



Performance of . . .
Barley, Oat, and Wheat Varieties

Tested in . . .
**Umatilla, Union, and
Wallowa Counties**

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Performance of Barley, Oat, and Wheat Varieties Tested in Umatilla, Union, and Wallowa Counties

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This publication presents results of cereal variety tests conducted by the Pendleton Branch Experiment Station. County Extension agents in Umatilla, Union, and Wallowa counties assisted in selecting sites for the tests conducted on farmers' fields. An attempt was made to select sites which were representative of many farms in each county.

Yield data and the agronomic characteristics of recommended and well-known cereal varieties are discussed. Characteristics are emphasized which are most likely to assist a grower to make a decision about what variety to grow. This circular is intended to supplement the descriptions found in Circular of Information 575, *Cereal Variety Recommendations for Oregon*.

RESULTS

Tables 1 through 20 summarize the yield and agronomic characteristics obtained from variety tests. Tables 1 through 4 present results for spring barley; tables 5 through 8 for winter barley. Tables 9 through 12 present results for spring oats. Tables 13 through 16 present results for spring wheat; tables 17 through 20 for winter wheat.

Characteristics measured within each grain include yield, test weight, plant height, and heading date and straw weight. For barley, lodging percent is also reported. Stripe rust reaction is recorded for spring wheat. For winter wheat, additional measures reported include number of tillers, seed weight, and stripe rust reaction.

Table 1. Yield of Spring Barley Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>
Trebi	3,082	2,347	3,254	2,894	4,200	3,336	3,768
Gem	3,174	2,337	3,547	3,019	4,248	2,990	3,619
Harlan	3,020	2,227	3,379	2,875	4,349	3,158	3,754
Flynn 37	3,143	2,035	3,254	2,811	3,893	2,573	3,233
Bonneville	2,773	2,342	2,976	2,697	4,320	3,341	3,830
Spray	2,434	2,042*	3,417*	2,631	4,368*	2,369*	3,368
Meloy 3	2,465	1,972	2,604	2,347	2,856	2,569	2,712
Wocus	2,958	2,266	3,182	2,802	4,229	3,302	3,766
Hannchen	2,527	2,122	2,726	2,458	3,446	2,875	3,160
Heines Hanna.....	2,434						
Atlas 57	2,928						
Traill	2,914						
Hiland	2,835						

* Results of only one year of tests.

Table 2. Test Weight of Spring Barley Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Trebi	48.5	49.3	48.3	48.7	48.9	48.7	48.8
Gem	48.5	49.3	48.3	48.7	48.1	47.0	47.6
Harlan	47.2	49.3	48.3	48.3	47.6	46.6	47.1
Flynn 37	46.8	48.3	47.7	47.6	47.0	45.7	46.4
Bonneville	45.6	47.5	46.5	46.5	47.5	46.4	47.0
Spray	42.5	47.3*	44.8*	44.9	43.3*	41.9*	42.6
Meloy 3	46.1	48.7	43.7	46.2	44.3	44.3	44.3
Wocus	47.6	49.3	48.1	48.3	47.4	46.9	47.2
Hannchen	52.0	53.8	52.5	52.8	51.3	52.0	51.6
Heines Hanna	51.3						
Atlas 57	49.0						
Traill	51.0						
Hiland	49.2						

* Results of only one year of tests.

Table 3. Plant Height of Spring Barley Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Trebi	32	24	31	29	38	32	35
Gem	32	24	32	29	36	30	33
Harlan	34	24	33	30	38	33	36
Flynn 37	30	21	29	27	32	28	30
Bonneville	33	24	32	30	38	32	35
Spray	34	25*	32*	30*	41*	32*	36
Meloy 3	35	27	34	32	40	34	37
Wocus	32	23	32	29	36	30	33
Hannchen	34	26	35	32	41	35	38
Heines Hanna	34						
Atlas 57	32						
Traill	34						
Hiland	32						

* Results of only one year of tests.

