

AN AGRICULTURAL PROGRAM FOR RILEY COUNTY

by

SAMUEL DAVID CAPPER

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TABLE OF CONTENTS

	Page
Introduction.....	1
Acknowledgments.....	1
Description of Area.....	2
Rainfall and Climate.....	5
Crops Adaptable.....	8
History and Development.....	11
Changes in Acreage of Principal Crops.....	12
Changes in Number of Livestock.....	29
Trend in Crop Yields.....	35
Markets and Transportation.....	37
The Present Type of Farms.....	38
Suggested Farming Systems.....	45
Suggested System for 160-Acre Farms.....	53
Suggested System for 240-Acre Farms.....	66
Suggested System for 400-Acre Farms.....	66
Other Typical Systems in Use in Riley County.....	86
Putting the Suggested System Into Operation.....	87
Conclusions.....	88
Program Suggested.....	88

FIGURES

	Page
1. Type of farming areas in Kansas.....	3
2. Monthly rainfall at Manhattan, Riley county.....	6
3. Trend of farm and city population in Riley county, five-year moving average.....	14
4. Acreage of corn in Riley county.....	15
5. Average yield of corn in Riley county. Average price per bushel.....	16
6. Acreage of wheat seeded in Riley county.....	17
7. Abandoned wheat acreage in Riley county.....	18
8. Acreage of wheat harvested in Riley county.....	19
9. Average yield of wheat per acre in Riley county. Cost of production per bushel. Average price per bushel.....	20
10. Trends of yield of corn, oats and wheat, in Ri- ley county, five-year moving average.....	21
11. Acreage of alfalfa in Riley county.....	22
12. Average yield alfalfa per acre in Riley county..	23
13. Acreage of oats in Riley county.....	24
14. Average yield of oats per acre in Riley county..	25
15. Acreage of sorghums, (kafir, feterita, milo, jerusalem corn) in Riley county.....	26
16. Number of sheep in Riley county.....	27
17. Number of hogs in Riley county.....	32

18.	Number of cattle (other than milk cows) in Riley county.....	33
19.	Number of milk cows in Riley county.....	34
20.	Value of poultry and eggs sold in Riley county...	36
21.	Comparison of percentage of far area in each crop in Riley county.....	41
22.	Comparison of number of livestock per hundred acres in Riley county.....	42
23.	Distribution of man labor by weeks on 160-acre farm with suggested system.....	61
24.	Distribution of man labor by weeks on 160-acre farm with typical system.....	61
25.	Distribution of man labor by weeks on 400-acre farm with suggested system.....	70
26.	Distribution of man labor by weeks on 400-acre farm with typical system.....	70

TABLES

Table

I.	Areas of different soils.....	4
II.	Monthly rainfall at Manhattan, Riley county Kansas.....	7
III.	Number of farms, land in farms, value of land and buildings per acre and population in Riley county, Kansas, 1860-1925.....	13
IV.	Farm area, percentage of farm area in each crop, and livestock per 100-acres, Riley co.,...	40

V.	Representative farms grouped according to size showing acres in crops, pasture and waste land.....	43
VI.	Summary of size groups of the farms in Riley county.....	44
VII.	Standard labor requirements per acre for the various operations of crop production..	46
VIII.	Material requirements per acre and threshing costs per bushel for crops.....	47
IX.	Standard feed and labor requirements for livestock.....	48
X.	Normal yields of crops.....	49
XI.	Prices of farm products and cost of materials.....	50
XII.	Crop production and use of crops on suggested organization for 160-acre farm Riley county.....	52
XIII.	Feed used by livestock, suggested organization for 160-acre farm, Riley county....	56
XIV.	Livestock production and use of products suggested 160-acre farm Riley co.....	57
XV.	Comparison of suggested system with a typical system for 160-acre, 75 crop acres.	58
XVI.	Comparison of suggested system with a typical system for 240-acre farm, 150 crop acres.....	63
XVII.	Comparison of suggested system with a typical system for 400-acre farm, 125 crop acres.....	67
XVIII.	A typical system for 80-acre farm, 40 crop acres.....	71

XIX.	A typical system for 160-acre farm, 125 crop acres.....	74
XX.	A typical system for 200-acre farm, 100 crop acres.....	77
XXI.	A typical system for 400-acre farm, 200 crop acres.....	80
XXII.	A typical system for 640-acre farm, 220 crop acres.....	83

INTRODUCTION

The purpose of this study is to analyze the farming systems conducted on typical farms of Riley county and suggest improved systems which may be used by the individual farmer in arranging his agricultural program and to serve as a guide for the county agent and extension forces in building a county agricultural program.

The methods used in this study are: a historical study of yield, crop acreage, number of livestock, and prices taken from Kansas State Board of Agriculture reports; finding the prevailing practice on typical farms by analysis of the county assessors' reports and a study of the farm account books kept by Riley county farmers; consideration of experimental work of the Kansas Agricultural Experiment Station, Manhattan, Kansas; interviews with many Riley county farmers and consultations with specialists as to different phases of crop and livestock production.

ACKNOWLEDGMENTS

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and Morris Evans, for their many helpful criticisms and suggestions.

DESCRIPTION OF AREA

Riley county is situated in northeastern Kansas and is the second county south from the Nebraska line, and the fourth west of the Missouri river. The County is irregular in outline. In topography, Riley county has the appearance of a much dissected high plateau, consisting of three distinct topographical divisions.

The first of these constitutes the high rolling prairies in the northeastern, central and western parts of the county, covering approximately one-half the county. These prairies are very rolling. Being the highest land of the county, the stream valleys cut into this plateau and its outward boundaries are irregular.

The second topographic division consists of land along rivers and creeks, and is found in the northern, southern, and eastern parts of the county. The river valleys range from one mile to three or four miles in width and are nearly level or are gently sloping and rolling. The creek valleys range from one-fourth to one-half mile in width.

The third topographic division is located principally in the northeastern and southern parts of the county, and

- I. General farming. Corn, hay, pasture, wheat.
- II. General farming. Corn, hay, pasture, dairying.
- III. General farming. Corn, alfalfa, whole milk.
- IV. Corn belt. Corn, alfalfa, hogs, beef cattle.
- V. Bluestem Belt. Cattle grazing.
- VI. Wheat belt. Wheat, corn, alfalfa, livestock.
- VII. Wheat belt. Wheat, pasture.
- VIII. Corn belt. Corn, wheat.
- IX. Wheat belt. Wheat, corn, grain.
- X. Wheat belt. Wheat, sorghums, pasture.
- XI. Wheat belt. Wheat, corn, pasture.
- XII. Short grass. Cattle grazing.

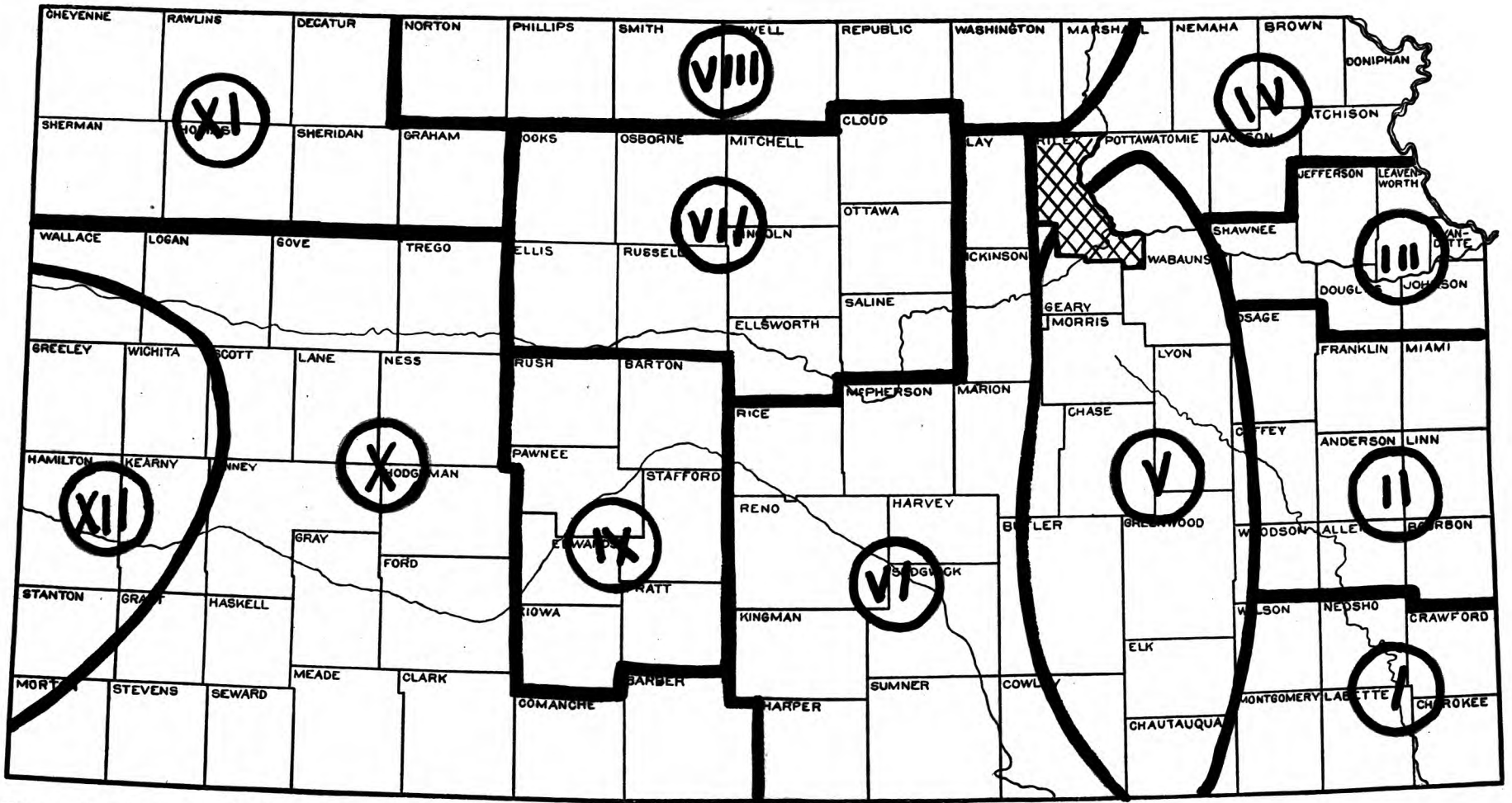
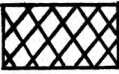


Fig. 1—Type of Farming Areas in Kansas. Source - Type of farming areas from unpublished MS. by J. A. Hodges, F. F. Elliott and W.E.Grimes.

 Area of study. Riley County.

occupies an intermediate position between the plateau and the valleys, and consists of the broken and hilly part of the county, ranging from the edge of the prairie down to the valley bottoms.

Of the eight soils mapped in Riley County, two are of residual origin, five are alluvial, and one consists of water deposited material. The following table gives the names and areas of the several soil types.

Table I. Areas of Different Soils. (a)

Soil	Acres	Percent
Oswego silt loam	193,152	47.6
Rough Stony land	100,992	24.9
Wabash silt loam	42,368	10.4
Marshall silt loam	39,808	9.8
Laurel silt loam	17,600	4.3
Laurel fine sandy loam	5,056	1.3
Wabash silt clay	4,992	1.2
Laurel fine sand	2,112	.5
Total	406,080	100.0%

(a) Source - United States Department of Agriculture Soil Survey of Riley County. By William T. Carter, Jr., and Howard C. Smith, Bureau of Soils, issued 1908.

Rainfall and Climate

The climate of Riley county is marked by extremes of precipitation and temperature. The annual precipitation has varied from 17 to 47 inches, and the temperature from 115 degrees F. to 32 degrees F. The average yearly rainfall for the 12 years, 1914 to 1925 was 32.6 inches. The distribution is valuable for crops as only about one-tenth falls in the three winter months, the remainder being distributed through the growing season, with a maximum rainfall in the months of May, June, July and sometimes August. The rainfall is not always evenly distributed and occasional dry spells may occur, although droughts sufficient to cause serious damage to crops are seldom experienced. More than half of the winds blow from a southerly direction at an average of 12 miles an hour and bring the bulk of the moisture from the Gulf of Mexico. Destructive winds are not common; occasional hail storms affect local areas, but crops are so seldom destroyed that insurance against hail is not practiced. The average depth of the annual snowfall is 22 inches. As a general rule, however, the ground is seldom covered for any length of time, and plowing during the winter is not unusual. Thunderstorms occur from April to August or September.

MONTHLY RAINFALL At Manhattan, Riley County, Kansas (a)

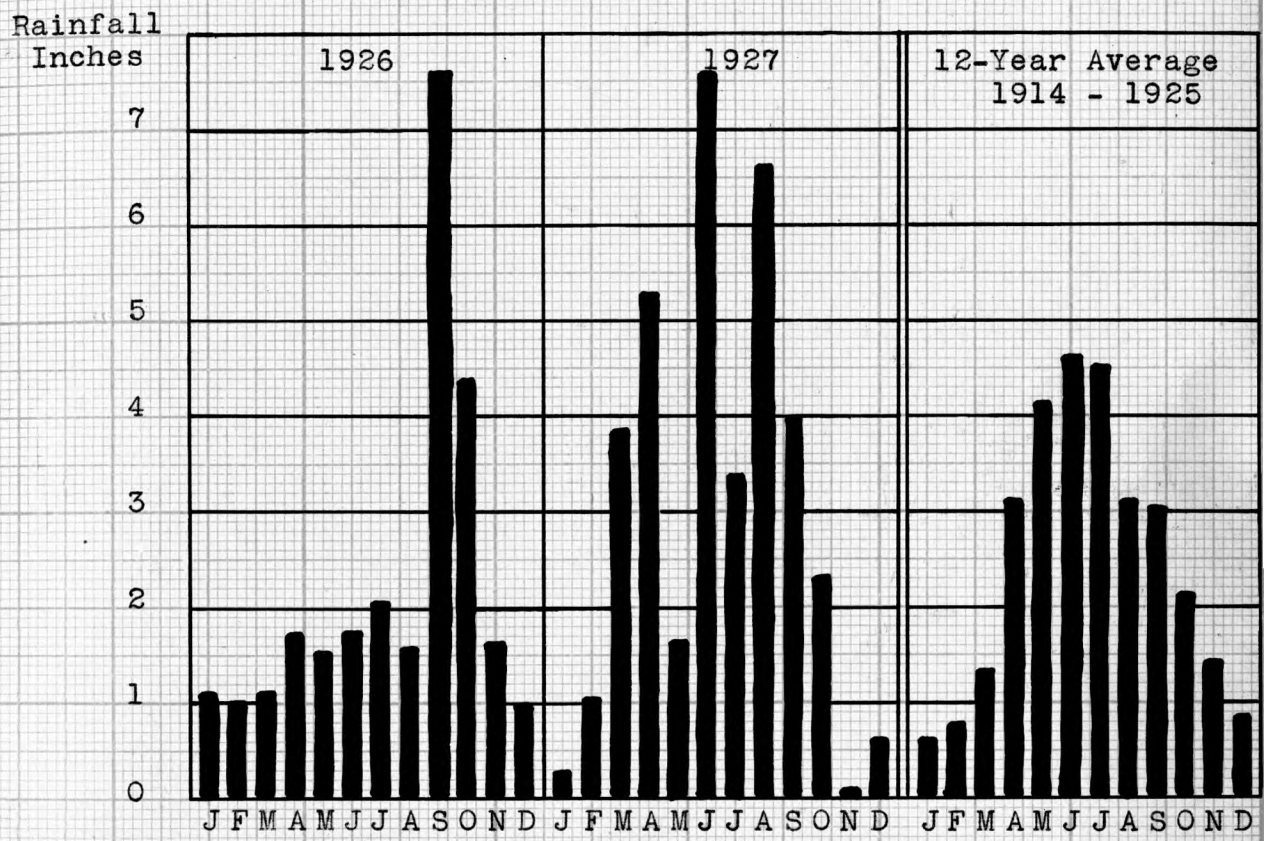


Figure 2 - (a) Source - United States Weather Bureau Records.

