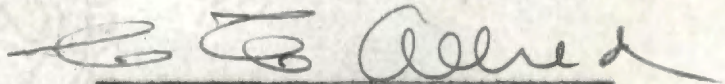


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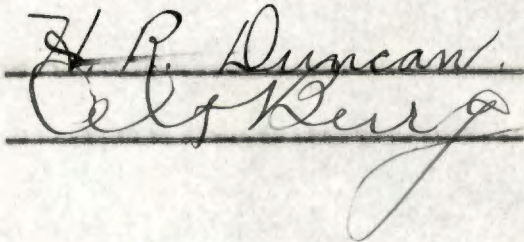
To the Committee on Graduate Study:

I am submitting to you a thesis written by Dale Powell Cleveland entitled "Economics of Livestock Production in Tennessee, With Special Reference to West Tennessee". I recommend that it be accepted for eighteen quarter hours credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.



Major Professor

We have read this thesis
and recommend its acceptance:



Accepted for the Committee


Dean of the Graduate School

**ECONOMICS OF LIVESTOCK PRODUCTION IN TENNESSEE,
WITH SPECIAL REFERENCE TO WEST TENNESSEE**

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

Dale Powell Cleveland

August 1939

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CONTENTS

Chapter	Page
I. INTRODUCTION:	
Object and Method	1.
Sources of Data	2.
Limitations of Data	3.
Area Studied	4.
Review of Literature	4.
II. LIVESTOCK INCOME AND ITS IMPORTANCE IN TENNESSEE:	
Livestock and Crops Compared As to Value	7.
Important Feed and Cash Crops in Tennessee	9.
Income from Major Livestock Enterprises	12.
Numerical Importance of Livestock	14.
Trend of Livestock	17.
Trend in Cattle of All Kinds	20.
Trend of Milk Cows	21.
Trend of Other Cattle	21.
Trend of Sheep	24.
Trend of Hogs	24.
Trend of Chickens	24.
III. REGIONAL CHARACTERISTICS OF TENNESSEE AGRICULTURE:	
General Description of the Soils of Tennessee	26.
Mississippi Bottoms	28.
West Tennessee Plateau Slope	28.
Western Valley of Tennessee	29.
Highland Rim	30.
Central Basin	30.
Cumberland Plateau	31.
East Tennessee Valley	32.
Unaka Range	32.
Type-of-Farming Regions	32.
Land Use by Type-of-Farming Regions	35.
Livestock Distribution by Type-of-Farming Regions..	38.
Milk Cows	38.
Other Cattle	38.
Hogs	45.
Sheep	45.
Chickens	45.

Chapter

Page

Regional Distribution of Farm Types	45.
Cotton Farms	45.
Small General	45.
General Farms	45.
Crop Specialty Farms	47.
Part-Time Farms	47.
Animal-Specialty Farms	47.
Dairy Farms	47.
Cash-Grain Farms	47.
Truck Farms	47.
Poultry Farms	47.
Fruit Farms	47.
Tenancy Distribution	47.
Prices Received by Farmers by Crop Reporting Districts..	48.

IV. LIVESTOCK PRODUCTION IN WEST TENNESSEE:

Region I

The Livestock Situation	51.
Factors Affecting Livestock Production	56.
Physical Factors	57.
Soil	57.
Topography	57.
Climate	58.
Biological Factors	58.
Animal Diseases and Pests	58.
Poisonous Plants	59.
Plant Diseases	59.
Economic and Cultural Factors	59.
System of Farming	59.
Kind and Available Pasture	63.
Feed Crops	64.
Tenancy	64.
Markets	65.
Farm Equipment	67.
Prices	67.
The Factors Summarized	67.

Region II

The Livestock Situation	69.
Factors Affecting Livestock Production	73.
Physical Factors	73.
Soil	73.
Topography	73.
Climate	74.

Chapter

Page

Biological Factors	74.
Economic and Cultural Factors	74.
Systems of Farming	74.
Kind and Available Pasture	78.
Feed Crops	79.
Tenancy	79.
Markets	79.
Farm Equipment	79.
Prices	80.
The Factors Summarized	80.
Region III	
The Livestock Situation	82.
Factors Affecting Livestock Production	85.
Physical Factors	85.
Soil	85.
Topography	86.
Climate	86.
Biological Factors	86.
Economic and Cultural Factors	87.
System of Farming	87.
Kind and Available Pasture	90.
Feed Crops	90.
Tenancy	91.
Markets	91.
Farm Equipment	91.
Prices	92.
The Factors Summarized	92.
Region IV	
The Livestock Situation	94.
Factors Affecting Livestock Production	98.
Physical Factors	98.
Soil	98.
Topography	99.
Climate	99.
Biological Factors	99.
Economic and Cultural Factors	99.
System of Farming	99.
Kind and Available Pasture	103.
Feed Crops	104.
Tenancy	104.
Markets	104.
Farm Equipment	104.
Prices	105.
The Factors Summarized	105.

Chapter

Page

Region V

The Livestock Situation	107.
Factors Affecting Livestock Production	110.
Physical Factors	110.
Soil	110.
Topography	110.
Climate	111.
Biological Factors	111.
Economic and Cultural Factors	111.
System of Farming	111.
Kind and Available Pasture	115.
Feed Crops	115.
Tenancy	115.
Markets	115.
Farm Equipment	116.
Prices	116.
The Factors Summarized	116.

V. THE PLACE OF LIVESTOCK IN TYPE-OF-FARMING REGION VI:

The Livestock Situation	118.
The Economic Situation	122.
Factors Affecting Livestock Production	125.
Physical Factors	125.
Soil	125.
Topography	126.
Climate	127.
Biological Factors	128.
Economic and Cultural Practices	129.
System of Farming	129.
Kind and Available Pasture	132.
Feed Crops	132.
Tenancy	135.
Markets	135.
Farm Equipment	135.
Prices	135.
An Economic Analysis of 237 Farms With Special	
Emphasis on Livestock	135.
Farms Enumerated	135.
Livestock	137.
Land Use	138.
Farm Acreage	138.
Crop Acreage	141.
Fertilizer Used	143.
Types of Farming	143.

(continued)

An Economic Analysis of 237 Farms With Special Emphasis on Livestock (continued)	
Tenancy	145.
Capital Investment	145.
Receipts	148.
Expenses	152.
Farm Income	156.
Factors Associated With Labor Income	156.
Labor Income	157.
Relation of Labor Income to Various Factors	158.
Size	159.
Total Acres	159.
Man Work Units	163.
Number of Cows	165.
Types of Farming in Relation to Labor Income	168.
Livestock Receipts	170.
Hog Receipts	170.
Cotton Receipts	173.
Total Animal Units	175.
Tenancy in Relation to Labor Income	178.
Production and Efficiency Factors	179.
Livestock Receipts per Animal Unit ..	179.
Crop Index	182.
Cotton Yields per Acre	184.
VI. SUMMARY AND CONCLUSIONS	187.
BIBLIOGRAPHY	194.
APPENDIX A. Interpretation of Census Data on Tennessee Livestock	197.
APPENDIX B. Selected Counties Representative of Tennessee's Major Type-of-Farming Regions	200.
APPENDIX C. Animal Unit Equivalents for Tennessee ..	201.
APPENDIX D. Appendix Tables I and II	202.
(see list of tables)	

TABLES

Number	Page
I. Value of Farm Crops, Livestock and Livestock Products, and Benefit Payments, Tennessee, 1937	9.
II. Value of Farm Crops, Tennessee, 1934-1935 Average	11.
III. Relative Value of Livestock and Livestock Products Produced, by Classes, Tennessee, 1934-1935 Average ...	14.
IV. Livestock on Farms, Number, Farms Reporting, and Value, by Class, Tennessee, 1935	16.
V. Livestock: Total Number by Specified Classes, Tennessee, 1867 - 1937	18.
VI. Number of Animal Units, Specified Classes of Livestock, Tennessee, 1867 - 1937	20.
VII. Farm Land Use: Percentage Distribution by Type-of-Farming Regions, Tennessee, 1929	36.
VIII. Crop Land Use: Percentage Distribution by Type-of-Farming Regions, Tennessee, 1934	37.
IX. Percentage Distribution of Farm Types for Each Type-of-Farming Regions, Tennessee, 1930	46.
X. Percentage Distribution of Farm Operators for Each Type-of-Farming Region, Tennessee, 1935	48.
XI. Prices Received by Farmers, Average Prices and Per Cent of State Average Prices Received by Farmers for Livestock and Livestock Products, by Crop Reporting Districts, Tennessee	49.
XII. Total Numbers of Livestock and Number per 1000 Acres Improved Land, by Specified Classes, Region I, 1880 - 1935	53.
XIII. A Successful Farm in Region I, Tennessee, 1934	54.
XIV. Total Number of Livestock, Number per 1,000 Acres Improved Land, by Specified Classes, Region II, 1880 - 1935	70.
XV. A Successful Farm in Region II, Tennessee, 1934	71.
XVI. Total Numbers of Livestock, Number per 1000 Acres Improved Land, by Specified Classes, Region III, 1880 - 1935	83.
XVII. A Successful Farm in Region III, Tennessee, 1934	85.
XVIII. Numbers of Livestock, Number per 1000 Acres of Improved Land, by Specified Class, Region IV, 1880 - 1935	95.
XIX. A Successful Farm in Region IV, Tennessee, 1934	97.
XX. Numbers of Livestock, Number per 1000 Acres Improved Land, by Specified Classes, Region V, 1880 - 1935	108.

Number		Page
XXI.	A Successful Farm in Region V, Tennessee, 1934	108.
XXII.	Livestock: Total Number, and Number per 1,000 Acres Improved Crop Land, by Specified Classes of Livestock, Region VI, 1880-1935	119.
XXIII.	A Successful Farm in Region VI, Tennessee, 1934	119.
XXIV.	Annual Index Number of Farm Prices, Tennessee, 1910-1937	123.
XXV.	Monthly and Annual Precipitation, With Departures from the Normal at Jackson, Tennessee, 1937	127.
XXVI.	Monthly and Annual Mean Temperature, With Departures from the Normal at Jackson, Tennessee, 1937	128.
XXVII.	Acres of Important Crops Grown in Region VI, Tennessee, 1879-1934	133.
XXVIII.	Average Numbers of Livestock on 237 Sample Farms in Region VI and Per Cent of Farms Reporting Each Type, Tennessee, 1937	137.
XXIX.	Variation in Size of 216 Farms in Region VI, Tennessee, 1937	138.
XXX.	Utilization of Farm Land in 1935 Compared with 216 Sample Farms in 1937 for Region VI, Tennessee	141.
XXXI.	Acreage and Proportion of Crop Area in Specified Crops Grown on 216 Farms in Region VI, Tennessee, 1937	141.
XXXII.	Number of Farms Using Fertilizer and Amount Spent in Relation to Various Factors on 237 Sample Farms, Region VI, Tennessee, 1937	143.
XXXIII.	Number and Per Cent of Different Types of Farms on 223 Sample Farms in Region VI, Tennessee, 1937	145.
XXXIV.	Number and Per Cent of Full-Owners, Part-Owners and Tenants on 237 Sample Farms in Region VI, Tennessee, 1937	145.
XXXV.	Distribution of Investment on 237 Sample Farms in Region VI, Tennessee, 1937	148.
XXXVI.	Distribution of Receipts on 237 Sample Farms in Region VI, Tennessee, 1937	148.
XXXVII.	Sources of Receipts, by Type of Farms, 237 Farms in Region VI, Tennessee, 1937	150.
XXXVIII.	Distribution of Expenses on 237 Sample Farms in Region VI, Tennessee, 1937	152.
XXXIX.	Distribution of Expenses, by Types of Farms on 237 Sample Farms in Region VI, Tennessee, 1937	154.
XL.	Average Receipts, Expenses, and Farm Income on 237 Farms in Region VI, Tennessee, 1937	156.

Number

Page

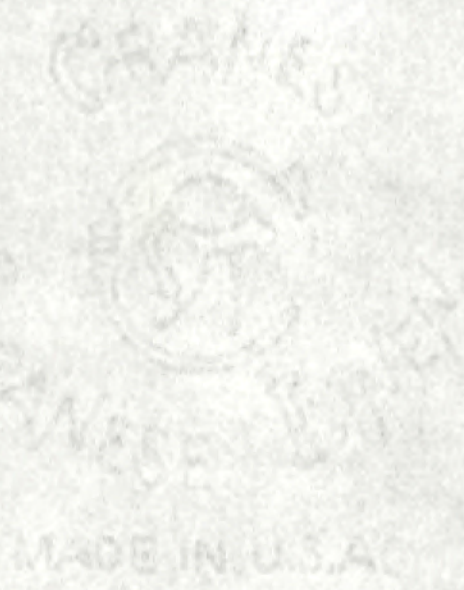
XLII.	Variation in Labor Income on 226 Farms in Region VI, Tennessee, 1937	157.
XLIII.	Relation of Labor Income to Various Other Factors on 223 Farms in Region VI, Tennessee, 1937	158.
XLIII.	The Relation of Total Acres to Land Use and Various Factors, 216 Farms, Region VI, Tennessee, 1937	160.
XLIV.	Relation of Total Acres to Various Other Factors on 219 Farms in Region VI, Tennessee, 1937	160.
XLV.	The Relation of Total Acres to Various Factors on 216 Farms in Region VI, Tennessee, 1937	160.
XLVI.	The Relation of Total Acres to Animal Units and Various Other Factors on 219 Farms in Region VI, Tennessee, 1937	161.
XLVII.	Total Man Work Units in Relation to Labor Income and Other Factors on 223 Farms in Region VI, Tennessee, 1937	163.
XLVIII.	Sources of Livestock Receipts Grouped According to Number of Cows, 223 Farms, Region VI, Tennessee, 1937	165.
XLIX.	Relation of Number of Cows to Labor Income and Various Factors on 223 Farms in Region VI, Tennessee, 1937	168.
L.	Types of Farms in Relation to Labor Income and Other Factors on 223 Farms, Region VI, Tennessee, 1937	168.
LI.	Livestock Receipts in Relation to Labor Income and Other Factors on 223 Farms, Region VI, Tennessee, 1937	170.
LII.	Relation of Hog Receipts to Labor Income and Various Factors on 223 Farms in Region VI, Tennessee, 1937	173.
LIII.	The Relation of Cotton Receipts to Labor Income and Various Factors, 223 Farms, Type-of-Farming Area VI, Tennessee, 1937	175.
LIV.	Total Animal Units in Relation to Labor Income and Various Other Factors on 223 Farms, Region VI, Tennessee, 1937	177.
LV.	Percentage of Tenancy, by Types of Farms on 237 Farms in Region VI, Tennessee, 1937	177.
LVI.	Relation of Tenure to Various Factors on 237 Sample Farms in Region VI, Tennessee, 1937	178.
LVII.	Labor Efficiency of Type of Farms Compared on 237 Sample Farms in Region VI, Tennessee, 1937	179.
LVIII.	Livestock Receipts per Animal Unit in Relation to Labor Income, Various Factors on 223 Farms in Region VI, Tennessee, 1937	182.

Number

LIX. Relation of Crop Index to Labor Income and Various Factors on 223 Farms, Region VI, Tennessee, 1937	184.
LX. Relation of Yield of Cotton per Acre to Labor Income and Various Factors on 223 Farms in Region VI, Tennessee, 1937	184.

APPENDIX
TABLES

I. Livestock Distribution: Number of Specified Livestock by Type-of-Farming Regions, Tennessee, 1935	202.
II. Livestock Distribution: Number of Specified Livestock per 1000 Acres Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	202.



FIGURES

Number	Page
1. Area of Interview Study	5.
2. Per Cent of Cash and of Gross Farm Income Received from Crops, Livestock, Livestock Products, and Benefit Payments, Tennessee, 1937	8.
3. Crop Acres Harvested: Average Distribution by Major Crops, Tennessee, 1934	10.
4. Relative Value of Livestock and Livestock Products, by Classes, Tennessee, 1934-1935	13.
5. Specified Classes of Livestock: Number, Average Number per Farm, Number Farms Reporting, Per Cent of Farms Reporting, Total Value of Livestock, and Average Value per Farm, Tennessee, 1935	15.
6. Livestock: Number of Animal Units by Specified Classes, Tennessee, 1867-1937	19.
7. All Cattle: Trend in Number of All Cattle, Tennessee, 1867 - 1937	22.
8. Milk Cows: Trend in Number of Milk Cows, Tennessee, 1867 - 1937	22.
9. Other Cattle: Trend in Number of Other Cattle, Tennessee, 1867-1937	23.
10. Sheep: Trend in Number of Sheep, Tennessee, 1867 - 1937	23.
11. Hogs: Trend in Number of Hogs, Tennessee, 1867-1937 ...	25.
12. Chickens: Trend in Number of Chickens, Tennessee, 1925 - 1937	25.
13. The Natural Divisions of Tennessee Based on Geologic and Soil Formations	27.
14. Type of Farming Regions, Tennessee	34.
15. Distribution of All Cattle by Type-of-Farming Regions, Tennessee, 1935	39.
16. Distribution of Milk Cows by Type-of-Farming Regions, Tennessee, 1935	39.
17. Distribution of Other Cattle by Type-of-Farming Regions, Tennessee, 1935	40.
18. Distribution of Sheep by Type-of-Farming Regions, Tennessee, 1935	40.
19. Distribution of Hogs by Type-of-Farming Regions, Tennessee, 1935	41.

Number	Page
20. Distribution of Chickens by Type-of-Farming Regions, Tennessee, 1935	41.
21. Distribution of All Cattle per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	42.
22. Distribution of Milk Cows per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	42.
23. Distribution of Other Cattle per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	43.
24. Distribution of Sheep per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	43.
25. Distribution of Swine per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	44.
26. Distribution of Chickens per 1000 Acres Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935	44.
27. Type-of-Farming Regions in West Tennessee	52.
28. Number of Livestock per 1000 Acres Improved Crop Land, by Specified Classes, Region I, 1880-1935	55.
29. Proportion of Farms in Cotton and Other Specified Types, Region I, Tennessee, 1930	60.
30. Average Size of Farms by Type-of-Farming Regions, Tennessee, 1930	60.
31. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region I, Tennessee, 1934	62.
32. Proportion of Crop Land in Major Crops, Region I, Tennessee, 1934	62.
33. Livestock Markets and Market Areas, Tennessee, 1932	66.
34. Number of Livestock per 1000 Acres Improved Crop Land, by Specified Classes, Region II, 1880 - 1935	72.
35. Proportion of Farms in Cotton and Other Specified Groups, Region II, Tennessee, 1930	75.
36. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region II, Tennessee, 1934	77.
37. Proportion of Crop Land in Major Crops, Region II, Tennessee, 1934	77.

38.	Number of Livestock per 1000 Acres of Improved Land, by Specified Classes, Region III, Tennessee, 1880-1936	84.
38A.	Proportion of Farms in Cotton and Other Specified Groups, Region III, Tennessee, 1930	88.
39.	Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region III, Tennessee, 1934	89.
40.	Proportion of Crop Land in Major Crops, Region III, Tennessee, 1934	89.
41.	Number of Livestock per 1000 Acres of Improved Crop Land, Region IV, Tennessee, 1880-1935	96.
42.	Proportion of Farms by Type, Region IV, Tennessee, 1930	101.
43.	Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region IV, Tennessee, 1934	102.
44.	Proportion of Crop Land in Major Crops, Region IV, Tennessee, 1934	102.
45.	Number of Livestock per 1000 Acres of Improved Crop Land, Region V, Tennessee, 1880-1935	109.
46.	Proportion of Farms by Type, Region V, Tennessee, 1930	112.
47.	Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region V, Tennessee, 1934	114.
48.	Proportion of Crop Land in Major Crops, Region V, Tennessee, 1934	114.
49.	Number of Livestock per 1000 Acres Improved Crop Land in Region VI, Tennessee, 1880-1935	120.
50.	Total Number of Livestock by Specified Classes in Region VI, Tennessee, 1880-1935	121.
51.	Annual Index Number of Cotton and Cottonseed and Meat Animals, Tennessee, 1910-1937	124.
52.	Percentage of Farms, by Types, Region VI, Tennessee, 1930	130.
53.	Proportion of Farm Land in Crops, Woodland Not Pastured, Pasture, Idle, and All Other Farm Land, Region VI, Tennessee, 1934	131.
54.	Proportion of Crop Land in Major Crops, Region VI, Tennessee, 1934	131.
55.	Crop Acres Harvested: Percentage Distribution, Specified Crops, Region VI, 1879-1934	134.
56.	Location of 237 Sample Farms, by Civil Districts, Region VI, Tennessee, 1937	136.
57.	Percentage Distribution of 216 Sample Farms by Size in Region VI, Tennessee, 1937	139.

Number

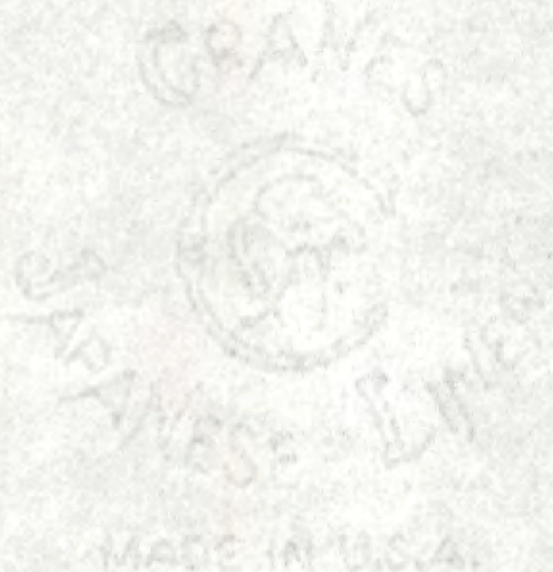
Page

58. Utilization of Farm Land on 216 Sample Farms in Region VI, Tennessee, 1937	140.
59. Utilization of Farm Land in Region VI, Tennessee, 1935	140.
60. Percentage of Crop Area in Specified Crops on 216 Farms in Region VI, Tennessee, 1937	142.
61. Percentage of Farms, by Types on 237 Farms in Region VI, Tennessee, 1937	144.
62. Distribution of Full Owners, Part Owners, and Tenants on 237 Sample Farms in Region VI, Tennessee, 1937	146.
63. Distribution of Investment on 263 Sample Farms in Region VI, 1937	147.
64. Distribution of Receipts on 237 Sample Farms in Region VI, Tennessee, 1937	149.
65. Sources of Receipts, by Types of Farms on 237 Sample Farms in Region VI, Tennessee, 1937	151.
66. Distribution of Expenses on 237 Sample Farms in Region VI, Tennessee, 1937	153.
67. Distribution of Expenses, by Types of Farms on 237 Sample Farms in Region VI, Tennessee, 1937	155.
68. The Relation of Total Acres to Labor Income on 216 Farms in Region VI, Tennessee, 1937	162.
69. Relation of Man Work Units to Labor Income on 223 Farms in Region VI, Tennessee, 1937	164.
70. Relation of Number of Cows to Labor Income on 223 Farms in Region VI, Tennessee, 1937	166.
71. Correlation Between Number of Cows and Labor Income on 223 Farms in Region VI, Tennessee, 1937	167.
72. Comparison of Labor Incomes on 223 Livestock and Dairy, General, Cotton, and Other Farms, Region VI, Tennessee, 1937	169.
73. The Relation of Livestock Receipts to Labor Income on 223 Farms in Region VI, Tennessee, 1937	171.
74. Relation of Hog Receipts to Labor Income on 223 Farms in Region VI, Tennessee, 1937	172.
75. Relation of Cotton Receipts to Labor Income on 223 Farms in Region VI, Tennessee, 1937	174.
76. Relation of Total Animal Units to Labor Income on 223 Farms in Region VI, Tennessee, 1937	176.
77. Comparison of Labor Efficiency by Types of Farms on 237 Sample Farms in Region VI, Tennessee, 1937 .	180.
78. Relation of Livestock Receipts per Animal Unit to Labor Income on 223 Farms in Region VI, Tennessee, 1937	181.

Number

Page

79. Relation of Crop Index to Labor Income on 223 Farms in
Region VI, Tennessee, 1937 183.
80. Relation of Yield of Cotton per Acre to Labor Income
on 223 Farms in Region VI, Tennessee, 1937 185.



CHAPTER I

INTRODUCTION

Livestock production, on farms now largely producing cotton, is a subject that has received wide attention from agricultural economists and animal husbandrymen as well as others interested in southern agriculture. Many writers have taken for granted that grass and livestock will grow under any and all conditions. The result has been a tremendous acclamation for livestock farming which in too many cases were without farm records and research studies to substantiate such recommendations.

Object and Method

The primary objective of this study was to show the relationships of livestock in a cotton area to the farmer's income. An attempt was made to show the importance of livestock production to agriculture in Tennessee as a whole; to make a reconnaissance study of the six type-of-farming regions in West Tennessee now growing considerable cotton, thus showing favorable and unfavorable factors there affecting livestock production; and finally to study in detail business records from a number of farms in a cotton-producing area showing the relationships of livestock along with other factors affecting the income from these farms.

It was felt that by studying the contributions of livestock farms in an area primarily devoted to cotton production a definite appraisal could be made of the place of livestock on these farms. While these records are limited to type-of-farming Region 6, conditions are so similar in a large part of West Tennessee that the findings should be especially applicable in most of the cotton-producing areas of the State, and to a lesser degree helpful in other areas.

Sources of Data

The primary source of data used was 223 farm business records obtained from the Farm Management Office of the Tennessee Agricultural Extension Service. These were tabulated on a tabulating machine through the courtesy and generosity of the Tennessee Agricultural Extension Service and its office force.

The records were collected by Mr. Horace Holmes, Farm Management Extension Specialist for West Tennessee, for the year 1937. These records were kept throughout the year by the farm operator with the help and guidance of the Assistant County Agent; then were checked by the Agent and given to the Farm Management Specialist for final checking and analysis.

The United States Census was used to ascertain the number of farms, number of livestock classes, etc., for the State. Livestock and crop income data were obtained from crop reporter estimates of the United States Department of Agriculture. Data used in calculating trends of livestock were obtained from the United States Department of Agriculture, Bureau of

Agricultural Economics. Monographs of the Department of Agricultural Economics and Rural Sociology, University of Tennessee, were used in describing the soils, climate, and topography of the type-of-farming regions in West Tennessee.

Limitations of Data

The data presented from the 223 farm records covered only the year 1937, a year when extra large yields were produced. If the data had covered a longer period of time they would probably have been more representative of the area studied.

The price levels for the principal commodities marketed should also be considered in evaluating the data in this report. For the crop year 1937 the average price per pound of cotton received by farmers in the United States was 8.66 cents compared with an average price of 12.25 for the period of 1928 to 1936.⁽¹⁾ The average price of tobacco in the United States in 1937 was 20.5 cents while the average from 1928 to 1936 was 15.90. Beef cattle prices averaged 6.96 per pound in the United States for 1937 and 6.07 from 1928 to 1936. Hogs average 9.48 cents per pound in 1937 for the United States and 6.85 from 1928 to 1936. Butter prices averaged 33.0 cents per pound in the United States for 1937 and 30.0 from 1928 to 1936. In 1937, while milk sold at condenseries averaged 1.57 cents per pound for the United States and 1.44 from 1928 to 1936. These prices

(1) Prices received by Tennessee farmers for agricultural products in 1937 were not available; therefore all the prices are based on the United States.

are slightly more favorable toward livestock, especially hogs. However, hogs only represent approximately one-fourth of the total livestock receipts.

The type-of-farming data presented is also limited because it is based on counties that are supposedly representative of each region. Part of these counties at times extend into other areas, thus in some instances may not adequately represent the particular type-of-farming region.

Area Studied

Type-of-farming Region 6 in West Tennessee was studied intensively and used as the representative area for this part of the State (Figure 1). All of the 223 farm records were taken from this area and used as a basis for recommendations and conclusions. A reconnaissance study of the remaining five regions in West Tennessee was made, discussing the factors there that favorably or unfavorably affect livestock production.

Review of Literature

Available literature applicable to this report is very limited. Numerous articles and bulletins have been written pertaining to the place of livestock in the South; however, none of the articles examined by the writer were substantiated by records from farms on which cotton was a major crop.

In the proceedings of the Association of Southern Agricultural Workers for the years 1934 to 1938 numerous articles are found concerning

livestock production in the South. Mr. E. W. Sheets of Mississippi, in The Place of Livestock in The Agricultural Program of The South, has greatly emphasized the need for more livestock on southern farms. Mr. H. R. Tolley, now Chief of the Bureau of Agricultural Economics, presented a land use program for the South in 1934. In his program cattle played an important part. Mr. R. B. Becker of the University of Florida wrote an article concerning the place of dairying in the agricultural adjustment of the South. He definitely favored dairying on all southern farms, believing that dairy cows had a place on all farms. Other writers who have written articles pertaining to livestock in the South are G. E. Wylie of the University of Tennessee; J. T. Sanders of Oklahoma A. and M. College; W. F. Ward of Brooksville, Florida; J. S. Moore of Mississippi State College; and Orville J. Hall of the University of Arkansas.

All of the writers mentioned have indicated that livestock definitely has a place in southern agriculture. However, their conclusions were apparently based on information other than farm records. It seems fitting, therefore, that an analysis be made from individual farm records showing the role of livestock on farms in a cotton area.

CHAPTER II
LIVESTOCK INCOME AND ITS IMPORTANCE
IN TENNESSEE

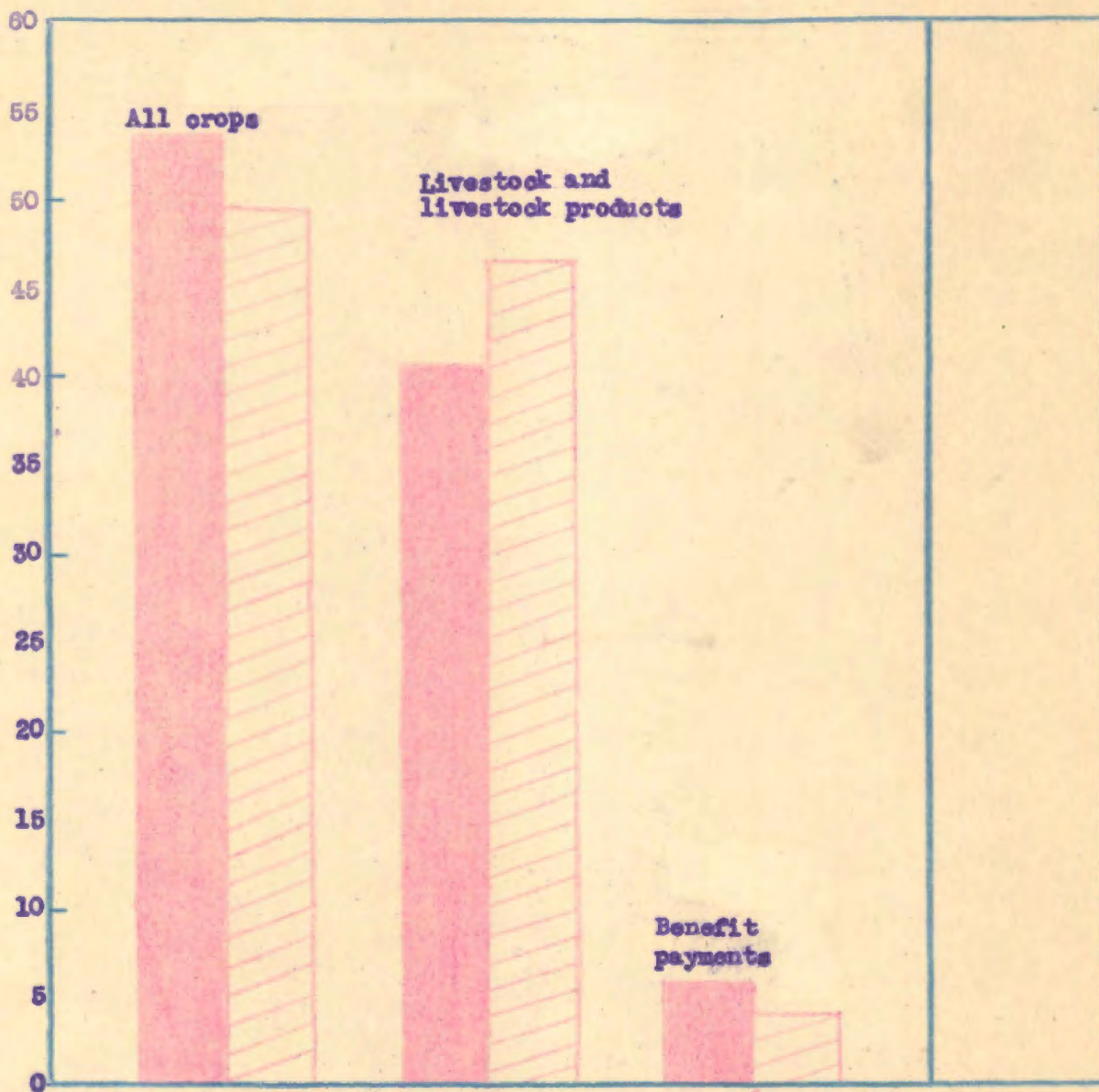
Tennessee is often thought of as a state in which farming systems are built mainly around crops. However, livestock production represents an important phase of agriculture here from the standpoint of both cash income and the utilization of crops grown in the State. Of the total cash farm income amounting to \$144,865,000 from the state's 273,783 farms, livestock and livestock products contributed \$58,865,000 or 40.8 per cent in 1937 (Figure 2).

Livestock and Crops Compared As to Value

In order to present a complete picture of the place of livestock in Tennessee, brief discussion is given showing the relative value of crops and of livestock together with the proportion of cash farm income and of gross income derived from each. Benefit payments to farmers for cooperating with the "Triple A" are also included in order that the readers may analyze the entire situation.

Of the total cash income from farms amounting to \$144,865,000 in 1937, crops contributed 53.6 per cent, or \$77,608,000. Benefit payments amounted to \$8,392,000, or 5.8 per cent. The remaining 40.6 per cent, or \$58,865,000, was derived from livestock and livestock products (Figure 2). Tennessee ranked 24th among the states in the United States

Per Cent



Source: Tables II and III

Figure 2. Per Cent of Cash and of Gross Farm Income Received from Crops, Livestock, Livestock Products, and Benefit Payments, Tennessee, 1937

Cash farm income

Gross farm income

with respect to cash income from crops.

The gross farm income, in Tennessee, amounted to \$206,855,000. Crops made up \$102,349,000 of this; benefit payments were \$8,392,000; and livestock and livestock products \$96,114,000 (Table I).

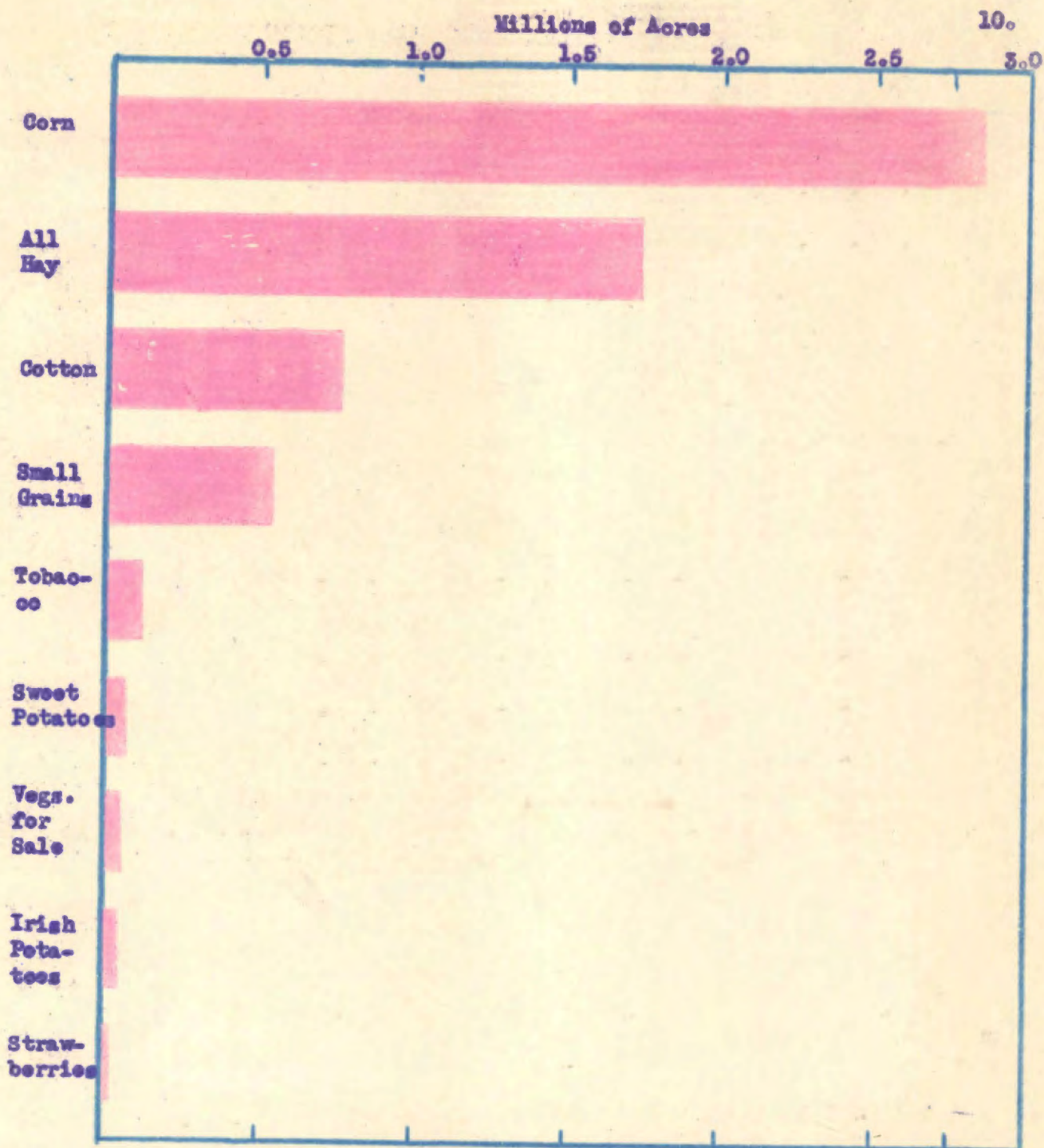
TABLE I. VALUE OF FARM CROPS, LIVESTOCK AND LIVESTOCK PRODUCTS, AND BENEFIT PAYMENTS, TENNESSEE, 1937

Source	Gross Income		Cash Income	
	Amount	Per Cent	Amount	Per Cent
Crops	\$102,349,000	49.5	\$77,608,000	53.6
Livestock and livestock products	96,114,000	46.5	58,865,000	40.8
Benefit payments	8,392,000	4.0	8,392,000	5.8
Totals	\$206,855,000	100.0	\$144,865,000	100.0

Source: U.S.D.A., Bureau of Agricultural Economics, Crop Reporting Board, Washington, D. C., May 21, 1938.

Important Feed and Cash Crops in Tennessee

Tennessee produces two major cash crops, cotton and tobacco. Cotton and cottonseed receipts made up 43.4 per cent of the cash farm income of \$57,641,000 for 1934-1935. Tobacco sales amounted to 21.3 per cent, followed by corn with 7.0 per cent; hay, 3.8 per cent; wheat, 3.7 per cent; vegetables for sale, 3.3 per cent; strawberries, 2.5 per cent; sweet potatoes and orchard crops, 2.3 per cent each; and Irish potatoes, 1.2 per cent (Table II). The remainder was contributed by crops of minor



Source: U. S. Census of Agriculture, 1935

Figure 3. Crop Acres Harvested: Average Distribution by Major Crops, Tennessee, 1934

importance except in specialized production area.

When crops are compared on the basis of total farm value a different picture is presented. Of the total gross farm value of crops amounting to \$140,257,000, corn ranks first with 32.5 per cent, followed by cotton and cottonseed, 18.8 per cent; hay, 11.7 per cent; tobacco, 8.7 per cent, wheat, 2.9 per cent; sweet potatoes, 2.4 per cent; orchard crops, 1.9 per cent; Irish potatoes, 1.7 per cent; vegetables for sale, 1.5 per cent; strawberries, 1.0 per cent; and other crops contributing the remainder (Table II). Thus Tennessee produced considerable feed crops important in livestock production.

TABLE II. VALUE OF FARM CROPS, TENNESSEE, 1934-1935
AVERAGE

Crop	Farm Value		Cash Income	
	Amount (1000 Dollars)	Per Cent	Amount (1000 Dollars)	Per Cent
Corn	45,539	32.5	4,044	7.0
Cotton and cotton- seed	26,570	18.8	25,062	43.4
Hay	16,401	11.7	2,205	3.8
Tobacco	12,253	8.7	12,253	21.3
Wheat	4,073	2.9	2,129	3.7
Sweet potatoes	3,574	2.4	1,323	2.3
Orchard	2,674	1.9	1,336	2.3
Irish potatoes	2,400	1.7	712	1.2
Vegetables for sale	2,185	1.5	1,882	3.3
Strawberries	1,458	1.0	1,438	2.5
Sorghum for forage	881	.6	-	-
Oats	630	.5	52	.1
Sorghum for syrup	534	.4	188	.3
Peanuts	234	.2	187	.3
All other crops	21,271	15.2	4,840	8.5
Total	140,257	100.0	57,641	100.0

There is a very close relationship between the farm value and the acreage harvested of principal farm crops in the state (Figure 3).

Income From Major Livestock Enterprises

Dairying leads in importance among the livestock enterprises, contributing \$12,308,000 or 30.3 per cent of the total cash income from livestock and its products. Cattle and calves rank second with 25.9 per cent. Poultry made up 20.9 per cent, of which 13.7 is contributed by eggs and 7.2 per cent by the sale of chickens. Hogs contributed 16.9 per cent. Sheep and lambs, important in some areas of the State, contributed 3.5 per cent, and wool 0.9 per cent. Horses and mules made up 3.6 per cent, mules contributing nearly the entire amount (Table III).

For the years 1934-1935 the annual cash farm income from livestock and livestock products amounted to \$40,624,000. The farm value amounted to \$67,505,000. Thus 60 per cent of the value of all livestock and livestock products produced during this period was sold and 40 per cent used on the farm.

The total farm value consists of the same major livestock enterprises that principally made up the cash farm income. Dairying again led in importance, contributing 39.6 per cent. Poultry products ranked second contributing 21.9 per cent. Hogs contributed 20.4 per cent; cattle and calves 14.1 per cent; sheep, lambs, and wool 2.7 per cent; and all workstock, 1.3 per cent (Figure 4).

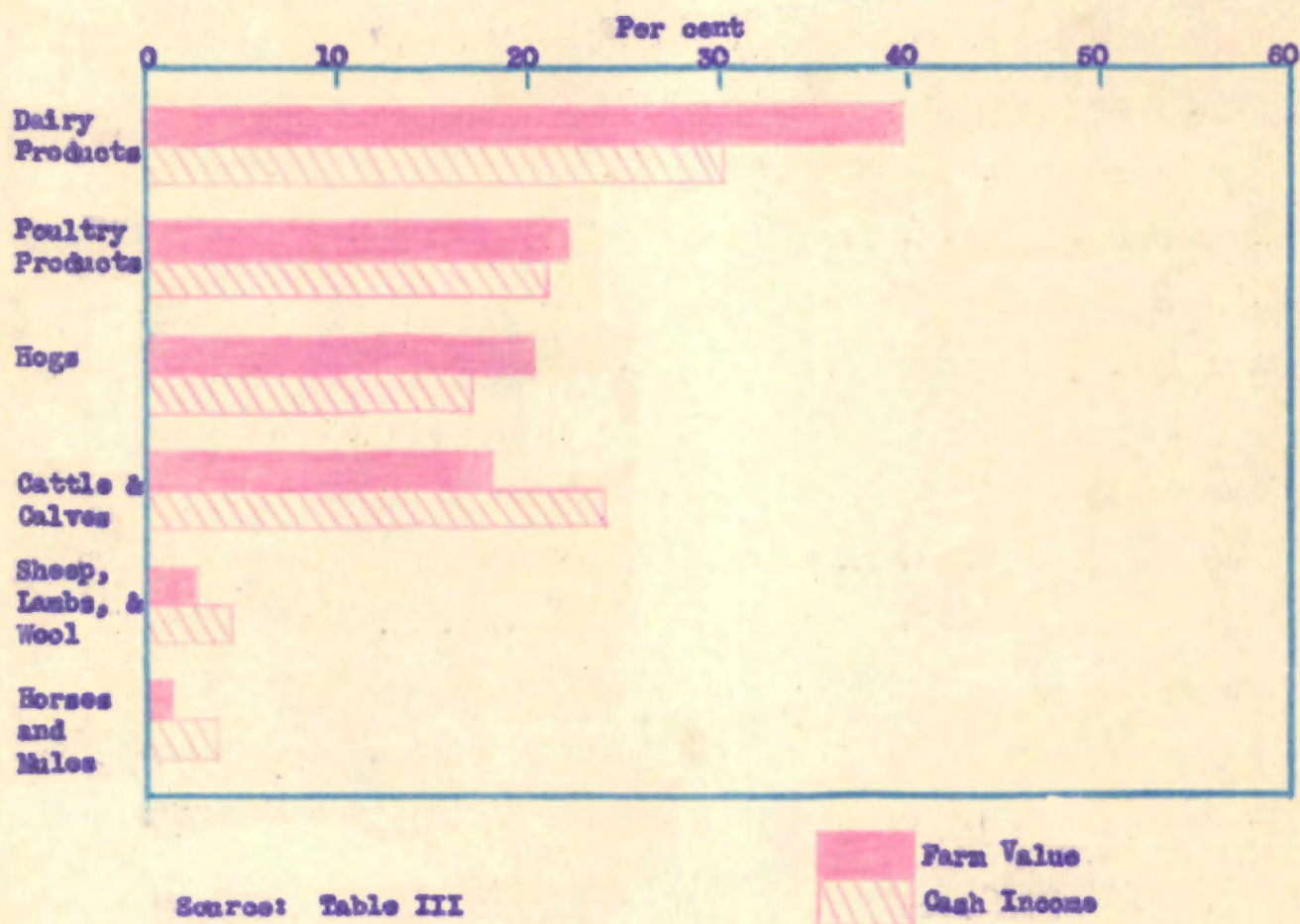


Figure 4. Relative Value of Livestock and Livestock Products, by Classes, Tennessee, 1934 - 1935

Total Number of Livestock Tennessee, 1936	Class of Livestock	Average Number of Livestock per Farm, Tennessee, 1936
TABLE III. RELATIVE VALUE OF LIVESTOCK AND LIVESTOCK PRODUCTS PRODUCED, BY CLASSES, TENNESSEE, 1934 - 1935 AVERAGE		
Class	Farm Value (Per Cent)	Cash Income (Per Cent)
Dairy products	39.6	30.3
Poultry products:	21.9	20.9
Eggs	13.8	13.7
Chickens	8.1	7.2
Hogs	20.4	16.9
Cattle and calves	14.1	25.9
Sheep, lambs, and wool:	2.7	4.4
Sheep and lambs	2.1	3.5
Wool	.6	.9
Horses and mules:	1.3	5.6
Horses	.4	0
Mules	.9	5.6
Total per cent	100.0	100.0
Total amount - average 1934-1935	\$67,505,000	\$40,624,000

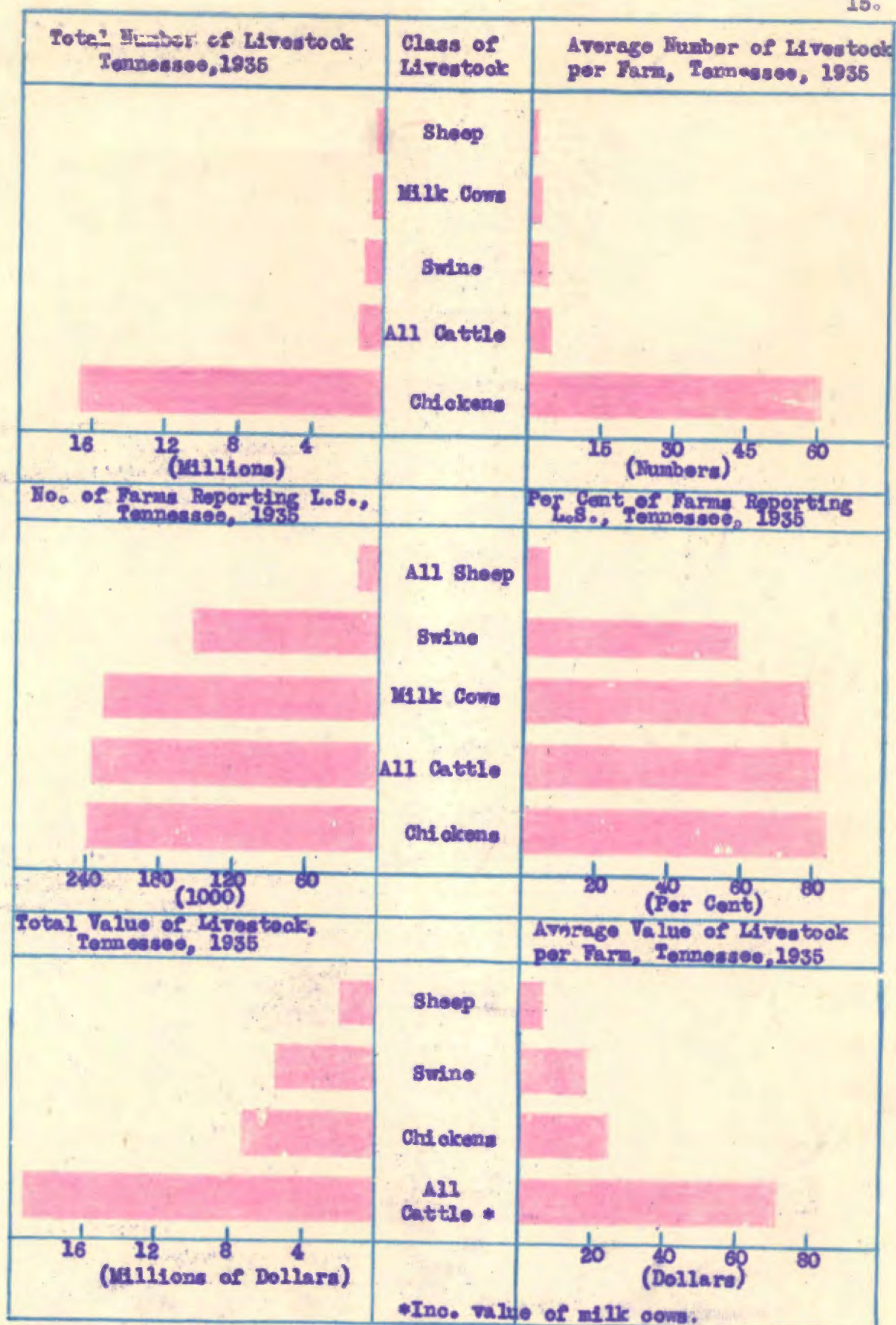
Source: U.S.D.A., Bureau of Agricultural Economics, Crop Reporting Board, August, 1936.

Numerical Importance of Livestock

Cattle, swine, sheep, and chickens represent the leading classes of livestock in this State. Of the 273,783 farms in Tennessee, 81.9 per cent reported cattle on January 1, 1935. The total number was 1,233,477,⁽¹⁾ valued at \$19,264,608, or an average of 4.5 cattle per farm, and an average investment of \$70.36 per farm. Milk cows were reported on 216,546 farms, or 79.0 per cent of the total. There were 558,772 milk cows in the State or an average of 2.0 head for each farm. Sheep and lambs

(1) This number includes cattle of all ages and sex on farms at the time of census enumeration.

Figure 4. Specified Classes of Livestock: Number, Average Number per Farm, Total Value of Livestock, and Average Value per Farm, Tennessee, 1935



Source: Table IV

Figure 5. Specified Classes of Livestock: Number, Average Number per Farm, Number Farms Reporting, Per Cent of Farms Reporting, Total Value of Livestock, and Average Value per Farm, Tennessee, 1935

TABLE IV. LIVESTOCK ON FARMS; NUMBER, FARMS REPORTING, AND
VALUE, BY CLASS, TENNESSEE, 1935

Class	Number		Farms Reporting		Value	
	Total	Av. per Farm*	Number	Per Cent	Total	Av. per Farm
1. All cattle	1,233,471	4.50	224,157	81.9	\$19,264,608	\$70.56
Calves under 1 yr. of age	268,387	.98	103,209	37.7	**	-
Heifers 1 yr. old and under 2 years	159,472	.58	62,732	22.9	-	-
Steers and bulls 1 yr. old & over	128,025	.47	31,545	11.5	-	-
Cows and heifers 2 yrs. old & over	677,593	2.47	219,642	80.2	-	-
2. Cows milked	558,772	2.00	216,546	79.0	-	-
3. Sheep and lambs of all ages	411,088	1.50	117,266	6.3	1,870,450	6.83
Ewes 1 year old and over	322,232	1.17	16,016	5.8	-	-
4. Swine of all ages	1,002,283	3.66	163,142	59.6	5,412,328	19.77
Swine and gills bred or bred to farrowing before 6/1/35	109,642	.40	68,107	24.9	-	-
5. Chickens	16,730,315	61.10	229,367	83.8	7,026,352	25.67

* Average of all farms in the State (273,783).

