

FARM PROGRAM FOR JEFFERSON COUNTY, KANSAS

by

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INTRODUCTION

The purpose of this study is to analyze the farming systems now used on typical farms of Jefferson County, Kansas, and to formulate improved systems, which may be of use to farmers in arranging their farm programs.

Analysis was made of the crops adapted to this area, as indicated by the yields per acre obtained between the years 1910-1936. Special emphasis was placed on the productivity of those crops which conserve and build up the soil nutrients, increase farm income by application of farming systems adapted to Jefferson County, and give a good distribution of farm labor.

A historical study of crop acreage and yields was conducted. Data on the increase and decrease in livestock numbers between the years 1910-1936 were obtained. The primary sources of data have been: The Biennial Reports of Kansas State Board of Agriculture; Department of Agricultural Economics of Kansas Agricultural Experiment Station; Weather Bureau of the United States Department of Agriculture; Department of Agronomy of the Kansas Agricultural Experiment Station.

Personal interviews and observations have been made with many farmers while teaching vocational agriculture in the county; interviews with specialists from the college have been a great benefit in this study.

Explanation of Terms

The term "Farm" is all the land which is directly farmed by one person, either by his own labor, or with the assistance of members of his household or hired employees.

"Type of Farming" relates to the kind, quantity and proportion of the crop and livestock found on individual farms.

A "Type of Farming Area" is an area in which there is a high degree of uniformity in the type of farming prevailing.

"Farms Reporting" means the number of farms which reported the particular item or items.

The "Total Value of All Products" is the sum of the value of crops, livestock and livestock products sold or traded, and products used by operators's family.

Description of Area

Jefferson County is located in the northeastern part of Kansas, in the third tier of counties from the northern

boundry and second tier of counties from the eastern boundary of the state. The Kaw River acts as the southern boundary except for a small area in the southeastern corner of the county as shown in Figure 1. Jefferson County is one of six counties which are classified as Area 3 in a Type-of-farming study of Kansas.

The soil making up the southern part of the county has been formed largely from limestone, sandstone and shale, ranging from a relatively fertile rolling area, to rough, broken lands. The other soils have been derived from glacial material which are usually rolling to hilly in topography, but quite fertile. Glacial soil is subject to erosion and is generally low in organic matter, nitrogen and phosphorous due largely to the loss of surface soil through erosion. Most of the soil is deficient in lime. The soil in this area that is used for cultivated crops in general is dark brown to black with frequent areas of brown to medium brown. If properly managed it is productive and adapted to general farm crops.

Type-of-farming Area 3 lays within a large soil belt known as the prairie soils. Kellogg (6) states that the prairie soils, as a group, are very dark in color, high in their content of organic matter in the upper part of the solum, and they are well supplied with the elements necessary for the growth of grasses and other herbaceous

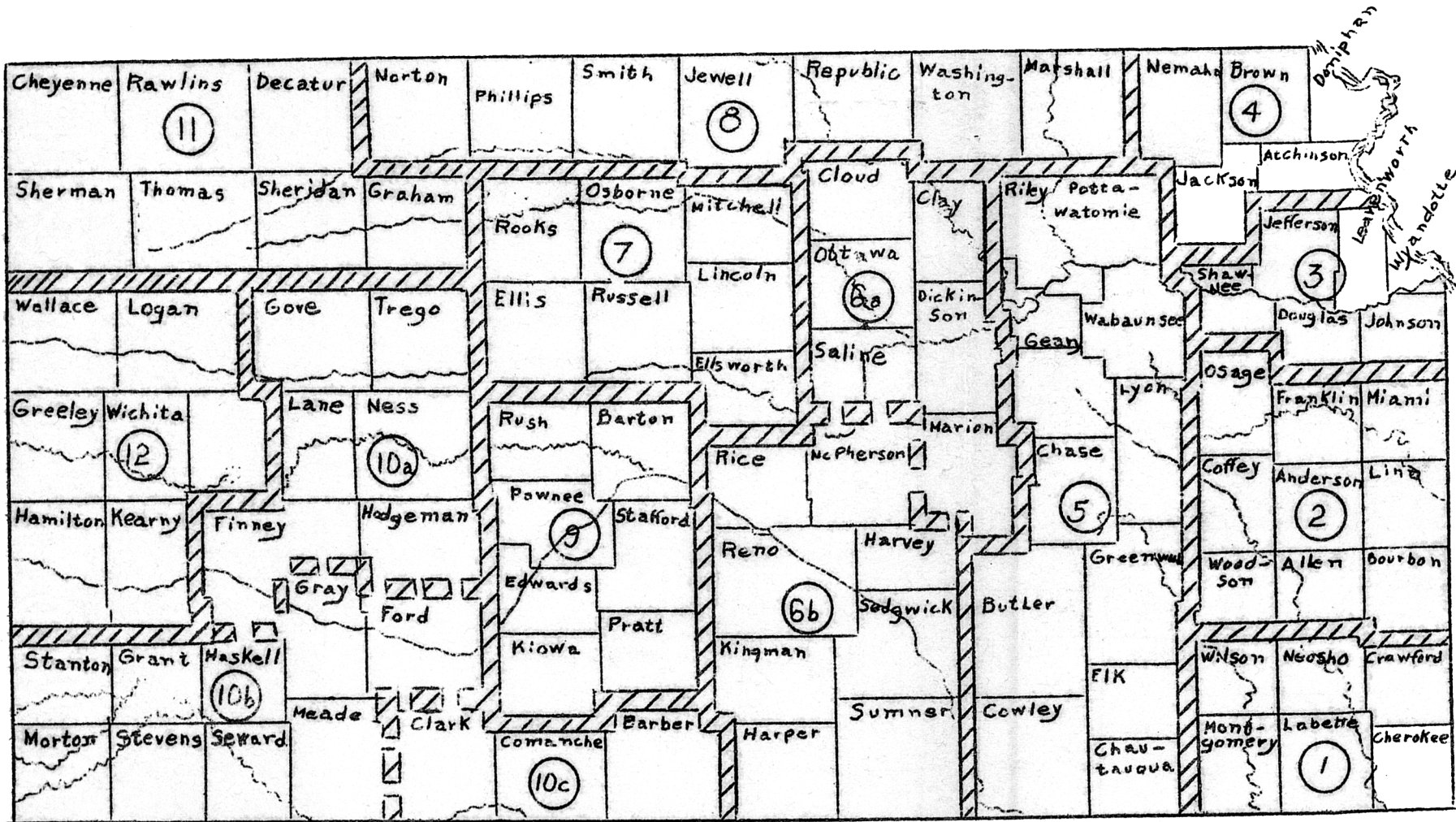


Figure 1. - TYPE-OF-FARMING AREAS IN KANSAS
 (Revision of Fig. 18, Bul. 251)

plants. The high natural fertility of these soils combined with their favorable climate, make them among the most productive in the world for grain and grasses. The normal prairie soils have little movement of colloidal material from the surface soil to the lower horizons.

Case and Myers (2) state that variations in type and productivity of soils are due to differences in age, in the parent material from which the soils were derived, in the topography and drainage of the land surface, in climate, and in organic activity.

Climatic Conditions

The total annual precipitation varied from 25.9" during the year 1930 to a maximum of 51.6" during the year 1915 as shown in Figure 2. The average precipitation between the years 1910-1936 was 35", two-thirds of the moisture falling during the growing months, namely, April to September inclusive.

The summers are long with relatively high average temperature. The average growing season is 175 days. April 24 is the average date of the last killing frost, and the first killing frost is October 16. The mean minimum winter temperature is 22 degrees F.; average annual temperature 54 degrees F. Small areas are occasionally

