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# AGRICULTURAL EXPERIMENT STATION

## KANSAS STATE AGRICULTURAL COLLEGE

DEPARTMENT OF AGRONOMY



Field of Kanred wheat on the Agronomy Farm,  
Kansas State Agricultural College, 1916

## ESTABLISHING KANRED WHEAT IN KANSAS

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### SUPERIORITY OF THE NEW VARIETY

There has been developed<sup>1</sup> at the Kansas Agricultural Experiment Station a new variety of wheat which yields from three to five bushels per acre more than either of the two varieties, Turkey and Kharkof, which are most commonly grown in Kansas. The new variety has been named Kanred, a derivation of the words *Kansas Red*. It is a hard red winter wheat (figs. 1 and 2) scarcely distinguishable in appearance from Turkey and Kharkof, but superior to them in winter hardiness, earli-

<sup>1</sup> The development of this new variety cannot be credited to any single individual. The experiment station's crop improvement work, of which this wheat variety is a product, has involved several departments of the station, especially the Departments of Agronomy, Botany, and Milling Industry.

ness of maturity, resistance to rust, and yield. Kanred has been grown in about 260 experimental tests and in ordinary fields by about 1,500 farmers in all parts of the state. With very few exceptions, the results have been satisfactory. Seed of Kanred was first distributed to Kansas farmers in 1914.

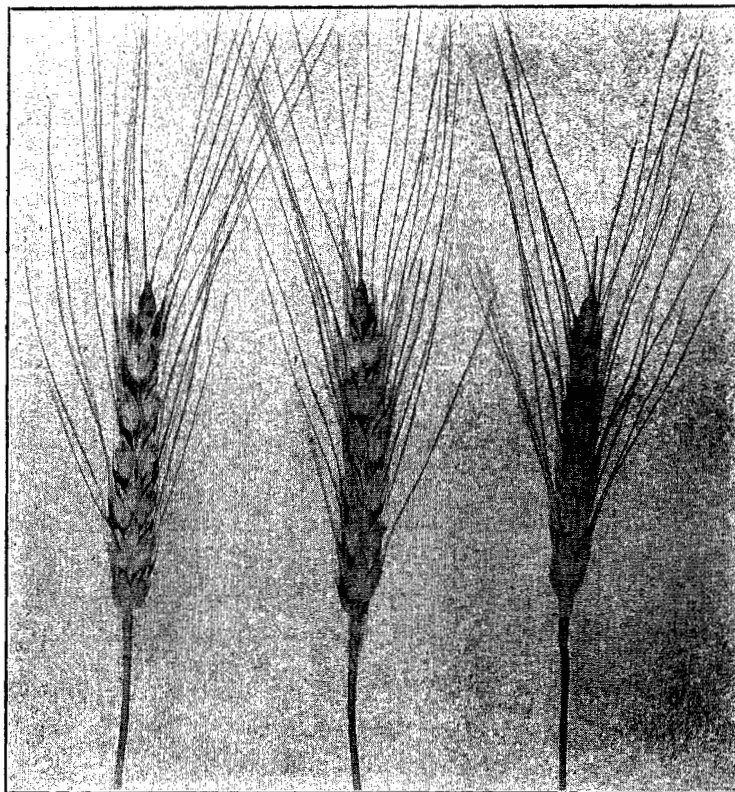


FIG. 1.—Heads of Kanred wheat. In appearance this variety can scarcely be distinguished from Turkey and Kharkof. It is more resistant to winterkilling and rust, and produces better yields in all parts of Kansas where hard winter wheats are grown

Such good results have been secured that a total of about 4,000 acres was seeded to this variety in the fall of 1917 and more than 50,000 acres in the fall of 1918.

The evidence regarding Kanred appears to warrant the substitution of this new variety for Turkey and Kharkof throughout the hard wheat sections of Kansas. It appears that such a substitution might increase the Kansas wheat crop mater-

ially, without increasing the cost of production. But the substitution cannot be made successfully, either on individual farms or throughout the hard wheat sections, without the observance of certain precautions and exercise of practical judgment. For this reason it seems desirable to inform Kansas wheat growers regarding the history, characteristics, adapta-

