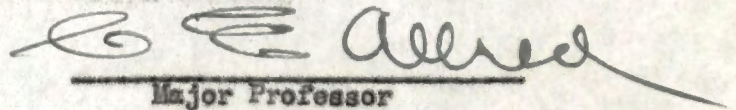


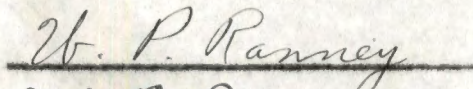
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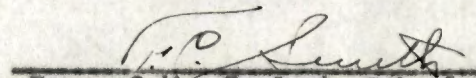
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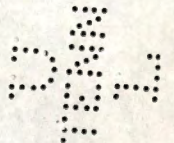
A THESIS

Submitted to
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of
The University of Tennessee
in
Partial Fulfillment of the Requirements
for the degree of
Master of Science

by

Ben A. Franklin

August 1940



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INTRODUCTION

A well-balanced cropping system¹ is the foundation to the successful operation and management of a farm.

In a large measure, the farmer's success is determined by the adaptability of the cropping system to the farm's needs.

Purpose and Method of Study

The purpose of this study is to determine, as far as possible, the cropping systems that are actually practiced in three type-of-farming areas. Three counties, Crockett, Overton, and Roane, in West, Middle, and East Tennessee, respectively, are included in the study. Crockett County is used as a sample area for Type-of-Farming Area III, Overton for Type-of-Farming Area XI, and Roane for Type-of-Farming Area XIV.

The cropping systems used in this study represent the crops and the number of years they are grown on a field over a five-year period. No attempt was made to record the actual sequence.

Characteristics of Cropping Systems in Tennessee

There is wide diversity in cropping systems in Tennessee, due chiefly

1. Cropping system is used in this study to mean the combinations of crops grown on a field over a period of years. It includes both planned and unplanned rotations as well as the continuous growing of a single crop on the same land. To this extent a cropping system is a more inclusive term than crop rotation.

to the differences in physical, economic, and social factors. Fifteen major and 25 minor types of farming areas are recognized in the State.² Within each of these areas different crop adaptations are found to such an extent that numerous cropping systems have been built up.

The leading crops in Tennessee on the basis of acreage are corn, hay, cotton, and wheat. In 1934 these four crops occupied approximately 91 percent of the cropland harvested. With few exceptions all of the cropping systems in the State are built around these crops. The exceptions may be made in the case of those areas that grow large acreages of tobacco, and the areas of highly specialized truck farming. In the case of livestock farms the major crops grown are corn and hay.

In planning a cropping system the Tennessee farmer is confronted with the problems of a small acreage of cropland and small irregular fields which may have different soil types, slopes, and fertility. Many farms include both bottomland and upland and generally the same rotation is not suited to both. Bottomland fields often overflow each winter and spring and a layer of silt, high in fertility, is deposited on the land. Fields of this type will usually stand a severe cropping system and still maintain fertility, while upland fields, which are subject to sheet and

2. Luebke, B. H., Atkins, S. W., Allred, C. E., and Roth, W. J., Types of Farming in Tennessee, Tennessee Agricultural Experiment Station, Bulletin 169, Knoxville, 1929.

gully erosion and leaching, must be handled carefully if yields are to be maintained. On this type of land rotation of crops is one of the best and least expensive ways of maintaining fertility.

In 1935 the average size farm in Tennessee was 69.7 acres, but only 39.1 acres were available for crops.³ To practice good crop rotations more cropland than this is needed.

On many Tennessee farms the fields are small and irregular in shape. In this case it is usually difficult to have a definite crop rotation. Uniform crop rotations can be practiced to greater advantage on fields of uniform size and shape.

In cases where different soil types and slopes exist on the same farm it is necessary for the farmer to practice different cropping systems on the fields.

Essentials of a Good Cropping System

A good cropping system is one that meets the needs of a farm from the standpoint of income, supplying food for the family and feed for the livestock, labor distribution, diversification, and soil conservation.

A good cropping system should furnish an adequate cash income for the farmer. This may be done by the growing of cash crops, feed crops for livestock which are a source of income, or a combination of these two.

3. U. S. Department of Commerce, Bureau of Census, Census of Agriculture, 1935, Washington, D. C.

Insofar as possible the cropping system should supply the farm family with food. It is also essential that adequate feed and pasture for the livestock be included in the system.

A good cropping system should distribute the labor over the entire year. It should be planned to provide maximum use of available labor and a minimum use of hired labor.

The cropping system should be as flexible and simple as possible. Due to unforeseen events and climatic conditions it may be necessary to alter the system from time to time. In this case it is not desirable to have an inflexible cropping system, but one that can be altered without changing the principle of the system.

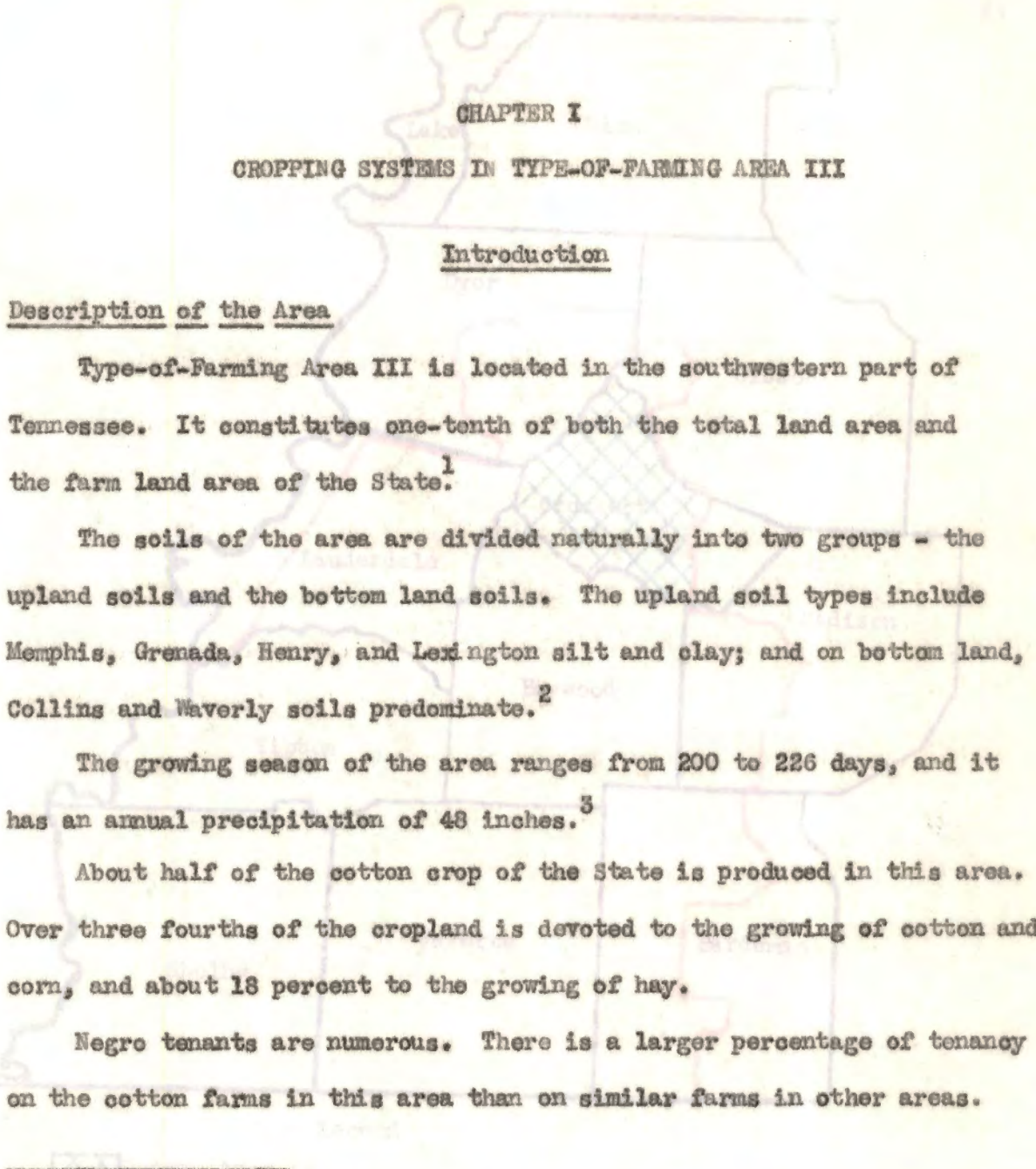
A good cropping system should provide for a succession of crops. The rotation should be built around the major crop or crops grown.

"In its essentials a good crop rotation utilizes crops that are adapted to the environment and that fit into a farming system that is planned and integrated as an efficient business undertaking."⁴

Diversification is another important characteristic of a good cropping system as it avoids risks involved in a one-crop system.

A cropping system may meet all of the factors discussed, but unless it includes a program for soil conservation it is still not a good long-time plan.

4. Leighty, Clyde E., "Crop Rotation," United States Department of Agriculture, Yearbook of Agriculture, 1938, Soils and Men, Washington, D. C.



CHAPTER I

CROPPING SYSTEMS IN TYPE-OF-FARMING AREA III

Introduction

Description of the Area

Type-of-Farming Area III is located in the southwestern part of Tennessee. It constitutes one-tenth of both the total land area and the farm land area of the State.¹

The soils of the area are divided naturally into two groups - the upland soils and the bottom land soils. The upland soil types include Memphis, Grenada, Henry, and Lexington silt and clay; and on bottom land, Collins and Waverly soils predominate.²

The growing season of the area ranges from 200 to 226 days, and it has an annual precipitation of 48 inches.³

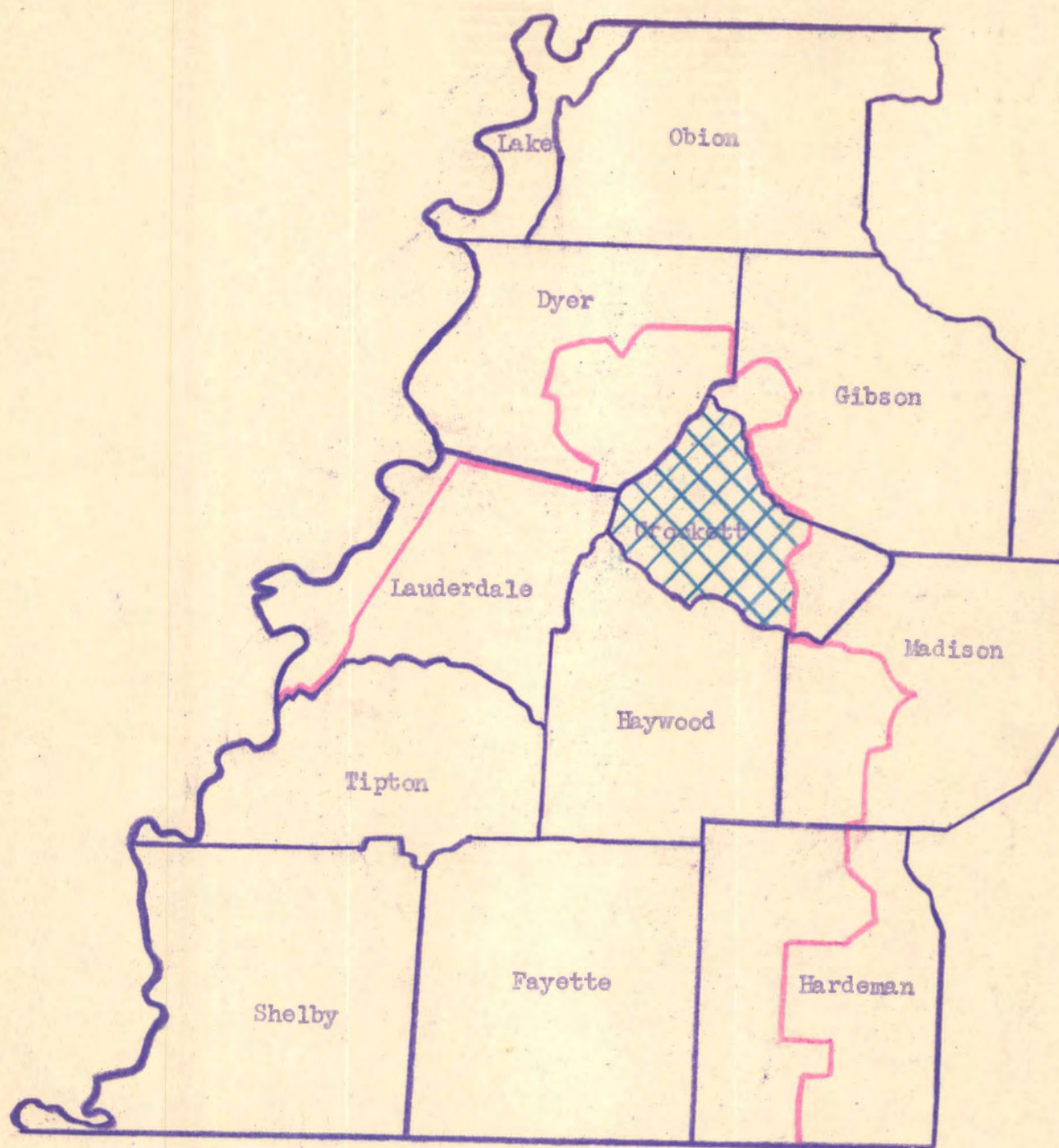
About half of the cotton crop of the State is produced in this area. Over three fourths of the cropland is devoted to the growing of cotton and corn, and about 18 percent to the growing of hay.

Negro tenants are numerous. There is a larger percentage of tenancy on the cotton farms in this area than on similar farms in other areas.

1. Luebke, B. H., Atkins, S. W., and Allred, C. E., and Roth, W. J., Types of Farming in Tennessee, Tennessee Agricultural Experiment Station Bulletin 169, 1939.

2. Ibid.

3. Ibid.



Legend

 Survey Area in
Crockett County

 County Boundary

 Type-of-Farming
Area Boundary

Scale - 1" = 64 miles

Figure 1. Map Showing Location of Crockett County, Survey Area, and
Type-of-Farming Area III

Sample Area

The portion of Type-of-Farming Area III that is located in Crockett County is used as being representative of the area. This portion includes Civil Districts 5 to 15 (Figure 1).

The percentage of farms, by type, in this portion of Crockett County, compared with Area III, shows the two areas to be very similar. In Crockett County 82 percent of the farms are classified as cotton farms, compared with 85 percent for Area III (Figure 2 and Table I). The largest difference in the two areas is in general farms. In the sample area about 7 percent of the farms are general, compared with only 3.3 percent in Area III. All other types are in about the same proportion (Table I).

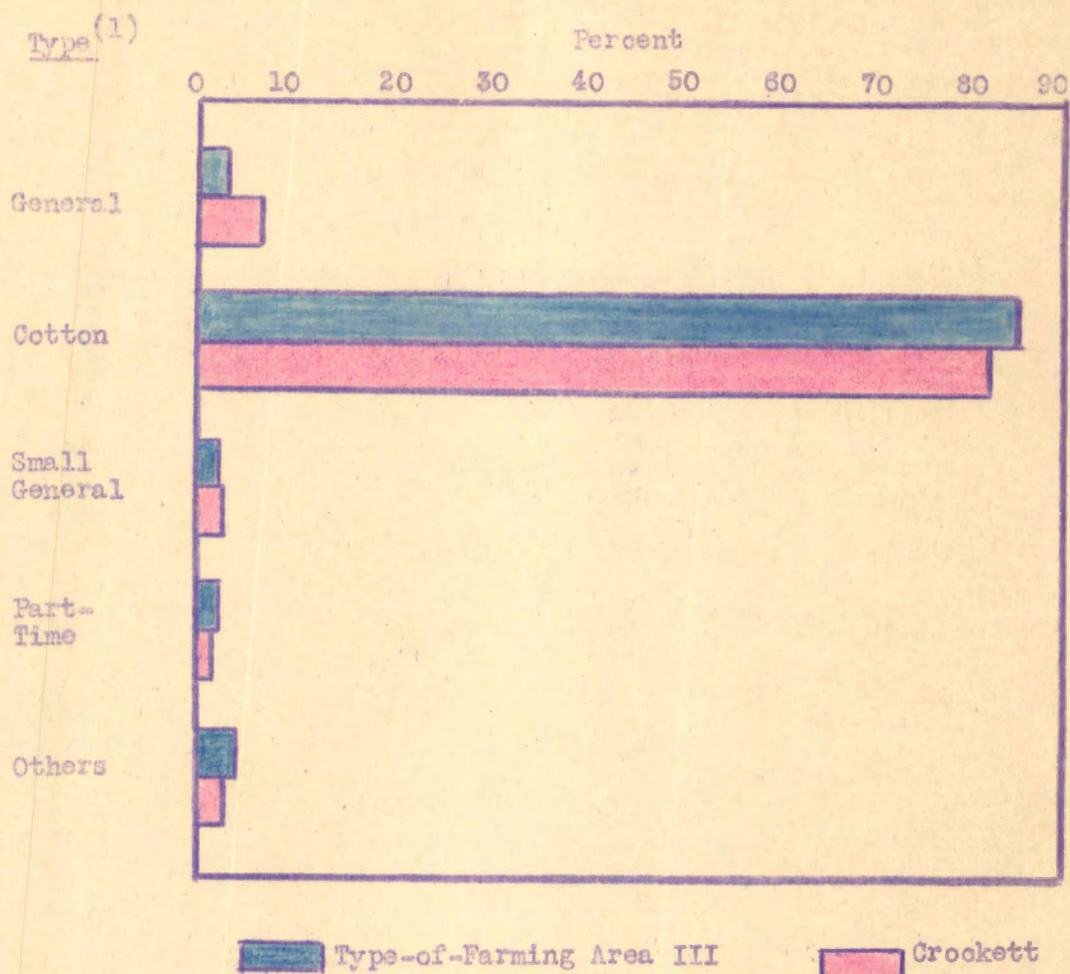
TABLE I. PERCENT OF FARMS BY TYPE IN CROCKETT COUNTY, AND
TYPE-OF-FARMING AREA III, 1935 *

Type of Farm	Crockett Percent	Area III Percent
General	6.9	3.3
Cash grain	.2	.4
Cotton	82.0	85.0
Crop-specialty	1.2	.5
Fruit	.5	.2
Truck	**	
Dairy	.4	1.2
Animal specialty	1.3	.6
Poultry	.2	.1
Small-general	2.6	2.2
Part-time	1.3	2.2
All other	3.3	4.3

Source: U. S. Census.

* Includes Civil Districts 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 of Crockett County.

**Less than 0.5 percent.



Source: Table I

Figure 2. Percent of Farms by Type in Crockett County, and Type-of-Farming Area III, 1935 (2)

(1) Types not shown less than 1.0 percent.

(2) Includes Civil Districts 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, & 15 of Crockett County.

Fields Studied

The cropping systems are based on the crop histories of 325 fields on 45 farms selected from the sample area for the years 1932, 1933, 1934, 1935, and 1936.

The crop histories are obtained from the schedules of the Farm Management and Soil Conservation surveys of the sample area made in 1936 by the Department of Agricultural Economics and Rural Sociology of the University of Tennessee in cooperation with the U. S. Bureau of Agricultural Economics and the U. S. Soil Conservation Service. These schedules included a complete record of the farm business, a map of the soil type and slope of each field, conservation practices used on the farms, and the cropping system for the period 1932-36.

These 325 fields are taken from an area rather homogeneous in its agricultural characteristics, and before the crop histories for many fields were tabulated it was discovered that certain well defined rotations predominate.

The 325 fields from which the cropping systems are taken are divided into two groups -- upland, of which there are 271 fields, and bottomland, of which there are 54 fields. This division is desirable in this area because the upland and bottomland are adapted to different rotations.

Row crops and hay crops are grown on approximately 99 percent of the 325 fields studied. Cotton and corn are the principal row crops, lespedeza the principal hay. The remaining 1 percent of the fields are planted to small grains or left idle (Table II).

Row crops are planted on 60 percent of the upland fields, and of the bottomland fields 85 percent are in row crops, and 15 percent in hay.

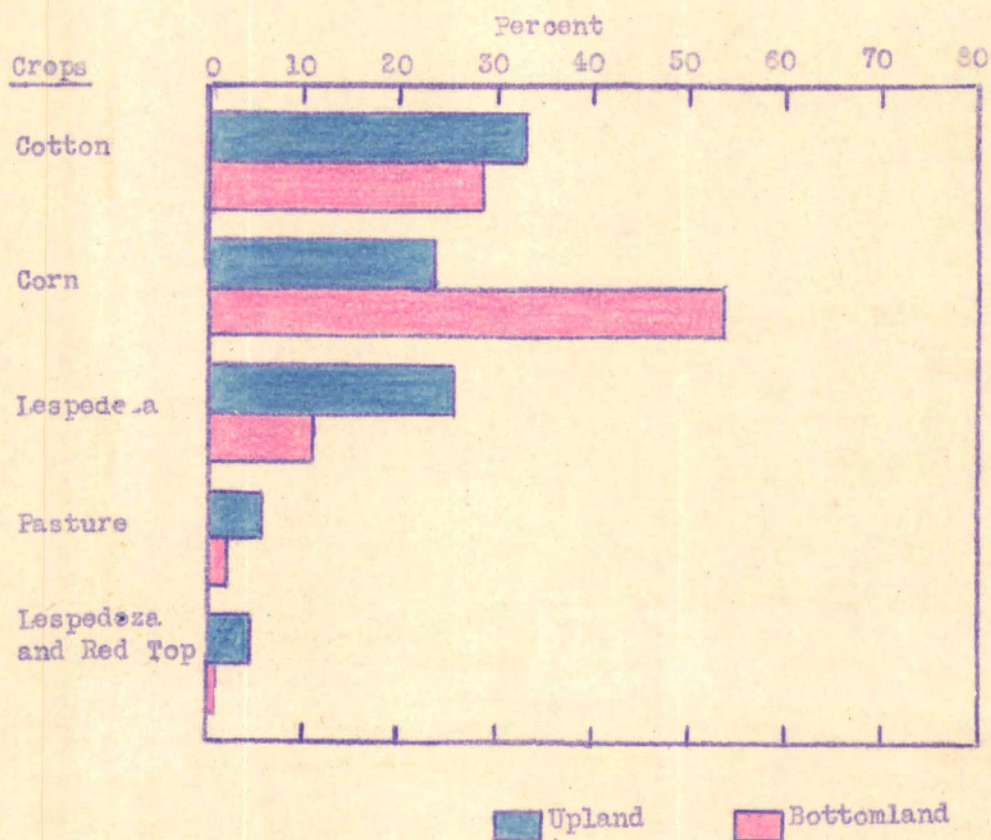
Cotton occupies a larger percentage of the upland fields than does corn, but on the bottomland corn occurs more frequently than cotton. In many cases the bottomlands do not dry out early enough in the spring to plant cotton so corn, which is a quicker maturing crop, is planted on these fields. If corn is drowned out by spring rains it can be replanted and a good crop obtained before frost, but this is not usually the case with cotton.

The distribution of minor crops on upland and bottomland is shown in Table II.

TABLE II. NUMBER OF FIELDS OF EACH CROP ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crops	Upland		Bottomland	
	No. of Fields	Percent	No. of Fields	Percent
Row crops:	808	59.7	229	84.8
Cotton	451	33.3	77	28.5
Corn	318	23.5	146	54.1
Strawberries	23	1.8	5	1.8
Sorghums	9	.6		
Tomatoes	6	.4	1	.4
Sweet potatoes	1	.1		
Hay crops:	530	39.1	40	14.8
Lespedeza	349	25.9	30	11.1
Lespedeza and red top	59	4.4	2	.7
Red clover	8	.6	1	.4
Soybeans	8	.6		
Lespedeza and red clover	6	.4		
Cowpeas	6	.4	1	.4
Lespedeza and oats	3	.2		
Red top, Red clover, and oats	4	.3		
Alfalfa	2	.1		
Red top and red clover	2	.1		
Pasture	80	5.9	6	2.2
Red top	3	.2		

(continued)



Source: Table II

Figure 3. Percent of Fields Planted to Important Crops on 45 Farms
in Crockett County, Tennessee,
1932-36

TABLE II. NUMBER OF FIELDS OF EACH CROP ON 45 FARMS IN
CROCKETT COUNTY, TENNESSEE, 1932-36 (continued)

Crops	Upland		Bottomland	
	No. of Fields	Percent	No. of Fields	Percent
Small grains:	7	.5		
Oats	6	.4		
Wheat	1	.1		
Idle	10	.7	1	.4
Total	1355	100.0	270	100.0

Source: Survey of Soil Conservation Practices, 1936.

To simplify studying the rotations the crops grown in this area are classified as follows:

I. Row crops

- a. Corn
- b. Cotton
- c. Sorghum
- d. Strawberries
- e. Tomatoes
- f. Sweet potatoes

II. Hay crops

- a. Lespedeza
- b. Lespedeza and red top
- c. Red top
- d. Red clover
- e. Lespedeza and red clover
- f. Soybeans
- g. Cowpeas
- h. Red top and red clover
- i. Alfalfa
- j. Pasture
- k. Lespedeza and oats
- l. Red top, red clover, and oats

III. Small grains

- a. Oats
- b. Wheat

IV. Idle cropland.

Pasture is classified as a hay crop because most of the temporary pastures and improved permanent pastures are either lespedeza alone, or a mixture of lespedeza and red top (see Table III).

Most farmers try to establish their pastures on old cropland and a large part is sown to lespedeza the first year. The usual practice is for the farmers to cut the fields with good growths for hay and use the remainder for pasture, seed, or leave it idle.⁴

TABLE III. PASTURE ESTABLISHMENT ON 112 FARMS IN CROCKETT COUNTY, TENNESSEE, 1936

Item	Pasture Practice						
	Pas- ture Estab- lish- ment	Les- pe- deza Alone	Les- pe- deza, red top	Red top	Red clo- ver	Al- fal- fa	Sudan
Number of farms re- porting using this practice	112	102	102	5	3	3	2
Number of fields re- ported for each prac- tice in 1936	-	68	34	3	3	1	2
Acres in each estab- lishment	1002	644	305	37	11	3	2

Source: Survey of Soil Conservation Practices, 1936.

4. Allred, C. E., Luebke, B. H., and Lanham, Ben T., Jr., Survey of Soil Conservation Practices in Central West Tennessee, Tennessee Agricultural Experiment Station, Monograph Number 59, 1937.

Cropping Systems

Upland. There are three cropping systems that occupy approximately three fourths of all the upland fields in this area. They are composed of two classes of crops - row crops and hay crops. Corn and cotton are the two chief row crops, and lespedeza the chief hay crop.

The system occurring the most frequently is that of straight row crops. It occurs 77 times or on 28 percent of the 271 upland fields (Figure 4 and Table IV).

The cropping system that has row crops two years and hay crops three years on the land is next in importance. This system occurs 76 times or on 28 percent of the upland fields.

The other important cropping system on the land is that which has row crops three years and hay crops two years. This system occurs 55 times or on 20 percent of the upland fields (Table IV).

These three cropping systems occupy 77 percent of all the upland fields over the period studied.

The remaining 23 percent of the fields are planted to the other four groups of cropping systems shown in Table IV.

Bottomland. One cropping system, that of straight row crops, occupies 38 or 70 percent of the 54 bottomland fields.

Two other systems, which include a row crop for two years and a hay crop for three years, and a row crop for three years and a hay crop for two years, occur on 5 fields each (Table IV).

One bottomland field is planted to a hay crop each year during the period, and another to a miscellaneous rotation.

TABLE IV. CROPPING SYSTEMS IN 325 FIELDS OF 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-1936

Cropping System					Upland Fields		Bottomland Fields	
					No.	Percent	No.	Percent
Hay	Hay	Hay	Hay	Hay	12	4.4	1	1.9
Hay	Hay	Hay	Hay	Row	20	7.4	2	3.8
				crop				
Hay	Hay	Hay	Row	Row	76	28.0	5	9.3
			crop	crop				
Hay	Hay	Row	Row	Row	55	20.3	5	9.3
		crop	crop	crop				
Hay	Row	Row	Row	Row	14	5.2	2	3.8
	crop	crop	crop	crop				
Row	Row	Row	Row	Row	77	28.4	38	70.1
crop	crop	crop	crop	crop				
Miscellaneous rotations					17	6.3	1	1.9
Total					271	100.0	54	100.0

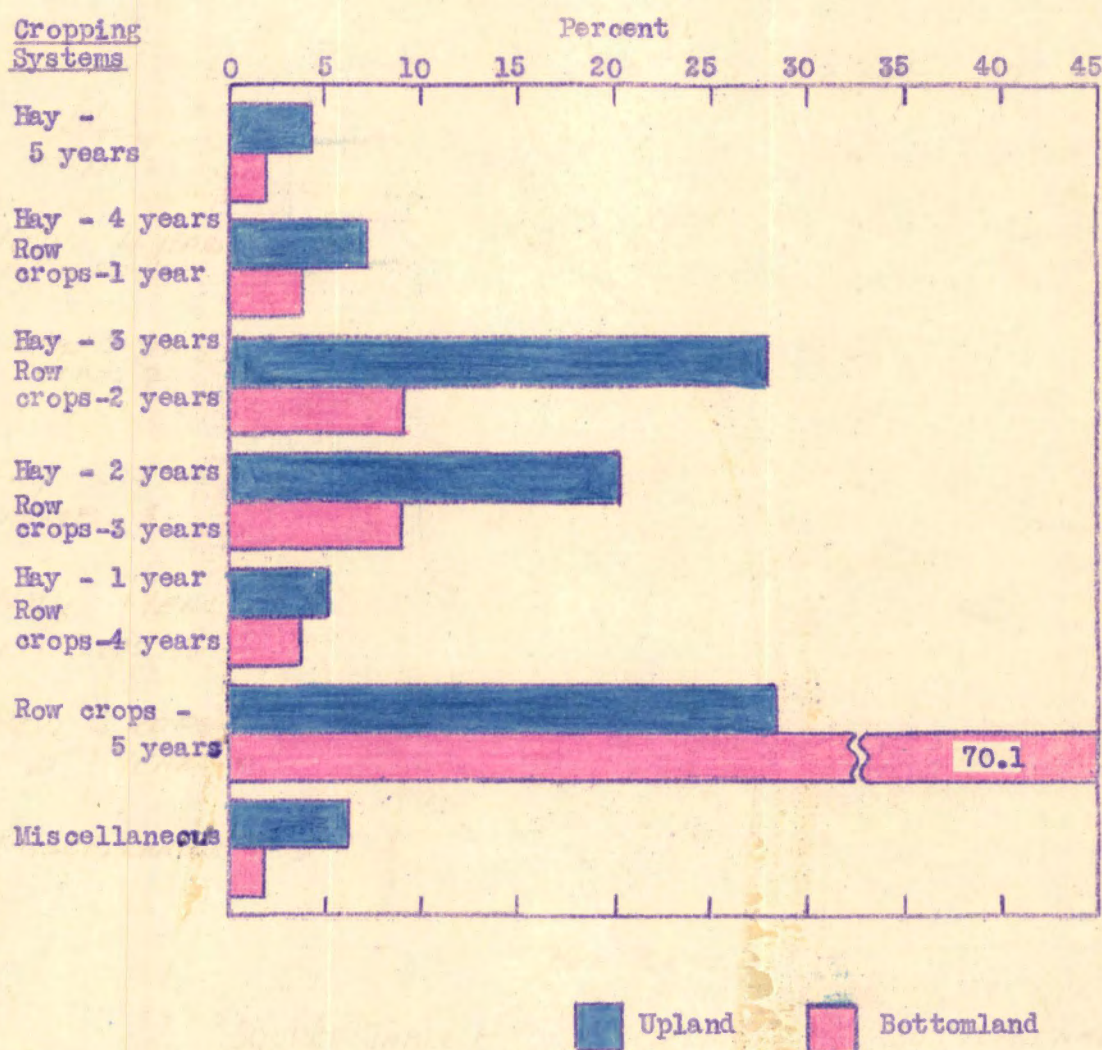
Source: Survey of Soil Conservation Practices, 1930

It is not known how many of these bottomland fields should grow row crops year after year because deposits of silt laid down on many fields subject to overflow each year tend to maintain fertility.

TABLE V. AVERAGE NUMBER OF FIELDS ON EACH FARM OCCUPIED BY THE DIFFERENT CROPPING SYSTEMS

Cropping System					No.	Percent
Row	Row	Row	Row	Row	2.6	36.1
Row	Row	Row	Row	Hay	.3	4.2
Row	Row	Row	Hay	Hay	1.3	18.0
Row	Row	Hay	Hay	Hay	1.8	25.0
Row	Hay	Hay	Hay	Hay	.5	6.9
Hay	Hay	Hay	Hay	Hay	.3	4.2
Miscellaneous					.4	5.6
Total					7.2	100.0

Source: Survey of Soil Conservation Practices, 1936.



Source: Table IV

Figure 4. Percent of Fields Occupied by Different Cropping Systems
on 45 Farms in Crockett County, Tennessee,
1932-36.

Straight Row Crops. The cropping system in which the land is planted to a row crop each year predominates in this area. On both the upland and bottomland it occupies more fields than does any other cropping system.

There are 271 upland fields and 54 bottomland fields, of which 28 percent of the upland and 70 percent of the bottomland fields are planted to a row crop each year.

This system, which is the most destructive as far as soil conservation is concerned, is found on one or more fields of practically every farm studied. Many of the bottomland fields, especially those that are overflowed each year, are capable of producing good yields of row crops year after year but the upland fields cannot maintain yields in a straight row crop system without heavy applications of fertilizer. There is an average of 7.2 fields per farm, 2.6 fields of which are planted to a row crop each year (Table V).

In the cropping system of straight row crops the two major row crops, corn and cotton, are planted on approximately the same number of upland fields. Each of the two crops are planted on 46 percent of the 77 upland fields that are occupied by straight row crops (Figure 5 and Table VI).

On the bottomland a larger percentage of the fields are planted to corn than cotton. Of the 38 bottomland fields, which are planted to straight row crops, 66 percent are planted to corn, and 32 percent to cotton. Cotton requires better drainage than is found on many of the bottomland fields, which will grow good crops of corn.

Strawberries are the third most important crop grown in the system of straight row crops. Over the five-year period they are planted on about 5 percent of the 77 upland fields, and on 2.6 percent of the 38 bottomland

fields devoted to this system.

Sorghum and tomatoes appear in this cropping system but are of very little importance. Each of these crops is planted on 1.3 percent of the 77 upland fields devoted to this system, and none are planted on the bottomland fields.

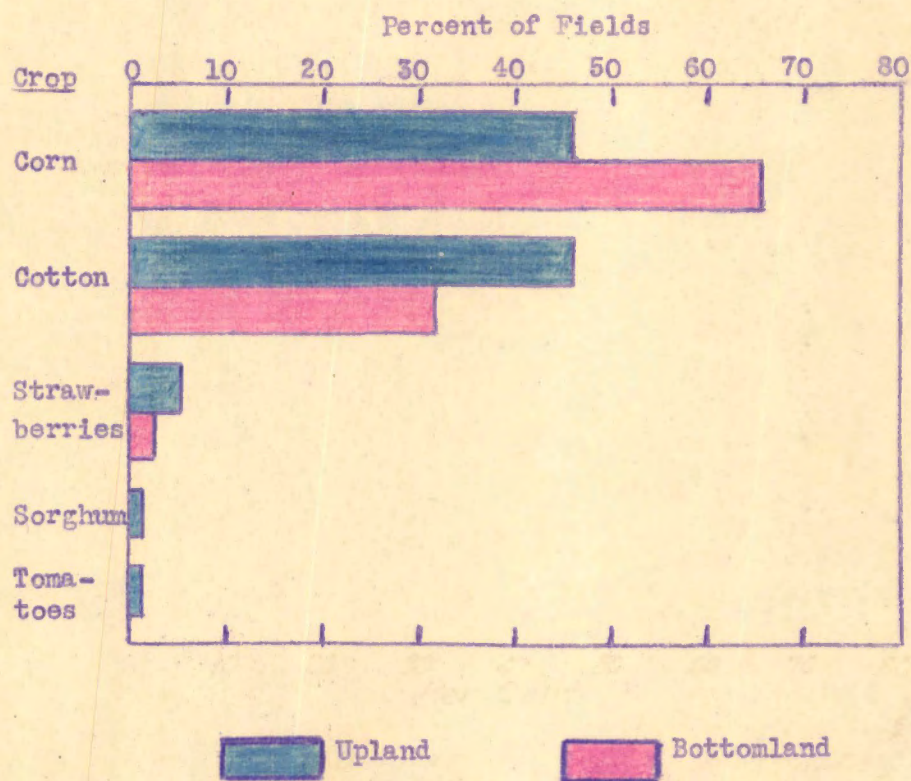
TABLE VI. DISTRIBUTION OF CROPS IN STRAIGHT ROW CROP SYSTEM
ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop	Upland Fields		Bottomland Fields	
	No.	Percent	No.	Percent
Corn	177	46.0	125	65.8
Cotton	177	46.0	60	31.6
Strawberries	21	5.4	5	2.6
Sorghum	5	1.3		
Tomatoes	5	1.3		
Total	385	100.0	190	100.0

Source: Survey of Soil Conservation Practices, 1936.

There are 15 different combinations of crops on the 77 upland fields which are planted to a row crop each year. The two most important of these are: cotton which was planted on 22 percent of the fields, and corn which was planted on 21 percent. On 15.6 percent of the fields cotton is grown three years and corn two years; and on 11.7 percent cotton is grown two years and corn three (Figure 6 and Table VII).

On the 38 bottomland fields which are planted to a row crop each year, there are only 7 different ways in which the crops are combined over the five-year period. Corn is planted on 39.5 percent of the fields each year.



Source: Table VI

Figure 5. Distribution of Crops in Straight Row Crop System
on 45 Farms in Crockett County, Tennessee,

1932-36

No other combination of the crops occurs frequently enough to be of much importance (Table VII).

On one upland and on one bottomland field strawberries were grown each year over the five-year period.

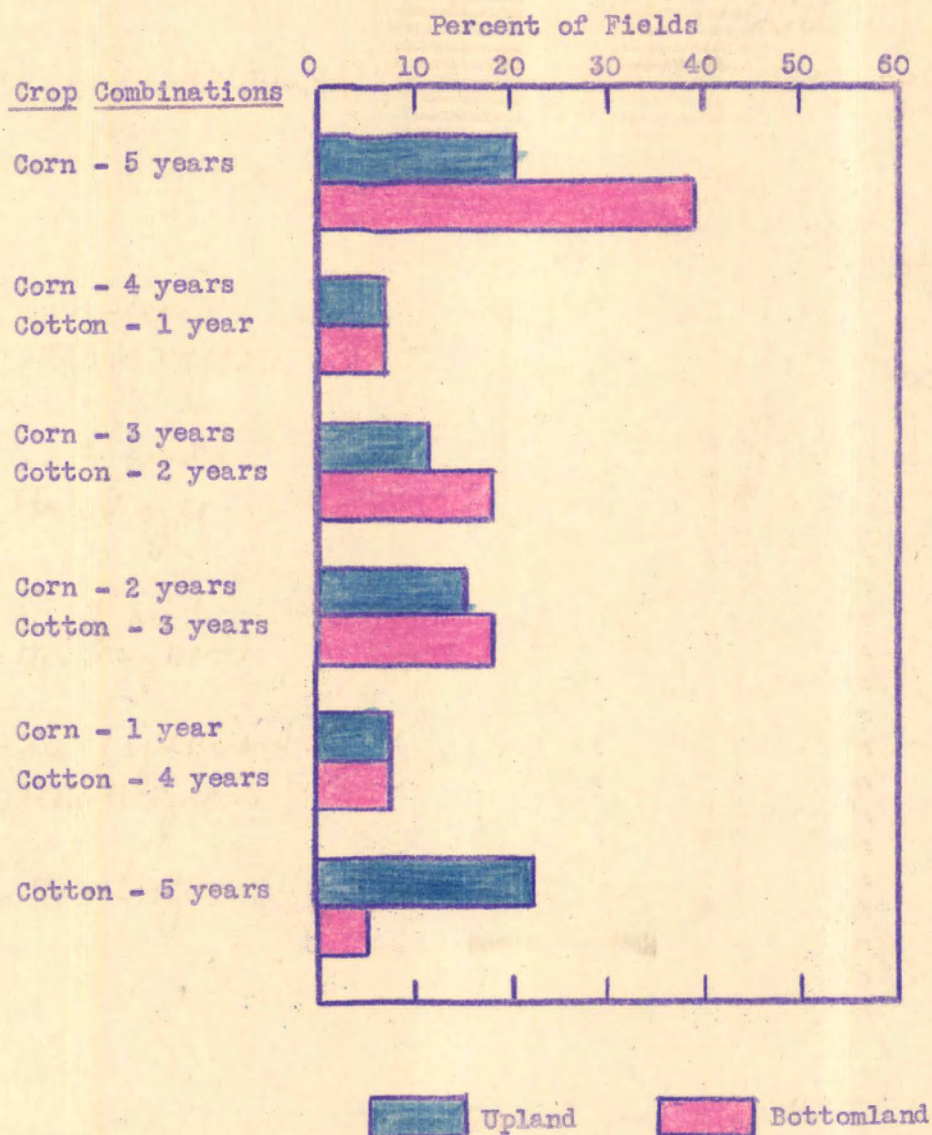
Only two of the bottomland fields are planted to cotton each year.

