WHY KANSAS GROWS WHEAT

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WHY KANSAS GROWS WHEAT

Chapter I

Early Conditions

1854 to 1865

Prior to the organization of Kansas as a territory it is estimated that the total white population numbered some seven hundred soldiers and army attaches, and perhaps nearly as many more civilians, living at the missions and trading posts in the territory.(1) Incentives to immigration were not operative until the official Territorial Act of May 30, 1854.

Since this date marks a time when the great political controversy that was stirring the whole nation was at its height, and since Kansas was middle ground between the North and the South, it is not surprising that political preferment served as one of the strongest incentives to immigration. Both the free state settlers and those favoring slavery had in mind the influencing of Kansas - whether it should be a free or a slave state - in its final admission to the Union when they immigrated to Kansas territory. This issue was conducive to heavy immigration.

(1). Cutler, W.G., History of Kansas. p. 82

The opportunity to obtain land at a very low cost probably was of equal importance in attracting settlers to Kansas with the political reason just mentioned. The people who came here to take land for future homes were a greater asset in determining the capabilities of the resources of the territory than were those more or less transitory immigrants whose foremost interests were aligned with the political issue.

The Act of July 22, 1854, provided that all the lands to which the Indian title was extinguished in the territories of Kansas and Nebraska were subject to the operation of the preemption Act of 1841. This act provided that citizens of the United States, being either heads of families, widows, or single persons over twenty-one years of age, who had made a settlement in person on public lands which had been surveyed, had the right of preemption.(2) As applied specifically to Kansas any person eligible to preemption privileges could preempt one hundred and sixty acres of government land at a price of $1.25 an acre. Later, after land grants had been made to railroads, a price of $2.50 an acre was charged for land within ten miles of a railroad grant. The additional provision was stipulated that the preemptor was not to be the owner of three hundred and twenty acres

(2). Kansas Historical Collections. Vol. V. p. 166

of land within the United States, exclusive of the preemption claim.(3)

It might be mentioned here that the land, in addition to being open to preemption, was known to be fertile and adapted to agricultural purposes, which doubtless served as an extra inducement to immigration. This fact had been experimentally proved by what farming had been done on the Indian reservations and at the missions before Kansas was organized as a territory.

As will be seen, the population of Kansas, though it increased rapidly as soon as the territory was thrown open to settlement, was subject to fluctuations. Some of the settlers stayed only long enough to secure title to their land; others did not stay even as long asthat. Agricultural reverses probably were as potent as any factor in influencing emigrations. And the population hardly could be expected greatly to increase during a war period.

Missourians were the first immigrants to rush into Kansas after the Territorial Act. Missouri furnished the nearest immigration source to the new territory; many citizens of this state had been anxiously waiting for the official organization of Kansas, so that they might go across the border and establish themselves and slavery there. Free state immi-

(3). Annual report of K.S.B.of A.. (1874). p. 156

gration from New England and Illinois, Indiana, Ohio, Wisconsin, Michigan and Iowa (middle west) soon followed the Missouri influx. The summer and fall of 1854 witnessed the beginning of the first real settlement of Kansas. By 1855 there were 8,501 people, exclusive of Indians, in the territory.(4) The tide of immigration continued to be heavy up to and including 1858.

It is not known exactly how many people there were in Kansas by 1859 when the unprecidented drouth of 1859 and 1860 literally starved out thousands of settlers. During the later months of 1859 and during 1860 it has been estimated that 30,000 people emigrated from Kansas.(5) At any rate the 1860 census gave the population as 107,206, which shows that in spite of this emigration, Kansas territory was not depopulated.(6)

It is doubtful whether Kansas increased either in population or in wealth from 1861 to and including 1864, though the state did grow in public interest and reputation. Immigration was of little consequence during the period; the Civil War was engaging the attention of many people who might otherwise have been concerned with finding homes for themselves in the unappropriated lands of Kansas.

(4). KansasHistorical Collections. Vol. IV. p. 355
(5). Cutler, W.G., History of Kansas. p.178
(6). Kansas Historical Collections. Vol. III, p. 375

It is true that Kansas made very little progress in any industries during her territorial period. Agriculture received more attention than any of the others, but even it was slighted. On the whole, conditions for agriculture were most inauspicious. During this time the territory was constantly subjected to the ravages of border warfare. What crops were raised were in constant danger of destruction by marauding border ruffians. And those who attempted farming found it necessary to devote so much of their time to protecting their homes, that they had to confine their agricultural activities to decidedly limited areas.

And the small agricultural beginning that the territory had made received a serious setback by the drouth of 1860. This drouth really extended from June, 1859, to November, 1860, so its effects were felt in both of these years. Immigration to the territory had been particularly heavy in 1858, so that 1859 found many settlers who had only been able to supply their present needs, with barely enough grain to last them until the fall harvest, which happened to be a short one. Then followed the rainless year of 1860 and what is known as the Kansas famine. This douth was not confined to Kansas alone; it extended over Missouri, Arkansas, western Tennessee, and a portion of Kentucky,(7) but it fell

(7). Holloway, J.N., History of Kansas. p. 561

with particular severity upon the settlers of Kansas because of the newness of the country and the lack of a reserve of farm crops. The harvesting of less than five hundred bushels of wheat from four thousand acres sown in Shawnee County for that year (1860) illustrates the almost total crop failure. Most of the counties did not harvest a bushel of wheat, and all other crops were practically a total failure. The emigration resulting from this drouth has already been mentioned.

Even if Kansas had been free from political strife during this period, it is doubtful if large acreages would have been planted in any crops because of the lack of markets. It may be said that the state was practically without railroads until 1865, which necessarily meant a dearth of transportation facilities and markets. A wheat farmer in 1863 wrote, "There is but one drawback to wheat raising in Kansas; that is the want of a market."(8)

The withdrawal of men for the army during the Civil War period acted as another deterrent upon the progress of agriculture. The men who would have been active in farming were, for the most part, those who served in the army, which meant that the labor force left at home was entirely inadequate for cultivating large areas.

(8). Annual Report of K.S.B.of A. 1873. p. 31.

With unfavorable circumstances, such as have been mentioned, it hardly would be expected that Kansas would raise many surplus crops during this period. In fact, during the periods of heaviest immigration the settlers raised barely enough to tide them over from year to year. At least no large reserve of farm products was built up. Agriculture was one of the minor interests, and the people concerned themselves, especially, with providing only enough crops for their own immediate consumption. It must be admitted that there was no great incentive for doing more than this.

In spite of these rather discrediting remarks concerning the position of agriculture in Kansas at this time, the United States census report of 1860 included the products of the state, or rather territory, at that date, in its statistics for that year. The variety listed is interesting and includes: 6,150,727 bushels of Indian corn, 194,173 bushels of wheat, 20,349 pounds of tobacco, 24,400 pounds of cotton, 206,335 bushels of Irish potatoes, 4,716 bushels of barley and 46,595 bushels of buckwheat.(9) This was the first time that the crops of Kansas were recorded, so that there are no data available concerning the aggregate yields of earlier years. It is not definitely shown whether this report was for the year 1859 or for 1860. An early preference is shown for corn, potatoes and wheat. These

(9). U.S.Census 1860.pp.55,56 and 57

crops were chiefly used for food since they could be fairly easily converted into a variety of food products. This fact encouraged the settlers to plant such crops more extensively than others, for in this way they could provide for their own needs, even though there were very few markets. This same census report gives Kansas a particularly insignificant position, twenty-ninth place, as a wheat producing state. At this time Illinois, with a yield of 24,159,500 bushels, was the largest wheat producing state in the United States. Next in rank were Wisconsin, Indiana, Ohio, Michigan, and Iowa.(10) However, the twenty-one bushel yield per acre for Kansas in 1862 was rather conspicuous in view of the fact that California, with an acre yield of twenty-four and three-fourths bushels, was the only other state that exceeded Kansas.(11) This large yield called attention to the possibilities of the state for wheat production, even at this early date.

Even though little progress had been made in agriculture by 1862, the people apparently were fairly hopeful for the future, for in that year the state legislature provided for the organization of the Kansas State Agricultural Society, the purpose of which being designated "to promote the improvement of agriculture and its related arts."(12) Very little has been recorded concerning the activities of the

(10). Eighth Census Report of U.S. - 1860 p.421
(11). Second Annual Report of K.SB.of A.-p1873 p.31
(12). Kansas, A Cyclopedia of State History, p. 43

society, so it cannot be stated definitely whether it really was instrumental in bringing about improvements in agricultural practices. At any rate, its existence may have impressed the farmers with the fact that a state that afforded such an organization at least had agricultural possibilities.

And at the end of the period under discussion, practically all that could be said for agriculture in Kansas was that it had possibilities It had progressed far enough in the experimental stage to make this statement. The political conditions of the territorial period, as well as those other unfavorable circumstances already mentioned, were largely responsible for this slow progress. And, with population at a standstill as it was during the Civil War, only limited areas, for the most part, confined to the eastern two or three tiers of counties, could so much as be tested for determining their fitness for agricultural purposes. Kansas was not known for its products, but rather for its politica during this period. It remained for later years to show the value of the former.

Chapter II

First Period of Modern Husbandry

1865 to 1874

In 1865 a new period opened in the history of Kansas. This was the period of the beginning of railroad building, of the second tide of immigration, and of the first serious attention given to farming. Previous to this time agricultural activities had been a side issue. Not only were they given attention now, but a definite tendency was shown towards specializing in certain crops. From what has been said, it is not to be inferred that the period under consideration was one of prosperity; it could be characterized better by saying that it was one of uncertainty - uncertainty as to the extent that farming operations couldbe extended westward in the state, and uncertainty as to whether Kansas could support her increasing population.

It would not be entirely correct to say that there were no railroads in Kansas before 1865, for at that date there were eighty miles. The first road had been built in 1860 in the northeast part of the state, extending from Elwood to Wathena, a distance of five miles. This road was called the Marysville or Palmetto & Roseport Railroad, afterward changed to St.Joseph & Denver City, and connected with the Hannibal & St.Joseph railroad at St.Joseph.(1) Also the Union Pacific

(1) Kansas Historical Collections, Vol.XII p.37

was operating its road as far west as Topeka in 1865.

But large scale building operations did not begin until the present period. In 1862 Congress had made a grant of land, and United States bonds to aid in the construction of the Union Pacific railroad, which included a grant for the Kansas division.(2) This division, then known as the Kansas Pacific, was commenced in 1863 and was completed through to the Western boundary of the state in 1869; it was the first line to be built entirely across the state.(3) This road was not built, necessarily, to serve the needs of the Kansas settlers, nor did it depend on the people of Kansas for support. Much of the territory through which it ran was practically without population. The Union Pacific road was built essentially to connect the East with the West, and Kansas happened to be so fortunate as to be in the path of its extension.

The Atchison, Topeka & Santa Fe was the next line to be built across the entire state. A government land grant, to the extent of 6400 acres of land per mile of road, actually built in the state, was made to this road in 1864. However, building operations were not begun until October, 1868. December 23, 1872, saw the completion of the Santa Fe through to the western boundary of the state.(4)

(2). Kansas Historical Collections, Vol. IX, p. 476
(3). Kansas, A Cyclopedia of State History, Vol. II, p. 544
(4). Kansas Historical Collections, Vol. XI, p. 100, and Cutler, W.G., History of Kansas, p. 244

By 1870 the Missouri River, Fort Scott & Gulf Railroad was operating 161 miles in Kansas, one terminus being Kansas City and the other Baxter Springs.(5) The 1870 census showed that Kansas had a total of 1,283 miles of railroad, practically all of which had been built since 1865.(6) In 1872 the Kansas City, Lawrence & Southern was operating nearly 200 miles of road in the eastern part of the state. The Missouri, Kansas & Texas, with Paola its eastern terminal and extending west to Junction City and south to Fort Smith in the Indian Territory purchased lines connecting with St. Louis and Hannibal, Missouri, in 1872. In 1871 the St. Louis & San Francisco entered the state. And at the close of this period, the Central Branch of the Union Pacific had started building its road.(7)

The rapid growth of Kansas during this period was largely due to the extension of the railway system of the state. The roads were built far in advance of the needs of the people, and for the most part preceded settlement. In fact, they offered direct inducement to settlement by affording reasonable transportation rates to the state, and by selling their lands, which they had received as government grants, at low prices, from $2.00 to $6.00 an acre. The various

(5). Kansas Historical Collections, Vol. XI p.103
(6). " " " Vol. III p. 375
(7). " " " Vol. XI, pp.103, 104 and 105

railroad companies were instrumental in bringing many foreign colonies to Kansas, thus increasing the population along their lines. It may be added that it was to the interests of the railroad companies to encourage the settlement of farm lands for this meant agricultural products for them to haul later.

In this way the settlement of Kansas was different from that of those states that had been fairly well settled, via the canal boats or canvas covered wagons, when railroads were first thought of. But the railroads built under conditions such as those that existed in Kansas were confronted by many difficulties. When they were first built there were no manufactures to transport, and very little in the way of agricultural products. Because of this fact the operation of the roads was unprofitable for several years. But the benefit which the state received from their operation more than compensated for any losses which the stockholders of the companies may have suffered.

If it had not been for the early coming of the railroads, it is doubtful whether it would have been possible for Kansas to establish herself so rapidly as a wheat growing state. The report of the United States Department of Agriculture for 1862 mentions the fact that a wheat region without transportation facilities is unavailable. This same report further states that it was the vast increase of the rail-

roads during the years from 1850 to 1860 that evidenced itself as the cause of the corresponding increase of the wheat crop of the northwest. The railroads opened the interior of the Northwestern states to commercial connections with all sections of the country. And the report predicted that the available wheat region of the United States would be bounded only by the limits of railroad enterprise.(8)

The low wheat production of the Northwestern states, Ohio excepted, prior to 1850 was attributable largely to their want of market facilities And the following statement was made in the United States Agricultural Report of 1862, with reference to the correlation between railroad extension and the increased wheat area in the state of Missouri: "With the progress of railroads in Missouri we see the wheat crop increasing also."(9) Though the relative unimportance of Kansas as a wheat state prior to 1865 is not especially attributed to the lack of transportation facilities, for political conditions were such that agriculture received little attention, we do know that a lack of markets was considered one great drawback to wheat growing. At any rate, during the present period each year saw an increased railroad mileage, with a corresponding increased wheat acreage, though later reports would indicate that transportation facilities were still inadequate at this time.

(8) Report of the Commissioner of Agriculture, 1862, p.67 & 69
(9). " " " " " " " p.69

With the extension of the railroads came a new period of settlement. And most of these immigrants came to Kansas in cars drawn by the locomotive. This second tide of immigration came between 1865 and1870 and made the heaviest settlement in the southeastern part of the state. For the most part these settlers were men who had recently been discharged from the army, who were without employment, and who were looking about for homes for themselves and their families.

The Homestead Act of 1862 had thrown open to settlement vast areas of government lands in the United States. Since Kansas at this time (1865) was only sparsely settled, the Homestead Act applied to the land in the greater part of the state and was the chief inducement for the post-war immigration. The homestead privilege of the soldiers meant practically free land for them. The homestead fees, $14.00 on land that was open to preemption at $1.25 an acre and $18.00 on $2.50 land under the same ruling, were the only cash payments that were required. In addition, the time served in the army or navy during the Civil War, which must have been not less than ninety days in order for a man to be eligible to this privilege, could be deducted from the five years' residence period required for securing title to the land. One hundred andsixty acres could be homesteaded under this ruling.(10)

(10). Annual Report of K.S.B.of A. for 1873, p. 157

The citizens' homestead privileges were not so liberal. The eligibility qualifications here were much the same as those which applied to preemption privileges which have already been mentioned. The citizen homesteader could acquire by occupation and the payment of the homestead fees one hundred and sixty acres of land held at $1.25 an acre, or eighty acres within ten miles of a railroad grant held at $2.50 an acre. He was required to reside and cultivate the land for five years immediately after filing his claim in order to secure a title to his homestead.(11) Furthermore, land was still open to preemption so that the settlers could secure additional acreas for a nominal sum. Then, too, railroad companies were disposing of their lands during this period, to which reference has been made in the earlier part of this chapter. With a small cash outlay, it was comparatively easy to become a large land owner in the true sense of the word at this time.

It may be mentioned here that the Timber Culture Act of 1872 made available still greater areas of free land. This act was officially designated as, "An Act to encourage the growth of timber on the western prairies." In it was stipulated that any person who planted, protected, and kept in a healthy growing condition for ten years, forty acres of timber on any quarter section of any public lands of the United States, was entitled to a patent of the whole of the

(11). Annual Report of K.S.B. of A. for 1873, p. 157

quarter section at the expiration of the ten years. Only one quarter in each section could be granted in this way.[12] Though the facts of the case are not available, it is probably correct to assume that the people who understood the conditions of the western prairies of Kansas made very modest demands on the government for land subject to the ruling of the Timber Culture Act.

For such reasons as have been given, the immigration to Kansas during the present period was especially heavy. There was a consequent rapid increase in population for these years. The census of 1865 showed a population of 140,179, and that of 1870,- 364,399, an increase of 124,220 in five years, or nearly double the population of 1865.[13] The returns for 1873 showed 605,063 people in Kansas.[14] But this rapid increase was not altogether for the best interest of the state, for in these earlier years the population grew faster than the crops, which had a tendency to keep the country poor. In some instances the settlers on the frontier had to be given state aid. In 1869 the legislature passed an act for the distribution of wheat to these settlers. Again, in 1872, the legislature found it necessary to appropriate $3,000.00 for the relief of families in the western part of the state.[15]

Farming operations were assuming importance at the same time that the railroads were extending their lines, and

(12). Annual Report of K.S.B. of A., 1873 - p. 157 & 158.
(13). Kansas Historical Collections, Vol. 3, p. 375
(14). Annual Report of K.S.B. of A., 1873, p. 67
(15). Kansas, A Cyclopedia of State History, Vol. I, p. 42

that population was so rapidly increasing. And, like other pioneer states, Kansas showed a tendency towards specializing in a few particular crops. Many used chiefly a single cropping system, but it is more nearly correct to say that Kansas adopted a dual system, the two specialties being corn and wheat. The position of corn in the agriculture of Kansas will be mentioned later.

Wheat is a crop that is especially well suited to pioneer conditions. It is usually the first crop planted after the breaking up of the sod. In the early stages of cultivation we have fertile land, sparse population with small labor force, little capital and crude methods of farming. Wheat farming fits into such meagre agricultural equipment very nicely. Furthermore, it produces large yields for a number of years with comparative careless methods of cultivation.(16) In taking up wheat growing, the Kansas farmer merely followed the precedent established by the pioneer farmer in Illinois, Indiana, Ohio and Wisconsin.

Then, too, pioneer conditions are suited to extensive farming rather than to intensive. And wheat is a crop that is most profitably grown under a system of extensive cultivation. Recent results of experiments carried on by the United States Department of Agriculture have shown such to be the case. These experiments with winter wheat showed that the most profitable and greatest returns per unit of labor are obtained by expending the labor on as

(16). Thompson, Wheat Growing in Wisconsin, p.23

large an acreage as can be efficiently covered, rather than by attempting to obtain increased yields from a given acreage by concentrating a greater amount of labor upon it.[17] The easy terms by which the Kansas pioneer could secure large tracts of land were conducive to large land holdings, which, in turn, favored an extensive system of farming by means of which the farmer was able"to grow more wheat, to buy more land."

Then, again, the Kansas pioneer, like the pioneer in other states, favored wheat because it is a cash crop. In fact, wheat was the source from which many of the citizens received their first cash earned in Kansas.[18] The pioneer prairie farmer depends upon the proceeds of wheat not only for a living, but to pay for his land, to stock his farm, to buy farm machinery, and to provide a house for his family. Wheat not only is one of the few crops that gives returns in actual cash, but these returns come at a time when ordinarily there is no other crop that is saleable.

The fact that wheat is accepted by the pioneer as one of his first crops, is, of course, dependent upon his finding a soil and climate suited to the growing of this crop. The location of Kansas, between 37° and 40° north latitude and 94°38' and 102° west longitude, places the

(17). Farmers' Bulletin 895, p. 3
(18). Quarterly Report of K.S.B. of A., Mar.31,1881, p. 26

state in the heart of the American continent in the region commonly known as the Great Plains country, which is the wheat district of the United States.[19] Generally speaking, the soil and climatic conditions which are characteristic of this district are also characteristic of Kansas, though the state has some conditions particularly favorable for wheat growing which are not shared by other states in this region.

The soils of the plains are generally rich, contain large amounts of decaying vegetable matter, and fertilizers are not often used. The broad, rolling fields of the prairie land themselves to an extensive system of agriculture in which large machinery can be used advantageously, and a small amount of man labor can be made to cover effectively a large acreage. The culture of winter wheat is especially adapted to such conditions.

