

Performance of

Wheat Varieties

in Eastern Oregon

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Introduction

This circular presents the performance of wheat varieties tested in the Columbia Basin and Blue Mountain areas of eastern Oregon. Tested varieties differ widely in yielding ability under various climatic and soil conditions, and in lodging resistance, quality, disease resistance, and many other important characteristics. No one variety is satisfactory under all the various climatic and soil conditions found in eastern Oregon. The Oregon Agricultural Experiment Station, in cooperation with the U. S. Department of Agriculture, has compared these varieties by growing them at representative locations. Their performance in these tests is presented in tabular summaries.

Winter Wheat Varieties

The following varieties have performed well in tests:

Elmar

Elmar is a medium tall, white club winter wheat. It has a white, stiff straw and good resistance to lodging. Under drought conditions the heads have a tendency to remain and develop in the boot.

Elmar threshes readily although it is resistant to shattering. It is highly resistant to about half the races of common bunt, and also to dwarf bunt. Elmar has shown increased bunt infection because the races to which it is susceptible have increased in recent years. In areas where this has occurred, it is advisable to grow a variety such as Omar, which is resistant to many of the bunt races to which Elmar is susceptible.

Elmar is less hardy than Rio or Hymar, slightly less hardy than Rex and Triplet, but more winterhardy than Orfed.

In all trials, Elmar has shown excellent milling characteristics. It is a soft wheat well suited for pastry flours.

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Elmar yields well under most situations, but is not recommended in drought areas that have light or shallow soils. The straw may be so short under these conditions that it is difficult to harvest. In areas of high rainfall and high fertility, Elmar frequently has excessive straw growth and lodges. Where these conditions are common, it is advisable to grow a shorter, stiffer-strawed variety such as Brevor.

Omar

Omar is a new red chaff club wheat of medium height with growth characteristics similar to Elmar. It has white stiff straw that is resistant to lodging. Resistance to shattering, threshability, and winter hardiness are about the same as Elmar. Although Omar is highly resistant to all known races of bunt, seed treatment is recommended to reduce the possibility of increasing new races.

Omar appears to be slightly superior to Elmar in milling quality and about equal to it in baking quality. The flour is suitable only for pastry purposes.

Like Elmar, Omar is not recommended in drought areas that have light or shallow soils. It produces a short straw under such conditions, and may be difficult to harvest. In contrast, under conditions of high rainfall and high fertility, Omar produces excessive straw growth and lodging occurs frequently. It is recommended for areas of eastern Oregon where Elmar is well adapted and especially where Elmar is susceptible to bunt. In most trials it produces slightly higher yields than Elmar.

Seed supply of Omar will be limited until the fall of 1957.

Brevor

Brevor is a soft white winter wheat having a beardless common type of head with white chaff. The straw is white, short to medium in height, stiff, and highly resistant to lodging.

This variety has exhibited moderate to high resistance to all known races of common bunt. It also appears to have considerable resistance to dwarf bunt. Its high bunt resistance makes it particularly useful in areas where resistance of other varieties has proved inadequate.

Brevor is about equal to Elmar in resistance to shattering and in threshability. Under certain conditions the rachis breaks up too easily resulting in incomplete threshing of kernels from chaff.

Brevor has shown a lack of winter hardiness in severe winters. It is slightly superior to Orfed, about equal to Elmar, slightly less hardy than Rex and Triplet, but distinctly less hardy than Rio and Hymar.

Brevor is decidedly inferior to Elmar in milling quality, particularly in bran cleanup and bolting. This has restricted its use in commercial mills. Its flour, however, appears to have highly desirable baking qualities. It makes a multiple-purpose type flour suitable for a wider range of products than flour from Elmar.

Brevor has seedling emergence slower than most varieties. This characteristic has met with disfavor among wheat farmers who desire a variety that emerges quickly.

In yield tests Brevor has given high yields in areas of high rainfall and high fertility. Its yield has, however, been below that of Elmar in less favorable areas.

