August 1, 1950

To the Committee on Graduate Study:

I am submitting to you a thesis written by Julius Stanley Hurst entitled "Changes Occurring On Farms In Southern Knox County, Tennessee, 1916 to 1948". I recommend that it be accepted for eighteen quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.

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Major Professor

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and recommend its acceptance:

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CHANGES OCCURRING ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE 1916 TO 1948

A THESIS

Submitted to
The Committee on Graduate Study
of
The University of Tennessee
in
Partial Fulfillment of the Requirements
for the degree of
Master of Science

---

by

Julius Stanley Hurst

August 1, 1950

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CHAPTER I

INTRODUCTION

There have been vast changes in the last 160 years of United State's history — from the sickle to the combine, the ox to the tractor, the oxcart to the jet-plane, four million people to 150 million, free land to scarce high-priced land, and a rural civilization to an urban-industrial civilization.

Industrial growth and the proportional decline in agriculture has been like the hare in the legendary race between the hare and the tortoise. Expansion and development seem to run awhile than rest awhile. During war and inflation agriculture and industry take on new life, shed cumbersome tools and practices, and speed forward at a rapid pace. It was just such a period of technological developments and improvements (World War II) through which agriculture and industry emerged in 1948. The technological developments during World War II may serve society for some years to come without any radical changes. If it is possible to measure some of the changes that have and are taking place in agriculture in an area subjected to industrial growth and development, organizations working for the best interests of society can make a sound contribution to future rural planning.

The best way to judge the future is by the past. It was in this vein of thought this study was undertaken. It was known that some areas were being subjected to the influence of industrialization faster than others. This influence had its telling effect upon agriculture in the area. The experience of these areas can be used by other areas later as they too come under the same type of influence.

State Of The Problem

The purpose of this study is to determine the changes in land utilization and farm organization on farms in southern Knox County, Tennessee, from 1916 to 1940 and from 1940 to 1948.

Importance Of The Study

During World War II and immediately thereafter, the South experienced a period of rapid industrialization. In the period from 1940 to 1945, over 25 percent of all new industrial facilities in the United States were concentrated in the normally Agricultural South.[1]

Tennessee, throughout this period of industrial emergence, maintained an outstanding position. Only nine states in the entire nation between 1899 and 1939 increased in maufacturing faster than Tennessee. In the last decade or so industrialization in the state was comparatively high (Figure 1).

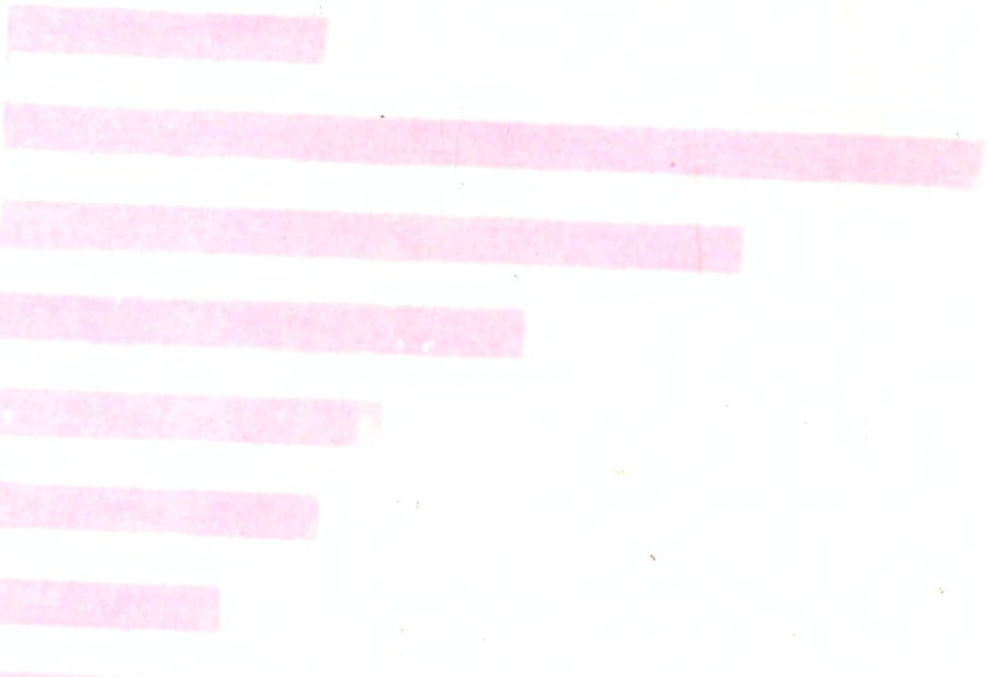
Over the 16-year period from 1923 to 1939, Tennessee's increase in manufacturing was exceeded by only one state, Virginia. Today, Tennessee is one of the leaders in the industrial Southeast.[2]

People for many years have been moving out of agriculture and into industry. This is more rapid in areas being subjected to industrialization than in other areas. The reason for the movement of people out of agriculture and into industry is twofold. First, population

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[1]Whitlatch, George I., Industrial Development of Tennessee (Nashville: Ambrose Printing Company, 1945), p. 1.

[2]Ibid., p. 4.



growth has not kept pace with the rapid industrial development throughout the nation. Second, technological developments in the field of agriculture have made it possible to produce the needed food and fiber with a proportionally smaller number of people. Where this migration out of agriculture has been rapid, the changes in agriculture take place much quicker than in an area where migration is slow. The above conditions are applicable to the area used in this study.

From 1940 to 1948, population increased in the United States 10.6 percent, while in Tennessee it increased only 6.2 percent. In Knox County and the three surrounding counties of Anderson, Roane, and Blount there was an aggregate increase in population of 23.1 percent (Table I).

While the total population in the United States was increasing from 1940 to 1948, the farm population decreased by 8.9 percent or 2,719,000 persons. In Tennessee, farm population decreased by 8.6 percent or 109,000 persons (Table II).

As farm population decreased and total population increased, the number of people employed in manufacturing increased by over one-half. In the United States the increase in the number of people employed in manufacturing was 50 percent or 4,766,998 persons from 1939 to 1947. In Knox and the three surrounding counties, the aggregate increase was 56.6 percent, while in Blount County alone, the increase was 145.5 percent (Table III).

In Anderson and Roane counties, two of the adjoining areas, the city of Oak Ridge had its birth and growth from an area of wooded hills to a

town of an estimated peak population of 75,000 in 1945 and a population of 35,800 in 1948.[3] These people were employed in various atomic energy projects at Oak Ridge.

In Knox County, industrial employment (all employment in firms having eight or more employees) increased from 30,890 to 44,448, or 43.9 percent, from 1940 to 1948. In Blount County, there was an increase in industrial employment of 77.1 percent (Table V).

There are no data available on industrial employment in Anderson and Roane counties. However, the number of manufacturing establishments in these two counties increased 37.5 and 27.8 percent, respectively (Table IV).

In addition to the above increase in Roane and Anderson counties, the atomic energy projects at Oak Ridge, which are not included in the above data, furnish employment to many people. The exact number is not known, but it has obviously been great.

The previous information has covered only the industrial changes in the area studied, and they have been marked. There is no information as to what changes have taken place in agriculture in an area subjected to such rapid industrial growth. And yet, indications point to industrialization of many areas in the South.

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[3]Knox, John Ballenger, The People Of Tennessee (Knoxville: University of Tennessee Press, 1949), p. 50.

TABLE I

POPULATION CHANGES, UNITED STATES, TENNESSEE; KNOX, BLOUNT, ANDERSON, ROANE COUNTIES, TENNESSEE, 1940-1948

Area	1940	Estimated 1948	Actual Increase	Percent Increase
United States	131,456,000	145,426,000	13,970,000	10.6
Tennessee	2,915,841	3,097,400	181,559	6.2
Knox County	178,468	219,600	41,132	23.0
Blount County	41,116	44,407	3,291	8.0
Anderson County	26,504	39,300	12,796	48.3
Roane County	27,795	33,800	6,005	21.6
Knox, Blount, Anderson, Roane combined	273,883	337,107	63,224	23.1

Source: John Ballenger Knox, The People of Tennessee (Knoxville: The University of Tennessee Press, 1949), pp. 172-174.

TABLE II

FARM POPULATION CHANGES IN UNITED STATES, SOUTH, AND TENNESSEE, 1940-1947

Area	1940	1947	Actual Decrease	Percent Decrease
United States	30,269,000	27,550,000	-2,719,000	8.9
South*	16,271,000	14,576,000	-1,695,000	10.4
Tennessee	1,265,000	1,156,000	- 109,000	8.6

* South refers to the 16 states in the South Atlantic, East South Central and West South Central geographic regions, namely: Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma and Texas.

Source: United States Department of Agriculture, Agricultural Statistics, 1948 (Washington, D. C.: U. S. Government Printing Office, 1948), pp. 541-545.

TABLE III

CHANGES IN NUMBER PEOPLE EMPLOYED BY MANUFACTURING ESTABLISHMENTS UNITED STATES, TENNESSEE; KNOX, BLOUNT, ANDERSON, ROANE COUNTIES, TENNESSEE, 1939-1947

Area	1939**	1947***	Actual Change	Percent Change
United States	9,527,306	14,294,304	4,766,998	50.0
Tennessee	131,024	221,454	90,430	69.0
Knox County	14,640	19,905	5,265	36.0
Blount County	4,159	10,209	6,050	145.5
Anderson County	938	1,079*	141	15.0
Roane County	2,103	2,998*	895	42.6
Knox, Blount, Anderson, Roane Counties	21,840	34,191	12,351	56.6

* Does not include employees working at Oak Ridge.

** Bureau of Census. Census of Manufacturers, 1939 (Washington, D. C.: U. S. Government Printing Office, 1940), pp. 2-7.

*** Bureau of Census. Census of Manufacturers, 1947 (Washington, D. C.: U. S. Government Printing Office, 1949). pp. 1-2.

TABLE IV

CHANGES IN NUMBER MANUFACTURING ESTABLISHMENTS, UNITED STATES, TENNESSEE: KNOX, BLOUNT, ANDERSON AND ROANE COUNTIES, TENNESSEE, 1939-1947

Area	1939**	1947***	Actual Change	Percent Change
United States	173,802	240,881	67,079	38.6
Tennessee	2,225	3,346	1,121	50.4
Knox County	182	216	34	18.7
Blount County	25	38	13	52.0
Anderson County	8	11	3	37.5
Roane County	18	23	5	27.8
Knox, Blount, Anderson, & Roane Counties (Combined)	233	288*	55	23.6

In 1947, as in earlier years, a minimum size limit for establishments was set for inclusion in the census. In other census, establishments having less than $5,000 value of products were designated as out of scope of census. In 1947 census reports were required from all establishments, employing one or more persons at any time during the year except that in the lumber industry, saw mills cutting less than 200,000 board feet in 1947 were also excluded.

* Does not include Oak Ridge or Alcoa Aluminum Company.

** Bureau of Census, Census of Manufacturers, 1939. (Washington, D. C.: U. S. Government Printing Office, 1940), pp. 2-7.

*** Bureau of Census. Census of Manufacturers, 1947 (Washington, D. C.: U. S. Government Printing Office, 1949), pp. 1-2.

TABLE V

GROWTH OF INDUSTRIAL EMPLOYMENT* KNOX - BLOUNT COUNTIES, TENNESSEE, 1940-1948

Year	Knox County	Blount County
1940	30,890	6,563
1941	33,576	8,585
1942	36,476	12,380
1943	37,756	14,011
1944	39,246	11,933
1945	38,212	11,360
1946	37,636	11,204
1947	41,041	12,578
1948	44,448	11,623
Actual Increase 1940-1948	13,558	5,063
Percent Increase Over 1940	43.9	77.1

*Includes only those persons working in firms with eight or more employees.

Source: Area Office, Unemployment Compensation Division, Tennessee Department of Welfare, Knoxville, Tennessee, 1950.

Relative to the South, John D. Black, of Harvard has the following to say about prospective changes and future developments. Black made this prediction in 1949.

> The South will see the largest readjustments of any major part of the country. Over large sections of the South, cotton will decline to the position of an important supplementary cash crop. The core of the farming systems in these parts of the region will be growing of forage, corn, and winter small grains and feeding these, first, to dairy cattle, second, to beef cattle, and third, to swine. The farms over large areas will go under intensive grassland management. Needless to state, accompanying these changes will be a large absorption of small farms into neighboring farms to make economic units of the type indicated for the Northeast,[7] which will make as full use as they can of modern power equipment. The prospective changes in this direction are so great that they will not be completed in less than half a century unless private and public credit and farm planning services are provided in large measure.[8]

This statement by Black might well serve as the hypothesis for this study.

Methods Of Procedure

This study is a continuation of previous studies made of the same farms in 1917 and 1941.[9] In 1917 a farm management study was made on 97 farms in southern Knox County. The farms at

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[7]For the Northeast, Black indicates the following condition: "The Northeast is likely to see increasing relative demand for dairy products. This will induce improved pasture and forage management, more mechanization, larger family farm units, and a growing confidence in the agricultural outlook for the region."

[8]John D. Black, "Coming Readjustments In Agriculture," Journal of Farm Economics, XXXI: 1-14, February, 1949.

[9]All data for tables and conclusions on changes from 1916 to 1940 in this study are taken from the 1941 study - H. J. Bonser, R. G. Milk, and C. E. Allred, Quarter Century of Agricultural Changes in Southwestern Knox County, Tennessee, Rural Research Monograph Number 135 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942).

that time were selected at random. The 1917 study covered the crop year of 1916.

In 1941, a restudy was made of the same farms to ascertain the changes that had taken place in the 24-year period from 1916 to 1940.[10]

At the beginning of this study, much attention was given to the study of the farms in the area made in 1941. It was ascertained that only 78 farms of the original 97 were analyzed for land utilization, and that only 61 of the above 78 farms were analyzed for both land use and farm organization. The reduction from 97 to 61 was made because the 36 farms had been diverted from full-time farming by 1940. This one development indicates the trend in the area from 1916 to 1940.

The 61 farming units analyzed for both land use and farm organization in 1940 were used in the 1948 study. No attempt was made to trace the developments on the farming units that had already gone out of production before 1940.

Following the review of the 1941 study, a review was conducted on other available literature; and then the problem was formulated. The next step was the selection of schedules. Previous information that had been acquired in 1917 and 1941 and the information desired for this study provided the basis from which schedules were obtained. The schedules used are the regular U. S. Department of Agriculture Farm Management forms adapted to the Southern States.

The survey method was used in collecting the data. The data were tabulated and from these, tables and figures constructed. This information

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[10] Ibid., pp. 19-31.

was analyzed and compared with similar data from the two previous studies. Changes were noted, and the information was put into shape and recorded.

Review of Literature

This review will be restricted to relatively recent literature of a similar nature from Tennessee.

The first and most important study of this nature and in the same area was the one completed by the Agricultural Experiment Station of the University of Tennessee in 1941, Quarter Century of Agricultural Changes In Southwestern Knox County, Tennessee.[11]

This study is a continuation of the above study. In this 1941 study, it was found that a number of significant changes has taken place between 1916 and 1940.

According to the 1941 study, the purpose was: "To depict agricultural changes over a 24-year period in an area subject to increasingly marked urban influence. It is hoped that lessons may be learned which will be helpful to other areas where similar adjustments are taking place."[12]

The study provides a general description of the area, community changes since 1916, changes in land use, farm organization, prices received by farmers, sources of income, current farm expenses, and net returns from farming, and factors affecting incomes in 1916 and 1940.

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[11] Ibid., pp. 1-64.

[12] H. J. Bonser, R. G. Milk, and C. E. Allred, Quarter Century of Agricultural Changes In Southwestern Knox County, Tennessee, Rural Research Monograph Number 135 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), p. 1.

Some of the more important changes found are as follows:

This community has been subject to marked urban influence arising out of population growth in and around the city of Knoxville. The total number of families outside of Concord town increased 35 percent in the 24-year period. Families living on farms decreased 6.0 percent, while non-farm families increased 365 percent. Part-time families declined, while hired farm laborer families increased. Death of farm operators, uneconomic farm units, need for immediate cash on the part of farm owners, and demand for residential sites by industrial workers were some of the reasons for breaking up farm units or selling off parts of farms.

Open pasture increased from 23.6 in 1916 to 33.4 percent in 1940. This gain was in permanent pasture, while rotation pasture declined slightly. Land in crops declined from 47.8 percent to 37.0 percent. About 10 percent of the total farm area was taken out of crops during the interval and put into permanent pasture.

Field crops in 1916 were about equally divided in acreage between row crops, small grains, and hay. By 1940 this had changed so that hay acreage equaled that of both row crops and small grains. Double cropping increased from 6.6 percent of the acreage in crops in 1916 to 22.1 percent in 1940. Most of the double cropping in 1940 was lespedeza after small grains.

The index of crop yields increased 20 percent during the interval. Increases were most pronounced for small grains and hay. Cattle, especially dairy cattle, increased in number an average of 2 mature head per farm. Hogs, sheep, poultry, and workstock all decreased in number, but the total amount of livestock kept changed very little.

Farms in this area had more items of machinery, an a higher machinery investment, in 1941 than in 1917.

Cows, heifers, and calves increased in value per head by 47, 36, and 24 percent respectively during the interval. All other classes of livestock (excepting suckling pigs) decreased in value. The greatest decline was 25 percent for mules.

Crop sales dropped from $477 to $374 per farm. The sale of farm animals as a source of income changed very little. The drop from $402 to $390 per farm was probably due to a slight decline in steer feeding and in horse breeding.

Dairying in 1916 was almost entirely in production for home use, sale of farm butter, and of cream to creameries. While in 1916 only 3 percent of the farms sold market milk, 41 percent did so in 1940.

Current farm expenses increased 80 percent during the period. Labor, feed, taxes, fertilizer, and seed in the order named were the largest items of current expenses for both years. Feed, transportation expenses, taxes, and lime showed the greatest increase during the 24 years.

Crop farming was less profitable than livestock farming in both 1916 and 1940. Labor incomes decreased, on farms with beef cattle, as the number of beef cattle units increased. High land values apparently make beef production unprofitable in this area.[13]

Three studies have been made on a county-wide basis in Tennessee depicting changes that have occurred in agriculture. They were in Crockett County in West Tennessee, Cumberland County on the Cumberland Plateau and Overton County on the Highland Rim. Both of the latter counties are in Middle Tennessee.

The three studies pointed out significant changes which had taken place in agriculture from 1879 to 1944 in Crockett County,[14] from 1860 to 1940 in Cumberland County,[15] and from 1889 to 1934 in Overton County.[16]

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[13] Ibid., pp. iv-vii.

[14] Thomas J. Whatley, Significant Trends In Agriculture Of Crockett County, Tennessee, 1879-1945, Rural Research Monograph Number 230 (Knoxville: University of Tennessee Agricultural Experiment Station, 1947), pp. 1-31.

[15] Charles E. Allred, Howard J. Bonser, and Edmond J. Lebrun, Significant Changes in Agriculture of Cumberland County, Tennessee, Rural Research Monograph Number 139 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), pp. 1-38.

[16] Charles E. Allred, and A. C. Robison, Significant Changes In Agriculture of Northeastern Highland Rim, Rural Research Monograph Number 61 (Knoxville: University of Tennessee Agricultural Experiment Station, 1937), pp. 1-36.

These three counties are predominantly rural counties. The changes in these counties have not been influenced by urbanization and industrialization to the extent that the area being studied in Southern Knox County has.

Some of the more important changes in the three counties that were noted follow. The acreage in farm land increased in Overton County over the period studied by 17.0 percent, while it decreased in Crockett County by 7.0 percent, and in Cumberland County by 27.0 percent. The average size farm decreased in all counties.

The results do not attempt to measure any pattern of development that can be used as a basis for future rural planning. It was noted that the average size farm in Crockett County in 1945 was 39 percent larger than in 1925, although the trend over the whole period, from 1879 to 1945, was toward a smaller average size farm. In the Overton County study, farm records from 10 identical farms were studied for the years 1926 and 1936. These records indicate a tendency toward larger and more efficient farms.

The above information indicates the trend of average sized farms in these areas may be somewhat misleading. It is probably that the total number of farms is increasing because many of the small farms are being broken up into smaller part-time units. This practice resulted in more farms in the area even though many of the full-time farming units are getting larger.

Row crops, such as cotton in Crockett County and corn in all three counties, increased. The acreage devoted to truck crops increased. The acreage devoted to small grains decreased in all three counties. The most marked change in the cropping system was in the acreage devoted to hay. There was a tendency in all three counties to devote more land to hay.

As for livestock, only one county, Cumberland, had more livestock in 1940 than at some former year. Hogs showed the most consistent decline of any other livestock enterprise. There was a slight increase in the number of workstock in Crockett and Cumberland Counties. The number of dairy cattle showed a definite increase in Cumberland and Overton Counties, and remained fairly constant over the period for Corckett County.

Another agricultural trend study that involves the area studied is the tracing of the agricultural history of Knox County from the days of the Indians to 1940.[17] Specific information concerning agricultural trends in this report follow. Crop production shifted to provide feed for cattle, and to conserve rather than exploit soil resources. There was a growth of dairying (especially for the fluid milk market) at the expense of sheep and hogs. There was a shift toward mechanization of the larger farms with favorable topography, and a growth in number of part-time and non-farming land units in the rural communities.

Two studies, one on crops and one on livestock, have also been completed on agricultural trends in Tennessee. Both reports deal

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[17]H. J. Bonser and C. C. Mantle, Agricultural History of Knox County, Tennessee, Part I, Part II, Part III, Rural Research Monographs Numbers 186, 187 and 188 (Knoxville: University of Tennessee Agricultural Experiment Station, 1945), pp. 1-37.

with the analysis of census data from the 1800's to 1945. These studies revealed some of the more important trends from 1879 to 1944 to be as follows. Corn acreage has dropped considerably from 3,374,574 acres in 1900 to 2,320,303 acres in 1945. Wheat and oats, although quite important in the 1800's, decreased over the years until recently when they seem to be increasing in acreage. Hay acreage made rather large gains up to 1940.[18]

Trends in horse production in Tennessee reached its peak in 1905, while mule production reached its peak in 1922. Both enterprises have had steady declines since that date. Cattle numbers in Tennessee on January 1, 1944, were two and one-half times that of 1850. There was a four-fold increase in milk cows from 1867 to 1947. Before the Civil War, over 10 percent of the number of hogs in the nation was in Tennessee. By 1944 this percentage was down to 2.1 percent. The number of chickens has changed but little since 1889.[19]

Organization of Study by Chapters

Chapter I is designed to introduce the problem, establish the fact that the area being studied is part of an area undergoing industrial development and urban growth, review some related literature to indicate

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[18]B. H. Luebke, Graphic Summary of Changes in Use of Cropland in Tennessee, Rural Research Monograph Number 218 (Knoxville: University of Tennessee Agricultural Experiment Station, 1947), pp. 1-43.

[19]B. H. Luebke, Trends in Livestock Production in Tennessee by Type of Farming Areas, Rural Research Monograph Number 228 (Knoxville: University of Tennessee Agricultural Experiment Station, 1947), pp. 1-24.

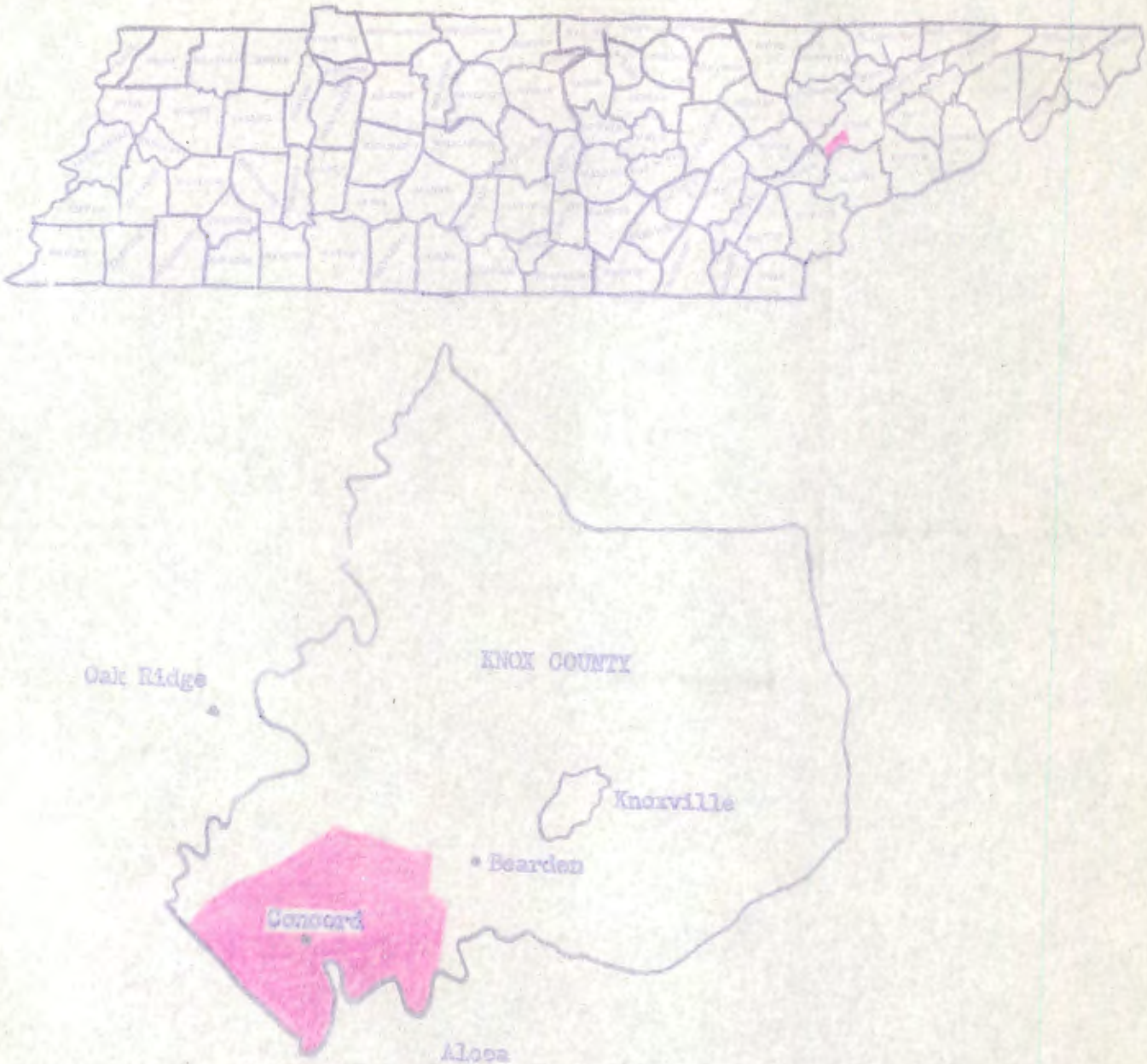


Figure 2

Location of area studied

the lack of a recent study of this nature, and to describe the area being studied.