Table II. — Monthly rainfall at Manhattan, Riley county, Kansas. (a)

Month	12-year average 1914-1925	1926	1927
Jan.	.66	1.15	.33
Feb.	.80	1.02	1.09
Mar.	1.36	1.12	3.88
Apr.	3.17	1.73	5.4
May	4.16	1.55	1.67
June	4.66	1.74	7.59
July	4.63	2.02	3.42
Aug.	4.12	1.60	6.65
Sept.	4.08	7.55	4.00
Oct.	2.14	4.40	2.31
Nov.	1.43	1.65	.09
Dec.	.85	1.01	.64
Total	32.06	26.54	37.37

(a) Source - United States Weather Bureau Records.

Riley county has a long summer of high average temperature, favorable to all the staple crops. The average growing season from the last killing frost in the spring to the first killing frost in the fall over a period of ten years, averaged 172 days, which gives time for all crops. The average dates of the last and first killing frosts are April 20 and October 9, respectively. The April frost seldom injures vegetation. The extreme heat of summer approximates 90 degrees F. for nearly 40 days on the average. The summer nights average 30 degrees F. cooler than the days. The climate is favorable for health and conducive to the highest development of agriculture.

Crops Adaptable

The Oswego silt loam which makes up the major portion of Riley County soil types is derived principally from the weathering of the underlying shales, only a small percentage being derived from the Cherty limestone, therefore, only a few flint fragments are found in the soil or subsoil. Where uncultivated, the Oswego silt loam is covered with a natural growth of prairie grass, principally Blue Stem with small patches of Buffalo grass. This soil is adapted to the production of grass, corn, wheat, alfalfa, sweet clover, oats, kafir and sorghum. Demonstration soil test plots on

alfalfa and sweet clover carried on in Riley county for the past four years indicate that some of the poorer upland soils are beginning to need lime. The application of barnyard manure and superphosphate in every case shows increased yields with values much in excess of the cost of application.

Riley county soil, judging from the decreasing crop yields, has been cropped with too little attention to the maintenance of its natural productiveness. Percentages of crops grown in Riley county are approximately as follows: Corn 40-45 percent; wheat, 15-20 percent; alfalfa and clover, 10-15 per cent; oats, 10 percent; kafir, 2-5 percent; sorghum and miscellaneous crops, 2-5 percent.

Due to the distribution of rainfall, corn is a fairly sure crop although taking the county over, the cost of production runs too close to the return per acre, to make the crop very profitable. Wheat production, due to competition with the wheat growing section further west in Kansas, does not seem to be at all profitable, the cost of production nearly equalling, if not exceeding, the return per acre most years. No doubt as soon as the wheat harvesting machinery wears out on most farms of Riley county the wheat acreage will be given over to more profitable crops.

In the case of oats, the cost of production for the

period 1920 to 1927 has equalled or exceeded the return per acre each year with the exception of small margins in 1920 and 1927.

Alfalfa is Riley county's most profitable crop, and while the acreage is growing less in Riley county, as it is in the state of Kansas, due to trouble in maintaining stands the cost of production per ton and the return per ton show a very good margin, and in addition to being a cash crop, alfalfa builds the soil and shows very beneficial effects on succeeding crops in the rotation. So far, not a very large acreage of the soil where alfalfa is being grown seems to need lime. Barnyard manure and superphosphate, however, show profitable returns where used with alfalfa. The wheat yield each year, outside of that used for seed is sold and shipped outside the county for milling. A great deal of the forage and grain produced is fed to livestock within the county. A great number of hogs and steers are fed during the winter. Several carloads of alfalfa are shipped each year to the central markets.

Sweet clover is used principally as a soil improvement crop and some as a supplementary pasture crop where beef cattle are grazing on native pasture and sweet clover at the same time. It is also used for hog pasture. Sweet clover

is usually planted with oats as a nurse crop in the spring and plowed under the next spring in time to plant corn or kafir or sorgo for a silage crop.

Other crops, such as millet, rye, timothy, fruit and truck take up less than two per cent of the crop area.

History and Development

The first white settlers came to Riley county in 1853. Riley county received its name from Fort Riley, which had been established on the Government Reservation in the southwest part of the county. The county was organized in 1855. By 1860 the population was given by the Federal census as 1,224. Manhattan, the principal city in the county, had been organized in 1854.

The population of the county increased quite rapidly until 1890 after which the increase has been more gradual with the exception of the period 1920 to 1925 when a decided increase in city population is apparent. (See Fig.3) The farm population has decreased since 1890 while the city population, which includes all persons in incorporated places in the county, has increased gradually since 1885. The decrease in farm population has amounted to approximately 1000 and is probably accounted for by a study of the average size of farms since 1870, at which time the average

size of farms was 153 acres. In 1925 it had grown to 230 acres. (See Table III.) The improved land per farm reached its peak in about 1890 and the greatest number of farms was in 1900. General farming, that is, crop production, to be fed to livestock and surplus sold for cash has been practiced. The tendency to increase the size of farms seems to continue, an indication of this is an increase in the number of tractors being used on Riley county farms.

Changes in Acreage of Principal Crops

The corn acreage, which as a rule is more than double the acreage of any other of the grain crops, has remained fairly constant for the past 16 years, running between 60,000 and 70,000 acres per year, and taking up approximately 40 to 50 per cent of the tillable land. (See Figs. 4, 5 and 10).

Wheat, which comes next in the area used, occupies less than half the area that corn does, and has ranged in the last 16 years from 12,500 to 42,500 acres, the large increase in area coming in war time. (See Figs. 6, 7, 8, 9 and 10) Increase in wheat acreage is also noted in poor corn years.

The alfalfa acreage has fluctuated from approximately 13,000 acres to 23,000 acres, and in 1927 occupied less

Table III. — Number of farms, land in farms, value of land and buildings per acre and population in Riley County, Kansas, 1860-1925
(a)

Year	Farms in county	Land in farms	Average acreage per farm	Improved acreage per farm	Value of land and buildings per acre	Population
	Number	Acres	Acres	Acres	Dollars	Number
1860	76	15,355	202	50.4	10.51	1,224
1870	655	100,279	153	43.3	18.03	5,105
1880	1,333	219,035	164.3	89.6	11.23	10,430
1890	1,576	317,201	201.0	149.6	20.45	13,183
1900	1,832	389,619	212.6	130.8	20.19	13,828
1910	1,671	377,576	226.0	136.2	47.19	15,783
1920	1,572	339,636	216.1	114.9	78.81	20,650
1925	1,517	349,788	230.6	---	68.85	19,719

(a) Data from U.S. Census.

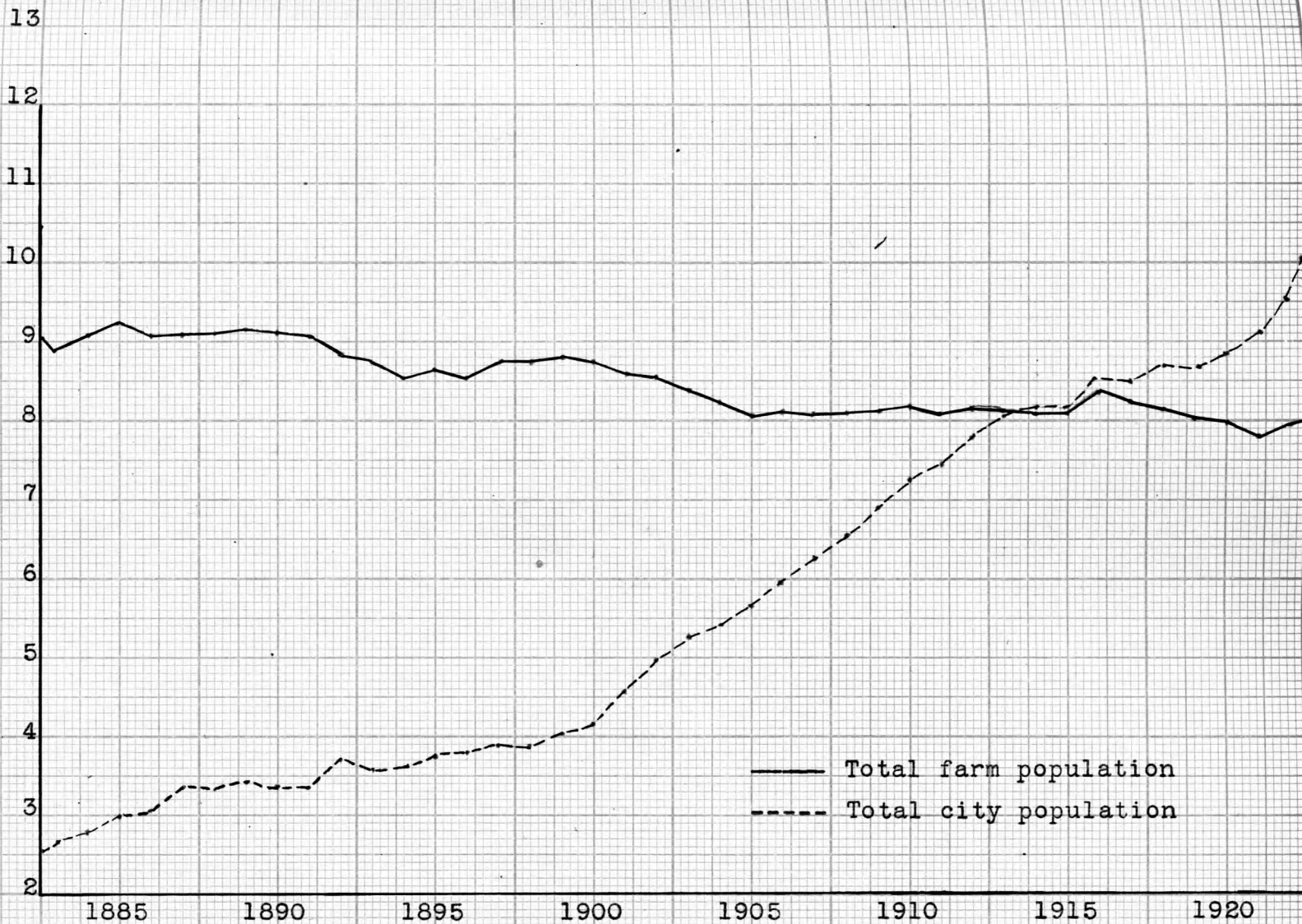


Fig. 3 - Trend of farm and city population in Riley county, five year moving average (a)
 (a) Data taken from U.S. Census

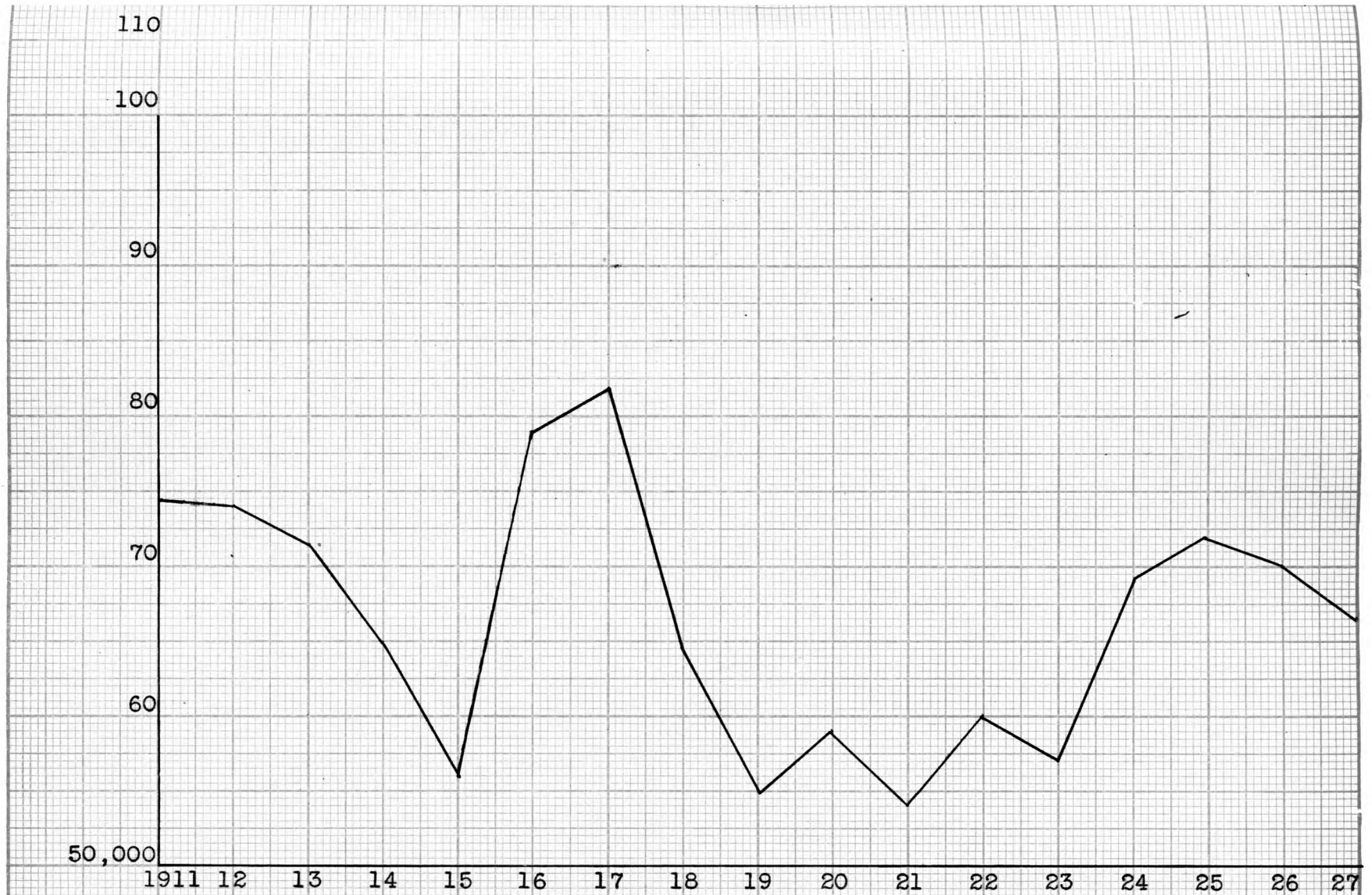


Fig. 4 - Acreage of corn in Riley County.
Source - Biennial Reports, State
Board of Agriculture.

Yield per
acre (bu)

Price per bushel
and cost of pro-
duction.

