

STATEWIDE CEREAL VARIETY TESTING PROGRAM

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Abstract

Cereal grain was grown on more than 1 million acres in Oregon for the 2001 crop year. Cereal growers need timely wheat and feed grain performance data so that informed variety selection decisions can be made. Trials with wheat, barley, oat, rye, and triticale were located at 11 different locations representing major cereal production regions. Trial results are summarized and posted on the OSU Cereals Extension web site, published in extension newsletters, annual reports, and shared at field days and grower meetings.

Key Words

Triticum aestivum, *Hordeum vulgare*, *Avena sativa*, *Secale cereale*, *Triticum secale*.

Introduction

The statewide cereal variety testing program as initiated in 1992. The objective of this program is to provide wheat and feed grain performance data, in a timely manner, to growers in all of Oregon's major cereal-producing regions so that informed variety selection decisions can be made.

In the 2000-2001 growing season, over 50 winter grain varieties were evaluated at 8 locations, and over 70 spring grains were evaluated at 11 locations across Oregon. The proportion of wheat and feed grain varieties tested was approximately two-thirds wheat and one-third feed grains. Varieties tested varied by location, but included a core set of varieties: those commonly used in the local area and

advanced experimental lines. Russ Karow and John Bassinette coordinate the program. Nathan Blake manages the five Columbia Basin sites.

These five sites encompass dryland (Pendleton, Moro, Lexington) and irrigated (Hermiston, LaGrande) environments. Each site in the Columbia Basin was planted, managed, and harvested by the trial manager with cooperation from growers at off-station locations (Table 1).

Combine-harvested grain is transferred to the central team (Bassinette and Karow) who process the grain, analyze data, and provide results to extension agents, seed dealers, agricultural field representatives, and growers.

This article reports yield data, collected in 2001 and a compilation from 1999 to 2001, for the Columbia Basin sites. More complete data, including test weights, heading dates, and protein information, can be found on the Internet (www.css.orst.edu/cereals/) and in various extension publications.

Materials and Methods

All experiments were designed as a randomized complete block with three replications. Grain was sown at a rate of 20 viable seeds/ft² for dryland and 30 viable seeds/ft² for irrigated sites into plots at least 20 ft long by 5 ft wide. Seed weight (kernels/lb) and germination percentage were determined for each variety and used to determine the amount of seed to be sown. Among varieties, seeding rates ranged from

60 to 150 lb/acre to attain the desired plant population. Small plot equipment (drills, tractors, combines) was used to sow and harvest plots. Plots were managed using best management practices for each location.

Harvested grain from each plot was run through a Pelz rub-bar[®] seed cleaner. After cleaning, plot yield, test weight, protein, and moisture were determined on grain samples. Yields are reported on a 10 percent moisture basis and in 60 lb/bu for wheat and triticale and in lb/acre for barley. Test weight was based on a 1-quart sub-sample.

In addition to small-plot variety trials, large-scale winter wheat drill-strip trials have been conducted across the state for the past 7 years. Cooperators were provided with seed and with the assistance of local county agents, established side-by-side, non-replicated drill-strip plots in their fields. Strips were managed and harvested by the cooperator using commercial equipment and best management strategies for their area. Weigh wagons or weigh pads were used to obtain yield data. When possible, a 2-quart sub-sample was collected and used for test weight and protein determination. Results are reported in Bassinette et al. (2002a, b).

Results and Discussion

Tables at the end of this report contain yield information from 2001 trials as well as compilations of data from 1999 to 2001. Because year-to-year variability is often high, conclusions should not be made from a single year's data. Three-year averages are a better indication of how well a variety is suited to a location. For newer lines that have not been tested over multiple years, the 2001 data may help identify lines to watch in the future.

Soft White and Club Winter Wheat (Tables 2 and 3)

'Rod' and 'Stephens' continue to be among the highest yielding varieties tested for the last 3 years at all locations in the Columbia Basin. Experimental line, OR939526 also continues to perform well. Grain yield of this line has been greater than or equal to all current varieties over the past 3 years. Overall quality is similar to 'Stephens' but test weight has been slightly lower. Jim Peterson, Oregon State University wheat breeder, has initiated a breeder seed increase of OR939526, which will be released in the next few years if it continues to perform well.