Brevor will be grown until there is an adequate supply of seed of other adapted bunt-resistant varieties. Its inferior milling quality, together with other shortcomings, will probably result in its early replacement.

Orfed is a soft white common spring wheat having bearded heads with white chaff. It has stiff, erect, medium tall, rather fine straw. It is slightly more winter hardy than Federation and is, therefore, usually sown in the fall. It is fairly early maturing when fall-sown, but very late maturing when spring-sown. Sow Orfed late in the fall to minimize winterkilling hazards. When spring-sown, sow as early as possible because of its late maturity.

Orfed is highly resistant to shattering but relatively easy to thresh. It is resistant to most races of common bunt, but somewhat susceptible to dwarf bunt.

This variety is generally rated as only fair in milling quality, producing a medium yield of flour. The flour is fairly good for most pastry purposes.

Fall-sown Orfed yields well in most locations, particularly if no winterkilling occurs. Spring-sown Orfed usually yields poorly because of late maturity. It is not recommended for spring seeding unless it can be sown extremely early or, possibly, on irrigated land. Orfed is recommended for areas where bunt resistance and a variety with moderately tall straw are desired.

Golden

Golden, sometimes called Fortyfold (the variety from which it was selected), is a soft white winter wheat with a beardless common head type having brown chaff. It has purple straw that is medium tall and moderately stiff. This variety is fairly resistant to lodging but highly susceptible to shattering, especially in dry, windy areas. Farmers usually begin harvesting Golden just as soon as it is ripe to avoid shattering losses.

Golden is medium winterhardy, with the ability to begin growth fairly early in the spring. It is late-to-midseason in maturity.

This variety is susceptible to all known races of common and dwarf bunt, and is not recommended for areas where bunt is a problem.

Golden is a fairly good milling wheat. Flour yield is fairly high despite its tendency toward a low test weight. The flour is suitable for most pastry products.

Golden yields well in high-producing areas but because of susceptibility to bunt and tendency to shatter, it is not generally recommended. It is recommended, however, for drought areas that have light or shallow soils since it produces fairly tall straw under such conditions.

Columbia

Columbia is a new hard winter wheat with a bearded common head type and brown chaff. It has medium length, fine grass-like straw, and is resistant to lodging. It is medium-early in maturity, and resistant to shattering.

This variety has proved highly resistant to all known races of common and dwarf bunt. Seed treatment is recommended, however, to prevent increase of new races. Columbia is more winterhardy than Elmar and Brevor, but is not as hardy as Rio and other Turkey-type wheats. It has not been affected as badly by "blasting" or foot rot as Rio, the most commonly grown hard red winter wheat variety.

The milling quality of Columbia has been termed only fair by the Western Wheat Quality Laboratory, since it is somewhat low in flour yield. It produces a flour suitable for bread purposes when the protein content is 11 per cent or above. It is not suitable for pastry flour.

Columbia has shown higher yielding ability than other hard red wheat varieties in eastern Oregon. Many bread flour wheats are not grown because their yield is low compared to pastry flour varieties. Columbia offers a higher yield in areas suitable for producing high protein wheat. It has sufficient plant height to be harvested readily even in the drier areas.

The seed supply of Columbia will be limited until the fall of 1957.

Rio

Rio, often called Turkey, is a hard red winter wheat with white bearded common type heads. It has white, medium tall straw rather susceptible to lodging. This variety is winterhardy, slow to begin growth in the spring, and about midseason in maturity. Rio usually does not shatter, but threshes readily.

Frequently Rio is damaged by "blasting" or foot rot. Nitrogen fertilization often increases Rio's susceptibility to this disease. Consequently, it may not respond as well to nitrogen applications as most soft varieties.

Rio is resistant to most common bunt races, but is susceptible to dwarf bunt. Under most conditions Rio has shown little bunt, indicating that this variety possesses satisfactory bunt resistance.

Milling quality of Rio is good, and flour yield is high. The flour is good for bread making when its protein content is 11 per cent or higher.

