹. The check cultivars ranked 17th or less. 09WA-231.5 had the highest test weight at 689.9 kg m⁻³. UT2136-96 was the earliest maturing and 2Ab09-X06F084-51 the latest. MT100126 was the tallest entry and BZ509-448 the shortest. 2ND30724 had the highest percent plump barley at 93.6%.

In the period of years summary for 2009 through 2014 (Table 4), 09WA-203.24 (2-rowed feed type) was the highest yielding entry with at least two years data at 5.79 Mg ha⁻¹. 09WA-228.13 (2-rowed feed type) was the next highest yielding entry with 2 years data at 5.66 Mg ha⁻¹. The highest yielding malting type with at least 2 years of data was 2B10-4162 (2-rowed) ranked 13th at 5.49 Mg ha⁻¹. Of the lines tested at least 2 years, 09WA-228.13 had the highest test weight at 675.7 kg m⁻³, and MT100120 had the highest percent plump barley at 93.4%.

Tables 5 through 12 present the 2014 WRSBN data summarized over locations for grain yield, test weight, height, heading date, plump barley, lodging, percent protein, and disease ratings.



Table 1: 2014 Western Regional Spring Barley Nursery, Entry List

Seed Source	Entry Number	Entry	Parentage	TYPE	Grade
WSU	1	Step toe	CI 15229	6 row	feed
WPB	2	Baronesse	PI 568246	2 row	feed
USDA-ARS	3	Harrington		2 row	malting
USDA-ARS	4	AC Metcalfe		2 row	malting
BARI	5	2B09-3425	2B05-0550 / 2B99-2763-10	2 row	malting
BARI	6	2B10-4162	MERIT 57 / 2B05-0712	2 row	malting
BARI	7 *	2B10-4378	2B99-2763-10 / 2B03-3669 // 2B05-0822 / 2B99-2763-10	2 row	malting
BARI	8 *	2B11-4949	MERIT 57 / MT050118	2 row	malting
BARI	9 *	2B11-5166	2B03-3604 / 2B06-1161	2 row	malting
HSG	10 *	BZ509-216	CDC Copeland/Xena	2 row	feed
HSG	11 *	BZ509-448	Champion/ YU501-312	2 row	feed
USDA-ARS	12 *	2Ab04-X01084-27	98Ab11993/Garnet	2 row	malting
USDA-ARS	13	2Ab07-X031098-31	2B97-4004/Newdale	2 row	malting
USDA-ARS	14	2Ab07-X04M219-46	95SR316A/2B97-4004	2 row	malting
USDA-ARS	15	2Ab08-X05M010-82	2B98-5312/98Ab11993	2 row	malting
USDA-ARS	16 *	2Ab09-X06F084-51	03AH3054/98Ab12019	2 row	hulled, high BG, food
USDA-ARS	17 *	2Ab09-X06F058HL-31	02HR4590/CDC Fibar	2 row	hulled, high BG, food
MSU	18	MT090190		2 row	feed
MSU	19	MT090180		2 row	feed
MSU	20	MT100126		2 row	feed
MSU	21	MT100120		2 row	feed
NDSU	22	2ND27705	2ND24393/TR05285	2 row	malting
NDSU	23	2ND28065	2ND21867/2ND24238	2 row	malting
NDSU	24 *	2ND30724	2ND25265/2ND26328	2 row	malting
USU	25 *	UT2183-85		6 row	feed
USU	26 *	UT2136-96		6 row	feed
WSU	27	09WA-231.5	02WZN-1015/YU-501-385N	2 row	Feed
WSU	28 *	10WA-105.33	02WA-7052.9/YU501-385	2 row	Feed
WSU	29	09WA-228.13	02WZN-1100/YU501-385	2 row	Feed
WSU	30	09WA-203.24	YU501-385/02WZN-1100	2 row	Feed
WSU	31 *	10WA-106.19	YU501-385/02WZN-1095	2 row	Feed
WSU	32 *	10WA-113.16	WA 9820-98/CDC Candle//02WZN-1100	2 row	Feed
WSU	33 *	10WA-106.18	YU501-385/02WZN-1095	2 row	Feed

* new entries

Table 2: Check Seasonal Measurements (2009-2014) of the Western Regional Spring Barley Nursery

Average of adjusted means of checks Baronesse, Steptoe, Harrington, and AC Metcalfe

Variety or Selection	Grain Yield	Test Weight	Heading Date	Plant Height	Plump Barley*	Protein
	Mg ha ⁻¹	kg m ⁻³	From 1/1	cm	%	%
2009 Locations	16	12	12	14	10	5
Steptoe	5.624	625.6	181.7	73.5	93.9	10
Baronesse	6.141	687	187.4	72.3	93.5	10.5
Harrington	5.395	672.5	186.5	78.4	93	10.8
AC Metcalfe	5.307	678.1	185.96	80	92.97	11.09
2009 AVERAGE	5.617	665.80	185.39	76.05	93.34	10.60
2010 Locations	13	11	12	13	9	2
Steptoe	5.451	623.3	180.2	85.9	85.3	12.6
Baronesse	5.651	669.2	184	78.4	85.3	15.1
Harrington	5.042	655.1	184.3	82.2	85.1	15.2
AC Metcalfe	5.068	657.2	183.5	84	84.2	15.8
2010 AVERAGE	5.303	651.20	183.00	82.63	84.98	14.68
2014 Locations	13	13	10	13	8	2
Steptoe	5.038	617.6	169.5	74.9	90.9	10.8
Baronesse	5.477	658.9	173.3	72.4	89.3	11.5
Harrington	5.006	632.5	174.3	75.4	90.1	11.0
AC Metcalfe	5.050	641.8	173.2	76.6	83.9	11.9
2014 AVERAGE	5.248	637.69	172.59	74.84	88.56	11.29
2013 Locations	13	11	9	10	10	2
Steptoe	5.204	615.6	178.8	73.9	93.6	10.2
Baronesse	5.348	661.0	183.3	71.8	92.6	11.2
Harrington	4.797	640.4	183.9	76.8	89.8	11.1
AC Metcalfe	4.989	664.5	182.9	80.5	92.0	11.6
2013 AVERAGE	5.085	645.40	182.26	75.76	91.98	11.03
2012 Locations	14	11	9	8	12	3
Steptoe	4.967	595.0	175.1	82.1	89.3	11.4
Baronesse	5.173	647.8	180.3	76.9	85.2	12.3
Harrington	4.297	629.0	181.1	80.1	84.8	12.4
AC Metcalfe	4.206	635.5	180.3	84.1	85.9	13.3
2012 AVERAGE	4.661	626.86	179.19	80.79	86.30	12.33
2011 Locations	10	9	8	8	9	3
Steptoe	4.459	614.5	185	71.4	87.6	11.2
Baronesse	4.867	676.7	189	66.8	87.3	12.5
Harrington	4.291	655.4	189	66.6	87.6	12.4
AC Metcalfe	4.302	662.1	189	70.5	85.3	12.7
2011 AVERAGE	4.480	652.17	187.98	68.84	86.97	12.20
Average Sta/Years	79	67	60	66	58	17
Steptoe	5.166	615.5	178.4	77.1	90.2	10.9
Baronesse	5.488	666.6	182.9	73.3	88.8	11.9
Harrington	4.840	647.2	183.2	77.1	88.3	12.0
AC Metcalfe	4.851	656.3	182.5	79.5	87.5	12.5
BASE AVERAGE	5.086	646.38	181.73	76.8	88.70	11.80