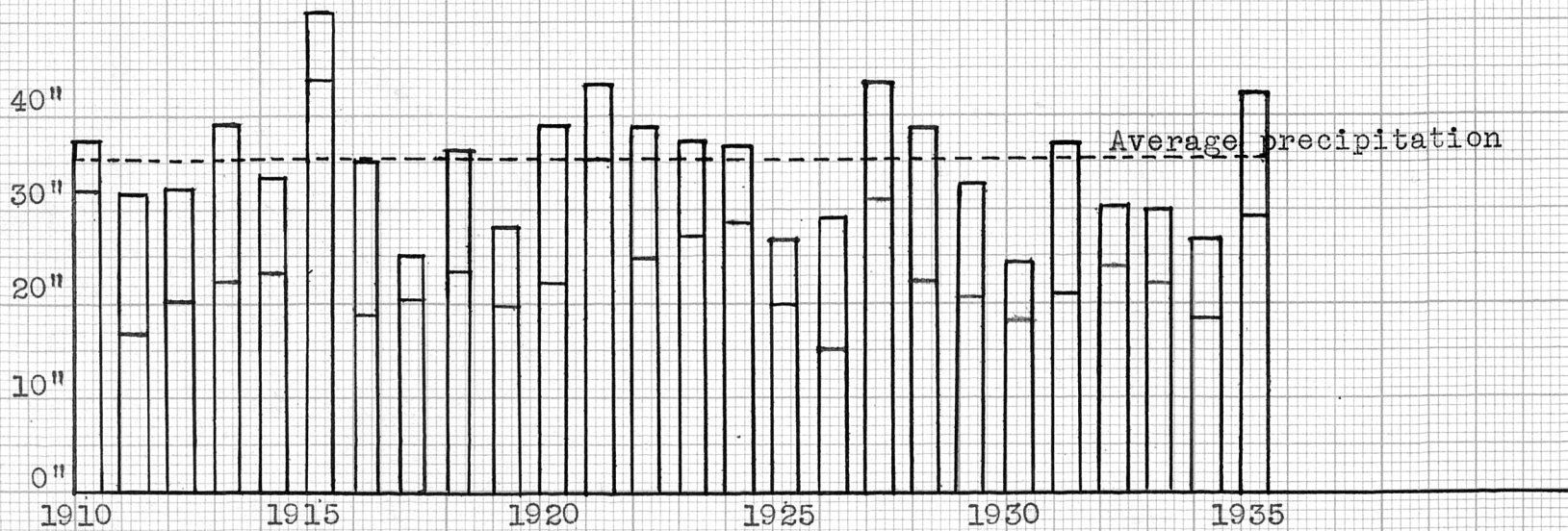


Figure 2. - Total Precipitation Compared with Seasonal Precipitation.
Seasonal Precipitation, April to September.

Source: Weather Bureau of the United States, Department of Agriculture
Station, Lawrence Kansas.

affected by hail. Climatic conditions are favorable for the growing of farm crops, and for the health of the people.

Trend of Farming in Jefferson County

Jefferson County is located in the general farming region of eastern Kansas. Corn is the predominant grain crop, followed in importance by wheat and oats. Wheat has had periods of expansion, while oats have remained practically constant except for short periods of fluctuation. Grain sorghum and atlas sorgo have been increasing in importance during the last 15 years.

Corn acreage has remained above other grain crops with the exception of one period of decline, as shown in Figure 3. After 1910 corn acreage declined slowly for five years, followed by one year of expansion, then a rapid decline.

In 1919 and 1921 corn reached a low of 52,500 acres. After 1921 there were a few years of expansion, followed by ten years with little change. Recent abnormal drought conditions and good wheat prices have caused a rapid decline in corn acreage and an increase in wheat.

Crop land planted to wheat reached a peak of more than 80,000 acres in 1919, declined to about 19,000 acres in 1925, then a gradual increase followed by a decline to about 12,000 acres in 1932. Due to extremely unfavorable

Thousands

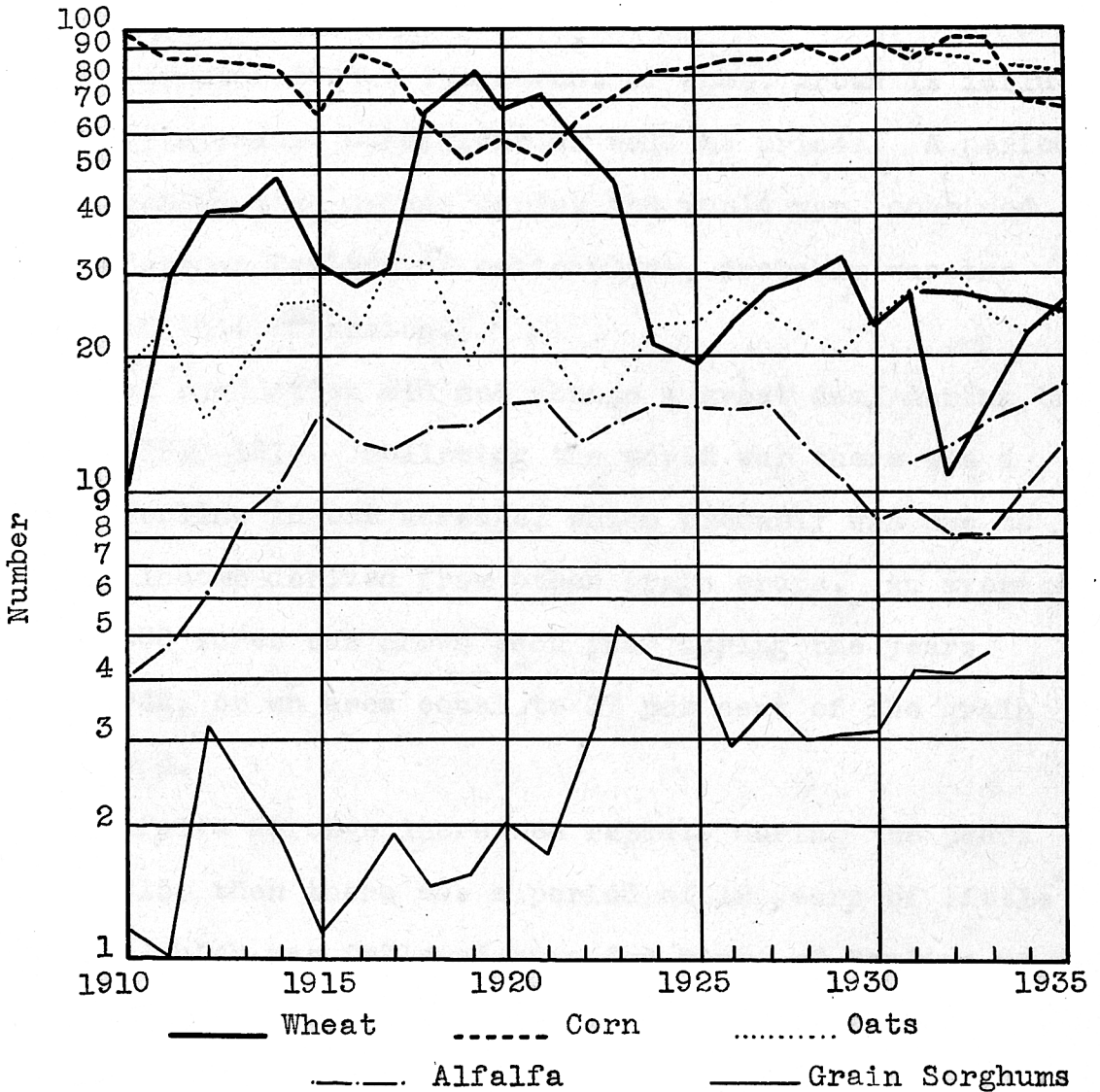


Figure 3. - Acreage of Corn, Wheat, Oats, Alfalfa and Grain Sorghum for Jefferson County, Kansas, 1910-1936.

Effect of the proposed program is indicated for the last five years, assuming that it would require such a period to put it into effect.

Source: Biennial Reports, Kansas State Board of Agriculture. 1910-1936.

climatic conditions for corn, wheat increased in acreage after the year 1933. The amount of wheat grown is influenced by climatic conditions as well as prices. A period of extremely high prices during the world war, combined with a strong feeling of nationalism, probably was the cause of this expansion.

Oat production did not change a great deal during the period 1910-1916. Following the world war there was a small decline in oat acreage, which probably was due to higher income derived from other grain crops. An average of 25,000 acres was grown each year during the years 1928-1932, or an area equal to 17 per cent of the grain crop land.

Alfalfa acreage increased rapidly during the years 1910-1915, then there was a period of 12 years of little change, which was followed by a few years of decline up to the year 1933. Since then there seems to have been a turn toward expansion.

High returns are obtained from the alfalfa crop by cash sale and by feeding to livestock. The use of lime, barnyard manure and superphosphate generally has given profitable returns. Alfalfa has the ability to build up the soil nutrients, and aids in controlling erosion.

Grain sorghum acreage during the years 1910-1922

remained practically steady, although there were years of minor fluctuations followed by years of expansion.

Atlas sorgo, a cross between kafir and sorgo has tended to take the place of kafir during the last few years.

Livestock always has held an important place in the agricultural program of this county. Livestock production has had a tendency to be more stable than crops, as shown in Figure 4, although at times hog production has tended to be erratic. Sheep production has played a relatively small part in the farm program.

Dairying, both whole milk and butterfat production, is common in this county as it is located near milk consuming urban communities, which make possible the importance of the dairy enterprise. The Type-of-farming area in which Jefferson County is located has the lowest percentage of tenancy of any area in Kansas. There is a tendency toward a high percentage of land ownership where the dairy enterprise is important.

Poultry production is fairly evenly distributed over the county. There were more chickens per acre on farms ranging in size from 0-40 acres than on larger farms, although the general tendency was to keep a fairly uniform number of chickens for each farm.