** Data not available.

Source: U. S. Census of Agriculture, 1935.

number 411,088 were reported on 16,016 farms, or 5.8 per cent of all farms. They were valued at \$1,870,450, averaging \$6.83 investment per farm and 1.5 sheep per farm. Swine were kept on 163,142 farms, or 59.6 per cent of all the farms. There were 1,002,283 hogs of all ages with a total value of \$5,412,528, an average value of \$19.77 for each farm in the State, and an average number of 3.6. More chickens were reported on farms than any other class of livestock. There were 229,367, or 83.8 per cent of all farms reporting chickens. The total number was 16,730,315, valued at \$7,026,732 or an average of 61.1 per farm and an average investment of \$25.67 (Table IV).

Trend of Livestock

Revised estimates of the Bureau of Agricultural Economics, United States Department of Agriculture, were used to show livestock trends. These estimates have adjusted earlier census figures on livestock to show the number on farms as of January first instead of April first, the date of census enumeration prior to 1925. In computing animal units to represent a gross livestock figure for the State it was assumed that the proportion of calves, heifers, steers, etc., were the same as those given in the decennial census.

The quantity of livestock has changed but little from 1867 to 1937. When measured on an animal unit basis, i.e., on a mature horse or cow-equivalent, the total number in 1937 was practically the same as that of 1867, indicating that no major change has taken place over the 70-year period. From 1867 to 1890 the number increased, but decreased from 1890

to 1900 due partially to the depression of 1893. In 1920, just after the World War, the number increased to its all-time peak, then in 1930 fell to its lowest point, since 1880. In 1937 the number was slightly lower than the 1890 level. During this period, however, the kind of livestock found on farms changed for cattle increased in number while other classes of livestock decreased (Figure 6).

The relative stability in number of all livestock over the 70-year period is significant in Tennessee's agriculture for it shows that this enterprise has been consistently important in relation to crop enterprises and land use.

TABLE V. LIVESTOCK: TOTAL NUMBER BY SPECIFIED CLASSES,
TENNESSEE, 1867 - 1937

(1000)

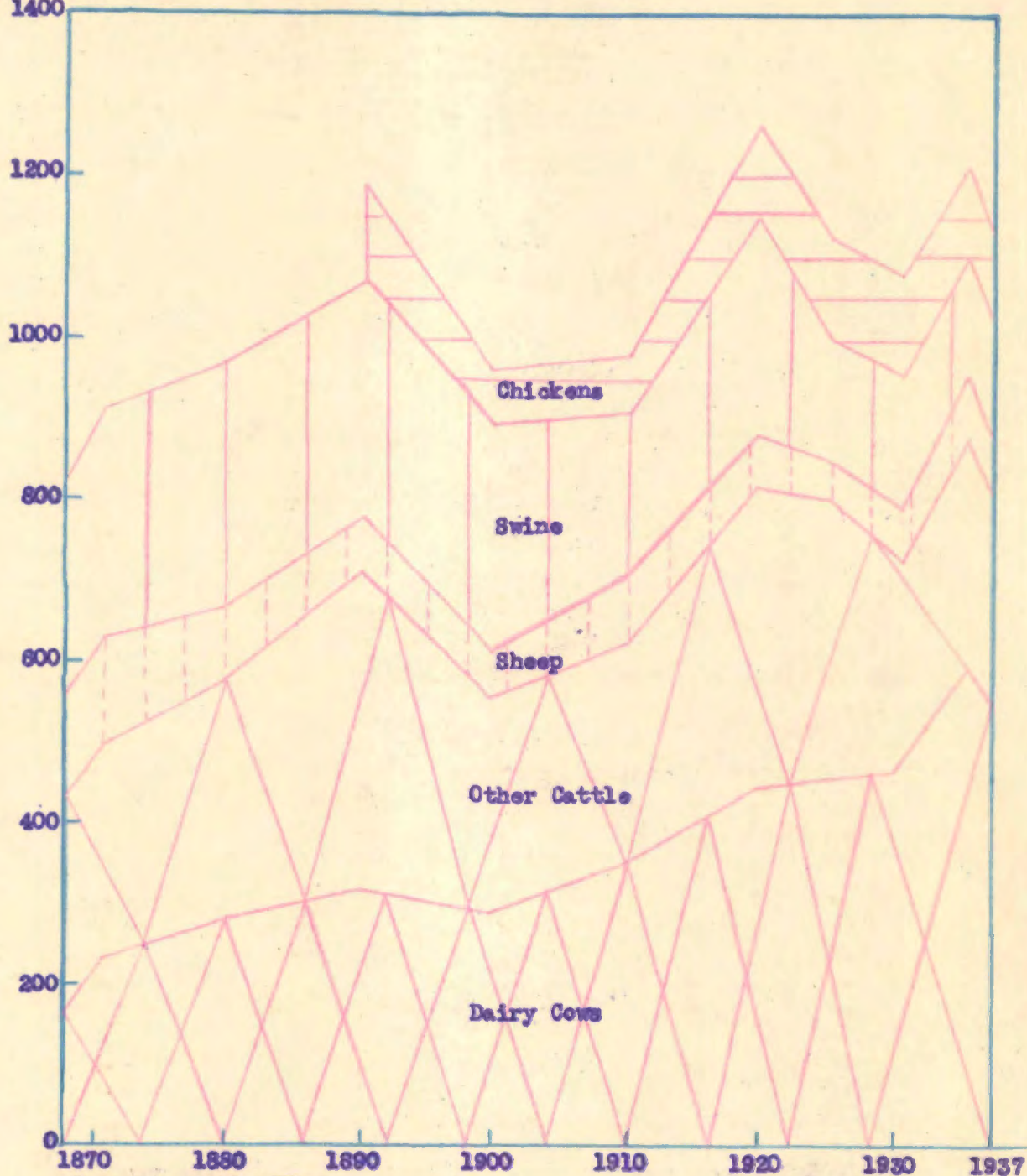
Date	All Cattle	Milk Cows	Other Cattle	Sheep	Swine	Chickens*
1867	690	160	530	900	1,752	*
1870	750	230	520	919	1,925	*
1880	860	280	580	609	1,980	*
1890	1,030	318	712	473	1,925	12,062**
1900	805	290	515	334	1,843	6,184
1910	915	350	565	477	1,280	7,341
1920	1,162	445	717	364	1,832	11,354
1925	996	458	538	291	1,035	12,721
1930	992	469	524	368	982	12,180
1935	1,233	594	639	411	1,002	11,135
1937	1,148	553	595	379	992	11,240

* Data not available.

** Figures from 1890-1920 were taken from the U. S. Census of Agriculture, because Revised Estimates of Livestock figures by Bureau of Agricultural Economics, were not available.

Source: U. S. Department of Agriculture, Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specified Classes of Livestock, 1937.

Animal
Units
(1000)
1400



Source: Table VI.
Figure 6. Livestock: Number of Animal Units by Specified Classes,
Tennessee, 1867-1937

TABLE VI. NUMBER OF ANIMAL UNITS, SPECIFIED CLASSES OF
LIVESTOCK, TENNESSEE, 1867-1937

Date	Milk Cows	Other Cattle	Sheep	Swine	Chickens
1867	160	270	128	263	*
1870	230	265	131	289	*
1880	280	296	87	297	*
1890	318	390	67	288	121**
1900	290	246	52	277	62**
1910	350	273	74	199	73**
1920	445	369	62	271	114**
1925	458	352	50	152	128
1930	468	256	62	167	122
1935	594	278	74	150	111
1937	553	260	68	149	112

* Data not available.

** Figure from the U. S. Census of Agriculture.

Source: Department of Agriculture, Bureau of Agricultural Economics Crop Reporting Board, Estimated Number of Specified Classes of Livestock, 1937. These estimates of total number as shown in Table V were transferred to animal units by assuming the same age distribution among livestock classes as was shown in corresponding census years. See Appendix A and B for means of computation.

Trend in Cattle of All Kinds. The general trend for cattle since 1867 has been upward, increasing from 690,000 to 1,148,000 in 1937 (Figure 7). The trend has moved in cycles because of cycles in beef production. It is significant that the number of all cattle varied considerably over a 20-year period beginning in 1870 (Figure 7). From 1870 to 1890, an increase of 180,000 was noted. A decrease of 115,000 from 1890 to 1910; an increase of 77,000 from 1910 to 1930; an increase of 216,000 since 1930 to 1935; and a gradual decrease since 1935. Most of the increase in all cattle from 1870 to 1937 has been due to the large increase in dairy cattle, as milk cows alone increased approximately 400,000 during this period.

Trend of Milk Cows.⁽²⁾ The trend in number of milk cows has been upward since the Civil War, increasing from 160,000 in 1867 to 553,000 in 1937, an increase of 393,000, or approximately 240 per cent. In 1935 milk cows numbered 594,000, the largest total during the 73-year period. Since 1935 there has been a decrease of 31,000 (Figure 8). The expansion of milk cows has been associated with a growing population, greater demand for milk, increased uses of milk, and expansion of creameries and cheese factories. Since 1930, milk cows have increased at an increasing rate, while population increase more slowly.

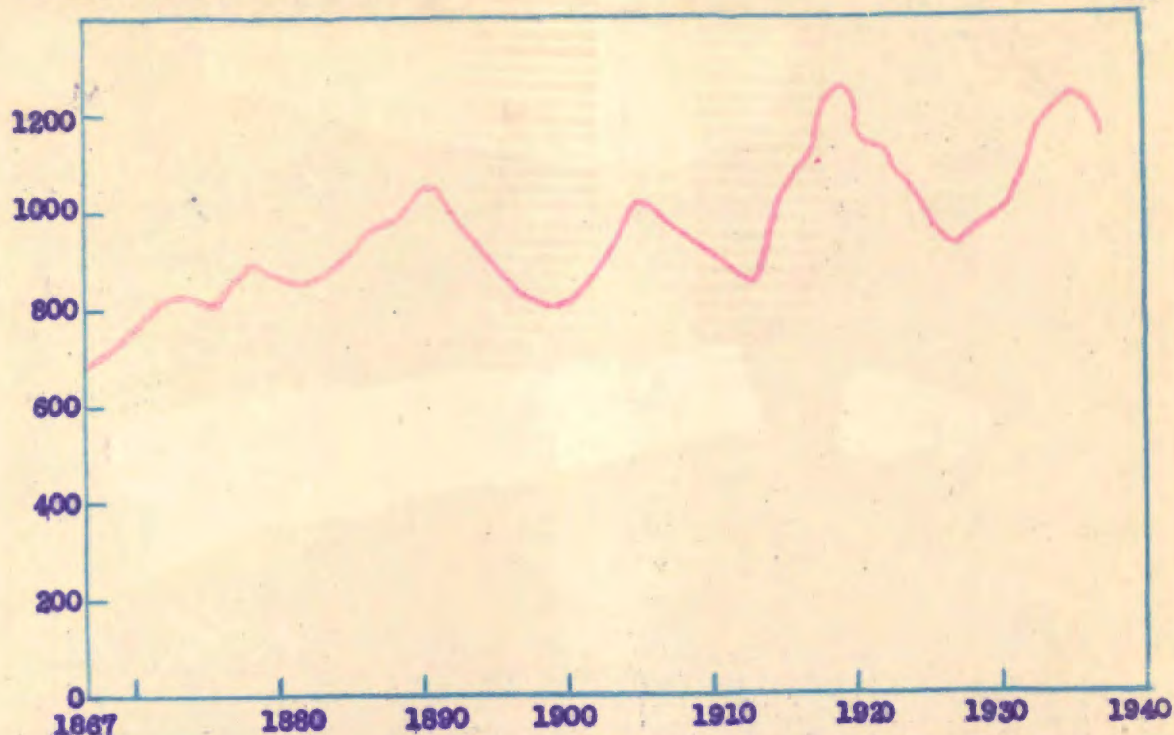
Trend of Other Cattle. According to the census classification, "other cattle" represents the difference between milk cows and total cattle. It includes beef cattle, and in addition those dairy cattle which were not milked during the year preceding the date of census enumeration. Therefore the figures that represent cattle other than milk cows does not adequately represent the beef cattle industry; however, it indicates an approximate representation.

From 1867 to 1890 other cattle showed a gradual increase. Since 1890, more or less regular cycles have occurred in the number of other cattle with the peaks being about 15 years apart. Since 1935 a downward cycle has begun. Throughout the long-time period of 1867-1937 the trend in number of other cattle has remained fairly constant, showing only a small increase of 65,000 (Figure 9).

(2) See Appendix A for computation of number of milk cows.

Number (1000)

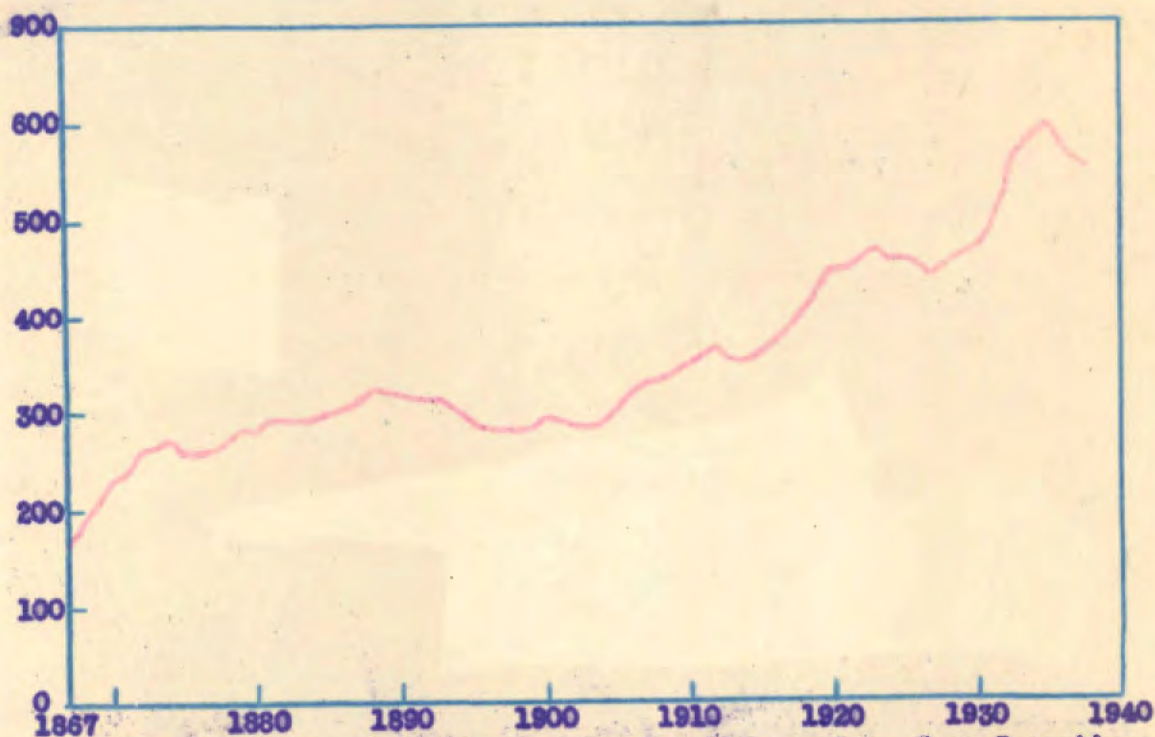
22.



Sources: U.S.D.A., Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specified Classes of Livestock, 1937.

Figure 7. All Cattle: Trend in Number of All Cattle, Tennessee, 1867 - 1937

Number (1000)

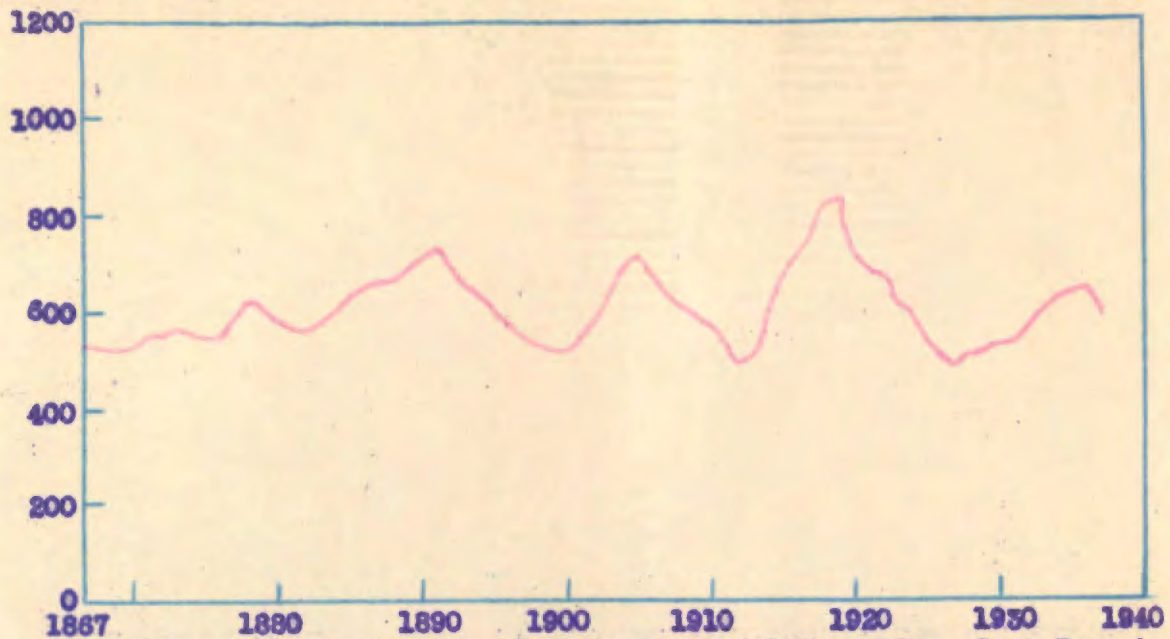


Sources: U.S.D.A., Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specified Classes of Livestock, 1937.

Figure 8. Milk Cows: Trend in Number of Milk Cows, Tennessee, 1867 - 1937

Number (1000)

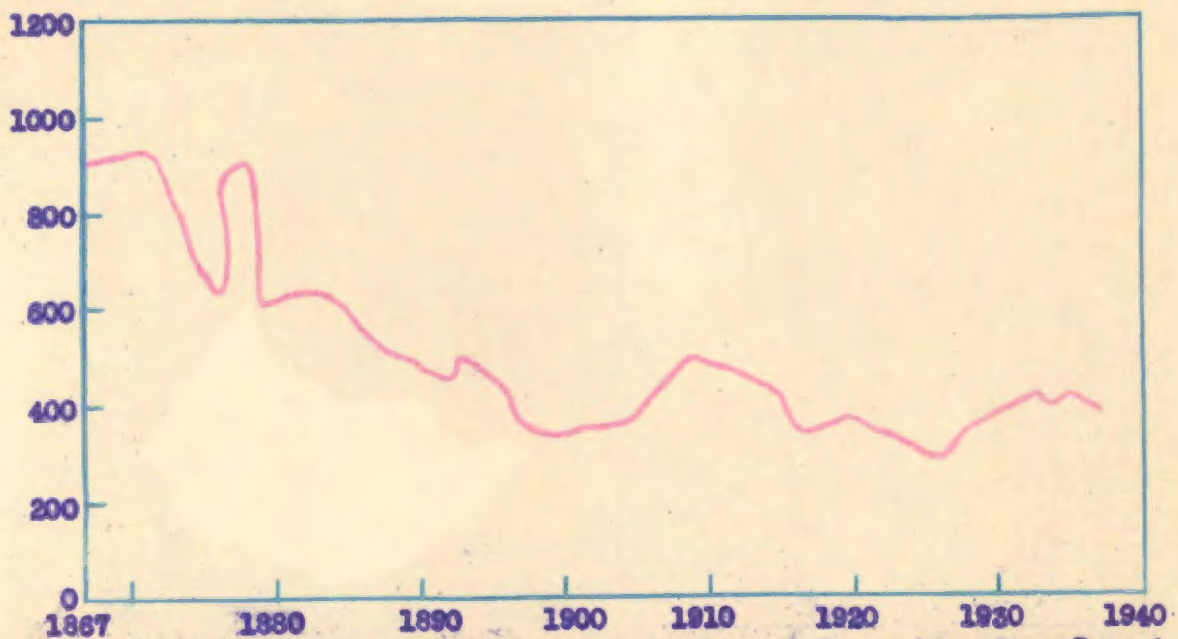
23.



Source: U. S. D. A., Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specific Classes of Livestock, 1937

Figure 9. Other Cattle: Trend in Number of Other Cattle, Tennessee, 1867-1937

Number (1000)



Source: U. S. D. A., Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specific Classes of Livestock, 1937

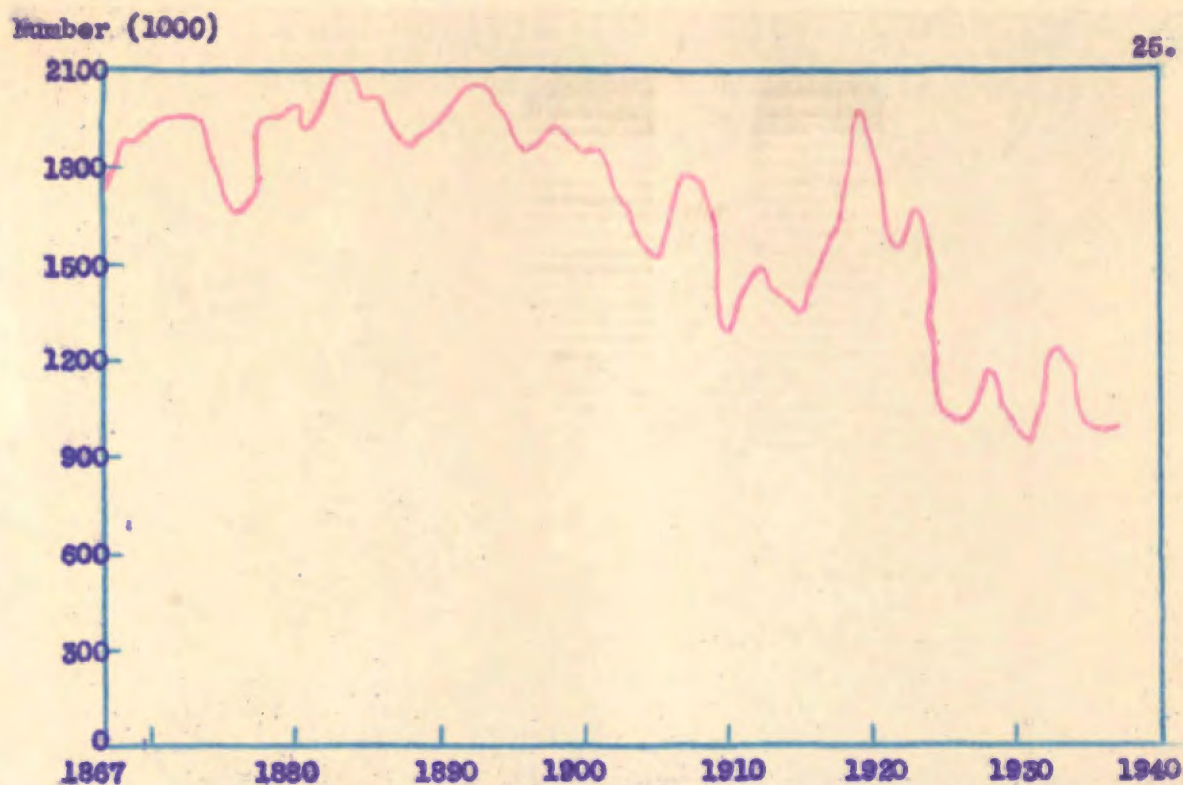
Figure 10. Sheep: Trend in Number of Sheep, Tennessee, 1867 - 1937.

Trend of Sheep. Sheep declined from 900,000 in 1867 to 579,000 in 1937. This decline was practically all prior to 1900. This long term decrease was due mainly to competition of the western ranges and parasitic diseases (Figure 10).

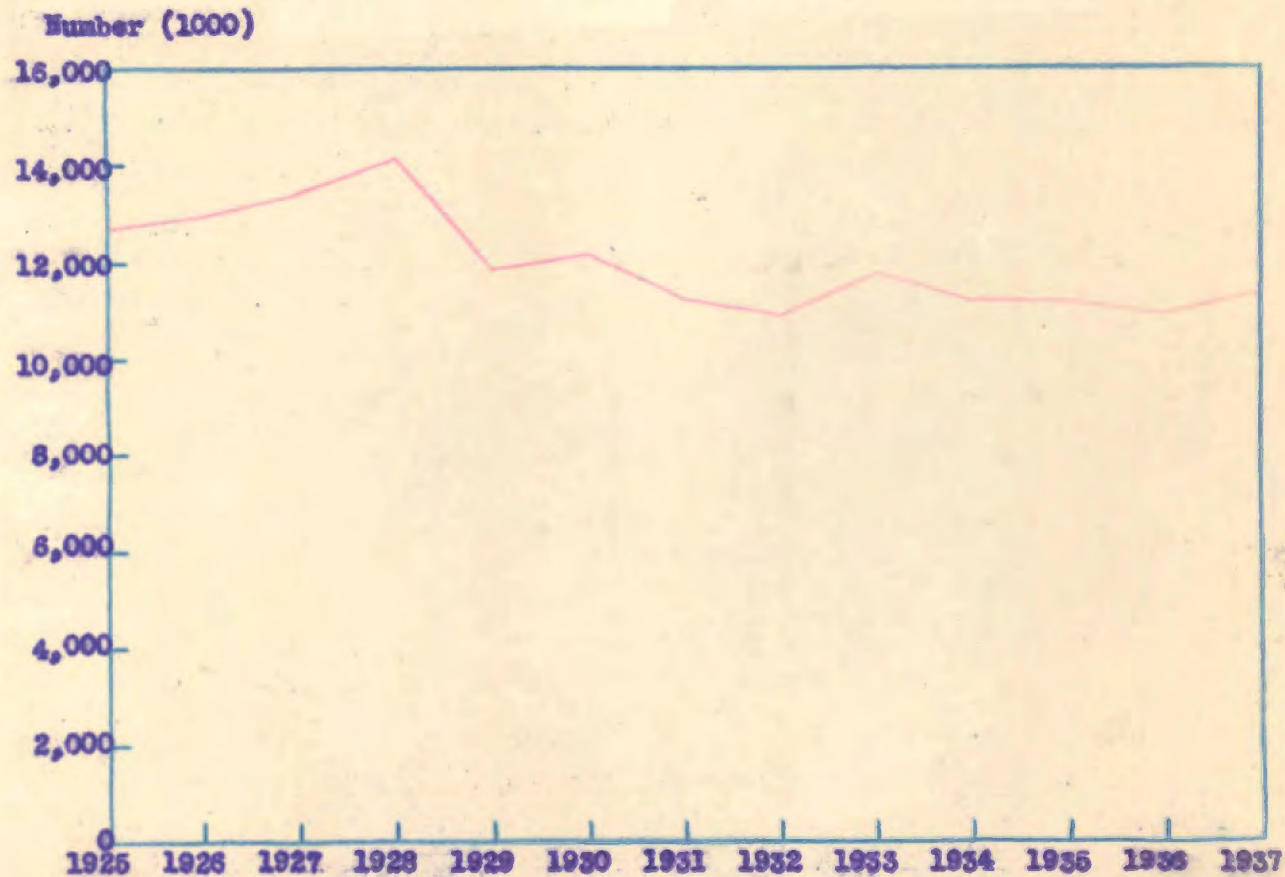
Trend of Hogs. Hogs have decreased more than any class of livestock in Tennessee. In 1885 there were approximately 2,000,000 hogs in Tennessee, while at present there are approximately 1,000,000 hogs (Figure 11). The most drastic decline in number of hogs occurred from 1920 to 1925, decreasing approximately 800,000. This drop has not been due to a reduction in corn acreage or other feed crops because such acreages, in general, have been maintained. The principal factors have been the effective competition from states better adapted to hog production, increasing cost of production in Tennessee, plus a decreasing market price.

Trend of Chickens. Tennessee is the leading chicken producing state in the southeast, having approximately 11,240,000 birds in 1937. There has been no drastic change in chickens from 1925 to 1937. However they have gradually decreased 11 per cent or approximately 1,500,000 since 1925⁽³⁾ (Figure 12). Poultry flocks were reported on 87.5 per cent of the farms in Tennessee in 1935. They are chiefly organized on a farm flock basis. Less than one per cent of the farms are classified as commercial poultry farms.

(3) Data for chicken numbers were not available by years prior to 1925.



Source: U.S.D.A., Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specified Classes of Livestock, 1937.
 Figure 11. Hogs: Trend in Number of Hogs, Tennessee, 1867 - 1937



Source: U.S.D.A., Bureau of Agricultural Economics, Crop Reporting Board, Estimated Number of Specific Classes of Livestock, 1937.
 Figure 12. Chickens: Trend in Number of Chickens, Tennessee, 1925-1937

CHAPTER III

REGIONAL CHARACTERISTICS OF TENNESSEE

AGRICULTURE

In the preceding chapter, livestock was shown to be a major factor in Tennessee agriculture. In order to picture the situation more accurately it is desirable to show regional characteristics in relation to livestock production. A brief discussion of the agriculture in each of type-of-farming regions of Tennessee is presented in this chapter along with a general soils description in order that the reader may have a background for comparison of West Tennessee with other areas of the State.

General Description of the Soils of Tennessee

Since soils are a dominant factor in livestock or any other type of farming it is desirable to briefly view the soil factor. The soils of Tennessee vary widely both in texture and fertility. In texture, they range from the heavy clays of the East Tennessee Valley to the sandy soils of the Cumberland Plateau; in fertility, they range from the poor gravel and slate hill soils in part of the Highland Rim to the very fertile valley loam and river bottom alluvial soils such as found in the Brown Loam area of the West Tennessee Plateau Slope and the Mississippi Bottoms.⁽¹⁾ These

(1) Allred, C. E., Atkins, S. W., Raskopf, B. D., Human and Physical Resources of Tennessee, Geology, Topography, Soils, University of Tennessee, Monograph 38, May 5, 1937, p. 1.

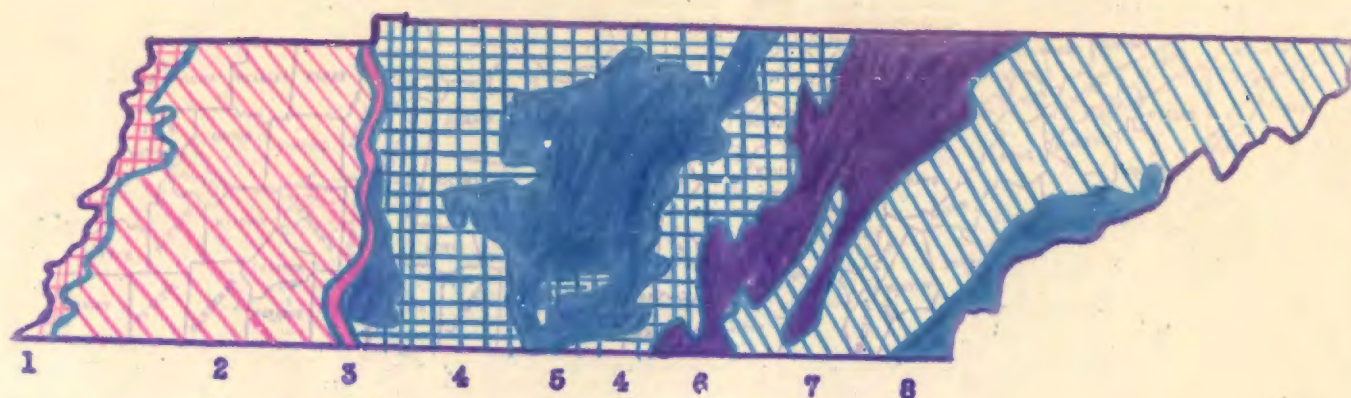
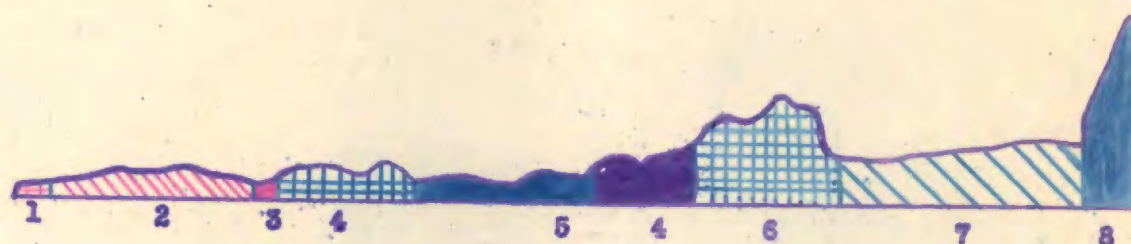


Figure 13. The Natural Divisions of Tennessee Based on Geologic and Soil Formations



Cross Section of Natural Divisions of Tennessee Along 36° Parallel

Scale: Horizontal - 75 miles per inch
Vertical - 4,000 feet per inch

- 1  Mississippi Bottoms
- 2  West Tennessee Plateau Slope
- 3  Western Valley of Tennessee
- 4  Highland Rim
- 5  Central Basin
- 6  Cumberland Plateau
- 7  East Tennessee Valley
- 8  Unaka Range

Source: Allred, C. E., Atkins, S. W., Raskopf, B. D., Human and Physical Resources of Tennessee, Chapter I Geology, Topography, Soils, Agric. Eco. and Rural Sociology Department, College of Agriculture, Univ. of Tenn., Knoxville, Tennessee, Mon. 38, May 5, 1937.

wide variations in soil have contributed to the great regional differences in production of livestock.

The State is divided into eight major divisions based on geologic and soil formations, namely, the Unaka Range, East Tennessee Valley, Cumberland Plateau, Highland Rim, Central Basin, Western Valley of Tennessee, West Tennessee Plateau Slope, and the Mississippi Bottoms (Figure 13).

Mississippi Bottoms. The major soils of the Mississippi Bottoms are alluvial deposits, composite formations of sands and silts, derived from the sediments laid down by the rivers in flood stage. In general, the principal soil is the Huntington series, developed from materials collected largely from limestone residuum, together with a minor constituent of materials from sandstones, shales, and locally igneous rock. It ranges from slightly acid to mildly alkaline in reaction. This soil is limited by susceptibility to flooding. Corn and cotton are chiefly grown; the corn yields ranging from 50 to 80 bushels per acre without fertilizer. If properly drained, Huntington soils are also excellent for pasture and hay crops, especially in the bottom lands. Alfalfa grows exceedingly well on this soil. The Sharky, Columbia, and Cass soil series are also found in this area.

West Tennessee Plateau Slope. Practically all of the soils of the West Tennessee Plateau Slope are silt loams. The predominating soils are probably the Grenada and Memphis soils, the two being closely associated. The Memphis soils are perfectly drained, contain no clay pan, have a

light brown surface, brownish-yellow subsoil, and are mostly silt loams. The Grenada soils differ from the Memphis in having a clay pan in the subsoil. These soils are characterized by the extremely silty texture of both surface soil and subsoil and a smooth flourlike feel. They are low in organic matter and acid in reaction, although the parent material locally is calcareous at 10 to 20 feet below the surface.

Cotton grown throughout the greater part of the areas, is the most important cash crop. Corn, the main subsistence crop, is widely grown. Tobacco, clover, alfalfa, wheat, oats, sorghum, sweet potatoes, redtop, soybeans, cowpeas, and other hays are also adapted to these soils.

Western Valley of Tennessee. This small area of approximately 1200 square miles is the natural boundary between Middle and West Tennessee. The soil types are mostly silt loams, sandy loams, cherty silt loams, and gravelly silt loams. The Lexington soils are considered the most important. This soil consists of a loess mantle less than 30 inches thick over Coastal Plain material. It is usually a silt loam, has a yellowish-gray or gray surface, yellowish subsoil, very erosive, relief is variable, and restricted to the west side of the river. Investigations at the West Tennessee Agricultural Experiment Station have found this soil to be well supplied with phosphoric acid and potash. The loam was found to be poor in lime. By adding lime excellent crops

of clover and alfalfa were obtained, while without it these crops were failures. This type of soil is naturally fertile, but long cropping in cotton and corn, plus erosion, have greatly reduced the productivity. However, it responds very readily to proper management.

Highland Rim. This division of the State covers approximately 9,300 square miles, and completely encircles the Central Basin. The soils are predominantly silt loams and cherty silt loams. The predominating soils series are Dickson and Baxter soils. Dickson soils originated from cherty limestone; occupies mainly flat areas; has a brownish-gray surface, yellowish subsoil with weak clay pan development; and is rather low in productivity. The Baxter soils are also formed from cherty limestone; closely associated with Dickson soils but occupies slopes of better drainage; has a light brown surface, reddish-brown subsoil; and is slightly more productive than the Dickson soils. The soils are silty in texture, have a smooth flourlike feel, contain a small amount of organic matter, and are medium to strongly acid. Dickson silt loam is the predominant type. Small areas of Taft soil are found which are intermediate in characteristics between Dickson and Guthrie. Very cherty soils (Bodine) are developed on steep slopes.

The principal crops grown are corn, oats, timothy, redtop, sweet potatoes, garden vegetables and sorgham. These soils are able to support a diversified subsistence of agriculture with proper crop rotations and the application of some fertilizer.

Central Basin. This entire region is underlain largely by limestone

formations, principally of the Trenton or Lebanon, and Nashville series.⁽²⁾

It covers an area of about 5,500 square miles and were formed by stream erosion. The soils in general are of the Maury and Hagerstown series. Maury soils are derived from phosphatic limestone; have grayish-brown surface, reddish-brown subsoil; usually a silt loam; highly productive; and rich in phosphate. The Hagerstown soils are very similar to Maury in general field appearance but not so rich in phosphate.

The greater part of this area is either cropped or in pasture. The principal crops are wheat, corn, hay (timothy and clover), oats, potatoes, and in some parts tobacco. Cattle raising is the main industry, including sheep and hogs. Most of the pastures are on the stony or sloping areas.

Cumberland Plateau. The soils of this region are principally of sandstone origin.⁽³⁾ Hartsells soils, in general, predominate and are characterized by light brownish-gray or yellowish-gray fine sandy loam surface; yellowish, friable, fine sandy clay subsoil; hard sandstones about 3 feet or less below surface. A large proportion of the soils are too thin for profitable cultivation. The prime cause of the lack of agricultural development in this area is that the soils are deficient in phosphorus and lime.

(2) Ibid., p. 15.

(3) Ibid., p. 12.

East Tennessee Valley. Fullerton soils are most commonly found in the East Tennessee Valley but Decatur and Dewey soils usually predominate in the most productive agricultural areas. Fullerton soils are only moderately productive, are derived from a low grade limestone; have a grayish-brown surface soil; brownish red, or reddish-yellow subsoil; are clayey, with chert being common in the series. Decatur soils are very productive; are formed from a high-grade limestone; have a brown surface and a dark red subsoil. Dewey soils are derived from high-grade dolomitic limestone; have grayish-brown surface; reddish color; clayish subsoil; little chert, and productive. These soils range from medium to strongly acid in reaction.

The main crops are corn, wheat, oats, hay (timothy, clover, and alfalfa), Burley tobacco, sorghum, fruits, potatoes, and garden vegetables. Lespedeza is an important hay and pasture crop.

Unaka Range. The soils are derived from granite material, ash, porters with most of the land having little agricultural value. However some land is tilled on the slopes and in some of the coves.

Type-of-Farming Regions

Twelve major and 5 minor types of farming in Tennessee are listed in the 1930 census. These types vary from self-sufficing to highly commercial types, and range from crop farms to livestock farms. Some types are well distributed over the State, while others are so concentrated in certain areas that they give rise to definite type-of-farming regions.

A recent study⁽⁴⁾ had as its objective "to study these types of farming, their localization into type-of-farming regions, and the determination of some of the types of farming and the type-of-farming regions." As defined in the study, "by a type-of-farming region is meant an area in which the farms produce similar crops and livestock in much the same proportion and under similar methods and conditions. Since such similarity exists only to a limited extent, type-of-farming regions of considerable size must be based on the dominant type of farming".⁽⁵⁾

As a result of the study, the State has been classified into 15 major type-of-farming regions and 25 subregions (Figure 15), each of which has some degree of homogeneity and differs from that of surrounding regions. The regional classification was based largely upon special tabulations of the 1930 and 1935 census reports by civil districts. The logical location of such boundaries may shift from time to time due to changes in farming systems. Shifts in prices and costs, or other economic or physical factors, may cause farmers to modify their systems.

The name given these type-of-farming regions have, in most cases, been chosen to represent the broad general system of agriculture practiced in the region. Farming even in the highly specialized sections such as the cotton area in West Tennessee, is not uniform. The farming in this region involves wide variations from the standard type indicated by the name but so dominant is cotton within this area that it is designated as a cotton region.

(4) Lanham, Ben T., Factors Influencing Type-of-Farming Regions in Tennessee, Master's thesis, University of Tennessee, Knoxville, Aug. 1938.

(5) Ibid., p. 237.



Figure 14. Type-of-Farming Region

Source: Based on Census of Agriculture, 1930 and 1935

- Region 1. Mississippi Delta Area - Cotton and Cash-Grain
- Region 2. Obion-Loessial Soils Area - Cotton and Livestock:
a. Livestock Dominant; b. Cotton Dominant
- Region 3. West Tennessee Brown Loam Area - Cotton
a. Dairy Truck Dominant; b. Cotton Dominant
- Region 4. Henry-Weakley Area - Dark Tobacco, Sweet Potato, and General Farming
- Region 5. Humboldt Area - Cotton, Truck and General Farming
- Region 6. West Tennessee Silt and Sandy Loam Area - Cotton and General Farming
- Region 7. Northern Highland Rim - Dark Tobacco
a. Tobacco Dominant; b. Tobacco Dominant, Strawberries; c. One-Sucker Tobacco Dominant, Small General Farming
- Region 8. Western Highland Rim - Small General Farming, Corn and Hogs
a. Peanuts Dominant; b. Small General Farms, Corn and Hogs
- Region 9. Southern Highland Rim - Cotton, Small General Farming, Some Livestock
a. Corn and Hogs on Bottoms, Some Beef Cattle; b. Some Dairying, Some Wheat

Region 10. Central Basin - General Livestock Farming.
a. Dairy and Cotton; b. General Farming, Corn and Hogs; c. General Farming

Region 11. Eastern Highland Rim - Small General Farming.
a. Small General Farming; b. General Farming and Some Cotton

Region 12. Cumberland Plateau - Very Small General and Part-Time Farming.

Region 13. Southeast East Tennessee Valley - General Farming, Cotton, and Dairy.

Region 14. East Tennessee Valley - General Farming.
a. Sequatchie Valley - Beef Cattle and Hogs; b. Fruit, Truck, and Cash-Grain; c. General Farming; d. Dairy, Truck, and Part-Time Farming; e. Small Gen. Farms, Burley Tobacco, and Poultry; f. Burley Tobacco, Dairy, Poultry, and Wheat

Region 15. Unaka Mountain Area - Small Gen. Farming
a. Beef Cattle; b. Burley Tobacco; c. Small General Farming

Land Use by Type-of-Farming Regions. The smallest proportion of total land area in farms is found in the Cumberland Plateau, the Unaka Mountains, and the Western Highland Rim.⁽⁶⁾ The Central Basin is highest, followed by West Tennessee, the East Tennessee Valley, and the Northern Highland Rim. Crop land is dominant in West Tennessee, and pasture land in the Central Basin and East Tennessee where the greater portion of livestock are produced. Farm woodland is concentrated greatest in Regions 8, 9, 11, and 12 (Table VII).

Three crops, corn, hay, and cotton, occupy approximately 85 per cent of the state's 6,330,402 acres of crop land. Corn and hay make up over 70 per cent of the crop land, and are utilized principally as food and feed crops. Cotton and tobacco, the state's two principal cash crops, occupy only 14 per cent of the total crop land area.

Corn is produced extensively throughout the State, with its highest percentage in Regions 8, 9, 11, 12, and 4. It is lowest in Regions 3 and 5 where cotton and truck farms predominate, and where few livestock are grown.

Hay is more concentrated in Regions 10, 11, 12, 13, and 14 where livestock production is the greatest. The regions in West Tennessee are lowest in hay production and have relatively few livestock.

Cotton is principally produced in West Tennessee and Regions 9 and 13. It occupies more than one-third of the crop land in West

(6) Region 1 shows a low percentage due to a large percentage of marsh and swamp land in the extreme western part of Dyer and Lauderdale counties which is included in the region.

TABLE VII. FARM LAND USE: PERCENTAGE DISTRIBUTION BY
TYPE-OF-FARMING REGIONS, TENNESSEE, 1929*

Region	Total Land Area in Farms	Per Cent of Total Land Area in Farms	Crops Harvested	Idle or Fallow	Crop Failure
1	120,953	39.6	68.6	5.1	10.0
2	434,976	78.3	53.1	5.6	2.1
3	1,004,297	67.6	54.4	5.3	1.0
4	435,510	77.8	37.1	10.4	.6
5	480,337	87.4	51.3	7.1	.9
6	1,413,235	76.5	31.7	6.9	.9
7	1,162,929	85.2	31.1	12.9	.6
8	1,168,944	50.7	21.8	7.0	.5
9	950,161	65.3	33.2	8.2	.7
10	5,292,669	88.7	34.6	6.7	.7
11	1,593,807	76.0	31.0	11.8	.6
12	582,351	21.1	20.8	7.2	.7
13	356,440	81.8	27.7	10.9	.5
14	5,903,681	76.3	30.2	7.5	.7
15	508,951	36.6	19.9	5.6	.3
State	18,003,241	67.2	33.9	7.9	1.4

(continued)

Region	Plowable Pasture	Woodland Pasture	All Other Pasture	Woodland Not Pastured	All Other Farm Land
1	3.5	1.5	.5	8.4	2.4
2	19.0	4.4	2.1	8.7	5.1
3	11.4	7.8	3.1	8.9	8.1
4	18.1	5.6	3.6	14.4	10.2
5	12.4	5.2	4.0	10.4	8.7
6	7.8	8.2	6.4	24.1	14.0
7	15.5	5.6	4.3	18.6	11.5
8	8.9	5.8	3.3	46.4	6.3
9	9.4	6.8	3.6	30.7	7.4
10	17.8	17.4	9.9	7.6	5.3
11	13.3	7.0	3.4	27.9	5.0
12	6.6	11.0	2.0	44.1	7.6
13	9.8	10.4	4.6	26.6	9.5
14	22.9	4.9	4.0	24.4	5.4
15	18.4	8.6	3.4	38.6	3.2
State	13.0	7.3	3.9	22.6	7.4

*Based on civil district data.

Source: Lanham, Ben T., Jr., Factors Influencing Type-of-Farming in Tennessee, Master's thesis, University of Tennessee, August 1936.

TABLE VIII. CROP LAND USE: PERCENTAGE DISTRIBUTION BY TYPE-
OF-FARMING REGIONS, TENNESSEE, 1934 *

Region	Crop Land Harvested	Percentage of Crop Land Harvested in:			
		Corn	Hay	Cotton	Wheat
1	103,157	42.4	10.2	45.7	.1
2	232,635	48.6	21.8	20.1	3.3
3	848,697	38.8	17.7	37.0	.5
4	166,172	49.6	22.2	10.0	1.8
5	245,315	36.8	23.7	28.0	.2
6	459,767	47.9	20.5	27.3	.2
7	356,281	42.5	25.3	**	11.7
8	257,706	57.8	28.3	1.7	3.1
9	327,628	50.7	19.5	22.3	2.2
10	1,164,136	45.1	34.1	3.0	11.8
11	520,504	54.3	30.2	1.4	5.2
12	163,387	50.5	35.2	.4	1.0
13	116,171	38.4	35.3	12.0	6.0
14	1,262,591	42.0	34.8	.5	13.0
15	108,355	46.2	26.2	**	10.1
State	6,330,402	45.2	27.6	12.0	6.6

(continued)

Region	Percentage of Crop Land Harvested in:				
	Tobacco	Strawberries	Irish Potatoes	Sweet Potatoes	Small Grain
1	-	**	.2	.1	.6
2	**	.4	.3	.5	5.0
3	**	.4	.5	.8	.7
4	5.2	.8	.2	7.3	2.4
5	**	2.0	.5	2.1	.6
6	.1	.3	.5	1.1	.6
7	15.4	.3	.5	.8	13.7
8	1.0	**	.7	.8	4.8
9	.1	**	.6	.7	3.8
10	1.3	**	.4	.4	16.2
11	.4	.1	1.2	.7	8.6
12	.1	**	3.7	1.5	2.3
13	.3	.2	.6	.9	8.3
14	1.8	.4	.9	.8	16.2
15	1.8	**	3.0	.7	15.8
State	1.7	.3	.7	.9	9.0

*Based on civil district data. ** Less than 0.1 per cent.

Source: Lanham, Ben T., Jr., Factors Influencing Type-of-Farming in Tennessee, Master's thesis, University of Tennessee, August, 1938.

Tennessee, but is relatively unimportant in other sections of the State.

Small grains, consisting principally of wheat, occupy nine per cent of the State's crop land and are grown principally in Regions 10, 14, 15, 7, and 11. These areas also correspond fairly closely with the principal livestock regions of the State.

Tobacco is mainly grown in Region 9, occupying 15.4 per cent of its crop land. It is also grown to some extent in Regions 4, 7, 15, 14, 10, and 8 (Table VIII).

Livestock Distribution by Type-of-Farming Regions.⁽⁷⁾ Cattle are found in greatest numbers in Regions 10, 14, and 3 (Figure 15). Regions 12, 10, 15, 14, 2, and 3 lead respectively in number in relation to improved crop land (Figure 21). Regions 12 and 15 are extremely high, but are of minor importance because of their relative low percentage of improved crop land.

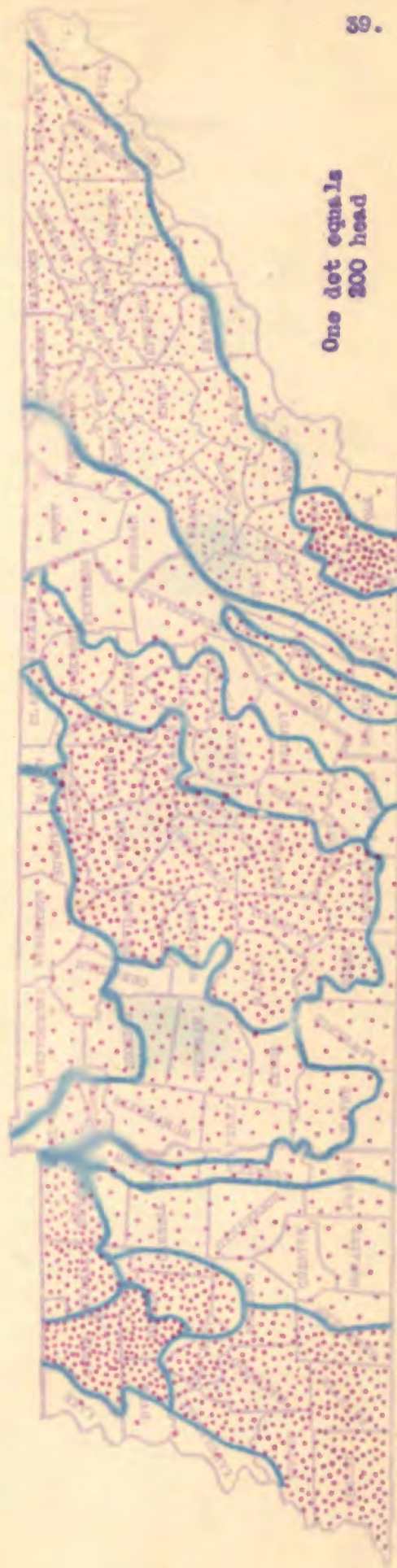
Milk cows are highest in Regions 10 and 14, followed by 3, 11, 8, and 4 (Figure 16). In relation to improved crop land, Regions 12, 10, 14, and 15 are highest in number (Figure 22). They tend to be concentrated near cities, creameries, condenseries, and various densely populated sections of the State.

Other cattle, the difference between all cattle and milk cows, is used as a measure of the beef cattle industry. Their greatest

(7) Horses and mules were omitted from the discussion of livestock classes because they are used primarily as workstock, and contribute only 2 per cent to the cash farm income.



