

STATE-WIDE CEREAL VARIETY TESTING PROGRAM TRIALS IN CENTRAL OREGON: 2002 RESULTS

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Abstract

Grain variety trials were conducted at Madras, Oregon, as part of the tenth year of a state-wide variety testing program. Winter wheat, triticale, and barley, and spring wheat and barley/oat trials were established. Soft spring wheat varieties were planted separately from hard spring wheat varieties to facilitate application of different nitrogen fertilizer rates. As groups, winter triticale (24 varieties) had the highest average yield (6,840 lb/acre) followed by winter wheat (46 varieties) (6,720 lb/acre), winter barley (8 varieties) (5,857 lb/acre), soft spring wheat (18 varieties) (5,100 lb/acre), hard spring wheat (28 varieties) (4,860 lb/acre), and spring barley/oat (8 barley and 4 oat varieties) (4,505 lb/acre). Lodging was a problem in the winter and spring barley/oat trials, but was moderate to limited in the other trials. Within each grain class, several varieties appear to be top performers across years. Growers are encouraged to carefully review prospective varieties for both yield and other desirable characteristics, such as grain quality, plant height, and resistance to disease and lodging.

Introduction

Cereals are an important rotational crop for central Oregon. Soft white wheat, historically, has been the most important species for grain, although hard red spring wheat acreage has dominated in the last three years. There has been some additional interest in triticale. Central Oregon is well situated to the markets in Portland, Oregon. Public and private Pacific Northwest plant breeders release new cereal varieties each year. To provide growers with accurate, up-to-date information on variety performance, a statewide variety-testing program was initiated in 1993 with funding provided by the Oregon State University (OSU) Extension Service, OSU Agricultural Experiment Station, Oregon Wheat Commission, and Oregon Grains Commission. Ten sites are included in the testing network. More than 50 varieties are tested each year at each site. Height, lodging, yield, test weight, 1000-kernel weight, and protein data are determined for all sites, including Madras. Other information is collected as time and labor allows. Data are summarized in extension publications and county extension newsletters as well as in other popular press media. Data for all trials are on the OSU Cereals Extension web page (<http://www.css.orst.edu/cereals>). For future reference, use the web page for earliest access to data, as trial results are posted as soon as they are available.

Materials and Methods

Plots (4.5 ft by 20 ft) were planted at a rate of 30 seeds/ft² (unless otherwise noted) in 6 rows spacing with an Oyjord plot drill. Winter cereal trials were planted on October 16, 2001. Spring trials were planted on April 12, 2002.

Soil samples were taken on April 5, 2002 and were analyzed by Agri-Check Laboratory at Umatilla, Oregon. Soil test results are presented in Table 1. The nitrogen supply goal for winter wheat and triticale is 200 lb N/acre. The nitrogen supply goal for hard spring wheat is 320 lb N/acre and 160 lb N/acre for soft spring wheat. The nitrogen target for winter and spring barley is 100 lb N/acre.

Table 1. Soil test results from samples taken on March 15, 2002, for the winter wheat, winter triticale, and winter barley, state-wide variety test trial, at COARC, Madras, Oregon.

Soil depth (inch)	pH	NO ₃ (lb/acre)	NH ₄ (lb/acre)	P (ppm)	K (ppm)	S (ppm)
0-12	7.1	37	13	43	501	11.5
12-24	7.4	71	12	31	444	12.7
0-24 Total		108	25			

Table 2. Soil test results from samples taken on April 5, 2002, for spring wheat and barley state-wide variety test trial, at COARC, Madras, Oregon.

Soil Depth (inch)	pH	NO ₃ (lb/acre)	NH ₄ (lb/acre)	P (ppm)	K (ppm)	S (ppm)
0-24	6.9	104	13	35	467	9.6

The winter wheat and triticale variety trials were fertilized with 350 lb/acre of 30-10-0-7 on March 25, 2002. Total nitrogen (soil + fertilizer N) available to the plants was 213 lb/acre. The hard spring wheat variety trial was fertilized with 530 lb/acre of 30-10-0-7 on April 15, 2002. An additional 60 lb/acre nitrogen was top-dressed at boot stage, on June 7, 2002. Total nitrogen (soil + fertilizer N) available to the plants was 319 lb/acre. Soft spring wheat was fertilized with 250 lb/acre of 30-10-0-7 on April 15, 2002. Total nitrogen available to the plants was 219 lb/acre. The spring barley/oat variety trial was not fertilized. Total nitrogen (soil + fertilizer N) available to the plants was 104 lb/acre. Only soil NO₃ is used for the nitrogen budget, in addition to the applied nitrogen.