TABLE VII. STRAIGHT ROW CROP COMBINATIONS ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Combinations					Upland Fields		Bottomland Fields	
					No.	Pct.	No.	Pct.
Corn	Corn	Corn	Corn	Corn	16	20.8	15	39.5
Corn	Corn	Corn	Corn	Cotton	6	7.8	3	7.9
Corn	Corn	Corn	Cotton	Cotton	9	11.7	7	18.4
Corn	Corn	Cotton	Cotton	Cotton	12	15.6	7	18.4
Corn	Cotton	Cotton	Cotton	Cotton	6	7.8	3	7.9
Corn	Corn	Cotton	Cotton	Sorghum	1	1.3		
Corn	Corn	Cotton	Strawb.	Strawb.	1	1.3		
Corn	Strawb.	Strawb.	Strawb.	Strawb.	2	2.6		
Corn	Cotton	Cotton	Cotton	Tomatoes	1	1.3		
Corn	Sorghum	Sorghum	Sorghum	Sorghum	1	1.3		
Corn	Cotton	Cotton	Tomatoes	Tomatoes	1	1.3		
Corn	Corn	Cotton	Tomatoes	Tomatoes	1	1.3		
Cotton	Cotton	Strawb.	Strawb.	Strawb.	2	2.6		
Cotton	Cotton	Cotton	Cotton	Cotton	17	22.1	2	5.3
Strawb.	Strawb.	Strawb.	Strawb.	Strawb.	1	1.2	1	2.6
Total					77	100.0	38	100.0

Source: Survey of Soil Conservation Practices, 1936.

Row Crops Four Years - Hay Crop One Year. The cropping system in which row crops are planted four years and hay crops one year over a five-year period is one of the minor cropping systems in this area.



Source: Table VII

Figure 6. Major Straight Row Crop Combinations on 45 Farms in
Crockett County, Tennessee, 1932-36

Of the 271 upland fields, 14 or 5.2 percent are planted to this system. Only 2 fields or 3.8 percent of the 54 bottomland fields have a row crop on them four years and a hay crop one year.

This cropping system appears on about 3 out of every ten farms. On both upland and bottomland 5.5 percent of all the fields are planted to a row crop four years and a hay crop one year (Table V).

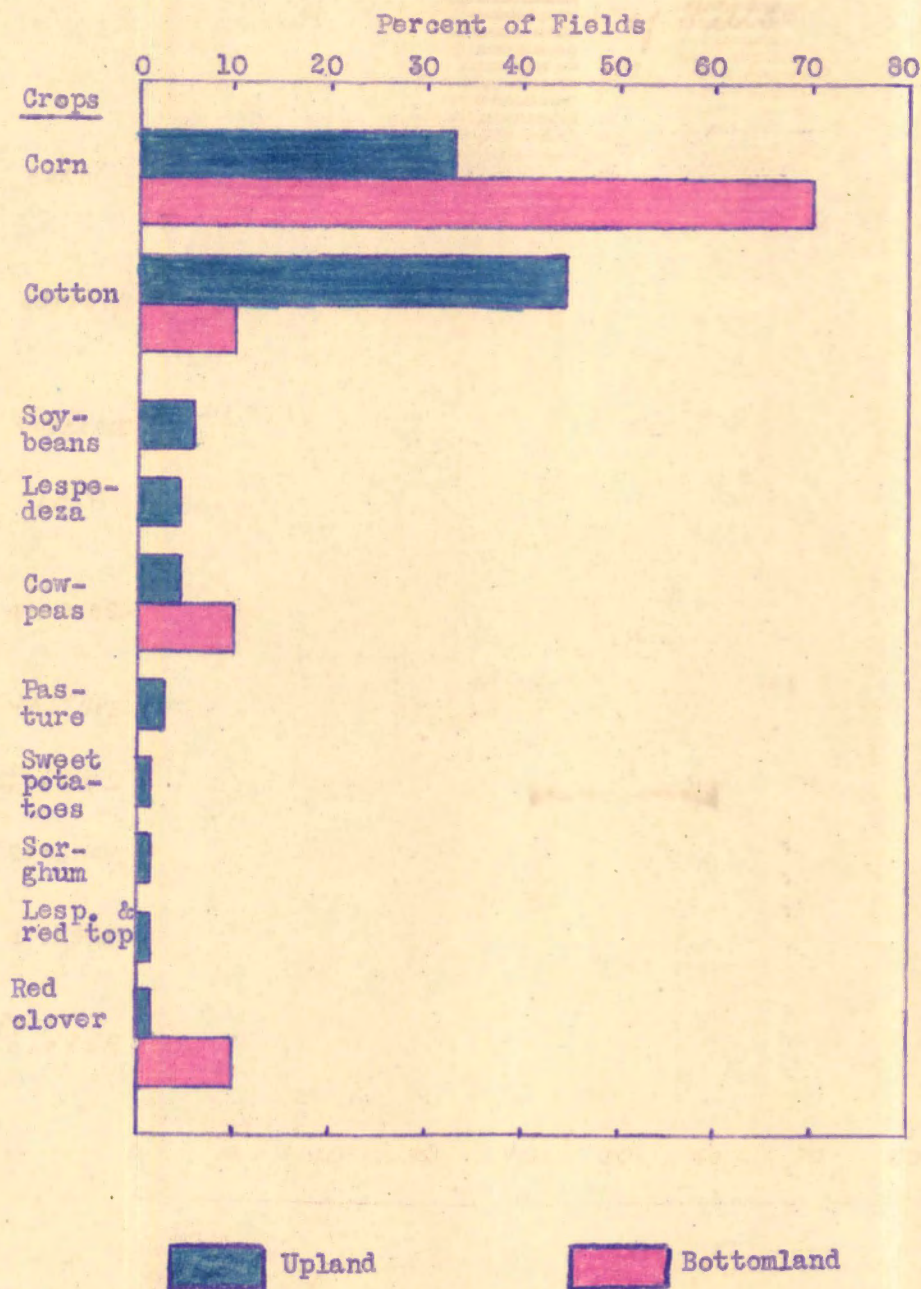
Row crops are planted on 80 percent of the 14 upland fields and of this number 77 percent are cotton and corn. The remaining 2.8 percent are planted to sweet potatoes and sorghum (Figure 7 and Table VIII). No other row crops are grown in this cropping system.

TABLE VIII. DISTRIBUTION OF CROPS IN FOUR YEAR ROW CROPS AND ONE YEAR HAY CROP SYSTEM ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop	Upland Fields		Bottomland Fields	
	No.	Pct.	No.	Pct.
Corn	23	32.9	7	70.0
Cotton	31	44.3	1	10.0
Soybeans	4	5.7		
Lespedeza	3	4.3		
Cowpeas	3	4.3	1	10.0
Pasture	2	2.9		
Sweet potatoes	1	1.4		
Sorghum	1	1.4		
Lespedeza and red top	1	1.4		
Red clover	1	1.4	1	10.0
Total	70	100.0	10	100.0

Source: Survey of Soil Conservation Practices.

Of the 14 fields that are planted to hay crops, soybeans are planted on 4, lespedeza 3, cowpeas 3, pasture 2, red clover 1, and lespedeza and red top 1.



Source: Table VIII

Figure 7. Distribution of Crops in Four Year Row Crop and One Year Hay Crop System on 45 Farms in Crockett County, Tennessee, 1932-36

This cropping system appears on 2 bottomland fields. Over the five-year period corn is planted 7 times, cotton 1 time, cowpeas 1 time, and red clover once.

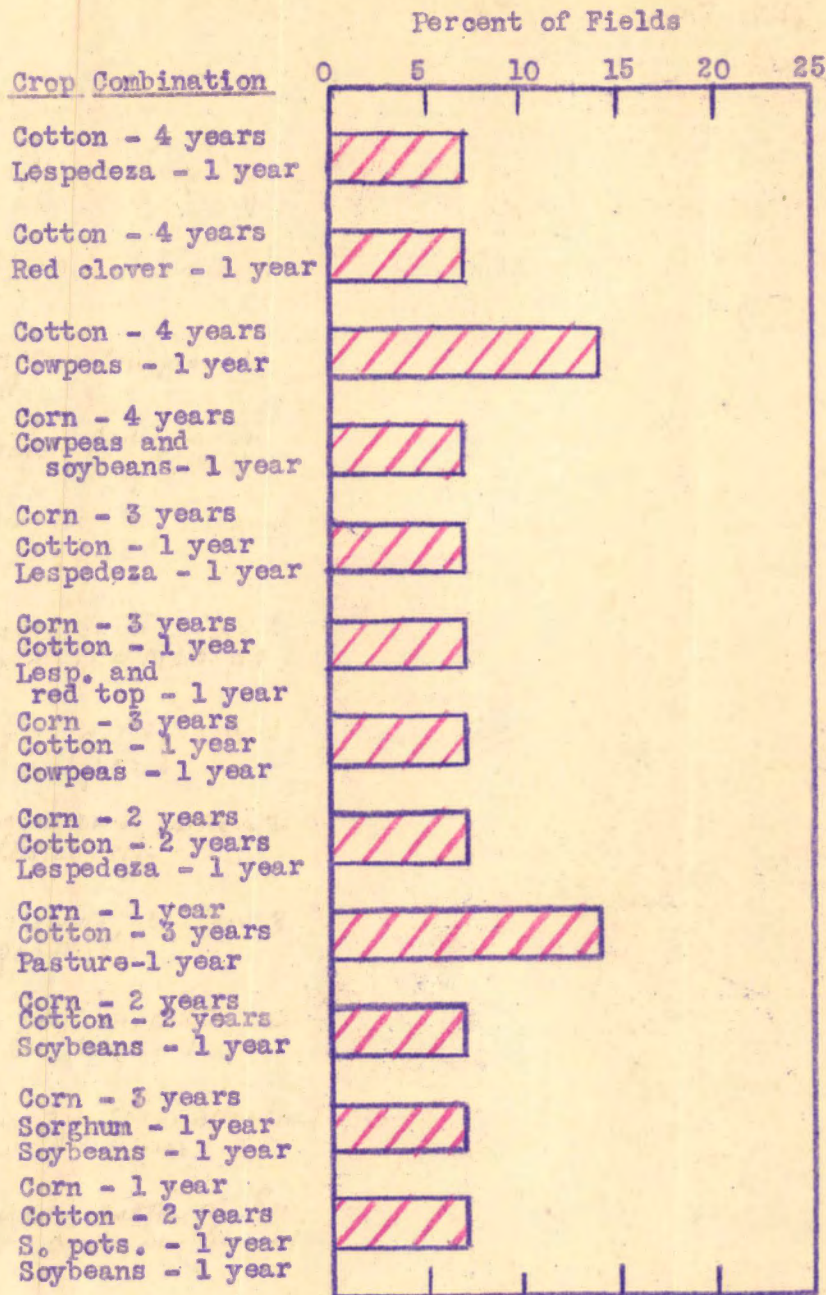
There are 12 different combinations of the crops over the five-year period on the upland fields. Two of the different combinations occur twice and the other 10 occur one time each (Figure 8 and Table IX).

There seems to be no one crop rotation within this system of four years of row crops and one year hay crop which occurs frequently enough to be called important.

TABLE IX. FOUR YEAR ROW CROP AND ONE YEAR HAY CROP COMBINATIONS ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Combinations					Upland Fields		Bottomland Fields	
					No.	Pct.	No.	Pct.
Cotton	Cotton	Cotton	Cotton	Lesp.	1	7.2		
Cotton	Cotton	Cotton	Cotton	Red cl.	1	7.1		
Cotton	Cotton	Cotton	Cotton	Cowpeas	2	14.3		
Corn	Corn	Corn	Corn	Soybeans	1	7.2		
				Cowpeas				
Corn	Corn	Corn	Cotton	Lesp.	1	7.1		
Corn	Corn	Corn	Cotton	Lesp. &	1	7.1		
				Red Top				
Corn	Corn	Corn	Cotton	Cowpeas	1	7.2		
Corn	Corn	Cotton	Cotton	Lespedeza	1	7.1		
Corn	Cotton	Cotton	Cotton	Pasture	2	14.3		
Corn	Corn	Cotton	Cotton	Soybeans	1	7.1		
Corn	Corn	Corn	Sorghum	Soybeans	1	7.2		
Corn	Cotton	Cotton	Sweet	Soybeans	1	7.1		
			Pots.					
Corn	Corn	Corn	Corn	Cowpeas			1	50.0
Corn	Corn	Corn	Cotton	Red cl.			1	50.0
				Total	14	100.0	2	100.0

Source: Survey of Soil Conservation Practices, 1936.



Source: Table IX

Figure 8. Four Year Row Crop and One Year Hay Crop Combinations on the Upland of 45 Farms in Crockett County, Tennessee, 1932-1936

Row Crops Three Years and Hay Crops Two Years. The cropping system in which the land is planted to a row crop three years and a hay crop two years, over a five-year period, is the third most important system used in this area. This cropping system is practiced on 55 or 20 percent of the 271 upland fields and on 5 or 9.3 percent of the 54 bottomland fields.

On practically every farm studied this system is found on at least one field, and on some farms two or three fields are planted to a row crop three years and a hay crop two years. Each farm has an average of 7.2 fields and this system is planted on 1.3 fields of 7.2 fields. This means that out of every 72 fields studied 13 are planted to a row crop three years and a hay crop two years (Table V).

As is true in the case of the other cropping systems, cotton and corn are the important row crops in this system.

Cotton is planted on a larger number of the upland fields than is any other crop, being planted on 41.8 percent of the 55 upland fields, occupied by this cropping system. However, on the 5 bottomland fields, on which this system is practiced it is second in importance, being planted on 24 percent of the fields (Figure 9 and Table X).

Corn is planted on 17.8 percent of the 55 upland fields and on 32.0 percent of the 5 bottomland fields. Over the five-year period one field of tomatoes is planted on both upland and bottomland.

The chief hay crop is lespedeza. It is planted on 28 percent of the 55 upland fields and on 32 percent of the 5 bottomland fields (Figure 9 and Table X).

Other hay crops, besides lespedeza, which are planted in this system, include lespedeza and red top; pasture, lespedeza, and red clover; and red clover alone. All of these crops are planted on the upland fields, the first two being the most important. Of this group only lespedeza and red top are planted on the bottomland.

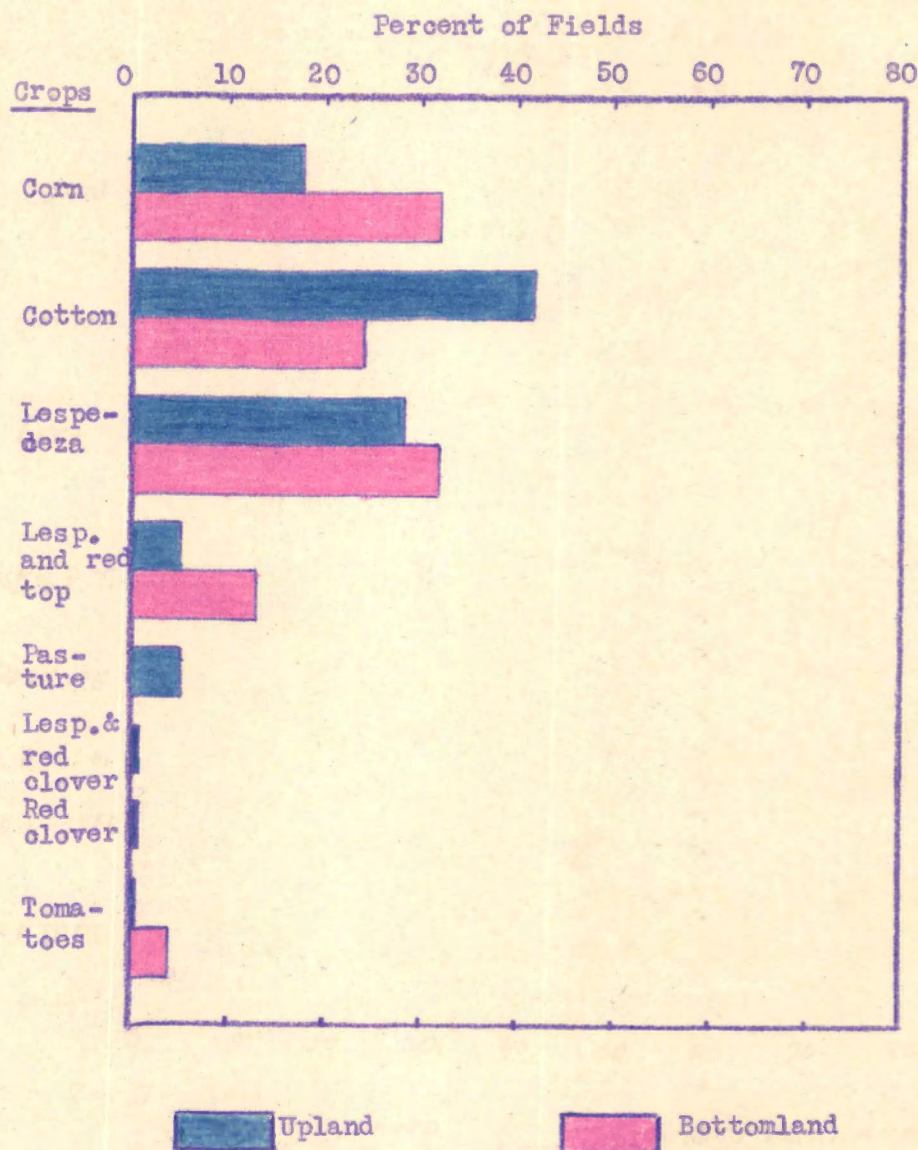
TABLE X. DISTRIBUTION OF CROPS IN THREE YEAR ROW CROP AND TWO YEAR HAY CROP SYSTEM ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop	Upland Fields		Bottomland Fields	
	No.	Pct.	No.	Pct.
Corn	49	17.8	8	32.0
Cotton	115	41.8	6	24.0
Lespedeza	78	28.4	8	32.0
Lespedeza and red top	14	5.1	2	8.0
Pasture	14	5.1		
Lespedeza and red clover	2	.7		
Red clover	2	.7		
Tomatoes	1	.4	1	4.0
Total	275	100.0	25	100.0

Source: Survey of Soil Conservation Practices, 1936.

Only one combination of crops occurs very frequently in this system. It is cotton planted three years with lespedeza two. This combination is planted on 40 percent of the 55 upland fields on which this system was practiced (Figure 10 and Table XI).

On about 13 percent of the 55 upland fields corn is planted one year, cotton two years, and lespedeza two years.



Source: Table X

Figure 9. Distribution of Crops in Three Year Row Crop and Two Year Hay Crop System on 45 Farms in Crockett County, Tennessee, 1932-36

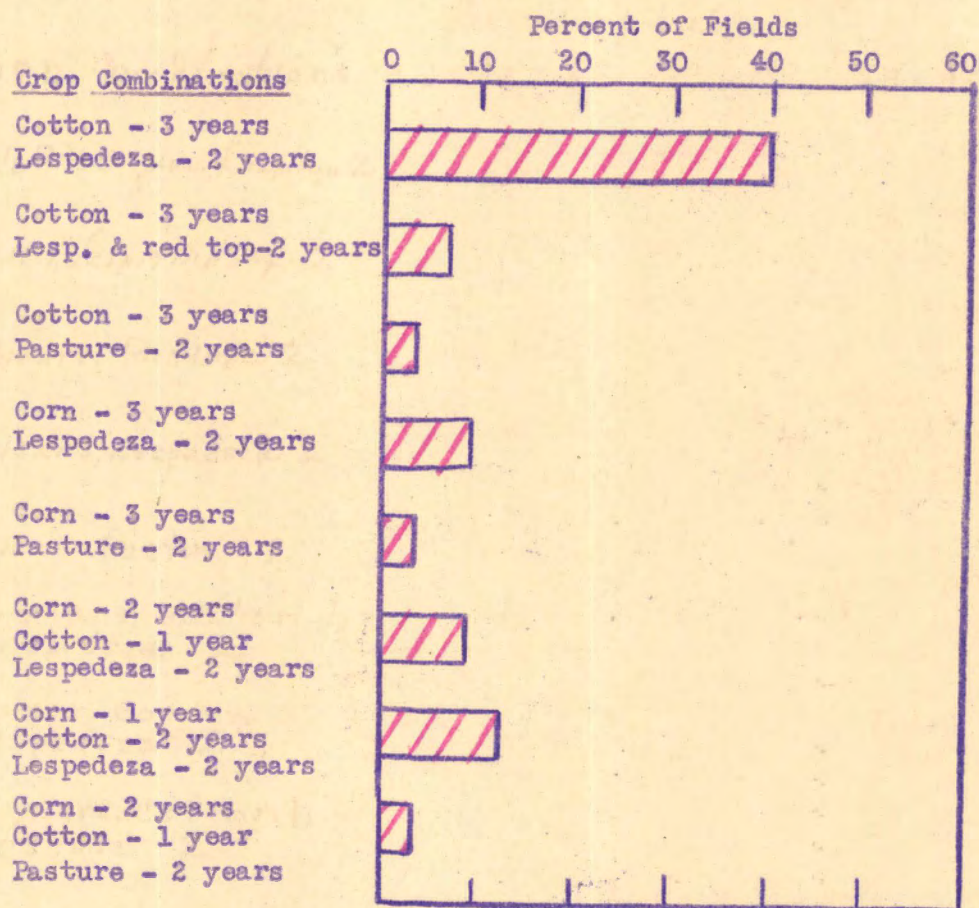
The percent of upland fields which are planted to corn three years and lespedeza two years is 9.2, which is somewhat lower than the most important on these crop arrangements.

Due to the fact that so small a number (5) of the bottomland fields are planted to row crops three years and hay crops two years, no conclusions are drawn as to the most important combination of the crops.

TABLE XI. THREE YEAR ROW CROP AND TWO YEAR HAY CROP COMBINATIONS
ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-1936

Combinations					Upland Fields		Bottomland Fields	
					No.	Pct.	No.	Pct.
Cotton	Cotton	Cotton	Lespedeza	Lespedeza	22	40.0	1	20.0
Cotton	Cotton	Cotton	Lesp. & red top	Lesp. & red top	4.	7.3		
Cotton	Cotton	Cotton	Lesp. & red clov.	Lesp. & red clov.	1	1.8		
Cotton	Cotton	Cotton	Pasture	Pasture	2	3.6		
Corn	Corn	Corn	Lesp.	Lesp.	5	9.2	2	40.0
Corn	Corn	Corn	Lesp. & red top	Lesp. & red top	1	1.8		
Corn	Corn	Corn	Pasture	Pasture	2	3.6		
Corn	Corn	Cotton	Lesp.	Lesp.	5	9.2		
Corn	Cotton	Cotton	Lesp.	Lesp.	7	12.7	1	20.0
Corn	Corn	Cotton	Red clov.	Red clov.	1	1.8		
Corn	Corn	Cotton	Pasture	Pasture	2	3.6		
Corn	Cotton	Cotton	Pasture	Pasture	1	1.8		
Corn	Corn	Cotton	Lesp. & red top	Lesp. & red top	1	1.8		
Cotton	Cotton	Toma- toes	Lesp. & red top	Lesp. & red top	1	1.8		
Corn	Cotton	Toma- toes	Lesp. & red top	Lesp. & red top			1	20.0
Total					55	100.0	5	100.0

Source: Survey of Soil Conservation Practices, 1936.



Source: Table XI

Figure 10. Three Year Row Crop and Two Year Hay Crop Combinations
on the Upland of 45 Farms in Crockett County,

Tennessee, 1932-36

Row Crops Two Years and Hay Crops Three Years. On the upland fields the cropping system in which a row crop is planted on the land two years and a hay crop three years is of almost equal importance to that of straight row crops. However, on only 9.3 percent of the bottomland fields was this system followed.

Straight row crops occur on 77 or 28 percent of the 271 upland fields, compared with a two year row and a three year hay crop system on 76 or 28.0 percent of the upland fields.

At least one field on nearly every farm studied is planted to a row crop two years and a hay crop three years. On some farms two or more fields are handled in this manner. Of the average of 7.2 fields per farm, 1.8 are planted to this type of rotation (Table V).

The row crops of this system are cotton, corn, and strawberries. Corn is planted on 13 percent of the 76 upland fields rotated according to this system; cotton 26 percent (Table XII).

Strawberries are a minor crop on the 76 upland fields of this system. Only one field is occupied by strawberries two years.

Only 5 out of the 54 bottomland fields are planted to a row crop two years and a hay crop three years.

Lespedeza is planted more times than any other crop in this system, exceeding corn and cotton combined. On the upland it is planted on 42.6 percent of the 76 fields, and on 36 percent of the 5 bottomland fields (Figure 11 and Table XII).

Lespedeza and red top are planted on 5.5 percent of the upland fields but not on any bottomland fields.

TABLE XII. DISTRIBUTION OF CROPS IN TWO YEAR ROW CROP AND THREE YEAR HAY CROP SYSTEM ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

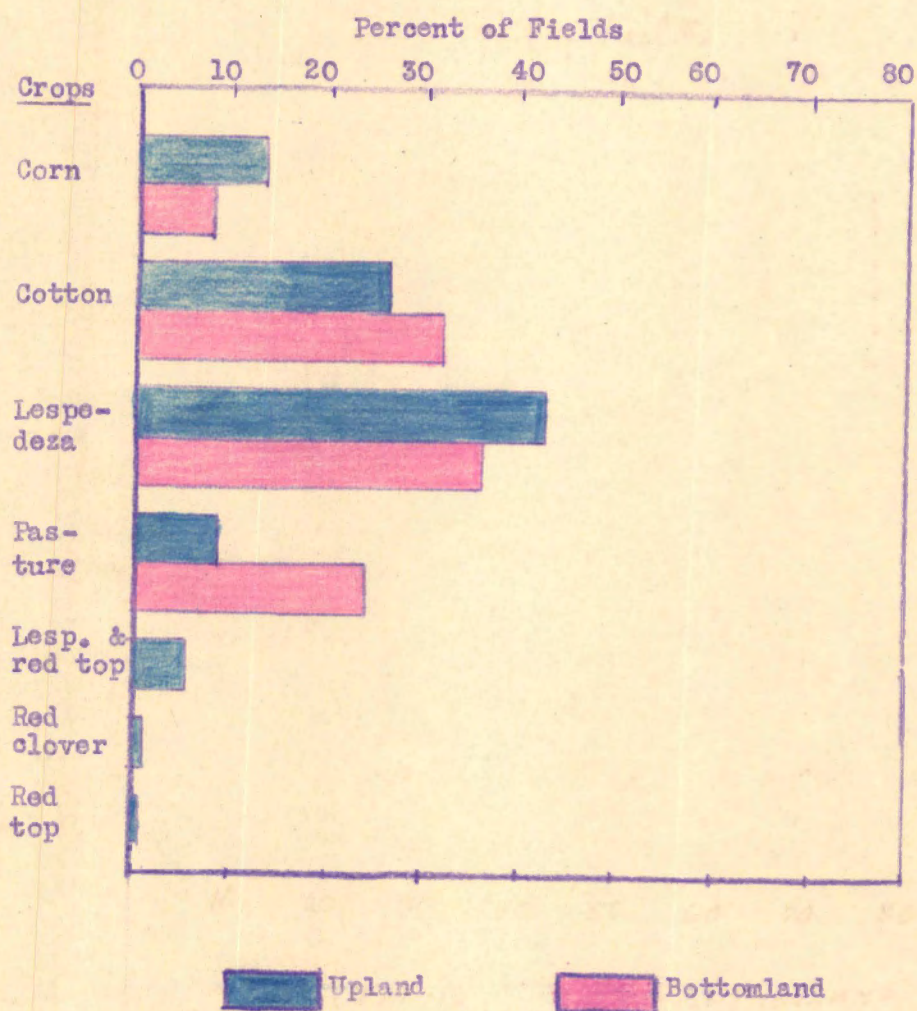
Crops	Upland Fields		Bottomland Fields	
	No.	Pct.	No.	Pct.
Corn	51	13.4	2	8.0
Cotton	99	26.1	8	32.0
Lespedeza	162	42.7	9	36.0
Pasture	34	8.9	6	24.0
Lespedeza and red top	21	5.5		
Red clover	4	1.1		
Red top	3	.8		
Soybeans	2	.5		
Red top and red clover	2	.5		
Strawberries	2	.5		
Total	380	100.0	25	100.0

Source: Survey of Soil Conservation Practices, 1936.

The major combination of crops in this system is that which includes cotton on the land two years and lespedeza three years. This combination of crops is planted on about 41 percent of the 76 upland devoted to the two year row and three year hay crop system.

The combination of two years corn and three years lespedeza is planted on 16 percent of the 76 fields.

The third important combination of crops is corn one year, cotton one year and lespedeza three years. It is planted on 10.5 percent of the 76 upland fields (Figure 12 and Table XIII).



Source: Table XII

Figure 11. Distribution of Crops in Two Year Row Crop and Three
Year Hay Crop System on 45 Farms in Crockett
County, Tennessee, 1932-36

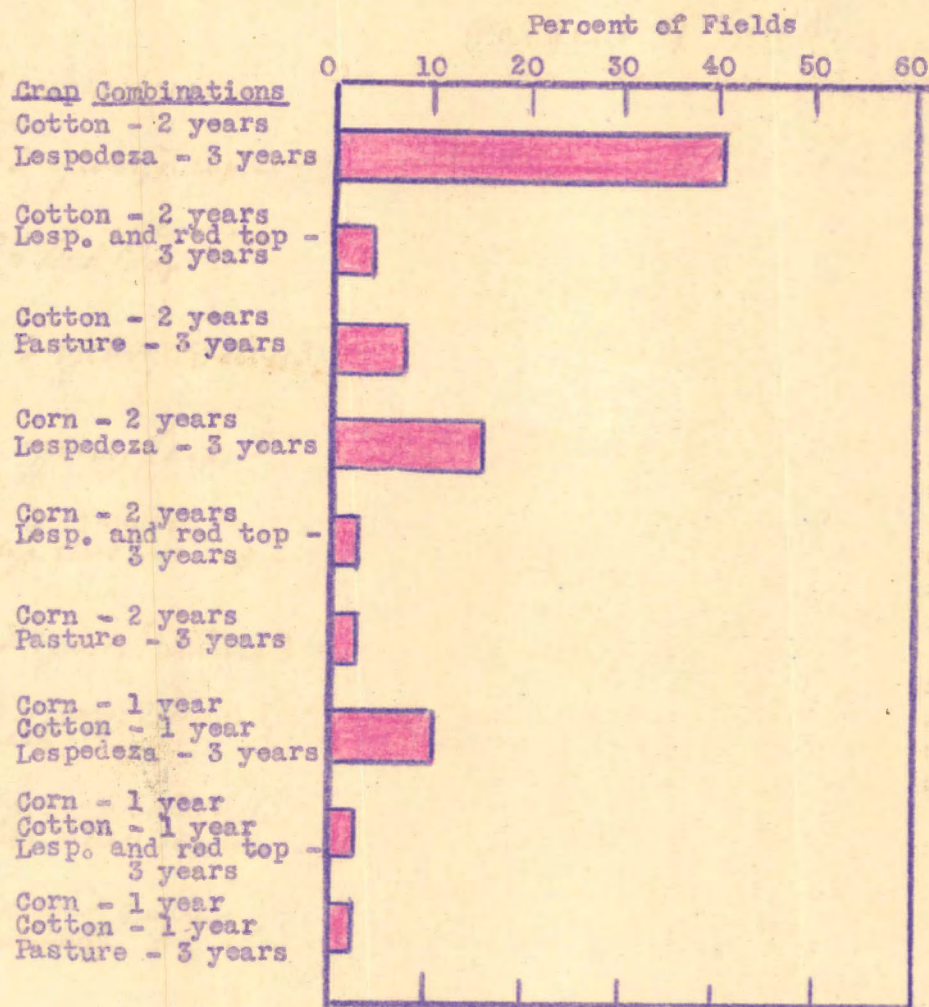
TABLE XIII. TWO YEAR ROW CROP AND THREE YEAR HAY CROP COMBINATIONS ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop Combinations					Upland Fields		Bottomland Fields	
					No.	Pct.	No.	Pct.
Cotton	Cotton	Lespedeza	Lespedeza	Lespedeza	31	40.8	2	40.0
Cotton	Cotton	Lesp. & red top	Lesp. & red top	Lesp. & red top	3	4.0		
Cotton	Cotton	Pasture	Pasture	Pasture	6	7.9	2	40.0
Cotton	Cotton	Red top	Red top	Red top	1	1.3		
Cotton	Cotton	Lesp.	Lesp.	Red clov.	1	1.3		
Cotton	Cotton	Lesp.	Pasture	Pasture	1	1.3		
Cotton	Cotton	Soybeans	Pasture	Pasture	1	1.3		
Corn	Corn	Lesp.	Lesp.	Lesp.	12	15.8	1	20.0
Corn	Corn	Lesp. & red top	Lesp. & red top	Lesp. & red top	2	2.65		
Corn	Corn	Red clov.	Red clov.	Red clov.	1	1.3		
Corn	Corn	Lesp.	Red top & red cl.	Red top & red cl.	1	1.3		
Corn	Corn	Pasture	Pasture	Pasture	2	2.65		
Corn	Cotton	Lesp.	Lesp.	Lesp.	8	10.5		
Corn	Cotton	Lesp. & red top	Lesp. & red top	Lesp. & red top	2	2.65		
Corn	Cotton	Soybeans	Lesp.	Lesp.	1	1.3		
Corn	Cotton	Pasture	Pasture	Pasture	2	2.6		
Strawb.	Strawb.	Lesp.	Lesp.	Lesp.	1	1.3		
Total					76	100.0	5	100.0

Source: Survey of Soil Conservation Practices, 1936.

Row Crop One Year, Hay Crops Four Years. This cropping system which has the land planted to a row crop one year and a hay crop four over a five-year period is one of the minor systems practiced in this area. Of the 271 upland fields studied it is planted on 7.4 percent and on the 54 bottomland fields it is planted on 3.8 percent.

About one-half of the 45 farms studied have one field which is planted



Source: Table XIII

Figure 12. Major Two Year Row Crop and Three Year Hay Crop Combinations on 45 Farms in Crockett County, Tennessee
1932 - 1936

to a row crop one year and a hay crop four years. Of the average of 7.2 fields for each farm this system is planted on 0.5 field of each farm, or on every 10 farms it was planted on 5 fields (Table V).

Cotton is the most important row crop planted in this system. It is planted on 13.0 percent of the 20 upland fields planted to a row crop one year and a hay crop four years (Table XIV).

Corn is planted on 6.0 percent of the 20 upland fields and on no bottomland fields.

TABLE XIV. DISTRIBUTION OF CROPS IN ONE YEAR ROW CROP AND FOUR YEAR HAY CROP SYSTEM ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop	Upland Fields		Bottomland Fields	
	No.	Pct.	No.	Pct.
Corn	6	6.0		
Cotton	13	13.0	2	20.0
Lespedeza	34	34.0	8	80.0
Pasture	23	23.0		
Lespedeza and red top	18	18.0		
Lespedeza and red clover	4	4.0		
Sorghums	2	2.0		
Total	100	100.0	10	100.0

Source: Survey of Soil Conservation Practices, 1936.

Of the hay crops, lespedeza, pasture, and lespedeza mixed with red top are the most important. Lespedeza alone is planted on 34 percent of the 20 upland fields, pasture occupies 23 percent, and lespedeza and red top 18 percent (Table XIV).

Lespedeza is the only hay crop planted on the 2 bottomland fields.

On the 20 fields planted to a row crop one year and a hay crop four years, the crop combination of cotton one year and lespedeza four years occupies 25 percent of the fields. This is the major crop combination within this system.

The crop combination of corn one year and lespedeza and red top four years is planted on 15 percent of the 20 upland fields (Table XV).

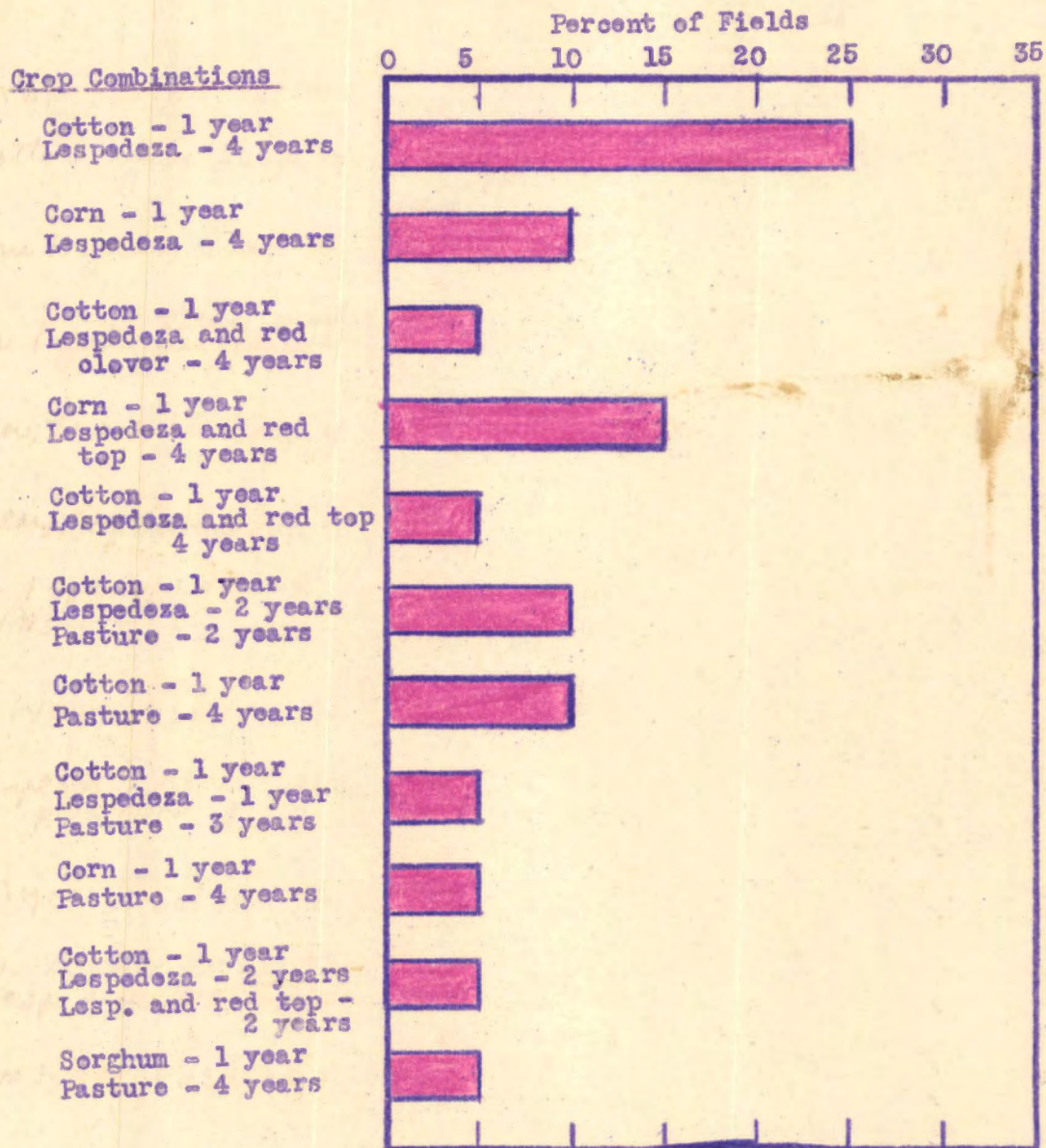
The only crop combination that appeared on the bottomland is cotton one year and lespedeza four years.

Considerable variation in crop combinations is shown in Figure 13 and Table XV where eleven different crop combinations appear on 15 fields.

TABLE XV. ONE YEAR ROW CROP AND FOUR YEAR HAY CROP COMBINATIONS ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop Combination					Upland Fields		Bottomland Fields	
					No.	Pct.	No.	Pct.
Cotton	Lepedeza	Lepedeza	Lesp.	Lesp.	5	25.0	2	100.0
Corn	Lesp.	Lesp.	Lesp.	Lesp.	2	10.0		
Cotton	Lesp. & red clov.	Lesp. & red clov.	Lesp. & red clov.	Lesp. & red clover	1	5.0		
Corn	Lesp. & red top	Lesp. & red top	Lesp. & red top	Lesp. & red top	3	15.0		
Cotton	Lesp. & red top	Lesp. & red top	Lesp. & red top	Lesp. & red top	1	5.0		
Cotton	Lesp.	Lesp.	Pasture	Pasture	2	10.0		
Cotton	Pasture	Pasture	Pasture	Pasture	2	10.0		
Cotton	Lesp.	Pasture	Pasture	Pasture	1	5.0		
Corn	Pasture	Pasture	Pasture	Pasture	1	5.0		
Cotton	Lesp.	Lesp.	Lesp. & red top	Lesp. & red top	1	5.0		
Sorghums	Pasture	Pasture	Pasture	Pasture	1	5.0		
Total					20	100.0	2	100.0

Source: Survey of Soil Conservation Practices, 1936.



Source: Table XV

Figure 13. One Year Row Crop and Four Year Hay Crop Combinations on the Upland of 45 Farms in Crockett County, Tennessee
1932-1936

Straight Hay Crops. The cropping system which has a hay crop planted on the same land each year for five years is of minor importance in this area. Of the 271 upland fields studied, 12 or 4.4 percent are planted in this way. On the 38 bottomland fields only one is planted to a hay crop each year during the period.

The chief hay crop grown in this system is lespedeza, which is grown on 83 percent of the 12 upland fields. It is the only hay crop planted on the bottomland in this system (Figure 14 and Table XVI).