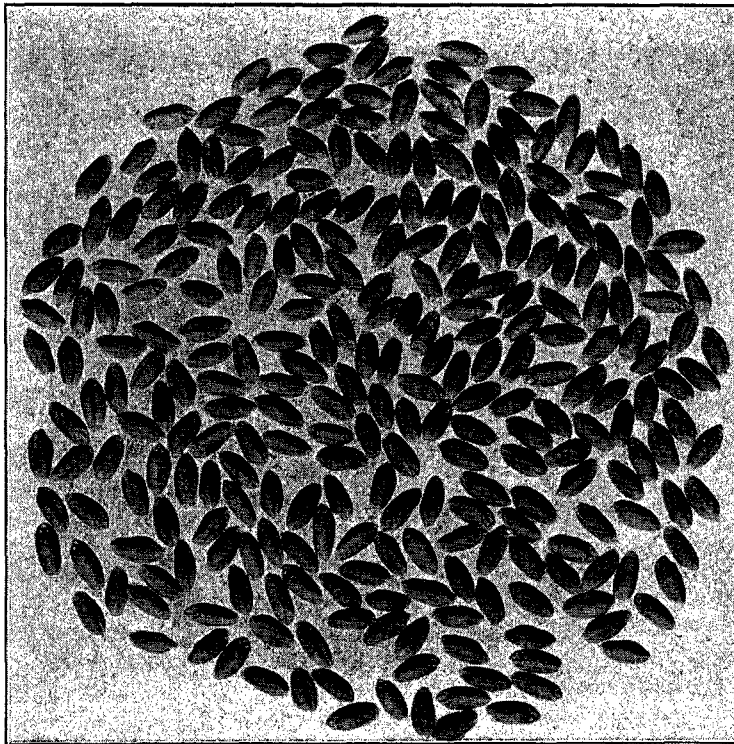


FIG. 2.—Kanred wheat. The threshed grain in appearance and quality is practically the same as Turkey and Kharkof

tions, and performance of Kanred, and to suggest methods whereby this new variety may be substituted for those now grown.

#### HOW KANRED WAS DEVELOPED

Kanred is the product of a single head selected in 1906 from a hard winter variety that had been introduced into the United States from Russia by the United States Department of Agriculture. It was discovered by selecting a large number of heads from the field, planting the seed of each in a single row,



harvesting them separately, and studying each carefully as to hardiness, earliness, yield, and other characteristics. The first year 554 selections were made and 451 of these were harvested. The second year each selection or strain, as it is called, was again sown in rows by itself, and careful notes on earliness, hardiness, quality of grain, and yield were again recorded. (Fig. 3.) This was continued for several years, careful studies of each individual strain being made each year. Beginning with 1911 and continuing to the present time, the more



FIG. 3.—View in the Cereal Crop Nursery at the Kansas State Agricultural College. Each row is a single variety or strain. The earliness, cold and drouth resistance, quality of grain, and yield of each individual row is recorded. Those which prove to be the best are grown in field plots and finally distributed to farmers

promising of these strains were grown in field plots in which more accurate records of yields were secured than was possible when they were grown in rows. Beginning in 1914, number of them, including Kanred, were grown at the branch experiment stations at Hays, Colby, Garden City, and Tribune, and in cooperation with farmers in all parts of the state. Milling and baking tests, and chemical analyses of the most promising varieties grown at Manhattan, have also been made each year since 1912.

### EARLINESS OF KANRED

The period required to mature is very important in determining the value of any variety of grain for Kansas. It is particularly important in wheat. A good wheat for Kansas must mature early. A late-maturing variety is very likely to be severely injured by hot winds and drouth, and occasionally by rust or by hail. Wheat that matures early has a much better chance of escaping these dangers. Even the small difference of one or two days is sometimes quite important.

Kanred usually ripens earlier than Turkey and Kharkof. The difference is not great, but in some cases it has been enough apparently to make considerable difference in the yield. At Manhattan the average date of ripening has been about two days earlier than Turkey and Kharkof. In some seasons there has been a difference of as much as four days. Some farmers have observed a difference of several days between the time of ripening of Kanred and their local variety. On other farms there has been no difference. On the whole it can be said that as far as known Kanred always ripens as early as Turkey and Kharkof and usually from one to four days earlier.

### RESISTANCE OF KANRED TO WINTERKILLING

The ability of a variety to survive severe winters is of first importance. There is some loss from winterkilling in Kansas nearly every year. In some seasons, as for example in 1917, the loss may amount to as much as 50 percent of the acreage seeded. In 1910 the loss from winterkilling was nearly 30 percent and in 1912 about 20 percent. It is apparent that the reduction of these losses by the substitution of a hardier variety is desirable.

Experiments so far conducted show that Kanred is more resistant to winterkilling than Turkey and Kharkof. In 1912, winter wheat at Manhattan was severely injured in late winter and early spring by freezing. Noexact figures on winter survival are available, but the yield for Kanred in that season was 19.2 bushels per acre as compared with 13.2 bushels for Turkey, and 11.9 bushels for Kharkof. It is believed that much of this difference was due to the greater hardiness of Kanred.