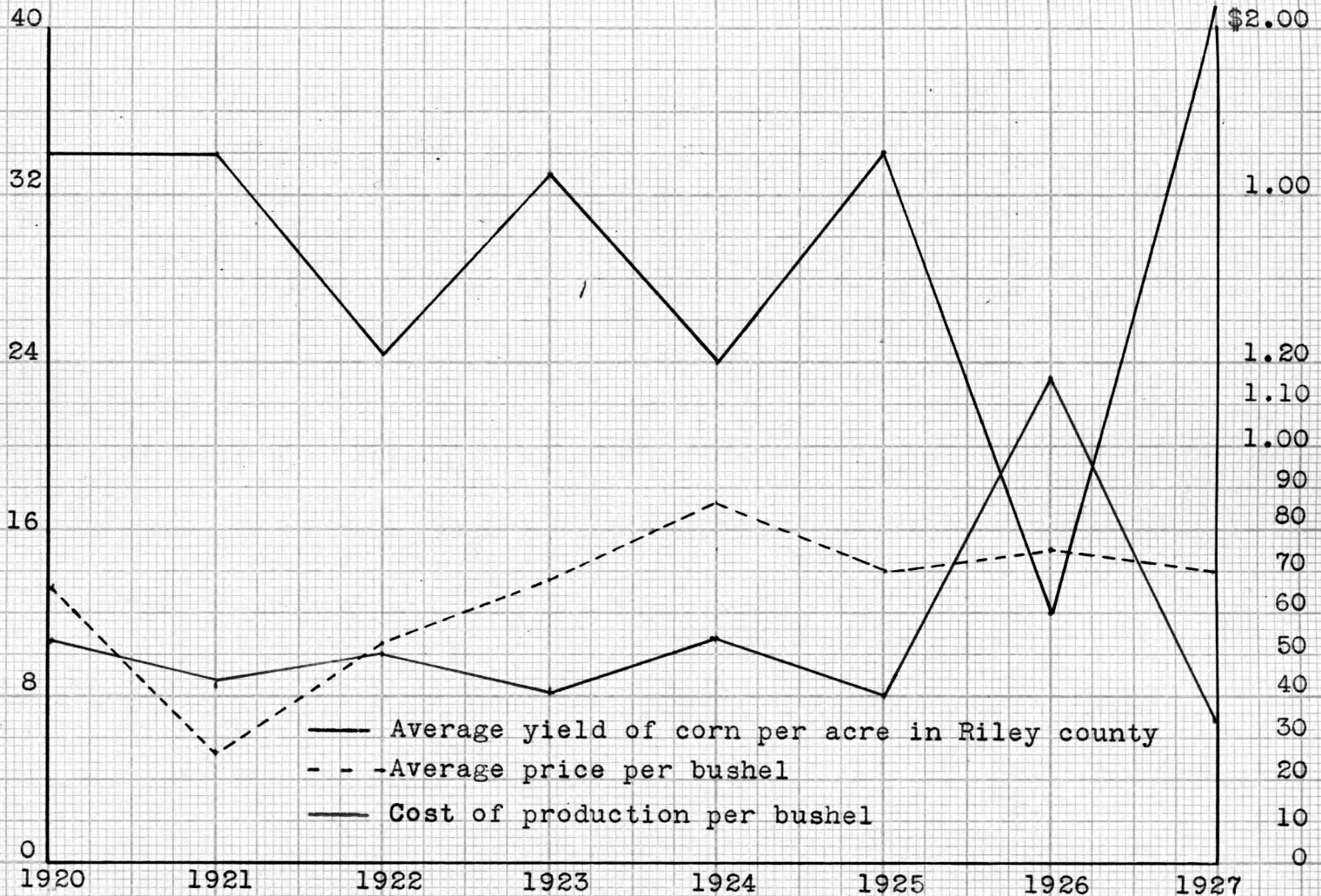


Fig. 5 - Source - Biennial Reports, State Board of Agriculture.



Fig. 6 - Acreage of wheat seeded in Riley county.

Source - Biennial Reports, State Board of Agriculture.

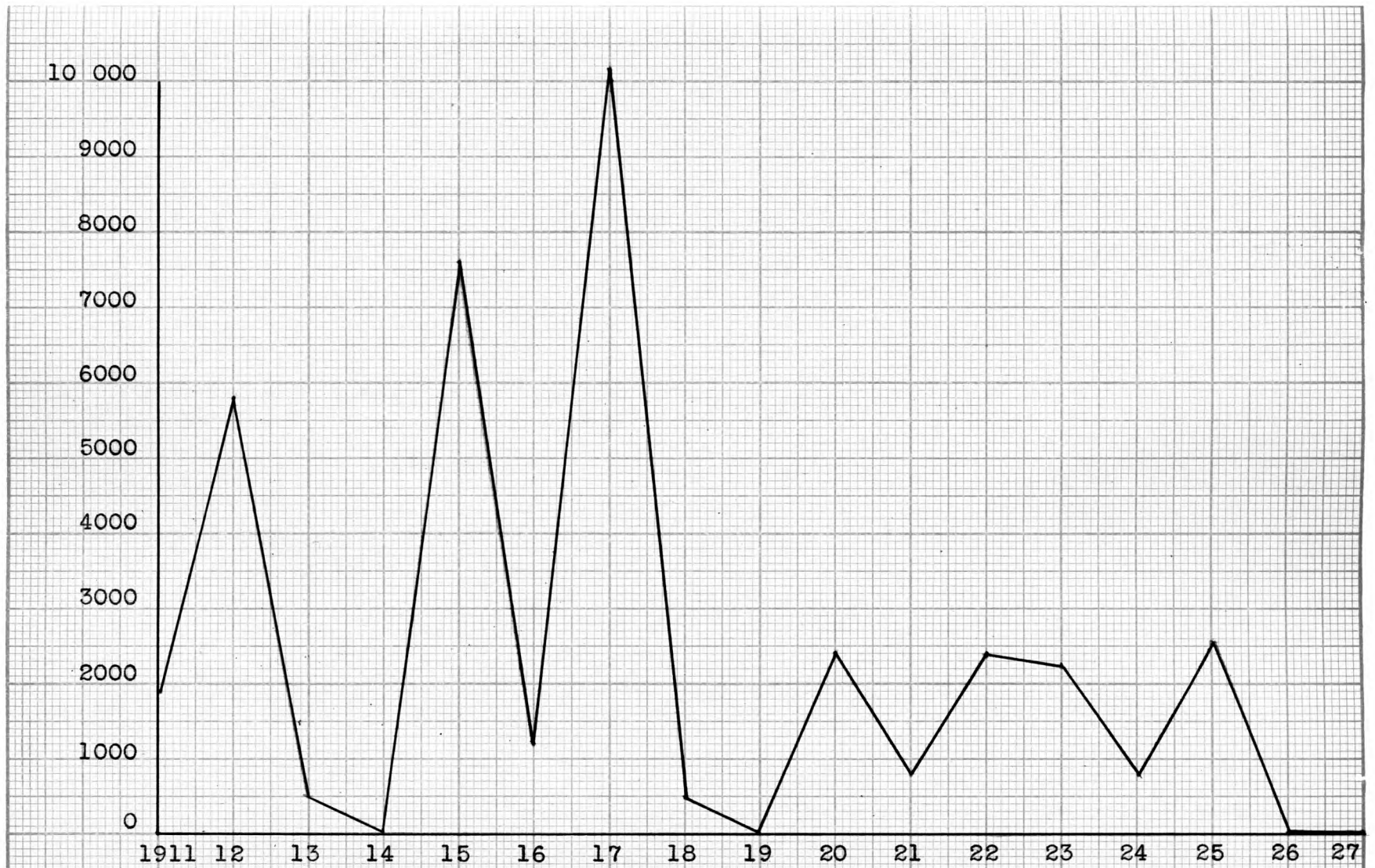


Fig. 7 - Abandoned wheat acreage in Riley county.

Source - Biennial Reports, State Board of Agriculture.



Fig. 8 - Acreage of wheat harvested in Riley county.

Source - Biennial Reports, State Board of Agriculture.

Yield per
acre (bu)

Price per bushel
and cost of pro-
duction.

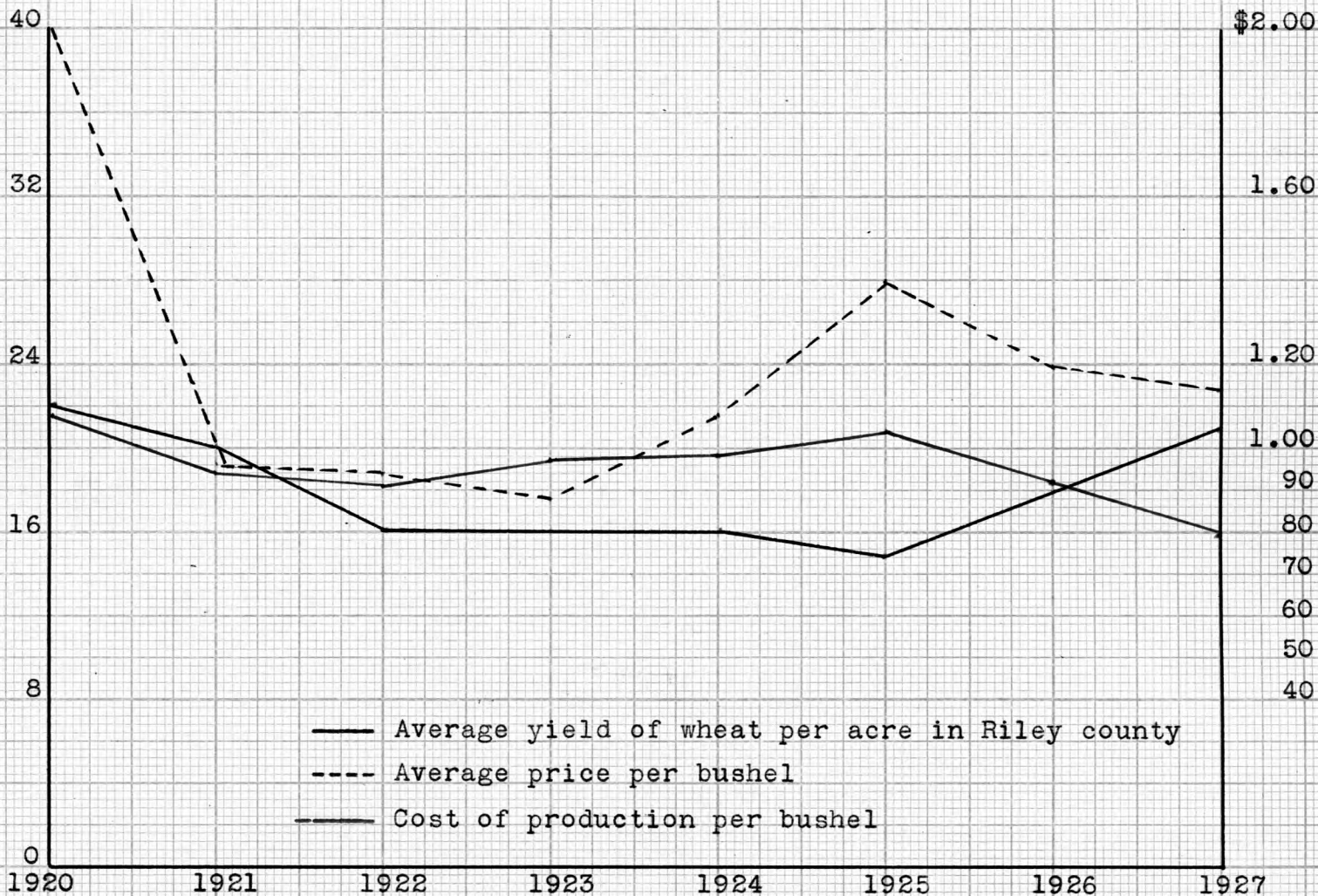


Fig. 9 - Source - Biennial Reports, State Board of Agriculture.

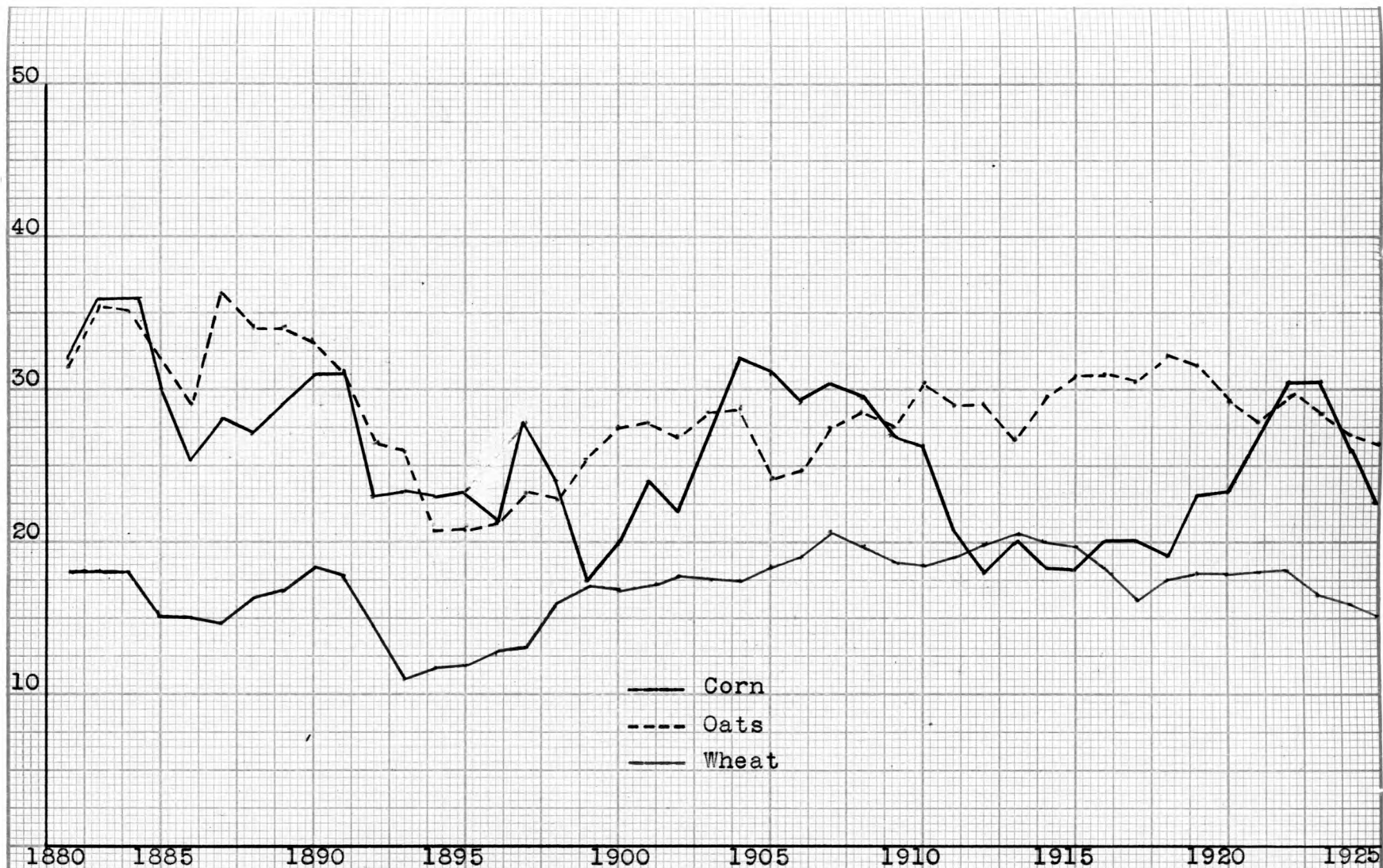


Fig. 10 - Trends of yield of corn, wheat, oats in Riley county-five year moving average.

Source - Biennial Reports, State Board of Agriculture

23 000
22 500
22 000
21 500
21 000
20 500
20 000
19 500
19 000
18 500
18 000
17 500
17 000
16 500
16 000
15 500
15 000
14 500
14 000
13 500
13 000
12 500

1911 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Fig. 11 - Acreage of alfalfa in Riley county.

Source - Biennial Reports, State Board of Agriculture.