Rio does not yield as well as most soft wheat varieties but gives satisfactory yields in areas of less than 12 inches average annual rainfall. Under such conditions it usually produces grain with a protein content satisfactory for bread flour.

Varieties Not Recommended

The following varieties are not recommended:

Rex

Rex is a soft white winter wheat with a beardless common head type and brown chaff. It is an early maturing variety with medium tall, white, stiff straw. Rex has shown high resistance to about half the races of common bunt, and to dwarf bunt. In recent years, however, bunt races to which Rex is susceptible have increased in certain areas, so its bunt resistance is no longer adequate for these areas.

Rex is extremely resistant to shattering, being more shatter-resistant than most other commercially grown varieties in eastern Oregon. This characteristic has made it difficult to thresh under certain conditions, but this has not been a serious defect in most cases.

It is moderately winterhardy, begins growth early in the spring, and is drought-resistant.

Rex is a poor milling wheat. It is relatively low in flour yield because the endosperm does not separate readily from the bran. It bolts poorly, causing clogging of the milling machinery. Flour from Rex is rated as only fair for most pastry purposes. Since Rex is an extremely poor milling variety, the U. S. Department of Agriculture has listed it among varieties that are discounted for price support.

Table 1. Average Winter Wheat Yields ^{1/}

Location	Variety							
	Elmar	Omar ^{2/}	Orfed	Brevor	Golden	Rio	Federation	Columbia
<u>Umatilla County</u>								
<u>Pendleton Branch Experiment Station</u>								
Nonfertilized (1948-1955)	43.2	45.9	42.0	41.4	41.0	39.5	38.8 ^{3/}	----
Fertilized (1952-1955)	56.0	62.1	51.2	51.8	48.7	47.0	48.1 ^{3/}	----
Helix (1953-1955)	38.5	42.9	37.2	38.5	36.3	34.8	31.2	----
Weston (1953-1955)	40.5	46.1	38.2	40.5	39.4	33.5	36.0	----
Pilot Rock (1953-1955)	26.3	27.8	24.4	21.2	23.3	21.2	21.1	----
Rew Farm (1955)	31.5	30.0	26.7	29.3	27.6	27.5	27.3	----
Average	39.3	42.5	36.6	37.1	36.0	33.9	33.8	----
<u>Union, Baker, and Wallowa Counties</u>								
Elgin (1953-1955)	55.7	----	54.2	54.3	53.4	48.3	28.2 ^{4/}	----
Haines (1955)	54.8	54.7	43.2	52.6	46.8	39.8	41.5	----
Enterprise (1955)	54.6	52.6	55.4	45.3	52.2	40.9	50.1	----
Average	55.0	53.6	50.9	50.7	50.8	43.0	39.9	----
<u>Sherman, Wasco, Gilliam, and Morrow Counties</u>								
Sherman Experiment Station (1920-1955)	29.0	34.0	26.0	28.8	25.1	23.5	24.2	28.3
Kent (1951-1955)	22.6	----	21.2	23.3	22.8	19.8	----	23.1
Condon (1927-1955)	33.6	----	29.6	31.5	29.1	27.5	27.6	39.5
Shuttler Flat (1938-1955)	24.5	----	20.6	20.4	21.4	22.0	26.2	21.6
Ione (1946-1955)	18.2	----	16.4	15.3	15.0	14.6	----	11.7
Eightmile (1946-1955)	25.2	----	24.3	25.6	26.3	25.6	----	24.5
The Dalles (1942-1955)	38.2	----	34.0	33.8	28.5	30.2	----	37.7
Average	27.3	----	24.6	25.5	24.0	23.3	24.8	26.6
<u>Jefferson and Crook Counties</u>								
Ashwood (1951-1953)	29.0	----	23.5	26.1	24.9	24.6	23.9 ^{5/}	25.6
Hay Creek (1954)	26.2	----	24.1	32.6	27.7	20.2	4.8 ^{6/}	21.9
Madras (1955)	13.6	----	11.7	12.4	13.3	11.0	10.7	12.4
Roberts Flat (1954)	16.1	----	16.8	17.4	17.6	15.5	5.4 ^{6/}	13.0
Average	23.8	----	20.5	23.4	22.2	20.1	15.4	20.7
Malheur Experiment Station (1952-1955)	61.5	----	61.4	68.4	52.2	54.5	----	----

^{1/} At most locations these varieties have been tested for varying periods of time.

