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COOPERATING WITH THE ILLINOIS AGRICULTURAL EXPERIMENT STATION,  
DEPARTMENT OF AGRONOMY AND CHEMISTRY,  
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# SOIL SURVEY OF KNOX COUNTY, ILLINOIS.

BY

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[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture,"

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided,* That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the Congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized into the Bureau of Soils.]

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### MAP.

Soil map, Knox County sheet, Illinois.



# SOIL SURVEY OF KNOX COUNTY, ILLINOIS.

By **GEORGE N. COFFEY**, **C. W. ELY**, and **C. J. MANN**, assisted by **J. G. MOSIER**, **CLIFFORD WILLIS**, and **A. F. KIDDER**, of the Illinois Experiment Station.

## LOCATION AND BOUNDARIES OF THE AREA.

Knox County lies northwest of the center of the State of Illinois, 92 miles south of its northern boundary, 27 miles east of the Mississippi, and about 150 miles southwest of Chicago. It is bounded on the north by Henry County, on the east by Stark and Peoria counties, on the south by Fulton County, and on the west by Warren and Mercer counties. It is situated between  $40^{\circ} 36'$  and  $41^{\circ} 5'$  north latitude and  $89^{\circ} 59'$  and  $90^{\circ} 27'$  west longitude. The county is rectangular in shape and is 30 miles north and south by 24 miles east and west. It contains 20 townships and has a total area of 717 square miles, or 458,752 acres. Galesburg, the county seat and principal town, is situated in the western part of the county.

## HISTORY OF SETTLEMENT AND AGRICULTURAL DEVELOPMENT.

The settlement of this part of the United States was influenced very greatly by the larger streams. Areas which were not located near a navigable stream were not settled until many years after those more favorably situated with regard to navigable waters. In 1818,

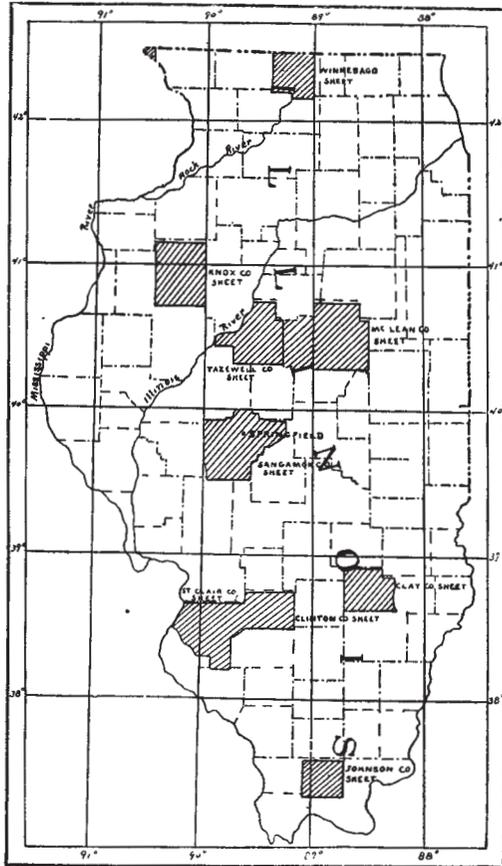


FIG. 1.—Sketch map showing position of the Knox County area, Illinois.

when Illinois was admitted into the Union, there was not a single white man living within the present limits of Knox County. In 1828 Daniel and Alexander Robertson and Richard Matthews settled in the edge of Henderson Township and are usually considered the pioneers, although there is strong evidence that a man named Palmer came to Maquon Township in 1826 or 1827. In 1830, when Knox County was organized, the population was estimated at 400. The majority of the early settlers were from Kentucky. Until 1832 the immigrants came principally from Kentucky, Tennessee, Virginia, southern Indiana, and southern Illinois. The tide of immigration was checked by the Black Hawk war, but after the war it started again from the same sources, with an increase in the number of settlers from the Northern States. The full force of the eastern immigration set in in 1836, when the southern immigration began to decline and New York, Ohio, Pennsylvania, and the New England States furnished most of the settlers. The first European addition to the population was the Scotch settlement in the northeastern part of the county. Swedes from a colony in Henry County settled near Victoria and a steady immigration from Sweden followed, until to-day they are an important element of the population. The Irish appeared in 1854 and increased rapidly by immigration from the old country. Other European countries have furnished a very small percentage of the population.