The hardiness of Kanred as compared with other varieties was especially apparent in tests conducted in cooperation with

farmers in north central Kansas in 1916. As an example, on the farm of Mr. Frank Carlson in Cloud County, Kanred survived almost perfectly, while at least 50 percent of Turkey and Kharkof in adjoining plots on either side was killed. The yields were 27 bushels per acre for Kanred, 17.2 bushels for Turkey, and 16 bushels for Kharkof. Similar results were secured in other tests in northern and northeastern Kansas in that season.

Winterkilling in the winter and spring of 1916 was mainly attributed to an ice sheet which covered the ground in late February and early March and to alternate thawing and freezing in the spring. A heavy ice sheet covered the ground at Manhattan and, although no winterkilling occurred, it appeared that the wheat was somewhat injured. Kanred was distinctly more vigorous and thrifty in the spring than other varieties and yielded, in that season, 11.4 bushels more per acre than Turkey and 9 bushels more than Kharkof.

It was observed following the very severe winter of 1916-17 that Kanred survived markedly better than other hard winter wheat grown in the same fields. This was true at Manhattan and also in experimental tests with farmers in the northern part of the state. The better yield of Kanred in that season also was thought to be due largely to the difference in hardiness.

There is probably more than one cause of winterkilling. For this reason it may be found that Kanred will not prove more hardy than other varieties for all conditions. But it seems reasonable to conclude that for Kansas it is less subject to winter injury than the varieties now generally grown.

#### RESISTANCE OF KANRED TO RUST

Black stem rust is seldom injurious in Kansas except in the eastern part of the state.

In some seasons the losses may be quite large. While rust does not cause so much damage in Kansas as in other states, the growing of a rust-resistant variety is worth considering. This is especially true for upland in northeastern Kansas where the danger of winterkilling makes it desirable to grow hard winter wheat, such as Turkey, Kharkof, and Kanred, and where rust sometimes causes serious injury.

Careful tests, conducted by the Department of Botany and

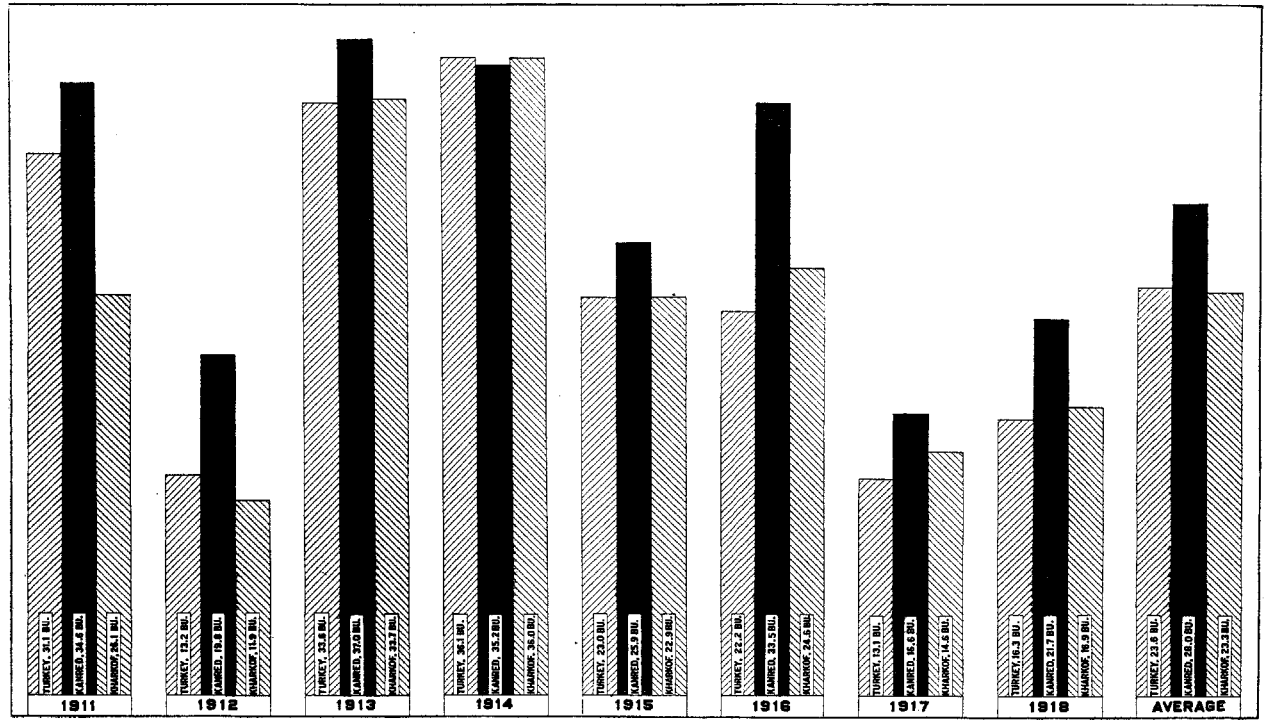


FIG. 4.—Comparative yields of Kanred, Turkey, and Kharkof on the Agronomy Farm, Manhattan, Kan., 1911 to 1918, inclusive

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the Department of Agronomy of the Kansas State Agricultural College, show that Kanred is markedly resistant or immune to certain kinds of black stem rust. Also it has frequently been observed in the fields at Manhattan and in cooperative tests with farmers that Kanred has been injured much less than other varieties when orange leaf rust was prevalent.