Chapter II is designed to establish the more important changes that have occurred during the same period in the American economy and American agriculture. These changes will be used for comparison with the changes which have occurred in the area studied.

Chapter III describes the general changes that have taken place in the community, such as increase in non-farm homes, improved roads, improved school facilities, improved methods of transportation. These changes have had their influence on agriculture.

Chapter IV shows changes occurring on the sample farms. It is devoted to changes in land use, crop acreage and crop yields.

Chapter V continues the work started in Chapter IV, and carries it into the area of farm operation and farm organization. This will show changes in class of operator, livestock, machines, equipment, prices received; crops, livestock and livestock products sold, and expenses.

Chapter VI shows the changes in the sources and the amount of the gross income, and the returns from labor on crops and livestock.

Chapter VII presents concluding observations on how changes in the sample area differ from changes in the United States, and conclusions regarding this area which has been subjected to industrial development and urban growth.

Description of Area Studied

Location. The area studied is located west of Knoxville, in the southwestern corner of Knox County, Tennessee. It extends about three miles on either side of U. S. Highway 11, to the Knox-Loudon County line. The northern boundary is approximately at Black Oak Ridge. The southern boundary is on the Tennessee River. The total area of the community is approximately 60 square miles.[20]

Concord, the largest community in the area, is approximately 15 miles from Knoxville. From Concord, it is approximately 13 miles to Oak Ridge and 26 miles to Alcoa, the world's largest aluminum reduction and fabricating facilities.

Topography. Several low parallel ridges and narrow valleys lie in the southern part of the community. A broad valley of relatively level farm land runs parallel to Highway 11 through the center of the area. North of this valley lies the Black Oak Ridge section which is hilly and rocky. In general, the topography of the area is smoother than most of the East Tennessee area.

Communication. Most of the roads in the area are of all weather construction. Many of them are hard surfaced. In addition to U. S. Highway 11, which runs through the center of the area, a network of asphalt feeder roads make travel easy. With the center

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[20] H. J. Bonser, R. G. Milk and C. E. Allred, Quarter Century of Agricultural Changes In Southwestern Knox County, Tennessee, Rural Research Monograph Number 135 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), pp. 2-6.

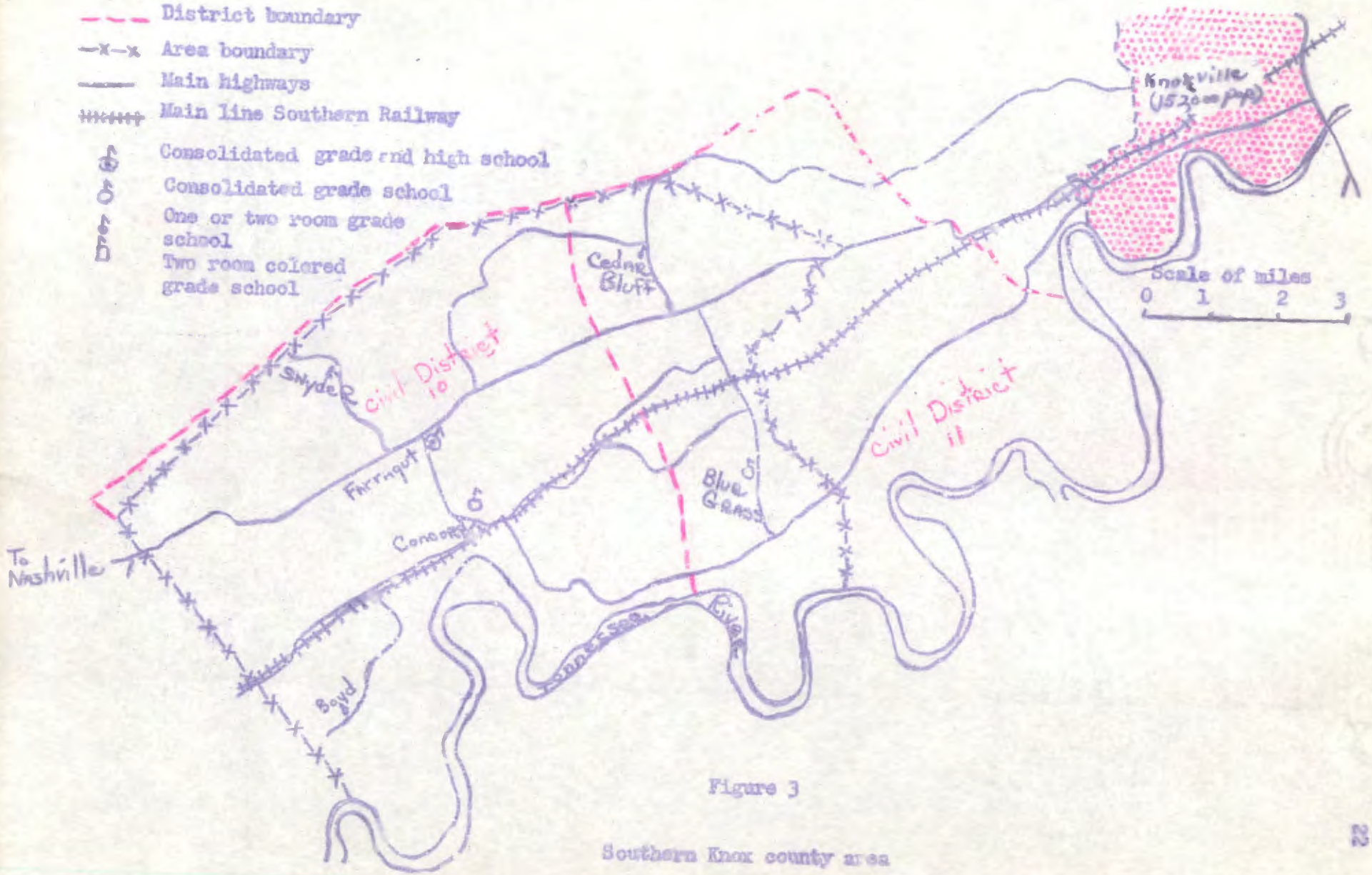


Figure 3

Southern Knox county area

of the community about 15 miles from the city of Knoxville, and three paved highways running into the city, transportation is not a problem in the area.

Passenger bus service operates between Concord and the city of Knoxville. Two routes, one along U. S. Highway 11 and another through the southern part of the area, are served by the local bus. Through bus service operates along U. S. Highway 11. Many of the residents commute daily to and from work in Knoxville by means of these carriers. Many of the families living in the area have automobiles, and these are used by both non-farm and farm residents. Residents near the western edge of the community do a considerable amount of their business in the town of Lenoir City in Loudon County.

A telephone exchange located in Concord serves the major portion of the area.

Community Organization. The unincorporated village of Concord is the only population center of the community. There are several stores, a barbershop, several churches, a garage, service station, and a post office in the village.

The area in the vicinity of Farragut High School, two miles north of Concord on U. S. Highway 11, is taking on the characteristics of a small village. This is especially true relative to the services being offered. Located here is a consolidated vocational high school, a medical clinic, a cabinet shop, a cleaning shop, a general store, and a dairy processing plant. Residential housing, although at present scattered along the four roads leading from the school, is increasing rapidly.

Tourist accomodations are numerous along U. S. Highway 11, and non-farm residences are increasing rapidly along the three main highways leading from the community to the city of Knoxville.

Consolidated grade schools are located at Farragut and Blue Grass. There are also elementary schools at Boyd and Cedar Bluff. The communities around Blue Grass and Cedar Bluff schools have a number of non-farm homes.

Agriculture. This area is one of relatively good soils, and has the advantage of being near a large city for the disposal of farm produce. Farmers in the area appear to be moderately prosperous.

Using 1945 census data, the average farm located in Civil Districts 10 and 11 was compared with the average farm in Knox County, Tennessee and the United States. The comparison shows the diversity of the type-of-farming carried on in the area. Civil District 10 lies almost wholly in the area, while approximately one-half of Civil District 11 is included. These two districts are fairly representative of the area studied.

The average size farm in the United States in 1945 was 194.5 acres, in Tennessee 75.9,and Knox County 45.3. In Civil District 10 the average size farm was 69.3, while it was only 43.1 in Civil District 11 (Table VI).

Civil Districts 10 and 11 had more harvested cropland per farm than Knox County. Civil District 10 was near the state average of 24.9 acres.

Acreage in permanent pasture per farm in both Districts was greater than such acreages per farm in the county and state.

The average farm in Civil Districts 10 and 11 was valued higher than the average farm in Knox County or Tennessee. The value per farm in the Districts closely approached the United States average of $7,917 for 1945.

Farms in both Districts in 1945 averaged more tractors per 100 farms than either the county or the state. Civil District 10 averaged 24 tractors per 100 farms. Civil District 11 had 16 per 100 farms, Knox County 11, and the state as a whole only nine. The national average was 40 tractors per 100 farms.

District 10 farms had more acres of corn per farm than the county. It had more acres of wheat, oats, and barley than either the average farm in the county or state. It had more milk cows, cattle and horses than either the average farm for the county or state. District 10 fell below the state average in the number of hogs, chickens and mules, and below the county average in only chickens (Table VII).

District 11 farms, which were smaller than the District 10 farms, were consistently lower than the state average and generally lower than the county average for crops and livestock (Table VII).

These comparisons reveal that the farms in the area are average or slightly above average, and their estimated values are quite high. On these farms more tractors are found than in most Tennessee areas and in the South. These farms have most all

types of livestock. Relative to crops, these farms grow most all types of crops except cotton.

The 61 farms studied comprise about 8.5 percent of the total number of farms in Civil Districts 10 and 11. This percent is actually greater for the area studied because only approximately one-half of District 11 is in this area.

Table VI

COMPARISON OF LAND USE ON THE AVERAGE FARM IN UNITED STATES, TENNESSEE, KNOX COUNTY, TENNESSEE AND CIVIL DISTRICT 10 AND 11 OF KNOX COUNTY, 1945

Land Use	U.S.*	Tenn.**	Knox Co.**	C.D.** 10	C.D.** 11
Total number farms	5,859,159	234,431	5,208	291	431
Average size of farms	194.9	75.9	45.5	69.5	43.1
Average acres cropland	68.0	24.9	13.9	20.1	15.0
Average acres plowable pasture	18.6	9.6	4.9	5.2	0.5
Average acres permanent pasture	97.4	10.4	10.2	19.5	15.4
Average acres woodland	28.3	21.6	10.9	14.8	9.1
Average value land and buildings	$7917	$3715	$5091	$6532	$6461
Average No. tractors on farm	.4	.09	.11	.24	.16

*United States Department of Agriculture, Agricultural Statistics 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 565.

**Bureau of Census, Census of Agriculture 1945, County and Minor Civil Divisions (Washington, D. C.: Department of Commerce, 1945) Tennessee Data:

TABLE VII

COMPARISON OF CROPS AND LIVESTOCK ON AVERAGE FARM IN UNITED STATES TENNESSEE, KNOX COUNTY, TENNESSEE, CIVIL DISTRICT 10-11,1945

Average number acres or head per farm	U.S.*	Tenn.**	Knox County**	C.D.** 10	C.D.** 11
Corn	16.2	10.1	3.7	5.5	3.7
Wheat	11.3	1.6	.7	2.2	.6
Oats	7.5	.5	.7	1.8	.3
Barley	2.4	.4	.3	1.5	.3
Milk cows	4.7	2.4	2.9	3.2	1.8
Cattle	14.1	6.1	5.1	7.9	3.9
Hogs	8.0	4.2	2.2	2.4	1.6
Chickens	73.9	44.4	40.2	37.9	35.7
Horses	1.5	.7	.6	1.0	.5
Mules	.5	1.1	.5	.6	.4

*United States Department of Agriculture, Agricultural Statistics, 1949, (Washington, D. C.: U. S. Government Printing Office, 1949), pp. 7-473.

**United States Department of Agriculture, Agricultural Statistics for Tennessee by Districts and Counties, 1945.



Figure 4

Distribution of farms studied over southern Knox County

CHAPTER II

SOME CHANGES IN THE AMERICAN ECONOMIC PICTURE AND AMERICAN AGRICULTURE

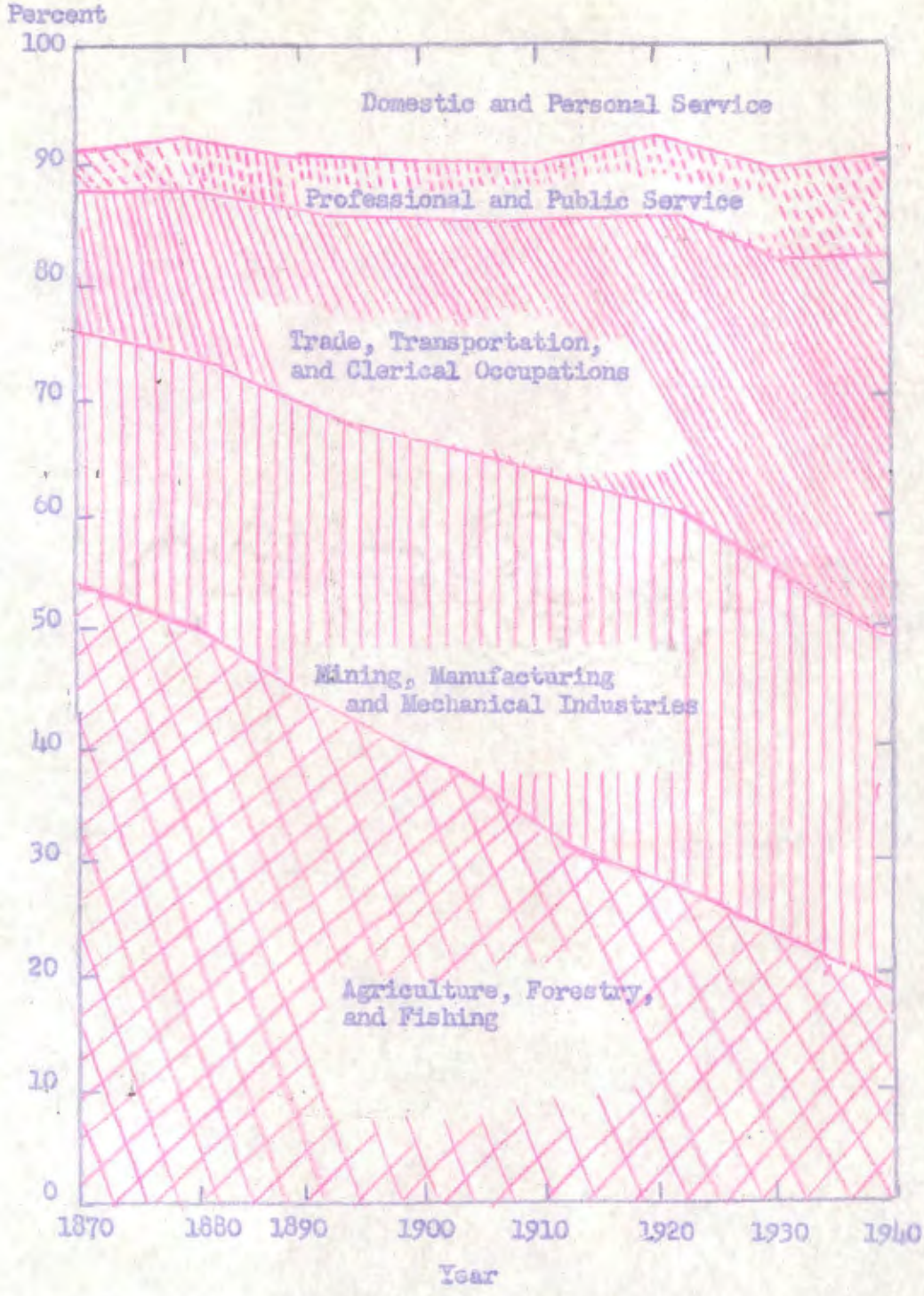
Agriculture no longer dominates the economic picture of the United States. In 1880 approximately 50 percent of the labor force was in agriculture, forestry, and fishing. Since that time there has been a steady decline in the percent of the labor force in this category. In 1940, agriculture, forestry, and fishing employed less than 20.0 percent of the labor force.

While agriculture has experienced a steady decline in the percent of the labor force, professional and public service, trade, transportation and manufacturing segments of the economy have had marked increases.

From 1900 to 1940, professional and public service climbed from 5.1 to 14.9 percent of the total labor force. Trade, transportation, and clerical employment increased from 19.8 to 25.7 percent of the labor force. Manufacturing, mining, and mechanical employment increased from 27.2 to 31.7 percent of the labor force in the same period (Table VIII).

In 1900, agriculture, forestry, and fishing employed 38.2 percent of the labor force. In 1940, only 18.5 percent of the labor force was employed in these same industries.

While the number of persons employed in farming decreased steadily, the total population of the country approximately doubled. There was a 94.8 percent increase in the population of the United States from 1900 to 1949 (Table IX). Farm population went down by 13.4 percent. In 1949,



Source: J. Frederic Dewhurst and Associates, America's Needs and Resources (Brattlebora: E. L. Hildreth and Company, 1947), p. 545.

Figure 5

Changing Composition of American Labor Force

TABLE VIII

DISTRIBUTION OF GAINFUL WORKERS BY OCCUPATIONAL DIVISIONS IN UNITED STATES, 1900-1940

Occupational Division	1900	1910	1920	1930	1940*
Domestic and personal	9.7	10.1	8.0	10.1	9.1
Professional and public service	5.1	5.8	6.8	8.5	14.9
Trade, transportation and clerical occupation	19.8	21.4	24.6	28.6	25.7
Mfg., mining, and mechanical industry	27.2	31.1	32.9	30.9	31.7
Agriculture, forestry, and fishing	38.2	31.6	27.6	21.9	18.5

*The industrial classification of the labor force in 1940 does not include 2.5 million persons who were on public Emergency Work at the time of enumeration and 800,000 new workers. The classification in 1940 only covers 91.3 percent of the total labor force, while in 1930 it covered 97.3.

Source: J. Frederic Dewhurst and associates, America's Needs and Resources (Brattlebora: E. L. Hildreth and Company, 1947), pp. 546-547.

TABLE IX

TOTAL AND FARM POPULATION IN UNITED STATES, 1910-1949

Year	Total Population	Farm Population	Non-Farm Population	Percent Farm Population
1910	91,972,000	32,077,000	59,895,000	34.9
1920	105,711,000	31,614,000	74,097,000	29.9
1930	122,497,000	30,169,000	92,328,000	24.6
1940	131,456,000	30,269,000	101,187,000	23.0
1945	138,923,000	25,190,000	113,733,000	18.1
1949	148,051,000	27,776,000	120,275,000	18.8

Source: United States Department of Agriculture, Agricultural Statistics 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 575.

less than 19 persons out of each 100 in the United States lived on farms (Table II).

Agricultural Production Trends

With over 4.3 millions of persons leaving the farm from 1910 to 1949, it might be assumed that agricultural production would slide steadily downward. But agricultural production did not go down with the number of people farming. Except for the depression years of 1932 to 1938, there have been no sharp declines in the rather steady increase in agricultural output since the year 1919 (Figure 6). With the smallest number of farmers in the 20th century, excepting the mid-World War II years, agricultural output was higher in 1948 than it had ever been (Figure 6).

> Output per farm worker has gone up rapidly in recent years. Weather has been favorable, and farmers have increased output in many ways. Along with mechanical aids, farmers are using more fertilizer, better animal husbandry, new plant varieties, better rotation, and many conservation practices.[21]

In reaching its peak output in 1948, it was found that all enterprises in agriculture did not increase at a steady rate (Table I). Some of the enterprises have decreased production in recent years, although the total has increased. With the above condition, it is obvious that some enterprises have made unusual gains to bring the aggregate to a peak.

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[21]United States Department of Agriculture, Agricultural Outlook 1950 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 19.



Source: United States Department of Agriculture, Agricultural Outlook, 1950 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 19.

Figure 6

Farm output and employment in United States, 1916 - 1948 (1935-39=100)

TABLE X

VOLUME OF AGRICULTURAL PRODUCTION FOR SALE AND CONSUMPTION IN UNITED STATES, 1929-1948

(1935-39 = 100)

	Livestock				Crops					
Year	Meat Animals	Poultry Eggs	Dairy Products	All Livestock	Food Grains	Feed Grain and hay	Cotton	Cotton Seed	Tobacco	All Crops	All Commodities
1929	103	100	93	99	113	103	113	105	98	99	
1930	100	106	94	99	109	83	105	113	96	98	
1931	103	101	96	100	114	92	128	108	104	102	
1932	101	99	97	99	92	113	98	70	92	96	
1933	108	100	98	103	69	82	98	94	85	96	
1934	117	96	98	106	64	41	74	74	72	93	
1935	90	92	98	93	81	91	81	89	89	91	
1936	103	99	99	101	79	58	95	80	82	94	
1937	96	101	99	98	115	112	144	108	117	106	
1938	102	101	102	102	124	115	91	95	105	103	
1939	109	110	102	107	101	124	89	129	107	107	
1940	118	112	105	112	110	114	95	101	107	110	
1941	118	120	110	115	131	125	83	87	110	113	
1942	132	139	114	127	139	129	98	97	121	124	
1943	150	162	113	139	116	125	87	97	114	129	
1944	155	166	115	143	148	153	94	135	128	137	
1945	147	170	119	141	155	144	68	137	122	134	
1946	145	160	119	138	164	172	66	160	135	137	
1947	145	157	117	137	197	131	93	145	136	136	
1948	134	153	114	130	184	204	117	136	151	138	

Source: United States Department of Agriculture, Agricultural Statistics 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 596.

Leading the list in gains is the enterprise of feed grains and hay. In 1948 production of feed grains and hay was the highest it had ever been. It was 32 percentage points higher than it has been in the past 20 years. Feed grains in 1948 were the second highest they have been in the past 20 years, only being exceeded by 1947. Tobacco production shows a decline through both years 1947 and 1948. It reached its peak in 1946.

In 1948, dairy products production was only five percentage points below its peak years of 1945 and 1946. Other than this slight decline for the past two years, there has been a steady increase in the amount of dairy products produced and sold for the past 20 years.

Poultry and egg production reached its peak in the year 1945 and has shown a slight decline each succeeding year. However, poultry and egg production is still higher than any year prior to 1943.

Meat animal production has declined slowly since the peak year of 1944, but is still higher than at any time prior to the year of 1943. Compared with 1929, meat animal production in 1948 was 31 percentage points higher, which means that farms still have large numbers of meat animals on hand.

Relative to changes in livestock production the following are given as influencing factors.

> Three major forces are back of the recent changes in livestock production. They are (1) the shift from animal to mechanical power, (2) the variations in the total feed supply, and (3) the higher production per animal. These forces in turn have been in-

fluenced by prices of livestock products and other economic changes.[22]

Relative to changes in crops and crop production the following are given as influencing factors.

> The greatest contribution of the changes in crops and varieties made to speed up wartime production was the interwar development of improved seeds that greatly increased the yields per acre of our most important crops. Hybrid seed corn is an outstanding example of this.[23]

Farm production has gone up. The number of farmers has decreased. To have accomplished this, farm workers must have become more efficient. How much more efficient were farm workers in 1948 than in previous years?

The production per farm worker was 71.0 percent greater in 1948 than in 1916. Production per farm worker was 29.0 percent greater in 1940 than in 1916 (Figure 6).

More and better machinery, better breeds of livestock and higher yielding varieties of crops with improved technology have played an important part in increasing production per worker on the farm.