Weed control for the trials included applying 1.5 pints/acre of 2,4-D, on April 26, 2002 on the winter wheat, triticale, and barley variety trial; 0.75 pints/acre of 2,4-D and 0.75 pints/acre Starane® on May 29, 2001 to the spring wheat and spring barley/oat variety trial.

The trials were irrigated as needed with a 30 ft by 40 ft spacing, solid-set sprinkler (9/64 inch Rainbird® nozzles) irrigation system. Date of first irrigation for the winter wheat, triticale, and barley variety trials occurred on April 16, 2002, and for the spring wheat and spring barley variety trials on April 17, 2002. The last irrigation for the winter wheat, triticale, and barley variety trial occurred on July 2, 2002; on July 11, 2002 for spring barley/oat variety trial, and on July 29, 2002 for spring wheat variety trials.

Heading dates were recorded when 50 percent heading occurred. Just prior to harvest, lodging scores (percent of plot) and plant height (inches) measurements were taken. The

trials were harvested with a Hege plot combine. Harvest date for the winter wheat and triticale variety trial was August 14; spring wheat and triticale variety trial was August 16; and spring and winter barley/oat variety trials was August 15, 2002. The grain samples were shipped to the OSU Hyslop Farm at Corvallis and the grain was cleaned on a Peltz rub-bar cleaner. Plot yield, test weight, protein, moisture, and 1000-kernel weight were all determined on cleaned grain samples. All cereal yields are reported on a 10-percent moisture basis. The wheat and triticale yields are reported on a bu/acre basis (60 lb/bu), and barley yields are reported as lb/acre. Protein and moisture levels were determined using a whole-grain, near infrared protein analyzer. Proteins are reported on a 12-percent moisture basis.

Results and Discussion

Weed control was excellent in all trials, with the exception of the hard spring wheat trial. There was a heavy, unevenly distributed, infestation of wild oats in the center of two replications.

There were some temperature extremes during the growing season worth noting. May 3, 4, 6-8, 14-16 recorded freezing temperatures from 22 to 32°F and June 7 and 8 were at 32°F. High temperatures on June 25 and 26 reached 93 and 97°F. July 10-13 saw high temperatures of 99-103°F.

Winter Wheat and Triticale Trial

The winter wheat and triticale trial average yield was 112 bu/acre and yields ranged from 71 to 132 bu/acre (Table 3). The top-yielding variety/line in the trial was OR941904. For the top-yielding 12 entries, OR941904 to 'Madsen'/'Stephens' mix (a range of 132 bu/acre to 121 bu/acre), there were no significant differences between these varieties. There needed to be an 11 bu/acre ($P = 0.10$) difference for varieties to be significantly different from each other.

The highest yielding line/variety for each class was for soft white, OR 941904 (132 bu/acre); for club wheat, 'Rohde' (131 bu/acre); for hard red wheat, IDO 517 (118 bu/acre); for hard white, OR850513 (111 bu/acre); for durum, 'Connie' (92 bu/acre); and for triticale, 'Bogo' (116 bu/acre).

Because of the lower yields and stresses that occurred this year, some of the club wheat varieties were among the highest yielding varieties. Yields for the two triticale varieties, 'Bogo' and 'Alzo', were dramatically reduced from previous years' trials. A number of the usually higher yielding varieties were lower in comparison to previous years as well. The Idaho Clearfield wheat varieties were among the top-yielding varieties. Given the similarity in yields for the leading varieties, selections should be made based on traits such as disease and lodging resistance, plant height, grain quality, or other desired characteristics.

Average plant height was 36 inches and average lodging was 14 percent for the trial. The numerical yield leader, OR 941904 did not lodge, while 'Stephens' had 20% lodging by comparison. Nine of the varieties/lines did not lodge.

Average grain protein was 11.2 percent. The protein percentage range for the different classes and species were triticale, 12.6 to 12.8; club wheat, 10.3 to 11.3; hard red wheat, 11.1 to 12.2; durum 12.2; and soft white wheat, 9.7 to 12.9. 'Hubbard' was an interesting entry; it was one of the top yielders with only 9.7 percent protein content. Optimum grain yield occurs at approximately 10.5 percent protein for soft white winter wheat and 11.5 percent for hard red wheat and is an indicator of sufficient nitrogen supply for yield. Based on this year's yield occurrence, it would appear that the trial was over-fertilized for most of the soft white yields produced, but under-fertilized for the hard red, hard white, and durum entries to make marketable protein content of 12, 13, and 15 percent, respectively. There were few cultivars that did not make 10.5 percent protein content. There were significant differences between varieties.