Source: U. S. Census of Agriculture, 1935
Figure 15. Distribution of All Cattle by Type-of-Farming Regions, Tennessee, 1935



Source: U. S. Census of Agriculture, 1935
Figure 16. Distribution of Milk Cows by Type-of-Farming Regions, Tennessee, 1935



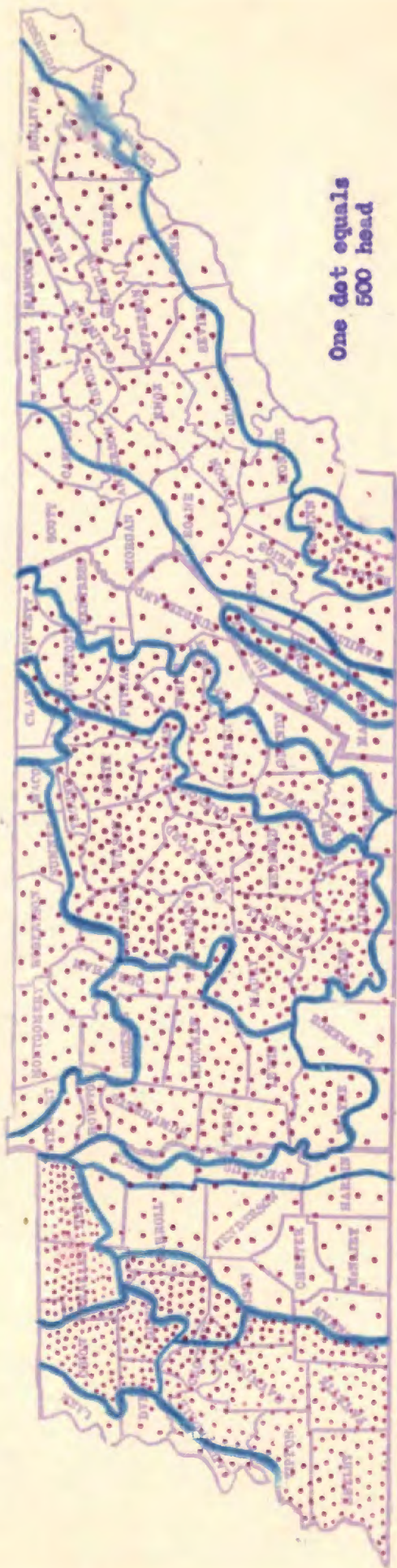
Source: U. S. Census of Agriculture, 1935

Figure 17. Distribution of Other Cattle by Type-of-Farming Regions, Tennessee, 1935



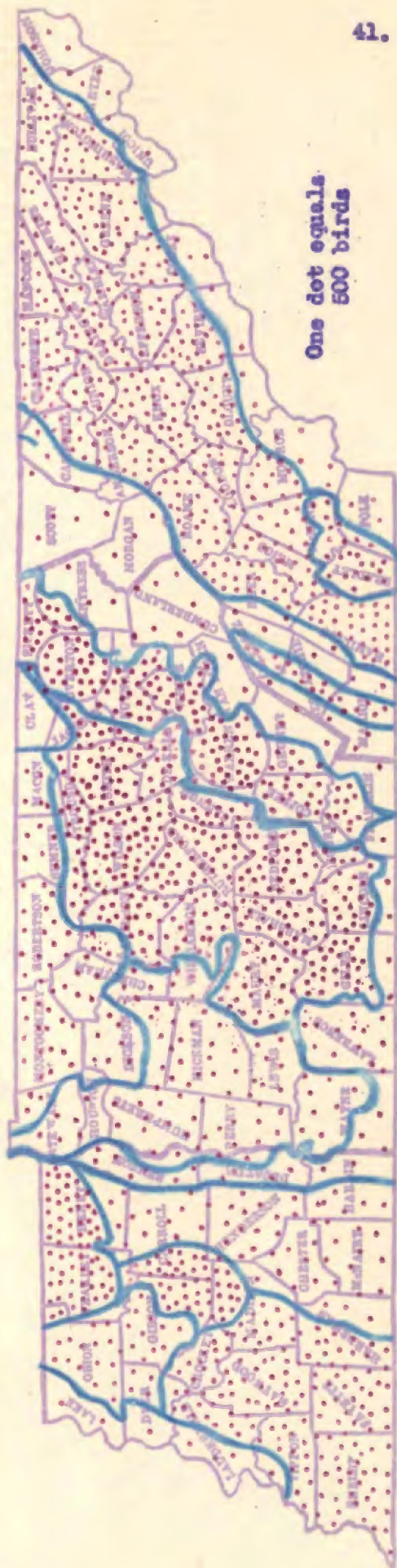
Source: U. S. Census of Agriculture, 1935

Figure 18. Distribution of Sheep by Type-of-Farming Regions, Tennessee, 1935



Source: U. S. Census of Agriculture, 1935

Figure 19. Distribution of Hogs by Type-of-Farming Regions, Tennessee, 1935



Source: U. S. Census of Agriculture, 1935

Figure 20. Distribution of Chickens by Type-of-Farming Regions, Tennessee, 1935



Source: Census of Agriculture, 1935

Figure 21. Distribution of All Cattle per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee.

1935



Source: Census of Agriculture, 1935

Figure 22. Distribution of Milk Cows per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935



Source: Census of Agriculture, 1935

Figure 23. Distribution of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935



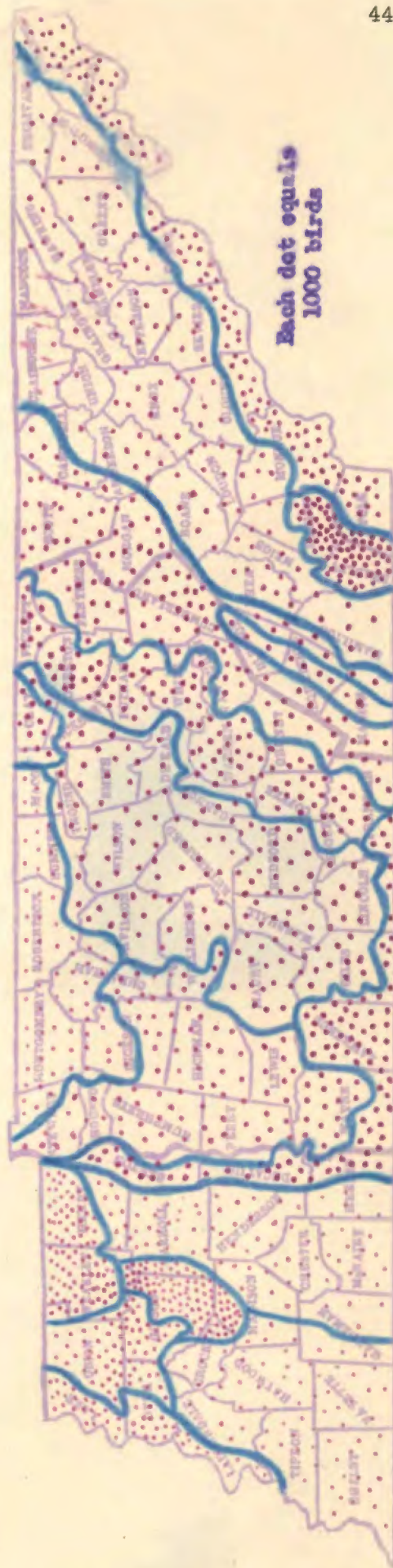
Source: Census of Agriculture, 1935

Figure 24. Distribution of Sheep per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935



Source: Census of Agriculture, 1935

Figure 25. Distribution of Swine per 1000 Acres of Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935.



Source: Census of Agriculture, 1935

Figure 26. Distribution of Chickens per 1000 Acres Improved Crop Land by Type-of-Farming Regions, Tennessee, 1935.

numbers are found in Regions 10 and 14, mainly in Middle and East Tennessee with the exception of Regions 2 and 3 in West Tennessee (Figure 17). Practically the same pattern is followed when shown in relation to improved crop land (Figure 23).

Hogs, in relation to improved crop land, are grown principally in Regions 12, 2, 8, and 4, which are leading corn-producing regions (Figure 25). The greatest numbers are found in Regions 10, 3, and 14 (Figure 19).

Sheep numbers are highest in Region 2, West Tennessee, 8 and 10, Middle Tennessee, and 14, East Tennessee (Figure 18).

Chickens are distributed in relatively high numbers throughout the State, with the exception of Regions 1 and 15. Region 14 ranks first in number, followed by 10, 3, 11, and 8. Region 10 leads in number per 1,000 acres improved crop land (Figure 26).

Regional Distribution of Farm Types

When calculating types of farms, on a percentage basis, for each type-of-farming region in the State, they tend to fall in the same geographic position as when plotted on the basis of county totals.

Cotton Farms are concentrated in Regions 1, 2, 3, 5, 6, and 9 of West Tennessee (Table IX)

Small General, or self-sufficing farms are found mostly in Regions 15, 12, 11, 8, 14, and 13 (Table IX).

General Farms are principally in Regions 14, 13, 10, 11, 8 and 4. They are lowest in Regions 1 and 3 (Table IX).

TABLE IX. PERCENTAGE DISTRIBUTION OF FARM TYPES FOR EACH TYPE-OF-FARMING REGIONS, TENNESSEE, 1930 *

Region	Total Number of Farms	Cotton	Small General **	General	Crop Specialty	Part-Time	Animal Specialty
1	2,296	75.4	4.8	2.1	.1	2.3	.5
2	6,507	54.9	5.8	18.6	1.6	3.2	6.9
3	35,321	85.0	2.2	3.3	.5	2.2	.6
4	5,928	3.1	9.8	31.0	38.8	3.9	3.4
5	9,794	58.6	3.4	19.6	1.4	1.8	1.0
6	17,711	67.9	8.6	14.4	1.0	1.8	.9
7	16,827	-	12.4	9.8	62.9	2.6	.8
8	9,513	2.0	35.4	27.1	9.6	6.8	7.0
9	12,561	51.9	15.8	19.9	.7	2.9	1.9
10	38,969	5.0	19.1	27.8	6.9	7.2	13.7
11	19,626	1.9	49.8	21.1	1.4	9.6	6.2
12	7,436	.3	52.6	12.6	.5	23.3	2.6
13	3,698	15.8	28.5	23.7	3.2	10.2	1.6
14	51,857	.2	32.2	27.9	10.4	9.8	3.5
15	7,613	#	50.2	15.1	6.2	16.2	3.0
State	245,657	25.7	21.9	19.5	9.6	6.6	4.4

(continued)

Region	Dairy	Cash Grain	Truck	Poultry	Fruit	All *** Others
1	-	6.5	.1	#	-	8.2
2	1.1	4.2	.2	.3	.2	3.0
3	1.2	.4	#	.1	.2	4.3
4	1.8	.5	.2	.3	.4	6.8
5	.7	.2	9.3	.2	.8	3.0
6	.4	.4	.2	.1	.1	4.2
7	.4	.7	.2	.3	1.2	8.7
8	.8	3.1	.1	.3	#	7.8
9	.6	1.2	.1	.1	#	4.9
10	7.4	4.7	.6	1.4	.1	6.1
11	1.0	1.5	#	.9	-	7.6
12	.6	.3	.1	.3	.1	6.9
13	5.5	.7	.3	.6	.5	9.3
14	2.9	1.4	.7	1.5	1.2	8.3
15	.2	.2	.3	.2	.2	8.2
State	2.4	1.7	.7	.7	.4	6.4

*Based on civil district data. ** Designated by the census as "self-sufficing farms". *** Abnormal (less part-time), unclassified, and stock-ranch.

Less than 0.1 per cent.

Source: Lanham, Ben T., Jr., Factors Influencing Type-of-Farming in Tennessee, Master's thesis, August 1938.

Crop-Specialty Farms are most important in Region 7, the Dark tobacco area; Region 4, the sweet potato area; Region 14, the Burley tobacco area; and Region 8, the peanut area.

Part-Time Farms are most important in Regions 14, 10, 11, 12 and 15. In addition to agriculture, the farmers are principally engaged in mining and lumbering.

Animal-Specialty Farms are highest in Regions 10, 14, 11, 8, and 2. These regions are also Tennessee's leading hay and pasture regions.

Dairy Farms are highest in Region 10 followed by Regions 14, and 3. There are no dairy farms in Region 1 and relatively few in Regions 5, 6, 7, 8, 9, 12, and 15.

Cash-Grain Farms are highest in the leading livestock areas of 10, 14, 8, 11, and 2.

Truck Farms are highest in Regions 5, 10, and 14 (Table IX).

Poultry Farms are also highest in the more important livestock Regions of 10, 14, and 11.

Fruit Farms are high only in Regions 14, 7, and 5, due to the strawberries in those regions.

Tenancy Distribution

Approximately fifty per cent of the farm operators in Tennessee are tenants. Regions 1, 3, 5, 6, 7, and 9 are highest in tenancy where cotton and tobacco are the principal crops, where a high percentage of tenancy is usually found (Table X).

TABLE X. PERCENTAGE DISTRIBUTION OF FARM OPERATORS FOR EACH TYPE-OF-FARMING REGION, TENNESSEE, 1935 *

Region	Total Number of Operators	Per Cent					
		Full-Owners	Part-Owners	Managers	Crop-pers	Other Tenants	All Tenants
1	735	13.1	6.4	.3	17.8	62.4	80.2
2	4,404	40.5	9.5	.6	15.2	34.2	49.4
3	32,255	20.1	3.9	.1	39.2	36.7	75.9
4	8,975	42.6	11.2	.1	16.1	30.0	46.1
5	6,921	32.7	10.4	-	22.6	34.3	56.9
6	6,345	40.0	7.4	-	14.9	37.7	52.6
7	8,614	36.6	6.4	.3	37.1	19.6	56.7
8	9,627	46.4	9.7	.1	11.4	32.4	43.8
9	4,088	40.7	7.0	-	12.4	39.9	52.3
10	32,410	51.6	5.7	.4	14.7	27.6	42.3
11	13,220	53.1	9.1	.1	10.1	27.6	37.7
12	7,444	66.8	5.5	-	5.0	22.7	27.7
13	4,871	56.3	4.4	.3	15.0	24.1	39.1
14	45,970	53.5	9.9	.3	13.9	17.4	31.3
15	3,199	65.6	13.6	.1	7.2	13.5	20.7
State	273,783	45.7	7.9	.17	18.8	27.4	46.2

*See Appendix B.

Source: Lanham, Ben T., Jr., Factors Influencing Types-of-Farming in Tennessee, Master's thesis, August, 1938.

In regions where livestock farming predominates, tenancy is lower. They are lowest in Regions 15, 14, 10, 12, 13, where less than 40 per cent of the operators are tenants.

Prices Received by Farmers by Crop Reporting

Districts

The Crop and Livestock Service of the United States Department of Agriculture has divided Tennessee into 6 major crop and livestock reporting districts which enables the Service to establish regional prices within the State, and to facilitate tabulation and analysis of data. Each district

TABLE XI. PRICES RECEIVED BY FARMERS, AVERAGE PRICES AND PER CENT OF STATE AVERAGE PRICES RECEIVED BY FARMERS FOR LIVESTOCK AND LIVESTOCK PRODUCTS, BY CROP REPORTING DISTRICTS, TENNESSEE, 1936

Commodity	Period	Unit	Average Price Received by Farmers in:						
			Districts						State
			I	II	III	IV	V	VI	
Hogs	1925-35	Cwt.	5.65	5.49	5.68	5.90	5.81	6.33	5.81
Beef cattle	1933-36	Cwt.	3.76	3.30	3.87	4.54	4.26	4.23	4.20
Veal calves	1933-36	Cwt.	5.24	4.62	5.09	5.56	5.41	5.32	5.23
Lambs	1933-36	Cwt.	*	*	5.79	6.46	5.66	6.03	6.05
Wool	1933-36	Lb.	.21	.21	.24	.26	.23	.22	.24
Milk cows	1933-36	Each	28.66	24.35	26.85	30.40	28.47	29.27	27.98
Milk, whole-sale	1933-36	Cwt.	*	*	*	1.32	*	1.46	1.44
Milk, retail	1933-36	Qt.	.10	.09	.09	.09	.09	.09	.09
Farm butter	1933-36	Lb.	.24	.20	.21	.22	.23	.17	.20
Butterfat	1933-36	Lb.	.24	.23	.23	.24	.24	.23	.23
Chicken eggs	1931-35	Doz.	.18	.15	.15	.16	.17	.18	.16
Chickens	1931-35	Lb.	.12	.11	.11	.11	.11	.12	.11

(continued)

Commodity	Per Cent of State Average by Districts						Pct. Tenn. Price Is of U.S. Average Price
	I	II	III	IV	V	VI	
Hogs	97.2	94.5	97.8	101.5	100.0	109.0	101.0
Beef cattle	89.5	78.6	92.1	108.1	101.4	100.7	82.0
Veal calves	100.2	88.3	97.3	106.3	103.4	101.7	84.0
Lambs	*	*	95.7	106.8	93.6	99.7	110.0
Wool	87.3	86.4	102.3	109.4	96.0	93.9	115.0
Milk cows	102.6	57.0	96.0	108.6	101.8	104.6	70.0
Milk, whole-sale	*	*	*	91.7	*	102.8	95.0
Milk, retail	110.0	97.8	97.8	95.6	102.2	101.1	96.0
Farm butter	121.5	97.5	104.0	111.5	115.0	85.0	75.0
Butterfat	100.9	100.0	97.9	100.9	105.2	100.0	87.0
Chicken eggs	110.4	94.5	93.9	96.9	103.1	109.2	88.0
Chickens	107.1	99.1	95.5	99.1	100.9	102.7	92.0

* Insufficient data.

Source: Lanham, Ben T., Jr., Factors Influencing Type-of-Farming in Tennessee, Master's thesis, University of Tennessee, August 1938.

contains a substantially homogenous area.

In general, the prices received for livestock and livestock products are below the United States average. Exceptions are prices received for hogs, lambs, and wool, which are slightly above the United States average. A deficit in hog production and wool tends to raise the price for hogs and wool. High quality lambs and advanced production of spring lambs accounts for the average price being about equal to the United States average (Table XI).

CHAPTER IV

LIVESTOCK PRODUCTION IN WEST TENNESSEE

REGION I

The Livestock Situation

Region one includes all of Lake County, parts of Dyer, Lauderdale, and Tipton counties in West Tennessee; is a part of the great alluvial plain that extends along the Mississippi River from the Gulf of Mexico northward to Southern Illinois. It has an average width of 10 to 12 miles, covers an area of approximately 900 square miles with an average altitude of 250 feet above sea level.

It is the lowest livestock producing area in West Tennessee. Figures 21, 22, 23, 24, 25, and 26 show the relatively low distribution of different livestock classes in comparison to other regions in the State. The only class of livestock to rank above the state average is hogs, these ranking 44 per cent above the state average (Table XII). Hogs are grown mainly because of the emphasis placed on corn production. Dairy cows are only about one-third of the state average; steers, three-fourths; chickens, two-thirds; and sheep are found only in very small numbers.

In Table XIII an example of a successful farm was presented because it better shows the small amount of livestock actually grown in Region One. Only about 4 animal units of livestock were kept on this

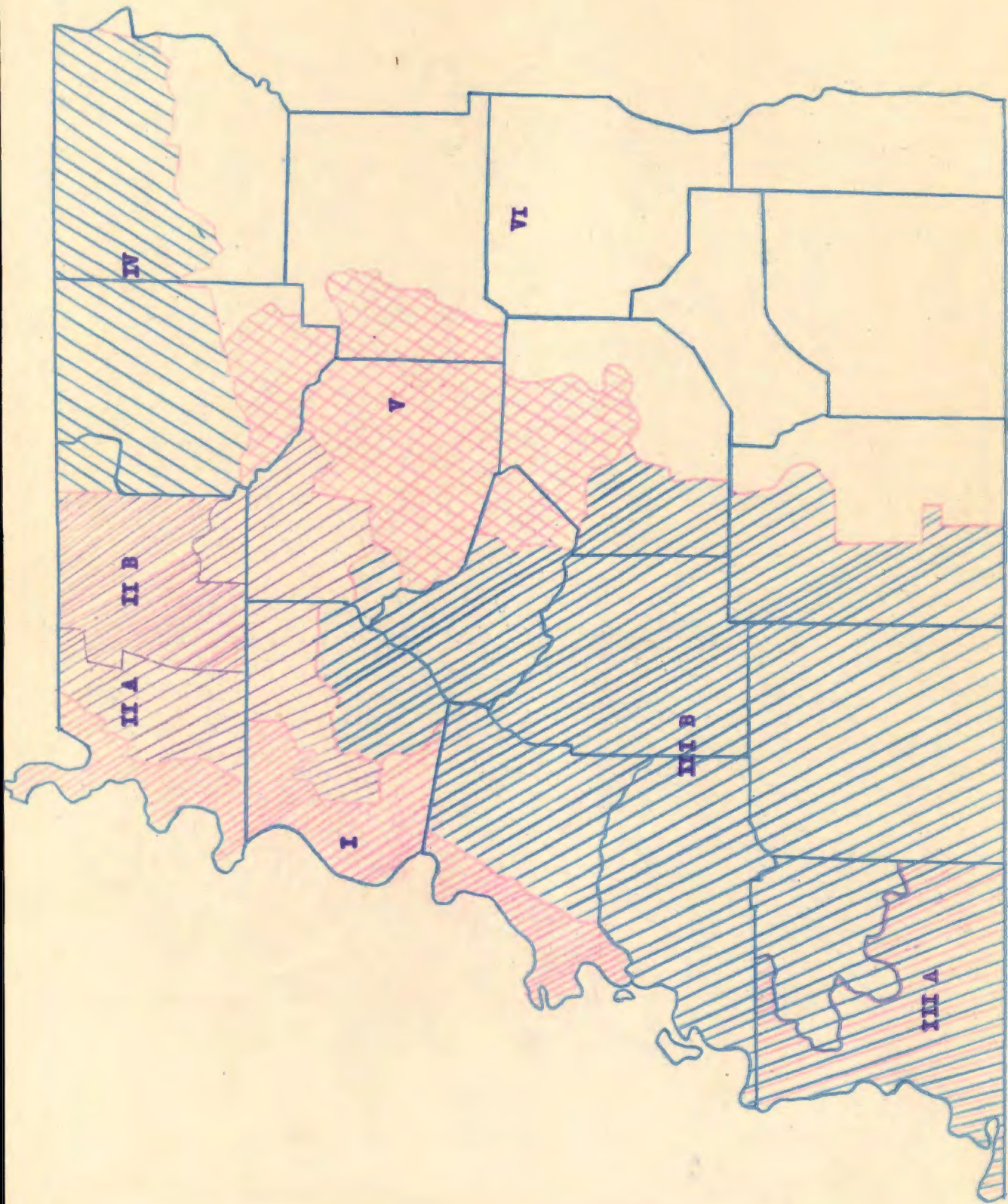


Figure 27. Type-of-Farming Regions in West Tennessee

TABLE XII. TOTAL NUMBERS OF LIVESTOCK AND NUMBER PER 1000
ACRES IMPROVED LAND, BY SPECIFIED CLASSES, REGION I,
1880-1935 *

Class **	I. Total Number of Livestock							
	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	3,570	4,802	4,227	4,273	3,204	1,098	640	1,865
Milk cows	1,434	1,559	1,078	1,298	939	726	357	882
Other cattle	2,136	3,443	3,149	2,975	2,265	322	283	983
Sheep	500	82	5	-	-	5	5	-
Swine	11,375	8,393	9,272	7,744	7,727	1,770	2,399	5,717
Chickens	-	51,781	35,018	21,285	26,811	25,340	26,525	28,823

II. Number of Livestock per 1000 Acres Improved Crop Land								
All cattle	102.8	174.5	99.8	88.7	60.9	21.5	11.0	32.0
Milk cows	41.3	49.4	25.4	26.9	17.8	14.2	6.1	15.1
Other cattle	61.5	125.1	74.4	61.8	43.1	7.3	4.9	16.9
Sheep	14.4	3.0	.1	-	-	.1	.1	-
Swine	327.5	305.0	218.8	160.7	146.8	34.7	41.1	98.1
Chickens	-	1881.9	826.4	441.6	509.5	499.7	283.3	494.8

* Based on census figures for Lake County, selected as representative of type-of-farming Region I.

** See Appendix A, B, and C.

Source: U. S. Census of Agriculture, 1880-1935.

farm which returned a labor income of \$2,110. Approximately 65 per cent of the farm receipts came from cotton while only about 4 per cent came from livestock and livestock products.

All classes of livestock have decreased in number since 1880 (Table XII). Cattle decreased from 3,570 to 1,865; milk cows from 1,434 to 882; other cattle from 2,136 to 983; swine from 11,375 to 5,717; chickens from 51,781 (1890) to 28,823; and sheep from 500 to only a few. Similar decreases are noted in the number of livestock in relation to

TABLE XIII. A SUCCESSFUL FARM IN REGION I, TENNESSEE, 1934

<u>Land Distribution</u>		<u>Crop Production</u>	<u>Investment</u>	
58 A. cotton		12,605 lbs. cotton	Real estate	\$8,550
28 A. corn		784 bu. corn	Livestock	750
4 A. pea hay		4 T. pea hay	Moly. & equip.	335
3 A. alfalfa hay		9 T. alfalfa hay	Feed and supp.	97
1 A. sorghum		2 T. sorghum		
1 A. pasture		for feed		\$9,732
2 A. bldg., lots, roads, etc.				
77 A.				
<u>Livestock</u>		<u>Farm Receipts</u>	<u>Farm Expenses</u>	
4 mules		Cotton \$2,063	Hired labor	\$485
1 cow		Hay 262	Family labor	100
1 sow		Hogs 104	Taxes	63
4 shoats		Poultry 20	Rep. & dep.	104
9 pigs		AAA 313	All other expen.	193
50 chickens		Inc. in feed 780		\$945
		Total \$3,542		
<u>Efficiency Factors:</u>		<u>Summary</u>		
Capital turnover	2.8	Farm income	\$2,597	
Per cent of total capital in oper- ating capital	12.7	Labor income	2,110	
Total man work units	630	Labor earnings	2,852	
		Pct. ret'd	25.5%	
		Corn per A.	25 bu.	
		Crop acres		
		per mile	18.5	
		No. of sour- ces of inc. greater than the taxes	4	

Source: Farm Management Department, Extension Service, University of Tennessee, Knoxville, Tennessee.

Improved crop land (Figure 28).

Since 1930, however, there has been a large percentage increase in total number of all classes of livestock, except sheep. Cattle have

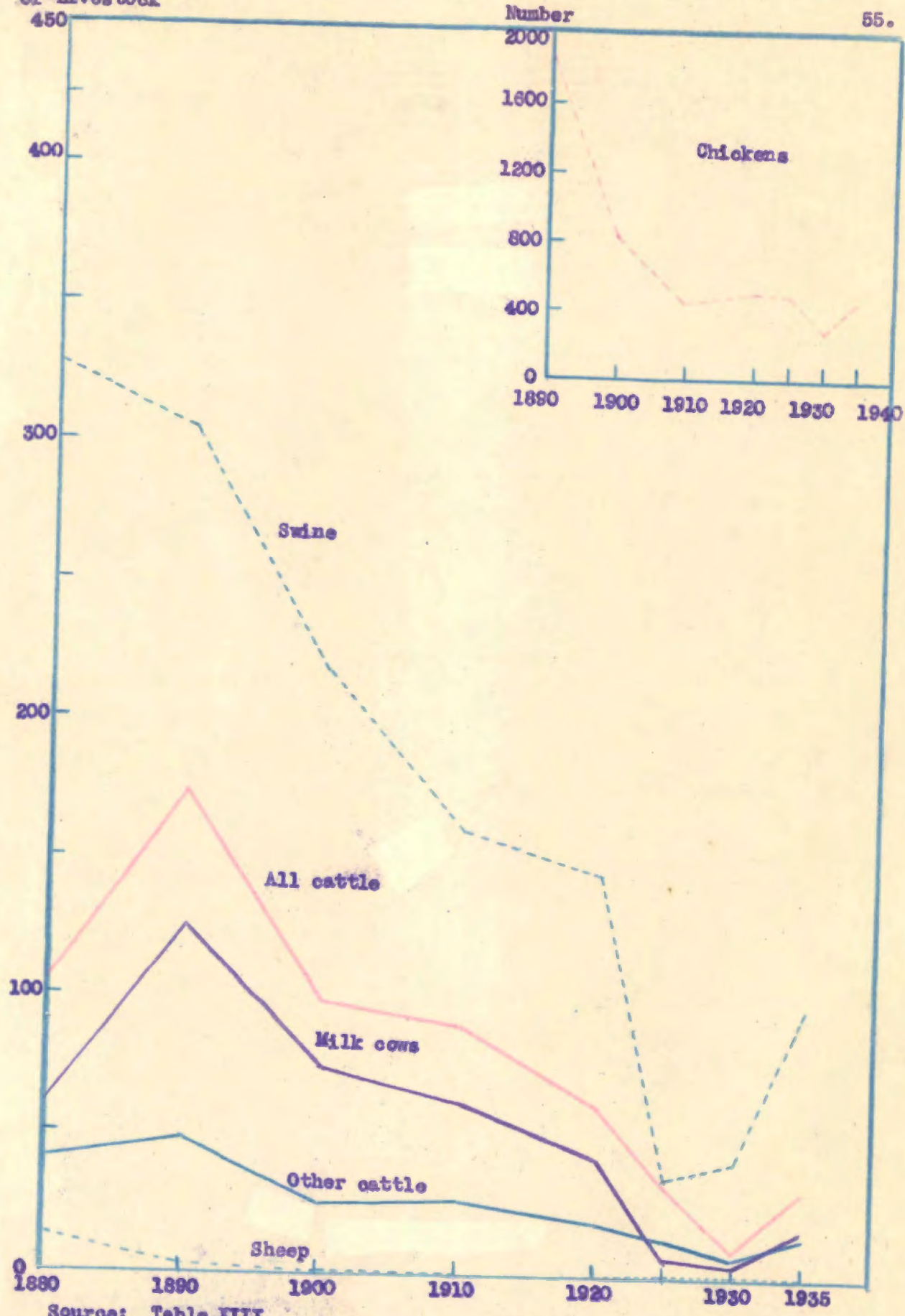


Figure 28. Number of Livestock per 1000 Acres Improved Crop Land, by Specified Classes, Region I, 1930-1935

Numbers.
of Livestock

Number

55.



Source: Table XIII

Figure 28. Number of Livestock per 1000 Acres Improved Crop Land, By Specified Classes, Region I, 1880-1935

increased from 640 to 1,865, or 191%; milk cows from 257 to 882, or 147%; other cattle from 283 to 983, or 247%; swine from 2,399 to 5,717, or 138%; and chickens from 16,525 to 28,823, or 74%. This increase shows that livestock is on the upward trend at the present time. Reduction of cotton acreage, lower prices for cotton, and increased diversification probably account for the increased emphasis on cattle.

Factors Affecting Livestock Production

When factors affecting livestock production are discussed it is impossible to determine which is the most important. For example, an area might have fertile soils, sufficient feed crops, and available markets, but climate alone could prevent economical production of livestock. However, farmers usually could produce a wider variety of products than they now do if they felt it advantageous to do so. For instance, in the Corn Belt, farmers can produce corn, hogs, beef cattle, dairy products, wheat, oats, wool, apples, berries, lettuce, etc. It is also true that farmers in Tennessee can produce all of these products; as is true that these crops and livestock can be grown by the farmers of Nebraska and North Dakota. However, it is a well known fact that the farmers of these different areas do not try to produce all of these different products. Production tends to become specialized in the different geographical areas. Almost every area has some advantage over another area for producing certain kinds of products. Therefore, "In each area farmers tend to produce those products which will yield them the highest return for their labor, management, and investment. The successful farm operator must select the

type of farming that fits in with the principle of comparative advantage".⁽¹⁾

I. Physical Factors. Soil. Soil affects livestock production through its influence upon crops produced. Animals need considerable calcium, phosphate, and other minerals. Consequently crops grown on soils rich in these minerals make better livestock than those grown on depleted soils.

The major soil division in Region One is alluvial, a composite formation of sands and silts, derived from the sediments laid down by rivers in flood stage. It ranges from slightly acid to alkaline in reaction.⁽²⁾ This soil produces excellent yield of practically all kinds of crops needed for livestock production, but is limited by susceptibility to flooding. Corn and cotton are chiefly grown; corn yielding 50-80 bushels per acre without fertilizer. If properly drained and protected from flooding waters, these alluvial, bottom lands are excellent for growth of pasture, hay crops, and alfalfa.

Topography. Livestock production is also affected by topography both directly and through the crops grown. Some animals thrive in exceedingly rough regions; others will not do well in low lands. Rolling land, well drained, is usually more ideal because of its being more free from diseases, insects, and other parasitic disturbances so frequently

(1) Yoder, Fred R., Introduction to Agricultural Economics, New York: Thomas Y. Crowell Company, 1929, p. 291.

(2) Mooers, C. A., The Soils of Tennessee, University of Tennessee, Agricultural Experiment Station, Circular of Information No. 5, April 16, 1932.

found on low, poorly drained soils.

This area with an average elevation of 25 feet above sea level and a range of from 215 feet at the southern border to 295 feet at the northern is characterized by frequent bayous, lakes, and swamps, by the Mississippi Bluffs, which attain to an average height of 130 feet above the bottoms. Thus, from the standpoint of topography this region is not ideally situated for livestock production because it is level throughout, and very susceptible to flooding.

Climate. All living things need a favorable temperature and a constant supply of water. Most animals of economic importance grow best in temperate regions. Furthermore, climate affects the growing season, shelter expenses, harvesting of feed crops, pasture season, and water supply.

This region is blessed with almost an optimum temperature, averaging 60°F, precipitation ranging from 40-45 inches and well distributed; and a growing season varying from 200-220 days. An ample supply of clean, healthy water is furnished by rainfall, rivers, creeks, lakes, and ponds.

II. Biological Factors. Insect pests, rodents, plant and animal diseases, and weeds affect both crops and livestock and are biological forces limiting livestock production. Most of these pests and diseases are generally distributed throughout the state. Data were not available that showed the per cent of deaths and estimated losses for the different regions, and figures for the State were used.

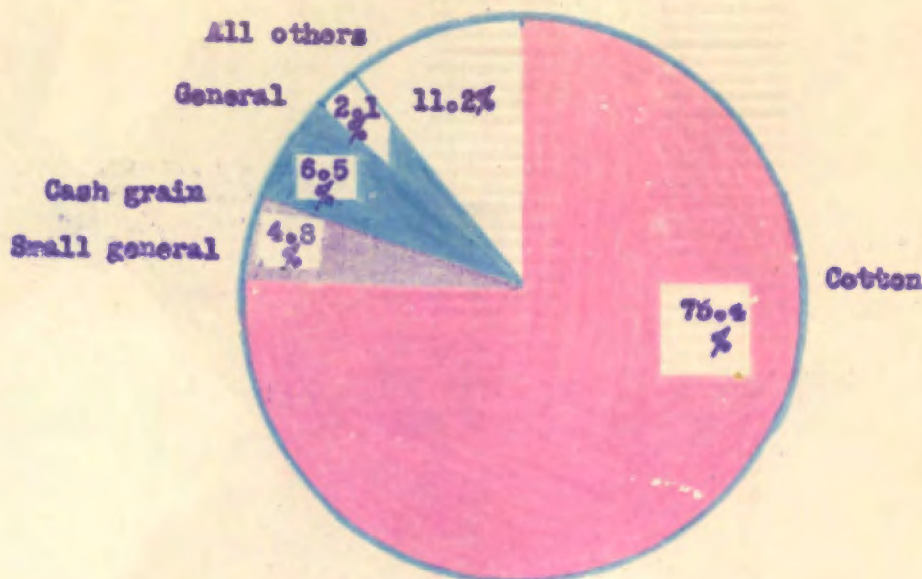
Animal Diseases and Pests. The greatest losses of animals in the State were caused from parasites, Bang's disease, hog

cholera, hemorrhagic septicemia, and blackleg. The average loss per \$100 investment in livestock on Tennessee farms in 1930 was \$5.70 compared with \$4.40 for the United States. It is assumed that losses would be greater in Region One because of heat, floods, etc. However, the Division of Animal Disease Control of the State Department of Agriculture (in cooperation with the Federal Bureau of Animal Industry) is active throughout the state and carries on a number of important projects such as tuberculosis eradication, hog cholera, and investigation of outbreaks of animal diseases.

Poisonous Plants. The most common poisonous plants of the state such as poke, butter cup, larkspur, May apple, wild black cherry, black locust, poison ivy, Jimson weed, ragweed, and mushroom are found in Region One. However, livestock are not frequently affected by these plants unless excessive quantities are eaten.

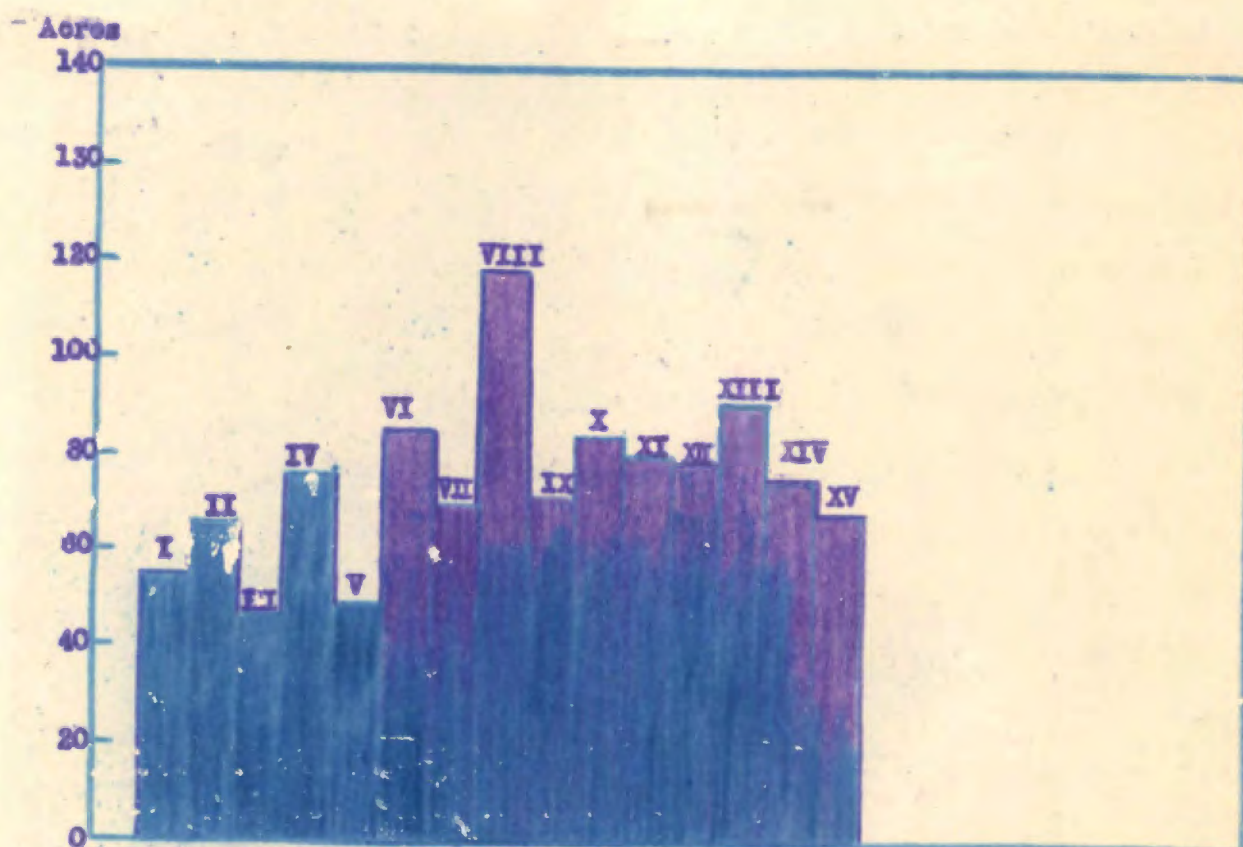
Plant Diseases. Minor plant diseases are commonly found in Region One, but are not important enough to hinder livestock production.

III. Economic and Cultural Factors. System of Farming. Probably the most important single factor affecting livestock production in Region One is the predominant type of farming. A single crop, cotton, prevails with practically no diversification. Cotton farming prevails on 75.4 per cent of the farms followed by cash grain with 6.5 per cent (Figure 29). The average farm has about 55 acres (Figure 30). Cotton and corn yields are high, and the incomes vary with the price of cotton.



Source: Table IX

Figure 29. Proportion of Farms in Cotton and Other Specified Types, Region I, Tennessee, 1930



Source: U. S. Census of Agriculture, 1930.

Figure 30. Average Size of Farms by Type-of-Farming Regions, Tennessee, 1930

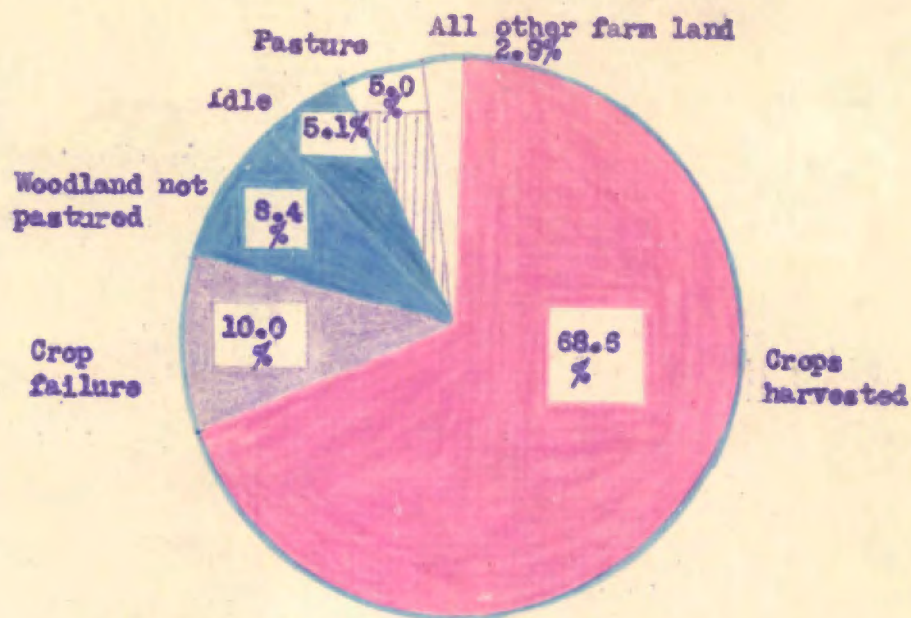
Approximately 120,000 acres, or 39.6 per cent of the total area, are in farms. Of the farm land, 83,000 acres are in crops harvested, 6,000 acres in pasture land, 10,000 acres in woodland not pastured, 6,000 acres in idle land, and 3,000 acres in all other land. The crop land amounts to 68.6 per cent of all farm land, leaving 5.0 per cent in pasture, 8.4 per cent in woodland, 5.1 per cent in idle land, and 2.4 per cent in all other land (Figure 31).

Of the area in harvested crops, 45.7 per cent was in cotton; 42.4 per cent in corn; 10.2 per cent in hay; and 1.0 per cent in all other crops (Figure 32). The total acres of crops grown in this area was as follows: cotton, 47,185; corn, 43,690; hay, 10,549; and other crops, 1,733.

Besides the system of farming, cultural and social factors also play a very important role in livestock production. Under most conditions it is of great importance to be conducting the same type of farming as do other farmers in the community. The experience of the community is of the utmost value to every farmer, and few farmers realize how much they owe to their neighbors. Each man gets the benefit of the experience of all; if a man is following a type of farming different from his neighbors, he cannot try all of these things. (3)

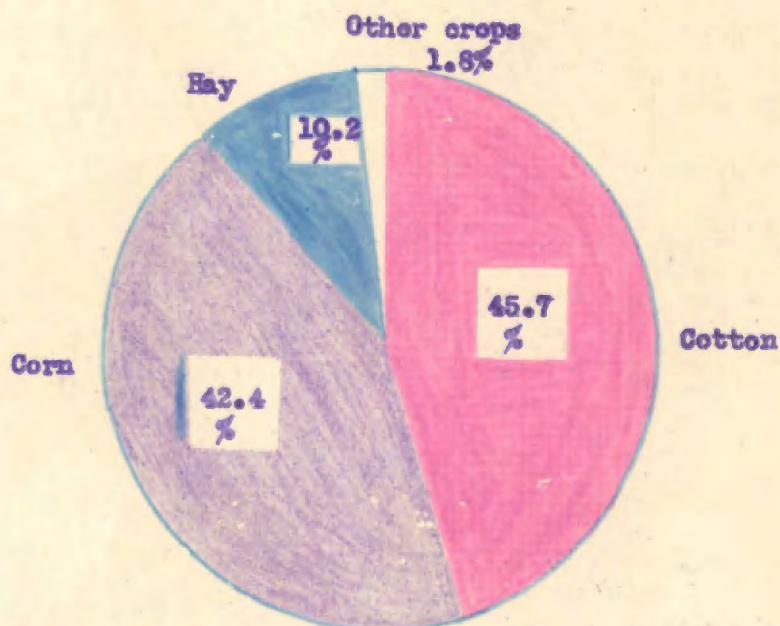
Labor of the required skill is also difficult to obtain if one is following a different type of farming from his neighbors. Anyone

(3) Warren, G. F., Farm Management, New York; The Macmillan Company, 1916, p. 58.



Source: Table VII

Figure 31. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region I, Tennessee, 1934



Source: Table VIII

Figure 32. Proportion of Crop Land in Major Crops, Region I, Tennessee, 1934

who has the only livestock farm in a region will have to train his laborers. The men will not know how to feed cattle economically, notice the cattle's reaction to different feeds, notice the gains and losses, etc. If the entire community is in cotton farming such as Region One, the men are more apt to be thinking about plowing and chopping cotton than castrating cattle, sheep, and hogs. For the reasons mentioned in the two preceding paragraphs along the high percentage of crop land in cotton and corn, Region One is greatly handicapped for livestock farming.

Kind and Available Pasture. An abundance of cheap and nutritious grazing is essential for the economical production of livestock and livestock products. Pasture is usually the cheapest and best feed for all kinds of farm animals; without good grazing but few livestock enterprises can be expected to return a profit. In a few special localities dairymen who are able to dispose of their products at fancy prices may produce dairy cattle profitably with little or no pasture, but as a general rule dairymen cannot hope to succeed without an ample supply of cheap grazing. Swine can be raised chiefly on annual grazing crops, but good, permanent pastures are necessary for profitable production of cattle or sheep.⁽⁴⁾

Region One is seriously handicapped by a scarcity of good pasture. Only 5.0 per cent of the total land area in farms is in pasture (Figure 19). Frequent overflows by the Mississippi River causes cattle grazing

(4) Jennings, R. D., Crosby, M. A., An Economic Study of Livestock Possibilities in the Southeastern Coastal Plain, U.S.D.A. Technical Bulletin No. 127, July, 1929.

to be dangerous in the bottom lands where pasture is well adapted, and handicaps livestock production. Bermuda grass prevails as the most common permanent pasture, while lespedeza is the predominating legume.

Feed Crops. In addition to pasture, roughage is required to carry livestock through the winter and other periods of short grazing. Concentrates are essential for production of dairy products and meat animals for the market. Under most conditions it is highly desirable to produce all or most of the feed requirements on the farm where fed because it is too costly to transport bulky feeds over any great distances.

With cotton the main consideration in Region One, only enough feed for workstock has been raised. Corn occupies 42.4 per cent of the crop land, hay 10.2, small grains 0.6, and wheat 0.1. Winter roughage for cattle commonly consists of hay, coarse fodder, or silage. Cottonseed hulls are fed to a considerable extent in winter. The principal crops for fattening livestock in this area are corn, soybeans, lespedeza, hay, oats, and wheat. Cottonseed meal is the most commonly used concentrate for dairy cows, or for dry-lot fattening of beef animals. Alfalfa is being produced in some few localities. Excellent yield of most of the crops mentioned can be produced if associated with good management.

Tenancy. There is a definite relationship between the systems of farming in an area and land tenure, but there arises the question as to which is the cause and which is the result. Land tenure, however, is an important factor in determining the rapidity with which a type of

farming may be changed. (5)

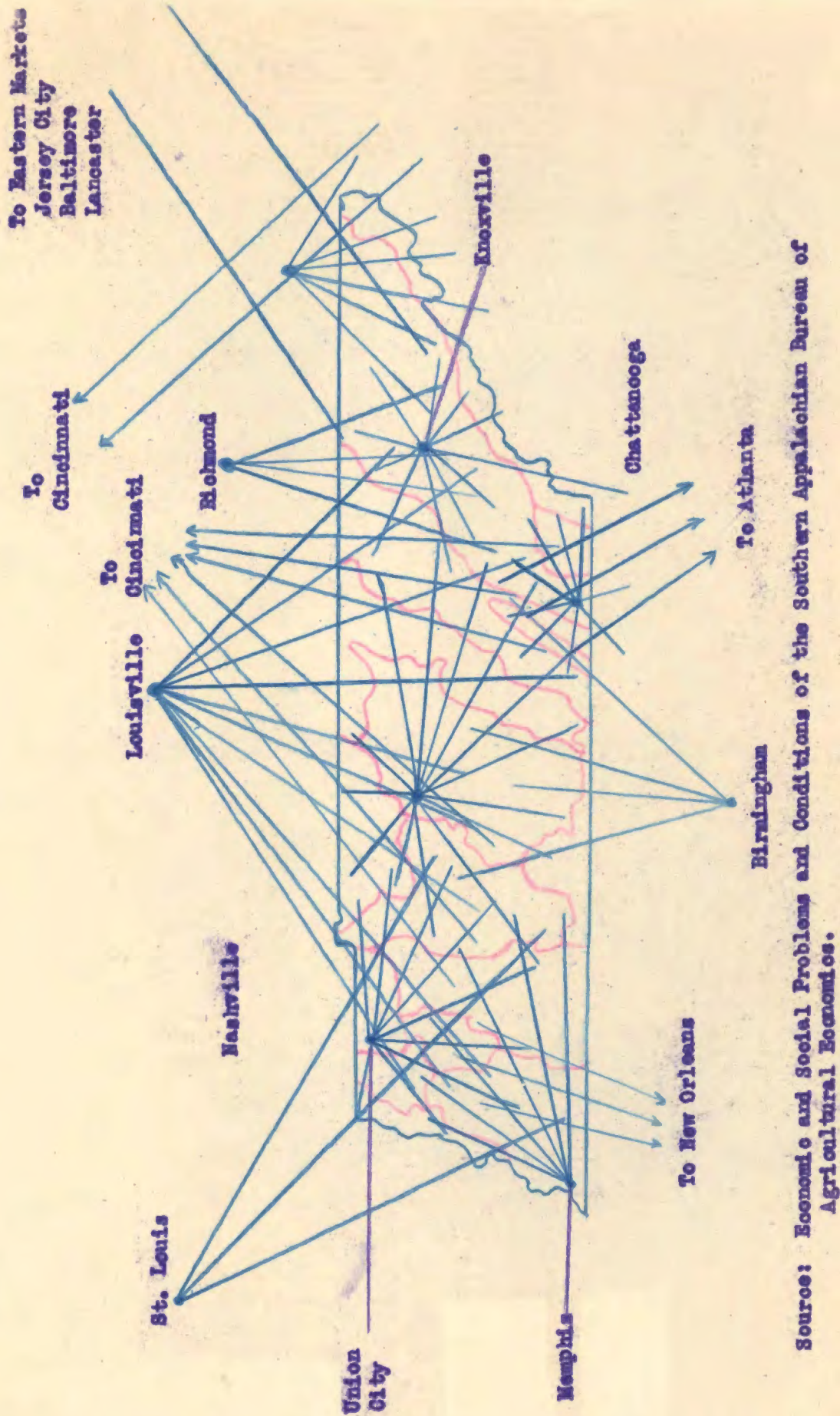
Region One leads all regions in the state in percentage of tenancy. Of the total farm operators, 80.2 per cent are tenants, 17.8 per cent being croppers. Only 13.1 per cent of the farmers are full owners, and about 6 per cent are part-owners.

The high percentage of tenancy existing in Region One is a serious obstacle for livestock production. In regions where tenancy is prominent there is a tendency to grow cash crops mainly instead of producing livestock. Tenants seldom have the necessary capital to obtain livestock. Consequently they grow crops which will return cash quickly. Farm owners are hesitant about placing their livestock with tenants because of the high rate of mobility of most tenants. Therefore, there is little or no incentive to improve pastures, permanently or temporarily, reserve pastures for drought emergencies, or develop permanent sources of water supply in the pastures.

Markets. The importance of local markets varies with the type of farm one is operating. Perishable products need a local market more than do grain and livestock. Also, if roads are good the distance to market is not so serious. However, railway facilities for reaching important cities exceed the importance of local markets for general livestock production. More rapid shipment and travel, as well as the advertising that a region receives, are also of great importance. (6)

(5) Case, H.C.M., and Myers, K.H., Types of Farming in Illinois University of Illinois, Agr. Exp. Station, Bulletin 403.