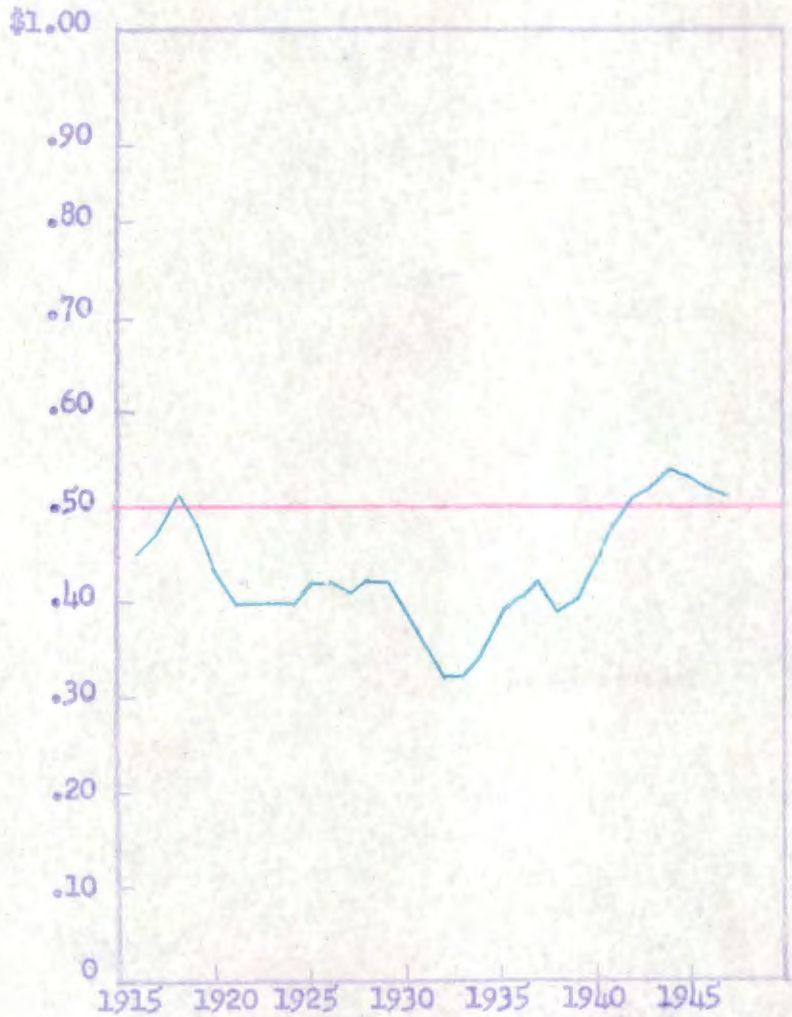
Income Trends

The farmer's job is producing food and fiber for the market. When the consumer buys this food and fiber, what percent of the dollar spent by the consumer goes to the farmer?

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[22]Sherman E. Johnson, Changes In American Farming, Miscellaneous Publication No. 707 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 45.

[23]Ibid., p. 27.



Source: United States Department of Agriculture, Agricultural Statistics, 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 619.

Figure 7

Farmer's share of the consumer dollar
1916 - 1949

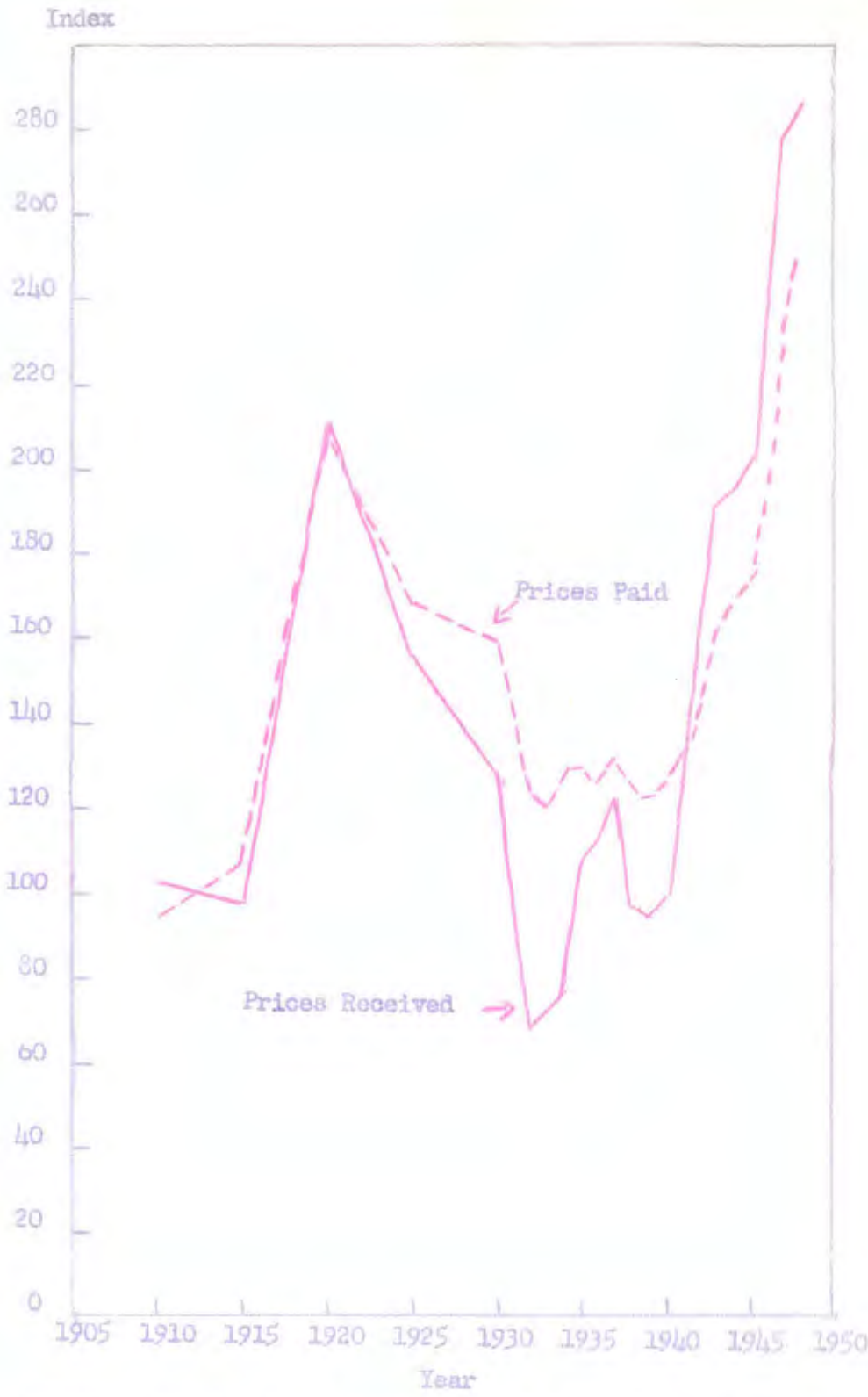
Generally speaking the farmer received less than half the consumer dollar through the years. In fact, the farmers' share of the consumer dollar has not been above 50 cents but seven years since 1913. It was never higher than 54 cents. In 1932 and 1933 the farmers' share of the consumer dollar went as low as 32 cents. Much of the time it has been around 40 cents (Figure 7).

A definite influence on the income of the farmer is the prices received as compared with the prices paid by farmers. Prices paid have been, in most years, higher than prices received. It was only in the late World War I years and all of World War II that prices farmers received were higher than prices farmers paid (Figure 8).

In a study of farm income from 1910 to 1948, two peaks for gross farm income and farm expenses are found (Figure 9).

From 1910 to 1915, agriculture experienced a rather stable period for both production and expenses. In 1916 there is a noticeable increase in the gross income from farming. This increase continued until the first peak year of 1919. In 1920, production expenses went up while gross income came down. Net income took the loss. In 1921 there was a definite drop in gross income and only a small drop in expenses. Again net income to the farmer suffered.

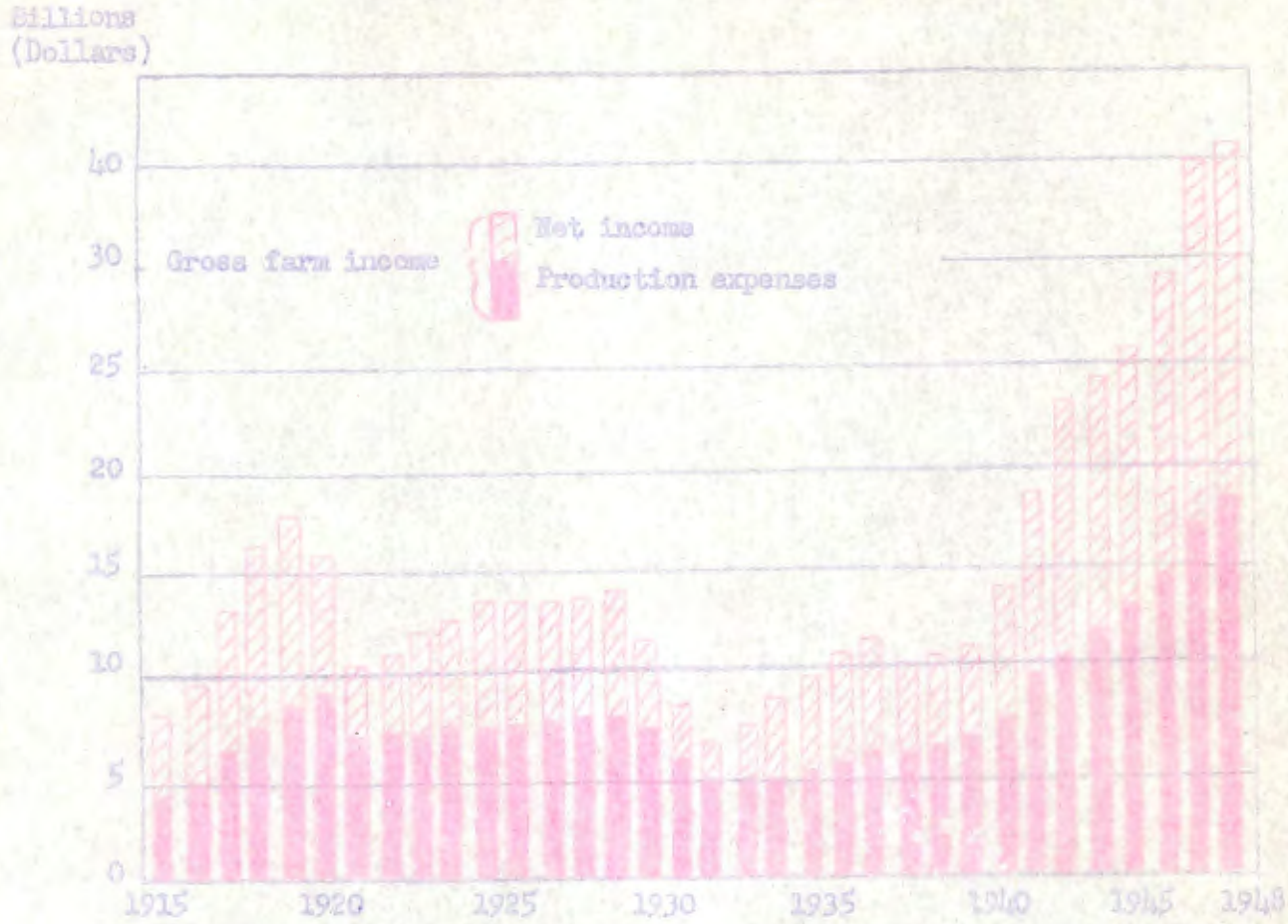
Gross income was only slightly higher, 15.0 percent, in 1940 than in 1916. At the same time expenses in 1940 were 34.0 percent higher than in 1916. The 1948 gross income in the United States was 270.0 percent higher than in 1916, while expenses were 283.0 percent higher (Figure 9).



Source: United States Department of Agriculture, Agricultural Statistics, 1950 (Washington, D. C.: U. S. Government Printing Office, 1949), pp. 621-622.

Figure 8

Index prices received and prices paid by farmers in United States, 1910 - 1948



Source: Sherman E. Johnson, Changes In American Farming, Miscellaneous Publication Number 707 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 59.

Figure 9

Gross farm income, net income and production expenses of farm operator United States, 1915 - 1948

Trend In Size Of Farms

The total number of farms counted in the census of agriculture decreased nine percent from 1920 to 1945. At the same time, "land in farms" increased 19.0 percent. This increase took place, however, in the Western States. The land in farms decreased in most of the Eastern States during this period.[24]

One definite trend is toward more part-time and rural home type of farms. In the quarter-century from 1920 to 1945 there was a 106.0 percent increase in the number of extremely small units that are counted as farms under 10 acres. The number of farms from 10 to 19 acres increased slightly from 1920 to 1945.[25]

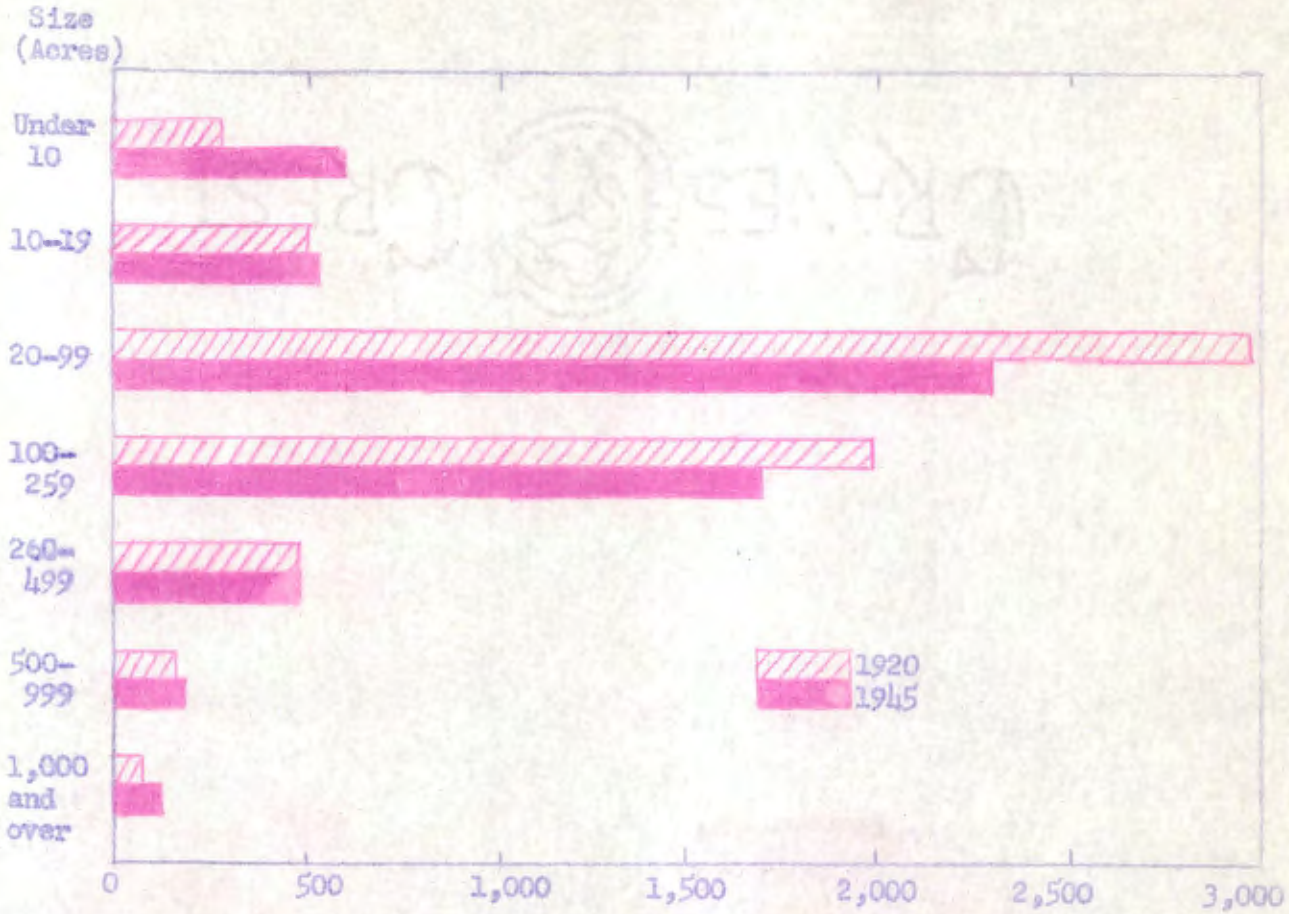
In contrast to this large increase in numbers of the small part-time and residential farms, from 1920 to 1945, there was a 23.0 percent decrease in what might actually be called "small farms," those with 20 to 99 acres. There were 690,000 fewer farms in this group in 1945 than in 1920. There were 14.0 percent fewer farms in the size group 100 to 259 acres. The group from 260 to 499 acres was practically the same; only a one percent decrease from 1920 to 1945 (Figure 10).

While the very small and part-time farm units were growing in number, large farms were also increasing in number. The group from 500 to

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[24] Ibid., p. 53.

[25] Ibid., pp. 52-54.



Source: Sherman E. Johnson, Changes in American Farming, Miscellaneous Publication Number 707 (Washington, D. C.: U. S. Government Printing Office, 1949), pp. 52.

Figure 10

Trend in number of farms by size groups, United States, 1920 - 1945
(number in thousands)

999 acres showed an increase of 16.0 percent, and those of 1,000 acres and over increased 69.0 percent. About 87.0 percent of the number of farms of 1,000 acres or over were found in the 17 Western States.[26] Census data and other information also indicates that there is some increase in large farms outside the grain and ranching areas of the Western States.

Trends In Land Utilization

There has been a steady increase in the amount of land in farms since 1900. In 1900 there were 839 million acres in farms. There were 1,142 million acres in farms in 1945. This is an increase of 36.0 percent in acreage in 45 years (Table XI).

The amount of land devoted to crops had a steady increase until the year 1930. Pasture land has been increasing steadily since 1900. There was a 61.0 percent increase in pasture land from 1920 to 1945. There was a 15.0 percent increase in pasture land from 1940 to 1945 (Table XI and Figure 11).

Woodland decreased rather steadily from 1900 to 1930; but since 1930, 16 million acres have been returned to forestland. The amount of wasteland has shown a steady decrease since 1900.

Trends In Mechanization

The rate of adoption of mechanical power and auxiliary equipment has varied considerably over the first half of the 20th Century. The

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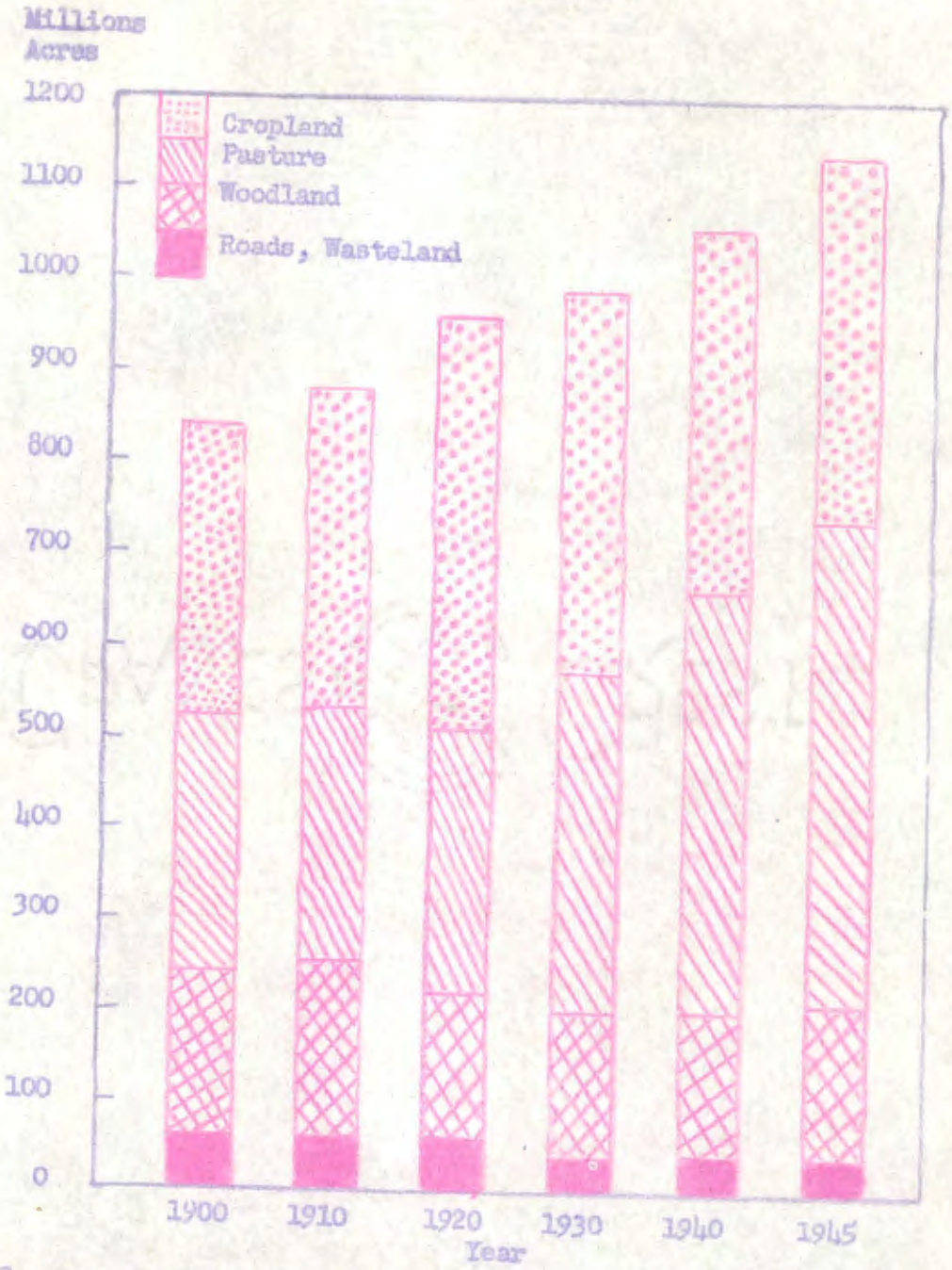
[26] Ibid., p. 53.

TABLE XI

LAND UTILIZATION IN UNITED STATES, 1900-1945

Major Land Uses	1900	1910	1920	1930	1940	1945
	Millions of Acres					
Land in farms	839	879	956	987	1061	1142
Cropland	319	347	402	413	399	403
Cropland harvested	295	322	362	359	321	353
Cropland failure, idle or fallow	24	25	40	54	78	50
Pasture on farms	276	284	328	379	461	529
Plowable pasture	90	95	105	109	111	109
Not plowable	186	189	223	270	350	420
Forest and woodland on farms	191	191	168	150	157	166
Pastured forest and woodland	87	98	77	95	100	95
Not pastured	104	93	91	65	57	71
Farmsteads, roads, wastelands	53	57	58	45	44	44

Source: United States Department of Agriculture, Agricultural Statistics 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 565.



Source: United States Department of Agriculture, Agricultural Statistics, 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 565.

Figure 11

Land utilisation in United States, 1900 - 1945

number of tractors on farms increased sharply during World War I. But these tractors were large and cumbersome, and after the war the increase slowed down. It was necessary to keep workstock on the place to do the light jobs. Then came the introduction of the general-purpose tractor, and the number of tractors started a gradual climb with a gradual decrease in the number of horses and mules (Figure 12).[27] Following World War II and the introduction of the small general-purpose tractor suitable for the smaller Southern farms, there has been an even greater increase in the number of tractors on farms. The number of tractors on farms increased 104.0 percent from 1940 to 1948.