Yield per
acre
(tons)

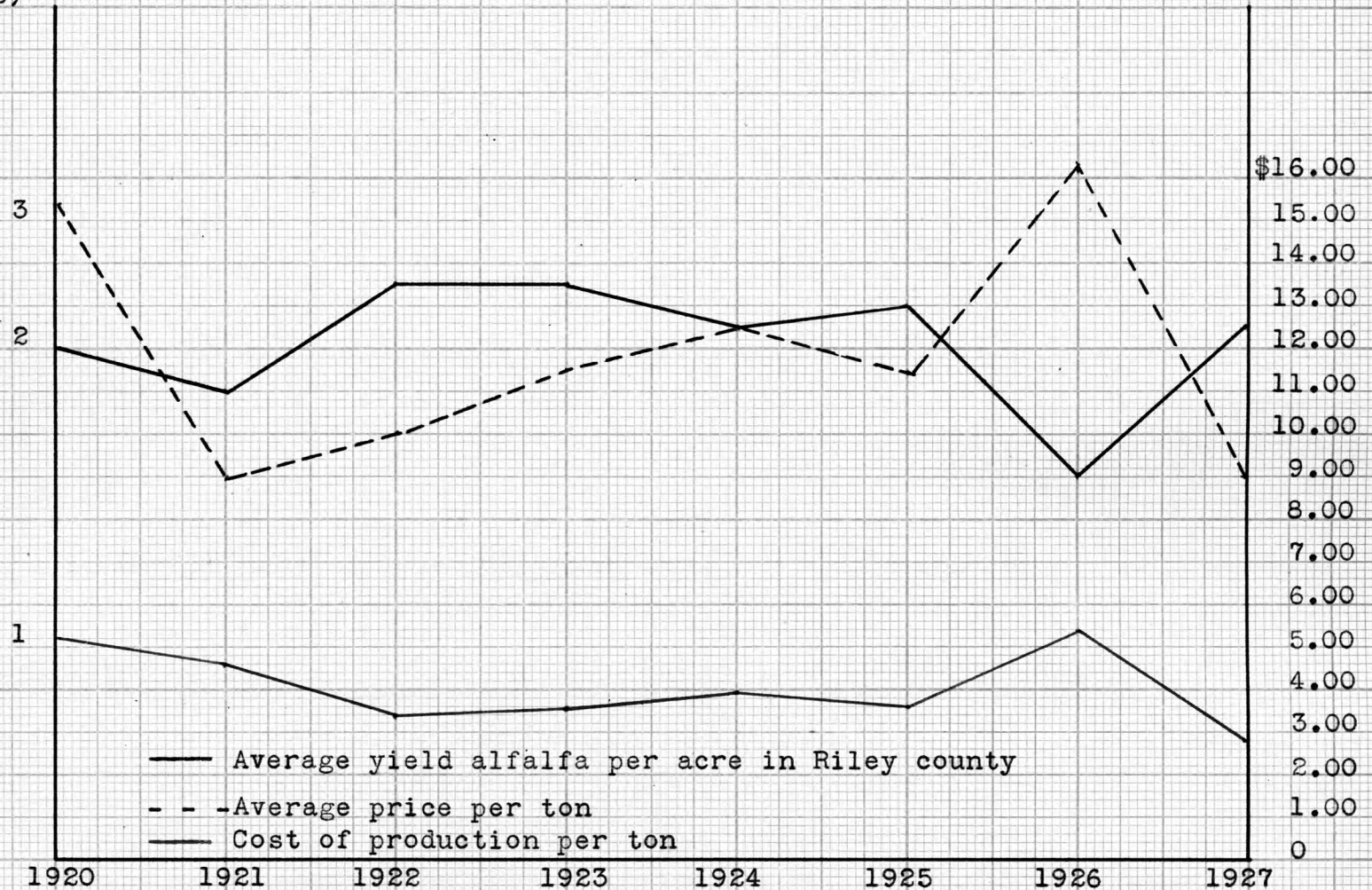


Fig.12. Source - Biennial Reports, State Board of Agriculture.

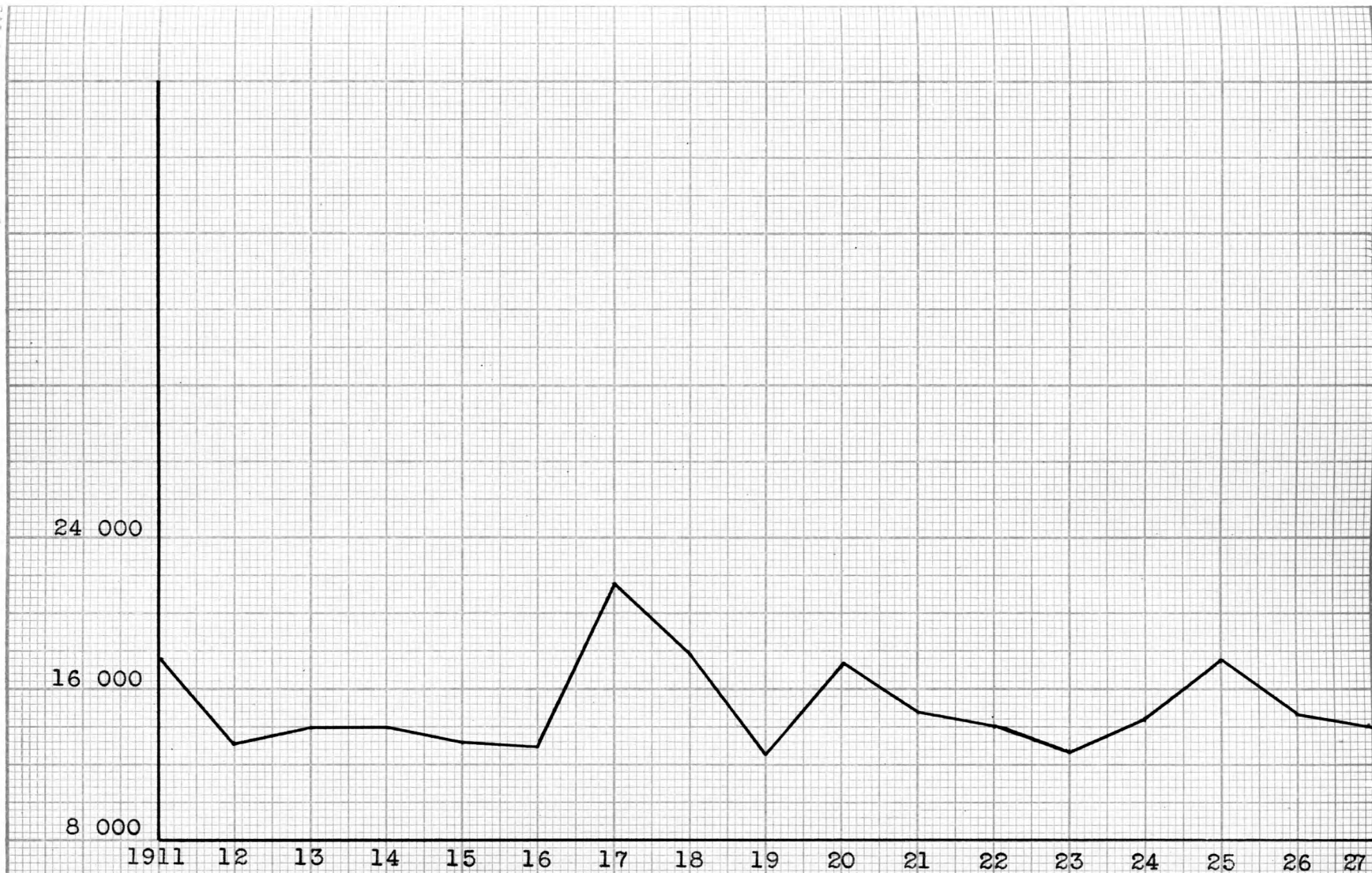


Fig. 13 - Acreage of oats in Riley County.

Source - Biennial Reports, State Board of Agriculture.

Price per bu., and
cost of production

Yield per
acre (bu.,)

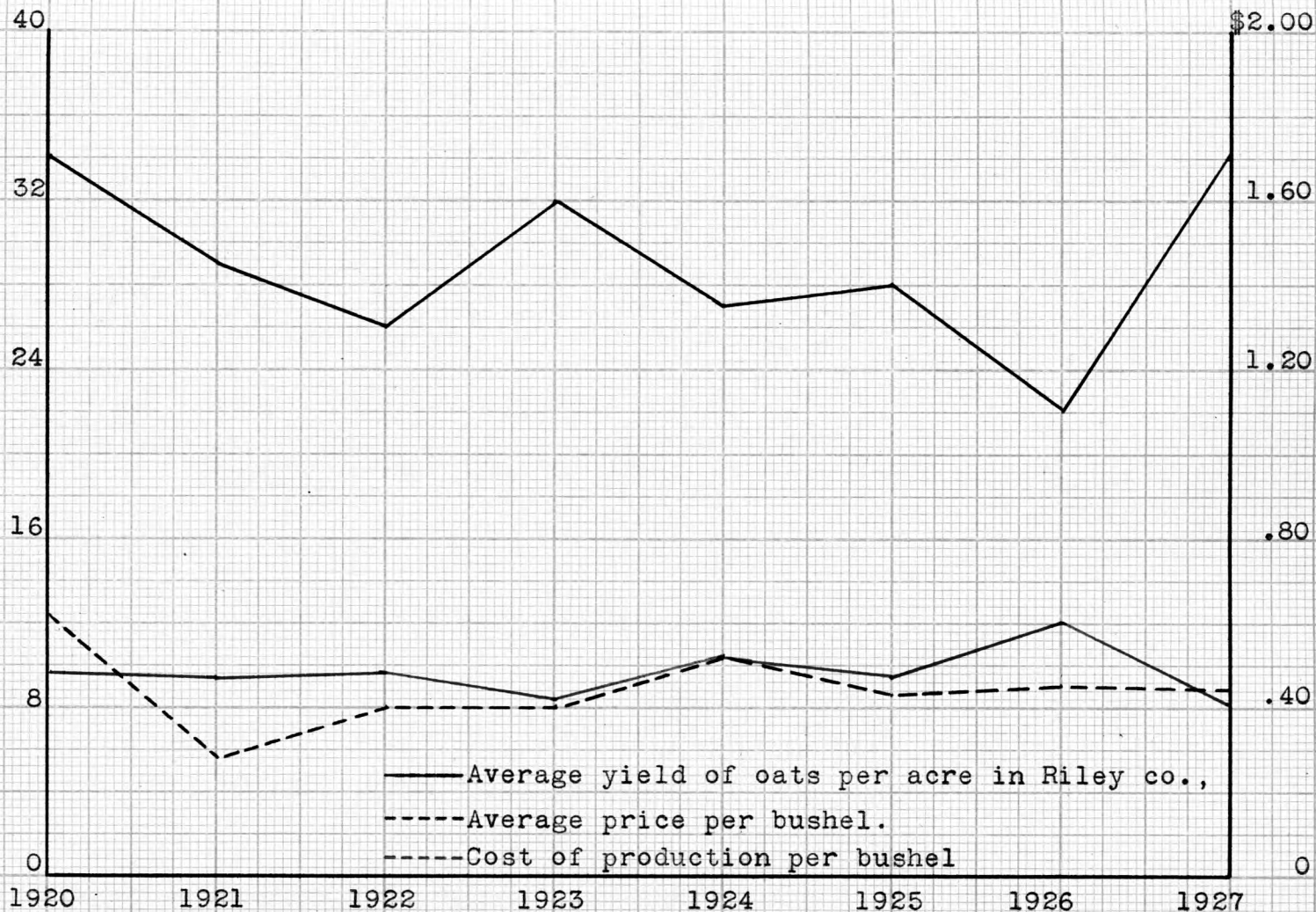


Fig. 14 - Source - Biennial Reports, State Board of Agriculture.



Fig. 15 - Acreage of sorghums (Kafir, Feterita, Milo, Jerusalem Corn) in Riley county.

Source - Biennial Reports, State Board of Agriculture.



Fig. 16 - Number of sheep in Riley county.

Source - Biennial Reports, State Board of Agriculture.

than 12 per cent of the ground under cultivation, the period of highest acreage being 1915 and 1916, and the period of lowest acreage being in 1922, 1923 and 1924. (See Figs. 11 and 12) Alfalfa acreage has been increasing for the last three years. One of the main reasons for the decrease in alfalfa acreage given by most farmers is the difficulty in getting and keeping a stand. In a great many cases the seed bed preparation has not been thorough, poor unadapted seed has been used, and also the fertility of the soil has been allowed to go down. These main factors with others have contributed very materially to the decrease in alfalfa acreage in the county.

Oats took up approximately ten per cent of the crop area of the county in 1927. (See Figs. 10, 13 and 14) During the 16 years previous the acreage has fluctuated from as low as 12,500 acres, which was in 1917 and probably was due to the good demand for oats during the war. Oats, in themselves, cannot be produced at a profit as a rule in Riley county but serve a good purpose as a nurse crop for sweet clover and usually pays for use of labor and machinery in addition to the soil improvement brought about by the use of sweet clover.

The sorghum and kafir acreage takes up approximately five per cent of the crop area and during the 16 year per-

iod previous to 1927, fluctuated from 2700 acres during the war period to as much as 6500 acres in 1925. (See Fig. 15) The drop during the war period was due to price and the increase in acreage in the later period (1922 to 1925) being the increased use of kafir and sorghum for silage and forage. Kafir and sorghum follow well after alfalfa has been broken especially in seasons when there is a tendency toward drought.

In 1927, sweet clover made up less than three percent of the crop area, it being comparatively new in Riley county and is being used primarily as a soil building crop and a supplement to native pasture. The acreage increased from 1923 when a very small acreage was planted in the county until in 1927 approximately 2400 acres were planted. Prairie hay has not been particularly profitable in Riley county since the war period. Many farmers have not been able to find a market for their hay crop. (See Table IV. and Fig. 21).

Changes in Number of Livestock

The sale of crops through livestock and the production of livestock has always held an important place in the agriculture of Riley county, although a glance at the curves for the period 1911 to 1927 inclusive show that the number

of livestock on Riley county farms has been erratic. During this period the production of sheep has been a relatively unimportant part of the industry, there being approximately 2500 sheep on farms at the beginning of the period, and from a study of the type of farming shown in the county, it is doubtful if the sheep industry will ever assume much greater proportions. (See Figs. 16, 22 and Table IV).

In the case of hogs during this period, the fluctuation has been rather violent, running from approximately 38,000 to as low as 19,000 hogs on the farms in the county. Hog production seems to show a very definite correlation with corn production. When the number of hogs are lagged one year the curve is very similar to that of corn production. (See Figs. 17, 22 and Table IV).

In the case of other cattle, not including milk cows, the fluctuation has been less violent than in the case of hogs, fluctuating during the period from as high as 30,000 head on farms to as low as 18,000. (See Fig. 18) The number of steers on pasture in the county during this period is hard to determine on account of their being brought in for pasturing after the assessors' make their record in the spring and having been shipped out before assessing time the next year, a great deal of the Riley county acreage in native pasture being used for this purpose.

A study of the graph of the number of milk cows for the period 1911-1927 at first appearance seems to be down, but a check-up on the methods of reporting indicates, however, that the sudden drop in 1916 was simply a matter of reporting, for a great many cows which had been reported as milk cows, were transferred over into the other cattle report, so basing judgment on the period 1917 to 1927 the trend has held fairly stationary with perhaps a little more tendency toward dairy cows, the number having run fairly close to 4000 milk cows during the period. (See Figs. 19, 22, and Table IV) However, the production per milk cow has more than doubled during the past ten years. While the number of cows has not increased appreciably, the amount of production for the county has been increased the same as if there were twice as many cows.