Kansas soils in general are preeminently wheat lands. Botanically, wheat is a grass, and it requires grassland conditions for its best development. It is a well known fact that all of Kansas was covered with grass before it was settled. Wheat demands a soil sufficiently rich in plant food for proper growth and maturity, but not of such composition to produce an excess of straw at the expense of the grain. The prairie lands of Kansas meet these conditions and have proved to be almost ideal for this crop.[20]

(19). Mo.Pac. Ry.Co., Facts About Kansas, p. 3
(20). Quarterly Report of K.S.B.ofA. Sept, 1920, p.10

It is doubtful if another state in the Union can show so large a proportion of its soils that are well adapted to wheat.[21] The soils of Kansas are especially well supplied with lime and gypsum and sulphate of calcium, which furnish essential elements for the development of both the straw and the kernel. The protein character of the Kansas flour is largely due to the glutinouscharacter of wheat, which is produced by the large amount of nitrogen in the soil on which it is grown.[22]

The first Kansas farmers found the climate equally favorable with the soil for wheat growing. Wheat the world over is extensively grown only in regions of less than thirty and more than nine inches of rainfall, with a cool, moist fall and a fairly long and moderately cold winter, followed by a moist spring with moderate temperatures, and a hot, dry harvest season.[23] The greater part of Kansas, the area known as the wheat belt, fits into these limits nicely.

Moreover, wheat growing is well suited to the distribution of rainfall as it is received in Kansas. The rains in the fall usually furnish sufficient moisture for seeding and the early growth period. Then the dry winter comes during the "resting" stage of the wheat, which is followed by the rains of spring and early summer, which come

(21). Crop and Weather Bulletin of K.S.B.ofA., July 31, 1889, p.20
(22). Quarterly Report of K.S.B.ofA., Mar. 1901, p. 136
(23). The Country Gentleman, Vol. 85, p. 6, Mar. 27, 1920.

in time to mature the crop. The maturing of the wheat crop in June makes it possible for it to escape damage from the drouth period of July and August, which often injures materially the late growing crops, such as corn.[24] Dry, hot weather during the harvest season is a decided asset for a wheat district, since it not only ripens the grain, but also furnishes hard, dry ground, which is necessary for the best use of harvesting machinery.

Wheat grown in districts with moderately dry climate, such as is found in Kansas, contains from three to four percent less water than that grown in moister regions. In place of so much water, we get an increase of the nutritive elements, protein, fats, and carbohydrates.[25]

It is to be understood that the Kansas farmers were growing wheat on a larger scale each year, too, during this period. With such favorable conditions for this crop as have been mentioned, it would have been unusual, to say the least, if wheat had not gained in favor. In 1866 the total area sown to wheat was 12,171 acres. There was a steady increase in acreage each year until in 1873 the wheat area covered 309,286 acres. The yields were satisfactory during this period, ranging from twenty-one bushels an acre in

(24). Monthly Report of K.S.B. of A., July, 1889, p. 20
(25). Thirteenth Biennial Report of K.S.B. of A., p. 468

1867 to eleven and six-tenths bushels in 1872.

Prior to 1872, that is, during that time before the Kansas State Board of Agriculture was organized, we do not have available information concerning the agricultural statistics of the individual counties of Kansas, so do not know in exactly what parts of the state wheat had its largest beginnings. However, we do have such data for the year 1872. For that year the largest wheat producing counties, those having over ten thousand acres each, were Bourbon, Doniphan, Johnson, Crawford, and Linn - all in the extreme eastern tier of counties. With the exception of Ottawa, those counties with from five thousand to ten thousand acres in wheat, were included within the four eastern tiers. Here we have Atchison, Labette, Jackson, Allen, Franklin, Ottawa and Lyon counties. Other counties reporting wheat for that year reported less than five thousand acres each, and no county west of Ottawa made any returns for wheat for 1872.(26)

Before 1870 winter wheat and spring wheat were not reported separately, which makes an estimation of the proportions of each grown impossible. For 1870 the harvest of spring wheat was fifty-five per cent of

(26). First Annual Report of K.S.B. of A.,1872, p. 16

the whole crop. In 1872, spring wheat constituted less than one-fourth of the wheat crop.[27] The decline in the percentage of spring wheat grown for the two-year period is significant in pointing toward its declining popularity. By 1873 the farmers in eastern Kansas had begun to despair over their efforts to raise spring wheat in that part of the state. The annual report of the Kansas State Board of Agriculture for 1873 reads as follows, with reference to spring wheat, "While winter wheat is a successful crop throughout the state, spring wheat does much better in western than in eastern counties. In the older portions of the state, spring wheat is gradually giving place to winter wheat for the reasons that it induces the chinch bug more than any other crop, yields less per acre, and is not worth as much per bushel as its rival."[28]

The prices for which wheat sold during this period were high enough to encourage its further production. With the exception of 1869, when wheat sold for 79 cents a bushel and 1870 when it brought 86 cents a bushel, the price did not go below $1.00. On the whole, these years, not only from a standpoint of prices, but from one of seasons and harvests as well, had been favorable for wheat and other crops, too. Such conditions led to increased farming oper-

(27). Fourth Annual Report of K.S.B. of A. 1874, p. 459
(28). Second Annual Report of K.S.B. of A., 1873, p. 129

tions. And the farmers began to feel a certain security in their position in Kansas and a sort of optimism about the future. However, the state was too young - its possibilities had not been definitely proved - and the population had increased too fast for the amount of crops raised to call the period from 1865 to 1874 one of prosperity.

Chapter III

Period of Change

1874 to 1885

If one were naming the most important happening in the history of wheat farming in Kansas for the period 1874 to 1885, or for any period previous to this, for that matter, one probably wouldgive the introduction of Turkey red wheat from Russia in 1874. Possibly the most significant movement of the period was that of the extension of the wheat area westward within the United States, which included Kansas, and within the state itself. The westward movement within the United States had been progressing ever since 1849, though Kansas had been of little importance in it previous to the present time. During the later years of this period, marked fluctuations occurred in the wheat acreage of the state which had not been observed previously. Falling prices also characterized the years 1874 to 1885.

The introduction of Turkey red wheat from Russia, though it proved to be a forceful factor in bringing about prosperity within the state, was entirely accidental and unplanned. The circumstances attending its introduction into Kansas are rather interesting. It was in 1873, just after the Atchison, Topeka & Santa Fe Railroad had com-

pleted its line through Kansas, thus earning the million acres of land granted by the national government to aid in the construction of the road, that this railroad company organized its land department for the sale and settlement of the territory thus acquired. The land department happened to know of conditions in southern Russia - German Mennonites, a thrifty people, were preparing to emigrate from that district - and it was particularly desirous of turning this immigration to Kansas. So the immigration agent of the land company was sent to Russia to use his efforts to induce these people to settle in Kansas. (1)

Regardless of the inducements that may have been offered, the Mennonite immigration turned to Kansas. In October, 1874, the first contingent arrived in the state and soon bought one hundred thousand acres of land from the Santa Fe Land Company. During 1874 and 1875 the Mennonite immigration continued, and in the summer of 1876 it was estimated that there were six thousand of these people in the Arkansas Valley and adjoining territory.

The first party that came brought twenty or thirty bushel of seed wheat of the Russian or Turkey variety, that had been popular with them in their native home. In

(1). Quarterly Report of K.S.B. of A., Sept., 1920, p. 218

Marion County, where these people first settled, the conditions were ideal for the introduction of that particular wheat. Soil and climatic conditions were essentially like those in that part of Russia, where this wheat had been grown. Because of its adaptation to these new conditions, the Mennonite farmers so on were able to provide themselves with all of the seed wheat that they needed, and within a few years produced a surplus.(2)

As early as 1880 this wheat was so plentiful in the country about Enterprise, in Dickinson County, that the millers there began to find it necessary to remodel their mills, so that they could handle hard wheat.(3) This statement is made more to show the extent to which Turkey wheat had spread at this time, rather than to suggest the trouble that the millers encountered in changing from soft to hard wheat. Theirs is a long story, one filled with difficulties, but it would not be pertinent here to go into detail in discussing the remodelling of the mills which hard wheat necessitated, nor the reluctance with which people came to accept flour made from this new kind of wheat.

It is considered that the introduction of Turkey wheat into Kansas in 1874 marked an epoch in the history of

(2). Quarterly Report of K.S.B. of A., Sept. 1920, p.219
(3). Thirteenth Biennial Report of K.S.B. of A., p. 532

wheat growing in the state, for it marked the beginning of the growing of a crop that was reasonably certain to produce grain every year. Farmers, except for those in southeastern Kansas, had begun to despair in their attempts to grow wheat before this new variety was introduced. The qualities, which this wheat possessed that made it superior to other varieties, were its ability to withstand unfavorable conditions, particularly drouth and winter killing. This is a necessary attribute for wheat if it is to be grown successfully in Kansas. The wheat belt proper is not abundantly supplied with rainfall. And, as a rule, the wheat crop is not protected by snow from the low temperatures of winter.

The early settlers came from regions producing soft winter or spring wheat, so these were the kinds first sown. Spring wheat very soon became unpopular, but soft winter wheat was well adapted to the conditions in the southeastern part of the state. However, as settlement advanced farther west into central Kansas, the farmers found that neither the spring nor the soft winter variety was dependable in this part of the state. Spring wheat suffered severe losses from invasions of insects, and the soft wheat was subject to winter-killing, which explains the favor with which hard winter wheat was received by these farmers.

It should be mentioned that this wheat was found to be much better suited to certain sections, central and western Kansas, than to the eastern part of the state. The moist climate of the eastern section is conducive to the production of a grain with a soft berry, in spite of the fact that a hard winter variety was originally sown. Furthermore, the term "hard winter wheat," except for a few years after its introduction into Kansas, did not refer to Turkey wheat alone. It came to include other varieties besides, such as Kharkof, Kanred, Theiss, Beloglina, Malakoff, and Crimean. However, all hard winter wheats are very similar, and cannot usually be distinguished from one another.(4)

Under conditions such as those found in central and western Kansas, hard winter wheat is characterized by a high content of gluten of fine quality, and the capacity for producing better bread flour than can be made from softer varieties. Kansas hard winter wheat was soon recognized as a standard of excellence in bread making, and came to be in large demand both in this country and abroad for use, not only alone, but also for blending with and strengthening flour made from softer wheats.(5)

The history of the extension of the area and the production of wheat in Kansas could be said to be almost identical with the histtory of hard winter wheat, (for that

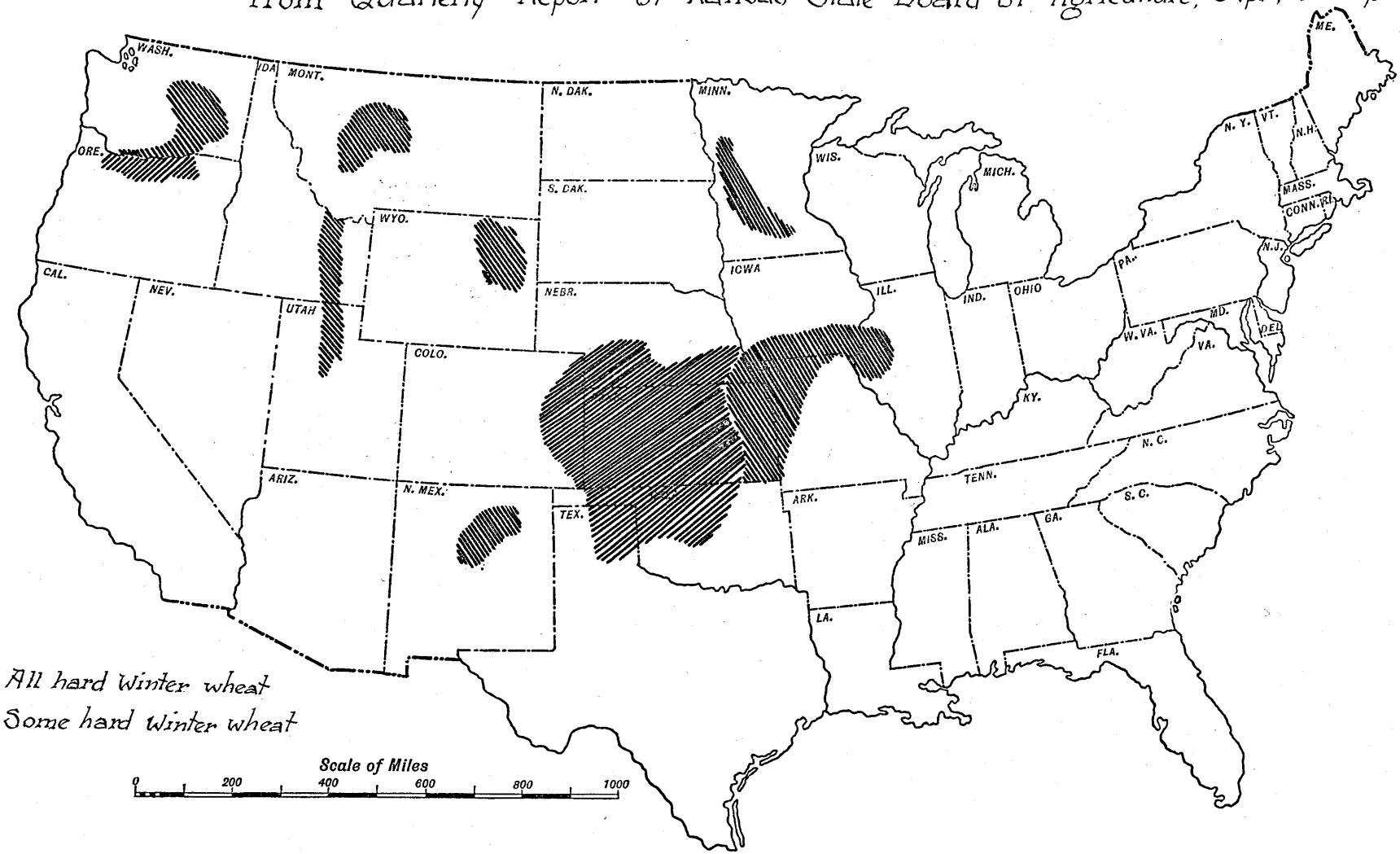
(4). Quarterly Report of K.S.B. of A., Sept. 1920, p. 22
(5). " " " " " " p. 10

is the particular kind for which the state came to be widely known, and in the production of which Kansas occupies a unique position. It scarcely could have been predicted during the years 1874 to 1885, when hard winter wheat was establishing itself in Kansas, that in 1919 the state would be virtually the only portion of America producing this particular variety in considerable quantities. The accompanying map shows the rather limited areas in the United States which produce hard winter wheat. To the east and south of Kansas it does not retain its hard flinty characteristics, and to the north and west it is subject to winter-killing.

The extension of the wheat area, both within the United States and within Kansas is coincident with this movement westward. Within the United States it was especially marked between the years 1849 and 1884, for it was in that period that the Trans-Mississippi district advanced from a position of little importance to the largest wheat producing district in the whole United States. And it may be added that, after 1870, Kansas contributed materially to the total wheat production of this region.

The progress of wheat growing westward has been a characteristic feature of the agriculture of the United States. The Report of the Commissioner of Agriculture for 1868 explains the reasons for this westward movement, other

From Quarterly Report of Kansas State Board of Agriculture, Sept., 1920 p. 12.



Hard winter wheat-producing area of the United States

than the progress attributed to the extension of the railroads in one brief paragraph. "The pioneer upon the prairie is a wheat grower because wheat is a cash crop and demands a small outlay of labor. Immediate returns with the least labor and capital are the object of the pioneer. The present practice will doubtless continue in vogue till our wheat lands are run over by pioneers who will ultimately be succeeded by scientific farmers, who will practice rotation draining, irrigation in certain sections, and fertilization from home resources, when the yield will be increased and crops will be surer. The relative area of wheat must, therefore, continue its decrease eastward and its increase westward, till our agriculture changes from its chrysalis state to its development as a complete system." (6)

The eastern decrease and western increase of wheat production were well under way at the time (1868) that this report was written. For purposes of differentiation the country has been divided into the Atlantic Coast Region, the Central Belt, and the Trans-Mississippi District; rather large divisions, to be sure, but not too large to show the general tendency of the shifting of the wheat area. In 1849 wheat growing was flourishing in the Atlantic Coast Region, though this district did not retain its supremacy long. During

(6). Report of Commissioner of Agriculture, 1868, p. 17.

the years 1849 to 1884 the increase in absolute quantities of wheat produced on the Atlantic Coast was slight, while the proportion declined from 51.4 per cent to 12.2 per cent. Half the crop in 1849 was produced in the eastern district, that is, on the eastern slope of the Alleghanies. In 1884, half the crop was grown beyond the Mississippi, and only one-twentieth on the Atlantic Coast. In 1849 Kansas not only was not producing wheat, but was not even known. In 1876 it was ranked as eighth in wheat production, and was given a place with the leading wheat states in 1876.(7)

The westward movement just described possibly can be more clearly shown in the following table:(7a)

BUSHELS

	1849	1859	1869	1879	1884
Atl. Coast	57,574,390	53,306,897	54,996,610	58,711,603	62,703,000
Cen. Blt.	43,522,646	94,458,609	143,360,613	229,265,180	185,136,000
Trs. Miss.	5,288,908	25,339,418	89,388,403	176,506,354	264,926,000
Total	100,484,944	173,104,924	287,745,626	459,483,137	512,765,000

PER CENTAGE

Atl. Coast	51.41	30.8	19.1	12.8	12.2
Cen. Blt.	43.3	54.6	49.8	49.9	36.1
Trs. Miss.	5.3	14.6	31.1	37.3	51.7

What has been true of the movement of the wheat area westward in the United States has been largely true of Kansas.

(7), Report of K.S.B. of A. for Aug. and Sept., 1888, p. 24
(7a) " " " " " " " " " "

In fact, there has been a well defined progress of the wheat area westward within the state, with a corresponding lesser importance attached to the eastern part of the state as a wheat belt. For purposes of discussion Kansas may be divided conveniently from east to west into divisions known as the eastern, the central, and the western, for here the variation in the conditions under which wheat is produced runs in those directions, rather than from north to south. And experience has shown that there is a varying suitability of these different sections for successful wheat farming.(8)

As early as 1874 certain counties in the southeastern part of the state began to show some uncertainty as to their continuance in the class of wheat counties. In that year Allen, Anderson, Bourbon, Coffey, Crawford, Linn and Miami counties, all in a district in which chinch bugs had done considerable damage to small grains in the spring, showed a decrease in the winter wheat acreage as compared with 1873 figures. At the same time the state showed an increase of 83,916 acres, or sixteen per cent over the 1873 crop.(9)

The area occupied by the 1876 wheat crop showed a marked extension westward over that of 1872. For this year Dickinson County took the lead, it being the only county to reach the 50,000 acre mark in winter wheat. As early as 1874 Dickinson County had assumed prominence in wheat production. In that year Mr. C. L. Henry had grown 500 acres

(8). Quarterly Report of K.S.B. of A., Sept. 1920, p. 127
(9). Third Annual Report of K.S.B. of A. 1874, p. 56

of wheat which he had harvested by means of a header and had threshed with a steam engine and thresher, this header and thresher probably being the first to be brought into Kansas.(10)

For 1876 the counties next in importance, after Dickinson, in wheat area were Montgomery and Labette, each with more than 40,000 acres. Cowley, McPherson, Saline and Sedgwick counties each had more than 30,000, but less than 40,000 acres. Those counties with an acreage of between 30,000 and 20,000 included Butler, Cherokee, Harvey, Marion, Sumner and Wilson. An acreage of less than 20,000 no longer gave a county a leading position in wheat production.(11)

Reports of Kansas State Board of Agriculture of 1878 go so far as to state that the winter wheat belt of that year, embracing the ten counties having more than 40,000 acres in winter wheat, lay mainly in the southwest. But we must remember that the southwest of 1878 was not the southwest of 1923, for that district was described as commencing at the northeast border of Dickinson County, thence to Saline, and crossing through McPherson, spread both east and west, including Reno, Harvey, Butler, Sedgwick, Sumner and Cowley counties. The second belt, including at least 20,000 but less than 40,000 acres in winter wheat, was confined to no particular section of the state. It was in Barton and Rice in the southwest, Doniphan in the extreme northeast, Jefferson and Leavenworth

(10). Kansas Historical Collections, Vol. IX, p. 504
(11). Fifth Annual Report of K.S.B. of A., 1876, p. 85

on the eastern border, Marion in the central part of the state, and Wilson and Labette in the south.[12]

By 1884 practically all sections of the state had proved themselves to be well adapted both as to soil and as to climate to the successful cultivation of winter wheat, but for a series of years certain counties lying in the central section had made a specialty of this crop, they having the largest areas and the greatest average yields. During a five-year period ending with 1884, the same counties had invariably led in winter wheat acreage, as well as in aggregate production. This belt, termed the "winter wheat belt," was composed of Barton, Cowley, Dickinson, Ellsworth, Harvey, Lincoln, Marion, McPherson, Osborn, Ottawa, Reno, Rice, Russell, Saline, Sedgwick, and Sumner counties, each of which had over 40,000 acres of winter wheat in 1884.[13]

But even in 1884 it was predicted that with the rapid progress of agriculture westward, the wheat belt of that year would not retain its original proportions for long. For several years previous to 1884, McPherson County, lying nearly in the center of the state, had ranked first in acreage and total production of winter wheat. In 1884, with 157,000 acres, several of the townships had nearly one-half of their total areas in this crop. For the same year Dickinson

(12). First Biennial Report of K.S.B. of A. p. 404
(13). Fourth Biennial Report of K.S.B. of A. p. 461

County had 107,000 acres of wheat, Dickinson and McPherson being the first two counties to pass the 100,000 acre mark.(14)

During this period spring wheat continued to decline in importance relative to winter wheat. In 1876 its acreage was only thirty-five per cent as great as that of the winter variety, though it did exceed the acreage of the previous year by 27,000 acres. This increased area was mainly in the then-called northwest counties, Marshall taking the lead with 31,831 acres. The other counties included in the spring wheat district at this time were Republic, Washington, Jewell, Cloud, Mitchell and Smith.(15) Not only was the acreage of spring wheat less than that of winter wheat, but the yield was proportionately less, not more than two-thirds as much, and the market price ranged from ten to fifteen cents a bushel less. Farmers considered spring wheat especially susceptible to rust and conducive to chinch bug invasions, so, in most parts of the state were averse to growing it.(16)

The total wheat acreage for the state increased each year until 1881, when it fell from 2,444,143 acres in 1880 to 2,182,872 acres. There were still further reductions in 1882 and 1883. This was the first time, since wheat growing became important in the state, that the number of acres had failed to increase with each succeeding year. This was

(14) Fourth Biennial Report, K.S.B. of A., p. 461
(15). Fifth Annual Report of K.S.B. of A. 1876, p. 75
(16). " " " " " 1876, p. 75

but the beginning of fluctuations in the Kansas wheat acreage which have been apparent throughout the history of the crop. A writer of a later period commented upon this observation as follows, "The position of wheat raising in Kansas agriculture has always been a peculiar one. Almost from the first the acreage has been subject to wide fluctuations unknown in the case of other staple grains and due largely to the changing opinions of the farmers themselves."(17) The figures given in Table I of the appendix confirm statements such as those made by this reporter.