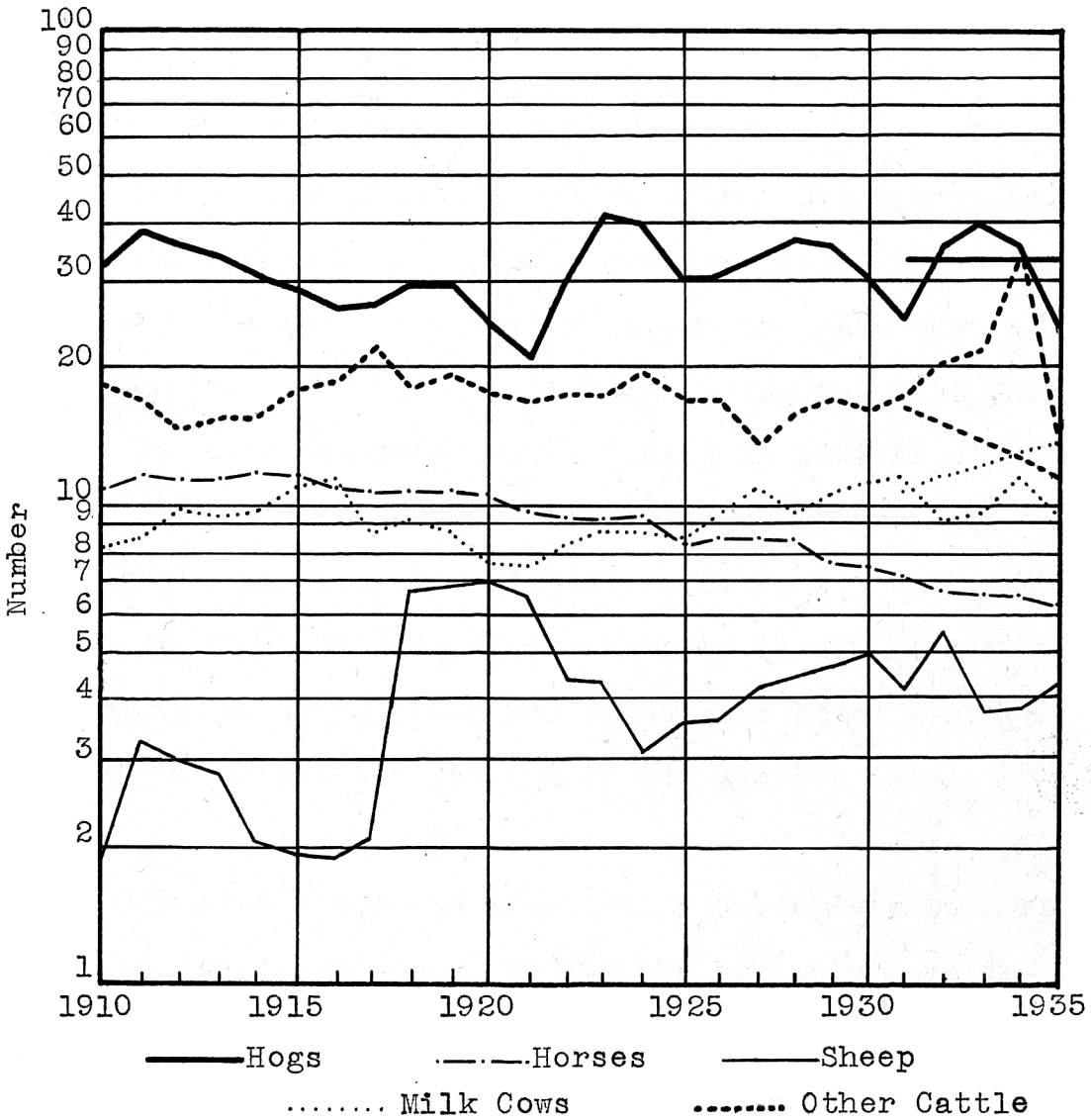


Figure 4. - Number of Hogs, Other Cattle, Milk Cows, Horses and Sheep for Jefferson County, Kansas. 1910-1936.

Effect of the proposed program is indicated for the last five years, assuming that it would require such a period to put it into effect.

Source: Biennial Reports, Kansas State Board of Agriculture. 1910-1936.

Trend in Crop Yields

In Table 1 attention is called to the average yields per acre of the main grain crops for the period 1911-1932. In Figure 5 the ten-year average yields indicate that corn yields have remained fairly constant during the last forty years. The last ten-year period ending in 1934 is slightly below other ten-year periods, but this probably can be accounted for by abnormal climatic conditions. Robb (9) was able to show that during this period in six of ten years, rainfall during July and August was below average and in seven of the ten years corn was planted late.

(May 4.)

During 1934 there was practically a complete failure in corn yields, thus these two factors probably have influenced yields in the last ten-year period.

The last ten-year period for wheat production 1925-1934 has about the same average yield as the first ten year period 1875-1884. Yields per acre have not changed a great deal during the entire period. There was a substantial increase in yields per acre during the world war. Exceedingly favorable climatic conditions are responsible for some of the increase. Another factor was the sowing of wheat on some of the more fertile land which

Table 1. - Normal Yield and Relative Yield of the
Principal Crops of Jefferson County
Kansas.¹

Principal Crops	:	Normal Yield	:	Relative Yield ²
Wheat bu.	:	16.5	:	123
Corn bu.	:	24.4	:	139
Oats bu.	:	29.4	:	120
Barley bu.	:	23.2	:	135
Kafir bu.	:	23.2	:	137
Milo bu.	:	21.2	:	135
Feterita bu.	:	22.1	:	135
Stover Kafir T.	:	2.8	:	---
Stover Milo T.	:	2.1	:	---
Stover Feterita T.	:	2.7	:	---
Kafir Hay T.	:	3.4	:	14.1
Cane Hay and Forage	:	4.0	:	153
Sudan T.	:	2.9	:	---
Alfalfa T.	:	2.8	:	112
Prairie Hay T.	:	1.2	:	119
Sweet Clover T.	:	2.2	:	---
Irish Potatoes bu.	:	113.2	:	---
	:		:	

¹Source: State Board of Agriculture. Average for wheat, corn, oats and barley are for 1911-1932. Sudan for 1916-1932. Potatoes 1919, and others from 1915-1932.

²Source: State yield = 100

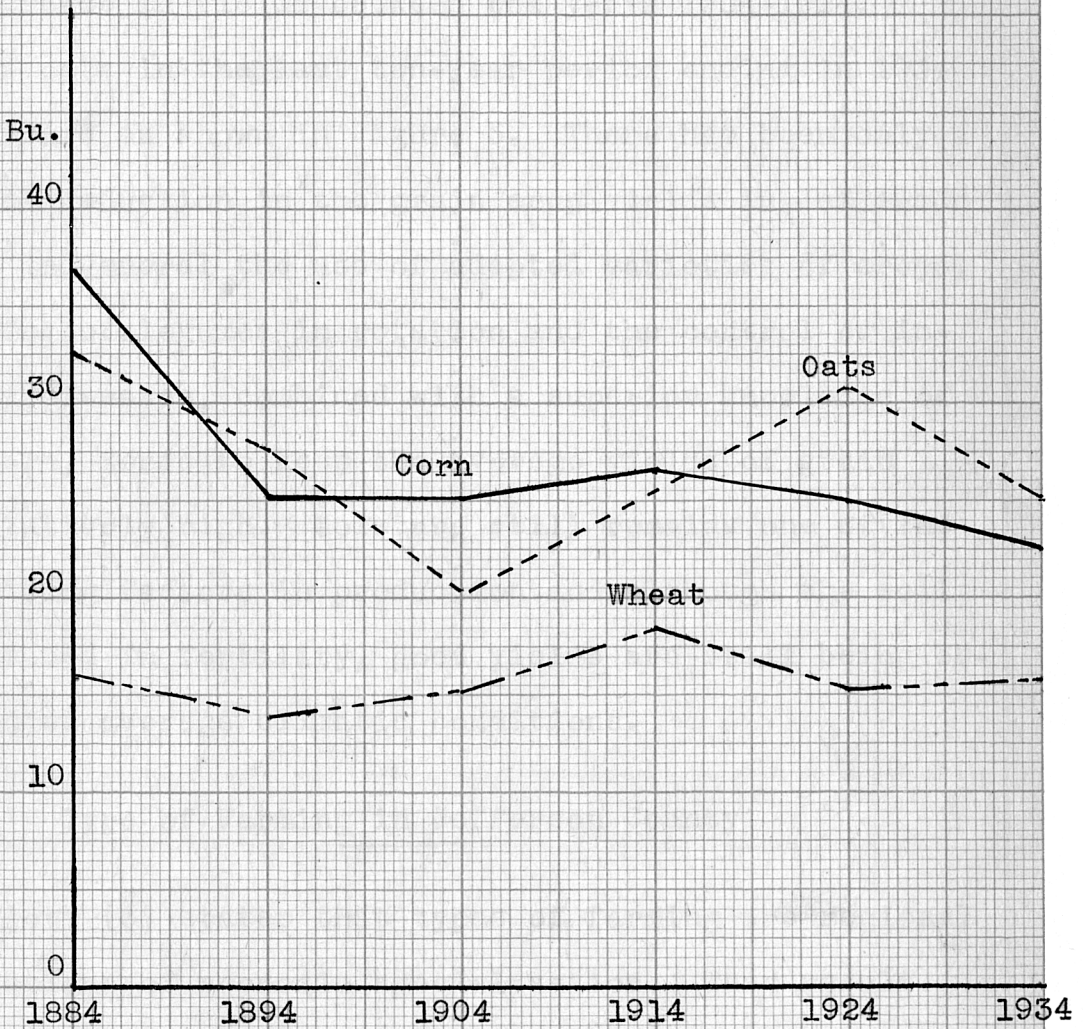


Figure 5. - Yields for Corn, Wheat and Oats Shown for 10 Year Averages Ending at Specified Dates. Jefferson County, Kansas.