There was little difference between the newer club lines 'Coda', 'Hiller', and 'Temple'. However, across Basin locations, 'Coda' had the highest average yield over the past 3 years. 'Rohde' has performed well, but the newer club lines have the advantage of both stripe rust and foot rot resistance. WA7855 was included in the trials for the first time in 2001 and led all club yields. WA7855 is resistant to foot rot and stripe rust, but heads 2 days later than Madsen. WA7855 was released in September of 2001 under the name 'Chukar'.

Winter Barley (Tables 4 and 5)

'Strider' and 'Kold' were the highest yielding winter barley cultivars for the 2000-2001 growing season. They also have the highest average yield among winter barleys over the last 3 years. While Scio has had above average yields at many sites, it tends to have lower test weight and is susceptible to stripe rust.

Soft White and Club Spring Wheat (Tables 6 and 8)

‘Wawawai’ and ‘Zak’ were the highest yielding spring soft white entries averaged across all sites in 2001. ‘Zak’ is Hessian fly tolerant, has better end use quality than ‘Wawawai’, and is intended as a ‘Wawawai’ replacement. Over the past 3 years, (Table 8) ‘Wawawai’ and ‘Alpowa’ have been the highest yielding spring soft white lines in the Columbia Basin.

Among experimental lines, WA7902, (club type) was among the highest yielding lines across locations even when compared to other common soft white wheat. WA7902 was approved for pre-release in February 2001 with registered seed available by spring of 2003.

Hard White and Hard Red Spring Wheat (Tables 7 and 8)

In 2001, across locations, WA7899 (‘Macon’) and ID533 (‘Lolo’) were the highest yielding hard white spring lines. Overall, grain yields of the spring hard whites were similar to those of the best soft white spring lines. ‘Winsome’ and ID377S have been the highest yielding hard whites averaged over the last 3 years. These lines have had similar grain yield, test weight and protein over this time. The Wheat Marketing Center in Portland has identified Winsome as a superior cultivar for Asian noodle production and should be considered for identity preserved sales.

Hard red varieties, ‘Jefferson’ and ‘Hank’ continued to perform well in 2001. Across market classes, 3-year averages show ‘Jefferson’ to be the top yielding variety at three of five Columbia Basin locations (Table 8). Across locations and market classes, ‘Hank’ was the top yielding line. ‘Hank’ is tolerant to Hessian fly and has performed well, especially in irrigated or high-rainfall environments.

Spring Barley (Tables 9 and 10)

Across locations, ‘Chinook’ had the highest yield in 2001 and the highest average yield over the last 3 years. ‘Chinook’ has stripe rust resistance, while ‘Steptoe’ and ‘Baronesse’ (not included in 2001 trials) do not. ‘Valier’ continued to perform well in 2001 and has 3-year-average grain yield similar to ‘Chinook’.

Conclusions

While any variety may excel in a single location and year, data over multiple years should be examined when selecting a variety. Growers should also consider disease resistance, winter hardiness, or other factors pertinent to their location. See Bassinette et al., (2002a,b) for more information on disease resistance, winter hardiness, etc. When switching to a new variety, small acreages should be grown for more than a year before making a larger commitment.

Acknowledgements

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Table 1. 2001 statewide variety testing program trial type, location, manager, and cooperater.

Trial name	Trial type ¹	Location	Manager ²	Grower cooperater
Corvallis	W,S-dryland	Hyslop Exp. Stn.	Bassinette/Karow	
Scio	S-dryland	Haugerud Farm	Bassinette/Karow	Carl Haugerud
Moro	W,S- dryland	Sherman Exp. Stn.	Blake/Petrie	
Lexington	W,S-dryland	Starvation Farms	Blake/Petrie	Chris Rauch
Hermiston	W-irrigated	Madison Farm	Blake/Petrie	Kent Madison
Hermiston	S-irrigated	Carroll Farm	Blake/Petrie	Larry Carroll
Pendleton	W,S-dryland	CBARC	Blake/Petrie	
LaGrande	W,S-irrigated	Cuthbert Farm	Blake/Petrie	John Cuthbert
Ontario	W,S-irrigated	Malheur Exp. Stn.	Eldredge/Shock	
Madras	W,S-irrigated	Central OR Exp. Stn.	Bafus/Bohle	
Klamath Falls Organic	S-dryland	Henzel Farms	Clark/Rykbost	Sam and Thurston Henzel
Klamath Falls Mineral	S-dryland	Klamath Exp. Sta.	Clark/Rykbost	

¹W and S are used to designate winter and spring trials respectively.