Possibly it shouldbe explained that the changing opinions of the farmers are largely attributed to fluctuating yields and fluctuating prices. A few years with short crops discourage wheat farming; then a bumper crop or two, and farmers again talk of "going into wheat." In the same manner a good yield with an extremely low price has a tendency to decrease the acreage that is sown for the following year. The marked decreases of 1881, 1882 and 1883 were attributed to the unfavorable crop year of 1880, in which wheat yielded but 10.34 bushels to the acre. It is entirely possible that the low yield, 10.63 bushels to the acre, of 1879 also was instrumental in bringing about these reductions. The crop of 1883 with an acre yield of 19.25 bushels served as an incentive for an increased wheat acreage for the crop of 1884. But the extremely low price of

(17). Kansas Crop & Weather Bulletin, July 31, 1889, p. 20

forty-five cents a bushel for this crop reduced the area sown to wheat that fall.

Not only were fluctuations first observed during this period, but for the first time since the early years of the Civil War were wheat prices less than $1.00 a bushel. With the exception of 1881, when wheat sold for $1.05 a bushel, the price was not higher than eighty-nine cents, and it even went as low as fifty-nine cents in 1878, though these prices were not low enough to discourage production.

Taking the period as a whole from a standpoint of acreage alone, indications are that wheat had continued to grow in favor with the farmers during these years, for in 1874 there were 716,205 acres, and in 1884, 2,237,128. The further extension of the railroads during the intervening years may have encouraged increased production. By 1879 the total railroad mileage of the state reached 3,104.(18) The Solomon branch of the Union Pacific was finished in that year, which extended transportation facilities to an important wheat producing district in north central Kansas. In 1880 the Missouri Pacific railroad began to operate in the state.(19)

Even though Kansas was considered to be fairly well supplied with railroads in the late '70's, transportation facilities must have been far from adequate in 1878, for a reporter writing for one of the Quarterly Reports of the Kansas State Board of Agriculture in 1882 mentioned, "Much annoyance and delay were

(18). Kansas, a Cyclopedia of State History, Vol. II, p. 546
(19) Kansas Historical Collections, Vol. XI, p. 104

occasioned in 1873 from the lack of sufficient transportation facilities in marketing the heavy wheat crop." But he continues, "It is probable that the blockade of 1873 will not be repeated. Farmers are now better able financially to hold their crop and many miles of additional railroad have been built since 1873, tapping the wheat producing region that was without a railroad four years ago. Railroads have increased their shipping facilities at least 100 per cent." (20) After 1880 increased railroad mileage was largely an extension of the lines already in the state.

In spite of falling prices, the grasshopper devastation of 1874, and the two unfavorable years of1879 and 1880, Kansas made rapid advances in wheat production during this period. Though the grasshopper invasion in July and August of 1874 destroyed practically all spring crops, wheat, for the most part escaped destruction. This really served to strengthen the position of wheat with reference to those less fortunate crops. But without doubt the growing of hard winter, rather than the soft varieties, contributed more than any other single factor to the increasing importance of Kansas as a wheat state and made possible its being classed with the foremost wheat producing states of the United States.

(20). Quarterly report of K.S.B. of A., June 30, 1882, p. 5

Chapter IV

Depression

1885 to 1897

Probably there have never been in the whole history of Kansas any twelve consecutive years with so great a number of unfavorable ones as were those between 1885 and 1897. The period was one of depression. Undoubtedly agriculture was deterred, if one may judge from the reverses which wheat growing suffered. But in spite of existent conditions, Kansas assumed first rank in wheat production. During these years the wheat area continued to move westward, passing through a so-called transition stage, while that section of the state, which had once been the most important in wheat production, gradually turned to other crops. For purposes of clarity in referring to particular sections of Kansas, brief consideration of the characterization of the sectional differences of the state has been thought to be advisable.

The years 1885, 1886 and 1887 were most discouraging for the wheat farmer. A crop reporter for 1887 wrote, "In fact, we have had nothing to encourage wheat growing in Kansas for three years. Unfavorable conditions and insect pests have reduced the product below the paying quantity, and prices have been too low to make the industry remunerative even to those who have been fortunate in securing the best yields."(1) An

(1). Kansas Crop & Weather Bulletin, June 30, 1887, p. 3

extract from a report of the United States Department of Agriculture in a publication of the Kansas State Board of Agriculture for the same year reads similarly, "Where wheat is grown somewhat extensively for district markets, the influence of low prices has been restrictive of a natural extension of area, and has in some cases caused considerable reduction in area. This has been the case in Kansas to a revolutionary degree."(2)

Table I (See appendix) bears out these statements with reference to yield, price and reductions in acreage. It was during this period (1885 to 1897) that the factors contributing to fluctuations in the wheat acreage played a very large part. The acreage fell from 2,090,549 in 1885 to 1,120,119 in 1888. But for this year the yield was larger, 14.93 bushels to the acre, and the price improved, 88 cents a bushel, which two factors were conducive to growing more wheat for the next year. The 22.15 bushel acre yield of 1889 still further stimulated the farmers to sow more wheat for 1890. The years 1890, 1891 and 1892 proved to be favorable, with reasonable yields and fair prices, which resulted in more wheat being sown each year, so that by 1893 the acreage had passed the five million mark. But then followed a series of disasters in 1893, 1894, 1895 and 1896 for wheat, in which both yields and prices reached the lowest figures in the history of the state. The yields ranged from 3.84 bushels to the acre in 1895 to 8.27 bushels in 1896, and the price from 42 cents a bushel in 1893 to 63 cents in 1896. As one would expect, the acreage was reduced each

(2). Kansas Crop & Weather Bulletin, Junr 30, 1887, p. 3

year, falling from 5,110,873 acres in 1893 to 3,357,727 in 1896.

In spite of these reverses, the farmers of Kansas did not abandon wheat growing, or even approach it. As will be seen later, they were only waiting for a few favorable years to encourage them again to go into wheat extensively. A crop reporters writing in the spring of 1887, stated, "Wheat has become our great staple. The wonderful growth of its production has made our state famous."(3) Even after including the disastrous crop year of 1887, the average acre yield of wheat of Kansas, for the period 1882 to 1888 inclusive, compared favorably with that of Illinois and Indiana for the same time. The Kansas average was 14.3 bushels while that of both Illinois and Indiana was 12.8 bushels.(4) And it was in 1892 that Kansas assumed front rank as a wheat producing state.

The more wheat Kansas produced, the more concentrated became the main wheat producing district in the central and western sections of the state. As already mentioned, even in 1884 it was predicted that the Kansas wheat belt would soon include more territory in western Kansas. The 1890 wheat district was not markedly different from that of 1884, though there was some shifting among the leading

(3). Quarterly Report of K.S.B. of A., March 31, 1887, p. 26
(4). Sixth Biennial Report of K.S.B. of A., p. 538

counties for first rank. In 1890 Sumner was the only county to claim more than 100,000 acres of wheat. Barton Saline, and McPherson, each with more than 80,000 acres, came next, and Dickinson, Ellsworth, Harper, Marion, Rice and Sedgwick counties each had between 50,000 and 80,000 acres in wheat for that year. By 1890 the spring wheat district had pushed still farther to the northwest. The foremost spring wheat counties, those with more than 10,000 acres each, at this time, were: Decauter, Rawlins, Cheyenne, Thomas, Norton, Phillips and Sherman.(5)

It was in 1891 and 1892 that special efforts were made to put before the public the capabilities and possibilities of western Kansas, especially for wheat growing. Questionnaires sent to farmers in all sections of the state revealed the fact that this section, through even to the Colorado line, had produced wheat yields as high, in some cases, as thirty bushels to the acre, and this without irrigation.(6) It may be said that during this period western Kansas was taking up wheat growing as its pioneer crop.

A reporter for the Kansas State Board of Agriculture in 1892, commenting upon the westward movement of wheat growing areas, wrote, "The line that marks the transition is now in Kansas. Compared with other farm industries, wheat

(5). Seventh Biennial Report of K.S.B. of A., p. 5,6 and 8
(6). Eighth " " " " p. VII

growing is declining in eastern Kansas, while western Kansas people feel that they have the greatest wheat country in the world. I presume that the history of the past will continue until checked by natural causes. - - But can the crops that usually follow wheat be made to follow it to its western limit"? (7)

It is true that at this time eastern Kansas had passed through the pioneer stage for which wheat is one of the most important crops that can be grown. Possibly an examination of some of the counties that were leaders in wheat production in 1872 will show how the above mentioned transition line has affected them. Bourbon, the county with the largest wheat acreage, 16,955, in that year, reported but 1,493 acres in 1890. At the same time the corn acreage had increased from 20,728 to 53,792.(8) In 1890 this same county had 11,492 acres of oats and 14,826 of flax. These figures show that wheat, compared with other crops, had greatly declined in area for the eighteen year period. Between 1870 and 1890 the population had increased from 13,868 to 32,115.(9) Increased population is conducive to higher land values, for the value of land is stamped by the number of people who want it, which, in turn means more intensive and specialized

(7). Quarterly Report of K.S.B. of A., March 1892, p. 125
(8). Seventh Biennial Report of K.S.B. of A., p. 15
(9). " " " " p. 15 and 9th Census of U.S., 1870, Vol. I, p. 355

farming. With increasing population and smaller land holdings there comes a system of farming which yields as large returns per acre as is possible. Earlier notice has been made of the fact that wheat farming is most profitably carried on under extensive cultivation.[10]

Other examples may further illustrate the transition movement. Johnson, another leading wheat county, in 1872 - 12,130 acres - does not show a decrease in wheat acreage for 1890, but instead, shows an increase - 27,738 acres. However, during the same period, the corn acreage had increased from 43,695 to 53,728, oats from 10,161 to 20,178, and timothy, which was not reported in 1872, showed an acreage of 35,201 in 1890.[11] In this same connection it is interesting to notice that the population of Johnson County had increased but little in comparison with Bourbon for the period,-1870 - 1890,-from 12,430 to 16,244.[12]

Crawford County furnishes figures more nearly like those of Bourbon. Although it shows a slight increase in the area sown to wheat, 11,939 acres in 1872 and 13,621 acres in 1890, other crops increased much more in proportion during the period - corn from 20,820 acres to 59,554, and oats from 6,682 to 17,683.[13] The county had a population of 7,579

(10) Thompson, J.G., The Rise and the Decline of the Wheat Growing Industry in Wisconsin. p. 123
(11). Seventh Biennial Report of K.S.B. of A., p. 120
(12). " " " " " " and Ninth Census of U.S., 1870, p. 355
(13). Seventh Biennial Report of K.S.B. of A., p. 50

in 1870 - 29,667 in 1890.[14]

The statistics of Linn County were similar to those of Bourbon. Here again we have a decided decrease in the wheat acreage from 11,397 acres in 1872 to 1,944 in 1890, with an increase in corn for the same period from 35,732 acres to 62,117. Also, here in 1890, besides corn, oats, flax, timothy and clover, each was of greater importance than wheat.[15]

One could continue to enumerate these statistics for other counties in the eastern part of the state which lead in wheat acreages and production in 1872, but which were showing marked tendencies in favor of other crops in 1890. However, the examples given illustrate the transition line that was mentioned earlier in the chapter.

The relative costs of producing wheat in different sections of Kansas undoubtedly exerted an influence on the westward movement. In 1890, the costs of growing a bushel of wheat in eastern Kansas was estimated at 57 cents; in the central section 50 cents; and in the western part of the state, 42 cents. The chief reason given for these different costs was that of a difference in land rents. At this time rents in eastern Kansas were about $4.00 an acre and $1.50 in the central section, and still lower in western Kansas. With production costs at these figures it was estimated that farm-

(14). Ninth Census of U.S., 1870, p. 355, and Seventh Biennial Report of K.S.B. of A., p. 49
(15). Seventh Biennial Report of K.S.B. of A., p. 50.

ers should receive from 75 cents to a dollar a bushel in order to make a reasonable profit.[16] For this period, with the exception of 1888, 1890 and 1891, the prices surely were not high enough to make the growing of wheat highly remunerative, especially in eastern Kansas where production costs were greatest.

A reporter for the Kansas State Board of Agriculture of 1894 emphasized the favorable position that western Kansas held from a stantpoint of low production costs of wheat. He wrote, "From reports made regarding wheat growing in western Kansas, it would seem that, from the large yields reported, the little labor required to produce the crop, and the low price of land, the price of wheat would seldom be below the costs of production in that part of the state. But what about the eastern part of the state? Can that section grow wheat at a profit on land worth from forty to fifty dollars an acre?"[17] At this time the average of wheat land values for the state was $19.35 an acre, the valuations ranging from $50.00 in Wyandotte County, $45.00 in Atchison andBrown, $40.00 in Allen, Jefferson, Johnson and Miami, and$37.00 in Cowley to $6.00 in Cheyenne, Morton, Sheridan and Sherman, $5.00 in Finney, Meade, Grant and Wallace, $4.00 in Lane and Seward, $3.00 in Haskell and Scott and $2.00 in Stanton.[18]

(16). Quarterly Report of K.S.B. of A., May 31, 1890, p. 7 & 8
(17). " " " " Mar. 31, 1894, p. 61
(18). " " " Sept. 30, 1894, p. 17

Since reference is so frequently made to eastern, central and western Kansas, possibly it would be well to explain what territory is included in these sections, and why they are so differentiated. The amount of rainfall received is the principal reason why the state is divided as it is. The average annual rainfall for the whole state varies from 43.13 inches in Cherokee County in the southeast corner to 15.26 inches in Kearney County in the southwest corner. Generally speaking, the amount of rainfall varies from east to west rather than from north to south.

Dividing Kansas into eastern, central, and western divisions on the basis of average annual rainfall, we find that the eastern section has 35.8 inches, the central 24.82 inches, and the western 18.68 inches. In eastern Kansas proper, we have all of those counties east of a line drawn north and south, east of Republic County on the north and Cowley on the south. Then central Kansas includes all counties west of this line and east of a line drawn north and south from the eastern boundary of Norton County on the north and Clark County on the south. The thirty-one counties west of this line constitute western Kansas.(19) Though the average rainfall of these different sections is as has been given, it must be understood that the decrease in amount from east to west is gradual, and that each of these different dis-

(19). Quarterly Report of K.S.B. of A., Sept. 1920, p. 64

tricts shades into the other.

The surface and soil characteristics of Kansas, along with climatic conditions, contribute toward dividing the state into the three sections already named. The elevation of seven hundred and fifty feet at the mouth of the Kansas river, on the eastern boundary, increases at the average rate of seven feet per mile, until it reaches an altitude of 3,500 feet on the Colorado line. Eastern Kansas is generally high rolling prairie, hilly and broken by valleys. This district gradually gives way to the undulating prairies of almost unbroken surface of central Kansas, and these to the extremely level country of the western part of the state.(20)

This explanation of the reasons for dividing Kansas in the way that it has been, may appear to be irrelevant, but it should not be, since the agricultural practices of the different parts of the state are largely determined on the basis of this differentiation. Possibly it is more easily seen now why farmers in central and western, rather than those in eastern Kansas, tend to specialize in wheat.

The period, 1885 to 1897, as a whole, was unfavorable for wheat growing, which makes the rank of Kansas as the leading wheat state in the Union, a position which it had never held before this time, all the more significant. In view of the fact that the wheat area was extended to the western border of the state, which had never before been consid-

(20) Mo.Pac. Ry. Co. - Facts about Kansas, p. 3

ed, strictly speaking, an agricultural district, showed that wheat growing was limited in Kansas only by the boundaries of the state itself.

Chapter V

Prosperity

1897 to 1915

The year 1897 may be said to mark the beginning of a new period in the history of Kansas wheat growing. In the first place, it was the first year since 1892 in which wheat had yielded even a reasonable crop. Then, too, the price, 74 cents a bushel, was better than that of any year since 1890. For all the years between 1897 and 1915 there was much more uniformity both in yield and in price, than in the previous period. The crop of 1914 was the largest in the history of the state, even up to the present time, (1923). Central Kansas continued to be the largest wheat producing district, though the western third of the state added more to the total output than it had ever done previously.

An examination of Table I (See appendix) shows the extent of the fluctuations in the acreage for this period much better than a discussion can show them. However, summarizations may be made. The low acre yield of 8.76 bushels, for 1899, contributed toward a lessened wheat acreage for 1900, but an increased yield, 17.66 bushels to the acre for that year gave a new impetus to wheat growing for 1901 and 1902. Again, a low yield, 8.67 bushels to the acre was conducive to a decrease in the number of acres sown for the

next two crops. The years 1904, 1905 and 1906 were favorable for wheat as is reflected in the number of acres sown to that crop for 1905, 1906 and 1907. The 7,235,283 acres of wheat sown for the 1907 crop, the largest area Kansas had had in wheat up to this time, only yielded 10.24 bushels to the acre. As a consequence, the farmers showed less desire for wheat for the next three years. However, it is probable that the acreage sown for the 1910 crop, for which data are not available, was larger than that of 1908 and 1909, even though the number of acres harvested was less by some two million acres. This small harvest is accounted for by unfavorable weather in the winter of 1909-1910 which caused winter-killing of wheat and the abandonment of a part of the acreage sown.(1) This failure was not favorable for an increase in 1911.

The 1911 yield, 10.94 bushels to the acre, was below average, but the price was high, 91 cents a bushel, the highest of the whole period with the exception of those for 1909 and 1914. Indications are that this price was a factor in the six million acre figures for 1912 and 1913. Again farmers were going into wheat. This is shown by the 9,116,183 acres sown for the 1914 crop. This acreage, the largest ever sown up to this time, yielded 19.85 bushels to the acre, which resulted in the largest wheat

(1). Seventeenth Biennial Report of K.S.B. of A.,p. 1007

crop ever grown in any one year in Kansas. The acre yield was the highest for the whole period. It may be noticed (See Table I) that the acre yields for these years, were fairly uniform. Prices did not show marked fluctuations, though those for the later years, beginning with 1904, were noticeably better than those of the early part of the period.