Source: Calculated from Biennial Reports, Kansas State Board of Agriculture.

was previously used for corn production.

The general trend of oats yields has been erratic. A period of declining yields from 1875-1904 was followed by an increase in yields between the years 1904-1924. Yields of oats in the last ten-year period ending in 1934 were downward as shown in Figure 5. There has been only a very small reduction in the grain crop yields in Jefferson County. In general the use of adapted varieties of crops, the growing of legumes in rotation and the control of insects and diseases, combined with a superior knowledge of agriculture, tends to keep the average yields of grain crops relatively high. Moisture still remains one of the main limiting factors in production and although the soil has decreased in fertility, good yields are still being obtained under average climatic conditions.

Type of Farming in Jefferson County

Elliott (3) states that types of farming are regional manifestations of economic specialization. They result from man's efforts to adjust himself and his resources to his environmental conditions.

The tendency of farmers to adjust their farming operations to their environmental conditions is an attempt to obtain the maximum return from the land. This brings

about a development of different lines of production.

Physical, biological and economic factors affect the development of type of farming in this area. Climate, topography and soil have a tendency to determine the limits of crop production. Rainfall, temperature and evaporation have important influences in localizing the production of crops. The effectiveness of rainfall, which is determined largely by the amount of evaporation and runoff, is of more importance than the total annual quantity.

The character of the land surface influences the nature of farming practices. Certain crops are affected by the texture, the chemical content and the water holding capacity of the soil. Legumes do not thrive well in this county on soils deficient in lime.

The development of early maturing varieties of crops that are more resistant to drought and disease will influence the type of farming in this area.

Moorhouse (7) was able to show the possible risk in the farming enterprise, even in humid areas. Numerous risks are encountered on the farm over which the farmer has little or no control such as the following: (1) partial crop failure due to deficient or excessive rainfall, extreme heat or cold, too short a growing season, wind or hail storms, plant disease, insect injuries; (2) insuf-

efficient horse power at critical periods, due to loss or injuries to work stock; (3) curtailment of livestock production through disease, injuries, failure in breeding stock, losses of calves, pigs or lambs, and (4) lack of sufficient labor at critical periods due to sickness or accident either to the farmer himself or to members of his family and the difficulty in obtaining hired labor.

Methods of control of disease and pests are being discovered although they still are a constant threat to the growth of many of our farm crops. The breeding of higher producing dairy cows, quicker maturing beef cattle and hogs has resulted in some change in the type of farming.

Economic factors such as net income, location of farm, transportation facilities, freight rates and markets exert an influence on the type of farming for this county.

The sale of whole milk is made possible, due to nearness to the consuming area.

Relative Frequency of the Types of Farms

A study was made of the relative frequency of the types of farms in Jefferson County as shown in Table 2.

In considering each of the major types of farms, sales of products had to represent 40 per cent or more of the total value of "all products" of the farm before the

Table 2. - Number and Per Cent of Farms and Acreage
and Per Cent of Farm Land by Type of Farm
Jefferson County, Kansas.¹

Types of Farms	Number of Farms	Acres of Farm Land	Per Cent	
			Number of Farms	Acres of Farm Land
General	542	75,679	25.02	22.69
Cash Grain	200	31,176	9.23	9.35
Crop Specialty	54	9,736	2.49	2.92
Fruit	18	2,427	.83	.73
Dairy	150	23,088	6.93	6.92
Animal Specialty	836	157,152	38.60	47.13
Poultry	62	4,890	2.86	1.47
Self Sufficing	84	7,074	3.88	2.12
Part Time	38	1,206	1.75	.36
Horse Farm Feed-lot or Livestock Dealer	14	2,640	.65	.79
Forest Product	1	---	.05	--
Unclassified	167	18,396	7.71	5.52

¹Source: 1930 Census.

farm was classified under a particular type. Farms were classified as "General" if they did not receive as much as 40 per cent of their income from any one source.

In the 1930 Census of Agriculture, 12 major types and five sub-types of farms were classified. They included the following types of farms: General, cash-grain, cotton, crop specialty, fruit, truck, dairy, animal-speciality, stock-ranch, poultry, self-sufficing, abnormal and unclassified.

Eighty seven per cent of the farm land in Jefferson County was classified under four major types although farms of the same type varied widely in size.

Animal-specialty farms made up 47 per cent of the farm land, general 23 per cent, cash grain nine per cent and dairy seven per cent. Crop specialty, poultry, fruit, self-sufficing, abnormal and unclassified made up the remaining 14 per cent.

Types of Farms by Size

Elliott (3) states that many factors have contributed to the variation in the crop and livestock combinations handled by different farmers following the same general type of farming. Probably the most important of these is the variation, in physical condition with respect to soil, topography and drainage on farms in the same locality.

Any one of these may force the farm operator to adopt a crop and livestock organization which may vary considerably from what the majority of the farmers in the region follow.

Hopkins (5) states that a farmer selects from the principal enterprises those that promise to add most to his net income, then he selects complementary projects to provide raw materials for these or to permit waste products from these to be utilized. If there are farm resources not fully utilized by the two groups of enterprises, such as labor in slack seasons the farmer will try to find other or supplementary enterprises to use up the possible waste.

Hodges, Elliott and Grimes (4) give other factors causing variations in farming systems in particular areas such as available capital. A farmer with a limited amount of capital or credit, may not be able to expand his business, or to produce as intensively as he otherwise would. The total amount of mortgage debt may cause the farm operator to adopt a different farming practice. The debtor farmer is more likely to work harder in an attempt to make the farm yield as much as possible. The tenant farmer usually has possession of the farm for a limited time, does not feel that he can afford to make improvements, add fertilizer, and adopt a definite farming program. The

tenant farmer is generally an operator with limited capital and often does not have complete freedom in operation of the farm.

Data obtained from Table 3 show that 12 per cent of the farms in Jefferson County fall into the group of farms ranging in size from 0-49 acres; 22 per cent in the size from 50-99 acres; 37 per cent in the size from 100-174 acres; 16 per cent in the size from 175-259 acres; 13 per cent in the size from 260 or more. Most of these farms are in 40 A., 80 A., 160 A., 180 A., 200 A., and 320 A., groups. The 160 acre farm is the most common size of farm.

Farming Systems now in Operation

An analysis of the farming systems now used shows considerable variation in the proportion of the various crops and livestock. The acreage of the most important crops grown on a farm may vary from 25-75 per cent of the total farming area. These extremes are found on a relatively few farms. A great many of the farms follow similar farming practices.

A high per cent of the farms have some rough land that is suited for the grazing of livestock. Alfalfa and tame hay grow abundantly; sweet clover and lespedeza are used to a limited extent for pasture. Kentucky blue grass is

Table 3. - Number and Per Cent of Farms and Acreage
and Per Cent of Farm Land by Size of Groups
Jefferson County, Kansas.¹

Size	:	Number of	:	Acres		Per Cent	
				of	of	Number	Acres
	:	Farms	:	Farm Land	:	of Farms	Farm Land
3 Acres of Less	:	6	:	7	:	.28	.00
3-9 Acres	:	37	:	215	:	1.71	.06
10-19 Acres	:	44	:	567	:	2.03	.17
20-49 Acres	:	181	:	6,357	:	8.35	1.91
50-99 Acres	:	477	:	36,491	:	20.02	10.94
100-174 Acres	:	810	:	113,491	:	37.40	34.03
175-259 Acres	:	351	:	74,362	:	16.20	22.30
260-499 Acres	:	217	:	72,122	:	10.02	21.63
500-999 Acres	:	40	:	25,638	:	1.85	7.69
1000-4999 Acres	:	3	:	4,215	:	.14	1.27
Total	:	2166	:	333,464	:	100. %	100. %

¹Source: 1930 Census.

the main form of pasture.

The pastures are badly infested with wild brome grass and chess (commonly called wild oats), cheat, ragweed, goldenrod and ironweed that has decreased their value for pasture. There are a few native pastures remaining in the county.

Many of the farms are heavily infested with cockleburs, sunflowers, and kinghead weeds which compete with the growing crops for moisture and soil fertility. In recent years a noxious weed, field bindweed, has entered the county.

Figure 3 shows the relative importance of the grain crops. Corn is the predominant crop grown on most of the farms. Wheat and oats are the other grain crops which tend to complete the grain rotation. Grain sorghum, to a limited extent, has been interchangeable with corn. The last few years there has been a tendency to increase sorghum crops, especially atlas sorgo. Feterita and milo are used in limited quantities.