²Statewide trials are coordinated through Cereals Extension, Oregon State University, Corvallis, Oregon.

Table 2. 2001 statewide variety testing program winter wheat, oat, rye, and triticale yield for varieties tested at Columbia Basin locations.

Variety or line ¹	Market class ²	Yield (60lb, bu/acre @ 10% moisture)				Across site	Across site
		Hermiston	LaGrande	Moro ³	Pendleton	average	% of average
Bruehl	Club	99	26	25	81	58	86
Brundage	SW	119	32	25	102	70	104
Coda	Club	103	62	25	80	68	101
Edwin	Club	83	48	23	67	55	82
Foote	SW	101	17	25	98	60	90
Hubbard	SW	103	61	28	107	75	112
ID 11713A	SW	119	64	22	89	74	110
ID-52814A	SW	111	53	25	89	70	104
ID-B-96	SW	112	63	20	97	73	109
Kolding Oat	Oat	59	35	26	40	40	60
Madsen	SW	108	67	25	85	71	106
Madsen/Stephens	SW	114	45	23	96	70	104
OR 939526	SW	118	54	23	91	72	107
OR 939528	SW	115	28	26	99	67	100
OR 941044	SW	109	29	25	100	66	98
OR 941904	HW	115	49	24	95	71	106
OR 943560	SW	117	45	24	94	70	104
Rely	Club	81	42	23	95	60	90
Stephens	SW	128	25	23	100	69	103
Temple	Club	128	16	23	93	65	97
WA 7853 (Finch)	SW	94	59	27	97	69	103
WA 7855 (Chucker)	Club	108	69	21	101	75	112
Weatherford	SW	114	58	25	92	72	108
Yamhill	SW	113	63	28	83	72	107
Alzo	Triticale	101	—	—	85	—	—
Bogo	Triticale	88	—	31	86	—	—
Boundary	HR	112	—	25	87	—	—
Connie	Durum	85	—	21	65	—	—
Gene	SW	—	31	22	84	—	—
Hiller	Club	111	17	—	102	—	—
ID517	HR	116	21	—	103	—	—
ID 550	HW	77	46	—	83	—	—
Kansas FT31	Triticale	113	—	—	93	—	—
MacVicar	SW	—	45	—	—	—	—
Malcolm	SW	122	—	—	—	—	—
OR 850513-19	HW	122	—	24	93	—	—
OR 850513-8	HW	104	—	27	89	—	—
OR 941899	SW	96	49	—	87	—	—
Rhode	Club	95	42	—	100	—	—
Rifle	Rye	130	—	—	88	—	—
Rod	SW	136	59	—	96	—	—
Trial Mean		107	45	24	95	67	—
CV		16	31		10	avg	
PLSD (0.05)		27	23		14		
PLSD (0.10)		23	19		12		
Pr > F		0.00	0.00		0.00		

¹ All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 30 seeds/ft². for all locations except Moro and Pendleton where seeding rate was 20 seeds/ft².

² SW-soft white, HW-hard white, HR-hard red.

³ Only one replication harvested due to planting error.

Table 3. 1999-2001 statewide variety testing program winter wheat yield data for Columbia Basin locations.