The state of Kansas became more widely known for its 1901 wheat crop than it had at any time previously. The 90,333,095 bushel yield of that year equalled one-seventh of the entire crop raised in the United States, and one-thirtieth of the world's wheat crop.(2) This crop assumes greater importance both in yield and in acreage, ninety million bushels harvested from five million acres, when it is recalled that forty years previous to this time the yearly area sown to the wheat in the state was less than 10,000 acres. For 1901, Kansas outranked by ten million bushels Minnesota which was second in wheat production in the United States.(3)

(2). Thirteenth Biennial Report of K.S.B.of A., p. 538
(3). The K.S.B. of A. in its Thirteenth Biennial Report (p. 10) shows the rank of the leading wheat states of 1901 as follows:

State	Bushels
1. Kansas	90,333,095
2. Minnesota	80,102,627
3. North Dakota	59,310,669
4. South Dakota	51,662,307
5. Nebraska	42,006,885
6. California	34,743,111

The wheat crops of both 1903 and 1906 exceeded the ninety-three million bushel mark, but were relatively insignificant when compared with the one hundred and eighty million bushels produced in 1914. This crop was nearly one-fifth of the total quantity of wheat produced in the United States for that year, nineteen million bushels in excess of the output of Canada, twenty-seven million bushels more than the combined yields of the two states ranking next highest, and twenty-three per cent greater than any other state had ever produced up to that year in a single season.(4) North Dakota, the second wheat state in 1914, produced less than one-half as much wheat as Kansas.(5)

Records showing the yields of the states producing the five largest wheat crops in the history of the United States, and the year when raised, up to and including 1907, give Kansas a prominent position, first rank in four out of five instances.(6) In the fifteen-year period from 1900 to and

(4).Nineteenth Biennial Report of K.S.B. of A.,p. VI
(5).The Nineteenth Biennial Report of the K.S.B. of A.(p.VI) shows the six leading wheat producing states for 1914 as follows:

State	Bushels
Kansas	180,924,000
N.Dakota	81,592,000
Nebraska	68,116,000
Oklahoma	47,975,000
Illinois	46,250,000
Missouri	43,333,000

(6).From Sixteenth Biennial Report of K.S.B. of A.,p.971:
Kansas (1901)- 90,333,095 Bu. Kansas (1903)- 94,041,902
Kansas (1900)- 77,339,091 " Kansas (1906)- 93,292,980
Minnesota(1901 - 80,102,627 Bu.

including 1914, the average yield for each five-year period showed a decided increase; from 76,301,000 bushels for 1900-1904, to 80,479,000 bushels for 1905-1909, and from this figure to 90,820,000 bushels for 1910-1914.(7)

And here it is worth mentioning that during the latter part of this period, in 1907, and again in 1914 the acreage of wheat harvested surpassed the acreage planted to corn. Previous to 1907 corn had undisputably each year held the position of the crop having the largest acreage. The farmers showed a decided tendency, beginning with 1911, to include a larger area in wheat than in corn, though since then at the end of this period, the 1914 wheat crop was the only one to exceed in acres harvested the acreage planted to corn.(8)

It has been seen that Kansas has come to occupy a preeminent position in wheat production in the United States. At the same time one should notice what sections of the state are contributing most to the total production of the state. In 1900 the importance of Central Kansas as a wheat region continues to be emphasized. The Thirteenth Biennial Report of the Kansas State Board of Agriculture (1901-1902) contains an article by M. A. Carleton, cerealist in the Year Book of the United States Department of Agriculture, which reads as follows, "The greatest

(7). Quarterly Report of K.S.B. of A., Sept. 1920, p. 5
(8). Twentieth Biennial Report of K.S.B. of A., p. V.

wheat belt in the world lies between the Solomon river in Kansas, on the north, and the Canadian on the south, and the flint hills on the east and the ninety-ninth meridian on the west. Nearly all of the wheat raised in Kansas and Oklahoma is raised in this belt, and nowhere in the world is to be found so large an area adapted to the production of wheat."(9)

In 1900 Sumner was the leading wheat county, with 287,993 acres, which yielded 5,079,480 bushels. Barton was Sumner's only close competitor for first rank in wheat production. This county produced 5,079,480 bushels from 253,974 acres. Rice was the only county, other than Sumner and Barton, to reach the three million bushel mark, but Ellis, Ellsworth, McPherson, Reno, Rush, Russell, Saline, Sedgwick, and Stafford are all included in those counties yielding between two million and three million bushels. Marion, Pawnee and Mitchell counties reached the one million bushel class.(10)

But what about eastern Kansas at this time? As representative counties of this part of the state, one may take Atchison, Jackson, Franklin, Miami, Wilson and Crawford with respective wheat acreages of 18,806; 884; 3,398; 4,347; 12,272; and 16,660.(11)

(9). Thirteenth Biennial Report of K.S.B. of A., p. 504
(10). Twelfth Biennial Report of K.S.B. of A., 1899-1900, p. 879
(11). " " " " " " p. 879

These figures are more significant when compared with the winter wheat acreages of these counties for 1890, which were as follows: Atchison, 19,500; Jackson, 3,593; Franklin, 8,330; Miami, 4,139; Wilson 8,238; Crawford, 13,621.[12] It is true that some of these counties show slight increases in their wheat acreages, while others show marked decreased. But the increases shown are insignificant when compared with the increases of Sumner - from 134,266 acres to 287,993 acres; Barton - from 99,347 acres to 253,974, Rice - from 52,646 to 148,597 for the same ten year period.

At the same time one may inquire as to what specialties these counties of eastern Kansas, that were entirely outdistanced in wheat production by those counties farther west, had in 1900. For Atchison County one finds a record of 67,693 acres of corn, 19,409 of oats, 24,039 of timothy, 19,957 of blue grass; for Jackson, 125,106 acres of corn, 10,275 of oats, 20,251 of timothy, 16,450 of clover, millet 6,283 and 9,489 of blue grass; for Franklin, 99,866 acres of corn, 23,191 of timothy, 12,670 of flax, 13,111 of clover and 10,398 of blue grass.[13] It would be practically repetition to continue enumerating the crops in which Miami, Wilson and Crawford counties were specialized at this time; all showed a

(12). Seventh Biennial Report of K.S.B. of A., 1889-1890, p. 5
(13). Twelfth " " " " 1889-1900, pp. 674-749

strong lead in corn with oats, timothy and clover coming next in importance as agricultural products. It is not to be understood that these crops included all of those raised in these particular counties, for they did not. Each of the counties in this part of the state also reported some acreages of barley, rye, potatoes, castor beans, grain sorghums and buckwheat, but all of these were of minor importance.

The wheat crop of 1901, the largest in the history of Kansas up to that time, showed a decided tendency to be produced in a certain district of the state, which, for a number of years, had come to be recognized as the wheat belt. In fact, 79 per cent of the enormous output of 1901 was grown in thirty counties, which were in order of their production: Sumner leading with 6,819,266 bushels, Barton, Rice, McPherson, Reno, Stafford, Sedgwick, Harper, Saline, Ellsworth, Pratt, Russell, Mitchell, Ottawa, Dickinson, Osborn, Kingman, Harvey, Ellis, Cowley, Lincoln, Marion, Montgomery, Pawnee, Rush, Cloud, Rooks, Smith, Marshall and Clay; none yielding less than one million bushels. Their total area in 1901 was 3,862,375 acres, or 72.65 per cent of the state's entire wheatfield.(14)

Spring wheat at this time had continued to decline in importance as an item of Kansas agriculture, and its

(14). Thirteenth Biennial Report of KS.B. of A.-1901-1902, p.463

growth was given little attention outside a few northern or extreme northwest counties bordering Nebraska. The area sown to this crop during the decade from 1890 to 1900 was not more than 157,000 acres annually, which yielded about 982,000 bushels each year.[15] Winter wheat farmers continued to condemn spring wheat on the ground that it afforded a breeding place for chinch bugs which later spread to other crops.

The wheat belt of 1910 was not noticeably changed from that of 1900, insofar as leading counties were concerned, though there was some exchange among them for first place. For 1910 Pawnee was the champion county in wheat production, with a crop of 3,983,673 bushels harvested from 209,667 acres. Barton, which led in 1909, harvested a larger acreage than Pawnee in 1910, but the yield was less - 3,255,375 bushels. Next in order came Rush, Pratt, Ford, Stafford, Ellis, and Russell, each of which had more than two million bushels of wheat to its credit for that year.[16] It may be noted that each decade finds a few of the counties farther west in the state entering the wheat belt as leading counties in wheat production.

(15). Thirteenth Biennial Report of K.S.B. of A., 1901-1902, p.464
(16). Seventeenth " " " 1909-1910, p.1006 and 1007.

Ford County is a conspicuous example of this extension in 1910. At the same time the spring wheat belt had pushed on to the western limits of the state, Cheyenne and Sherman counties producing 60 per cent of the spring wheat produced in 1910.[17]

Though only a few of the counties of the western third of the state could be classed as leading wheat counties in 1910, the increase in winter wheat growth in that part of the state was especially marked in the first decade of the present century, and the formation of the wheat belt to the north and west was a natural outgrowth of the increased demand for the Kansas hard red Turkey wheat for the production of which western Kansas is so well suited. Within the decade, the gain in the western third had been from 572,201 acres in wheat in 1900 to 1,789,266 acres in 1910, or more than 200 per cent increase.[18] Thirty-one counties, wholly or partly west of the one hundredth meridian, are included in this group. Thirty years ago, in 1880, the territory now represented by these thirty-one counties had only 32,685 acres of wheat, or 3 per cent of the state's sowing. Twenty years ago (1890) their aggregate wheat acreage was 280,642, ten years ago (1900) 570,201 or 13 per cent of the state's sowing, and in 1910, 1,789,266 acres, or 26.5

(17). Seventeenth Biennial Report of K.S.B. of A., 1909-1910 p.180
(18). " " " " " " p.179

per cent of the entire wheat acreage.[19] These counties constitute the western one-third of Kansas, and include Clark, Cheyenne, Decauter, Finney, Ford, Gove, Graham, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearney, Lane, Logan, Meade, Morton, Ness, Norton, Rawlins, Scott, Seward, Sheridan, Sherman, Stevens, Thomas, Trego, Wallace, Widhita, and Stanton.

Wheat growing in eastern Kansas, southeastern Kansas especially, continued to lose favor in the decade 1900-1910. Coffey County furnishes a notable example of this decreased wheat production. That part of Kansas never did produce enough wheat to change the price in Chicago, but wheat was at one time one of the big crops. In 1905 Coffey County sowed 13,340 acres of wheat. In 1908 it had 34,695 acres; the next year the acreage fell to 19,923, and in 1910 only 7,268 acres were sown. This county is typical of many of the southern counties of the state.[20] Other examples of similar reductions in wheat acreages occurred in Greenwood - 1,984 acres in 1900 and 1,072 in 1910; Wilson - 12,272 acres in 1900 and 7,936 in 1910; Neosho - 14,039 acres in 1900 and 9,250 in 1910; and Labette - 42,076 acres in 1900 and 10,942 in 1910.[21]

One may wonder why these counties have decreased their wheat acreages, and what kind of farming they have taken

(19). Seventeenth Biennial Report of K.S.B. of A., p. 179
(20) The Country Gentleman, Vol. 82p. 530, Aug.5,1916
(21). Twelfth Biennial Report of K.S.B. of A., 1899-1900, p.878-879 and Seventeenth Biennial Report of K.S.B. of A., 1909-1910, pp.1006-1007

up to take the place of wheat. In the first place, southeastern Kansas, with its rather moist climate, is not suited to the growing of hard winter wheat, which is by far the most resistant variety grown in Kansas. Consequently, the softer, less resistant varieties grown in that part of the state are subject to winter-killing, and severe losses, which have tended to discourage wheat farming. Also, that part of the state is more subject to the depredations of chinch bugs than districts farther west.

When winter wheat began to decline in popularity in Coffey County, the farmer there turned quickly to alfalfa, beef culture, and hogs.(22) In addition to Coffey and the other counties already mentioned, as representing the foreshadowed change, Chautauqua, Elk, Clay and Cherokee may also be included. In 1910 Chautaugua County had a corn acreage of 50,814; kafer-corn, 14,002; alfalfa, 5,717; oats, 4,494 - compared with a wheat acreage of 2,705. Elk County shows similar figures: 58,207 acres of corn; 12,067 of kafir corn; 7,605 of clover; 7,218 of alfalfa; and 2,645 of wheat. Wheat still makes a strong appeal in Cherokee County, though not necessarily so, when 29,252 acres of wheat are compared with 79,035 acres of corn. Clay County shows a still stronger preference for corn, 125,750 acres, but also has 50,014 acres

(22). The Country Gentleman, Vol. 82, p. 530, Aug. 5, 1916.

of oats; 15,411 of alfalfa; and 31,829 of wheat.[23]

The tendency of wheat growing in Kansas for these years, 1897 to 1915, could be rather concisely stated in a few words - increased production farther west in the state, and decreased production in the eastern section, the section that had for a number of years been gradually turning to other crops for its staples. This fact may be of interest only to people in the state. Probably it matters little to those outside Kansas, who may happen to know of its rank in wheat production, that there is a wheat district within a wheat state.

(23). Seventeenth Biennial Report of K.S.B. of A.,p.808-836.

Chapter VI

War Production and War Prices

1915 to 1921

Beginning in the fall of 1914, at the time of the outbreak of the European war, new incentives were operative for increased wheat production in the United States. Foreign demand, along with increased prices, encouraged more extensive wheat farming. War prices were in effect even as late as 1920. During this war period the Kansas wheat output added materially to the aggregate production of the United States. But at the same time the wheat crop of the state was subject to unfavorable climatic conditions, which resulted in a much smaller acreage being harvested than was sown. However, there was no noticeable reduction in acreage as long as war prices prevailed.

During 1915 and 1916, the foreign demand stimulated wheat growing immensely, tho prices for these years, 89 cents a bushel for 1915 and $1.35 for 1916, were comparatively low, compared with those of 1917, 1918 and 1919. Upon the entry of the United States into the war in 1917, the demand for wheat was still further increased, and prices were even higher. Wheat sold for an average of $2.08 a bushel for 1917. The

government guaranteed price of $2.00 a bushel was effective during 1918 and 1919, and until July 1, 1920. However, the price did not drop markedly until the fall of that year, so that the average for 1920 was $1.86 a bushel. Under these conditions it is not surprising that Kansas produced more wheat, for this period, than ever before in an equal length of time.

During the five years from 1914 to and including 1918 the total production of wheat in Kansas amounted to 529,169,000 bushels, or nearly one hundred million bushels more than was produced by any other state.(1) This aggregate yield was worth $716,839,000.00 as against $591,446,000.00 of the state ranking second. The average annual production in Kansas during that time amounted to more than one hundred andfive million bushels. In one of the war years Kansas raised about one-fifth of the entire wheat crop of the United States, and in another approximately one-sixth.(2) Comparing the period, 1914-1918, with the pre-war period, Kansas increased the average annual seeding to wheat 34.54 per cent, and increased the average annual production 43 per cent, as against gains for the rest of the United States of 23.16 per cent in acreage and 24.16 per cent in production.(3)

(1). Twenty-first Biennial Report of K.S.B. of A. p. IX
(2). Twenty-first " " " " p. VII
(3). " " " " " p. VII

The acreage sown to wheat in the fall of 1918, for the 1919 crop, about 11,000,000 acres, exceeded by far all previous records. Possibly it was the largest acreage ever devoted to a single crop in any state. (See accompanying map as to concentration of wheat acreage in Kansas in 1919). Thisacreage included approximately one-fourth of all the winter wheat sown in the United States for that fall. Kansas was the first state in the Union to reach and exceed the 11,000,000 acre mark in wheat, thus more firmly establishing its leadership in wheat growing.(4) As to aggregate yield, Kansas held first place for the five-year period, 1915 to and including 1919.(5)

In the ten years previous to 1920, Kansas was the leading wheat state for five years, 1920, 1919, 1916, 1914 and 1913, and North Dakota for the other five, but for the aggregate yield during the ten years, Kansas had 1,048,964,000 bushels and North Dakota 854,034,000.(6)

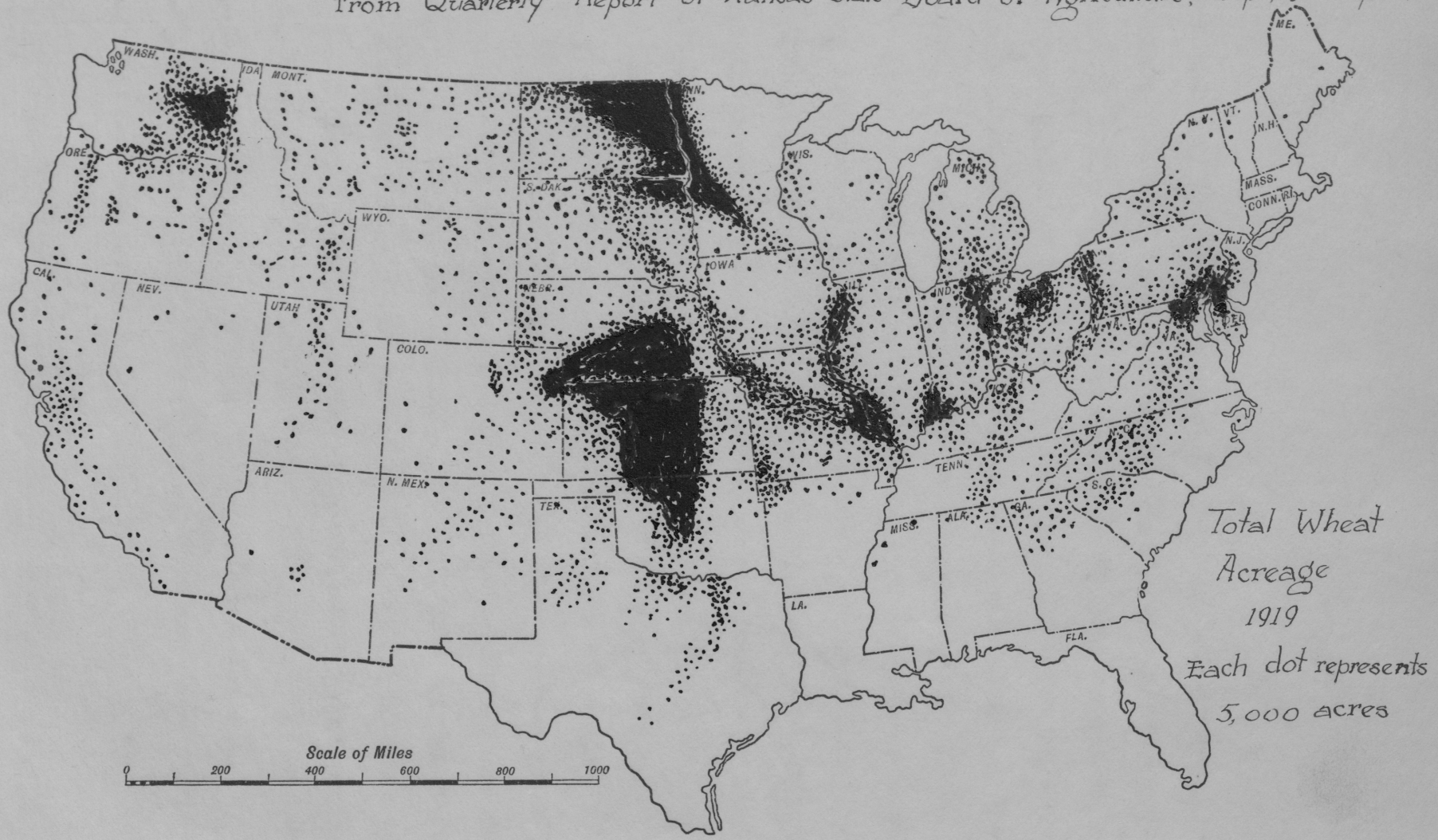
Robert E. Sterling, Associate Editor of the Northwestern Miller, for 1920, emphasizes the fact that the Kansas wheat crop has acquired a prestige which makes itself felt

(4). Twenty-first Biennial Report of K.S.B. of A., p. XVI
(5). From: Quarterly Report of K.S.B. of A., Sept. 1920, p. 4
Aggregate yields of 6 leading wheat states for 1915-1919 period

Kansas	-	502,970,000 Bu.
N.Dakota	-	406,580,000 "
Minnesota	-	262,393,000 "
Nebraska	-	255,220,000 "
Illinois	-	230,470,000 "
S.Dakota	-	225,722,000 "

(6). Twenty-second Biennial Report of K.S.B. of A., p. 533

From Quarterly Report of Kansas State Board of Agriculture, Sept., 1920. p. 3.



Total Q-wheat acreage of the United States, 1919

not only in the United States, but in the whole world. He states, "In the ten harvests just past, the great parallelogram of Kansas has produced and sent out into the near and distant places of the earth more wheat than ever before was produced on an equal area of soil since time began. Practically a billion bushels make up the total wheat grown on the fertile plains of Kansas in the last decade, more wheat than has been grown in the whole of the United States in a single year, and a third of the average annual production of all the wheat fields of the world. . . . .Kansas is the first and foremost wheat reservoir of this country and the state to which the grain and flour trade of Europe look each year as their initial and most desirable source of supply."(7)

It was during this period, with a decrease in the production of hard winter wheat in Russia, Turkey and Hungary, due to conditions arising from the war, that Kansas assumed the position of the largest producer in the world of this particular kind of wheat.(8) The excellences of hard winter wheat have already been mentioned, so that one is able to understand the significance of the above statement.

The climatic conditions of these years were unfavorable, for the most part, for wheat farming. Under normal

(7). Quarterly Report of K.S.B. of A., Sept. 1920, p. 172
(8). " " " " " p. 10

conditions with large losses in the crop each year, with the exception of 1919, undoubtedly there would have been decreases in the wheat acreage instead of the enormous increases that were witnessed. In each instance the figures in Table I, (See appendix) show the number of acres of wheat harvested, rather than the number sown, which, in themselves, would appear to be almost contradictory to the statement made with reference to the increases in acreage.

This point is illustrated in the 1915 crop. Though the harvest, 7,630,810 acres, was below that of 1914, the area sown, 9,448,000 acres really was greater. Continued rains through June and July rendered impossible the harvesting of large areas of wheat. The acreage harvested for the 1916 crop was only a little larger than that for 1915. And for this year even the number of acres sown was reduced. The conditions for seeding in the fall of 1915 were unfavorable for a large wheat acreage. The long rainy season of the summer had delayed all farm work to such an extent that there was not sufficient time in the fall for preparing the ground for, and seeding as much wheat as really was desired.