(6) Warren, G. F., Farm Management, New York: The Macmillan Company, 1916.



Source: Economic and Social Problems and Conditions of the Southern Appalachian Bureau of Agricultural Economics.

Figure 33. Livestock Markets and Market Areas, Tennessee, 1932.

Region One ships very few livestock. Some hogs, and steers are sold at Union City and Memphis. Markets available for livestock include Union City, Memphis, St. Louis, Louisville, and Nashville (Figure 33). Cotton is marketed principally at local cotton gins, local shipping points, and Memphis. On the nearby uplands, cities and towns some corn is sold. Transportation is generally satisfactory, being supplied by river and railway transportation and an expanding network of automobile highways.

Farm Equipment. In regions where the winters are severe, farm buildings play a major part in livestock production. For economical production, animals must be kept warm and protected from disagreeable weather. Region One is not handicapped by requiring expensive farm buildings, etc., to shelter livestock. The region has a temperate climate with a narrow range of temperature fluctuations throughout the year, and consequently animals do not need a great amount of shelter, nor would an expansion of livestock production require a heavy investment in equipment. Probably fencing would be the greatest expense.

Prices. In general, the prices received for livestock and livestock products are below the state average. Hogs and beef cattle are slightly under the state average; data is not sufficient for lambs; milk cows exceed the state average approximately 3.0 per cent; and chickens are above the state average of 7.0 per cent (Table XI).

IV. The Factors Summarized. In order that the reader may obtain a glance at the livestock situation as a whole with respect to advantages or hinderances to the production of livestock in this area, the following diagram is presented in brief outline:

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK
PRODUCTION, REGION I

Factors	Favor- able	Unfavor- able	Reasons
Physical:			
1. Soil	X		Produces abundantly all kinds of crops needed for livestock production
2. Topog- raphy		X	Very susceptible to flooding
3. Climate	X		Optimum temperature and precipitation. Long growing season. Ample water supply.
Biological:			
1. Animal dis- eases & pests	X		No outstanding diseases.
2. Poison- ous plants	X		None in particular
3. Plant dis- eases	X		None outstanding
Economic and Cul- tural:			
1. System of farm- ing		X	Cotton farming practiced on 75.4 per cent of the farms, 47.5 per cent of crop land in cotton; Region is not experienced in livestock farming; farms are small; and experienced labor is difficult to obtain.
2. Kind and avail- able pas- ture		X	Only 5.0 per cent of total land area in pas- ture. Overflow of land causes grazing to be dangerous, particularly in bottom lands. Bermuda, lespedera, and red top grow well in the bottom lands, but are scarce.
3. Feed crops		X	Greater part of attention given to cotton; corn sold to adjoining regions. Only enough feed raised to feed livestock. Excellent yields of feed crops could be produced.
4. Tenancy		X	Tenancy increases tendency to grow cash crops; lack of capital; small incentive to grow live- stock and improve pastures.
5. Markets	X		Markets are close; transportation facilities sufficient; non-perishable products and can be hauled considerable distances.
6. Farm equip.	X		Temperate climate.
7. Prices		X	Below state average, in general

REGION TWO

The Livestock Situation

Region Two includes the major portion of Obion County and portions of Dyer and Gibson counties (Figure 27). It is the largest livestock producing area in Western Tennessee; the livestock being concentrated mainly in the central and northeastern part of the region. The region ranks fifth among the type-of-farming regions in Tennessee in number of sheep, sixth in hogs and steers, ninth in chickens, and twelfth in cows milked. With respect to livestock per acre of improved crop land, the region ranks third in hogs and sheep, fifth in steers, tenth in chickens, and twelfth in cows milked. Dairying and poultry are minor livestock enterprises; their products being used mainly for home consumption and local market demands. Hogs, sheep, and steers are above the state average, and chickens and milk cows are below the state average in relation to improved crop land.

Only two classes of livestock, swine and chickens, have decreased in number from 1880 to 1935. Hogs have decreased from 46,924 to 44,671, or 5 per cent; chickens decreased from 188,732 to 158,576, or 16 per cent. Cattle numbers have been increasing for the last three census enumerations. They have increased approximately 100 per cent since 1880, increasing from 12,614 to 24,427 in 1935. Numerically, sheep have shown a decided downward trend from 1880 to 1900; then increased from 1900 to 1920; decreased in 1925; but have increased in the last two census periods. Sheep have also increased their number nearly 100 per cent from 1880 to 1935, increasing from 6,974 to 12,004. Cattle other than dairy cows have increased approximately 75 per cent from 1880 to 1935, increasing from 8,036 to 14,030.

They have increased in numbers from 1880 to 1900, decreased in 1910, increased from 1910 to 1920, decreased again in 1925, and increased during the last two census periods.

TABLE XIV. TOTAL NUMBER OF LIVESTOCK, NUMBER PER 1,000 ACRES IMPROVED LAND, BY SPECIFIED CLASSES, REGION II, 1880 - 1935 *

Class **	I. Total Number of Livestock							
	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	12,614	17,329	17,002	15,027	19,656	14,708	17,056	24,427
Milk cows	4,578	5,967	4,963	5,619	6,604	5,328	6,500	10,397
Other cattle	8,036	11,362	12,039	9,408	13,052	9,380	10,556	14,030
Sheep	6,974	4,096	2,922	8,627	15,904	7,189	8,694	12,004
Swine	46,924	47,040	45,927	48,346	53,153	35,758	41,846	44,671
Chickens	-	188,732	93,371	125,485	158,457	185,118	110,672	158,376
Class **	II. Number of Livestock per 1000 Acres Improved Crop Land							
	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	107.8	120.2	91.0	69.4	87.5	68.2	80.3	107.0
Milk cows	39.1	41.4	26.6	26.0	29.4	24.7	30.6	45.6
Other cattle	68.6	76.8	64.5	43.5	58.1	43.5	49.7	61.5
Sheep	59.6	28.4	15.6	39.9	70.8	38.3	40.9	52.6
Swine	400.8	326.3	245.9	223.3	236.6	165.8	197.1	196.6
Chickens	-	1309.3	500.0	579.6	705.4	858.1	521.3	680.8

* Based on census figures for Obion County, selected as representative of type-of-farming Region Two.

** See Appendix A, B, and C.

Source: U. S. Census of Agriculture, 1880-1935.

The most significant change of livestock, in relation to improved crop land, has been the decrease of chickens and hogs, each decreasing approximately one-half. This is chiefly due to an increase in improved crop land while number of hogs and chickens have remained practically constant. All other classes of cattle have remained relatively stable, except for periodical fluctuations (Table XIV).

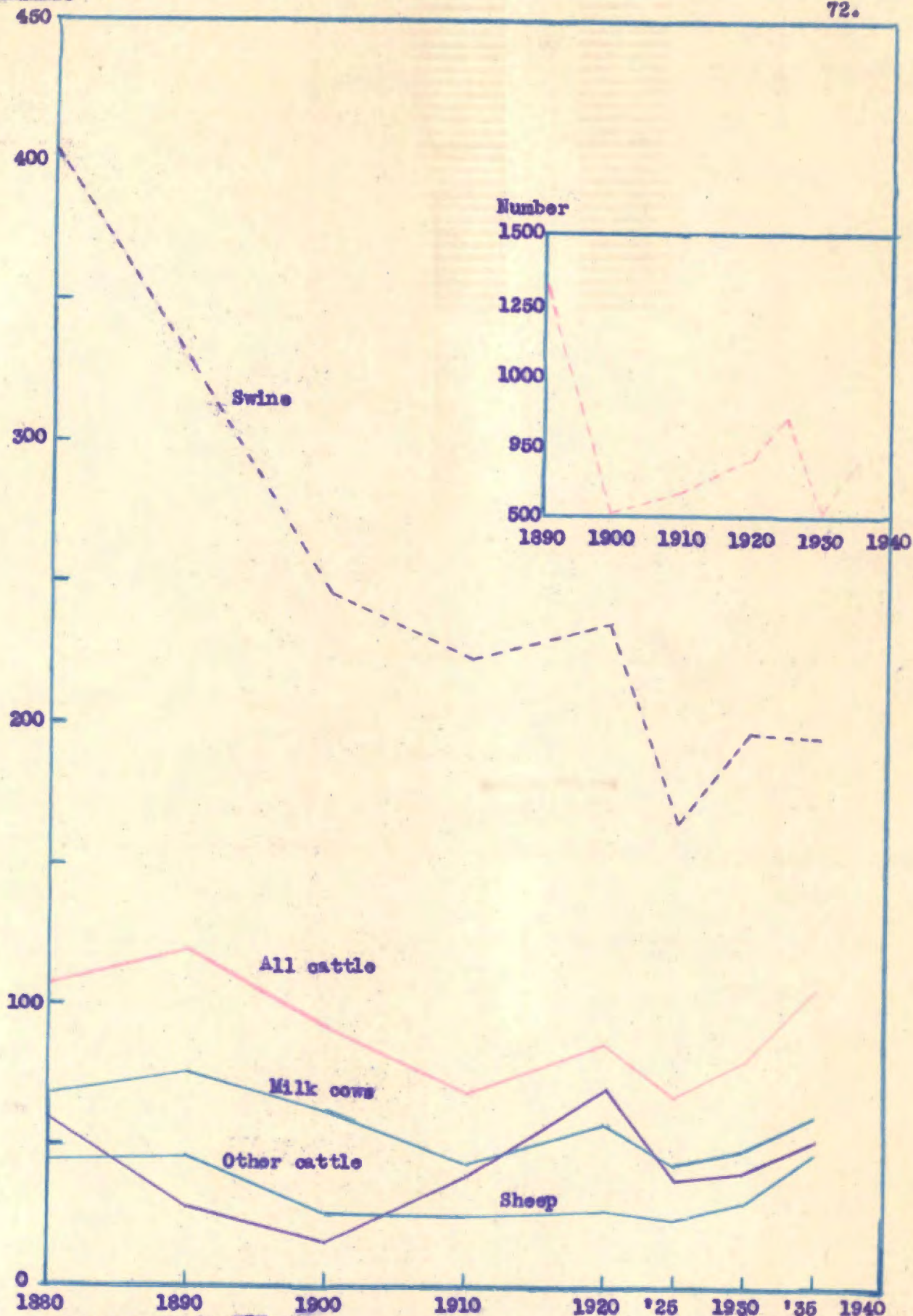
Subregion II-A is higher in number of steers, hogs, and sheep than Subregion II-B, while Subregion II-B is higher in cows milked and in chickens. Subregion II-A is above the state average in number of steers, sheep, and hogs. Subregion II-B is above the state average in number of hogs only.

Table XV is inserted in this discussion so that the reader may better realize the important role played by livestock in this region. There were approximately 40 animal units on the farm shown, and about 40 per cent of the farm receipts came from livestock and livestock products.

TABLE XV. A SUCCESSFUL FARM IN REGION II, TENNESSEE, 1934

<u>Land Distribution</u>		<u>Crop Production</u>		<u>Investment</u>	
46 A. corn		1,610 bu. corn		Real estate	\$4,815
8 A. soybeans		5 T. soybean hay		Livestock	1,189
9 A. red clover grass		33 T. clover hay		Mchry. and	
24 A. red clover		25 bu. clover seed		equipment	1,072
1/4 A. Irish potatoes		15 bu. I. potatoes		Feed and	
1 A. garden				supplies	995
18 A. seeded down					
10 A. perm. pasture					\$8,071
3 3/4 A. waste, bldg. lots, etc.					
		<u>Farm Expenses</u>		<u>Farm Receipts</u>	
120 A.		Hired labor	\$113	Hay	\$144
		Family labor	25	Clover	
		Seed & plants	31	seed	280
		Taxes	66	Cattle &	
		Repairs and		dairy	398
		depreciation	167	Hogs &	
		Insurance	84	meat	379
		Threshing	40	Poultry	
		Fuel and oil	70	& eggs	90
		Other expen.	63	AAA	467
				Misc.	149
				Increase	
				in feed	807
					\$2,714
		<u>Summary</u>			
		Farm income	\$1,930		
		Labor income	1,526		
		" earnings	1,867		
		Pot. returned	23.1%		

Source: Farm Management Department, Extension Service, University of Tennessee, Knoxville, Tennessee.



Source: Table XIV

Figure 34. Number of Livestock per 1000 Acres Improved Crop Land, by Specified Classes, Region II, 1880 - 1935

Factors Affecting Livestock Production

I. Physical Factors. Soil. The major soils of this area are Loess and La Grange soils. The former are gray-brown loams, which lie well for agricultural purposes, are easily tilled, and are adapted to nearly all crops. Loess is silty in character with a yellowish-buff color, unless severely weathered or carrying a large amount of humus. These soils found mainly in Obion County, are of great natural strength and fertility. Good crops are grown with little regard to crop rotations and lime⁽⁷⁾ even after long periods of cultivation in cotton and corn. Cotton, corn, tobacco, clover, alfalfa, wheat, oats, sorgo, sweet potatoes, red top, soybeans, cowpeas, and hay are adapted to the soil. Bermuda grass and lespedeza make luxuriant growth, affording good pasture.⁽⁸⁾ The La Grange soils, found principally in Gibson and parts of Dyer County, are thinner, have suffered more from erosion and cropping than have the Loess soils, are usually a grayish brown silt loam with a yellowish colored subsoil. They are poor in lime, but with the addition of this element excellent crops of alfalfa and clover can be grown. Their response to good treatment is very striking.⁽⁹⁾

Topography. The topography is rolling to hilly, most of the hilly land occurring in the western part where small streams wind back from the Mississippi flood plains. The elevation above sea level varies

(7) Mooers, C. A., The Soils of Tennessee, University of Tennessee Agricultural Experiment Station, Circular of Information No. 5, April 16, 1932, p. 8.

(8) 1938 Yearbook of Agriculture, Soils and Men, U.S.D.A., Washington, D. C.

(9) Op. cit., pp. 8 and 9.

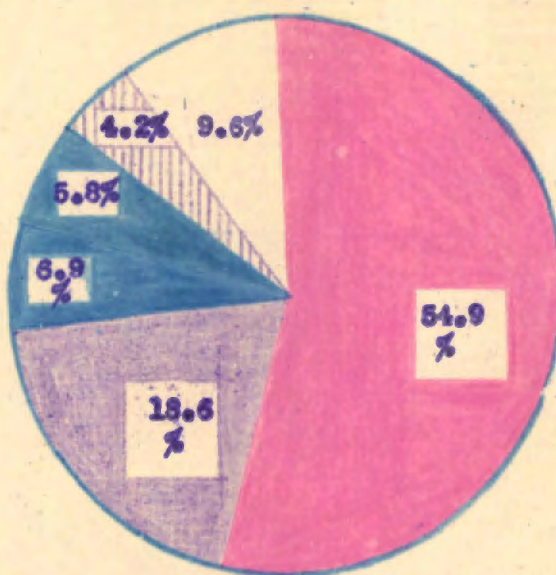
from 400 to 600 feet. The main streams are entrenched 100 to 200 feet in wide flat bottoms, and are separated by broad gently sloping ridges or hills. The topography is considered very favorable for livestock production.

Climate. The average annual temperature is 60 degrees, varying from 79 degrees in July to 38 degrees in January. The length of growing season ranges from 190 to 200 days. The annual precipitation is approximately 48 inches, ranging from 45 to 50 inches. Rainfall and temperature are favorable along the western and southern borders for crops such as cotton. From the center to the northwestern part of the region, where the growing season is shorter, the climate is especially favorable for production of corn, small grains, pasture grasses, hay, and tobacco. An ample supply of fresh water is furnished by rainfall, rivers, springs, creeks, lakes, and ponds.

II. Biological Factors. Animal diseases and pests, poisonous plants, and plant diseases are similar in this area to those of Region One which were described earlier. On the whole these pests are not prohibiting to livestock production.

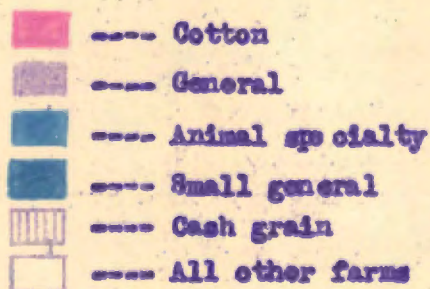
III. Economic and Cultural Factors: System of Farming. The influence exerted by type of farming upon livestock in a given region has previously been discussed under Region One.

Two distinct types of farming are practiced in Region Two, cotton and livestock farming. The former is dominant on approximately one-half of the farms, with a few having tobacco (Figure 35). Price changes tend to cause these two crops to come in and go out. The average size farm in



Source: Table IX

Figure 35. Proportion of Farms in Cotton and Other Specified Groups,
Region II, Tennessee,
1930



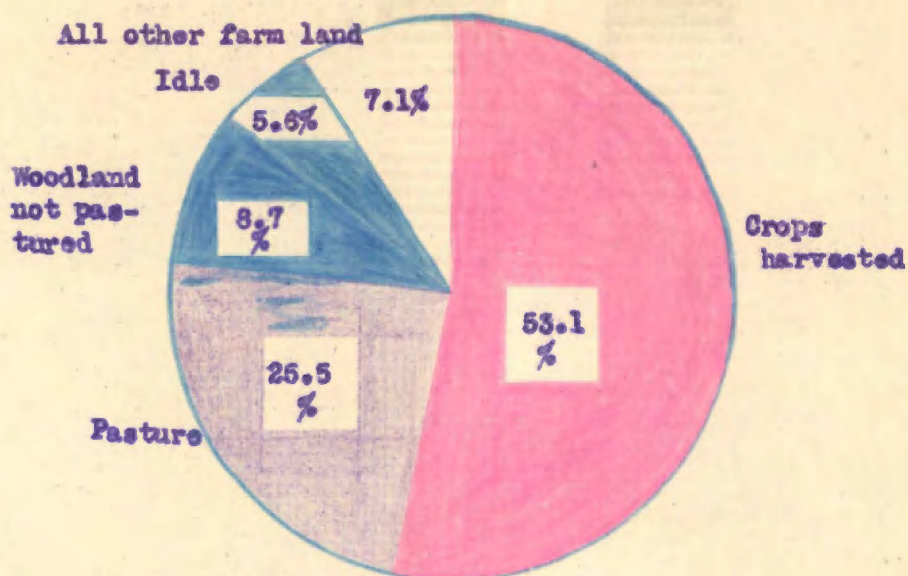
1930 was 66 acres (Figure 30), with 84.8 per cent of the farm products being sold and 15.2 per cent being used by the operator's family. The majority of the farms are diversified and large enough to produce good incomes. This area produces a grain surplus that is fed mainly to hogs and cattle.

Approximately 80 per cent, or 435,000 acres of the total land area is in farms. Of the land in farms, 230,770 acres are in crops harvested, 24,418 acres idle, 37,800 acres in woodland not pastured, 111,421 acres in pasture, 8,968 acres in crop failure, and 21,599 acres in all other farm land. The crop land amounts to 53.1 per cent of all farm land; pasture amounted to 25.5 per cent; woodland not pastured 8.7; idle 5.6; crop failure 2.0; and all other farm land 5.1 per cent (Figure 36).

Of the area in harvested crops, 48.6 per cent is in corn; 21.8 per cent in hay; 20.1 per cent in cotton; 5.0 per cent in small grain; 3.3 per cent in wheat; and 1.2 per cent in all other crops. The acreages of these major crops are as follows: corn, 113,002; hay, 50,671; cotton, 46,781; small grain, 11,599; wheat, 7,729; and other crops, 1,718 (Figure 37).

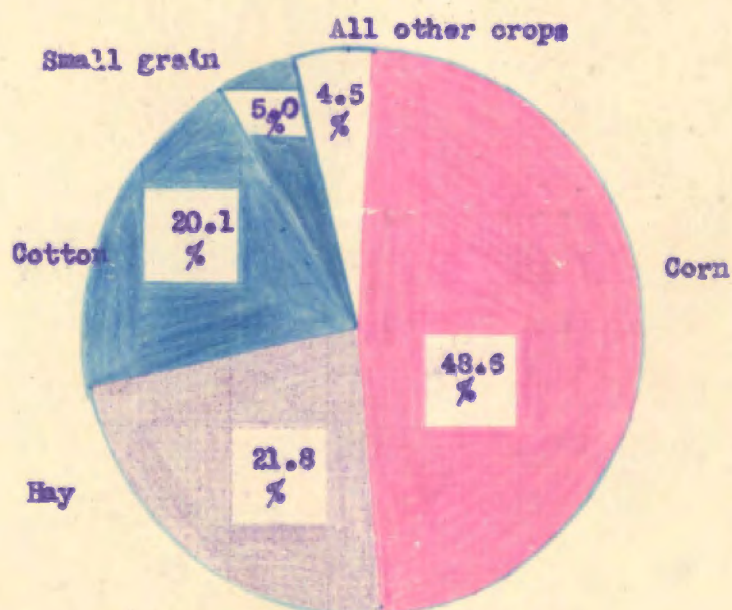
Region Two is divided into two subregions - the cotton area along the southern and western borders, and the livestock area in the central and eastern part of the region.

Subregion II-A: Livestock farming prevails in this region, with



Source: Table VII

Figure 36. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region II, Tennessee, 1934.



Source: Table VIII

Figure 37. Proportion of Crop Land in Major Crops, Region II, Tennessee, 1934

corn, beef cattle, hogs, and sheep as the major products; however, 11 per cent of the income is received from the sale of corn and wheat. The prevailing type of farming is due mainly to climatic limitations of cotton in this area and to soils, topography, and climate favorable for feed and pasture production.

Subregion II-B: Cotton farming predominates in this area. However, livestock is more important here than in Region One. Factors favoring cotton farming are early maturing varieties, freedom from the boll weevil, high percentage farm tenancy, high farm indebtedness, and high taxes.

The farmers in each specialized type of farming area have become accustomed to their regular and routine production. These systems of farming are well established and will not shift very easily. The training on the home farm serves as a basis for farm management from generation to generation. New farmers moving into the area usually adjust themselves to the surrounding type of farming. The result has been few radical departures from the old system. There is a greater supply of labor in the cotton area because of the high percentage tenancy and the small proportion of share croppers. Livestock farming is not injured because of labor for long periods of training and experience with livestock has supplied sufficient labor from the home and neighbors.

Kind and Available Pasture. Of the total farm land, 23.4 per cent is in pasture. The most prominent pastures are Bermuda grass, red top, lespedeza, white clover, and hop clover. These plants are fairly well adapted to this region, and good yields produced (Figure 38). Pasture land is found mainly in Subregion II-A, due mainly to the greater

fertility of the soil. Pastures are favorable for livestock production, especially in Subregion II-A.

Feed Crops. The principal feed crops grown are corn; lespedeza, red top, red clover, and timothy hay; wheat; and small grains. Subregion II-A, in which livestock farming is dominant, is characterized by a high percentage of its harvested land in feed crops. It has 57.5 per cent in corn; 20.5 per cent in hay; and 9.1 per cent in small grains. Only 8.7 per cent is in cotton. In Subregion II-B 44.2 per cent of the crop land is corn; 22.4 per cent in hay; and 1.9 per cent in small grains. Cotton occupies 25.7 per cent of the crop land (Table VIII). Some alfalfa is also produced in Region Two. Cattle are fed hay, silage, and coarse fodder for winter roughages. Cottonseed hulls and meal are the principal concentrates fed, supplemented with corn, wheat, oats, and grasses. Excellent yields of practically all crops mentioned are produced.

Tenancy. Of the total farm operators in Region Two, 49.4 per cent are tenants, 40.5 per cent are full owners and 9.5 per cent are part owners.

Markets. Livestock is marketed at St. Louis, Louisville, Cincinnati, Union City, and Memphis (Figure 23). Transportation facilities are excellent, the area being well supplied with both rail and highway facilities. No river transportation is available, except on the Mississippi, a few miles west. Cotton finds an outlet as local gins, local shipping points and at Memphis.

Farm Equipment. Region Two is equipped with sufficient

farm buildings for livestock. With a temperate climate, the animals do not need elaborate housing. Livestock farming has been practiced a number of years; consequently, barns, fences, etc., have been provided for the stock.

Prices. Prices of all classes of major livestock are below the state average. However, livestock products, particularly milk, butter, and eggs, are somewhat higher than the state average. Beef cattle are 10 per cent below the state average, and hogs are 3 per cent below. Wool prices are 12 per cent below the state average. Cotton is 2.9 per cent above the state average; wheat 6.0 per cent above; while practically all the hay is utilized at home.

IV. The Factors Summarized. In order that the reader may obtain a glance at the livestock situation as a whole with respect to advantages or hinderances to the production of livestock in this Region, the following diagram is presented in brief outline.

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION, REGION II

Factors	Favorable		Unfavorable		Reasons
	II-A	II-B	II-A	II-B	
Physical:					
1. Soil	X	X			The soil is really more favorably in II-A than II-B because the II-A soil is mainly loess soils that are higher in fertility and natural strength than the LaGrange soil of II-B. However, with the addition of lime, the LaGrange soil will produce excellent yields.
2. Topography	X	X			Rolling to hilly, especially in II-A, and adapted for livestock production.
3. Climate	X	X			Optimum temperature; ample rainfall and water supply; and 190-200 day growing season.

(continued)

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK
PRODUCTION, REGION II (continued)

Factors	Favorable		Unfavorable		Reasons
	II-A	II-B	II-A	II-B	
Biological:					
1. Animal Disease & Pests	X	X			No particular diseases except those commonly found all over the State
2. Poisonous Plants	X	X			None outstanding; only common poisonous plants found in all parts of the State
3. Plant Diseases	X	X			None outstanding
Economic and Cultural:					
1. System of Farming	X			X	Livestock farming predominates in II-A. Cotton farming is dominant in II-B and farmers are more concerned with production of cotton instead of cattle. Over half of the farms are in cotton. Labor for livestock farming is harder to obtain in II-B, and tenancy is also high.
2. Kind and Available Pasture	X			X	30.0 per cent of farm land in II-A is in pasture. Only 20.0 per cent of farm land in II-B is in pasture, and the soil does not produce such excellent yield as II-A, unless fertilizers. Orchard grass, bermuda grass, lespedeza, and clovers are adapted to both subregions, especially II-A.
3. Feed Crops	X			X	In II-A 57.5 per cent of land is in corn; 20.5 per cent in hay; 9.1 per cent in small grains; 7.6 per cent in wheat; and 8.7 per cent in cotton. In II-B only 44.2 per cent of land is in corn; 22.4 per cent in hay; 1.9 per cent in small grains; 1.2 per cent in wheat; and 25.7 per cent in cotton. More feed crops could be grown in II-B with the addition of lime.

(continued)

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK
PRODUCTION, REGION II (continued)

Factors	Favorable		Unfavorable		Reasons
	II-A	II-B	II-A	II-B	
Economic and Cultural:					
4- Tenancy	X			X	Highest percentage of tenancy is found in II-B, and tenancy discourages livestock production and encourages cash-crop production.
5. Markets	X	X			Livestock markets are close, transportation facilities are excellent.
6. Farm Equipment	X	X			Temperate climate and only minimum amount of housing needed.
7. Prices			X	X	Prices are not particularly unfavorable. Prices for livestock products are more favorable than for livestock.

REGION THREE

Livestock Situation

Region Three includes all of Haywood, Fayette, Shelby, and Tipton; major portions of Lauderdale, Crockett, and Hardeman; and minor portions of Carroll and Gibson counties (Figure 27).

The production of beef cattle, hogs, sheep and swine are relatively unimportant in Region III, and is closely associated with a lack of feeding crops and pasture land. Chickens are less than half of the state average; beef cattle are over half the state average when measured in proportion to improved crop land; hogs are slightly less than average; and sheep are of

slight importance (see Appendix D). The number of cows milked are slightly above the state average; due principally to the concentration near Memphis.

During the period from 1880 to 1935, sheep have decreased 90 per cent, and hogs 60 per cent in relation to improved crop land. All other livestock classes have remained in the same relative position (Table XVI).

TABLE XVI. TOTAL NUMBERS OF LIVESTOCK, NUMBER PER 1000 ACRES IMPROVED LAND, BY SPECIFIED CLASSES, REGION III, 1880-1935*

	I. Total Number of Livestock							
Class **	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	86,331	93,521	94,514	95,859	100,495	87,522	70,814	117,494
Milk cows	35,663	37,540	35,632	45,627	45,618	47,226	35,417	57,903
Other cattle	50,668	55,981	58,882	50,232	54,877	40,296	35,397	59,591
Sheep	25,858	21,362	8,993	7,534	5,143	3,128	3,288	4,024
Swine	180,185	145,558	168,856	117,733	145,342	75,636	79,091	103,227
Chickens	-	924,985	730,884	616,773	807,724	745,456	569,986	782,039

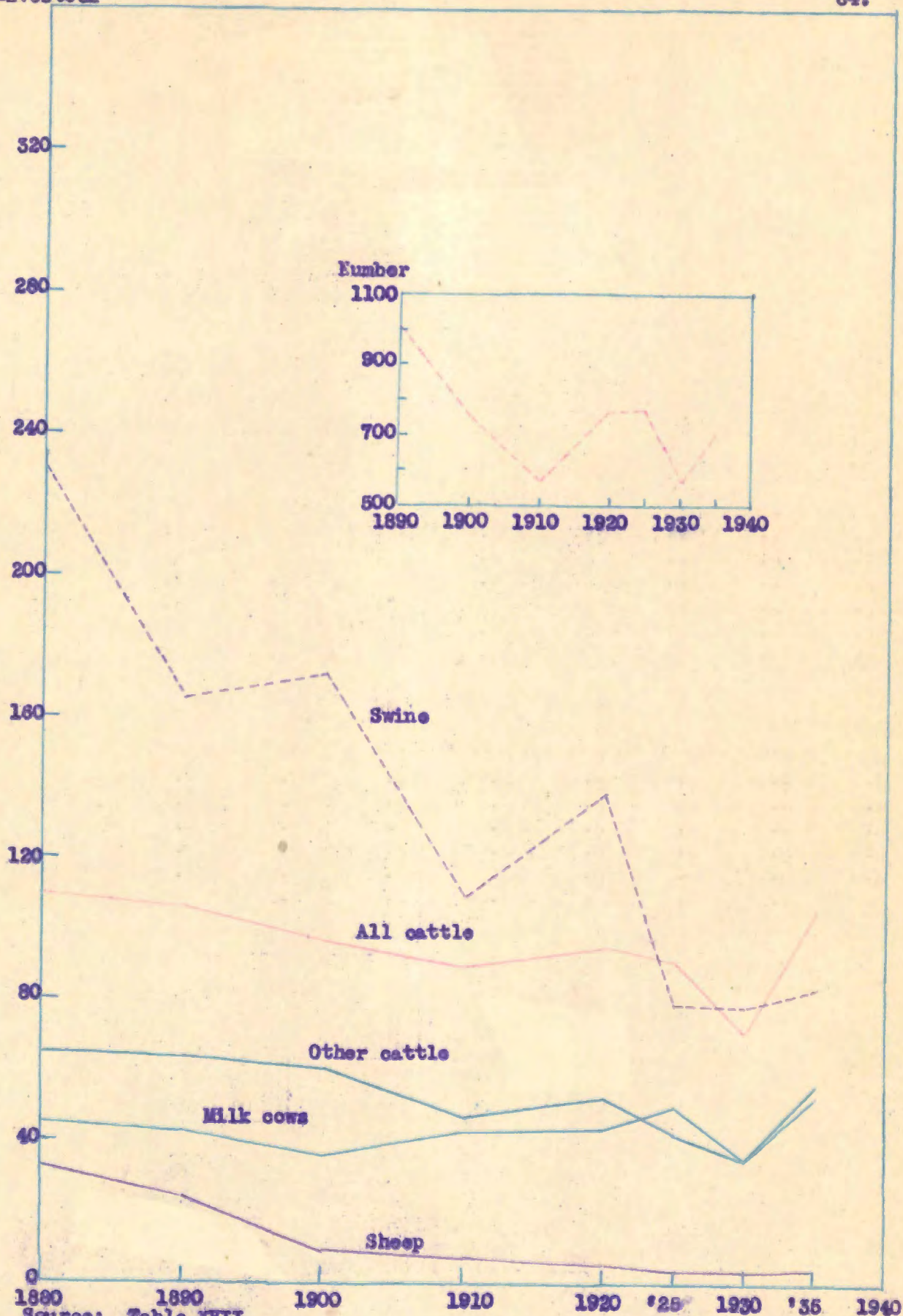
II. Number of Livestock per 1000 Acres Improved Crop Land								
All cattle	110.3	106.5	96.7	88.9	95.8	91.3	70.0	105.7
Milk cows	45.5	42.7	36.5	42.3	43.5	49.3	35.0	52.1
Other cattle	64.7	63.7	60.3	46.6	52.3	42.0	35.0	53.6
Sheep	33.0	24.3	9.2	7.0	4.9	3.3	3.3	3.6
Swine	230.1	165.7	172.8	109.2	138.5	78.9	78.2	92.9
Chickens	-	1053.2	748.0	572.2	769.9	777.7	563.8	703.6

* Based on census figures for Crockett, Fayette, Haywood, Lauderdale, Shelby, and Tipton counties, selected as representative of type-of-farming Region III.

** See Appendix A, B, and C.

Source: U. S. Census of Agriculture, 1880-1935

The place of dairy cows in Region Three is shown in Table XVII. This farm had 18 dairy cows and no beef cattle. Approximately 50 per cent of the receipts came from cotton and only about 3 per cent from livestock and livestock products.



Source: Table XVII

Figure 38. Number of Livestock per 1000 Acres of Improved Land, by Specified Classes, Region III, Tennessee, 1880 - 1935

TABLE XVII. A SUCCESSFUL FARM IN REGION III, TENNESSEE, 1934

<u>Land Distribution</u>		<u>Crop Production</u>	<u>Livestock</u>	
41 A.	cotton	13,500 lbs. cotton	6 miles	
53 A.	corn	1,040 bu. corn	18 cows	
30 A.	lespedeza for hay	27 tons hay	1 bull	
5 A.	" " seed	15 bu. Jap seed	3 hogs	
60 A.	rotation pasture		40 chickens	
15 A.	permanent pasture (tillable)			
4 A.	permanent pasture			
12 A.	woods, waste, bldg., lots, etc.			
220 A.				
		<u>Investment</u>	<u>Expenses</u>	
		Real estate \$9,325	Hired labor	\$100
		Livestock 900	Cropper "	1,392
		Mahy, & equip. 589	Seed and	
		Feed & supp. 765	plants	5
		Total \$11,579	Fertilizer	60
			Taxes	82
			Repair and	
			deprec.	231
			Ginning	135
			Insurance	26
				\$2,051
<u>Receipts</u>		<u>Summary</u>		
Cotton	\$1,820	Farm income	\$1,541	
Corn	320	Labor income	962	
Hay	105	Labor earnings	1,387	
Cattle	148	Per cent re-		
Hogs	15	turned	12.2%	
Rent	150			
Other rec.	80			
Incr. in feed	317			
AAA	607			
	\$3,572			

Source: Farm Management Department, Tennessee Agricultural Extension Service, University of Tennessee, Knoxville, Tennessee.

Factors Affecting Livestock Production

I. Physical Factors. Soil. The principal soils of Region Three are loessial silt and clay loams. The Lexington series is dominant among the coastal sands and clay. It is estimated by the Soil Conservation Service that nine per cent of the region is covered by this series. The upland soils, consisting of the Grenada, Memphis, and Henry series, make up 74 per cent of the land area. First bottom land makes up sixteen per cent and second bottom land one per cent of the farm land. In general the

soils along the eastern part of the region are badly eroded, leaving much of the subsoil exposed.

The first and second bottom lands are the most fertile soils and produce high yields of cotton and feed crops. In the eastern part of the region where the soil is thin and composed mainly of sand and gravel much lower yield of crops are found. However, under proper soil management and fertilization practices these soils could produce desirable pastures, feed crops and be more profitable.

Topography. Region Three has very little rough land, the topography ranging from almost level along the Mississippi River to rolling in the eastern and northern part. The Obion, Forked Deer, Loosahatchie, Hatches, and Wolf rivers proved the principal means of drainage. Forests cover some of the river bottoms which are usually low and marshy. These bottom lands, subject to frequent overflow, present a hazard for livestock production. Most of the streams are slow and shallow, which, during seasons of heavy rains, may cause overflows.

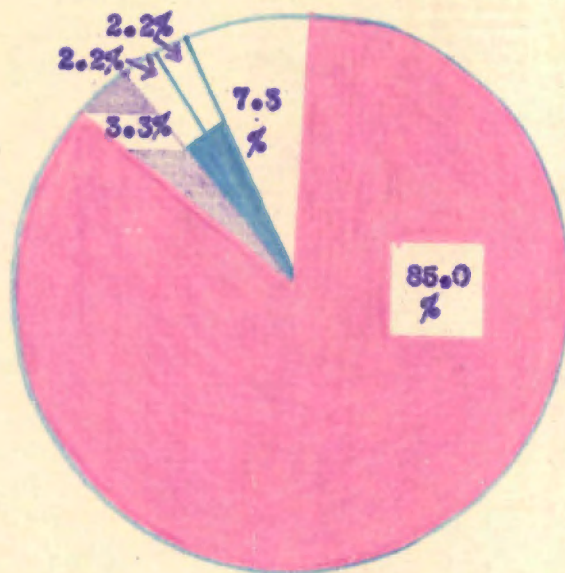
Climate. Almost an optimum climate exists for livestock production. The average annual precipitation ranges between 45-50 inches. The mean annual temperature is approximately 60 degrees, varying from an average of about 81 degrees in July to 41 degrees in January. The length of growing season ranges from 200 days in the northeastern section to 226 days at Memphis in the extreme southeastern corner.

II. Biological Factors. Practically the same conditions exist concerning animal diseases and pests, poisonous plants, and plant diseases in Region Three as in Region One. For a detailed discussion of these

conditions refer to the discussion of biological factors in Region One.

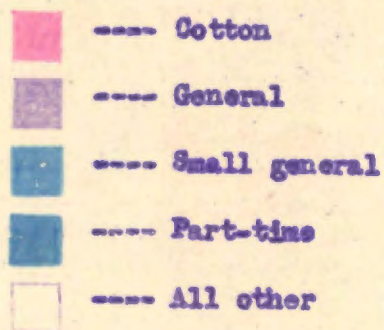
III. Economic and Cultural Factors. System of Farming. Region Three is divided into two distinct type-of-farming regions -- III-A, the dairy-truck area in the vicinity of Memphis in the extreme southwestern corner, and III-B, the cotton area which makes up the remainder of the region. Subregion III-A, including the greater part of Shelby County, is of importance as a dairy section due to the fluid milk market in Memphis, five large creameries in Memphis, and a cheese factory at Collierville. Truck farming is the result of a heavy demand for fresh vegetables on the Memphis market. Aside from dairy cows, only a small amount of beef-hog and sheep production is carried on. In Subregion III-B livestock are relatively unimportant as a farm enterprise because of low yields of feed and pasture crops. Cotton has remained dominant because of the climate, length of growing season, low production costs, and the less severe infestation of the boll weevil. Along with cotton production are found a high percentage of tenancy, high farm indebtedness, high tax rate, and small farms; the average farm of Region Three being 47 acres (Figure 30).

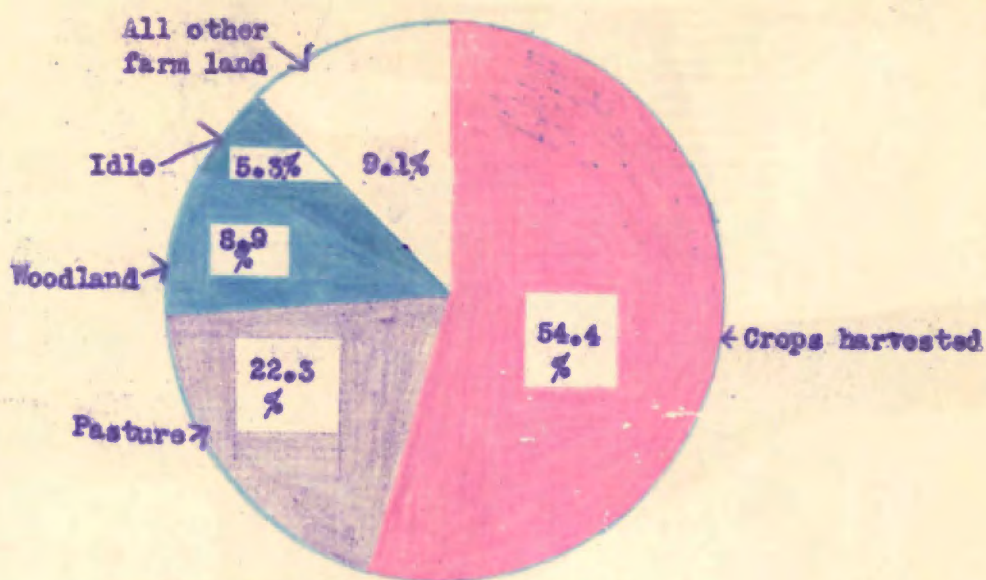
This region contains approximately 1,604,297 acres of farm land, of which 872,557 acres are in crops, 258,454 acres in pasture land, 142,076 acres in woodland not pastured, 85,548 acres in idle land, and 130,084 acres in all other land. The crop land amounts to 54.4 per cent of all farm land, leaving 22.3 per cent in pasture, 8.9 per cent in woodland, 5.3 per cent idle, and 8.1 per cent in all other farm land (Figure 39).



Source: Table IX

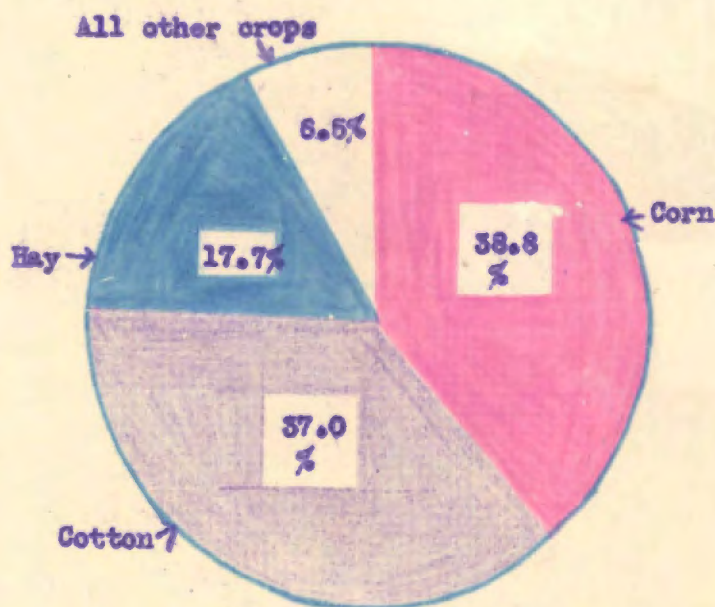
Figure 38A. Proportion of Farms in Cotton and Other Specified Groups, Region III, Tennessee, 1930





Source: Table VII

Figure 39. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region III, Tennessee, 1934



Source: Table VIII

Figure 40. Proportion of Crop Land in Major Crops, Region III, Tennessee, 1934

Of the area in harvested crops, 38.8 per cent was in corn; 37.0 per cent in cotton; 17.7 per cent in hay; and 6.5 per cent in all other crops. The acreage of these major crops were as follows: corn 329,607; cotton 313,919; hay 150,217; and other crops 54,984 (Figure 40).

It is evident from the preceding discussion that Region Three is characterized by small farms, high degree of crop-specialization, high percentage tenancy, low incomes per farm, and severe soil erosion. Each of these characteristics is a great disadvantage for livestock production, and does not permit the systems of farming to change easily though a shift may seem economically desirable. Outside of Subregion III-A, labor would probably be difficult to obtain for livestock farmers. Most of the laborers have gained practically all of their experience and training in cotton farming. The laborers are not over-enthusiastic about tending to cattle, and have a tendency to be inefficient workers.

Kind and Available Pasture. Lack of pasture for livestock production in Region Three is significant for only 19.2 per cent of the crop land is in pasture, and fifty per cent of this pasture land is plowable. Only in the vicinity of Memphis, where dairying is specialized, is the percentage of pasture land important. Bermuda grass is the best grass adaptable for permanent pasture in this area. It will grow on practically any kind of soil, and does not need fertilizer for successful growth. Other pastures of lesser importance include lespedera, red top, white clover, and hop clover.⁽¹⁰⁾ The Soil Conservation Service has recommended a new land use program for the region involving a decrease in row crops from 46 per cent to 35 per cent; an increase of pasture land from 40 to 45 per cent; and an increase of cover crops from 0.3 to 20.3 per cent.

Feed Crops. The principal feed crops grown are corn and hay

(10) Allred, C. E., Sant, Paul T., Land Use Problems in Crockett County, Tennessee, Agr. Exp. Station, Univ. of Tennessee, Knoxville, Tennessee, Monograph No. 72, June 1, 1938.

which now occupy 38.8 and 17.7 per cent of the harvested crop land respectively. Small amounts of wheat and small grains are grown, but are of minor importance. Lespedeza, the main hay crop produced, is supplemented with alfalfa and clover hay. Corn and cottonseed meal are the principal concentrates fed. Low yields of all the feed crops mentioned are usually produced on the majority of the farms because of the badly eroded stage of the soil and lack of soil nutrients. With proper soil management and fertilizer practices the yields can be increased considerably.

¹ ² ³ ⁴
Tenancy. Region Three ranks next to Region One in highest percentage of tenancy. Of the total farm operators, 75.9 per cent are tenants, 20.1 per cent are full owners, and 3.9 per cent are part owners (Table X).

Markets. Railway facilities are excellent. Four major railroad lines radiate east, northeast, and north from Memphis. The region has a network of highways, which are now being hard-surfaced; when this is done most farmers will probably have access to an all-weather road. Cotton is marketed through local markets and in Memphis. The latter is also an important market for many other farm products, such as dairy and poultry products, truck crops, and livestock. Creameries are located in Jackson and Somerville. Other available livestock markets are New Orleans, Birmingham, Nashville, Louisville, and St. Louis (Figure 23).

Farm Equipment. Region Three has practically an optimum climate and livestock production is not limited by barns, feeding equipment, etc. The only housing mainly needed for the cattle is a shelter

from rain.

Prices. The western half of type-of-farming Region Three is located in the state Crop and Livestock Reporting District Number 1, and the eastern half in District Number 2. Prices of the major class of livestock and livestock products are higher in the western half than in the eastern half because of the strong demand for such products by the Memphis markets. The region is also a deficit livestock and livestock production area.

IV. Factors Summarized. In order that the reader may obtain a glance at the livestock situation as a whole with respect to advantages or hinderances to the production of livestock in this region, the following diagram is presented in brief outline.

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION III

Factors	Favorable	Unfavorable	Reasons
Physical:			
1. Soil		X	At the present, the soil is unfavorable for growth of pasture and feed crops because of serious soil erosion. This problem is due largely to the system of farming practiced. However in Subregion III-A where livestock farming is practiced the problem of soil erosion is not so pronounced as in the cotton producing sections. Under proper soil management and fertilizer practices, the soil could produce good pasture and feed crops.
2. Topography	X		Although the bottom lands are susceptible to flooding, they cover only 16 per cent of the crop land area. Therefore, it is evident that the majority of the land is favorable for livestock production.

(continued)

**FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION III (continued)**

Factors	Favor- able	Unfavor- able	Reasons
Physical:			
3. Climate	X		An optimum climate, having ample rainfall and water supply, 200-226 day growing season, and very favorable temperature.
Ecological:			
1. Animal Diseases & Pests	X		No particular diseases except those commonly found over the entire state.
2. Poisonous Plants	X		None outstanding that particularly hurt livestock unless eaten in excessive quantities.
3. Plant Diseases	X		None in particular.
Economic and Cultural:			
1. System of Farming		X	Of the total farms, 85 per cent are cotton farms. Such a system of farming is very slow to changes and offers little chance for increased livestock production. Cotton is well adapted to the region because it escapes the greatest damage of the boll weevil, climate and length of growing season are optimum, and silty loams are easily tilled. Also, small farms, high percentage of tenancy, and lack of labor for livestock production are serious disadvantages for livestock production.
2. Kind and Available Pasture		X	Only 19 per cent of crop land is in pasture. Soil produces low pasture yields and requires much attention and fertiliser. Bermuda grass is the outstanding permanent pasture. Frequent droughts also severely injure the pastures. Pastures are only important in Subregion III-A. However the Soil Conservation Service has recommended that pasture land be increased 40 to 45 per cent.

(continued)

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION III (continued)

Factors	Favor- able	Unfavor- able	Reasons
Economic and Cul- tural:			
3. Feed Crops		X	A relatively low percentage of crop land is in hay and corn. In 1934, only 56.5 per cent was in corn and hay compared with the state average of 72.7. Low yields are also produced. With crop rotations or fertilizer the soil could produce excellent yields of feed crops.
4. Tenancy		X	Tenancy composes 60.6 per cent of the farm operators which is a natural hazard against livestock production.
5. Markets	X		Markets are close, railway facilities and roads are excellent, and there is an especially strong demand for dairy products at Memphis.
6. Farm Equip- ment	X		Shelter from rain is practically the only housing needed and is furnished sufficiently.
7. Prices	X		More favorable for dairy products than any other livestock products. Being a deficit livestock and livestock production area, the prices are naturally higher than in most regions.

REGION FOUR

The Livestock Situation

Region Four includes the major portions of Henry and Weakley counties (Figure 27).

Livestock is distributed over the area, but is relatively unimportant. Hogs and sheep have decreased in total numbers since 1880 while

the other livestock classes have remained practically in the same position (Table XVIII).

In relation to improved crop land, all classes of livestock except hogs are below the state average. Dairy cattle are 87 per cent of the state average; other cattle 52 per cent; sheep 38 per cent; and chickens 50 per cent of the state average (Appendix D). The most significant decreases of livestock classes have been a decrease of 80 per cent in sheep; 59 per cent in swine; 50 per cent in chickens; and 25 per cent in beef cattle (other cattle). Milk cows have increased approximately 20 per cent (Figure 41).

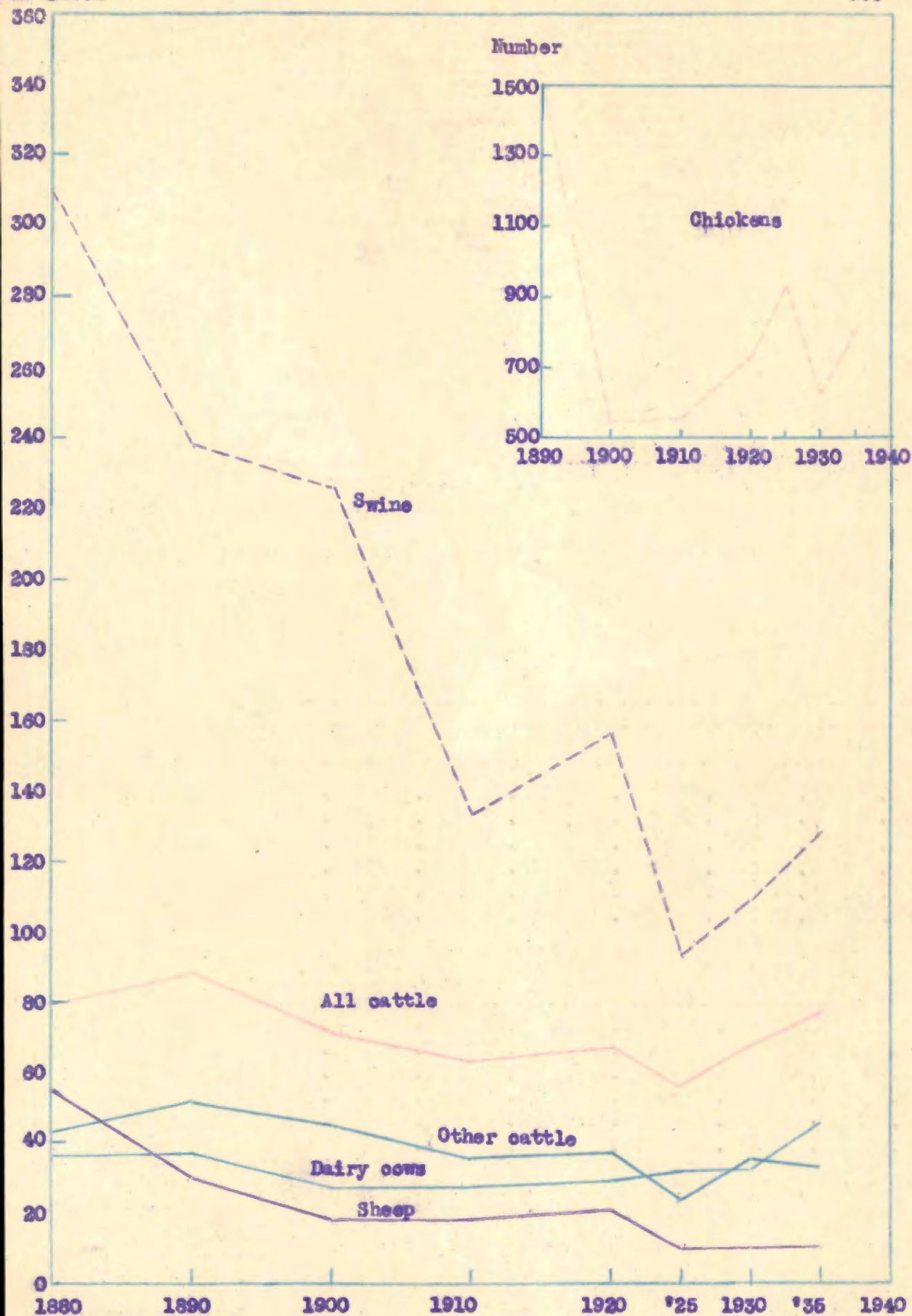
TABLE XVIII. NUMBERS OF LIVESTOCK, NUMBER PER 1000 ACRES OF IMPROVED LAND, BY SPECIFIED CLASS, REGION IV, 1880 - 1935 *

I. Total Number of Livestock								
Class **	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	22,061	28,119	27,541	25,532	27,861	20,625	26,205	30,464
Milk cows	9,949	11,716	10,299	11,080	12,369	11,690	12,545	17,704
Other cattle	12,112	16,403	17,242	14,452	15,492	8,945	13,658	12,760
Sheep	15,105	9,520	7,012	7,246	8,577	3,741	3,796	3,971
Swine	85,812	75,530	87,553	53,982	65,399	33,995	42,757	50,137
Chickens	-	496,412	210,164	225,571	306,660	338,118	247,668	318,694
II. Number of Livestock per 1000 Acres Improved Crop Land								
Class **	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	79.9	88.7	71.2	62.9	66.7	56.1	67.4	77.8
Milk cows	56.0	57.0	26.6	27.3	29.6	32.0	32.3	45.2
Other cattle	43.9	51.7	44.6	35.6	37.1	24.5	35.1	32.6
Sheep	54.7	30.0	18.1	17.9	20.5	10.2	9.8	10.1
Swine	310.8	238.3	226.2	133.0	156.6	93.0	109.9	128.0
Chickens	-	1566.0	543.1	555.7	734.3	925.0	636.9	813.4

* Based on census figures for Henry and Weakley counties, selected as representative of type-of-farming Region IV.