Table 4. Other Data for Spring Barley Varieties Tested at the Pendleton Station

Variety	Heading date	Straw weight	Lodging
		<i>T/A</i>	<i>%</i>
Trebi	June 8	1.92	21
Gem	June 2	1.70	6
Harlan	June 1	1.94	9
Flynn 37	June 1	1.61	11
Bonneville	June 13	2.14	2
Spray	June 5	1.76	30
Meloy 3	June 6	1.66	7
Wocus	June 10	1.82	4
Hannchen	June 13	2.14	5
Heines Hanna	June 11	2.04	9
Atlas 57	June 3	1.86	7
Traill	June 7	1.82	6
Hiland	June 9	1.68	4

Table 5. Yield of Winter Barley Varieties

Variety	Pendleton Experiment Station		Helix	Weston	Pilot Rock	Rew Farm
	Non-fert.	Fert.				
	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>
Alpine	2,767	3,524	2,576	3,306	2,463	2,400
Olympia	2,831	3,839	2,592	3,145	2,449	2,104
Winter Club	2,367	3,062	2,477	3,389	2,264	2,005
Trebi*	2,819	3,348	2,194	3,356	2,386	1,977
Cascade*	2,559	3,529	2,526	3,686	2,762	2,226

	Av. for Umatilla County	La Grande	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>
Alpine	2,839	3,490	4,610	2,648	3,582
Olympia	2,827	3,341	3,096	2,627	3,021
Winter Club	2,594	3,254	3,053	2,748	3,018
Trebi*	2,680	2,736	2,851	2,372	2,653
Cascade*	2,881	3,341	3,694	2,978	3,338

* These varieties lack winter-hardiness.

Table 6. Test Weight of Winter Barley Varieties

Variety	Pendleton Experiment Station		Helix	Weston	Pilot Rock	Rew Farm
	Non-fert.	Fert.				
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Alpine	48.4	48.8	48.7	50.0	49.5	47.4
Olympia	49.3	50.9	50.7	51.6	50.9	50.0
Winter Club	47.0	48.6	49.6	50.2	49.1	47.5
Trebi	49.5	50.4	50.6	50.6	50.8	49.6
Cascade	49.1	50.0	50.1	50.4	49.8	49.8

	Av. for Umatilla County	La Grande	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Alpine	48.8	46.5	47.7	48.3	47.5
Olympia	50.6	49.6	48.6	50.7	49.6
Winter Club	48.7	46.0	45.4	47.8	46.4
Trebi	50.2	48.6	49.3	49.6	49.2
Cascade	49.9	48.5	47.6	50.2	48.8

Table 7. Plant Height of Winter Barley Varieties

Variety	Pendleton Experiment Station		Helix	Weston	Pilot Rock	Rew Farm
	Non-fert.	Fert.				
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Alpine	41	44	34	43	36	33
Olympia	44	46	35	43	42	36
Winter Club	43	45	31	43	40	35
Trebi	39	42	34	39	37	33
Cascade	38	41	29	39	36	32

	Av. for Umatilla County	La Grande	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Alpine	38	41	46	37	41
Olympia	41	42	45	40	42
Winter Club	40	42	44	39	42
Trebi	37	36	42	36	38
Cascade	36	37	40	34	37

Table 8. Other Data for Winter Barley Varieties Tested at the Pendleton Station

Variety	Heading date		Straw weight		Number of tillers		Lodging	
	Non-fert.	Fert.	Non-fert.	Fert.	Non-fert.	Fert.	Non-fert.	Fert.
			<i>T/A</i>	<i>T/A</i>	<i>Per 16 ft. of row</i>		<i>%</i>	
Alpine.....	May 31	June 6	2.38	2.91	491	598	1	2
Olympia.....	May 22	May 28	2.67	3.32	425	529	1	10
Winter Club.....	May 29	June 4	2.59	2.77	405	519	3	5
Trebi.....	May 21	May 29	2.31	2.57	434	528	1	28
Cascade.....	May 21	May 27	1.97	2.90	408	615	0	22