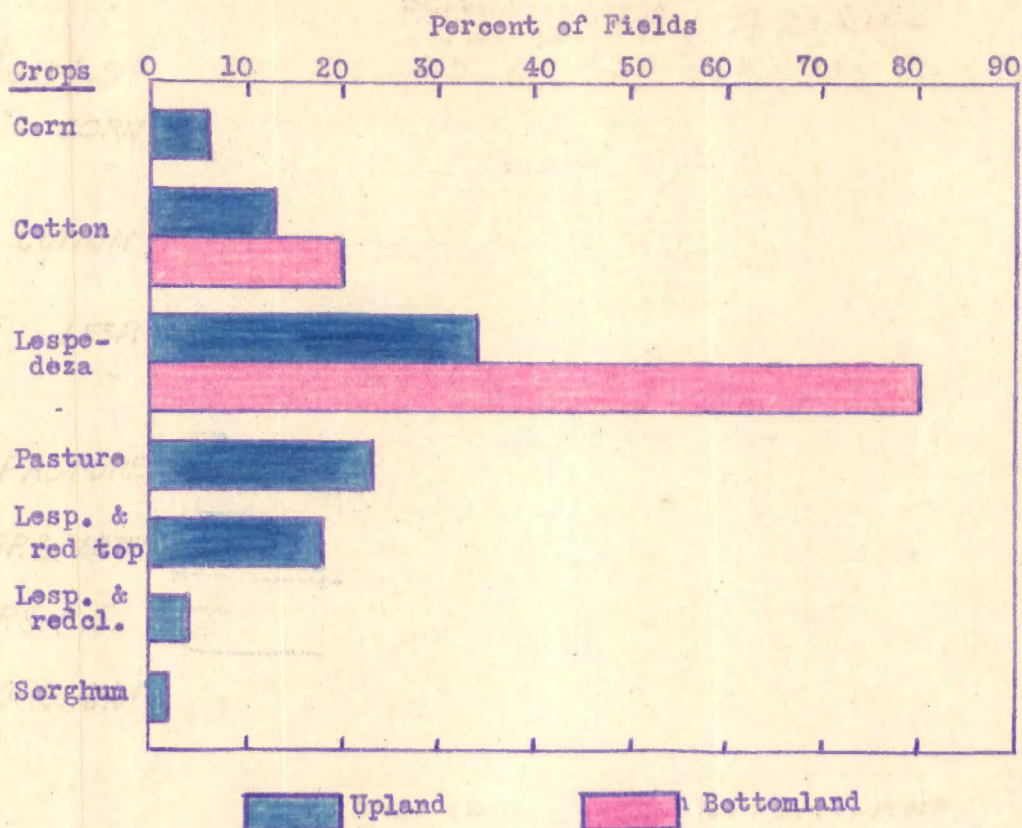
Some fields within this system were also planted to lespedeza and red top, pasture, and soybeans, but all of these crops combined are planted on but 2 of the 12 upland fields.

TABLE XVI. DISTRIBUTION OF CROPS IN STRAIGHT HAY CROPS SYSTEM
ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Crop	Upland Fields		Bottomland Fields	
	No.	Pct.	No.	Pct.
Lespedeza	50	83.3	5	100.0
Lespedeza and red top	5	8.3		
Pasture	3	5.0		
Soybeans	2	3.4		
Total	60	100.0	5	100.0

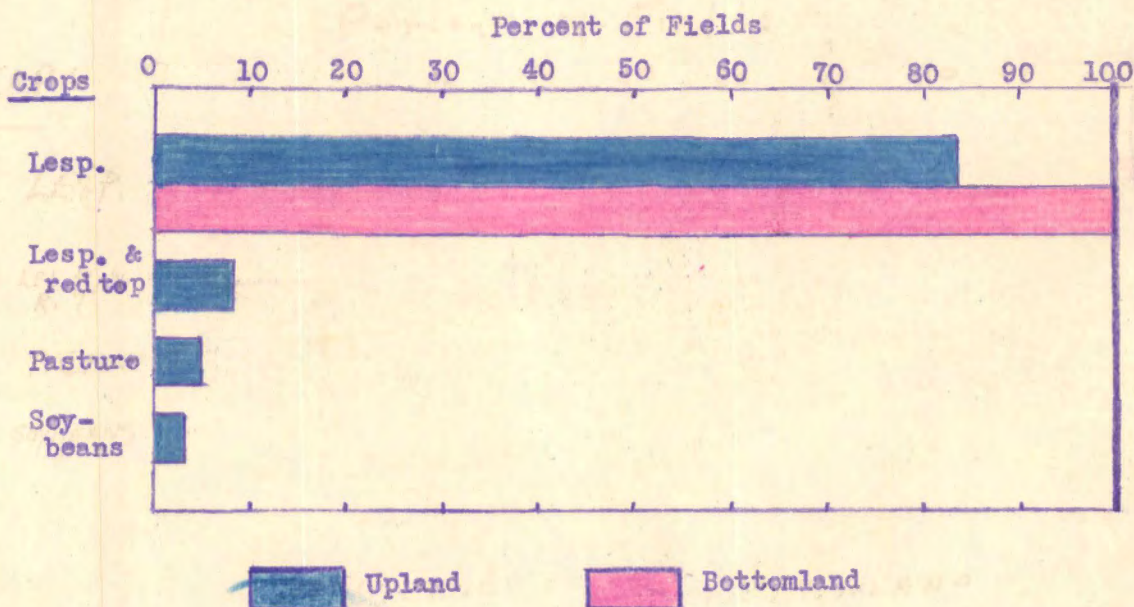
Source: Survey of Soil Conservation Practices, 1936.

There are four different combinations of crops in this cropping system. Lespedeza planted each year over the five-year period is the predominating combination. It was planted on 8 of the 12 upland fields. Two fields were planted to lespedeza four years and soybeans one year (Table XVII).



Source: Table XIV

Figure 14. Distribution of Crops on One-Year Row Crop and Four-Year Hay Crop System on 45 Farms in Crockett County, Tennessee, 1932-1936



Source: Table XVI

Figure 15. Distribution of Crops in Straight Hay Crops System on 45 Farms in Crockett County, Tennessee, 1932-1936

TABLE XVII. STRAIGHT HAY CROPS COMBINATIONS ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Combinations					Upland Fields		Bottomland Fields	
					No.	Pct.	No.	Pct.
Lespedeza	Lespedeza	Lespedeza	Lespedeza	Lespedeza	8	66.7	1	100.0
Lespedeza	Lespedeza	Lespedeza	Lespedeza	Soybeans	2	16.7		
Lespedeza	Lespedeza	Pasture	Pasture	Pasture	1	8.3		
Lesp. and red top	Lesp. and red top	Lesp. & red top	Lesp. & red top	Lesp. & red top	1	8.3		
				Total	12	100.0	1	100.0

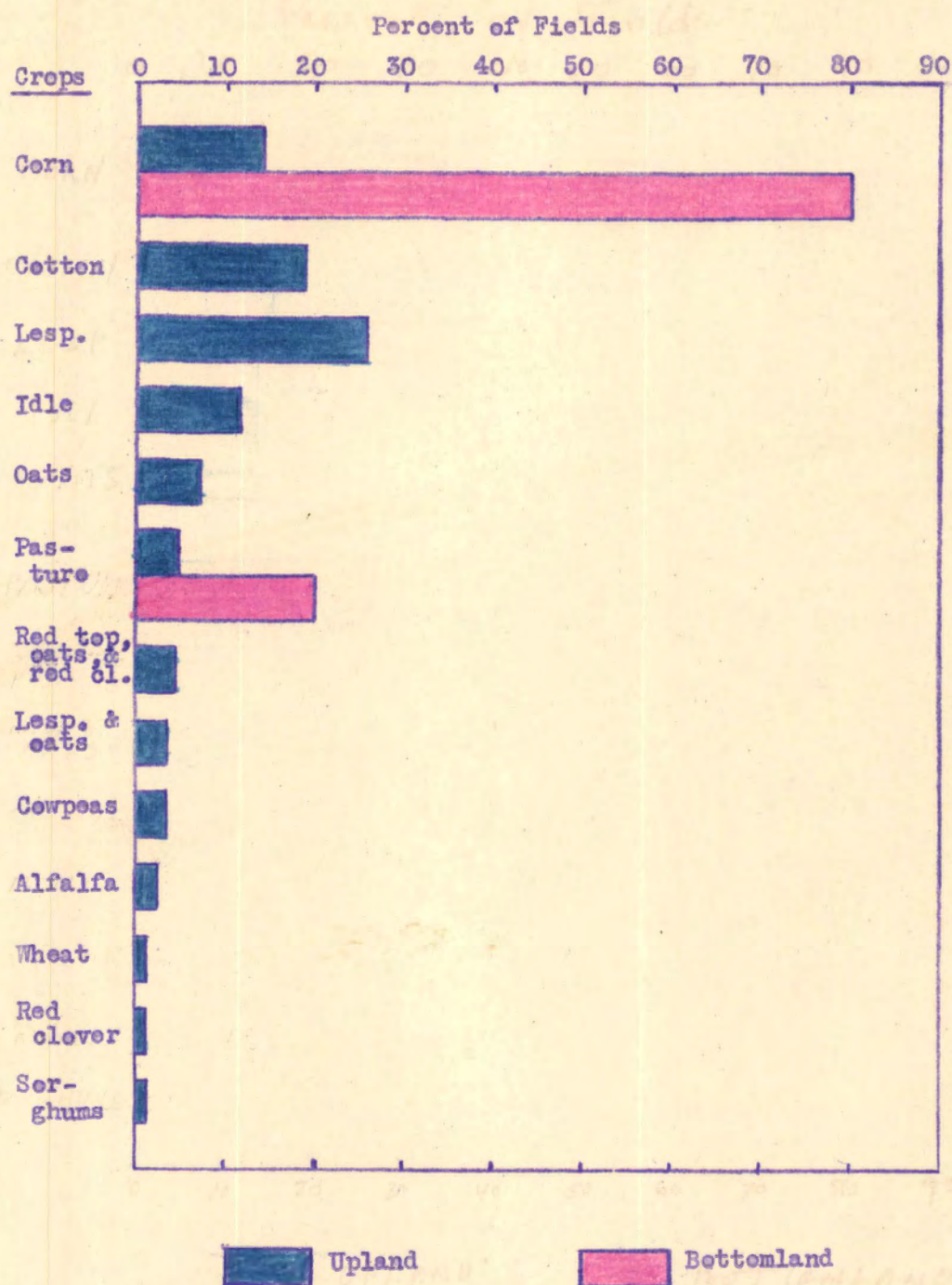
Source: Survey of Soil Conservation Practices, 1936.

Miscellaneous Cropping Systems. Those cropping systems which did not occur frequently enough to constitute a separate group are all classified as miscellaneous cropping systems. On the 271 upland fields, the miscellaneous systems occur 17 times, and one time on the 54 bottomland fields.

The chief difference between the miscellaneous cropping systems and the other cropping systems studied, is that in the miscellaneous group the land is either left idle or planted to a small grain (cover crop) one or more years during the five-year period.

The fact that only one miscellaneous cropping system was planted on the bottomland, and 17 on the upland seems to indicate that the bottomlands are being devoted continuously to the two standard cash crops of the area (cotton and corn) without cover crops or resting the land (Figure 16 and Table XVIII), while the upland is planted to a wider diversity of crops.

There are 16 different miscellaneous cropping systems. Only one crop combination, that of cotton, cotton, lespedeza, lespedeza, and idle, occurs twice.



Source: Table XVIII

Figure 16. Distribution of Crops in the Miscellaneous Cropping Systems on 45 Farms in Crockett County, Tennessee, 1932 - 1936

TABLE XVIII. OCCURRENCE OF CROPS IN THE MISCELLANEOUS CROPPING
SYSTEMS ON 45 FARMS IN CROCKETT COUNTY, TENNESSEE,
1932-36

Crop	Upland Fields		Bottomland Fields	
	No.	Pct.	No.	Pct.
Corn	12	14.1	4	80.0
Cotton	16	18.8		
Lespedeza	22	25.9		
Idle	10	11.7		
Oats	6	7.1		
Pasture	4	4.7	1	20.0
Red top, oats, and red clover	4	4.7		
Lespedeza and oats	3	3.5		
Cowpeas	3	3.5		
Alfalfa	2	2.4		
Wheat	1	1.2		
Red clover	1	1.2		
Sorghums	1	1.2		
Total	85	100.0	5	100.0

Source: Survey of Soil Conservation Practices, 1936.

CHAPTER II

CROPPING SYSTEMS BY SIZE OF FARM AND LABOR INCOME, TYPE- OF-FARMING AREA III

Effect of Size of Farm on Cropping Systems

Description of Cropping Systems on Large Compared With Small Farms.

Twelve of the largest and twelve of the smallest farms included in the Soil Conservation Survey in Crockett County were selected to determine the effect of size of farm on the cropping system.

The average size of the large farms is 265 acres with an average of 186 acres or 70 percent in crops. The small farms average 35.2 acres with 24.2 acres or 70 percent in crops (Table XIX).

The difference in percentage of the upland fields planted to a row crop each year during the five-year period, on the large and small farms, indicates that the large farms practice better cropping systems. On the 12 large farms 12.7 percent of the upland fields are planted to a row crop each year compared with 32 percent of the upland fields on small farms (Figure 17 and Table XX). Of bottomland fields 55 percent on the large farms and 50 percent on the small farms are planted to a row crop each year.

TABLE XIX. SIZE AND LAND USE ON 12 LARGE AND 12 SMALL FARMS IN
CROCKETT COUNTY, TENNESSEE, 1935

Characteristics	Large Farms	Small Farms
Average size of farms (acres)	265	35.2
Average acreage of cropland per farm	186	24.5
Percent of land in cropland	70.1	69.6
Number of fields	140	85
Number of times row crops were planted	375	261
Percent of fields planted to row crops	54.7	61.4
Number of times hay crops were planted	310	129
Percent of fields planted to hay crops	44.3	36.5

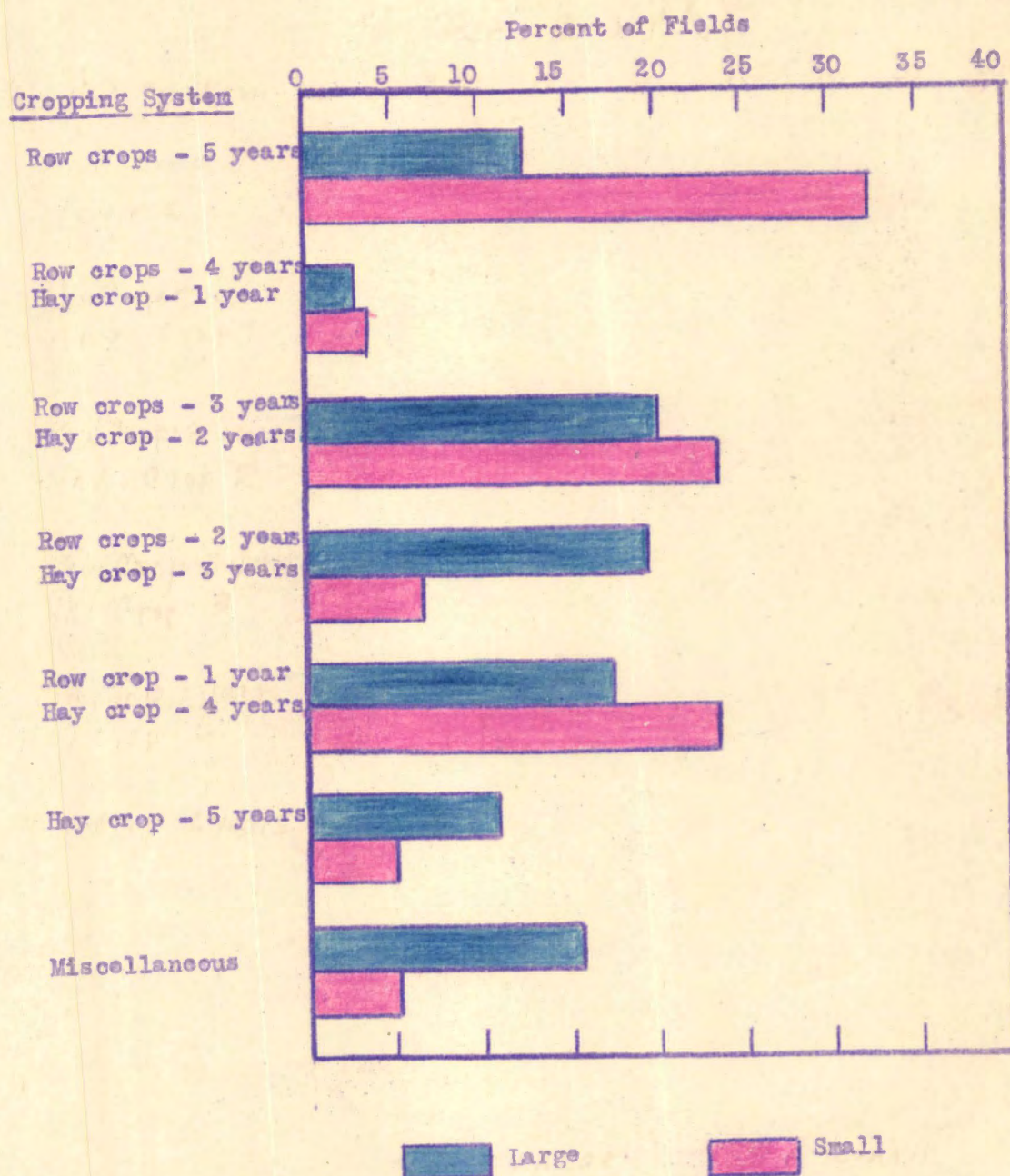
Source: Survey of Soil Conservation Practices, 1936.

The cropping system of a row crop four years and a hay one year does not occur very frequently on either group of the farms.

The small farms have about 24 percent of their upland fields planted to a row crop three years and a hay crop two years and the large farms about 21 percent (Figure 17 and Table XX).

Another large difference in the cropping systems on the large and small farms is in the system of two year row crops and three year hay crops. This system is planted on 20 percent of the upland fields on the large farms and on 6.8 percent of the small farms.

There is very little difference in the cropping systems practiced on the bottomland of both the large and small farms. This is attributed to the fact that most bottomland fields are not a problem in soil conservation and can stand severe cropping and are used mostly for growing of row crops on all type farms.



Source: Table XX

Figure 17. Cropping Systems on the Upland Fields of 12 Large and 12 Small Farms in Crockett County, Tennessee, 1932-36

TABLE XX. CROPPING SYSTEMS ON 12 LARGE AND 12 SMALL FARMS IN
CROCKETT COUNTY, TENNESSEE, 1932-36

Cropping System					Upland Fields				Bottomland Fields			
					Large Farms		Small Farms		Large Farms		Small Farms	
					No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Row crop	Row crop	Row crop	Row crop	Row crop	13	12.7	19	32.1	21	55.3	13	50.0
Row crop	Row crop	Row crop	Row crop	Hay	3	2.9	2	3.7	2	5.3	3	11.7
Row crop	Row crop	Row crop	Hay	Hay	21	20.6	14	23.7	4	10.5	0	
Row crop	Row crop	Hay	Hay	Hay	20	19.7	4	6.8	4	10.5	2	7.8
Row crop	Hay	Hay	Hay	Hay	18	17.6	14	23.7	4	10.5	3	11.7
Hay	Hay	Hay	Hay	Hay	11	10.8	3	5.0	1	2.5	1	4.8
Miscellaneous					16	15.7	3	5.0	2	5.3	4	14.0
Total					102	100.0	59	100.0	30	100.0	26	100.0

Source: Survey of Soil Conservation Practices, 1936.

Influence of Size of Farm on Cropping Systems. The description of cropping systems on upland fields shows the advantage of large farms in following good cropping systems. ¹ Straight row crop and other short rotations are found much more frequently on the small farms. Besides, the variety of crops grown is smaller, being limited principally to the three standard crops of the area - cotton, corn, and lespedeza. A maximum acreage of these must be planted on the small farms to meet minimum requirements for cash income and feed for

1. By a good cropping system is meant one which meets the needs of a farm by furnishing adequate feed for the livestock, sufficient cash income, and is in accordance with good soil conservation practices. See introduction for a discussion of criteria of a good cropping system.

livestock (including corn meal for family consumption). Sufficient land is not available on many of the small farms for long rotations which provide for soil conservation. Labor here is probably not an important limiting factor in the selection of crops.

Influence of Size of Field on Cropping Systems. The size of the fields also are in favor of the large farms in practicing better cropping systems. The large farms average 15.9 acres per field compared with 3.4 acres for the small farms.

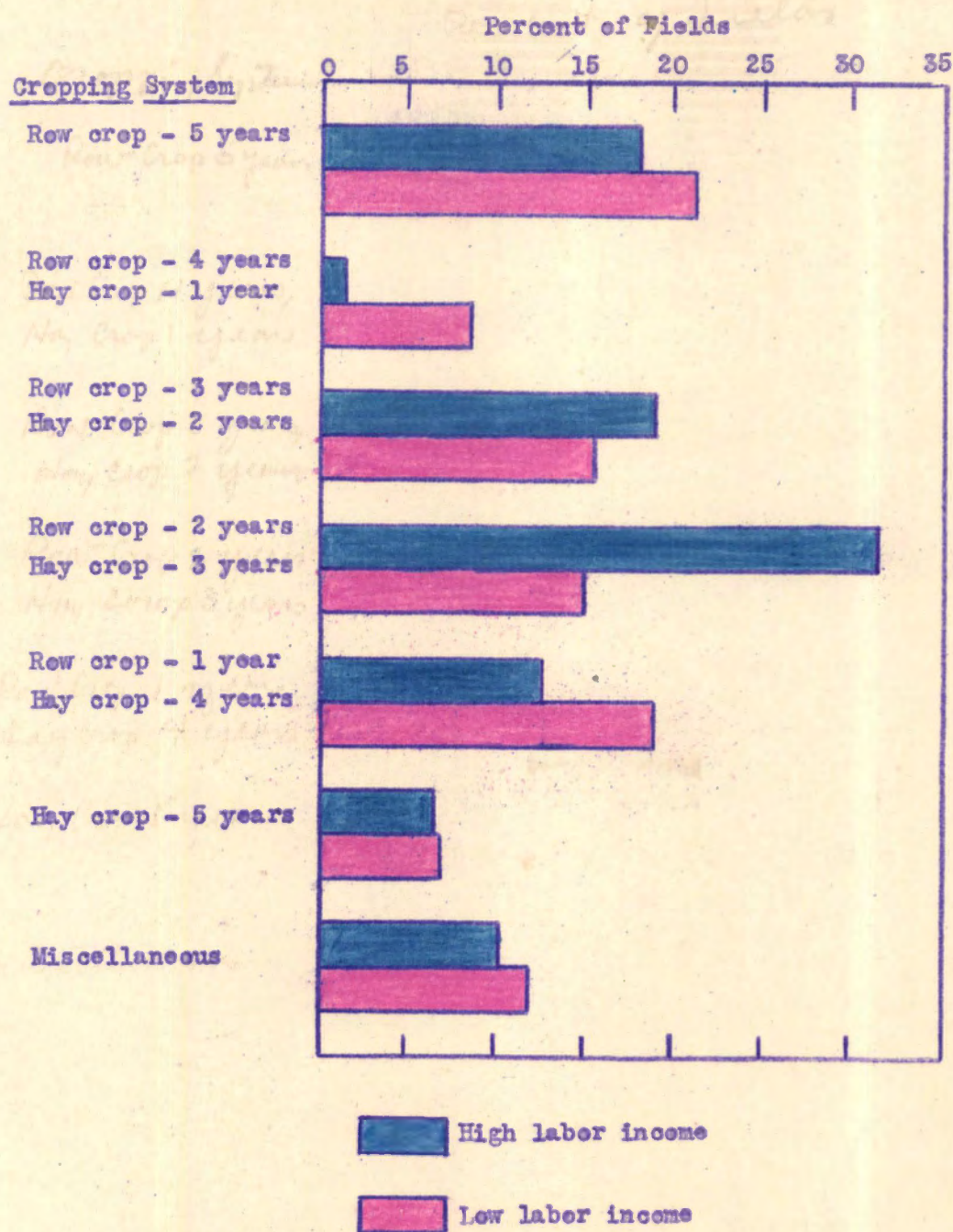
The number of fields is another important factor in determining the crop rotations that can be practiced. On the small farms where there is an average of only 7 fields per farm the possibilities of practicing good cropping systems are not so great as on the large farms which have about 12 fields per farm.

The large farms devote a much larger percentage of their fields to miscellaneous cropping systems not followed on the small farms. More fields are in small grains, various hays, and pasture. The number of fields lying idle are also greater on the large farms.

Effect of Cropping Systems on Labor Income

The cropping systems on high and low income farms were compared in order to determine the relation, if any, of cropping systems to income. For this purpose 12 of the highest and 12 of the lowest labor income farms included in the Soil Conservation Survey were selected.

On the upland fields of low labor income farms 22 percent are planted to row crops each year compared with 18 percent on the high labor income farms. Both groups have the same number of bottomland fields planted to this system.



Source: Table XXI

Figure 18. Cropping Systems on the Upland Fields of 12 High Labor Income and 12 Low Labor Income Farms in Crockett County, Tennessee, 1932 - 33

The four year row crop and one year hay crop system occupies only one field of the more successful farms compared with five fields for the less successful group (Figure 18 and Table XXI).

The longer crop rotations, which are considered the better of the group, are planted on a larger percentage of the fields of the high labor income farms than on the low labor income group (see Figure 18 and Table XXI).

TABLE XXI. CROPPING SYSTEMS ON 12 HIGH LABOR INCOME AND 12 LOW LABOR INCOME FARMS IN CROCKETT COUNTY, TENNESSEE, 1932-36

Cropping System					Upland Fields				Bottomland Fields			
					12 High		12 Low		12 High		12 Low	
					No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Row crop	Row crop	Row crop	Row crop	Row crop	14	17.9	13	22.4	14	60.9	14	58.3
Row crop	Row crop	Row crop	Row crop	Hay	1	1.3	5	8.6				
Row crop	Row crop	Row crop	Hay	Hay	15	19.2	9	15.5	3	13.1	2	8.3
Row crop	Row crop	Hay	Hay	Hay	25	32.1	9	15.5	2	9.0	1	4.1
Row crop	Hay	Hay	Hay	Hay	10	12.8	11	19.0	1	4.0	1	4.1
Hay	Hay	Hay	Hay	Hay	5	6.4	4	6.9	1	4.0	1	4.2
Miscellaneous					8	10.3	7	12.1	2	9.0	5	21.0
Total					78	100.0	58	100.0	25	100.0	24	100.0

Source: Survey of Soil Conservation Practices, 1936.

The average labor income for the 24 farms studied is \$334. For the 12 farms that have the high labor income the average is \$857. For the 12 low

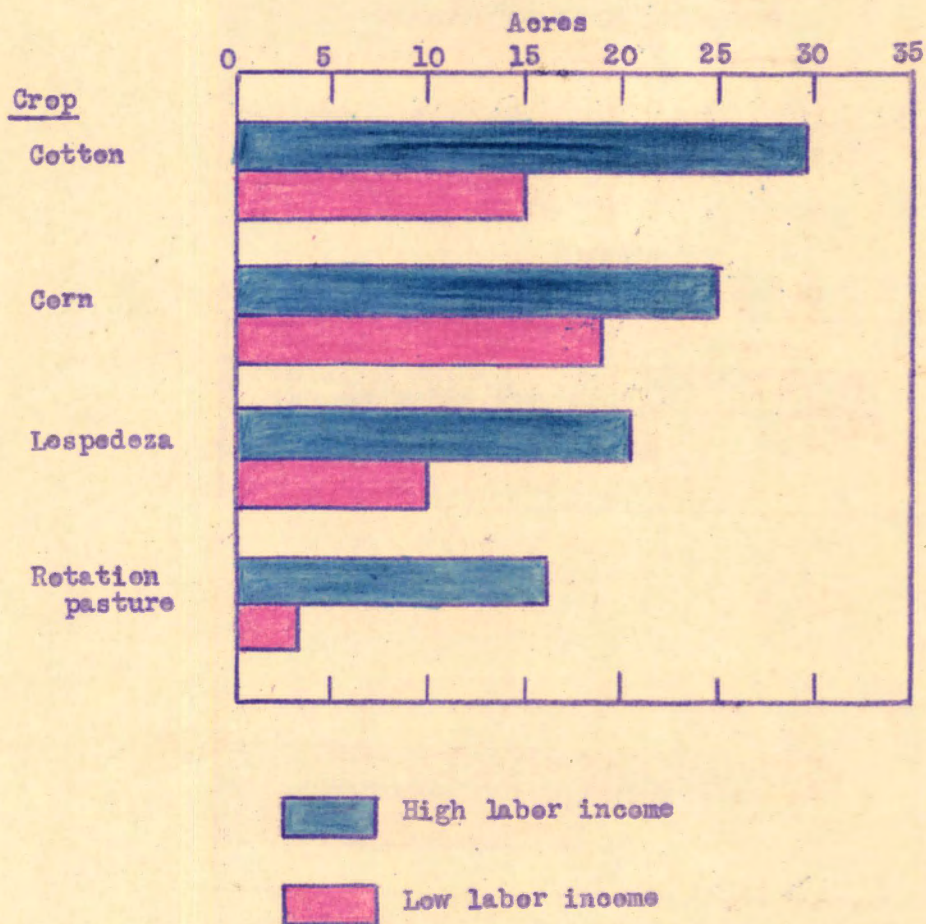
labor income the average is a minus \$189.

The farms with the highest labor income are larger in acreage than those with the lowest labor income. The 12 high labor income farms average 137.5 acres compared with 80.8 acres for the low labor income farms.

Figure 19 and Table XXII shows that the more successful farms have almost twice as many acres in cotton than the less successful farms. For the more successful farms the cotton acreage is 29.6 acres compared with 15.3 for the less successful. These farms also have a larger acreage in corn and in lespedeza than the less successful farms. Size of farm is probably a more basic factor affecting labor income on these farms than are cropping systems, because of the effect of size on selection of crops.

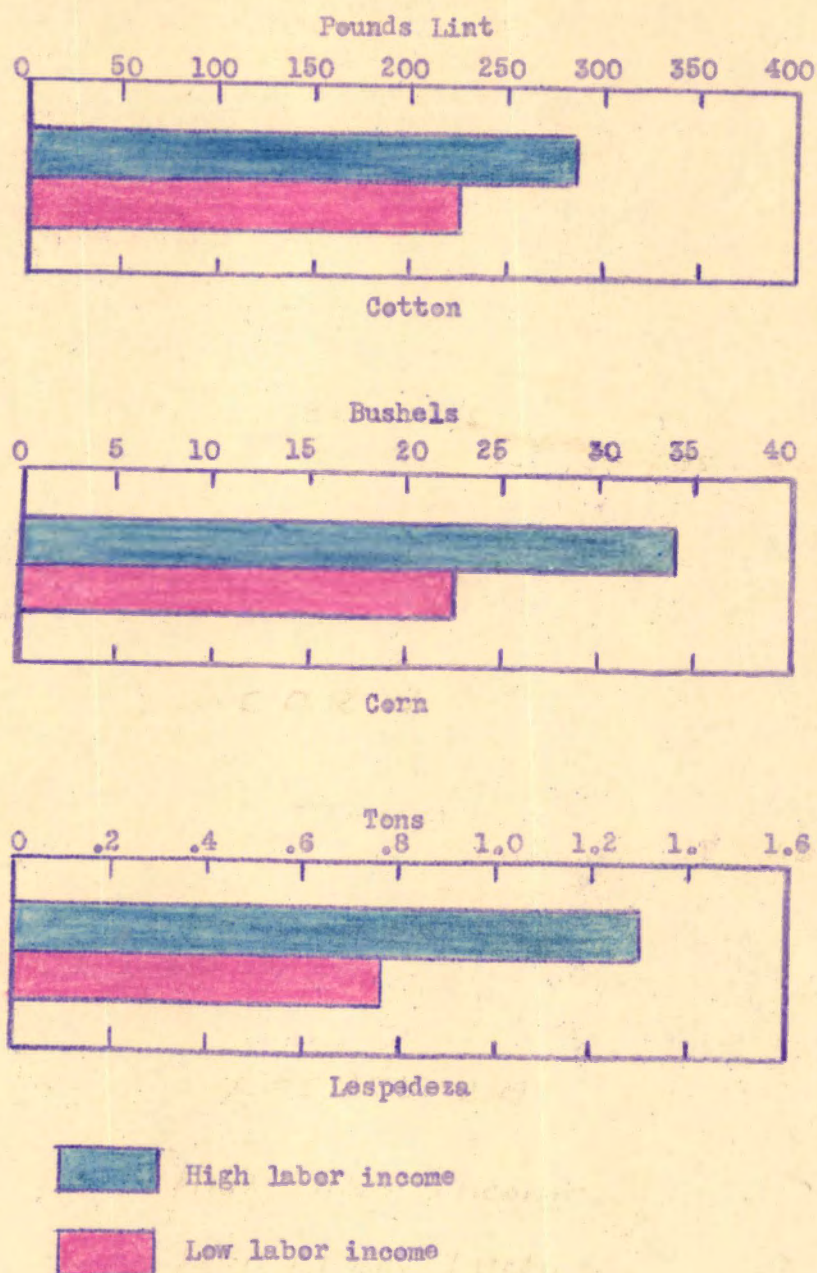
Another weakness of the low labor income farms are the crop yields. The yields are much lower than those of the high labor income farms. Comparing the two groups of farms together it is found that the more successful farms produce 58 pounds more lint cotton per acre, 11 bushels more corn, and .54 tons of lespedeza hay (Figure 20 and Table XXII).

The high labor income farms do practice better cropping systems than the low labor income farms, and they also have higher acreages of cotton, corn, and lespedeza and better crop yields. These better cropping systems tend to maintain the yields and in general raise the labor income for the farm.



Source: Table XXII

Figure 19. Cropping System on 12 High Labor Income and
12 Low Labor Income Farms in Crockett County,
1935



Source: Table XXII

Figure 20. Yields per Acre on Cotton, Corn, and Lespedeza on 12 High and 12 Low Labor Income Farms in Crockett

County, Tennessee, 1935

TABLE XXII. RELATION OF CROP AND LIVESTOCK PROGRAM TO FARM
EARNINGS ON 12 HIGH LABOR INCOME FARMS IN CROCKETT
COUNTY, TENNESSEE, 1935

Items	12 High Labor Income	12 Low Labor Income	Ave. Labor Income of 24 Farms
Labor income	\$857	- \$189	\$554
Size of farm - acres	137.5	80.8	108.5
Acres of cropland	83.5	50.6	67.0
Acres in cotton	29.6	15.3	22.45
Cotton yield per acre, lbs.	284.2	226.0	255.1
Acres in corn	25.18	18.0	21.59
Corn yield per acre, bu.	34.0	22.6	28.30
Acres in lespedeza	21.05	10.0	15.50
Lespedeza yields per acre, tons	1.32	.78	1.05
Acres of rotation pasture	16.30	3.66	9.98
Percent of total farm acres cropped	60.5	62.5	61.5
Livestock:			
Horses and mules	4	2.8	3.4
Dairy cows	2.5	2.0	2.2
Other cattle	0	3.9	1.8
Hogs	4.7	2.7	3.7
Poultry	78	38	5.8
Percent of farm in upland	67.3	60.5	63.9
Percent of farm in bottomland	32.7	39.5	36.1

Source: Survey of Soil Conservation Practices, 1936.

CHAPTER III

CROPPING SYSTEMS IN TYPE-OF-FARMING AREA XI

Introduction

Description of Area

Type-of-Farming Area XI is located on the Eastern Highland Rim. It constitutes 7 1/2 percent of the land area of the State and 9 percent of the farm land.

The principal soils are the Clarksville, Decatur, and DeKalb series. The Clarksville soils are of a gray to light-yellow silt loam, which puddles quite easily when wet and becomes almost as impervious as clay. The plateau soils are classed in the DeKalb series and crops planted on these soils are subject to severe damage during droughty periods. The Decatur soils are more fertile than the others just described.¹

General and small general farms are the predominant types in the area. Of the total number of farms in the Area, 49.8 percent are classified as small general farms and 21.1 percent as general farms.²

"Agriculture is characterized by general farming, ranging from large units on fertile red soils, which produce large quantities of corn, hay, and some small grains, with mixed livestock, to the small general type on infertile gray soil. A common rotation is corn, soybeans or cowpeas, small

1. Allred, C. E. and Esry, Dalson H., Soil Conservation Practices in Actual Use by Farmers, Eastern Highland Rim, 1932-36, University of Tennessee, Agricultural Experiment Station, Monograph No. 28, Knoxville, Tennessee, 1937.

2. U. S. Census of Agriculture, 1930.

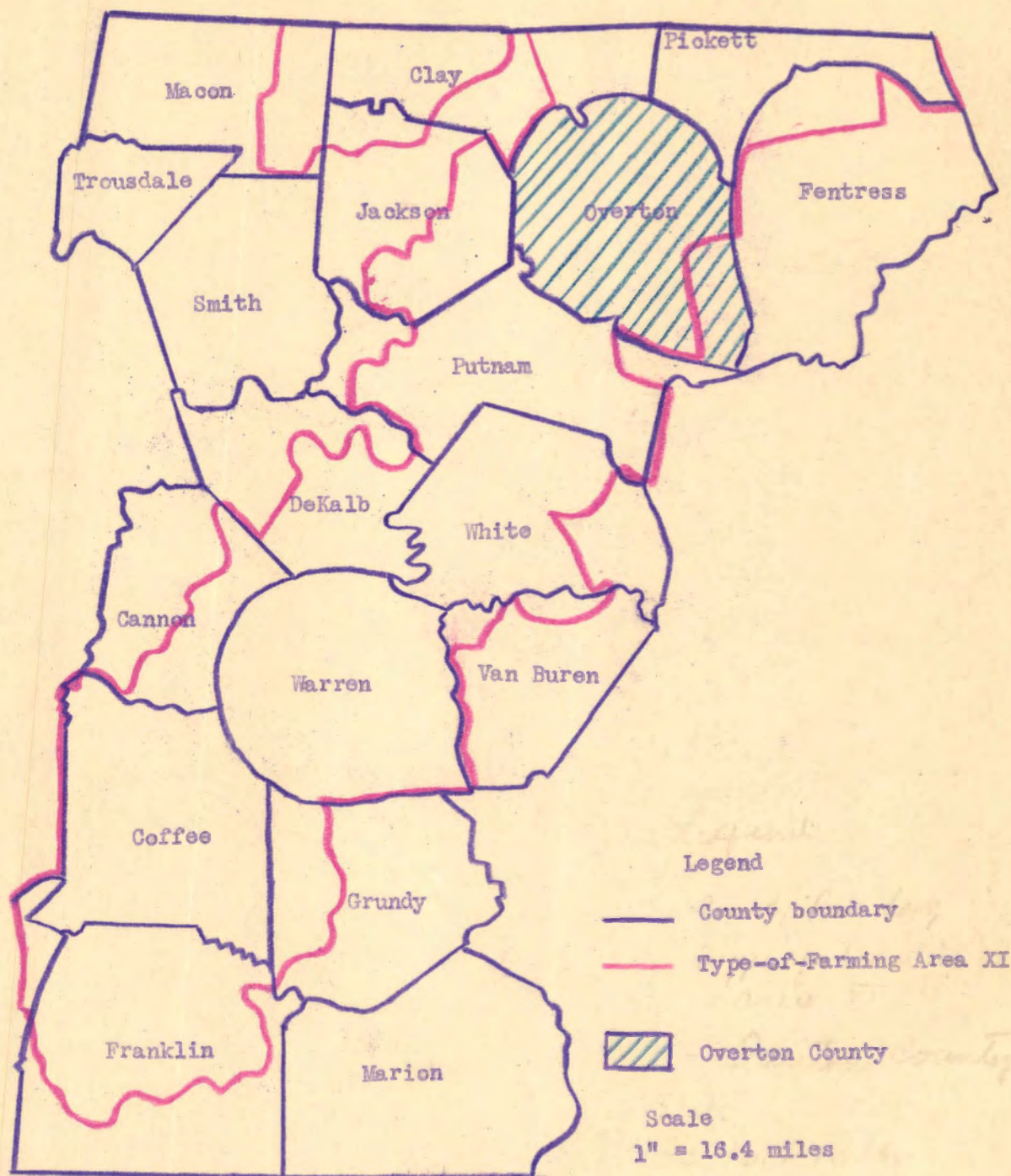


Figure 21. Location of Type-of-Farming Area XI and Overton County

grains, and lespedeza. Corn, with or without commercial fertilizer, sometimes is grown for a number of years in succession, and then the ground is left idle for a year or more."³

Sample Area

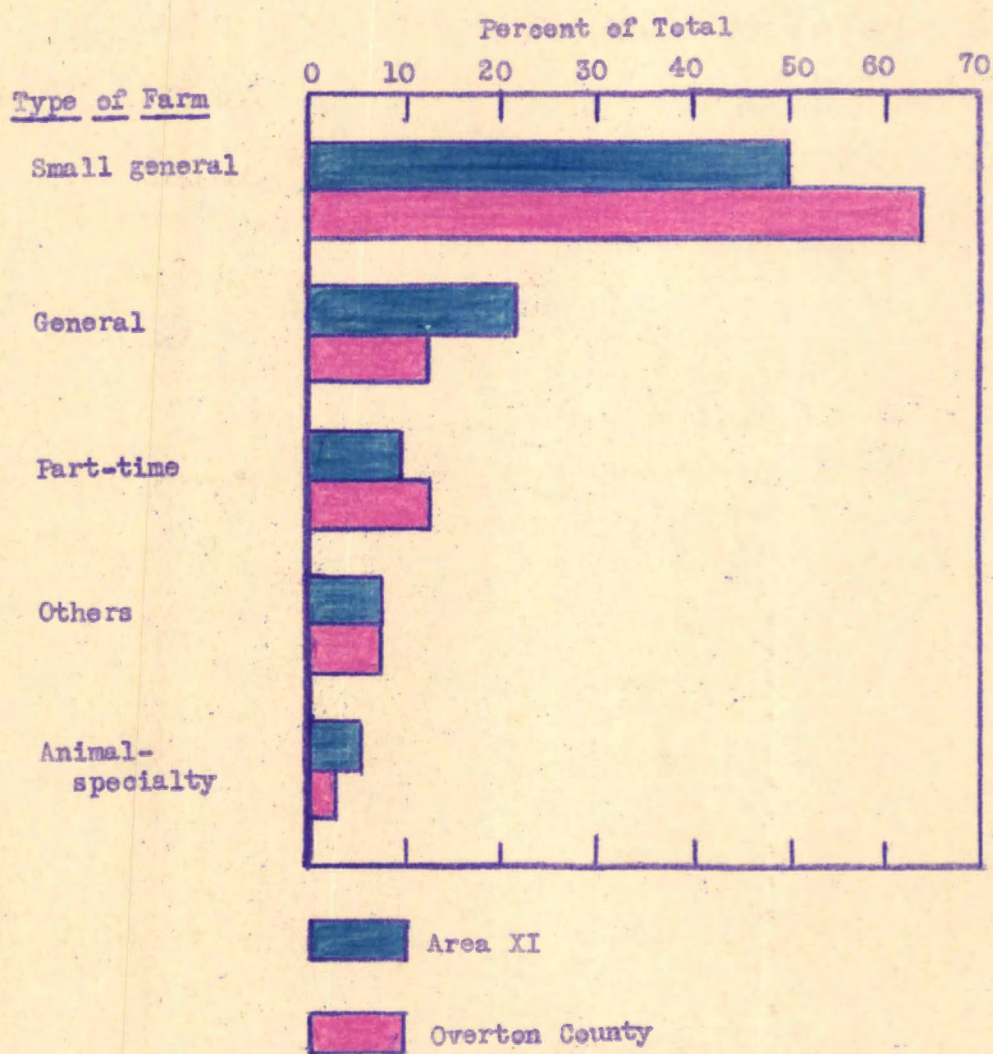
Overton County, which is located in the northern part of the area, was selected as a representative county. The type of farming in this county is similar to that of the area as a whole. Area XI has a larger percentage of general farms and a smaller percentage of small general farms than the sample area. In other types the percentages for the two areas are about equal (Figure 22 and Table XXIII).