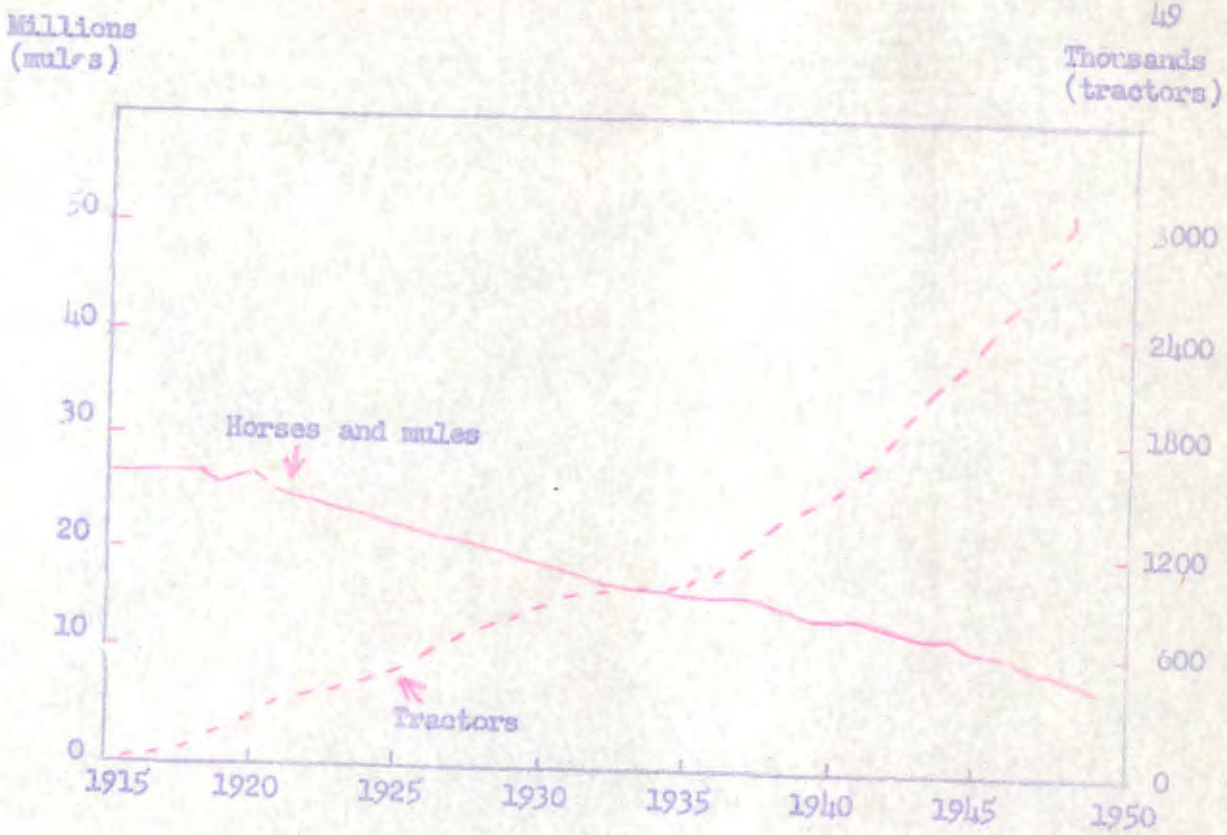
Automobiles have increased consistently, with the exception of World War II years, from 1910 to 1949. The increase from 1947 through 1949 was over 350,000 per year. Combines, corn pickers and milking machines have increased enormously since 1940. Combines increased over 210.0 percent from 1940 to 1949. Corn pickers have increased over 300.0 percent from 1940 to 1949. Milking machines have increased over 600.0 percent since 1930, over 291.0 percent since 1940 and over 100.0 percent since 1944 (Table XII).

Trends In Crop And Livestock Production

Trends in livestock and crop production in the United States will be restricted to comparisons between the years 1916, 1940, and 1948, as these are the years on which this study is based.

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[27] Ibid., p. 13.



Source: United States Department of Agriculture, Agricultural Outlook, 1950 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 26.

Figure 12

Horses and mules, and tractors on farms in the United States, 1915 - 1949

TABLE XII

NUMBER OF TRACTORS AND OTHER SPECIFIED MACHINES ON FARMS IN UNITED STATES, 1910-1948

Year	Tractors	Motor Trucks	Auto-mobiles	Grain Combines	Corn Pickers	Milking Machines
			(Thousands)			
1910	1	0	50	1	-	12
1920	246	139	2146	4	10	55
1930	920	900	4135	61	50	100
1940	1545	1047	4144	190	110	175
1941	1675	1095	4330	225	120	210
1942	1885	1160	4670	275	130	255
1943	2100	1280	4350	320	138	275
1944	2215	1385	4185	345	146	300
1945	2422	1490	4152	375	168	365
1946	2585	1550	4150	415	200	465
1947	2800	1730	4520	450	225	580
1948	3150	1920	4930	520	300	640

Source: United States Department of Agriculture, Statistical Bulletin No. 83 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 44.

Farmers in the United States planted approximately 15.0 percent fewer acres of corn in 1948 than in 1916, but harvested over 77.0 percent more bushels per acre. The increase in yield over this 32-year period was nearly 19 bushels per acre (Table XIII).

Farmers in the United States planted more wheat and oats in 1948 than in 1916 and increased the yield per acre of wheat by six bushels or 51.0 percent and oats by eight bushels or 27.0 percent. There has been very little change in the acreage planted to hay from 1940 to 1948, but the yield has increased approximately four percent per acre. Tobacco yields have increased per acre by nearly 60.0 percent, and acreage is approximately the same for the two years.

Dairy cattle increased by 24.0 percent between 1916 and 1948. From 1940 to 1948 dairy cattle increased less than one percent, and from the peak year of 1945 there was a 12.0 percent decrease in the number (Table XIV). Production of dairy products, unlike the trend in numbers, has continually gone up. There was an increase of 13.0 percent in milk production and 17.0 percent in butterfat production from 1930 to 1949.[28]

Cattle, other than dairy, showed the next highest gain of the livestock from 1916 to 1948. Cattle numbers were 15.0 percent greater in 1948 than in 1916, and 22.0 percent greater in 1948 than in 1940. There were fewer hogs on farms in the United States in 1948 than in 1916. The decrease amounts to approximately eight per-

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[28]United States Department of Agriculture, Agricultural Statistics 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 416.

TABLE XIII

CHANGES IN ACREAGE AND YIELDS OF SELECTED CROPS IN UNITED STATES, 1916-1948

Year	Corn		Wheat		Oats		Hay		Tobacco	
	Acres (Thousands)	Yield (Bu.)	Acres (Thousands)	Yield (Bu.)	Acres (Thousands)	Yield (Bu.)	Acres (Thousands)	Yield (Tons)	Acres (Thousands)	Yield (Lb/av.)
1916	100,561	24.1	53,510	11.9	39,098	29.1	-	-	1,483	813.7
1920	101,359	30.3	62,358	13.5	42,732	33.8	73,033	1.25	1,935	780.0
1925	101,331	27.6	52,443	12.8	44,240	31.8	70,105	1.12	1,751	786.0
1930	103,915	20.5	67,559	14.2	42,608	32.0	67,974	1.10	2,124	775.8
1935	99,974	24.0	69,611	12.2	43,599	30.2	68,550	1.32	1,439	904.8
1940	88,692	28.4	61,820	15.3	39,315	35.2	73,058	1.31	1,410	1036.0
1941	86,837	31.1	62,707	16.8	41,841	31.0	73,136	1.31	1,306	966.0
1942	88,818	35.1	53,000	19.5	43,018	35.2	74,827	1.44	1,377	1023.0
1943	94,341	32.2	55,984	16.4	43,467	29.3	77,004	1.34	1,458	964.0
1944	95,475	32.8	66,190	17.7	43,804	29.0	77,541	1.33	1,751	1116.0
1945	89,727	32.7	69,130	17.0	45,889	36.6	77,017	1.41	1,822	1094.0
1946	89,788	36.7	71,536	17.2	46,549	34.7	74,173	1.36	1,963	1182.0
1947	86,108	28.4	78,169	18.4	42,301	31.2	75,489	1.36	1,853	1139.0
1948	86,196	42.7	77,749	17.9	44,529	37.1	73,616	1.36	1,555	1275.0

Source: United States Department of Agriculture, Agricultural Statistics 1937 and 1949 (Washington, D. C.: U. S. Government Printing Office, 1937 and 1949), pp. 7-121.

TABLE XIV

CHANGES IN AMOUNTS OF SELECTED TYPES OF LIVESTOCK IN THE UNITED STATES, 1916-1948

Year	Cattle (Not Dairy)	Dairy Cows	Hogs	Horses	Mules	Chickens	Sheep
				(Thousands)			
1916	46,330	20,064	59,700	21,159	4,593	-	36,543
1920	48,980	21,455	60,159	20,161	5,656	-	40,743
1925	40,798	22,575	55,770	16,651	5,918	-	38,543
1930	37,971	23,032	55,705	13,742	5,382	468,491	51,565
1935	42,764	26,082	39,066	11,861	4,822	389,958	51,808
1940	43,369	24,940	61,165	10,444	4,034	438,288	52,107
1941	46,302	25,453	54,353	10,193	3,911	422,288	53,920
1942	49,712	26,313	60,607	9,873	3,782	476,935	56,213
1943	54,066	27,138	73,881	9,605	3,626	542,047	55,150
1944	57,630	27,704	83,741	9,192	3,421	582,197	50,782
1945	57,803	27,770	59,331	8,715	3,235	516,497	46,520
1946	55,739	26,695	61,301	8,053	3,010	530,203	42,436
1947	55,109	26,098	56,921	7,249	2,772	474,441	37,818
1948	53,087	25,039	55,028	6,589	2,541	461,550	34,827

Source: United States Department of Agriculture, Agricultural Statistics 1937 and 1949 (Washington, D. C.: U. S. Government Printing Office, 1937 and 1949), pp. 244-484.

cent. Horse numbers have declined 69.0 percent and mule numbers 45.0 percent from 1916 to 1948 (Table XIV).

Farmers in the United States are producing considerably more corn on fewer acres; and with only a slight increase in small grain acreage, they are producing much more grain. They have increased hay and tobacco production, especially in yield per acre. Dairy cattle in the United States increased more than any other livestock enterprise, and cattle, other than dairy, made the next highest gains. Hog numbers were somewhat less in 1948 than in 1916, while horse and mule numbers were approximately half of what they were in 1916.

Changes found on the sample farms will be compared with the above trends.

CHAPTER III

COMMUNITY CHANGES SINCE 1917

Expanding industry and population growth changed the area from a predominant agricultural area in 1916 to a semi-urban area in 1948. In 1916 there were 541 families residing in the area studied, not including the village of Concord.[29] This number was 731 in 1940, an increase of 35.0 percent. Figures 13 and 14 show a greater density of houses in nearly all parts of the area in 1941. However, there was no increase in houses in the section west of Concord and south of Boyds Switch in the southwestern part of the community.

In 1943, approximately 10 home sites were inundated by waters from the development of Fort Loudon Lake on the Tennessee River. This reduced the approximate number of families living in the area to 721. Since 1940, 153 homes have been constructed. Forty-four of these were farm homes, while the other 109 were non-farm residences. The total number of families in 1948 was approximately 874, about equally divided between farm and non-farm.

Population growth from 1917 to 1940 was in non-farm families, which increased from 66 to 307 during the period. Add to this 307 families the 104 new non-farm families and the total number of non-farm families in the area in 1948 was approximately 411. There is every

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[29] Information concerning community changes between 1917 and 1940 is taken from the 1941 study, H. J. Bonser, R. G. Milk, and C. E. Allred, Quarter Century Of Agricultural Changes In Southwestern Knox County, Tennessee, Rural Research Mohograph No. 136 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), pp. 6-18.

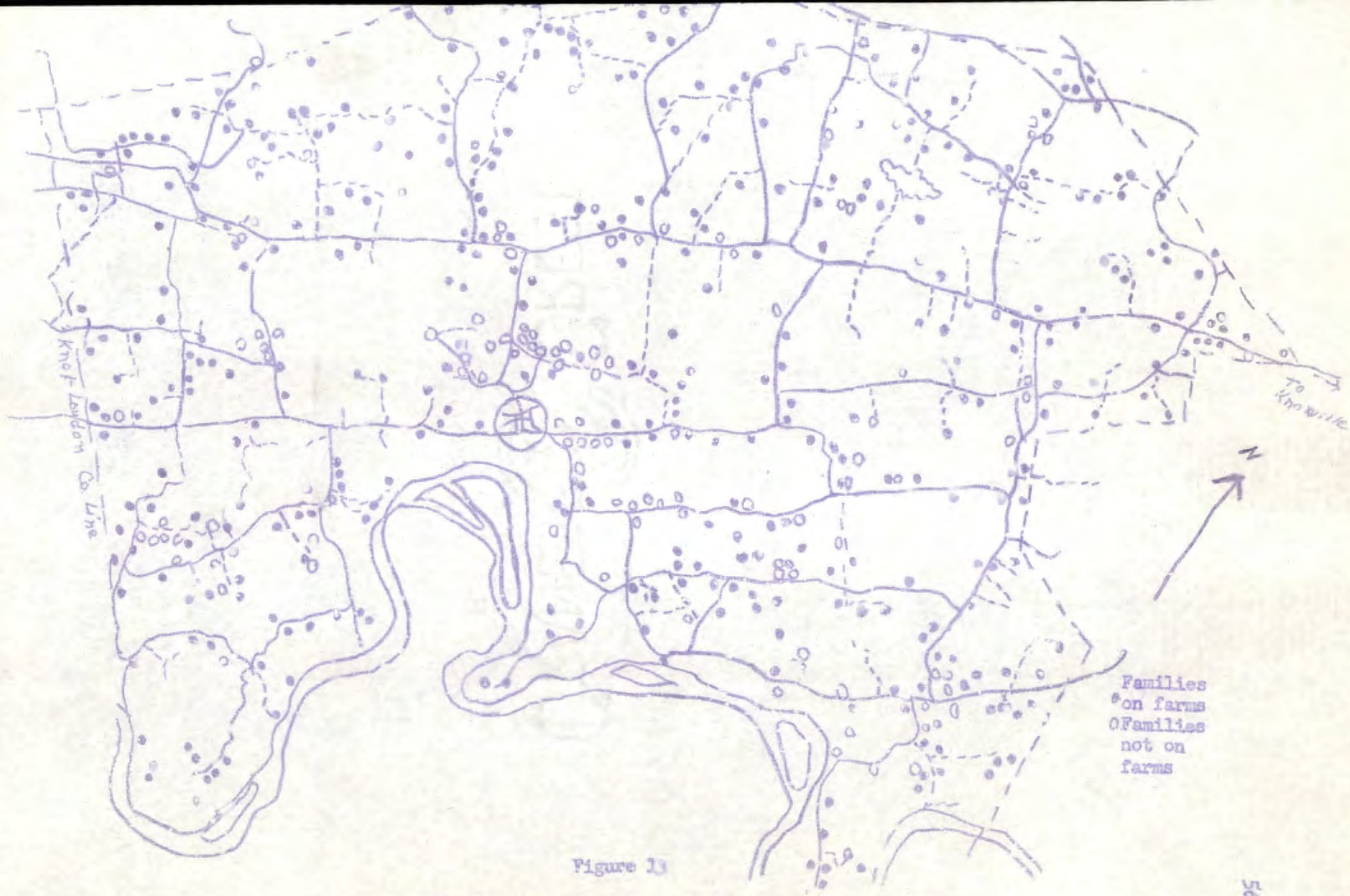


Figure 13

All families in area in 1917

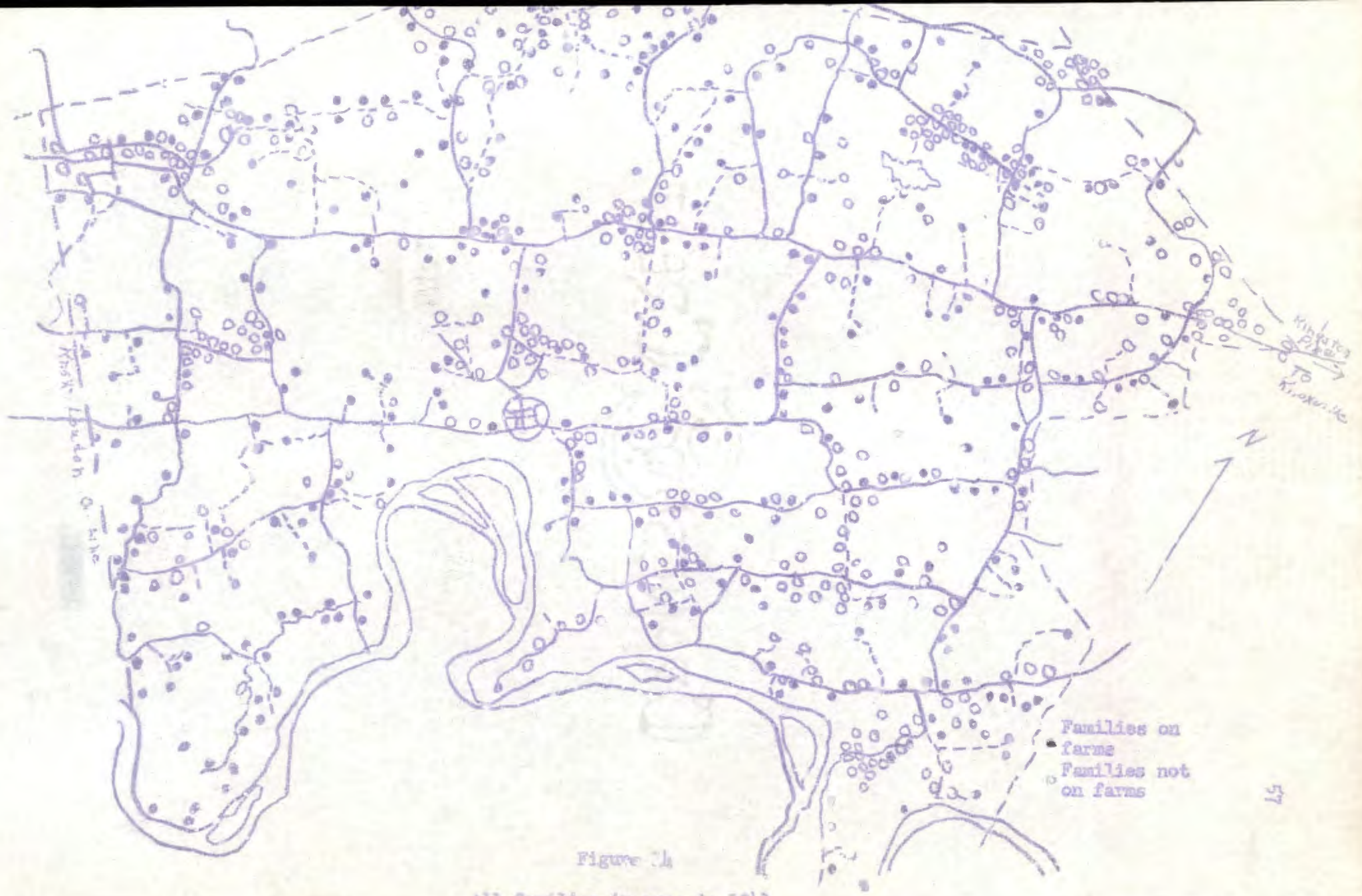


Figure 7h

All families in area in 1911

indication that this number is larger, because eight of the 61 farms studied in 1940 could in 1948 be classified as non-farm homes. To strengthen this supposition that non-farm homes are more numerous than indicated is the fact that full-time farms declined from 415 in 1917 to 305 in 1941, a decrease of 27.0 percent. Part-time farms increased from 34 to 119 or 250.0 percent in the same period (Figures 15 and 16). And with excellent opportunities for work in industry in the cities of Knoxville, Oak Ridge, and Alcoa, many of the part-time and marginal farms of 1941 were probably being occupied by non-farm families in 1948.

Roads and Railroads

In collecting the information in this area in 1917, the enumerators boarded the passenger coach of the Southern Railroad at Knoxville and rode out into the area stopping at appropriate way stations. From these points the enumerators walked to the farms to interview the farmers, and remained overnight at the farm homes.

U. S. Highway 11, now running through the community, was widened and paved about 1922. There followed an era of road building in which most of the secondary roads were made all weather, and quite a number being surfaced with asphalt. Automobiles came generally into the area during the years of post-World War I prosperity. Busses began to travel the main highways. As a result of increased highway transportation the sections most accessible to Knoxville, near the main roads or along the good secondary roads, increased in population.

Figure 15 Part-time farm families in 1917

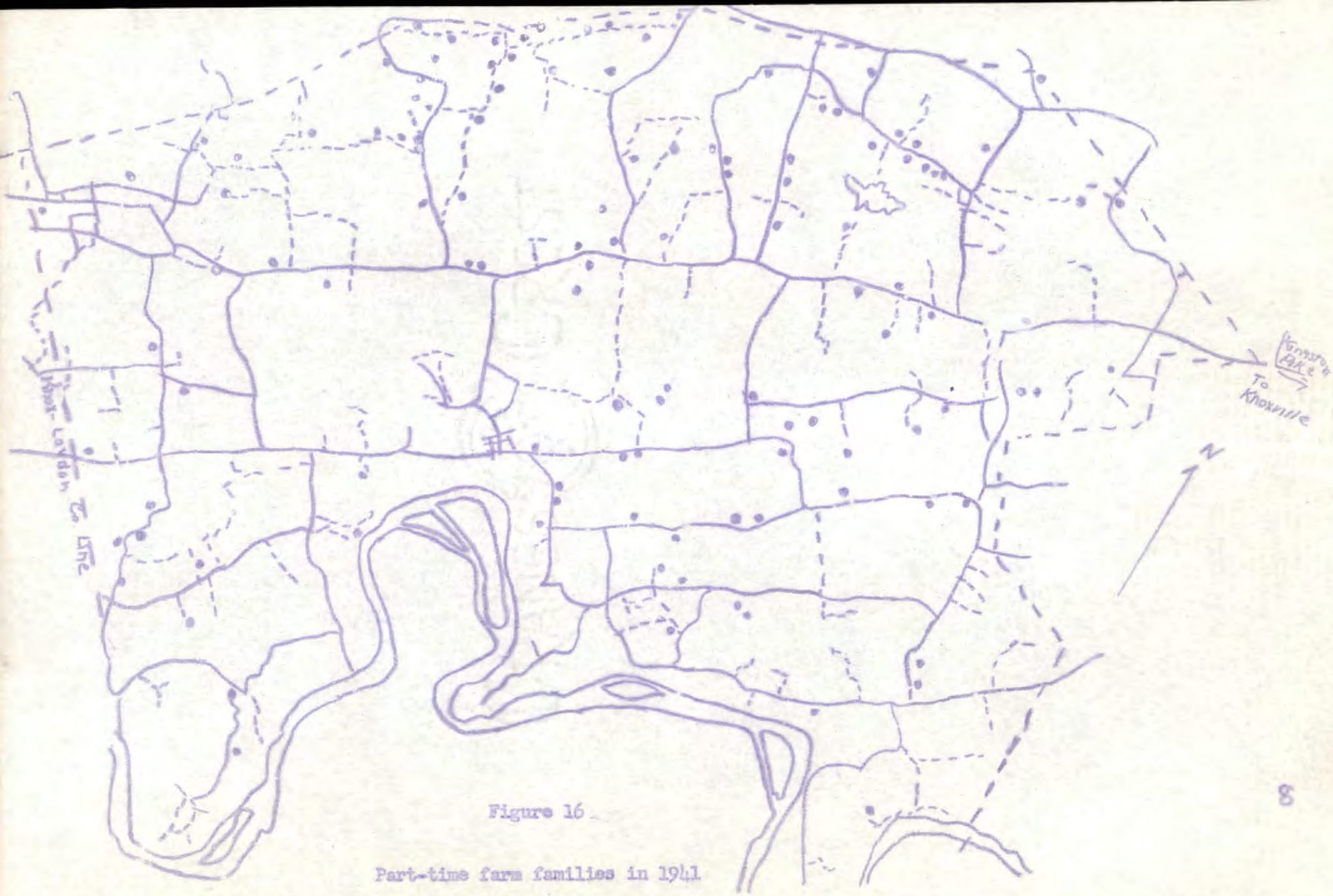


Figure 16

Part-time farm families in 1941

Since 1940, and especially since World War II, the main secondary roads have been widened and surfaced or resurfaced with asphalt. All other roads are of all-weather construction.

In 1917, local bus service was inaugurated between Concord and Knoxville. In 1948, this local bus traveled two routes from Concord to Knoxville, one north to Farragut and on U. S. Highway 11 seven trips per day and the other southeast through the Blue Grass Community four trips per day. The route through Blue Grass was inaugurated in 1940.

Residents living west of Farragut School and either on or near U. S. Highway 11 have no trouble getting transportation because of the frequent through bus service along this arterial road. Only the extreme southwestern sections of the community did not have public transportation service available in 1948.

Urbanization

Aside from a number of new homes built in the Blue Grass neighborhood, and a few close to U. S. Highway 11, very few houses were built between 1917 and 1924. During this period a total of 45 new homes were built. From 1925 to 1934, 96 houses were built, mostly in the Black Oak Ridge section at the northern part of the community. From 1935 to 1941 there were 141 new homes built, most of which again were in the Black Oak Ridge Section. About 20, however, were near Blue Grass School.

From 1940 to 1948, 44 of the 104 new non-farm homes were built in the Black Oak Ridge section. Nine of the new non-farm homes were built in the vicinity of Blue Grass School (Figure 17).