** See Appendix A, B, and C.

Source: U. S. Census of Agriculture, 1880-1935.



Source: Table XIX

Figure 41. Number of Livestock per 1000 Acres of Improved Crop Land, Region IV, Tennessee, 1880-1935

It is quite evident in Table XIX that there are a few more animal units found on the farm shown than would be expected on the average farm in Region Four. This farm has approximately 17 animals on 200 acres of land. Tobacco and sweet potatoes furnish about 55 per cent of the receipts compared with about 20 per cent from livestock. This shows that Region Four farms are mainly devoted to crop specialty farming.

TABLE XIX. A SUCCESSFUL FARM IN REGION IV. TENNESSEE, 1934

<u>Land Distribution</u>	<u>Crop Production</u>	<u>Livestock</u>
40 A. corn	1,250 lb. seed cotton	6 mules
1.5 A. cotton	1,040 bu. corn	7 cows & 1 bull
4 A. oats (followed by peas)	57 tons hay	11 heifers & calves
48 A. lespedeza & grass	11,750 lbs. tobacco	4 sows
10.5 A. tobacco	1,000 bu. sweet potatoes	49 shoats & pigs
40 A. rotation pasture		40 chickens
10 A. permanent pasture		
36 A. woods, lots, etc.		
200 A.		
<u>Farm Receipts</u>	<u>Investment</u>	<u>Farm Expenses</u>
Tobacco \$1,292	Real estate \$15,900	Hired labor \$236
Sweet potatoes 500	Livestock 684	Cropper " 920
Cattle & dairy 412	Machy. & equip. 698	Seed & plants 21
Hogs 309	Feed, supplies and cash 821	Fertilizer 35
Corn 216	Total \$16,103	Taxes & ins. 167
AAA 252		Repairs & depr. 224
Other rec. 181		Hay baling 12
Incr. in feed 304		All other exp. 40
Total \$5,446		Total \$1,657
	<u>Summary</u>	
	Farm income \$1,789	
	Labor income 984	
	Labor earnings 1,357	
	Pre cent re- turned 9.6%	

Source: Farm Management Department, Tennessee Agricultural Extension Service, University of Tennessee, Knoxville, Tennessee.

Factors Affecting Livestock Production

I. Physical Factors. Soil. In the western half of Region Four the La Grange and Grenada soil formations of sand and clays are found. These soils are characterized by an extremely silty texture of both surface soil and subsoil, and a smooth flourlike feel. They are naturally low in organic matter and acid in reaction, although the parent material locally is calcareous at 10 or 20 feet below the surface. The surface of these soils was formerly a smooth plain, but has been deeply and intricately cut by streams, and ranges from smooth or undulating to rolling, hilly, and broken, with many long narrow ridges.

In the eastern portion a wide variety of soil types occur, due to the numerous geological formations from which they have been derived. The major soil types in this region are the silt to clay loams, derived from the Porter's Creek Clay formation; the reddish to brown gray silt loams, derived from the McNairy and Ripley sand formations; the sandy clay loams, derived from the Selmer clay formation; and the sandy soils, derived from the Butaw sand formations. In some sections they are readily distinguishable; in others they are mixed together, due to overlapping of the formations. (11)

In general the soils of the eastern portion are not equal to the loess and La Grange soils of the western half for agricultural purposes, due to a deficit of phosphate, and a more rugged topography. Low crop

(11) Allred, C. E., Atkins, S. W., Raskopf, B. D., Human and Physical Resources of Tennessee, Chapter I, Geology, Topography, Soils, Monograph No. 38, Agr. Economics and Rural Sociology Department, College of Agriculture, University of Tennessee, Knoxville, May 5, 1937.

yields have reflected the presence of inferior soils over the entire area. Much of the soils in this area have suffered severely from erosion and continuous row cropping. They are also deficient in lime, nitrogen, and humus.

With proper soil management and fertilizer practices abundant yields of corn, tobacco, clover, alfalfa, wheat, oats, sorgo, sweet potatoes, red top, soybeans, cowpeas, and hay could be produced. Bermuda grass and lespedeza are well adapted to these soils.

Topography. The elevation is approximately 400 feet. The topography which is favorable for livestock production ranges from rolling to hilly, the hilly section occurring along the boundary between Henry and Weakley counties. The Obion River and its tributaries drain the western half of the Region and the Tennessee River with its tributaries the eastern half. The bottom lands are frequently flooded; however, they occupy only a small share of the Region.

Climate. Practically an optimum climate exists for livestock production. The average annual rainfall ranges from 50 to 55 inches. The mean annual temperature is approximately 59 degrees. The length of growing season varies from 190 days in the eastern portion to 200 days in the western half.

II. Biological Factors. Practically the same situation concerning animal diseases and pests, poisonous plants, and plant diseases exists in Region Four as in Region One. Refer to Region One for a more detailed discussion of the biological factors.

III. Economic and Cultural Factors. System of Farming. Region Four

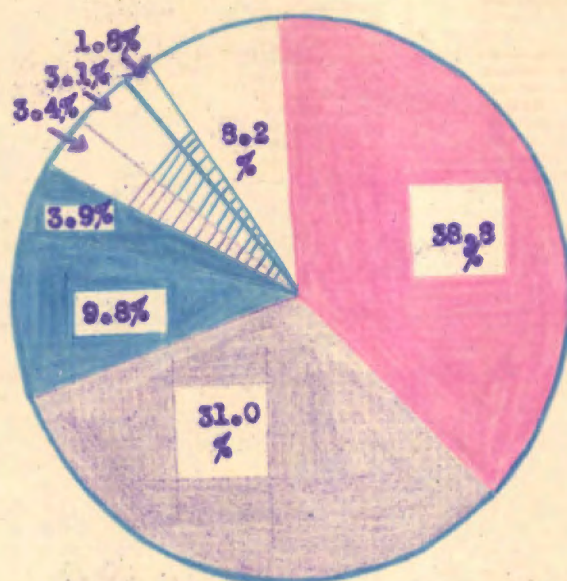
has three important cash crops, cotton, tobacco, and sweet potatoes; at least one of which is found on most farms. Cotton is grown in the southern part of the region, the northern limits of the cotton belt. Dark tobacco and sweet potatoes are grown quite generally throughout the region with sweet potatoes being somewhat more important.⁽¹²⁾

The 1930 census shows the average farm as having 77 acres (Figure 30), 75.4 per cent of the farm products being sold and 24.6 per cent used by the operator's families. Of the total number of farms, 38.8 per cent are crop specialty, 31.0 per cent are general, 9.8 per cent are small general, 3.9 per cent are part-time, 3.4 per cent are animal specialty, 3.1 per cent are cotton, 1.8 per cent are dairy, and 8.2 per cent are all other farms (Figure 42).

This area contains 435,510 acres of farm land, 161,748 acres being in crops harvested, 118,635 acres in total pasture land, 62,638 in woodland not pastured, 2,748 in crop failure, and 44,295 in all other farm land. The crop land amounts to 37.1 per cent of all farm land, leaving 27.3 per cent in pasture, 14.4 per cent in woodland, 10.4 per cent idle, and 10.8 per cent in all other farm land (Figure 43).

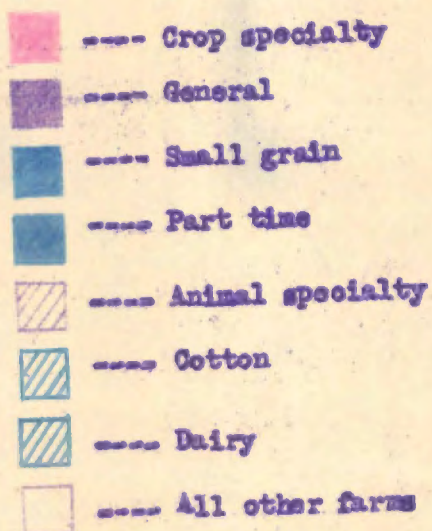
Of the area in harvested crops, 49.6 per cent was in corn; 22.2 per cent in hay; 10.0 per cent in cotton; 7.3 per cent in sweet potatoes; 5.2 per cent in tobacco; 2.4 per cent in small grains; and 1.8 per cent

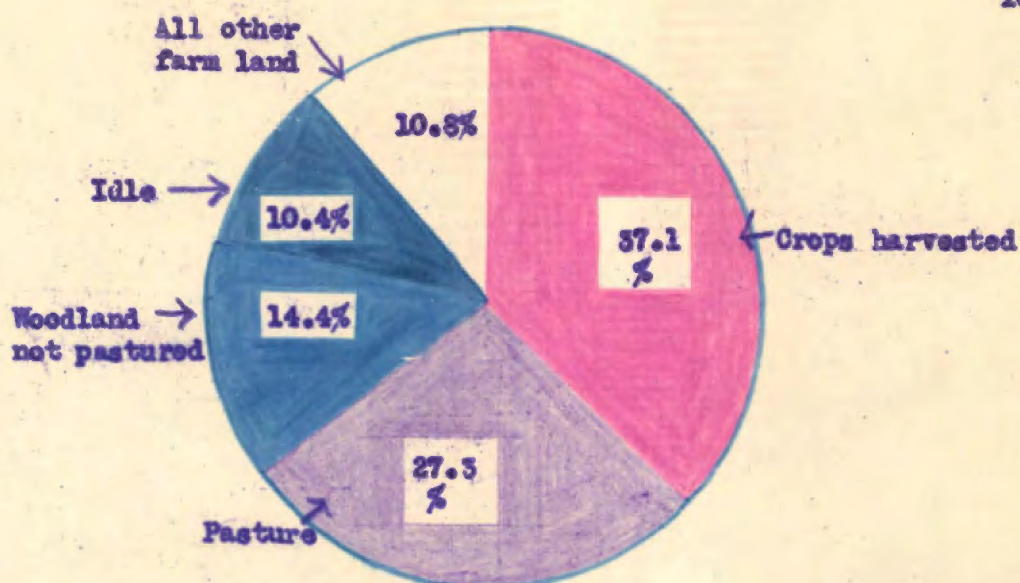
(12) Farm Management Department, Tennessee Agricultural Extension Service, University of Tennessee, Knoxville, Tennessee.



Source: Table IX.

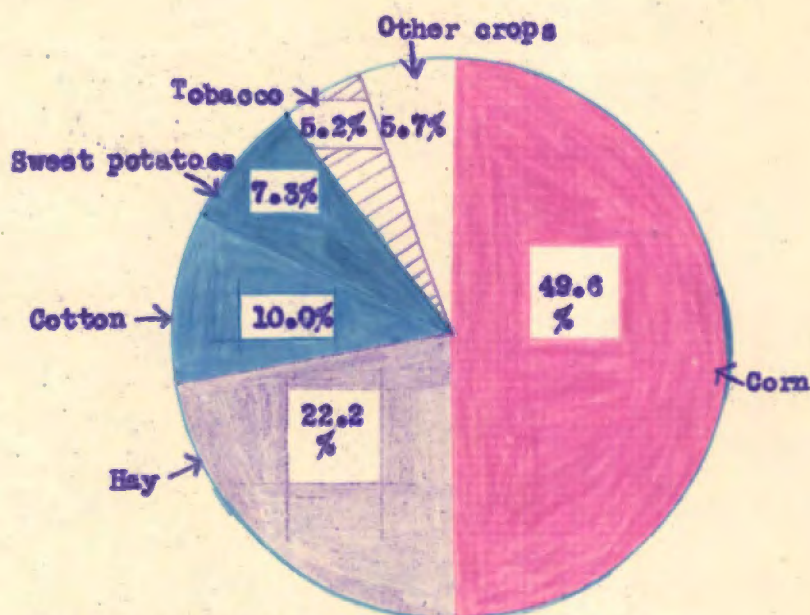
Figure 42. Proportion of Farms by Type, Region IV, Tennessee, 1930





Source: Table VII

Figure 43. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region IV, Tennessee, 1934



Source: Table VIII

Figure 44. Proportion of Crop Land in Major Crops, Region IV, Tennessee, 1934

in wheat. The acreages of these major crops were as follows: corn, 82,518; hay, 36,820; cotton, 16,664; sweet potatoes, 12,118; tobacco, 8,623; wheat, 3,044; and other crops, 6,385 (Figure 44).

The farmers in Region Four have accustomed themselves to crop specialty farming over a long period of years. Dark tobacco was formerly the leading crop but has decreased in importance because of increased competition from other areas producing similar types of tobacco. Potatoes are increasing in importance because of the decreasing competition of tobacco for land use and the adaptation of potatoes to sandy soils. The majority of the farms are relatively small. Over half of them are operated by tenants and croppers. Most of the laborers in the region have experience only in growing cotton, corn, sweet potatoes, and tobacco. Therefore, from the preceding discussion it is significant that because of small farms, high percentage of tenancy and croppers, crop-growing experience of laborers, and established long-time farming systems, increased livestock production is seriously hindered in Region Four.

Kind and Available Pasture. Pastures occupy 23.7 per cent of the farm land of which 18.1 per cent is plowable and 5.6 per cent woodland. Bermuda grass is the prevailing type of permanent pasture supplemented by lespedesa, white clover, and red top. The pasture-carrying capacity is relatively low because of thin soils and severe erosion. In order for pastures to grow successfully fertilizer needs to be applied. With proper soil management and fertilizer practices pasture yields could be increased considerably. At present, pastures throughout the

region are not especially encouraging for livestock production.

Feed Crops. Corn and hay are the principal feed crops grown, occupying 49.6 per cent and 22 per cent of the crop land respectively. Wheat, which is of minor importance, occupies 1.8 per cent of the crop land. Lespedeza is the principal crop used for hay, supplemented with some clover and timothy, corn, cottonseed, and sweet potatoes are the main feeds used for concentrates. All of the feed crops grown usually produce low yields because of insufficient soil nutrients and the badly eroded condition of the soil. Fertilizer and proper soil management practices must be applied for higher and more profitable yields of feed crops.

Tenancy. Approximately 46 per cent of the farm operators are tenants, 42 per cent full owners, and 9.5 per cent part owners. This high percentage of tenancy has tended to discourage livestock production.

Markets. Two railroads in each county provide excellent transportation facilities to northern markets. A good system of highways has been developed in recent years. Livestock is marketed at Union City, Memphis, Louisville, and St. Louis. Milk is marketed at cheese factories located at Palmersville and Henry; a milk plant at McKenzie; a creamery at South Fulton, Kentucky; and non-farm consumers in the region.

Farm Equipment. Livestock does not need an elaborate amount of shelter, feeding equipment, etc., in Region Four since it

has a rather mild climate throughout the year. An inexpensive shelter for protection against rain is the only housing essentially needed for the cattle.

Prices. All livestock and livestock products are below the state average except butterfat. Dairy products more nearly approach the average than the prices received for beef cattle. Practically all of the feed crops grown in Region Four are sold below the state average price.

IV. Factors Summarized. In order that the reader may obtain a glance at the livestock situation as a whole with respect to advantages or hinderances to the production of livestock in this region, the following diagram is presented in brief outline.

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION, REGION IV

Factors	Favorable	Unfavorable	Reasons
Physical:			
1. Soil		X	At the present, the soil is not favorable for growth of pasture and feed crops because it is very thin and badly eroded. Continuous row cropping has decreased the soil nutrients and absence of cover crops has hastened erosion. In order to produce profitable and large yields of feed and pasture crops, proper soil management and fertilizers practices will be necessary.
2. Topography	X		The topography varies from rolling to hilly, affording good drainage except for a small per cent of bottom lands.
3. Climate	X		The climate is optimum -- 50-55 inches of rainfall, ample water supply, 190-200 day growing season, and average mean temperature of 60°.

(continued)

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION IV (continued)

Factors	Favorable	Unfavorable	Reasons
Biological:			
1. Animal Diseases & Pests	X		No particular diseases or pests that seriously harm livestock.
2. Poisonous Plants	X		None that seriously injure livestock
3. Plant Diseases	X		None in particular.
Economic and Cultural:			
1. System of Farming		X	Seventy per cent of the farms are crop specialty and general farms. This type of farming does not encourage livestock production. Potatoes and tobacco, two competing enterprises, are well adapted to the region. Potatoes are especially adapted to the sandy soil. A high percentage of tenancy, small farms and lack of skilled labor to care for livestock prevails.
2. Kind and Available Pasture		X	Low carrying capacity of pastures discourages livestock farming. Eighty per cent of the pasture land is plowable. Bermuda grass is the only pasture crop adapted to the region that can be grown moderately well without large amounts of fertilizer.
3. Feed Crops		X	The amount of hay and corn grown is equal to the state average, but low yields offset the acreage.
4. Tenancy		X	Fifty per cent of the farm operators are tenants. This decreases the incentive to grow livestock.
5. Markets	X		Railway and highways are adequate, and markets are close.

(continued)

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION IV (continued)

Factors	Favorable	Unfavorable	Reasons
Economic and Cultural:			
6. Farm Equipment	X		Adequate shelter from rain is furnished.
7. Prices	X		Favorable for dairy products and would probably be more favorable for other livestock if higher grade of livestock were grown.

REGION FIVE

The Livestock Situation

The major portion of Gibson and the minor portions of Madison, Crockett, Weakley, and Carroll counties are included in Region Five (Figure 27).

Livestock production is of minor importance, with all classes below the state average. Since 1880, sheep have decreased 79 per cent, hogs 70 per cent, and cattle other than dairy cows 33 per cent, in relation to improved crop land. Milk cows have increased 8 per cent, in relation to improved crop land (Table XX).

The minor importance of livestock in Region Five is illustrated in Table XXI. The farm here shown had about 5 animal units, with only approximately 1 per cent of the receipts coming from livestock and livestock products. Cotton and truck crops contributed about 80 per cent of

the receipts, which is very typical of the average farm in Region Five.

TABLE XI. NUMBERS OF LIVESTOCK, NUMBER PER 1,000 ACRES
IMPROVED LAND, BY SPECIFIED CLASSES, REGION FIVE,
1880 - 1935 *

Class **	I. Total Number of Livestock							
	1880	1890	1900	1910	1920	1925	1930	1935
All cattle	15,580	17,695	19,840	17,836	20,553	16,592	17,576	22,443
Milk cows	8,534	7,527	7,184	7,750	9,306	7,969	8,480	12,296
Other cattle	9,046	10,168	12,656	10,080	11,247	8,623	9,096	10,147
Sheep	8,851	5,861	2,770	3,369	3,638	2,202	2,896	3,087
Swine	46,221	42,124	45,136	23,234	39,713	19,511	20,411	23,536
Chickens	-	334,281	133,281	159,994	254,184	275,252	162,751	243,936

II. Number of Livestock per 1,000 Acres Improved
Crop Land

All cattle	100.2	92.6	84.7	72.7	81.6	64.9	67.8	83.8
Milk cows	42.0	39.4	30.7	31.6	37.0	31.2	32.7	45.9
Other cattle	58.2	53.2	54.0	41.1	44.7	33.7	35.1	37.9
Sheep	56.9	30.7	11.8	13.7	14.4	8.6	11.2	11.6
Swine	297.4	220.5	192.6	94.7	157.7	76.4	78.8	87.9
Chickens	-	1749.6	568.8	652.3	1009.3	1077.2	628.0	910.6

* Based on census figures for Gibson County, selected as representative of type-of-farming Region Five.

** See Appendix A, B, and C.

Source: U. S. Census of Agriculture, 1880-1935.

TABLE XII. A SUCCESSFUL FARM IN REGION V, TENNESSEE, 1934

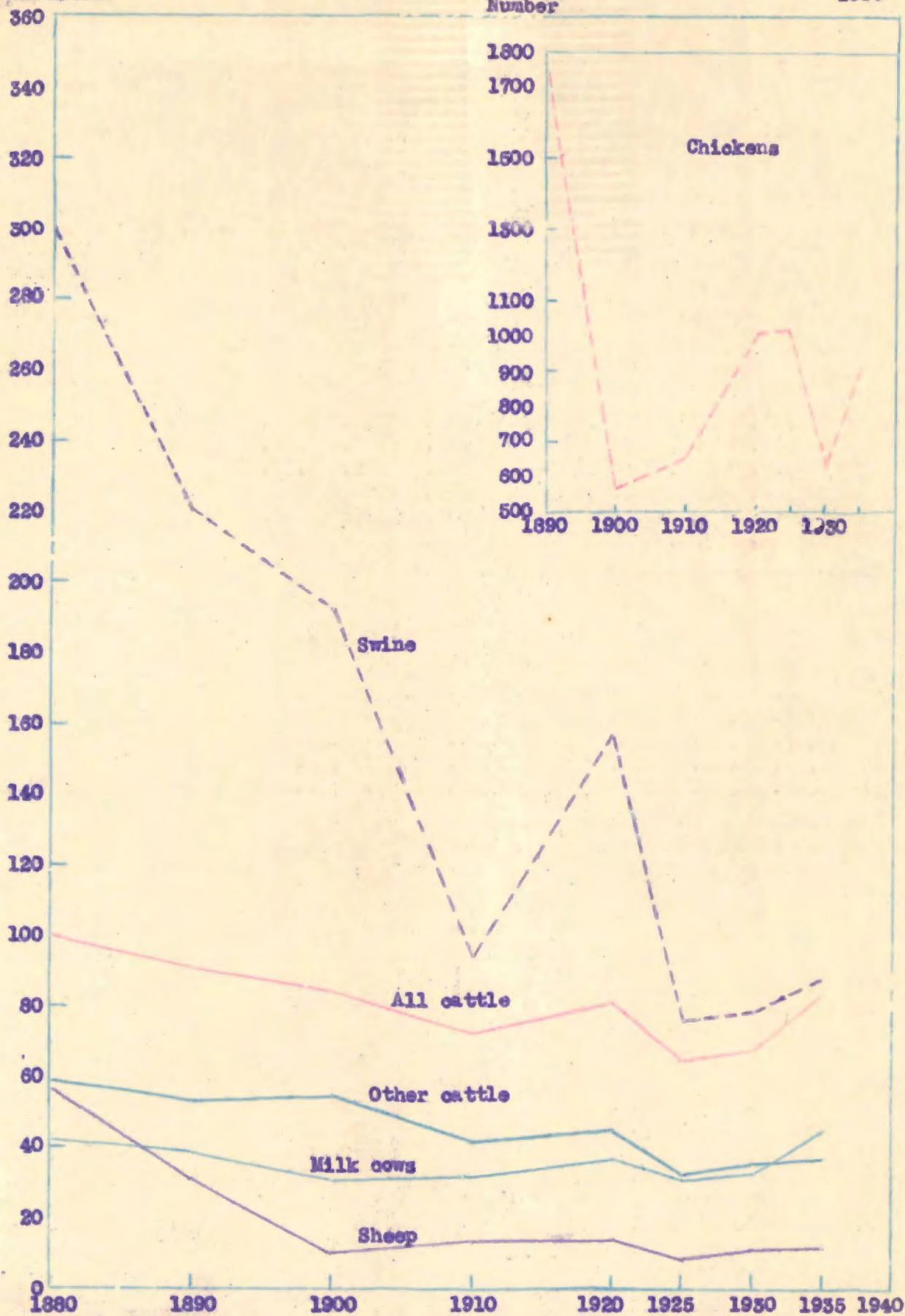
Land Distribution

21 A. cotton	2 A. orchard
14 A. corn	4 A. strawberries
3 A. oats (followed by peas)	(net)
2 A. red clover	7 A. perm pasture
30 A. lespedeza	8 A. woods, waste, etc.
3 A. Irish potatoes	
7 A. sweet potatoes	95 A. Total
2.25 A. tomatoes	
1 A. cabbage	
4 A. strawberries	

Crop Production

9,000 lb. cotton
420 bu. corn
27 T. hay
15 bu. peas
165 bu. Irish potatoes
950 bu. sweet potatoes
150 bu. tomatoes
140 cr. cabbage
75 bu. apples & peaches
248 cr. strawberries

(continued)



Source: Table XXI.

Figure 46. Number of Livestock per 1000 Acres of Improved Crop Land, Region V, Tennessee, 1880-1935

TABLE XXI. A SUCCESSFUL FARM IN REGION V, TENNESSEE, 1934
(continued)

<u>Livestock</u>	<u>Farm Receipts</u>	<u>Farm Expenses</u>
1 horse, 4 mules	Cotton \$1,299	Hired labor \$145
3 cows, 1 heifer, 1 calf	Sweet pot. 525	Cropper " 144
1 sow, 3 shoats	Strawberries 248	Family " 50
60 chickens	Tomatoes 150	Seed & plants 34
	Other truck 161	Fertilizer 150
<u>Investment</u>	Horses &	Taxes & ins. 88
Real estate \$ \$6,370	mules 150	Repairs & depr. 221
Livestock 588	Cattle &	Crates 157
Mchy. & equip. 396	dairy 48	Ginning 95
Feed, supplies	Hogs 36	Other expenses 170
and cash 610	Poultry	Total \$1,290
	& eggs 40	
Total \$7,824	Other rec. 298	<u>Summary</u>
	AAA 126	Farm income \$1,791
	Total \$3,081	Labor income 1,400
		Labor earnings 1,778
		Per cent ret'd 19.7%

Source: Farm Management Department, Tennessee
Agricultural Extension Service, University of Tennessee,
Knoxville, Tennessee.

Factors Affecting Livestock Production

I. Physical Factors. Soil. The soils in Region Five are very closely related to those described in Region Four. The major portions are derived from the La Grange and Grenada formations consisting of sands and clays. The soils have been seriously eroded. This is particularly true on cotton farms and along the eastern borders. The yields of the principal crops grown are slightly above the state average because of heavy applications of commercial fertilizer.

Topography. The topography ranges from rolling to hilly land. The elevation varies from 350 to 450 feet, with the average elevation being approximately 400 feet. The Obion River and the Forked Deer River, with their tributaries, drain the region. The bottom lands are susceptible to frequent overflows; these occurring mainly during the

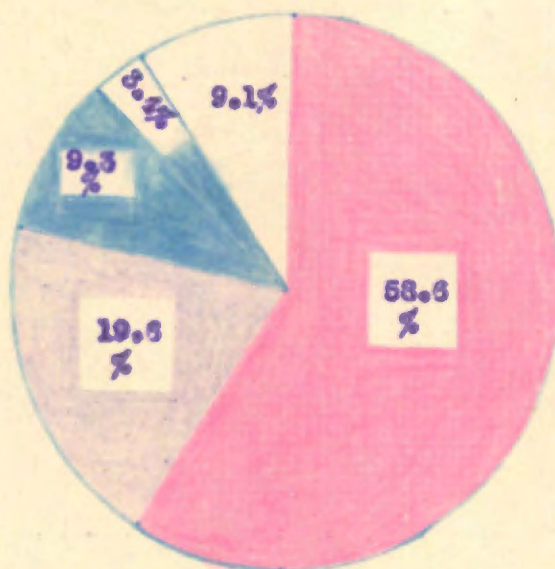
seasons of the year when crops are not growing.

Climate. The climate is especially favorable for livestock production. The average annual rainfall is 48 to 50 inches. The mean annual temperature is 60 degrees F., ranging from an average of 39 degrees in January to 79 degrees in July. The average length of growing season varies between 190 to 200 days.

II. Biological Factors. The biological factors in Region Five are practically the same as those described in Region One. Refer to Region One for a detailed discussion.

III. Economic and Cultural Factors. System of Farming. The 1930 census shows the average farm to have 49 acres (Figure 30), with 82.5 per cent of the farm products being sold and 17.5 per cent used by operator's family. Of the total number of farms, 58.6 are cotton, 19.6 are general, 9.3 are truck, 3.4 are small general, 1.8 are part-time, 1.4 are crop specialty, 1.0 are animal specialty, and 4.9 are all other farms (Figure 46).

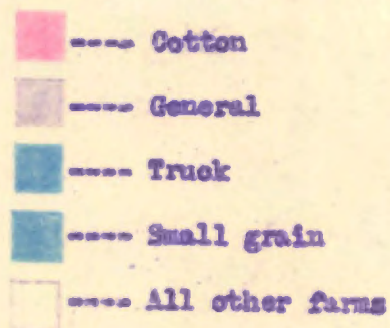
This is a highly diversified cash crop area with cotton as the staple crop, and cabbage, tomatoes, sweet potatoes, strawberries, and other truck crops fitted into the farming program along with some livestock. A variety of these crops are often found on individual farms. The farms are small in acreage, but, due to intensive crops, the size of business is large in proportion. Hogs, poultry, and dairy products, the principal sources of livestock receipts, are minor enterprises on most farms. Much commercial fertilizer is used and both cash expenses and



112.

Source: Table IX

Figure 46. Proportion of Farms by Type, Region V, Tennessee, 1930



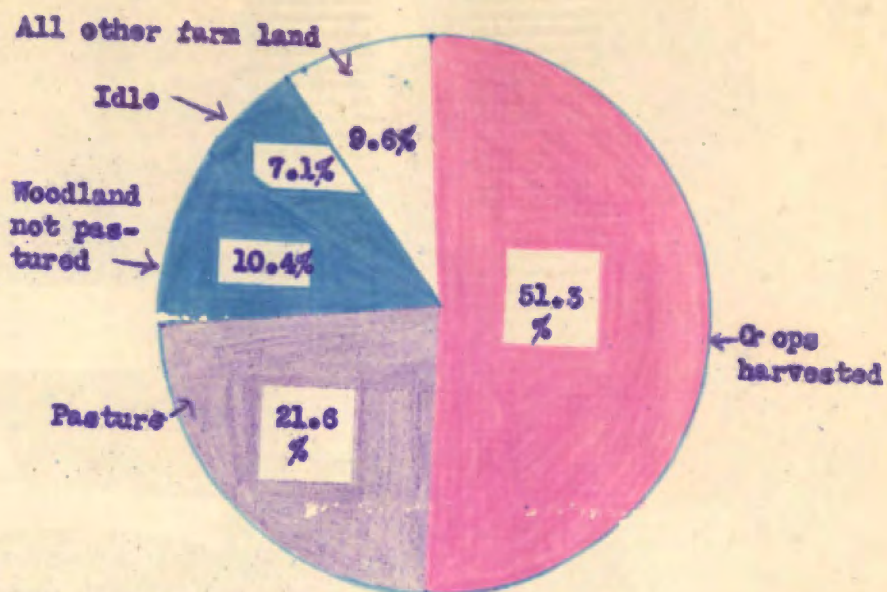
cash receipts are relatively high.⁽¹³⁾

This region contains approximately 480,000 acres of farm land, 245,000 acres of which are crop land, 103,829 acres in pasture land, 49,868 acres in woodland not pastured, 34,216 in idle land, and 45,752 in all other farm land. The crop land amounts to 51.3 per cent of all farm land, 21.3 per cent in pasture, 10.4 per cent in woodland not pastured, 7.1 per cent idle, and 9.6 per cent in all other farm land (Figure 47).

Of the area in harvested crops, 36.8 per cent was in corn, 28.0 per cent was in cotton, 23.7 per cent in hay, 2.1 per cent in sweet potatoes, 2.0 per cent in strawberries, and 7.4 per cent in other crop land. The acreages of these major crops were as follows: corn, 90,180; cotton, 68,686; hay, 58,061; sweet potatoes, 5,048; strawberries, 5,011; and other crop land, 18,374 acres (Figure 47).

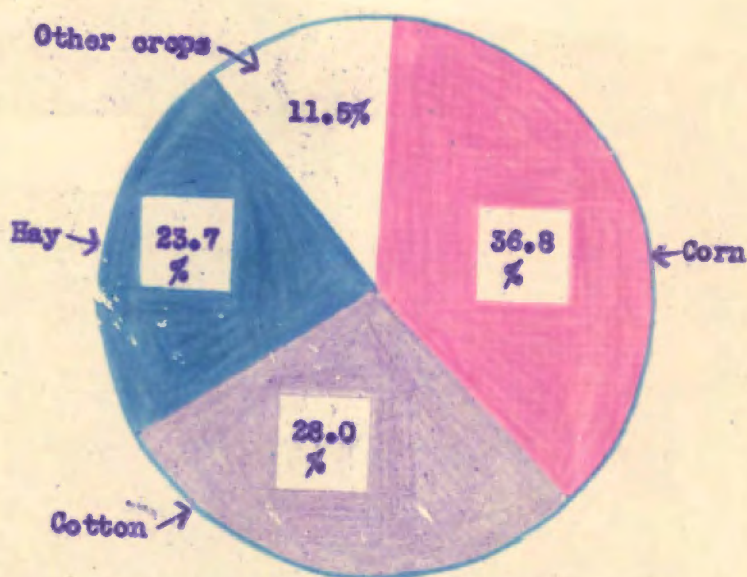
The farmers in Region Five have been trained from generation to generation in cotton and truck farming, types of farming that have been maintained in this area. Under these conditions, the system of farming does not change easily to other systems even though a change may seem economically desirable. Labor is also scarce in this region for livestock farming. Small farms, high percentage of tenancy, and long-time farming practices have all tended to discourage livestock production.

(13) Farm Management Department, Tennessee Agricultural Extension Service, University of Tennessee, Knoxville, Tennessee.



Source: Table VII

Figure 47. Proportion of Farm Land in Crops, Pasture, Woodland, Idle, and All Other Farm Land, Region V, Tennessee, 1934



Source: Table VIII

Figure 48. Proportion of Crop Land in Major Crops, Region V, Tennessee, 1934

Kind and Available Pasture. Of the total farm land, 17.6 per cent consists of pasture, 12.4 per cent being plowable and 5.2 per cent woodland. Bermuda grass is the outstanding permanent pasture. It is well adapted to the soils of the region as it requires practically no fertilizer for successful growth. Other pasture crops consist of red top, lespedeza, and white clover. Serious erosion and low nutritive value of the soils have made the carrying capacity of pastures relatively low. For abundant pasture growth, fertilizer and proper soil management must be applied. The present condition of pasture in Region Five tends to discourage livestock farming.

Feed Crops. There is a scarcity of feed crops in this region because of low yields and a high percentage of land used for cotton. Only 60.5 per cent of the crop land is in corn and hay as compared with 70.2 per cent for the state as a whole. Small grain crops are of very minor importance. Lespedeza, supplemented by white cover, is the principal crop grown for hay. Corn, cottonseed, and sweet potatoes are the main concentrates fed. This scarcity of feed crops is associated with lack of interest in livestock production, soil nutrients, and improper soil management practices followed.

Tenancy. More than half of the farm operators are tenants, 32.7 per cent are fullowners, and 10.4 per cent are part owners (Table X). Most of the tenants are associated with cotton farming which acts as a disadvantage for livestock production.

Markets. Transportation facilities are excellent. Three main railways serve the area, offering direct access to the north and east. More

recently improved highways have been constructed.

The principal markets for livestock include Union City, Nashville, Memphis, Louisville, and St. Louis. Principal markets for truck crops are cities to the north and northeast. Local concentration and shipping points include Gibson, Humboldt, Milan, Medina, and Fruitvale.

Farm Equipment. In general, the barns, fences, feeding facilities, etc., are adequate, though some part of the area may possibly be handicapped by lack of farm equipment.

Prices. All livestock and livestock products are below the state average except butterfat. Prices received for dairy products more nearly approach the state average than any of the livestock and livestock products. Prices for corn, hay, small grains, and other feed crops are below the state average. The prices received for strawberries and sweet potatoes are slightly under the average. Cotton prices are slightly above the state average.

IV. Factors Summarized. In order that the reader may compare all of the favorable and unfavorable factors affecting livestock production in Region Five, a brief outline is presented showing the situation as a whole.

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION V

Factors	Favorable	Unfavorable	Reasons
Physical:			
1. Soil		X	The soil is severely eroded, and requires large amount of fertilizer.
2. Topography	X		Ranges from rolling and hilly land, and the greater part of the land is well drained.

(continued)

FAVORABLE VS. UNFAVORABLE FACTORS AFFECTING LIVESTOCK PRODUCTION,
REGION V (continued)

Factors	Favor- able	Unfavor- able	Reasons
3. Cli- mate	X		Ideal. Rainfall averages 48-50 inches annually; temperature averages 60° F., and growing season varies from 190 to 200 days.
Biological:			
1. Animal Diseases & Pests	X		None that particularly harm livestock.
2. Poison- ous Plants	X		None very serious.
3. Plant Dis- eases	X		None in particular.
Economic and Cultural:			
1. System of Farm- ing		X	Cotton, truck, and general farming pre- dominate; farms are small; farming systems are well established, and adapted to the region.
2. Kind and Available Pasture		X	Low carrying capacity due to the poor condition of the soil. Only 17.6 per cent of farm land ¹ pasture, and 12.4 per cent is plowable.
3. Feed Crops		X	Low yields and only 60.5 per cent of crop land is in feed crops compared with 70.2 per cent for the state average.
4. Tenancy		X	More than half of the farm operators are tenants.
5. Markets	X		Transportation facilities are excellent for roads and railways. The principal m markets are close.
6. Farm Equipment	X		In general, it is adequate throughout the region.
7. Prices	X		More favorable for dairy products, less favorable for other livestock and live- stock products because of quality of production.

CHAPTER V

THE PLACE OF LIVESTOCK IN TYPE-OF-FARMING REGION VI

The Livestock Situation

Region VI lies in the eastern part of West Tennessee. It is composed of Henderson, Chester, and McNairy counties; major portions of Henry and Carroll; and minor portions of Madison, Hardeman, and Hardin counties (Figure 14). All the major classes of livestock are evenly distributed over the Region with the exception of dairy cattle which are concentrated mainly in Madison and Carroll Counties in response to the local market demands for fluid milk and dairy products from Jackson and McKenzie. The Region is below the state average in all classes of livestock, in relation to improved crop land (Appendix D). Cattle are 60 per cent of the state average; dairy cows are 70 per cent; other cattle are 50 per cent; hogs are 75 per cent; chickens are 55 per cent; and relatively few sheep are grown.

The greatest decrease has been in sheep, decreasing 97 per cent, followed by hogs, 70 per cent, beef cattle, 80 per cent, chickens, 56 per cent, and dairy cows, 20 per cent (Table XXII).

The relatively small amount of livestock grown in Area VI is illustrated by the successful farm in this area, shown in Table XXIII. The farm has about 6 animal units in cattle; has 20 per cent of the farm receipts derived from livestock and livestock products, while 43.5 per cent

are from cotton.

TABLE XXII. LIVESTOCK: TOTAL NUMBER, AND NUMBER PER 1,000 ACRES
IMPROVED CROP LAND, BY SPECIFIED CLASSES OF LIVESTOCK,
REGION VI, 1880 - 1935 *

I. Total Number of Livestock								
Class **	1880 ***	1890	1900	1910	1920	1925	1930	1935
All cattle	-	30,647	24,992	19,893	24,722	18,580	15,649	22,555
Milk cows	-	11,077	9,576	10,100	11,859	9,616	7,903	11,966
Other cattle	-	19,570	15,416	9,793	12,863	8,964	7,746	10,589
Sheep	-	17,195	10,167	5,431	2,911	635	655	624
Swine	-	56,938	66,353	41,079	52,177	19,735	16,108	22,241
Chickens	-	356,235	183,475	189,401	290,871	277,926	209,926	273,027

II. Number of Livestock per 1000 Acres Improved Crop Land								
All cattle	-	130.2	98.8	70.3	77.1	67.7	52.0	70.2
Milk cows	-	47.1	37.9	35.7	37.0	35.0	26.2	37.2
Other cattle	-	83.2	61.0	34.6	40.1	32.6	25.7	33.0
Sheep	-	73.1	40.2	19.2	9.1	2.3	2.2	1.9
Swine	-	237.7	262.4	145.3	162.7	71.9	53.5	69.2
Chickens	-	1513.7	733.4	669.7	906.9	1010.6	697.0	849.9

* Based on census figures for Chester, Henderson, and McNairy counties, selected as representatives of Type-of-Farming Region VI.

** See Appendix A, B, and C.

*** Chester County was not organized until March 1, 1879 and data was not available for 1880.

Source: U. S. Census of Agriculture, 1880-1935.

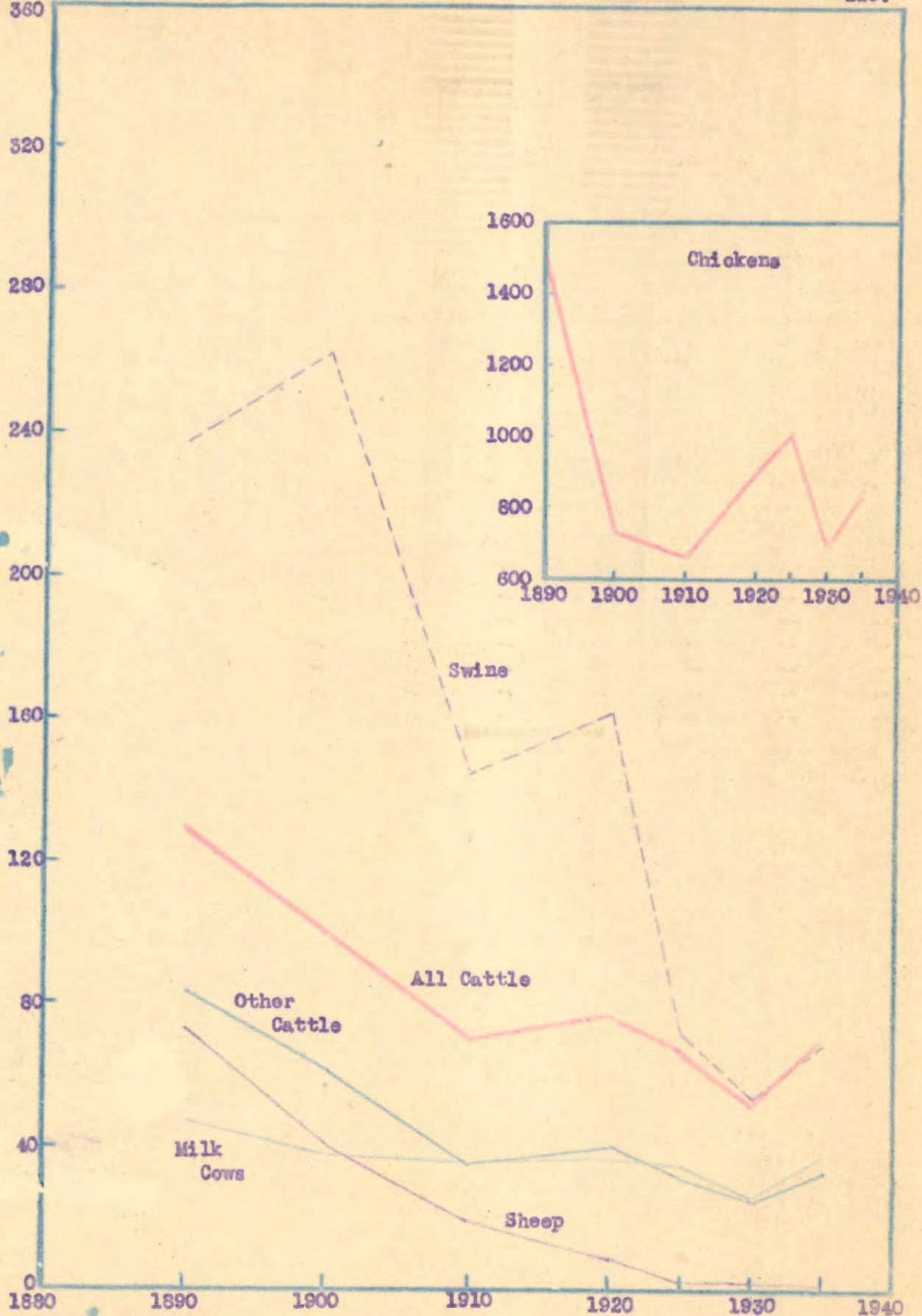
TABLE XXIII. A SUCCESSFUL FARM IN REGION VI, TENNESSEE, 1934

Land Distribution		Crop Production
10 A. cotton	1/2 A. sorghum	3,413 lbs. cotton
13 A. corn	12 A. rotation pasture	286 bus. corn
8 A. lespedera hay	10 A. woods pasture	8 T. lesp. hay
2 A. pea hay	10 A. seeded down	2 T. pea hay
1 A. garden	55 A. woods, etc.	102 gal. sorghum
(cont.)	Total 122 Acres	

(continued)

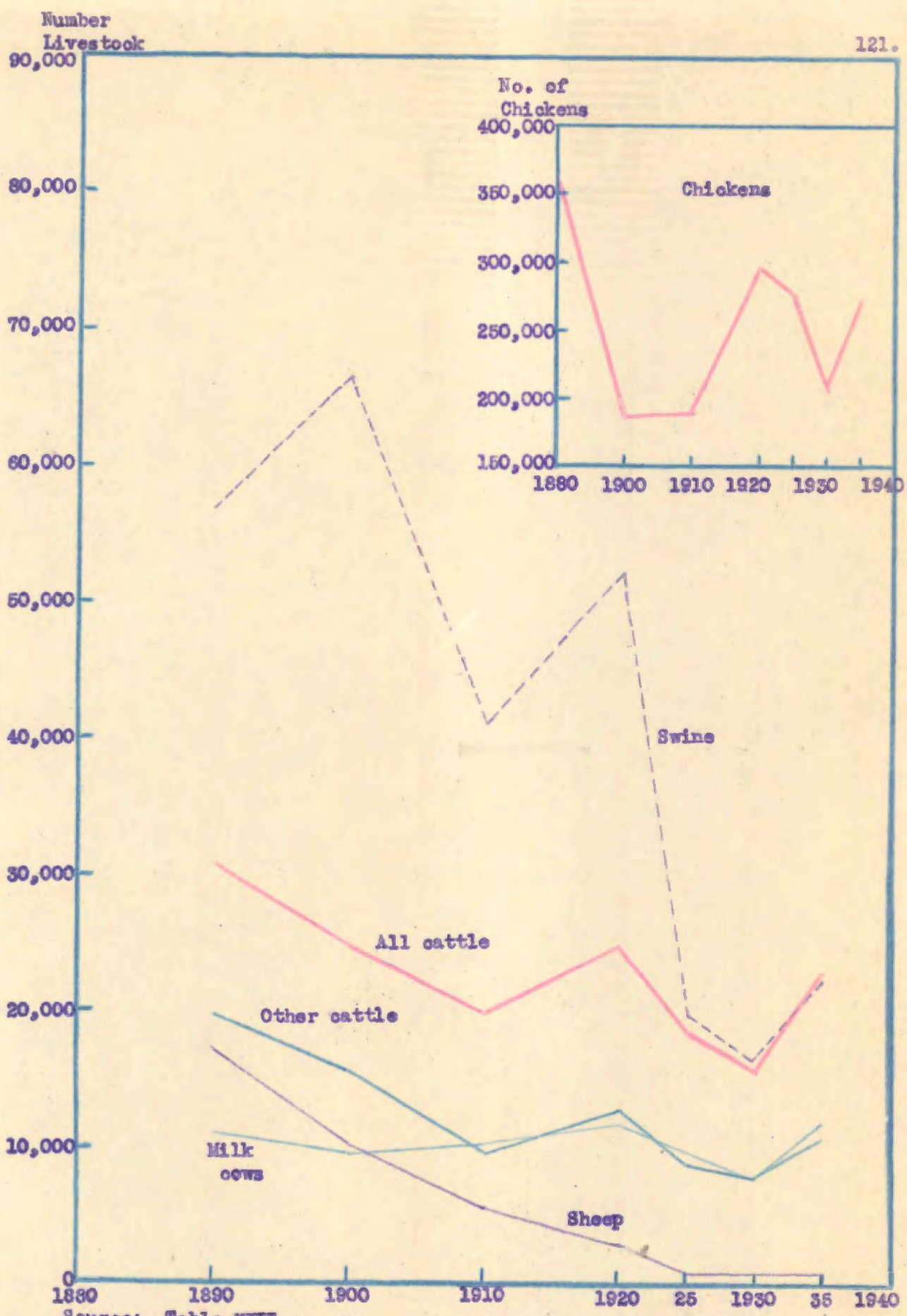
Number
Livestock
360

120.



Source: Table XXII

Figure 49. Number of Livestock per 1000 Acres of Improved Crop Land, Region VI, Tennessee, 1880 - 1935



Source: Table XXII

Figure 50. Total Number of Livestock by Specified Classes in Region VI, Tennessee, 1880-1935

TABLE XXIII. A SUCCESSFUL FARM IN REGION VI, TENNESSEE, 1934
(continued)

<u>Livestock</u>	<u>Investment</u>	<u>Farm Expenses</u>
2 mules	Real estate \$2,800	Hired labor \$15
3 cows, 2 heifers	Livestock 224	Family " 15
2 calves	Mchy. & equip. 224	Seed and fer-
1 sow, 5 pigs	Feed, supplies,	tilizer 21
50 chickens	and cash 448	Taxes 27
	Total \$3,696	Rep. & depr. 94
		Insurance 34
		Ginning and
		machiner
		work 74
		Feed 26
		Total \$296
<u>Farm Receipts</u>	<u>Summary</u>	
Cotton \$457	Farm income \$754	
Cattle & cream 107	Labor income 569	
Horses & mules 78	Labor earn-	
Poultry & eggs 52	ings 834	
Other rec. 153	Per cent	
AAA 64	returned 15%	
Incr. in feed 139		
Total \$1,050		

Source: Farm Management Department, Tennessee Agricultural Extension Service, University of Tennessee, Knoxville, Tennessee.