Table 9. Yield of Spring Oat Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>	<i>Lbs./A</i>
Carleton	3,758	2,837	4,229	3,608	5,002	4,315	4,658
Cody	3,898	2,851	4,224	3,658	5,160	4,344	4,752
Markton	3,480	2,837	3,859	3,392	4,843	4,056	4,450
Centore	3,758	2,890	4,018	3,555	5,213	4,056	4,634
Park	3,724	2,707	4,085	3,505	4,627	3,576	4,102
Victory	3,445	2,695	3,782	3,307	4,553*	3,448	4,000
Shasta	3,271	2,808	3,628	3,236	5,182*	3,691	4,436
Overland	3,445	2,525	3,705	3,225			
Winema	3,619						
Rodney	3,445						

* Results of 2 years data only.

Table 10. Test Weight of Spring Oat Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Carleton	35.5	36.9	35.6	36.0	37.7	34.6	36.2
Cody	36.2	38.2	35.0	36.5	39.2	36.0	37.6
Markton	36.5	38.6	36.4	37.2	40.8	36.9	38.8
Centore	35.4	38.4	34.5	36.1	38.6	35.0	36.8
Park	37.0	38.1	34.3	36.5	40.4	35.1	37.8
Victory	37.3	39.6	36.4	37.8	42.2*	36.3	39.2
Shasta	35.2	37.2	33.5	35.3	41.0*	35.0	38.0
Overland	37.2	38.2	35.3	36.9			
Winema	36.1						
Rodney	36.8						

* Results of 2 years data only.

Table 11. Plant Height of Spring Oat Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Carleton	37	27	36	33	40	38	39
Cody	34	24	33	30	36	36	36
Markton	42	30	41	38	44	44	44
Centore	37	25	35	32	38	37	38
Park	37	28	36	34	39	40	40
Victory	44	31	43	39	46*	42	44
Shasta	44	32	45	40	46*	45	46
Overland	35	24	36	32			
Winema	31						
Rodney	39						

* Results of 2 years data only.

Table 12. Heading Date and Straw Weight of Spring Oat Varieties Tested at the Pendleton Station

Variety	Heading date	Straw weight
		<i>T/A</i>
Carleton	June 9	2.12
Cody	June 12	1.94
Markton	June 11	2.45
Centore	June 11	1.76
Park	June 13	2.03
Victory	June 18	2.32
Shasta	June 17	2.47
Overland	June 10	1.97
Winema	June 8	1.81
Rodney	June 14	2.28

Table 13. Yield of Spring Wheat Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Bu./A</i>	<i>Bu./A</i>	<i>Bu./A</i>	<i>Bu./A</i>	<i>Bu./A</i>	<i>Bu./A</i>	<i>Bu./A</i>
Federation	38.2	30.2	34.4	34.3	45.9	32.5	39.2
Idaed	39.3	28.6	39.2	35.7	38.5	27.7	33.1
Lemhi 53	37.8	30.2	35.1	34.4	48.5	28.9	38.7
Baart	33.7	29.2	33.9	32.3	46.4	31.5	39.0
Marfed	39.3	30.2	36.1	35.2	45.9	29.2	37.6
Orfed	34.4	29.6	29.6	31.2	45.4	26.6	36.0
Henry	35.9	27.5	32.3	31.9	42.2	32.8	37.5

Table 14. Test Weight of Spring Wheat Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Federation	57.8	59.5	58.0	58.4	58.2	54.1	56.2
Idaed	59.9	60.6	59.5	60.0	59.1	57.6	58.4
Lemhi 53	58.6	58.9	57.9	58.5	58.4	52.4	55.4
Baart	61.1	62.3	60.7	61.4	60.5	57.4	59.0
Marfed	59.2	60.0	59.2	59.5	59.6	55.6	57.6
Orfed	61.4	61.9	60.6	61.3	61.8	56.5	59.2
Henry	59.8	60.4	59.0	59.7	58.9	56.1	57.5