Table 3: 2014 Western Regional 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**		13		13	10	13	8	2
1	Step toe	5.038	30	617.6	169.5	74.9	90.9	10.8
2	Baronesse	5.477	17	658.9	173.3	72.4	89.3	11.5
3	Harrington	5.006	31	632.5	174.3	75.4	90.1	11.0
4	AC Metcalfe	5.050	29	641.8	173.2	76.6	83.9	11.9
5	2B09-3425	5.452	19	626.7	174.2	73.5	91.5	11.4
6	2B10-4162	5.604	7	641.6	173.7	72.9	84.2	10.8
7	2B10-4378	5.488	16	641.7	172.9	71.2	88.1	10.8
8	2B11-4949	5.575	10	639.1	173.2	72.2	88.3	10.4
9	2B11-5166	5.588	8	632.6	173.9	73.0	88.6	10.3
10	BZ509-216	5.831	2	647.5	174.6	79.9	87.5	10.7
11	BZ509-448	5.565	11	648.9	175.6	67.2	89.1	10.8
12	2Ab04-X01084-27	5.183	25	627.9	173.8	72.2	86.4	11.3
13	2Ab07-X031098-31	5.435	21	636.3	173.0	76.9	88.0	11.9
14	2Ab07-X04M219-46	5.211	24	612.3	175.9	76.0	84.8	10.4
15	2Ab08-X05M010-82	5.564	12	640.1	173.5	75.2	87.1	10.5
16	2Ab09-X06F084-51	4.908	32	630.6	177.4	76.9	86.2	12.3
17	2Ab09-X06F058HL-31	4.132	33	664.2	174.2	74.9	85.7	13.2
18	MT090190	5.153	27	646.5	173.3	71.7	88.1	12.6
19	MT090180	5.578	9	645.7	174.2	79.5	91.0	10.1
20	MT100126	5.491	15	654.1	173.9	81.3	91.5	10.3
21	MT100120	5.526	13	650.6	174.0	78.5	92.9	10.0
22	2ND27705	5.443	20	640.4	171.1	78.5	89.2	10.4
23	2ND28065	5.355	22	657.5	170.3	76.8	91.9	11.6
24	2ND30724	5.072	28	648.9	170.5	74.2	93.6	11.4
25	UT2183-85	5.217	23	639.2	169.7	79.7	89.3	12.2
26	UT2136-96	5.494	14	610.2	168.6	74.2	82.2	11.5
27	09WA-231.5	5.181	26	689.9	172.6	72.1	88.3	11.5
28	10WA-105.33	5.711	5	663.1	171.9	69.4	91.4	11.8
29	09WA-228.13	5.744	4	664.9	171.7	78.9	90.3	11.5
30	09WA-203.24	5.941	1	665.1	173.1	72.4	90.6	10.5
31	10WA-106.19	5.647	6	656.1	171.7	75.1	88.9	10.8
32	10WA-113.16	5.466	18	656.6	173.4	70.1	89.9	10.8
33	10WA-106.18	5.774	3	660.1	171.8	73.6	85.5	10.7
MEAN:		5.504		645.13	172.98	81.75	88.62	11.12
CHECK'S MEAN:		5.248		637.69	172.59	81.86	88.56	11.29
CV %		2.050		0.38	0.73	1.22	2.33	0.74
LSD (.05)		0.301		13.79	1.81	3.47	5.19	0.81

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

 Highest  Earliest/Lowest

Table 4: Summary Across Locations and Years, Western Regional Spring Barley Nursery, 2009-2014.

Entry Number	CULTIVAR/ DESIGNATION	Grain Yield			Test Weight	Heading Date	Plant Height	Plump Barley*	Protein
		Station Years	Mg ha ⁻¹	RANK	kg m ⁻³	From 1/1	cm	%	%
1	Steptoe	79	5.166	27	615.5	178.4	77.1	90.2	10.9
2	Baronesse	79	5.488	12	666.6	182.9	73.3	88.8	11.9
3	Harrington	79	4.840	31	647.2	183.2	77.1	88.3	12.0
4	AC Metcalfe	79	4.851	30	656.3	182.5	79.5	87.5	12.5
5	2B09-3425	26	5.396	18	637.3	178.8	72.6	90.6	10.9
6	2B10-4162	26	5.487	13	651.4	178.1	73.3	86.6	11.0
7	2B10-4378	13	5.488	11	641.7	172.9	71.2	88.1	10.8
8	2B11-4949	13	5.575	8	639.1	173.2	72.2	88.3	10.4
9	2B11-5166	13	5.588	7	632.6	173.9	73.0	88.6	10.3
10	BZ509-216	13	5.831	1	647.5	174.6	79.9	87.5	10.7
11	BZ509-448	13	5.565	9	648.9	175.6	67.2	89.1	10.8
12	2Ab04-X01084-27	13	5.183	26	627.9	173.8	72.2	86.4	11.3
13	2Ab07-X031098-31	40	5.232	23	638.2	178.4	78.6	85.3	12.5
14	2Ab07-X04M219-46	40	4.774	32	605.0	181.6	77.7	81.0	12.0
15	2Ab08-X05M010-82	26	5.290	22	643.7	178.4	74.9	86.2	10.7
16	2Ab09-X06F084-51	13	4.908	29	630.6	177.4	76.9	86.2	12.3
17	2Ab09-X06F058HL-31	13	4.132	33	664.2	174.2	74.9	85.7	13.2
18	MT090190	26	5.212	25	661.3	178.2	75.8	91.2	11.3
19	MT090180	26	5.448	15	659.5	178.7	80.6	92.6	10.1
20	MT100126	26	5.312	20	665.7	178.9	81.5	92.4	10.3
21	MT100120	26	5.404	17	664.2	178.9	80.5	93.4	10.2
22	2ND27705	26	5.303	21	641.9	176.6	79.4	89.1	10.3
23	2ND28065	26	5.407	16	666.6	176.1	77.4	91.8	11.1
24	2ND30724	13	5.072	28	648.9	170.5	74.2	93.6	11.4
25	UT2183-85	13	5.217	24	639.2	169.7	79.7	89.3	12.2
26	UT2136-96	13	5.494	10	610.2	168.6	74.2	82.2	11.5
27	09WA-231.5	26	5.345	19	677.9	177.5	70.4	89.7	11.4
28	10WA-105.33	13	5.711	4	663.1	171.9	69.4	91.4	11.8
29	09WA-228.13	26	5.662	5	675.7	176.7	78.7	91.6	11.0
30	09WA-203.24	26	5.790	2	674.1	178.0	74.0	92.2	10.6
31	10WA-106.19	13	5.647	6	656.1	171.7	75.1	88.9	10.8
32	10WA-113.16	13	5.466	14	656.6	173.4	70.1	89.9	10.8
33	10WA-106.18	13	5.774	3	660.1	171.8	73.6	85.5	10.7
MEAN:			5.257		648.6	178.3	76.0	88.7	11.4
CHECK'S MEAN:			5.086		646.4	181.7	76.8	88.7	11.8