The range in heading dates was from 147 to 158 days from January 1. Fifty percent heading occurred during the very last part of May and first week or so of June.

Test weights averaged 58.4 lb/bu and ranged from 61.2 lb/bu for a high (OR 941904), to 54.6 lb/bu for a low ('Alzo' triticale). There were significant differences between varieties.

The average 1000-kernel weight was 28.8 g with a range of 23.3- 35.0 g. There were significant differences between varieties. The average future seeding rate (30 seeds/ft²) for the seed produced would be 82.9 lb/acre with a range of 67.1 lb/acre to 100.8 lb/acre. One could under-plant or over-plant by 22 percent if the average seeding rate (lb/acre) was used.

Winter Triticale Trial

The winter triticale variety trial average yield was 114 bu/acre and yields ranged from 68 to 138 bu/acre (Table 4). The winter triticale variety and the winter wheat variety trial average yields were similar. There was clearer separation between the top-yielding varieties in the triticale trial than in the winter wheat trial. The top three entries were the same statistically, 'Elan' at 138 bu/a, to 'Titan' at 125 bu/acre (PLSD 0.10 = 14 bu/acre). Many of these varieties, which have shown outstanding yield potential, are from Poland.

As yield has increased in the triticale cultivars, protein contents have decreased (nitrogen dilution). This year, though, average protein content was up dramatically to 12.3 percent from last year's 9.5 percent. This was a clear reflection of the reduced yield. Yield was dramatically lower than in previous years.

Test weight average was 55.8 lb/bu, slightly lower than the 2001 trial. The highest test weights recorded this year were for two experimental lines at 58.2 and 58.6 lb/bu.

The average 1000-kernel weight was 30.8 g with a range of 26.4- 34.7 g. There were significant differences between varieties. The average future seeding rate (30 seeds/ft²) for the seed produced would be 88.7 lb/acre, with a range of 76.0 lb/acre to 99.9 lb/acre. Depending upon cultivar, one could under-plant or over-plant by 11 percent if the average seeding rate was used. In past trials this difference has usually been greater.

‘Fidellio’ was the last variety to head out, which is same heading date as ‘Stephens’. The earliest heading date was 7 days earlier (MLPT01-98) than ‘Fidellio’. Great strides have been made in breeding earlier heading triticale cultivars.

Spring Hard Wheat Trial

In contrast to the winter trials where soft white varieties dominate, hard white and hard red lines tend to have higher yields in the spring trials. Hard spring wheat was managed to optimize grain protein concentrations.

‘Brooks’ was the highest yielding entry (100 bu/acre) and met protein requirements with 14.5% protein. The hard spring wheat trial average yield was 81 bu/acre and yields ranged from 54 to 100 bu/acre (Table 5). There was no significant difference (P = 0.10 level) between any of the cultivars and yet there was a range of 54 -100 bu/ac yield difference. The most reasonable explanation for no differences in statistical yield, points to the uneven infestation of wild oats growing across two of the three reps in the trial, which more than likely created a large range of yield differences within the three plots that represented a single cultivar. There may have been some irrigation problems based on the data and visual appearance of the trial

It is also difficult to discuss the differences between the ‘Yecora Rojo’ seeding rate entries, because there were no differences statistically between yields for any of the entries. But the 20, 30 (two entries), and 40 seeds/ft² were all within 7 bushels of each other (83-90 bu/acre). The 10 seeds/ft² entry yielded 74 bu/acre. The infestation of wild oats was not documented within each plot to determine any correlations between severity of wild oat plants vs. yield (or any other agronomic characteristic).

Average test weight was 60.7 lb/bu. Average protein concentration was 14.8% compared to last year’s hard spring average of 12.3%. The range of protein contents was 14.2-16.1 percent. The 1000-kernel weight averaged 34.1g with a range of 29.3-38.2 g. For future planting of the seed produced for these varieties, the seeding rates (30 seeds/ft²) would average 99.1 lb/ac with a range between 84.4 to 110.0 lb/ac. One could under-plant or over-plant by 15 percent, if the average seeding rate was used. There were no significant differences between cultivars.

Average heading date was 171 days from January 1 with a range of 167-175 days.

Average height was 29 inches. ‘Yecora Rojo’ averaged about 23 inches in the trial. The tallest cultivar was ‘WA 007859’ at 37 inches.

None of the cultivars lodged in the trial.