The first settlers made their homes in the timber, where fuel, building material, and water for stock could be easily obtained, and for many years prairie land was practically unsalable unless woodland was offered in connection with it. As late as 1850 many large tracts of prairie were uninclosed, but by 1858 they had all been occupied. The prairie sod was tough and hard to break, and 4 to 6 yoke of oxen were required to pull a plow. The first steel plow used in America is said to have been made in 1837 by Harvey H. May, of this county. In that year the price paid for breaking prairie sod was \$2.50 per acre. A year was required for the sod to decay. Corn was sometimes planted by cutting a hole in the sod and was allowed to grow without cultivation.

Changed conditions—a reduction in the cost of transportation, new and enlarged markets, competition from newer settlements, and the introduction of improved farm machinery—have caused a variation in the amount of attention given to different branches of farming. Vegetables and grain were raised by the early settlers, chiefly for home consumption. As production increased the surplus was fed to stock. Wheat was the first grain raised for export. It was sown broadcast by hand, cut with cradles, bound by hand, and thrashed by tramping with horses. Labor during harvest time was hard to secure and wages were relatively high. The first thrashing machine was introduced about 1842, and the first reaper about 1847. The extreme cold of

winter sometimes killed the plants, especially upon the prairie fields. The introduction of improved varieties of spring wheat caused the cultivation of this grain to be continued longer than it otherwise would have been, but competition from States to the west and the ravages of insects resulted in the practical abandonment of the cultivation of wheat in the sixties. About 1883 press drills began to be used by some farmers. Better results were secured by their use, and for twelve years wheat was again cultivated quite extensively. Within the last few years less profitable returns have been secured and the acreage has decreased again, until at the present time no large amount of wheat is raised in the area. Corn formed the principal crop of the early settlers. Little of it was shipped before the coming of the railroad in 1854. Sorghum was extensively cultivated between 1850 and a date subsequent to the civil war, but a decrease in the price of sugar and a demand for other farm products caused a gradual decline in this industry and very little sorghum is now grown.

The agricultural development of the county has been rapid, but there have been no great or sudden changes. The crops grown now are pretty much the same as those cultivated by the early settlers. Newer and better methods of cultivation have replaced the primitive ones used by the pioneers, labor-saving machinery has gradually come into use, and the wild prairies of less than a century ago have been transformed into rich and productive fields.

## CLIMATE.

The following table shows the main features of the climate of this section of Illinois. It has been compiled from the records of the Weather Bureau stations at Knoxville and Peoria, the former situated in Knox County and the latter in the adjoining county on the east:

*Normal monthly and annual temperature and precipitation.*

Month.	Knoxville.		Peoria.		Month.	Knoxville.		Peoria.	
	Temperature.	Precipitation.	Temperature.	Precipitation.		Temperature.	Precipitation.	Temperature.	Precipitation.
	° F.	Inches.	° F.	Inches.		° F.	Inches.	° F.	Inches.
January .....	21.7	2.09	28.5	2.12	August .....	73.2	3.99	75.3	2.81
February .....	22.5	1.75	25.4	1.96	September ..	64.9	3.94	67.1	4.08
March .....	34.6	2.77	37.7	3.42	October .....	52.1	2.33	56.9	2.22
April .....	51.2	2.86	52.6	1.89	November ...	37.6	1.98	40.3	1.87
May .....	61.9	3.83	64.1	4.48	December ...	27.4	1.94	29.1	1.61
June .....	71.4	3.34	73.7	3.12	Year ...	49.6	34.59	52.3	32.08
July .....	76.3	3.77	78.0	2.50					

The least amount of precipitation occurs in the late fall and early winter and often falls in the form of snow. May, June, and September are the months of heaviest rainfall, while July and August show

considerable variation. June to September is the period of greatest danger to crops. Heavy rains in April and May often keep the ground wet and cold and retard the crops. Crops are injured more by dry weather than by wet, but a total loss of crops is never sustained from either cause.