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




 Highest overall
  Highest 2+ years of data
  Earliest /Lowest

Table 5: 2014 Western Regional Spring Barley Nursery, Grain Yield (Mg ha⁻¹)

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Rank Ave.	Tulelake	Aberdeen	Idaho Falls	Fairfield	Hettinger	McVIlle	Minot	Williston	Logan	Almira	Pullman	Powell	Saskatoon
		Mg ha ⁻¹	Rank		CA	ID	ID	MT	ND	ND	ND	ND	UT	WA	WA	WY	SK
1	Steptoe	5.038	30	22.1	5.117	6.257	7.482*	5.683*	6.805	3.774*	5.683*	1.146	5.158	1.518	5.644	6.049	5.201
2	Baronesse	5.477	17	16.6	5.565	6.988	7.973	6.663	7.154	4.268	6.020	3.893	5.304	1.165	5.751	5.515	4.946
3	Harrington	5.006	31	24.2	4.726	6.730	7.692	5.892	5.730	3.999	5.203	3.766	5.580	1.192	4.945	5.457	4.168
4	AC Metcalfe	5.050	29	25.3	4.860	6.477	7.948	5.568	6.068	3.472	6.133	3.234	5.186	0.976	5.698	5.059	4.969
5	2B09-3425	5.452	19	16.5	5.173	7.358	8.315	6.100	7.079	4.370	5.853	3.571	5.680	1.138	5.590	5.566	5.083
6	2B10-4162	5.604	7	12.6	5.140	7.912	8.186	5.937	6.918	4.424	6.525	4.025	5.585	1.409	6.235	5.662	4.897
7	2B10-4378	5.488	16	15.6	5.162	7.514	7.947	6.320	6.955	4.343	6.138	3.887	5.354	1.545	5.913	5.445	4.819
8	2B11-4949	5.575	10	13.3	5.633	7.713	8.189	6.138	7.031	4.574	6.117	3.420	5.511	1.219	5.966	5.650	5.308
9	2B11-5166	5.588	8	12.6	5.297	7.858	8.322	6.144	7.321	4.241	5.391	4.003	5.034	1.328	6.450	5.789	5.469
10	BZ509-216	5.831	2	9.8	6.103	8.450	8.383	6.154	7.799	3.440	6.880	3.676	5.372	1.057	6.396	6.147	5.952
11	BZ509-448	5.565	11	14.8	4.770	7.756	8.228	6.418	7.590	3.951	7.052	3.304	4.703	1.301	5.805	6.458	5.011
12	2Ab04-X01084-27	5.183	25	20.6	5.005	6.767	8.045	6.290	6.117	4.262	5.741	3.630	4.795	1.572	5.644	5.042	4.475
13	2Ab07-X031098-31	5.435	21	17.4	5.319	7.600	8.009	5.784	7.047	3.703	6.773	3.017	5.517	1.138	6.020	5.436	5.295
14	2Ab07-X04M219-46	5.211	24	21.2	5.274	7.229	7.653	5.418	6.536	4.381	5.644	2.480	5.422	0.813	5.536	6.050	5.313
15	2Ab08-X05M010-82	5.564	12	14.5	5.700	7.923	8.131	6.304	6.794	4.101	6.090	3.274	5.960	1.165	5.644	6.095	5.157
16	2Ab09-X06F084-51	4.908	32	25.6	5.140	7.213	8.450	5.578	5.875	3.279	5.466	1.657	4.536	0.921	5.214	5.552	4.922
17	2Ab09-X06F058HL-31	4.132	33	31.5	3.639	5.402	6.653	4.986	5.531	2.827	4.391	2.347	3.696	1.219	5.053	4.001	3.973
18	MT090190	5.153	27	22.5	4.994	6.869	7.603	5.769	6.219	3.585	5.047	3.660	5.333	1.165	5.698	5.449	5.604
19	MT090180	5.578	9	13.3	4.759	7.821	8.612	6.214	6.197	4.676	6.208	4.083	5.401	1.003	5.913	6.026	5.604
20	MT100126	5.491	15	15.9	4.961	7.842	8.375	5.952	5.558	4.080	6.617	4.595	5.125	1.003	5.751	6.073	5.448
21	MT100120	5.526	13	13.9	4.782	7.186	7.955	5.600	6.052	4.542	6.187	4.361	5.350	1.436	6.289	6.265	5.831
22	2ND27705	5.443	20	17.1	4.826	6.918	7.680	5.246	7.213	4.682	6.509	3.204	5.254	0.867	6.450	6.275	5.631
23	2ND28065	5.355	22	17.6	4.636	7.100	7.848	6.081	6.837	4.257	6.192	3.754	5.594	1.409	5.751	4.833	5.326
24	2ND30724	5.072	28	23.2	4.434	6.407	7.114	5.658	6.676	3.569	6.133	3.897	4.693	1.436	5.483	5.025	5.415
25	UT2183-85	5.217	23	20.0	3.942	7.579	8.143	6.089	6.009	3.214	5.552	3.635	5.603	1.274	4.891	6.644	5.248
26	UT2136-96	5.494	14	14.7	4.345	7.713	8.964	6.425	6.547	3.714	5.762	2.501	6.220	1.382	6.343	6.277	5.226
27	09WA-231.5	5.181	26	21.4	4.670	7.998	7.305	5.770	6.434	3.741	5.182	4.044	5.535	1.030	6.074	5.181	4.386
28	10WA-105.33	5.711	5	10.4	5.173	7.681	8.634	6.630	7.584	4.687	6.025	4.249	5.581	1.436	5.859	5.749	4.956
29	09WA-228.13	5.744	4	9.7	4.938	7.880	8.155	6.636	7.751	4.187	6.907	3.483	5.605	1.518	6.128	5.871	5.609
30	09WA-203.24	5.941	1	7.8	5.319	7.955	7.909	6.763	7.401	4.047	7.074	4.171	6.254	1.192	6.181	7.310	5.650
31	10WA-106.19	5.647	6	12.3	5.633	8.202	7.732	6.851	7.697	4.203	5.853	3.716	5.738	1.680	5.268	5.550	5.292
32	10WA-113.16	5.466	18	16.5	5.386	7.520	8.260	6.465	7.450	3.881	6.278	3.318	5.013	1.192	5.590	5.694	5.005
33	10WA-106.18	5.774	3	10.4	5.308	8.331	7.952	6.879	7.536	4.537	7.165	3.688	5.320	1.219	5.859	5.771	5.502
Location Mean		5.391			5.028	7.398	7.995	6.073	6.773	4.031	6.054	3.475	5.334	1.436	5.781	5.726	5.172
Check's Mean		5.143			5.067	6.613	7.774	5.952	6.439	3.878	5.760	3.010	5.307	1.213	5.509	5.520	4.821
C.V. (%)		1.87			5.830	7.845			6.600	9.797	10.403	12.950			8.520	99.417	7.700
LSD .05		0.286			0.487	1.131			0.247	0.647	1.033	0.734		0.468	0.802		0.561
Replications		13			3	3			3	3	3	3		4	3		3