Soft Spring Wheat Trial

The soft spring wheat variety trial average yield was 85 bu/acre and the yields ranged from 66 (ML 411-1-12) to 105 bu/acre (IDO 526) (Table 6). There were no significant differences between varieties for yield. Among soft white lines, there has been high yield variability from year to year. 'Alturas' (tested as IDO 526) and 'Whitebird' have been among the most consistent of the high-yielding lines/varieties over the years. 'Alturas' and 'Jubilee' (Idaho release) are high yielding, low protein, and high-quality performers in Idaho trials. 'Alturas' has performed well at Madras and has good resistance to lodging and excellent stripe rust resistance. 'Jubilee' has not performed as well. 'Challis', 'Treasure', 'Whitebird', and 'Penawawa' are other soft white lines that have good yield potential in central Oregon. 'Challis' and 'Treasure' yield well under irrigation and have good resistance to lodging.

'Trical 96' was the highest yielding triticale entry at 102 bu/acre. WA 007902 was the highest yielding club at 102 bu/acre. 'Jefferson' was the highest yielding hard red at 86 bu/acre. 'Winsome', the hard white check for the trial, yielded 74 bu/acre. The yield rouge was 54-100 bu/acre and there was no significant difference between varieties for yield. There were significant differences between varieties for test weight.

'Alturas', WA 007902, 'Alpowa', WA 007905, 'Jubilee', and 'Penawawa' all had protein contents less than 12% and lower than the mean (12.4 percent) of the trial. 'Jefferson', a hard red cultivars, made 14.1% protein content. All of the classes of wheat cultivars in the trial exceeded the protein content for optimum yield, so it would appear that nitrogen fertility was too high and there may have been some irrigation problems based on the data and visual appearance of the trial.

The range of 1000-kernel weight was 24.7-36.7 g; the average was 31.1 g. There were significant differences between varieties. For future planting of the seed produced, the seeding rates (30 seeds/ft²) of all of the varieties would average 89.6 lb/acre and would range between 71.1 to 105.7 lb/acre. One could under plant or over plant up to 18 percent depending upon variety if the average was used.

None of the varieties lodged. Average height of the varieties was 32 inches. 'Alturas' is 4 inches taller (36 inches) than 'Penawawa'. 'Jubilee' was the average of the trial. There was a range of 168 – 178 days for heading date.

Spring Barley/Oat

Spring barley data are presented in Table 7. The average yield for spring barleys was 4,505 lb/acre and ranged from 4,903 to 6,092 lb/acre. Yield was up considerably from last year. There were no significant differences (P = 0.10 level) between the top five yielding barley varieties, 'Farmington', 'Xena', 'Samish 23', 'Harrington', and 'Orca'. The four oat varieties were the lowest yielding of the trial, ranging from a low of 983 lb/acre to 3,602 lb/acre. 'Garnet' (2R) is a feed variety that shows potential as malting

barley but is pending further testing. 'Garnet' competes favorably in yield with existing two-rowed varieties. The trial was managed for barley.

The varieties lodged an average of 33 percent. The range for the barley varieties was from 17 ('Orca') to a high of 78 percent ('Bancroft'). There was very little lodging for the oat varieties. Average height was slightly higher compared to 2001.

There was a significant difference between entries. None of the barley entries were different from each other. There were differences between oat varieties. Test weights were lower compared to 2001.

Average protein content was 14.5 percent for the trial, with the protein contents ranging from 10.6 to 12.5 percent. 'Xena' was significantly lower in protein than 'Farmington', 'Samish 23', 'Bancroft', and 'Chinook', but equal to 'Harrington', 'Orca' and 'Garnet'. The four oat varieties had protein contents ranging from 17.9 to 23.5 percent.

The 1000-kernel weight averaged 34.2 g with a range of 31.1- 44.1 g for barley (38.8 g average) and 18.7- 28.7 g for oat (25.2 g average). The seeding rate for 30 seeds/ft² for the seed produced would average 98.5 lb/acre with a range of 89.5 lb/acre to 127.0 lb/acre for barley; and would average 72.6 lb/acre and range from 53.8 to 82.6 lb/acre for oat. One could under-plant or over-plant 30 percent for barley or 14 percent for oat cultivars if the average seeding rate is used, depending upon the variety.

Winter Barley

The data for the winter barley are presented in Table 8. The average yield was 5,857 lb/acre and ranged from 2,213 to 8,184 lb/acre. There were significant differences between the cultivars. 'Strider' has been one of the higher yielding varieties but has been prone to lodging. 'Scio' has been a high yielder and normally shows good resistance to lodging, but had lower test weight than the rest of the varieties. The yield of 'Kold' was consistent with last year's yield.

The test weight averaged 52.7 lb/bu with a range of 48.9 - 54.6 lb/bu. 'Scio' had the lowest test weight of 48.9 lb/bu. All of the lines/cultivars had more than adequate test weight.