TABLE XXIII. TYPE OF FARMS IN OVERTON COUNTY AND IN TYPE-OF-FARMING AREA XI, 1930

Type of Farm	Percent in Area XI	Percent in Overton
General	21.1	12.5
Cash grain	1.5	.6
Cotton	1.9	
Crop-specialty	1.4	
Truck		
Dairy	1.0	.3
Animal-specialty	5.2	2.4
Poultry	.9	.4
Small general	49.8	63.9
Part time	9.6	12.5
All other	7.6	7.4
Total	100.0	100.0

Source: U. S. Census, 1930.

3. Luebke, B. H., Atkins, S. W., Allred, C. E., and Roth, W. J., Types of Farming in Tennessee, Tennessee Agricultural Experiment Station, Bulletin 169, 1939.



Source: U. S. Census, 1930

* Those classes not shown less than 2.0 percent.

Figure 22. Farms, By Type, in Area XI and Overton County, 1930

Fields Studied

The cropping systems are based on the crop histories of 455 fields on 65 farms for the years 1932 to 1936 inclusive. They are classified according to the soil type, and 202 are on Clarksville series, 122 on DeKalb series, and 54 on Decatur series.

The crop histories are taken from the schedules of the Conservation Practice Survey made during the summer of 1936 by the Department of Agricultural Economics and Rural Sociology of the University of Tennessee in cooperation with the U. S. Bureau of Agricultural Economics and the Agricultural Adjustment Administration. The schedules included a record of the conservation practices on the farm, map of the soil type, and crop history of each field for the years 1932-36.

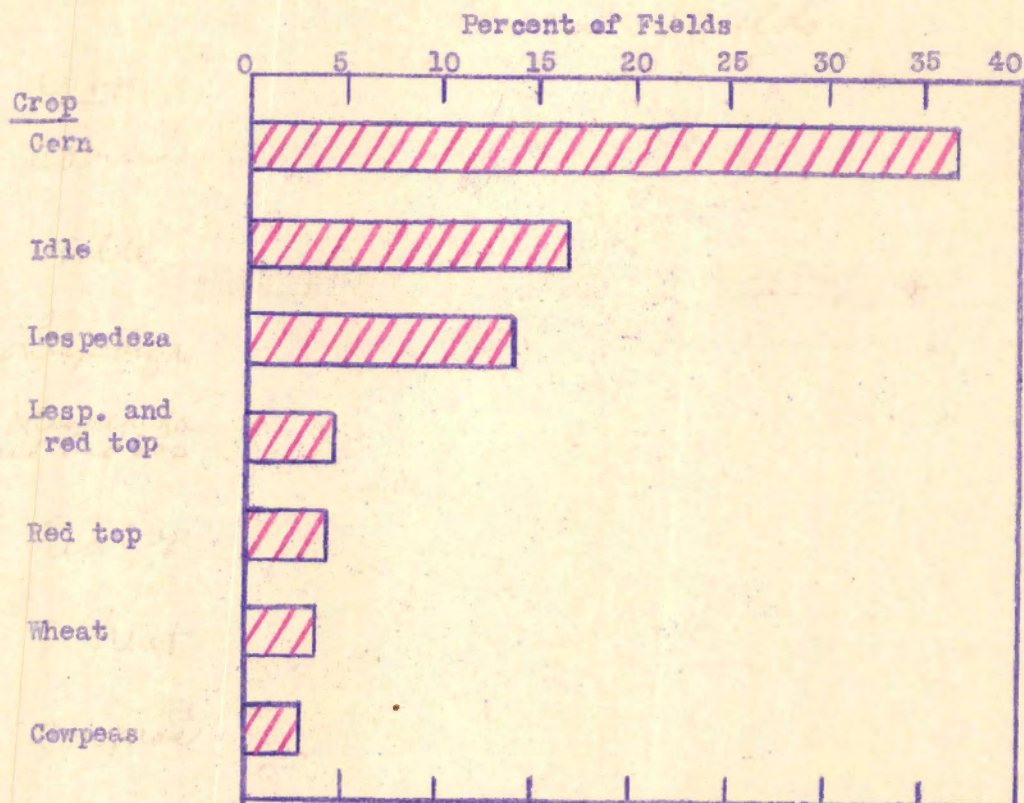
The crops are grouped into different classifications as shown in Table XXIV to simplify the studying of the cropping systems.

Row crops are the most important crops grown in this area. Over the five-year period they are planted on 38 percent of the 455 fields studied. Corn is the major row crop, and is planted on 36 percent of the 455 fields.

Hay crops are planted on 35 percent of the fields, which is just 3 percent less than those planted to row crops. There is a wide diversity in the hay crops grown in this area. There are eight different hay crops, of which lespedeza is the most important, being planted on 14 percent of the fields. These eight hay crops are grown in eleven different mixtures, which gives nineteen different hay crops grown in this area (Table XXIV).

TABLE XXIV. DISTRIBUTION OF CROPS ON 65 FARMS IN OVERTON COUNTY,
TENNESSEE, 1932-36

Item	Clarks- ville	DeKalb	Deca- tur	Total	Pct.
Row crops	476	259	140	875	38.4
Corn	454	244	140	838	36.8
Cane	14	10		24	1.1
Truck	5	5		10	.4
Tobacco	3			3	.2
Hay crops	514	128	158	836	35.2
Lespedeza	227	55	29	311	13.7
Alfalfa	19		24	43	1.9
Red clover	11	2		13	.6
Cowpeas	22	5	10	37	1.6
Beans	42	7	18	67	2.9
Red top	85	6	9	100	4.4
Timothy	2	2	9	13	.6
Orchard grass	10			10	.4
Lespedeza and red top	65	14	28	107	4.7
Lespedeza and orchard grass		14	12	26	1.1
Lespedeza, orchard grass, and red top	14		7	21	.9
Red top and timothy	4	1		5	.2
Red clover and timothy	3	15	5	23	1.0
Millet and cowpeas	4	3	2	9	.4
Millet and beans	4			4	.2
Red top and orchard grass		3	5	8	.4
Beans and red top	2			2)	
Red clover and orchard grass			1	1)	.2
Red clover and red top		1		1)	
Small grains	119	19	48	186	8.2
Wheat	41	10	34	85	3.7
Oats	32	4	4	40	1.8
Rye	32	2	4	38	1.7
Millet	8	3	4	15	.7
Barley	6		2	8	.3
Double crops	14	7	14	35	1.5
Lespedeza and wheat	9	2	9	20	.9
Lespedeza and oats	3	4	3	10	.4
Beans and wheat	2		2	4	.2
Red top and oats		1		1	
Idle	202	122	54	378	16.6
Total	1325	535	415	2275	100.0



Source: Table XXIV

Figure 23. Major Crops Grown on 65 Farms in Overton County,
Tennessee, 1932-36

Small grains are grown on 8.2 percent of the fields, and the most important of these is wheat.

One and one-half percent of the fields are double cropped, which includes mostly wheat and lespedeza and oats and lespedeza.

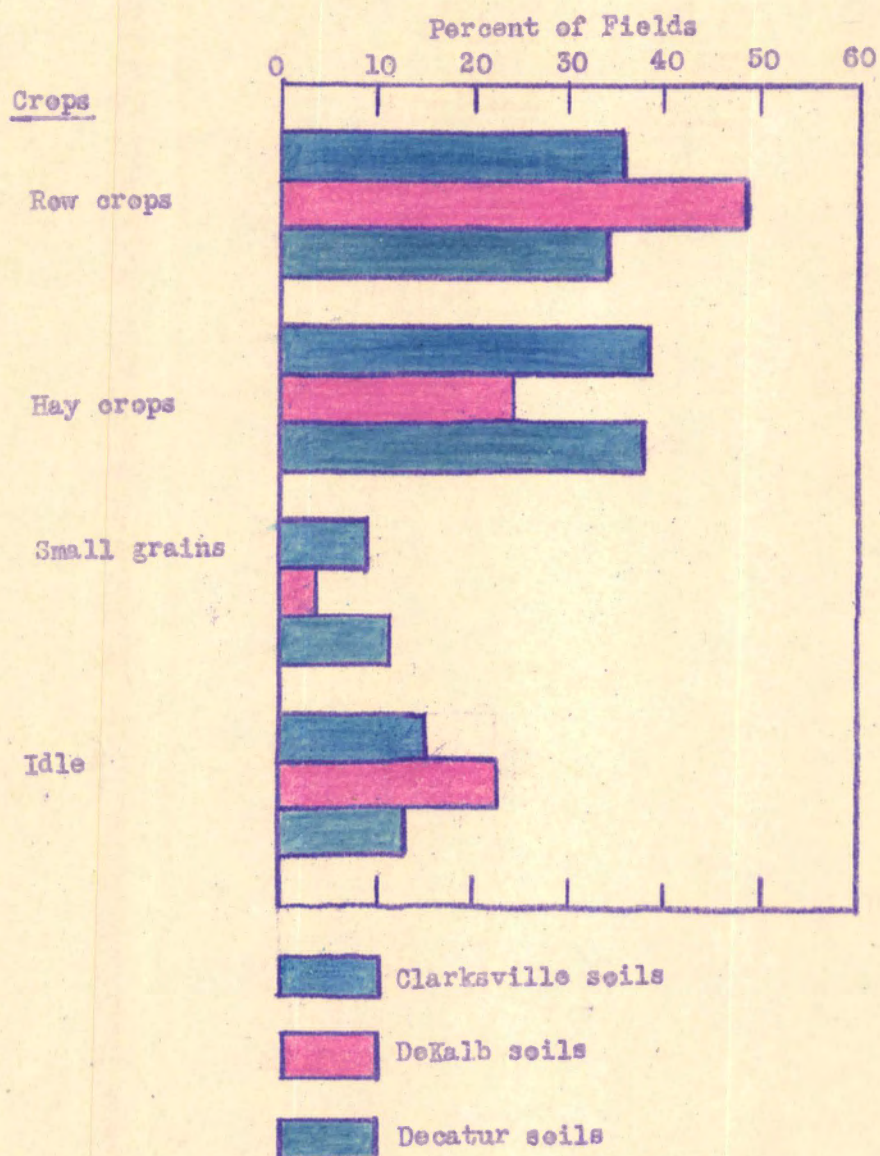
It has been a common practice in this area to plant a field in corn for one or two years and sometimes follow by a small grain, and then leave idle the next two or three years, but since the introduction of lespedeza a large percentage of the fields are being planted to lespedeza instead of being left idle. However, over the five-year period 17 percent of the fields are left idle.

A larger percentage of the fields on DeKalb soils are planted to row crops and left idle than on the other two soil types.

As a whole the Decatur soils have better cropping systems than do the Clarksville or DeKalb series. A small percentage of the Decatur soils are planted to row crops and left idle and a large percentage planted to hay crops and small grains (Figure 24 and Table XXV).

TABLE XXV. PERCENT OF FIELDS ON EACH SOIL TYPE PLANTED TO DIFFERENT CROPS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Crops	Clarksville Soils	DeKalb Soils	Decatur Soils
Row crops	35.9	48.4	33.7
Hay crops	38.8	23.9	38.3
Small grains	9.0	3.6	11.6
Double cropped	1.0	1.3	3.4
Idle land	15.3	22.8	13.0
Total	100.0	100.0	100.0



Source: Table XXV

Figure 24. Crops Grown on Each Soil Type on 65 Farms in Overton County, Tennessee, 1932-36

Cropping Systems and Crop Combinations

Cropping Systems. Because of the wide diversity of crops grown in this area there is a lack of any definite predominating system. The cropping systems vary from the farm on which all the cultivatable land is in either corn or idle to the farm where all the land is utilized by growing legumes and small grains in addition to corn. On the 65 farms studied there are 44 different cropping systems and 235 different combinations of crops.

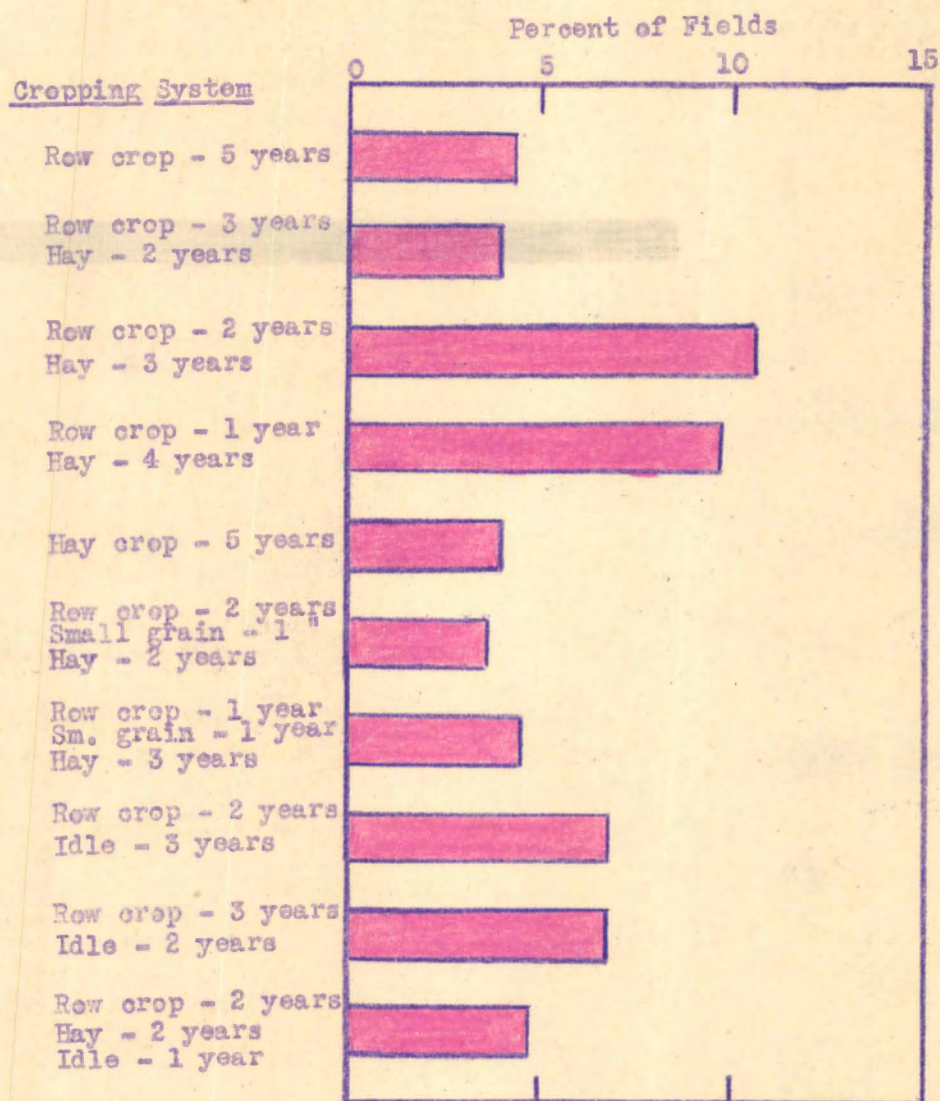
From the group of 44 cropping systems the ten that occur the most frequently are classified as the major cropping systems and the remaining as minor. These major cropping systems are practiced on 270 or 61 percent of the 455 fields (Table XXVI).

Of the 270 fields on which these major cropping systems are practiced, 160 are Clarksville soils, 69 DeKalb soils, and 41 Decatur soils (Table XXVI).

TABLE XXVI. MAJOR CROPPING SYSTEMS ON 65 FARMS IN OVERTON COUNTY,
TENNESSEE, 1932-36

Cropping Systems					No. of Fields			Total	
					Clarks- ville	De- Kalb	Deca- tur	No.	Pct.
Row crop	Row crop	Row crop	Row crop	Row crop	5	13	2	20	4.4
Row crop	Row crop	Row crop	Hay	Hay	11	6	1	18	4.0
Row crop	Row crop	Hay	Hay	Hay	32	9	7	48	10.6
Row crop	Hay	Hay	Hay	Hay	30	7	8	45	9.9
Hay	Hay	Hay	Hay	Hay	12	3	3	18	4.0
Row crop	Row crop	Small grain	Hay	Hay	13	1	3	17	3.7
Row crop	Small grain	Hay	Hay	Hay	12	1	7	20	4.4
Row crop	Row crop	Idle	Idle	Idle	17	12	2	31	6.8
Row crop	Row crop	Hay	Hay	Idle	11	5	6	22	4.8
Minor cropping systems					105	38	42	185	40.6
Total					265	107	83	455	100.0

Source: Conservation Practice Survey, 1936.



Source: Table XXVI

Figure 25. Major Cropping Systems on 65 Farms in Overton
County, Tennessee, 1932-36

Crop Combinations. Of the 235 different crop combinations found on the 455 fields studied seven are planted frequently enough to be called important. These seven crop combinations are planted on approximately 27 percent of the fields. Of this 27 percent 15 percent are on Clarksville soils, 9 percent on DeKalb soils, and 3 percent on Decatur soils.

The crop combination that occupies the largest number of fields is one in which the land is planted to corn three years and left idle two. This crop combination is practiced on 6.6 percent of the fields.

The system in which the land is planted to corn two years and left idle three is of almost equal importance to the one where row crops are planted three years and then left idle two. It occurs on 6.4 percent of the fields (Figure 26 and Table XXVII).

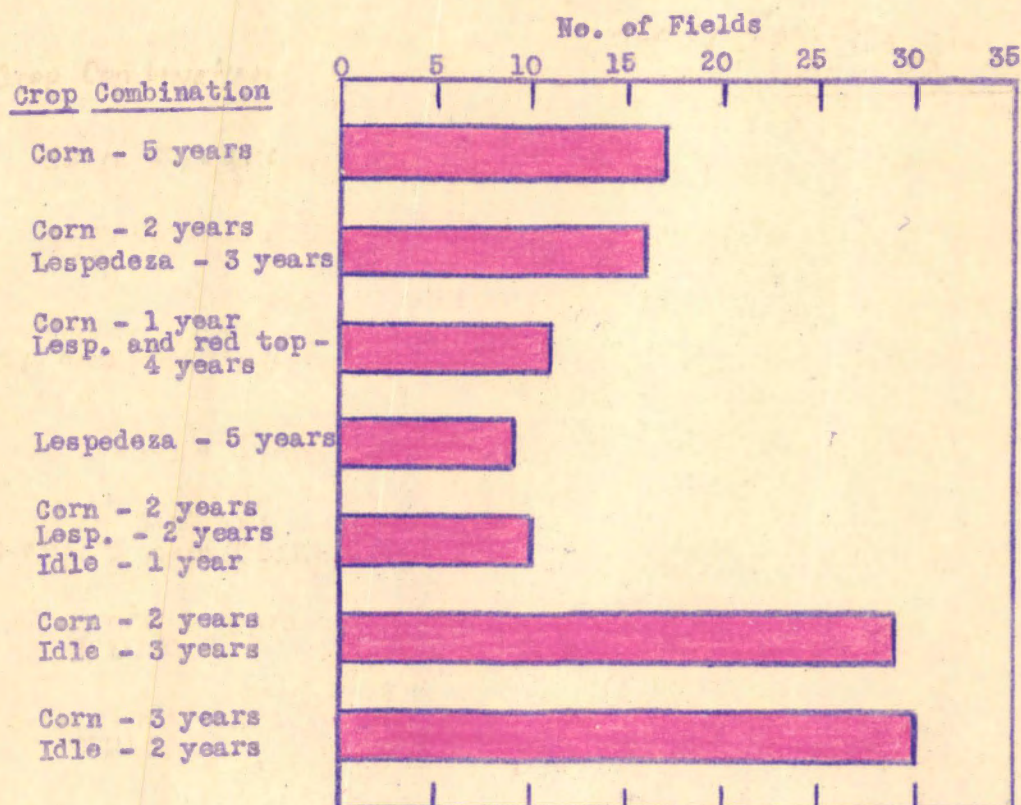
When combined these two systems, which are very similar, are planted on 13 percent of the fields in this area.

The crop combination of straight corn was planted on 3.7 percent of the fields. Significantly, 2.4 percent of this 3.7 percent was on DeKalb soils.

TABLE XXVII. MAJOR CROP COMBINATIONS ON 455 FIELDS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					Number of Fields				
					Clarks-ville	De-Kalb	Deca-tur	Total	Pct.
Corn	Corn	Corn	Corn	Corn	4	11	2	17	3.7
Corn	Corn	Lesp.	Lesp.	Lesp.	12	4		16	3.5
Corn	Lesp. & red top	Lesp. & red top	Lesp. & red top	Lesp. & red top	7	1	3	11	2.4
Lesp.	Lesp.	Lesp.	Lesp.	Lesp.	8		1	9	2.0
Corn	Corn	Lesp.	Lesp.	Idle	4	3	3	10	2.2
Corn	Corn	Idle	Idle	Idle	16	11	2	29	6.4
Corn	Corn	Corn	Idle	Idle	17	11	2	30	6.6
Totals					68	41	15	122	26.8

Source: Conservation Practice Survey, 1936.



Source: Table XXVII

Figure 26. Major Crop Combinations on 455 Fields in Overton
County, Tennessee, 1932-1936

Straight Row Crops. Row crops are planted on 20 of the 455 fields each year over the five-year period 1932-36.

The DeKalb soils are not good corn producers,⁴ but 13 or 65 percent of the 20 fields which are planted to this system are of the DeKalb soils. Five of the fields are Clarksville soils and only two Decatur soils. This indicates that the farmers on the better soils (Decatur) practice better cropping systems, while those who have soils that are not very productive, further decrease their fertility by constant cropping with row crops.

Of these 20 fields which are planted to a row crop each year, corn is planted on 17, cane on 2, and truck on 1. Eleven fields planted to corn each year are on the DeKalb soils (Table XXVIII).

TABLE XXVIII. STRAIGHT ROW CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					Clarks- ville Soils	DeKalb Soils	Decatur Soils
Corn	Corn	Corn	Corn	Corn	4	11	2
Cane	Cane	Cane	Cane	Cane	1	1	
Truck	Truck	Truck	Truck	Truck		1	
Total					5	13	2

Source: Conservation Practice Survey, 1936.

Row Crops Three Years, Hay Crops Two Years. This cropping system is planted on 18 fields, of which 11 are Clarksville soils, 6 DeKalb, and 1

4. Allred, C. E., and Esry, Danson H., Soil Conservation Practices in Actual Use by Farmers, Eastern Highland Rim, 1932-36, Agricultural Experiment Station, Monograph No. 28, 1937.

Decatur.

On every field with the exception of one the row crop is corn. The hay crops are chiefly lespedera, cowpeas, beans, red top, and red-clover.

Within this group there are 12 different combinations of crops, and no one combination occurs frequently enough to be of importance. The combination of corn three years and lespedera two years is planted on 4 fields of Clarksville soil and 1 on DeKalb. The other combinations occur only one or two times each (Table XXIX).

TABLE XXIX. FOUR YEAR ROW CROP AND ONE YEAR HAY CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					Clarks- ville	De- Kalb	Deca- tur
Corn	Corn	Corn	Beans	Millet & peas		1	
Corn	Corn	Corn	Leasp.	Leasp.	4	1	
Corn	Corn	Corn	Cowpeas	Beans	2		
Corn	Corn	Corn	Red top	Red top			1
Corn	Corn	Corn	Beans	Beans	2		
Corn	Corn	Corn	Leasp.	Leasp.	1		
Corn	Corn	Corn	Cowpeas	Cowpeas		1	
Corn	Corn	Corn	Red clover	Red clover		1	
Corn	Corn	Corn	Beans	Red top and timothy		1	
Corn	Corn	Corn	Beans	Red top	1		
Corn	Corn	Corn	Orch. grass-leasp.	Orchard grass, lespedera		1	
Corn	Corn	Corn	Leasp.	Millet & beans	1		
Total					11	6	1

Source: Conservation Practice Survey, 1936.

Row Crops Two Years and Hay Crops Three Years. This cropping system is planted on more fields than any other system. It is planted on 48 of the 455 fields studied. Thirty-two of the fields are Clarksville soil, 9 DeKalb, and 7 Decatur.

TABLE XXX. TWO YEAR ROW CROP AND THREE YEAR HAY CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-1936

Combinations					No. of Fields		
					Clarks-ville	De-Kalb	Deca-tur
Corn	Corn	Lesp.	Lesp.	Lesp.	12	4	
Corn	Corn	Red top	Red top	Red top	6	1	1
Corn	Corn	Lesp. & red top	Lesp. & red top	Lesp. & red top	1	1	1
Corn	Corn	Lesp.	Lesp.	Beans	2		1
Corn	Corn	Lesp.	Lesp.	Red top & or. grass			1
Corn	Corn	Red top	Red top	Lesp.	4		
Corn	Corn	Red cl.	Red cl.	Lesp.	1		
Corn	Corn	Lesp.	Lesp.	Red top	1		
Corn	Corn	Red cl. & tim.	Red cl. & tim.	Red cl. & tim.		1	
Corn	Corn	Cowpeas	Cowpeas	Lesp.			1
Corn	Corn	Alfalfa	Alfalfa	Alfalfa			1
Corn	Corn	Lesp. & orchard grass	Lesp. & orchard grass	Lesp. & orchard grass			1
Corn	Corn	Red top	Red top	Cowpeas	2		
Corn	Corn	Lesp.	Lesp.	Millet & peas	1	1	
Corn	Corn	Red top, orchard grass, & lesp.	Red top, orchard grass, & lesp.	Red top, orchard grass, & lesp.	1		
Corn	Corn	Red top	Red top	Beans		1	
Corn	Corn	Or. grass	Or. grass	Or. grass	1		
				Total	32	9	7

Source: Conservation Practice Survey, 1936.

Corn is the only row crop grown in this system. It is planted 96 times over the five-year period.

The principal hay crop in this system is lespedeza, which is planted 63 times during the period studied. Other hay crops grown are red top, cowpeas, beans, red clover, timothy, orchard grass, millet and peas, alfalfa, and mixtures of some of these crops. In the longer rotations alfalfa is a more important hay crop.

There are 17 different combinations of crops in this system. The combination of two years corn and three years lespedeza is the most important, being planted on 16 fields, 12 of which are on Clarksville soils and 4 on DeKalb. On 8 fields corn is planted two years and red top three. Of this number 6 are Clarksville soils, 1 DeKalb, and 1 Decatur. The other 15 combinations are planted from 1 to 4 times each (Table XXX).

Row Crop One Year and Hay Crops Four Years. Second in importance is this cropping system which is planted on 45 or about 10 percent of the 465 fields studied. Thirty of the fields are Clarksville soil, 7 DeKalb, and 8 Decatur.

As is the case in all of the cropping systems in which a row crop is grown corn is the crop that is grown almost exclusively. With the exception of two times it is the row crop that is used in this system. Cane was planted on two fields.

The chief hay crops planted in this system are lespedeza, cowpeas, orchard grass, red top, timothy, red clover, and mixtures of these crops, but none are planted frequently enough to be dominant.

There are 21 different combinations of crops in this system over the period 1932-36. The combination that is planted the most frequently is that of corn one year and a mixture of lespedeza and red top for four years. This combination is planted on 11 fields, of which 7 are Clarksville soils, 1 DeKalb, and 3 Decatur (Table XXXI).

TABLE XXXI. ONE YEAR ROW CROP AND FOUR YEAR HAY CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields		
					Clarks-ville	De-Kalb	Deca-tur
Corn	Alfalfa	Alfalfa	Beans	Cowpeas			1
Corn	Alfalfa	Cowpeas	Cowpeas	Cowpeas			1
Corn	Alfalfa	Alfalfa	Alfalfa	Alfalfa	2		3
Corn	Lesp. & red top	Lesp. & red top	Lesp. & red top	Lesp. & red top	7	1	3
Corn	Lesp.	Lesp.	Lesp.	Red top	2		
Corn	Lesp.	Orch.grass	Orch.grass	Orch.grass	1		
Corn	Red top, lesp. & orchard grass	Red top, lesp., & orchard grass	Red top, lesp. & orchard grass	Red top, lesp. & orchard grass	1		
Cane	Lesp.	Lesp.	Lesp.	Lesp.		1	
Cane	Lesp.	Lesp.	Lesp.	Cowpeas	1		
Corn	Lesp. & orchard grass	Lesp. & orchard grass	Lesp. & orchard grass	Lesp. & orchard grass		2	
Corn	Or.grass	Or.grass	Or.grass	Or.grass	1		
Corn	Lesp.	Lesp.	Lesp.	Lesp.	7	1	
Corn	Lesp.	Lesp.	Lesp.	Cowpeas	2		
Corn	Red top	Red top	Red top	Lesp.	1		
Corn	Lesp.	Lesp.	Red top	Lesp. & red top	1		
Corn	Lesp.	Lesp.	Lesp.	Timothy	1		
Corn	Red top & timothy	Red top & timothy	Red top & timothy	Lesp.	1		
Corn	Red cl.& timothy	Red cl.& timothy	Red cl.& timothy	Red cl.& timothy		1	
Corn	Red cl.& timothy	Red cl.& timothy	Lesp.	Lesp.		1	
Corn	Soybeans & red top	Red top	Red top	Red top	2		
Total					30	7	8

Source: Conservation Practice Survey, 1936.

The combination of corn one year and lespedeza four is planted on 8 fields, 7 of which are Clarksville soils and 1 DeKalb. Five fields are planted to corn one year and alfalfa four, and 3 of these are Decatur soils and 2 Clarksville. The other 18 combinations only occur once or twice each (Table XXXI).

Straight Hay Crops. This system in which the land is occupied by a hay crop each year is planted on 18 or approximately 4 percent of the 455 fields. Twelve of the fields are Clarksville soils and 3 each of DeKalb and Decatur soils.

TABLE XXXII. STRAIGHT HAY CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields		
					Clarks-ville Soils	De-Kalb Soils	Deca-tur Soils
Lesp.& red top	Lesp. & red top	Lesp.& red top	Lesp. & red top	Lesp. & red top	1	1	
Lesp.	Lesp.	Lesp.	Lesp.	Lesp.	8		1
Beans	Beans	Beans	Lesp.	Lesp.			1
Lesp.	Lesp.	Lesp.	Orch.gr. & lesp.	Orch. grass & lespedeza		1	
Lesp.& or.gr.	Lesp.& or.gr.	Or.grass & red top	Or.grass & red top	Or. grass & red top		1	
Red top	Red top	Red top	Red top	Red top	1		
Timothy	Timothy	Timothy	Timothy	Timothy			1
Red top	Red top	Lesp.& red top	Lesp. & red top	Lesp. & red top	2		
Total					12	3	3

Source: Conservation Practice Survey, 1936.

Lespedeza is the crop around which this cropping system is based. It is planted 48 times over the five-year period studied. Red top, timothy, orchard grass, beans, and a mixture of lespedeza and red top are the principal crops planted in this rotation.

There are 8 different combinations of crops in this system. The most important of these is the one in which lespedeza is planted each year. This combination is planted on 9 fields, of which 8 are Clarksville soils and 1 Decatur. No other crop combination of straight row crops occurs over twice. Timothy is planted each year on 1 field of Decatur soil and red top on 1 field of Clarksville soil (Table XXXII).

Row Crops Two Years, Hay Crops Two Years, and Small Grains One Year.
This cropping system is planted on 17 fields over the years 1932-36. Of this number 13 are Clarksville soils, 1 DeKalb, and 3 Decatur.

Corn is the only row crop grown in the system, and the chief hay crops are lespedeza, red top, red clover, and a mixture of lespedeza and red top.

The introduction of a small grain into the cropping system along with row crops and hay crops increases the combinations of the crops planted. Wheat and rye are the two principal small grains that are planted in this system.

There are 12 different combinations of crops in this system which only occurs 17 times. Five of the combinations occur twice and the other seven occur only one time each (Table XXXIII).

TABLE XXXIII. TWO ROW CROPS, SMALL GRAIN, AND TWO HAY CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, 1932-36

Combinations					No. of Fields		
					Clarks- ville Soils	De- Kalb Soils	Deca- tur Soils
Corn	Corn	Rye	Lesp.	Lesp. & red top	1		
Corn	Corn	Rye	Lesp.	Lesp.	2		
Corn	Corn	Wheat	Lesp.	Cowpeas	1		1
Corn	Corn	Oats	Lesp. & red top	Lesp. & red top	1		
Corn	Corn	Oats	Lesp.	Lesp.	1	1	
Corn	Corn	Wheat	Red cl.	Red clover	1		
Corn	Corn	Wheat	Lesp.	Beans			1
Corn	Corn	Rye	Red top & lesp.	Red top & lesp.	1		1
Corn	Corn	Rye	Red top	Red top	1		
Corn	Corn	Wheat	Red top	Red top	2		
Corn	Corn	Wheat	Beans	Timothy	1		
Corn	Corn	Rye	Lesp.	Millet & peas	1		
Total					15	1	3

Source: Conservation Practice Survey, 1936.

Row Crop, Small Grain, and Three Hay Crops. This cropping system is planted on 20 fields, 12 of which are Clarksville soils, 1 DeKalb, and 7 Decatur soils.

The row crop grown in this cropping system is corn, and the most important hay crops are lespedeza, alfalfa, and red top. Wheat is the small grain grown on most of the fields but some oats, rye, barley, and millet are grown.

This cropping system should be planted on more fields than it is because corn followed by a small grain and this followed by hay crops for

three years is a good rotation for much of the land in this area.

There is no definite crop combination in this cropping system.

The system is planted on 20 fields and there are 16 different combinations of crops. Only one combination occurs more than twice and that is corn for one year, lespedeza three, and wheat one which occurs three times (Table XXXIV).

TABLE XXXIV. ROW CROP, SMALL GRAIN, AND THREE HAY CROP COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields		
					Clarks- ville Soils	De- Kalb Soils	Deca- tur Soils
Corn	Rye	Lesp.	Red top	Red top	1		
Corn	Wheat	Lesp.	Lesp.	Cowpeas	1		
Corn	Wheat	Or.grass, lespedeza	Or.grass, lespedeza	Cowpeas			1
Corn	Wheat	Alfalfa	Alfalfa	Alfalfa	1		1
Corn	Wheat	Lesp. & or.grass	Lesp. & or.grass	Lesp. & or. grass			1
Corn	Wheat	Lesp.	Lesp.	Lesp.	3		
Corn	Rye	Lesp.	Lesp.	Lesp.	1		
Corn	Oats	Lesp., or. grass, red top	Lesp., or. grass, red top	Lesp., or. grass, red top			1
Corn	Barley	Alfalfa	Alfalfa	Alfalfa			1
Corn	Wheat	Red clover	Red clover	Lesp.	1		
Corn	Wheat	Lesp., or. grass, red top	Lesp., or. grass, red top	Lesp., or. grass, red top	2		
Corn	Wheat	Red top	Red top	Beans	1		
Corn	Millet	Lesp. & red top	Lesp. & red top	Lesp. & red top	1		
Corn	Oats	Lesp., or. grass	Lesp., or. grass	Red clover, or. grass			1
Corn	Oats	Beans	Beans	Beans		1	
Corn	Wheat	Or.grass, red top	Or. grass, red top	Or. grass, red top			1
Total					12	1	7

Source: Conservation Practice Survey, 1936.

Row Crops Two Years and Idle Three. This is one of the most important cropping systems practiced in this area. It occurs on 31 fields, 17 of which are Clarksville soils, 12 DeKalb, and 2 Decatur.

As is the case in the straight row crop system a large number of the fields in this system are of DeKalb soils. A larger percentage of the DeKalb soils are planted to corn than of the other two soils, yet it does not produce as good corn yields as the other two.

Corn is planted on all the fields except three and on these three cane, truck, and tobacco are planted (Table XXXV).

There are 16 fields of Clarksville soil, 11 of DeKalb, and 2 of Decatur that are planted to corn two years and left idle three.

TABLE XXXV. TWO YEAR ROW CROP AND THREE YEARS IDLE LAND COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields		
					Clarks- ville Soils	De- Kalb Soils	Decatur Soils
Corn	Corn	Idle	Idle	Idle	16	11	2
Corn	Cane	Idle	Idle	Idle		1	
Truck	Tobacco	Idle	Idle	Idle	1		
Total					17	12	2

Source: Conservation Practice Survey, 1936.

This cropping system could be improved much but sowing lespedeza or other legumes and grasses on the idle land. Further improvement would be to follow the second corn crop with a small grain and then follow the small grain by lespedeza or other legumes and grasses.

Row Crop Three Years and Idle Two. Of equal importance and very similar to the cropping system just discussed is this system in which the land is planted to a row crop three years and left idle for two. It is practiced on 31 fields, of which 17 are Clarksville soils, 12 DeKalb, and 2 Decatur. This is in the same proportion as the cropping system of planting a row crop two years and leaving the land idle three (Table XXXVI).

All except one field is planted to corn. On one field of DeKalb soil cane is planted one year.

For many years farmers have been following or leaving land idle for the purpose of "resting" it. It is still believed by many farmers that land must rest, and the best way of doing this is by leaving the land idle and allowing it to grow up in weeds and grasses.

Edward J. Russell in his book on Soil Conditions and Plant Growth says: "One of the greatest improvements in agriculture was the substituting of a definite sown crop of selected grasses and clovers for the indefinite mixture of self-sown plants of the medieval fallow"⁵

This cropping system should be improved as is the case with the other

TABLE XXXVI. THREE YEAR ROW CROP AND TWO YEAR IDLE LAND COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields		
					Clarks- ville Soils	DeKalb Soils	Decatur Soils
Corn	Corn	Corn	Idle	Idle	17	11	2
Corn	Corn	Cane	Idle	Idle		1	
				Total	17	12	2

Source: Conservation Practice Survey, 1936.

5. Russell, Edward J., Soil Conditions and Plant Growth, page 363, Longmans, Green and Company, New York, 1932.

cropping systems in which there is idle land. With proper treatment this idle land could be producing hay and pasture without decreasing its fertility as much as when it is left idle. Improvement could be made in this cropping system in the same way as suggested for the system in which the land is planted to a row crop two years and left idle three.

Row Crop Two Years, Hay Two Years, and Idle One. This cropping system is planted on 11 fields of Clarksville soil, 5 of DeKalb, and 6 of Decatur, or a total of 22 fields.

TABLE XXXVII. TWO YEAR ROW CROP, TWO YEAR HAY CROP, AND ONE YEAR IDLE LAND COMBINATIONS ON 65 FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields		
					Clarks- ville Soils	De- Kalb Soils	Deca- tur Soils
Corn	Corn	Lespedeza	Lespedeza	Idle	4	3	3
Corn	Corn	Millet & peas	Millet & peas	Idle	1		
Corn	Corn	Peas & beans	Red clover & red top	Idle		1	
Corn	Corn	Red clov. & timothy	Red clover & timothy	Idle		1	
Corn	Tobacco	Beans	Beans	Idle	3		
Corn	Corn	Lesp. & red top	Lesp. & red top	Idle	1		3
Corn	Corn	Red top	Red top	Idle	1		
Corn	Cane	Beans	Beans	Idle	1		
Total					11	5	6

Source: Conservation Practice Survey, 1936.

With the exception of one field of cane and one of tobacco the row crop is corn. The hay crops are lespedeza, red top, beans, and mixtures of these

crops.

The combination of idle one year, corn two and lespedeza two was the only one that occurs frequently enough to be of importance. It is planted on 10 fields, 4 Clarksville soils, 3 DeKalb, and 3 Decatur (Table XXXVII).

Minor Cropping Systems. There are 34 minor cropping systems practiced in this area including the group miscellaneous systems. These systems are planted on about 41 percent of the fields but none of them are planted frequently enough to be called a major cropping system.

The presence of such a large number of cropping systems in one area is due to the growing of a large number of different crops. There are 17 different crops grown, eleven different crop mixtures for hay and pasture, and four different combinations of hays and small grains in double cropping.

These minor cropping systems represent nearly every possible combination of row crops, hays, small grains, and idle land (Table XXXVIII).

As is the case with all the major cropping systems except one, the minor cropping systems are based on corn.

Many of these minor cropping systems represent good rotations and should be practiced on more fields than they are, while many of the others are composed of idle land for two or three years out of the five-year period. It is these that should be corrected.

Of the ten major cropping systems only two had a small grain in them compared with 22 for the minor systems.