#### PHYSIOGRAPHY AND GEOLOGY.

The general surface features of Knox County are similar to those of a large part of the State, consisting of a broad, rolling plain in which the streams have carved valleys of varying width and depth. Spoon River, which crosses the southeastern part of the county in a southwestern direction, is the principal stream in the county, and with its tributaries drains about three-fourths of the area. The drainage of the northwest one-fourth of the county is into the Mississippi River, through Pope Creek and two branches of Henderson River. Along all these streams the surface of the country is generally broken and hilly. The bluffs are sometimes as much as 150 feet in height and rise abruptly from the bottoms. More often they are from 50 to 100 feet high, and in some places there is a gradual slope from the streams back to the general level of the uplands. The most level areas are in the northern and western parts of the county, along the divide which is traversed by the main line of the Chicago, Burlington and Quincy Railroad.

The most elevated part of the county lies northeast of Galesburg, the highest points being about 850 feet above sea level. The lowest place, the point where Spoon River leaves the county, is 536 feet above the sea, thus giving a vertical range of 314 feet. The difference in elevation has given the streams sufficient fall to cause active erosion, and the county has excellent drainage. There are only a few small areas which are level enough to admit of the formation of ponds and marshes. A large proportion of the county consisted originally of open prairies. The small streams are, however, very numerous, and along them were usually found strips of timber.

The exposed stratified rocks belong to the Coal Measures and consist of shales, sandstones, limestones, and seams of coal. These, especially the shales, are seen outcropping along most of the streams, sometimes as much as 50 feet above their beds. On account of the superposition of glacial material and loess, these rocks have not entered into the formation of the soil, unless it be indirectly.

The unconsolidated deposits, namely, glacial drift, loess, and alluvium, belong to the three divisions of the Quaternary. The glacial drift covers almost the entire surface of the county. It is generally 20 to 30 feet in depth, but in some of the preglacial valleys it is as much as 100 feet thick. It consists of a brown, yellowish, or bluish gravelly till, but does not influence the character of the soils except to

a small extent upon the lower parts of the hills. The drift here is referred to the Illinois glaciation.

The most important geological formation from a soil standpoint is the mantle of "upland loess," which was spread over the glacial drift probably about the time of the Iowan glaciation. It is important, because from it the soils of the county have been almost entirely derived, either directly or indirectly—the alluvial deposit being this material reworked and redeposited by the streams. The average depth of this formation is probably about 15 feet. It follows the contour of the surface in a general way, although the streams have cut through it. Shells are usually absent, but were observed in a few places along Spoon River.

#### SOILS.

There is no great diversity of soils in Knox County, and only four types were recognized, three of which are found on the uplands and one in the bottoms. The names of these soils and the area occupied by each are given in the following table:

*Areas of different soils.*

Soil.	Acres.	Per cent.
Marshall silt loam.....	289,088	63.0
Miami silt loam.....	135,552	29.5
Kaskaskia loam.....	29,148	6.4
Miami black clay loam.....	4,928	1.1
Total.....	458,752	.....

#### MARSHALL SILT LOAM.

The Marshall silt loam is the most important type of soil found in the county. It consists of a slightly granular and somewhat coherent silty loam with an average depth of 18 inches. On the steeper slopes and in the more rolling areas it is sometimes not more than 12 or 15 inches deep, while in the more level sections it may have a depth of 24 inches. By far the greatest proportion of it is very close to the average depth given above. The soil crumbles and pulverizes readily, is porous, and absorbs moisture quickly. The color varies from a dark to a light brown, depending upon the amount of organic matter present, and also upon the condition as regards moisture. The Marshall silt loam is quite uniform in texture. The slight variations which occur are due to differences in topography, the more level areas grading into the Miami black clay loam and the more rolling ones into the Miami silt loam. Between the depths of 18 and 22 inches there is a gradation from the soil to the subsoil. The latter consists of a mottled gray and yellow clayey silt, which shows many dark streaks and spots due to the penetration of roots or the presence of iron. It sometimes

has considerable plasticity, but becomes more friable in the lower depths.

This soil is widely distributed over the county in broad tracts and covers 63 per cent of the total area. There is not a township in the county which does not contain several square miles of this type of soil, and a number of them in the northern and western parts are occupied almost exclusively by it. It is least extensively developed in those townships which are situated along or near Spoon River and its larger tributaries. In general it is not found near the larger streams, although in a few cases where there is no decided bluff, but a gradual slope from the stream to the upland, this soil extends down to the bottom land. A few small areas which occur as second bottoms or terraces, from 15 to 20 feet above the stream, were classed with this soil type.