The crop of 1917 was most disappointing, only 3,546,433 acres harvested, the smallest since 1897, from 9,588,000 acres sown. The extremely dry weather of the fall and winter of 1916-1917 was responsible for this loss.(9) Even this

(9). Twenty-first Biennial Report of K.S.B. of A., p. XIX

disaster did not cause a reduction in the acreage sown for the 1918 crop. It is recalled that the prices for wheat for 1917 reached their peak, which served as an impetus to sow more wheat. Though 9,897,365 acres were sown for the crop of 1918, the greatest acreage in the history of the state up to that time, only 6,770,784 acres, were harvested. Again losses were due to unfavorable winter conditions.

The war had not yet ended and the government price guarantee was still in effect when the wheat crop for 1919 was sown, which two facts account for the large acreage sown, 11,640,873 acres. The year 1919 was the one exception during this period in which practically the whole acreage sown was harvested. Of this crop, Kansas produced about 15 per cent of the aggregate production of the United States.(10) For the 1920 crop nearly one million acres less were sown than for that of 1919. The fact that $2.00 wheat was not guaranteed after July 1, 1920, may have been instrumental in reducing the acreage. About 15 per cent of this crop was lost from the effects of dry weather and high winds blowing out the wheat plants and covering them with drifted soil.(11)

(10). Yearbook of U.S. Dept. of Agriculture, 1921, p. 96
(11). Twenty-second Biennial Report of K.S.B of A., p. VIII

It necessarily follows from the greatly increased acreages sown to wheat during the war period that the wheat belt was extended into parts of the state in which it had been relatively unimportant previously. During the years immediately following the war, when war prices still prevailed, more than half of the state's cultivated area was sown to wheat alone. A few years previous to this period twice as much corn as wheat was planted; during the years mentioned the conditions were exactly reversed.(12) Kansas furnishes an example of what occurred in many states in those years during and immediately following the world war. Scarcity of labor, along with the demand and a guaranteed price for wheat, contributed to this increase in the wheat acreage with a corresponding decrease for corn.(13)

Although the wheat area was spread out over much more territory, literally in all directions, during these years, the largest acreages and greatest production were found in the wheat belt of Central Kansas, and in a few of the counties of the western part of the state. Taking 1920, as illustrative, the counties having the largest areas sown to wheat were Ford, Barton, Sumner, Reno, Pawnee, Rush, Pratt,

(12). Twenty-third Biennial Report of K.S.B of A., p. IX
(13). Yearbook of U.S.Dept. of Agriculture, 1921, p. 175

Stafford, Thomas, Sedgwick, McPherson and Rooks, each of which had more than 200,000 acres.[14]

Even in the eastern third of the state, in the corn belt, wheat raising increased nearly 100 per cent during and immediately following the war. Other crops, alfalfa especially, as well as corn, were decreased in acreage as a result of the mad panic in which people turned to wheat.[15] Under normal conditions, other crops, especially corn, were more profitably grown than wheat in this section, but with $2.00 wheat, along with a government guarantee for this price, the growing of this crop was sufficiently profitable to crowd out others.

Possibly this increase in wheat in some of the counties of the corn belt can be shown best by a comparative list of the wheat acreages for 1910 and 1920:

Wheat Acreages in Typical Corn Counties for 1910 and for 1920 (16)

Counties	Acreages 1910	Acreages 1920
Nemaha	1,902	35,833
Brown	1,918	73,340
Jackson	1,437	56,794
Pottawatomi	1,647	38,157
Wilson	7,936	39,533
Osage	4,221	62,897
Riley	2,773	41,058
Jefferson	10,634	68,217
Anderson	3,652	37,444
Shawnee	5,079	53,266

(14). Twenty-second Biennial Report of K.S.B. of A., p.544-5
(15). Twenty-third " " " " p.IX
(16). Seventeenth " " " " p.1006-7
Twenty-second " " " " p.544-5

A Comparison of the Corn Acreages for the Years 1910- 1920
Showing Marked Decreases in 1920 (17)

COUNTIES	ACREAGES 1910	1920
Nemaha	191,091	133,703
Brown	133,350	106,734
Jackson	115,536	87,657
Pottawatomi	116,802	75,680
Wilson	70,802	36,670
Osage	102,355	53,599
Riley	82,392	59.207
Jefferson	99,340	59,841
Anderson	79,719	47,821
Shawnee	87,364	43,040

It would not be exaggerating the facts of the case greatly to say that the years 1915 to 1921 were phenominal for wheat production in the state. Partly for patriotic reasons, but more largely because of the war prices, wheat growing assumed a position of importance, such as it had never held before. The areas sown each year were greater by some two million acres than those of any of the pre-war years. However, the unfavorable climatic conditions prevented the total production for any year from reaching the record established in 1914. Although wheat has displaced a part of the corn acreage in eastern Kansas, it can hardly be expected that the price of wheat through any considerable period of time will remain so high in relation to corn as to make wheat a more profitable crop than corn under the best of corn belt conditions. It must be remembered that much of the world is well

(17). Seventeenth Biennial Report of K.S.B. of A., p.1010
Twenty-second " " " " " p.548-9

suited to wheat production, while relatively only a small part of it is suited to corn.[18]

(18). Yearbook of U.S.Dept. of Agriculture, 1921,p. 104.

Chapter VII

Post - War Conditions

1921, 1922 and 1923

Beginning in the fall of 1920 and extending up to the present time (1923), there was a decided slump in the price of all farm products. However, the wheat crop of 1921 was the first to be noticeably affected by the lowered prices. Contrary to what one would be led to expect, the war acreages sown to wheat have been maintained even with lowered prices effective.

The government guaranteed price for wheat of $2.00 a bushel was removed July 1, 1920. In the fall of this year, prices began to decline, and fell to such an extent by 1921 that the wheat crop for that year averaged but 95 cents a bushel. And the 1922 crop sold for still less, 90 cents a bushel. In 1923 there was a slight improvement, but only to the extent of reaching the 1921 price. Compared with the general price level in 1921, the farm price of wheat fell to the lowest point it had reached in the history of the United States.(1) The price of wheat fell more rapidly and farther than the average price of all commodities.(2)

(1). Yearbook of U.S. Dept. of Agriculture, 1921, p. 141
(2). " " " " " p. 147

The precipitous fall and low prices of wheat since 1920 are due more to the general deflation of all prices than to any other single factor.[3] Lessened demand also plays a part. Not only did the foreign war demand cease, but even a pre-war demand has not been maintained, because the impoverished nations of Europe have not been able, financially, to buy American wheat. It is not expected that the price of wheat can be greatly improved as long as the war supply is being dumped onto the markets. It should be remembered that normally the price of wheat is a matter of world determination, and is not a simple matter of price fixing within the United States.

The Kansas farmer has been producing wheat at a loss since 1920. The cost of production studies conducted by the Kansas State Agricultural Experiment Station in 1921, in McPherson and Jackson counties, showed that the average net cost of producing a bushel of wheat in the former county for that year was $1.44, and in the latter $1.58.[4] These results speak for themselves when it is recalled that the average price of wheat for 1921 was 95 cents a bushel. The same studies for 1922 estimated that the average cost for the whole state, of producing a bushel of wheat for that year, was $1.36,

(3). Yearbook of U.S. Dept. of Agriculture, 1921, p. 141
(4). K.S.A. Experiment Sta., Cost of Production Studies, 1921

somewhat less than for 1921, as was the price, 90 cents a bushel.

The two greatest factors influencing the cost per bushel are the price of the land, and the yield per acre.(5) With the 1922 price, the average yield for the state would have had to be about twenty-five bushels to the acre in order to give the farmer a reasonable return on the money which he had invested in his land. It would be mere folly even to predict a twenty-five bushel yield as an average for the state of Kansas, for never, in the history of the state, has this figure been reached. It should be added here that the conditions under which wheat is grown in western Kansas - low land values and extensive farming - tend to make production costs lower there than in the eastern part of the state.

After what has been said concerning the cost of growing wheat, as compared with the returns, one would expect the farmers to reduce the area sown. But this has not been the case. For the 1921 crop, there was the second largest acreage ever sown to wheat - 11,454,000 acres, but only 10,345,651 acres were harvested. The usual calamity, dry winter weather, with the additional disaster of a late spring freeze and a green bug devastation, befell this crop.(6) Even

(5). Nineteenth Biennial Report of K.S.B. of A., p. 344
(6). Twenty-third Biennial Report " p. VI

with this loss in acreage, Kansas was the leading wheat state for 1921 in aggregate production. In 1922, in spite of the unfavorable conditions and low prices, still more wheat was sown - 12,284,712 acres, the largest acreage in the history of the state. What had almost come to seem the inevitable happened again in 1922 - severe losses from a dry fall and winter, with only 9,602,955 acres of wheat harvested.(7) And, for this year, Kansas ranked second in wheat production in the United States, North Dakota being first.

For the most part the farmers had not changed their minds about wheat for 1923, as shown by the 11,587,400 acres sown for this crop - over one-half of the state's cultivated area in wheat, alone. The 7,835,000 acres harvested, which yielded but 9.7 bushels an acre, the lowest yield in twenty-one years, was most discouraging to the wheat farmer.(8) But for the crop of 1924, it begins to look as if wheat had lost in favor with the Kansas farmer. It is estimated that there were 9,761,000 acres seeded in the state for this crop. The wheat belt proper (See accompanying map) - fifty-two counties west and northwest of a line drawn along the east borders of Washington and Sumner counties - contains 8,106,000 acres of

(7). Twenty-third Biennial Report of K.S.B. of A., p. VII
(8). Inventory of K.S.B. of A. of Ag. - Production of Kansas for 1923

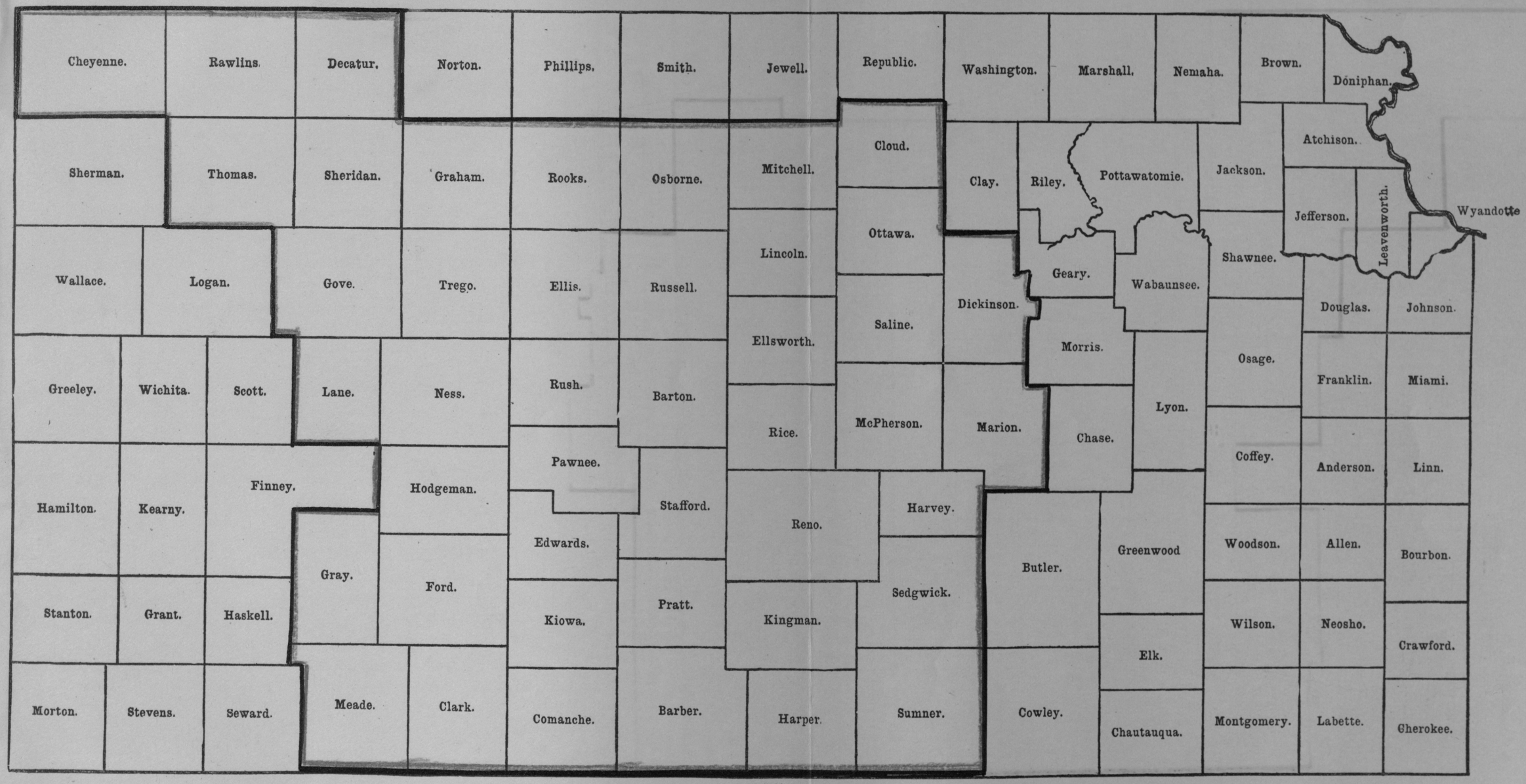
the 1924 seeding or 83 per cent of the winter wheat area of the state. The acreage sown for this crop is a decrease of 1,826,410 acres from the area sown for the 1923 crop, or 15.76 per cent, which is the smallest acreage seeded since the first year of the war. This reduction can be attributed to greatly reduced prices received for wheat during 1921, 1922 and 1923, to unfavorable climatic conditions for these three years, and to extremely high prices for labor required in handling the crop.(9)

But will the farmers continue to reduce the areas which they sow to wheat? This question cannot be answered definitely here, though it seems fairly safe to make a few suppositions. If one is guided by the fluctuations of the past in the wheat acreage, it surely would not be far from wrong to predict that, with a few bumper crops, say of eighteen to twenty bushel yields, even with the price where it is, farmers would be taking fresh interest in wheat growing, and would be extending the areas sown to this crop. On the other hand, with two or three more years of destruction of a large per cent of the acreage sown, such as occurred in 1921, 1922 and 1923, it is more than likely that less wheat will be sown each year, unless we should again have phenomenal prices.

(9). Report of K.S.B. of A. on 1924 Wheat Sowing, Dec.1923.

The Wheat Belt for the 1924 crop

KANSAS



5 5001

Each county in this belt sowed more than 100,000 acres of wheat in the fall (1923)
Data taken from report of Kansas State Board of Agriculture on wheat growing for 1924 crop

One may as well ask why farmers maintained their war acreages of wheat for such a long time as to predict their future line of procedure. Though one may discern with somewhat more certainty the answer to the farmer question. It is probable that the farmers felt they were following the only course open to them. It must be remembered that it is not a simple matter to change a system of farming. Farmers had gone into wheat so extensively that they could not change their cropping system within a year or two. In many cases they had bought expensive machinery for handling their large wheat acreages, and often had gone in debt for it, too, so they thought they must raise more wheat to meet these obligations. Then, too, farmers had a certain optimism about the future - that higher prices might return. Though wheat raising was not profitable, neither were other branches of farming. Possibly the farmer saw himself choosing between two evils when it was a question with him whether to choose wheat or some other crop as his staple.

Right now the wheat farmers are being told that for success they must diversify. Yes, they may raise some wheat, but not so much wheat. The system implies growing more corn, more alfalfa, and more of the grain sorghums in connection with beef cattle, dairy cows, hogs, and poultry. The absolute necessity for livestock lies in the fact that

there is a very limited market for the bulk of those crops except via the live-stock route, as in the making of meat, or milk, or other animal products. It cannot be denied that diversification has its virtues. With intelligent management it practically assures a good living, and an income the year round. It also means year round work, to which some farmers are rather averse.[10]

The farmers in eastern Kansas learned through experience that that part of the state was suited best to diversified farming. Will the farmers in the wheat belt proper come to the same conclusion? This is a question that cannot be answered now, though it can be stated that the climatic conditions of eastern Kansas are more favorable to corn growing, which usually forms the backbone of a diversified system, than are those of the wheat belt.

Whether a farmer is choosing wheat as a main crop or as a subordinate crop, he chooses it on the basis of how profitable it is in relation to other crops, from the standpoint of the use of labor and equipment, as well as land, in one year as in several years.[11] Undoubtedly this has been a determinant, that is, the fact that wheat has proved to be the most profitable crop that could be grown under conditions existent in the main wheat district of Kansas, in encouraging farmers to specialize in it.

(10). Twenty-third Biennial Report of K.S.B. of A., p.X and Xi
(11). Yearbook, of U.S.Dept. of Ag., 1921, p. 106

Thus it has been seen that wheat has remained a specialty with the Kansas farmers in spite of low prices and disastrous crop years, which shows that it has become pretty well entrenched in the farming system. The reasons for its prominence have already been given.

Chapter VIII

Position of Corn in Kansas Agriculture

Wheat has not always held the preeminent position that it now holds in the agriculture of Kansas. Records of the Kansas State Board of Agriculture show that corn was for many years the most important crop. In fact, until the farmers realized that livestock raising must accompany corn growing, there was a decided over-production. It is interesting to notice that within recent years corn has been superceded by wheat both in acreage and in yield. (See Tables II and III of appendix) These conditions that favored growing more wheat were conducive to less corn production. Kansas has never been considered a foremost corn state, not even when corn was the leading crop. And it should be added that the state never would have held the position it has in years past in the production of this crop, if it had not been for the so-called corn belt in the eastern section.

Early reports mention that, from 1864 to 1872 inclusive, there was a constant and continued over-production of corn, which caused a corresponding diminution in the value of the product to the individual farmer and to the state. In

1871 corn was worth from ten to fifteen cents a bushel, and was not only used for fuel, but through neglect and improvidence was allowed to rot in the field. There was an overproduction of corn owing to the cheapness with which it could be produced; the absence of livestock to which it could be fed; and the lack of a remunerative market.(1)

In 1873 farmers called attention to the fact that too much corn was being produced for the amount of stock, and that corn should never be exported except in the form of beef or pork. The situation was termed as "alarming." At that time the supply so far exceeded the demand for home consumption that in some parts of the state it could be utilized only as fuel, and would not bear transportation to a distant market. Such conditions made the farmers realize the absolute necessity of turning their attention to a more diversified industry.(2)

Evidently by 1881 the corn situation had improved in Kansas, for in that year in one of the quarterly reports of the Kansas State Board of Agriculture a writer stated, "Probably few people thoroughly comprehend the immense importance of the corn crop of the state, or realize its value. They little imagine that the corn produced in 1881 exceeds in value by 100 per cent that of the winter and spring wheat crops combined; or that it is not only the chief

(1) Annual Report of K.S.B. of A. for 1874, p. 84
(2) Second Annual Report of K.S.B. of A., 1873, p. 132

grain fed to our work animals, but the one wholly used to fatten a very large percentage of the animals slaughtered or sold for slaughter."(3)

In 1884 the biennial report of the Kansas State Board of Agriculture predicted that an increase in the area of corn in the eastern half of the state could be reasonably calculated on each year because of the rapid increase in the number of livestock and the necessity of providing feed for them. This same report further stated that for every past season corn had been the most important crop cultivated in Kansas, both as to the number of bushels raised and as to the value of the product.(4)

In the twenty-five years closing with 1895 the corn fields had an average annual value exceeding $31,000,000, or a total of more than $776,000,000.00 These yields had been produced mainly to the east of the north and south center line. In the twenty-five year period mentioned, the aggregate value of the corn crop had been nearly double that of the winter and spring wheat crops combined. Though corn was the premier crop in 1896, the reports for that year admitted that even enthusiastic advocates of the productive possibilities of Kansas for corn made no claim that the western two-thirds of the state, that area west of the ninety-ninth meridan, was especially reliable corn growing terri-

(3). Quarterly Report of K.S.B. of A., Dec., 1881, p. 81
(4). Fourth Biennial Report of K.S.B. of A., p5 and 467.

tory.[5] For 1897 the acreage planted to corn in Kansas represented nearly one-half and that sown to wheat one-fourth of the entire cultivated area.[6]

As late as 1906 there was no doubt about the supremacy of corn in Kansas. In the twenty-year period ending with 1906, the state had produced nearly 3,000,000,000 bushels of corn, worth to the farmers where grown over $850,000,000.00.[7] The records for 1908 and for 1909 show similar facts relative to the importance of corn. For 1908 over five million bushels in excess of the crop of 1907 were grown in which year the valuation of the corn crop was 51.8 per cent of the entire valuation of all cereals.[8] For 1909 the United States placed corn as the leading crop for the state, though the wheat crop for that year almost equalled corn in value -$75,941,189.83 for wheat, and $83,066,905.22 for corn. The wheat acreage was about three-fourths as great as that of corn. These two crops combined represented 90 per cent of the reported acreage of all crops.[9]

But beginning in 1911, as was mentioned in an earlier chapter, the farmers began to show a tendency to

(5). Tenth Biennial Report of K.S.B. of A., p. 1
(6). Eleventh " " " " p.546
(7). Fifteenth " " " " p.3
(8). Seventeenth " " " " p.39
(9). Thirteenth Census of the U.S., Vol.VI, p. 565

devote a larger area to wheat than to corn. (See Tables II and III of appendix). And this tendency was accentuated by the late war and the demands that it made for wheat. For the thirty-year period ending with 1916, and divided into five-year periods, that of 1912-1916 was the first one to show a greater annual acreage of wheat harvested than of corn planted. For this period, wheat shows an average annual acreage of 7,374,308 and corn, 6,064,116. For the period 1915-1916, the total value of all the field crops for the state amounted to more than half a billion dollars, of which two-thirds was contributed by corn and wheat. During these years wheat occupied 35.8 per cent of the total cultivated area and corn 31.9 per cent.(10)

For the period 1917 to 1922 inclusive wheat showed a still greater gain on corn. The annual average figures for these years were, for wheat, 8,486,452 acres harvested; 111,254,816 bushels produced - at a value of $175,562,305.60; for corn 5,693,466 acres planted, 89,728,547 bushels produced,- at a value of $73,152,228.89.(11) And it should be remembered that for this period, with the exception of 1919, there were material differences between the number of acres sown to wheat and the number harvested, owing to unfavorable clima-

(10). Twelfth Biennial Report of K.S.B. of A., pp. V and VI.
(11). Quarterly Report of K.S.B. of A., Dec., 1922, p. 8 and 9

tic conditions. The crop inventory of the Kansas State Board of Agriculture for 1923 shows that, for the first time since 1917, the total production of corn for Kansas, as well as aggregate value, surpassed those figures for wheat.[12] But the wheat crop for that year was a decided failure, so this exception does not justify any prediction to the effect that corn is regaining its lost prestige.