Variety or Line ¹	Market class ²	Site Location					Across site average
		Hermiston	LaGrande ³	Lexington ⁴	Moro	Pendleton	
-----Yield (60 lb. bu/acre @ 10% moisture)-----							
1999							
Boundary	HR	73	47	—	62	87	67
Coda	Club	80	67	—	69	96	78
Foote	SW	25	28	—	52	74	45
Hiller	Club	70	38	—	64	91	66
Madsen	SW	70	63	—	66	96	74
Madsen+Stephens mix	SW	79	53	—	59	80	68
OR 939526	SW	84	64	—	65	92	76
Rely	Club	75	26	—	61	87	62
Rod	SW	96	61	—	64	92	78
Rohde	Club	64	41	—	66	78	62
Stephens	SW	72	47	—	63	85	67
Temple	Club	61	33	—	64	92	63
Weatherford	SW	92	58	—	60	85	74
Trial average (bu/acre)		72	48	—	63	87	68
							0
2000							
Boundary	HR	97	109	34	52	115	81
Coda	Club	112	118	37	51	110	86
Foote	SW	86	124	27	35	104	75
Hiller	Club	114	126	34	56	132	92
Madsen	SW	131	98	36	58	116	88
Madsen + Stephens mix	SW	138	114	36	57	117	92
OR 939526	SW	133	140	42	57	132	101
Rely	Club	99	126	38	47	116	85
Rhode	Club	93	131	42	57	118	88
Rod	SW	117	145	36	55	132	97
Stephens	SW	128	133	39	72	113	97
Temple	Club	104	132	43	43	116	88
Weatherford	SW	135	108	37	53	111	89
Trial average (bu/acre)		114	123	37	53	118	89
							0
2001							
Boundary	HR	112	—	—	25	87	—
Coda	Club	103	62	—	25	80	68
Foote	SW	101	17	—	25	98	60
Hiller	Club	111	17	—	—	102	—
Madsen	SW	108	67	—	25	85	71
Madsen+Stephens mix	SW	114	45	—	23	96	70
OR 939526	SW	118	54	—	23	91	72
Rely	Club	81	42	—	23	95	60
Rod	SW	136	59	—	—	96	—
Rohde	Club	95	42	—	—	100	—
Stephens	SW	128	25	—	23	100	69
Temple	Club	128	16	—	23	93	65
Weatherford	SW	114	58	—	25	92	72
Trial average (bu/acre)		111	42	—	24	93	68

Table 3 (continued). 1999-2001 Winter wheat yields for varieties tested at Columbia Basin locations.

Variety or line ¹	Market class	Site Location					Across site average
		Hermiston	LaGrande ³	Lexington ⁴	Moro	Pendleton	
----- Yield (bu/acre @ 10% moisture)-----							
<u>1999-2001</u>							
Boundary	HR	94	—	34	46	96	—
Coda	Club	98	82	37	48	95	72
Foote	SW	71	56	27	37	92	57
Hiller	Club	98	60	34	—	108	—
Madsen	SW	103	76	36	50	99	73
Madsen+Stephens	SW	110	71	36	46	98	72
OR939526	SW	112	86	42	48	105	79
Rely	Club	85	65	38	44	99	66
Rod	SW	116	88	36	—	107	—
Rohde	Club	85	71	42	—	99	—
Stephens	SW	109	68	39	53	105	75
Temple	Club	98	60	43	43	100	69
Weatherford	SW	114	75	37	46	93	73
1999-2001 average (bu/acre)		99	71	37	46	100	71
<u>1999-2001</u> ----- Yield expressed as percent of trial average-----							
Boundary	HR	95	—	92	100	96	96
Coda	Club	99	115	101	104	95	103
Foote	SW	72	79	72	80	92	79
Hiller	Club	99	85	93	—	108	96
Madsen	SW	104	107	96	109	99	103
Madsen+Stephens	SW	111	100	98	100	98	101
OR939526	SW	113	121	114	105	105	112
Rely	Club	86	92	103	96	99	95
Rod	SW	117	124	97	—	107	111
Rohde	Club	86	100	113	—	99	99
Stephens	SW	110	96	106	115	105	106
Temple	Club	99	85	115	93	100	98
Weatherford	SW	115	106	100	100	93	103

¹ All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 20 seeds/ft² for all locations except Hermiston and LaGrande where seeding rate was 30 seeds/ft².

² SW-soft white, HW-hard white, HR-hard red.

³ LaGrande trials were damaged by hail storms on June 24, 1999.

⁴ Lexington site data were too variable to report in 1999. Lexington site data were lost in 2001 due to equipment problem.

Table 4. 2001 winter barley yields for varieties tested at Columbia Basin locations.