The surface of the Marshall silt loam is generally rolling. Upon the divides between the streams it is more level or gently undulating, but it becomes more rolling and broken nearer the streams. The character of the topography is usually such as to give good surface drainage, except in some of the more level areas where the smaller streams take their rise. Here underdrainage is necessary to secure the best results, and even where the surface is more rolling the land is improved by the laying of tile drains through the swales or along the lines of natural drainage. Often a single line of tile through the lowest place in a field is all that is necessary. The majority of the farms have been so underdrained, but there are a few which can be put in better condition by the use of tile.

As soon as the loess or silty layer was deposited it was attacked by the agencies of weathering, plants began to grow and decay, and the processes of soil formation went on. The plants added organic matter to the soil and increased its capacity for holding moisture. The increase in the moisture content decreased the rapidity of the oxidation of the organic matter, and for this reason more is found in the soil where the surface is most level and the water runs off less readily.

All the crops which are commonly grown in this section of the country are found upon the Marshall silt loam. Corn is the most important, and its production year after year is limited only by the needs of crop rotation. The average yield is 40 bushels per acre, but in good seasons it will probably reach 50 or 60 bushels, and some of the farmers maintain an average as high as this. Yields of from 75 to 90 bushels an acre are sometimes secured, but are exceptional. Oats is next in importance to corn and the average yield is about the same. This crop sometimes lodges badly. Grass and clover are also grown quite extensively and a yield of from 1 ton to 3 tons of hay per acre is secured. The production of wheat is not large, as it is no longer considered a profitable crop.

This soil is well adapted to the production of corn, oats, and hay. Wheat does fairly well, and in some other parts of the State is grown quite extensively upon this type of soil. The Marshall silt loam is a very productive soil, easily cultivated, and with proper treatment will continue to give profitable returns to the farmers.

The following table shows the texture of samples of the soil and subsoil of this type:

*Mechanical analyses of Marshall silt loam.*

No.	Locality.	Description.	Organic matter.							
				Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
8732	1½ miles SW. of Yates City.	Brown silty loam, 0 to 18 inches.	P. ct. 3.51	P. ct. 0.10	P. ct. 0.92	P. ct. 0.46	P. ct. 0.54	P. ct. 2.62	P. ct. 82.60	P. ct. 12.74
8730	3 miles E. of Victoria.	Brown silty loam, 0 to 18 inches.	3.21	.20	1.08	.60	.70	3.42	80.60	13.22
8728	5 miles NE. of Rio..	Brown silty loam, 0 to 18 inches.	2.18	.24	.94	.50	.64	3.74	75.92	17.60
8731	Subsoil of 8730.....	Yellow clayey silt, 20 to 39 inches.	.69	.16	1.08	.68	1.58	1.90	79.30	15.20
8733	Subsoil of 8732.....	Clayey silt, 20 to 36 inches.	.57	.06	.94	.40	1.06	9.58	71.18	16.72
8729	Subsoil of 8728.....	Yellow clayey silt, 20 to 36 inches.	.78	.12	.46	.36	1.84	6.92	73.40	16.86

MIAMI SILT LOAM.

The Miami silt loam is a loose, floury, silty loam. The depth varies considerably, but the average is about 12 inches. Upon some of the steeper slopes the soil has been almost or quite removed. A small percentage of very fine sand is present, especially on the lower part of the slopes where the glacial material outcrops. In the southeastern part of Chestnut Township a few patches of fine sand occur, but their total area is too limited to be shown upon the soil map. The color of this soil varies from a light brown to almost white, the darker color being due to the larger amount of organic matter which is present in the more level areas. On some of these the soil for the first 4 or 5 inches is of a brown color and resembles the Marshall silt loam, but the general characteristics are more like the typical Miami silt loam. The soil crumbles readily and is very loose and dusty when dry. The clods are open and porous and resemble pumice stone.

There is no distinct line of demarcation between the soil and the subsoil, but rather a gradation from one to the other. The subsoil is not very different from that of the Marshall silt loam, being a mottled gray and yellow clayey silt. It is more friable, however, than the

subsoil of that type, especially in the first foot. The looser and more floury character, lighter color, less amount of organic matter, and less depth of soil, as well as the more broken character of the surface, enable one to distinguish this type from the Marshall silt loam.