Table 15. Plant Height of Spring Wheat Varieties

Variety	Pendleton Experiment Station	Helix	Weston	Av. for Umatilla County	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Federation	39	27	38	35	39	40	40
Idaed	39	28	38	35	39	37	38
Lemhi 53	40	30	39	36	41	38	40
Baart	44	32	43	40	44	44	44
Marfed	40	28	38	35	37	34	36
Orfed	40	29	38	36	40	38	39
Henry	44	30	42	36	41	38	40

Table 16. Other Data for Spring Wheat Varieties Tested at the Pendleton Station

Variety	Heading date	Straw weight	Stripe rust*
		<i>T/A</i>	%
Federation	June 10	1.92	38
Idaed	June 6	2.04	4
Lemhi 53	June 11	1.96	82
Baart	June 9	2.14	45
Marfed	June 12	2.12	26
Orfed	June 16	2.04	16
Henry	June 11	2.27	14

* 1960 data only.

Table 17. Yield of Winter Wheat Varieties

Variety	Pendleton Experiment Station		Helix	Weston	Pilot Rock	Rew Farm
	Non-fert.	Fert.				
	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>
Omar	41.8	57.9	44.7	51.4	36.2	38.8
Gaines**	59.5	79.0	53.5*	54.1	38.0	40.5
Burt	45.3	58.3	41.6	47.9	33.6	42.6
Orfed	40.5	52.1	40.3	47.2	30.6	35.9
Brevor	40.5	54.6	43.4	51.7	29.5	39.2
Golden	39.3	48.4	38.0	48.8	31.4	34.4
Columbia	41.1	48.2	36.2	44.1	31.5	36.9
Elgin	43.5	55.4	43.4	52.1	33.7	37.6
Elmar	41.4	52.0	40.8	49.0	33.9	36.2
Federation	37.2	42.2	32.9	47.0	29.5	27.0

	Av. for Umatilla County	La Grande	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>	<i>Bu./A.</i>
Omar	45.1	49.7	53.3	41.7	48.2
Gaines**	54.1	57.1	96.7*	53.7	69.2
Burt	44.9	49.2	59.0	45.4	51.2
Orfed	41.1	42.6	58.8	46.2	49.2
Brevor	43.2	45.4	58.3	41.0	48.2
Golden	40.0	47.2	51.2	42.9	47.1
Columbia	39.7	39.2	58.6	37.0	44.9
Elgin	44.3	50.8	52.6	41.7	48.4
Elmar	42.2	47.6	50.3	36.9	44.9
Federation	36.0	36.5	27.5	29.7	31.2

* Results of one year of tests.

** Results of 3 years of tests.

Table 18. Test Weight of Winter Wheat Varieties

Variety	Pendleton Experiment Station		Helix	Weston	Pilot Rock	Rew Farm
	Non-fert.	Fert.				
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Omar	59.5	60.2	59.6	59.7	59.1	59.5
Gaines**	61.7	62.3	61.7*	59.7	61.0	60.6
Burt	61.8	62.0	61.7	61.3	60.7	61.0
Orfed	62.0	62.5	62.2	61.8	61.6	62.3
Brevor	60.9	61.4	61.1	60.7	60.7	60.8
Golden	58.1	58.6	58.7	58.2	58.6	58.4
Columbia	62.6	62.9	63.0	61.8	62.3	62.5
Elgin	59.7	60.6	59.7	60.1	59.5	60.3
Elmar	59.5	60.3	59.6	59.7	59.4	60.2
Federation	59.3	59.4	60.3	59.2	60.1	59.6
Itana	61.8	62.5				