Variety or line ¹	Market class ²	Site location				Across site average	Across site % of average
		Hermiston	LaGrande	Lexington	Pendleton		
		Yield (lbs/acre @ 10% moisture)					
88Ab536	6RM	4804	2587	1709	3963	2836	83
Kab-37	6RF/M	4069	2554	1153	5047	3100	91
Kold	6RF	4266	2664	1667	5661	3664	107
Scio	6RF	4327	2780	1201	5615	3408	100
Stab-113	6RF/M	3948	2176	1687	5400	3544	104
Stab-47	6RF/M	4556	2283	1396	4528	2962	87
Stab-7	6RF/M	4718	2734	1555	4783	3169	93
Strider	6RF	4527	2410	2690	5774	4232	124
Trial Mean		4402	2523	1632	5096	3413	
CV		22	22	25	7		
PLSD (0.05)		ns ³	ns	726	633		
PLSD (0.10)		ns	ns	596	520		
Pr > F		0.95	0.86	0.01	0.00		

¹ All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 20 seeds/ft² for all locations except Hermiston and LaGrande, where seeding rate was 30 seeds/ft².

² 6RF-six-row feed; 6RF/M-six-row being assessed for feed and malting use.

³ ns-not significant

Table 5. 1999-2001 winter barley yields for varieties tested at Columbia Basin locations.

Variety ¹	Market class ²	Site location				Pendleton	Across site average
		Hermiston	LaGrande ³	Lexington ⁴	Moro		
		Yield (lbs/acre @ 10% moisture)					
<u>1999</u>							
Kold	6RF	4220	—	—	2346	4672	4783
Scio	6RF	3940	—	—	3430	5628	5355
Strider	6RF	3793	—	—	2687	5564	4221
Trial average (lb/acre)		3985	—	—	2821	5288	4598
<u>2000</u>							
Kold	6RF	4421	5739	2192	2411	5456	4044
Scio	6RF	5491	6584	2138	2875	4929	4403
Strider	6RF	5683	5874	2544	3192	5831	4625
Trial average (lb/acre)		5198	6065	2291	2826	5405	4357
<u>2001</u>							
Kold	6RF	4266	2664	1667	—	5661	3565
Scio	6RF	4327	2780	1201	—	5615	3481
Strider	6RF	4527	2410	2690	—	5774	3850
Trial average (lb/acre)		4373	2618	1853	—	5683	3632
<u>1999-2001 average</u>							
Kold	6RF	4302	4202	1929	2378	5263	3615
Scio	6RF	4586	4682	1669	3152	5391	3896
Strider	6RF	4668	4142	2617	2940	5723	4018
1999-2001 average (lb/acre)		4519	4342	2072	2823	5459	3843

¹ All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 20 seeds/ft² for all locations except Hermiston and LaGrande, where seeding rate was 30 seeds/ft².

² 6RF-six-row feed; 6RF/M-six-row being assessed for feed and malting use.

³ LaGrande site was damaged by hail in 1999.

⁴ Lexington site data were too variable to report in 1999. Site data were lost to equipment problem in 2001.

Table 6. 2001 spring soft wheat and spring oat yields for varieties tested at Columbia Basin locations.

Variety or line ¹	Market		Site location				Pendleton ³	Across site average	Across site % of average
	class ²	Hermiston	LaGrande	Lexington	Moro	Across site average			
-----Yield (60 lb, bu/acre @ 10% moisture)-----									
Alpowa	SW	78	66	16	31	33	45	102	
Alpowa (no Gaucho)	SW	97	57	18	25	21	44	99	
Alpowa (untreated)	SW	99	64	20	30	21	47	106	
Challis	SW	73	58	19	27	18	39	89	
IDO 526	SW	74	61	18	29	24	41	94	
Jefferson	HR	88	72	25	38	50	55	124	
Jubilee (IDO 525)	SW	91	55	22	31	13	42	96	
Penawawa	SW	92	52	21	36	19	44	100	
Treasure	SW	80	56	22	31	24	43	97	
WA 7884	SW	91	63	17	37	35	49	110	
WA 7902	Club	89	65	13	38	23	46	104	
Wawawai	SW	85	64	18	35	50	50	115	
Zak (WA 7850)	SW	87	57	18	32	57	50	114	
Cayuse	Oat	61	53	21	31	51	43	99	
Lamont	N Oat	67	30	13	22	35	33	76	
Provena	N Oat	74	30	9	24	33	34	77	
Whitebird	SW	97	47	18	35	—	—	—	
Winsome	HW	97	60	21	28	—	—	—	
IDO 556	Club	—	—	19	31	25	—	—	
Trial Mean		84	56	18	31	31	44	—	
CV		21	11	16	15	9			
PLSD (0.05)		ns ⁴	10	5	8	5			
PLSD (0.10)		ns	9	4	7	4			
Pr > F		0.33	0.00	0.00	0.00	0.00			

¹ All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 20 seeds/ft² for all locations except Hermiston and LaGrande where seeding rate was 30 seeds/ft².