A study of the poultry and eggs sold from 1901 to 1927 is of interest. The return having increased from \$77,000.00 in a gradual curve over the period to more than \$315,000.00. Evidently Riley county farm operators have been gradually depending more for their income from the poultry enterprise. A part of this increase being due to increased efficiency of production and a portion to enlargement of the poultry enterprise.

Deflating the value of poultry and eggs sold from 1901

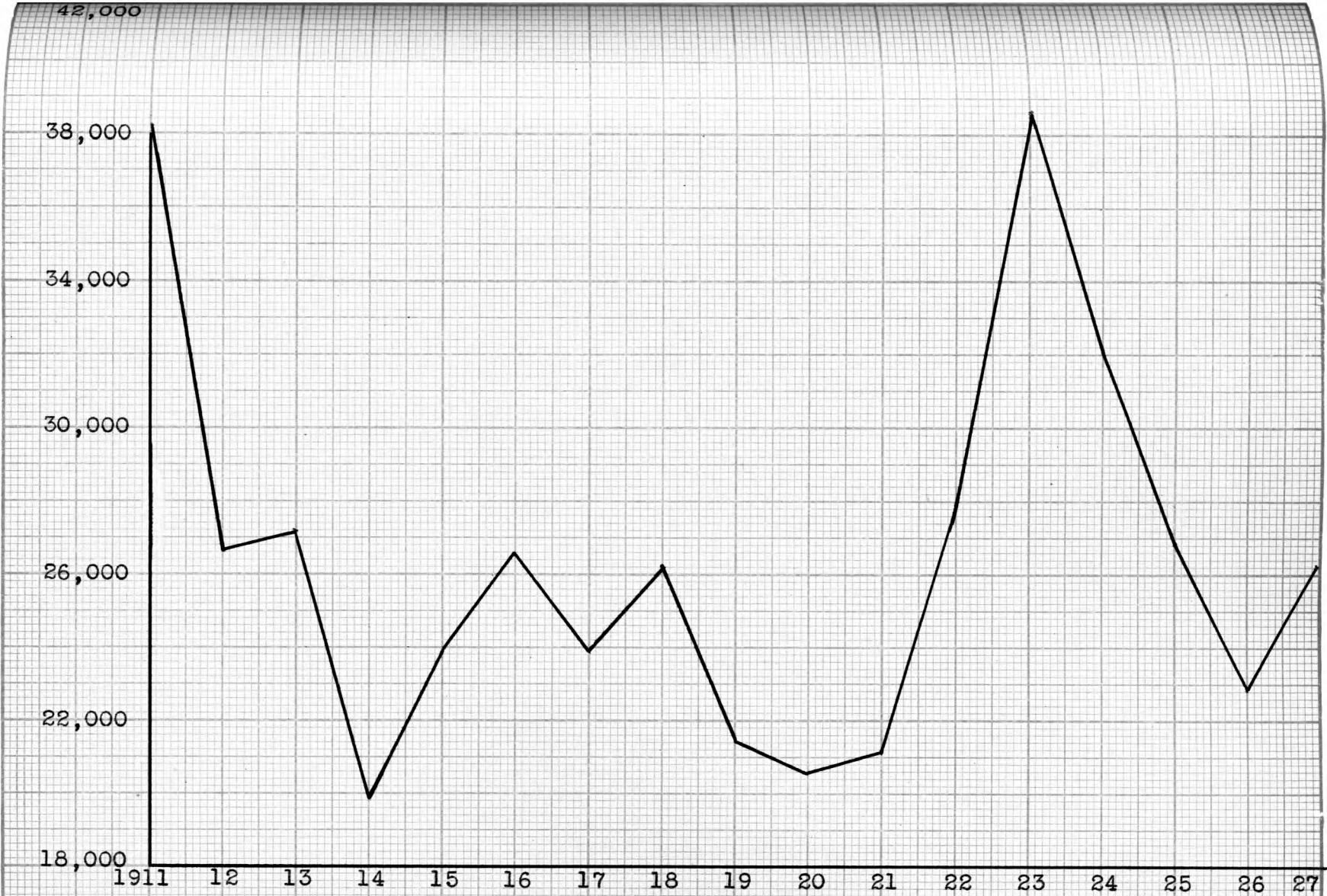


Fig. 17 - Number of hogs in Riley county.

Source - Biennial Reports, State Board of Agriculture.



Fig. 18 - Number of cattle (other than milk cows) in Riley county.
Source - Biennial Reports, State Board of Agriculture.



Fig. 19 - Number of milk cows in Riley county.

Source - Biennial Reports, State Board of Agriculture.

to 1927 inclusive mentioned in the paragraph above for a more accurate comparison, (a) the Comparative values are as follows, beginning in 1901 with \$95,062.00 in a gradual curve upward over the period to a little over \$211,409.00 in 1927. (See Figs. 20, 22 and Table IV).

There does not seem to be any particular correlation between the number of poultry kept on the average Riley county farm and the size of farms, there being between 150 and 175 head of poultry on most of the farms.

Trend in Crop Yields

Yields of the grain crops decreased over the fifteen year period from 1880 to 1895, and continued somewhat low until approximately 1900. From 1900 to 1925 the yield trend has run fairly normal showing some improvement. Yields of corn averaged from 25 to 35 bushels in the period 1895 to 1900, and rose again to more than 30 bushels to the acre by 1905 and back down to approximately 18 bushels in 1915 and to another high point of a little above 30 bushels in 1923. However, there is a wide fluctuation in yield of corn over this period, the general tendency seems to be

(a) Index of Wholesale prices in U.S. (1910-1914=100)
Warren and Pearson, The Agricultural Situation.
Bulletin #64, Dept., of Agricultural Economics and
Farm Management, New York State College.

Dollars
Thousands

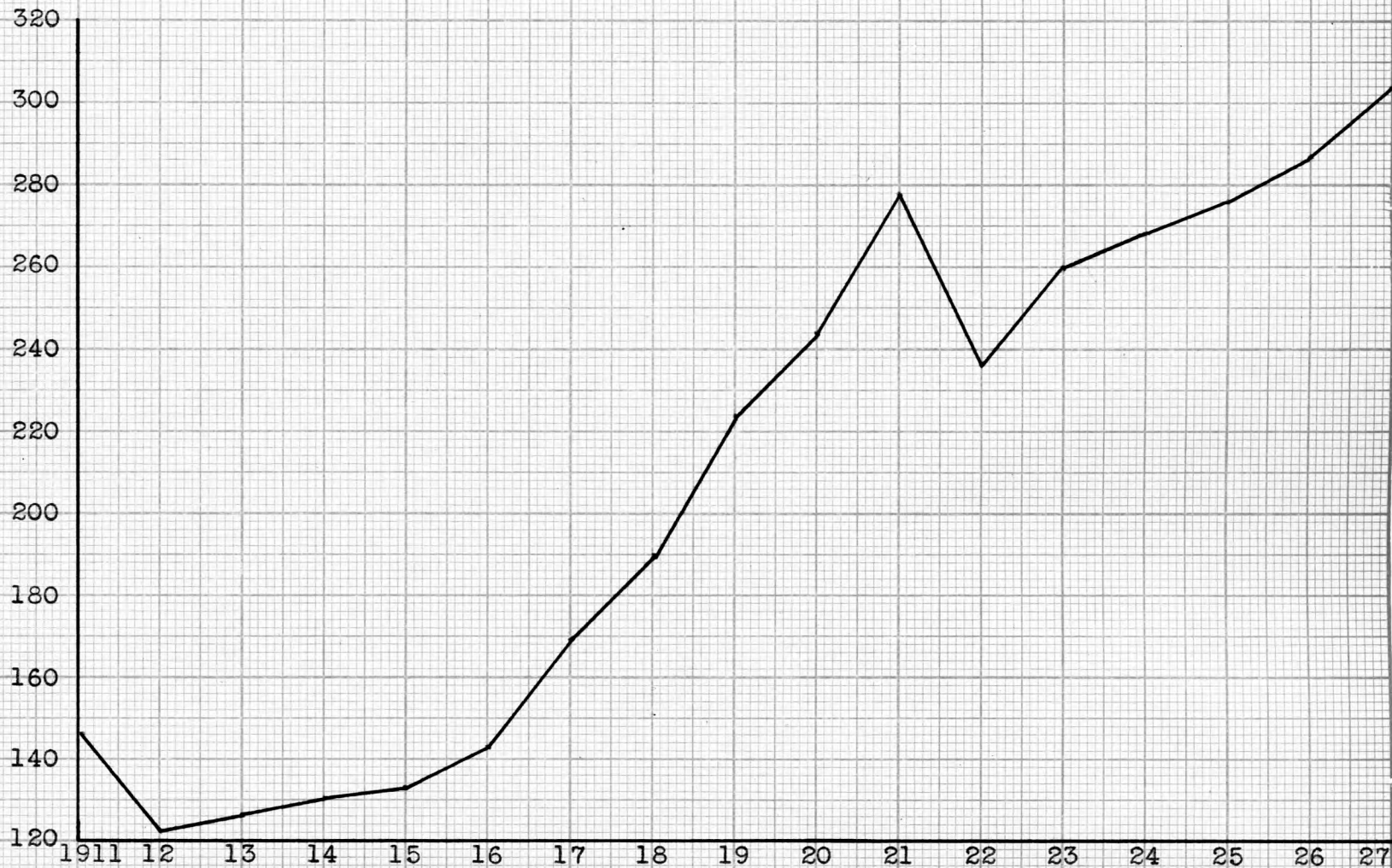


Fig.20 - Value of poultry and eggs sold in Riley county.

Source - Biennial Reports, State Board of Agriculture.

slightly down. This decrease in yield indicates lowering fertility of the soil, most of which is probably due to continued cropping and erosion.

Wheat yields have fluctuated or declined as has corn, probably due to the fact that Riley county has only a small acreage of wheat which has been raised only on land best suited to the growth of the crop. The yield of wheat from 1880 to 1925 has averaged from between 15 and 20 bushels to the acre with the exception of the period about 1895 when it averaged around 12 bushels to the acre.

The yield of oats has been above corn the greater share of the period from 1880 to 1925, the highest yield, however, being in the ten year period from 1880 to 1890. (See Fig. 10).

Markets and Transportation

There are 100 miles of railroad in the county and all sections have had good shipping facilities except the northwestern part. In the northwestern section of the county where the hauling of farm products to railroads is impracticable most of the grain and other products are fed and the stock is trucked to the nearest station.

The local market for grain, poultry, eggs, livestock and other farm products are about the same or average

slightly better than is to be found in other central Kansas counties.

The Present Type of Farms

A farm growing corn as the most important grain crop and supplementing it with kafir, oats, alfalfa and wheat is typical for Riley county. Practically all the farms have some land suited only for grazing and carry milk cows or stock cattle to utilize this pasture. Meadows and prairie hay are also common on Riley county farms. One usually furnishes enough prairie hay for the horses.

According to the United States Agricultural Census for 1925, 17 per cent of the farms in Riley county fall in the group ranging in size from 3 to 99 acres, 29 per cent in the size from 100 to 174 acres, 23 per cent from 175 to 259 acres, 23 per cent 260 to 500 acres, 8 per cent 500 to 5,000 acres. Most of the farms in these different sized groups are 80 acres, 160 acres, 200 acres, 240 acres, 400 acres and 640 acres respectively. The 160 acre farm is the most usual, probably due to the fact that many farms in Riley county were homesteaded as 160 acre units. In general the larger farms have a higher percentage of the land in pasture than the small farms. (See Tables V and VI) Much of the land in Riley county consists of river and creek

valleys with rough, steep and stony walls and with some low rolling uplands. There is also considerable area consisting of broad rolling prairies. The crop acres on each farm and to a certain extent the number and kind of livestock kept depends upon the acres that can be broken and cultivated successfully, the rest of the land being only suitable for pasturing.

Corn is grown on practically all farms as is also sorghum, oats, alfalfa and wheat. Wheat is grown principally as a cash crop.

Alfalfa is the most important hay crop in the county, and is an important source of income on many farms. Annual hay crops such as sumac, atlas, sudan and such similar crops are grown on many farms. Approximately 50 per cent of the farm land on the typical farm in Riley county is in prairie pasture. Sweet clover as a soilage crop and supplementary pasture is grown on many Riley county farms. (See Table IV and Figs. 21 and 22).

A typical farm of 160 acres has 25 to 55 per cent of the land in native pasture or prairie hay. The cropping system includes approximately 40 to 50 acres of corn, 5 acres of kafir, 10 acres of oats, 10 to 30 acres of alfalfa, possibly 15 to 20 acres of wheat. Four to 5 head of work horses are kept for farm work on the typical 160 acre farm.

Table IV. - Farm area, percentage of farm area in each crop, and livestock per 100 acres, Riley county, Kansas. (a)

Farm area	349,799 acres
Per cent farm area in:	
Wheat	7.5
Corn	20.1
Oats	3.6
Sorghum	2.4
Hay (all kinds)	9.1
Waste land	7.1
Pasture	50.2
Number of livestock per 100 acres farm land:	
Cows	4.
Sows	1.5
Ewes	2.
Chickens	67.

(a) Source - 1925 U.S. Census of Agriculture, Kansas.
Pages 50 and 66.

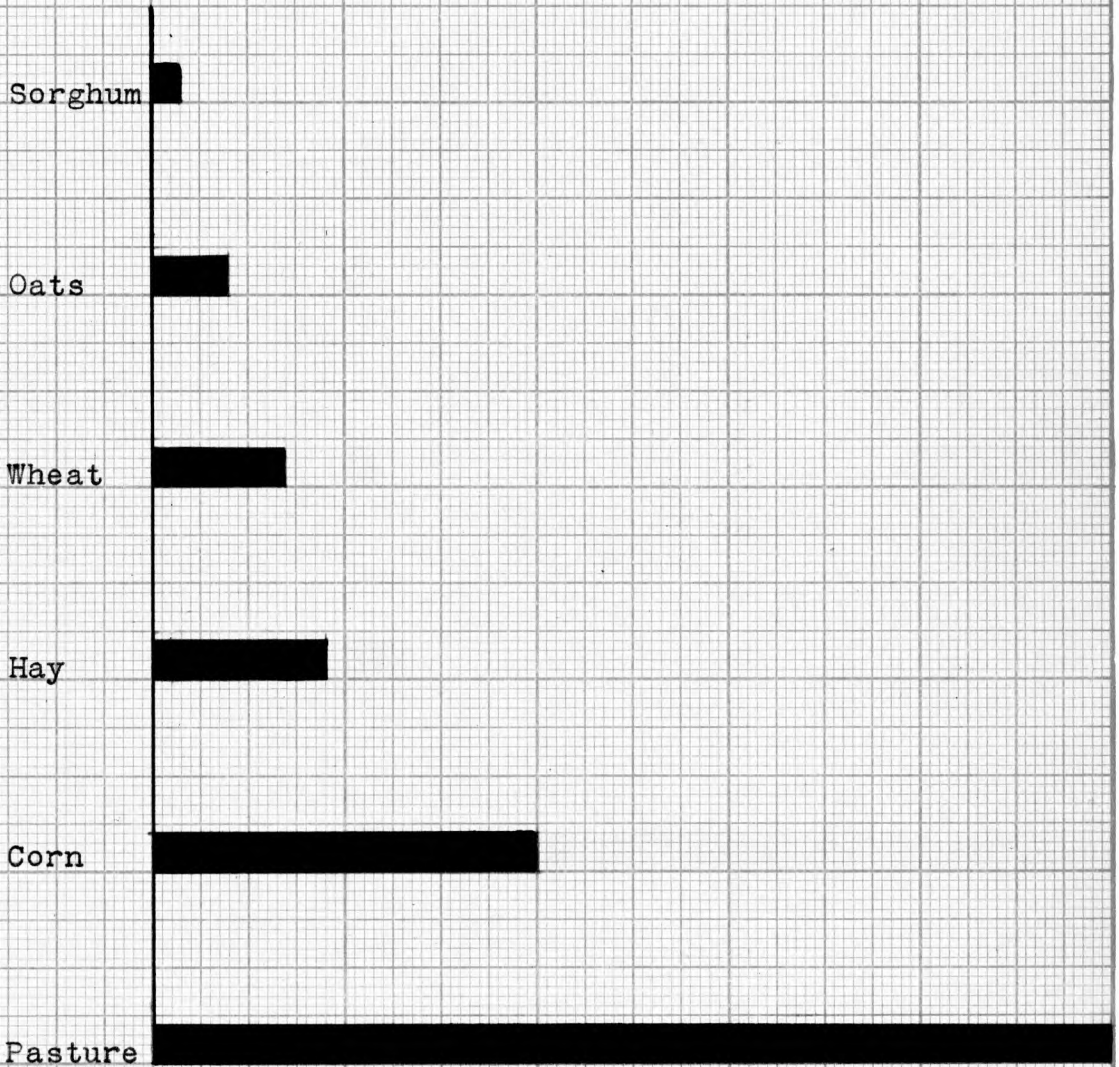


Fig. 21 - Comparison of percentage of farm area in each crop in Riley county.
Source - 1925 U.S. Census of Agriculture, pages 50 and 66.