	Av. for Umatilla County	La Grande	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>	<i>Lbs./bu.</i>
Omar	59.6	58.7	59.0	59.7	59.1
Gaines**	61.2	59.4	60.4*	60.5	60.1
Burt	61.4	60.1	59.0	60.4	59.8
Orfed	62.1	61.7	60.7	62.3	61.6
Brevor	60.9	60.4	59.4	60.8	60.2
Golden	58.4	58.1	57.9	58.4	58.1
Columbia	62.5	61.4	62.1	61.7	61.7
Elgin	60.0	59.4	58.7	59.7	59.3
Elmar	59.8	59.0	58.4	59.4	58.9
Federation	59.6	57.7	56.7	58.5	57.6

* Results of only one year of tests.

** Results of 3 years of tests.

Table 19. Plant Height of Winter Wheat Varieties

Variety	Pendleton Experiment Station		Helix	Weston	Pilot Rock	Rew Farm
	Non-Fert.	Fert.				
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Omar	41	47	35	43	34	32
Gaines**	27	30	28*	32	27	25
Burt	38	42	32	38	32	32
Orfed	42	46	38	43	36	34
Brevor	38	43	33	40	33	32
Golden	43	49	38	45	37	36
Columbia	41	45	34	42	35	33
Elgin	40	45	34	41	32	30
Elmar	41	46	34	40	34	32
Federation	40	41	34	42	35	32
Itana	45	50				

	Av. for Umatilla County	La Grande	Union Experiment Station	Enterprise	Av. for Union, Wallowa counties
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Omar	39	44	45	40	43
Gaines**	28	29	34*	28	30
Burt	36	38	42	38	39
Orfed	40	40	46	41	42
Brevor	36	37	43	38	39
Golden	41	45	48	44	46
Columbia	38	39	44	39	41
Elgin	37	42	45	39	42
Elmar	38	42	45	41	43
Federation	37	38	41	38	39

* Results of only one year of tests.

** Results of 3 years of tests.

Table 20. Other Data for Winter Wheat Varieties Tested at the Pendleton Station

Variety	Heading date		Straw weight		Number of tillers		Seed weight		Stripe rust*	
	Non-fert.	Fert.	Non-fert.	Fert.	Non-fert.	Fert.	Non-fert.	Fert.	Non-fert.	Fert.
			<i>T/A</i>	<i>T/A</i>	<i>Per 16 ft. of row</i>		<i>100 seeds, grams</i>		<i>%</i>	<i>%</i>
Omar.....	June 2	June 6	2.23	3.05	387	493	3.33	3.17	57	57
Gaines**.....	May 30	June 4	2.29	2.88	688	804	3.77	3.50	15	13
Burt.....	May 28	June 1	2.55	3.05	614	705	4.25	4.23	42	47
Orfed.....	May 26	May 30	2.79	3.51	699	840	3.11	3.03	50	55
Brevor.....	May 30	June 4	2.73	3.47	575	695	3.89	3.79	15	17
Golden.....	May 31	June 5	2.59	3.41	505	628	3.36	3.29	2	1
Columbia.....	May 28	June 1	2.69	3.01	764	792	3.08	2.87	36	46
Elgin.....	June 1	June 6	2.19	2.93	402	524	3.11	3.05	45	46
Elmar.....	June 1	June 6	2.40	2.97	423	514	3.02	3.02	44	44
Federation.....	May 22	May 29	1.79	2.26	455	553	3.99	3.92	54	67
Itana.....	May 28	June 3	3.14	3.50	673	743	2.97	3.22	42	48

* 1961 results only.

* Results of 3 years of tests.

DISCUSSION

Spring Barley

Trebi is a weak-strawed spring barley variety; therefore it should not be grown in areas where lodging is severe. It has yielded well and is well-adapted at the Pendleton Branch Experiment Station, at Helix, and at Enterprise. It matures somewhat late for the wheat-pea area around Weston; thus it is often injured by hot summer temperatures. This variety lodged very severely at the Union Experiment Station. It possesses a small degree of winter-hardiness and is frequently grown successfully from fall seedings in the Pilot Rock area. Its kernels are blue.