* Determined by missing value analysis

Table 6: 2014 Western Regional Spring Barley Nursery, Test Weight (kg m⁻³)

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Tulelake	Aberdeen	Idaho Falls	Fairfield	Hettinger	McVille	Minot	Williston	Logan	Almira	Pullman	Powell	Saskatoon
		kg m ⁻³	Rank	CA	ID	ID	MT	ND	ND	ND	ND	UT	WA	WA	WY	SK
1	Step toe	617.6	31	639.9	577.9	610.6*	630.4*	588.2	643.0*	657.7*	638.9	664.2	568.9	625.5	598.2	610.6
2	Baronesse	658.9	7	660.0	620.3	654.1	660.0	674.4	635.8	706.6	646.4	691.4	592.0	674.4	649.2	683.3
3	Harrington	632.5	27	645.6	603.6	645.3	645.6	615.2	635.8	658.9	543.2	687.2	604.9	621.6	629.9	642.3
4	AC Metcalfe	641.8	18	647.9	606.2	654.8	647.9	649.9	625.5	657.7	580.5	695.2	586.9	644.8	645.2	661.8
5	2B09-3425	626.7	30	608.8	594.6	622.1	608.8	620.3	620.3	615.2	652.4	682.3	579.2	615.2	638.2	652.5
6	2B10-4162	641.6	20	620.1	597.2	641.7	620.1	647.4	642.2	644.8	646.5	692.0	588.2	640.9	648.1	658.9
7	2B10-4378	641.7	19	627.3	607.5	634.0	627.3	648.6	616.5	626.8	642.8	685.3	595.9	665.4	653.9	676.5
8	2B11-4949	639.1	24	618.3	575.3	628.6	618.3	656.4	634.5	668.0	664.8	687.8	574.0	656.4	630.0	646.8
9	2B11-5166	632.6	26	619.3	585.6	640.2	619.3	652.5	628.1	593.3	615.3	687.4	574.0	662.8	635.1	667.9
10	BZ509-216	647.5	15	629.1	621.6	643.5	629.1	665.4	637.1	680.8	626.2	691.1	584.3	638.4	659.1	661.6
11	BZ509-448	648.9	14	643.8	610.0	639.6	643.8	671.8	664.1	680.8	595.7	663.9	603.6	669.2	645.8	683.0
12	2Ab04-X01084-27	627.9	29	614.9	588.2	619.0	614.9	607.5	651.2	644.8	619.6	688.2	583.0	617.8	625.0	644.0
13	2Ab07-X031098-31	636.3	25	615.4	593.3	627.5	615.4	634.5	646.1	649.9	633.3	697.2	543.1	642.2	638.7	663.2
14	2Ab07-X04M219-46	612.3	32	585.8	561.1	602.8	585.8	631.9	594.6	673.1	627.1	681.7	489.1	611.3	599.6	629.7
15	2Ab08-X05M010-82	640.1	22	627.8	608.8	621.4	627.8	648.6	640.9	664.1	625.5	685.3	577.9	649.9	649.8	658.1
16	2Ab09-X06F084-51	630.6	28	630.9	610.0	638.4	630.9	653.8	575.3	665.4	613.5	686.9	572.7	598.5	626.6	664.8
17	2Ab09-X06F058HL-31	664.2	4	738.5	592.0	687.0	738.5	725.9	597.2	693.7	625.9	744.3	553.4	610.0	638.5	694.8
18	MT090190	646.5	16	647.6	622.9	657.9	647.6	684.7	586.9	647.4	597.9	691.4	568.9	675.7	674.3	694.3
19	MT090180	645.7	17	651.2	586.9	650.4	651.2	670.5	660.2	695.0	608.3	687.6	586.9	652.5	643.4	674.8
20	MT100126	654.1	11	653.5	599.7	663.1	653.5	671.8	638.4	702.7	651.1	693.7	603.6	653.8	647.6	696.5
21	MT100120	650.6	12	651.7	602.3	648.6	651.7	677.0	651.2	670.5	595.2	693.1	601.0	665.4	667.7	698.0
22	2ND27705	640.4	21	632.2	612.6	641.2	632.2	669.2	633.2	646.1	626.0	681.4	561.1	639.6	653.3	656.9
23	2ND28065	657.5	8	669.8	608.8	651.7	669.8	653.8	621.6	704.0	640.2	702.9	626.8	677.0	636.8	671.7
24	2ND30724	648.9	13	652.5	585.6	644.0	652.5	658.9	649.9	686.0	587.6	701.2	616.5	666.7	642.2	685.8
25	UT2183-85	639.2	23	632.7	585.6	630.4	632.7	621.6	655.1	684.7	608.9	690.9	588.2	655.1	649.0	662.6
26	UT2136-96	610.2	33	599.0	545.7	588.9	599.0	608.8	628.1	639.6	614.0	671.9	529.0	628.1	605.7	639.0
27	09WA-231.5	689.9	1	756.8	626.8	709.7	756.8	734.9	679.5	751.6	648.7	702.5	610.0	624.2	696.4	674.1
28	10WA-105.33	663.1	5	665.6	642.2	644.5	665.6	688.5	673.1	696.3	631.4	707.6	599.7	662.8	647.2	691.0
29	09WA-228.13	664.9	3	678.0	646.1	666.7	678.0	691.1	644.8	718.1	567.7	700.0	606.2	669.2	657.4	704.1
30	09WA-203.24	665.1	2	677.5	643.5	662.0	677.5	692.4	665.4	716.9	560.0	726.2	604.9	671.8	648.8	696.8
31	10WA-106.19	656.1	10	658.2	635.8	645.3	658.2	677.0	646.1	675.7	606.5	713.7	619.0	651.2	641.3	678.5
32	10WA-113.16	656.6	9	652.0	629.3	675.2	652.0	670.5	673.1	704.0	610.0	694.7	590.7	644.8	647.5	674.1
33	10WA-106.18	660.1	6	661.5	628.1	645.6	661.5	674.4	656.4	706.6	636.0	705.4	597.2	661.5	652.6	681.0
Location Mean		645.13		668.0	604.7	643.5	645.6	658.9	637.9	673.5	617.8	693.2	584.3	647.4	643.1	669.1
Check's Mean		637.69		667.3	602.0	641.2	646.0	631.9	635.0	670.2	602.2	684.5	588.2	641.6	630.6	649.5
C.V. (%)		0.38		1.18	2.25			1.10	4.49	4.43	1.74			1.77	49.84	
LSD .05		13.79		13.1	26.5			5.02	46.75	48.75	17.50			18.66		
Replications		13		3	3			3	3	3	3		1	3		1