Average protein content was 8.3 percent with a range of 7.3 - 10.7 percent. From a protein standpoint, the trial may have been under-fertilized. One likes to see 11.5 percent protein for feed barley (especially if used for swine).

Average 1000-kernel weight was 35.1 g with a range of 32.5 - 39.6 g. There were significant differences between varieties. The future seeding rates (30 seeds/ft²) for the varieties would average 101.0 lb/acre with a range of 93.6 - 114.0 lb/acre. One would under-plant or over-plant by 14 percent if the average seeding rate was planted, depending upon the variety planted.

Average height was 33 inches with a small range of 32 - 34 inches.

The average heading date was 142 days from January 1, with a range of 138 - 149 days.

Lodging averaged 20 percent with a range of 2 - 50 percent. 'Scio', 'Kold', and 'Stab-7' lodged very little.

Table 3. 2002 Statewide variety testing program for winter wheat at Madras, OR.

Variety or line ¹	Market class ²	Yield (bu/acre)			2002 Data					
		2002	2001	2000	Test wt. (lb/bu)	Protein (%)	1000 KWT ³ (g)	Heading (doy)	Height (inch)	Lodging (%)
OR 941904	SW	132	-	-	61.2	10.7	32.0	150	35	0
Rohde	Club	131	121	124	59.0	10.3	29.6	156	34	12
IDO 587	CF-SW	130	-	-	58.8	10.3	31.7	150	33	0
Rely	Club	128	121	122	58.6	10.7	33.0	150	34	7
Temple	Club	127	118	127	58.7	11.3	33.1	150	34	13
OR 941550	SW	127	-	-	57.0	11.1	29.3	155	37	5
Lambert	SW	125	-	-	58.4	10.6	32.8	152	38	1
Chukar	Club	123	-	-	57.4	10.3	24.8	155	37	13
IDO 588	CF-SW	122	-	-	59.3	10.7	30.1	150	34	8
Madsen	SW	122	120	141	57.9	11.1	27.3	156	36	2
Stephens	SW	121	113	151	60.4	10.4	26.3	156	37	20
Madsen/Stephens Mix	SW	121	128	162	57.8	11.2	29.9	151	34	5
ARS 96277	SW	120	-	-	60.3	10.8	32.6	153	35	0
Hubbard	SW	120	116	-	59.2	9.7	28.2	154	34	0
ID 9134302A	SW	120	-	-	59.8	10.7	27.5	154	36	15
IDO 517	HR	118	135	-	60.4	11.0	30.9	150	34	0
Malcolm	SW	118	126	-	59.0	11.0	30.1	152	35	1
Hiller	Club	117	131	138	58.2	11.1	28.5	156	41	0
Bogo	Trit	116	132	163	55.0	12.6	28.2	147	42	3
Gene	SW	116	-	-	56.7	10.5	26.1	156	34	1
OR 2010010	CF-SW	116	-	-	58.8	11.4	31.1	149	33	5

Weatherford	SW	115	125	150	59.3	11.6	28.3	155	37	2
Boundry	HR	115	125	120	62.6	11.1	30.7	154	35	7
OR 951431	SW	115	-	-	60.3	11.7	30.5	153	35	0
ID 17113A	SW	114	-	-	57.7	11.5	29.2	155	36	3
OR 2010051	CF-SW	113	-	-	57.5	11.6	30.2	152	35	15
Edwin	Club	113	102	106	57.8	11.3	26.7	158	37	2
Bruehl	Club	112	110	137	55.3	10.9	26.1	157	38	32
OR 850513	HW	111	-	-	61.3	10.2	29.4	151	34	15
Tubbs (OR 939526)	SW	111	128	149	59.7	10.1	28.6	156	38	35
OR 9900548	SW	111	-	-	59.7	10.4	29.6	155	36	0
Brundage 96	SW	106	135	-	56.8	11.0	26.2	154	34	7
Alzo	Trit	104	145	179	54.6	12.8	28.4	145	46	10
OR 942496	HW	104	-	-	56.1	12.7	26.5	155	35	7
Coda	SW	102	121	130	58.0	12.5	23.9	157	40	72
Finch	SW	101	-	-	58.6	11.5	33.0	150	38	13
Rod	SW	101	137	156	56.5	12.9	23.3	155	38	62
Gary	HW	100	-	-	57.7	11.2	31.8	150	30	0
NPBEX 001	CF-SW	99	-	-	57.6	12.3	24.9	154	35	5
IDO 571	HR	99	-	-	59.8	12.2	26.2	152	38	53
NPBEX 002	CF-SW	97	-	-	58.1	12.3	26.5	156	35	2
Connie	Durum	92	103	137	60.0	12.2	35.0	147	33	8
Foote	SW	91	117	136	55.6	10.9	25.7	156	39	78
IDO 576	SW	88	-	-	59.6	10.0	26.3	155	36	73
DW (IDO 513)	HW	85	-	-	59.5	12.8	24.8	156	41	32