Economic Situation

During the year of 1937 the production of livestock was much more favorable than for cotton in relation to economic conditions. The average price index for meat animals, in Tennessee, for the year was 137.8, based on the year 1910 to 1914 as 100. This compares with 92.4 for cotton and cottonseed. Thus, while the price of meat animals was approximately two-fifths greater than the base period, cotton was one-twelfth lower. This was the greatest margin advantage that livestock has held over cotton for the 28-year period. The price index in 1937 for poultry products was 116.7;

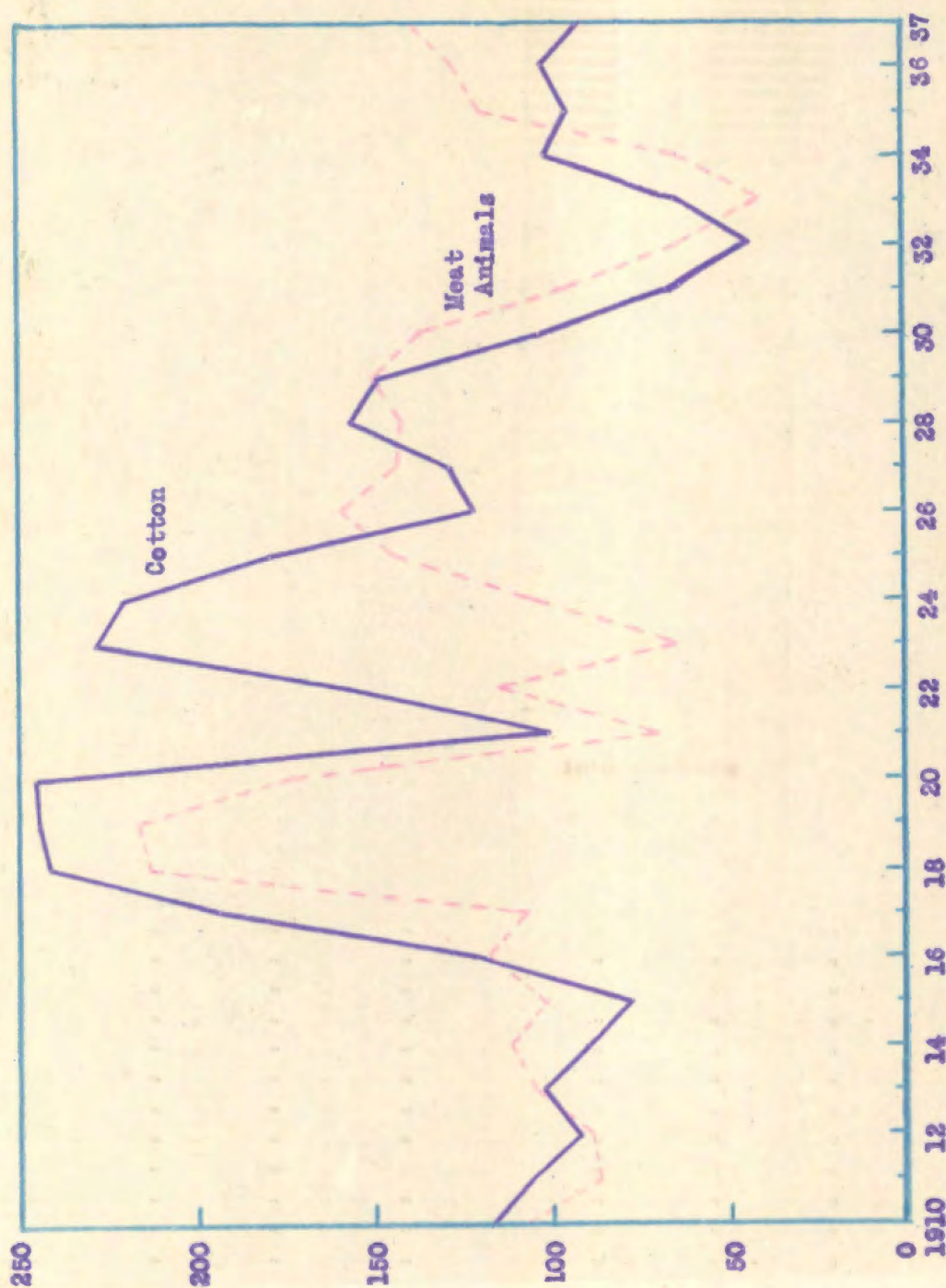
dairy products, 115.3; grains, 126.2; miscellaneous other farm products, 91.5; and the combined index of all the farm commodities in this state was 113.3.

In the past ten years the average price index was 107.8 for meat animals and 97.6 for cotton and cottonseed. The price index of livestock has also been higher than cotton seven times out of the past ten years. This indicates if the prices are normal for the base period, the price situation for livestock has also been more favorable for the last ten years than for cotton farming. Poultry products have had a higher price index than cotton and cottonseed nine years out of the past ten years; dairy, nine years; grains, seven years; and miscellaneous farm products, seven years (Table XXIV).

TABLE XXIV. ANNUAL INDEX NUMBER OF FARM PRICES, TENNESSEE,
1910 - 1937

Year	Grains	Cotton and Cotton- seed	Dairy Products	Poultry Products	Meat Ani- mals	Miscel- laneous	Combined Index
1910	104.7	116.8	92.4	106.8	107.8	95.0	101.0
1911	86.5	106.4	85.7	90.6	87.1	103.9	94.9
1912	104.7	91.7	94.7	101.1	88.9	100.0	95.0
1913	98.6	102.2	105.8	101.6	104.7	99.9	102.1
1914	106.4	89.0	101.3	104.6	111.8	101.3	101.4
1915	108.0	77.5	94.7	100.0	101.8	89.8	92.3
1916	112.6	121.0	99.2	115.7	116.8	110.0	115.5
1917	202.4	193.1	121.8	162.4	106.5	168.1	160.0
1918	212.2	241.6	171.1	192.3	212.6	196.9	213.7
1919	224.3	244.3	187.0	218.8	216.0	236.1	227.7
1920	237.7	246.6	167.1	234.9	173.7	220.7	216.3
1921	116.8	100.4	126.3	157.0	71.6	184.5	127.7

(continued)



Sources: Calculated from monthly farm prices of important Tennessee farm products. Data from office of S. T. Marsh, State Statistician, U. S. Crop Reporting Service, Department of Agricultural Economics, Knoxville, Tennessee.

Figure 51. Annual Index Number of Cotton and Cottonseed and Meat Animals, Tennessee, 1910 - 1937

TABLE XXIV. ANNUAL INDEX NUMBER OF FARM PRICES, TENNESSEE,
1910 - 1937 (continued)

Year	Grains	Cotton and Cotton- seed	Dairy Products	Poultry Products	Meat Ani- mals	Miscel- laneous	Combined Index
1922	79.6	158.5	121.7	136.7	114.7	186.8	139.4
1923	128.2	227.6	130.8	148.8	65.0	147.5	156.6
1924	130.6	219.9	126.4	160.7	105.0	175.8	160.0
1925	165.5	178.7	133.2	167.3	143.5	180.0	164.8
1926	127.6	122.0	133.1	166.2	158.7	149.6	142.8
1927	120.6	128.0	135.4	153.0	143.5	198.9	147.1
1928	150.5	155.4	135.5	160.2	142.1	211.7	161.1
1929	145.1	148.8	126.6	177.0	149.7	196.3	159.4
1930	124.4	102.8	113.1	138.0	135.9	159.0	128.4
1931	86.8	67.0	85.9	102.3	96.4	93.3	87.4
1932	50.6	46.5	61.1	79.3	64.3	89.3	63.8
1933	78.5	64.9	60.5	72.6	41.5	94.8	70.4
1934	92.4	100.7	70.0	92.5	64.5	128.3	92.9
1935	103.9	95.6	85.8	122.1	119.0	117.9	109.3
1936	114.2	102.1	94.3	122.6	126.7	146.1	119.8
1937*	126.2	92.4	115.3	116.7	137.8	91.5	113.3

* Standard average of monthly weighted averages.

Source: Calculated from monthly farm prices of important Tennessee farm products. Data from office of S. T. Marsh, State Statistician, U. S. Crop Reporting Service and Department of Agricultural Economics, Knoxville, Tennessee.

Factors Affecting Livestock Production

I. Physical Factors. Soil. Sands, silts, and gravels thinly covered with loess are the principal soils of Region VI. Along the western border is a thin strip of soils that is composed of the Grenada and La Grange formations, sands, and clays. In the southeastern corner a small amount of alluvium bottom land formed by alluvial deposits of the Tennessee River is found. The remainder of the soils which principally

run in parallel strips from north to south are classified as Holly Springs formations, Tuscaloosa gravel, Porter's Creek Clay, McNairy sands, silty sand and soft sandstones, Ripley sands, Selma clay and fine sands, and Eutaw sands.

Crop yields for cotton, corn, hay, sweet potatoes, and pasture are all below the state average. The crop production tends to increase from east to west except for the alluvial bottom lands in the southeastern corner. The soils in the east are lacking more in soil nutrients, fertility, and are much more subject to drought than the deeper silt loam soils of loessial origin in the west. Soil erosion is a very serious problem, especially gullying in the east. The texture of the soils, slope, and cropping system cause all of the farm land to be subject to erosion. Unless fertilizer and proper soil management practices are applied, the soil is unfavorable for the growth of seed and pasture for livestock.

Topography. The topography ranges from level land found principally in the central part to hilly land in the remainder of the Region. The elevation ranges from 400 to 600 feet. The Tennessee River and its tributaries drain the eastern part of the area, the Obion River and its tributaries the northwestern corner; and the remainder of the Region by the Forked Deer River and the Hatchie River. Overflows seldom occur on the western bottom lands, but are not uncommon on the eastern bottoms. The greater part of the land is well adapted to livestock production.

Climate. The average rainfall at Jackson, Tennessee, is 48 inches, and in 1937 the rainfall was 59.55 inches. The average rainfall in the crop growing season (April to August) is 19.04 inches, and in 1937 it was 17.21 inches (Table XXV). The rainfall was favorably

TABLE XXV. MONTHLY AND ANNUAL PRECIPITATION, WITH DEPARTURES
FROM THE NORMAL AT JACKSON, TENNESSEE,
1937

Month	Precipitation	Departure
January	20.31	15.56
February	2.14	- 1.41
March	2.83	- 2.09
April	5.35	0.76
May	3.33	- 1.03
June	3.35	- 0.30
July	5.22	1.85
August	2.96	- 1.01
September	2.98	- 0.25
October	5.49	2.19
November	2.41	- 1.08
December	3.18	- 1.60
Total	59.55	11.59

Source: U. S. D. A., Weather Bureau, Climatological Data,
Tennessee Section, Annual Summary, 1937.

distributed throughout the year with the exception of January, exceeding the normal rainfall for that month by 15.56 inches. During the crop growing season the rainfall was well distributed and favorable although the rainfall was only 89.4 per cent of the normal precipitation.

The mean annual temperature is about 60 degrees, ranging from 40 degrees in January to 79 degrees in July. In 1937 the temperature was

practically normal in every respect. The monthly averages did not vary greatly at any time from the normal. The average length of growing season is approximately 200 days, varying from 195 days in the north to 205 days in the southern part. In 1937 the last killing frost was on April 10 and the first killing frost in the fall was October 24, making a growing season of 197 days (Table XXVI).

TABLE XXVI. MONTHLY AND ANNUAL MEAN TEMPERATURE, WITH DEPARTURES FROM THE NORMAL AT JACKSON, TENNESSEE, 1937

Month	Temperature	Departure
January	45.3	4.5
February	41.7	- 1.0
March	45.8	5.6
April	59.9	- 0.4
May	69.4	1.1
June	77.1	0.5
July	77.2	- 2.3
August	80.0	1.4
September	70.1	- 3.2
October	58.4	- 2.7
November	46.9	- 3.6
December	40.2	- 1.6
Total	59.3	- 1.1

Source: U.S.D.A., Weather Bureau, Climatological Data, Tennessee Section, Annual Summary, 1937.

From the preceding discussion on rainfall and temperature it is apparent the climatic conditions were normal throughout the year of 1937 and favorable for the growth of cotton, feed crops, and livestock.

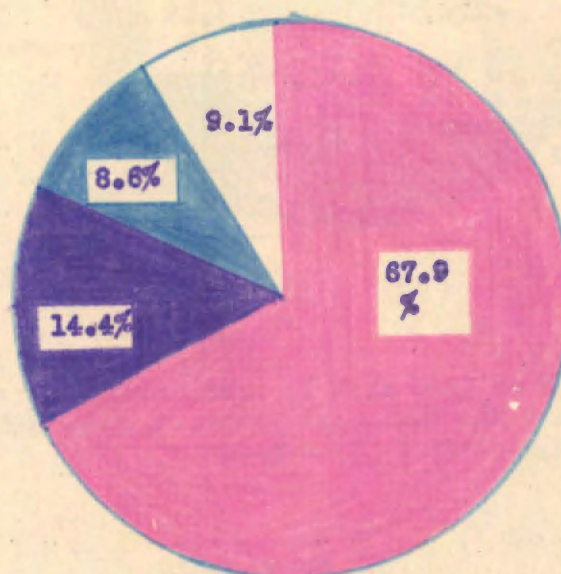
II. Biological Factors. The amount and conditions of parasitic diseases, animal diseases, and plant diseases in Region VI are practically the same as those described in Region I. For details read the description

of biological factors under Region I.

II. Economic and Cultural Practices. System of Farming. Cotton farming prevails with little diversification on most of the farms, and is indicated by the fact that 68 per cent of the total farms are classified as cotton farms. Almost 15 per cent of the farms are classified as general and 8.6 per cent as small general (Figure 52). The 1930 census shows the average farm had 85 acres (Figure 30), 73.5 per cent of the farm products being sold and 26.5 per cent used by operator's family. The land is cropped hard with corn and cotton with practically no winter cover. The productivity of many farms is decreasing. Crop fields and production rates for livestock are low. An inadequate amount of food and feed crops is produced on many farms, and a large number of farm businesses are too small for full time farming.

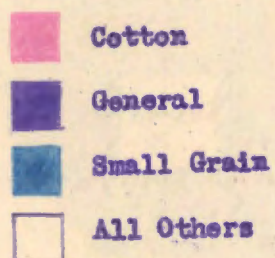
Approximately 1,000,000 acres, or 76.5 per cent of the total area, are in farms. Of the farm land, 448,699 acres are in crops harvested, 340,429 acres in woodland not pastured, 316,628 acres in pasture, 97,707 acres in idle land, and 197,280 acres in all other land. The crop land amounts to 31.7 per cent of all farm land, leaving 24.1 per cent in woodland not pastured, 22.4 per cent in pasture, 6.9 in idle land, and 14.9 per cent in all other land (Figure 53).

Of the total area in harvested crops, 47.9 per cent was in corn; 27.3 per cent in cotton; 20.5 per cent in hay; and 4.3 per cent in other crops (Figure 54). The total acres of crops grown in the Region was as follows: corn, 220,131; cotton, 125,392; hay, 94,212; and other crops, 20,032.



Source: Table IX

Figure 52. Percentage of Farms, by Types, Region VI, Tennessee



Highly specialized cultural practices, well developed marketing facilities for cotton, and well established systems of cotton farming are major factors that have determined the system of farming to be followed by new farmers moving into the Region. Labor is plentiful for cotton production, but scarce for livestock farmers. In a crop-producing area, such as Region VI, where cotton is the major crop, the systems of farming do not change easily even though it may seem economically desirable.

Kind and Available Pasture. Of the total farm land, 22.4 per cent is in pasture of which 35 per cent is plowable. The most outstanding pasture is Bermuda grass, supplemented by red top, lespedeza, white clover and hop clover. Bermuda grass is well adapted to the poor soils of the Region because it does not especially require fertilizer for successful growth. The other pasture crops mentioned are fairly well adapted to the Region and good yields could be produced with the application of fertilizer and proper soil management practices. The greater per cent of the pasture land is found in the northwestern part of the region where the soil is more fertile and less cotton is planted. At the present, the carrying capacity and yields of pastures are low and unfavorable for livestock production.

Feed Crops. Corn and hay, the principal feed crops, make up 68.4 per cent of the harvested crop acreage. Corn is planted in bottom lands that are subject to overflow and not adapted to cotton or other feed crop production. Small grains are produced only in limited amounts due

to low yields. Hay acreage increases towards the northern part of the area in about the same proportion as cotton decreases. Some alfalfa, lespedesa, and timothy hay are produced in Region VI. Cattle are fed hay and coarse fodder for winter roughage. Corn, cottonseed hulls and meal are the principal concentrates fed. Livestock production has received only a small amount of emphasis because of low average yields of these feed crops and pasture. With applications of fertilizer and proper soil management practices, the yields could be increased considerably.

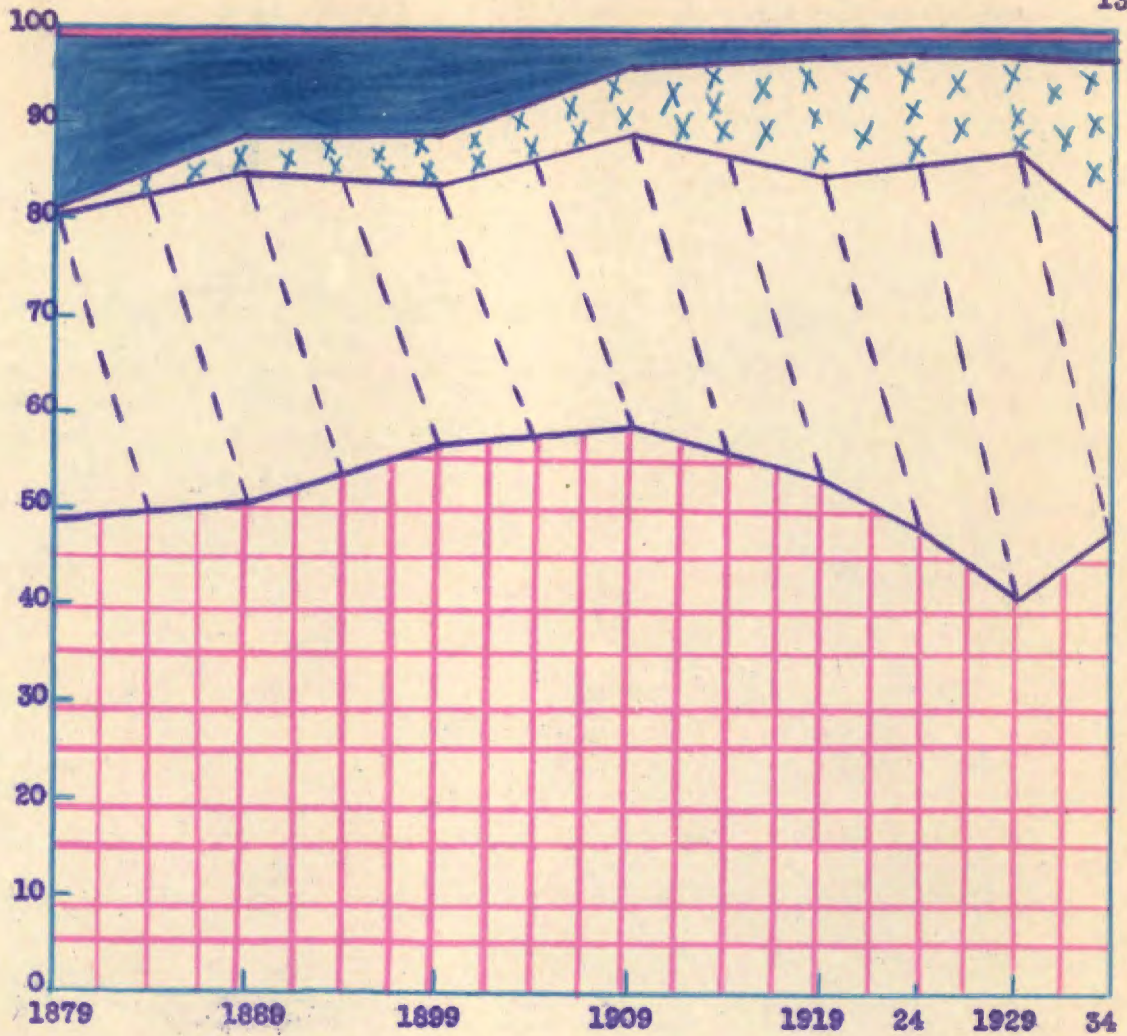
The most significant feature in crop production from a livestock standpoint has been the increase in hay acreage. In 1879 the total acreage of hay represented less than 3 per cent of the 1934 acreage of 38,303. Corn has increased about 40,000 acres from 1879 to 1934. Wheat and oats have decreased to a point of slight importance. Cotton acreage has shown an increase from 1879 to 1934, but a very definite decrease has taken place since 1924. The total crop area has increased approximately 60,000 acres from 1879 to 1934.

TABLE XXVII. ACRES OF IMPORTANT CROPS GROWN IN REGION VI,
TENNESSEE, 1879 - 1934 *

Crop	1879	1889	1899	1909	1919	1924	1929	1934
Corn	71,235	77,745	102,448	98,196	109,929	98,274	66,828	101,954
Wheat	18,517	3,927	13,049	454	930	151	7	55
Oats	9,636	11,524	4,821	3,107	613	1,379	270	906
Rye	-	2	12	-	-	-	-	-0
Barley	279	140	79	17	19	9	-	9
Hay	878	5,801	9,856	11,995	26,769	23,799	23,281	38,303
Cotton	45,479	53,930	48,861	50,781	62,768	76,056	64,735	63,731
Tobacco	218	11	60	9	6	1	5	3
S. Potatoes	953	531	544	658	807	434	711	1,137
I. Potatoes	-	297	389	476	558	413	798	1,207
Strawberries	-	-	84	32	22	57	130	157
Peanuts	-	57	196	254	209	130	197	487
Total	147,195	153,972	180,399	165,979	202,630	200,703	156,962	207,940

* Based on figures for Chester, Henderson, and McNairy counties selected as representatives of Type-of-Farming Region VI.

Source: U. S. Census of Agriculture, 1935.



Corn

Cotton

Hay

Small grains
Wheat
Oats
Barley
Rye

Other crops
Tobacco
Sweet potatoes
Irish potatoes
Strawberries *
Peanuts **

* Strawberries not reported until 1899
** Peanuts not reported until 1889

Note: Percentage based on total of crops listed and not on total harvested crops.

Source: Table XCVII

Figure 55. Crop Acres Harvested: Percentage Distribution, Specified Crops, Region VI, 1879 - 1934

Tenancy. Of the total farm operators in Region VI, 52.6 per cent are tenants, 40.0 per cent are full owners, and 7.4 per cent are part owners.

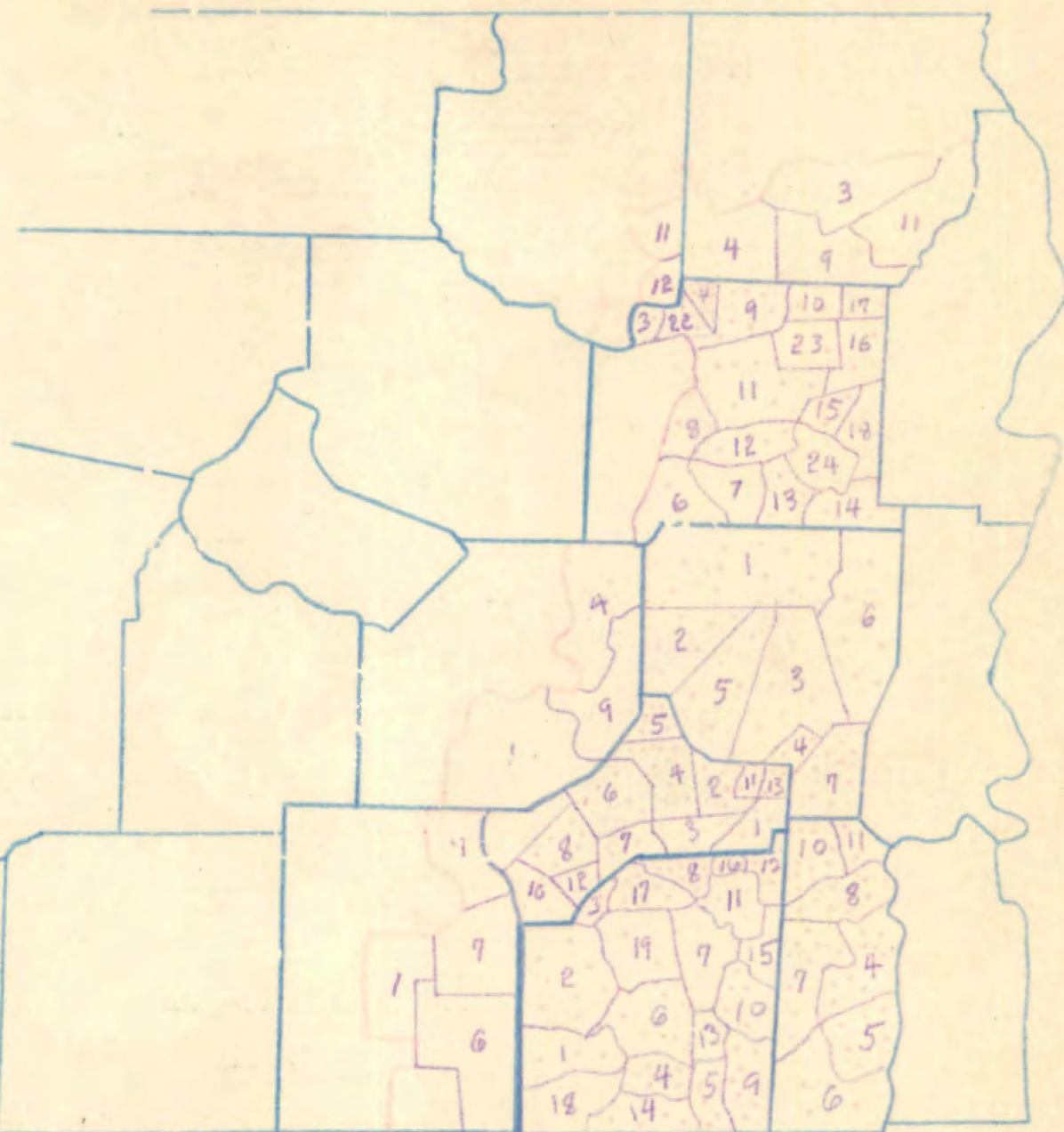
Markets. Transportation is generally adequate, though some parts of the area are still handicapped by lack of farm-to-market and secondary roads. Local markets for cotton are available at gins and shipping points. Local market outlets for livestock and livestock products are available, with creameries at Jackson and Paris, a cheese factory at Henry, and a milk plant at McKensie. More distant markets are Union City, Memphis, and Nashville.

Farm Equipment. In general, the barns, fences, etc., are adequate in the Region for livestock production. With a temperate climate, the livestock do not need elaborate housing.

Prices. Region VI is located in Crop and Livestock Reporting District Number 2. All livestock and livestock products are below the state average except butterfat. Dairy products more nearly reach the state price than any other livestock or livestock products. The prices for corn, hay, small grains, and other feed crops are also below the state average.

An Economic Analysis of 237 Farms With
Special Emphasis on Livestock

Farms Enumerated. In order to present a more detailed analysis and appraisal of the contribution and relationship of livestock to the farmer's income in Region VI, 237 farm records were analyzed in some detail.



Source: Farm Management Department, Tennessee Agricultural Extension Service,
University of Tennessee, Knoxville, Tennessee.

Figure 56. Location of 237 Sample Farms by Civil Districts, Region VI, Tennessee, 1937.

Of the total 237 farms in this study, 71 were in McNairy, 43 in Henderson, 42 in Hardin, 42 in Carroll, 37 in Chester, and 2 in Madison counties.⁽¹⁾ These farms were evenly distributed throughout the counties and civil districts (Figure 56).

Livestock. The average number of milk cows per farm was 3.2; heifers, bulls and other cattle, 3.8; horses, mules, colts, and jacks, 3.7; all sheep and goats, 1.7; all swine, 8.7; and hens and pullets, 67.4 (Table XXVIII). Milk cows were reported on 99.2 per cent of the farms; heifers, bulls, and other cattle on 86.7 per cent; horses, mules, colts, and jacks, 98.5 per cent; all sheep and goats, 8.4 per cent; all swine, 77.6 per cent; and hens and pullets on 97.3 per cent.

TABLE XXVIII. AVERAGE NUMBERS OF LIVESTOCK ON 237 SAMPLE FARMS IN REGION VI AND PER CENT OF FARMS REPORTING EACH TYPE, TENNESSEE, 1937

Type of Livestock	Average per Farm	Per Cent of Farms Reporting
Milk cows	3.2	99.2
Heifers, bulls, and other cattle	3.8	86.7
Horses, mules, colts, and jacks	3.7	98.5
All sheep and goats	1.7	8.4
All swine	8.7	77.6
Hens and pullets	67.4	97.3

(1) Three tabulations were made in compiling the data for this analysis. When the first tabulation was made, 226 farm records were available, 216 for the second, and 237 for the third. A slight shift in the type-of-farming areas caused the first change, and completion of more records the other changes, explaining the reason why the tables in the following discussion varied in number of sample farms.

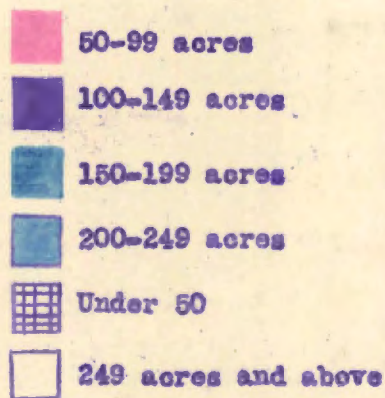
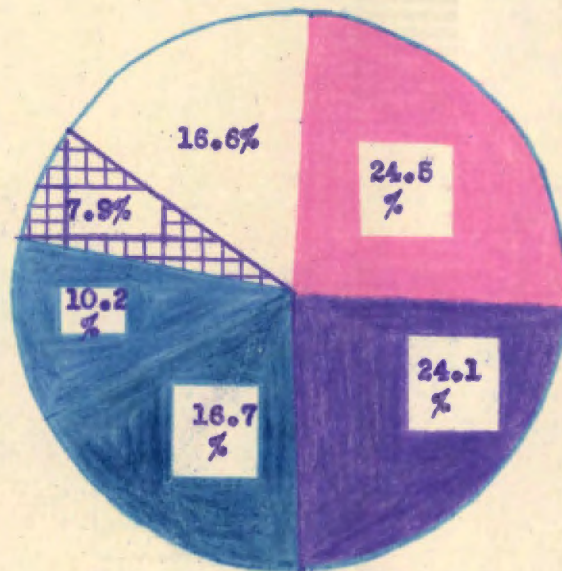
Land Use. Farm Acreage. Almost 50 per cent of the farms were between 50 and 149 acres, only 7.9 per cent being under 50 acres. The farms between 150 and 249 acres made up 36.9 per cent of the total (Table XXIX).

TABLE XXIX. VARIATION IN SIZE OF 216 FARMS IN REGION VI,
TENNESSEE, 1937

Acres per Farm	Number of Farms	Per Cent of Farms
Under 50	17	7.9
50-99	53	24.5
100-149	52	24.1
150-199	36	16.7
200-249	22	10.2
250-299	13	6.0
300-349	10	4.6
350-399	6	2.8
400-449	5	2.3
Above 450	2	.9
Total	216	100.0

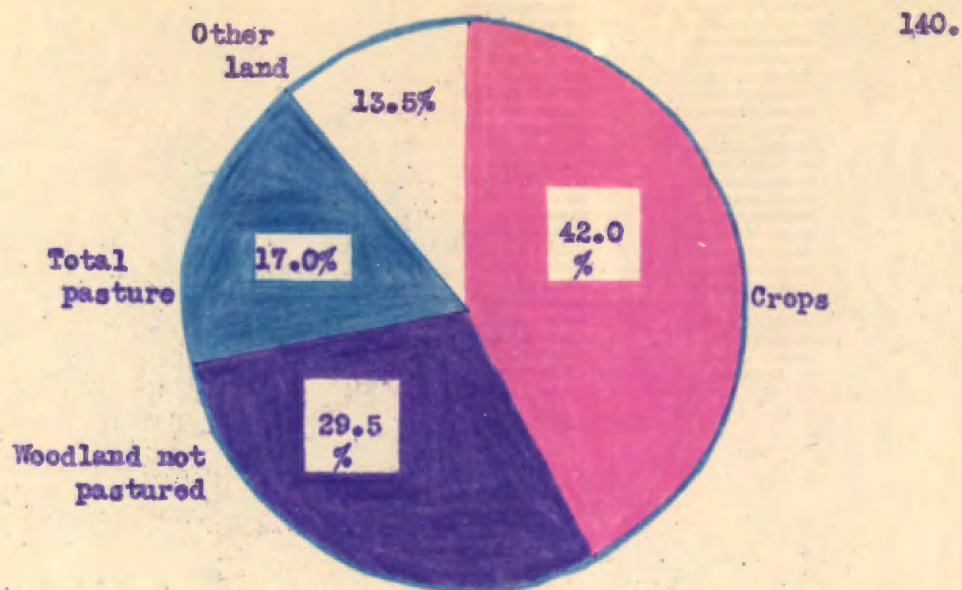
The average size of the 216 sample farms was 156.3 or almost twice that of the average for the Region. The average size farm in this region according to the 1935 census was 79.0 acres. However, the farms in this sample represent a work stock unit whereas the census definition includes croppers as farmers. The sample farms had a higher proportion of their total acres in crops and a smaller proportion in "other land" and pasture.

Both groups had high acreage of "other land", most of which was idle.



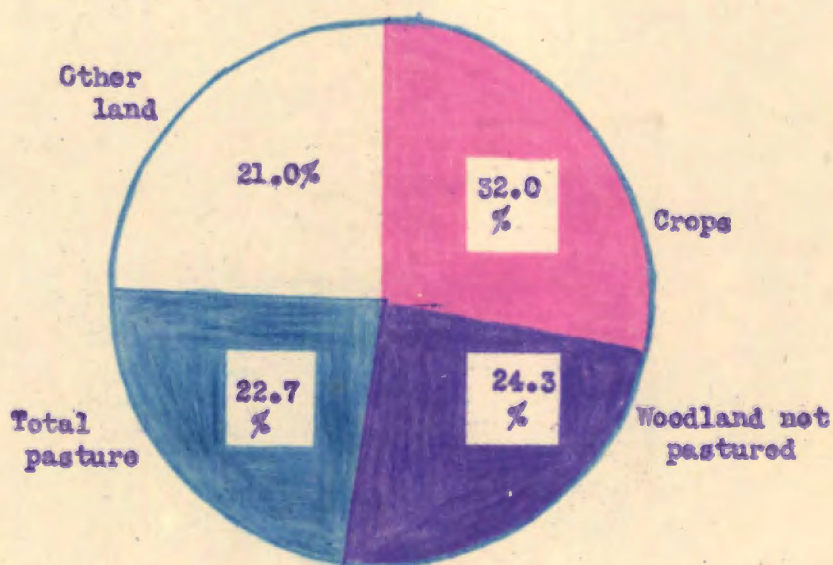
Source: Table XXIX

Figure 57. Percentage Distribution of 216 Sample Farms by Size in Region VI, Tennessee, 1937



Source: Table XXX

Figure 58. Utilization of Farm Land on 216 Sample Farms in Region VI, Tennessee, 1937



Source: Table XXX

Figure 59. Utilization of Farm Land in Region VI, Tennessee, 1935

TABLE XXX. UTILIZATION OF FARM LAND IN 1935 COMPARED WITH
216 SAMPLE FARMS IN 1937 FOR REGION VI, TENNESSEE

Land Use	Average Acres per Farm		Per Cent of Total	
	216 Farms Studied	1935 Census Region VI	216 Farms Studied	1935 Census Region VI
Crops	65.7	25.3	42.0	32.0
Woodland				
not past.	43.0	19.2	29.5	24.3
Total past.	26.5	17.9	17.0	22.7
Other land	21.1	16.6	13.5	21.0
Total	156.3	79.0	100.0	100.0

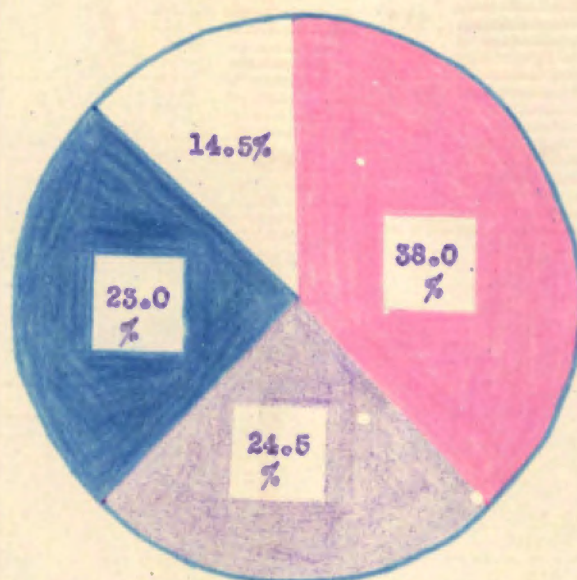
Crop Acreage. The most important crops grown on these farms were corn, hay, and cotton (Table XXI). Of the crop area, 38.0 per cent

TABLE XXI. ACREAGE AND PROPORTION OF CROP AREA IN SPECIFIED
CROPS GROWN ON 216 FARMS IN REGION VI, TENNESSEE, 1937

Crops Harvested	Acres per Farm	Per Cent of Crop Area
Corn	22.6	38.0
Hay	14.6	24.5
Cotton	13.7	23.0
Truck	1.2	2.0
Fruit	1.0	1.7
Small grain	0.6	1.0
Sweet potatoes	0.3	0.5
Silage	0.3	0.5
Other crops	5.2	8.8
Total	59.5 *	100.0

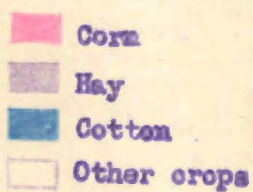
* This acreage differs slightly from the crop land in Table XXX because it includes only crops harvested and not idle land.

was in corn; 24.5 per cent in hay, most of which was lespedeza; 23.0 per cent in cotton, and the remainder in various other crops.



Source: Table XXXI

Figure 60. Percentage of Crop Area in Specified Crops
on 216 Farms in Region VI, Tennessee,
1937



There were a few truck and fruit farmers, but most of the operators produced little more than enough for home use. Approximately the same proportion of crop land was used for these different crops on all farms in the Region (Table XXVII).

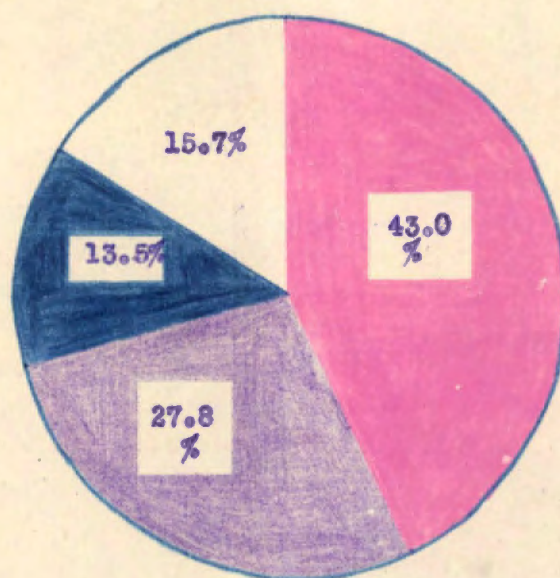
Fertilizer Used. Of the total 237 farms, 89 per cent purchased lime or fertilizer, or both. The average cost per farm was \$67.20. The larger farms were using the greatest amount of fertilizer and also represented the largest per cent of farms using fertilizer.

TABLE XXXII. NUMBER OF FARMS USING FERTILIZER AND AMOUNT SPENT IN RELATION TO VARIOUS FACTORS ON 237 SAMPLE FARMS, REGION VI, TENNESSEE, 1937

Number of Acres	No. of Farms	No. Using Fertilizer	Per Cent Using Fertilizer	Crop Index	Cost
1-49	107	95	88.8	163.7	\$57.10
50-99	92	84	91.3	177.0	84.60
100-149	28	19	82.6	150.0	92.00
150 and above	15	14	93.3	139.0	126.21
Total or ave.	237	212	89.0	166.0	67.20

Types of Farming. Four principal groups of farm types were found among these farms. (2) Cotton farming predominated with 102, or 43.0 per cent; followed by general farms with 66, or 27.8 per cent; and livestock and dairy farms 32, or 13.5 per cent, and other farms 37 or 15.7 per cent (Table XXXIII). Corn, truck, fruit, semi-commercial, and small general farms were included in "other farms".

(2) These farms were classified according to man work units.



144.

Source: Table XXXIII

Figure 61. Percentage of Farms, by Types, 237
Farms in Region VI, Tennessee, 1937

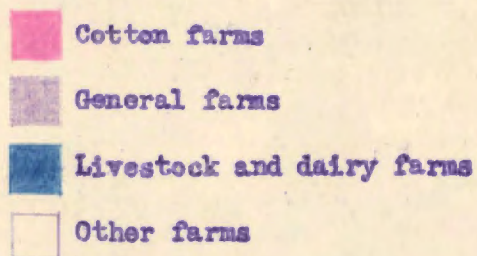


TABLE XXXIII. NUMBER AND PER CENT OF DIFFERENT TYPES OF
FARMS ON 223 SAMPLE FARMS IN REGION VI, TENNESSEE,
1937

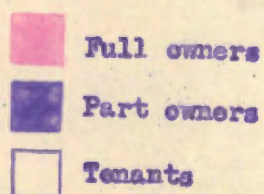
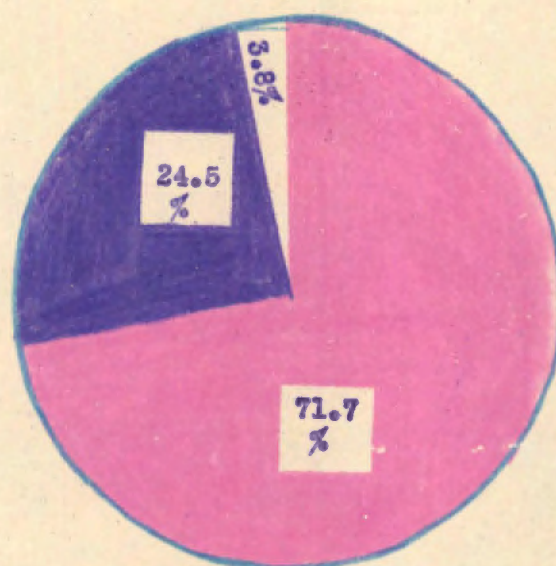
Type of Farm	Number	Per Cent of Total
Livestock and dairy	30	13.4
Cotton	103	46.2
General	63	28.3
Other farms	27	12.1
Total	223	100.0

Tenancy. Of the total 237 farm operators, 170, or 71.7 per cent were full owners; 58, or 24.5 per cent were part owners; and 9, or 3.8 per cent were tenants (Table XXXIV).

TABLE XXXIV. NUMBER AND PER CENT OF FULL OWNERS, PART-OWNERS,
AND TENANTS ON 237 SAMPLE FARMS
IN REGION VI, TENNESSEE, 1937

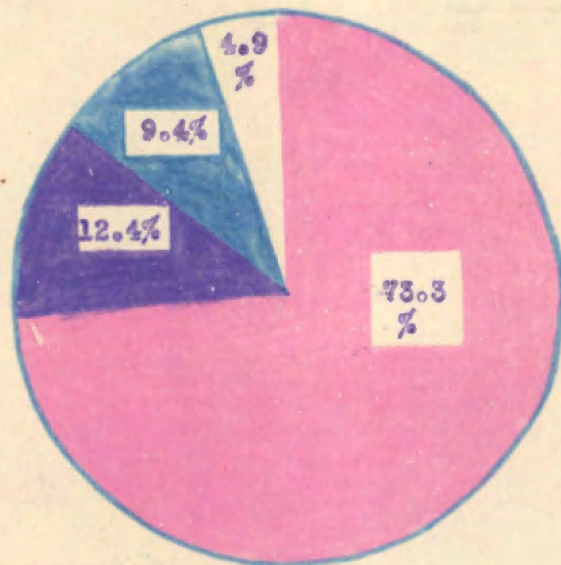
Type of Tenure	Number of Farms	Per Cent of Total
Full owners	170	71.7
Part owners	58	24.5
Tenants	9	3.8
Total	237	100.0

Capital Investment. The average investment per farm was \$6,880.47 (Table XXXV). Of this total, \$5,041.60, or 73 per cent, was invested in real estate, \$337 in machinery and equipment, \$858 in live-stock, and \$645 in feed and supplies.

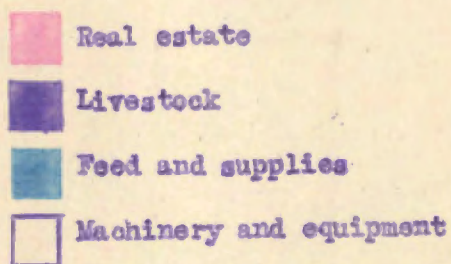


Source: Table XXIV

Figure 62. Distribution of Full Owners, Part Owners, and Tenants on 237 Sample Farms in Region VI, Tennessee, 1937



147.



Source: Table XXXV

Figure 63. Distribution of Investment on 263 Sample Farms in Region VI, Tennessee, 1937

TABLE XXV. DISTRIBUTION OF INVESTMENT ON 237 SAMPLE FARMS
IN REGION VI, TENNESSEE, 1937

Form of Investment	Average Investment per Farm	Per Cent of Total
Real estate	\$5,041.60	75.3
Machinery and equipment	336.51	4.9
Livestock	857.54	12.4
Feed and supplies	644.82	9.4
Total	6,880.47	100.0

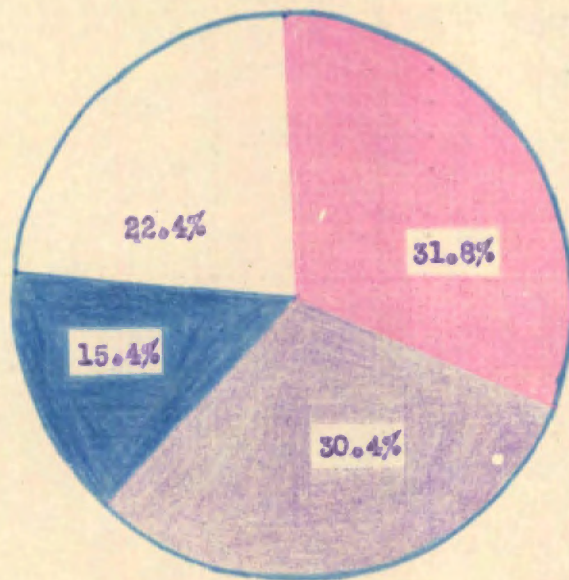
Receipts. The average total receipts per farm were \$1,464.

Crops contributed 45.8 per cent of all receipts, livestock 31.8 per cent, and other sources of income 22.4 per cent.

Cotton was by far the most important cash crop, contributing 30.4 per cent. Corn, the second most important cash crop, was of less significance as a direct source of income with only 7.4 per cent of all receipts. A total of 22.4 per cent of the receipts per farm was from miscellaneous sources other than crops and livestock (Figure 64).

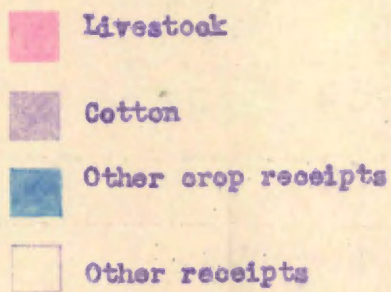
TABLE XXVI. DISTRIBUTION OF RECEIPTS ON 237 SAMPLE FARMS
IN REGION VI, TENNESSEE, 1937

Receipts	Average Amount	Per Cent of Total
Corn	\$109.00	7.4
Hay	29.00	2.0
Total truck crops	19.00	1.3
Cotton	445.00	30.4
Other crops	69.00	4.7
Total crops	671.00	45.8
Total livestock	466.00	31.8
Other	327.00	22.4
Total	\$1464.00	100.0



Source: Table XXXVI

Figure 64. Distribution of Receipts on 237 Sample Farms
in Region VI, Tennessee, 1937



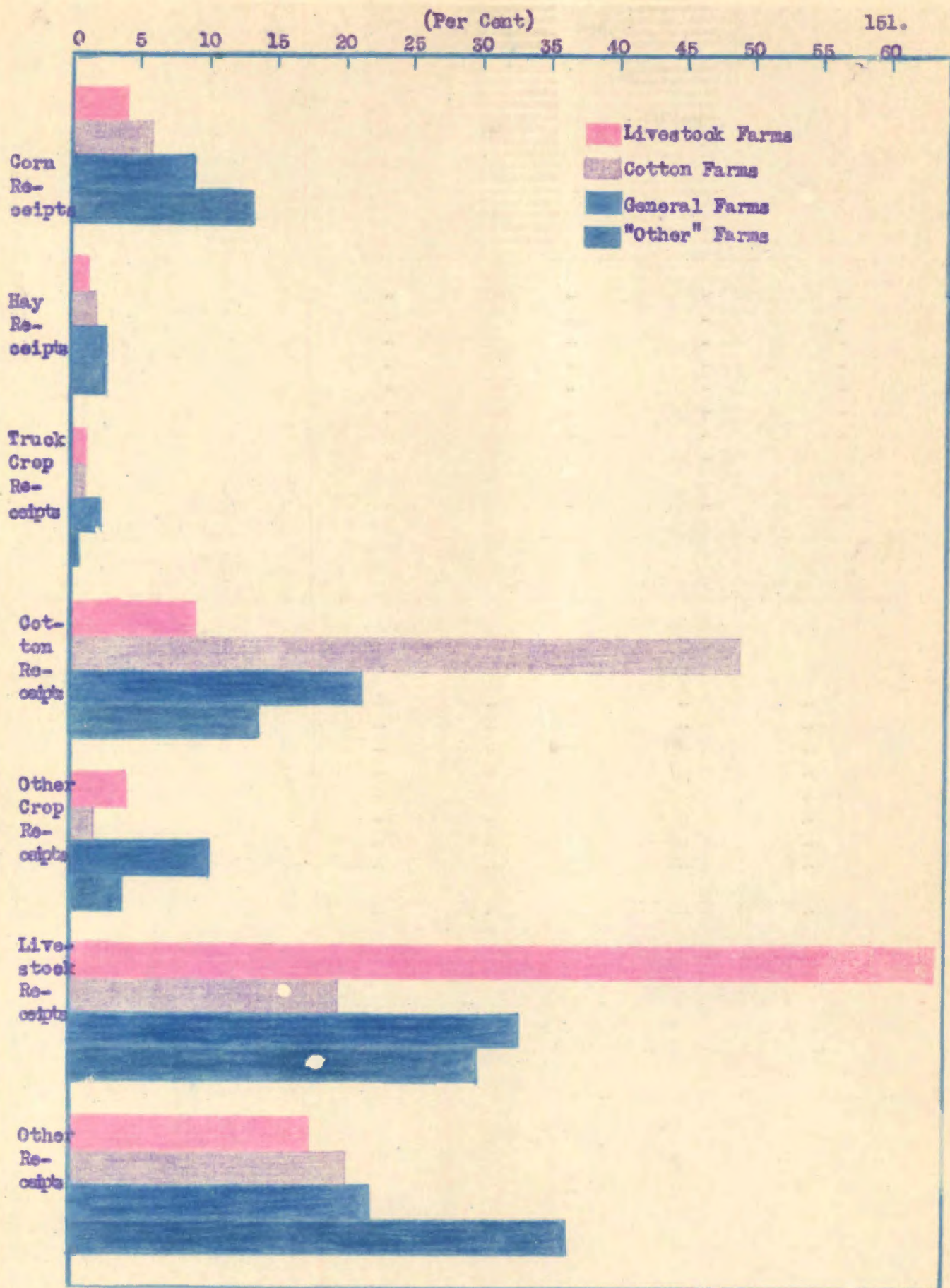
XXXVII. SOURCES OF RECEIPTS, BY TYPE OF FARMS, 237 FARMS IN
REGION VI, TENNESSEE, 1937

Source	32 Livestock and Dairy Farms	Per Cent of Total	102 Cotton Farms	Per Cent of Total
Corn	\$71.00	4.0	\$85.00	5.9
Hay	23.00	1.3	25.00	1.7
Total truck crops	18.00	1.0	15.00	1.0
Cotton	165.00	9.3	714.00	49.9
Other crops	74.00	4.2	21.00	1.6
Total crops	351.00	19.8	860.00	60.1
Total livestock	1116.00	62.8	281.00	19.7
Other	309.00	17.4	289.00	20.2
Total	1776.00	100.0	1430.00	100.0

(continued)

Source	66 General Farms	Per Cent of Total	37 Other Farms	Per Cent
Corn	\$134.00	8.9	\$160.00	13.2
Hay	38.00	2.5	30.00	2.5
Total truck crops	35.00	2.3	5.00	0.4
Cotton	319.00	21.2	169.00	13.9
Other crops	154.00	10.2	47.00	3.9
Total crops	680.00	45.1	411.00	33.9
Total livestock	495.00	32.8	361.00	29.8
Other	332.00	22.1	441.00	36.3
Total	1507.00	100.0	1213.00	100.0

Livestock accounted for 62.8 per cent of the receipts on livestock farms. Cotton, the second largest receipts, contributed 9.3 per cent. The total crop receipts amounted to 19.8 per cent of the income. Receipts other than crop or livestock were 17.4 per cent of the total receipts for livestock farms (Table XXXVII).



Source: Table XXXVII

Figure 65. Sources of Receipts, by Types of Farms, 237 Sample Farms in Region VI, Tennessee, 1937

On the cotton farms, receipts from cotton were 49.9 per cent and total crop receipts were 60.1 per cent of all receipts. Livestock contributed 19.7 per cent and other receipts 20.2 per cent (Table XXXVII).