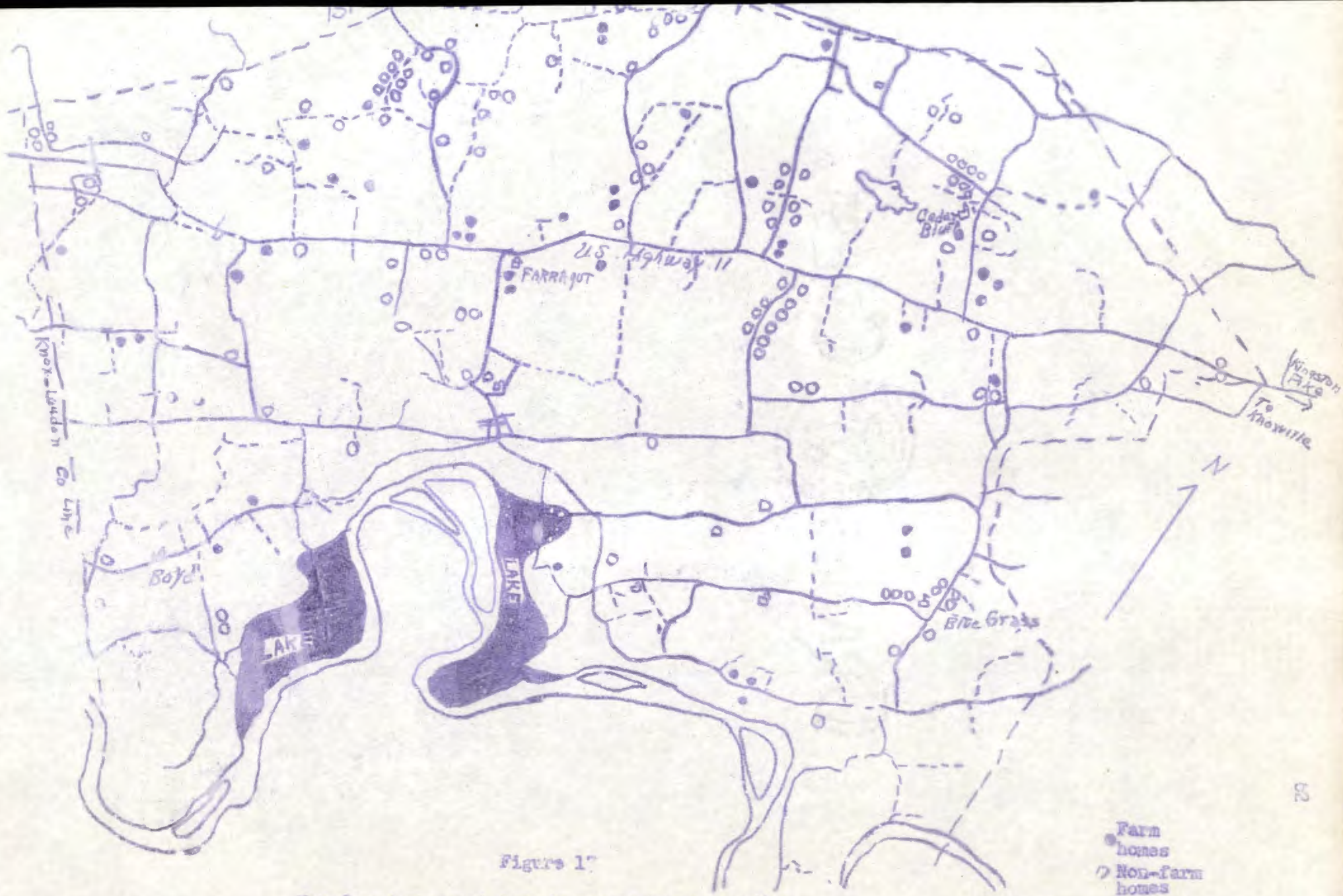


Figure 17

Non-farm homes and farm homes built since 1940.

Most of the other 51 homes were located on roads leading off U. S. Highway 11. In figure 17, it can be seen how the new homes tend to be grouped along roads leading to the main highway. These are plots where the farm was broken up and sold into building lots. Being off the main highway, the lots were not excessive in cost, but were still near the main road.

There was no extensive building along U. S. Highway 11. This is because much of the land is owned and farmed by business and professional men as hobbies rather than as business enterprises, and the land is either not for sale or excessively high in cost. Some owners along the main highway quoted a price of $1,000 per acre in 1949.

The Black Oak Ridge section has seen much urbanization because hilly topography and rocky soil make farming somewhat difficult. As the section is near Oak Ridge and Knoxville and on good all-weather roads, it furnishes home sites for people who do not desire to live in the city or on the high priced land along the main highway.

Figure 17 will show that approximately 24 of the 44 new farm homes have been built near U. S. Highway 11. This is because most of them are tenant homes built on farms owned by business and professional men. Approximately 75 percent of the 44 farm homes built since 1940 are tenant homes.

Land Values and Ownership

Farm land acreage was reduced by 17.0 percent in Civil District 10 and by 23.0 percent in Civil District 11 from 1935 to 1945. While

farm acreage decreased, the value per acre of farm land increased. Farm land in Civil District 10 increased by 55.0 percent, from $60.94 per acre in 1935 to $94.71 in 1945. In Civil District 11, farm land increased 53.0 percent, from $98.33 in 1935 to $149.98 in 1945 (Table XV).

There was very little change in the number of farm owners in Civil District 10 between 1935 and 1945, but a definite increase from 240 in 1935 to 329 full owners in 1945. The number of tenants in Civil District 11 increased from 11 in 1935 to 100 in 1945.

As Civil District 11 lies between Civil District 10 and the city of Knoxville and extends close to the city limits, land values and tenancy are comparatively high. This is because the owners are business and professional men, and all owners anticipating future urban and residential development have capitalized land prices at a high level.

The decrease in the amount of farm land and an increase in the price of farm land illustrates the influence of industrialization and urban development on land prices.

Electricity

Electric power, lacking in 1917 except for a few home plants, extended over all the area in 1948. About the year 1929 local subscriptions toward a power line brought an extension of the Tennessee Electric Power Company from Lenoir City, which served a limited number of the more accessible families. The Rural Electrification Administration has since extended lines over the area.

TABLE XV

CHANGES IN FARM LAND VALUES AND OWNERSHIP, SOUTHERN KNOX COUNTY, TENNESSEE, 1935-1945

	1935			1945		
	Knox County	Civil District 10	Civil District 11	Knox County	Civil District 10	Civil District 11
Value of land and buildings	17,876,247	1,479,520	2,377,050	26,514,171	1,910,850	2,784,706
Amount of land in farms	257,953	24,279	24,173	236,909	20,175	18,567
Full owners	3,511	218	240	4,161	216	329
Part owners	362	19	22	249	28	0
Managers	33	4	12	17	3	2
Tenants	371	49	17	781	44	100

Source: Bureau of Census, Census of Agriculture 1935 and 1945, County and Minor Civil Divisions (Washington, D. C.: Department of Commerce, 1935 and 1945), Tennessee Data.

Schools

Farragut High School was built prior to 1917, and has continued to function as a progressive force in the community. The Vocational Agriculture Department has been of much service to the farmers throughout the years. Consolidated grade schools were constructed at Farragut and Blue Grass, two teacher schools at Cedar Bluff and Boyd, and a school for colored people at Concord. The exact date of the erection of these schools is not known, but in recent years the Farragut and Blue Grass schools have been improved and made into modern school plants.

Fort Loudon Lake

In 1943, Fort Loudon Dam on the Tennessee River was completed, and it formed a lake which covered a large part of the river bottom land in the southern portion of the area. The creation of this lake seems to have had little influence on the type of agriculture in the area. However, land values along the lakeshore have increased. Following World War II, some week-end cottages and permanent residences were built on suitable locations along the lake. Future development of this nature seems certain.

CHAPTER IV

CHANGES IN LAND USE ON SELECTED FARMS

This is an analysis of changes occurring in land use and crop yields on specified numbers of the original 97 farms surveyed in 1916. The analysis will cover two periods, 1916 to 1940 and 1940 to 1948. A comparison between the two periods as to changes that have occurred will be made.

The data on the 1916-1940 period covers 74 of the original 97 farms studied in 1916. It was possible in 1940 to trace land use on only 74 of the original 97 farms.[30] However, it was not possible to get complete information as to farm organization and income on all 74 farms. Only 61 of the original 97 farms were analyzed for farm organization and income factors.[31] The data for the 1940-1948 period covers only the latter 61 farms.

The 61 farms on which a complete analysis was made in 1940 and on which the survey was conducted in 1948, had changed from 61 farm units in 1940 to more than 75 farm and non-farm units in 1948. Two of the farms were broken up and sold as seven building lots. Another farmer sold enough land for three building lots. Two other farmers are known to have sold building lots.

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[30] H. J. Bonser, R. G. Milk, and C. E. Allred, Quarter Century Of Agricultural Changes in Southwestern Knox County, Tennessee, Rural Research Monograph No. 135 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), p. 21.

[31] Ibid., p. 34.

Five of the 61 farms analyzed in 1940 were either divided to form new farms or sold as small tracts on which limited farming could be carried on. Two of the farms surveyed in 1940 were inundated by the formation of Fort Loudon Lake on the Tennessee River. These divisions brought the known total farm and non-farm units growing out of the 61 farm units in 1940 to 77 in 1948.

Farms were broken up and sold for various reasons. Some of the reasons given for break-up in the period from 1916 to 1940 were:

> The break up and recombination of farm tracts during the interval resulted from various causes. Approximately one-half of the operators were 45 years of age in 1917, so it is not surprising that, 24 years later, one of the main reasons for farm break-ups were death and liquidation of the estate. It is quite common for estates of deceased farmers to be settled by proportioning the land among the heirs.
>
> Another significant tendency is for operators, as they become older, to find themselves with more land than they feel able to work, to dispose of part of the acreage. Several instances were reported of farmers selling or deeding land to married children on which to build homes.[32]

Between 1940 and 1948 there were two main reasons for farm break-ups. One of the main reasons was the shortage of persons desiring to rent land. The small units were especially plagued with this condition, as they were too small to support a tenant family. When the owner of the small unit for any reason could no longer take care of it, the farms went out of production, or production was so negligible, such as cutting wild hay or cultivating a small plot of corn, that the place could hardly be considered a farm. Previous owners of two farms that were sold into

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[32] Ibid., p. 20.

building lots gave the shortage of help as the reason they sold. This same factor was responsible for the selling of small acreages off two other farms by owners who had become too old to cultivate the land.

A second important reason given for the break-up of farms was related to the first. As tenants were few, costs of living high, coupled with an increased demand for rural home sites, the owners through both necessity and opportunity considered it the right time to sell small tracts.

Small farms and farms on which the owner had become too old to work were the ones subject to the major portion of break-ups between 1940 and 1948.

In 1916, there were only five farms of less than 50 acres. In 1948, the number of units of 50 acres or less had increased to 19, 10 of which were nothing more than home sites (Table XIV). Eight of the other nine could hardly be classified as farms. Farming on these eight places was restricted to a few small fields that some neighbor farmer rented.

While the number of small part-time and non-farm units was increasing, the number of farms 300 acres or more in size was also increasing. There were only two of the original 61 farms in 1916 that were over 300 acres in size. In 1948 there were five of these farms over 300 acres in size.

There was also an increase in the number of farms from 100 to 200 acres, and at the same time a decrease each succeeding year in farms

TABLE XVI

SIZE OF FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE
1916, 1940, AND 1948

Size of Units (Acres)	Number of Units		
	1916	1940	1948
1 - 9		1	10
10 - 24	2		3
25 - 49	3	5	6
50 - 74	7	12	9
75 - 99	5	5	9
100 - 149	11	14	15
150 - 199	8	6	8
200 - 299	18	13	9
300 and up	2	4	5

TABLE XVII

AVERAGE SIZE OF FARMS WITHIN GROUP LIMITS, SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

Size of Units (Acres)	Average Number of Acres		
	1916	1940	1948
1 - 9		6.0	5.9
10 - 24	13.0		16.8
25 - 49	38.3	31.2	34.0
50 - 74	59.1	60.1	59.9
75 - 99	80.0	85.4	85.2
100 - 149	118.7	122.6	119.6
150 - 199	172.2	173.3	176.5
200 - 299	234.9	232.4	231.3
300 and up	440.0	392.5	376.2

from 200 to 300 acres in size. Many of the 100-200 acre farms in 1948 were used as small dairy farms with 20 to 40 head of dairy cattle.

There were no abrupt shifts of sizes of farms within size groups, except for farms 300 acres and over. These large farms were smaller in 1948 than in any previous year although they are more numberous (Table XVII).

Major Land Use Through The Years

Less and less land is being devoted to crops and more and more to pasture on the sample farms (Table XVIII).

In 1916, 48.0 percent of the total acreage in farms was devoted to crop land. The amount of land devoted to crops in 1940 was 37.0 percent of the total acreage. Over 10.0 percent of the total acreage had been taken out of crops by 1940. Approximately 3.2 percent more of the total acreage was taken out of cropland between the years 1940 and 1948. The change in the eight years from 1940 to 1948 was at approximately the same rate as in the previous 24-year period. It was 3.2 percent for eight years as compared with 10.8 percent in 24 years.

This reduction in cropland went into pasture land. Two apparent reasons for this are: for the production of more livestock, and because less labor is required for pasture upkeep than for crop tillage. A shortage of tenant labor and a greater demand for livestock and livestock products either shaped the trend, or fitted very well into it. The amount of idle cropland does not appear to follow any trend (Figure 18 and Table XVIII).

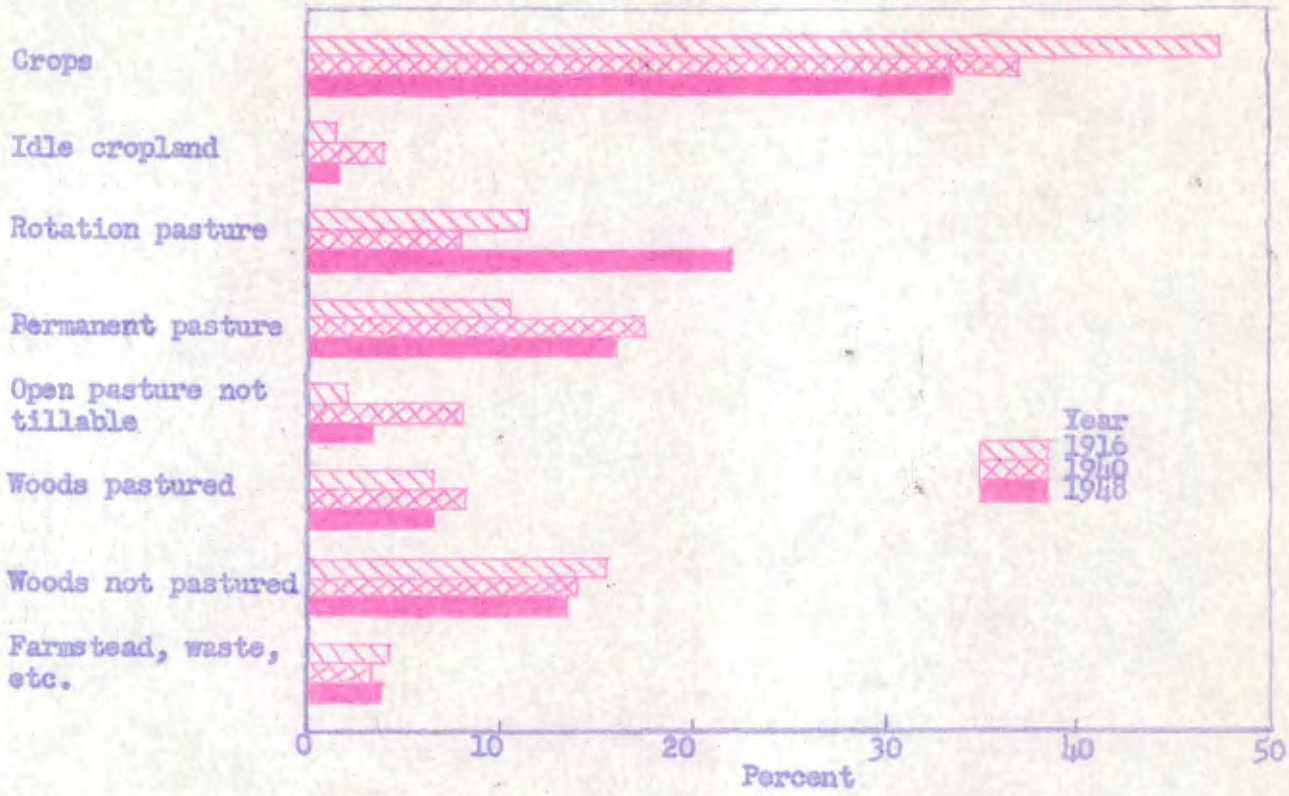


Figure 18

Percent of land in use on farms in southern Knox County, Tennessee
1916 - 1940 - 1948

(74 farms 1916, 77 farms 1940, 61 farms 1948)

TABLE XVIII

MAJOR LAND USE ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

	Number and Acreage			Percent of Acreage		
	1916	1940	1948	1916	1940	1948
Number farms	74	77	61			
Total land in farms	11033	11592	8908*	100.0	100.0	100.0
Crops	5277	4304	3010	47.8	37.0	33.8
Idle cropland	170	473	155	1.5	4.1	1.8
Rotation pasture	1232	902	1935	11.2	7.9	21.7
Permanent pasture	1154	2042	1419	10.5	17.6	15.9
Open pasture not tillable	207	921	305	1.9	7.9	3.4
Woods pastured	780	957	567	7.1	8.3	6.4
Woods not pastured	1750	1621	1193	15.8	14.0	13.4
Farmstead, waste, roads, etc.	463	372	324	4.2	3.2	3.6

*This includes all the land traceable from the 61 original farms on which a complete analysis was made in 1940.

The most significant change in the pasture situation was in rotation pastures from 1940 to 1948. Only 7.9 percent of the total acreage was devoted to rotation pasture in 1940 while this increased to 21.7 percent of the total acreage in 1948.

There is a noticeable trend to pasture from 1916 to 1948 and within this overall trend a tendency to have less open and more rotation pasture. In 1916, 23.6 percent of the farm acreage was devoted to pasture, of which 47.6 percent was rotation pasture, 44.5 percent permanent pasture, and 7.9 percent to open pasture. In 1940, 33.4 percent of the total farm acreage was devoted to pasture, 23.0 percent of which was rotation pasture, 53.0 percent permanent pasture, and 24.0 percent open pasture. In the 24-year period from 1916 to 1940 about 10.0 percent of the total farm acreage was turned into pasture.

The increase in percent of land devoted to pasture from 1916 to 1940 was less than one-half of one percent per year. In the eight-year period from 1940 to 1948, it was approximately one percent per year. The acreage devoted to pasture in 1948 was 41.0 percent of the total farm acreage compared with 33.4 percent in 1940.

There was a slight decrease in the percent of the total acreage in woodland from 1916 to 1948, but it is not abrupt (Figure 18). One possible reason for this lack of change in woodland is that all woodland in this area has little or no alternative use. Woodland is generally on the roughest and most inaccessible parts of the farm.

Main Types Of Crops Through The Years

One of the important trends in types of crops grown through the years is a tendency to get away from crops that require man labor and time to a type of crop requiring less time and can be produced mainly by the use of machinery (Table XIX). Tobacco is the one exception to this. This again illustrates a lack of man labor available, as well as the desire to increase efficiency of production.

Row crops occupied a conspicuously smaller percent of the total acreage in 1948 than in 1916. The decrease in the amount of land devoted to row crops has been rapid between 1940 and 1948. In 1916, row crops occupied 34.7 percent of all cropland. The percent in row crops in 1940 was down to 30.8. In 1948, row crops occupied only 23.1 percent of the total cropland (Table XIX).

While row crops were declining in importance, hay crops were increasing. This was especially true in the period from 1916 to 1940. The percent of cropland devoted to hay crops increased from 36.6 in 1916 to 61.3 in 1940. There was no change in the percent of land devoted to hay from 1940 to 1948.

In 1940, the decrease in row crop acreage seemed to have been absorbed by increasing hay acreage. In 1948, the decrease in row crop acreage seemed to have been absorbed by the increase in small grains. Grain crops decreased from 33.6 percent of the cropland in 1916 to 29.6 percent in 1940. Small grains increased until they occupied 51.2 percent of the cropland in 1948. Although the analysis in 1948 covered approxi-

TABLE XIX

MAIN TYPES OF CROPS GROWN ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(74 Farms 1916, 77 Farms 1940, 61 Farms 1948)

Type of Crop	Acres			Percent of Acreage		
	1916	1940	1948	1916	1940	1948
Row crops	1831	1327	677	34.7	30.8	23.1
Small grain	1771	1275	1501	33.6	29.6	51.2
Hay	1933	2637	1797	36.6	61.3	61.3
Fruit trees and bush	92	16	- *	1.7	.4	-
Total crops	5627	5254	4294	106.6	122.1	146.6
Acres double cropped	350	950	1364	6.6	22.1	46.6
Acres used for crops	5277	4304	2930	100.0	100.0	100.0

*Fruit trees and bush crops not included because acreage was so small.

mately 1000 fewer acres of farm land than in 1940, small grains in 1948 still exceeded the acreage in 1940, 1501 to 1275 acres (Table XIX).

Tree and bush fruits, never very important, were no longer considered part of the cropping system in 1948.

One important development in the use of cropland was the tendency to double crop land.[33] In 1916, only 350 acres or 6.6 percent of the cropland was double cropped. In 1948, only 950 acres or 22.1 percent of the land was being double cropped. Nearly half of the cropland was being double cropped in 1948, 1,364 acres or 46.6 percent (Table XIX).

Double cropping has come about with the harmonious way in which lespedeza hay and small grain production fit together. In 1948, 1501 acres were devoted to small grain production. In the same year, 1364 acres were double cropped and 1320 of these acres were in lespedeza hay following small grains (Table XIX and Figure 19).

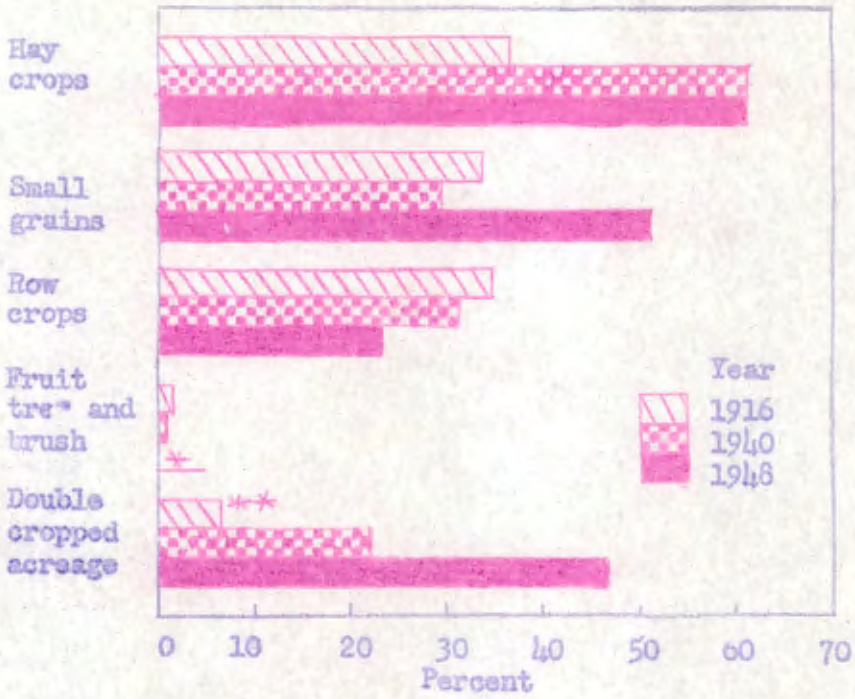
Such intensive cultivation of land, as the above indicates, is not only profitable but necessary. This land is higher in price than the average price of farm land for Knox County or the average in the State. It must produce or lose money.

Row Crops Grown Through The Years

Corn, alone, dominated row crop acreage each of the years studied. All types of corn, corn for grain, silage, and for roasting ears, made

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[33]Double cropping is the growing of a winter crop and a summer crop on the same land the same year.



* No acreage reported on fruit tree and bush in 1948.

** A combination of grain and hay illustrates extent of double cropping.

Figure 19

Percent of cropland in specified crops on 61 farms
in southern Knox County, Tennessee,
1916 - 1940 - 1948

(74 farms 1916, 77 farms 1940, 61 farms 1948)

up over 86.0 percent of the acreage devoted to row crops in 1948. This dominant position was also held for corn in the other periods studied (Table XX and Figure 20).

Although corn has dominated all row crops during every period studied, it like row crops in general, has declined in percent of total acreage through the years. In 1916, corn occupied 27.4 percent of the crop acreage. In 1940 corn occupied only 22.0 percent of the crop acreage, and decreased to only 18.2 percent in 1948 (Table XX).

The other significant row crop is tobacco. Tobacco is not so significant in the acreage it occupies, but gets its importance from the income it produces. In 1916, less than one acre of tobacco was grown. In 1940, 22.3 acres or one half of one percent of the total crop acreage was in tobacco. In 1948, 27.6 acres or approximately one percent of the crop acreage was in tobacco (Table XX).

Truck crops, including both kinds of potatoes, have declined in the percentage of total crop acreage occupied. From 1916 to 1940, potatoes increased from 0.2 to 1.2 percent of the crop acres or 11.5 to 53.5 acres; but this increase was mainly on one farm. Both potato crops were insignificant in 1948 (Table XX).

The fact that the cities of Knoxville, Maryville-Alcoa, and Oak Ridge are close raises the question of why this area, so close in proximity to a rather large market, does not devote more acreage to truck crops. Practically all truck crop produce is brought into this area from some other place.