Gem is well-adapted for growing in all parts of the Columbia Basin and the Blue Mountains except the Enterprise area. It is earlier than Trebi and possesses stiffer straw, consequently it has yielded well at Weston and at the Union Experiment Station. This variety lacks winter-hardiness and should not be sown in the fall. It produces white kernels.

Flynn 37 is best suited in areas where earliness or a smooth-awned variety is desired. It is earlier than Gem. This variety performs best in western Umatilla County and in Morrow and Gilliam counties. It possesses very little winter-hardiness. Flynn 37 produces white kernels.

Bonneville is best adapted for growing in irrigated areas because of its resistance to lodging. Its late maturity often results in grain of low test weight when grown in dryland areas. The beards of this variety do not break from the kernel readily; consequently difficulty has been reported during harvesting. It produces white kernels.

Spray and **Meloy 3** are hooded varieties and recommended only for hay purposes. These varieties lodge rather easily and produce grain with low test weights. Both varieties have blue kernels.

Hannchen is recommended for those areas which can grow barley suitable for malting purposes. This variety produces white kernels which have a very high test weight.

Winter Barley

Alpine has yielded well in all tests in Umatilla, Union, and Wallowa counties. This variety is moderately winter-hardy. It grows very slowly during its early stages of growth—thus is somewhat late in maturity and is sometimes injured by hot summer tem-

peratures. Its kernels are light blue and very small; consequently it should be seeded at lower rates than most varieties. Some feed processors have indicated that this variety does not produce a good rolled feed product. This may be because of its small kernels.

Olympia, although not a recommended variety, may be preferred when an earlier maturing variety is desired. It is less winter-hardy than Alpine and shatters more easily. Therefore, it should be harvested as soon as it is ripe. Its kernels are white.

Winter Club, although not a recommended variety, may be preferred to Alpine when it is desirable to have a stiff-strawed variety which produces white kernels. It matures about as late as Alpine; however, it is less winter-hardy.

Spring Oats

Carleton has yielded well in all tests in Umatilla, Union, and Wallowa counties. When grown for a hay crop it produces a fair tonnage of forage.

Cody is recommended for irrigated areas because of its short stiff straw. It is not desirable for hay purposes because of its short straw.

Markton, although not a recommended variety, may be preferred to Carleton where hay is desired.

Spring Wheat

Federation is recommended in all areas where stem, leaf, and stripe rust are not problems. It possesses a small degree of winter-hardiness. When fall seeded it should be planted late to minimize winter injury. Federation has not yielded well in the wheat-pea area near Weston. This is probably because it does not mature early enough for this area.

Idaed is earlier maturing than Federation and is best suited in the Weston area. It is resistant to stripe rust but is susceptible to leaf and stem rust. This variety has not performed well in Union and Wallowa counties.

Lemhi 53 is recommended in irrigated areas and in areas where stem rust may be a problem. It is very susceptible to stripe rust.

Winter Wheat

Omar has yielded well in all parts of Umatilla County and in the La Grande area. It has not yielded well at the Union Experiment Station and at Enterprise. This variety is medium late in maturity and may be injured by high summer temperatures. It possesses extremely good milling and baking quality, is quite resistant to lodging, and is resistant to all but one race of common smut. This variety is susceptible to stripe rust.

Gaines is a semi-dwarf variety. It appears suitable for most areas of northeastern Oregon. It has produced extremely high yields and possesses extreme resistance to lodging. This variety is quite resistant to stripe rust and very resistant to all except one race of common smut and to all except one race of dwarf smut. Gaines is especially recommended in areas where lodging is severe and in areas where a variety earlier than Omar is desired.