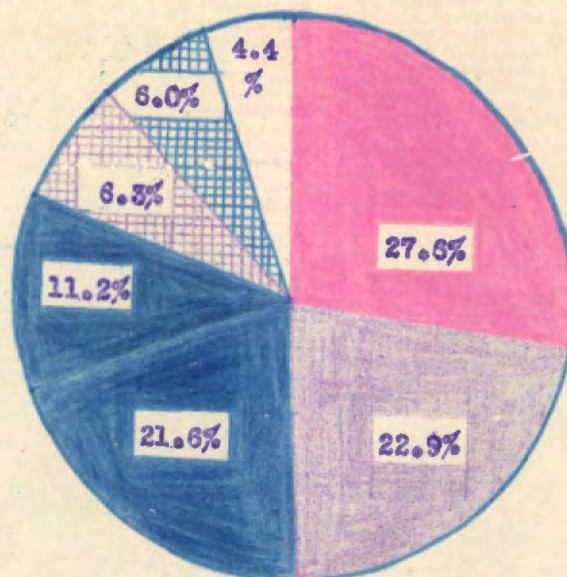
Cash crops were the most important sources of income on the general farms, contributing 45.1 per cent of all receipts. Cotton was the most important crop, with 21.2 per cent. Livestock receipts were next in importance with 32.8 per cent, and other receipts amounted to 22.1 per cent of the total (Table XXXVII).

On "other farms" cash crops were also the most important source of income, cotton and corn contributing 18.9 and 13.2 per cent respectively. Livestock followed with 29.8 per cent and other receipts were 36.5 per cent of all income.

Expenses. The average expenses per farm were \$969.00. The largest single item of expense was for labor, 10.8 per cent of the total for hired labor, 8.3 per cent for cropper labor, and 8.5 per cent for unpaid

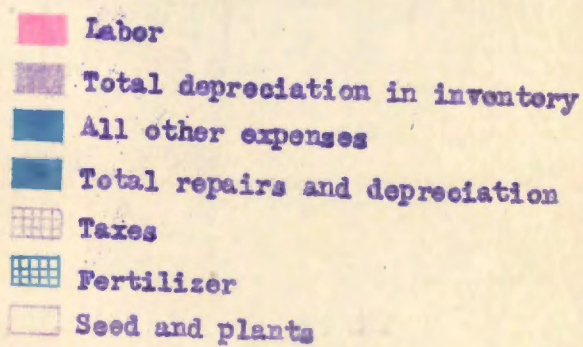
TABLE XXXVIII. DISTRIBUTION OF EXPENSES ON 237 SAMPLE FARMS
IN REGION VI, TENNESSEE, 1937

Expenses	Average Amount	Per Cent of Total
Labor, hired	\$105.00	10.8
Labor, cropper	80.70	8.3
Labor, family	82.40	8.5
Total labor	268.10	27.6
Seed and plants	42.50	4.4
Fertilizer	58.60	6.0
Taxes	61.00	6.3
Total rep. and depr.	108.20	11.2
Total depr. in inv.	222.00	22.9
All other expenses	209.30	21.6
Total	\$969.70	100.0



Source: Table XXXVIII

Figure 66. Distribution of Expenses on 237 Sample Farms in Region VI, Tennessee, 1937



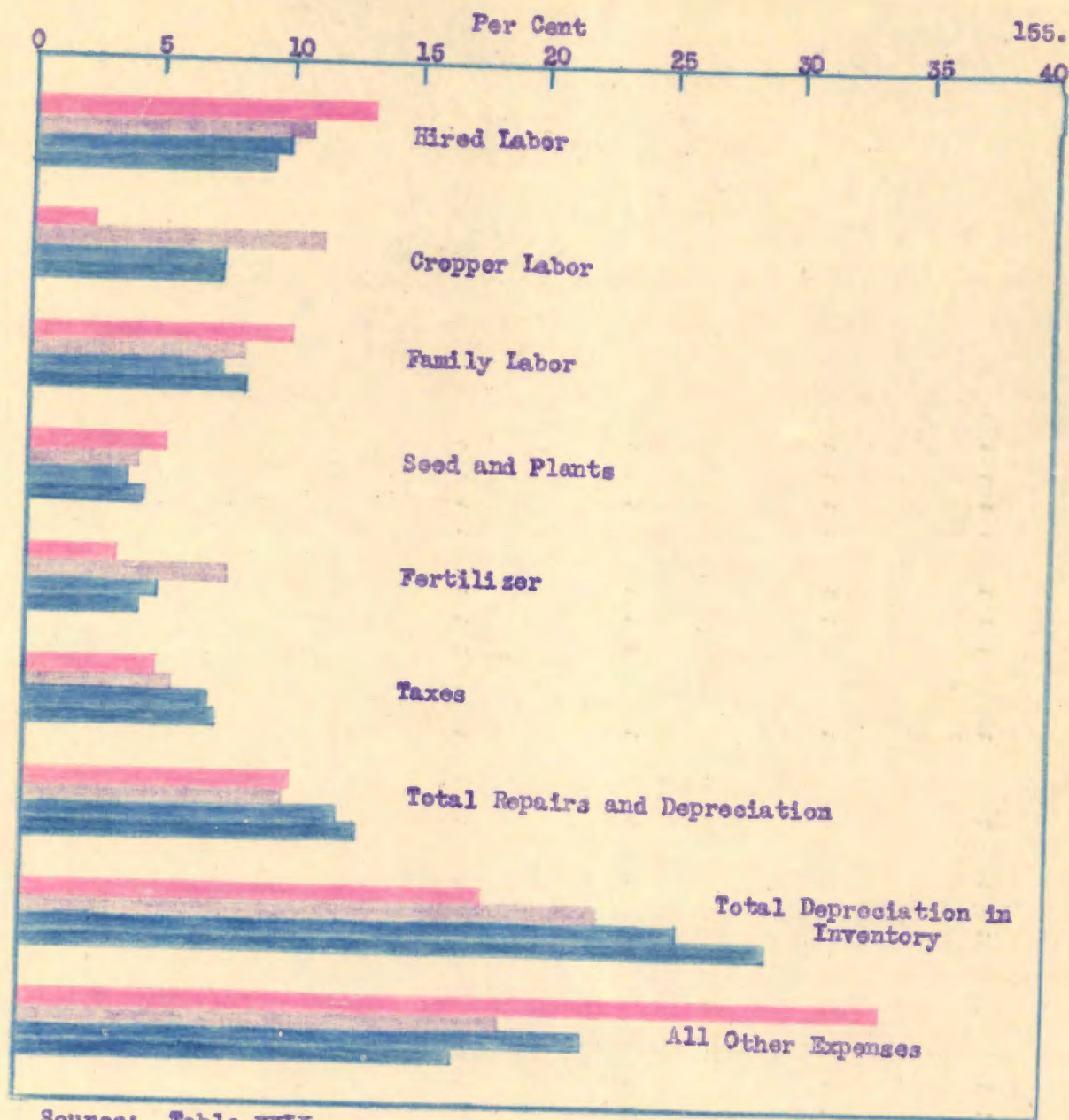
family labor. Total depreciation in inventory amounted to \$220 per farm, or 22.9 per cent of all expenses. All other expenses were \$209.30. The average taxes per farm were \$61.00, or 6.3 per cent of all expenses (Table XXXVIII).

TABLE XXXIX. DISTRIBUTION OF EXPENSES, BY TYPES OF FARMS ON 237 SAMPLE FARMS IN REGION VI, TENNESSEE, 1937

Expenses	32 Livestock and Dairy Farms	Per Cent of Total	102 Cotton Farms	Per Cent of Total
Labor, hired	\$165.00	13.5	\$197.00	10.8
Labor, cropper	30.40	2.5	112.00	11.3
Labor, family	125.00	10.2	82.00	8.3
Total labor	320.40	26.2	391.00	30.4
Seeds and plants	64.60	5.3	42.50	4.3
Fertilizer	46.00	3.7	78.00	7.9
Taxes	63.00	5.1	57.70	5.8
Total repairs and depreciation	127.00	10.4	101.00	10.2
Total depreciation in inventory	220.40	18.00	225.00	22.7
All other expenses	383.00	31.3	185.00	18.7
Total	\$1,224.40	100.0	\$990.20	100.0

(continued)

Expenses	66 General Farms	Per Cent of Total	37 Other Farms	Per Cent of Total
Labor, hired	\$95.00	10.0	\$99.00	9.1
Labor, cropper	70.00	7.5	57.00	7.5
Labor, family	72.00	7.7	65.00	8.6
Total labor	235.00	25.2	191.00	25.2
Seeds and plants	57.00	3.9	34.00	4.5
Fertilizer	48.00	5.1	35.00	4.6
Taxes	67.00	7.2	58.00	7.6
Total repairs and depreciation	115.00	12.5	100.00	13.2
Total depr. in inventory	225.00	24.1	210.00	27.7
All other exp.	207.00	22.2	130.00	17.2
Total	\$934.00	100.0	\$758.00	100.0



Source: Table XXIX

Figure 67. Distribution of Expenses, by Types of Farms on 237 Sample Farms in Region VI, Tennessee, 1937

Les. & dairy farms
 Cotton farms
 General farms
 "Other" farms

Labor was the highest item of expense on the different types farms, being greatest on cotton farms with 30.2 per cent. Livestock farms were next highest in labor costs followed by general and "other farms". Total depreciation in inventory was highest on "other farms" with \$210.00 or 27.7 per cent of the total. General, cotton, and livestock farms followed in order. Other expenses were greatest on livestock farms and indicated that a large amount of feed and livestock equipment were bought. Fertilizer expenses were highest on cotton farms with \$78.00, or 7.9 per cent, while livestock farms averaged only \$46 per farm, or 3.7 per cent of the total. Taxes were highest on general farms with an average of \$67.00, followed by livestock farms, \$62, other farms, \$58, and cotton farms, \$57.70 per farm. Total repair and depreciation was greatest on livestock and lowest on cotton farms (Table XXXIX).

Farm Income. Farm income, which is the difference between total receipts and total expenses, averaged \$494.30 on the 237 sample farms. (Table XL).

TABLE XL. AVERAGE RECEIPTS, EXPENSES, AND FARM INCOME ON 237 FARMS IN REGION VI, TENNESSEE, 1937

Receipts	\$1,464.00
Expenses	969.70
Farm income	494.30

Factors Associated With Labor Income

A farmer's labor income is what he received for his year's work, in addition to having a house to live in and products furnished by the farm. Consequently, it is one of the best means available for measuring the success of a farmer. However, a farmer's labor income might be

nothing, or even less than nothing, and yet he might make a living. If the farm income were \$600, and the capital invested \$15,000, the labor income would be \$600 less 5 per cent interest on \$15,000 or minus \$150. In other words, this farmer would receive nothing for his own work. However, if this farmer were out of debt he would have \$600 to live on. If in addition he had a son at home who was not paid wages, but whose time was valued at \$600, the family would then have \$1200 to live on. Such a farmer might be getting ahead and have an attractive place. Yet the farmer is actually getting less than nothing for his own work.

The average labor income for the 237 farms was \$150.28, ranging from \$1270 to \$4030. Many factors influenced the returns for each farm. A few of these factors were size of business, type of farming, and production and labor efficiency.

Labor Income. Of these farms, 41.1 per cent had a minus labor income. Three farms, or 1.3 per cent of the total, had labor incomes below -\$1,000, while fourteen farms, or 6.2 per cent, had labor incomes of \$1000 or better (Table XLI). Approximately 53 per cent of the farms were concentrated between labor incomes of -\$200 and \$200.

TABLE XLI. VARIATION IN LABOR INCOME ON 226 FARMS IN REGION VI, TENNESSEE, 1937

Labor Income	Number of Farms	Per Cent of Total	Labor Income	Number of Farms	Per Cent of Total
-\$1000 and below	3	1.3	\$200 to 399	31	13.7
- 800 to - 999	2	.9	400 to 599	21	9.3
- 600 to - 799	9	4.0	600 to 799	13	5.8
- 400 to - 599	13	5.7	800 to 999	5	2.2
- 200 to - 399	26	11.5	1000 and over	14	6.2
- 1 to - 199	40	17.7			
0 to 199	49	21.7	Total	226	100.0

Relation of Labor Income to Various Factors. It is significant that labor income is closely correlated with many factors. In relation to total acres, the largest and smaller labor incomes were derived from the greatest number of acres, indicating that on large farms there are many more chances of losing as well as making money.

TABLE XLII. RELATION OF LABOR INCOME TO VARIOUS OTHER FACTORS
ON 223 FARMS IN REGION VI, TENNESSEE, 1937

Factors	Classes				
	-\$1270 to -\$270	-\$260 to -\$20	-\$1 to \$15	\$16 to \$41	\$41 to \$403
Number of farms	44	45	45	45	47
Labor income	-\$496	-\$125	\$65	\$236	\$874
Total acres	169.0	133.8	129.0	155.0	180.6
Crop acres	62.0	59.1	58.8	66.7	74.0
Cotton acres	12.2	12.8	13.0	15.6	12.9
M.W.U., livestock	82.5	68.9	82.4	91.8	125.8
Total M.W.U.	409.0	350.0	386.4	429.3	470.6
Number sources of receipts	4.3	4.6	4.9	5.9	5.7
Livestock re- ceipts	\$280.00	\$233.00	\$373.80	\$398.90	\$864.00
Crop receipts	\$580.00	\$516.00	\$629.00	\$712.40	\$841.70
Total receipts	\$1027.00	\$964.00	\$1302.00	\$1358.00	\$2226.00

depending mainly on the management of the entrepreneur. Crop acres also followed practically the same pattern as total acres in relation to labor income. A small correlation was shown between cotton acres and labor income until the average number of acres exceeded 155.

Man work units⁽³⁾ on livestock, and total man work units were

(3) A man work unit is the average amount of work accomplished by one man in a ten-hour day.

closely associated with the amount of labor income. They varied with the average number of total acres and for that reason they were high while the labor income was the lowest and greatest.

Practically a direct relationship was shown between labor income and the number of sources of receipts.⁽⁴⁾ As the labor income advanced from minus \$496 to \$874, the number of sources steadily increased from 4.3 to 5.7 (Table XLII). Livestock receipts⁽⁵⁾ and crop receipts⁽⁶⁾ also directly increased with the amount of labor income with the exception of the large farms that showed a minus \$496 labor income. Crop index⁽⁷⁾ increased steadily along with the increase of labor income.

Size. Total Acres. The average size of farm was 156.3 acres (Table XXX). The medium-sized farms had the highest labor income. The average for this group was \$353 as compared with \$242 for the largest farms. However, the lowest labor income for any group of farms was for those farms ranging from 150 to 221 acres, or the second largest group in acreage. This group of farms averaged a minus labor income of \$36 (Table XLIII).

This indicates that size as measured by total acres was not a significant factor in determining labor income on these farms. Probably

(4) "Number of sources of receipts" as used in this study represents the number of enterprises from which cash income is greater than taxes on the farm.

(5) Livestock receipts represent the ending inventory plus the sales minus the beginning inventory plus purchases.

(6) Crop receipts include the amount received for all crops, including cropper grown crops, plus the value of crops held for sale at the end of the year.

(7) Crop index is a percentage comparison of the crop yields on one farm with the average yields of the state.

TABLE XLIII. THE RELATION OF TOTAL ACRES TO LAND USE AND
VARIOUS FACTORS, 216 FARMS, REGION VI, TENNESSEE, 1937

Factors	Classes				
	28-74	75-112	115-154	155-221	225-469
Number of farms	44	43	42	44	43
Average number acres	55.1	90.1	135.1	185.2	317.3
Woodland, acres	9.3	18.7	34.3	56.1	96.7
Cleared acres	41.9	64.1	86.9	106.0	186.2
Permanent pasture, acres	5.6	13.2	15.9	23.1	35.9
Rotation pasture, acres	1.6	3.6	5.3	7.0	21.6
Total pasture, acres	7.2	16.8	21.2	30.1	57.5
Crop acres	33.0	45.1	61.9	68.2	120.3
Labor income	\$67.80	\$20.13	\$353.20	-\$35.90	\$241.67

TABLE XLIV. RELATION OF TOTAL ACRES TO VARIOUS OTHER FACTORS
ON 219 FARMS IN REGION VI, TENNESSEE, 1937 *

Factors	Total Acres per Farm				
	28-74	75-112	115-154	155-221	225-469
Acres of corn	11.6	14.1	20.8	23.8	42.8
Acres of cotton	8.1	9.3	13.7	14.8	22.8
Acres of s. potatoes	0.2	0.5	0.1	0.3	0.5
Acres of truck	0.5	1.4	1.3	1.3	1.6
Acres of lesp. hay	8.3	11.1	12.8	12.8	24.8
Acres of silage	0.3	0.1	0.2	0.1	0.7
Acres of hay	8.6	12.2	13.0	12.9	26.6
Acres of small grain	0	0.2	0.6	0.6	1.6
Acres of fruit	0.7	0.6	0.9	1.5	1.2
Acres of other crops	1.8	3.8	5.7	5.2	9.5
Ave. no. crop acres	31.8	42.2	56.3	60.5	107.3

* There were no acres of tobacco reported on these farms.

TABLE XLV. THE RELATION OF TOTAL ACRES TO VARIOUS FACTORS ON
216 FARMS IN REGION VI, TENNESSEE, 1937

Factors	Total Acres per Farm				
	28-74	75-112	115-154	155-221	225-469
Number of farms	44	43	42	44	43
Crop acres	33.0	45.1	61.9	68.2	120.3
Crop receipts	\$350.90	\$524.40	\$660.47	\$683.40	\$1128.40
Livestock receipts	\$295.10	\$310.90	\$475.90	\$349.80	\$ 823.50
Number sources	4.77	5.41	5.35	4.68	5.67
Crop index	165.4	160.7	181.0	158.1	156.4

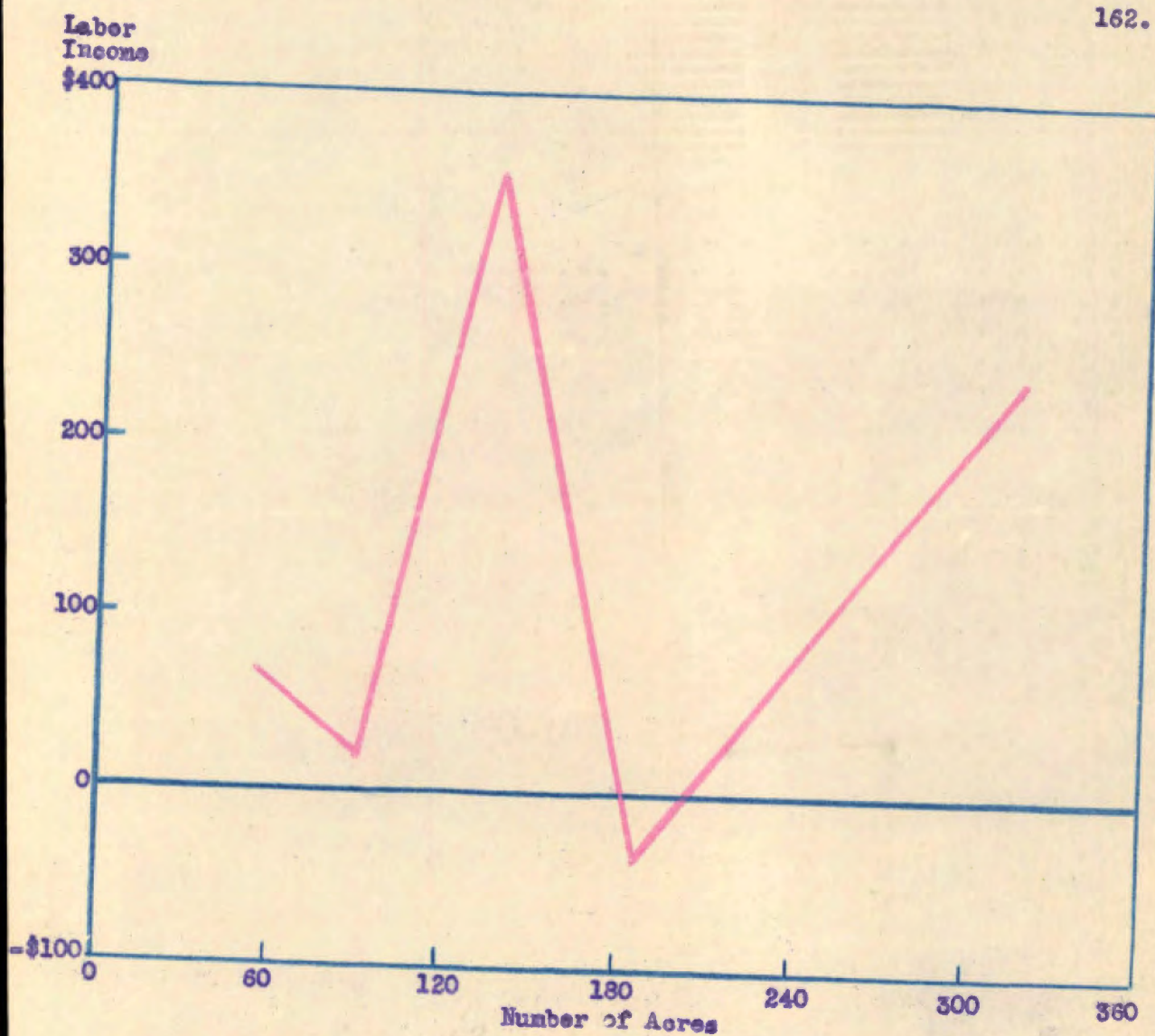
TABLE XLVI. THE RELATION OF TOTAL ACRES TO ANIMAL UNITS AND
VARIOUS OTHER FACTORS ON 219 FARMS IN REGION VI,
TENNESSEE, 1937

Factors	Total Acres per Farm				
	28-74	75-112	115-154	155-221	224-469
Number of farms	44	43	42	44	43
Average number of acres	55.1	90.1	135.1	185.2	317.3
Total animal units	4.60	5.20	8.10	7.40	18.30
Number of dairy cows	2.3	2.3	3.6	2.8	6.9
Number of sheep	0	0.3	0.3	0.4	2.8
Number of hens	54.9	52.5	67.5	77.1	81.9
Labor income	\$67.80	\$20.13	\$353.20	-\$35.90	\$241.67

a major determining reason why acreage was not more influential in relation to labor income was the high proportion of land in woods.

Corn, hay, and cotton were the principal crops grown, occupying about 55 per cent of the total acres (Table XLIV). These crops steadily increased with the total number of acres. Sweet potatoes, small grain, acres of fruit, and silage were relatively unimportant crops.

Factors that are more responsible for the farms with higher labor incomes are indicated in Table XLV. This group has the highest crop index, and second largest number of sources and livestock receipts. This partially agrees with Dr. Stanley Warren's survey of 697 farms in Northern Livingston County in 1918, New York. He found that the highest labor incomes came from the smaller farms which were heavily stocked with cows that were profitable. Crop acres, crop receipts and livestock receipts tended to increase with the total number of acres.



Source: Table XLIII

Figure 68. Relation of Total Acres to Labor Income on 216 Farms in Region VI, Tennessee, 1937

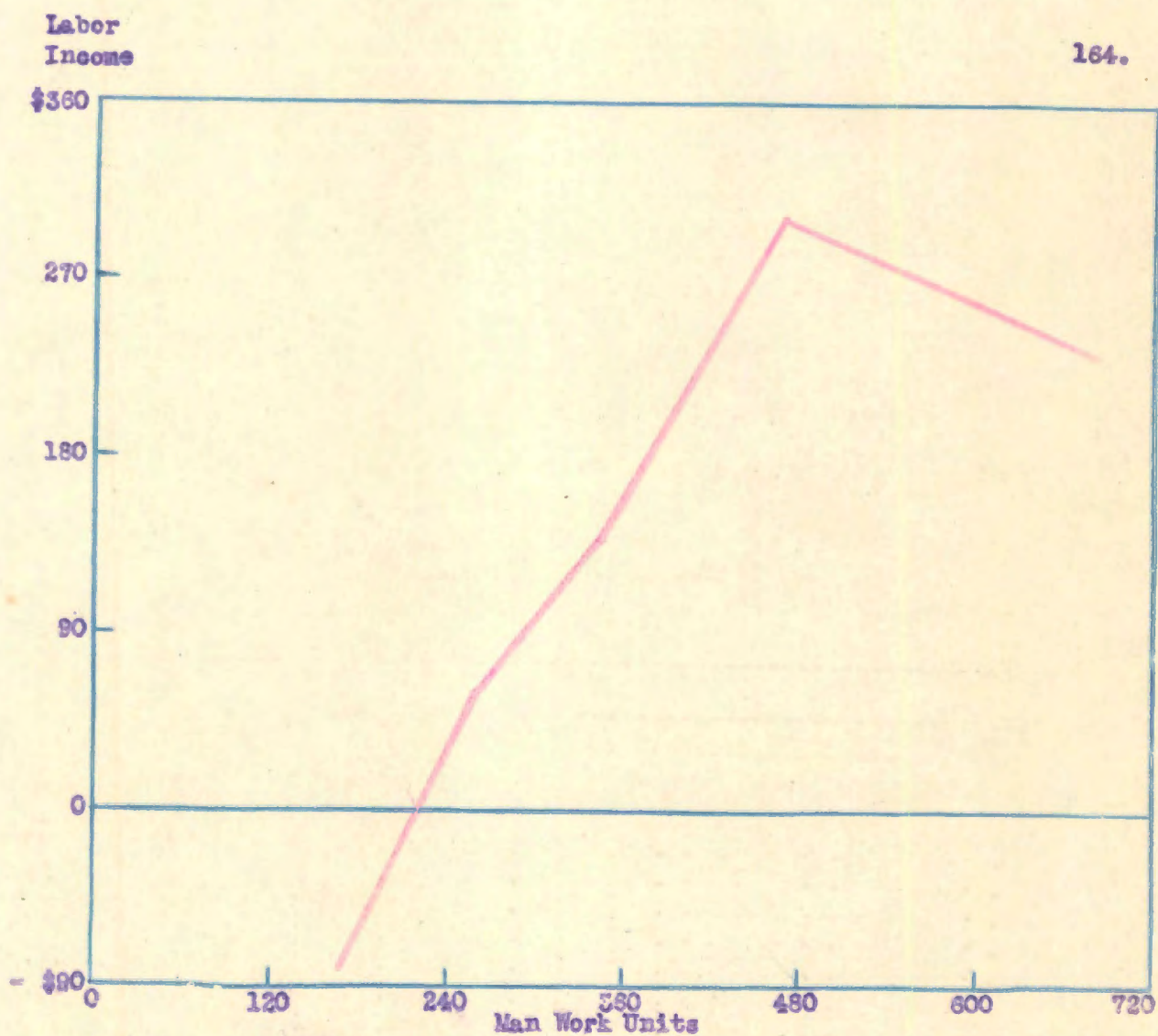
The largest farms were found to have the greatest number of total animal units (Table XLVI). With the exception of the farms averaging 185 acres, the number of animal units steadily increased with total acres. Dairy cows followed the same pattern. Sheep were relatively unimportant, and hens increased with the total number of acres.

Man Work Units. One of the best measures of size is man work units because it shows the amount of productive work actually done on the farm. There was a definite relationship shown between man work units and labor income on the 223 sample farms. Both increased together until the number of man work units reached 468, this group having

TABLE XLVII. TOTAL MAN WORK UNITS IN RELATION TO LABOR INCOME AND OTHER FACTORS ON 223 FARMS IN REGION VI, TENNESSEE, 1937

Factors	Man Work Units				
	60-210	220-290	300-390	400-540	550-1230
Number farms	43	44	45	47	44
Average number man work units	168.6	257.5	342.9	468.3	680.7
Crop index	151.5	158.7	170.8	174.7	160.6
Number sources	4.25	5.2	5.6	5.5	4.3
Livestock rec.	191.2	280.4	462.7	621.3	702.3
M.W.U., crops	114.4	180.2	251.1	439.2	604.3
M.W.U., livestock	61.2	65.6	77.3	115.1	142.5
Labor income	\$82.3	\$58.2	\$137.8	\$301.9	\$232.5

the largest labor income of \$302. At this point the law of diminishing returns was approximately reached between 400 and 500 man work units; however, both crop index and number of sources declined with the largest farms (Figure 69).



Source: Table XLVII.

Figure 69. Relation of Man Work Units to Labor Income on 223 Farms in Region VI, Tennessee, 1937

Number of Cows. Poultry and hog receipts made up a much larger proportion of the total livestock receipts on the farms where but one to three cows were kept. On the farms with five to fifteen cows, receipts from cattle and dairy products made up approximately 65 per cent of the total livestock income (Table XLVIII).

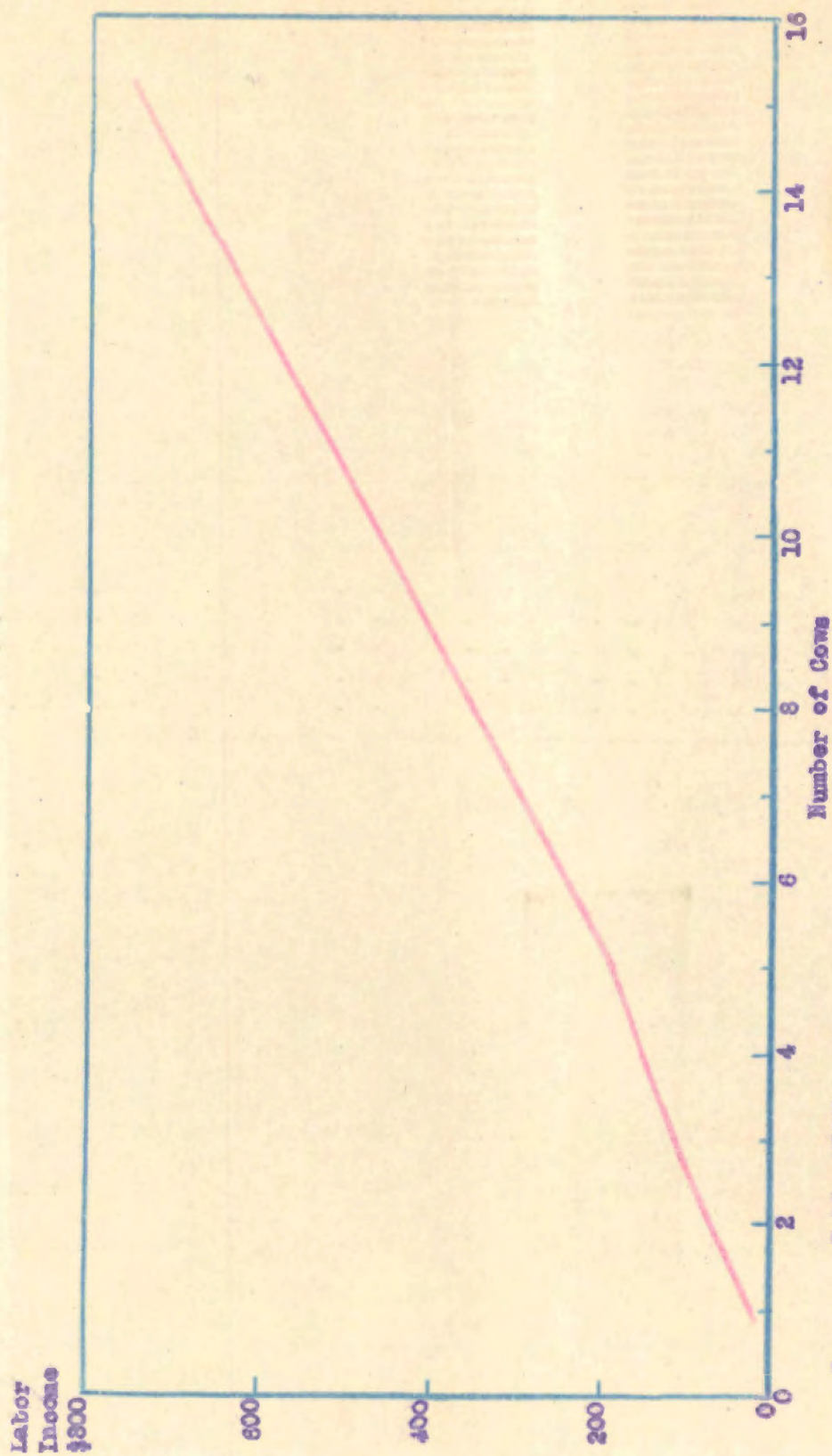
TABLE XLVIII. SOURCES OF LIVESTOCK RECEIPTS GROUPED ACCORDING TO NUMBER OF COWS, 225 FARMS, REGION VI, TENNESSEE, 1937

No. of Cows	Ave. No. of Cows	No. of Farms	Cattle Receipts	Hog Receipts	Sheep Receipts	Dairy Receipts	Poultry Receipts
0-1.0	0.9	41	\$36.70	\$62.70	-	\$10.90	\$57.10
1.5-2.0	1.8	75	57.80	75.80	\$1.50	22.90	61.70
2.5-3.5	2.9	51	136.80	168.00	11.10	54.70	80.80
4.0-6.5	5.0	36	220.20	290.40	8.60	89.60	74.80
8.0-36.5	15.2	20	1072.00	505.00	42.50	750.50	52.70

Those farms with the largest number of cows had a labor income of \$750, and earned 10 per cent return on investment.⁽⁸⁾ They also had 688 man work units per farm, or considerably more than any other groups (Table XLVIII). These relationships agreed with Warren's⁽⁹⁾ findings in Northern Livingston County, New York. He used farm records for the years 1908, 1918, and 1928, and the relationship of number of cows to labor income was positive for each year. However it must be remembered that Dr. Warren's survey was made in a dairy-producing area while these

(8) Per cent return on investment expresses the relationship between the total investment and the gross income. As used in this report it represents farm income minus value of operator's labor divided by inventory times 100 (Farm income - Value of operator's labor ÷ Inventory x 100).

(9) Warren, Stanley Whitson, Economic Study of Agriculture in Northern Livingston County, New York, Bulletin 539, Cornell Agricultural Experiment Station, Ithaca, New York, 1931.



Source: Table XLIX

Figure 70. Distribution of Number of Cows to Labor Income on 223 Farms in Region VI, Tennessee, 1937

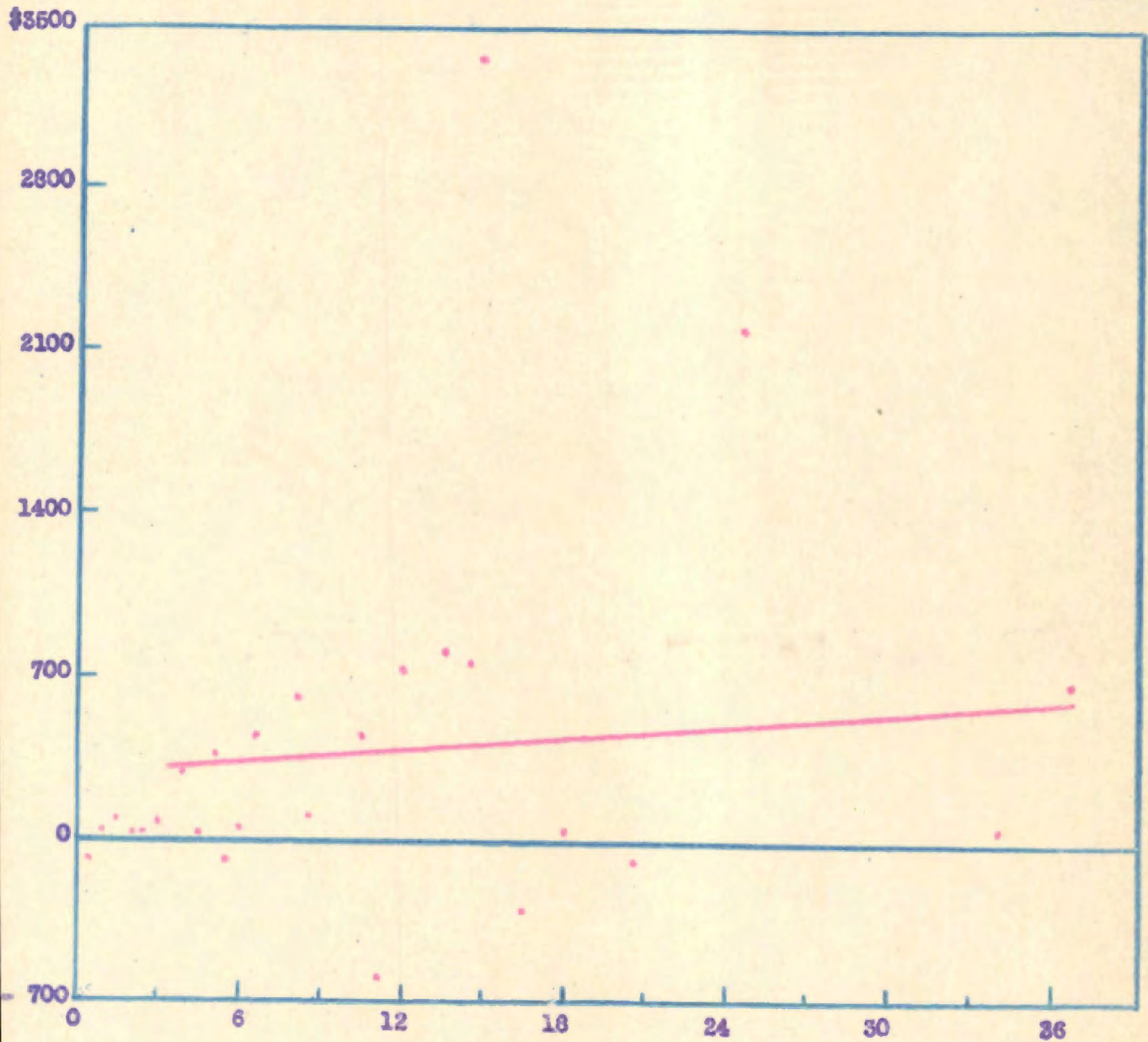


Figure 71. Correlation Between Number of Cows and Labor Income on 223 Farms in Region VI, Tennessee, 1937

farm records were taken from a cotton-producing region. Crop index on these farms, however, did not increase with the number of cows kept. This does not agree with Dr. Warren's study⁽¹⁰⁾ nor with the findings in Pennsylvania.⁽¹¹⁾

TABLE XLIX. RELATION OF NUMBER OF COWS TO LABOR INCOME
AND VARIOUS FACTORS ON 223 FARMS IN REGION VI,
TENNESSEE, 1937

Cows per Farm	No. of Farms	Ave. No. of Cows	Crop Index	Total M.W.U.	Per Cent Ret. Inv.	Labor Income
0-1.0	41	0.9	155.4	270.6	3.08	\$19.12
1.5-2.0	75	1.8	167.8	332.9	3.64	60.10
2.5-3.5	51	2.9	164.5	429.4	4.00	106.19
4.0-6.5	36	5.0	174.6	523.0	5.24	185.00
8.0-36.5	20	15.2	166.6	688.3	10.08	749.80

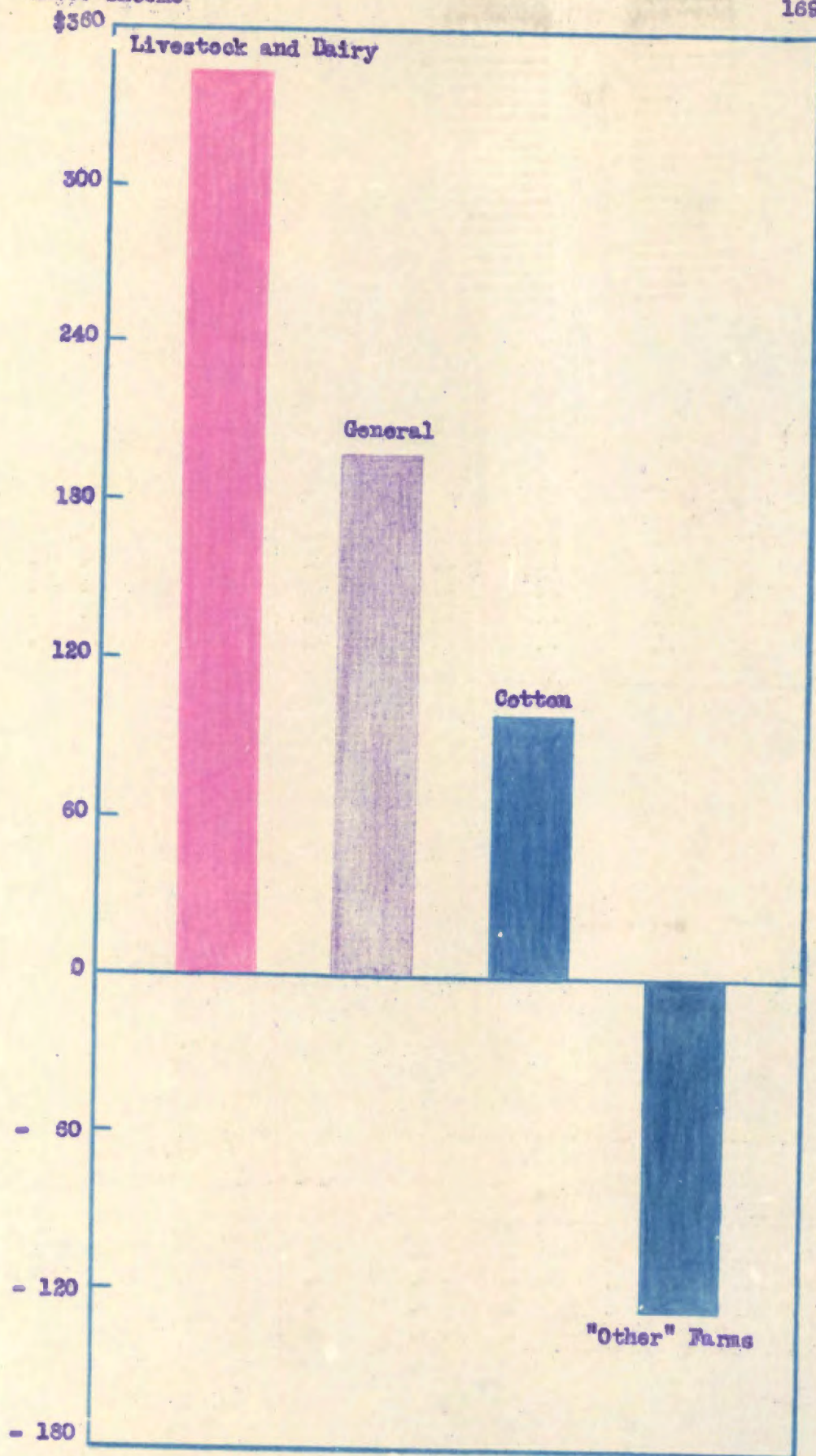
Types of Farming in Relation to Labor Income. The livestock and dairy farms had the highest labor income of any group of farms. These were followed by general farms with an average labor income of \$198. The cotton farms earned an average labor income of \$100, and the miscellaneous other farms - \$128 (Figure 72). The farms with the smallest labor

TABLE L. TYPES OF FARMS IN RELATION TO LABOR INCOME AND
OTHER FACTORS ON 223 FARMS, REGION VI, TEN-
NESSEE, 1937

Type of Farm	No. of Farms	Total M.W.U.	Crop Index	Total An.Units	Crop Acres	Livestock Receipts per An.Unit	Labor Income
Livestock	30	362.4	171.5	17.9	50.6	64.8	\$343.80
Cotton	103	458.7	175.7	6.8	67.5	45.2	99.60
General	63	403.1	153.5	8.9	72.3	57.3	198.00
Other	27	258.1	140.7	8.6	54.3	59.2	- 127.80

(10) *Ibid.*, p. 60.

(11) Walter, David H., An Economic Study of Farming in the Crooked Creek Area, Indiana and Armstrong Counties, Pennsylvania, Bulletin 369, Pennsylvania Agricultural Experiment Station, 1938, p. 23.



Source: Table L

Figure 72. Comparison of Labor Incomes on 223 Livestock and Dairy, General, Cotton, and Other Farms, Region VI, Tennessee, 1937

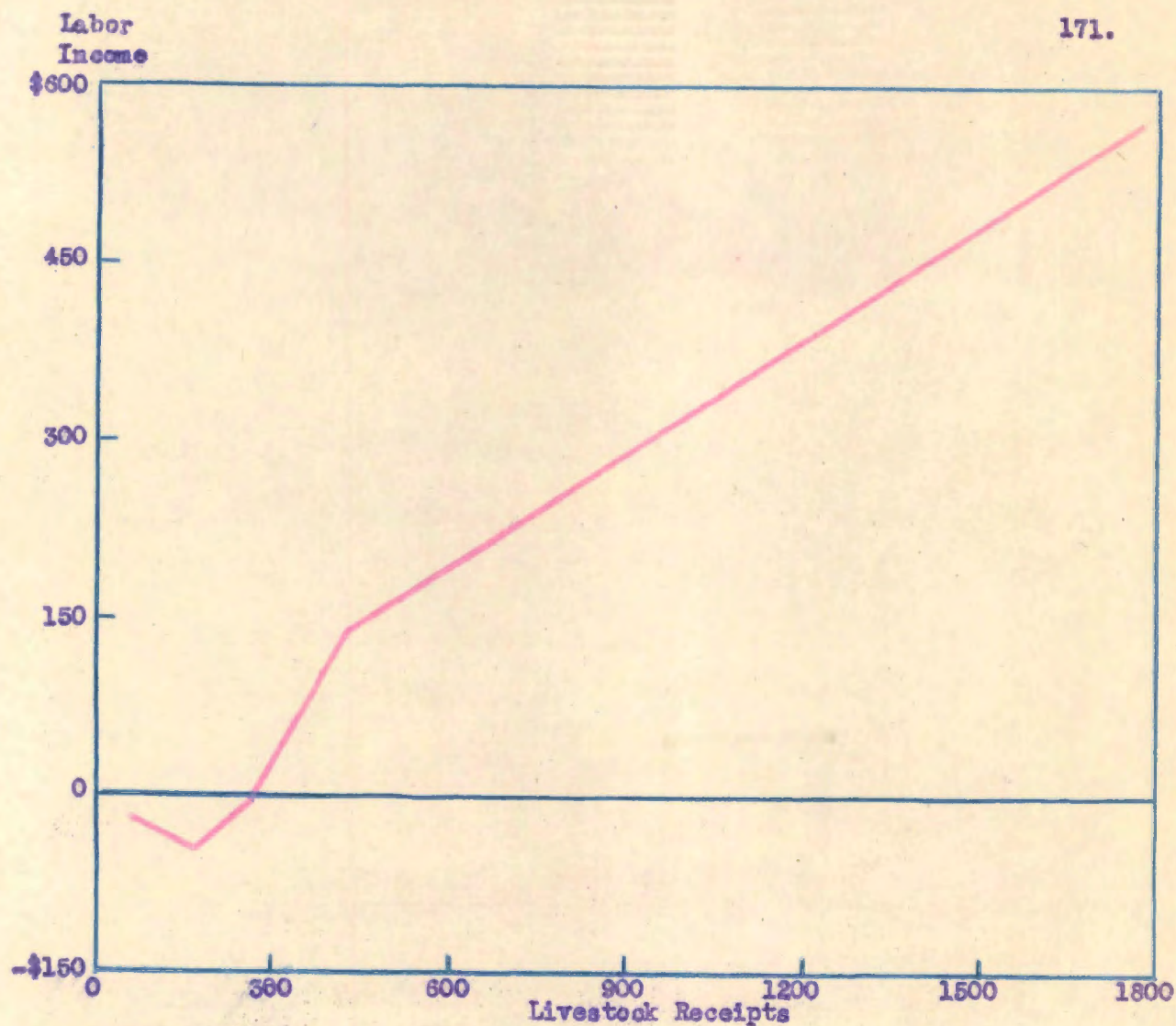
income had the least number of total man work units and lowest crop index. Cotton farms, the second lowest labor group, were lowest in total animal units, second in crop acres, and highest in crop index and total man work units. General farms were second in total number of man work units, third in crop index, highest in crop acres, and third in total animal units (Table L).

Livestock Receipts. Livestock receipts showed a definite relationship with labor income (Figure 73). Farms with the greatest proportion of receipts from crops had a labor income ranging from -\$18 to -\$3. The farms which had more than 50 per cent of their receipts from livestock had a labor income ranging from \$138 to \$566. Total man work units, number of sources, total acres, crop receipts, and crop acres showed a definite correlation with the increase of livestock receipts (Table LI).