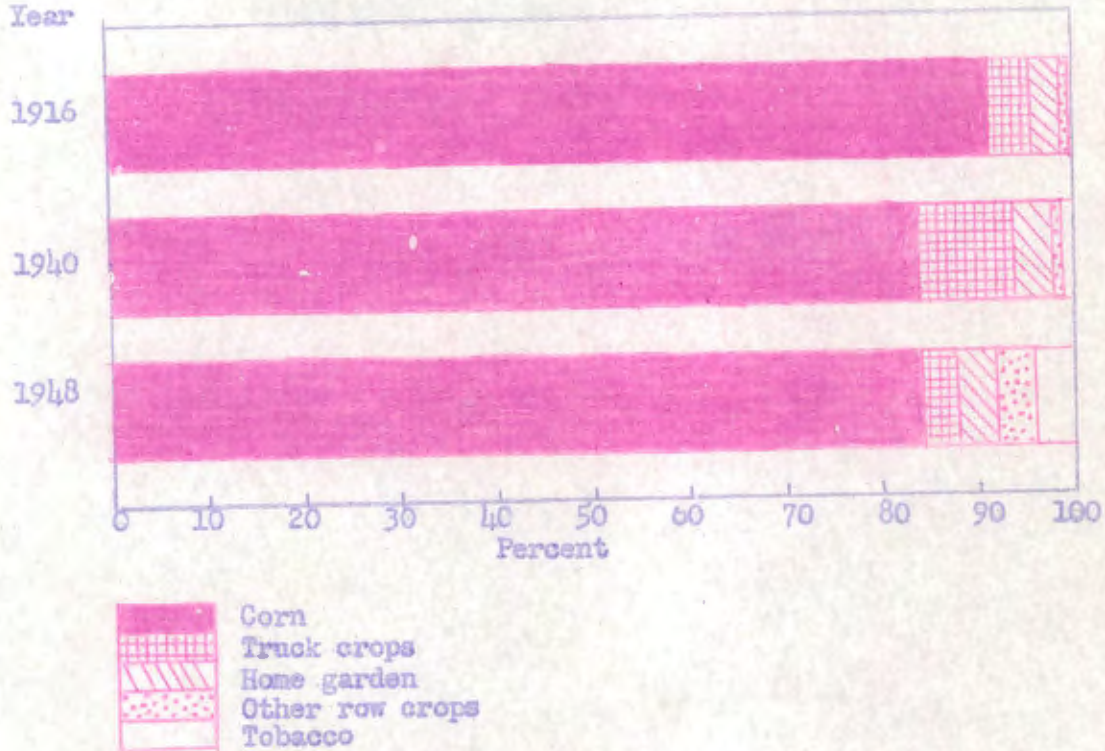


Figure 20

Percent of row crops in specified crops on farms in southern Knox County, Tennessee, 1916 - 1940 - 1948

(74 farms 1916, 77 farms 1940, 61 farms 1948)

TABLE XX

ROW CROPS ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

Crop	Acres			Percent of Acreage		
	1916	1940	1948	1916	1940	1948
Corn for grain	1441.0	947.0	534.5	27.4	22.0	18.2
Corn silage	242.5	162.0	52.0	4.6	3.7	1.8
Other corn	22.0	1.8	11.0	.4	-	.4
Sorghum	12.5	3.2	1.0	.2	.1	-.03
Tobacco	.8	22.3	27.6	-	.5	.9
Irish potatoes	11.5	53.5	3.0	.2	1.2	.1
Sweet potatoes	29.6	3.4	3.6	.6	.1	.1
Watermelons	28.5	37.3	12.25	.5	.9	.4
Other truck crops	11.0	45.5	1.2	.2	1.1	.04
Home garden	20.9	48.4	26.9	.4	1.1	.9
Other row crops	10.5	2.5	21.0	.2	.1	.7
Total row crops	1836.8	1326.9	694.05	34.7	30.8	23.7
Acres in crops	5277.0	4304.0	2930.0	100.0	100.0	100.0
Number of farms	74.0	77.0	61.0	-	-	-

Some of the reasons advanced for the lack of emphasis on truck crops are: (1) high land values, (2) high priced labor, (3) better opportunity for work elsewhere, and (4) topography and soil not particularly suited to many truck crops.

Small Grains Through The Years

In 1916, small grain acreage comprised 33.6 percent of the crop acreage, and in 1948 this acreage had grown to 51.2 percent (Table XXI). Oats led both barley and wheat in the increase, while rye completely disappeared as a crop.

Wheat was by far the most important small grain in 1916, occupying 21.3 percent of the cropland. Oats was the second most important small grain occupying 10.6 percent of the crop acreage. Rye and barley were of little importance as they occupied less than one percent of the cropland.

In 1940, wheat was still the most important grain crop, but had declined from 21.3 percent of the cropland to only 10.1 percent. Oats declined very little and occupied nearly as great a percent of the crop acreage as wheat. Barley, of little importance in 1916, occupied 8.7 percent of the crop acreage in 1940. About the same amount of land was devoted to each type of grain in 1940, with barley being the only grain that had increased in acreage from 1916.

Oats advanced from 9.7 percent of the crop acreage in 1940 to 26.7 percent in 1948. Wheat increased over the same period from 10.1 percent to 14.1 percent of the cropland and barley increased until it occupied 10.4 percent (Table XXI and Figure 21).

TABLE XXI

ACREAGE OF SMALL GRAINS ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

Crop	Acres			Percent of Acreage		
	1916	1940	1948	1916	1940	1948
Wheat	1123.0	430.7	413.0	21.3	10.1	14.1
Oats	558.5	419.4	782.0	10.6	9.7	26.7
Barley	35.0	376.7	306.0	.7	8.7	10.4
Rye	44.5	10.4	-	.8	.2	-
Small grain turned under	10.0	37.5	-	.2	.9	-
Total acres in small grain	1771.0	1274.7	1501.0	33.6	29.6	51.2
Acres in crops*	5277.0	4304.0	2930.0	100.0	100.0	
Number of farms	74.0	77.0	61.0	-	-	-

* Includes 178.5 acres cut for hay in 1916 and 209.1 acres in 1940.

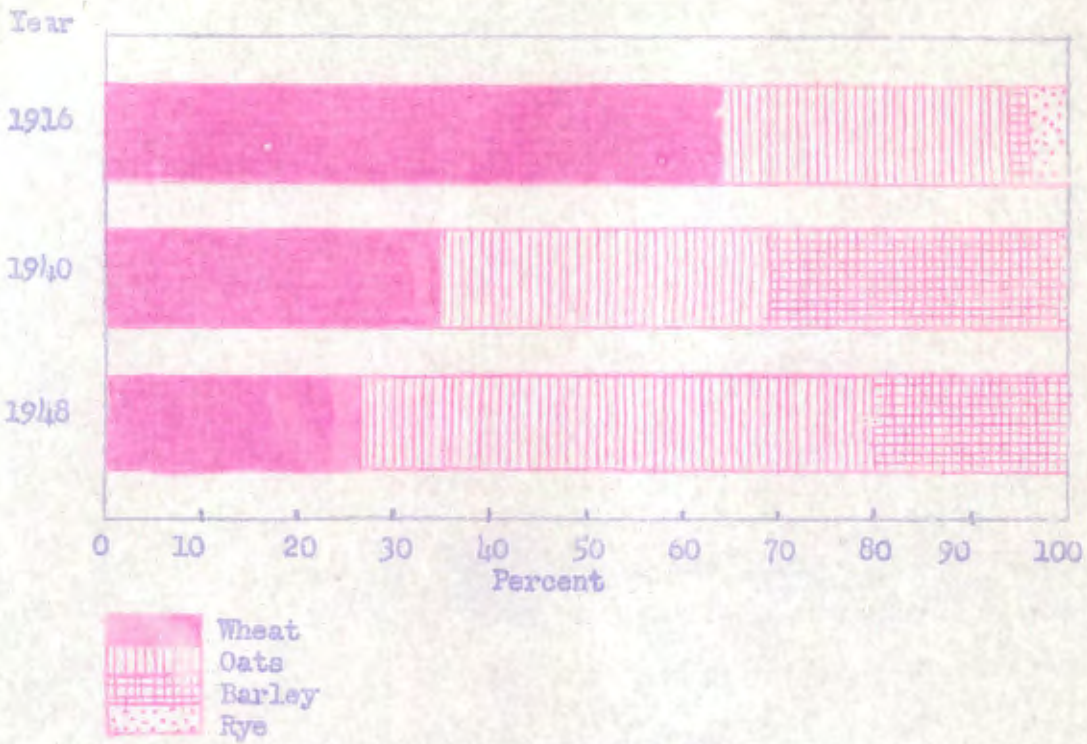


Figure 21

Percent wheat, oats, barley and rye is of total grains acreage on 61 farms in southern Knox County, Tennessee 1916 - 1940 - 1948

(74 farms 1916, 77 farms 1940, 61 farms 1948)

The gain in feed grains was the most important change in small grain acreage through the years. Occupying only 11.0 percent of the crop acreage in 1916, oats and barley occupied 37.1 percent in 1948.

Through the years pasture land, hay acreage and feed grain acreage all increased substantially. In addition to this much of the wheat grown in this area is used for feed. These developments indicate a definite trend toward livestock.

Types Of Hay Grown Through The Years

> The most important hay crop in 1916 was millet and peas mixed, 619.5 acres being grown (Table XXII). Next in importance was "meadow" with 325 acres. Other important hay crops were: crab grass, 236 acres; red top and or timothy, 231 acres; red clover alone or in mixtures with timothy and red top, 226 acres; and cowpeas 213 acres. The above six kinds of hays accounted for 95 percent of the 1916 hay acreage, but for only 9 percent of the hay acreage in 1940.
>
> In 1940, lespedeza for hay was grown by itself on 1766.5 acres, and in addition was grown on 146.9 acres in combination with other hay crops. Thus lespedeza, either alone or in mixtures, represented 73.0 percent of the 1940 hay acreage. Alfalfa also showed considerable expansion in the area, having increased from 11.4 acres to 253.2 acres. Soybeans, Johnson grass, and orchard grass did not show significant change. Crimson clover, ryegrass, sericea, and sweet clover were not reported in 1916 but had a combined acreage of 75.3 acres in 1940.[34]

In 1948, lespedeza still dominated the acreage devoted to hay. Lespedeza alone or in combination represented 76.5 percent of all hay acreage. This was slightly more than in 1940. Alfalfa hay increased

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[34] H. J. Bonser, R. G. Milk, and C. E. Allred, Quarter Century of Agricultural Changes in Southwestern Knox County, Tennessee, Rural Research Monograph No. 136 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), pp. 25-27.

TABLE XXII

HAY CROPS ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

Crop	Acres			Percent of Acreage		
	1916	1940	1948	1916	1940	1948
Lespedeza	-	1766.5	1550.0	-	41.2	52.9
Lespedeza mixture	-	146.9	25.0	-	3.4	.9
Alfalfa	11.4	253.2	319.1	.2	5.9	10.9
Millet and peas	619.5	6.0	14.0	11.7	.1	.5
"Hay grass meadow"	325.0	-	-	6.2	-	-
Crab grass hay	236.0	22.0	-	4.5	.5	-
Red top and/or timothy	231.0	73.5	-	4.4	1.7	-
Red clover	226.0	46.2	-	4.3	1.0	-
Cow peas	213.0	90.0	7.0	4.0	2.1	.2
Soybeans	59.5	124.9	15.0	1.1	2.9	.5
Johnson grass	6.0	22.0	98.0	.1	.5	3.3
Orchard grass	6.0	10.0	-	.1	.2	-
Crimson clover	-	32.9	-	-	.8	-
Rye grass	-	29.0	30.0	-	.7	1.0
Sericea	-	9.0	2.0	-	.2	.06
Sweet clover	-	4.4	-	-	.1	-
Total hay crop	1933.4	2637.1	2060.0	36.6	61.3	70.3
Acres in Crops	5277.0	4304.0	2930.0	-	-	-
Number of farms	74.0	77.0	61.0	-	-	-

from 253.2 acres in 1940 to 319.1 acres in 1948. Alfalfa and lespedeza were the only two hay crops of importance in 1948 (Table XXII).

Yields of Important Crops

Most all crops made greater gains in yield per acre from 1940 to 1948 than in the longer period from 1916 to 1940. The yields of corn per acre increased rapidly from 1940 to 1948, although there was no increase from 1916 to 1940. In 1916, the average yield of corn per acre was 30.1 bushels per acre, 30.0 in 1940, and up to 50.1 in 1948.

There are a number of contributing factors to this rapid increase in yield on corn. The near universal adoption of hybrid seed is one of the main reasons. Crop rotations with legumes and the planting of winter cover crops is another factor. Proper fertilization, as indicated by the amounts of lime and fertilizer used, is still another important reason. The fact that the high yields occurred on the larger and better farms owned and operated by the landlord indicates more attention and better soil. Only one rented farm produced over 60 bushels per acre. The only two farms reporting 20 bushels per acre were on rented farms. Often mentioned as the source of information leading to better methods of crop production is the Vocational Agricultural Department at Farragut High School.

One of the large farms reported a yield of 158 bushels per acre, while three others reported yields of over 96 bushels per acre.

The yields on corn silage, like corn for grain, have increased in significant quantities. The yield in 1916 was 7.6 tons per acre; in 1940, 8.0 tons per acre; and in 1948, 13.6 tons per acre.

The fact that acreage devoted to silage has decreased each succeeding year poses a question. In 1916, 209 acres were planted in silage. In 1940, only 109 acres were planted to silage; and the acreage was down to only 52 in 1948. One possible explanation for this development is the fact that beef cattle were quite important in 1916, but declined between 1916 and 1940. During this period there was no rapid establishment of dairy herds. Development of the larger dairy herds has come about since 1940, and they had silos in 1948. It is likely that more silos will be built and more silage grown as dairy herds increase in size.

Of the small grains, barley had the greatest increase in yield per acre. From 1940 to 1948, the yield on barley was increased by 47.8 percent, while the yield on wheat was increased only 23.0 percent. There were fewer oats produced per acre in 1948 than in 1940. One reason given for this decrease in the yield of oats was a hail storm that hit the crop a few days before harvest. Three farmers felt that it cut their oat yield in half (Table XXIII).

The yield of tobacco per acre has been upward. In 1916, the yield on the one acre planted was 1000 pounds. The yield per acre in 1940 was 1165 pounds. From 1940 to 1948, tobacco yields per acre increased by 46.6 percent. The average yield on tobacco in 1940 was 1707 pounds per acre (Table XXIII).

There was not a great deal of change in the yield of hay crops over the entire period.

TABLE XXIII

YIELDS OF IMPORTANT CROPS ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

Crop	Unit	Acres on Which Yield Was Reported			Average Yield Per Acre		
		1916	1940	1948	1916	1940	1948
Corn for grain	Bu.	1214	851	534.5	30.1	30.0	50.1
Corn silage	T.	209	109	52	7.6	8.0	13.6
Small grains	Bu.						
Wheat		951	373	413	10.1	16.1	19.8
Oats		354	203	782	20.3	30.1	26.6
Barley		35	277	306	22.4	30.1	44.5
Tobacco	Lbs.	1	20	27.6	1000.0	1165.0	1707.7
Hays	T.						
Alfalfa		11	180	319.1	4.4	1.9	2.2
Lespedeza		-	1232	1550	-	1.1	1.1
Lespedeza mixture		-	109	25	-	1.3	1.0
Soybean		49	106	15	1.4	1.7	2.0
Cow peas		708	78	7	1.3	1.4	2.0
Other hay		677	214	98	.8	1.0	1.0

In the analysis of land use and crop yields data it has been found that (1) there is a tendency for the small farms to break up and change from farm land into part-time and non-farm homesteads, (2) there is a marked tendency to reduce cropland and to increase pasture land, (3) there is a significant trend in cropland use from row crops to hay and small grains, especially feed grains, (4) there is little change in the pattern of cropland use, as corn and tobacco continue to dominate all cropland in the area. There is a slight decrease in the amount of truck crops grown. (5) Small grains have increased in importance in recent years and they are composed largely of feed grains. (6) Lespedeza hay, in most instances in combination with small grains and alfalfa dominate the hay grown in the area. (7) There have been marked increases in yields of crops in the period from 1916 to 1948, and the greatest increases have come in the past eight years from 1940 to 1948.

CHAPTER V

CHANGES IN FARM OPERATION AND ORGANIZATION

The traditional family farm in this country is one worked by the operator with the aid of his family plus some hired help at certain times. In 1916, the traditional farm family seemed to be operating the farms in Southern Knox County. In the first place, most of the farmers owned their farms, and second, they spent most of their time on the farm working.

Fifty-five of the 61 farmers were both the landlord and the operator of the farm in 1916. Only 26 farmers out of 61 were both the landlord and the operator in 1948. In addition to the 26 farmers in 1948 who both owned and operated their farms, there were eight farmers who owned their farms but operated them in various combinations with renters. Three additional farmers owned their farms and operated them on a part-time basis. Of the 24 farms in 1948 that the owner did not operate, 18 were operated by renters or croppers and six by hired men. Percentage-wise, 90.0 percent of the farmers owned the farms they operated in 1916, while only 60 percent were owners of the land they operated in 1948.

While the class of operator was changing from owner-operator toward a renter-operated group of farms, the amount of time spent in the farming operation was also changing. The general practice in 1916 was for the farmer to devote most of his efforts to farming. At that time approximately four-fifths of the operators reported having worked the full year on the farm, and all but three of the 61 farm operators spent

six or more months at farm work (Table XXIV). By 1940, only 36 of the 61 operators, or nearly 60.0 percent, spent 12 months at farm work, while 13 worked on the farm less than 3 months. The number of farmers who spent 12 months on the farm in 1948 had increased slightly over the group who spent 12 months on the farm in 1940. In 1948, 39 of the 61 operators spent 12 months on the farm.

One of the reasons more farmers were spending more time on the farm in 1948 than in 1940 was due to the change in the type of farming. The dairy farmers had to stay on the farm all year, and there was a definite shift to dairy farming between 1940 and 1948.

Also, in 1948 there was an increase in the number of farmers who spent 6 to 11 months on the farm. On some farms the older owner-operators did not work full time. Farming on the above farms was done in connection with a cropper or renter and consisted mostly of grain and a few head of cattle. These were the farms that had the least amount of income per unit of labor input.

Many of the farmers in 1948 who spent less than six months on the farm were either part-time farmers or actually did no farm work. These farm people had small tracts of land and farmed on a part-time basis or rented a field to a neighboring farmer. Eight of the 15 classified as working under three months on the farm did no farm work and rented no land. The latter group is included only because the land is part of the original 61 farms used in 1916 and 1940.

TABLE XXIV

MONTHS OF WORK ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

Months Worked on Farm By Operator	Number of Operators		
	1916	1940	1948
Under 3 months	2	13	15*
3 - 5 months	1	6	6
6 - 8 months	3	4	4
9 - 11 months	7	2	6
12 months	48	36	39
Average months per operator	11.0	8.4	8.1
No. of farms	61	61	70

*Eight of these operators did not intend to call their place a farm and did no farm work.

Changes in Amount and Type of Machinery

Crop and livestock yields increased and the amount of time spent on the farm decreased. One way this was accomplished was by a change in the amount and type of equipment and machines used.

There were more items of equipment and machines on these farms in 1941 than in 1917, and fewer of most types in 1949 that at either previous date (Table XXV). The increase from 1917 to 1941 was due to keeping old machinery and equipment on the place after new machinery was bought. With the coming of the small general-purpose tractor before, and especially after World War II, the old equipment became obsolete and farmers used every opportunity to dispose of it.

The most significant change in machines and equipment has come with the increase in the number of tractors. No tractors were reported in 1916. In 1940, 11 tractors were reported and this number had increased to 54 in 1948. Many of the large farms in 1948 had two tractors and were using them altogether in their farming operation. The need for numerous small pieces of equipment (plows, planters, discs, wagons, etc.) decreased with the introduction of tractors.

The necessity for economizing on labor and increasing efficiency can be seen in the changes in haying equipment (Table XXV). Hay acreage increased and the available labor supply decreased. To cope with this problem, farmers shifted to the power mower, side delivery rake, power pickup baler, and the hay loader or hay chopper. The introduction of the hay chopper came between 1940 and 1948. Two farmers who had choppers approved of them, and three others expressed a desire to get one.

TABLE XXV

MACHINERY ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1917, 1941, AND 1948

	61 Farms 1917	56 Farms 1941	57 Farms* 1948
Wagons	92	86	60
Breaking plows (all types)	118	104	108
Disk harrows	82	82	68
Spike or spring tooth harrow	90	71	38
Roller or cultipacker	21	32	20
Corn planter	74	73	34
Grain drill	70	64	39
Mowing machine	89	86	57
Hay rake	92	82	54
Hay tedder	3	4	-
Hay loader	2	4	9
Hay chopper	-	-	2
Grain binder	62	36	12
Combine	-	4	11
Corn binder	16	13	5
Silage cutter	13	7	2
Corn shredder	5	-	-
Manure spreader	26	20	25
Tractor	-	11	54
Auto - Truck	-	14	17
All engines	11	9	19
Corn sheller	18	2	-
Feed grinder	5	16	19
Lime and fertilizer spreader	-	20	17
Stalk cutter	-	-	3

*All farms included that had as much as two pieces of equipment.

Combines were used altogether for grain harvesting in 1948.

Changes In Livestock

From land use and crop acreage data, the trend toward livestock was quite evident by noting the increase in the amount of land used for hay and the turning of cropland into pasture land.

The trend toward dairying and livestock production was even more evident when the amount of livestock on the farms at the three periods studied was analyzed (Table XXVI). There was a definite trend toward dairying in each succeeding year studied. Beef cattle, which decreased in number until 1941, showed a rather definite trend upward in 1948.

This trend toward dairying and increased beef production was emphasized by the definite increase in the number of cows, heifers, and calves on the farms in the three periods. In 1916 there were about 800 head of cows, heifers, and calves. This number had increased by over 20.0 percent, or 164 head, in 1941. From 1941 to 1948 the number of cows, heifers, and calves had increased by over 45.0 percent, or 441 head. The increase from 1941 to 1948 is even more important in view of the fact that only 56 farms are included in the 1948 survey while 61 were included in both the 1917 and 1941 surveys. Only 91.0 percent of the farms had cows in 1948 as compared with 98.0 percent in 1916.

The definite shift to dairy cattle came between 1940 and 1948, although there was a trend in this direction between 1916 and 1940. With industrialization and the subsequent population growth, the demand for

TABLE XXVI

LIVESTOCK ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1917, 1941, AND 1948

Type of Livestock	Percent of Farms Reporting			Number of Head			Number Per Farm (All Farms)*		
	1917	1941	1948	1917	1941	1948	1917	1941	1948
Horses	85	63	76	151	98	61	2.5	1.6	1.1
Mules	54	50	39	90	80	47	1.6	1.3	.8
Colts	50	14	7	59	15	4	1.0	.2	.07
Jacks and Jennets	4	-	-	17	-	-	.3	-	-
Cows	98	93	91	424	615	861	6.9	10.0	15.4
Heifers	68	63	63	177	214	229	2.9	3.5	4.1
Calves	75	50	86	200	135	315	3.3	2.2	5.6
Bulls	32	47	54	20	39	42	.3	.6	.8
Steers	24	11	29	177	85	340	2.9	1.4	6.1
Boars	4	4	-	3	3	-	.04	.04	-
Brood sows	45	31	50	55	39	60	.9	.6	1.1
Other hogs	67	39	68	262	109	222	4.3	1.8	4.0
Pigs	32	16	38	109	122	186	1.8	2.0	3.3
Sheep	1	1	2	3	17	45	.04	.3	.8
Goats	-	1	-	-	5	-	-	.1	-
Chickens	96	96	88	4170	2779	3219	68.4	45.6	57.5
Turkeys	14	13	2	36	59	14	.6	1.0	.3
Guineas	1	8	-	10	42	-	.2	.7	-
Ducks	11	1	2	42	6	12	.7	.1	.2
Geese	1	-	-	10	-	-	.2	-	-
Animal Units				1166	1140		19.1	18.7	

*61 farms in 1916 and 1940, 56 farms in 1948.

fluid milk increased. Closer inspection as a result of strict demands for clean milk made the small dairy herd unprofitable in this area. The cost of additional equipment and facilities needed to meet these requirements were too great compared with returns from their use. This development eliminated many of the small dairy farmers and further increased the demand for milk from the farms that could provide land and facilities enough to maintain a sizeable herd. It was the larger farms that turned to dairying.

Another factor that played an important role in the development of dairying in this area was labor. The steady employment offered by the dairy farms was able to compete to some extent with the lower paying industrial plants and service jobs. The small grain and tobacco farms could not offer this steady employment and relatively good wage and thus either increased the farm acreage and turned to livestock and/or dairying or were forced to reduce operation to what the operator alone could do. About the only grain and tobacco farms in operation in 1948 were those farms whose owner rented parts of his farm to neighbors, while he retained his small tobacco allotment.