#### YIELDS OF KANRED

Of first importance in determining the value of a new variety is its yield as compared with those generally grown. Kanred wheat has been grown in field plots at the Agricultural Experiment Station at Manhattan for eight years. The average yield for this period is 28.1 bushels per acre as compared with 23.6 bushels for Turkey, and 23.4 bushels for Kharkof. (Fig. 4.) In other words, the average production of Kanred has been 4.5 bushels per acre more than Turkey, and 4.7 bushels per acre more than Kharkof. Probably more significant is the fact that it has outyielded these varieties in every year but one, and in that year there were no significant differences in the yields of the three varieties.

Kanred has been grown at the four branch experiment stations in western Kansas, and in 242 tests by 113 farmers throughout the hard wheat belt of the state. (Fig. 5.) As an average of all tests it produced 3.4 bushels per acre more than Turkey, 4.2 bushels more than Kharkof, and 3.6 bushels more than the local varieties grown by the farmers making the tests. It has outyielded the local varieties in all but 10 tests that have been conducted. These results show that there is little doubt of the superiority of Kanred for central Kansas. There is good reason to believe that it will prove adapted to the hard winter wheat growing areas of Oklahoma, Nebraska, Colorado, and Montana as well as Kansas.

#### WHAT FARMERS THINK OF KANRED

About fifteen hundred farmers in Kansas are now growing Kanred. (Fig. 6.) About three hundred grew this new variety in 1918. The following extracts from letters and reports show what some of these farmers think of Kanred for their conditions.<sup>1</sup>

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<sup>1</sup>All farmers who grew Kanred wheat in 1918 were asked to give their experience with this variety. All statements secured in this way are included in the following paragraphs except a few where permission for publication was not obtained from the writers.



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Barber County, Miss Mary Best, Medicine Lodge.—In the years 1912 and 1913, I grew comparative tests of wheat for the Kansas State Agricultural College, and in the two seasons we could see that Kanred yielded better than any other variety. We had been growing Kharkof and found it very good, but Kanred was better. In 1914 we discarded Kharkof and bought 50 bushels of Kanred from the Kansas State Agricultural College. Since then we have used no other variety. We find Kanred is hardy—never has it winterkilled, and on the low, rich ground where

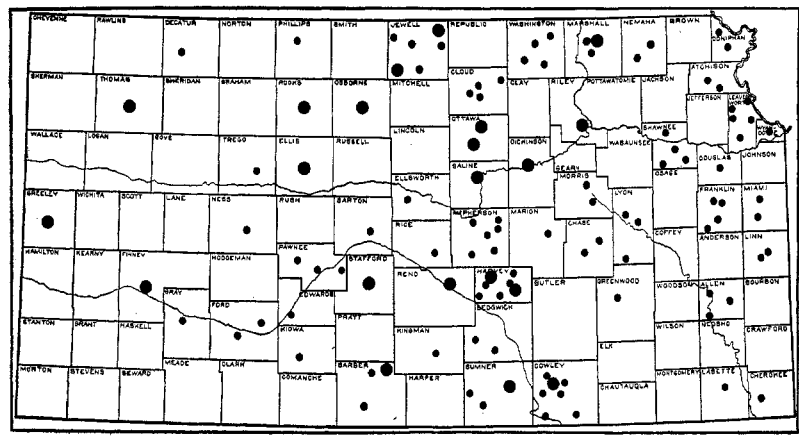


FIG. 5.—Map of Kansas showing location of experimental tests with Kanred wheat. The large dots represent tests conducted for four years or more, and the small dots those conducted for one to three years. As an average of all tests Kanred produced 4.5 bushels per acre more than Turkey, 4.7 bushels more than Kharkof, and 3.6 bushels more than the local variety grown by each farmer making the test