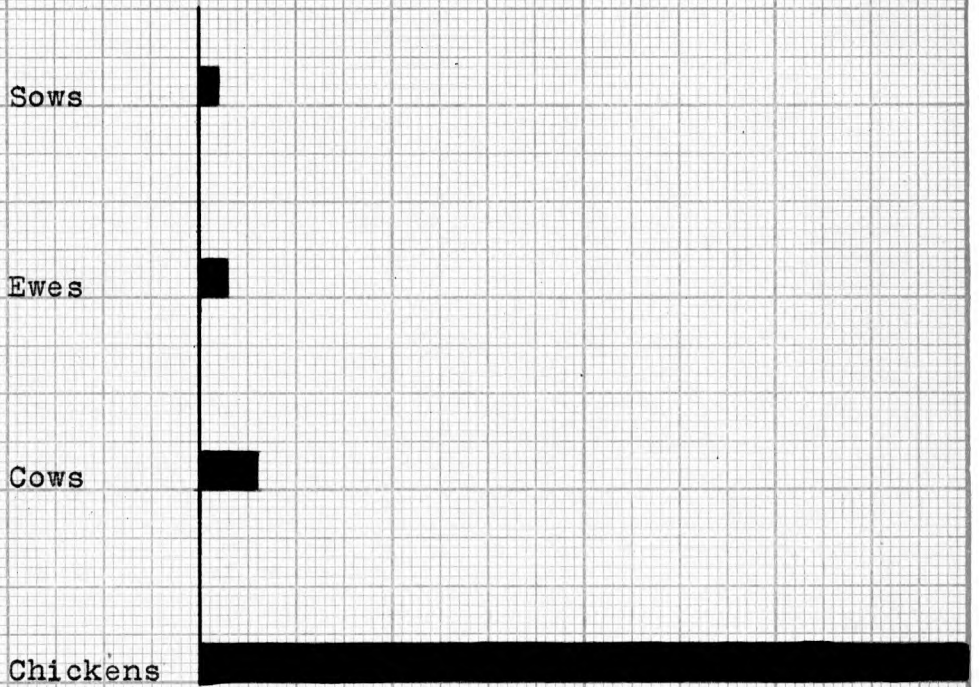


Fig. 22 - Comparison of number of live-stock per hundred acres in Ri-ley county.

Source - 1925 U.S. Census of Agriculture, pages 50 and 66.

Table V. - Representative farms grouped according to size, showing acres in crops, pasture and waste land.

Farms by size	3 - 99 acres		100 - 174 acres			175 - 259 acres		260 - 500 acres		500 - 5000 acres
Per cent of farms in each group	17		29			23		23		8
Per cent of total farms	4	5	11	4	6	9	5	8	9	2
Most common size farms	80	80	160	160	160	240	200	400	400	640
Acres in crops	40	55	75	100	125	150	100	200	125	220
Acres in pasture	25	15	70	30	15	60	75	160	225	360
Acres in farm- stead and waste	15	10	15	30	20	30	25	40	50	60

Table VI. - Summary of size groups of the farms in Riley county.

Township	Number of farms of size given					No Acreage Given	Total Number Farms	Total Acres
	3-99 Acres	100-174 Acres	175-259 Acres	260-499 Acres	500-5000 Acres			
Ashland	10	13	5	5	3	1	37	7734
Bala	19	41	43	21	5	24	153	26551
Center	2	8	15	21	12	1	59	20839
Fancy Creek	6	24	21	19	5	2	77	18746
Grant	16	24	17	13	4	-	74	16625
Jackson	11	18	12	24	11	22	98	22158
Madison	12	34	46	38	12	1	143	37311
Manhattan	63	34	7	13	6	1	124	18865
Mayday	2	24	21	28	3	2	80	20725
Ogden	14	24	12	13	6	19	88	16023
Sherman	19	26	25	19	2	1	92	18044
Seven Mile	3	13	18	27	6	3	70	19324
Swede Creek	13	27	28	23	11	1	103	27536
Wildcat	15	36	19	25	6	1	102	22521
Zeandale	18	32	16	25	10	-	101	27704
Total	223	378	305	314	102	79	1401	320706

(a) According to Assessors report in March, 1927.

Two or 3 head of milk cows, 2 or 3 head of young cattle and a farm flock of poultry are typical. We also find on the typical 160 acre farm from 3 to 7 head of brood sows which help the annual farm income.

On smaller farms the organization is quite similar to that of farms of 160 acres, except that the enterprises are conducted on a smaller scale. The larger farms typically have a higher proportion of the land in pasture and usually keep quite a number of stock cows.

Suggested Farming Systems

Data obtained from the county assessors report, the census data from the farm account records in Riley county, and information from other sources makes it possible to give suggestions for farms of various sizes. In making these suggestions the more profitable farming systems found on the farms of Riley county are taken as a starting point. The suggested farm organization used here is that combination of crop and livestock enterprises on farms of different sizes which appear to be most profitable under conditions as they exist at the present and for the years immediately ahead. Adjustments have been made on the basis of normal yields and usual price relationships.

The requirements of man labor and horse labor for crop

Table VII.—Standard labor requirements per acre for the various operations of crop production. (a)

Operation	Size of machine	Man hours	Horse hours	Acres per 10-hour day	Operation	Size of machine	Man hours	Horse hours	Acres per 10-hour day
Seedbed preparation:					Harvesting small grain:				
Cutting stalks or breaking stalks	1-row stalk cutter	1.25	2.50	8.0	Binding	7' binder	.80	3.20	12.5
Plowing	2-section harrow	.60	1.20	16.6	Shocking		1.50	—	8.0
	2-bottom, 14" gang	2.00	10.00	5.0	Shock threshing		3.50	4.00	—
	2 " 12" "	2.50	10.00	4.0	Prairie hay:				
	1 " 16" sulky	3.50	10.50	2.8	Cutting	5' mower	1.50	3.00	6.3
Discing	16 disc	.60	2.40	16.6	Raking	10' rake	.50	1.00	20.0
	14 disc	.67	2.67	15.0	Stacking		3.00	3.00	3.3
Harrowing	3-section	.40	1.60	25.0	Alfalfa:				
	2 " "	.50	2.00	20.0	First cutting				
Planting row crops	2-row furrow opener	.80	3.20	12.5	Cutting		1.00	2.00	10.0
	2 " planter	.67	1.34	15.0	Raking		.67	1.34	15.0
	1 " lister	1.35	5.40	7.4	Putting in barn		3.25	3.25	3.0
Cultivating row crops	2-row	.80	3.20	12.5	Second cutting				
	1 " "	1.35	2.70	7.4	Cutting		1.00	2.00	10.0
Sowing small grain	14-hole drill	.40	1.60	25.0	Raking		.50	1.00	20.0
	12 " "	.50	2.00	20.0	Putting in barn		3.00	3.00	3.3
Harvesting corn and kafir:					Third cutting				
Binding or cutting	Corn binder	1.70	5.00	6.0	Cutting		1.00	2.00	10.0
Filling silo		1.00	9.00	—	Raking		.50	1.00	20.0
Husking corn, from standing stalk		5.00	10.00	2.0	Putting in barn		1.75	1.75	5.7
Topping kafir		3.00	3.00	3.3	Fourth cutting				
Shocking kafir		2.50	—	4.0	Cutting		1.00	2.00	10.0
					Raking		.50	1.00	20.0
					Putting in barn		1.75	1.75	5.7

(a) Report of Cost Route in Jackson county, Kansas, 1923-1924.

Prepared by J. A. Hodges; J. R. Moyer, route man; W. E. Grimes; Morris Evans.

Table VIII. - Material requirements per acre and threshing costs per bushel for crops.

Crop	Seed per acre	Twine per acre	Threshing per bushel
	Pounds	Pounds	
Corn	8	2	-
Wheat	75	3	8
Oats	64	2	5
Kafir	7	3	6
Sweet Clover	15	-	-
Alfalpa	15	-	-

Table IX. - Standard feed and labor requirements for livestock.

	Cows		Other cattle producing 500# per L.U.		Beef Steers		Poultry	Pork	Work Horses
	200# B F	250# B F	With silage	Without silage	Wintered (Maintained weight)	Full fed (Gained about 275#)			
Corn and cobmeal (lbs.)	750	850	--	--	650#	850#	100#	100#	Head
Corn (lbs.)	--	--	500	750	--	1870	--	--	--
Oats (lbs.)	250	300	--	--	--	110 Da.fed	6000	400	2000
Cottonseed meal or Linseed meal	100	300	150	150	90	110	--	--	--
Alfalfa	3500	2500	1500	1500	500	550	--	--	1500
Other dry roughage lbs.	1500	750	--	2000	500	--	--	--	2500
Silage (lbs)	--	6500	3000	--	3000	1100	--	--	--
Bran (lbs)	200	300	--	--	--	--	200	--	--
Shorts (lbs.)	200	--	--	--	--	--	200	30	--
Whole milk (lbs.)	--	--	--	--	--	--	--	--	--
Skimmilk (lbs.)	--	--	--	--	--	--	--	--	--
Tankage (lbs.)	--	--	--	--	--	--	--	10	--
Meat scrap (lbs.)	--	--	--	--	--	--	100	--	--
Grits (lbs.)	--	--	--	--	--	--	150	--	--
Days pasture	--	163	200	200	150	150	--	10	100
Man hours	120	130	30	30	--	--	200	2½	60
Horse hours	10	10	6	6	--	--	10	½	10
Cash costs	.75	.75	3.00	3.00	--	--	.75	.25	1.00

Note: Grain may be interchanged where necessary.

Table X. - Normal yields of crops (a)

	Yield per acre
Wheat)	18 bu.
Corn) 16 year average	23 bu.
Oats)	29 bu.
Kafir grain)	22 bu.
Alfalfa) 12 year average	2.50 T.
Prairie hay)	1.00 T.
Kafir silage	10.00 T. (b)
Corn silage	8.00 T. (b)

(a) Source - 16 year and 12 year average, Biennial Reports of Kansas State Board of Agriculture.

(b) Estimated from 4 years Riley Farm Account Records.

Table XI. - Prices of farm products and cost of materials.

Item	Price
Milk, 4% (cwt.)	2.50
Butterfat (lb.)	.40
Cows (head)	60.00
Heifers (head)	50.00
Veals (cwt.)	8.00
Eggs (doz)	.25
Poultry (lbs)	.17
Hogs (lbs.)	.08
Corn (bu.)	.70
Kafir (bu.)	.70
Oats (bu.)	.42
Bran (cwt.)	1.40
Beef cattle	8.25
Shorts (cwt.)	1.70
Cotton seed meal (cwt.)	2.50
Tankage (cwt.)	4.00
Meat scrap (cwt.)	4.50
Alfalfa hay (ton)	12.00
Prairie hay (ton)	7.00
Alfalfa seed (bu)	15.00
Sweet clover seed (bu.)	3.50
Seed oats (bu.)	.60
Twine (lb.)	.15
Superphosphate (ton)	25.00
Wheat (bu.)	1.00
Oyster shell	1.25
Purchase price grass cattle 750 to 850 lbs. per cwt.	7.75
Filling silo per hour	2.00
Silage (ton)	3.50
Labor (hr.)	.40

production used in outlining these systems are shown in Table VII. The material requirement for crops are shown in Table VIII. Standard feed and labor requirements for the different classes of livestock are shown in Table IX. Standard yields of crops used are shown in Table X, and the prices of farm products and cost of materials in the Table XI. The approximate quantities of the different feeds required for the different classes of livestock on these farms are used. The man labor, horse work, feed and material requirements and the production requirements taken from the records of farmers following similar systems of farming, the yields of those which seem most likely to be normally obtained.

Labor requirements for livestock are the usual quantities required on farms having livestock of similar numbers of the same approximate production. The usual dates of performing different operations in crop production in the suggested system of farms of the same sizes are used in estimating the labor needed for different cropping plans. By summing up these quantities together with the miscellaneous labor the amount of labor to be hired at various times of the year can be determined.

The prices used in determining the probable return from the different farming systems are those which seem

Table XII. Crop production and use of crops on suggested organization for 160 acre farm, Riley county, Kansas.

Crop	Acres	Yield	Total Production	Use of crop		
				Amount fed	Amount seeded	Available for sale
Corn	43	23 bu.	989 bu.	1339 bu.	6½ bu.	- - - - -
Sorghum silage	10	10 T.	100 T.	68½ T.	1½ T.	30 T.
Oats & (Sweet Clover)	10	29 bu.	290 bu.	150 bu.	20 bu.	120 bu.
Alfalfa hay	12	2½ T.	30 T.	30 T.	1 bu.	- - -
Sweet Clover	--	-----	Soilage crop	-----	4 bu.	- - -

most likely to be normally obtained. It is recognized that in any one year the prices of particular crop or livestock products may be higher or lower than those used in these computations. Since the quantities of products sold are given any differences due to price changes can be easily calculated.

Suggested System for 160 Acre Farms

The farm organization suggested for 160 acre farms differs from the organization of the typical farm in having a smaller acreage of grain crops, a slightly larger acreage in legume crops for hay and as a soil improvement crop, and the using of silage instead of dry roughage, a larger number of cows, hogs and poultry. The suggested farm requires more labor than the typical farm due particularly to the increased number of livestock, but the labor is more evenly distributed throughout the year. The system suggested in a family unit that can be handled by the operator and family labor with hired labor during the crop and haying season. The major portion of all feed produced will be needed on the farm for livestock. It would be necessary, however, to purchase some supplementary feed. Table XII shows the production and use of the different crop. It is contemplated that wherever practical alfalfa or sweet clover will be

rotated over all the fields. The acreage given for crops and pasture represents the proportion most likely to exist on farms of this size. Sweet clover would be used mainly as a soil improvement crop and for supplementary pasture where practicable. Alfalfa is to be plowed up and field planted to a grain crop after standing four years.