Wheat is the main cash crop. The prevailing practice is to sell the grain direct from the threshing machine. A limited amount is farm stored. A relatively small proportion of the wheat crop is fed to livestock except in

years of short corn crops. There are local farming areas where high yields are obtained on the more fertile soils.

Oats are sown on practically every farm in the county. The income derived from oats is usually small, but the quality of feed for work horses and breeding stock, combined with the ease in working out a crop rotation makes oats a valuable crop.

There has been a decline in the production of alfalfa as shown in Figure 3. The use of the hay as feed for cattle, and the succulent pasture obtained for other livestock make alfalfa a highly desirable crop. Lime is necessary for a profitable return on acid soil. Barnyard manure and superphosphate have materially increased the crop yields.

Data for setting up the typical farming systems for Jefferson County were obtained by the Kansas Agricultural Experimental Station from the 1931 assessors rolls. In that year the organization of the farm had not been greatly affected by low prices or the Agricultural Adjustment program.

In Table 4 records from the individual farms are grouped according to the size of the farm and acreage of the principal crop. Corn was the principal crop for Jefferson County.

Table 4. - Type of Farm by Size for Jefferson County, Kansas.¹

Size	General	Cash-Grain	Crop Specialty	Fruit	Dairy	Animal Specialty	Poultry	Self-sufficing
3 Acres or Less	---	---	--	--	---	---	2	--
3-9 Acres	4	---	--	--	4	---	5	4
10-19 Acres	7	2 ²	1	--	2	1 ²	3	10
20-49 Acres	54	20	3	3	12	35	10	15
50-99 Acres	140	46	12	4	28	138	25	31
100-174 Acres	212	67	13	6	57	354	13	16
175-259 Acres	80	41	17	3	30	157	3	5
260-499 Acres	39	20	6	2	16	123	1 ⁴	3 ⁴
500-999 Acres	6	4	2 ³	--	1 ³	25	-	-
1000-or Over	---	---	--	--	---	3	--	--
Total	542	200	54	18	150	836	62	84

¹Source: 1930 Census

²Under 20 Acres

³500 Acres or More

⁴260 Acres or More

A budget was worked out for eight typical farming systems. To work out these budgets it was necessary to use standards of production which are the physical requirements in feed, labor and miscellaneous items. Normal yields were determined for crops and unit quantities of production for livestock were used with all available information for normal quantities of feed used.

Under the Agricultural Adjustment Administration the program planning division of the A.A.A. worked out two series of farm prices for the United States. The Department of Agricultural Economics of Kansas Agricultural Experiment Station adjusted these prices for Kansas and further converted them to the area prices according to the best obtainable information. Series A was based upon 1928-1932 production with prospective demand for 1936-1940, while series B was based on the assumption of moderate adjustment in production from the 1928-1932 level with estimates for 1936-1940 demand.

These two series of prices for commodities and cost items were applied for Jefferson County whereby comparisons of the typical system using normal yields and prices were made. Eight typical farms were selected from the types of farms by size. These farms were considered representative for their respective size and type. They

represent farming practices that occur most frequently in the farming systems of the county. A combination of crops and livestock enterprises was selected for a 40-acre farm, 80-acre farm, 120-acre farm, three 160-acre farms, a 200-acre farm and a 320-acre farm, as shown in Table 5. The 160-acre farm is the most common size. In working out the farming system three different 160-acre farms were selected, one which carried out the general farm practice by the average farmer, one with a high per cent of grain crops and one with a small amount of grain crops. A typical farming system of 160 acres would have between 20-30 per cent of the land in corn, 10-15 per cent in wheat, 10-15 per cent in oats and 35-40 per cent in pasture. The remaining crops occupy a small per cent of the crop land. A typical cropping system would include approximately 40 acres of corn, 20 acres each of wheat and oats, 60 acres of pasture and five acres or less for each of the following crops, alfalfa, sorghum, sweet clover and tame hay. (Table 5.)

On the 160-acre farm 80-90 per cent of the farms have four or more dairy cows, 75-80 per cent have six or more other cattle. A typical farming system of 160 acres would have about four head of horses or mules, four to five head of dairy cows, six head of other cattle, two

Table 5. - Typical Farming Systems from Specified Types of Farms, for Jefferson County, Kansas.

Item	40-Acre Farm	80-Acre Farm	120-Acre Farm	160-Acre Farm	160-Acre Farm	160-Acre Farm	200-Acre Farm	320-Acre Farm
Rel. Frequency of Type	41	30	27	3	20	3	22	23
Typical Farming Systems:	10-A. Corn	20-A. Corn	30-A. Corn	No Corn	40-A. Corn	100-A. Corn	50-A. Corn	65-A. Corn
All Crops	15	43	69	25	94	121	110	173
Corn	10	20	30	--	40	100	50	65
Wheat	--	--	10	15	20	---	20	40
Oats	2	10	15	6	20	15	25	25
Grain Sorghum	1	3	3	4	3	--	2	--
Alfalfa	2	4	8	-	4	6	6	--
Tame Hay	-	4	3	-	5	--	8	8
Prairie Hay	-	2	-	-	-	-	-	15
Sweet Clover	-	-	-	-	2	-	-	20
Pasture	20	30	40	120	60	25	85	140
Other Land	5	7	11	15	6	14	5	7
Livestock	Number	Number	Number	Number	Number	Number	Number	Number
Horses	2	3	4	4	4	5	5	6
Milk Cows	3	3	5	2.5	4.5	6	5	5.5
Other Dairy Cattle	1	1	2	---	1.5	-	1.5	---
Other Cattle	1	2	4	16	6	6	9	20
Sows	1	1	3	3	2.5	5.5	4	5
Poultry	70	105	95	75	95	105	95	110

Source: 1931 Assessor Roll.

to three head of young cattle, two to three sows and approximately 100 hens. On smaller farms a similar organization would be followed, with the exception that a higher per cent of land would be in grain crops.

Suggested Farming Systems

In working out a farm program for Jefferson County using the typical and suggested systems, a farming practice was followed that was common under average farm conditions. The growing of peas, potatoes and fruit along the Kaw River was not considered a major farm practice and was not a part of the farm program. It is realized that in some years these crops do play an important part in the local cropping system. As there were only an average of two head of sheep per farm, sheep production was not considered in arranging the farm program.

The change from the typical to the suggested system in acreage of crops and numbers of livestock was made by working out suggested farm budgets for each of the eight typical farms. These farms were weighted to represent 25 per cent of the farms in the county. Production of crops was estimated by multiplying the acreage by the normal average yield per acre for the county. The typical and suggested systems were each totaled to obtain the per cent change in the acreage of crops and the number of livestock.

The percentage change was then applied to the five-year base 1928-1932 to obtain the change for the county.

The amount of feed needed for livestock is shown in Table 16. This is the quantity of feed for each class of livestock determined by standards worked out by the Department of Agricultural Economics of the Kansas Agriculture Experimental Station. Two hundred twenty-five pounds of butterfat per cow, and an increase of 550 pounds of beef for each livestock unit were used in the typical and suggested systems for recording the livestock income.

Four acres of pasture is allowed for each livestock unit, 160-170 days is considered a pasture season. If legume pastures are used a larger number of livestock could be grazed per acre. Protein supplement is added when cattle are not fed legume hay.

Attention was centered upon soil conservation with the idea of a system of farming and a method of production which considered the economic factors of production as well as soil depleting crops. There is a marked increase in the acreage of soil-conserving crops. This is brought about by a large acreage increase in alfalfa, sweet clover and tame hay.

In the suggested system an increase in dairy cows and poultry and a decrease for other cattle is recommended as shown in Table 6.

Table 6. - Suggested Farming Systems from Specified Types of Farms, for Jefferson County, Kansas.

Item	40-Acre Farm	80-Acre Farm	120-Acre Farm	160-Acre Farm	160-Acre Farm	160-Acre Farm	200-Acre Farm	320-Acre Farm
Suggested Farming Systems	10-A. Corn	18-A. Corn	30-A. Corn	20-A. Corn	36-A. Corn	60-A. Corn	45-A. Corn	70-A. Corn
All Crops	15	45	70	50	94	106	110	156
Wheat	--	--	12	--	18	20	20	28
Corn	10	18	30	20	36	60	45	70
Oats	--	9	15	10	18	20	20	25
Atlas Grain-Sorghum	--	3	--	--	5	--	5	3
Alfalfa	5	6	8	10	7	6	10	15
Tame Hay	--	9	5	10	10	--	10	15
Pasture	15	30	40	100	56	40	85	140
Sweet Clover-Lespediza	5	--	--	--	5	6	5	--
Other Land	5	5	10	10	-	8	5	4
Live Stock	Number	Number	Number	Number	Number	Number	Number	Number
Horses	2	3	4	4	4	5	5	6
Milk Cows	4	5	5	2.5	6.5	6	7	6
Other Dairy Cattle	-	1.5	2	-	2.5	-	3	-
Other Cattle	-	-	3	20	3	4	7	25
Poultry	150	125	125	100	120	130	130	130
Sows	1	1	3	3	3	4	3	5

Livestock and crop requirements and standards were obtained for working out the farm budgets. (Appendix Tables 17, 18, 19 and 20.)