The second important change in the cattle enterprise was the trend toward feeder cattle and purebred beef production. The 1941 survey showed a definite decrease in the number of steers and in the number of farms reporting steers. The total number of steers on farms in 1917 was 177 as compared with only 85 for 1941. In 1948, there were 340 steers on 29 percent of the farms. It should be noted that this change, although important percentagewise, may not be a trend. First, beef cattle were

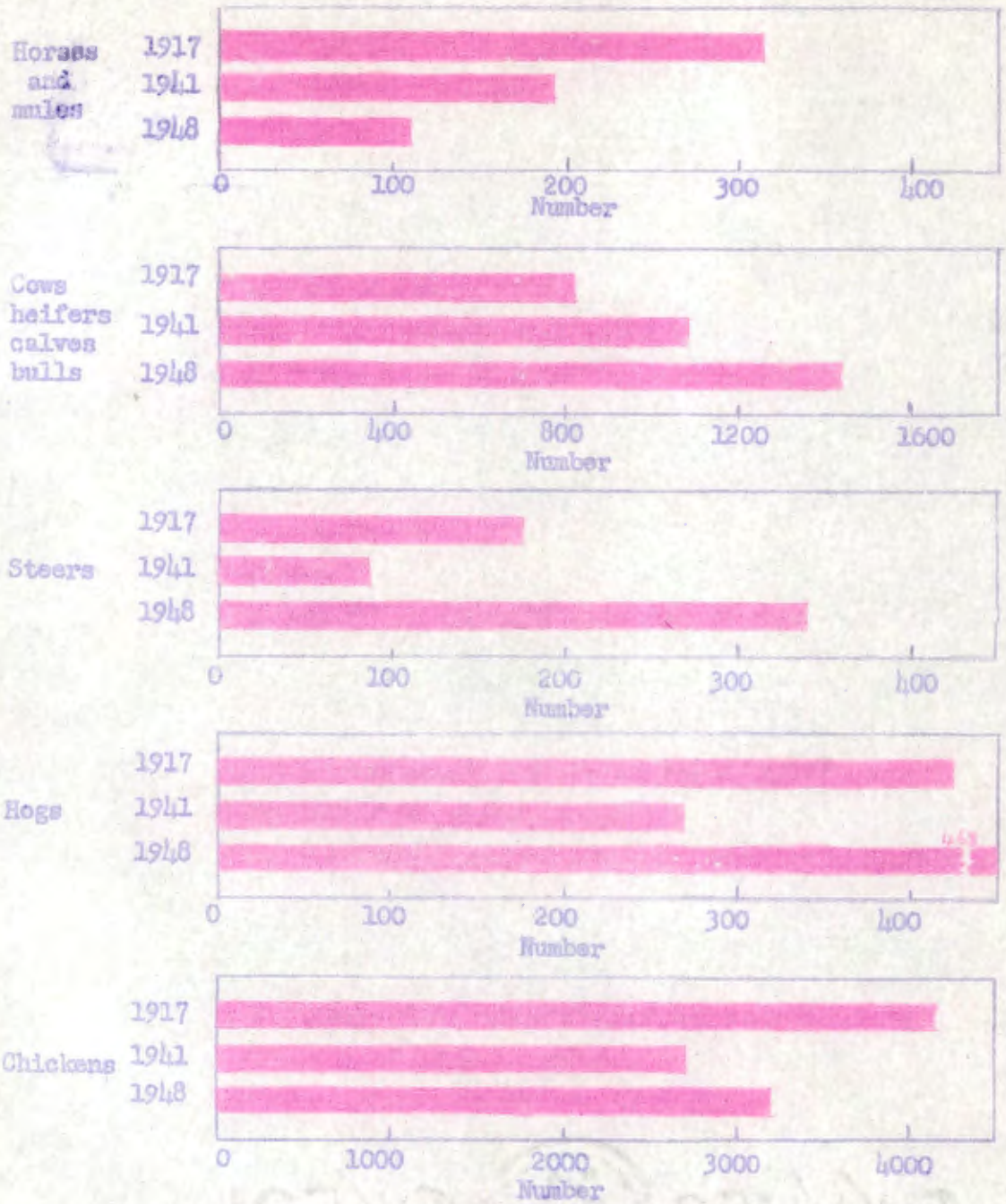


Figure 22

Livestock on farms in southern Knox County, Tennessee
1917 - 1941 - 1948

high in price during and immediately following World War II. Second, practically all the purebred beef cattle, and approximately one-half of the other cattle, were on farms owned by business and professional men. Whether they will stay in the cattle business when and if prices decline, cannot be answered here. In 1948 two of these beef farms were already disposing of their cattle and going into the dairy business.

The above trends in dairy and beef cattle numbers indicate the use to which increased pasture land and hay production was used. It also establishes the direction in which farm organization is turning, namely to dairy farming and livestock production.

Hog production, like beef production, showed a decline in 1941 when compared with 1917, but an increase in 1948. The average number of brood sows on the farms in 1917 was 0.9, with 4.3 head of feeder hogs and 1.8 head of pigs. In 1940, sows had declined to an average of 0.6 head per farm, feeder hogs to 1.8, but an increase in pigs was found. In 1948 there were more sows on the farms than at any other period. This is also true of weanling pigs.

One probable explanation for the fluctuation in hog numbers is the consistent hog cycle in the United States. The hog cycle moves in a fairly well defined pattern. In 1940 it was at a low point. In 1940, hogs in Tennessee were selling at an average price of $5.30 per hundred weight, while in 1948 hogs were selling at an average price of $23.70 per hundred weight. This price structure had a definite influence on hog numbers.

But, from the number of sows and pigs on hand and the facilities present, hog production will continue to be a part of the livestock farming program for some time to come.

The trend pattern for poultry is very similar to that of steers and hogs. There was a decrease from 1917 to 1941, and an increase from 1941 to 1948. Prices of poultry and eggs, like the prices of hogs, probably had a great deal to do with poultry numbers in both 1941 and 1948. Although approximately half of the farmers sold some eggs in 1948, the total amount was small. Most of the flocks were small in size. No reason was given by the farmers as to why they had not gone into poultry and egg production with the rapid increase in the population of the area. Development along this line may come in the future. A few farms, not included in the survey, and in the western part of the area, had commercial flocks in 1948.

Changes In Prices Received

Prices received for farm products in 1948 were the highest in history. It would have been misleading to analyze prices received on the face-value. To correct the fluctuations in prices, 1916 prices and values were used as the base year and the 1940 and 1948 prices and values were adjusted to this base.

The first adjustment made was on the basis of prices received by farmers. On the 1910-1914 base, the index of all prices received by farmers was 118 in 1916, 100 in 1940, and 287 in 1948. When the base is moved up to 1916, the index numbers become 100 for 1916, 85 for 1940, and 243 for 1948.

Prices received by farmers in this area for livestock products was generally higher in 1940 than in 1916 and substantially higher for all products than in 1948. This is especially true of the important cash dairy products. In 1916 a gallon of market milk sold for .20 cents. In 1940, after being adjusted, a gallon of market milk was up to .26 cents, while in 1940 it had fallen to an adjusted price of only .18 cents per gallon. The deflated price of butter was only .18 cents in 1948 as compared with .32 cents in 1916 and .34 cents in 1940. After prices were adjusted, butterfat (creamery milk) sold for only .27 cents per pound, the lowest price for any of the three periods (Table XXVII). These facts are especially important when it is realised that the sale of market milk made up approximately 57.0 percent of the gross income for both 1940 and 1948, and also when consideration is given to efficiency of production.

On a comparative basis, prices received for grain crops was the lowest in 1948 of any period studied. After deflation, the index on the price of corn was 100 for 1916, 83 for 1940 and only 51 for 1948. Wheat, oats, and barley declined in a like manner. The deflated prices of tobacco and hay were the only prices for crops that were greater in 1948 than in 1916 (Table XXX).

Prices on livestock were different from livestock products and grains. The trend, after adjustment, was consistently upward on cattle and hogs. With the exception of cows, all types of cattle and all types of hogs were the highest in 1948 of any other period studied. In contrast to the above condition, horses and mules were

TABLE XXVII

PRICES RECEIVED BY FARMERS FOR LIVESTOCK PRODUCTS FROM FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE
1916, 1940, and 1948

(adjusted for prices received by farmers - Index - 1916=100, 1940=85, 1948=243)

Product	1916		1940			1948		
	Unit	Price	Index	Price	Adjusted Price	Index	Price	Adjusted Price	Index
Butter	lbs.	.32	100	.29	.34	106	.44	.18	56
Butterfat (Creamery milk)	lbs.	.43	100	.32	.37	86	.65	.27	63
Market milk	gal.	.20	100	.22	.26	130	.44	.18	90
Buttermilk	gal.	.10	100	.18	.21	210	.25	.10	100
Eggs	doz.	.24	100	.20	.24	100	.52	.21	87

TABLE XXVIII

ESTIMATED VALUE OF LIVESTOCK ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE 1916, 1940, AND 1948

(adjusted for prices received by farmers - Index - 1916=100, 1940=85, 1948=243)

Kind of Livestock	Value Per Head			Adjusted Value	
	1916	1940	1948	1940	1948
Cows	$ 47.71	$ 70.25	$182.40	$ 82.64	$75.06
Heifers	25.54	34.84	111.25	40.99	45.78
Calves	13.77	19.09	59.70	22.46	24.57
Horses	141.54	126.07	111.46	148.32	45.86
Mules	144.54	108.89	130.43	128.11	53.67
Colts	91.41	77.19	150.00*	90.81	61.73
Brood Sows	23.42	20.42	69.36	24.02	28.54
Other hogs	9.31	8.64	48.16	10.16	19.82
Pigs	3.68	3.78	15.25	4.45	6.28
Chickens	.68	.61	.89	.72	.36

* Gaited colts.

TABLE XXIX

INDEX OF VALUE PER HEAD OF LIVESTOCK ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices received by farmers)

Kind of Livestock	Value Per Head		
	1916	1940	1948
Cows	100	173	157
Heifers	100	160	179
Calves	100	163	178
Horses	100	105	32
Mules	100	89	37
Colts	100	100	68
Brood Sows	100	103	122
Other hogs	100	109	213
Pigs	100	121	171
Chickens	100	106	53

TABLE XXX

PRICES RECEIVED BY FARMERS FOR CROPS GROWN ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices received by farmers - 1916=100, 1940=85, 1948=243)

		Prices Received							
		1916		1940			1948		
Crop	Unit	Price	Index	Price	Adjusted Price	Index	Price	Adjusted Price	Index
Corn	Bu.	1.05	100	.74	.87	83	1.31	.54	51
Wheat	Bu.	1.54	100	.93	1.09	71	2.02	.83	54
Oats	Bu.	.32	100	.46	.54	104	1.02	.42	81
Rye	Bu.	1.28	100	.55	.65	51	----	----	----
Barley	Bu.	1.12	100	.65	.76	68	1.21	.50	45
Tobacco	Lbs.	.15	100	.18	.21	140	.48	.20	133
Alfalfa hay	Tons	15.92	100	14.86	17.48	110	40.00	16.46	103
Lespedeza hay	Tons	----		15.22	----	----	33.00	----	----
Millet hay	Tons	15.25	100	----	----	----	----	----	----
Red Top or Timothy	Tons	12.86	100	10.00	11.76	91	----	----	----

selling at a deflated price of approximately one-third of what they were in 1916 and 1940, while chickens were valued in 1948 at approximately one-half of what they were in 1916 and 1940 (Table XXIX).

Prices received by farmers was important, but what they could buy with what they received was more important. To analyze the purchasing power of the receipts from different sources, it was necessary to correct price quotations in terms of prices paid by all farmers in the United States. On the 1910-14 base, the 1916 index of prices paid by farmers was 125, in 1940 it was 125, and in 1948 it was 250.[35] With 1916 as the base year for the three periods studied, the index figures became 100 for 1916, 100 for 1940, and 200 for 1948.

From the above data it becomes apparent that the farmer's real income, in terms of what he could buy with each dollar received, was the same for 1916 and 1940, but only one-half of each dollar he received in 1948. Prices and incomes for the year 1916 and 1940 were compared on a dollar for dollar basis, while prices and incomes for 1948 must have been twice as great to have had the same real value.

In table XXXI prices received by farmers for livestock products during the respective periods can be compared. Actually, in terms of real income, farmers received less for their butter and butterfat in 1948 than in either 1940 or 1916. In actual dollars, farmers received twice as much for their market milk per gallon in 1948 as compared

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[35] United States Department of Agriculture, Agricultural Statistics 1949 (Washington, D. C.: U. S. Government Printing Office, 1949), p. 622.

with the price received in 1940, but in real income it was the same. For egg prices, the real income is only eight cents on the dollar better in 1948 than in 1916. Market milk was the only livestock product sold in quantity that returned as much or more in real income in 1948 as in either 1916 or 1940.

Estimated values of livestock for the three periods studied can be seen in table XXXII, and values in terms of index numbers in table XXXIII.

Cattle and hogs were much higher in value in 1948 than in either 1940 or 1916. Horses, mules, and chickens were lower in value in 1948 than during any of the other two periods. In 1940, cattle were the only livestock valued at a price greater than in 1916.

The fact that cattle were nearly twice as high, in terms of real value as in 1916, and materially higher than in 1940, was probably one reason why there had been such an increase in cattle numbers. Another important reason for the growth of dairy cattle numbers was the returns from market milk. Market milk held its real value even in the inflationary period of post-World War II. With production per animal continually increasing without any reduction in the real income per gallon of milk, it can be seen that the dairy enterprise would continue to be one of the most important in the area.

Another important reason why cattle numbers have increased at the expense of the crop enterprises is this factor of real income received from the sale of farm products. The real income from crops in 1948 was very low as compared with 1916 and even lower, in most cases, than in 1940 (Table XXXIV).

TABLE XXXI

PRICES RECEIVED BY FARMERS FOR LIVESTOCK PRODUCTS FROM FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices paid by farmers - Index-1916=100, 1940=100, 1948=200)

Product	Unit	1916 Price	1916 Index	1940 Price	1940 Index	1948 Price	1948 Adjusted Price	1948 Index
Butter	Lbs.	.32	100	.29	90.6	.44	.22	68.8
Butterfat (creamery milk)	Lbs.	.43	100	.32	74.4	.65	.325	75.6
Market milk	Gal.	.20	100	.22	110.0	.44	.22	110.0
Buttermilk	Gal.	.10	100	.18	180.0	.25	.125	125.0
Eggs	Doz.	.24	100	.20	83.0	.52	.26	108.3

TABLE XXXII

ESTIMATED VALUE OF LIVESTOCK ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices paid by farmers - Index - 1916=100, 1940=100, 1948=200)

Kind of Livestock	Value Per Head			Adjusted Value
	1916	1940	1948	1948
Cows	$ 47.71	$ 70.25	$182.40	$91.20
Heifers	25.54	34.84	111.25	55.62
Calves	13.77	19.09	59.70	29.65
Horses	141.54	126.07	111.46	55.73
Mules	144.54	108.89	130.43	65.21
Colts	91.41	77.19	150.00*	75.00
Brood sows	23.42	20.42	69.36	34.68
Other hogs	9.31	8.64	48.16	24.08
Pigs	3.68	3.78	15.25	7.62
Chickens	.68	.61	.89	.44

*Gaited colts.

TABLE XXXIII

INDEX OF VALUE PER HEAD OF LIVESTOCK ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices paid by farmers - Index- 1916=100, 1940=100, 1948=200)

Kind of Livestock	Values Per Head		
	1916	1940	Adjusted 1948
Cows	100	147.2	191.2
Heifers	100	136.4	217.8
Calves	100	138.6	215.3
Horses	100	89.1	39.4
Mules	100	75.3	45.1
Colts	100	84.4	82.0
Brood sows	100	87.4	148.1
Other hogs	100	92.8	258.6
Pigs	100	102.7	207.1
Chickens	100	89.7	64.7

TABLE XXXIV

PRICES RECEIVED BY FARMERS FOR CROPS GROWN ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices paid by farmers - Index - 1916=100, 1940=100, 1948=200)

Crop	Unit	Price Received						
		1916		1940		1948		
							Adjusted	
		Price	Index	Price	Index	Price	Price	Index
Corn	Bu.	1.05	100	.74	70.5	1.31	.655	62.4
Wheat	"	1.54	100	.93	60.4	2.02	1.01	65.6
Oats	"	.52	100	.46	88.5	1.02	.51	98.1
Rye	"	1.28	100	.55	43.0	-	-	-
Barley	"	1.12	100	.65	58.0	1.21	.605	54.2
Tobacco	Lbs.	.15	100	.18	120.0	.48	.24	160.0
Alfalfa hay	Ton	15.92	100	14.86	93.3	40.00	20.00	125.6
Lespedeza hay	"	-	100	15.22	100.0	33.00	16.50	-
Millet hay	"	15.25	100	-	-	-	-	-
Red top or timothy	"	12.86	100	10.00	77.8	-	-	-

Changes In Sale Of Livestock And Crops

The most important change in the source of income came from the sale of market milk. All land-use and livestock data indicated increased livestock production of which dairying was most important.

In 1916 only 0.3 percent of the farms reported selling market milk. These farms received less than 0.5 percent of the total income from the sale of livestock and livestock products. In 1940, 41.0 percent of the farms reported selling market milk, and the income from this source represented 57.0 percent of the total sales from livestock and livestock products. In 1948, only 29 percent of the farmers reported selling market milk, but the sale of milk at this time still amounted to over 57.0 percent of the total income received from livestock and livestock products (Table XXXV).

Four farms were in the process of starting dairy herds in 1949 when the 1948 survey was made. The addition of these four farms would have increased the number of dairy farms to one-third of the sample group of 56 farms.

The other important change in the income derived from the sale of livestock and livestock products came in the year 1948. In 1916, the sale of livestock by 61 farms amounted to $24,543 and made up over one-half of the total income received from the sale of livestock and livestock products. In 1940, livestock had declined in importance in the area and only $23,796 income was received from this source. In 1948, the sale of livestock amounted to $83,036 which was 40.0 percent of the total income from the sale of livestock and livestock products.

TABLE XXXV

SALES OF LIVESTOCK AND LIVESTOCK PRODUCTS FROM FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948*

Product	Percent of Farms Selling			Total Amount Sold			Average Sales Per Farm		
	1916	1940	1948	1916	1940	1948	1916	1940	1948
Butter	73	26	9	$ 7481	$ 2411	$ 436	$122.64	$ 39.53	$ 7.79
Cream	21	11	2	9500	1815	1801	155.74	29.76	32.16
Market milk	3	41	29	2076	41789	120044	34.03	685.07	2143.64
Buttermilk	3	8	2	227	279	364	3.72	4.57	6.50
Eggs	93	68	45	3299	2174	3559	54.09	35.64	63.55
Breeding fees	13	9	-	546	104	-	8.95	1.70	-
Wool	1	-	2	11	-	127	.18	-	2.27
Hides	34	1	-	124	2	-	2.03	.03	-
Meat (dressed)	-	3	-	-	30	-	-	.49	-
Total livestock products	(100)	(82)	(68)	(23264)	(48604)	(126331)	(381.38)	(769.79)	(2255.91)
Livestock	100	98	89	24543	23796	83036	402.34	390.10	1482.79
Grand total	100	98	91	47807	72400	209367	783.72	1186.89	3738.70

*61 farms 1916 and 1940, 56 farms 1948.

Livestock products that declined in importance were butter and cream. In 1916, income received from the sale of butter and cream amounted to $16,981 which was approximately 36.0 percent of the income received from the sale of livestock and livestock products. In 1948, the combined income from this above source was less than 2.0 percent (Table XXXV).

With the exception of tobacco, there were no radical changes found in the sale of crops, as in livestock. Tobacco was of little importance in 1916 as only one farmer grew it, but in 1948 nearly one-half of the farmers grew tobacco. The one farmer growing tobacco in 1916 received $105 for his crop. Total sales of crops in the same year amounted to $29,123.

In 1940, 41.0 percent of the farmers reported selling their tobacco for $4,217. This amounted to nearly 20.0 percent of the $22,795 received from the sale of crops. By 1948, 44.0 percent of the farmers were growing tobacco for which they received $23,977, or 33.0 percent of the income derived from the sale of crops (Table XXXVI).

Another important change has been in the decreasing number of farms growing and selling truck crops, and tree and bush fruits. The total amount of money received from the above sources in the three years studied are as follows: 1916, $4,873 or 17.0 percent of the income derived from crops; 1940, $5,685 or 25.0 percent; 1948, $2,429 or 3.0 percent.

TABLE ~~XXXVI~~

VALUE OF CROPS SOLD FROM FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE
1916, 1940, AND 1948

(61 Farms)

Crop	Percent of Farms Selling Crops			Total Value of Crops Sold			Average Value Per Farm (All Farms)		
	1916	1940	1948	1916	1940	1948	1916	1940	1948
Corn	62	47	43	$ 9177	$ 3838	$10111	$150.44	$ 62.92	$ 165.75
Wheat	62	36	31	8924	3248	9138	146.29	53.25	152.05
Oats	23	11	25	1131	391	6980	18.54	6.41	114.43
Barley	3	8	11	90	1561	3236	1.48	25.59	53.05
Rye	5	1	-	50	69	-	.82	1.13	-
Hay	56	43	34	4775	3786	15754	78.28	62.07	280.00
Tobacco	1	41	44	105	4217	23977	1.72	69.13	393.07
Truck - Tomatoes	-	24	2	-	2350	51	-	38.53	.84
Watermelons	9	21	8	754	1266	1605	12.36	20.75	263.11
Other truck	1	7	7	393	754	448	6.44	12.36	7.34
Berries, mostly strawberries	3	2	-	450	265	-	7.38	4.34	-
Tree and bush fruits	1	-	-	175	-	-	2.87	-	-
Irish potatoes	16	26	-	389	687	-	6.38	11.26	-
Sweet potatoes	22	11	2	1868	106	40	30.59	1.74	.66
Sorghum syrup	11	7	2	560	132	22	9.18	2.16	.36
Straw	6	1	-	284	25	-	4.66	.41	-
Pop corn	-	1	-	-	60	-	-	.98	-
Lespedeza seed	-	3	3	-	40	263*	-	.66	4.31
Total crops	95	83		29123	22795	71625	477.43	373.69	1174.18

* This includes $188 for soybean seed.

Fewer and fewer farms reported the sale of corn, small grains and hay. With a substantial increase in the number of livestock being kept on the farms, this is easily understood. The reason oats show an increase in the amount sold is that they were often grown on rented land and the landlord sold his share. This is also true of hay.

Changes In Expenses

When 1948 expenses are deflated and compared with 1940 expenses there is a 23.0 percent difference, $69,117 in 1948 as compared with $56,077 in 1940 (Table XXXVII).

The difference between the total expenses of $56,077 in 1940 as compared with $31,393 in 1916 is attributed to the following causes:

> High interest charges due to upward changes in land values which in turn were caused by increased residential site value; expensive homes built from non-farm income more elaborate than farm incomes usually afford; changes in price levels; changes land use and farm organization; less emphasis on farming due to purchase of farms by business and professional men; less work done by the farm operator himself; or increased expenses due to more hauling and transportation charges; greater upkeep on machinery; higher wage rates; higher taxes; etc.[36]

Most of the above quoted factors also apply to the increase in 1948 expenses over 1940. This is especially true of land values. Other expenses that were higher in 1948 than in 1940 were building and machinery repairs, fertilizer, seeds, plants, and fuel and oil.

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[36] H. J. Bonser, R. G. Milk, and C. E. Allred, Quarter Century Of Agricultural Changes In Southwestern Knox County, Tennessee, Rural Research Monograph No. 135 (Knoxville: University of Tennessee Agricultural Experiment Station, 1942), p. 47.

In 1947 and 1948 building materials and farm machinery became fairly plentiful. As new building and the purchase of new machinery, and even major repairs on these items, had been put off during the war years, the sudden increase was merely the carrying out of plans which would have been executed before had it been possible.

The cost of fertilizer, seeds, and plants are somewhat greater for 1948 than in 1940 even after the 1948 quantity is deflated. Farmers found conditions such that a reduction in row crops was desirable, but at the same time they wanted to increase the total yield. The purchase of hybrid and certified seeds, along with heavy applications of fertilizer, although more expensive, seemed to have been the answer.

The great increase in the number of tractors on these farms explains the increased use of fuel and oil in 1948 over 1940.

TABLE XXXVII

CURRENT FARM EXPENSES ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE
1916, 1940, AND 1948

Type of Expense	Percent of Farms Reporting			Total Amount			Average Per Farm*		
	1916	1940	1948	1916	1940	1948	1916	1940	1948
Hired labor**	85	80	63	$ 8264	$11270	$ 28866	$135.48	$184.76	$ 481.10
Cropper labor	32	32	20	5052	4430	10904	82.82	72.62	181.73
Building repairs***	61	59	50	951	1995	28163****	15.59	32.70	469.38
Repairs on machinery	83	72	65	892	1018	5008	14.62	16.69	83.47
Fence repairs	58	49	45	790	591	2485	12.95	9.69	41.42
Feed	57	85	48	3089	10475	22663	50.64	171.72	377.71
Seeds and plants	86	90	70	2114	2444	6879	34.66	40.07	114.65
Fertilizer	81	81	83	2518	3293	11771	41.28	53.98	196.62
Fuel and oil	72	42	53	249	1646	9911	4.08	26.98	165.18
Veterinary	37	39	20	212	459	674	3.48	7.52	11.23
Threshing	81	57	-	610	981	-	10.00	16.08	-
Taxes	100	100	100**	2498	5428	5950	40.95	88.98	99.17
Insurance	86	68	85	857	1011	1570	14.05	16.57	26.17
Other	-	-	-	3297	11036	3390	54.05	180.92	56.50
Total	-	-	-	31393	56077	138234	514.64	919.30	2303.90

*61 farms 1916 and 1940, 60 farms 1948.

**Including managers.

***Includes new buildings.

****Does not include one farm because no one lived on it.

CHAPTER VI

CHANGES IN INCOME

As land values increased and labor became scarce and high priced, it became necessary for the farmers to organize the farming operation to make the most efficient use of land, labor, and capital and continually increase their income. They did this by shifting to dairy cattle first, beef cattle second, and by the intensive cultivation of land in growing forage crops, corn, and winter grains with which to feed their livestock.

Total income from all sources has increased at each succeeding period. The 1940 gross income was 21.0 percent greater than 1916, and the 1948 gross income was 207.0 percent greater than 1916 (Figure 23).