The silo is to be filled with sorghum or kafir silage and the corn used for grain. The grain sorghums produce higher yields of silage in Riley county than does corn. Oats used as a nurse crop for sweet clover, is seeded thinly and the estimated yield is low. Table XIII shows the distribution of feed to livestock with the quantity of feed for each class of livestock determined from the standard requirements. Feed for dairy cows is based on a production of 250 lbs. of butterfat per cow and a pasture season of 163 days. Four horses should supply plenty of power for field work. A charge for replacing horses is included in farm expenses instead of making a feed allowance for young horses and colts.

The use of the products and the value of the sales from livestock is shown in Table XIV. It is noted that the major portion of the income is from the sale of butterfat. It is contemplated that the skimmilk will be used for the production of hogs, poultry and calves.

Table XV shows the principal items of expense which are: feed purchased, livestock expense, such as cow testing and veterinary and medicine, and crop and machinery expense, which includes repairs and depreciation on machinery and such items as twine, seed and threshing.

A comparison of the suggested system with the typical system of 160 acres is shown in Table XV. The same requirements and standards of production are used for each farm to show the effects of the combination of enterprises. The suggested system has a larger acreage of legumes and a smaller acreage of cultivated crops than the typical farm.

The larger proportion of the income on the typical farm comes from crop sales than on the suggested farm. Nearly all crops in the suggested system are used on the farm to maintain livestock. Crop, feed and livestock expenses are somewhat higher under the suggested system on account of more livestock being kept for hired labor.

It is the same production and prices used in computing returns to each system. The suggested system shows the returns for management and labor of the farm operator and his family of \$1,425.96 compared to a loss of \$42.22 on the typical farm.

Under actual operating conditions the suggested system will probably have even a greater advantage than is indicat-

Table XIII. - Feed used by livestock, suggested organization for 160 acre farm.
Riley county, Kansas.

Feed	Milk cows 16 head	Other cattle 11 animal units	Poultry 225 hens	Hogs 11,600 lbs. pork	Horses 4 head	Total
Corn (lbs.)	--	5,500	13,500	48,000	8,000	75,000
Oats (lbs.)	4,800	--	--	--	--	4,800
Tankage (lbs.)	--	--	--	1,200	--	1,200
Corn & Cobmeal (lbs.)	13,600	--	--	--	--	13,600
Alfalfa (tons)	20	8.25	--	--	3	31.25
Silage (tons)	52	16.5	--	--	--	68.5
Other dry roughage (lbs.)	12,000	--	--	--	10,000	22,000
Cottonseed meal or Lin- seed Meal (lbs)	4,800	1,650	--	--	--	6,450
Bran (lbs.)	4,800	--	450	--	--	5,250
Shorts (lbs.)	--	--	450	3,600	--	4,050
Meal scraps (lbs.)	--	--	225	--	--	225
Grits (lbs.)	--	--	337.5	--	--	337.5

Table XIV. - Livestock production and use of product suggested 160-acre farm,
Riley county, Kansas.

Livestock	No.	Total production	Use of product				
			Used on farm	Used in home	Sold		
					Quantity	Price	Value
Cows	16	4,000 lbs. B'fat.	200 lbs.	100 lbs.	3700 lbs. B'fat	@ .40 lb.	\$1,480.00
					4 cows	@ \$80.00	320.00
					10 dairy steers	@ \$12.00	120.00
Hens	225	1,875 doz. eggs	47 doz.	217 doz.	1,611 doz.	@ .25 doz.	402.75
		1,125 lbs. meat	--	210 lbs.	915 lbs.	@ .17 lb.	155.55
Sows	6	11,600 lbs. meat	--	550 lbs.	11,050 lbs	@ .08 lb.	884.00

Table XV. - Comparison of suggested system with a typical system for 160 acre farm, 75 crop acres.

	Suggested system	Typical system
Crops raised:		
Corn	43 acres	40 acres
Kafir grain	-	5 "
Oats & sweet clover	10 "	10 "
Alfalfa	12 "	10 "
Prairie hay	-	10 "
Native pasture	70 "	70 "
Waste land	15 "	15 "
Sorghum silage	10 "	-
Livestock kept:		
Cows	16 head	3 head
Other cattle	11 "	9 "
Poultry	225 "	125 "
Brood sows	6 "	3 "
Horses	4 "	4 "

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Table XV. (con't.)

	Suggested system		Typical system	
Crop sales:				
Corn	--	--	89 bu.	\$ 62.30
Kafir	--	--	108 $\frac{1}{2}$ "	75.95
Oats	120 bu	50.40	240 "	100.80
Alfalfa hay	--	--	11 $\frac{1}{2}$ T.	138.00
Sorghum silage	30 T.	105.00	--	--
Livestock sales:				
Butterfat	3,700 lbs.	1480.00	610 lbs.	244.00
Beef	5,350 "	441.38	600 "	49.50
Eggs	1,611 doz.	402.75	777 doz	16.19
Poultry	915 lbs.	155.55	415 lbs.	70.55
Pork	<u>11,050 "</u>	<u>884.00</u>	<u>6,000</u>	<u>480.00</u>
Total		3,519.08		1,237.29
Products used in home		<u>197.70</u>		<u>197.95</u>
Total income		\$3,716.78		\$1,435.24

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Table XV. (Con't.)

	Suggested system	Typical system
Expenses:		
Labor	\$265.60	\$ 34.00
Purchased feed	558.10	140.29
Livestock expense	107.09	75.59
Crop expense	130.00	62.50
Machinery	345.13	345.13
Farm upkeep	110.40	110.40
Taxes	<u>154.90</u>	<u>141.91</u>
Total	\$1,671.22	\$909.82
Interest on investment	<u>619.60</u>	<u>567.64</u>
Total deductions	\$2,290.82	\$1,477.46
Family earnings	\$1,425.96	42.22
Total hours labor	5,552.05	2,620.26
Labor force required	One man and family and ex- tra help during busy season	One man and family and ex- tra help during busy season

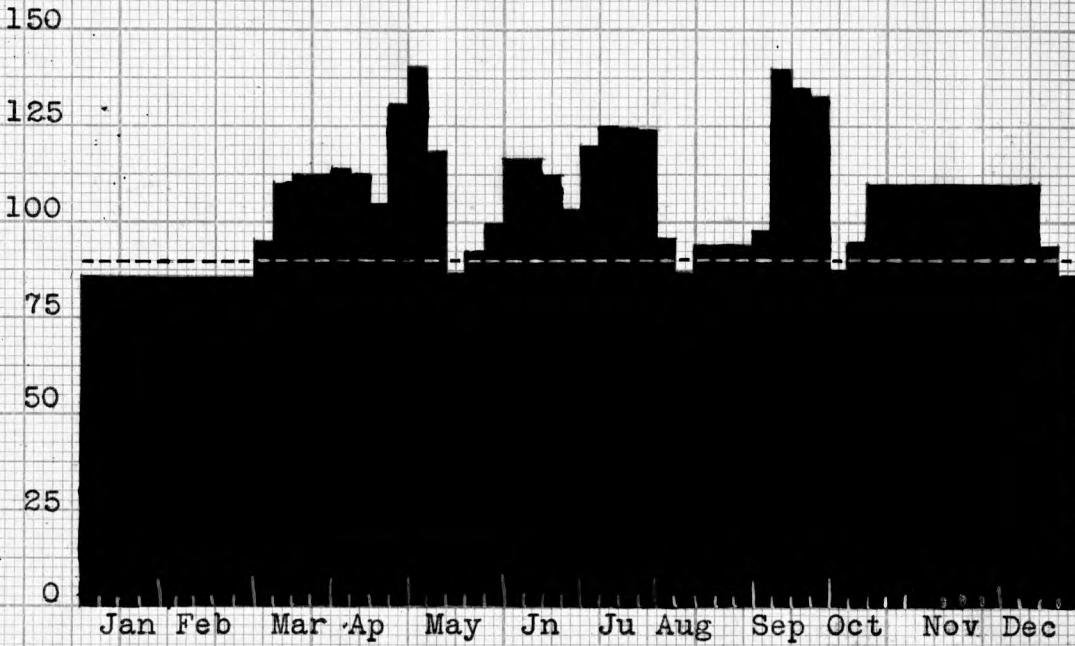


Fig 23. - Distribution of man labor by weeks on 160 acre farm with suggested system.

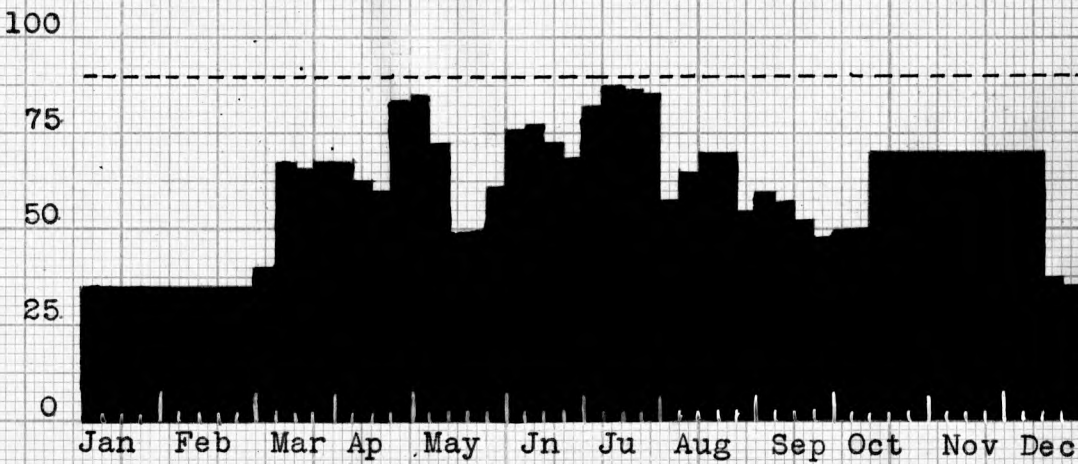


Fig.24 - Distribution of man labor by weeks on 160 acre farm with typical system.

ed. Crop yields in the long run would be higher on this farm than on the typical farm due to better farm practices such as rotation with legumes and the manure from a greater number of livestock. The livestock production would be easier to obtain under the conditions suggested. The livestock production is figured the same in the typical system as in the suggested system for comparison only. It is believed that many farm operators would realize greater farm profits by adopting a system similar to the one suggested.

The labor distribution on the suggested system for the 160 acre farm is shown in Figure 23 and for the typical system on Figure 24. The suggested system requires hired labor during the summer months in caring for the crops and hay in addition to the labor of the farm operator and his family. The typical system requires about one-half the number of hours of labor as the suggested system and requires but little, if any, hired labor. The growing of fruit does not appear in either the typical system or the suggested system as the limited number of crop acres available on this size of farm may be more profitably employed in the production of feed crops for livestock produced on the farm.

Table XVI. - Comparison of suggested system with a typical system for
240 acre farm, 150 crop acres.

	Suggested system	Typical system
Crops raised:		
Wheat	20 acres	35 acres
Corn	60 "	54 ¹ / ₂ "
Corn silage	10 "	5 ¹ / ₂ "
Kafir grain	- "	5 "
Oats & sweet clover	20 "	20 "
Sorghum silage	5 "	- "
Alfalfa	35 "	15 "
Prairie hay	- "	15 "
Native pasture	60 "	60 "
Waste land	30 "	30 "
Livestock kept:		
Cows	6 head	3 head
Other cattle	7 "	14 "
Poultry	200 "	200 "
Brood sows	8 "	4 "
Horses	6 "	6 "

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Table XVI. (Con't.)

	Suggested system		Typical system	
Crop sales:				
Corn silage	85 T.	\$297.50		
Corn	--	--	316 bu.	\$221.20
Oats	534 bu.	210.08	324 bu	146.08
Wheat	335 bu.	335.00	586 bu.	586.00
Alfalfa	69 T.	828.00	19 T.	228.00
Prairie	--	--	7½T.	52.50
Sorghum silage	35 T.	122.50	--	--
Livestock sales:				
Butterfat	1,340 lbs.	536.00	610 lbs	244.00
Beef	4,100 "	255.75	6,850 "	565.12
Eggs	1,320 doz.	330.00	1,402 doz	350.50
Poultry	895 lbs.	152.15	790 lbs	134.30
Pork	17,450 lbs.	1,396.00	7,450 "	596.00
Total		\$4,462.98		\$3,123.70
Products used in home		<u>190.05</u>		<u>235.00</u>
Total income		\$4,653.03		\$3,358.70

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Table XVI. (Con't.)

	Suggested system	Typical system
Expenses:		
Labor	\$500.00	\$500.00
Purchased feed	715.83	118.05
Livestock expense	100.90	111.75
Crop expense	117.30	138.00
Machinery	387.00	380.15
Farm upkeep	124.20	166.00
Taxes	<u>199.11</u>	<u>203.00</u>
Total	\$2,204.34	\$1,616.95
Interest on investment	<u>796.45</u>	<u>811.04</u>
Total deductions	\$3,000.79	\$2,427.99
Family earnings	\$1,652.24	\$930.71
Total hou's labor	4,800.75	4,022.72
Labor force required	One man and family and one hired man	One man and family and one hired man

Suggested System for 240 Acre Farm
with 150 Crop Acres

The comparison between a suggested system for a 240 acre farm with 150 crop acres and a typical system as it is being operated is shown in Table XVI. The cropping system has a larger acreage of legumes, a smaller acreage of wheat, and provision for a silage crop and three more head of milk cows, the same number of hens and four additional brood sows, the number of work horses remains the same.

The return to the farm operator and family after deducting farm expenses on the suggested system is \$1,652.24 as compared \$930.71 on the typical system. Approximately 800 hours more labor is required in the suggested system than the typical system due mainly to the increased number of livestock.

Suggested System for 400 Acre Farm
With 125 Crop Acres

The pasture acreage is relatively larger on the 400 acre farm than on the 160 or 240 acre farm. The organization of such farms on the typical system is shown in Table XVII. A change in the cropping system is suggested to increase the amount of legumes and provide silage for

Table XVII. - Comparison of suggested system with a typical system for
400 acre farm, 125 crop acres.

	Suggested system	Typical system
Crops raised:		
Corn	46 acres	50 acres
Kafir grain	--	10 "
Alfalfa	10 "	20 "
Wheat	30 "	25 "
Prairie	10 "	20 "
Native pasture	225 "	225 "
Waste land	50 "	50 "
Corn silage	9 "	--
Oats & sweet clover	20 "	--
Livestock kept:		
Cows	2 head	3 head
Other cattle	7 "	2 "
Poultry	225 "	125 "
Brood sows	8 "	8 "
Horses	6 "	8 "
Stock cows	25 "	--
Creep fed calves	20 "	--

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Table XVII. Con't.

	Suggested system		Typical system	
Crop sales:				
Wheat	500 bu.	\$500.00	419 bu.	\$419.00
Alfalfa	6 $\frac{1}{2}$ T.	78.00	42 T.	504.00
Prairie hay	10 T.	70.00	3 T.	21.00
Oats	560 bu.	235.20	--	--
Corn silage	35 $\frac{1}{2}$ T.	224.25	--	--
Livestock sales:				
Butterfat	375 lbs.	150.00	460 lbs	184.00
Eggs	1,611 doz.	402.75	798 doz.	199.50
Poultry	915 lbs.	155.55	415 lbs.	70.55
Pork	17,450 lbs.	1,396.00	15,450 lbs.	1,236.00
Beef	10,850 lbs.	895.13	850 lbs.	70.13
Steers	--	--	3,000 lbs.	2,475.00
Total		\$4,106.88		\$5,179.18
Products used in home		<u>197.70</u>		<u>225.00</u>
Total income		\$4,304.58		\$5,404.18

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Table XVII. Con't.

