

separately from stocks owned but held elsewhere. This item of stocks held at mills supplements the Department of Agriculture items.

This joint arrangement of reports on wheat stocks does not include wheat in transit, either by rail or boat, nor in the small number of 5,000-barrel mills on the present census list which fail to report to that bureau. This last quantity, however, is small and an allowance can be made on the basis of holdings of those mills which do report.

The Department of Agriculture estimates of stocks on farms and in country mills and elevators on July 1 relate only to old wheat, while the reports of stocks in terminal markets and mills may include some new wheat.

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WHEAT Varieties for the Western United States Several new wheat varieties, introduced or developed through breeding by the United States Department of Agriculture in cooperation with State experiment stations, have been distributed in the Western States. Some of these already have achieved commercial importance and others may soon. The more important ones are described and discussed briefly under the commercial classes to which they belong.

Hard Red Spring

The Kota variety was introduced from Russia and developed concurrently by the United States Department of Agriculture and the North Dakota Agricultural Experiment Station. It is a bearded, white-glumed variety which is resistant to black stem rust. It also is fairly resistant to drought and outyields Marquis in North Dakota and adjacent portions of neighboring States where it now occupies about 1,000,000 acres.

Reliance is a spring variety produced from a Marquis-Kanred cross in cooperative experiments between the Department of Agriculture and the Oregon, Montana, North Dakota, and Minnesota experiment stations. It is a bearded, white-glumed variety, maturing about one day later than Marquis. It is a vigorous, frost-resistant, and high-yielding variety. While it has the resistance of Kanred to stem rust it is not as resistant as Kota. Small samples of seed were first distributed for commercial growing from the Northern Great Plains Field Station, Mandan, N. Dak., in the spring of 1926. It should be best adapted to the western portions of the Dakotas and in Montana.

Durum

Nodak is a pure-line selection from Kubanka developed at the Dickinson substation, Dickinson, N. Dak., in cooperative experiments between the United States Department of Agriculture and the North Dakota Experiment Station. It is similar to Kubanka except for being more resistant to stem rust and a higher yielder. Seed was first distributed for commercial growing from the Dickinson substation in 1923, and it is estimated that about 5,000 acres were grown in

1926. It appears best adapted to central North Dakota where stem rust is prevalent.

Mondak is a different selection from Kubanka but developed similarly. Mondak is not resistant to stem rust but yields best in Montana and in western North Dakota where stem rust does not occur. Mondak differs from Kubanka and Nodak only in being slightly later and taller, and having better quality of grain for the manufacture of macaroni. Seed was first distributed from the Dickinson substation in 1923 and from the Judith Basin substation, Moccasin, Mont., in 1926.

Akrona is a selection from Arnautka developed at the Akron Field Station, Akron, Colo., by the United States Department of Agriculture. It is an early, high-yielding amber durum and of excellent quality for the manufacture of macaroni. Seed was first distributed from the Akron Field Station, Akron, Colo., in 1925. It appears best adapted to northeastern Colorado and adjacent sections of neighboring States.

Hard Red Winter

Karmont is a hardy, high-yielding selection of Kharkof developed at the Judith Basin substation in cooperative experiments between the United States Department of Agriculture and the Montana Agricultural Experiment Station. It is slightly hardier than Kharkof and yields best in the higher and drier sections of Montana. Seed was first distributed from the Moccasin substation in 1922, and it is estimated that about 350,000 acres were grown in 1926.

Newturk is an awnless hard red winter wheat developed from a Newton-Turkey cross in cooperative experiments between the United States Department of Agriculture and the Montana Agricultural Experiment Station at the Judith Basin substation. It is as hardy and as high yielding as Kharkof or Karmont in Montana, and of equal quality. Seed was first distributed for commercial growing in the fall of 1926.

Regal is a smut-resistant selection of Turkey developed in cooperative experiments between the United States Department of Agriculture and the Oregon Agricultural Experiment Station at the Sherman County branch station, Moro, Oreg. The Regal variety may be distinguished from other hard red winter wheats by its purple stems. Seed of the Regal was first distributed from the Moro Station in the fall of 1926.

White

Federation was introduced into the United States in 1914 by the United States Department of Agriculture. It originated from a cross made by William Farrer, of New South Wales, Australia, and became the leading wheat variety of Australia. After being tested in the Pacific Coast States for several years, it was distributed to farmers in Oregon in the spring of 1920 from the Sherman County substation, and later in Idaho from the Aberdeen Field Station, Aberdeen, Idaho. About 450,000 acres of Federation were grown in 1925. It is an awnless, brown-glumed, soft-kerneled spring wheat, but is grown from fall seeding in mild climates. It is especially well adapted for growing under irrigation and on rich heavy soils.

Hard Federation was selected from Federation about 1908 by J. T. Pridham, at the Cowra Experiment Station, in New South Wales, Australia. It was introduced by the Department of Agriculture in 1915 and was first distributed in 1920 to farmers of Oregon and California from experiment stations at Moro, Oreg., and Chico, Calif. It is estimated that about 100,000 acres of Hard Federation were grown in 1925. It is a short, early, awnless, brown-glumed, hard white wheat, best adapted to the higher and drier sections of California, Oregon, and Montana.

Onas was introduced by the United States Department of Agriculture from Tulsa, Saddleworth, South Australia. It was developed through hybridization by F. Coleman, Federation being one parent. The value of this wheat for California conditions was determined in cooperative experiments by the department and the California Agricultural Experiment Station. Seed was distributed from the Davis Experiment Station, Davis, Calif., in 1923. It is a high-yielding, awnless, white-glumed, spring variety, best adapted to the low-lying good wheat lands of California.

Value of the New Wheats

Of the new varieties listed above five already have proved extremely valuable to wheat-growing farmers. These are Kota, Federation, Hard Federation, Karmont, and Nodak. Their total estimated area in 1926 was 1,855,000 acres, and the total estimated increase in value from growing them was \$5,525,000.

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WHEAT Varieties Resistant to Stinking Smut

For more than 2,000 years stinking smut or bunt has been one of the worst fungous parasites of the wheat plant. A hundred years ago the practice of treating the seed in general use in regions where outbreaks of the disease were common.

In the Pacific Coast States, owing to soil infection by wind-borne spores scattered during the harvest season, satisfactory control could not be obtained by seed treatment. Infection from this source was limited to winter wheat, for these wind-borne spores perish during the winter season and cease to be a menace to wheat sown in the spring. It was necessary, therefore, to try other means of control of stinking smut in winter wheat. The most hopeful solution of the problem seemed to be to find or develop resistant varieties. Accordingly, since 1913, when the nature of field infection was first demonstrated, thousands of varieties and hybrid selections have been tested for resistance at the experiment stations in Washington, Oregon, and California. The methods used have been similar at all stations. The seed is blackened with smut spores and sown at the time infection is most likely to occur. At harvest time the susceptibility is measured in terms of percentage of bunted heads.

Most of the common bread wheats have been found to be susceptible, producing from 25 to 100 per cent of bunted heads under such conditions. A very few varieties have proved to be highly resistant, producing less than 10 per cent of smut. In fact, three strains, White Odessa, Martin, and Hussar, have been smut-free in most