Table 3 (Continued)

Variety or line ¹	Market class ²	2002 Data								
		Yield (bu/acre)	Test wt.	Protein	1000 KWT ³	Heading	Height	Lodging		
		2002	2001	2000	(lb/bu)	(%)	(g)	(doy)	(inch)	(%)
Yamhill	SW	71	107	-	55.1	11.9	29.7	156	40	12
Trial Mean		112	121	141	58.4	11.2	28.8	153	36	14
PLSD 0.05		20	24	17	2.3	2.1	3.4	avg	avg	avg
PLSD 0.10		11	20	14	1.9	1.7	2.9			
CV (%)		17	12	7	2.5	12	7.4			
P > F		0.00	<0.00	0.00	0.00	0.00	0.00			

¹All seed treated with fungicide and Gaucho (insecticide) prior to planting unless otherwise noted. Seeding rate was 30 seeds/ft² unless otherwise noted.

²HR = hard red, HW = hard white, SW = soft white, trit – tiritcale, doy = day of year, cl = clearfield,

³KWT – kernel weight

Table 4. 2002 Statewide variety testing program for winter triticale, Madras, OR.

Variety or line ¹	Market class ²	2002 Data								
		Yield (bu/acre)			Test wt. (lb/bu)	Protein (%)	1000 KWT (g)	Heading (doy)	Height (inch)	Lodging (%)
		2002	2001	2000						
Elan	Trit	138	177	-	56.9	11.8	34.3	144	38	0
RSI 1439-960 VG106 (K-106)	Trit	134	-	-	57.7	10.9	31.1	148	41	7
Titan	Trit	125	152	178	54.4	12.9	33.2	146	39	0
Kitaro	Trit	123	161	181	57.4	10.7	31.3	145	42	0
Enot	Trit	122	150	-	56.6	12.7	34.1	145	39	1
Sturdy	Trit	120	153	-	57.0	12.0	34.2	145	42	3
Décor	Trit	119	157	-	56.4	13.2	32.2	144	39	4
MLPT01-100	Trit	118	-	-	56.1	12.8	28.2	146	44	0
MLPT01-113	Trit	117	-	-	58.6	12.3	32.9	146	35	0
Stephens	SW	117	147	151	57.5	12.8	33.3	150	33	0
MLPT01-105	Trit	116	-	-	56.3	12.1	34.7	144	37	0
MLPT01-134	Trit	115	-	-	54.2	11.7	28.7	149	38	3
TRICAL 336	Trit	115	-	-	56.0	12.1	26.6	146	43	37
MLPT01-70	Trit	114	-	-	56.9	12.1	33.8	144	35	2
Fidellio	Trit	112	154	-	54.0	10.1	26.6	150	41	7
RSI 27029	Trit	112	-	-	56.9	11.0	28.8	145	42	0
Disko	Trit	111	156	-	53.7	12.5	29.9	148	43	0
MLPT01-98	Trit	110	-	-	58.2	11.6	30.7	143	38	4
Magnito	Trit	109	171	-	54.8	12.1	31.8	149	36	2
Alzo	Trit	107	134	185	52.5	12.7	27.7	149	44	0
MLPT01-116	Trit	105	-	-	53.6	12.9	26.4	148	39	2
Dictor	Trit	100	154	-	55.5	14.0	31.9	145	30	0
MLPT01-50	Trit	97	-	-	56.2	12.7	29.9	148	32	1
MLPT01-103	Trit	68	-	-	52.3	14.6	27.2	147	29	0
Trial Mean		114	155	161	55.8	12.2	30.8	146	38	3
PLSD (0.05)		17	15	25	1.4	2.1	2.7			
PLSD (0.10)		14	7.2	21	1.2	1.8	6.5			
CV		9	18	10	2	11	3	avg	avg	avg
Pr>F		0.00	0.00	0.00	0.03	0.00	0.00			

¹All seed treated with fungicide and Gaucho (insecticide) prior to planting unless otherwise noted. Seeding rate was 30 seeds /ft² unless otherwise noted

² Wtrit = winter triticale, doy = day of year, KWT = kernel weight

Table 5. 2002 Statewide variety testing program for hard spring wheat, Madras, OR.