The yields have been adjusted so as to be comparable.

^{2/} Omar was tested at Pendleton from 1953 to 1955, but only in 1955 at the other locations.

^{3/} Suffered frost injury in 1951 and 1954.

^{4/} Federation was completely winterkilled in 1955, and was severely injured the other years.

^{5/} Injured by frost in 1951.

^{6/} Injured by frost in 1954.

Table 2. Average Date of Heading, Plant Height, and Weight per Bushel ^{1/}

Location	Variety							
	Elmar	Omar	Orfed	Brevor	Golden	Rio	Federation	Columbia
	Date of heading							
Pendleton Experiment Station	6/4	6/5	5/28	6/3	6/3	6/1	5/26	----
Sherman Experiment Station	6/4	6/3	5/25	6/2	6/1	6/1	5/24	5/29
Malheur Experiment Station	5/25	----	5/15	5/22	5/23	5/19	----	----
Crook County (irrigated).....	6/24	----	----	6/23	----	6/20	----	6/17
	Plant height							
	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>
Average for Umatilla, Union, Baker and Wallowa Counties	35	34	36	33	38	38	34	----
Sherman Experiment Station	282	27	30	28	30	30	29	28
Malheur Experiment Station	40	----	40	37	41	44	----	----
Crook County (irrigated).....	35	----	----	33	----	32	----	33
	Weight per bushel							
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>
Average for Umatilla, Union, Baker and Wallowa Counties	60.6	60.6	62.7	61.4	59.0	62.2	59.8	----
Sherman Experiment Station	59.5	58.3	60.5	58.8	56.5	59.0	56.8	60.3
Malheur Experiment Station	60.0	----	62.1	60.9	59.2	61.7	----	----
Average for Jefferson and Crook Counties (dryland)	58.6	----	60.6	59.3	57.6	61.8	59.1	61.6
Crook County (irrigated).....	59.5	----	----	59.5	----	61.7	----	62.5

^{1/} Data are for varying periods of time, but mostly 1951-1955.

Elgin

Elgin is a white club winter wheat similar to Elmar in growth characteristics, quality, and yielding ability. It differs from Elmar in bunt susceptibility. Elgin is susceptible to all known races of common bunt as well as to dwarf bunt, and has been largely replaced with bunt-resistant varieties of similar yield and quality characteristics.

Requa

Requa is a soft white winter wheat with a bearded common head type. It has brown chaff and straw that is medium tall. The straw lodges easily. This variety is moderately susceptible to most races of common bunt and to dwarf bunt.

Requa is a pretty good milling wheat, and produces a fair yield of flour. The flour is satisfactory only for pastry purposes, producing a cookie with a fair diameter.

Triplet

Triplet is a soft red winter wheat variety of medium maturity. It has medium-tall straw moderately resistant to lodging. It has a beardless common head type with white chaff covered by fine hairs.

This variety is susceptible to all known races of common bunt and to dwarf bunt.

Triplet possesses excellent milling quality and gives a fairly good yield of flour. The flour is useful only for pastry purposes, and is an especially good cake flour.

Hymar

Hymar is a white club winter wheat of medium-late maturity. It has tall stiff straw, resistant to lodging, and a beardless head with white chaff.

Hymar is resistant to about half the races of common bunt, and to the most common race of dwarf bunt. Its bunt resistance is similar to Elmar. Like Elmar it has shown considerable amounts of bunt in recent years.

Milling and baking quality of Hymar is good, being similar to Elmar.