	Suggested system	Typical system
Expenses:		
Labor	\$37.50	\$150.00
Purchased feed	1,276.05	358.45
Livestock expense	148.54	1,912.24
Crop expense	277.45	251.75
Machinery	319.00	427.75
Farm upkeep	<u>207.00</u>	<u>325.00</u>
Total	\$2,597.90	\$3,701.19
Interest on investment	<u>1,329.02</u>	<u>1,299.88</u>
Total deductions	\$1,268.88	\$5,001.07
Family earnings	1,466.58	403.11
Total hours labor	4,770.37	3,243.56
Labor force required	One man and family	One man and family

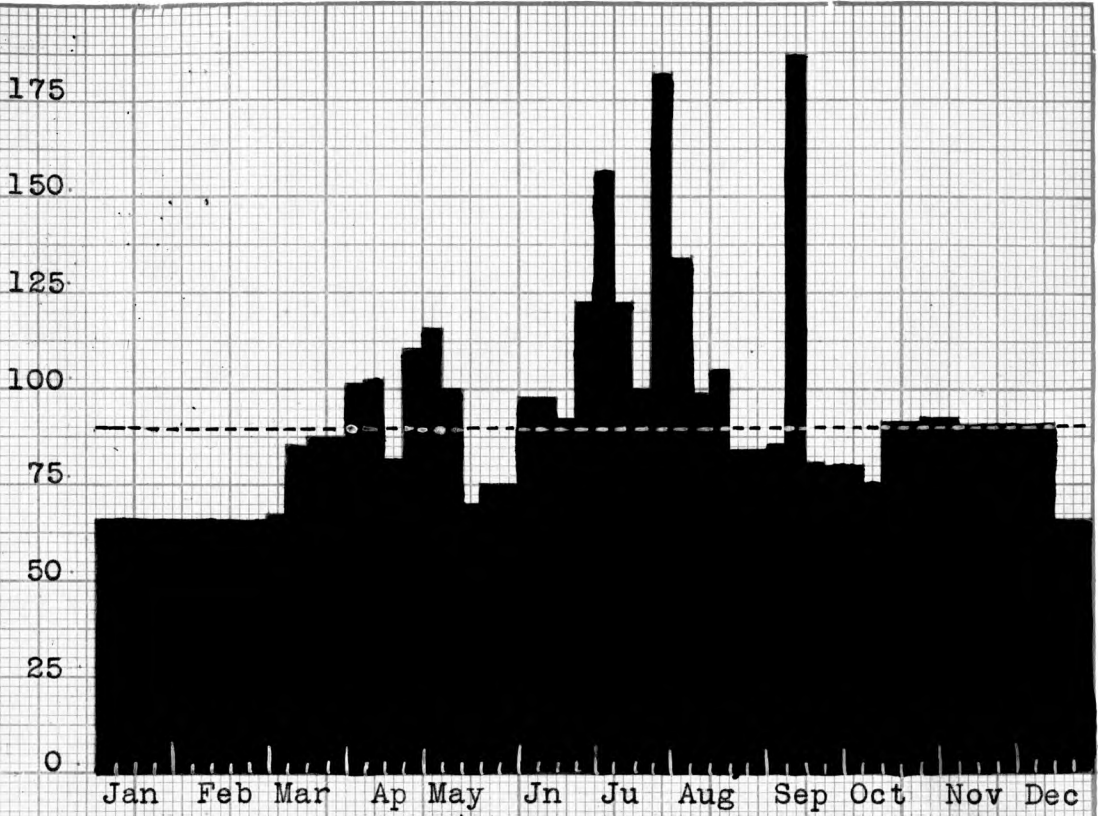


Fig. 25 - Distribution of man labor by weeks on 400 acre farm with suggested system.

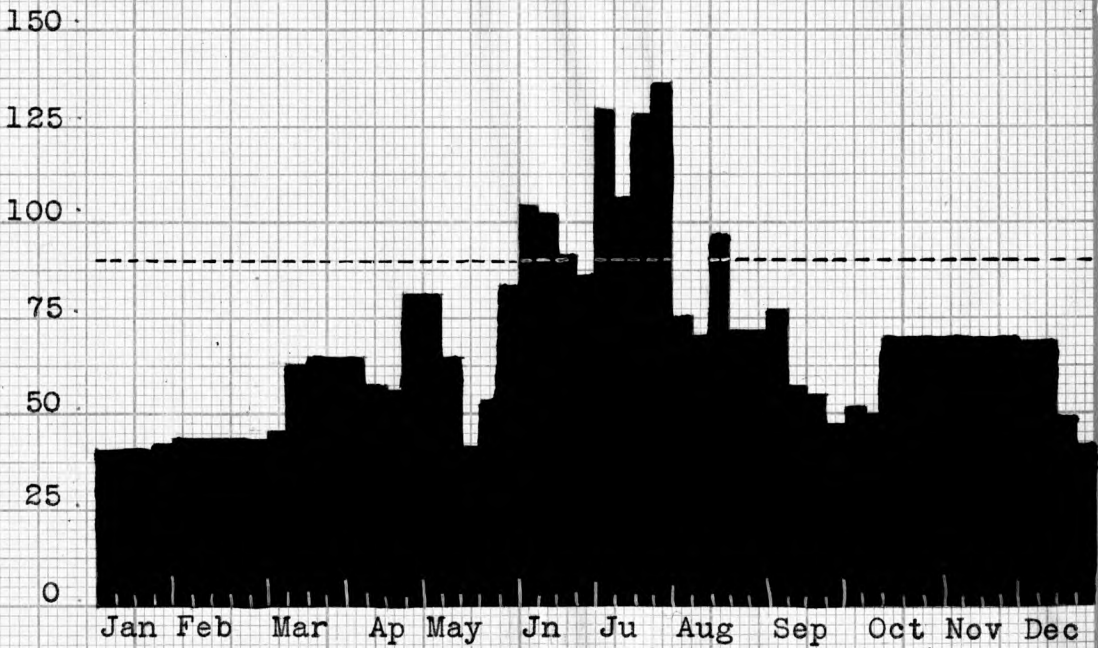


Fig. 26 - Distribution of man labor by weeks on 400 acre farm with typical system.

Table XVIII. - A typical system for 80 acre farm, 40 crop acres.

		Typical system
Crops raised:		
Corn		15 acres
Kafir corn		5 "
Oats		10 "
Alfalfa		10 "
Native pasture		25 "
Waste land		15 "
Livestock kept:		
Cows		2 head
Other cattle		2 head
Poultry		100 head
Brood sows		2 head
Horses		3 head

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Table XVIII. (con't.)

	Typical system	
Crop sales:		
Corn	31 bu.	\$ 21.70
Oats	29 "	12.18
Alfalfa hay	16½ T.	198.00
Livestock sales:		
Butterfat	275 lbs.	110.00
Beef	1000 lbs.	82.50
Eggs	289 doz.	147.25
Poultry	290 lbs.	49.30
Pork	<u>3600 lbs.</u>	<u>288.00</u>
Total		\$908.83
Products used in home		<u>183.00</u>
Total income		\$1,091.93

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Table XVIII. (Con't.)

	Typical system
Expenses	
Labor	Exchange
Purchased feed	\$ 46.88
Livestock expense	41.25
Crop expense	89.75
Machinery	216.00
Farm upkeep	55.20
Taxes	<u>71.13</u>
Total	\$520.01
Interest on investment	<u>284.52</u>
Total deductions	\$804.53
Family earnings	\$287.40
Total hou's labor	2,057.50
Labor force required	One man and family

Table XIX. - A typical system for 160 acre farm, 125
crop acres.

Typical system	
Crops raised:	
Corn	50 acres
Kafir grain	5 "
Oats	10 "
Alfalfa	30 "
Prairie hay	10 "
Native pasture	15 "
Waste land	20 "
Wheat	20 "
Livestock kept:	
Cows	2 head
Other cattle	5 "
Poultry	200 "
Brood sows	7 "
Horses	5 "

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Table XIX. - (Con't.)

Typical system		
Crop sales:		
Oats	250 bu.	\$105.00
Kafir	108½ "	75.95
Alfalfa	65 T.	708.00
Wheat	335 bu.	335.00
Livestock sales		
Butterfat	375 lbs.	150.00
Beef	300 "	24.75
Eggs	1,402 doz.	350.50
Poultry	590 lbs.	100.30
Pork	14,000 "	1,120.00
Total		\$3,041.50
Products used in home		181.70
Total income		\$3,223.20

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Table XIX. (Con't)

	Typical system
Expenses:	
Labor	\$175.00
Purchased feed	415.90
Livestock expense	91.00
Crop expense	113.50
Machinery	340.00
Farm upkeep	110.00
Taxes	<u>140.00</u>
Total	\$1,385.40
Interest on investment	<u>561.78</u>
Total deductions	\$1,947.18
Family earnings	1,276.02
Total hou's labor	3,529.12
Labor force required	One man and family

Table XX. - A typical system for 200 acre farm, 100 crop acres.

Typical system	
Crops raised:	
Corn	40 acres
Kafir grain	5 "
Oats	10 "
Alfalfa	10 "
Wheat	20 "
Prairie	15 "
Native pasture	75 "
Waste land	25 "
Livestock kept	
Cows	2 head
Other cattle	6 "
Poultry	200 "
Brood sows	4 "
Horses	5 "

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Table XX. - (Con't.)

	Typical system	
Crop sales:		
Corn	18 bu.	\$ 12.60
Oats	95 "	39.90
Wheat	335 "	335.00
Prairie hay	15 T.	105.00
Alfalfa hay	4 T.	48.00
Livestock sales:		
Butterfat	360 lbs.	144.00
Eggs	1,443 doz.	360.75
Beef	2,850 lbs.	235.13
Pork	7,450 "	596.00
Poultry	1,000 "	170.00
Total		\$2,046.38
Products used in home		<u>202.00</u>
Total income		\$2,248.38

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Table XX. - (Con't.)

	Typical system
Expenses:	
Labor	\$120.00
Purchased feed	143.85
Livestock expense	97.00
Crop expense	85.15
Machinery	332.75
Farm upkeep	138.00
Taxes	<u>165.12</u>
Total	\$1,081.87
Interest on investment	<u>660.48</u>
Total deductions	\$1,742.35
Family earnings	\$506.03
Total hours labor	2,851.15
Labor force required	One man and family

Table XXI. - A typical system for 400 acre farm, 200 crop acres

	Typical system
Crops raised:	
Corn	80 acres
Kafir grain	10 "
Oats	25 "
Alfalfa	15 "
Wheat	50 "
Prairie	20 "
Native pasture	160 "
Waste land	40 "
Livestock kept:	
Cows	3 head
Other cattle	12 "
Poultry	250 "
Brood sows	8 "
Horses	8 "

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Table XXI. - (Con't.)

	Typical system
Crop sales:	
Corn	\$ 61.60
Kafir	82.60
Oats	270.90
Alfalfa	198.00
Wheat	837.00
Prairie	140.00
Livestock sales:	
Butterfat	244.00
Eggs	465.00
Beef	482.63
Pork	1,236.00
Poultry	<u>212.50</u>
Total	\$4,230.23
Products used in home	<u>252.57</u>
Total income	\$4,482.80

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Table XXI. - (Con't.)

Typical system	
Expenses:	
Labor	\$350.00
Purchased feed	189.64
Livestock expense	141.12
Crop expense	179.95
Machinery	521.62
Farm upkeep	276.00
Taxes	<u>276.00</u>
Total	\$1,934.33
Interest on investment	<u>1,283.14</u>
Total deductions	\$3,217.47
Family earnings	1,265.33
Total hours labor	4,995.06
Labor force required	One man and family and one hired man

Table XXII. - A typical system for 640 acre farm, 220 crop acres.

Typical system	
Crops raised:	
Corn	85 acres
Kafir grain	10 "
Oats	20 "
Alfalfa	25 "
Wheat	50 "
Prairie	30 "
Native pasture	360 "
Waste land	60 "
Livestock kept:	
Cows	4 head
Other cattle	2 "
Poultry	150 "
Brood sows	5 "
Horses	9 "

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Table XXII. - (Con't.)

	Typical system	
Crop sales:		
Corn	1,095 bu.	\$766.50
Wheat	832 bu.	832.00
Oats	196 bu.	82.22
Alfalfa hay	43 $\frac{3}{4}$ T.	549.00
Prairie hay	18 $\frac{1}{2}$ T.	129.50
Livestock sales:		
Butterfat	650 lbs.	260.00
Eggs	1,000 doz	250.00
Poultry	540 lbs.	91.80
Pork	9450 "	756.00
Beef	850 "	70.12
Beef cattle	5,000 "	<u>4,125.00</u>
Total		\$7,912.14
Products used in home		<u>225.00</u>
Total income		\$8,137.14

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Table XXII. - (con't.)

		Typical system
Expenses:		
Labor		\$ 325.00
Purchased feed		121.06
Livestock expense		3,044.75
Crop expense		403.95
Machinery		394.28
Farm upkeep		442.00
Taxes		<u>501.00</u>
Total		\$5,232.14
Interest on investment		<u>2,005.00</u>
Total deductions		\$7,237.14
Family earnings		900.00
Total hours labor		4,697.50
Labor force required	One man and family and one hired man	

wintering the stock cows. However, the main feature in the suggested system is the use of good beef type cows for the production of high quality baby beef calves to be marketed at less than a year old. It is contemplated that these calves will be creep fed grain on pasture and be marketed off of grass or with a very short feed from the feed lots.

Other Typical Systems in Use in Riley County

Table XVIII. A typical system for 80 acre farms with 40 crop acres.

Table XIX. A typical system for 160 acre farms with 125 crop acres.

Table XX. A typical system for 200 acre farms with 100 crop acres.

Table XXI. A typical system for 400 acre farms with 200 crop acres.

Table XXII. A typical system for 640 acre farms with 225 crop acres.

Suggested systems were not included for the above farms but reorganization along similar lines to that suggested for the typical farms for which systems were included is necessary. The systems suggested provide a basis on which the farms mentioned above and individual farms may be organized for the greatest possible returns.

Putting the Suggested System into Operation

Changing from the typical system to the suggested system would in many cases require added investment and equipment and other facilities. Allowance has been made for these expenses in comparing the two systems. The system suggested for the farms of the different sizes have been given as if they were in actual operation. It is recognized that changes in the farm layout, methods, and capital investment may be necessary before the suggested system could be put into operation. It requires considerable time and expense to get a good rotation into operation.

Many farm operators do not have the better quality and high producing livestock as provided for in the suggested system. In this case it is probably best and advisable for them to build up their herds through the use of good sires, by growing out young stock instead of attempting to secure the capital needed for establishing their livestock enterprises outright by purchasing stock already grown out and in production.

CONCLUSIONS

1. Yields of grain crops have been declining for past thirty years.
 - A. Probably due to erosion and loss of fertility.
2. Legume acreage for county is low.
 - A. Improved methods of getting stands of legumes necessary.
3. Present typical farm systems seem to be inadequate because of:
 - A. Low amount of crop acres in legumes.
 - B. Not enough livestock kept on farms.
 - C. Low yields due to absence of proper rotations and program for prevention of soil erosion.
 - D. General return from farm business is too low.

Program Suggested

- A. Increase in the acreage of legumes; i.e. alfalfa and sweet clover.
- B. Building up of proper crop rotation to maintain fertility and prevent erosion by terracing when necessary.
- C. More attention to growing right kinds of feed crops to maintain livestock; thus cutting down amount of feed purchased.

- D. A more profitable farm business organization permitting of the utilization of labor more equally throughout the year and a more evenly balancing of sources of income.

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