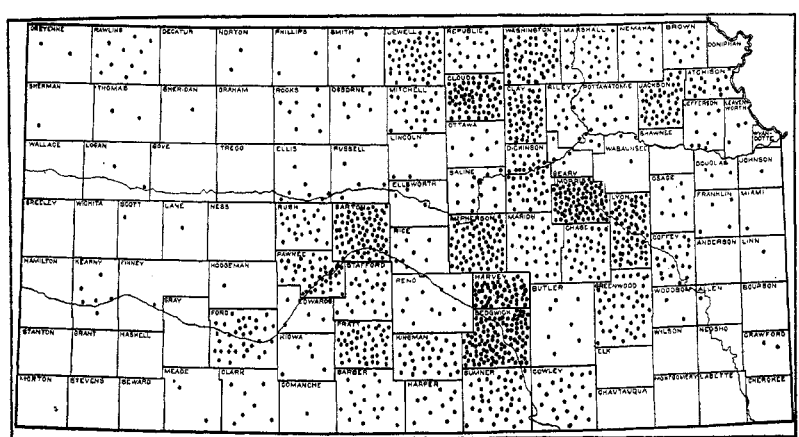


FIG. 6.—Map of Kansas showing where Kanred was sown in the fall of 1918. Each dot indicates a farmer who sowed Kanred wheat

other varieties lodged badly, Kanred stood up much better. Our neighbor last year when binding his wheat said he and his help could tell to a row where his old local variety of wheat was sown and where Kanred began, all in favor of the latter. My crops have varied according to season, as all crops do. I have had as high a yield as 44 bushels per acre, and as low as 10 bushels. One 50-acre upland field gave an average yield for three years of 28 bushels per acre.

Butler County, Mr. Walter E. Gilmore, Eldorado.—We consider Kanred a marked improvement over the local variety, which is a good strain of Turkey wheat. The yield was 13.5 bushels per acre for Kanred and 12.0 bushels for Turkey. We believe that under ordinary conditions results would favor the Kanred more than the above figures show. One end of the Kanred plot was injured considerably from blowing of the soil in the early spring.

Cheyene County, Mr. Albert Weaver, Bird City.—We think Kanred equally as good as our own wheat and when it becomes acclimated it will do better than it did the first year.

Clay County, Mr. Walter Avery, Wakefield.—Kanred ripened a day or so earlier than the local wheat. It produced 17 bushels per acre and the local wheat 15 bushels. The quality of Kanred appeared to be better than the other.

Cloud County, Mr. Peter Anderson, Jamestown.—Kanred stood more and stood the drouth better than Turkey. The quality of grain was better. We think it a better wheat and will sow it this fall in place of other varieties. The Kanred yielded  $7\frac{1}{4}$  bushels and Turkey 4 bushels per acre.

Cloud County, Mr. Otis D. Bland, Miltonvale.—Do not think there is much difference between Kanred and the local wheat (smooth). Kanred seems to be a great wheat to stool. It seems to be quite a bit hardier.

Cloud County, Mr. Henry F. Pae, Concordia.—I could tell no difference between Kanred and the local variety, but I think Kanred is the better. Kanred was not damaged as much as the other wheat during the winter and appeared to stool better. The yield was three bushels per acre for Kanred and two bushels for the other.

Cloud County, Mr. F. J. Colwell, Glasco.—Kanred did not appear to be less drouth-resistant than the local wheat, but ripened earlier. It stood the dry winter the best of any wheat around here. On our farm it produced 14 bushels per acre as compared with 8 bushels for our own variety. It stools more than other wheat. The quality was as good and we consider it a better wheat than the other.

Cloud County, Mr. Soren P. Smith, Miltonvale.—Kanred appeared to be more drouth-resistant than the local wheat and the quality of the grain was better. There was no difference in yield.

Cowley County, Mr. H. A. White, Winfield.—Kanred stood the dry winter better than the local wheat (soft wheat) and ripened a few days earlier. It produced 30 bushels per acre and my own wheat 26 bushels.

Dickinson County, Mr. John A. Minter, Abilene.—Kanred was slightly more resistant to drouth than my own wheat (common Russian variety), Both ripened about the same time. Kanred produced 26 bushels per acre as compared with 18 bushels for the other. The quality of grain was better.

Edwards County, Mr. Fred Windhorst, Belpre.—I am well pleased with the results with the Kanred wheat, I am fully convinced that it is a very hardy wheat. The yield was 22 bushels per acre for Kanred and 20 bushels for the local wheat. All Kanred wheat should be used for seed this year.

Harvey County, Mr. Sam Regier, Moundridge.—Kanred stooled more than the local variety, ripened earlier, and in my opinion is a better wheat. The yield was 18 bushels per acre for Kanred and 14.5 bushels for the local. The difference may have been partly due to the soil.