This variety does not yield as well as Elmar. It also has a tall straw often difficult to handle during summer-fallow tillage operations.

Pawnee

Pawnee is a medium tall hard red winter wheat. It is early in maturity, and has straw fairly resistant to lodging. This variety has a bearded, white-chaffed common head type. Milling quality is good. The flour is satisfactory for bread making when Pawnee is grown in areas that produce grain with a protein content of 11 per cent or more.

This variety normally does not yield as well as Columbia or Rio.

Comanche

Comanche is an early maturing variety of hard red winter wheat. It has medium-height straw. The head of this variety is a common type, white-chaffed and bearded.

Comanche possesses excellent milling qualities. Its flour is excellent for bread when it is grown in areas that produce wheat with a protein content of 11 per cent or more.

Turkey

Turkey is a name applied to several similar strains of hard red winter wheat that have been grown for many years. They have medium tall straw that lodges readily. They are medium in maturity and produce a bearded, white-chaffed common type of head.

Turkey is of good milling quality, in general, and produces a flour good for bread making when grown in areas that produce grain with a protein content of 11 per cent or more.

Since none of the Turkey strains yield as well as Rio or Columbia, they are not recommended for eastern Oregon.

Vigo

Vigo is a soft, red winter wheat of medium maturity, having a moderately stiff straw that resists lodging under most conditions. This variety has a beardless, white chaffed common type head that shatters easily.

Vigo has satisfactory milling quality, and produces a flour suitable for pastry purposes.

The variety has not yet been adequately tested in this area. Varieties are recommended only after extensive testing.

Spring Wheat Varieties

The following varieties have performed well in tests:

Idaed

Idaed is an early maturing soft white spring wheat variety with a beardless, common head type and white chaff. It has medium tall, moderately stiff, white straw resistant to lodging. Heads are also resistant to shattering.

This variety is susceptible to most races of bunt but since it is generally spring-sown, bunt can be controlled by seed treatment.

Idaed is a good milling wheat with an intermediate flour yield. Its flour is suitable for most pastry products, and is frequently used in blending.

Idaed yields well at most locations, especially in areas where earliness is desirable. It frequently matures before summer droughts occur and is, therefore, recommended for areas where this hazard is common.

Federation

Federation is a soft white spring wheat with a beardless common type of head and brown chaff. It has a white, stiff straw of medium height. Federation is an extremely early variety when fall-sown, but is midseason in maturity when spring-sown.

This variety is susceptible to most races of common bunt, and to dwarf bunt. Under spring seeding, however, this defect is not serious because bunt can be controlled effectively by adequate seed treatment.

Federation is fall-sown in some areas of eastern Oregon because of its extreme earliness. It often is hardy enough to survive the winter, especially when sown late in the fall. However, fall-seeding of this variety is not recommended.

Federation has good harvesting characteristics, except that occasional difficulty is encountered in removing "white caps" in the higher rainfall areas and under certain conditions in irrigated areas.

When fall-sown, Federation almost always grades soft. When spring-sown in the drier areas, it frequently is vitreous enough to grade as hard white wheat. It generally rates as a fairly good milling wheat. The flour is most commonly used for pastry products, but occasionally for bread.

Federation yields well in most locations when spring-sown. In fall seedings, it yields well during years of mild winters or when the season is free from late spring frosts. This hazard, nevertheless, prevents its recommendation for fall-seeding.

Lemhi

Lemhi is a soft white spring wheat having a beardless common head type with white chaff. It has medium tall, stiff, white straw and is resistant to lodging. It is medium early in maturity, being slightly later than Federation. Lemhi is very resistant to shattering, being about equal to Federation in this characteristic.

Lemhi has been most popular in irrigated areas, indicating that it is well adapted for growing under irrigation.

Milling quality of Lemhi is good and it gives a fairly high yield of flour suitable for most pastry products.

Lemhi has given good yields at most locations at which it has been tested. It has been popular only in irrigated areas; however, experimental tests indicate it is well adapted to most areas of eastern Oregon.