In 1916, income from the sale of livestock products constituted only 25.0 percent of the gross income. In 1940, the portion contributed by the sale of livestock products was up to 44.0 percent, and in 1948 it was 45.0 percent.

The income derived from the sale of livestock and the net increase in livestock amounted to 27.0 percent of the gross income in 1916, 22.0 percent in 1940 and up to 25.0 percent in 1948.

When income derived from livestock products was combined with income derived from the sale of livestock and the net increase in livestock, the total income from these sources amounted to 52.0 percent of the gross income in 1916, 66.0 percent in 1940 and 70.0 in 1948.

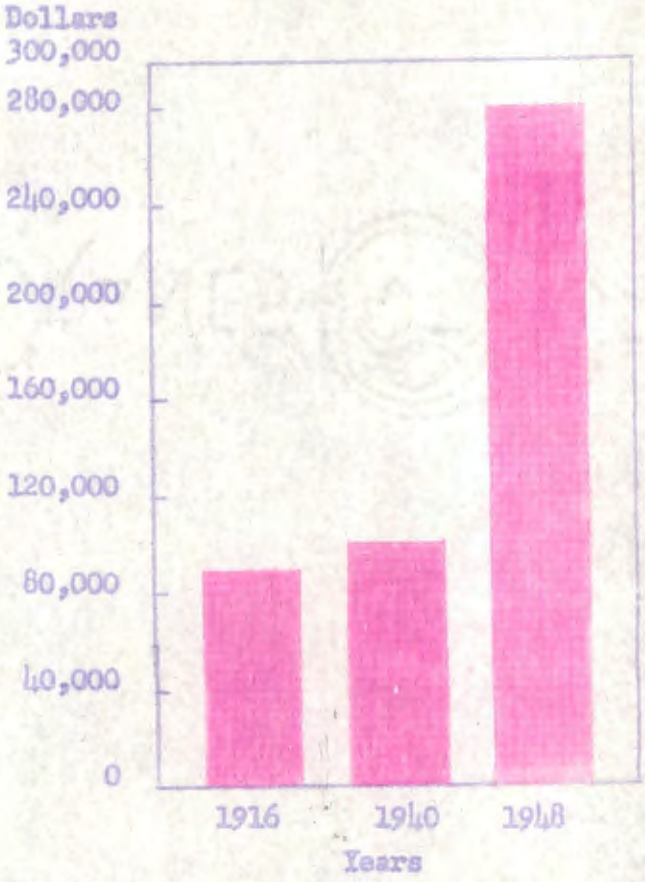


Figure 23

Gross income from farms in southern
Knox County, Tennessee, 1916 - 1940 - 1948

Income derived from the sale of crops amounted to 32.0 percent of the gross income in 1916, 21.0 percent in 1940 and 26.0 percent in 1948. The main source of income from the sale of crops was tobacco, as it constituted over one-third of the total income from crops (Table XXXIX and Figure 24).

Income from miscellaneous sources shows no trend in pattern of development. It amounted to $6,638 in 1916, $9,536 in 1940, and $2,380 in 1948.

Explanation for computation of income from miscellaneous sources in 1941 follows:

> In connection with miscellaneous sources of farm income, it is sometimes difficult to determine the source of income for some items. Is rental of an auto truck a source of farm income? Obviously if the farm is maintaining the truck such a source should be attributed to the farm. Is labor accomplished by a farmer at non-farm work a source of farm income? Certainly such labor diverts attention from the farm and effects the amounts of income earned from the farm directly. In this study income earned by the farmer at miscellaneous times, in conjuntion with his farm work was included. But income from industrial workers or business men who lived on the farm and operated it through hired labor, was not included as a source of farm receipts.[37]

This source of income was difficult to determine in 1948. There was a great deal of uncertainty in the minds of farmers as to the exact amount received from these sources. But it is rather evident that they spent less time working off the farm in 1948 than in 1940 because of the change in the farming systems. Only rentals from houses, pastures, one sawmill, and payments from AAA were included in the 1948 figure.

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[37] Ibid., pp. 42-43

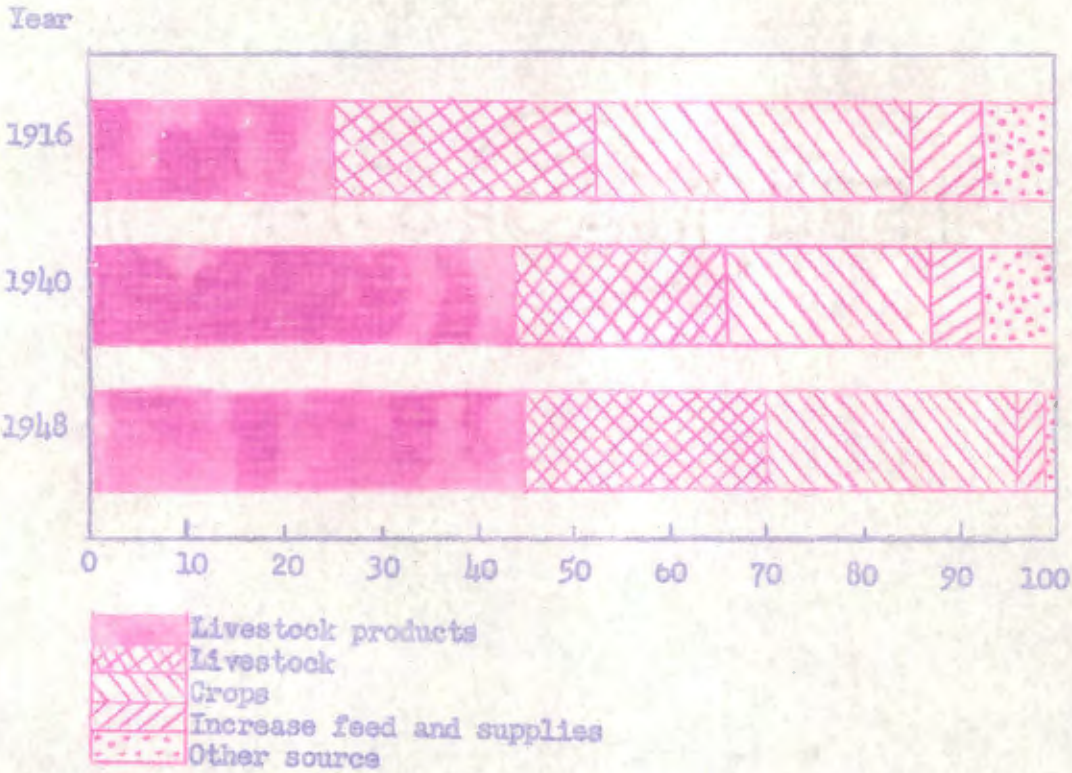


Figure 24

Percent each source is of gross income
on farms in southern Knox County, Tennessee

1916 - 1940 - 1948

Gross Income In Terms Of Prices Received

In Chapter V, it was seen from the analysis of prices received that it was misleading to analyze income on the face-value. Fluctuating prices made it necessary to use correction factors.

When corrected in terms of prices received by farmers, it was found that receipts from crops were about the same for the three periods studied. The index figure on income from crops was 100 for 1916, 92 for 1940 and 101 for 1948. Income, after correction, from crops was slightly greater in 1948 than at either of the two previous periods even though acreage devoted to crops was only 57.0 percent as great in 1948 as in 1916 and only 70.0 percent as great in 1948 as in 1940. Also the deflated prices for grains was only approximately 50.0 percent as much in 1948 as in 1916 and substantially lower than in 1940. These figures indicate a definite increase in production of crops per acre (Table XXXVIII).

The deflated income from livestock steadily increased at each period. This was true even though prices on horse, mules and chickens were substantially lower in 1948 than in either of the two previous periods. An increase in the price of cattle and hogs was able to stabilize income from livestock, while the increase in numbers resulted in a slight but steady increase in income.

There was a definite increase in the income received from the sale of livestock products from 1916 to 1940. This was due to two factors. The most important contributing factor was definite increase in the amount of market milk sold. Income from market milk made up

86.0 percent of the income from livestock products in 1940 and 95.0 percent from the same source in 1948.

In 1948 there was a slight decrease in the amount of income received from livestock products. This resulted from the fact that market milk did not rise in price as much as did the general level of prices received for farm products. In 1948, the index price for market milk, after deflation, was only 90 as compared with 130 for 1948 or .18 cents per gallon as compared with .26 cents. With this approximate 31.0 percent reduction in price of milk, gross income from livestock products, of which market milk made 95.0 percent, was down only approximately 11.0 percent. When corrected for price differential, it was found that milk production was approximately 31.0 greater in 1948 than in 1940.

Income data, corrected on the basis of prices received for farmers indicate definite increases in production of both crops and livestock products.

The reduction in gross deflated income in 1948 resulted from two factors. One of the main reasons is the fact that the deflated price of market milk, the main source of income on these farms, did not increase as fast as the price for all farm products. The second reason is that the farms in 1948 contained approximately 20.0 percent fewer acres than the farms in either of the two previous periods.

TABLE XXXVIII

TOTAL INCOME FROM DIFFERENT SOURCES ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices received by farmers - 1916=100, 1940=85, 1948=243)

Item	Total Income			Adjusted Income		Income Index*		
	1916	1940	1948	1940	1948	1916	1940	1948
Crop Receipts	$29123	$ 22795	$ 71625	26818	29475	100	92	101
Livestock Net Increase & Sales	24543	23796	70163	27995	57181	100	114	118
Sale of Livestock Products	23264	48604	126331	57181	51988	100	246	223
Other Farm Income	6638	9536	2380	11219	979	100	169	14
Increase Feed and Supplies	7622	5847	9744	6879	4010	100	90	53
Total Receipts	91190	110578	280243	130092	115326	100	143	126

*Income from 61 farms 1916 and 1940. The 1948 figure does not include four of the original 61 farms (two not in cultivation and two inundated by T.V.A. lake, parts of three farms inundated by T. V. A. lake, and seven tracts which were nothing more than residential sites.

Gross Income In Terms Of Purchasing Power

Gross income, in terms of what it will buy in deflated dollars, increased 54.0 percent in 1948 over the 1916 income, mainly because of the increase in one product, market milk. Income received from the sale of livestock products, of which market milk was 95.0 percent in 1948, was in terms of what it would buy 172.0 percent greater in 1948 than in 1916. Income received from the sale of livestock had a purchasing power of 43.0 percent greater in 1948 than in 1916, while crops were only 23.0 percent greater in 1948 than in 1916 (Table XXXIX).

As the increase in income was attributed mainly to the sale of market milk, this increase came from only 29.0 percent of the farms. These were the dairy farms in 1948.

The probable future trend in farm organization may be indicated by the number of dairy and livestock farms in comparison with the percent of gross income derived from the main products grown on these farms. In 1948, there were 14 dairy farms, two dairy-beef farms, seven beef farms, and one hog-beef farm. These dairy and livestock farms made up 43.0 percent of the total farms that had any livestock. The income derived from the sale of livestock products and from the sale of livestock or the net increase in livestock made up 70.0 percent of the gross income derived from all the farms in 1948.

TABLE XXXIX

TOTAL INCOME FROM DIFFERENT SOURCES ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(Adjusted for prices paid by farmers - Index- 1916=100, 1940=100, 1948=200)

Item	Total Income			Deflated Income	Income Index*		
	1916	1940	1948	1948	1916	1940	1948
Crop Receipts	$29123	$ 22795	$ 71625	$ 35812	100	78	123
Livestock Net Increase & Sales	24543	23796	70163	35081	100	97	143
Sale of Livestock Products	23264	48604	126331	63165	100	209	272
Other Farm Income	6638	9536	2380	1268	100	144	19
Increase Feed and Supplies	7622	5847	9744	4872	100	77	64
Total Receipts	91190	110578	280243	140121	100	121	154

*Income from 61 farms 1916 and 1940. The 1948 figure does not ininclude four of the original 61 farms (two not in cultivation and two inundated by TVA lake), parts of three farms inundated by TVA lake, and seven tracts which were nothing more than residential sites.

Changes In Income Per Unit Of Physical Labor Input

It has been seen that income from livestock grew faster than the income from crops and other sources, however the question has not been answered as to why these farmers have shifted to the production of livestock and livestock products. If they spent more time on livestock and the returns per day of labor was the same, it is natural that they would have made more money with the livestock.

Why did farmers shift to livestock? How much more money, if any, did they make per unit of labor input by working with livestock than with crops?

In figure 25 and table XL, it can be seen that the income per unit of physical labor input on livestock returned $4.28 in 1916, while on crops it returned $3.46. This is not excessive considering the fact that investment in livestock is necessarily greater than in the crops these farmers grow. The situation changed in 1940. For the same amount of work as in 1916, a physical labor input on livestock returned $6.07, while crops returned only $3.47, or one cent more than in 1916. In 1948, a physical labor input on livestock returned to the farmer $16.24, while crops returned only $9.96 (Figure 25).

Comparing the returns per unit of physical labor input on the basis of prices received by farmers with 1916 as the base year, it was found that income from a physical labor input in livestock in 1948 was approximately 56.1 percent greater than in 1916, while income from crops was only approximately 15.9 percent greater. The income per unit of physical labor input was greater in 1940 than in 1948 as a result of price differentials (Table XL).

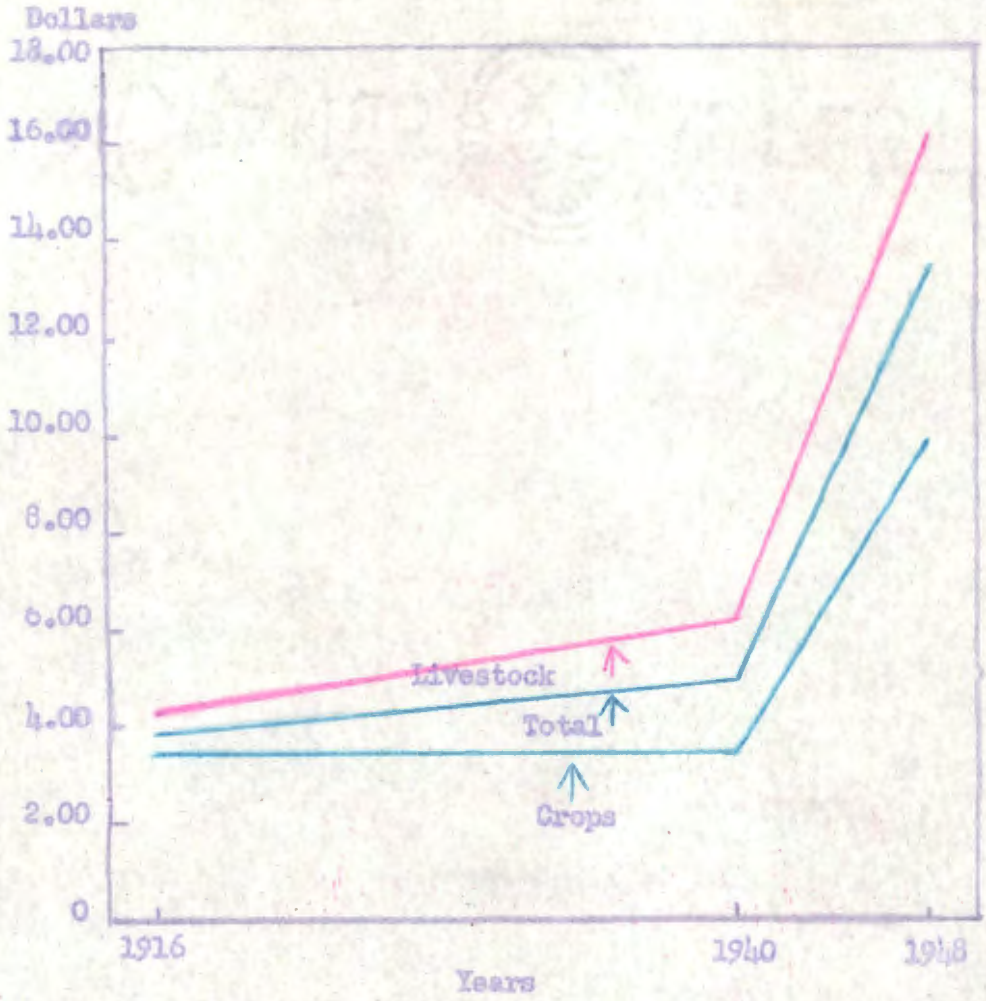


Figure 25

Income per unit of physical labor input on crops - livestock in southern Knox County, Tennessee

1916 - 1940 - 1948

TABLE XL

CHANGES IN PHYSICAL LABOR INPUTS AND INCOME PER UNIT OF INPUT ON LIVESTOCK AND CROPS ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940 AND 1948

(adjusted for prices received by farmers - Index - 1916=100, 1940=85, 1948=243)

	Total Inputs - Total Income - Income Per Unit of Input										
	1916			1940				1948			
						Adjusted				Adjusted	
Factors	Inputs	Income	Income per Inputs	Inputs	Income	Income	Income per Input	Inputs	Income	Income	Income per Inputs
Man work unit crops	10625	$36745	$3.46	8251	$ 28642	$ 33696	4.08	8344	$ 81369	33485	4.01
Man work units livestock	11153	47807	4.28	11931	72400	85176	7.14	121000	196494	80862	6.68
Man work units total	21778	84522	3.88	20182	101042	118873	5.89	20444	277863	114347	5.59
Man work units	188			209				197			
Income per man		729			1047	1232			2680	1103	
Months man labor	1392	1158						1244			

In real income (purchasing power), using 1916 as the base year, income from a physical labor input on livestock in 1948 had increased approximately 100 percent over 1916, while the income from the same amount of time spent on crops had increased by only 40.0 percent (Table XLI).

Thus it is quite evident that farmers in this area was employing more of their resources in the most profitable farm enterprises, namely dairy farming and general livestock farming.

TABLE XLI

CHANGES IN PHYSICAL LABOR INPUTS AND INCOME PER UNIT OF INPUT ON LIVESTOCK AND CROPS ON FARMS IN SOUTHERN KNOX COUNTY, TENNESSEE, 1916, 1940, AND 1948

(adjusted for prices paid by farmers - index - 1916=100, 1940=100, 1948=200)

	Total Input - Income - Income Per Unit of Input									
	1916			1940			1948			
Factors	Inputs	Income	Income per Input	Inputs	Income	Income per Input	Inputs	Income	Adjusted Income	Income per Input
Man work units Crops	10625	$36745	$3.46	8251	$28642	$3.47	8344	$81369	$49685	$4.88
Man work units Livestock	11153	47807	4.28	11931	72400	6.07	12100	196494	98247	8.12
Man work units Total	21778	84552	3.88	20182	101042	5.01	20444	277863	138932	6.80
Man work units & Income per man	188	789		290	1647		197	2680	1340	
Current expenses per man		271			581			1333	667	
Months man labor	1392			1158			1264			

CHAPTER VII

SUMMARY AND CONCLUSIONS

The farming area studied in Southern Knox County embraces approximately 60 square miles extending about 10 miles along U. S. Highway 11, and three miles on each side of the highway. The area begins approximately five miles west of the Knoxville city limits.

The period studied covers changes on farms from 1916 to 1940 and from 1940 to 1948.

The purpose of the study was to ascertain two types of changes on farms: (1) changes in land utilization, (2) changes in farm organization and operation. The more pronounced changes are as follows:

The area has been subjected to marked urban growth and influence from industrial development. Industrial employment and population growth in Knox, Blount, Anderson, and Roane counties was greater than the corresponding growth in the United States from 1940 to 1948. Changes occurring on the farms studied were greater in most cases during the eight-year period from 1940 to 1948 than in the 24-year period from 1916 to 1940.

In 1916, only 12.0 percent of the 541 families were non-farm. By 1940, 42.0 percent of the 731 families were non-farm, while in 1948, approximately 50.0 percent of the 874 families were non-farm.

Farm land values in the area increased over 50.0 percent between 1935 and 1945.

There was a tendency for small farms to break-up and be sold as non-farm building sites, and for an increase in the number of farms with acreages ranging between 100-200, and 300 and above. Uneconomic farm units and lack of farm labor were the main causes of farm break-up.

Of the farms that remained in 1948, there was a decided shift away from row crop farming to livestock farming. Cropland occupied only 33.8 percent of the farm acreage in 1948 as compared with 37.0 percent in 1940, and 47.8 percent in 1916.

Most of the land taken out of crops was turned into pasture. Only 23.6 percent of the farm acreage was in pasture in 1916, 33.4 percent in 1940, and 41.0 percent in 1948. There was also a definite shift from open to rotation pasture.

Crop production shifted principally from row crops to hay crops and to small grains. Row crops occupied 34.7 percent of all cropland in 1916, 30.8 percent in 1940, and only 23.1 percent in 1948. Reduction in row crop acreage in 1940 was absorbed by an increase in hay acreage, while the reduction of row crops in 1948 seemed to have been absorbed by small grains, of which feed grains were the most important.

Corn was the most important row crop throughout the entire period, with tobacco changing from little importance in 1916 to the chief cash crop grown in 1948.

Substantial increases were noted in crop yields. Average corn yields in 1948 were 66.0 percent greater than in 1916. Barley yields were 100.0 percent greater, and wheat yields 96.0 percent more in

1948 than in 1916. Tobacco yields were 47.0 percent greater in 1948 than in 1940.

There has been a tendency to change from owner-operated to cropper and tenant operated farms. In 1916, 90.0 percent of the farms were owner-operated. In 1948, approximately 47.0 percent of the farms were operated full-time by the owner.

The shift toward mechanization was more pronounced in this area between 1940 and 1948 than the corresponding shift in the United States. New tools and machines bought were labor saving devices such as tractors, combines, power pickup balers and hay choppers.

The trend toward livestock farming was more pronounced in this area than in the United States or in Tennessee. In 1948 there were 18.0 percent more cattle of all types in the United States and approximately 41.0 percent more in Tennessee than in the year 1916. In this areathere were 79.0 percent more cattle on farms in 1948 than in 1917. While there were 4.0 percent fewer hogs in the United States and 10.0 percent fewer in Tennessee in 1948 than in 1916, there were 8.0 percent more hogs on the farms in this area in 1948 than in 1917.

Market milk, cattle, hogs, and tobacco were the farm products that had the greatest increase in price from 1916 to 1948. They were the only farm products that sold for a price per sales unit that had as great or a greater purchasing power in 1948 than in 1916.

The most important change in the sale of farm products was in market milk.

Livestock sales were 3.0 percent less in 1940 than in 1916, and 249.0 percent greater in 1948 than in 1940. Corrected in terms of purchasing power livestock sales were still 3.0 percent less in 1940 than in 1916, and 69.0 percent greater in 1948 than in 1940.

Fewer farmers sold feed grains (corn and small grains) in 1948 than at any other period. Tobacco sales, which were negligible in 1916, had increased 469.0 percent in dollars and 184.0 percent in purchasing power from 1940 to 1948.

Income from the sale of livestock and livestock products made up approximately 52.0 percent of the gross income in 1916 compared with 70.0 percent in 1948. Income from market milk made up 95.0 percent of the total income from the sale of livestock products.

In 1940, gross income was 21.0 percent greater than in 1916, while current expenses had increased 80.0 percent in the same period. In 1948, gross income was 153.4 percent greater than in 1940, while current expenses had increased only 146.0 percent in the sale period.

From 1916 to 1940 current expenses had increased at a faster rate than gross income. Between 1940 and 1948, a definite shift toward livestock, especially dairying, took place, and more efficient use of resources was accomplished. As a result of this shift, it was found by 1948 that gross income had increased at a faster rate than the current expenses.

Implications Of The Study

As future developments point to urban growth and industrial development in the South, other areas similar to the one studied which may undergo such changes may use the experience of this Southern Knox County area to an advantage. Implications of this study reveal conditions to which consideration might be given.

As the area changes from one predominantly agricultural to a semi-urban area, attention should be given to the development of better schools that offer vocational education in trades as well as Vocational Agriculture and Home Economics. Children from the non-farm homes will have interests that differ from the farm children.

The problem of transportation facilities is one that should be given thoughtful attention. Building and maintaining good roads will become a necessity with the added non-farm traffic.

Religious organizations will have better opportunities to re-establish and maintain worthwhile religious programs with the additional population present to support and participate in such programs.

As non-farm population grows, real estate will materially rise in price, thus the development of residential projects as an area of planning that could receive attention. The small uneconomic farm units might well consider this type of development a possibility in converting their investment into a paying one.

Part-time farm labor will practically disappear from farms in these areas. Farmers planning on operating farms with hired help must realize that the facilities should offer full-time employment to the

hired help. Wages comparable to wages paid by the lower paying industrial plants, and wages paid by the trade and service industries must be maintained if it is necessary to use hired labor. Rental farms will have to be developed to a point where the renter can made a wage comparable to wages paid by industrial plants and the trade and service industries.

People planning on going into farming in such an area should understand the problems involved in high priced land, scarce labor supply, high priced labor, and the necessity for intensive cultivation of the land.

Small farms in such areas tend to be used for part-time farming purposes only. The larger farms must have facilities and other necessities conducive to livestock farming, especially dairying. The land tends to be of such a nature that intensive cultivation in feed grains and hay can be performed with the latest labor saving devices.

Rental of small acreages for raising grain and other feed will tend to disappear making it necessary to have all the land needed in one farm plot.

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