TABLE XXXVIII. MINOR CROPPING SYSTEMS PRACTICED ON 65 FARMS IN
OVERTON COUNTY, TENNESSEE, 1932-36

Cropping System					No. of Fields		
					Clarks- ville Soils	De- Kalb Soils	Deca- tur Soils
Row crop	Row crop	Row crop	Row crop	Hay	4	1	1
Row crop	Row Crop	Row crop	Row crop	Small grain	3		-
Row crop	Row crop	Row crop	Small grain	Small grain	5		2
Row crop	Row crop	Small grain	Small grain	Small grain	1		1
Row crop	Small grain	Small grain	Small grain	Small grain			1
Hay	Hay	Hay	Hay	Small grain	5		4
Hay	Hay	Hay	Small grain	Small grain	1		1
Hay	Hay	Small grain	Small grain	Small grain	3		
Row crop	Row crop	Row crop	Hay	Small grain	5	2	
Row crop	Hay	Hay	Small grain	Small grain	7	2	1
Row crop	Hay	Small grain	Small grain	Small grain	1		
Row crop	Row crop	Hay	Small grain	Small grain	3	1	2
Idle	Idle	Idle	Idle	Idle		1	
Idle	Idle	Idle	Hay	Hay	2	1	
Idle	Hay	Hay	Hay	Hay	3		
Idle	Idle	Idle	Idle	Row crop	7	3	3
Idle	Row crop	Row crop	Row crop	Row crop	2	5	3
Idle	Row crop	Row crop	Hay	Small grain	6	1	2
Idle	Row crop	Row crop	Row crop	Hay	7	4	
Idle	Idle	Row crop	Hay	Hay	3	1	

(continued)

TABLE XXVIII. MINOR CROPPING SYSTEMS PRACTICED ON 65 FARMS IN
OVERTON COUNTY, TENNESSEE, 1932-36 (continued)

Cropping System					No. of Fields		
					Clarks- ville Soils	De- Kalb Soils	Deca- tur Soils
Idle	Row crop	Hay	Hay	Hay	3	1	
Idle	Idle	Row crop	Row crop	Hay	3	4	4
Idle	Idle	Idle	Row crop	Hay	2		1
Idle	Idle	Idle	Row crop	Small grain	2	1	
Idle	Idle	Idle	Hay	Small grain	1	1	
Idle	Idle	Row crop	Row crop	Small grain	4	1	2
Idle	Row crop	Hay	Small grain	Small grain	2		1
Idle	Row crop	Row crop	Row crop	Small grain	1		2
Idle	Row crop	Small grain	Small grain	Small grain	1		
Idle	Idle	Row crop	Small grain	Small grain	1		
Idle	Hay	Hay	Small grain	Small grain	1	1	
Idle	Row crop	Row crop	Small grain	Small grain	3		
Idle	Row crop	Hay	Hay	Small grain	1		1
Miscellaneous					12	7	10
Total					265	107	83

Source: Conservation Practice Survey, 1936.

CHAPTER IV

CROPPING SYSTEMS BY SIZE OF FARM IN TYPE-OF-FARMING AREA XI

Description of Cropping Systems

The cropping systems on ten large and ten small farms were studied in order to determine the effect of the size of the farm on cropping systems within this area.¹ The large farms selected have more than 65 acres of crop land, the small farms less than 35 acres. The average for the large farms is 107 acres, the small farms 24 acres.

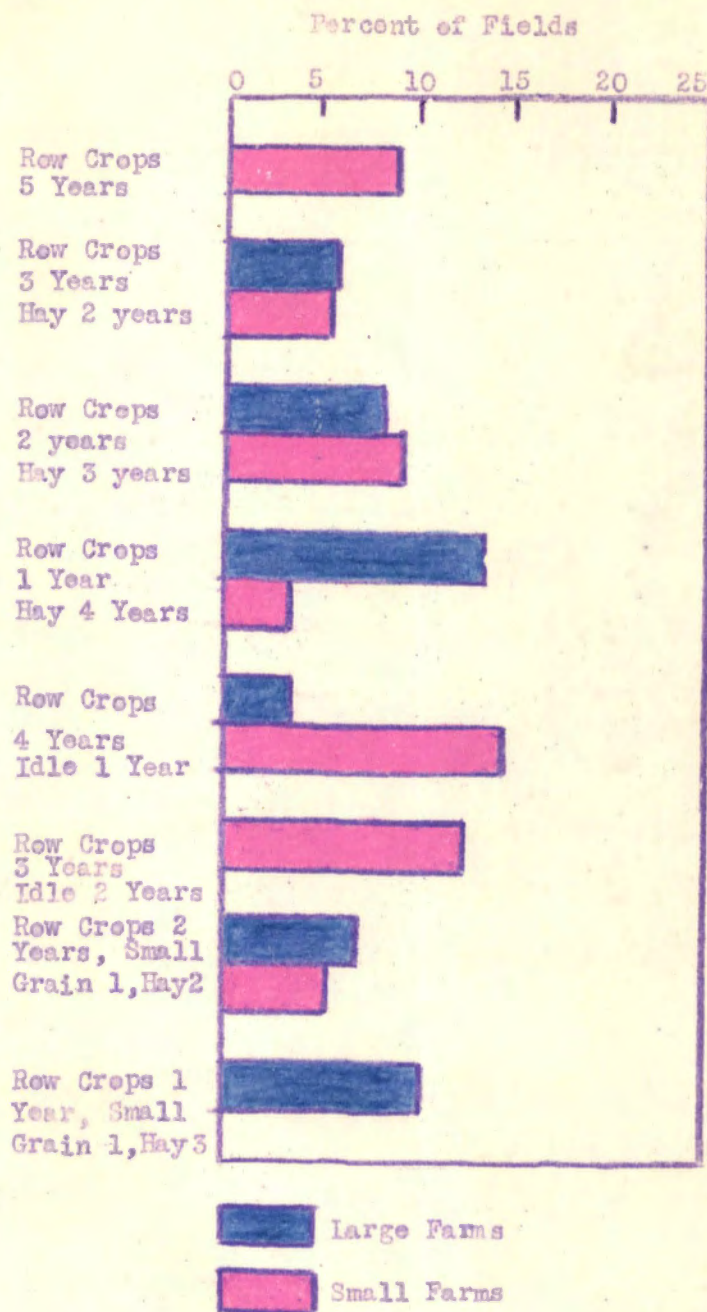
Six of the large farms are on Clarksville soils and four on Decatur soils, compared with six small farms on Clarksville soils and four on DeKalb soils.

The principal difference in the cropping systems on the large compared with small farms is in the length of rotation (Figure 27 and Table XXXIX). Shorter rotations are used on a larger percentage of the fields on the small farms.

On the small farms straight row crops are planted on about 9 percent of the fields, but on the large farms this system does not appear on a single field.

Corn is the only row crop that is grown in this system.

1. The cropping systems were taken from the schedules of the Conservation Practice Survey made in Overton County in 1936.



Source: Table XXXIX

Figure 27. Major Cropping Systems on 10 Large and 10 Small Farms in Overton County, Tennessee, 1932-36

TABLE XXXIX. MAJOR CROPPING SYSTEMS PRACTICED ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Cropping Systems					Fields of Large Farms		Fields of Small Farms	
					No.	Pct.	No.	Pct.
Row crop	Row crop	Row crop	Row crop	Row crop			5	9.1
Row crop	Row crop	Row crop	Hay	Hay	5	5.7	3	5.5
Row crop	Row crop	Hay	Hay	Hay	7	8.0	5	9.1
Row crop	Hay	Hay	Hay	Hay	12	13.6	2	3.6
Row crop	Row crop	Row crop	Row crop	Idle	3	3.4	8	14.5
Row crop	Row crop	Row crop	Idle	Idle	-	-	7	12.7
Row crop	Row crop	Small grain	Hay	Hay	6	6.8	3	5.5
Row crop	Small grain	Hay	Hay	Hay	9	10.2	-	
Minor cropping systems					46	52.3	22	40.0
Total					88	100.0	55	100.0

Source: Conservation Practice Survey, 1936.

Both large and small farms have about the same percentage of their fields planted to a row crop two or three years and hay the other three or two years. These are two of the better cropping systems practiced in the area. About 15 percent of the fields are planted in this manner (Figure 27 and Table XXXIX).

The crop combinations that are grown in the system of row crops three years and hay crops two years are shown in Table XL. The most important

of these on both the large and small farms is the rotation in which corn is planted three years and lespedeza two.

TABLE XL. THREE YEAR ROW CROP AND TWO YEAR HAY CROP
COMBINATIONS ON 10 LARGE AND 10 SMALL FARMS IN
OVERTON COUNTY, TENNESSEE, 1932-1936

Combinations					No. of Fields	
					10 Large Farms	10 Small Farms
Corn	Corn	Corn	Lesp.	Lesp.	3	2
Corn	Corn	Cane	Lesp.	Lesp.	1	
Corn	Corn	Corn	Lesp.	Red top	1	
Corn	Corn	Corn	Cowpeas	Cowpeas		1
Total					5	3

Source: Conservation Practice Survey, 1936.

In the two year row crop and three year hay crop combinations corn and lespedeza appear on one field of the large farms and on two fields of the small farms (Table XLI). No one combination appears frequently enough in this system to be a major crop combination.

The cropping system in which the land is planted to a row crop one year and a hay crop four years is planted on 10 percent more fields of the large farms than of the small farms. This is a longer rotation than can be planted on many fields on the small farms.

TABLE XLI. TWO YEAR ROW CROP AND THREE YEAR HAY CROP COMBINATIONS ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields	
					10 Large Farms	10 Small Farms
Corn	Corn	Lesp.	Lesp.	Lesp.	1	2
Corn	Corn	Lesp.	Lesp.	Beans	1	1
Corn	Corn	Lesp., red top, orch. grass	Lesp., red top, orch. grass	Lesp., red top, orch. grass	1	
Corn	Corn	Lesp., red top	Lesp., red top	Lesp., red top	1	
Corn	Corn	Lesp.	Cowpeas	Cowpeas	1	
Corn	Corn	Cowpeas	Lesp., or. grass	Lesp., or. grass	1	
Corn	Corn	Lesp., red top	Lesp., red top	Cowpeas	1	
Corn	Corn	Red top	Red top	Red top		1
Corn	Corn	Timothy	Timothy	Red clover, timothy		1
Total					7	5

Source: Conservation Practice Survey, 1936.

There are eight different crop combinations as shown in Table XLII but none occur enough times to be a major combination.

TABLE XLII. ONE YEAR ROW CROP AND FOUR YEAR HAY CROP COMBINATIONS ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields	
					10 Large Farms	10 Small Farms
Corn	Lesp., red top	Lesp., red top	Lesp., red top	Lesp., red top	3	
Corn	Lesp.	Lesp.	Red top	Red top	2	
Corn	Lesp.	Lesp.	Lesp.	Lesp.	2	2
Corn	Alfalfa	Alfalfa	Alfalfa	Alfalfa	2	
Corn	Beans	Cowpeas	Alfalfa	Alfalfa	1	
Corn	Red top	Red top	Red top	Red top	1	
Corn	Lesp.	Or. grass	Or. grass	Or. grass	1	
Total					12	2

Source: Conservation Practice Survey, 1936.

One of the most important differences in cropping systems of large compared with small farms is the proportion of fields left idle one or two years.

On the small farms 14.5 percent of the fields are planted to a row crop four years and left idle one, compared with 3.4 percent for the large farms. No fields on the large farms are planted to a row crop three years and left idle two, while this system is practiced on approximately 13 percent of the fields on the small farms.

The principal crop planted in these two systems is corn. Cane and truck are planted some (Tables XLIII and XLIV).

TABLE XLIII. FOUR YEAR ROW CROP AND ONE YEAR IDLE COMBINATIONS ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields	
					10 Large Farms	10 Small Farms
Corn	Corn	Corn	Corn	Idle	1	5
Corn	Corn	Corn	Cane	Idle	1	2
Corn	Corn	Corn	Truck	Idle	1	1
Total					3	8

Source: Conservation Practice Survey, 1936.

TABLE XLIV. THREE YEAR ROW CROP AND TWO YEAR IDLE COMBINATIONS ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields	
					10 Large Farms	10 Small Farms
Corn	Corn	Corn	Idle	Idle	-	6
Corn	Corn	Cane	Idle	Idle	-	1
Total						7

Source: Conservation Practice Survey, 1936.

One reason why it is not possible for the small farms to practice good cropping systems is the need for a large portion of the land to be planted to corn each year in order to furnish sufficient cash and food for the family and feed for the livestock. Thus little land can be devoted to crops for soil conservation. Yet, on the small farms where more than a third of the crop land is needed to meet this demand, a larger percentage of the fields are left idle than on the large farms. It appears that planting of idle land to soil improving crops would be a step toward improving the existing cropping systems in this area.

About the same percentage of fields on both the large and small farms are planted to a row crop two years, a small grain one year and a hay crop two years (Table XXXIX).

The crop combinations that appear in this system are shown in Table XLV. The combination of corn two years, rye one, and lespedeza and red top two is planted on 3 fields of the large farms and 1 field of the small farms. The other combinations are not important.

TABLE XLV. TWO YEAR ROW CROP, ONE YEAR SMALL GRAIN, AND TWO YEAR HAY CROP COMBINATIONS ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-36

Combinations					No. of Fields	
					10 Large Farms	10 Small Farms
Corn	Corn	Oats	Lesp.	Lesp.	2	
Corn	Corn	Wheat	Lesp.	Lesp.	1	
Corn	Corn	Rye	Lesp., red top	Lesp., red top	3	1
Corn	Corn	Wheat	Red top	Red top		1
Corn	Corn	Rye	Lesp., red top, orch. grass	Lesp., red top, orch. grass		1
Total					6	3

Source: Conservation Practice Survey, 1936.

The cropping system consisting of a row crop one year, a small grain one year, and hay crops for three years is planted on 10 percent of the fields on the large farms; and on small farms none of the fields are rotated in this manner (Table XXXIX). This is one of the better cropping systems in this area but is not practiced by the small farms because the rotation is too long.

Another important difference in the cropping system on the large and small farms is the percent of fields planted to minor cropping systems. The 10 large farms have 46 percent of their fields planted to a minor cropping system compared with 22 percent for the small farms.

These minor cropping systems are made up of a wide variety of crops, largely hays and small grains. Row crops are usually planted one or two years out of the five-year period, but very seldom are planted more than two years.

Number of Years Fields Are Planted to Row Crops. A cropping system in which the land is planted to a row crop four-fifths of the time is not a good system to be practiced in this area. Yet, approximately 16 percent of the 55 fields on the small farms are planted to a row crop four years out of five. Only 3.4 percent of the 88 fields of large farms are planted in this manner, which is further evidence of the large farms practicing better cropping systems.

About one-fifth of the fields on the small farms are planted to a row crop three years out of five, compared with one-tenth for the large farms.

The cropping systems in which row crops are planted two years out of

five occupies 36 percent of the fields on the small farms and 33 percent on the large farms. This group of cropping systems are planted on a larger number of fields of the small farms than is any other group (Table XLVI).

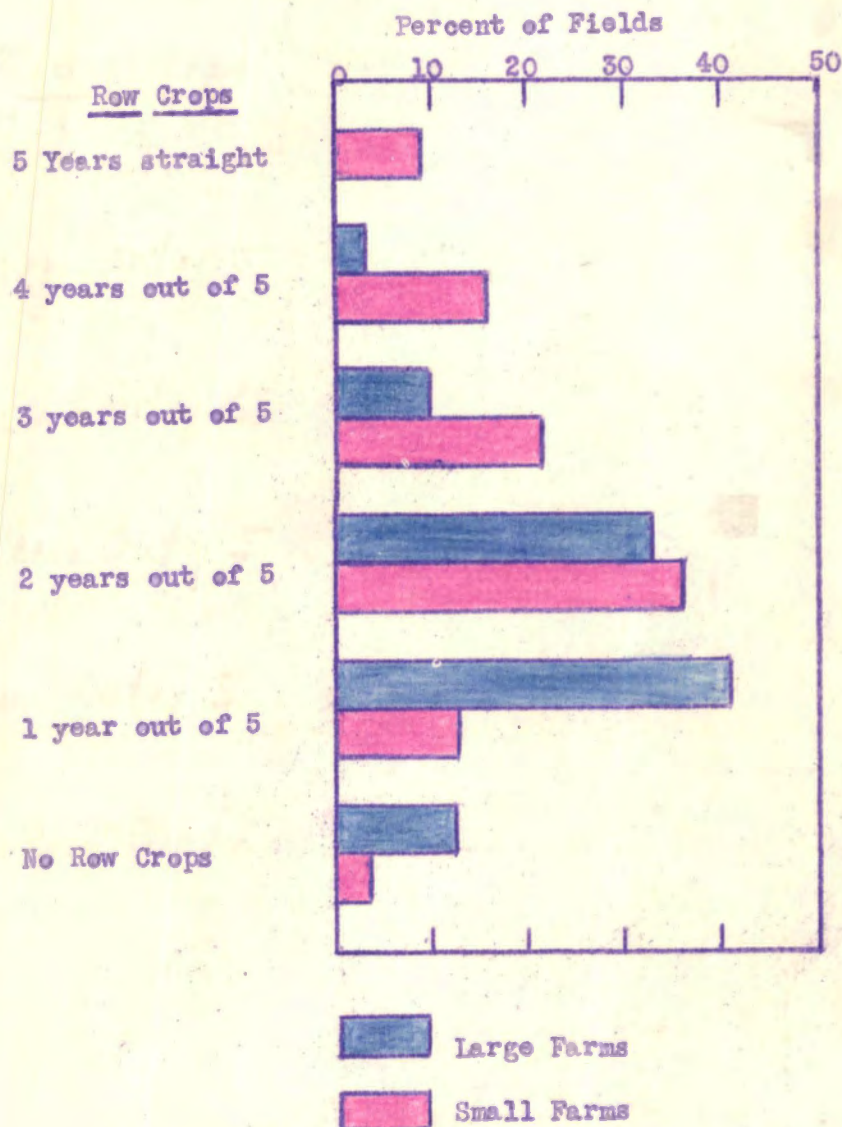
The largest percentage of fields on the large farms are planted to cropping systems in which only one row crop is planted during a five-year period. This percentage was 41 for the large farms compared with 13 for the small farms. The difference is due to the fact that, in general, the small farms cannot practice long rotations because of demand for the land to grow cash and feed crops.

Only 2 fields on the small farms do not have a row crop planted on them during the five-year period, while the large farms have eleven fields on which no row crops are planted (Figure 26 and Table XLVI).

TABLE XLVI. ROW CROP DISTRIBUTION ON 10 LARGE AND 10 SMALL FARMS
IN OVERTON COUNTY, TENNESSEE, 1932-36

Row Crops	10 Large Farms		10 Small Farms	
	No. Fields	Pct.	No. Fields	Pct.
Five years straight	-		5	9.1
Four years out of five	3	3.4	9	16.4
Three years out of five	9	10.2	12	21.8
Two years out of five	29	33.0	20	36.4
One year out of five	36	40.9	7	12.7
No row crops	11	12.5	2	3.6
Total	88	100.0	55	100.0

Source: Conservation Practice Survey, 1936.



Source: Table XLVI

Figure 28. Row Crop Distribution during Five-year period on
10 Large and 10 Small Farms in Overton County,
1932-36

Some Factors Affecting Cropping Systems

Some factors affecting cropping systems on large and small farms are number of fields, size of fields, and crop yields.

Number of Fields. The cropping system practiced by a farm, in most cases, is based largely on the number of fields on the farm. To have a good cropping system under the conditions of this area more than four or five fields are required.

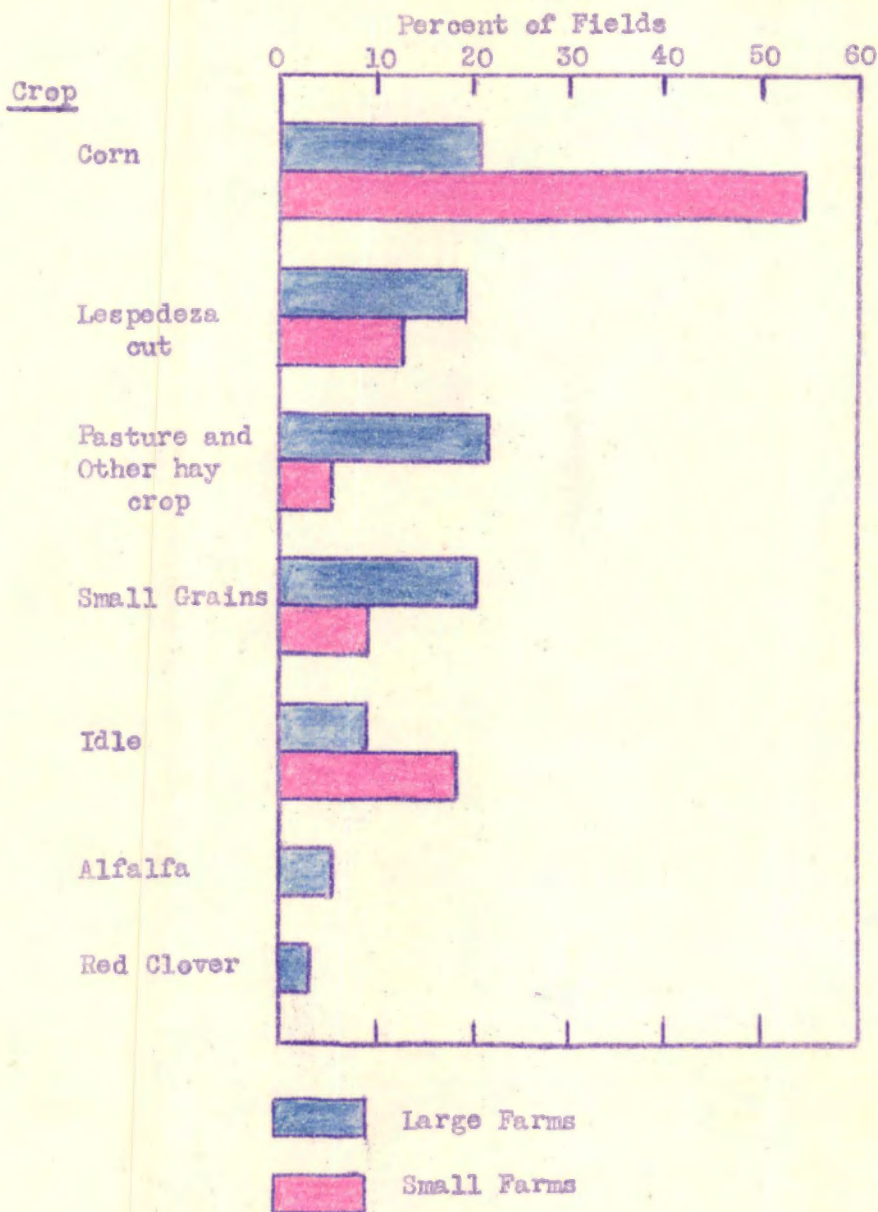
The 10 large farms have 88 fields compared with 55 on the 10 small farms. This gives an average of nearly 9 fields for the large farms and 5.5 for the small farms.

Of the 88 fields on the large farms, about one-fifth were planted to corn in 1935, compared with more than half of the 55 fields in the small farms (Figure 29 and Table XLVII). With half the fields on the small farms planted to corn the rotation is limited to two years; whereas, the large farms have only one-fifth of their fields in corn which makes it possible for them to have five-year rotations.

One-half of the fields on the large farms were planted to hay crops or pasture crops in 1935, while only 17.2 percent of the small farm fields were planted to these crops. These hay and pasture crops on the large farms are an important factor in soil conservation.

The large farms have 20 percent of their fields planted to small grains, compared with 9 percent for the small farms.

The large farms have more fields than do the small farms, yet 18 percent of the fields on the small farms are left idle and only 9 percent



Source: Table **XLVII**

Figure 29. Fields in Each Crop on 10 Large and 10 Small Farms in Overton County, Tennessee, 1935

on the large farms.

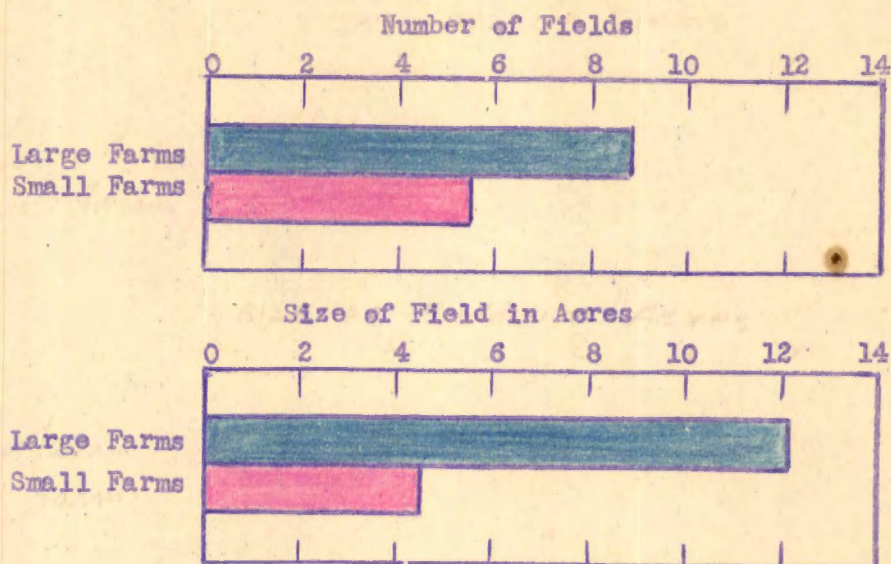
TABLE XLVII. FIELDS PLANTED TO DIFFERENT CROPS ON 10 LARGE
AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE,
1935

Field Use	10 Large Farms		10 Small Farms	
	No.	Pct.	No.	Pct.
All fields	88	100.0	55	100.0
Fields in corn	18	20.5	30	54.5
Fields in lespedeza cut for hay	17	19.3	7	12.7
Fields in alfalfa	5	5.7	0	0
Fields in red clover	3	3.4	0	0
Fields in pasture and other hays	19	21.6	3	5.5
Fields in small grains	18	20.5	5	9.1
Fields left idle	8	9.0	10	18.2

Source: Conservation Practice Survey, 1936.

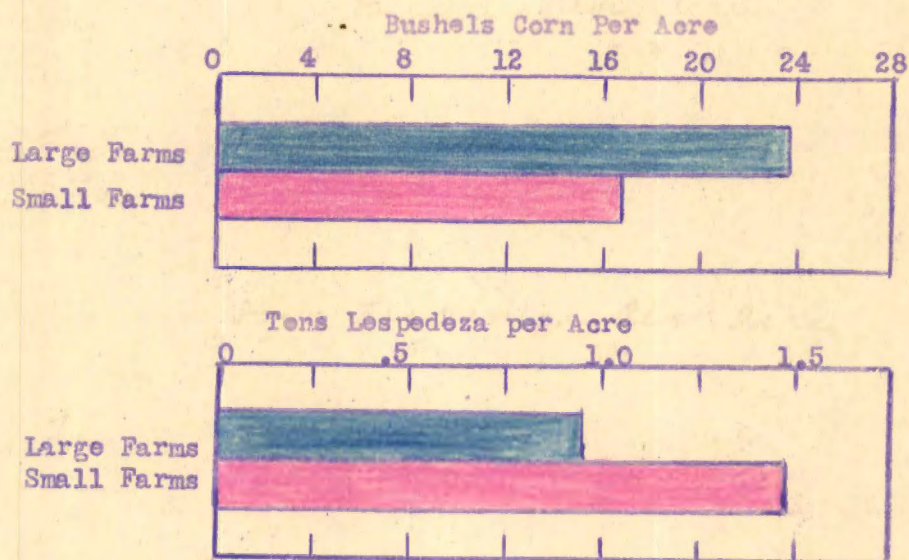
Size of Fields. Another important difference in the large and small farms is the size of the fields, which greatly influences the cropping systems practiced on the farms.

The average size field for the large farms is 12.2 acres, and for the small farms 4.4 acres (Figure 30, Table XLVIII). With fields of this size the large farms need only plant about one-fifth of them in row crops, which permits the others to be planted in small grains, hay, and pasture crops. However, the small farms, whose fields average 4.4 acres in size, and only 5.5 of these per farm, must plant over one-half of them in row crops. This leaves only two fields per farm for other crops.



Source: Table XLVIII

Figure 30. Number and Size of Fields per Farm on 10 Large and 10 Small Farms in Overton County, Tennessee, 1932-36



Source: Table XLIX

Figure 31. Crop Yields on 10 Large and 10 Small Farms in Overton County, Tennessee, 1935

TABLE XLVIII. SIZE AND NUMBER OF FIELDS ON 10 LARGE AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1932-1936

Item	10 Large Farms	10 Small Farms
Total acres crop land	1074	240
Acres crop land per farm	107.4	24.0
Total number of fields	88	55
Number of fields per farm	8.8	5.5
Average size field per farm (acres)	12.2	4.4

Source: Conservation Practice Survey, 1936.

Crop Yields. Large farms have a higher corn yield per acre than the small farms, but lower yields of lespedeza (Figure 31 and Table XLIX). The high corn yields may be attributed partly to the fact that large farms, as a whole, are located on the better soil types. The cause of the larger yields of lespedeza on the small farms is not known, but it is probably due to the fact that within this small sample the lespedeza was planted on the more fertile fields. It may be that some of the lespedeza is pastured on the large farms and this fact is not shown on the schedules.

This better corn yield enables large farms to plant a smaller percentage of their land to row crops and a larger percentage to other crops.

TABLE XLIX. CROP YIELDS ON 10 LARGE FARMS AND 10 SMALL FARMS IN OVERTON COUNTY, TENNESSEE, 1935

Crop	10 Large Farms		10 Small Farms	
	Production	Yields per Acre	Production	Yield per Acre
Corn	5035	23.9	1475	16.8
Lespedeza	157	.94	33	1.48

Source: Conservation Practice Survey, 1936.

Distribution of Crops on Large and Small Farms in 1935

In 1935 the 10 large farms had a better cropping system than did the 10 small farms. They had a better cropping system because a smaller percentage of the acres was planted to corn and left idle and a large percentage to small grains, hays, and pasture crops.

Alfalfa and red clover are grown on the large farms to a small extent, but neither of these crops is planted on the small farms.

Nearly 37 percent of the acreage on the small farms was planted to corn in 1935, compared with about 20 percent for the large farms.

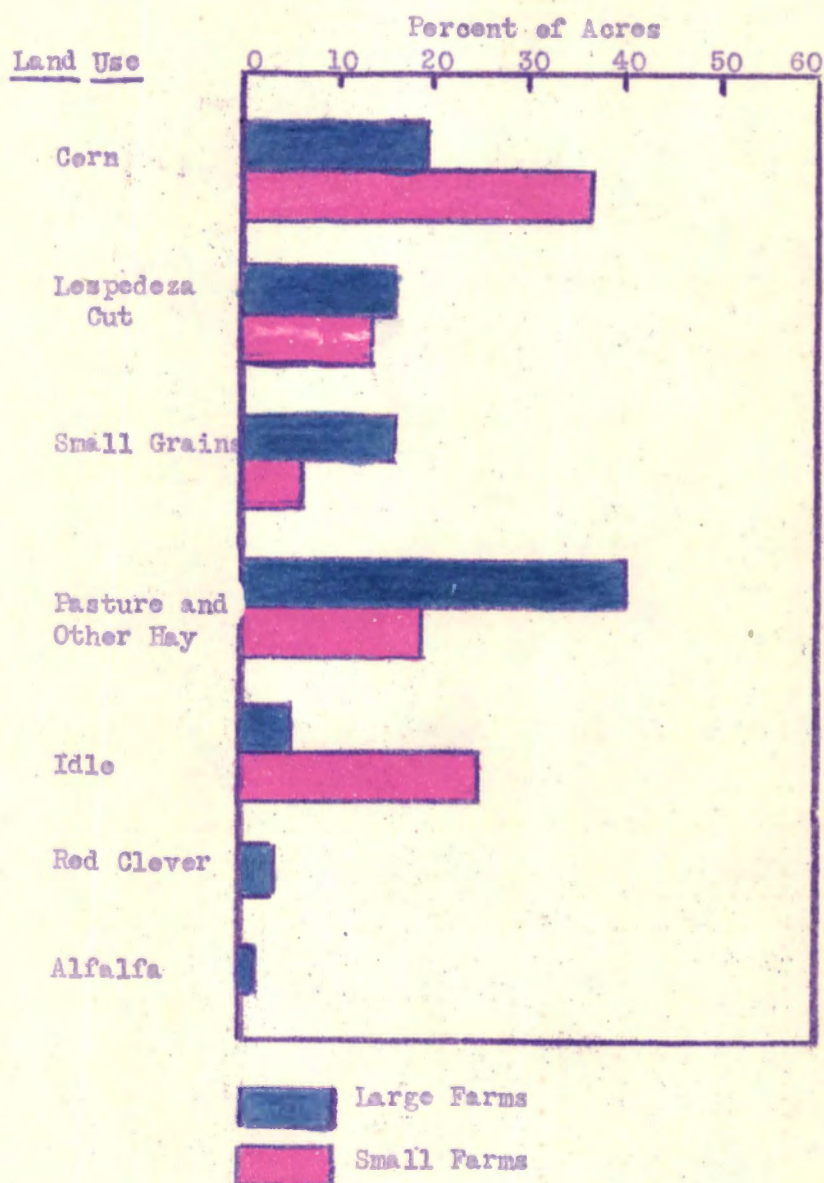
One-half of the acreage on the large farms was planted to hay crops and pasture, and about one-third of that in the small farms.

On the small farms 60 acres were left idle compared with 54 on the large farms (Figure 32 and Table L).

TABLE L. DISTRIBUTION OF CROPS ON 10 LARGE AND 10 SMALL FARMS
IN OVERTON COUNTY, TENNESSEE, 1935

Crops	10 Large Farms		10 Small Farms	
	Acres	Pct.	Acres	Pct.
Total acres of crop land	1074	100.0	240	100.0
Corn (some cane and truck)	211	19.6	88	36.7
Lespedeza cut for hay	167	15.6	33	13.8
Alfalfa	14	1.3	-	-
Red clover	29	2.7	-	-
Small grains	185	15.4	15	6.2
Idle	54	5.0	60	25.0
Other hays and pasture	434	40.4	44	18.3

Source: Conservation Practice Survey, 1936.



Source: Table L.

Figure 32. Distribution of Crops on 10 Large and 10 Small Farms in Overton County, Tennessee, 1935

CHAPTER V

CROPPING SYSTEMS IN AREA A, ROANE COUNTY, TENNESSEE

Introduction

Description of Area¹

This area, designated as a problem area by the Roane County Land Use Planning Committee, is located in the eastern end of the county (Figure 33). It consists of approximately 4400 acres, of which only 300 acres is definitely not in farms, and 130 acres of farm land which has been abandoned.

Being hemmed in between two ridges, the topography of the area is hilly. Over a third of the land has a slope of over 30 degrees, and two thirds has a slope of over 15 degrees.

About 18 percent of the land area has been classified by the U. S. Bureau of Soils as suitable for crop land, and about 64 percent as forest land. The remaining 18 percent is classified as pasture land.²

1. Description was taken from an unpublished manuscript, Farming Possibilities in a Problem Area of Roane County, Tennessee, Agricultural Economics and Rural Sociology Department, Tennessee Agricultural Experiment Station in cooperation with Bureau of Agricultural Economics, U. S. Department of Agriculture, Knoxville, Tennessee, April 20, 1940.

2. Loc. cit.

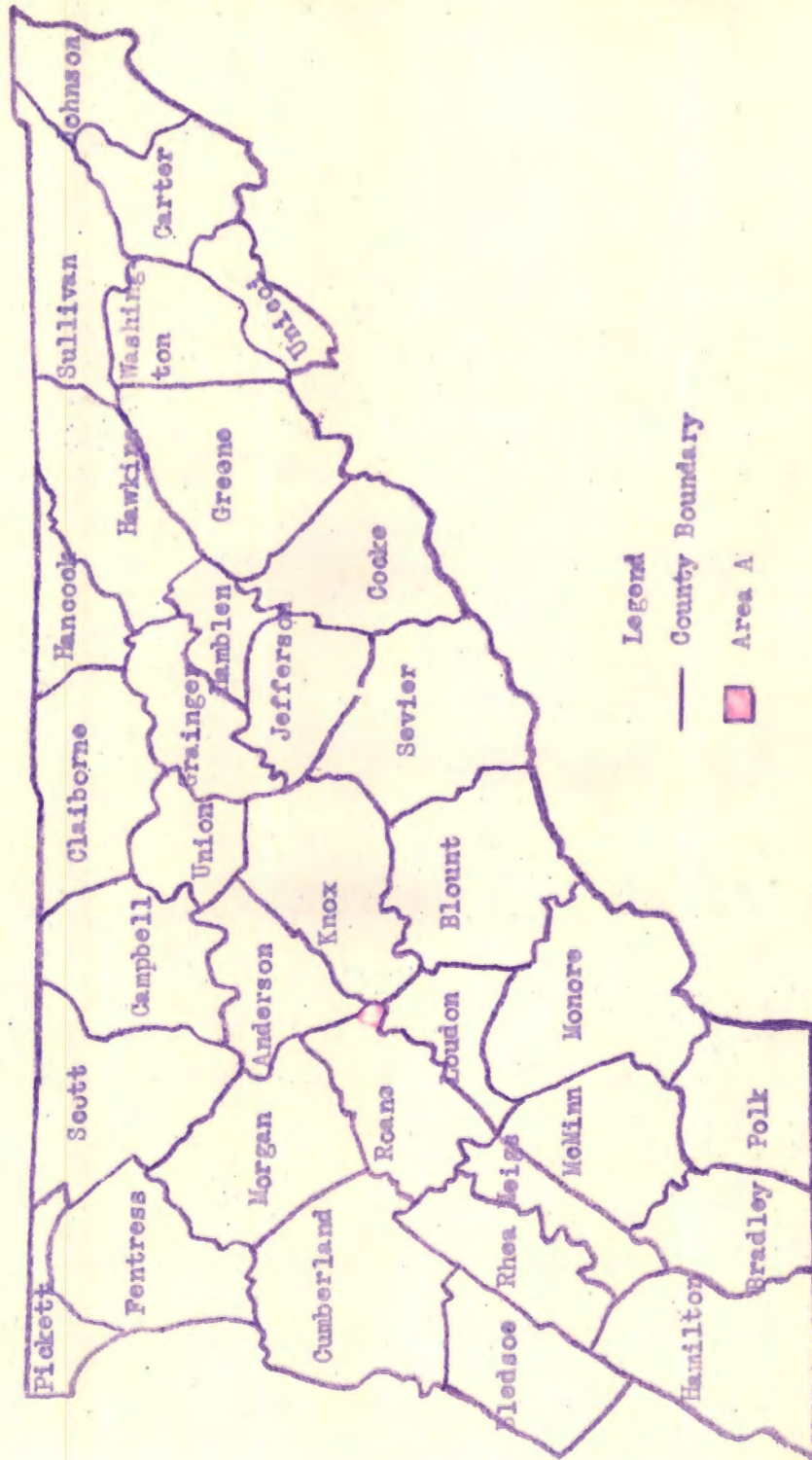


Figure 33. Location of Roane County and Area A.

The chief soils of the area are the Fullerton, Lebew, Armuchee, Clarksville, Meskinghum, and Dewey Series. These soil types constitute approximately 82 percent of the land.

Schedules were obtained from 16 of the 20 farms which are wholly within the area and they represent a total of 1408 acres. These 16 farms average 88 acres in size. More than half the farm land was in woods. About one-fifth was in crops in 1939 -- the average acreage of crops being 19.2 acres. The farms averaged nearly 8 acres of tillable crop land lying idle. The farms averaged over 11 acres each of pasture, most of which was regarded by the farmers as tillable. In many cases the pasture was idle crop land. It should be pointed out that over a third of the crop land, 130.1 acres, was on one farm, and that nine of the 16 had less than ten acres of crop land per farm. If the 130.1 acres were excluded the average of the other 15 would be 11.8 acres of crop land per farm.

Selection of Sample Farms and Method of Study.

Of the 16 schedules obtained, 10 of them had a complete history of the cropping systems. These 10 farms are fairly equally distributed over the area and represent 50 percent of the operating units which are completely within the area.

The cropping systems are based on the crop histories of 137 fields on 10 farms for the years 1935-39 inclusive.

These crop histories were obtained from schedules used in a study of farming possibilities in this area by the Department of Agricultural Economics and Rural Sociology of the Tennessee Agricultural Experiment Station in cooperation with the Bureau of Agricultural Economics, U. S. Department of Agriculture. The survey was made during the spring of 1940.

Distribution of Crops on Fields Studied

The crops grown on the 137 fields in this area are classified into the different groups shown in Table LI. This was done in order to simplify the studying of the rotations.

Hay crops (which includes pasture) occupies a larger percentage of fields than does any other group. The important hay crops are grasses, lespedeza, and pasture (Table LI).