Capper (1) and Nichols (8) in their master theses made a study of the distribution of man labor by weeks for typical and suggested farms in Type-of-farming Areas 2 and 5. Due to the fact that only 16-20 per cent of the farms have tractors, horse labor is used in the organization of the farm. General expenses as taxes, interest, depreciation and family labor were similar in the typical and suggested systems, and were not considered in the farm income.

Suggested System for 160-Acre Farm

The 160-acre farm is the most important farm in size, comprising 16 per cent of the total farms. There was quite a wide variation in the acreage of different crops on these farms. This was particularly true of corn, which varied from 0-100 acres on the typical farming system. There was a small group of farms which were low in corn acreage ranging from 0-30 acres. A large group with from 30-50 acres, a small group from 60-80 acres and a fourth group from 80-100 acres. Thus on the same size farm there were numerous farm organizations. The most common group comprising approximately 50 per cent of the

farms contained 30-50 acres of corn, 15-20 acres of wheat, 15-20 acres of oats and four to seven acres of alfalfa. (Table 4.)

A decrease of ten per cent in corn, wheat and oat acreage is recommended in the suggested system, which is a general expansion in soil conserving crops. In the suggested farm organization three sows are recommended. Assuming a 2,000 pound gain per sow, (derived from offspring) the feed allowance for pork production is corn, tankage and legume pasture.

Four work horses or mules will be sufficient for the power needed on the farm. As horses become too old for farm work tractor power will gradually act as a replacement for a large number of the horses in the county.

The main items of expense are crop expense, which includes twine, threshing, silo filling, alfalfa seed and lime. A fixed charge for livestock expense is set aside for each head of livestock. The same requirements and standards of production are used for each farm in the typical and suggested farming systems. A greater proportion of the income on the typical farms comes from crop sales. A high per cent of the grain crops are fed to livestock on the suggested system.

The suggested system has a larger acreage of legumes

and a smaller acreage of cultivated crops, than the typical farm. An increase in dairy cows and poultry is recommended, with a decrease in other cattle.

It is a common practice for farmers that are not located on an all-weather road to separate their milk and sell the cream to a local cream station. A large amount of whole milk is distributed in Lawrence and Topeka. This practice enables these dairymen to obtain higher prices for their products than if they sold cream and kept the skim milk on the farm. Due to the increase in the dairy enterprise the typical system would require 200 hours more labor. The labor of the suggested system would be more evenly distributed throughout the year, and probably would not require any additional hired man labor.

A comparison of the returns on the typical and suggested systems of farming after deductions are made for expenses leaves a family earning on the typical system of \$970, as compared to \$1235, for the suggested system, using non-adjusted prices as shown in Table 7. By using adjustment prices a somewhat higher return is obtained. In the typical system returns of \$1208, as compared to \$1497, for the suggested system. In Tables 8 and 9 are given comparisons of the return on the typical and suggested systems for the other two 160-acre farms.

Table 7. - Comparison of the Returns on the Typical and Suggested Systems for 160-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Wheat	161.65	207.40	119.06	154.86
Corn	181.30	234.90	76.82	96.86
Oats	131.13	160.74	104.59	128.21
Alfalfa	---	---	61.15	61.15
Tame Hay	---	---	51.76	51.76
Atlas Sorgo	---	---	55.00	60.00
Livestock and Produce				
Dairy Products	177.54	198.88	282.63	316.59
Hogs	267.75	327.50	327.25	412.50
Other Cattle	206.02	222.64	89.10	101.20
Other Dairy Cattle	22.05	24.50	22.50	25.00
Poultry	94.79	96.11	131.87	133.60
Expenses				
Purchased Seed	258.26	263.14	18.09	20.10
Crop Expense	66.97	74.00	88.46	100.91
Livestock Expense	21.32	21.32	25.08	25.08
Hired Labor	68.55	71.88	108.55	112.88
Totals				
Receipts Minus Exp.	822.03	1042.33	1087.18	1331.00
Products Used in Home:	148.02	165.79	148.02	165.79
Total Income	970.05	1208.12	1235.20	1496.79

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

Table 8. Comparison of the Returns on the Typical and Suggested Systems for 160-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Wheat	120.84	155.04	---	---
Rent Pasture 36 A.	99.00	108.00	---	---
Oats	---	---	33.07	40.66
Livestock and Produce				
Dairy Cows	125.23	140.28	125.23	140.28
Other Cattle	552.03	621.04	696.60	791.00
Sows	327.25	412.50	327.25	412.50
Poultry	65.15	65.97	102.11	103.45
Expenses				
Purchased Seed	776.44	817.65	179.60	196.58
Crop Expense	25.22	28.48	48.36	55.23
Livestock Expense	23.62	33.62	24.87	24.87
Totals				
Receipts Minus Exp.	464.22	633.08	1031.63	1211.21
Products used in home	148.03	165.79	148.03	165.79
Total Income	612.25	798.87	1179.66	1387.00

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

Table 9. - Comparison of the Returns on the Typical and Suggested Systems for 160-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Corn	552.00	696.00	277.28	349.62
Oats	79.50	97.57	120.44	148.90
Wheat	--- --	--- --	161.65	207.40
Livestock and Produce				
Dairy Cattle	256.60	287.10	256.60	287.10
Other Cattle	206.02	222.64	124.70	141.68
Hogs	624.75	787.50	446.25	562.50
Poultry	109.63	111.02	150.54	152.44
Other Dairy Cattle	--- --	--- --	9.00	9.75
Expenses				
Purchased Feed	168.91	173.32	114.56	114.98
Crop Expense	50.99	57.56	90.78	102.01
Livestock Expense	82.05	82.05	29.30	29.30
Hired Labor	119.25	130.80	111.25	117.86
36 Acres Pasture to be rented	100.	110.	--- --	--- --
Totals				
Receipts Minus Exp.	1307.30	1648.10	1200.57	1495.24
Products Used in Home	148.03	169.79	148.03	169.79
Total Income	1455.33	1817.89	1349.60	1665.03

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

In comparing the returns from a typical and a suggested system, the amount on one farm is not large, but under actual farming conditions the suggested system should have a greater advantage due to the increase in yields over a long period of time by the use of soil conserving crops.

Suggested System for 80-Acre and 120-Acre Farms

The 80 acre farm is the second most common size farm comprising 15 per cent of the total farms of the county. "Animal Specialty" and "General" farms are by far the most frequent type of farms. (80 per cent.)

A farm is classified as "Animal Specialty" when 40 per cent of the total income from the farm is derived from the sale of all classes of meat animals such as beef cattle, hogs and sheep.

Corn is the main grain crop, the total amount varying from 10 to 50 acres. An average typical 80-acre farm would have 20 to 30 acres of corn, 10 acres of oats, a small acreage of wheat, 25 to 30 acres of pasture and approximately four acres each of grain sorghum, alfalfa and tame hay.

In the suggested system there is a decline of 10 per cent in the acreage of corn and oats, with an increase of 33 per cent in alfalfa acreage, and 60 per cent

increase in acreage of tame hay. In the typical organization the total amount of soil conserving crops is not large. Thus the addition of a few acres results in a high percentage increase.

The same requirements and standards of production are used for each size farm to show the effect of the typical and suggested system.

The return to the farm operator and family after deductions are made for expenses, leaves a family earning on the typical system of \$590, as compared to \$686 on the suggested system, using non-adjusted prices. By using adjusted prices a return of \$678 on the typical system as compared to \$759 for the suggested system, as shown in Table 10.

The 120 acre farm comprises four per cent of the total farms. In the suggested system there is an increase in wheat, tame hay and poultry, and a decrease in other cattle.

In Table 11 comparison is made of the income of the typical and suggested systems. More labor is required for the suggested system, thus giving the farm operator employment throughout the year. The farm operator and family would manage the farm as a family unit. Three head of horses, five head of dairy cows, one sow and 125

Table 10. - Comparison of the Returns on the Typical and Suggested Systems for 80-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Corn	67.75	85.50	18.17	22.91
Oats	55.80	68.40	16.43	20.14
Alfalfa	36.69	36.69	77.05	77.05
Tame Hays	-- --	-- --	36.92	36.92
Livestock and Products				
Dairy Products	99.02	110.92	203.87	228.37
Hogs	89.25	112.50	89.25	112.50
Poultry	109.63	111.05	139.23	141.26
Other Cattle	53.46	60.60	---	---
Other Dairy Cattle	14.40	16.00	9.22	10.25
Expenses				
Purchased Feed	43.61	44.61	3.78	4.20
Crop Expense	29.41	33.55	34.91	39.48
Livestock Expense	10.80	10.80	13.25	13.25
Totals				
Receipts Minus Exp.,	442.18	512.70	538.20	592.52
Products Used in Home	148.02	165.79	148.02	165.79
Total Income	590.20	678.49	686.22	759.49

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

Table 11. - Comparison of the Returns on the Typical and Suggested Systems for 120-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1.	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Corn	49.78	62.64	-- --	-- --
Wheat	81.89	104.04	96.99	124.24
Oats	91.76	114.48	91.76	114.48
Alfalfa	97.84	97.84	102.73	102.73
Livestock and Products				
Dairy Products	203.87	228.37	203.87	228.37
Hogs	327.25	412.50	327.25	412.50
Other Cattle	124.74	141.68	89.10	101.20
Other Dairy Cattle	16.42	18.25	16.42	18.25
Poultry	94.79	96.11	139.25	141.26
Expenses				
Purchased feed	181.09	181.75	50.49	57.75
Crop Expense	59.94	68.65	70.24	80.06
Livestock Expense	23.45	23.45	23.50	23.50
14 A. Pasture Rent	38.50	42.00	-- --	-- --
10 A. Pasture Rent	-- --	-- --	27.75	30.00
Total Income	932.58	1125.75	1043.41	1217.51

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

chickens would provide a working unit for the family.

