

IRRIGATED WINTER WHEAT VARIETY TRIALS FOR 1992¹

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Abstract

Separate soft white and hard red winter wheat variety trials were planted at COARC, Madras site in 1991. Yields were low in general with a high amount of lodging in both trials. Test weights and percent proteins were excellent.

Introduction

Two large trials of soft white and hard red winter wheat varieties were established at COARC Madras in 1991. Several new varieties were included this year that were not evaluated in the 1990 and 1991 trials. The next variety trial for winter cereals will be tested in the statewide variety testing program, beginning in the fall of 1992. The Oregon Grains Commission, Oregon Wheat Commission and the Oregon State University Experiment Station have put up funds to test released and near release cultivars at approximately 11 sites across the state of Oregon. COARC Madras will participate as one of the sites. With this program's funding, COARC will continue testing winter (and spring) cereals.

Materials and Methods

Separate soft white winter and hard red winter wheat variety trials were planted at COARC Madras site on October 18, 1991 with a cone type experimental drill (8-inch row spacing) into 5 x 20 ft plots. The experimental design was a randomized block with four replications. Seeding rate was 30 seeds/ft² (seeding rates in lb/ac are in Tables 2 and 4). The trials were fertilized with 200 lb N/ac and 60 lb S/ac with a gaudy type drop spreader on March 11, 1992. The first date of irrigation was April 18 and the last date was June 24 (the winter triticale trial's last date of irrigation was July 8). 5 x 15 feet area of the plot was harvested with a Hege plot combine on July 29, 30, and 31. All data are reported on an air dry moisture basis.

¹Dr. Randy Dovel and Greg Chilcoate of Klamath Experiment Station are gratefully thanked for processing the grain from these two trials.

Data collected includes yield, percent relative yield of Stephens, test weight, protein, hardness factor, protein yield, flower date (January 1 = 1), height, lodging, chaff, grain N uptake, and seeding rate. Protein percentage and hardness factor were predicted with near infrared reflectance spectrometry (NIRS) at the OSU Crop and Soil Science Dept.

Results and Discussion

Soft White Winter Wheat Trial

Data are reported in Tables 1 and 2. The trial mean yield was not impressive at 85.8 bu/ac. Basin was significantly higher yielding than all other cultivars except for Nugaines and OR 860302. Other varieties that yielded well above Stephens included Durham Pride, Rod (new WSU release), Cashup, Malcolm, Hill 81, Daws, Oveson, Madsen, and MacVicar. Just about every cultivar and line outyielded Stephens this year. Yields in an adjacent winter triticale trial were much greater, but Stephens as the check in that trial, yielded about the same. Weatherwise, the crop growth was a month ahead of normal. Lodging was high in the trial as the mean was 62 percent. Test weights and protein percentages were excellent in general, though a few protein levels were a little higher than they need to be to obtain top market price for soft white wheat. Basin, Nugaines, Durham Pride, Dusty, and KMor led the varieties in low protein in the range of 9.9 to 10.4 percent. There was a large range in heights. Note the shortness of Nugaines, Basin, and Gene in the 31 to 35 inch range. Basin and Nugaines stood well. Gene was 48 percent lodged. Rod, Daws, Oveson, and Madsen were in 29 to 33 percent lodged range. Stephens lodged at 85 percent. Seeding rates ranged from 69 to 127 lb/ac (planting 30 seeds/ft²).

Hard Red Winter Wheat Trial

Data are presented in Tables 3 and 4. Quantum 555 was the top yielder for cultivars at 93.9 bu/ac. Four experimental lines did outyield Quantum 555, although not significantly. Stephens yield was 84.3 bu/ac. Hoff yielded 78.6 bu/ac. Average lodging for the trial was 70 percent. Test weights were excellent with a mean of 61.8 lb/bu. Quantum 555 and Hatton had 64-pound plus test weights. Lowest test weight was Stephens at 58.0 lb/bu. Percent protein averaged 12.3 percent for the trial, with Tam 109 having the highest at 13.9 percent (very low yielder). Quantum 555 had acceptable protein at 12.1 percent. Stephens had the lowest protein, 11.1 percent. Ute was the shortest cultivar at 29 inches, but had a 90 percent lodging score. Tam 109 was short (34 inches), but had a 98 percent lodging score. Longhorn was the earliest flowering cultivar but was a poor yielder. Monopole, Hoff, and Batum were the least lodged cultivars. A few of the experimental lines stood very well. The seeding rates (30 seeds/ft²) ranged from 78 to 135 lb/ac.

Table 1. 1992 hard red and hard white winter wheat variety trial data for yield, percent relative yield of Stephens, test weight, percent protein, hardness and protein yield on plots established in 1991 at COARC, Madras, OR.