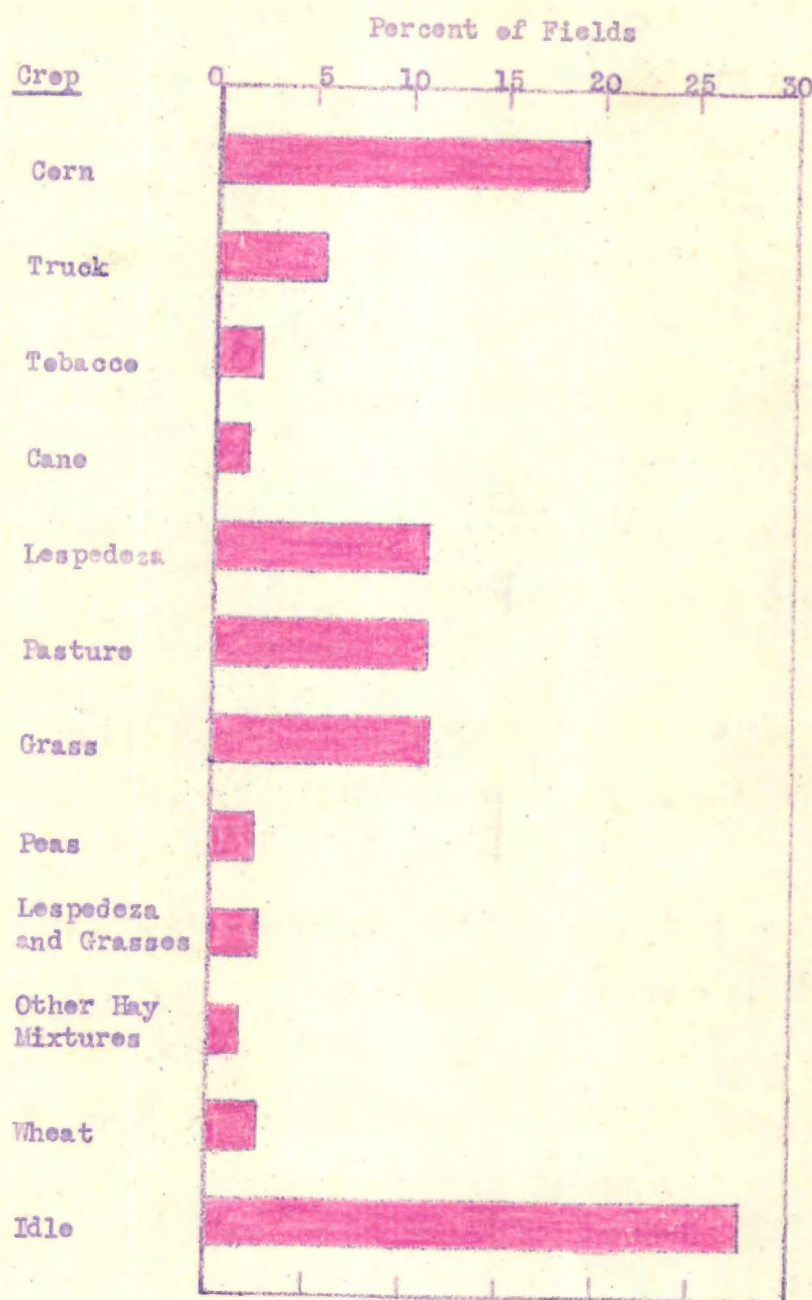
The grasses are principally red top and wild grasses, which are mostly crab grass and sedge.

The pastures that are seeded by the farmers are usually lespedeza, or a mixture of lespedeza and red top, while many of them have never been seeded but have grown up in wild grasses.

To some of the farmers in the area lespedeza is a new crop. One farmer had never sown any, and another farmer had only seeded one field, which was in 1937.

Corn is the principal row crop grown in the area. It is planted on 19 percent of the fields. The principal cash crop is tobacco. Some truck and cane are grown (Figure 34 and Table LI).

Due to the topography and inaccessibility of the area there are no threshing machines, and very little small grain is grown.



Source: Table LI

Figure 34. Distribution of Crops on 10 Farms In Area A, Reano County, Tennessee, 1935-1939

TABLE LI. DISTRIBUTION OF CROPS ON 10 FARMS IN AREA A, ROANE COUNTY, TENNESSEE, 1935 - 1939

Crops	Fields	
	No.	Pct.
Row crops	194	28.3
Corn	130	19.0
Truck	38	5.5
Tobacco	15	2.2
Cane	11	1.6
Hay crops	278	40.6
Lespedeza	77	11.2
Pasture	77	11.2
Grass	78	11.4
Peas	15	2.3
Beans	2	.3
Alfalfa	1	.1
Red clover	1	.1
Lespedeza and grass	17	2.5
Other mixtures	10	1.5
Small grains	21	3.1
Wheat	17	2.5
Rye	3	.5
Oats	1	.1
Double crops	2	.3
Idle land	190	27.7
Total	685	100.0

Source: Survey of Farming Possibilities, 1940.

Cropping Systems

Major Cropping Systems

There are 33 different cropping systems practiced in this area, and of this number 7 are classified as major and 26 as minor (Figure 35 and Table LII).

The major cropping systems are made up of either row crops, hay crops, and idle land or combinations of these, and are planted on 64 percent of the fields. The minor systems, which are miscellaneous combinations of the above

crops and small grains, in some cases, are planted on 36 percent of the fields.

The three most important systems, straight row crops, straight hay crops, and straight idle land, are those in which no changes in crops are made during the five-year period. These are found on every farm studied. While the other four major systems are not so universally used yet, they are planted on enough fields to be called major.

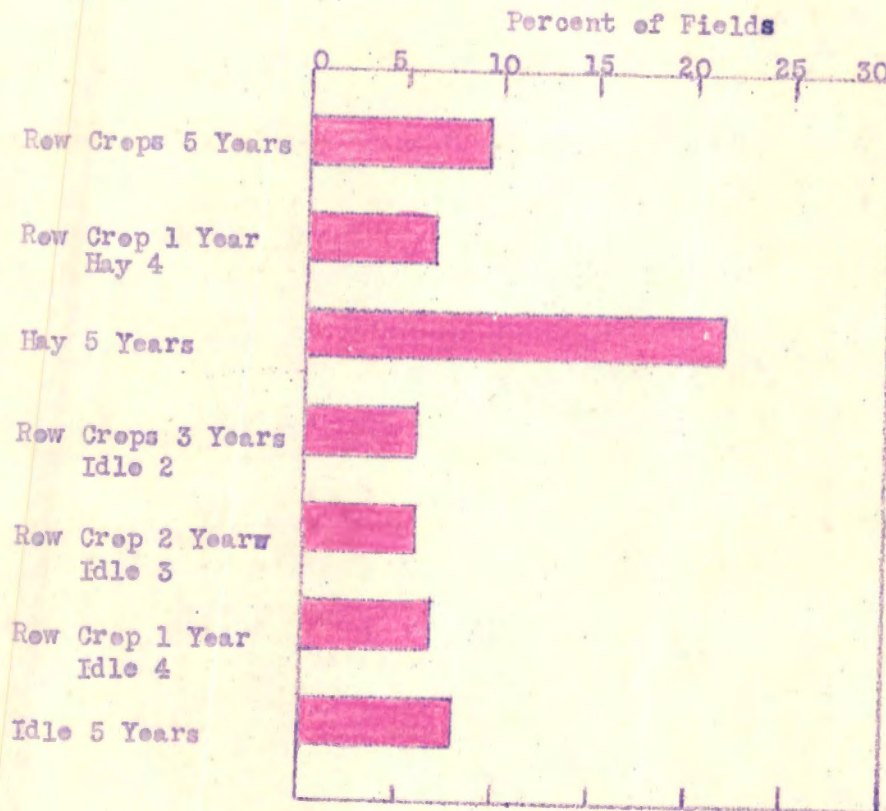
TABLE LII. MAJOR CROPPING SYSTEMS ON 10 FARMS IN AREA A, ROANE COUNTY, 1935-1939

Cropping System					No. of Fields	Percent of Fields
Row crop	Row crop	Row crop	Row crop	Row crop	13	9.5
Row crop	Hay	Hay	Hay	Hay	9	6.6
Hay	Hay	Hay	Hay	Hay	30	21.9
Row crop	Row crop	Row crop	Idle	Idle	8	5.8
Row crop	Row crop	Idle	Idle	Idle	8	5.8
Row crop	Idle	Idle	Idle	Idle	9	6.6
Idle	Idle	Idle	Idle	Idle	11	8.0
Minor cropping systems					49	35.8
Total					137	100.0

Source: Survey of Farming Possibilities, 1940.

Straight Row Crops. Row crops were planted each year, over the five-year period, on 9.5 percent of the fields (Figure 35 and Table LII).

The row crops that are planted in this system are corn, truck crops, tobacco, and cane. Corn is the most important of these, being planted on approximately 57 percent of the fields. Truck crops are planted on 21



Source: Table LII

Figure 35. Major Cropping Systems On 10 Farms In Area A, Reane County,
Tennessee, 1935-39

percent of the fields, tobacco 14 percent, and cane about 8 percent (Figure 36 and Table LIII). Some farmers grow truck crops (sweet and Irish potatoes) for commercial use.

TABLE LIII. DISTRIBUTION OF CROPS IN STRAIGHT ROW CROP SYSTEM ON 10 FARMS IN AREA A, ROANE COUNTY, TENNESSEE, 1935-39

Crop	No. of Times	Percent
Corn	37	56.9
Truck	14	21.5
Tobacco	9	13.9
Cane	5	7.7
Total	65	100.0

Source: Survey of Farming Possibilities, 1940.

Because of the importance of tobacco and truck crops in this area there is a wider variety of row crop combinations in this system than in similar systems of other areas studied.

In most cases the fields that are planted to row crops year after year are small (one half acre or less) and usually located close to the farmstead. Practically all the manure that is available on the farm is spread on these fields.

Tobacco is usually planted on some of these small fields one or two years out of five, and in this case the field receives a heavy application of fertilizer and manure. This treatment increases the tobacco yield and maintains the yields of the crops which follow the tobacco. Manure is also used on the truck crops which are planted on these fields. These treatments

permit the fields to be cropped continuously without a serious problem of depleting the fertility.

Only two fields are planted to corn each year of the five. Three are planted to corn four years and truck crops one (Table LIV).

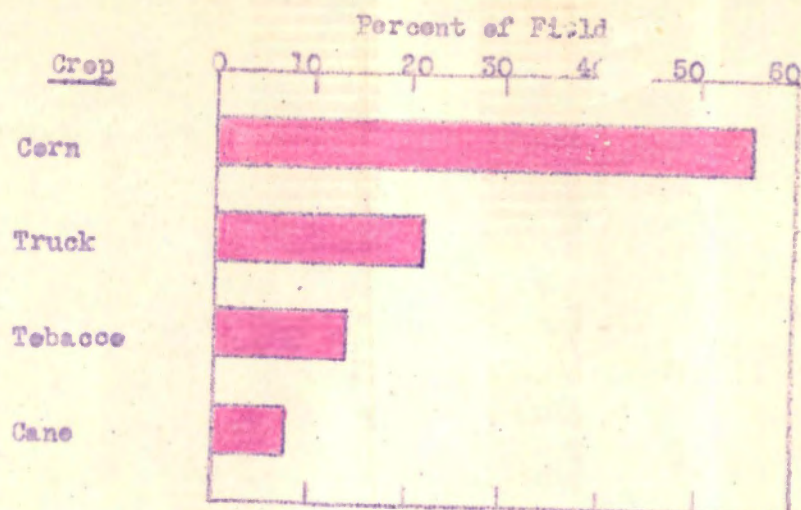
TABLE LIV. STRAIGHT ROW CROP COMBINATIONS ON 10 FARMS IN AREA A,
ROANE COUNTY, TENNESSEE, 1935-39

Combinations					No. of Fields
Corn	Corn	Corn	Corn	Corn	2
Corn	Corn	Corn	Corn	Truck	3
Corn	Corn	Corn	Corn	Cane	1
Corn	Corn	Corn	Tobacco	Truck	1
Corn	Corn	Truck	Truck	Tobacco	1
Corn	Cane	Tobacco	Tobacco	Truck	1
Truck	Truck	Truck	Tobacco	Tobacco	1
Cane	Cane	Truck	Truck	Truck	1
Corn	Corn	Cane	Tobacco	Truck	1
Corn	Corn	Corn	Tobacco	Tobacco	1
Total					15

Source: Survey of Farming Possibilities, 1940.

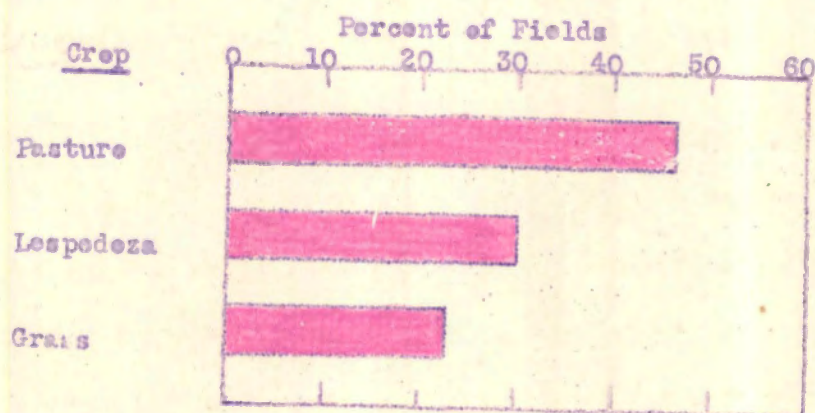
Straight Hay Crops. Hay crops are planted continuously, over the five-year period, on more fields than are any other crops. Slightly over one fifth of the fields are planted to this system, which is more than twice as large as the percent planted to any other system (Figure 35 and Table LII).

The hay crops planted in this system are lespedeza, pasture crops, and grass crops. Of these, pasture occupies the largest percent of fields, lespedeza second, and the grass crops third (Figure 37 and Table LV).



Source: Table LIII

Figure 36. Distribution of Crops in Straight Row Crop System On 10 Farms in Area A, Reane County, Tennessee, 1935-1939



Source: Table LV

Figure 37. Distribution of Crops in Straight Hay Crop System On 10 Farms in Area A, Reane County, Tennessee, 1935-1939.

TABLE LV. DISTRIBUTION OF CROPS IN STRAIGHT HAY CROP SYSTEM
ON 10 FARMS IN AREA A, ROANE COUNTY, TENNESSEE, 1935-39

Crop	Fields	
	Number	Percent
Lespedeza	45	30.0
Pasture	70	46.7
Grass	34	22.6
Peas	1	.7
Total	150	100.0

Source: Survey of Farming Possibilities, 1940.

Table LVI shows that within this system it is a common practice to have fields in the same hay crop for at least five years. It is possible that many of the fields are occupied by a hay crop for a longer period, but this fact is not indicated by the schedules, as the crop histories are for a five-year period only.

TABLE LVI. STRAIGHT HAY CROP COMBINATIONS ON 10 FARMS IN AREA A,
ROANE COUNTY, TENNESSEE, 1935-39

Crop Combinations					Fields	
					Number	Percent
Pasture	Pasture	Pasture	Pasture	Pasture	14	46.7
Lespedeza	Lespedeza	Lespedeza	Lespedeza	Lespedeza	9	30.0
Grass	Grass	Grass	Grass	Grass	6	20.0
Peas	Grass	Grass	Grass	Grass	1	3.3
				Total	30	100.0

Source: Survey of Farming Possibilities, 1940.

It is a fact of general observation in the area, however, that some of the fields are planted back to a row crop after being in hay 5 or 6 years. Others may be occupied by hay crops 7 or 8 years before they are cultivated again. This applies more to the fields which are pastured than those for hay. Most of these fields are only cultivated for a year or two, for the purpose of cleaning off weeds and sprouts, and are sown back to hay crops.

There are 30 fields on which hay crops are planted for five years, and about 47 percent are in pasture each year. Lespedeza occupies 30 percent of the fields each year, and grass 20 percent (Table LVI).

Straight Idle Land. Although 8 percent of the fields in this area are left idle each year during a five-year period, it does not represent a complete cropping system. It is part of a system that runs over a longer period of time than is shown by a five-year crop history of the fields.

When fields are left idle this long it is usually because the farmer has decided to turn them out of cultivation for several years. This is done in order to give the land a rest, and is an attempt to partially restore fertility.

After most fields in this area remain idle for three years they are covered with a thick growth of sprouts. If they lie idle longer than this it requires a considerable amount of work to clean and prepare them for cultivation. Some of the farmers stated that they would pasture these fields, instead of leaving them idle, except that they are not fenced and have no water available.

Other Major Cropping Systems. The one-year row crop and four-year hay crop system is planted on 8.6 percent of the fields. The row crops grown in this system are corn, truck, cane, and tobacco. The hay crops are grasses and lespedeza (Table LVII).

There are no important combination of crops in this system.

TABLE LVII. ONE-YEAR ROW CROP AND FOUR-YEAR HAY CROP COMBINATIONS ON 10 FARMS IN AREA A, ROANE COUNTY, TENNESSEE, 1935-39

Crop Combinations					No. of Fields
Corn	Lespedeza	Lespedeza	Lespedeza	Lespedeza	2
Truck	Lespedeza	Lespedeza	Lespedeza	Lespedeza	2
Cane	Grass	Grass	Grass	Grass	2
Corn	Grass	Grass	Grass	Grass	1
Tobacco	Grass	Grass	Grass	Grass	1
Truck	Grass	Grass	Grass	Grass	1
Total					9

Source: Survey of Farming Possibilities, 1940.

The other three major cropping systems involve the planting of row crops one year, two years, or three years, during the five-year period, and the land remaining idle the other years.

As a group these are the most important cropping systems practiced in the area. Practically every farmer has some fields on which he plants row crops one or two years and then leaves idle for a year or two. There are several different reasons why these fields are left idle, instead of being planted to a crop of some kind. These will be given in the case studies on farms in Chapter VII.

The row crops that are planted on these fields are chiefly corn, but some truck, tobacco, and cane are planted (Table LVIII).

TABLE LVIII. ROW CROP AND IDLE COMBINATIONS ON 10 FARMS IN AREA A,
ROANE COUNTY, TENNESSEE, 1935-39

Crop Combinations					Number of Fields
Corn	Idle	Idle	Idle	Idle	7
Cane	Idle	Idle	Idle	Idle	1
Truck	Idle	Idle	Idle	Idle	1
Corn	Corn	Idle	Idle	Idle	7
Tobacco	Truck	Idle	Idle	Idle	1
Corn	Corn	Corn	Idle	Idle	2
Corn	Corn	Cane	Idle	Idle	2
Corn	Truck	Cane	Idle	Idle	1
Tobacco	Truck	Truck	Idle	Idle	1
Corn	Corn	Tobacco	Idle	Idle	1
Corn	Corn	Truck	Idle	Idle	1
Total					25

Source: Survey of Farming Possibilities, 1940.

Minor Cropping Systems

The minor cropping systems of this area represent different combinations of the row crops, hay crops, and idle land which do not occur frequently enough to be called a major cropping system. Small grains also appear in some of the minor systems.

Some of these systems only occur on one field each. These minor cropping systems are planted on 36 percent of the fields.

CHAPTER VI

CROPPING SYSTEMS IN AREAS E-2, E-5, AND A OF ROANE COUNTY

Introduction

Description of Area E-2

This area is designated by the Roane County Land Planning Committee as one of small-general and subsistence farming. It is located in the upland valleys and on the milder ridge slopes throughout most of the county. It is the largest area of the county, constituting approximately 142,950 acres, of which about 114,829 acres are in farms¹ (Figure 38).

The agriculture of the area is characterized by a small-general type of farming, with little or no emphasis except that it approaches a subsistence type of farming. The important field crops are hay, corn, wheat, oats, garden and truck, and tobacco.²

Description of Area E-5

This area is designated by the committee as one of general and subsistence farming. It is approximately 25,000 acres in size, with 22,000 acres in farms.³ The area possesses the same physical characteristics as

1. Land Use Classification of Roane County, Tennessee, County Report No. 1, Roane County Program Planning Committee in cooperation with Agricultural Extension Service, University of Tennessee and Bureau of Agricultural Economics, U. S. Department of Agriculture, March 1940.

2. Ibid.

3. Ibid.

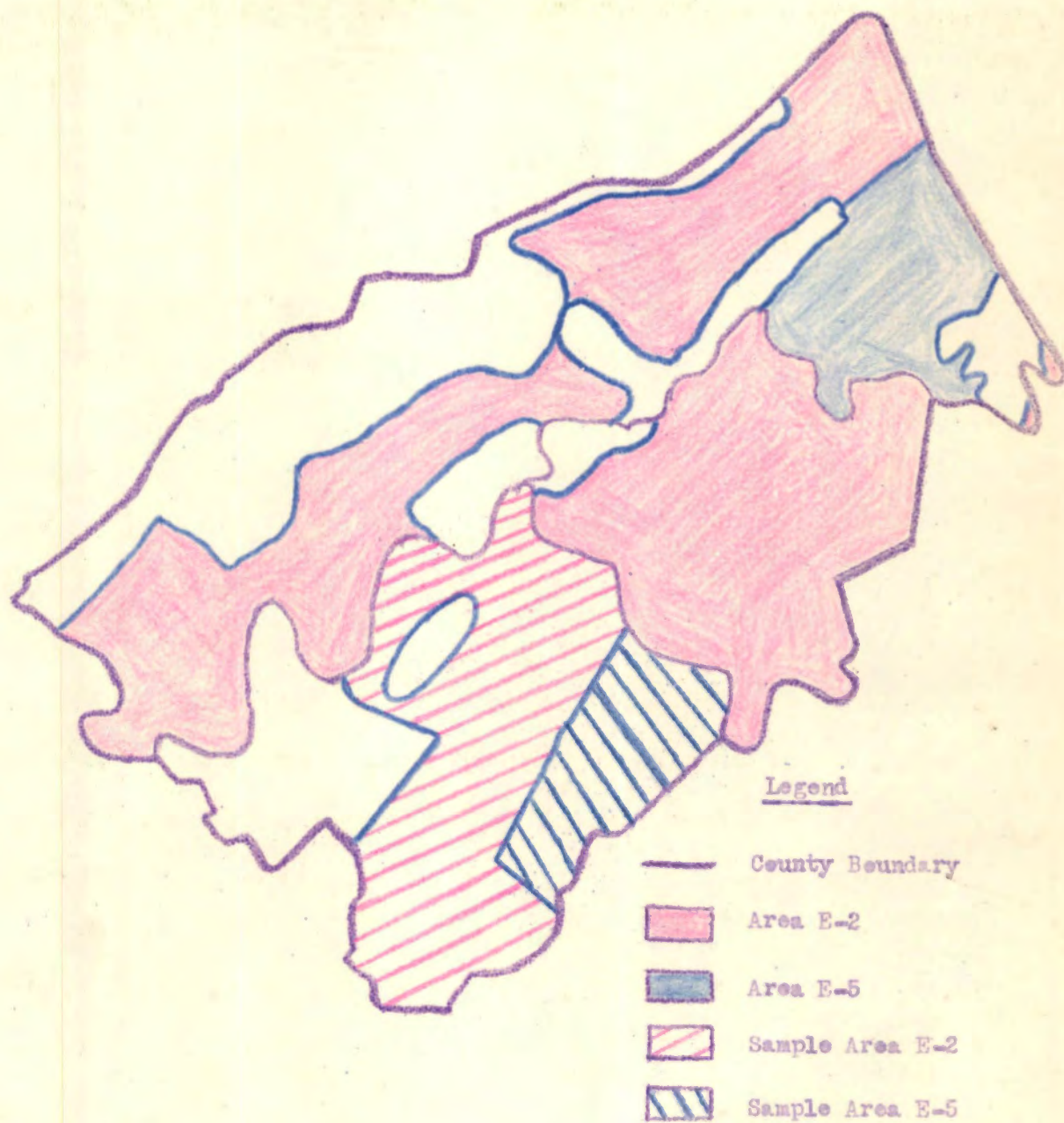


Figure 38. Reane County and Location of Areas E-2 and E-5

Area E-2. The most important crops are hay, corn, Burley tobacco, small grains, and garden.

"General farming is characterized by a Burley tobacco emphasis which is often associated with smaller farms and a live-at-home program."⁴

Sample Area

The portion of Area E-2 and Area E-5 that is located in the Fourth Civil District of Roane County was selected as the sample area.

No bottom land farms were included in the survey because these will be flooded upon completion of the Watts Bar Dam.

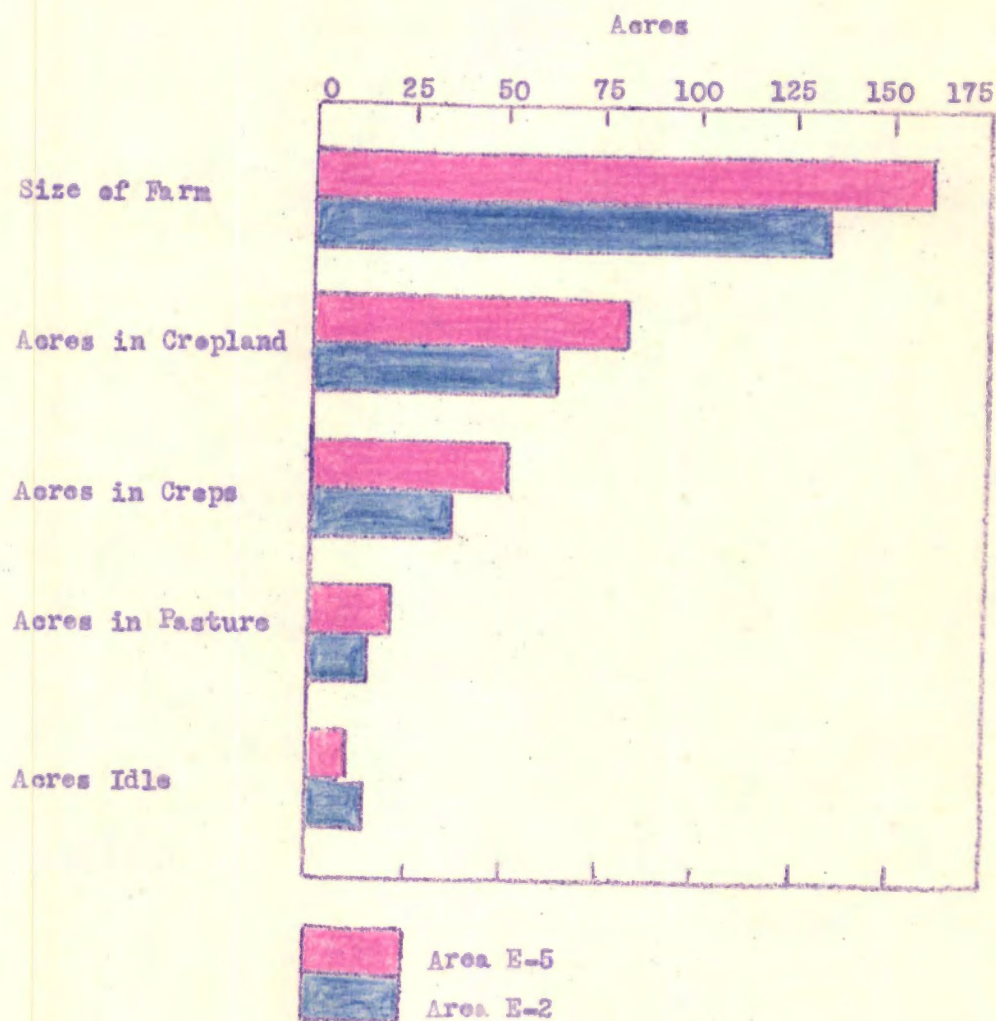
The average size farm for Area E-2 is 133.9 acres.⁵ The average cropland per farm in this area in 1939 was 62.8 acres, of which 35.1 acres was in crops, 14.5 acres in pasture,⁶ and 13.2 acres idle land (Figure 39 and Table LIX).

For Area E-5 the average size farm is 161.4 acres which is somewhat larger than in the other area. Of this 161.4 acres in 1939, 82 acres were cropland, 51.4 acres in crops, 21.6 acres pasture, and 9 acres left idle (Figure 39 and Table LIX).

4. Ibid.

5. Figures based on average of 18 farms. One farm in the area was so exceptionally large that it was not included in these averages.

6. Includes rotation pasture and permanent pasture tillable.



Source: Table LIX

Figure 39. Average Size of 18 Farms in Area E-2 Compared with Average of 10 Farms in Area E-5, Reane County, Tennessee, 1939

TABLE LIX. SIZE OF FARM, 18 FARMS IN AREA E-2 AND 10 FARMS IN
AREA E-5, ROANE COUNTY, TENNESSEE,
1939 *

Characteristics	Average for E-2	Average for E-5
Size of farm (acres)	133.9	161.4
Acres of cropland	62.8	82.0
Acres in crops	35.1	51.4
Acres of pasture (rotation and tillable permanent)	14.5	21.6
Acres of idle land	13.2	9.0

Source: Farm Business Survey, 1940.

*See Footnote on page 113.

Fields Studied

The cropping systems in Area E-2 are based on the crop histories of 254 fields on 19 farms for the years 1935-39 inclusive. In Area E-5 these are based on the crop histories of 10 farms for the same period. The farms were selected from the sample area.

The crop histories were obtained from the schedules of the Farm Business Survey, made in the early summer of 1940 by the Department of Agricultural Economics and Rural Sociology of the Tennessee Agricultural Experiment Station in cooperation with the Bureau of Agricultural Economics, U. S. Department of Agriculture.

The crops that are grown in these areas are classified in the same groups as those in Area A.⁷

Cropping Systems

The cropping systems in these areas are divided into three groups, major, minor, and miscellaneous. This was done in order to simplify the

the comparison between the two areas, because there are a large number of different cropping systems.

Three of these cropping systems are very important, and are practiced on one or more fields of practically every farm studied. These are called the major cropping systems, and are planted on 42 percent of the fields on E-2 farms and on nearly 46 percent of the fields on E-5 farms (Figure 40 and Table LX).

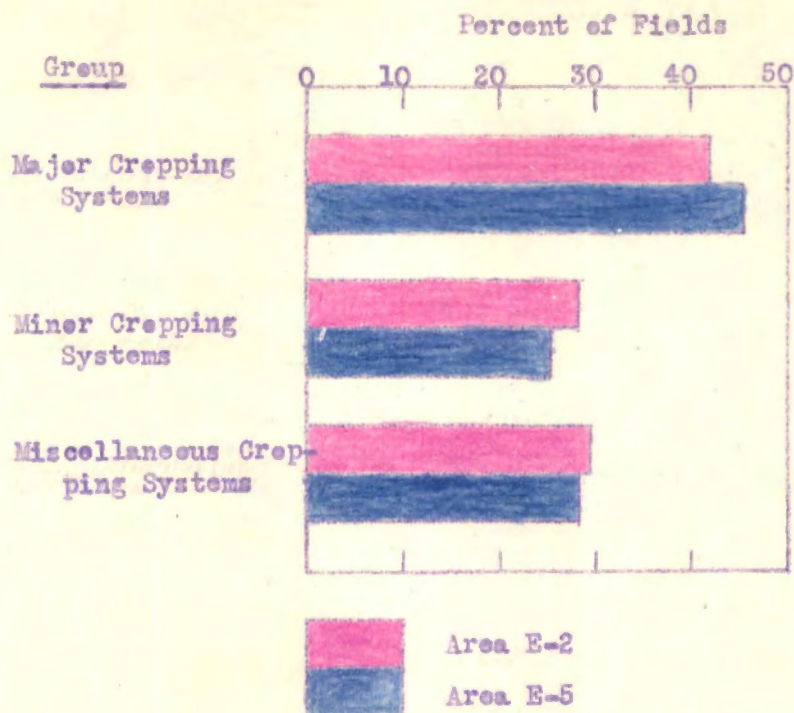
The minor cropping systems do not occur so frequently as do the major systems, yet they are important. There are five different cropping systems within this classification. These five are planted on about 28 percent of the fields on E-2 farms and on about 25 percent of the fields on E-5 farms.

The miscellaneous cropping systems are planted on a slightly higher percentage of fields in both areas than are the minor systems but few of them are alike. Many of them are only planted on one field, while some are planted on four or five.

TABLE LX. DIFFERENT GROUPS OF CROPPING SYSTEMS ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

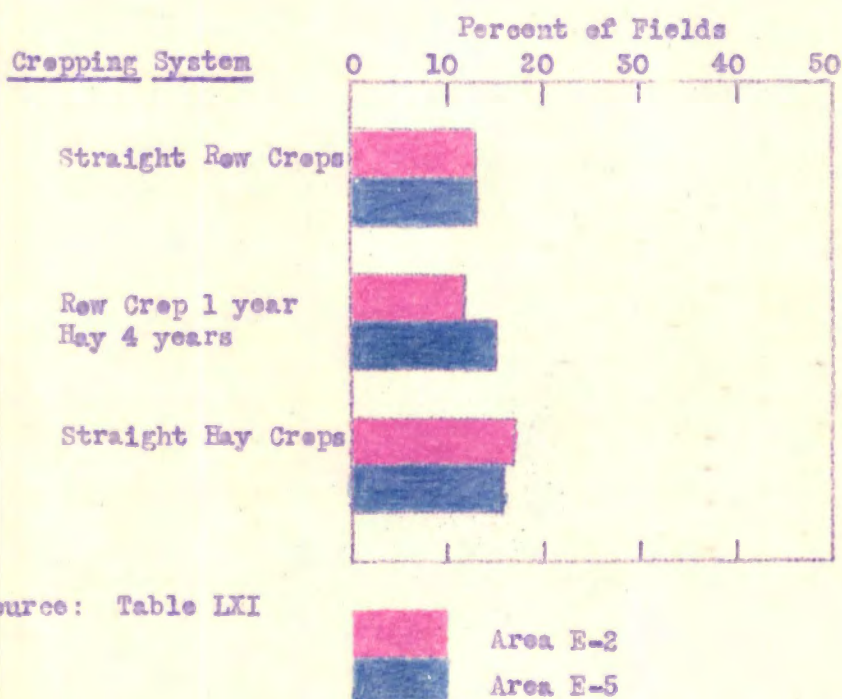
Group	Area E-2		Area E-5	
	No. of Fields	Pct.	No. of Fields	Pct.
Major cropping systems	107	42.1	70	45.8
Minor cropping systems	72	28.4	39	25.5
Miscellaneous cropping systems	75	29.5	44	28.7
Total	254	100.0	153	100.0

Source: Farm Business Survey, 1940.



Source: Table LX

Figure 40. Different Groups of Crepping Systems on 19 Farms in Area E-2 and 10 Farms in Area E-5, Reane County, Tennessee 1935-39



Source: Table LXI

Figure 41. Major Crepping Systems on 19 Farms in Area E-2 and 10 Farms in Area E-5, Reane County, Tennessee, 1935-1939

Major Cropping Systems

There are three major cropping systems practiced in the two areas. The crops grown in these systems are row and hay crops (Figure 41 and Table LXI).

Nearly half of the fields in both areas are planted to one of these 3 systems.

The major cropping systems appear to be a little more important in Area E-5 than in E-2. They are planted on 3.7 percent more fields in the former area than the latter (Figure 40 and Table LX).

TABLE LXI. MAJOR CROPPING SYSTEMS ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Cropping System					Area E-2		Area E-5	
					No. Fields	Pct.	No. Fields	Pct.
Row crop	Row crop	Row crop	Row crop	Row crop	33	13.0	20	13.1
Row crop	Hay	Hay	Hay	Hay	30	11.8	25	16.35
Hay	Hay	Hay	Hay	Hay	44	17.3	25	16.35
Total					107	42.1	70	45.8

Source: Farm Business Survey, 1940.

Straight Hay Crops. This system is planted on a larger percentage of fields in Area E-2 than is any other system. It is planted on about 4.3 percent more fields than are straight row crops. In Area E-5 this system

is planted on the same number of fields as the system of a row crop one year and a hay crop four years (Figure 41 and Table LXI). However, these are the two most important cropping systems in Area E-5.

There is quite a wide difference between the two areas in some of the hay crops grown in this system (Figure 42 and Table XLII).

Lespedeza is grown on a larger percentage of fields in Area E-2 than is any other crop. It is planted on about 43 percent of the fields in this area compared with 28 percent in Area E-5.

Pasture occupies a larger number of fields in Area E-5 than does any other crop. In Area E-2 only 6.8 percent of the fields are in pasture, while 35 percent of the fields in Area E-5 are in pasture.

A mixture of lespedeza and red top is important in both areas. In Area E-2 it is planted on nearly 23 percent of the fields and on 16 percent of the fields in Area E-5.

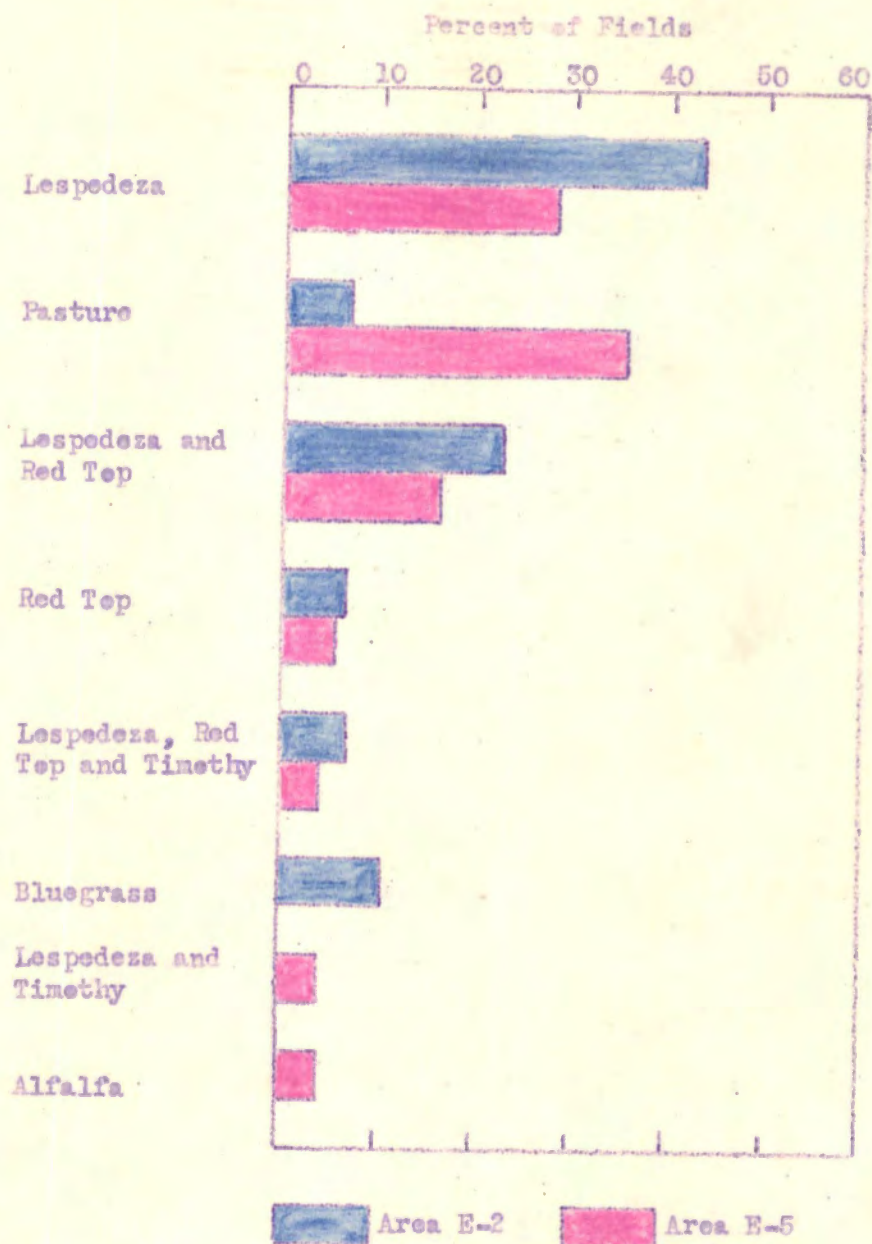
In Area E-2 bluegrass occupies 10.5 percent of the fields, but none of this is found in the other area.

Other hay crops that are planted in this system are shown in Table XLII.

There are eight different crop combinations of this system in Area E-2, and eleven in Area E-5.

Lespedeza is planted on 19 fields each year for the five-year period in the E-2 area, but in the other area only 5 fields are in lespedeza each year. This seems to indicate that the farmers in the E-5 Area do not leave a field in lespedeza as long as those in Area E-2.

In Area E-5 eight fields are in pasture each year compared with 3 in Area E-2.



Source: Table LXII

Figure 42. Distribution of Major Crops in Straight Hay Crop System on 19 Farms in Area E-2 and 10 Farms in Area E-5, Reane County, Tennessee 1935-39

TABLE LXII. DISTRIBUTION OF CROPS IN STRAIGHT HAY CROP SYSTEM ON
19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE
COUNTY, TENNESSEE, 1935-39

Crop	Area E-2		Area E-5	
	No. of Fields	Pct.	No. of Fields	Pct.
Lespedeza	95	43.2	35	28.0
Pasture	15	6.8	44	35.2
Lespedeza and red top	50	22.7	20	16.0
Red top	15	6.8	7	5.6
Lespedeza, red top, and timothy	15	6.8	5	4.0
Bluegrass	23	10.5		
Timothy	5	2.3		
Orchard grass	2	.9		
Lespedeza and timothy			5	4.0
Alfalfa			5	4.0
Beans			4	3.2
Total	220	100.0	125	100.0

Source: Farm Business Survey, 1940.

TABLE LXIII. STRAIGHT HAY CROP COMBINATIONS ON 19 FARMS IN AREA E-2
AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Crop Combinations					No. of Fields	
					Area E-2	Area E-5
Lesp.	Lesp.	Lesp.	Lesp.	Lesp.	19	5
Pasture	Pasture	Pasture	Pasture	Pasture	3	8
Lesp., red top	Lesp., red top	Lesp., red top	Lesp., red top	Lesp., red top	10	4
Red top	Red top	Red top	Red top	Red top	3	1
Lesp., red top, timothy	Lesp., red top, timothy	Lesp., red top, timothy	Lesp., red top, timothy	Lesp., red top, timothy	3	1
Timothy	Timothy	Timothy	Timothy	Timothy	1	
Bluegrass	Bluegrass	Bluegrass	Bluegrass	Bluegrass	4	
Bluegrass	Bluegrass	Bluegrass	Or. grass	Or. grass	1	
Lesp.	Lesp.	Lesp.	Red top	Red top		1
Lesp., timothy	Lesp., timothy	Lesp., timothy	Lesp., timothy	Lesp., timothy		1
Beans	Beans	Lesp.	Lesp.	Lesp.		1
Beans	Lesp.	Lesp.	Lesp.	Lesp.		1
Alfalfa	Alfalfa	Alfalfa	Alfalfa	Alfalfa		1
Beans	Pasture	Pasture	Pasture	Pasture		1
				Total	44	25

Source: Farm Business Survey, 1940.

