

IRRIGATED SPRING BARLEY VARIETY TRIALS FOR GRAIN*

Mylen Bohle, D. Dale Coats,
Patrick Hayes, and Russ Karow
Central Oregon Agricultural Research Center
OSU, Dept of Crop and Soil Science
Madras, OR and Corvallis, OR

Abstract

Ten spring barley cultivars were planted in 1990 and 1991 at Madras and a single replication at Powell Butte in 1990. There were no significant differences in yield in 1990. 'Columbia' was the top yielder in 1991, significantly different than all other varieties. 'Crest' had the top test weight in 1990, followed by 'Crystal', 'Harrington' and 'Micah', which were all over 50 lb/bu. There were no differences in test weight in 1991. Twice as much lodging occurred in 1990 compared to 1991.

Introduction

Barley is grown for several different purposes as animal feed, forage, and for human consumption. Cultivar selection should be based on the market being produced for. In central Oregon it has been several years since a spring barley variety trial was conducted to aid in the producer's decision on cultivar selection. Ten barley varieties were planted in 1990 and 1991 to evaluate agronomic characteristics.

Materials and Methods

In 1990 ten barley cultivars were planted on April 6 at the Madras site and replicated three times in a randomized block design. A single replication was planted at Powell Butte on April 6, 1990. Planting was accomplished with a cone planter (6-8 inch rows) and seeding rates were 30 seeds per square foot. Plots were 5 x 20 ft long. The plots were fertilized with 80 lb N/a and 60 lb S/a with a Barber metered feed fertilizer spreader. Weed control was applied in May. The plots were irrigated as needed with solid set lines. The plots were harvested on September 5 at Madras and on September 6 at Powell Butte with a Hege plot combine.

In 1991, the planting date was April 23 at Madras. Harvest was completed on August 23. The soil test (0-12 in) results for 1991 were 6.8 pH, 50 ppm P, 308 ppm K, 14.0 meq/100g Ca, 5.2 meq/100g Mg, 0.37 meq/100g Na, 25.3 ppm N-NO₃, and 1.7 ppm N-NH₄. Because of the high residual soil N, only 60 lbs of sulfur was applied to the plots. All other methods were the same as 1990.

*These trials were partially supported by the Oregon Grains Commission.

Table 1. Some characteristics of some of the barley cultivars tested.

Variety	Growth Habit	Head Type	Awn Type	Maturity	Plant Height	Market Class	State/ Company	Year
Columbia	Spring	6-row	awned	late	V. short	Feed	WPB	1979
Harrington	Spring	6-row	awned	Mid	Medium	Malt	Canada	1986
Micah	Spring	6-row	awned	Late	Medium	Feed	OR	1985
Russell	Spring	6-row	awned	Mid	Medium	Feed	ID	1985
Steptoe	Facultative	6-row	awned	Mid	Tall	Feed	WA	1973

Results and Discussion

The results are listed in tables 2, 3, 4, 5, and 6. Table six contains results from a single rep grown at Powell Butte in 1990. 'Columbia' was the top yielder over the two years as it had an average yield in 1990 and was significantly better yielding than any other variety in 1991. 'Harrington', 'Crest', 'Crystal', and ORSM8408 had test weights above 48 lb/bu both years. 'Gustoe', the shortest cultivar, had the least lodging resistance. 'Crystal' and 'Columbia' were two of the better varieties for lodging resistance over the two years.

Table 2. Combined results of the 1990 and 1991 spring barley variety trials conducted at Madras.

	Yield bu/acre	Test Wt. lbs/acre	Height i n c h e s	Lodging
1990	104.2	48.3	35	66
1991	101.3	49.2	36	34
Probability	NS	NS	NS	.063
Bearpaw	104.4	48.5	36	39
Harrington	105.7	50.4	35	40
Crest	94.6	50.9	35	47
ORSM8408	99.8	50.3	37	63
Crystal	91.0	50.8	39	38
Russell	97.2	47.5	38	43
Gustoe	102.0	46.7	30	88
Steptoe	106.5	47.4	40	75
Columbia	118.5	47.2	34	29
Micah	107.9	47.9	35	39

Table 3. 1990 Results of Spring Barley Variety Trial conducted at Madras.

Variety	Yield	Test Wt.	Height	Lodging
	bu/acre	lbs/acre	inches	%
Bearpaw	108.0	50.8	35	65
Harrington	100.8	50.3	37	63
Crest	88.9	49.2	31	68
ORSM8408	110.5	49.7	36	92
Crystal	88.8	49.9	39	38
Russell	104.0	47.4	36	47
Gustoe	107.2	46.0	29	92
Steptoe	114.6	48.0	40	83
Columbia	105.1	46.3	35	42
Micah	114.0	45.7	32	72
PLSD .10	NS	2.0	3.8	NS
PLSD .05	NS	2.5	4.6	NS
PLSD .01	NS	3.4	6.4	NS
CV %	11.7	3.0	7.8	47.1

Table 4. 1991 results of spring barley variety trial conducted at Madras.

Variety	Yield	Test Wt	Heading Date	Height	Lodging	Plumps	Thins
	bu/acre	lbs/bu.	M/D	inches	%	%	%
Bearpaw	100.7	46.2	7/5	36	13	89	4
Harrington	110.7	50.4	7/7	33	17	87	6
Crest	100.3	52.6	7/7	39	25	89	5
ORSM8408	89.0	50.9	7/6	38	33	84	7
Crystal	93.3	51.6	6/28	38	37	83	8
Russell	90.4	47.5	7/5	40	40	75	11
Gustoe	• 96.7	47.3	7/5	30	85	78	9
Steptoe	98.3	46.9	7/5	40	67	87	5
Columbia	131.8	48.1	7/6	33	16	88	4
Micah	101.8	50.1	6/28	37	7	81	8
PLSD .10	16.5	NS	one	2.9	24.3	5.0	2.0
PLSD .05	20.0	NS	rep	3.6	29.4	6.0	3.0
PLSD .01	27.4	NS	only	4.9	40.4	8.0	4.0
CV %	11.5	6.2		5.7	50.6	4.3	25.3

Table 5. 1990 results of single replication observations for spring barley cultivars at the Powell Butte site, COARC, Oregon.

Variety	Yield	Test Wt	Headin Date	Height	Lodging	Plumps	Thins
	bu/acre	lbs/bu.	M/D	inches	%	%	%
Bearpaw	66.6	47.4	6/28	36	30	88	4
Harrington	90.3	50.8	6/28	40	0	92	4
Crest	87.7	49.8	6/27	37	10	93	3
ORSM8408	101.7	50.4	6/27	38	10	90	4
Crystal	88.8	50.2	6/27	36	0	95	2
Russell	75.6	49.1	6/22	42	0	91	3
Gustoe	106.7	47.8	6/27	30	0	97	1
Steptoe	76.5	46.5	6/22	35	0	96	2
Columbia	98.8	47.3	6/30	31	0	97	1
Micah	81.3	48.0	6/30	29	0	89	2
Mean	87.4	48.7	6/27	35	5	93	3

a. e "•I " an• ture see ng rates in poun per acre ase on see• s per square foot.

Variety	1990	1991	Future*
Bearpaw	111	113	130
Harrington	125	136	127
Crest	121	127	106
ORSM8408	121	137	104
Crystal	132	140	122
Russell	113	114	125
Gustoe	120	125	127
Steptoe	131	133	126
Columbia	134	135	128
Micah	106	111	111
Mean	121	127	121

*Seeding rate calculated from 300 seed weights from the 1991 harvested grain.