Suggested System for 40-Acre Farm

A comparison between the suggested system and the typical system of a 40-acre farm was worked out using the same requirements and standards of production that were used for the 160 acre and 80 acre farms.

In the organization of the 40-acre farm provision was made to provide hay and pasture for the livestock on the farm. Grain and livestock supplement would be a cash expense. The sales of livestock and livestock products were the main items of income.

The farm operator would be compelled to depend on some other form of work for part of his income, as the returns are small and would only provide a low standard of living as shown in Table 12. A farm flock of 150 chickens or more would increase the labor and the farm income.

A marked increase in the acreage of soil-conserving crops, especially alfalfa and sweet clover, combined with the effective use of barnyard manure will tend to increase crop yields on the farm.

Table 12. - Comparison of the Returns on the Typical and Suggested Systems for 40-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops	:	:	:	:
Livestock and Products	:	:	:	:
Dairy Cattle	99.02	110.92	151.45	167.65
Other Dairy Cattle	14.40	16.00	9.00	9.75
Other Cattle	24.58	26.56	---	---
Sows	89.25	112.50	89.25	112.50
Poultry	57.74	58.45	165.35	167.86
Expenses	:	:	:	:
Purchased Feed	166.83	173.92	102.31	122.13
Crop Expense	7.95	9.00	23.81	26.30
Livestock Expense	9.70	9.70	10.50	10.50
Totals	:	:	:	:
Receipts Minus Exp.	100.51	131.81	278.43	298.83
Products Used in Home	148.02	165.79	130.20	145.55
Total Income	248.53	297.60	408.63	444.38

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

Suggested System for a 200-Acre and 320-Acre Farms

The suggested system for the 200-acre farm is carried out on the same plan as the 160-acre farm as shown in Table 13. The pasture acreage is relatively larger on the 200-acre farm than on the 160-acre farm. The cropping system is corn, oats, wheat and legumes. Atlas sorgo is interchangeable with corn in the cropping system. The increase of labor will necessitate the hiring of one man during part of the year. A similar farming practice was carried out for the 320-acre farm as shown in Table 14.

The Organization of the County Budget

Data for setting up the county budget for Jefferson County was obtained by using the five year base 1928-1932 for acreage of crops and number of livestock. The county budget for the suggested system was obtained by multiplying the per cent change obtained by comparing the typical and suggested systems in the sample by the base figure. Production for the county was calculated by multiplying the average yield per acre by the county acreage. The same price series were used in making the county budget as were used in the typical and suggested systems.

Table 13. - Comparison of the Returns on the Typical and Suggested Systems for 200-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Wheat	161.65	207.40	148.40	190.40
Corn	125.12	157.76	201.02	253.40
Oats	160.81	197.13	131.13	160.74
Alfalfa	--- --	--- --	91.72	91.72
Tame Hay	--- --	--- --	27.69	27.69
Livestock and Products				
Dairy Cows	203.87	228.37	308.63	345.82
Other Dairy Cattle	9.22	10.25	21.60	24.00
Other Cattle	302.94	344.08	241.22	270.82
Sows	446.25	562.50	327.25	412.50
Poultry	94.79	96.11	150.54	152.44
Expenses				
Purchased Feed	92.83	97.03	--- --	--- --
Crop Expense	87.01	96.75	94.85	106.25
Livestock Expense	29.95	29.95	27.30	27.30
Hired Labor	114.25	119.80	127.10	133.76
Totals				
Receipts Minus Expenses	1181.61	1460.07	1399.95	1662.20
Products used in Home	148.03	165.79	148.03	165.79
Total Income	1329.64	1625.86	1547.98	1828.01

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

Table 14. - Comparison of the Returns on the Typical and Suggested Systems for 320-acre Farm, Jefferson County, Kansas.¹

	Typical System		Suggested System	
	No.1	No.2	No.1	No.2
Expected Sales	Dollars	Dollars	Dollars	Dollars
Crops				
Corn	134.75	168.96	245.18	309.19
Wheat	323.30	414.80	226.37	290.36
Oats	154.38	189.24	154.38	189.24
Tame Hay	83.07	83.07	---	---
Prairie Hay	149.42	149.42	---	---
Pasture for Rent 75 A.	68.75	75.00	---	---
Livestock and Products				
Dairy Products	229.97	257.60	256.30	287.10
Other Cattle	696.60	791.00	874.80	993.60
Hogs	565.25	712.50	565.25	712.50
Poultry	120.84	122.44	146.74	148.67
Expenses				
Purchased Feed	69.82	74.86	46.83	47.88
Crop Expense	129.72	145.42	120.35	138.14
Livestock Expense	38.22	38.22	40.30	40.30
Hired Labor	150.00	160.00	155.00	165.00
Totals				
Receipts Minus Exp.	2138.57	2545.47	2146.48	2539.29
Products used in Home	148.03	165.79	148.03	165.79
Total Income	2286.60	2711.26	2294.51	2705.08

¹Source: Calculated from material obtained from the Department of Economics and Sociology.

The county budget is the result of over two thousand individual farm systems and practices which are followed in the county. Distinct differences are to be noted by different farmers of the county in kind and acreage of crops grown and kinds and numbers of livestock kept. These individual farm practices, although varied, tend to cluster about definite farming systems which represent average farming practices for each type and size of farm.

In Table 15 a comparison of the returns on the typical and suggested systems is made. It is recognized that the suggested system would necessitate the disposal of extra livestock products, alfalfa and tame hay.

The per cent change in the suggested county system as compared to the typical system is shown in Table 16. A decrease of nine per cent in the acreage of corn, and eight per cent in oats, with a high per cent increase in the soil conserving crops were the main crop changes. There was a 36 per cent increase in dairy cows, 29 per cent in poultry and a 32 per cent decrease in other cattle.

In the organization of the suggested system an increase of approximately five hundred thousand dollars was indicated for the farm operators. Similar results were obtained by using adjusted and non-adjusted farm prices.

Table 15. - Comparison of the Returns on the Typical and Suggested Systems for Jefferson County, Kansas.¹

	: Typical System (Thousands)		: Suggested System (Thousands)	
	: A ²	: B ³	: A ²	: B ³
Expected Sales	Dollars	Dollars	Dollars	Dollars
Corn	366	462	236	298
Wheat	224	287	204	262
Oats	128	157	104	127
Alfalfa	---	---	170	170
Tame Hay	---	---	27	27
Livestock and Products				
Milk Cows	417	456	617	691
Other Cattle	557	644	595	450
Sows	888	1,119	888	1,119
Poultry	222	225	311	316
Expenses				
Purchased Feed	268	272	14	14
Crop Expenses	106	123	150	175
Livestock Expenses	58	58	60	60
Hired Labor	104	112	149	157
Receipts Minus Expenses	2,276	2,785	2,579	3,032

¹Source: Calculated from material from 1930 Census and Department of Economics and Sociology.

²Non-adjusted Commodity Prices.

³Adjusted Commodity Prices.