Variety	Yield bu/ac	% Rel Yield of Stephens	Test Weight lb/bu	Protein %	Hardness Factor	Protein Yield lb/ac
Stephens	84.3	100	58.0	11.1	33.3	560
Ute	84.3	100	60.6	12.1	82.0	611
Buchannon	70.7	84	61.3	11.8	86.1	499
Tam 109	42.8	51	62.8	13.9	72.4	357
Longhorn	78.6	93	63.9	13.2	81.4	621
QT 555	93.9	112	64.0	12.1	77.2	680
XNH 1401	69.1	82	62.8	13.4	79.7	554
Andrews	76.5	91	62.3	12.0	64.2	547
Hoff	78.6	93	62.8	12.9	80.9	604
Hatton	71.8	85	64.4	11.9	89.8	511
Wanser	70.1	83	62.0	11.8	82.0	497
Federation	70.2	83	60.0	11.7	44.9	494
Monopole	84.2	100	62.8	12.2	84.2	613
Batum	67.1	80	60.1	11.7	83.8	464
Tiber	69.0	82	62.0	13.0	71.2	538
OR8602	68.4	81	60.9	12.4	87.3	509
OR830282	81.9	97	61.0	12.5	85.4	615
ORCR8718	89.3	106	62.6	12.6	92.4	674
ORCR8617	96.8	115	61.6	12.3	84.1	715
ORCR8601	72.6	86	61.8	12.9	87.9	562
ORCR8300027	71.8	85	61.0	13.5	90.9	582
OR8302306	77.2	92	60.6	11.8	69.7	545
OR8522	91.5	109	61.0	11.9	76.3	650
OR8500513H	86.0	102	63.6	11.5	66.4	592
OR860126	98.7	117	63.0	11.4	91.3	676
OR860247	100.4	119	62.5	12.5	84.6	750
OR870834	81.6	97	59.0	11.3	46.7	552
OR870859	102.5	122	62.4	11.3	72.6	691
Redwin	73.5	87	62.6	13.8	85.6	606
Winridge	63.6	75	60.6	12.8	84.2	485
Mean	78.9	94	61.8	12.3	77.3	578
PLSD .10	10.9	13	1.1	0.8	7.3	85.0
PLSD .05	13.0	15	1.3	8.7	8.7	101
CV%	11.7	11.5	1.5	5.8	8.0	12.4

Table 2. 1992 hard red and hard white winter wheat variety trial data for flowering date, height, lodging, chaff, grain N uptake, and seeding rate on plots established in 1991 at COARC, Madras, OR.

Variety	Flower Date	Height in	Lodging	Chaff	Grain N Uptake lb/ac	Seeding Rate lb/ac
Stephens	147	35	68	9.1	98.3	113
Ute	147	29	90	6.7	107.2	85
Buchannon	147	41	100	9.7	87.6	120
Tam 109	143	34	98	11.9	62.6	94
Longhorn	140	39	65	7.6	108.9	104
QT 555	143	36	68	8.1	119.3	134
XNH 1401	145	43	96	6.4	97.2	125
Andrews	152	35	79	6.8	96.0	88
Hoff	145	39	58	7.6	105.9	109
Hatton	151	43	93	8.5	89.7	98
Wanser	147	45	99	9.7	87.1	101
Federation	149	41	85	10.8	86.7	107
Monopole	149	41	44	10.9	107.5	93
Batum	148	40	65	15.2	81.4	91
Tiber	148	45	83	9.1	94.4	94
OR8602	144	32	84	9.6	89.3	107
OR830282	145	36	73	10.9	107.9	114
ORCR8718	146	40	71	9.6	118.3	106
ORCR8617	144	35	39	8.1	125.5	92
ORCR8601	141	40	85	10.1	98.5	106
ORCR8300027	146	39	80	11.5	102.0	106
OR8302306	145	33	69	9.0	95.5	78
OR8522	149	36	25	6.4	114.0	83
OR8500513H	144	34	75	7.6	104.0	115
OR860126	147	37	36	8.0	118.6	110
OR860247	142	38	18	6.9	131.7	124
OR870834	145	37	86	7.7	96.9	100
OR870859	145	37	25	6.7	121.2	111
Redwin	149	46	54	7.5	106.3	107
Winridge	150	44	93	12.1	85.1	98
Mean	146.1	38	70	4.0	101.5	104
PLSD .10	one	2.0	19	1.5	14.8	range
PLSD .05	rep	3.0	23	1.8	17.7	78 - 135
CV%		5.2	23.1	13.9	12.41	

Table 3. 1992 soft white winter wheat variety trial data for yield, percent relative yield of Stephens, test weight, percent protein, hardness, and protein yield on plots established in 1991 at COARC, Madras, OR.