* Determined by missing value analysis

Table 7: 2014 Western Regional Spring Barley Nursery, Plant Height (cm)

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Tulelake	Aberdeen	Idaho Falls	Fairfield	Hettinger	McVilIe	Minot	Williston	Logan	Almira	Pullman	Powell	Saskatoon
		cm	Rank	CA	ID	ID	MT	ND	ND	ND	ND	UT	WA	WA	WY	SK
1	Step toe	74.9	17	58.4	89.7	94.6*	78.8*	90.7	53.6*	83.1*	57.6	81.3	52.5	78.7	67.7	87.0
2	Baronesse	72.4	24	71.1	89.7	92.7	73.7	84.6	51.0	77.2	58.4	68.6	49.3	76.7	66.9	82.0
3	Harrington	75.4	13	76.2	97.3	96.5	78.7	88.9	56.5	78.5	59.3	68.6	52.3	71.6	72.8	83.0
4	AC Metcalfe	76.6	11	73.7	101.6	97.8	76.2	88.1	56.3	90.3	61.8	68.6	48.5	73.7	79.6	80.0
5	2B09-3425	73.5	21	66.0	83.8	94.0	78.7	88.1	54.7	86.3	60.1	68.6	46.6	74.4	70.3	84.0
6	2B10-4162	72.9	23	63.5	89.7	92.7	78.7	87.1	56.5	83.3	57.6	66.0	50.4	76.2	64.3	81.0
7	2B10-4378	71.2	30	68.6	88.1	87.6	71.1	85.6	54.0	81.5	61.0	68.6	50.4	69.3	66.0	74.0
8	2B11-4949	72.2	26	66.0	83.8	88.9	76.2	86.4	57.7	84.7	59.3	71.1	48.7	70.4	67.7	78.0
9	2B11-5166	73.0	22	68.6	88.9	95.3	76.2	91.4	54.8	76.3	58.4	73.7	49.0	70.6	69.4	77.0
10	BZ509-216	79.9	2	78.7	98.3	104.1	88.9	96.5	55.3	88.5	63.5	76.2	56.3	81.8	67.7	83.0
11	BZ509-448	67.2	33	58.4	73.7	72.4	71.1	76.2	47.5	67.5	64.3	68.6	46.1	76.2	85.5	66.0
12	2Ab04-X01084-27	72.2	27	61.0	85.6	88.9	76.2	87.1	49.8	76.2	58.4	68.6	54.0	71.1	72.8	89.0
13	2Ab07-X031098-31	76.9	8	68.6	91.4	97.8	81.3	93.2	52.7	89.3	62.7	71.1	57.0	80.5	69.4	85.0
14	2Ab07-X04M219-46	76.0	12	73.7	96.5	102.9	83.8	92.2	61.7	84.7	62.7	66.0	47.8	78.7	49.7	87.0
15	2Ab08-X05M010-82	75.2	14	76.2	94.7	92.7	81.3	90.7	48.8	85.5	58.4	73.7	46.6	80.8	66.9	81.0
16	2Ab09-X06F084-51	76.9	9	71.1	95.8	96.5	88.9	91.4	53.8	86.8	59.3	73.7	51.6	73.2	68.6	89.0
17	2Ab09-X06F058HL-31	74.9	16	76.2	91.4	92.7	83.8	90.7	52.2	83.3	50.8	71.1	56.2	77.0	69.4	79.0
18	MT090190	71.7	29	71.1	90.7	90.2	78.7	85.6	46.3	75.2	61.0	76.2	46.6	70.6	58.4	81.0
19	MT090180	79.5	4	78.7	98.3	97.8	86.4	91.4	63.2	87.5	58.4	81.3	49.7	75.4	78.7	86.0
20	MT100126	81.3	1	76.2	99.8	106.7	83.8	97.3	61.0	93.2	61.0	83.8	51.8	73.2	77.9	91.0
21	MT100120	78.5	6	78.7	94.7	97.8	83.8	94.7	63.2	83.5	58.4	76.2	56.0	76.7	72.8	84.0
22	2ND27705	78.5	7	83.8	102.4	102.9	81.3	94.0	53.7	93.0	56.7	76.2	50.8	80.8	61.8	83.0
23	2ND28065	76.8	10	66.0	103.4	97.8	81.3	92.2	55.5	82.5	57.6	73.7	53.5	79.2	69.4	86.0
24	2ND30724	74.2	19	68.6	90.7	94.0	73.7	86.4	49.5	80.0	58.4	86.4	54.6	78.0	66.9	77.0
25	UT2183-85	79.7	3	71.1	105.9	105.4	86.4	88.1	51.7	84.8	61.0	94.0	53.0	77.0	70.3	88.0
26	UT2136-96	74.2	18	66.0	88.9	94.0	78.7	84.6	52.2	80.5	58.4	83.8	50.3	70.6	71.1	86.0
27	09WA-231.5	72.1	28	71.1	81.3	87.6	71.1	82.0	53.2	77.8	61.0	76.2	49.6	74.9	77.0	74.0
28	10WA-105.33	69.4	32	61.0	84.6	91.4	66.0	82.0	45.8	70.7	55.0	71.1	46.9	77.0	72.0	79.0
29	09WA-228.13	78.9	5	73.7	94.0	102.9	81.3	92.2	60.2	91.3	47.4	81.3	59.0	76.7	82.1	84.0
30	09WA-203.24	72.4	25	68.6	90.7	92.7	71.1	87.1	48.0	83.2	59.3	76.2	50.3	73.2	62.7	78.0
31	10WA-106.19	75.1	15	71.1	89.7	91.4	78.7	86.4	53.8	88.5	60.1	76.2	54.6	72.4	74.5	79.0
32	10WA-113.16	70.1	31	55.9	88.1	83.8	78.7	84.6	44.2	81.0	58.4	68.6	37.5	74.4	73.7	82.0
33	10WA-106.18	73.6	20	68.6	94.0	97.8	76.2	83.8	52.0	87.5	58.4	78.7	52.9	78.0	49.1	80.0
Location Mean		74.77		68.6	92.0	94.6	78.8	88.6	53.6	83.1	58.9	74.7	50.9	75.4	69.5	82.0
Check's Mean		74.84		69.9	94.6	95.7	76.2	88.1	54.6	82.3	59.3	71.8	50.6	75.2	71.8	83.0
C.V. (%)		1.11		5.8	5.7			4.3	8.1	10.1	4.2			8.7	73.1	
LSD .05		3.15		6.7	10.1			4.3	7.1	5.4	4.0			10.6		
Replications		13		3	3			3	3	3	3			3		1