Another important crop combination in both areas is a mixture of lespedeza and red top (Table LXIII)

Straight Row Crops. Row crops were planted each year, over the five-year period, on approximately 13 percent of the fields in both areas (Figure 43 and Table LXIV).

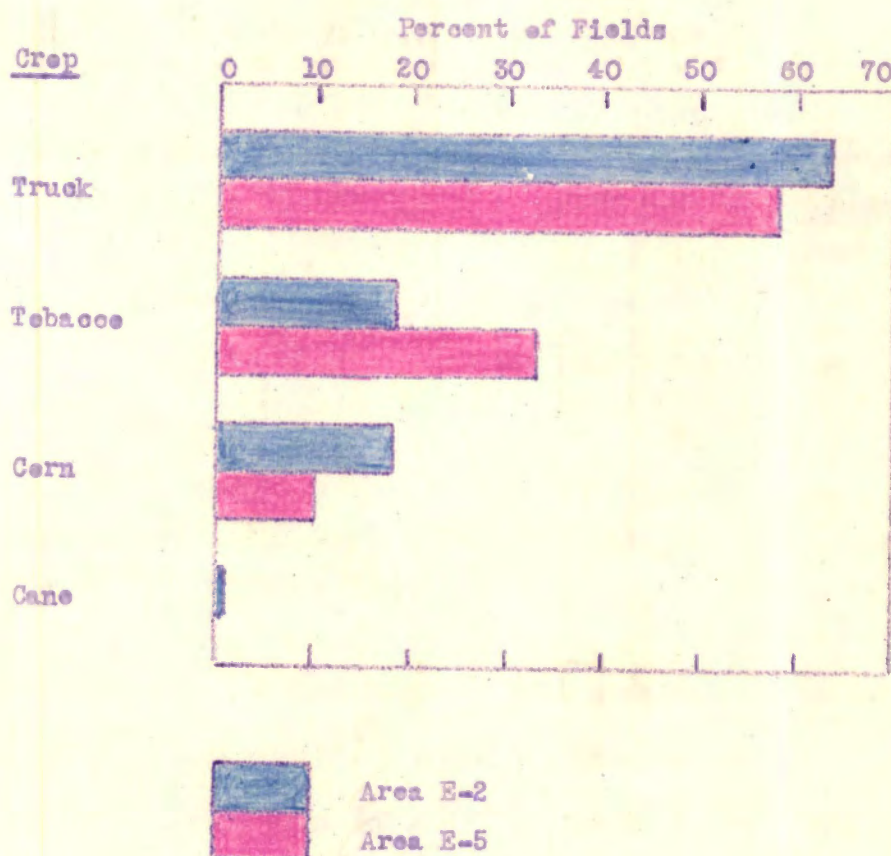
This is the second most important cropping system in Area E-2 and the third in Area E-5.

The crops that are grown indicate that most of the fields which are planted to a row crop each year are small fields (half acre or less).

From observation in the field and studying the farm map it was noticed that the layout of most farms in these areas included several small fields located close to the farmstead. In nearly every case it is these fields on which row crops are planted each year. These fields are usually planted to truck crops, tobacco and corn. Due to their location close to the barn a large part of the manure available on the farm is applied to them. When tobacco is planted on them they receive a heavy application of fertilizer. The application of manure and fertilizer enables the fields to be cropped continuously.

Truck crops are the most important crops planted in this system. They are somewhat more important in Area E-2 than E-5, occurring on about 64 percent of the fields in the former compared with 57 percent for the latter. Some strawberries and potatoes, which are classified as truck crops, are produced commercially.

Tobacco is the second in importance. However, in area E-2 corn is planted on nearly as large percentage of the fields as is tobacco. The percentage



Source: Table LXIV

Figure 43. Distribution of Crops in Straight Row Crop System on 19 Farms in Area E-2, and 10 Farms in Area E-5, Reane County, Tennessee 1935-39

for tobacco is 18 compared with 17.6 for corn. In Area E-5 tobacco is much more important than corn, being planted on 33 percent of the fields compared with 10 percent for corn (Figure 43 and Table LXIV).

TABLE LXIV. DISTRIBUTION OF CROPS IN STRAIGHT ROW CROP SYSTEM ON 19 FARMS IN AREA E-2, AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Crop	Area E-2		Area E-5	
	No. of Fields	Pct.	No. of Fields	Pct.
Truck	105	63.6	57	57.0
Tobacco	30	18.2	33	33.0
Corn	29	17.6	10	10.0
Cane	1	0.6		
Total	165	100.0	100	100.0

Source: Farm Business Survey, 1940.

Table LXV bears out the fact that the fields which are planted to row crops continuously are principally tobacco and truck crops.

There are 12 fields in Area E-2 and 7 in E-5 that have truck crops planted on them each year during the five-year period.

Only 3 fields in Area E-2 and none in E-5 are planted to corn each year.

TABLE LXV. STRAIGHT ROW CROP COMBINATIONS ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Crop Combinations					No. of Fields	
					Area E-2	Area E-5
Corn	Tobacco	Tobacco	Truck	Truck	1	
Corn	Corn	Corn	Corn	Corn	3	
Tobacco	Tobacco	Truck	Truck	Truck	2	3
Truck	Truck	Truck	Truck	Truck	12	7
Tobacco	Tobacco	Tobacco	Truck	Corn	1	2
Tobacco	Truck	Truck	Truck	Truck	2	

(continued)

TABLE LXV. STRAIGHT ROW CROP COMBINATIONS ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39 (cont.)

Crop Combinations					No. of Fields	
					Area E-2	Area E-5
Corn	Truck	Truck	Truck	Truck	5	
Cane	Truck	Truck	Truck	Truck	1	
Corn	Corn	Corn	Tobacco	Truck	1	1
Corn	Corn	Corn	Corn	Truck	1	1
Tobacco	Tobacco	Tobacco	Tobacco	Tobacco	3	2
Corn	Tobacco	Truck	Truck	Truck		1
Tobacco	Tobacco	Tobacco	Truck	Truck	1	3
Total					33	20

Source: Farm Business Survey, 1940.

Row Crop One Year, Hay Crop Four Years. This cropping system is third in importance in Area E-2, but in Area E-5 it ranks with the first. It is planted on approximately 12 percent of the fields in Area E-2 compared with about 16 percent in Area E-5 (Figure 41 and Table LXI).

This is the principal difference between the cropping systems of the two areas.

The most important row crop grown in this system is corn. It is planted on 16 percent of the fields in Area E-2 compared with nearly 18 percent for Area E-5. A few of the fields are planted to truck crops in both areas, but none are planted to tobacco.

Lespedeza is the leading hay crop planted in this system. It is much more important in Area E-5 than E-2, being planted on about one-half of the Area E-5 fields compared with 39 percent in Area E-2.

The fields that are occupied by pasture are also important in this system. In Area E-2 about 21 percent of the fields are pastured four years out of five. In Area E-5 about 4 percent more of the fields are pastured in this manner than in Area E-2.

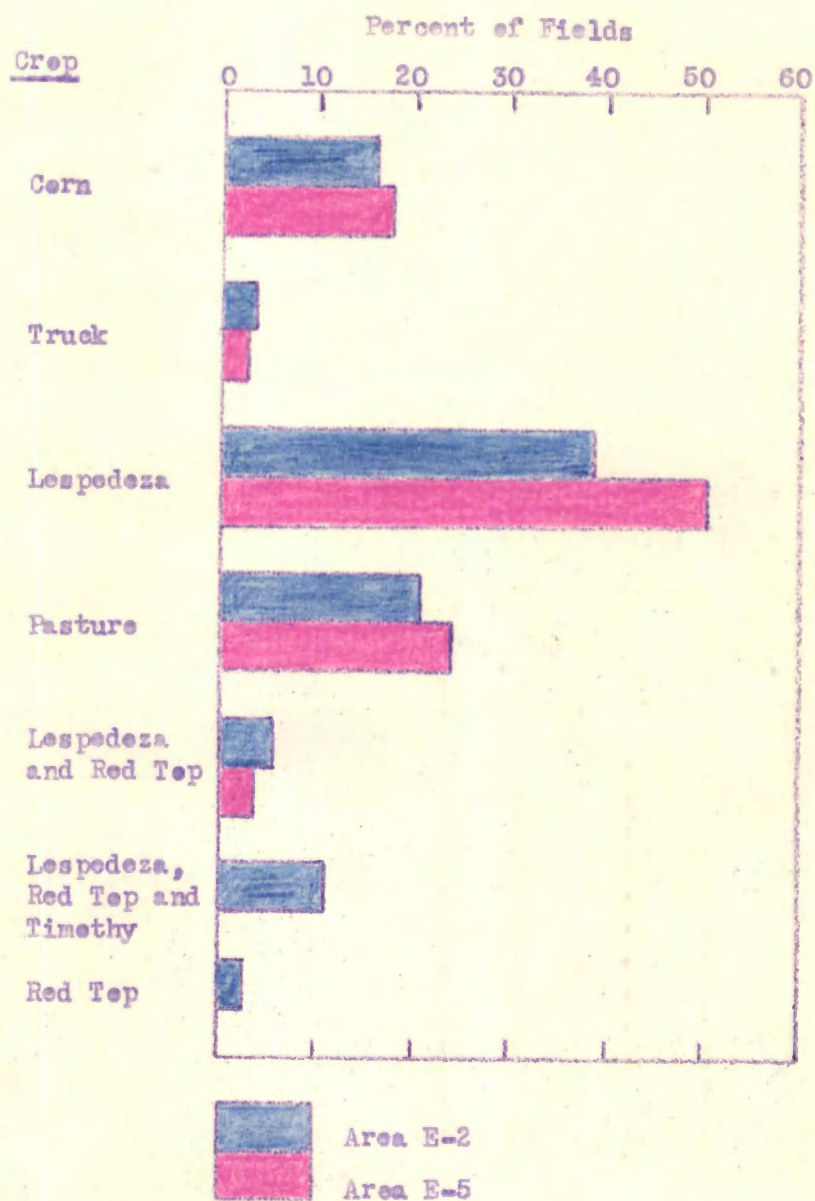
In this system lespedeza and pasture are the only hay crops of much importance in Area E-5, but in Area E-2 mixtures of lespedeza and grasses are planted frequently. A mixture of lespedeza and red top is planted on 5.3 percent of the fields, and a mixture of lespedeza, red top, and timothy is planted on 10.7 percent of the fields (Figure 44 and Table LXVI).

TABLE LXVI. DISTRIBUTION OF CROPS IN ONE YEAR ROW CROP AND FOUR YEAR HAY CROP SYSTEM ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Crop	Area E-2		Area E-5	
	No. of Fields	Pct.	No. of Fields	Pct.
Corn	24	16.0	22	17.6
Truck	5	3.3	3	2.4
Cane	1	.7		
Lespedeza	58	38.7	63	50.4
Pasture	31	20.7	30	24.0
Lespedeza and red top	8	5.3	4	3.2
Lespedeza, red top, and timothy	16	10.7		
Red top	4	2.6	1	.8
Orchard grass	2	1.3		
Alfalfa	1	.7		
Beans and peas			2	1.6
Total	150	100.0	125	100.0

Source: Farm Business Survey, 1940.

There is a wide variety of crop combinations in this system. In Area E-2 there are 12 different combinations, but only 7 in Area E-5. The most



Source: Table LXVI

Figure 44. Distribution of Major Crops in One Year Row Crop and Four Year Hay Crop System on 19 Farms in Area E-2, and 10 Farms in Area E-5, Reane County, Tennessee 1935-39

important combination in both areas is that of corn one year and lespedeza four. This combination is planted on 11 fields in Area E-2 and 13 fields in Area E-5.

The combination of corn one year and pasture four occurs on 5 fields in Area E-2 and 6 in Area E-5 (Table LXVII).

TABLE LXVII. CROP COMBINATIONS IN ONE YEAR ROW CROP AND FOUR YEAR HAY CROP SYSTEM ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Crop Combinations					No. of Fields	
					Area E-2	Area E-5
Corn	Pasture	Pasture	Pasture	Pasture	5	6
Truck	Pasture	Pasture	Pasture	Pasture	1	1
Cane	Pasture	Pasture	Pasture	Pasture	1	
Corn	Lespedeza	Lespedeza	Lespedeza	Lespedeza	11	13
Truck	Lespedeza	Lespedeza	Lespedeza	Lespedeza	2	2
Corn	Lespedeza, red top	Lespedeza, red top	Lespedeza, red top	Lespedeza, red top	1	1
Corn	Red top	Pasture	Pasture	Pasture	1	
Truck	Lesp., red top	Lesp., red top	Lesp., red top	Lesp., red top	1	
Corn	Lesp., timothy, red top	Lesp., timothy, red top	Lesp., timothy, red top	Lesp., timothy, red top	3	
Truck	Lesp., timothy, red top	Lesp., timothy, red top	Lesp., timothy, red top	Lesp., timothy, red top	1	
Corn	Red top	Red top	Red top	Alfalfa	1	
Corn	Lespedeza	Lespedeza	Lespedeza	Or. grass	2	
Corn	Lespedeza	Lespedeza	Lespedeza	Beans, peas		1
Corn	Red top	Peas, soybeans	Pasture	Pasture		1
Total					30	25

Source: Farm Business Survey, 1940.

Minor Cropping Systems

There are 5 cropping systems in this group and together they are planted on 28 percent of the fields in Area E-2 and about 25 percent in Area E-5.

The most important of these systems is the one in which the land is left idle each year during the five-year period. This does not represent a complete cropping system, but shows part of a system which covers a period longer than five years. In the E-2 Area, 8.3 percent of the fields are left idle each year during the period, compared with 9.1 percent for the other area (Table LXVIII). In some cases these are fields which have been turned out of cultivation in an attempt to restore the fertility. They are allowed to grow up in weeds, grasses, and sprouts and left this way several years before they are cleared and put back into cultivation.

Another important minor cropping system in E-2 is a row crop one year and idle land four years. This system occupies 8.3 percent of the fields in this area, but in Area E-5 it is only found on 4.6 percent.

TABLE LXVIII. MINOR CROPPING SYSTEMS ON 19 FARMS IN AREA E-2 AND 10 FARMS IN AREA E-5, ROANE COUNTY, TENNESSEE, 1935-39

Cropping System					Area E-2		Area E-5	
					No. of Fields	Pct.	No. of Fields	Pct.
Row crop	Row crop	Hay	Hay	Hay	12	4.7	5	3.3
Row crop	Row crop	Row crop	Idle	Idle	8	3.2	7	4.6
Row crop	Row crop	Idle	Idle	Idle	11	4.3	6	3.9
Row crop	Idle	Idle	Idle	Idle	20	7.9	7	4.6
Idle	Idle	Idle	Idle	Idle	21	8.3	14	9.1
Total					72	28.4	39	25.5

Source: Farm Business Survey, 1940.

The other 3 minor cropping systems are each planted on less than 5 percent of the fields. These systems and the percent of fields on which they are planted are shown in Table LXVIII. They are planted on approximately the same percent of fields in both areas.

Miscellaneous Cropping Systems

As a group the miscellaneous cropping systems are important because they are planted on nearly 30 percent of the fields in Area E-2 and about 29 percent in Area E-5.

It is in this group of cropping systems that small grains are grown.

These systems represent combinations of row crops, hay crops, small grains, and idle land.

Cropping Systems in Area A Compared With Area E as a Whole

A comparison of the cropping systems of these two areas is made in order to determine if a difference exists in the systems of the two areas. This is done because, while located in the same county, Area A has been classified as a problem area and Area E as suitable for agriculture.

The cropping systems in Areas E-2 and E-5 were combined and used as being representative of Area E.

The first eight cropping systems in each area are used in this comparison. In Area A these are planted on 68 percent of the fields compared with about 71 percent for Area E.

The system of straight hay crops⁸ occupies the largest percent of fields in both areas. However, in Area A this system is slightly more important than in Area E, being planted on about 5 percent more fields.

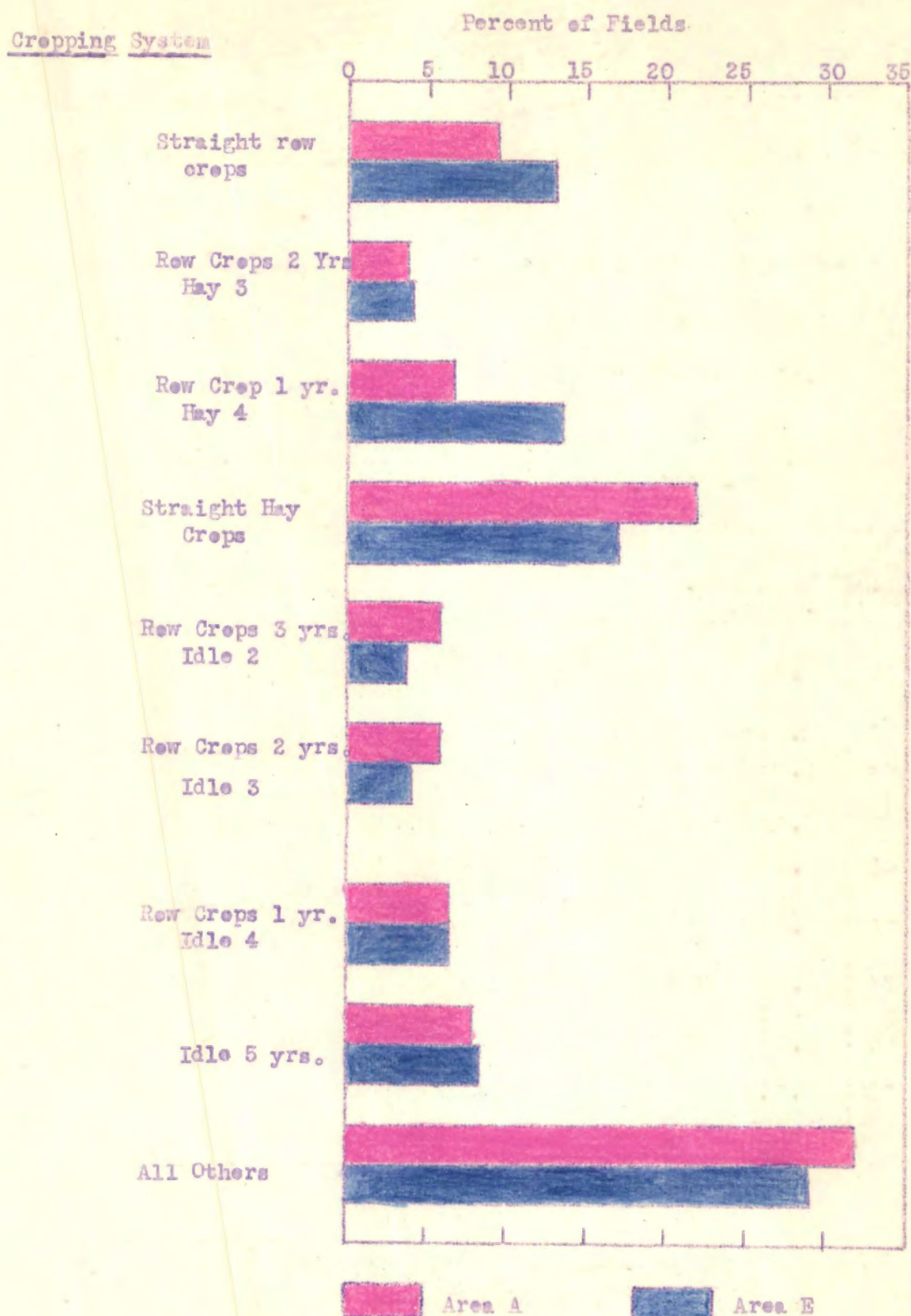
There are about 3.5 percent more fields planted to straight row crops in Area E than in Area A. This might be partly attributed to the fact that more truck and tobacco are produced in Area E than in the other area. The soil is another factor which would influence this.

TABLE LXIX. CROPPING SYSTEMS ON 10 FARMS IN AREA A AND 29 FARMS IN AREA E, ROANE COUNTY, TENNESSEE, 1935 - 39

Cropping System					Area A		Area E	
					No. of Fields	Pct.	No. of Fields	Pct.
Row crop	Row crop	Row crop	Row crop	Row crop	13	9.5	53	13.0
Row crop	Row crop	Hay	Hay	Hay	5	3.7	17	4.2
Row crop	Hay	Hay	Hay	Hay	9	6.6	55	13.5
Hay	Hay	Hay	Hay	Hay	30	21.9	69	17.0
Row crop	Row crop	Row crop	Idle	Idle	8	5.8	15	3.7
Row crop	Row crop	Idle	Idle	Idle	8	5.8	17	4.2
Row crop	Idle	Idle	Idle	Idle	9	6.6	27	6.6
Idle	Idle	Idle	Idle	Idle	11	8.0	35	8.6
All others					44	32.1	119	29.2
Total					137	100.0	407	100.0

Source: Farm Business Survey, 1940.

8. The actual disposition of the hay crops is not known except for one year. Some of the hay crops are cut for hay, some pastured, and some used as a soil-building crop.

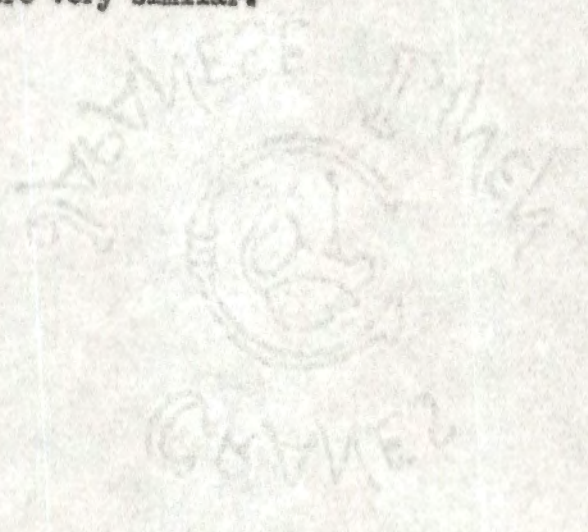


Source: Table LXIX

Figure 45. Crepping Systems in Area A and Area E, Reane County, Tennessee
1935-1939

The other important cropping system in which there is a difference between the two areas is a row crop one year and a hay crop four years. This is the second most important cropping system in Area E. It is planted on 13.5 percent of the fields in Area E compared with 6.6 percent for Area A (Figure 45 and Table LXIX).

Except for the few differences discussed, the cropping systems in the two areas are very similar.



CHAPTER VII

CASE STUDIES OF FARMS IN AREA A AND AREAS E-2 AND E-5,

ROANE COUNTY

Introduction

There are many factors which determine the cropping system of a particular farm. These range from those which affect all farms in the region to those which affect only that farm or even particular fields. It is the latter two types of factors in which we are primarily interested.

The more important factors which affect the way a particular farm is cropped are the following: size of farm, acres of crop land, acres of pasture, demand for land, number of fields, size and shape of fields, uniformity in size of fields, distance to fields, labor available, kind and amount of machinery, kind and number of livestock, general topography, soils, drainage, water supply, yields, capital available, and the likes and dislikes of the farmer himself.

Just as important as the factors which affect the cropping system of a farm as a whole are those which determine the way in which a given field will be cropped. These factors are size, shape, fertility, erosiveness, slope, drainage, water supply, location, stumps, rocks, response to fertilizers, insects and disease, age, past cropping system, whether or not the field is fenced, ease of tillage, weeds and bushes, topography, upland or bottomland, and accessibility.

In many cases only one of these factors is responsible for the field's being cropped as it is.

Area A

Besides the Farm Business Schedule, additional information was obtained on the cropping system and farm layout of three farms in this area. This was done to determine the reasons farmers crop each field as they do.

Farm M

This farm contains 120 acres and is located in the southern part of the Area A. There are 38.7 acres of cleared land on the farm. In 1939, 13.7 acres of crops were planted, 4 acres in pasture, and 21 acres left idle.

Of the 38.7 acres of cleared land, 13.8 acres are Class III and 24.9 acres Class IV (Table LXX). The Class III land is Fullerton soils, and the Class IV land is Colbert and Talbott soils.

The general topography of the farm is hilly. Some fields have steep slopes, while others are fairly level.

A small wet weather creek runs along the eastern side of the farm

TABLE LXX. DISTRIBUTION OF CLEARED LAND BY LAND CLASS ON FARM M,
AREA A, ROANE COUNTY, TENNESSEE, 1939

Land Class	Acres in Crops	Acres in Pasture	Acres Idle	Total Acres
III	5.5	1.3	7.0	13.8
IV	8.2	2.7	14.0	24.9
Total	13.7	4.0	21.0	38.7

Source: Farm Business Survey, 1940.

and 5 of the 12 fields are located beside it. There is no bottomland along this creek as it is dry most of the year.

Farm Layout. There are 12 fields on the farm ranging in size from 0.2 to 12 acres. All fields are more or less irregular in shape.

Four fields on the farm contain less than one acre (Numbers 4, 5, 7, and 8). These fields are located adjoining the farmstead (Figure 46).

Two of the fields (Numbers 11 and 12) are not located very close to the farmstead, and are unhandy for cultivation.

Cropping System. The general cropping system practiced is the planting of corn on a field two years straight and then leaving the field idle the next two or three years. However, on some of the fields, especially the smaller ones, other crops and cropping systems are practiced (Table LXXI).

There are several reasons why this general cropping system is practiced. One is that it only requires from 7 to 10 acres of corn to furnish food for the family, feed for the livestock, and enough corn to exchange for flour. With this amount of land used for corn and no other large acreages of crops planted there is no need to use all the cropland each year. As a result more than half of the crop land is left idle. Erosion does not occur on these idle fields as wild grasses, weeds, and brush grow up on them immediately after they are turned out of cultivation.

Labor is another factor that determines the cropping system on this farm. There is a limited amount available, which is insufficient to cultivate all the farm.

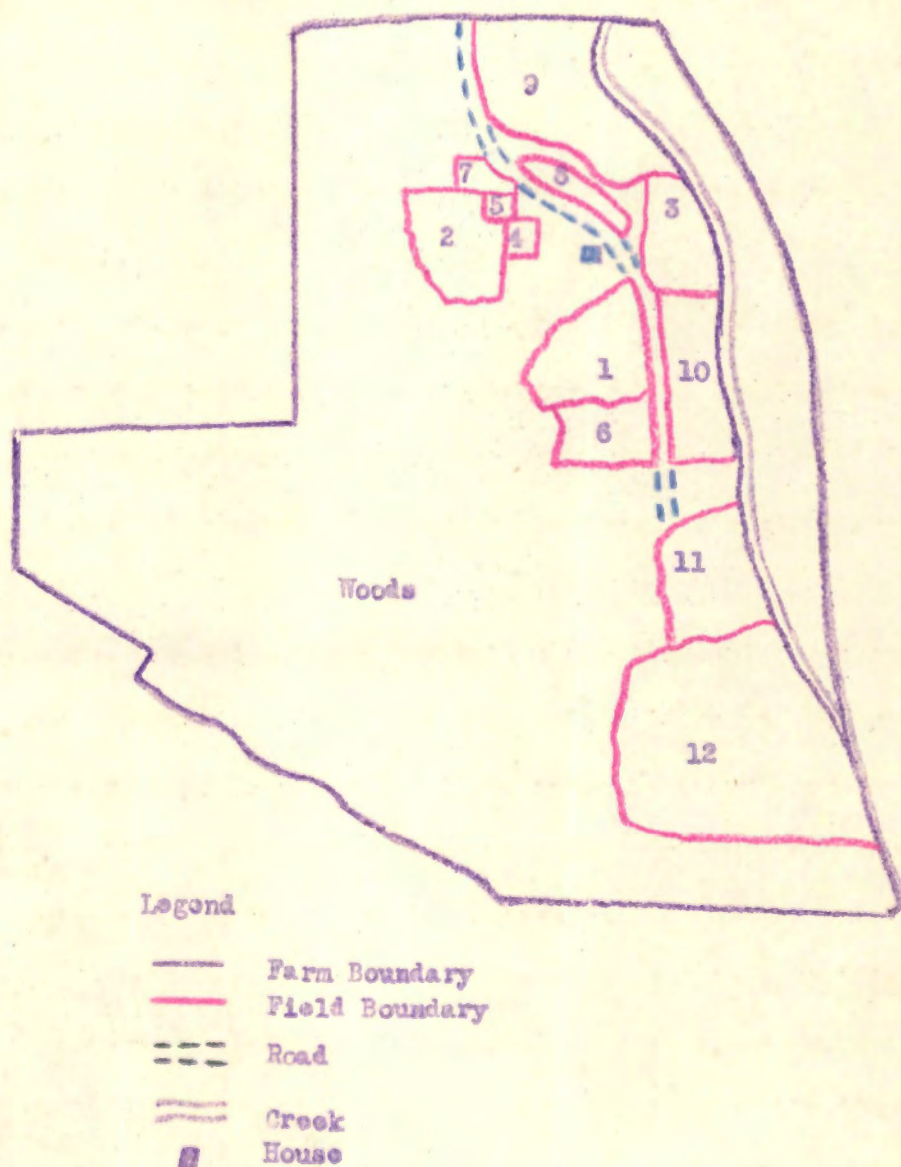


Figure 46. Map of Farm M in Area A, Roane County, Tennessee, 1939

TABLE LXXI. CROPPING SYSTEM ON FARM M, AREA A, ROANE COUNTY, TENNESSEE, 1935-39

Field No.	Acres	1939	1938	1937	1936	1935
1	4.0	Corn	Corn	Idle	Idle	Idle
2	3.0	Corn	-(Truck (Tobacco 0.9	-(Truck (Tobacco	Corn	Idle
3	3.0	Corn	-(Corn 1.0 (Woods	Woods	Woods	Woods
4	0.3	Tobacco	Sweet potatoes	Cane	Corn	Corn
5	0.2	Truck	Corn	Corn	Corn	Corn
6	2.0	Lesp. and grass	Lesp. and grass	-(Oats (Lespedeza (and grass	Corn	Corn
7	0.5	Garden	Garden	Garden	Garden	Garden
8	0.7	Cane	Corn	Corn	Corn	Corn
9	6.0	Idle	Idle	Idle	Corn	Corn
10	4.0	Pasture	Pasture	Pasture	Pasture	Pasture
11	3.0	Idle	Idle	Corn	Corn	Idle
12	12.0	Idle	Idle	Idle	Idle	Idle

Source: Farm Business Survey, 1940.

Wheat is not grown. There are no threshers in the area, and roads are such that it would be difficult for one to get around.

Characteristics of Specific Fields. (a) Fields Numbers 2, 4, 5, 7, and 8. These five fields are fairly level and are on Class III land. The farm operator stated that the soils are "strong", and do not erode very easily. They are cropped more intensely than any others on the farm. The total acreage of the five is 4.7. The largest field, Number 2, contains 3 acres.

One reason why these fields are cropped almost continuously is their location. They are near the farmstead and easily accessible. The manure

from the barn can be applied to them with less labor than on other fields.

The size of the fields is another factor that affects the way in which they are cropped. All of them, except Number 2, contain less than 1 acre. Although corn is grown on them sometimes, it is on these smaller fields that the tobacco and truck crops are grown. These 2 crops, especially tobacco, require considerable labor to produce, and large acreages could not be handled. Tobacco is planted close to the barn to reduce the work required to harvest it. It is also desirable to have truck crops planted close to the house.

These fields receive a heavy application of fertilizer and manure when tobacco is planted, and when in truck crops they receive a heavy application of manure. This practice makes it possible to cultivate them year after year without a decrease in yields.

Field Number 5 has been cultivated continuously for the past 5 years in an effort to kill Bermuda grass. This grass was in the yard of a house that was located on this field, but the house burned down in 1934.

(b) Field Number 1. Except for size this field has the same characteristics as the fields just discussed. It is a larger field containing four acres. The cropping system followed is corn two years and left idle three years. There are several reasons for using this system. The farmer feels that he has plenty of land and does not need to cultivate this field each year. He considers this to be one of the best systems of resting his land, because when not in cultivation this field will grow

up immediately in grasses, weeds, and sprouts. This growth acts as a protective covering.

The field is not fenced and has no water supply; as a result it cannot be pastured. If these facilities were present the field would be pastured instead of lying idle.

(c) Field Number 3. This field was cleared, 1 acre in 1938, and 2 acres in 1939. It had never been cultivated before. For the first 3 or 4 years it will be planted to corn. This is done for two reasons: first, to clean the field of brush, and second, the land is comparatively high in fertility and will produce fairly high yields of corn for the first 3 years.

(d) Field Number 6. The only lespedeza ever grown on this farm was sown on this 2 acre field in 1937. It is Class III land and does not differ very much in general characteristics from Field Number 1. As this is smooth, instead of leaving it idle after being in corn two years, as was the usual practice, lespedeza was sown to be mowed for hay.

(e) Fields Numbers 9 and 11. Although these fields are not adjoining they are very similar. They are on Class IV land and are fairly steep. There are 6 acres in Field 9 and 3 in Field 11. The cropping system is corn two years and idle three. The reasons for cropping these fields in this manner are: they are hillside fields and cannot be cultivated continuously, as they erode easily; they are unhandy to the farmstead; there is no water in them; and they are not fenced for pasturing. Because of other available crop land it is not necessary for these fields

to be cultivated more often.

Number 9 has been out of cultivation since 1936 and has grown up until it will need partial clearing before it can be cultivated again.

It has been the intention of this farmer to build ponds in these fields and build fences, so they could be pastured, but thus far he has not been financially able.

(f) Field Number 10. This 4-acre field is the only one on the farm that is pastured, being the only field that is fenced and has water available. The field was fenced about six years ago and has been in pasture ever since. The water is supplied by a pond.

This field is situated fairly close to the barn, which makes it convenient for pasturing. About one-half of the field is Class III land and the remainder Class IV, the latter being a hillside. The hillside part of the field is fairly steep and cannot be cropped very often, which is another reason the field is kept in pasture.

No seeding or fertilizer practices have been used on the pasture.

(g) Field Number 12. This field, which contains 12 acres, is the largest one on the farm; yet it is cropped the least.

Location of the field is a handicap because it is on the opposite side of the farm from the farmstead and is not easily accessible.

The field erodes easily, as it is on a steep hillside. It is Class IV land. Because of these facts it is not desirable that it be cultivated often. This field has been idle for several years and has now grown up in brush.

Another reason for leaving the field idle is that the farmer did not wish to cultivate a large acreage in crops.

Farm N

This farm contains 72 acres and is located in the central part of the area. There are 22.1 acres of cleared land on the farm. In 1939, crops were planted on 7.0 acres, pasture occupied 7.8 acres, and 7.3 acres were left idle.

Of the cleared land, 6.1 acres are Class III, 12.3 acres are Class IV, and 3.7 acres are Class V (Table LXXII).

TABLE LXXII. DISTRIBUTION OF CLEARED LAND BY LAND CLASS
ON FARM N, ROANE COUNTY, TENNESSEE,
1939

Land Class	Acres in Crops	Acres in Pasture	Acres Idle	Total Acres
Class III	.8	1.9	3.4	6.1
Class IV	3.3	5.9	3.1	12.3
Class V	2.9		.8	3.7
Total	7.0	7.8	7.3	22.1

Source: Farm Business Survey, 1940.

Farm Layout. Figure 47 shows that there is no systematic arrangement of the fields. The 17 fields range in size from 0.1 to 7.8 acres.

The fields occur in groups, which is a characteristic of farms in this area. There is a group of six small fields which adjoin the farmstead. All of these contain less than one acre.

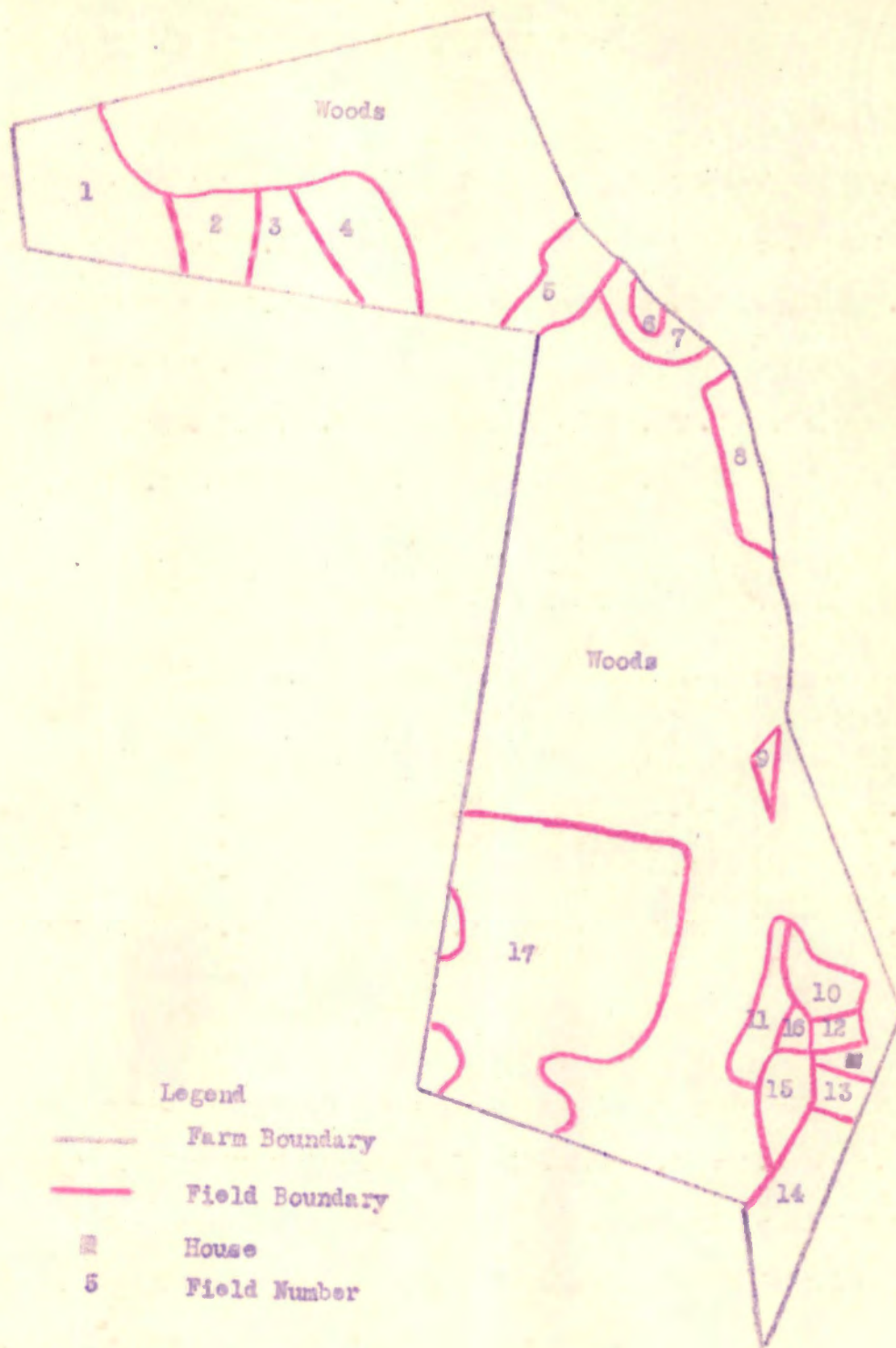


Figure 47. Map of Farm N in Area A, Roane County, Tennessee, 1939

The shape of the farm and location of some of the fields at a distance from the farmstead make them inconvenient to cultivate.

Cropping System. There is so much similarity between the cropping system on this farm and Farm M that only the differences will be pointed out.

The same general cropping system that is followed on Farm M is used on this farm (Table LXXIII).

TABLE LXXIII. CROPPING SYSTEM ON FARM N IN AREA A, ROANE COUNTY, TENNESSEE, 1939

Field No.	Acres	1939	1938	1937	1936	1935
1	3.2	Idle	Idle	Idle	Idle	Idle
2	1.1	Corn	Corn	Peas	Corn	Corn
3	1.1	Idle	Idle	Peas	Corn	Corn
4	1.6	Corn	Corn	Peas	Corn	Corn
5	1.0	Corn	Idle	Corn	Corn	Corn
6	0.3	Corn	Idle	Corn	Corn	Corn
7	0.8	Idle	Idle	Corn	Corn	Corn
8	1.4	Idle	Idle	Idle	Idle	Corn
9	0.1	Tobacco	Corn	Potatoes	Corn	Corn
10	0.6	Truck	Potatoes	Corn	Cane	?
11	0.6	Corn	Corn	Corn	Potatoes	Corn
12	0.2	Tobacco	Tobacco	Potatoes	Corn	Cane
13	0.2	Garden	Garden	Garden	Garden	Garden
14	1.1	Corn	Corn	Corn	Woods	Woods
15	0.8	Idle	Corn	Corn	Potatoes	?
16	0.2	Potatoes	Tobacco	Corn	Potatoes	Corn
17	7.8	Pasture	Pasture	Pasture	Pasture	Pasture

Source: Farm Business Survey, 1940.

The small fields located close to the farmstead are cropped like those on Farm M. This is done for the same reasons given under the discussion of Farm M.

Characteristics of Specific Fields. Only those fields will be discussed where a factor not found on Farm H determines the way the field is cropped.

(a) Field Number 1. This field has been idle for five years because it is heavily infested with Johnson grass.

(b) Fields Numbers 2, 3, and 4. These fields are cultivated almost continuously to prevent them from growing up to sprouts.

(c) Fields Numbers 5, 6, and 7. The presence of black locust in these fields is the factor which determines the way in which they are cropped. The fields will grow up immediately in black locust sprouts if not cultivated. Hence the fields are cropped three or four years out of five to keep down the sprouts.