² SW-soft white, HW-hard white, HR-hard red, N Oat-naked oat. HR and HW entries included as checks.

³ Yields reflect damage done by Hessian fly.

⁴ ns-not-significant.

Table 7. 2001 hard spring wheat yields for varieties tested at Columbia Basin locations.

Variety or line ¹	Market class ²	Site Location							Across site average	Across site % of average
		Hermiston	LaGrande	Lexington	Moro	Pendleton ³	Moro	Pendleton ³		
-----Yield (60 lb, bu/acre @ 10% moisture)-----										
Alpowa	SW	100	63	19	32	34	34	34	50	110
Hank	HR	107	66	16	35	46	46	46	54	120
IDO 377S	HW	78	54	15	33	17	33	17	39	88
IDO 545	HR	71	49	14	30	42	30	42	41	92
IDO 557	HR	86	68	19	37	21	37	21	46	103
Iona	HR	79	53	16	34	21	34	21	41	90
Jefferson	HR	91	61	20	34	48	34	48	51	113
Lolo (IDO 533)	HW	86	67	18	35	29	35	29	47	104
OR 4910028	HR	71	65	16	34	43	34	43	46	102
Penawawa	SW	84	48	18	37	23	37	23	42	93
Scarlet	HR	90	58	17	35	24	35	24	45	100
Sunco	HW	78	58	18	31	20	31	20	41	91
Tara (WA 7824)	HR	72	61	12	30	33	30	33	42	92
WA 7839	HR	75	69	19	36	37	36	37	47	105
WA 7899 (Macon)	HW	94	53	18	34	42	34	42	48	107
WA 7901	HW	76	58	15	31	25	31	25	41	91
Winsome	HW	77	65	20	35	25	35	25	44	99
WPB 936	HR	93	65	12	31	18	31	18	44	97
Yecora Rojo	HR	88	67	19	35	30	35	30	48	106
IDO 560	HR	99	60	—	—	—	—	—	—	—
OR 4920002	HR	—	57	—	—	34	—	34	—	—
WA 7900	HW	84	63	20	33	—	33	—	—	—
Winsome (high rate)	HW	84	52	21	37	—	37	—	—	—
Winsome (low rate)	HW	56	60	15	27	—	27	—	—	—
Trial Mean		83	60	17	33	31	33	31	45	—
CV		17	11	14	15	22	15	22	15	22
PLSD (0.05)		23	11	4	ns ⁴	11	ns ⁴	11	4	11
PLSD (0.10)		19	9	3	ns	9	ns	9	3	9
Pr > F		0.02	0.00	0.00	0.39	0.00	0.39	0.00	0.00	0.00

¹ Fertilized for desired hard wheat protein levels. All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 20 seeds/ft² for all locations except Hermiston and LaGrande, where seeding rate was 30 seeds/ft².

² SW-soft white, HW-hard white, HR-hard red. SW entries included as checks.

³ Yields reflect damage done by Hessian fly.

⁴ ns-not-significant.

Table 8. 1999-2001 spring wheat yields for varieties tested at Columbia Basin locations.