Variety or line ¹	Market class ²	Yield (bu/acre)			2002 Data				
		2002	2001	2000	Test wt. (lb/bu)	Protein (%)	1000 KWT (g)	Height (inch)	Heading (doy) ³
Brooks	HR	100	95	119	60.8	14.5	34.2	26	170
Jefferson	HR	92	76	112	61.5	16.1	32.6	33	173
Hank	HR	92	90	98	59.8	14.6	36.5	29	171
Bonus	HR	90	108	122	59.9	14.2	36.6	25	168
IDO 557	HR	90	87	-	60.9	13.5	30.4	30	173
Yecora Rojo (5 row harvest)	HR	90	-	-	59.6	15.1	32.6	23	171
IDO 566	HR	89	-	-	60.9	14.9	33.8	28	169
WA 007900	HW	89	87	-	62.4	15.2	35.8	33	171
Penawawa	SW	87	86	121	60.9	14.7	32.5	29	173
ID 377S	HW	85	113	133	60.9	13.3	31.1	30	172
Iona	HR	85	72	-	60.9	15.7	31.6	34	174
Macon	HW	85	74	-	60.5	15.9	32.6	33	173
Pronto	HR	85	91	-	60.7	15.0	33.4	33	168
Yecora Rojo (20 seeds/ft ²)	HR	84	98	-	60.5	15.4	35.8	24	169
Yecora Rojo	HR	83	94	114	60.9	14.4	36.9	23	167
Yecora Rojo (40 seeds/ft ²)	HR	83	87	-	60.1	15.7	35.2	23	168
WPB 936	HR	80	89	117	59.7	14.7	36.0	27	170
ML 181, A-1-38	HW	79	94	-	60.1	14.9	35.2	29	170
Lolo	HW	78	78	122	61.5	14.9	35.5	29	172
Scarlet	HR	78	91	106	61.0	14.5	35.5	33	174
Sunco	HW	76	75	-	62.6	15.2	32.4	29	173
Winsome	HW	74	82	127	59.3	15.3	29.3	29	174
Yecora Rojo (10 seeds/ft ²)	HR	74	92	-	60.1	15.0	36.5	23	170
Alpowa	SW	72	96	-	61.5	14.3	33.7	33	175
OR 4970018	HW	70	-	-	62.2	14.6	33.8	33	172
Tara	HR	68	77	111	60.3	14.7	38.2	34	171
OR 4970025	HW	62	-	-	61.4	15.0	31.1	32	174
WA 007859	HR	54	-	-	59.9	14.6	35.7	37	172
Trial Mean		81	88	115	60.7	14.8	34.1	29	171
LSD (0.05)		NS	14.1	24	NS	NS	NS		
LSD (0.10)		NS	20.0	20	NS	NS	NS		
CV (%)		17	17	10	2	8	10.6	avg	avg
P > F		0.11	0.00	0.02	0.23	0.76	0.32		

¹ All seed treated with fungicide and Gaucho (insecticide) prior to planting unless otherwise noted. Seeding rate was 30 seeds/ft². unless otherwise noted

² HR = hard red, HW = hard white, SW = soft white, ³doy = day of year. KWT = kernel weight

Table 6. 2002 Statewide variety testing program for soft spring wheat, Madras, OR.

Variety or line ¹	Market class ²	Yield (bu/acre)			Test wt. (lb/bu)	2002 Data			
		2002	2001	2000		Protein (%)	1000 KWT (g)	Height (inch)	Heading (doy) ³
Alturas (IDO 526)	SW	105	115	116	62.1	11.8	32.7	36	175
Trical 96	Trit	102	-	-	56.2	11.0	31.7	28	167
WA 007902	Club	102	88	-	61.8	11.0	30.0	34	172
Alpowa	SW	97	75	114	62.1	11.8	33.0	36	175
WA 007905	SW	95	-	-	60.2	11.5	33.0	37	173
Jubilee	SW	90	81	117	61.7	12.0	29.7	33	174
Penawawa	SW	88	87	121	59.6	11.7	29.3	32	174
Challis	SW	87	94	122	60.6	12.5	32.0	32	174
Wawawai	SW	87	78	106	61.6	12.4	36.7	37	172
Jefferson	HR	86	100	112	62.2	14.1	34.7	30	170
Whitebird	SW	83	95	130	61.8	12.5	28.3	33	174
Zak	SW	81	85	108	61.4	14.2	34.3	27	173
IDO 556	SW	80	-	-	61.7	13.6	26.7	27	173
Trical 105	Trit	79	-	-	56.7	12.3	33.7	33	170
Winsome	HW	74	83	127	59.1	13.2	28.0	29	175
Castle	Trit	68	-	-	48.8	13.2	24.7	31	169
Trical 111	Trit	67	-	-	53.4	11.9	32.3	32	168
ML 411-2-12	SW	66	-	-	60.4	12.9	29.0	35	178
Trial Mean		85	80	115	59.5	12.4	31.1	32	173
LSD (0.05)		NS	26	24	1.6	1.8	3.0		
LSD (0.10)		NS	21	20	1.61.3	1.5	2.5		
CV (%)		22	19	10	2	9	6	avg	avg
P > F		.38	<0.00	0.02	0.00	0.02	0.00		