Burt is a whitekerneled bread-type variety. It is recommended only in Wallowa County where a variety earlier than Omar is desired. This variety yields very well in all parts of Umatilla, Union, and Wallowa counties. However, these areas do not ordinarily produce grain which is suitable for bread quality. Burt is quite susceptible to stripe rust, but its resistance to smut is similar to that of Gaines.

Orfed is recommended in western Umatilla County and in those parts of Morrow and Gilliam counties where earliness and moderately tall growth are desired. It does not possess as much winter-hardiness as the above mentioned varieties. It is quite susceptible to stripe rust but is resistant to most races of smut.

Golden may be preferred where smut is not a problem and moderately tall growth is desired. It is resistant to stripe rust. This variety shatters easily and should be harvested as soon as it is ripe. Golden appears to be well-adapted to the southern parts of Umatilla, Morrow, Gilliam, and Sherman counties.

Columbia is a bread-type variety with red kernels. It is recommended only in areas that grow wheat suitable for bread flour. This variety does not yield as well as the whitekerneled varieties described above. It is very susceptible to stripe rust but is resistant to most races of smut.

Brevor, although not recommended in Umatilla, Union, and Wallowa counties, may be preferred where a variety resistant to stripe rust is desired. It possesses high resistance to almost all races of smut. This variety has yielded lower than Omar in all locations except at the Rew Farm and at the Union Experiment Station where it has yielded higher than Omar. The milling quality of Brevor is very poor.

METHODS

Procedures and techniques used in evaluating cereal varieties were as follows:

1. Varieties were tested by using a randomized block design with four replications.
2. Each plot consisted of 4 rows seeded 11 feet long.
3. Eight-foot eight-inch sections of the two center rows were harvested for yield and test weight determinations.
4. Dates of seeding conformed with date of seeding characteristic of the area for the particular season, and were generally as follows:

Location	Spring varieties	Winter varieties
Umatilla County (summer fallow area)	March 15-25	Oct. 1-20
Umatilla County (pea area)	Mar. 15-Apr. 10	Oct. 20-Nov. 1
Union County	Apr. 1-15	Sept. 10-30
Wallowa County....	Apr. 20-May 10	Sept. 10-30

5. All test areas, except Pilot Rock, received nitrogen fertilizer. Rates varied from 30 to 60 pounds of N per acre.

6. Soil types and cropping systems of the test areas were as follows:

Pendleton Experiment Station—Walla Walla silt loam, alternate small grain and summer fallow.

Helix—Walla Walla silt loam, alternate small grain and trashy summer fallow.

Weston—Athena silt loam, alternate small grain and green peas.

Pilot Rock—Pilot Rock silt loam, alternate small grains and summer fallow.

Rew Farm—Ritzville silt loam, alternate small grains and trashy summer fallow.

Union Experiment Station—La Grande silt loam, alfalfa and small grain.

La Grande—Alicel fine sandy loam, summer fallow or dry peas and small grain.

Enterprise—(winter nurseries)—Powwatka, Illahee, or Hurwal silt loam, alternate small grain and summer fallow.

Enterprise—(spring nurseries)—Chesnimus silt loam, alfalfa and small grain.

Data represent the average of at least three years results unless otherwise noted. Since varieties grown within a location often are tested for a different period of years, the performance of each variety was first expressed as a percentage of a check variety for the same period of years; then data were converted to pounds or bushels per acre. For example, at Weston the spring barley variety Trebi, which was the check

variety, was tested from 1953 to 1961 and averaged 3,254 pounds per acre. Gem was tested from 1954 to 1961 and averaged 3,386 pounds per acre. However, the average of Trebi for the period 1954 to 1961 was 3,093 pounds per acre. Therefore, Gem yielded $(3,386 \div 3,093 = 109)$ 109% of Trebi. When this was converted to an average yield of Trebi of 3,254 pounds per acre, the average yield of Gem became 3,547 $(3,254 \times 109)$ pounds per acre. Thus all values within a location are considered to be comparable.