Hodgeman County, Mr. F. A. Billheimer, Jetmore.—Kanred produced a better stand under the same conditions, stood the drouth better, and ripened earlier than the local wheat. Neither came up until spring. The grain appeared more shriveled, but the stand was much thicker. Kanred yielded two bushels per acre. The other was not harvested.

Jewell County, Mr. L. M. Jorgenson, Jewell.—Kanred stooled more than the local wheat, appeared to be more drouth-resistant, and ripened earlier. It was hurt by hot winds and the quality was not quite as good as the other. The yield was 19 bushels per acre as compared with 10.5 to 18.5 bushels for the local.

Jewell County, Mr. Chris Vandeventer, Mankato.—I have been growing Kanred in my variety test for some years. In 1917 it made so much better yield and the straw was so much stiffer than the other varieties, I decided to purchase all I could from the college at Manhattan. They let me have only 20 bushels. I planted the 20 bushels on 22 acres of a 70-acre field. The remainder of the field was planted to common Turkey wheat. The soil of the entire field of 70 acres was upland of the same kind and the seed was planted under exactly the same conditions. The Kanred stooled twice as much as the Turkey and ripened four days earlier. The weather during June was very unfavorable for wheat, but the Kanred stood the hot winds so much better than the Turkey that at threshing it made 32 bushels per acre, machine measure, while the Turkey made 17 bushels. Some of my neighbors who have purchased seed of me claim that Kanred made twice as much pasture as the other wheat. The main things in favor of Kanred wheat are: It stands our Kansas winters with their variable weather better and averages more per acre than any other wheat grown in this part of the country.

Jewell County, Mr. J. Dee Shank, Mankato.—Kanred produced 30.5 bushels per acre. Had no other wheat, but a field across the road under exactly similar conditions (cornstalk ground) made 25 bushels per acre. This was the best yield of any wheat in this locality.

McPherson County, Mr. O. Kilmer, McPherson.—Kanred was more drouth-resistant and a very little earlier than the local variety. It produced 24 bushels per acre and the local 18 bushels.

Marshall County, Mr. O. W. Dam, Marysville.—Kanred produced only 16 bushels per acre as compared with 17 bushels for the local wheat. The quality of the Kanred was better. It suffered more from drouth as rains came in time to help the local variety, but not the Kanred which was earlier.

Mitchell County, Mr. F. J. Kirgis, Beloit.—Kanred ripened a few days earlier than the local wheat and produced 31 bushels per acre as compared with 19.5 bushels for the other.

Osborne County, Mr. J. H. Wanamaker, Osborne.—Kanred went through the winter of 1918 in this locality with less loss from freezing and drying out than the local variety. It suffered much less from the intense heat and drouth of June. The yield of the Kanred was 17.5 bushels per acre and the test weight 64 pounds. The local variety yielded 10 bushels per acre and tested 50 pounds.

Pawnee County, Mr. O. F. Wilcox, Larned.—I am pleased with Kanred wheat. It ripened a little earlier than the local wheat. The quality of grain was better and it produced 12 bushels per acre as compared with 8 bushels for the other.

Pottawatomie County, Mr. G. L. Taylor, Onaga.—Kanred produced 18 bushels per acre and the local variety (Turkey) 14 bushels. The Kanred was a little better as to quality. There was no difference in earliness. I consider Kanred materially better than Turkey.

Reno County, Mr. B. W. White, Arlington.—In my opinion Kanred is more drouth-resistant than the local wheat and will be as good after it becomes acclimated. It produced 21 bushels per acre and my own wheat 18 bushels. The quality of the Kanred was poorer.

Republic County, Mr. C. E. Shoemaker, Narka.—Kanred made a heavier growth and stood the drouth better than the local variety. It was not injured by the cold winter, while the local variety was killed on this farm and most adjoining farms. The Kanred produced 12.6 bushels per acre.

Rooks County, Mr. Chas. Thomas, Zurich.—I am well pleased with the Kanred. It made a thicker stand and the straw was stiffer than the local Kharkof wheat. Apparently it stood the three days hot winds (110 degrees) better and ripened earlier than the Kharkof. The Kanred produced more than 28 bushels per acre and the Kharkof 26 bushels.

Sedgwick County, Mr. W. J. Roof, Maize.—I think Kanred wheat is O. K. It averaged 25 bushels per acre and Turkey 32 bushels, but the Turkey was on better ground. Kanred appeared to stand the hot weather better.

Sedgwick County, Mr. F. Byrle Webb, Clearwater.—Kanred was a trifle earlier, stood up better, and had a much stiffer straw than the Kharkof which has been grown on my farm since obtaining it from Russia about six years ago. The yield was exactly the same as Kharkof, 25 bushels per acre, but the quality was not so good, due to dry weather and the fact that Kanred stooled heavily. We have sown 108 acres of Kanred and expect to give it a thorough test.