TABLE LI. LIVESTOCK RECEIPTS IN RELATION TO LABOR INCOME
AND OTHER FACTORS ON 223 FARMS, REGION VI,
TENNESSEE, 1937

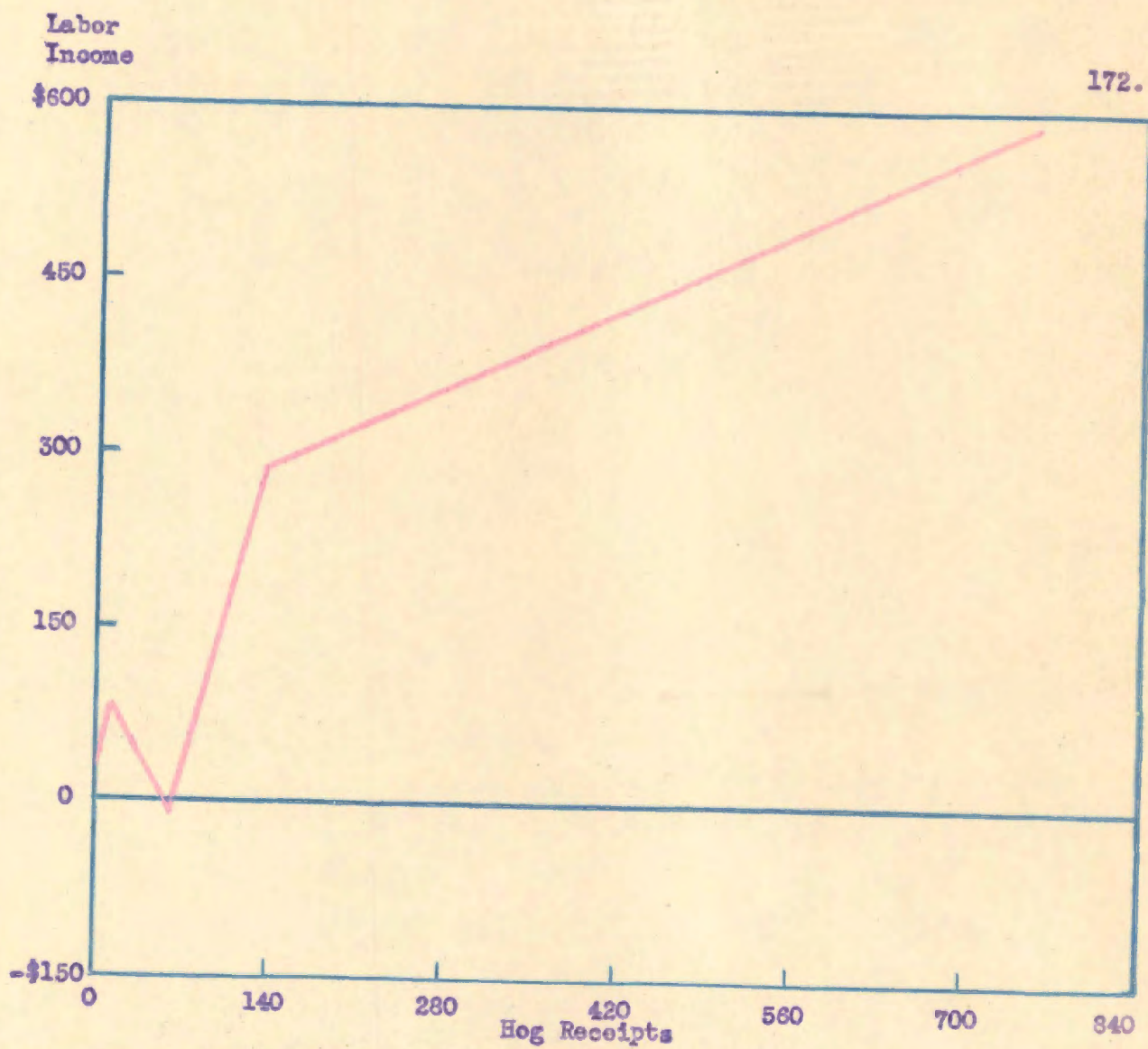
Livestock Receipts	No. Farms	Average Livestock Receipts	Crop Acres	Crop Receipts	Total Acres	Total M.W.U.	No. Sources	Labor Income
\$10-110	43	\$62.00	45.3	\$525.00	114.9	307.2	3.9	\$-18.14
120-220	47	160.42	59.0	594.47	130.8	362.5	5.0	-44.90
230-310	42	260.47	55.4	645.47	144.3	362.5	4.9	- 5.33
320-560	44	426.81	64.0	789.66	155.0	386.9	5.9	137.50
590-4620	47	1790.00	98.0	811.48	228.9	561.7	5.5	565.53

Hog Receipts. There was a definite relationship between hog receipts and labor income. This was more pronounced on those farms



Source: Table LI

Figure 73. The Relation of Livestock Receipts to Labor Income on 225 Farms in Region VI, Tennessee, 1937



Source: Table LII

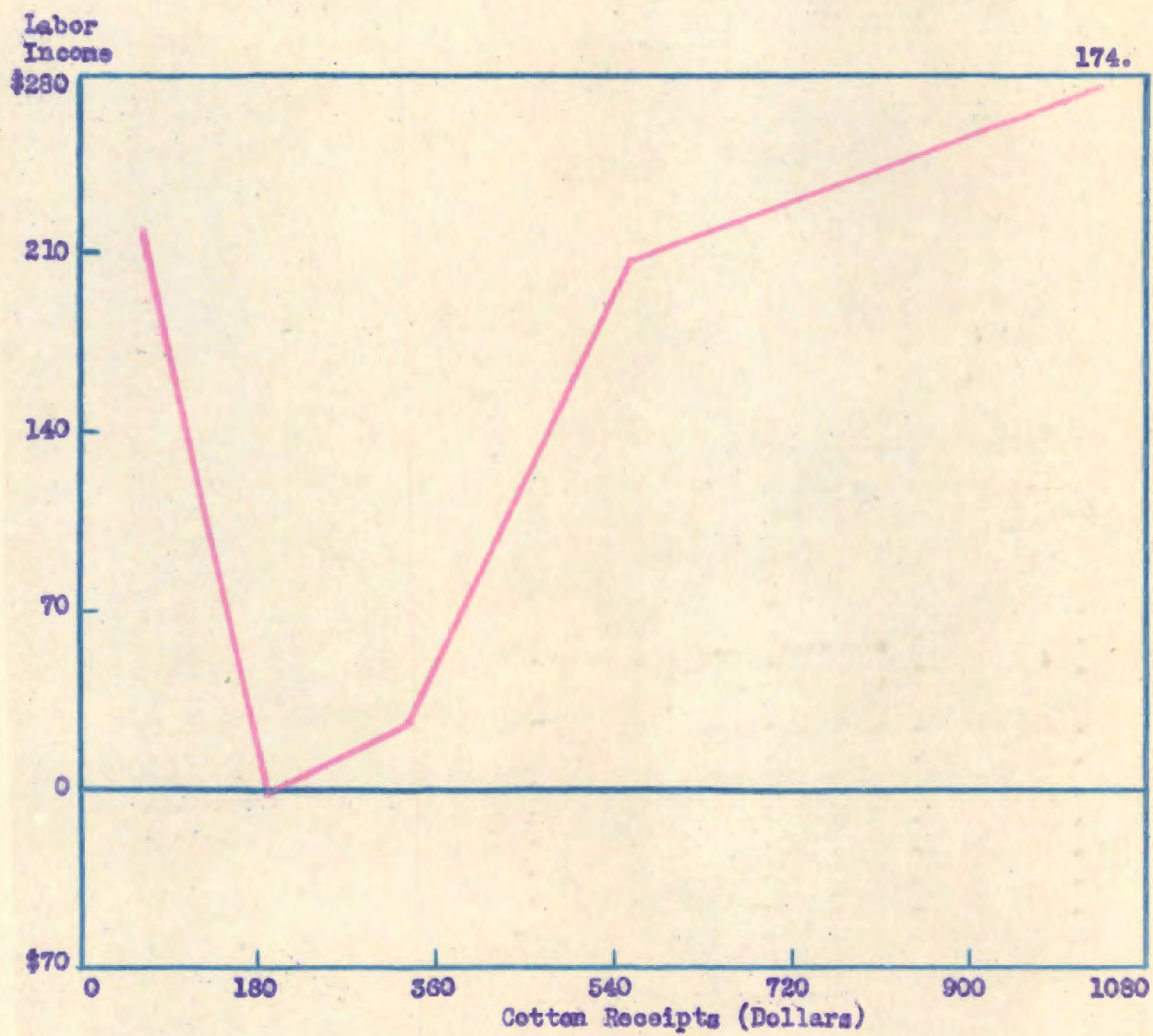
Figure 74. Relation of Hog Receipts to Labor Income on 223 Farms in Region VI, Tennessee, 1937

having a greater income from hogs. The group that averaged \$751 from hogs had the largest labor income of \$589 as compared with \$30 from the farms with no hog receipts. The farms with the lowest labor income of -\$10 had an average income of \$59 from hogs. It was also significant that the farms with the lower income received approximately 70 per cent of their receipts from crops. Crop index, total man work units, and total receipts showed a direct correlation with the increase of hog receipts (Table LII).

TABLE LII. RELATION OF HOG RECEIPTS TO LABOR INCOME AND VARIOUS FACTORS ON 223 FARMS IN REGION VI, TENNESSEE, 1937

Factors	Hog Receipts				
	0	1-28	30-99	100-191	210-2296
Number of farms	38	46	52	40	37
Hog receipts	0	13.5	59.0	134.8	751.0
Hog returns per unit	0	34.7	101.10	153.29	202.50
Cattle returns per unit	22.31	20.05	26.47	33.69	43.10
Poultry returns per unit	97.30	86.74	78.65	108.50	118.36
Sheep returns per unit	0	0	1.60	6.40	13.45
Total M.W.U.	341.2	348.0	376.3	370.5	708.0
M.W.U., crops	263.4	266.2	309.7	249.1	490.7
M.W.U., livestock	62.6	60.1	71.7	102.1	206.7
Crop index	160.3	162.2	162.0	164.5	217.7
Total receipts	\$923.5	1000.90	1038.20	1640.40	3110.00
Labor income	\$29.60	80.80	- 10.00	287.70	588.80

Cotton Receipts. No significant difference appeared to exist between cotton receipts and labor income. Those farms with the greatest and least receipts from cotton were highest in labor income, with \$275 and \$220 respectively; whereas the median group had an average



Source: Table LIII

Figure 75. Relation of Cotton Receipts to Labor Income on 223 Farms in Region VI, Tennessee, 1937

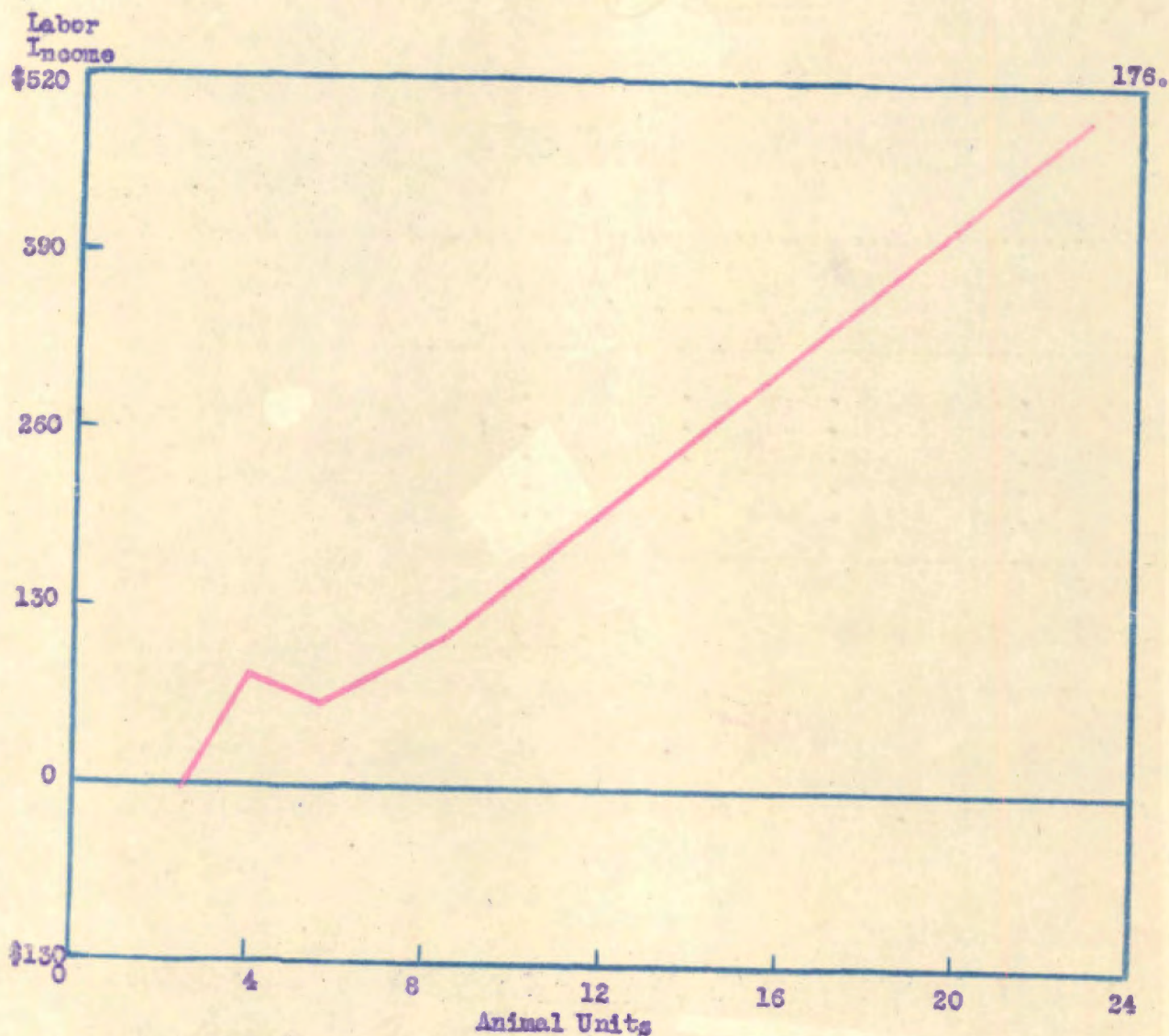
labor income of \$25. The lowest labor income for any group was -\$0.21. Total man work units tended to increase with cotton receipts, and a slight tendency existed for livestock receipts to vary inversely with cotton receipts. However, the latter was not markedly pronounced (Table LIII).

TABLE LIII. THE RELATION OF COTTON RECEIPTS TO LABOR INCOME AND VARIOUS FACTORS, 223 FARMS, TYPE-OF-FARMING AREA VI, TENNESSEE, 1937

Cotton Receipts	Number Farms	Cotton Receipts, Average	Total M.W.U.	Total Livestock Returns	Labor Income
\$10-133	45	\$54.90	253.3	\$720.90	\$220.10
136-239	47	188.90	298.3	589.50	- 0.21
240-437	44	335.00	369.0	401.00	25.10
440-684	43	569.10	438.4	346.30	207.70
700-2414	44	1034.50	672.2	478.20	275.00

Total Animal Units. There was a definite association between total animal units and labor income. The farms with the greatest number of animal units had largest labor income of \$490. The total man work units increased until the animal units reached 8.4; then a decrease followed.

Corresponding with other relationships already shown between man work units and livestock in Table XLVI, crop index showed only a slight correlation with total animal units and likewise agreed with relations shown in Table XLIX between livestock and crop index. Crop acres and permanent pasture steadily increased with the number of animal units.



Source: Table LVII.

Figure 76. Relation of Total Animal Units to Labor Income on 237 Farms in Region VI, Tennessee, 1937

TABLE LIV. TOTAL ANIMAL UNITS IN RELATION TO LABOR INCOME
AND VARIOUS OTHER FACTORS ON 223 FARMS, REGION VI,
TENNESSEE, 1937

Factors	Total Animal Units				
	6-31	32-48	49-65	67-110	116-1070
Number farms	44	47	44	42	46
Total an. units	2.5	4.0	5.6	8.4	22.8
Total M.W.U.	252.7	345.2	387.7	435.0	421.3
Crop index	152.3	173.6	159.3	171.6	161.0
Crop acres	37.3	50.9	61.3	70.3	104.7
Permanent pasture, acres	10.5	13.0	18.1	20.6	31.6
Labor income	\$-1.61	\$80.25	\$57.22	\$107.50	\$490.00

Livestock farms had the greatest proportion full owners and largest labor income, followed by general, miscellaneous, and cotton farms (Table LV). Cleared acres and acreage of row crops were highest on general and cotton farms. Total animal units were highest on livestock and general farms.

TABLE LV. PERCENTAGE OF TENANCY, BY TYPES OF FARMS ON 257
FARMS IN REGION VI, TENNESSEE, 1937

Class	Number Farms	Per Cent Tenancy	Cleared Acres	Total Animal Units	Acreage Row Crops
Livestock and dairy farms	32	100.0	100.0	18.9	28.4
Full owners	30	93.7	101.6	17.6	28.3
Part owners	2	6.3	74.5	23.7	23.7
Tenants	0	0	0	0	0
General farms	66	100.0	105.0	9.0	42.0
Full owners	46	72.8	113.3	7.2	38.7
Part owners	16	24.2	92.5	7.2	41.1
Tenants	2	3.0	62.5	2.4	19.7
(continued)					

TABLE LV. PERCENTAGE OF TENANCY, BY TYPES OF FARMS ON 237
FARMS IN REGION VI, TENNESSEE, 1937 (continued)

Class	Number Farms	Per Cent Tenancy	Cleared Acres	Total Animal Units	Acreage Row Crops
Cotton farms	102	100.0	102.6	6.7	43.7
Full owners	67	65.7	105.7	7.1	42.5
Part owners	28	27.4	95.5	6.0	45.7
Tenants	7	6.9	100.0	6.2	48.5
Other farms	37	100.0	75.7	6.5	32.4
Full owners	25	67.6	58.0	4.8	16.9
Part owners	12	32.4	112.4	10.1	61.2
Tenants	0	0	0	0	0

Tenancy in Relation to Labor Income. The tenant farms had a labor income of \$339; the highest labor income for any tenure group of the total 237 farms.⁽¹²⁾ However, there were only nine tenant farms and hence they cannot be considered as a representative sample. There

TABLE LVI. RELATION OF TENURE TO VARIOUS FACTORS ON 237 SAMPLE
FARMS IN REGION VI, TENNESSEE, 1937

Type of Tenure	Number Farms	Cleared Acres	Total Ani- mal Units	Acres Row Crops	Labor Income
Full owners	170	100.1	8.6	35.1	\$121.50
Part owners	58	97.4	7.8	46.9	202.70
Tenants	9	91.7	5.4	44.3	339.40
Total or ave.	237	99.1	8.3	38.4	\$150.28

were 58 part owners who had an average labor income of \$203 and 170 full owners who had a labor income of \$122 per farm. The average labor income for these farms was \$150 (Table LVI).

Full owners averaged 100.1 acres of land per farm, part owners

(12) Labor income earned by the farm but does not indicate distribution between landlord and tenant.

97.4, and tenants 91.7 acres. Acres in row crops were highest on the part-owner operated farms, followed by tenants and full owners. Total animal units were concentrated mostly on operator-owned farms.

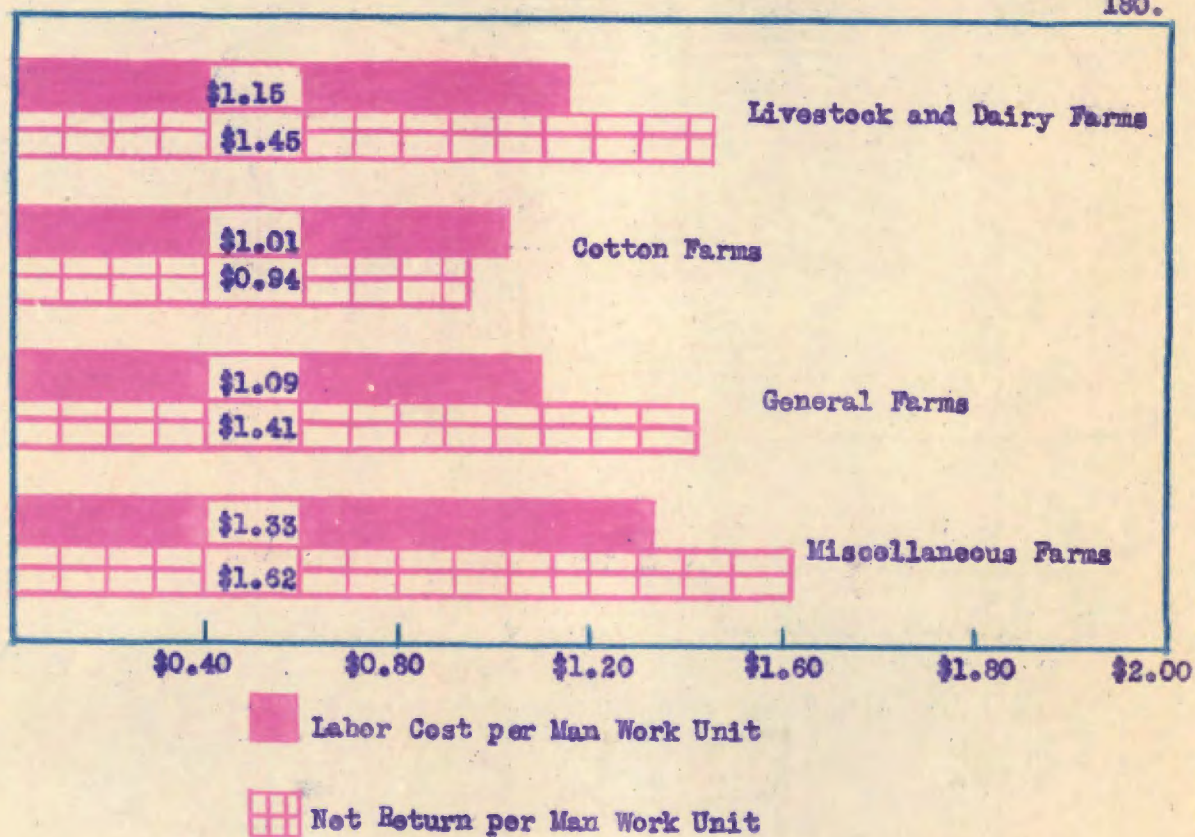
Production and Efficiency Factors. Labor cost per man work unit was calculated by adding the labor costs, including estimated value of operator's labor, and dividing the sum by the total number of man work units. The miscellaneous farms had the highest labor cost of \$1.33 per man work unit and the smallest number of man work units. Livestock farms were next highest in labor cost of \$1.15 per man work unit and had the second lowest number of man work units. Cotton farms had the lowest labor cost of \$1.01 per man work unit and the largest number of man work units (Table LVII).

TABLE LVII. LABOR EFFICIENCY OF TYPE OF FARMS COMPARED ON 237
SAMPLE FARMS IN REGION VI, TENNESSEE, 1937

Type	Number of Farms	Total M.W.U.	Labor Costs per M.W.U.	Net Returns per M.W.U.
Livestock and dairy	32	381	\$1.15	\$1.45
Cotton	102	469	1.01	.94
General	66	405	1.09	1.41
Other farms	37	280	1.33	1.62
Total or ave.	237	410	\$1.10	\$1.25

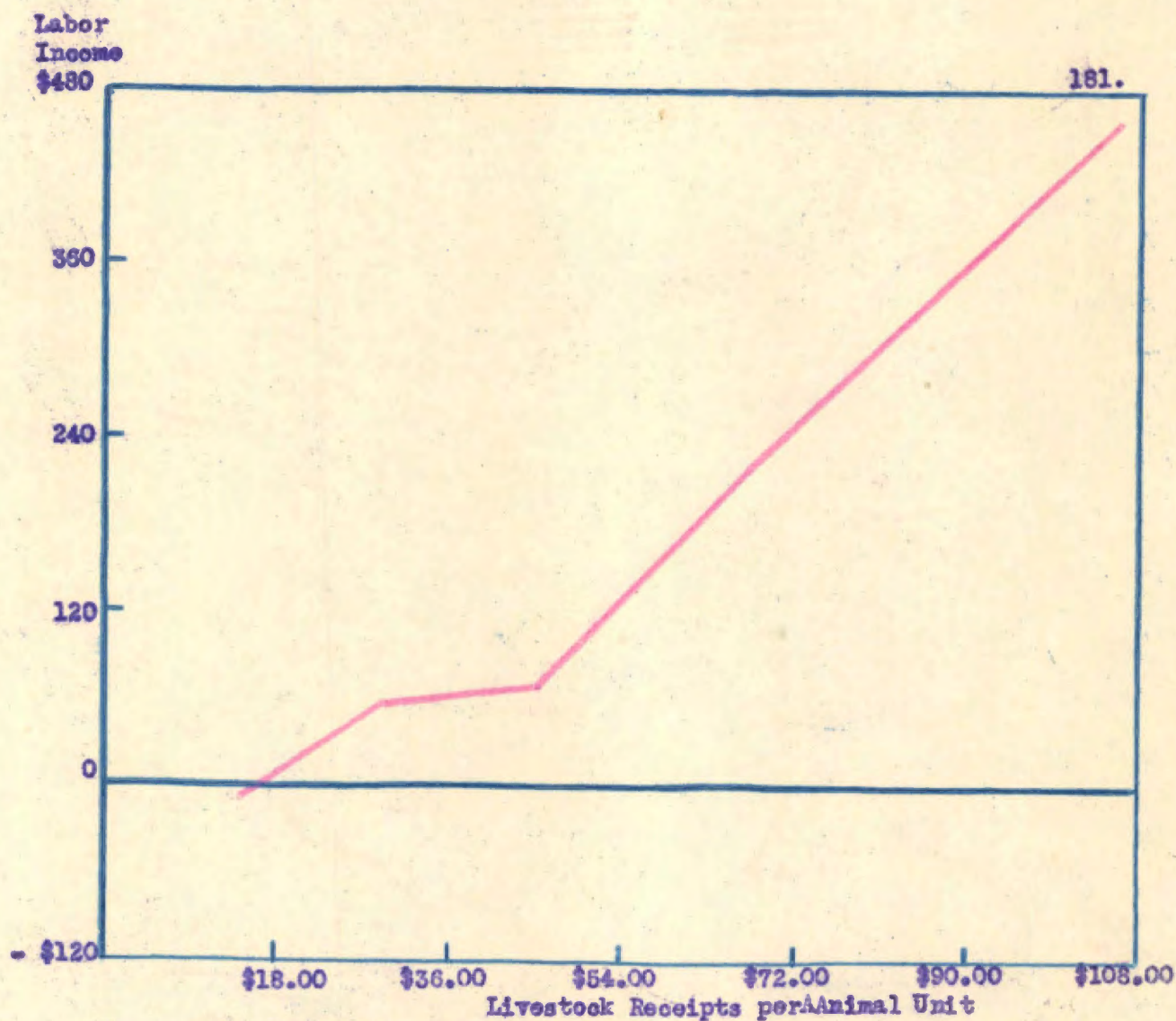
Net return per man work unit was calculated by subtracting the expenses from the receipts and dividing the sum by the man work units. The miscellaneous farms also had the highest net return of \$1.62 per man work unit, followed by livestock farms with \$1.45, general farms \$1.41, and cotton farms \$0.94 per man work unit (Table LVII).

Livestock Receipts per Animal Unit. Livestock receipts per animal unit showed a positive relationship with labor income (Figure 78). The farms with the highest return of \$106 per animal unit had the highest labor income of \$469 (Table LVIII). These farms also had the smallest number of total acres and second lowest number of animal units, crop index, and total



Source: Table LVII

Figure 77. Comparison of Labor Efficiency by Types of Farms on 237 Sample Farms in Region VI, Tennessee, 1937



Source: Table LVIII.

Figure 78. Relation of Livestock Receipts per Animal Unit to Labor Income on 223 Farms in Region VI, Tennessee, 1937.

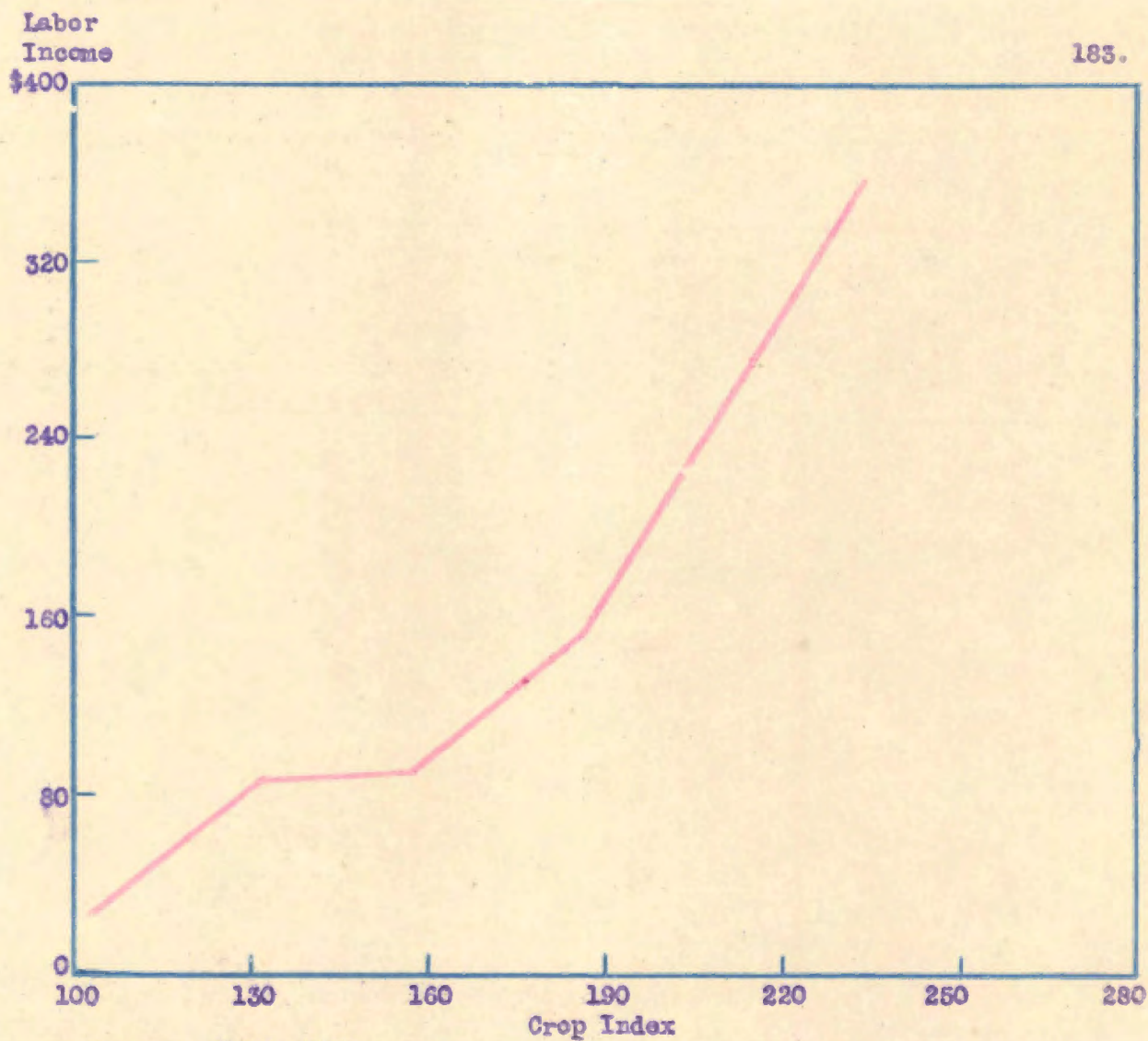
man work units. The farms with the largest number of man work units, 470.3, had an average return of \$31 per animal unit and a labor income of \$55.

TABLE LVIII. LIVESTOCK RECEIPTS PER ANIMAL UNIT* IN RELATION TO LABOR INCOME, VARIOUS FACTORS ON 223 FARMS IN REGION VI, TENNESSEE, 1937

Livestock Receipts per An. Unit	No. Farms	Ave. Live-stock Re-ceipts per An. Unit	Total M.W.U.	Crop Index	Crop Acres	Ave. Total Animal Units	Total Acres, Average	Labor Income
\$4.48-22.83	45	14.64	410.6	159.0	59.8	10.2	154.1	\$-7.95
23.15-39.92	43	30.53	470.3	169.6	75.0	8.8	168.4	54.90
40.33-52.41	47	44.99	366.0	163.8	59.2	7.2	147.9	68.30
55.35-79.88	45	67.49	433.5	169.8	69.3	10.1	170.1	220.80
80.31-228.45	43	105.64	405.7	159.4	61.8	7.4	144.9	458.90

* Livestock receipts per animal unit were calculated on the standard amounts of feed consumed by each class of livestock and is limited because there is no convenient means of comparing the amounts fed one animal unit of a class of livestock such as sheep with an animal unit of another class such as hogs or chickens.

Crop Index. The yields of all crops for each farm were worked into a weighted figure based on 1929 crop yields for the State which was called crop index. This was used to compare yields of one farm with another. A direct correlation was found between crop index and labor income. The group of farms with a crop index of 233 had a labor income of \$355.42. These farms were lowest in crop acres, highest in corn and cotton yields and third lowest in total man work units (Table LVIII). This indicated that these farms practiced more intensive and efficient farming than the other farms. Crop acres and total man work units tended



Source: Table LIX

Figure 79. Relation of Crop Index to Labor Income on 223 Farms in Region VI, Tennessee, 1937

to be highest on the farms with the lowest crop index.

TABLE LIX. RELATION OF CROP INDEX TO LABOR INCOME AND
VARIOUS FACTORS ON 223 FARMS, REGION VI,
TENNESSEE, 1937

Crop Index	Number Farms	Average Crop Index	Total M.W.U.	Crop Acres	Ave. Corn, Bu.	Ave. Cotton, Lbs.	Labor Income
50-125	46	103.8	351.1	62.4	20.43	192.9	\$25.70
126-150	41	131.1	131.1	102.4	25.36	286.6	85.40
151-173	44	157.8	411.0	67.2	24.90	354.1	90.70
174-198	46	185.8	416.1	64.0	28.53	401.6	152.20
200-367	47	233.1	386.8	54.9	30.69	521.3	355.42

Cotton Yields per Acre. There was no particular significant association between cotton yields per acre and labor income. Those farms which raised the greatest and least number of pounds per acre were highest in labor income, with \$328 and \$240 respectively, whereas, the median group had an average labor income of \$66. The lowest labor income for any

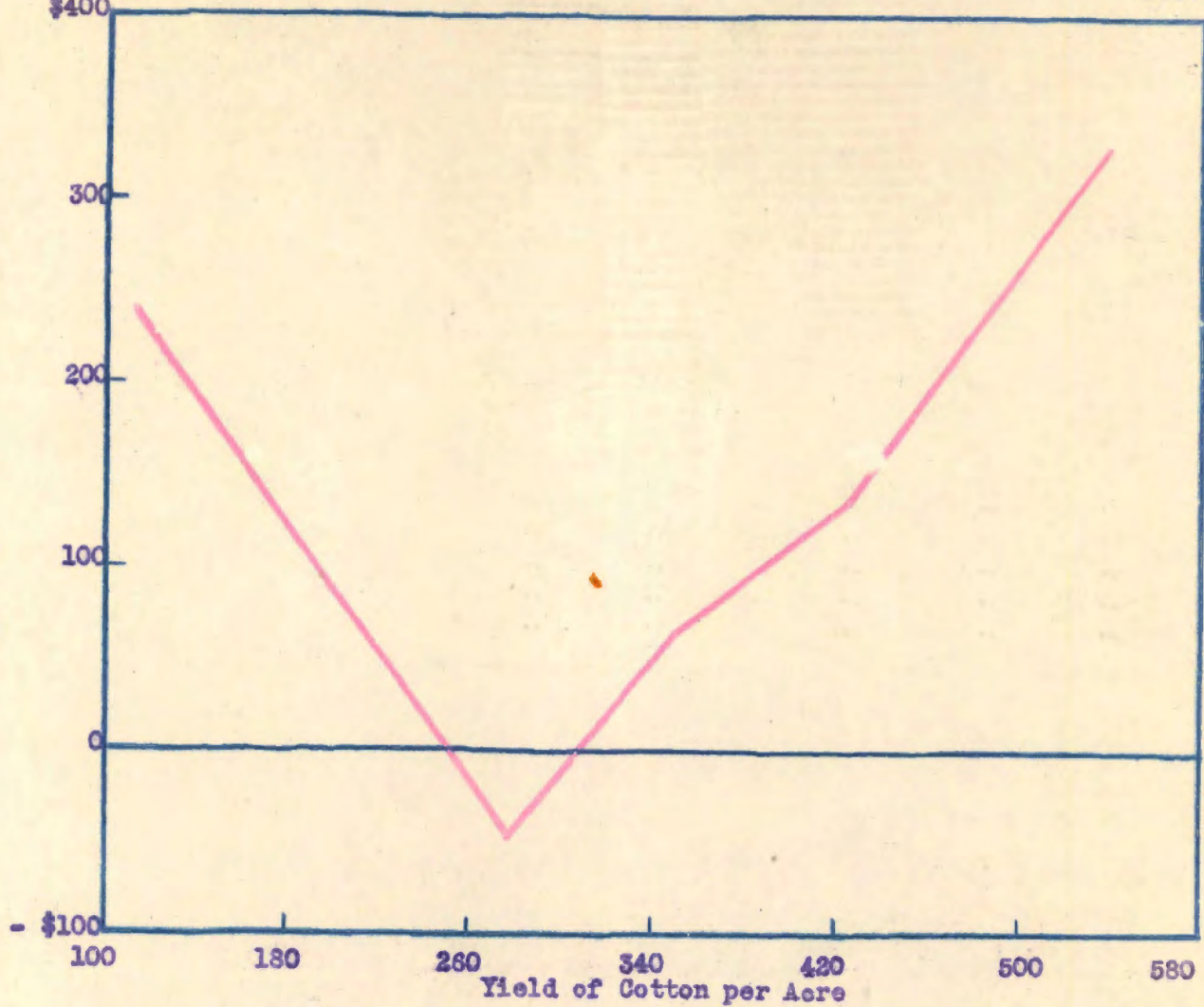
TABLE LX. RELATION OF YIELD OF COTTON PER ACRE TO LABOR
INCOME AND VARIOUS FACTORS ON 223 FARMS IN REGION
VI, TENNESSEE, 1937

Pounds of Cotton	Number Farms	Ave. Lbs. Cotton per Acre	Total M.W.U.	Crop Index	Acres Cotton	Labor Income
111-228	42	126.6	362.7	117.0	7.0	\$239.70
233-317	44	288.0	442.6	131.6	15.6	- 46.50
321-398	49	359.8	447.5	163.8	18.0	65.90
400-466	44	429.0	403.8	187.3	13.7	136.50
470-924	44	540.4	378.8	221.5	11.7	327.70

group was -\$47. Total man work units and acres of cotton were highest on those farms that produced between 233 and 466 pounds of cotton per acre.

Labor
Income
\$400

185.



Source: Table LX

Figure 80. Relation of Yield of Cotton per Acre to Labor Income on 223 Farms in Region VI, Tennessee, 1937

Crop index increased steadily with yield of cotton per acre
(Table LX).

These relationships are very similar to those found in
Table LXIII concerning cotton receipts in relation to labor income.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Livestock production represents an important phase of agriculture in Tennessee, from the standpoint of both cash income and the utilization of crops and pasture. Of the total cash farm income from the state's 273,783 farms, livestock and livestock products contributed \$58,865,000, or 40.8 per cent in 1937. Dairying leads in importance among the livestock enterprises, contributing \$12,508,000 or 30.3 per cent of the total cash income from livestock and its products. Cattle and calves rank second, followed by poultry, hogs, sheep, and lambs, and horses and mules. Cattle, hogs, sheep, and poultry represent the leading classes of livestock in this state. Of the total farms, 81.9 per cent reported cattle on January 1, 1935. The total number was 1,233,477, valued at \$19,264,618, with an average of 4.5 cattle per farm, and an average investment of \$70.36 per farm. Milk cows were reported on 216,546 farms, or 79.0 per cent of the total; sheep and lambs 16,016 farms, or 5.8 per cent of all farms, swine were kept on 163,142, or 59.6 per cent of all farms; and chickens on 229,367, or 83.8 per cent of all farms. The quantity of livestock changed but little from 1867 to 1937. When measured on an animal unit basis, i.e., on a mature horse or cow-equivalent the total number in 1937 was practically the same as that of

1867. The only class to show an increase, when measured in number of animal units, was milk cows. These increased from 160,000 in 1867 to 553,000 in 1937. The greatest decrease for the same 70-year period was in swine, which decreased from 263,000 animal units to 149,000. During this period sheep decreased from 128,000 to 68,000 animal units; other cattle from 270,000 to 260,000; and chickens from 121,000 in 1890 to 112,000 in 1937. The relative stability in number of livestock over this 70-year period is significant in Tennessee's agriculture for it shows this enterprise has been consistently important in relation to crop enterprises and land use.

In the type-of-farming regions studied in Western Tennessee, with the exception of Region I and parts of Region III, it is expected that livestock numbers would be very similar to that in Region VI. These regions were high in cotton production and in tenancy, and low in feed crops and pasture. All of the regions in Western Tennessee, with the exception of Subregion IIB, were relatively low livestock producing areas. The principal factors which discouraged livestock in West Tennessee were lack of feed crops and pasture, only an average of 20 per cent of the farm land being in pasture. This was largely due to the low fertility and badly eroded condition of the soil which prevented the farmers from gaining profitable yields from feed crops and permanent pastures. However, Region I had an abundance of fertile, alluvial soil deposits which gave good yields for all crops grown, but livestock was limited by a permanently established system of cotton farming, plus a

high percentage of tenancy, small farms, lack of ^{trained} livestock labor, and frequent overflows of the bottom lands. These factors were also pronounced in most of the other regions in Western Tennessee. Practically all classes of livestock have shown an increase during the past ten years. This increase was especially noticeable in Regions II, III, IV, and VI, with milk cows, beef cattle, and swine showing the greatest increases.

Of 237 sample farms studied in Region VI, 99.2 per cent reported an average of 3.2 milk cows; 86.7 per cent kept an average of 3.8 meat animals; 98.5 per cent reported an average of 3.7 horses and mules; 8.4 per cent reported an average of 1.7 sheep and goats; 77.6 reported an average of 3.7 hogs; and 97.3 kept an average of 67.4 hens and pullets per farm.

The average size of these farms was 156.3 acres with 42.0 per cent of the acreage in crops, 29.5 in woodland not pastured, 17.0 per cent in pasture and 13.5 per cent in other land. The average crop acreage per farm was 59.5 acres, 38.0 per cent being in corn, 24.5 per cent in hay, 23.0 per cent in cotton, and the remainder in other crops.

Cotton farms made up 46.2 per cent of the number, general farms 28.3 per cent, livestock and dairy 13.4 per cent, and other 12.1 per cent of the total farms.

Full owners represented 170 or 71.7 per cent of the farm operators, part owners 58, or 24.5 per cent, and tenants 9, or 3.8 per cent of the total.

The average capital investment was \$6,880.47 per farm, real estate being \$5,041.60 or 73.3 per cent of the total, machinery and equipment \$330, livestock \$857, and feed and supplies \$645. The average receipts per farm was \$1,464, crop receipts contributing 45.8 per cent, livestock and livestock products 31.8 per cent, and other sources 22.4 per cent.

The average farm expenses per farm were \$969.70, labor being 27.6 per cent of the total, repairs and depreciation 11.2 per cent, depreciation of inventory 22.9 per cent, and all other expenses 38.3 per cent. Labor costs were highest on cotton farms, followed by livestock, general and miscellaneous farms.

Of the total farms, 89 per cent used fertilizer, with an average cost of \$67.20 per farm.

The average farm income was \$494 and the average labor income \$150. Of these farms, 41.1 per cent had a minus labor income, and approximately 53 per cent of the farms were concentrated between labor incomes of minus \$200 and \$200.

Size, as measured by total acres, was not a significant factor in determining labor income on these farms, the medium-sized farms having the highest labor income of \$353 compared with \$242 for the largest farms.

A definite relationship was shown between man work units and labor income. Both increased together until the number of man work units reached 468, when the law of diminishing returns was apparently reached.

Those farms with the largest number of cows had the highest labor income of \$750 and earned 10 per cent return on investment.

Livestock and dairy farms had the highest labor income of \$344 for any group of farms. These were followed by general farms with an average labor income of \$198, cotton farms \$100, and miscellaneous other farms minus \$128. Livestock receipts showed a definite relationship with labor income. The farms which had more than 50 per cent of their receipts from livestock had a labor income ranging from \$138 to \$568. There was also a relationship between hog receipts and labor income. The group that averaged \$751 from hogs had the largest income of \$589 as compared with \$30 from the farms with no hog receipts. No significant difference appeared to exist between cotton receipts and labor income. Those farms with the greatest and least receipts from cotton were highest in labor income, with \$275 and \$220 respectively; whereas, the median group had an average income of \$25. There was a definite association between total animal units and labor income. The farms with the greatest number of animal units had the largest labor income of \$490.

The tenant farm had a labor income of \$339, the highest labor income for any tenure group of the total 237 farms. However, there were only nine tenant farms, hence they cannot be considered as a representative sample.

The miscellaneous farms had the highest labor cost of \$1.33 per man work unit, and the smallest number of man work units. Livestock farms were next highest in labor cost of \$1.15 per man work unit, and had the second lowest number of man work units. Cotton farms had the lowest labor cost of \$1.01 per man work unit and the largest number of

man work units. The labor cost per man work unit on the general farms was \$1.09, and had the second largest total man work units.

The miscellaneous farms had a net return of \$1.62 per man work unit, followed by livestock farms with \$1.45, general farms \$1.41, and cotton farms \$0.94 per man work unit. Livestock receipts per animal unit showed a positive relationship with labor income. The farms with the highest return of \$106 per animal unit had the highest labor income of \$459. These farms also had the smallest number of total acres and second lowest number of animal units and total man work units. This showed that the greatest number of animal units were found on the largest total acres, but the most profitable livestock enterprises were not associated with the most acres and total man work units.

A direct relationship was found between crop index and labor income. The group of farms with a crop index of 233 had a labor income of \$355. There was no particular significant association between cotton yields per acre and labor income. Those farms which raised the greatest and least number of pounds per acre were highest in labor income, with \$328 and \$240 respectively; whereas, the median group had an average income of \$66.

Net returns on these farms were most affected by the number of man work units, number of cows, type of farm, livestock receipts, hog receipts, total animal units, livestock receipts per animal unit, and crop index.

In conclusion, it is evident that in 1937 livestock was a profitable enterprise on the farms studied. However, it should be remembered that during the year 1937 the production of livestock was much more favorable in relation to economic conditions than for cotton. The average price index for meat animals in Tennessee for the year 1937 was 137.8, based on the years 1910 to 1914 as 100. This compares with 92.4 for cotton and cottonseed. Thus, while the price of meat animals was approximately two-fifths greater than the base period, cotton was one-twelfth lower. The price index for other livestock and livestock products was also from 24 to 25 points higher than for cotton. This means, before it can be definitely said livestock farming will always continue to be more profitable in Western Tennessee, that the following questions must be taken into consideration and answered:

- (1) Will cotton regain its former importance by a rise in prices and world trade?
- (2) Will foreign production in Brazil, India, and other countries continue to increase, and our export trade in cotton decrease?
- (3) Are the cotton farms of Western Tennessee more adaptable and more advantageously suited to livestock farming than other areas of the United States?
- (4) To what degree can pasture grasses and soils be improved to the extent that feed crops and pastures can be grown profitably?
- (5) Will the local market demands, in Western Tennessee, expand for meat animals or dairy products, and to what extent?

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APPENDIX

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APPENDIX A

INTERPRETATION OF CENSUS DATA ON TENNESSEE LIVESTOCK

I. Figures Used in Calculating Trends:

1880

Other cattle: - Corrected to include work oxen

Chickens: - Not reported

1890

Other cattle: - Corrected to include work oxen

1910

Chickens: - Represent 91.0 per cent of "all poultry"

1930

Milk cows: - Represent 79.4 per cent of "all cattle 2 years old and over" based on U.S.D.A. Yearbook estimates, 1930 (census data not comparable with previous years.)

Other cattle: - Represent milk cows subtracted from the census figure "all cattle" for regions. The state figure for "all cattle" is an estimate from the U.S.D.A. Yearbook.

1935

Milk cows: - Represent 87.7 per cent of "all cattle 2 years old and over" based on U.S.D.A. Yearbook estimates, 1935.

Other cattle: - Represent milk cows subtracted from census figure "all cattle" for regions. The figure for "all cattle" is an estimate from the U.S.D.A. Yearbook.

II. Figures Used in Calculating Animal Units

1880

All cattle: - Calves under 1 year - 24.6 per cent of total (based on 1920 and 1925). Only 50 per cent of calves used.

1 Year and under 2 years - 16.9 per cent of total (based on 1920, 1925, and 1930).

1880 (continued)

Other cattle: - Same as above excluding "milk cows"

Swine: - Under 6 months - 50 per cent of total
6 months and over - remainder of total number

1890

All cattle: - Calves under 1 year - 50 per cent of census figure "calves dropped 1889"

1 year and under 2 - 16.9 per cent of total
2 and over - remainder of total number

Sheep: - Total census figure

Swine: - Under 6 months - 50 per cent of total
6 months and over - remainder of total

1900

All cattle: - Under 1 year - 50 per cent under 1 year
Under 2 - steers and heifers 1 year and under 2
2 and over - 2 years and over

Swine: - Under 6 months - 50 per cent of total
6 months and over - remainder of total

1910

All cattle: Total cattle - census figure less 50 per cent of calves

Under 1 year - 24.6 per cent of "all cattle".
1 year and under 2 - 16.9 per cent of "all cattle"
2 years and over - remainder of total

Milk cows: - Census figure

Sheep: - Census figure "rams, ewes, and wethers"

Swine: - Under 6 months - 1/4 mature hogs plus spring pigs
6 months and over - 3/4 mature hogs

Chickens: - 91.1 per cent of "all poultry".

1920

All cattle: - Under 1 year - "beef and dairy calves under 1"
1 and under 2 - "beef and dairy heifers 1 and under 2"
plus "steers 1 and under 2"
2 and over - remainder of total

Milk cows: - Dairy cows and heifers 2 and over

Sheep: - Total census figure

Swine: - Under 6 months - "pigs under 8 months"
6 months and over - remainder of total

1925

All cattle: - Calves under 1 year - census figure
 1 and under 2 - all heifers 1 and under 2
 2 and over - cows (dairy and beef), steers 1 and over, and
 bulls 1 and over

Sheep: - Total census figure

Swine: - Under 6 months - census figures
 6 months and over - census figures

1930

All cattle: - (U.S.D.A. Yearbook estimate used in State trend table. Actual census figures used for regions because no estimate given for counties)

Under 1 year - yearling heifers and steers
 1 and under 2 - heifers and steers, 2 years old
 2 and over - remainder of total

Milk cows: - Per cent (79.4) milk cows of all cattle 2 years old and over, based on U.S.D.A. Yearbook estimates, 1930. This figure was used in all regions.

Sheep: - Yearling ewes born between October 1, 1928, and October 1, 1929, plus crop born before October 1, 1928, plus rams and wethers born before October 1, 1929.

Swine: - Under 6 months - pigs born between January 1, 1930, and April 1, 1930.

6 months and over - sows and gilts farrowing between January 1, 1930, and June 1, 1930, plus other swine.

1935

All cattle: - Under 1 year - "calves under 1 year".
 1 under 2 - heifers 1 year old and under 2 and steers and bulls 1 year old and over
 2 and over - remainder of total

Milk cows: - U.S.D.A. Yearbook estimate used. Milk cows were 87.7 per cent of "all cattle" 2 years old and over. This figure was used in all regions.

Sheep: - Census total for "all ages"

Swine: - Under 6 months - 50 per cent of census total
 6 months and over - remainder of total

APPENDIX B

SELECTED COUNTIES REPRESENTATIVE OF TENNESSEE'S MAJOR TYPE-OF-FARMING REGIONS *

The following counties have been selected as representative of the fifteen type-of-farming regions in Tennessee and have been used in this study as a basis for collecting and analyzing historical data on each region from 1880 to 1935.

Region I - Lake

Region II - Obion

Region III - Crockett, Fayette, Haywood, Lauderdale, Shelby,
and Tipton

Region IV - Henry and Weakley

Region V - Gibson

Region VI - Chester, Henderson, and McNairy

Region VII - Montgomery and Robertson

Region VIII - Dickson, Hickman, Humphreys, Lewis, Perry, and Wayne

Region IX - Lawrence

Region X - Bedford, Davidson, Jackson, Marshall, Maury, Rutherford,
Smith, Trousdale, Williamson, and Wilson

Region XI - Clay, Coffee, Overton, Pickett, Warren, and White

Region XII - Cumberland, Fentress, Grundy, Morgan, Scott, and
Van Buren

Region XIII - Bradley and McMinn

Region XIV - Anderson, Claiborne, Grainger, Greene, Hamblen, Hancock,
Hawkins, Jefferson, Knox, Loudon, Meigs, Reams,
Sullivan, Union, and Washington

Region XV - Johnson and Unicoi

* These counties are entirely or almost entirely within the boundaries of specified regions as listed above.

APPENDIX C

ANIMAL UNIT EQUIVALENTS FOR TENNESSEE

The following figures* have been used as animal unit equivalents in calculating the number of livestock by classes in this study:

Mature horses	1
Horse colts	2
Mature mules	1
Mule colts	2
Mature dairy cattle	1
Mature beef cattle	1
Mature bulls	1
Mature steers	1
Yearlings	2
Calves	4
Mature ewes	7
Rams	7
Lambs	14
Goats and kids	14
Mature sows	5
Mature boars	5
Pigs	10
Chickens	100
Turkeys	35
Ducks	100

*These figures apply particularly to the number of livestock classes as reported by the 1935 census. Slight variations were made in these animal equivalent figures to comply with variations in the methods employed by the Census Bureau of reporting livestock for the census periods prior to 1935.

APPENDIX D

APPENDIX TABLE I. LIVESTOCK DISTRIBUTION: NUMBER OF SPECIFIED LIVESTOCK BY TYPE-OF-FARMING REGIONS, TENNESSEE, 1935*

Region	All Cattle **	Cows Milked	Other Cattle	Hogs	Sheep	Chickens
1	1,865	882	983	5,717	-	28,823
2	24,427	10,397	14,030	44,871	12,004	158,376
3	117,494	57,903	59,591	103,227	4,024	782,039
4	30,464	17,704	12,760	50,137	3,971	318,694
5	22,443	12,296	10,947	23,535	3,097	243,936
6	22,555	11,966	10,589	22,241	624	273,027
7	20,531	9,479	11,052	26,565	3,807	243,717
8	44,912	19,003	25,909	67,291	13,533	380,689
9	14,870	7,518	7,352	8,575	685	141,764
10	226,165	115,750	110,415	166,408	200,597	1,823,464
11	54,623	25,508	29,315	45,200	14,404	606,630
12	31,635	13,544	18,091	32,987	14,120	194,797
13	28,286	12,904	15,382	9,261	1,776	175,025
14	211,024	102,043	108,981	94,632	27,074	2,089,113
15	11,748	5,066	6,682	4,112	4,073	83,599

* Based on counties selected as representative of each type-of-farming region.

** See Appendix A, B, C.

Source: U. S. Census of Agriculture, 1935.

APPENDIX TABLE II. LIVESTOCK DISTRIBUTION: NUMBER OF SPECIFIED LIVESTOCK PER 1000 ACRES IMPROVED CROP LAND BY TYPE-OF-FARMING REGIONS, TENNESSEE, 1935*

Region	All Cattle **	Cows Milked	Other Cattle	Hogs	Sheep	Chickens
1	32.0	15.1	16.9	98.1	-	494.8
2	107.0	45.6	61.5	196.6	52.6	680.8
3	105.7	52.1	53.6	92.9	3.6	703.6
4	77.6	45.2	32.6	128.0	10.1	813.4
5	83.8	45.9	37.9	87.9	11.6	910.6
6	70.2	37.2	33.0	69.2	1.9	849.9
7	52.1	24.1	28.1	67.5	9.7	618.9
8	114.9	48.6	66.3	172.1	34.6	973.7
9	93.8	47.4	46.4	54.1	4.3	893.8
10	159.1	81.4	77.7	117.0	141.1	1282.4
11	96.6	44.7	51.8	79.9	25.6	1072.5
12	195.0	85.5	111.5	203.4	87.0	1200.9
13	115.9	52.9	63.0	38.0	7.3	717.3
14	126.7	61.2	65.4	56.8	16.2	1253.9
15	143.8	62.0	81.8	50.3	49.9	1023.4
St. ave.	114.97	52.08	62.89	93.43	38.32	1559.49

* Based on counties selected as representative of each type-of-farming region.

** See Appendix A, B, C.

Source: U. S. Census of Agriculture, 1935.