Variety	Yield bu/ac	% Rel. Yield of Stephens	Test Weight lb/bu	Protein %	Hardness Factor	Protein Yield lb/ac
Rely	73.4	96	59.6	10.8	41.1	475
Nugaines	106.7	139	61.9	9.9	33.7	633
Rod	99.3	130	59.5	10.9	42.4	645
Forty Fold	42.1	55	61.0	12.3	35.6	310
Durheim Pride	99.0	129	61.9	10.3	37.9	610
Basin	111.4	145	60.6	9.9	23.2	660
Cashup	97.2	127	60.4	11.1	27.9	645
Yamhill	67.6	88	58.3	11.8	37.1	479
Rhode)	88.7	116	61.6	10.7	42.8	567
Malcolm	97.5	127	60.0	10.7	36.7	623
Kmor	87.1	114	59.3	10.4	33.4	539
Eltan	71.7	94	59.5	11.3	40.0	482
Hill 81	94.5	123	60.5	11.5	42.9	653
Gene	87.5	114	60.1	11.7	36.4	613
Hyak	70.1	92	59.4	11.1	42.2	465
Tres	78.9	103	59.9	10.8	38.1	510
Daws	91.1	119	60.5	10.9	34.7	594
Oveson	97.1	127	60.6	10.5	28.9	605
Stephens	76.6	100	58.8	11.8	43.6	538
Dusty	82.2	98	60.0	10.4	28.7	506
Madsen	94.5	123	60.0	11.6	36.5	657
OR8632	82.9	108	59.4	11.4	41.9	565
OR8302784	80.6	105	60.0	11.9	35.8	577
MacVicar	86.9	113	58.9	11.2	41.3	581
W301	84.4	110	58.6	11.7	41.1	591
85HR6537	69.4	91	60.4	11.6	42.9	478
85HR5350	75.9	99	58.1	11.0	42.1	496
OR851139H	84.8	111	60.1	12.1	43.5	610
OR857847P	85.2	111	58.9	11.4	38.3	579
OR860302	112.7	147	62.5	11.0	37.5	741
Salmon	84.6	110	59.5	10.9	33.0	551
Syringa	84.2	110	61.0	11.2	44.3	565
Mean	85.8	112	60.0	11.1	37.6	571
PLSD .10	9.9	13	0.9	0.5	5.7	64
PLSD .05	11.8	16	1.1	0.6	6.8	77
CV%	9.8	10.0	1.3	3.9	12.8	9.6

Table 4. 1992 soft white winter wheat variety trial data for flowering date, height, lodging, chaff, grain N uptake, and seeding rate on plots established in 1991 at COARC, Madras, OR.

Variety	Flower Date	Height in	Lodging %	Chaff %	Grain N Uptake lb/ac	Seeding Rate lb/ac
	143	42	78	16.4	83.4	103
Rely						
Nugaines	146	35	25	10.6	111.0	111
Rod	151	36	33	9.6	113.2	108
Forty Fold	147	47	100	11.1	54.3	106
Durheim Pride	151	37	25	8.7	107.0	113
Basin	150	31	10	7.6	115.8	116
Cashup	151	37	41	11.3	113.2	127
Yamhill	146	41	88	12.0	84.1	112
Rohde	152	35	73	11.6	99.5	94
Malcolm	152	37	53	9.0	109.3	100
Kmor	145	36	81	12.4	94.5	103
Eltan	150	37	94	13.6	84.5	84
Hill 81	151	39	43	8.9	114.6	77
Gene	152	34	48	11.8	107.5	91
Hyak	148	34	80	14.7	81.5	82
Tres	151	40	64	15.4	89.3	79
Daws	150	37	33	11.9	104.1	75
Oveson	149	35	29	13.6	106.2	76
Stephens	149	37	85	10.5	94.5	113
Dusty	150	37	64	11.6	88.7	69
Madsen	146	36	31	7.4	115.3	82
OR8632	149	34	74	9.2	99.1	99
OR8302784	145	39	60	10.2	101.2	80
MacVicar	142	36	71	10.8	102.0	85
W301	149	36	83	10.4	103.7	95
85HR6537	152	41	90	13.7	83.8	104
85HR5350	150	38	95	15.5	87.0	103
OR851139H	152	41	76	9.1	106.9	109
OR857857P	151	35	78	10.0	101.6	119
OR860302	149	34	18	8.1	129.9	108
Salmon	150	37	79	11.0	96.7	111
Syringa	145	36	90	11.1	99.1	104
Mean	177	37	62	11.2	99.4	98
PLSD .10	one	1.8	18	2.3		range
PLSD .05	rep	2.2	21	2.7		69-127
CV%	only	4.2	24.5	17.2	9.6	