Statistics show that corn not only has been surpassed by wheat in recent years, but that the aggregate production, as well as acre yields, is gradually decreasing.[13] The decreased total production has been due in part to the increased wheat area, in part to the substitution of alfalfa and grain sorghums for corn, and in part to the reduced acre yield above mentioned.[14]

(12) K.S.B. of A. Inventory for Agriculture of Kansas, for 1923.
(13) Table from the Twentieth Biennial Report of K.S.B. of A., p. V and VI, showing the average annual total production of corn from 1898 to 1922 by five-year periods:

Period	Bushels
1898-1902	162,560,000
1903-1907	169,958,000
1907-1912	126,435,000
1913-1917	100,277,000
1918-1922	86,380,953

(14). Twenty-first Biennial Report of K.S.B. of A., p. 196

Though the acre yield fluctuates with the seasons, nevertheless the records show that the decrease has been a steady one. This decrease may be attributed to: Loss of fertile surface of soil by erosion; depletion of fertility and humus content of the soil; injury to the corn from insects and plant diseases due to lack of proper methods of tillage and crop rotation.[15] But this decrease in acre yield in Kansas is not consistent with the corn situation in the United States as a whole. The report of the Yearbook of the United States Department of Agriculture for 1921 states that there has been an increase in the acre yield of corn in the United States for the period 1895-1913, and this same report attributes the increase as partly due to better cultivation and partly to a reduction of the acreage in areas where the crop is uncertain as in parts of Kansas and Oklahoma.[16]

(15). Twenty-first Biennial Report of K.S.B.ofA.p.205.
The following table illustrates the statement made relative to decreasing acre yields of corn in Kansas - from 1865 to 1923 by five-year periods:

Period	Av.Bushels Per Acre
1865-1869	36.0
1870-1874	31.2
1875-1879	41.2
1880-1884	32.9
1885-1889	26.7
1890-1894	18.6
1895-1899	23.1
1900-1904	19.9
1905-1909	23.8
1910-1914	14.6
1915-1919	14.8
1920-1923 (4 Yr.period)	21.8

(16). Yearbook of U.S.Dept. of Agric., 1921, p. 170

Kansas has never been classed as a foremost corn producing state - has never held a position in corn production comparable to that held in wheat. Statistics show that with the decrease in the aggregate yields, the state gradually has come to occupy a less important position in the list of leading corn states. In 1880 Kansas was the sixth corn producing state in the United States, being outranked by Illinois, Iowa, Missouri, Indiana and Ohio.(17) For the period 1911 to 1915 inclusive, it dropped to eighth place.(18) The state ranked ninth in corn production in 1921,(19) and tenth in 1922.(20)

(17). Kansas Historical Collections, Vol. III, p.378

(18). Rank of states in corn production for period 1911 to 1915, inclusive: Data from Bulletin 696, U.S.Dept. of Ag., p.28 & 29

State	Av. Annual Production (Bu.)	Bu. Produced Per Acre
1. Iowa	353,619,000	35
2. Illinois	343,924,000	33
3. Missouri	186,643,000	25
4. Indiana	180,926,000	37
5. Nebraska	167,928,000	23
6. Ohio	153,991,000	40
7. Texas	137,145,000	20
8. Kansas	120,815,000	18

(19). Yearbook of U.S.Dept. of Agriculture, 1921, p.510

(20). Rank of states according to aggregate production of corn for 1922: (From Yearbook of U.S.Dept. of Ag., for 1922, p.572)

State	Acres	Production (Bu.	Yield Per Acre
1. Iowa	10,123,000	455,535,000	45.0
2. Illinois	8,819,000	313,074,000	35.5
3. Nebraska	7,296,000	182,400,000	25.0
4. Indiana	4,765,000	176,305,000	37.0
5. Missouri	6,150,000	175,275,000	28.5
6. Ohio	3,823,000	149,097,000	39.0
7. Minnesota	3,979,000	131,307,000	33.0
8. Texas	5,729,000	114,580,000	20.0
9. S.Dak.	3,861,000	110,038,000	28.5
10. Kansas	5,098,000	98,391,000	19.3

The cost of production studies compiled in Bulletin 696 of the United States Department of Agriculture show that, in the list of the first eight corn producing states for 1911-1915, given in note 18, Texas and Kansas have the greatest costs per bushel, 61 cents for Texas and 51 cents for Kansas, and Iowa the lowest, 35 cents. There is even a greater discrepancy between the net returns per acre in favor of Iowa.(21) The results as shown in this table indicate that the net returns per acre are partly determined by the acre yields. And, tho not evidenced here, land rentals also play a large part in this determination.

In estimating the cost of producing a bushel of corn, there are several items to be taken into consideration, the largest of which is the cost of the use of land.(22)

(21). From Bulletin 696, U.S. Dept. of Ag., pp. 28 and 29

State	Av. Gross Returns per Acre	Cost of Producing, Including land rental or Int.	Net Returns Per Acre
1. Iowa	$17.85	$12.25	$3.60
2. Illinois	18.15	13.20	4.95
3. Missouri	15.25	10.50	4.75
4. Indiana	19.61	13.69	5.92
5. Nebraska	11.37	10.02	1.71
6. Ohio	22.80	15.60	7.20
7. Texas	14.40	12.20	2.20
8. Kansas	10.62	9.18	1.44

(22). Yearbook of U.S. Dept. of Ag., 1921, p. 190

This along with the acre yield, determines the greater part of the cost of production, although labor, costs and allowances for the use of machinery should be included. In Iowa, for example, where farm land is valued at $199.52 an acre, (average for the state) the cost of the use of land would be much higher than in Kansas, where the average value of farm land is $54.50 an acre.[23]. On the other hand, the 45 bushel acre yield in Iowa compared with the 19.3 bushel yield in Kansas more than compensates for the higher land values there in making production costs per bushel less. This illustrates the camparative profitableness of growing corn in Iowa, and in Kansas.

Yield per acre is the most important factor in making production costs greater in central and western Kansas than in the eastern part of the state. The higher land values in the eastern section would tend to make production costs greater here, but the higher yields more than offset this tendency. In a series of cost-of-production studies conducted by the Kansas State Agricultural Experiment Station in 1920 it was found that the average net cost of producing an acre of corn in McPherson County, (average for nineteen farms studied) was $22.39. With an average yield of 26.8 bushels per acre, the average cost per bushel was 83.22 cents.

(23). Thirteenth U.S. Census, Vol. VI, Part I p.534 and 732.

For Jackson County (20 farms studied) in the same year the figures were: Net cost per acre $28.76; average yield per acre, 44.8 Bushels; average net cost per bushel, 64.2 cents. A similar experiment in 1921 gave the following figures for McPherson County (18 farms studied): Average acre cost $17.69; average acre yield, 7.29 bushels; average net cost $2.43 per bushel; and for Jackson County (21 farms studied): Net cost per acre, $21.95; Average yield per acre 36.96 bushels; average net cost per bushel, 59 cents.(24)

McPherson is in central Kansas, one of the leading wheat counties, while Jackson in the northeast part of the state is among those foremost counties in corn. With differences in yields for the two counties, such as these noted, and with consequent wide variation in production costs, it is to be expected that Jackson would choose corn as its specialty, while McPherson would depend on some other crop.

The yields mentioned in these cost-of-production studies indicate that some particular sections of the state are much better suited to corn growing than others. Possibly it would be more nearly correct to say section, for, in reality, the corn belt proper of Kansas is included in the eastern third of the state. Though Phillips and Norton counties on the northern border, west of the north and south center

(24). Data taken from cost of Production Studies conducted under direction of K.S.A. Experiment Sta., 1920-1921

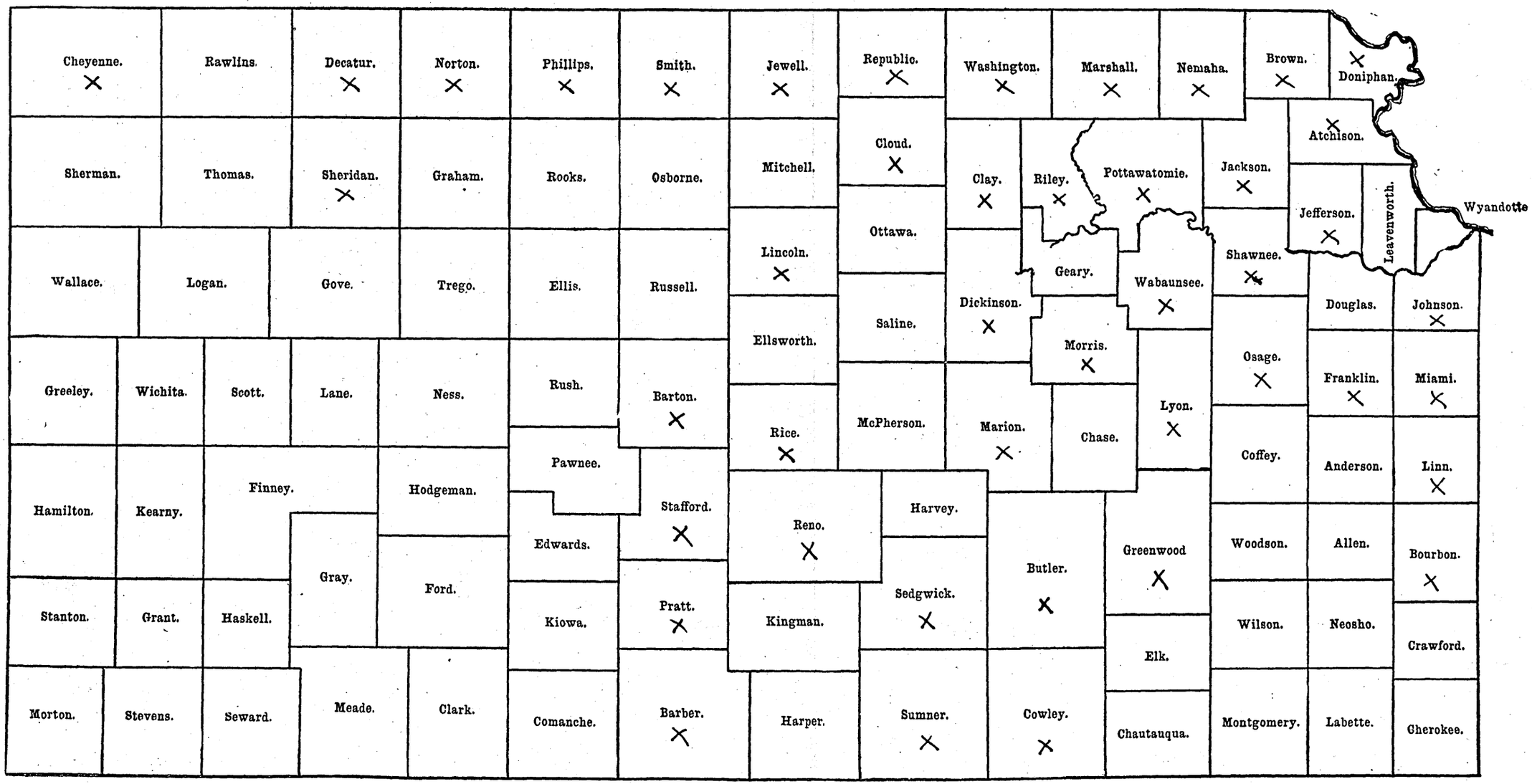
line and Reno County in the central section, are included in the fifteen leading corn countiesfor the five-year period, 1918-1922.[25] With the exception of this northwestward deviation, the corn belt is still confined to eastern Kansas, (See accompanying map). Besides the most important corn district already mentioned for 1922, more corn was produced than any other crop in the following counties in the eastern section of the state: Allen, Anderson, Atchison, Bourbon, Chautauqua, Coffey, Crawford, Douglas, Franklin, Greenwood, Johnson, Miami, Neosho, Woodson, and Wyandotte.[26] It has been mentioned previously that some of the eastern, especially southeastern, counties reduced their corn acreages sufficiently during the era of war prices, in order to grow

(25). Average acreage and production for those fifteen counties foremost in corn production for 1918-1922: (Twenty-third Biennial Report of K.S.B.of A.,p. 508)

Counties in Order of Rank	Av. Acreage	Av. Annual Production
1. Nemaha	129,697	2,903,455
2. Brown	98,219	2,875,145
3. Marshall	152,136	2,829,145
4. Jewell	150,569	2,711,681
5. Smith	170,207	2,601,997
6. Doniphan	65,151	2,176,036
7. Jackson	97,972	2,174,700
8. Republic	126,034	2,089,789
9. Pottawatomi	80,508	2,083,789
10. Phillips	133,350	2,083,709
11. Washington	118,249	2,028,676
12. Reno	130,087	1,864,035
13. Norton	106,727	1,674,389
14. Riley	62,238	1,651,289
15. Jefferson	61,873	1,607,424

(26). Twenty-third Biennial Report of K.S.B. of A.,p.280-489

KANSAS



5 5001

X shows each county producing more than 1,000,000 bushels of corn in 1922

Data taken from Twenty-third Biennial Report of Kansas State Board of Agriculture, p. 520 and 521

more wheat, to be removed, temporarily at least, from the list of those counties leading in corn production.

It is said to be unfortunate that all parts of Kansas are not adapted to the production of corn, for, under conditions suited to its growth, corn is preferred to other cereals. This is so, largely because of its high acre yield and the ease with which it can be grown. The world bids high enough for pork, corn-fed beef and other corn products to make corn pay better in general than any other crop that can be produced in the corn-belt.(27)

However, profitable corn growing may be in any corn belt, experience has proved that it is not profitable in those sections of Kansas not suited to its production. The corn belt of the state is necessarily limited by the physical factors of soil and climate, for the most part to the eastern third of the state. For highest and most profitable yields, corn requires a fertile well-drained, loamy soil, well supplied with humus, and that can be worked easily with labor saving machinery.(28) Those counties in north-eastern Kansas that are covered with a glacial silt furnish an especially suitable soil for corn growing. It should be borne in mind that corn requires a richer soil for its growth

(27). Yearbook of the U.S.Dept. of Ag., 1921, p. 176
(28). " " " " " " p.181

than do most of the cereals.

The most important climatic factors determining the production and yield of corn are length and temperature of the growing season and rainfall. Growing corn requires high temperatures both day and night. Speaking from a standpoint of temperature, alone, the nights of western Kansas, with its high elevation, are rather too cool for ideal corn conditions. But rainfall is the most important factor in determining the location of the corn district of Kansas. Corn flourishes best in those regions having an annual rainfall of about thirty inches.(29) It was stated in a previous chapter that eastern Kansas is the only part of the state that satisfies this moisture requirement. (See Chapter IV, p. 50, for sectional divisions of Kansas on the basis of annual rainfall). And, by way of modification, it may be added that this rainfall must be distributed fairly evenly throughout the growing season, in order to be utilized by corn. In those sections of Kansas where low rainfall, summer drouths and hot winds prevail, corn production is uncertain. Such conditions are typical of the wheat district of the state.

Apparently, these limitations to corn growing in central and western Kansas came to be recognized rather early by

(29). Encyclopedia, The American, Vol.7, p.700

would-be corn farmers in these sections. And, for that matter, these limitations have continued to be recognized. The statements of reporters for the Kansas State Board of Agriculture publications at different times in the history of the state confirm the remarks just made.

In 1888, a reporter writing on the subject, "The Hot Winds of the Plains," stated, "During July and August the winds did great damage in many counties to an especially promising corn crop. The condition of the crop in June was highly encouraging, but during the months of July and August, a continuous series of hot winds parched the fields throughout the central and southern counties, and shrunk the crops to a fraction of their normal size. The counties principally affected were: Chase, Marion, Rice, McPherson, Stafford, Reno, Harvey, Kingman, Harper and Sedgwick. Of 1,024,000 acres of corn planted in these ten counties, only 715,400 acres (70%) were harvested, and these gave an average of only twenty-four bushels to the acre, when at least forty had been anticipated. . . . The hot winds were recognized as the principal agent of destruction in the loss of about seven million dollars in the corn crop alone in these counties."(30)

The Kansas Crop and Weather Bulletin for July 1888, also reports on the effects of the hot winds of the sum-

(30). Seventh Biennial Report of K.S.B of A., p. 162

mer of that year, and rather definitely defines the district unaffected by them. This report reads as follows: "Hot weather set in very suddenly during the last ten days of July - was intense and long continued. Hot winds which followed, prevailed in many sections, especially in the central, western and southwestern counties, and the damage to the crop has been serious in many portions of the state, in some practically amounting to a total failure. In the eastern and northern counties of the state, extending on the north line of the state to Republic County, and from that diagonally in a southeasterly direction to Bourbon County, onthe Missouri line (third county north of the southeast county of the state) the crop is reported in excellent condition and recent rains have assured more than an average crop."(31)

A similar story was repeated in 1890. That year was one of the driest and hottest in the history of the state. The extremely dry, hot weather of July and August almost wholly destroyed the corn crop in many sections, and shortened it greatly in others. Those crops, however, which matured in the early summer, fared much better. Wheat and oats were, for the most part, good, and the disastrous consequences of the corn failure in such places were partly alleviated. (32)

(31). Kansas Crop & Weather Bulletin, July 31, 1888, p. 4
(32). Seventh Biennial Report of K.S.B. of A., p. 6

"Heat and lack of sufficient rainfall during the last half of July" are termed responsible for the loss of part of the corn crop of 1893. Hot winds are not mentioned, but it is safe to assume that they were present, for intense heat, lack of rainfall and hot winds are practically inseparable in central and western Kansas. This report gives the condition of corn in eastern Kansas as 92 per cent, but mentions the fact that in the central belt the early corn over a large area was seriously damaged by intense heat and lack of sufficient rainfall during the first half of July. However, rains in the latter part of the month partially revived the corn. Corn in the southern counties of the central belt was too far advanced at the time of the drouth to recover when rains finally came, and the crop to a large extent was reported lost. The condition for these counties was reported at 58 per cent. In the western counties, conditions had been still more unfavorable. The following statement was rather pointed concerning western Kansas conditions, "Since the farmers in western Kansas recognize that climatic conditions are unfavorable to this crop (corn), but a small area is planted and the product grown will be quite light."(33)

(33). Monthly Report of K.S.B. of A., July 31, 1893, p.3

In 1897, a farmer from Dighton, Lane County, wrote at length on the unsuccessful attempts on the part of the farmers of western Kansas to grow corn there. He based his assertions on experience and the natural conditions of that part of the state. The usual story is repeated, "Rain in the spring months, but with dreadful certainty come the drying winds of July, sure to strike the corn at its critical period and meaning its destruction." He also mentioned the unsuitability of the soil of that district for corn growing. He described it as a soil of a black surface on top, but underneath which was a clay formation of twenty to one hundred feet thick - except along the sandy river bottoms - which was hard and dry, simply impervious to water. This meant no submoisture in the earth and that in a dry season the corn crop was at the mercy of the atmosphere.(34)

Apparently western Kansas had not improved its reputation as a corn growing district during the intervening years, for in 1920 a crop reporter from Meade wrote that "Corn is not a success here on account of the dry hot weather we are likely to get when it tassels and silks."(35) And it is true that the climate of Kansas has not changed during the period of

(34). Quarterly Report of K.S.B. of A., Mar. 31, 1897, p. 221
(35). Twenty-second Biennial Report of K.S.B. of A., p. 109

settlement. Some optimists in the early history of the state predicted that with the breaking up of the prairies, and the planting of trees, western Kansas would be less subject to drouths and hot winds. The present conditions in this section disprove such Utopian predictions better than any statements to this effect could.