Lespedeza and grasses cannot be grown on these fields because the sprouts grow so fast they would crowd out the crops. Also the fields are so rough they cannot be mowed with a machine.

(d) Field Number 17. This is the only field on the farm that is pastured. It is steep and erodes easily, but water is available and it is fenced. This field has never been seeded, but was allowed to grow up in wild grasses, weeds, and sprouts for pasture.

Farm O

This farm contains 272.5 acres, and is located in the northern part of the area.

There are 148.4 acres of crop land on the farm. Of this amount, 29.5

acres are Class III land and 119.3 acres Class V land.

In 1939, 101.1 acres were in crops, 32.8 acres in pasture, and 14.9 acres left idle (Table LXXIV).

TABLE LXXIV. DISTRIBUTION OF LAND BY LAND CLASS ON FARM O OF
AREA A, ROANE COUNTY, TENNESSEE, 1939

Land Class	Acres in Crops	Acres in Pasture	Acres Idle	Total Acres
Class III	24.1	.3	5.1	29.5
Class V	77.0	32.5	9.8	119.3
Total	101.1	32.8	14.9	148.8

Source: Farm Business Survey, 1940.

Farm Layout. The farm layout is characterized by a large number of small fields located throughout the farm. There are 45 fields, of which 13 are less than one acre in size. The largest field contains 12 acres.

With the exception of fields that are located along the creek, the land is poor, shallow, has a steep slope, and erodes easily.

No systematic arrangement of the fields has been attempted by the operator, as that probably would not be practical. Fields are irregular in shape and size (Figure 48).

Cropping System. The cropping system followed on this farm is different from those on Farm M and Farm N. This farm has a more definite cropping system which is practiced on a majority of the fields. The rotation is corn for one year, followed by oats and grass. Grass is left on the fields

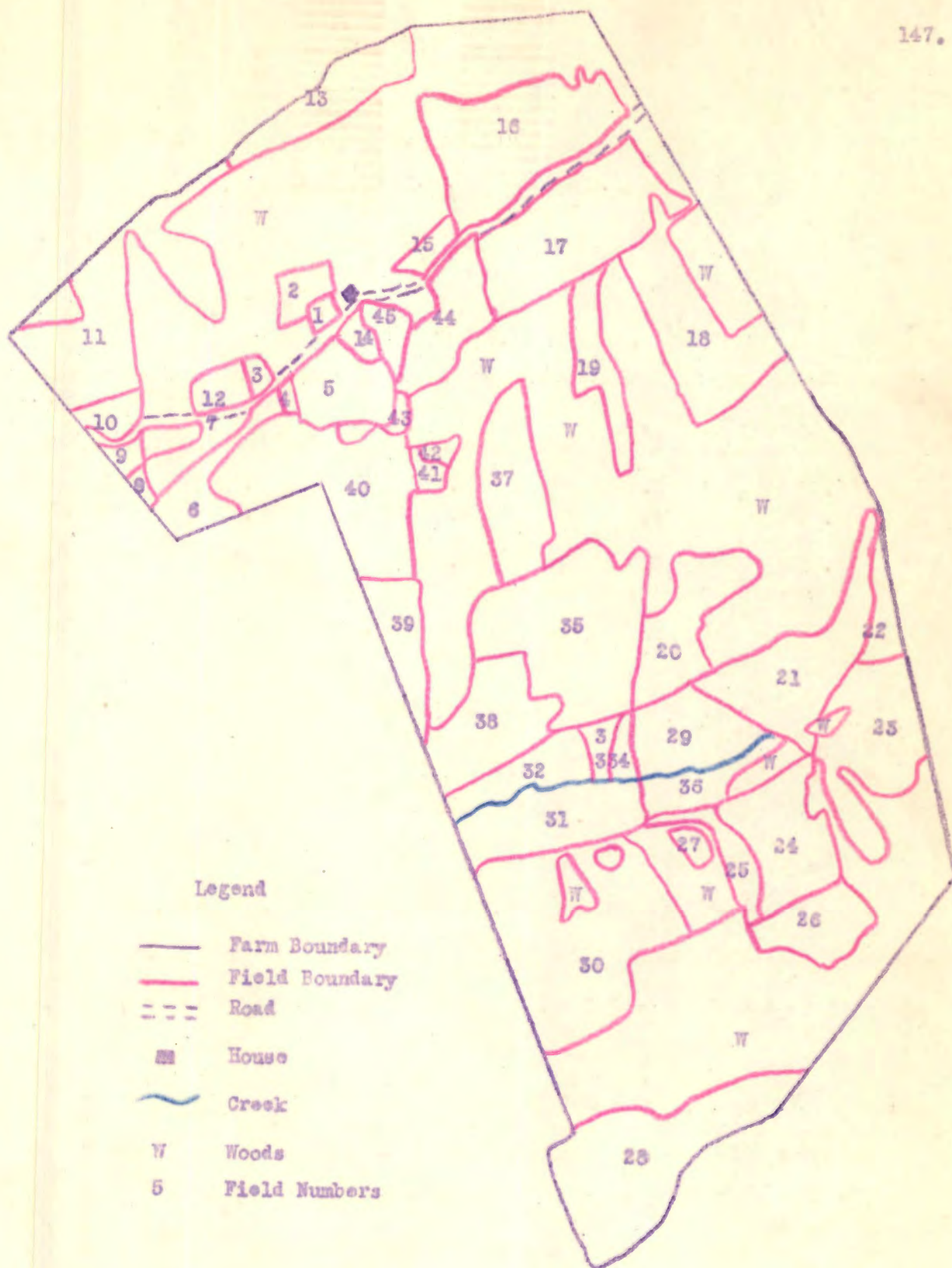


Figure 43. Farm Layout of Farm O in Area A, Roane County, Tennessee, 1939

four or five years. In order to get a good stand of grass it is necessary to sow small grains as a nurse crop.

The farm operator thinks that this rotation is one of the best ways that he can build up his land, which is the main reason for using it.

With few exceptions none of the fields are planted to corn two years straight (Table LXXV). The five-year rotation does not produce enough corn for the farm, but rather than change it the farmer rents about 30 acres of land each year on which to produce most of his corn.

The steep hillside fields are sown to red top and orchard grass. There has never been much lespedeza grown on the farm.

Nearly every field on the farm can be pastured. All fields are fenced, and water is available on most of them. Pastures are said to need reseeding every three years. Some of the hay fields are pastured after they are mowed.

An important difference between the cropping system on this farm and on Farms M and N is the number of fields left idle. It is not a practice on this farm to leave a field idle unless it is to be turned out of cultivation.

TABLE LXXV. CROPPING SYSTEM ON FARM O IN AREA A, ROANE COUNTY, TENNESSEE, 1939

Field No.	Acres in Field	1939	1938	1937	1936	1935
1	0.6	Garden	Garden	Garden	Garden	Garden
2	1.6	Pasture	Pasture	Pasture	Pasture	Pasture
3	0.3	Tobacco	Tobacco	I. Potatoes	I. Potatoes	I. Potatoes
4	0.3	Tobacco	Tobacco	I. Potatoes	I. Potatoes	I. Potatoes
5	3.5	S. Potatoes, Barley	Grass	Grass	Grass	Grass

(continued)

TABLE LXXV. CROPPING SYSTEM ON FARM O IN AREA A, ROANE COUNTY, TENNESSEE, 1939 (cont.)

Field No.	Acres in Field	1939	1938	1937	1936	1935
6	2.4	Pasture	Pasture	Pasture	Pasture	Pasture
7	1.6	Pasture	Pasture	Pasture	Pasture	Pasture
8	0.3	Truck	Truck	Truck	Truck	Truck
9	0.8	Pasture	Pasture	Pasture	Pasture	Pasture
10	1.0	Pasture	Pasture	Pasture	Pasture	Pasture
11	9.6	Pasture	Pasture	Pasture	Pasture	Pasture
12	1.3	Pasture	Pasture	Pasture	Pasture	Pasture
13	4.2	Pasture	Pasture	Pasture	Pasture	Pasture
14	0.8	Orchard	Sw. Potatoes	Sw. Potatoes	Cane	Cane
15	1.1	Idle	Idle	Idle	Idle	Idle
16	8.6	Corn	Pasture	Pasture	Pasture	Pasture
17	9.4	Wheat, Corn	Pasture	Pasture	Pasture	Pasture
18	7.0	Lespedeza	Corn	Corn	Woods	Woods
19	2.7	Red top	Oats, Red top	Corn	Corn	Woods
20	4.5	Peas	Grass	Grass	Grass	Grass
21	6.7	Red top	Wheat	Idle	Corn	Grass
22	1.9	Red top	Wheat	Idle	Corn	Grass
23	5.3	Red top	Wheat	Idle	Corn	Grass
24	5.3	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top	Wheat	Corn
25	1.6	Red top	Red top	Red top	Wheat	Corn
26	3.2	Idle	Idle	Idle	Idle	Idle
27	0.5	Wild grass	Wild grass	Wild grass	Wild grass	Wild grass
28	9.8	Idle	Corn	Idle	Idle	Idle
29	4.2	Red top, Timothy	Red top, Timothy	Red top, Timothy	Wheat	Peas, I. Potatoes
30	12.1	N o n -	C r o p	L a n d		
31	5.4	Grass	Grass	Grass	Grass	Grass
32	3.0	Wheat	Lespedeza, Grass	Lespedeza, Grass	Lespedeza, Wheat	Wheat
33	0.6	Wheat	Lespedeza, Grass	Lespedeza, Grass	Wheat	Wheat
34	0.8	Wheat	Lespedeza, Grass	Lespedeza, Grass	Wheat	Wheat
35	9.7	Corn, Tobacco	Grass	Grass	Grass	Grass
36	2.2	Grass	Grass	Grass	Grass	Grass

(continued)

TABLE LXXV. CROPPING SYSTEM ON FARM O IN AREA A, ROANE COUNTY, TENNESSEE, 1939 (cont.)

Field No.	Acres in Field	1939	1938	1937	1936	1935
37	5.1	Red clover, Grass	Grass	Grass	Grass	Grass
38	5.0	Grass	Grass	Grass	Barley	Grass
39	2.4	Grass	Grass	Grass	Grass	Grass
40	8.3	Grass	Grass	Grass	?	?
41	0.6	Pasture	Pasture	Pasture	Pasture	Pasture
42	0.2	Beans	Woods	Woods	Woods	Woods
43	0.2	Grass	Grass	Grass	Grass	Grass
44	3.9	Oats, Grass	Corn	Corn	Grass	Grass
45	1.3	Idle	Cane	Idle	Idle	Idle

Source: Farm Business Survey, 1940.

Characteristics of Specific Fields. A large number of the fields on this farm possess about the same characteristics. In general the land is hilly, has a steep slope, thin soil, and will erode easily. For these reasons it cannot be cropped intensively.

There is such a large number of fields on this farm that all of them will not be discussed separately.

(a) Fields Numbers 24, 25, 26, and 27. These fields are fairly representative of the farm. They are hillsides with steep slopes. All of them are on Class V land. The operator considers it a good practice to put these fields in corn one year out of every four or five. The corn is followed by a small grain and the land sown to grass and left this way until cultivated again. This is usually four or five years. Field Number 26 has been idle for the past five years. This field had been cropped

until it was run down, and was turned out of cultivation.

(b) Fields Numbers 29, 31, 32, 33, 34, and 36. These six fields are located along a creek which runs through the farm. They are the most level fields on the farm. Fields Numbers 31 and 36 are usually in meadows as the operator says they are almost too wet for corn. These two fields are cultivated often enough to keep them clean but have not been in corn in 30 years.

Wheat is grown on fields Numbers 32, 33, and 34. These fields are not so moist as those on the south side of the creek and wheat and corn can be grown on them more often.

The fields are fenced and are pastured each year after the hay is mowed.

(c) Fields Numbers 6, 7, 9, 10, 11, 12, and 13. These fields are all Class V land. They are located on the ridges and are used almost entirely for pastures. The land is steep and erodes easily. The soil is thin and cannot be cultivated frequently without ill effects. Another factor which causes them to be pastured is their location near the barn.

(d) Fields Numbers 1, 3, 4, 5, and 14. These fields are also located close to the farmstead. At one time they were run down and would not produce well. Heavy applications of manure have been applied to them each year for the past few years. Now yields are above average; tobacco, corn, small grains, and truck crops being grown. They are cropped more intensively than other fields on the farm. Only subdivisions of Field Number 5 are included in this category.

(e) Fields Numbers 18, 19, and 42. These fields have been cleared within the last five years. The farm operator states that he cultivates a field the first two years after they are cleared. This is done to clean the field of brush and sprouts. Also the land is fertile after being cleared and will stand cultivation this length of time without serious effects.

(f) Field Number 28. This field is inconvenient, being located on the opposite side of the farm from the farmstead. It is on a ridge, is very thin soil, and erodes easily. For these reasons it is only cropped often enough to keep it clean.

Area E-2 and E-5

Two farms in Area E-2, and one in Area E-5 are used as case studies. Besides the Farm Business Schedule additional information was obtained in regard to cropping systems and farm layout on these farms.

Farms X and Y are in Area E-2. Farm Z is in Area E-5.

Farm X

This is a 150-acre farm located in the southwestern part of Civil District Four, which is in Area E-2. One-half of this farm is cropland. In 1939, 34.4 acres were in crops, 26.9 acres in pasture, and 13.7 acres were left idle.

Farm Layout. There is more uniformity in the layout of this farm than on the farms in Area A. Fields are larger and fewer in number. There are 11 fields, which average 6 to 8 acres in size. However, there are

some subdivisions within these fields.

The barn is located near the center of the farm (Figure 49). From here all fields are conveniently located and easily accessible.

The farm layout is so arranged that all fields can be pastured.

Cropping System. The general cropping system practiced on this farm is corn one year followed by a small grain and grass. The grass is usually left on the land four or five years. Sometimes lespedeza is sown with the grass (Table LXXVI).

With the exception of the meadows the soil is thin and will not stand much cultivation. No fields except the meadows are put in corn two years straight.

The operator usually plants about 8 to 10 acres of corn each year. This does not produce enough to meet his needs and he has to buy an additional amount.

There is an average of about 20 acres of hay on the farm, about 5 acres of this being sown each year.

The farmer is trying to build up the land by keeping livestock on it. His system includes hay and pasture on a large part of the farm and corn on as little as possible. By having plenty of hay and pasture he can keep additional livestock. He states that this will build up the land quicker than any other system he can follow.

Labor is another factor which influences the cropping system. With the exception of some hired work during the rush seasons the owner is the only person working on the farm.

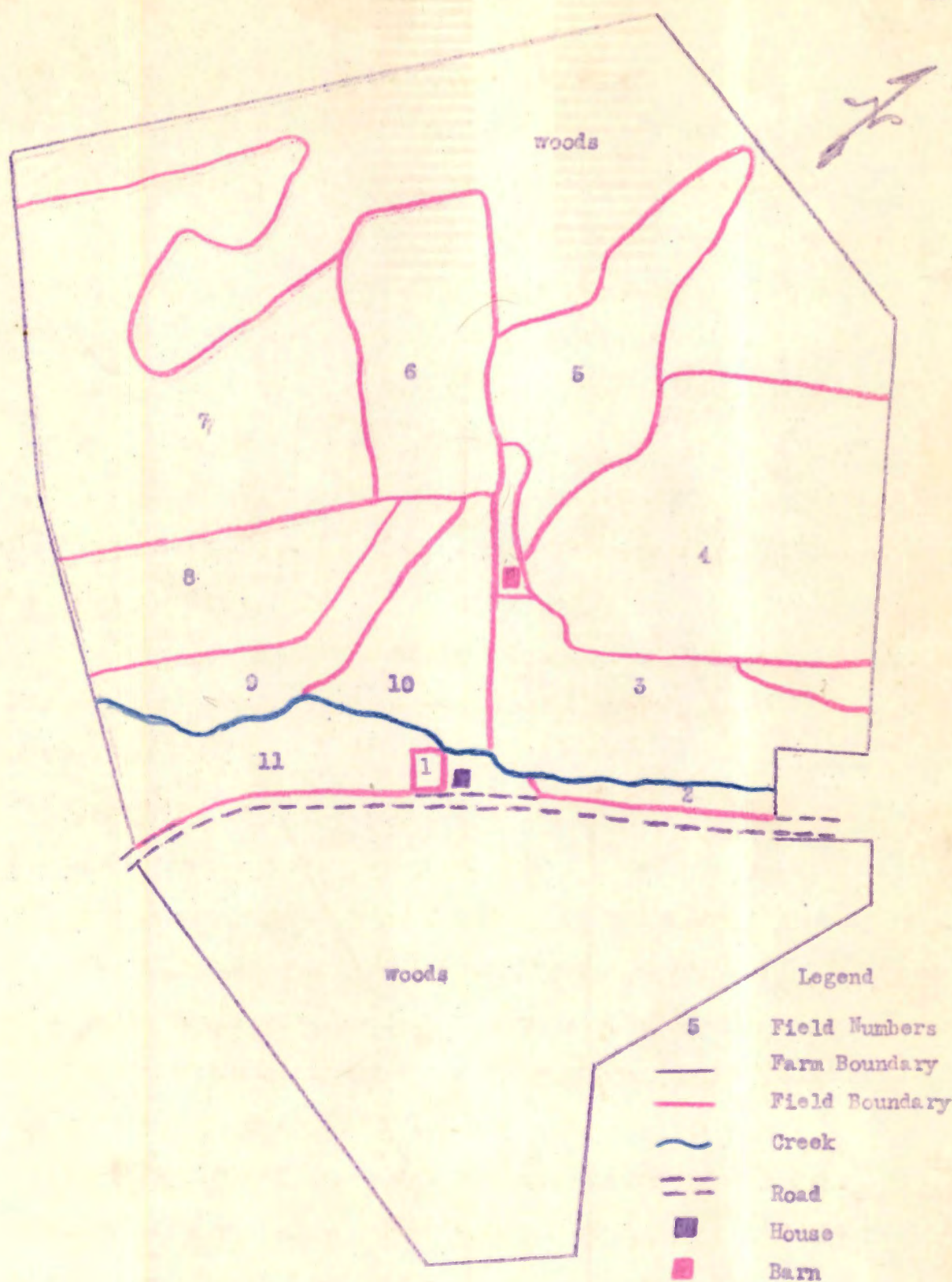


Figure 49. Farm Layout of Farm X in Area E-2, Roane County, Tennessee, 1939

TABLE LXXVI. CROPPING SYSTEM ON FARM X IN AREA E-2, ROANE COUNTY, TENNESSEE, 1939

Field Number	Acres in Fields	1939	1938	1937	1936	1935
1	0.3	Garden	Garden	Garden	Garden	Garden
2	1.5	Lespedeza, Red top	Lespedeza, Red top	Corn	Cane	Cane
3	7.2	Red top	Red top	Red top	Red top, Corn	Red top
4	15.1	Corn, Idle - 1.9	Lespedeza	Lespedeza	Lespedeza	Lespedeza
5	5.9	Idle	Idle	Idle	Idle	Idle
6	6.8	Red top	Red top	Red top	Red top	Red top
7	18.0	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top
8	5.9	Idle	Idle	Idle	Idle	Corn
9	4.2	Red top	Red top	Red top	Red top	Red top
10	5.3	Millet	Wheat	Corn	Corn	Red top
11	4.8	Wheat	Corn	Corn	Red top	Red top

Source: Farm Business Survey, 1940.

Characteristics of Specific Fields. Some of the fields are similar in characteristics and cropped in the same manner. These will be discussed as a group.

(a) Fields Numbers 3 and 9. These two fields are located along the creek that runs through the farm. They are level, moist, and comparatively high in fertility. They have not been cultivated in the last 10 years, with the exception of small parts of Field 3. In 1936, 0.7 acre of corn was planted in Number 3. An orchard was set out on 0.4 acre of Field 3 in 1939.

About once every 10 years these fields are planted to corn two years

straight, then to wheat and back to grass. This is done to clean the fields of brush and undesirable weeds and grasses.

The fields are fenced and are usually pastured during the fall.

Each year about one-half acre of Field Number 3 is planted in tobacco. This is part of the field that is close to the barn.

(b) Fields Numbers 2, 10, and 11. These fields have about the same characteristics as Numbers 3 and 9, but are cropped differently. They are planted to corn two years straight, followed by wheat. The wheat is followed by red top or a mixture of red top and lespedeza. This is left on the field four or five years. The same sequence is then repeated again.

Corn is planted on these fields two years straight because one year of cultivation will not clean them sufficiently.

Another reason for cropping these fields in this manner is that they are the only fields on the farm that can be cultivated this much without ill effects.

(c) Fields Numbers 4, 5, 6, 7, and 8. These fields are used for pasture almost exclusively. The soil is thin and erodes easily. They are very conveniently located with reference to the barn.

The operator stated that these fields will not produce good yields of hay or corn, and are good for pasture only. Nevertheless, he plants corn on them once every five or six years to clean them and get a new sod. When corn is planted it is usually followed by a small grain, with grass or a mixture of lespedeza and grass.

The fields are fenced so they can be pastured. The woods north of them are fenced and are pastured with the fields. Each field has an outlet into this woodland pasture. This makes it possible for the livestock to have access to the woodland pasture at all times if one or more of these fields are being pastured.

Fields Numbers 5 and 8 were not sown to grass, but were left idle after corn was last planted. Native grasses have come in and they are pastured the same as the other fields.

There is a small spring branch running through Field Number 5. It supplies water for this field and for Field Number 4.

A fenced lane from Field Number 8 gives access to the creek.

There is no water in Field Number 6, but a narrow lane runs from this field to the creek in Field Number 9, through which water is made available. For this reason when Field Number 7 is pastured it is also necessary to pasture Number 6.

Farm Y

This farm is located in about the central part of Civil District Four and is in Area E-2. It contains 130 acres of which 33.2 acres are cropland. In 1939, 8.4 acres were in crops, 15.7 acres in pasture, and 9.1 acres left idle.

Farm Layout. The farm is located on top of a ridge. Topography therefore determines the arrangement of fields more than any other factor.

There are nine fields on the farm, ranging in size 0.1 acre to 7.2 acres. They are irregular in shape and do not conform to any particular pattern (Figure 50).

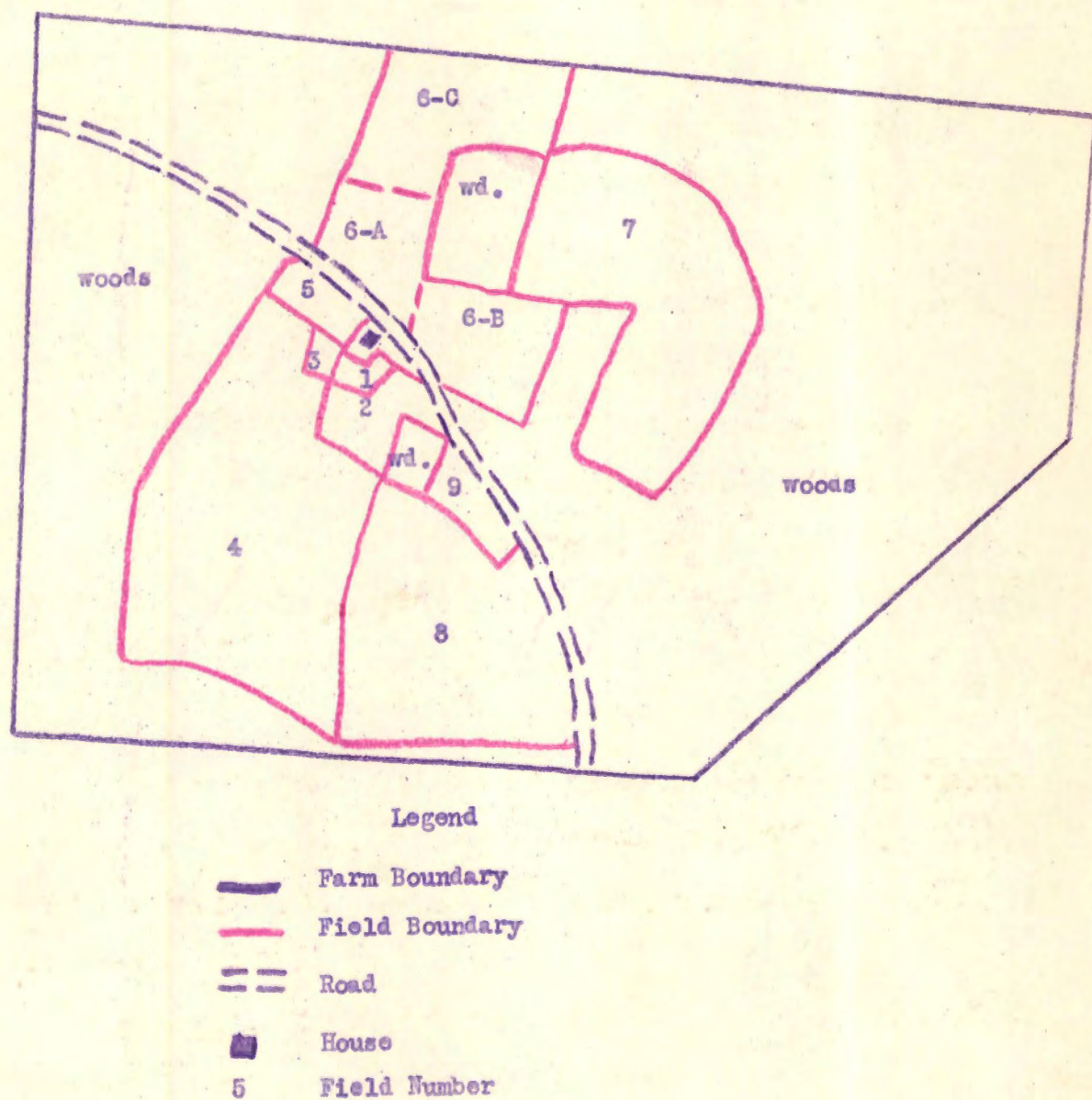


Figure 50. Farm Layout of Farm Y in Area E-2, Roane County, Tennessee, 1939

All fields except the small ones located adjoining the farmstead have a steep slope, thin soil, and erode easily.

Cropping System. A planned cropping system has been set up for the farm, but it is just beginning to be established, as the present operator has been on the farm only five years. The plan consists of corn one year, oats or rye one year, and grass about four years. It is necessary to sow a small grain for a nurse crop in order to get a good stand of grass.

During the past five years much of the land has been lying idle (Table LXXVII). The farmer stated that the land was run down when he moved there, and that it needed a rest.

About three acres of cane is grown on the farm each year to be used for feed. The farmer stated that this land produces good yields of this crop. Lespedeza is not grown to any extent; the operator stating that it does not grow very well on this farm.

The fact that the farmer has another tract of land on which he can produce most of his corn enables him to practice longer rotations on this farm.¹

1. There is another tract of land operated by this farmer but it is not shown on either the farm map or the cropping system schedule. Each year the farmer plants on this tract about 10 acres of corn and cuts 3 acres of hay. The tract contains some bottomland.

TABLE LXXVII. CROPPING SYSTEM ON FARM Y IN AREA E-2, ROANE COUNTY, TENNESSEE, 1939

Field No.	Acres in Field	1939	1938	1937	1936	1935
1	0.2	Tobacco	Idle	Idle	Idle	Idle
2	1.1	Corn	Tobacco, Cane	Corn	Idle	Idle
3	0.1	Garden	Garden	Tobacco	Idle	Idle
4	9.3	Pasture	Pasture	Pasture	Beans, Corn	Corn, Beans
5	0.7	Truck	Truck	Truck	Truck	Truck
6-A	1.9	Idle	Idle	Idle	Idle	Corn
6-B	2.2	Cane	Idle	Idle	Idle	Idle
6-C	3.3	Corn	Corn	Idle	Woods	Woods
7	7.2	Idle	Idle	Idle	Idle	Idle
8	6.4	Pasture	Pasture	Pasture	Pasture	Pasture
9	0.8	Lespedeza, Red top	Red top, Timothy	Corn, Rye	Idle	Idle

Source: Farm Business Survey, 1940.

Characteristics of Specific Fields. Fields that are similar in characteristics are discussed as a group.

(a) Fields Numbers 1, 2, 3, and 5. These are small fields located adjoining the farmstead. They are fairly level and are more fertile than the remainder of the fields. Because of these facts, and also their location, they are cropped more intensively.

Tobacco, truck crops, and corn are grown on these fields. When tobacco is planted the land receives a heavy application of fertilizer and manure. When truck crops are planted manure is applied. Some years millet and Kafir corn are planted for the chickens. The chickens are turned into the field to eat this, and what is left is turned under. Tobacco is never planted on the same field two years in succession.

(b) Fields Numbers 6-(A, B, and C). Field Number 6 has three main subdivisions. Each of these are cropped in a different way. The field has a steep slope and erodes very easily. For this reason it is never cultivated two years in succession.

It is conveniently located near the barn, and the farmer intends to fence and pasture it. However, there is no water available except a well in Field 6-B.

Field Number 6-A was planted to corn in 1935 and since that time has been idle.

Field Number 6-B was cleaned off and planted to cane in 1939. It had been lying idle for ten years and had grown up in bushes.

Field Number 6-C was cleared in 1936, but the operator stated that he did not have time to plant the field in 1937. However, it was planted to corn the next two years.

(c) Field Number 7. This is the second largest field on the farm. It has a steep slope, the soil is poor, thin, and will wash away if it is cultivated very often.

It was turned out of cultivation seven years ago and has not been planted since. It has grown up in brush, and the farmer thinks it is now ready to be cleaned off and cultivated again. This practice of leaving a field idle for several years and allowing it to grow up in bushes is an attempt to restore the fertility.

(d) Field Number 9. This is a small field located near the farm. It is fairly level and has about the same characteristics as the first

group discussed.

The field was planted to corn in 1937, sown to rye and red top in the fall, and lespedeza in the spring. It has been pastured some during the last two years, because of its convenient location.

(e) Fields Numbers 4 and 8. These fields have steep slopes, the soil is poor and thin, and they erode easily. They are fenced and are used for pasture. Number 4 has been in pasture for three years. It was planted to corn the two years before it was turned into pasture. Field Number 8 has been in pasture for fifteen years.

These fields have never been seeded but have grown up to wild grasses.

Water for both fields is furnished by a spring, but during the dry seasons it goes dry. When this happens the livestock must be watered from a well.

These fields furnish plenty of pasture for the farm, but are inconveniently located.

Farm Z

This farm is located in that part of Civil District Four classified as Area E-5. It contains 194.9 acres, of which 122.4 acres are cropland. In 1939 there were 75.5 acres in crops, 46.4 acres in pasture, and 0.5 acres idle.

Farm Layout. There are 17 fields on the farm, which average 4.4 acres in size. Only four fields contain less than one acre. Seven fields contain more than 8 acres each.

There is no systematic arrangement of the fields. A county road divides the farm almost in half. The half that lies on the west side has a large creek running through it, which makes a natural boundary between some of the fields (Figure 51). There is also a small branch that runs through the eastern half of the farm.

Two barns are located on the farm, one on each side of the road, which makes it possible to pasture any field without the livestock having to cross the highway.

Each field is fenced and has running water.

The land is rolling but there are no steep slopes. A mowing machine can be run over all fields.

Cropping System. A more definite cropping system is practiced on this farm than on any of the other farms studied. The rotation is corn one year; a small grain one year; and lespedeza or lespedeza and grass four or five years. The exact length depends largely upon the field. The first year or two the lespedeza and grass is cut for hay and then the field is pastured for two or three years.

Corn is never planted on the same field two years straight. The soil is thin and would erode under that kind of cropping.

Lespedeza was started on this farm in 1935. At present it is the only hay and pasture crop grown, with the exception of a mixture of lespedeza and red top. The operator stated that since he started growing

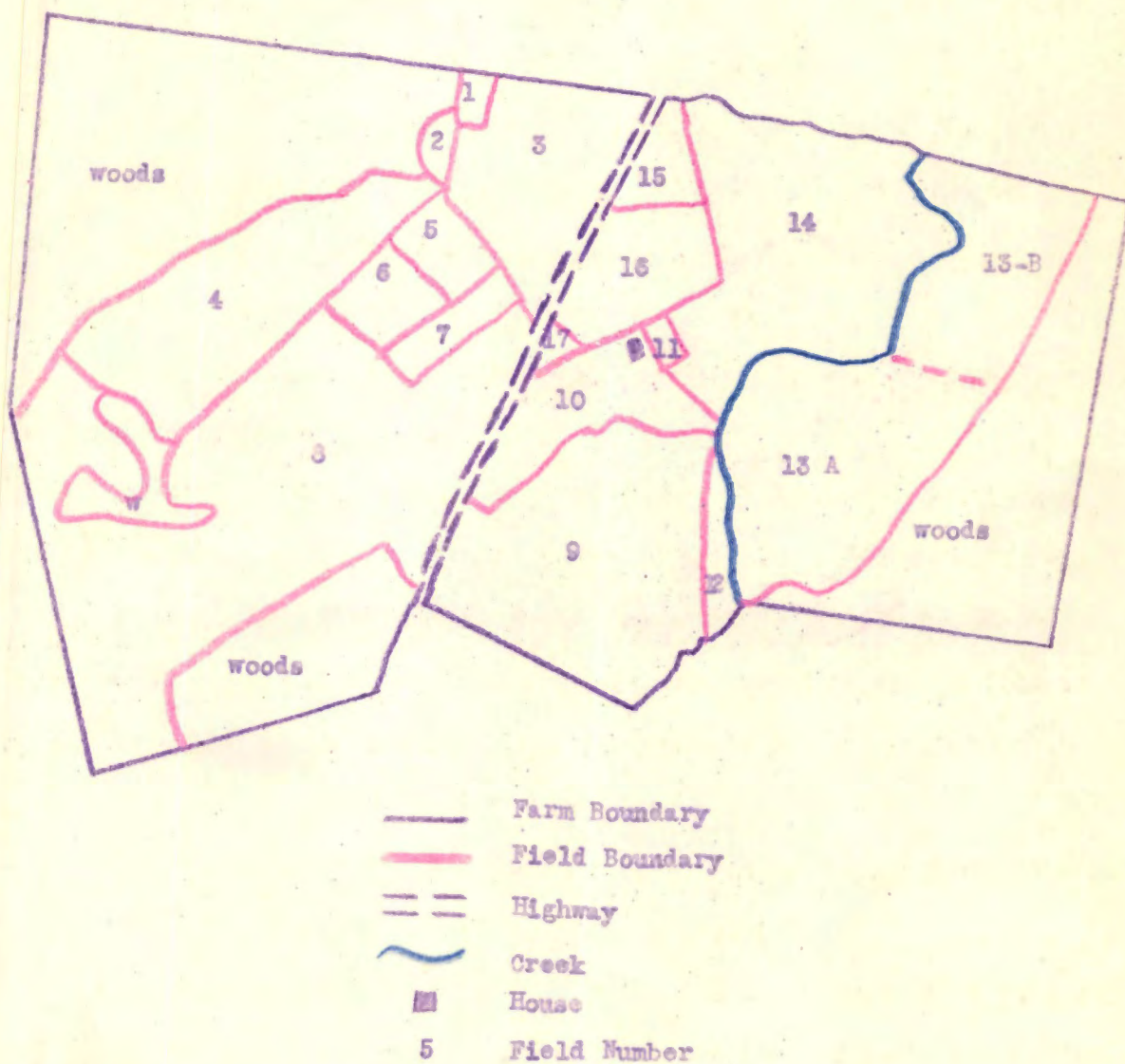


Figure 51. Farm Layout of Farm Z in Area E-5, Roane County, Tennessee, 1939

lespedeza he has been getting larger corn yields.

Each year the farmer has from 15 to 20 acres in corn, 50 to 60 acres in hay and 40 to 50 acres in pasture. No land is left idle (Table LXXVIII).

Fertilizer is applied to corn each year at the rate of 100-125 pounds to the acre.

TABLE LXXVIII. CROPPING SYSTEM ON FARM 2 IN AREA E-5, ROANE COUNTY, TENNESSEE, 1939

Field No.	No. of Acres	1939	1938	1937	1936	1935
1	0.5	Garden	Pasture	Woods	Woods	Woods
2	0.5	Lespedeza	Lespedeza	Lespedeza	Lespedeza	Corn
3	8.8	Lespedeza	Lespedeza	Lespedeza	Lespedeza	Corn
4	12.4	Lespedeza	Lespedeza	Lespedeza	Lespedeza	Corn
5	1.7	Pasture	Hog lot	Hog lot	Hog lot	Hog lot
6	2.1	Orchard	Orchard	Orchard	Orchard	Orchard
7	1.9	Corn	Lespedeza, Grass	Lespedeza, Grass	Lespedeza, Grass	Lespedeza, Grass
8	35.5	Lespedeza	Lespedeza	Lespedeza	Lespedeza	Lespedeza
9	16.4	Corn, Wheat	Lespedeza	Lespedeza	Lespedeza	Lespedeza
10	2.6	O p e n	n o n -	c r o p	l a n d	p a s t u r e
11	0.4	Garden	Garden	Garden	Garden	Garden
12	1.5	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top	Lespedeza, Red top
13-A	13.0	Wheat	Corn	Lespedeza	Lespedeza	Lespedeza
13-B	8.4	Lespedeza	Lespedeza	Lespedeza	Lespedeza	Lespedeza
14	15.9	Lespedeza	Lespedeza	Lespedeza	Corn, Wheat	Pasture
15	2.1	Lespedeza	Lespedeza	Lespedeza	Lespedeza	Corn
16	4.6	Truck	Truck	Truck	Truck	Truck
17	0.4	Truck	Truck	Truck	Truck	Truck

Source: Farm Business Survey, 1940.

Characteristics of Specific Fields. In general all fields on the farm have about the same characteristics. The only difference in the way they are cropped is that some have longer rotations than others.

(a) Fields Numbers 1, 11, 16, and 17. These fields are located near the farmstead. They are small (Number 16 has eight subdivisions) and are cropped intensively. The home garden, truck crops, and tobacco are grown on these fields. Field Number 1 is the garden for the tenant.

Much of the manure from the barn is applied to the fields. A heavy application of fertilizer is applied when tobacco is planted. These practices make it possible to put the land in row crops each year.

(b) Fields Numbers 3, 4, and 8. These fields are located on the east side of the road. They are rolling but fairly level. The soil is thin and will erode easily.

The land is used more for pasture than any other land on the farm. The soil is not so good as on the west side of the farm. Fields are fenced and have water available. A barn is located on this side of the farm.

Corn is planted on this land once every six or seven years. Corn is followed by lespedeza. The first year the lespedeza is cut for hay, then pastured for the next five years.

(c) Fields Numbers 9, 13, and 14. The rotation followed on these fields is similar to that on the fields just discussed, except that it is shorter.

The land is on the east side of the road and is of better quality

than that on the west side. Each field is fenced and has running water available.

Field Number 13 is subdivided into two parts. A fence separates these divisions so that one part can be pastured while the other is in corn.

Over a five-year period, corn occupies the land one year, hay is cut two years, and it is pastured two years. Corn is followed by wheat, which makes it possible to harvest three crops off each field in two years.

Field Number 13-B has a year longer rotation because the slope is somewhat steeper than on the other fields.

There is no bottomland adjoining the creek, which has not built up a flood plain.

CHAPTER VIII

SUMMARY

There are six major cropping systems in Type-of-Farming Area III. These six are planted on 94 percent of the fields. A straight row crop system is most important in this Area, being planted on 28.4 percent of the upland fields and 70 percent of the bottomland fields.

The two most important classes of crops in Area III are row crops and hay crops. All the major cropping systems are based on these.

The important crop combinations on upland in Area III are cotton two years and lespedeza three, cotton three years and lespedeza two, and cotton five years. On the bottomland the only important crop combination is corn five years.

The large farms in Area III practice longer and better cropping systems than do small farms. On the large farms about 13 percent of the upland fields are planted to straight row crops compared with 32 percent on the small farms.

There is very little difference in the cropping systems practiced on the bottomlands of the large and small farms in Area III.

High labor income farms in Area III have a larger percentage of fields planted to longer rotations than do low labor income farms.

On 65 farms studied in Type-of-Farming Area XI there were 455 fields, 44 cropping systems, and 235 different crop combinations.

The ten cropping systems in Area XI classed as major are practiced on 61 percent of the fields.

The two most important cropping systems in Area XI are: row crops two years and hay crops three years, and a row crop one year and hay crops four years. These systems occupy 10.6 and 9.9 percent of the fields, respectively.

There are seven important crop combinations in Area XI, planted on approximately 27 percent of the fields.

The principal difference in cropping systems practiced on large and small farms in Area XI is the length of rotation. Shorter rotations are used to a greater extent on the small farms.

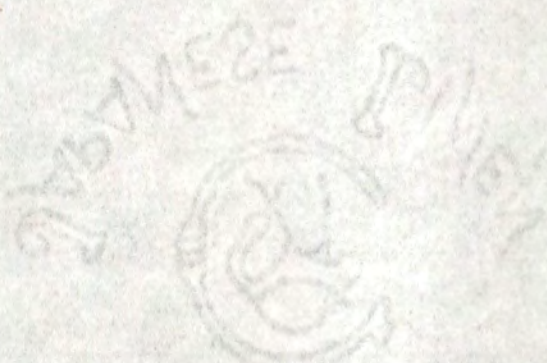
There are 33 different cropping systems practiced in Area A of Roane County. The seven cropping systems classed as major are planted on 64 percent of the fields.

A characteristic of Area A is the large number of fields that are left idle each year. These fields are planted to corn for a year or two and then left idle for two or three years.

Three cropping systems are practiced on practically every farm in Areas E-2 and E-5 of Roane County. They are straight row crops; row crop one year and hay five; and straight hay crops. These are planted on 42 percent of the fields.

The most important factors which affect the way a field in Areas A and E is cropped are size, location in respect to farmstead, slope, stumps, rocks, fertility, fences, the rotation practiced on the farm, cropland available, and whether or not the operator is trying to improve his land.

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