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Smith County, Mr. Ben H. McNall, Gaylord.—I think Kanred is a better variety. It produced five bushels per acre as compared with three bushels for my own wheat.

Stafford County, Mr. H. C. Hardie, Macksville.—I think Kanred is better than our local wheat, as it does not require so much seed and tillers more. The yield, 20 bushels per acre, was the same as my own wheat. Neither came up until spring.

Stafford County, Mr. W. H. Learned, Stafford.—I believe Kanred is better than our local wheat, by five bushels per acre.

Stafford County, Mr. E. Wendelburg, Stafford.—Kanred ripened about four days earlier than other wheat. It yielded 20 bushels per acre as compared with 17 to 18 bushels for other varieties grown in this immediate vicinity. I consider Kanred wheat far superior to other varieties.

Stafford County, Mr. Fred Wendelburg, Stafford.—I consider Kanred better than our local wheat. It stools out better. This year it burned more because of being thicker.

Washington County, Mr. John S. Greenland, Clifton.—I am well pleased with my field of Kanred wheat. I had 25 acres in 1918, of which 15 acres were Kanred averaging 11 bushels per acre and of good quality. The remaining 10 acres were sown with my own home-grown seed. This averaged 7 bushels per acre of very poor quality.

### **ADVANTAGES OF GROWING A SUPERIOR VARIETY**

It is fully as important to grow the best obtainable variety of wheat as it is to breed good livestock. A yield of as much as 10 or 12 bushels per acre is frequently required to pay the cost of production, including such items as rent, or interest on the money invested in the land, depreciation on machinery, cost of seed, preparation of the ground, seeding, and harvesting. These costs remain about the same whether one grows a large crop or a small one. If one attempts to increase the yield by better preparation of the ground, manuring, or by the application of fertilizers, the cost is increased. On the other hand, if one can secure a larger yield simply by growing a better variety, there is practically no extra cost after seed is once obtained. An extra bushel secured by growing a superior variety may increase the net profit anywhere from 25 to 100 percent with a very small investment for seed, and this increase is not only for a single year, but for as long as the superior variety is grown. It is not to be understood, however, that a superior variety is the only requisite for successful wheat production. It is one of the chief requisites, and its use ordinarily involves no material increase in production costs. The best and most profitable yields are secured when the growing of a superior variety is combined with better methods of production.

The importance of developing or discovering better varieties of grain is shown by the history of wheat varieties in Kansas. When Kansas was first settled the soft wheats from



the eastern United States were generally grown. As long as farming was confined to eastern Kansas these varieties did fairly well, but when settlement moved westward it was found they would not survive the cold winters and hot, dry summers.

Then came the introduction of Turkey wheat by Russian Mennonite colonists who settled near Newton, Halstead, and Moundridge in 1873. This variety rapidly replaced practically all others in central and western Kansas. In 1900 the Kharkof variety was introduced by the United States Department of Agriculture. About half of the wheat crop of Kansas is now planted to this variety.

These two varieties are among the hardiest and most drouth-resistant of any wheats grown in the world, and largely for this reason they are practically the only ones grown in the hard winter wheat sections of Kansas, Oklahoma, Colorado, Nebraska, and Montana. Were it not for such varieties, it would be necessary to depend on soft winter wheat or spring

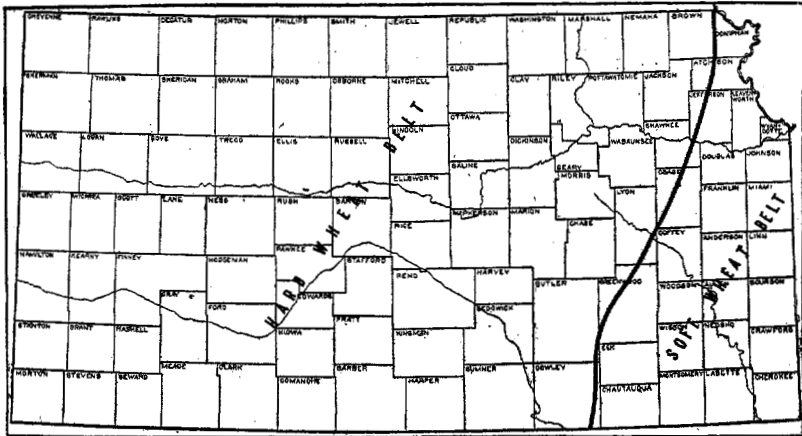


FIG. 7.—Map of Kansas showing hard wheat and soft wheat belts. Kanred is adapted to the hard wheat belt. Soft wheats will likely give better yields in eastern Kansas with the possible exception of upland in northeastern Kansas

wheat, which in much of this area will not yield more than one-fourth to one-half as much as the varieties now used.