Variety or line ¹	Market class ²	Hermiston	LaGrande	Lexington	Moro	Pendleton	Across site average
-----Yield bu/acre @ 10% moisture-----							
1999							
Alpowa	SW	74	41	18	44	34	42
Alpowa (fungicide only)	SW	76	34	16	49	36	42
IDO377S	HW	87	58	19	45	36	49
Jefferson	HR	84	44	20	45	36	46
Penawawa	SW	80	48	17	43	36	45
Scarlet	HR	65	31	20	43	37	39
Wawawai	SW	77	26	21	39	35	40
Whitebird	SW	80	48	19	40	35	44
Winsome	HW	74	49	17	41	35	43
WPB936	HR	60	34	19	45	32	38
Yecora Rojo	HR	45	27	17	40	37	33
Trial average (bu/acre)		77	45	19	44	35	44
2000							
Alpowa	SW	52	118	28	52	41	58
Alpowa (fungicide only)	SW	57	113	30	52	38	58
IDO 377S	HW	43	107	34	50	49	57
Jefferson	HR	42	102	34	54	51	57
Penawawa	SW	48	106	23	52	25	51
Scarlet	HR	42	107	25	38	48	52
Wawawai	SW	47	104	24	44	55	55
Whitebird	SW	48	91	24	48	44	51
Winsome	HW	50	103	31	51	48	57
WPB 936	HR	44	102	21	51	33	50
Yecora Rojo	HR	51	104	25	50	32	52
Trial average (bu/acre)		46	102	26	46	43	53
2001							
Alpowa	SW	78	66	16	31	33	45
Alpowa (fungicide only)	SW	97	57	18	25	—	39
IDO 377S	HW	78	54	15	33	17	39
Jefferson	HR	88	61	20	34	48	50
Penawawa	SW	92	52	21	36	19	44
Scarlet	HR	90	58	17	35	24	45
Wawawai	SW	85	64	18	35	50	50
Whitebird	SW	97	47	18	—	—	32
Winsome	HW	56	60	20	35	25	39
WPB 936	HR	93	65	12	31	18	44
Yecora Rojo	HR	88	67	19	35	30	48
Trial average (bu/acre)		86	59	18	33	29	45

Table 8 continued. 1999-2001 spring wheat yields for varieties tested at Columbia Basin locations.

1999-2001 average							
Alpowa	SW	68	75	21	42	36	48
Alpowa (fungicide only)	SW	77	68	21	42	37	49
IDO 377S	HW	69	73	23	43	34	48
Jefferson	HR	71	69	25	44	45	51
Penawawa	SW	73	69	20	44	27	47
Scarlet	HR	66	65	21	39	36	45
Wawawai	SW	70	65	21	39	47	48
Whitebird	SW	75	62	20	44	39	48
Winsome	HW	60	71	23	42	36	46
WPB 936	HR	65	67	17	42	28	44
Yecora Rojo	HR	61	66	20	42	33	44
1999-2001 average (bu/acre)		69	68	21	42	36	47

1999-2001 average		----- Yield expressed as a percent of trial average-----					
Alpowa	SW	99	110	98	101	101	102
Alpowa (fungicide only)	SW	111	100	102	100	97	102
IDO 377S	HW	101	108	108	102	89	101
Jefferson	HR	103	102	117	106	119	109
Penawawa	SW	106	101	97	104	71	96
Scarlet	HR	95	96	98	92	96	95
Wawawai	SW	101	95	100	94	123	103
Whitebird	SW	109	91	97	105	103	101
Winsome	HW	87	104	108	101	95	99
WPB 936	HR	95	98	83	101	73	90
Yecora Rojo	HR	89	97	97	99	87	94

¹ All seed was treated with fungicide and insecticidal seed treatment unless otherwise noted. Seeding rate was 20 seeds/ft² for all locations except Hermiston and LaGrande, where seeding rate was 30 seeds/ft².

² SW-soft white, HW-hard white, HR-hard red.

Table 9. 2001 spring barley yields for varieties tested at Columbia Basin locations.