In the early history of Kansas, when agricultural activities were more largely confined to the eastern section of the state, Kansas ranked higher as a corn state than it did in later years when settlement was extended farther westward. It is probable that the declining acre yield of corn for the state is caused partly by the averaging of the yields of what corn there is grown in western Kansas, and the very moderate yields even in central Kansas with those of the eastern corn belt. Writing from the present, the history of corn growing in Kansas might be fairly well described under the title, "The Rise and Decline of Corn Growing." And, certainly, this would be no gross exaggeration, for corn is not as important a crop as it once was in Kansas.

Chapter IX

Alfalfa

At the time that alfalfa was introduced into Kansas in 1891, the state had already become so prominent in wheat production as to be classed as a leading wheat state. Though there are other reasons more important why alfalfa has never been a close competitor of wheat in Kansas. A consideration of the characteristics of the alfalfa plant shows that there are only small areas of the state suited to it, that is, small in comparison with those areas in which wheat can be grown successfully.

Alfalfa is especially adapted to irrigation farming, which means that it is a favored crop with the western Kansas farmer who irrigates his land. At the same time it must be remembered that there are only limited areas in western Kansas that are irrigable, which necessarily limits the alfalfa acreage in this district. (See irrigation district map). And in eastern and central Kansas the crop is most profitably grown only in the lowlands where there is accessible a subterranean water supply.

The importance of alfalfa as a forage crop has been repeatedly emphasized since it was introduced into western

From:- Bulletin of Kansas Agricultural Experiment Station, June, 1922, page 4

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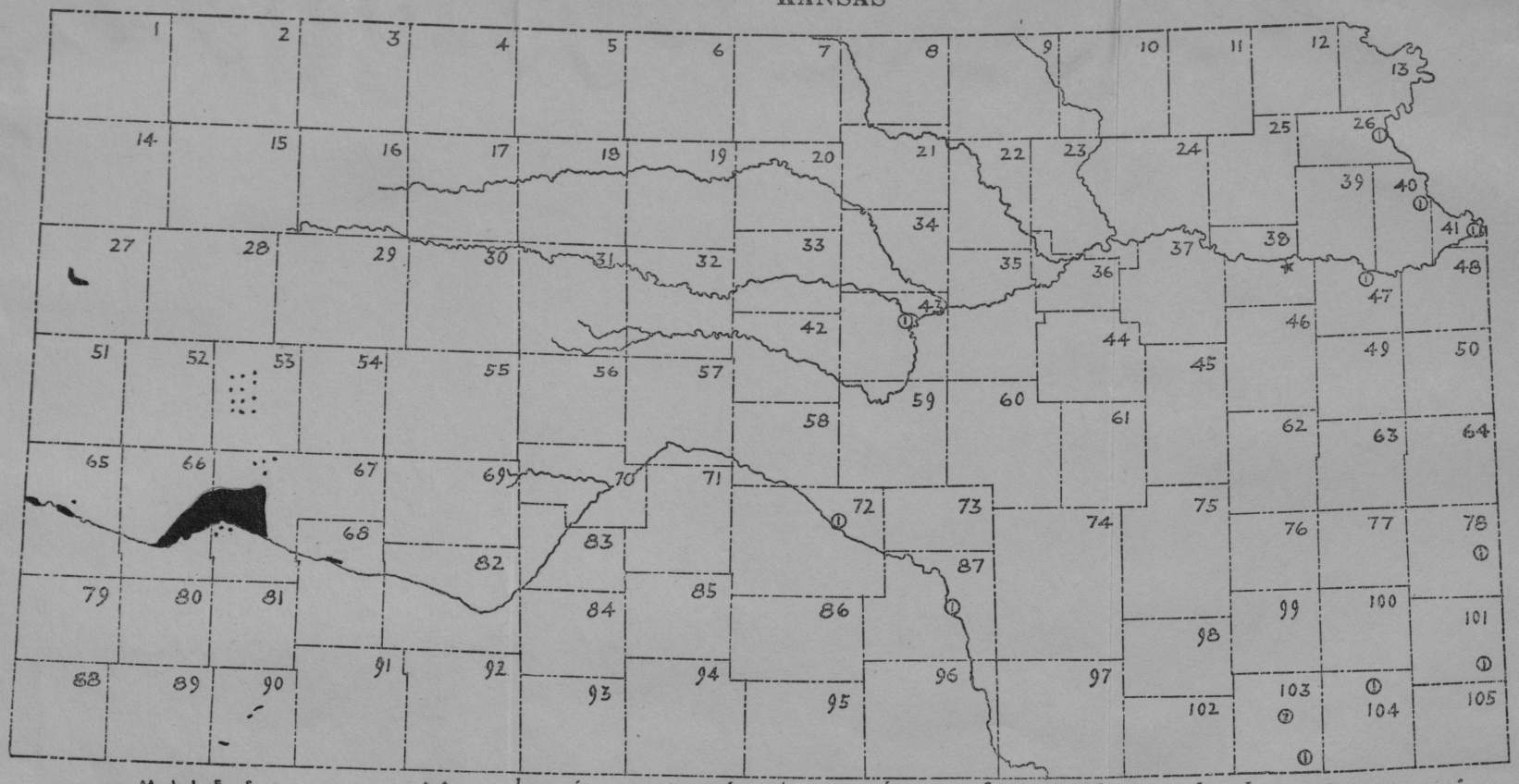

MILES
5 10 20 30 40 50 60

Map showing approximate location of irrigated district in Kansas in 1920, as reported by the State Irrigation Commissioner.

COUNTIES

Allen..... 77
Anderson..... 63
Atchison..... 26
① Atchison
Barber..... 94
Barton..... 57
Bourbon..... 78
① Fort Scott
Brown..... 12
Butler..... 74
Chase..... 61
Chautauqua.....102
Cherokee.....105
Cheyenne..... 1
Clark..... 92
Clay..... 22
Cloud..... 21
Coffey..... 62
Comanche..... 93
Cowley..... 97
Crawford.....101
① Pittsburg
Decatur..... 3
Dickinson..... 35
Doniphan..... 13
Douglas..... 47
① Lawrence
Edwards..... 83
Elk..... 98
Ellis..... 31
Ellsworth..... 42
Finney..... 67
Ford..... 82
Franklin..... 49
Geary..... 36
Gove..... 29
Graham..... 17
Grant..... 80
Gray..... 68
Greeley..... 51
Greenwood..... 75
Hamilton..... 65
Harper..... 95
Harvey..... 73
Haskell..... 81
Hodgeman..... 69
Jackson..... 25
Jefferson..... 39
Jewell..... 7
Johnson..... 48
Kearney..... 66
Kingman..... 86
Kiowa..... 84
Labette.....104
Lane..... 54
Leavenworth..... 40
① Leavenworth
Lincoln..... 33
Linn..... 64
Logan..... 28
Lyon..... 45
McPherson..... 59
Marion..... 60
Marshall..... 10
Meade..... 91
Miami..... 50
Mitchell..... 20
Montgomery.....103
① Coffeyville
② Independence
Morris..... 44
Morton..... 88
Nemaha..... 11
Neosho.....100
Ness..... 55
Norton..... 4
Osage..... 46
Osborne..... 19
Ottawa..... 34
Pawnee..... 70
Phillips..... 5
Pottawatomie..... 24
Pratt..... 85
Rawlins..... 2
Reno..... 72
① Hutchinson
Republic..... 8
Rice..... 58
Riley..... 23
Rooks..... 18
Rush..... 56
Russell..... 32
Saline..... 43
① Salina
Scott..... 53
Sedgwick..... 87
① Wichita
Seward..... 90
Shawnee..... 38
★ Topeka
Sheridan..... 16
Sherman..... 14
Smith..... 6
Stafford..... 71
Stanton..... 79
Stevens..... 89
Sumner..... 96
Thomas..... 15
Trego..... 30
Wabaunsee..... 37
Wallace..... 27
Washington..... 9
Wichita..... 52
Wilson..... 99
Woodson..... 76
Wyandotte..... 41
① Kansas City (Kan.)

Kansas, because it is the only one of the tame grasses that can be grown successfully under the conditions existing in that part of the state. It is essentially a dry climate plant and is especially suited to growing on irrigable land. It will withstand the hottest winds and the greatest variations in temperature, but at the same time in order to secure satisfactory returns, it must have some moisture not only in the surface soil, but also for several feet into the subsoil.(1) Besides, it is advantageous to be able to apply the moisture when it is needed, and only then, which conditions are not always assured in those districts where moisture is supplied directly by rainfall. Then, too, alfalfa yields high cash returns per acre, which is one of the requirements of an irrigated crop.(2) Also much higher yields are obtained from this crop grown under irrigation conditions.

Of the total irrigated district of 95,138 acres, the greater part of which is in eight counties in southwestern Kansas,(3) it is estimated that almost half of this area is

(1). Ninth Biennial Report of K.S.B. of A., p. 411
(2). Nineteenth " " " p.313
(3). Irrigation district in 1920 (From Report of the Irrigation Commissioner for the Biennium July 1, 1920 to June 30, 1922, p.28):

County	Acres Irrigated
Finney	52,041
Kearney	23,079
Scott	4,921
Hamilton	3,666
Pawnee	2,244
Meade	2,169
Gray	1,936
Sedgwick	685
Other counties	4,397
Total	95,138

devoted to alfalfa growing. And the conditions that limit the irrigation district in this part of the state at the same time rather consistently limit the alfalfa district. With a knowledge of the fact that practically all of the irrigated land is confined to the river valleys, and, along with an examination of a map of Kansas showing the sparsity of these valleys in the western section of the state, it is not difficult to understand why the irrigation districts are limited as they are.

About 85 per cent of the irrigated acreage in the state is in the upper Arkansas valley between Dodge City and the Kansas-Colorado line, and 65,000 acres of this land are irrigated by ditches taking water from the Arkansas River. The balance of this district is irrigated by pumping water from the underflow ground water of the Arkansas River. Most of these pumping plants are in the lowlands in the Arkansas valley where the depth to water is not more than eight to twelve feet. Attempts to pump water from the uplands have not been altogether successful because the great depth to water makes pumping very expensive. Many of the uplands plants established in 1913 and 1914, northwest of Garden City, were not being operated in 1920, because of the increase in the cost of power and freight rates since the plants were installed. This, together with the drop in the value of farm products

following the close of the war, made the operation of these plants of doubtful value.[4]

The other irrigation districts of the state are much less extensive in character, and for the most part have water supplied them either by pumping from reservoirs, made by damming rivers, or, from the underground water supply in the river valleys. The distance to water in the uplands is too deep for extensive or profitable irrigation. With physical conditions such as those stated, limiting the irrigation districts almost entirely to the river valley lands, it can be seen that the area of irrigable land is relatively insignificant compared with the whole of western Kansas.

But farmers of western Kansas show a hesitancy about farming under irrigation methods even as extensively as the physical conditions of the country permit. Many of them have lived in western Kansas too long to be willing to confine their labors to a small irrigated farm after they have been accustomed all their lives to farming a section or more by dry-farming methods. The shallow water valleys which traverse the plains seem unimportant to the average man when he sees about him vast areas of land, practically all of which can be cultivated by dry-farming. For example, it is much easier to grow wheat. The wheat farmer can cultivate from one-fourth to a whole section of land,

(4). K.S.B. of A. Division of Irrigation Report 1920-1922, p129

and in many instances even more, but the nature of irrigation farming requires an intensive system and makes the cultivation of extensive areas an impossibility. A farm of eighty acres is considered a large irrigation farm, and smaller areas probably would be found more profitable in most cases.(5)

It is interesting to notice that fully half of the alfalfa that is grown in these irrigated districts of western Kansas is shipped out to the dairy states of the East. The farmers on these irrigated lands could develop the dairy industry to such an extent that they would be able to use at home all of the alfalfa that they raise. It has always been considered one of the staple feed crops for dairy cows. These alfalfa farmers are the "offspring" of the wheat farmers, which partially accounts for their being disinclined to show an especial liking for an industry that requires as much routine as dairying.

The most important alfalfa district in Kansas is confined to the eastern half of the state where this crop

(5). Nineteenth Biennial Report of K.S.B. ofA., p. 314

is grown without irrigation.[6] Although certain counties grow much more alfalfa than others, for 1922 every county, with the exception of Haskell, Seward, Stanton and Stevens reported some. It is even grown without irrigation in some of the valley lands of western Kansas where there is a subterranean water supply which the roots can reach.

Under conditions suited to its production, alfalfa is considered one of the most profitable crops that can be grown. For 1922 the average yield in Kansas per acre was 2.5 tons and the cost of production $7.81 a ton.

(6). Leading counties in alfalfa production for five-year period, 1918-1922 annual average (Twenty-third Biennial Report of K.S.B. of A.: p.509:

County	Av. Acreage	Av. Annual Production -Tons
1. Butler	38,396	97,894
2. Cowley	33,230	94,109
3. Jewell	42,764	92,499
4. Lyon	31,373	89,679
5. Sedgwick	34,384	85,500
6. Smith	31,525	75,784
7. Washington	39,086	73,198
8. Republic	37,219	68,951
9. Nemaha	26,610	64,955
10. Wabaunsee	23,104	63,081
11. Marion	26,221	62,741
12. Osage	24,271	62,666
13. Greenwood	22,732	62,570
14. Reno	24,910	61,694
15. Sumner	21,498	61,563

At the same time the price of hay per ton was $9.91. At least there was not the disparity between the cost of production and the value of the crop that there was in the case of wheat, - Cost of production $1.36 per bushel and price 90 cents per bushel; and corn, cost of production 71 cents per bushel, and price 54 cents a bushel.(7)

Since alfalfa is considered to be such a profitable crop, it may well be questioned why larger areas in the state are not devoted to it. First, there are certain physical conditions of the soil and climate which make much of the Kansas uplands district not suited to alfalfa growing. This crop requires a subterranean water supply to which its tap roots can extend, and a subsoil sufficiently open and friable to be penetrated by them. This peculiar characteristic of alfalfa makes it especially well adapted to sandy valley lands, and makes its growth rather uncertain on uplands where it is a great distance to water, and where there is a hard, compact subsoil. It is not at all uncommon, during a prolonged dry season, for many acres of alfalfa to be killed. Also, late spring freezes often result disastrously to this crop.

Probably another reason why alfalfa is not grown more extensively is that on farms where its production is

(7). Twenty-third Biennial Report of K.S.B. of A., pp.V, Vi and VII and Cost of Production Studies of K.A.C. Experiment Station.

a side issue, the three or four cuttings of hay produced during the season are liable to come at a time when the normal work of the farm is directed along other lines. In such cases attention cannot be given to the alfalfa at the proper time without handicapping the major lines of farm work.(8) With a large alfalfa acreage on a farm, one crop is barely harvested before another is ready to be cut. A particular central Kansas farmer, who had less than twenty acres of alfalfa on his four hundred acre farm remarked that he had been literally "snowed under" with alfalfa during the whole summer, when he had formerly had approximately seventy-five acres in this crop.

During 1920 and 1921 the alfalfa acreage of Kansas was reduced by more than 320,000 acres.(9) (See Table IV in appendix). Much of this reduction was caused by unfavorable climatic conditions, late spring freezes in 1921, and by attacks of the pea aphis. Other reductions occurred during the war period, while the wheat acreage was being increased. This decrease in the alfalfa acreage has been of too short duration to describe the history of alfalfa growing in the state as that of a rise and a decline, as has been the

(8). U.S.Dept. of Agriculture, Farmers' Bulletin 339, p. 20
(9). Twenty-third Biennial Report of K.S.B. of A., p. 500

case with corn.

After all, the limitations to alfalfa growing restrict its production to rather well defined areas. Much of the wheat district of Kansas, the prairie uplands, would not provide conditions for profitable alfalfa production, so it seems hardly probable that this crop will displace any appreciable wheat acreage on the preeminently wheatlands.

Chapter X

Grain Sorghums

The grain sorghums, like alfalfa, were introduced fairly late - were first recorded statistically in 1894 - into Kansas, when 77,942 acres were planted to these crops, which may partially account for the fact that their acreage in 1922 was only about one-fifth of that of corn, and one-ninth of that of wheat. Though their acreage increased fairly rapidly up to 1911, (See Table V in appendix) when it passed the 1,000,000 mark,[1] these crops have not been considered to displace any appreciable areas sown to wheat. But they have tended to displace corn in certain districts in which this crop was uncertain. It has been noticed that in those years in which a part of the wheat acreage has been abandoned in the spring, the area planted to sorghums has been larger than in other years.

The term grain sorghums is a group name, and includes both the saccharine and the non-saccharine varieties, with the further division of the latter into kafir corn, milo maize, and feterita, all three of which present similar characteristics. At least, these three divisions are the most

(1). Twenty-third Biennial Report of K.S.B. of A., p. 500

important ones. It is sufficient to say here that the saccharine sorghums are given little attention in Kansas, compared with the non-saccharine varieties.

The sorghums are valuable chiefly because of their drouth resistant characteristics, which make their growth suited to regions of low rainfall. At the same time, the sorghums assure farmers in these districts feed for the livestock on the farms, which is far from a certainty if corn is depended on for a forage crop. The sorghum belt proper is usually considered to be in the western half of the state, coincident with part of the wheat belt, though it is extended into the corn belt in the eastern part of the state. The sorghums really grow best under corn belt conditions, but they have proved to be of the greatest value in those districts that are not suited to corn.

Ability to withstand drouth is the quality possessed by all of the sorghums which makes them a reasonably certain and a profitable crop for districts of deficient rainfall. Here, corn, if grown at all, is an uncertain crop. The essential difference between the sorghums and corn is that the latter have the ability to control transpiration to a much greater extent.[2] During a drouth period, the sorghums

(2). Borman, T. A. Sorghums; Sure Money Crops, pp. 3,4 and 57 .

the sorghums practically cease growing, but remain green and, with rain in the late summer or early fall, continue their growing; corn under these conditions simply withers and dies.

Since the sorghums are such vigorous growing crops, and since they have a comparatively shallow rooting system, they are considered to make rather exhausting demands on the soil. But the principal injury to the soil is that of sapping it of moisture to the extent that the succeeding crop suffers materially from this effect. Sorghums grow late in the season and draw heavily upon the soil moisture, which makes it inadvisable to follow them with a fall sown crop. Not only do these crops leave the soil dry, but they also leave it so rough and cloddy when plowed that it is not in a good condition to absorb or retain any moisture that falls on it.(3) The wheat farmer does not consider it profitable to sow wheat on land that has just grown a sorghum crop; wheat yields are usually less where such practices are followed.(4) It necessarily follows that the grain sorghums do not fit well into a crop rotation system with wheat, unless the ground is permitted to lie idle in order to conserve moisture for a year

(3).U.S.Department of Ag.,Farmers' Bulletin 228, p. 3
(4).Quarterly Report of K.S.B. of A.,Sept. 1920, p. 52

between the growing of the sorghums and the sowing of the wheat.

However, it is not as a rotation crop but as a forage and grain crop that the sorghums are most essential to the farmers of western Kansas. They make it possible to provide feed for livestock, which are necessarily kept on every farm, ever year. Sorghums furnish grain as well as forage. There have been years when they have practically failed to produce a grain crop, but they have never failed to produce at least a fair forage crop, though both grain and forage yields vary with the seasons for the same reasons that yields of corn vary even in the corn belt.(5)

Not only do the sorghum yields vary with the seasons, but they also vary among themselves, kafir corn usually yielding most. For 1922, kafir corn averaged for the state 18.5 bushels of grain and 1.9 tons of stover per acre; milo maize 15.2 bushels of grain and 1.1 tons of stover; and feterita 17.1 bushels of grain and 1.5 tons of stover.(6) The silo offers the most economical way of handling the sorghum crop, whether it be light or heavy, but if light all the more necessary that none of the crop should be wasted. It was not until 1911 that farmers in the sorghum belt recognized this

(5).Borman, T.A., Sorghums. Sure Money Crops, pp.25,67 and 86
(6).Twenty-third Biennial Report of K.S.B. of A.,pp.558 & 574.

fact and began building silos.[7]

Sorghum silage is shown to be slightly less valuable than corn silage, but the matter of adaptability to local conditions must be considered in those districts where corn is not a sure crop. Sorghum grain, which can be fed to all kinds of live-stock, has been estimated to have about 90 per cent of the feeding value of corn. It is a profitable feed only when the price is not more than 90 per cent of the price of corn.[8] However, the grain is considered to be somewhat less digestible than corn, and it does not form a balanced ration alone. Some feed rich in protein, such as alfalfa, clover, or some leguminous hay must be fed with the sorghum grain, if favorable results are to be obtained from its use.[9]

To be profitable, sorghum growing should be undertaken only to the extent that the sorghums raised can be fed to livestock on the farms where they are grown. The grain is most profitably marketed in this way, as is the forage. In fact, the forage, which is a large proportion of the crop, has little direct market value.[10] So unless the sorghum belt farmer also makes extensive livestock raising a part of his

(7). Ninetenth Biennial Report of K.S.B. of A., p. 575
(8). U.S. Dept. of Ag., Farmers' Bulletin 972, p. 2
(9). " " " " " " 724, p. 5
(10). Borman, T.A., Sorghums: Sure Money Crops, pp. 25 and 28

farming system, he probably raises no more of the sorghums than are required to furnish feed for the number of livestock which are necessary on a farm.