Table 16. - Typical and Suggested Crop Acres, Livestock Production and Per Cent Change for Jefferson County, Kansas.¹

Commodity	1934 or 1935 ²		Base		Change from 1928-1932		Suggested Acres
	Acres	Acres	Acres	Acres	Per Cent Change	Actual Change	
Crops	Acres	Acres	Acres	Acres	Per Cent	Acres	Acres
Acres in Soil							
Dep. Crops	-----	-----	146,741		-8 %	-11,557	135,184
Corn	68,033	87,267	89,804		-9 %	- 8,082	81,722
Wheat	23,907	32,122	27,840		-5 %	- 1,392	26,448
Gr. Sorghum ⁴	10,418	2,242	4,070		+2 %	+ 81	4,151
Oats	17,808	19,480	25,027		-8 %	- 2,002	23,025
Acres Soil							
Corn Crops	-- ---	14,216	13,186		+ 139 %	+ 18,398	31,583
Alfalfa	10,153	10,585	10,204		+ 68 %	+ 6,938	17,142
Sweet Clover	-- ---	3,631	2,982		+ 384 %	+ 11,460	14,442
Prairie Hay	-- ---	7,917	5,945		---	-- ---	5,945
Tame Hay	-- ---	- ---	6,771		+ 93 %	+ 6,297	13,068
Pasture	138,555	124,867	130,921		- 4 %	- 5,237	125,684
Livestock	No	No	No		-	No	No
Horses, Mules	8,782	10,448	9,338		-	- ---	9,338
Total Cattle	31,353	32,798	27,312		7 %	- 1,892	25,419
Milk Cows	-- ---	9,253	10,071		+ 36 %	+ 3,625	13,696
Other Cattle	-- ---	23,545	17,241		- 32 %	- 5,577	11,723
Sows	2,953	5,812	8,318		--	- ---	8,318
Hens ⁵	189,528	268,209	216,923		+ 29 %	+ 62,907	279,830

¹Source: Calculated from the Kansas State Board of Agriculture.

²Report of 1935 Census.

³Report of 1930 Census.

⁴All Sorghum Crops.

⁵Total Chickens over Three Months Old.

Summary and Conclusions

Jefferson County is in the Type-of-farming Area 3, which is an area of general farming. Corn, oats, wheat and alfalfa are the main crops. With the exception of wheat these crops are used mainly in the production of meat animals and dairy products. The yields per acre for grain crops have remained fairly constant during the last forty years. During the ten-year period ending in 1934, corn yields were slightly below the other ten-year periods. This was partially due to adverse climatic conditions and not entirely to decrease in the fertility of the soil.

Physical, biological and economic factors have affected the type of farming in Jefferson County. The 160-acre animal-specialty farm is the most common size and type of farm. The average farmer is using his best efforts to develop those combinations of crops and livestock enterprises that are best suited to his individual farms. A high per cent of the farms have some rough land that is suited for the grazing of livestock. There are few native pastures remaining in the county, therefore legumes and tame pastures are used for pasture. A great deal of the crop land is infested with weeds which compete with the growing crops for moisture and soil fertility.

Farm budgets were worked out for eight typical farms which represent a large number of individual farm systems and practices for the county. (25 per cent.) Suggested farm budgets were calculated on the same farms and the percentage increase or decrease was determined by dividing the acreage and the number of livestock of the typical systems into the suggested systems. The per cent change in the suggested system as compared with the typical system was as follows. Nine per cent decrease in corn, eight per cent in oats, five per cent in wheat and an increase of two per cent in grain sorghums, 68 per cent in alfalfa, 384 per cent in sweet clover and 93 per cent in tame hay. The suggested system would have eight per cent less in soil depleting crops and 139 per cent more in soil conserving crops.

The suggested system calls for an increase of 36 per cent in dairy cows, 29 per cent in poultry and a 32 per cent decrease in other cattle. Hog production remained about steady due to low transportation cost for marketing, supply of home grown feed, and abundant supply of legumes for pasture. The nearness to areas of urban population affords a market for farm products. The presence of a cheese factory and a whole milk creamery is an important reason for the development of the dairy enterprise.

A farm management program will aim to promote and encourage the best utilization of the individual farmer's resources, conserve soil fertility and provide the maximum farm income over a period of years.

The raising of dairy cows, hogs, other cattle, and poultry combined with a well balanced ration for livestock, the use of home grown feed, and the maintenance of pasture improvement would enable the farmer to receive a profitable return and create a place to be desired for the rearing of a family.

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APPENDIX

Table 17. - Production and Feed of Livestock in Area 3.

Kind of Animal	Production	Roughage Required				Grain Required		Protein Supplement	
		Non Legumes T.	Legumes T.	Silage T.	Pasture Acres	Corn or Sorghums Lbs.	Barley or Oats Lbs.	Kind	Quantity
Work Horses	800 hours work	1	1	-	2	1500	(and) 1000		
Milk Cows									
No Silage	200 lbs.	1½	1½	-	4	250	(or) 300		
Milk Cows									
Silage	200 lbs.B.F.	1	1½	2	4	250	(or) 300		
Milk Cows									
No Silage	225 lbs.B.F.	1½	1½		4	450	(or) 540		
Milk Cows									
Silage	225 lbs.B.F.	1	1½	2	4	450	(or) 540		
Other Cattle per Livestock Union									
With Silage	550 lbs.	1	-	2½	4	350	---	C.S. Cake	150 lbs.
Other Cattle per Livestock Union									
Without Silage	550 lbs.	3	-	-	4	350	---	C.S. Cake	150 lbs.
Other Cattle per Livestock Union									
Legume hay, Silage	550 lbs.	½	½	2½	4	350	---		
Other Cattle per Livestock Union									
Leg.hay,no Silage	550 lbs.	2¾	¼	-	4	350	---		
Hogs per cwt.	2000 lbs.								
per Sow		-	-	-	½ Leg.	350	---	Milk fed: Tankage	25 lbs. 10 lbs. without Legumes
Poultry per 100 Hens	8000 Eggs								
Poultry	400 lbs.								
						7,500	---		

Table 18. - Crop Production Requirements in Area 3.

Crop and Method	Seed per Acre	Twine per Acre	Hours per Acre	
	bu.	lbs.	Man	Horse
Wheat-shock threshed	1.25	2	10.0	24.0
Oats-shock threshed	2.00	2	8.0	18.5
Oats-three horses			10.8	22.7
Corn husk from standing stalks	.10		13.1	37.0
Corn-not more than three horses			14.8	34.4
Corn-two horses			16.6	32.
Rowed Sorghums-bind, shock, head	.20	2.5	13.4	27.2
Rowed Sorghums-three horses			19.8	27.4
Sowed Sorghum hay			10.0	23.0
Sowed Sorghum hay-three horses			12.7	20.4
Sudan Pasture	.75		4.5	18.0
Sudan hay			10.0	23.0
Alfalfa put in barn			12.9	17.3
New Alfalfa-annual cost	.25		1.2	4.8
Tame Pasture-annual cost			1.2	4.8
Sweet Clover Pasture	.25		1.7	6.0
Prairie Hay stacked			5.0	7.0

Kind of Livestock	Man Hours	Horse Hours	Cash Cost
Work Horses, per Head	60	10	\$ 0.50
Colts, per Head	15	2	.25 ²
Milk Cows, per Head	120	10	.75
Other Dairy Stock, per L.U.	25	5	.50
Other Cattle, per L. U.	50	15	.25
Hogs, per cent, Produced	2½	2½	.25
Poultry, per 100 Hens	200	10	1.00

¹Source: Department of Economics and Sociology, Kansas State College.

²Does not Include Service Fees.

Livestock Products for Home Use.

	Typical and Suggested Organizations
Home Use for Food	
Butter Fat	250 pounds
Poultry ¹	100 pounds
Beef ¹	275 pounds
Eggs	200 dozen
Pork ¹	500 pounds
Other Use - Eggs Set	
100 Hen flocks	25 dozen
150 Hen "	40 dozen
200 Hen "	50 dozen

¹Live Weight.

Table 20. - Commodity Prices for Series A and Series B.

Commodity	Unit	Series A	Series B.
Wheat	bu.	.53	.68
Corn	bu.	.46	.58
Oats	bu.	.31	.38
Barley	bu.	.42	.52
Grain Sorghum	bu.	.39	.47
Alfalfa Seed	bu.	9.00	10.00
Red Clover Seed	bu.	10.80	12.00
Sweet Clover Seed	bu.	3.95	4.35
Lespedeza	bu.	1.62	1.80
Alfalfa Hay	ton	12.23	12.23
Prairie Hay	ton	6.23	6.23
Other Tame Hay	ton	9.23	9.23
Sudan Seed	bu.	5.00	5.50
Potatoes	bu.	.81	1.04
Lime	ton	1.25	1.50
Hogs	cwt.	5.95	7.50
Beef Cattle	cwt.	6.48	7.36
Mutton	cwt.	7.24	7.49
Chicken	lb.	.114	.114
Eggs	doz.	.154	.157
Butterfat	lb.	.233	.261
Cost Item			
Fuel	gal.	.116	.116
Wages with Board	mo.	22.85	23.96

Table 20. - (Con't.)

Commodity	Unit	Series A	Series B
Wages Without Board	mo.	34.06	35.65
Wages with Board	day	1.31	1.37
Wages without Board	day	1.76	1.84
Tankage	cwt.	1.89	2.10
Shorts	cwt.	1.25	1.40
Cottonseed Cake	cwt.	1.80	2.00
Twine	lb.	.08	.10
Threshing Wheat	bu.	.06	.07
Threshing Oats	bu.	.04	.045
Threshing Barley	bu.	.05	.055

Source: The Department of Agricultural Economics of
Kansas Agricultural Experiment Station.

Series A was based upon 1928-1932 production with prospective demand for 1936-1940. While Series B was based on the assumption of moderate adjustment in production from the 1928-1932 level with estimates for 1936-1940 demand.