Variety or line ¹	Market class ²	Yield (bu/acre @ 10% moisture)					Across site	Across site
		Hermiston	LaGrande	Lexington	Moro	Pendleton	average	% of average
Bancroft	2RM	3780	2596	1259	2103	2572	2462	93
Othello (BCD 47)	2RF/M	4249	3438	1343	1970	2100	2620	99
Chinook	2RM	4402	4469	1603	1931	2710	3023	114
Farmington (Wa 9504-04)	2RF	3944	3753	1016	1988	2730	2686	101
Garnet	2RM	3891	3840	1281	2133	2668	2763	104
H3860224	2RF/M	4433	3405	1377	1809	2742	2753	104
Harrington	2RM	4300	3850	1170	1629	2805	2751	104
Morex	6RM	3115	3843	1365	1817	2020	2432	92
Orca	2RF	3499	4328	1587	1430	2187	2606	98
Stab-7	6RF/M	3766	3758	566	1173	1956	2244	85
Steptoe	6RF	4502	3812	1402	1624	2258	2720	103
Tango	6RF	3893	2411	1235	1481	1632	2130	80
Valier	2RF	5011	3701	1323	2071	2722	2966	112
WA 8682-96	6RF/M	4910	2875	1607	2335	2997	2945	111
Stab-113	6RF/M	3403	—	614	1524	1687		
Stab-47	6RF/M	4951	3824	837	1135	—		
Xena	2RF	4646	—	—	2212	2321		
Trial Mean		4158	3594	1224	1786	2381	2650	
CV		19	19	12	15	8		
PLSD (0.05)		1307	1122	241	452	303		
PLSD (0.10)		1087	933	200	376	252		
Pr>F		0.00	0.04	0.00	0.00	0.00		

¹ All seed was treated with fungicide and insecticide prior to planting unless otherwise noted. Seeding rate was 20 seeds/ft² at all locations except Hermiston and LaGrande, where seeding rate was 30 seeds/ft².

² 2R-two row, 6R-six row, F-feed, M-malt, F/M-may be considered for feed or malt

Table 10. 1999-2001 spring barley yields for varieties tested at Columbia basin locations.

Variety or line ¹	Market class ²	Hermiston LaGrande Lexington Moro Pendleton					Across site average
		-----Yield (lbs/acre @ 10% moisture)-----					
<u>1999</u>							
Bancroft	2RM	3796	1989	1176	3093	2943	2599
Chinook	2RM	3610	2754	1374	3322	2817	2775
Orca	2RF	2994	3281	1314	3071	2801	2692
Steptoe	6RF	3290	1650	1421	3641	3068	2614
Tango	6RF	3425	1770	1341	3617	2858	2602
Valier	2RF	4346	2318	1525	3284	3010	2897
Trial average (lb/acre)		3577	2294	1359	3338	2916	2697
<u>2000</u>							
Bancroft	2RM	3991	4951	1474	3241	2505	3232
Chinook	2RM	3827	6474	1569	3043	1843	3351
Orca	2RF	4097	5389	2101	2875	2126	3318
Steptoe	6RF	3995	6791	2297	3177	1940	3640
Tango	6RF	4187	4695	2288	3893	1852	3383
Valier	2RF	3216	4199	2111	3263	2496	3057
Trial average (lb/acre)		3886	5416	1973	3249	2127	3330
<u>2001</u>							
Bancroft	2RM	3780	2596	1259	2103	2572	2462
Chinook	2RM	4402	4469	1603	1931	2710	3023
Orca	2RF	3499	4328	1587	1430	2187	2606
Steptoe	6RF	4502	3812	1402	1624	2258	2720
Tango	6RF	3893	2411	1235	1481	1632	2130
Valier	2RF	5011	3701	1323	2071	2722	2966
Trial average (lb/acre)		4181	3553	1402	1773	2374	2657
<u>1999-2001 average</u>							
Bancroft	2RM	3856	3179	1303	2812	2673	2765
Chinook	2RM	3946	4566	1515	2765	2457	3050
Orca	2RF	3530	4333	1667	2459	2371	2872
Steptoe	6RF	3929	4084	1707	2814	2422	2991
Tango	6RF	3835	2959	1621	2997	2114	2705
Valier	2RF	4191	3406	1653	2873	2743	2973
Average yield 1999-2001 (lb/acre)		3881	3754	1578	2787	2463	2893
<u>1999-2001 average</u> -----Yield expressed as percent of trial average-----							
Bancroft	2RM	99	85	83	101	109	95
Chinook	2RM	102	122	96	99	100	104
Orca	2RF	91	115	106	88	96	99
Steptoe	6RF	101	109	108	101	98	103
Tango	6RF	99	79	103	108	86	95
Valier	2RF	108	91	105	103	111	104

¹ All seed was treated with fungicide and insecticide prior to planting unless otherwise noted. Seeding rate was 20 seeds/ft² at all locations except Hermiston and LaGrande, where seeding rate was 30 seeds/ft².

² 2R-two row, 6R-six row, F-feed, M-malt.