¹ All seed treated with fungicide and Gaucho (insecticide) prior to planting unless otherwise noted. Seeding rate was 30 seeds/ft², unless otherwise noted

² HR=hard red, HW= hard white, SW =soft white, ³doy=day of year. KWT – kernel weight

Table 7. Statewide variety testing program for spring barley, Madras, OR, 2002.

Variety or line ¹	Market class ²	2002 Data								
		Yield (lb/acre) ³			Test wt. (lb/bu)	Protein (%)	1000 KWT (g)	Height (inch)	Heading (doy) ⁴	Lodge (%)
		2002	2001	2000						
Farmington	2RF	6092	3186	-	54.0	12.4	37.2	28	174	22
Xena	2RF	5948	-	-	54.6	10.6	39.9	32	168	57
Samish 23	2RF/M	5887	-	-	53.6	12.5	31.1	29	175	22
Harrington	2RM	5608	3414	4481	54.6	11.4	37.5	31	169	67
Orca	2RF	5523	3855	3772	55.7	11.6	44.1	33	165	17
Garnet	2RM	5188	4762	4854	53.6	11.5	39.6	34	172	50
Bancroft	2RM	5162	3229	4097	54.9	12.2	41.8	35	169	78
Chinook	2RM	4903	4458	4309	55.2	12.2	39.0	32	169	73
Cayuse	Oat	3602	-	-	41.0	17.9	28.7	38	175	8
Monida	Oat	3273	-	-	45.6	16	26.4	39	176	6
Lamont	Oat	1887	-	-	44.9	22.3	26.9	41	177	0
Provena	Oat	983	-	-	51.2	23.5	18.7	37	177	0
Mean		4505	3757	4257	51.6	14.5	34.2	34	172	33
LSD (0.05)		1085	NS	944	4.6	1.9	5.6			
LSD (0.10)		898	909	784	3.8	1.5	4.6			
CV (%)		14	17	13	5	8	9.6	avg	avg	avg
Pr>F		0.00	0.10	0.00	0.00	0.00	0.00			

¹ All seed was treated with fungicide and Gaucho (insecticide) prior to planting unless otherwise noted. Seeding rate was 30 seeds/ft² unless otherwise noted.

² 2R= two row; 6R = six row; F= feed; M = malt; F/M = may be considered for malt; ³Adjusted to 10% moisture; ⁴day of year; KWT – kernel weight

Table 8. Statewide variety testing program for winter barley, Madras, OR, 2002.

Variety or line ¹	Market class ²	2002 Data								
		Yield (lb/acre) ³			Test wt. (lb/bu)	Protein (%)	1000 KWT (g)	Height (inch)	Heading (doy) ⁴	Lodge (%)
		2002	2001	2000						
Strider	6RF	8184	6410	-	52.9	8	39.6	32	140	25
Stab-113	6RF/M	7023	4534	-	53.6	7.3	33.1	33	138	37
Scio	6RF	6407	7473	-	48.9	8.8	36.0	32	141	3
Kold	6RF	6232	6310	-	54.2	7.6	34.4	34	141	2
Stab-7	6RF/M	5474	3904	-	53.7	8	32.5	32	140	7
Kab-37	6RF/M	5468	5177	-	54.6	7.5	36.0	32	143	15
Stab-47	6RF/M	2213	6066	-	51.6	10.7	34.0	34	149	50
Trial Mean		5857	5547		52.7	8.3	35.1	33	142	20
LSD (0.05)		1517	NS		1.6	1.3	2.1			
LSD (0.10)		1241	909		1.3	1	1.7			
CV (%)		15	17		2	9	3.3	avg	avg	avg
Pr>F		0.00	0.10		0.00	0.00	0.00			

¹ All seed was treated with fungicide and Gaucho (insecticide) prior to planting unless otherwise noted. Seeding rate was 30 seeds/ft² unless otherwise noted.

² RF= Feed; RM = Malt; F/M = being evaluated for malt; ³Adjusted to 10% moisture; ⁴day of year. KWT = kernel weight