Lemhi 53

Lemhi 53 differs from Lemhi because it possesses resistance to stem rust. It is recommended for areas of eastern Oregon where stem rust is a serious disease problem.

Limited amounts of seed of this variety are available in Idaho. None is known in Oregon.

Baart

Baart is a semihard white spring wheat with a bearded common type of head and white chaff. It has tall, white straw that lodges readily when grown on heavy fertile soil. It is midseason in maturity, and resistant to shattering.

Baart is susceptible to bunt, but since it is always spring-sown this disease can be controlled by adequate seed treatment. Foot and root rots occasionally damage this variety severely.

Baart mills fairly well and gives a satisfactory yield of flour. When grown under conditions that produce a high protein content, it is suitable for bread flour. When the flour is low in protein, it is suitable for use in production of crackers and cake. Baart is also a popular variety for making puffed wheat breakfast cereal.

Baart normally does not yield as well as Federation, so it is not recommended for general usage. It has the ability to produce rather tall growth and satisfactory yields in dry seasons; therefore, it is recommended for areas where droughts occur frequently. When grown under such conditions the flour is usually of high quality, and the wheat brings a premium on the market.

Table 3. Average Spring Wheat Yields 1/

Location	Variety					
	Idaed	Federation	Lemhi	Lemhi 53 <u>3/</u>	Orfed	Baart
<u>Umatilla County</u>						
Pendleton Experiment Station (1946-1955) <u>2/</u>	45.0	42.9	41.0	43.7	39.7 <u>4/</u>	35.8
Helix (1953-1955)	31.5	34.1	35.4	32.1	32.4	32.1
Weston (1953-1955)	35.7	30.7	33.2	24.0	27.3	31.0
Rew Elevator (1953-1955)	23.4	23.5	22.5	20.9	21.4	21.2
Average	33.9	32.8	33.0	30.2	30.2	30.0
<u>Union, Baker, and Wallowa Counties</u>						
Elgin (1952-1955)	44.6	39.4	43.2	34.6	32.2	38.3
Alicel (1952-1955)	18.8	18.0	21.6	19.2	15.7	17.0
Enterprise-Lostine (1954-1955)	16.5	14.0	17.7	15.7	14.2	16.9
North Powder (1952-1954)	25.2	25.1	25.3	----	20.5	22.4
Average	26.3	24.1	27.0	23.0	21.2	23.6
<u>Sherman and Gilliam Counties</u>						
Sherman Experiment Station (1917-1955)	25.0	24.8	24.1	23.6	24.0	20.8
Kent (1950-1955)	21.5	21.3	----	----	17.3	----
Condon (1939-1955)	28.0	26.7	----	----	22.7	----
Average	24.8	24.3	----	----	21.3	----
Average for Deschutes, Crook, and Jefferson Counties (1948-1954)						
Malheur Experiment Station (1953-1955)	67.3	72.7	73.6	78.8	----	62.7

1/ At most locations these varieties have been tested for varying periods of time. Yields have been adjusted so as to be comparable.

2/ Grown on nitrogen-fertilized summer fallow, 1952-1955.

3/ Lemhi 53 has been tested 2 years at Pendleton, Moro, and Ontario, and only 1 year at the other locations.

4/ Orfed was not tested during 1948-1952.

Table 4. Averages of Spring Wheat Varieties for Date of Heading, Plant Height, and Weight per Bushel ^{1/}