* Determined by missing value analysis

Table 8: 2014 Western Regional Spring Barley Nursery, Heading Date (Days after Jan. 1)

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Tulelake	Aberdeen	Hettinger	McVille	Minot	Williston	Logan	Almira	Powell	Saskatoon
		From 1/1	CA	ID	ND	ND	ND	ND	UT	WA	WY	SK	SK
1	Step toe	169.5	32	116	163	179	189*	193*	180	157	168	165	185
2	Baronesse	173.3	17	115	167	184	194	196	181	171	172	164	189
3	Harrington	174.3	5	118	168	185	193	201	181	172	172	165	189
4	AC Metcalfe	173.2	18	116	170	183	193	199	176	171	171	165	189
5	2B09-3425	174.2	8	119	167	185	193	198	181	176	171	165	187
6	2B10-4162	173.7	13	116	168	185	193	197	178	172	172	168	188
7	2B10-4378	172.9	22	115	165	185	194	198	178	165	171	168	190
8	2B11-4949	173.2	19	116	166	185	194	198	180	166	171	168	187
9	2B11-5166	173.9	11	116	169	185	193	201	178	172	172	165	187
10	BZ509-216	174.6	4	121	168	186	195	197	180	172	173	165	190
11	BZ509-448	175.6	3	125	170	186	195	197	181	173	173	168	189
12	2Ab04-X01084-27	173.8	12	117	167	185	193	199	178	172	172	168	187
13	2Ab07-X031098-31	173.0	21	114	168	185	193	197	180	165	172	168	188
14	2Ab07-X04M219-46	175.9	2	119	173	187	197	201	180	173	173	165	192
15	2Ab08-X05M010-82	173.5	14	117	167	185	195	199	181	166	171	165	190
16	2Ab09-X06F084-51	177.4	1	125	172	187	195	202	183	179	172	168	190
17	2Ab09-X06F058HL-31	174.2	6	113	170	185	193	198	183	171	171	168	190
18	MT090190	173.3	16	114	166	185	192	198	180	171	172	168	188
19	MT090180	174.2	7	116	169	185	194	197	180	172	172	168	189
20	MT100126	173.9	10	116	170	185	195	196	178	171	173	165	190
21	MT100120	174.0	9	115	168	185	195	200	180	171	173	165	188
22	2ND27705	171.1	28	114	167	183	190	195	181	158	169	164	189
23	2ND28065	170.3	30	111	164	182	191	197	177	158	169	168	187
24	2ND30724	170.5	29	113	164	181	190	199	181	158	167	165	186
25	UT2183-85	169.7	31	116	163	180	191	195	181	151	169	165	186
26	UT2136-96	168.6	33	110	163	180	190	193	180	152	169	165	185
27	09WA-231.5	172.6	23	115	166	185	192	199	180	166	167	168	188
28	10WA-105.33	171.9	24	116	165	184	189	195	181	165	170	168	187
29	09WA-228.13	171.7	27	116	166	184	192	195	177	165	168	168	187
30	09WA-203.24	173.1	20	118	167	185	195	195	183	166	169	165	188
31	10WA-106.19	171.7	26	115	165	185	194	194	181	159	170	168	186
32	10WA-113.16	173.4	15	120	166	185	191	197	183	166	170	168	189
33	10WA-106.18	171.8	25	116	165	185	191	194	181	166	170	165	185
Location Mean		172.98		116	167.0	184.0	193.0	197.4	180.1	166.9	170.7	166.4	187.9
Check's Mean		172.59		116.25	166.8	182.8	193.4	197.2	179.6	167.8	170.8	164.8	187.8
C.V. (%)		0.73		1.58	0.6	0.4	0.8	5.9	4.1			164.7	0.8
LSD .05		1.81		3.06	2.1	0.4	2.6	4.4	3.9				1.0
Replications		10		3	3	3	3	3	3				3

* Determined by missing value analysis

Table 9: 2014 Western Regional Spring Barley Nursery, Percent Plump Barley*

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Idaho Falls	Fairfield	Hettinger	Williston	Almira	Pullman	Powell	Saskatoon
		Percent	Rank	ID	MT	ND	ND	WA	WA	WY	SK
1	Step toe	90.9	5	98.7*	97.4*	91.6	74.5	82.0	90.0	96.8	96.4
2	Baronesse	89.3	13	96.5	96.1	94.0	72.4	77.0	91.0	95.9	91.3
3	Harrington	90.1	16	97.0	97.1	86.0	84.5	88.0	90.0	95.8	82.5
4	AC Metcalfe	83.9	33	98.1	96.8	91.2	22.3	85.0	93.0	96.7	88.4
5	2B09-3425	91.5	4	96.6	96.5	91.4	85.9	86.0	94.0	96.2	85.0
6	2B10-4162	84.2	30	94.6	90.6	87.5	78.8	69.0	85.0	93.3	75.0
7	2B10-4378	88.1	25	97.5	96.6	88.2	64.4	85.0	90.0	97.2	85.9
8	2B11-4949	88.3	20	97.0	96.5	91.5	70.8	80.0	91.0	95.3	84.3
9	2B11-5166	88.6	21	98.3	96.5	92.3	63.3	84.0	92.0	95.0	87.8
10	BZ509-216	87.5	27	94.3	92.4	93.8	75.7	83.0	79.0	96.7	85.4
11	BZ509-448	89.1	17	93.9	95.6	93.9	73.2	81.0	90.0	95.7	89.1
12	2Ab04-X01084-27	86.4	31	94.1	95.6	85.6	60.1	93.0	86.0	93.5	83.2
13	2Ab07-X031098-31	88.0	18	95.1	90.9	88.0	84.1	73.0	90.0	95.6	87.0
14	2Ab07-X04M219-46	84.8	26	91.5	92.0	91.8	80.3	60.0	90.0	93.0	79.9
15	2Ab08-X05M010-82	87.1	28	92.6	92.9	88.6	73.8	85.0	83.0	94.2	86.8
16	2Ab09-X06F084-51	86.2	29	96.6	93.2	93.3	60.5	78.0	89.0	93.5	85.4
17	2Ab09-X06F058HL-31	85.7	19	96.3	90.9	94.9	75.0	57.0	85.0	97.0	89.7
18	MT090190	88.1	15	98.8	96.6	97.5	56.5	71.0	93.0	98.5	92.7
19	MT090180	91.0	6	97.8	96.8	92.7	72.5	84.0	94.0	98.6	91.5
20	MT100126	91.5	10	97.7	97.3	92.2	67.0	92.0	92.0	98.9	95.1
21	MT100120	92.9	3	98.2	96.8	93.9	72.7	93.0	94.0	98.6	96.0
22	2ND27705	89.2	9	98.3	97.5	96.0	66.0	73.0	92.0	98.1	93.1
23	2ND28065	91.9	2	94.6	96.6	89.8	95.8	84.0	92.0	97.6	84.8
24	2ND30724	93.6	1	98.8	98.8	94.9	74.0	93.0	96.0	98.4	94.7
25	UT2183-85	89.3	22	98.0	94.6	85.4	63.8	90.0	91.0	98.5	93.1
26	UT2136-96	82.2	32	87.1	77.4	75.9	79.0	65.0	87.0	96.4	89.5
27	09WA-231.5	88.3	14	94.9	90.4	93.4	80.4	70.0	91.0	96.7	89.9
28	10WA-105.33	91.4	7	97.5	98.5	96.7	68.5	89.0	92.0	96.7	92.7
29	09WA-228.13	90.3	11	97.7	97.8	96.4	67.0	83.0	91.0	96.1	93.5
30	09WA-203.24	90.6	8	98.3	98.5	96.5	66.8	84.0	90.0	95.1	95.9
31	10WA-106.19	88.9	23	95.6	96.5	95.8	69.3	90.0	83.0	94.0	87.0
32	10WA-113.16	89.9	12	98.3	96.3	94.8	73.4	81.0	91.0	95.7	88.6
33	10WA-106.18	85.5	24	94.6	93.3	93.5	69.1	64.0	86.0	96.4	87.2
Location Mean		88.62		96.13	94.81	91.80	70.94	80.36	89.78	96.23	88.74
Check's Mean		88.56		97.20	96.69	90.70	63.41	83.00	91.00	96.29	89.67
C.V. (%)		2.33				2.10	10.49		2.40	96.13	
LSD .05		5.19				1.00	12.14		3.52		
Replications		8				3	3		3		1