It might be well to mention what territory is included in the sorghum belt. For the United States, it includes the western half of Kansas, the western third of Oklahoma, the western half of Texas, and all that part of New Mexico and Colorado east of the Rocky Mountains, an area conspicuous for its deficient rainfall.(11) In Kansas much of the wheat belt and the sorghum belt are coincident.

In the production of kafir-corn, which is the most important sorghum raised in Kansas both as to acreage and as to value, in 1922 Stevens County in the southwest corner of the state had the greatest acreage - 37,794. But there were more than 20,000 acres grown in each of Barber, Ford, Meade, Butler, Greenwood, and Pratt counties.(12) It will be recalled that Barber, Ford and Pratt counties were among the most prominent wheat counties of that year.

Milo maize and feterita, with somewhat less moisture requirements than kafir-corn, that is, the appreciable acreages, are confined almost exclusively to the western half of the state. Those counties having more than 10,000 acres of milo maize for 1922 were: Stevens, leading with

(11) Borman, T.A., Sorghums: Sure Money Crops, pp.3 and 4
(12) Twenty-third Biennial Report of K.S.B. of A., p 564 & 565.

16,087 acres, Morton, Ford, Finney, and Meade counties.[13] For feterita, Ellis County led with 6,365 acres; then came Ford, Rush, Rooks and Clark counties, each with more than 2,500 acres.[14] Here we have four of the leading wheat counties, Ellis, Ford, Rush, and Rooks of the state.

Generally speaking, wheat is the preeminent crop in the sorghum belt, with acreages so much greater than those of the sorghums as to make the latter appear relatively insignificant. For 1922 there were two counties in the state, Morton and Stevens, in the extreme southwest corner, that had a larger acreage in sorghums than in wheat, that is, in wheat harvested, though not in acres sown. Stevens County had the largest sorghum acreage, 55,042, of any county in the state that year. At the same time there were 39,616 acres of wheat harvested there. Ford County came next in sorghum acreage with 47,370 acres, but the same year harvested 166,457 acres of wheat. Meade County had 39,784 acres in sorghums and a wheat harvest of 95,778 acres. Barber, another leading sorghum county, grew 35,708 acres of sorghum and harvested 123,742 acres of wheat. Morton, one of the two counties that had a greater area in sorghums than in wheat, planted 28,038 acres of grain sorghums and harvested 18,063 acres of wheat.[15]

(13). Twenty-third Biennial Report of K.S.B. of A., pp 556 & 557
(14). " " " " " " pp.572 and 573
(15). Borman, T.A., Sorghums: Sure Money Crops, pp. 3 & 4, and Twenty-Third Biennial Report of K.S.B. of A., pp 516 & 517.

A consideration of average size of the farms in western Kansas may offer some explanation for the predominance of wheat in a district in which climatic conditions are suitable for growing both wheat and the grain sorghums. To say that the farms are large is not sufficiently concrete. The Fourteenth Census of the United States (1920) gives the average size of farms in Sherman County, 948 acres; Thomas 768; Trego, 582; Ness, 590; and Ford, 505.[16] These illustrations at least indicate that extensive areas are included in a single farm.

It has already been mentioned that wheat growing lends itself well to extensive farming. So in a district with climatic conditions suited, as western Kansas is, to wheat production, one would expect to find larger acreages in this crop than in any other. With the present type of modern machinery, vast acreages of wheat, often from five hundred to one thousand acres, can be handled on a single farm. And with farms the size of those mentioned, the farmer must have a crop, the cultivation of which is suited to large scale farming.

The sorghums require as good farming methods as does corn for maximum production, and certain yields. With such cultivation requirements, one would not expect to find the acreages given to these crops on a single farm approaching those

(16). Fourteenth Census of U.S., Vol. VI, Part 1, pp. 732 - 741

given to wheat.

Another reason why the farmers of western Kansas have placed so much dependence on wheat is that it has been their one important cash crop, which, as has already been explained, is one of the chief reasons that any pioneer community chooses wheat. And these farmers were well established in wheat growing before grain sorghums were widely known in the state. Before sorghums wereintroduced the western Kansas farmers depended on corn, which usually resulted in failure for their forage corp. Corn failures only made them turn more and more to wheat. If the grain sorghums and wheat had been introduced into the state at the same time, there might have been more sorghums grown now than there are in comparison with wheat.

It must not be inferred that sorghums are grown only in the western part of the state, for this is not true. It was stated earlier in the chapter that the sorghums grow best under corn belt conditions. The yield tends to increase with increased rainfall. Kafir-corn is grown more extensively in the eastern section than are milo maize andfeterita . Butler and Greenwood, two of the most important kafir-corn counties of the state in 1922, are found in the southeastern section. The farmers here choose to supplement their feed crops, in connection with livestock raising, with kafir-corn

because of its high yields in this district. However, corn, because of its higher feeding value than the sorghums, and because it is more easily harvested and safely stored, holds its own in the corn belt.[17]

The grain sorghums doubtless have been one of the factors that has been instrumental in promoting what prosperity there is in western Kansas, for, in spite of the fact that wheat has been the crop most extensively grown and most depended on, any farming district must have some livestock, and must grow a crop that will provide feed for them. This has been the chief contribution of the grain sorghums.

(17). Yearbook of U.S.D ept. of Agriculture, 1922, p. 529.

CONCLUSION

In arriving at any conclusions as to why Kansas grows wheat, it has been necessary to follow rather closely the history of wheat growing in the state, and to notice the factors that have contributed toward making Kansas preeminent in the production of this crop. The early start which wheat growing had - almost concomitant with settlement - doubtless was instrumental in establishing this crop so firmly in the agricultural system.

Of course, this early start would have been of little avail had not other conditions been favorable to give added impetus. The suitability of the soil and climate of Kansas for wheat production has been sufficiently stressed, and may be classed without further mentioning as one ofthe strongest reasons for the preference which the Kansas farmers have shown for wheat growing. Then there have been the railroads that have made possible more markets and more wheat to supply them.

The improvement of the varieties of wheat, especially the introduction of those that proved to be particularly well adapted to the conditions of the wheat belt, has contributed greatly toward making Kansas a preeminent wheat state. Along with the suitability of the wheat belt for

growing this crop, there is the very fact of the unsuitability for other crops. Quite naturally farmers have chosen the crop that they felt to be most certain.

The limitations to the production of corn, alfalfa and the grain sorghums, the crops that, because of their profitableness, would have been most likely to displace wheat, have been recognized. A larger part of the state is suited to wheat growing than to any other one crop.

The fact that wheat, in spite of reverses both in yield and in price, came to be the foremost crop in Kansas, indicates that there must have been rather forceful reasons why the state happened to specialize in this crop. Certainly it is not because the Kansas farmer is temperamentally different from the Iowa farmer. Rather, it is a matter of practice and experience as to what crop can be most profitably grown under Kansas conditions, without modifications as to what could be done if they were otherwise.

APPENDIX

Table I

Table showing annual wheat (winter and spring) acreage, average yield and annual price (1862-1923)

Year	Acreage	Price	Average Yield (Bushels)
1862	9,630	$ .74	21.00
1863	16,434	.88	16.00
1864	13,439	2.00	15.00
1865	12,768	1.71	15.00
1866	12,171	1.91	21.00
1867	89,285	1.84	14.00
1868	98,525	1.35	15.60
1869	151,351	.79	18.50
1870	156,200	.86	15.00
1871	169,433	1.13	15.90
1872	185,775	1.42	11.60
1873	309,286	1.00	14.00
1874	716,205	.76	13.79
1875	743,205	.77	17.77
1876	1,023,103	.79	14.28
1877	1,063,993	.82	13.45
1878	1,730,812	.59	18.67
1879	1,932,708	.89	10.63
1880	2,444,434	.70	10.34
1881	2,182,872	1.05	9.38
1882	1,603,267	.67	22.29
1883	1,559,302	.78	19.25
1884	2,237,128	.45	21.47
1885	2,090,549	.65	5.15
1886	1,758,593	.58	8.29
1887	1,373,915	.67	6.75
1888	1,120,119	.88	14.93
1889	1,594,285	.55	22.15
1890	2,321,113	.77	12.40
1891	3,733,910	.73	15.68
1892	4,129,829	.52	18.05
1893	5,110,873	.42	4.85
1894	4,840,892	.44	5.82
1895	4,176,971	.45	3.84
1896	3,357,727	.63	8.27
1897	3,444,364	.74	14.81
1898	4,624,731	.50	13.14
1899	4,988,952	.52	8.76
1900	4,378,533	.55	17.66
1901	5,316,482	.59	16.99
1902	6,301,040	.55	8.67
1903	5,964,866	.59	15.76
1904	5,861,712	.89	11.11

Table I - Continued

II.

Year	Acreage	Price	Average Yield (Bushels)
1905	5,925,338	$ .71	13.02
1906	6,436,085	.58	14.49
1907	7,235,283	.82	10.24
1908	6,939,351	.88	11.06
1909	6,450,734	.96	12.55
1910	4,870,442	.84	12.53
1911	4,643,398	.91	10.94
1912	6,242,855	.74	14.24
1913	6,062,066	.79	11.95
1914	9,116,183	.95	19.85
1915	7,630,810	.89	12.55
1916	7,819,626	1.35	12.71
1917	3,546,433	2.08	11.72
1918	6,800,059	1.99	13.70
1919	11,640,873	1.98	12.56
1920	8,982,743	1.86	15.68
1921	10,345,651	.95	12.39
1922	9,602,955	.90	12.17
1923	7,835,000	.90	9.70

In each case the figures given represent the number of acres harvested. In some years, as during the war period, this figure was considerably less than that for the number of acres sown.

Table II

WHEAT, 1860 to 1922

Kansas State Board of Agriculture

Table showing acres, annual product, value and average yield of wheat (winter and spring).

Years	Acres	Bushels	Values	Av. Yield Per Acre Bu.
1860		168,527		
1861		185,379		
1862	9,630	202,232	$ 149,652.00	21.00
1863	16,434	262,953	231,399.00	16.00
1864	13,439	201,598	405,212.00	15.00
1865	12,768	191,519	338,989.00	15.00
1866	12,171	260,465	497,488.00	21.40
1867	89,285	1,250,000	2,300,000.00	14.00
1868	98,525	1,537,000	2,074,950.00	15.60
1869	151,351	2,800,000	2,212,000.00	18.50
1870	156,200	2,343,000	2,014,980.00	15.00
1871	169,433	2,694,000	3,044,220.00	15.90
1872	185,775	2,155,000	3,060,100.00	11.60
1873	309,286	4,330,000	4,330,000.00	14.00
1874	716,205	9,881,383	7,631,671.00	13.79
1875	743,206	13,209,403	11,350,375.38	17.77
1876	1,023,183	14,620,225	12,413,780.89	14.28
1877	1,063,993	14,316,705	12,240,128.72	13.45
1878	1,730,812	32,315,358	18,441,066.84	18.67
1879	1,932,798	20,550,936	18,448,711.14	10.63
1880	2,444,434	25,279,884	20,980,668.57	10.34
1881	2,182,872	20,479,689	21,705,275.80	9.38
1882	1,603,267	35,734,846	24,003,821.00	22.29
1883	1,559,302	30,024,936	22,322,119.58	19.25
1884	2,237,128	48,050,431	20,516,560.93	21.47
1885	2,090,549	10,772,181	6,829,945.00	5.15
1886	1,758,393	14,571,033	8,482,503.00	8.29
1887	1,373,915	9,278,501	5,759,449.60	6.75
1888	1,120,119	16,724,717	12,097,814.11	14.93
1889	1,594,285	35,319,851	19,917,701.21	22.15
1890	2,321,113	28,801,214	23,410,548.00	12.40
1891	3,733,910	58,550,653	42,596,759.09	15.68
1892	4,129,829	74,538,906	40,691,762.03	18.05
1893	5,110,873	24,827,523	11,032,932.04	4.85
1894	4,840,892	28,205,700	11,297,797.13	5.82
1895	4,171,971	16,001,060	7,463,118.47	3.84
1896	3,357,727	27,754,888	13,257,193.77	8.27
1897	3,444,364	51,026,604	34,385,304.69	14.81
1898	4,624,731	60,790,661	32,937,042.28	13.14
1899	4,988,952	43,687,013	22,406,410.00	8.76

Table II - Cont.

WHEAT - 1860 to 1922

Years	Acres	Bushels	Values	Av. Yield Per Acre
				Bu.
1900	4,378,533	77,339,091	$ 41,974,145.00	17.66
1901	5,316,482	90,333,095	50,610,505.00	16,99
1902	6,301,040	54,649,236	29,139,490.00	8.67
1903	5,964,866	94,041,902	52,426,355.55	15.76
1904	5,861,712	65,141,629	51,409,255.86	11.11
1905	5,925,338	77,178,177	53,889,365.76	13.02
1906	6,436,085	93,292,980	55,178,711.62	14.49
1907	7,235,283	74,155,695	56,787,511.85	10.24
1908	6,939,351	76,808,922	63,885,145.74	11.06
1909	6,450,734	80,958,740	75,941,189.83	12.55
1910	4,870,442	61,017,339	52,785,965.32	12.53
1911	4,643,398	50,809,435	43,840,589.85	10.94
1912	6,242,855	88,889,128	71,227,437.25	14.24
1913	6,062,066	72,458,051	56,375,409.95	11.95
1914	9,116,183	180,924,885	151,583,031.17	19.85
1915	7,630,810	95,768,176	85,681,786.81	12.55
1916	7,819,627	99,384,760	134,615,306.56	12.71
1917	3,546,433	41,563,387	85,679,211.22	11.72
1918	6,800,059	93,195,332	186,332,974.88	13.70
1919	11,640,873	146,109,192	289,886,360.01	12.56
1920	8,982,743	140,842,516	262,110,065.71	15.68
1921	10,345,651	128,220,148	123,876,118.57	12.39
1922	9,602,955	116,864,983	105,489,103.23	12.17

Statistics taken from Quarterly Report of K.S.B. of A., December, 1922, p. 8

Table III

CORN, 1860 to 1922

Kansas Statistics
1922
Table showing acres, annual product, value, and average yield per acre

Years	Acres	Bushels	Values	Av. Yield Per Acre
				Bu.
1860		5,678,834		
1861		6,246,717		
1862	170,365	6,814,601	$ 2,180,672.00	40.00
1863	193,597	8,518,215	2,555,475.00	44.00
1864	186,923	4,673,081	6,402,121.00	25.00
1865	163,463	6,729,236	3,566,495.00	41.00
1866	190,858	6,527,358	4,112,235.00	34.20
1867	211,373	8,159,000	4,487,450.00	38.60
1868	360,388	6,487,000	6,422,130.00	18.00
1869	506,198	24,500,000	10,780,000.00	48.40
1870	595,892	16,685,000	9,677,300.00	28.00
1871	617,325	24,693,000	7,160,970.00	40.00
1872	769,636	29,631,000	6,518,820.00	38.50
1873	1,202,046	47,000,000	14,570,000.00	39.10
1874	1,525,421	15,699,078	12,064,424.00	10.29
1875	1,932,861	80,798,769	19,071,698.15	48.80
1876	1,844,454	82,308,176	19,217,332.24	43.68
1877	2,563,112	103,497,831	20,206,184.92	40.38
1878	2,405,482	89,324,971	17,018,968.79	37.13
1879	2,995,070	108,704,927	26,562,674.46	36.29
1880	3,554,396	101,421,718	24,926,079.07	28.53
1881	4,171,554	80,760,542	44,859,963.29	19.33
1882	4,441,836	157,005,722	51,838,366.27	35.36
1883	4,653,170	182,084,526	47,492,663.43	39.14
1884	4,545,908	190,870,686	39,512,734.32	41.99
1885	5,266,034	177,350,703	40,428,327.08	33.67
1886	5,802,018	139,569,132	37,966,031.80	24.05
1887	6,530,392	75,791,454	26,836,422.70	11.60
1888	6,993,207	168,754,087	52,395,948.65	24.13
1889	6,820,693	273,888,321	51,649,876.18	40.15
1890	5,775,691	51,090,229	21,491,916.00	8.84
1891	5,209,234	139,363,991	48,057,978.93	26.75
1892	5,603,588	138,658,621	42,089,849.01	24.74
1893	6,172,462	118,624,369	32,621,762.62	19.20
1894	6,404,705	66,952,833	25,354,190.27	10.45
1895	8,394,871	201,457,396	46,189,772.72	24.00
1896	7,897,575	221,419,414	35,633,013.17	28.03
1897	8,293,819	152,140,993	28,555,293.05	18.34
1898	7,237,601	126,999,132	30,298,097.93	17.54

Table III - Cont.

CORN - 1860 to 1922

Years	Acres	Bushels	Values	Av. Yield Per
1899	8,194,561	225,183,432	$ 53,530,576.00	27.48
1900	7,369,020	134,523,677	39,581,835.00	18.25
1901	6,722,973	42,605,672	21,731,215.39	6.33
1902	6,990,764	201,367,102	78,321,653.26	28.80
1903	6,525,777	169,359,769	57,078,141.67	25.95
1904	6,494,158	132,021,774	50,713,955.74	20.33
1905	6,799,755	190,519,593	68,718,583.91	28.01
1906	6,584,535	187,021,214	65,115,203.01	28.40
1907	6,809,012	145,288,326	63,040,743.32	21.33
1908	7,057,535	150,640,516	82,642,461.72	21.34
1909	7,711,879	147,005,120	83,066,905.22	19.06
1910	8,589,682	152,810,884	76,402,327.52	17.79
1911	7,760,087	105,047,068	59,599,408.03	13.54
1912	6,884,044	156,499,382	83,483,681.05	22.73
1913	6,655,023	18,420,052	13,378,475.35	2.77
1914	5,279,552	87,338,272	59,320,146.75	16.54
1915	4,537,238	142,653,140	73,547,443.71	31.44
1916	6,964,724	62,127,191	51,886,271.52	8.92
1917	9,162,232	106,166,517	120,540,410.70	11.59
1918	6,195,624	44,539,488	64,081,655.56	7.19
1919	4,188,045	63,083,497	82,845,461.76	15.06
1920	5,137,238	132,786,130	92,036,455.00	25.85
1921	4,421,669	96,484,070	27,760,924.81	21.82
1922	5,055,989	95,311,582	51,648,465.49	18.85

Statistics taken from Quarterly Report of K.S.B. of A., December, 1922, p. 9.

Table IV

ALFALFA, 1891 to 1922
Kansas Statistics, 1922

Table showing the acres of alfalfa in Kansas, with the value of the product after the year 1914.

Years	Acres	Value #
1891	34,384	
1892	62,583	
1893	75,200	
1894	90,825	
1895	139,878	
1896	155,949	
1897	171,334	
1898	231,548	
1899	278,477	
1900	276,008	
1901	319,142	
1902	458,493	
1903	566,592	
1904	557,569	
1905	602,560	
1906	614,813	
1907	743,050	
1908	878,283	
1909	993,539	
1910	926,492	
1911	976,094	
1912	1,000,785	
1913	1,026,299	
1914	1,193,641	
1915	1,359,498	$ 28,433,930.
1916	1,189,351	30,907,618
1917	1,131,373	56,570,863
1918	1,227,875	58,751,741
1919	1,243,486	61,837,385
1920	1,231,340	48,501,301
1921	1,064,741	20,205,864
1922	910,631	23,267,169

The value of alfalfa was not shown separately from other tame hay until 1915.

Statistics taken from Quarterly Report of K.S.B. of A., December, 1922, p. 11.

Table V

GRAIN SORGHUMS, 1894 to 1922

Table showing the acres and value of product of the grain sorghums in Kansas.

Years	Acres	Value
1894	77,942	$ 653,229.
1895	124,075	813,156
1896	404,354	3,599,646
1897	390,665	4,275,774
1898	552,023	5,842,692
1899	631,040	5,380,870
1900	652,667	5,814,389
1901	627,432	6,451,751
1902	757,036	9,579,110
1903	669,295	6,220,942
1904	528,142	5,136,412
1905	575,038	5,726,978
1906	569,701	5,216,985
1907	533,007	5,919,197
1908	688,582	7,407,517
1909	741,983	8,145,508
1910	727,426	9,128,497
1911	1,099,032	16,337,291
1912	1,609,219	21,982,042
1913	1,637,701	13,537,511
1914	1,287,259	19,373,528
1915	1,546,238	22,074,348
1916	1,365,055	14,527,210
1917	2,136,915	43,835,544
1918	1,990,635	45,966,394
1919	1,150,260	35,981,373
1920	1,466,477	33,069,873
1921	1,050,855	12,145,372
1922	1,406,331	23,205,159

Statistics taken from Quarterly Report of K.S.B. of A., December 1922, p. 11.

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