Location	Variety					
	Idaed	Federation	Lemhi	Lemhi 53	Orfed	Baart
Date of heading						
Pendleton Experiment Station	6/3	6/7	6/9	6/9	6/13	6/8
Sherman Experiment Station	6/6	6/10	6/12	6/14	6/16	6/11
Malheur Experiment Station	5/28	6/2	6/3	6/3	----	6/8
Plant height						
	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>	<u>Inches</u>
Pendleton Experiment Station	32	31	33	32	32	36
Sherman Experiment Station	29	29	30	33	30	32
Malheur Experiment Station	34	37	39	39	----	43
Average for Deschutes, Crook, and Jefferson Counties.....	32	37	37	----	42	39
Weight per bushel						
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>
Pendleton Experiment Station	58.5	57.9	58.3	56.6	61.3	59.6
Sherman Branch Station	56.0	54.9	55.6	53.2	59.8	56.6
Malheur Experiment Station	61.0	59.0	59.6	59.6	----	63.0
Average for Deschutes, Crook, and Jefferson Counties.....	57.8	57.5	58.0	----	61.0	60.0

^{1/} Data are for varying periods of time, but mostly 1951-1955.

Spring Varieties Not Recommended

The following varieties now grown are not recommended:

Marfed

Marfed is a soft white common spring wheat, medium late in maturity. It produces heads that are beardless and white chaffed. Straw is medium in height and stiff.

Milling quality of this variety is only fair, although the flour is good for pastry purposes. When grown under conditions resulting in high protein content, the flour will produce good bread.

Marfed yields well under most conditions, but is not recommended for growing in eastern Oregon because of poor milling quality.

Hard Federation 31

Hard Federation 31 is a hard white common spring wheat, early in maturity. It has short, stiff straw and produces a beardless, brown chaffed head.

This variety is rated only fair in milling quality, but its flour is satisfactory for bread making when grown in areas that produce grain with a protein content of 11 per cent or more.

Hard Federation 31 does not yield as well as Federation, Idaed, and most other recommended spring wheat varieties.

White Federation 38

White Federation 38 is a hard white common spring wheat that is early maturing. It has a short, stiff straw and heads that are white chaffed and beardless.

Milling and baking quality of White Federation 38 is similar to Hard Federation 31.

White Federation 38 does not yield as well as Federation and other recommended varieties in most areas of eastern Oregon.

Henry

Henry is a hard red spring common wheat, medium in maturity. It has medium tall, moderately stiff straw and produces bearded, white chaffed heads.

This variety has good milling quality and produces flour fairly good for bread making when grown in areas that produce high protein grain. In Washington it is used for reseeding areas where winterkilling occurred in hard red winter wheat fields.

Henry does not yield as well as recommended varieties of soft white spring wheats in most areas of eastern Oregon.

Onas 53

Onas 53 is a soft white common spring wheat, medium in maturity. It has medium height straw very resistant to lodging. It has bearded, white chaffed heads.

Onas 53 is resistant to about half the races of bunt, with resistance similar to Elmar. Since bunt can be controlled in spring-seeded wheat by proper seed treatment, the disease is not serious.

But milling quality of Onas 53 is poor. The flour produces good bread when protein content of the wheat is 11 per cent or higher. In contrast it produces good cookies when protein content is about 8 per cent. Onas 53 gives high yields of grain and would be a desirable variety when growing wheat for livestock feed.

Thatcher

Thatcher is a hard red spring common wheat, medium early in maturity. It has medium height, moderately stiff straw. Heads are white chaffed and beardless.

This variety has good milling quality and flour produces good bread when protein content of the wheat is 11 per cent or more.

Thatcher yields about 10 per cent less than recommended varieties of soft white wheat.

Marquis

Marquis is a hard red spring common wheat, moderately late in maturity. Straw is medium tall, moderately weak, and may lodge under certain conditions. It has beardless, white chaffed heads.

Marquis has good milling quality, and its flour is excellent for bread when protein content of the wheat is 11 per cent or more.

This variety has averaged yields about 15 per cent less than recommended varieties of soft white spring wheat.

Mida

Mida is a hard red spring common wheat of medium maturity. It has medium tall straw, moderately resistant to lodging. Heads are bearded and white chaffed. It may shatter during windy weather if allowed to stand in the field too long after ripening.

This variety has good milling quality and its flour is good for bread when protein content of the wheat is 11 per cent or more. It has not been tested adequately in eastern Oregon. Varieties are recommended only after extensive testing.