* Determined by missing value analysis

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

Table 10: 2014 Western Regional Spring Barley Nursery, Percent Protein

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Hettinger	Pullman
		Percent	Rank	ND	WA
1	Step toe	10.8	17	10.8	10.8
2	Baronesse	11.5	10	11.3	11.6
3	Harrington	11.0	16	10.7	11.3
4	AC Metcalfe	11.9	5	11.7	12.1
5	2B09-3425	11.4	14	10.7	12.0
6	2B10-4162	10.8	18	10.4	11.2
7	2B10-4378	10.8	19	9.9	11.6
8	2B11-4949	10.4	29	10.2	10.6
9	2B11-5166	10.3	30	9.8	10.8
10	BZ509-216	10.7	23	10.0	11.4
11	BZ509-448	10.8	20	10.0	11.5
12	2Ab04-X01084-27	11.3	15	10.6	12.0
13	2Ab07-X031098-31	11.9	6	11.5	12.2
14	2Ab07-X04M219-46	10.4	28	9.9	10.9
15	2Ab08-X05M010-82	10.5	26	10.0	10.9
16	2Ab09-X06F084-51	12.3	3	12.6	11.9
17	2Ab09-X06F058HL-31	13.2	1	12.8	13.5
18	MT090190	12.6	2	11.7	13.4
19	MT090180	10.1	32	9.9	10.3
20	MT100126	10.3	31	10.1	10.4
21	MT100120	10.0	33	9.7	10.2
22	2ND27705	10.4	27	10.0	10.8
23	2ND28065	11.6	8	11.2	12.0
24	2ND30724	11.4	13	11.7	11.1
25	UT2183-85	12.2	4	12.0	12.4
26	UT2136-96	11.5	9	12.0	11.0
27	09WA-231.5	11.5	11	11.8	11.1
28	10WA-105.33	11.8	7	11.8	11.8
29	09WA-228.13	11.5	12	11.5	11.4
30	09WA-203.24	10.5	25	10.1	10.9
31	10WA-106.19	10.8	21	10.3	11.2
32	10WA-113.16	10.8	22	10.2	11.3
33	10WA-106.18	10.7	24	10.4	10.9
Location Mean		11.12		10.80	11.40
Check's Mean		11.29		11.13	11.46
C.V. (%)		0.74		4.30	5.51
LSD .05		0.81		0.25	1.02
Replications		2		3	3