The most recent step in improving the wheat crop of Kansas is the discovery and distribution of the new wheat, Kanred, which, as shown above, is distinctly superior to any others heretofore commonly grown.

**WHERE KANRED SHOULD BE GROWN**

It is unreasonable to expect that any variety of wheat will be better than others for all conditions. In establishing a new variety it is important to know where and under what conditions it will give superior results.

Kanred is adapted to all sections of the state where hard winter wheats, such as Turkey and Kharkof, are generally grown. (Fig. 7.) In southeastern Kansas and on bottom-land in eastern and northeastern Kansas, some variety of soft wheat, such as Harvest Queen or Fulcaster, gives better yields and is not so likely to lodge in wet seasons. For these reasons soft wheats are better than Kanred for this part of the state. In nearly all of Kansas, except this small area, which usually does not grow much wheat, Kanred is better than any other variety.

#### KEEPING THE SEED PURE

The full benefit of growing a superior variety will not be obtained if the seed is not kept reasonably pure. Kanred is so similar to Turkey and Kharkof that mixtures can be detected only by the most careful examination. (Figs. 1 and 2.) If it becomes mixed with these varieties much of the advantage of growing Kanred may be lost. This will be especially true for those who expect to grow Kanred for seed, for few farmers will want to buy Kanred unless they can be assured of getting pure seed. Mixtures with soft wheat and rye are specially objectionable, as such mixtures reduce the market value as well as the yield.

Seed can be kept pure only by exercising care in seeding, harvesting, and threshing. Kanred for seed should not be planted on ground that grew another variety of wheat or rye the previous season. There is almost certain to be some volunteer plants which mature with the crop and result in mixture.

If the Kanred planting adjoins another field there is danger of bundles being blown across the dividing line, or of being carried there by mistake. A good plan is to grow Kanred in an isolated field until enough seed for the entire farm is available. If this is not practicable, two or three swaths of the binder around the Kanred field or on the side next to the other wheat should be included with the wheat for market.

A common source of mixture is the machinery used for seeding and threshing. Drills should be thoroughly cleaned before seeding Kanred. In threshing it is a good plan to thresh a few loads of oats or barley and clean the machine thoroughly before threshing the Kanred. This means considerable extra work and attention at a busy time of the year, but those who make a business of raising pure seed or who wish to maintain a supply for their own use find that it pays.

The very best way to keep Kanred pure is to grow it and no other variety in the community. As soon as a sufficient supply of seed is available this will be practicable, except possibly for some areas in northeastern Kansas where it may be found advisable to grow Kanred on upland, and soft wheat on bot-

tom-land. In central and western Kansas it should be possible, and it is certainly desirable, to grow Kanred exclusively as soon as an adequate supply of seed is available.

#### WHERE GOOD SEED CAN BE OBTAINED

The Agronomy Department of the Kansas State Agricultural College grows from 500 to 1,000 bushels of Kanred seed each year. Every effort is made to keep this seed pure and to distribute it to farmers who will grow it for seeding purposes for themselves and others.

There are now a number of farmers in Kansas who make a specialty of growing Kanred for seed. At the 1919 annual meeting of the Kansas Crop Improvement Association provision was made for the inspection of Kanred fields through the association and under the direction of the Kansas State Agricultural College, and for publishing a list of farmers having pure Kanred seed. This should make it possible for any farmer to secure pure seed of Kanred for a seed plot. From this he can develop his own seed supply.

#### SECURE SEED FROM RELIABLE SOURCES

One of the serious difficulties encountered by those who wish to grow superior varieties of grain is the mixed seed, and seed not true to name, that is offered for sale. Buyers soon become discouraged and rightly conclude that it is better to use their own seed, even though it is poor, than to buy from outside their locality when they can have no assurance of securing pure seed adapted to their conditions. If prospective buyers could be assured of securing seed that is pure and true to name, the demand for the better grades of farm seeds would no doubt be increased.

This will be particularly true of Kanred wheat. As previously pointed out, Kanred is so similar to other varieties of hard wheat that they cannot be distinguished by ordinary examination. No doubt some unscrupulous and careless people will take advantage of this fact to sell mixed seed or even Turkey and Kharkof as Kanred. The best way to prevent this is to buy only from people who are known to have pure Kanred seed and whose integrity is above question. The Kansas State Agricultural College and the Kansas Crop Improvement Association will make every effort to prevent the sale of mixed Kanred seed, and to prevent the sale of other varieties as Kanred. But the sale of such seed cannot be prevented without reasonable care on the part of the buyers, and absolute honesty on the part of those who offer seed for sale.