Table 11: 2014 Western Regional Spring Barley Nursery, Lodging, 0-10*

Ent. NO.	CULTIVAR/ DESIGNATION	AVERAGE		Tulelake	Aberdeen	Idaho Falls	Hettinger	Minot	Almira	Pullman	Powell	Saskatoon
		Rating	Rank	CA	ID	ID	ND	ND	WA	WA	WY	SK
1	Step toe	2.5	28	1.0	4.7	1.5**	3.7	4.0**	0.0	0.0	0.0	7.3
2	Baronesse	2.0	23	2.7	0.0	1.0	3.7	3.3	0.0	1.7	0.0	5.3
3	Harrington	3.0	32	3.0	6.3	1.0	6.0	4.0	0.0	0.0	0.0	6.3
4	AC Metcalfe	2.6	31	1.7	2.0	1.0	4.7	4.0	0.0	1.7	0.0	8.3
5	2B09-3425	2.0	22	1.3	0.0	1.0	4.3	6.0	0.0	1.7	0.0	3.3
6	2B10-4162	1.4	11	1.3	0.0	1.0	2.7	1.7	0.0	1.0	0.0	5.3
7	2B10-4378	1.7	16	1.0	0.7	1.0	3.3	3.7	0.0	3.0	0.0	2.3
8	2B11-4949	1.8	19	1.7	0.0	1.0	2.0	4.0	0.0	1.7	0.0	6.0
9	2B11-5166	1.7	17	1.3	0.7	1.0	3.7	1.0	0.0	0.0	0.0	7.7
10	BZ509-216	1.4	9	1.3	0.7	1.0	0.0	3.0	0.0	1.0	0.0	5.7
11	BZ509-448	1.2	4	1.0	0.0	1.0	3.3	4.3	0.0	0.0	0.0	1.0
12	2Ab04-X01084-27	3.0	33	3.0	3.3	1.0	5.0	3.7	0.0	2.5	0.0	8.3
13	2Ab07-X031098-31	2.1	25	2.3	0.7	1.0	2.7	2.3	0.0	4.2	0.0	5.3
14	2Ab07-X04M219-46	2.0	24	2.3	0.0	3.0	1.7	2.0	0.0	4.2	0.0	5.0
15	2Ab08-X05M010-82	1.8	18	1.7	2.0	1.0	3.0	3.0	0.0	1.0	0.0	4.7
16	2Ab09-X06F084-51	1.3	6	1.0	0.0	1.0	0.7	1.0	0.0	0.0	0.0	8.0
17	2Ab09-X06F058HL-31	2.1	27	3.7	3.7	1.0	1.7	2.7	0.0	2.5	0.0	4.0
18	MT090190	1.4	7	1.3	1.3	1.0	0.3	2.3	0.0	2.5	0.0	3.7
19	MT090180	1.6	13	1.0	0.3	1.0	3.3	1.0	0.0	1.7	0.0	5.7
20	MT100126	1.2	5	1.0	0.0	1.0	2.7	3.3	0.0	0.0	0.0	3.0
21	MT100120	1.1	3	1.0	0.0	1.0	1.7	1.0	0.0	2.5	0.0	3.0
22	2ND27705	1.9	21	2.3	0.7	1.0	0.0	3.7	0.0	3.3	0.0	6.0
23	2ND28065	1.6	14	1.3	0.3	1.0	1.0	1.7	0.0	2.5	0.0	6.3
24	2ND30724	0.6	1	1.7	0.0	1.0	0.0	1.7	0.0	0.0	0.0	1.0
25	UT2183-85	0.6	1	1.0	0.3	1.0	1.0	1.3	0.0	0.0	0.0	1.0
26	UT2136-96	1.9	20	1.0	0.3	1.0	4.0	1.3	0.0	1.7	0.0	7.7
27	09WA-231.5	1.4	10	1.7	0.0	1.0	2.3	3.0	0.0	1.7	0.0	3.0
28	10WA-105.33	1.4	8	1.3	0.0	1.0	0.7	2.7	0.0	0.0	0.0	6.7
29	09WA-228.13	1.5	12	1.7	0.0	1.0	0.7	2.3	0.0	3.3	0.0	4.7
30	09WA-203.24	1.6	15	1.7	0.0	1.0	0.7	3.0	0.0	5.8	0.0	2.0
31	10WA-106.19	2.5	30	1.7	0.0	1.0	1.7	8.0	0.0	2.5	0.0	8.0
32	10WA-113.16	2.5	29	3.0	1.7	1.0	3.3	3.7	0.0	2.5	0.0	7.7
33	10WA-106.18	2.1	26	2.0	0.7	1.5	4.0	3.3	0.0	0.0	0.0	7.7
Location Mean		1.77		1.7	0.9	1.1	2.4	2.9	0.0	18.2	0.0	5.2
Check's Mean		3.20		2.1	3.3	1.0	4.5	3.8	0.0	0.9	0.0	6.8
C.V. (%)		0.42		36.9	132.3		34.0	83.5		174.1	0.0	2.0
LSD .05		0.98		1.0	2.4		0.5	4.0		51.6		2.6
Replications		9		3	3		3	3		3		3

* 0.0 to 10.0 where 0.0 = no lodging, 10.0 = complete lodging, calculated as (((% of plot area lodged)/100)*((% lodged [lean])/100))*10; i.e. ((90/100)*(90/100))*10=(.9*.9)*10=8.1

** Determined by missing value analysis

Table 12: 2014 Western Regional Spring Barley Nursery, Disease Ratings

Entry No.	CULTIVAR/ DESIGNATION	Stripe Rust						Leaf rust		TTKSK Seedling Screening†	
		Pullman, WA**			Mt. Vernon, WA			Mt. Vernon, WA		Minneapolis, MN	
		7/9		6/4		7/9***		7/9		12/8	
		Milk		Seedling		Milk		Milk			
IT* %		IT %		IT %		IT %		Rep1 Rep 2			
1	Steptoe	8	1	8	5	-	-	9	90	3	3-2
2	Baronesse	8	1	2	5	-	-	9	90	3-2	3
3	Harrington	2	1	2	5	-	-	9	90	213-	3
4	AC Metcalfe	5	1	2	2	-	-	9	90	23-	33+
5	2B09-3425	2	1	2	5	-	-	9	90	3-2	3
6	2B10-4162	8	5	2	5	-	-	9	90	3-2	3-
7	2B10-4378	2	1	2	5	-	-	9	90	3-	3-
8	2B11-4949	8	1	2	2	-	-	9	90	0,23-	23-
9	2B11-5166	8	1	8	30	-	-	9	90	3-	23-
10	BZ509-216	8	1	8	5	-	-	9	90	33-	3-
11	BZ509-448	2	1	2	5	-	-	9	90	3-2	3
12	2Ab04-X01084-27	8	2	2	2	-	-	9	90	0,(3-)	0,(3-)
13	2Ab07-X031098-31	8	2	2	5	-	-	9	90	3-2	23-
14	2Ab07-X04M219-46	8	1	2	2	-	-	9	90	33-	23-
15	2Ab08-X05M010-82	8	5	2	5	-	-	9	90	23-	3-
16	2Ab09-X06F084-51	8	10	8	30	-	-	9	90	3-	3-2
17	2Ab09-X06F058HL-31	8	5	2	5	-	-	9	90	33+	23-
18	MT090190	2	1	2	1	-	-	9	90	3?	33-
19	MT090180	8	5	2	5	-	-	9	90	3-2?	3-2
20	MT100126	8	2	2	5	-	-	9	90	3-2	23-
21	MT100120	8	1	2	2	-	-	9	90	23-	3
22	2ND27705	8	1	8	20	-	-	9	90	3-2	3-2
23	2ND28065	2	1	8	5	-	-	9	90	3-	23-
24	2ND30724	8	10	2	5	-	-	9	90	23-	21
25	UT2183-85	8	20	8	10	-	-	9	90	3-	3-2
26	UT2136-96	8	30	8	15	-	-	9	90	3-	3-
27	09WA-231.5	8	10	2	10	-	-	9	90	33-	33-
28	10WA-105.33	2	1	2	5	-	-	9	90	0,(3-)	3-2
29	09WA-228.13	8	1	8	20	-	-	9	90	3-2	0?
30	09WA-203.24	8	2	8	20	-	-	9	90	3	0?
31	10WA-106.19	8	2	8	20	-	-	9	90	33-	0?
32	10WA-113.16	2	1	2	20	-	-	9	90	33+	0?
33	10WA-106.18	8	1	8	30	-	-	9	90	3	0?

* Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs.

** Pullman, WA was inoculated with race PSH-58.

*** Stripe rust reaction could not be assessed as leaf rust was too severe.

† Scoring was conducted using a modified Stakman scale, where 0; to 1 represents high levels of resistance, 2 is intermediate and 3 is susceptible, 4 type pustules are not common on barley. As barley gives a mesothetic reaction, the variety of pustule types is reflected in the scoring with the most common pustule type written first, followed by the minority types, in order of frequency. If reduced receptivity is noted, it is scored a "0,(minority infection type)", i.e. if only a single isolated 3 type pustule is present on an otherwise clean leaf it would be scored as 0, (3)

Figure 1: Test locations (past and present)