The following table of analyses shows the texture of the soil and subsoil of the Miami silt loam:

*Mechanical analyses of Miami silt loam.*

No.	Locality.	Description.	Organic matter.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.06 mm.	Silt, 0.06 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>
8738	1½ miles SW. of Etherly.	Gray silty loam, 0 to 12 inches.	1.01	0.54	2.66	1.08	0.92	4.66	76.22	13.86
8736	1¼ miles E. of Etherly.	Gray silty loam, 0 to 12 inches.	.51	.40	1.80	.86	.88	8.42	71.18	16.44
8737	Subsoil of 8736.....	Clayey silt, 14 to 36 inches.	.42	.00	.04	.06	.24	5.06	71.34	23.26
8739	Subsoil of 8738.....	Clayey silt, 14 to 36 inches.	.19	.02	.26	.24	.60	2.60	69.28	26.82

The Miami silt loam is found along the Spoon River and its tributaries, where it occurs in strips from a few rods to 2 miles or more in width. The greatest development of this type is the area which begins near the center of the county and extends eastward to the county line. Every township except Ontario has at least a small area of this soil. It is never found upon the rolling prairies.

The most broken and hilly parts of the county are occupied by the Miami silt loam. There are tracts that lie some distance from the streams or between them which are comparatively level, but the greater proportion of the type is broken and hilly and the areas are often dissected by deep ravines. The character of the surface permits the water to run off readily, so that underdrainage is seldom necessary except in the more level areas.

The Miami silt loam is derived chiefly from the loess which covers the uplands, the glacial material entering into its composition only upon the lower slopes. It has been formed through the superficial weathering of these materials and owes its peculiar characteristics to the large amount of erosion which has taken place here. As the loess has weathered and formed soil a large part of it has washed away, less organic matter has been incorporated, and oxidation has gone on more rapidly because the soil contained less moisture than in the more level areas.

A large proportion of the Miami silt loam is still forested, these tracts being used for pastures. Much of this type which has been cleared is also used for the same purpose. Corn, oats, grass, clover, and wheat are the principal crops grown. Of these corn is the most important and yields from 15 to 45 bushels per acre. Oats does fairly well and yields about the same as corn. The growth of grass and clover is luxuriant and the average yield of hay is about  $1\frac{1}{2}$  tons per acre. Wheat also yields fair crops, but the production is not large. Only the better areas of this soil are planted in these crops, and if crops were grown on the entire cultivable area the average yields would be considerably less.

This soil is well adapted to grass and clover. Bluegrass and timothy thrive and the former makes excellent pasture, and as the broken character of the surface renders large areas unsuited to general farming, grazing or the production of fruit should be given more attention. Strawberries, raspberries, blackberries, and other small fruits could well be grown upon this soil. It should be pointed out, also, that the soil is low in organic matter and every effort should be made to increase this important constituent. Plowing under leguminous crops and the addition of stable manure would aid in building up the soil, and make it more like the Marshall silt loam.

#### MIAMI BLACK CLAY LOAM.

The Miami black clay loam consists of a black, granular, sticky clay loam 20 inches in depth. It is quite coherent, especially when wet, and this characteristic has given to it the local name of "gumbo." It is more tenacious in the lower depths than near the surface. It contains a large percentage of silt, but its properties are those of a clay loam rather than a silt loam. When moist it is black, but it becomes lighter in color as it dries. It possesses the property of granulation in a remarkable degree, dividing as it dries into small, irregular cubes, often to a depth of 3 or 4 inches, thus forming a kind of mulch. It cracks badly, however, and these cracks sometimes extend to a depth of 2 feet. The subsoil is a mottled gray and yellow clayey silt, usually plastic, but becoming more loesslike in the lower depths. It contains iron stains and dark streaks, the latter caused by decayed roots.

The following table of mechanical analyses shows its heavier character as compared with the Marshall silt loam. The Miami black clay loam occurs only in small areas in the most level portions of the upland, and the surface is in general quite flat. The areas occupied by this soil type were originally wet and swampy, and it was necessary to drain them before they could be cultivated. Some of the fields have open drains, but the best results can not be obtained without the use of tile underdrainage. The formation of the Miami black clay loam is due

to this imperfect drainage, which has caused the accumulation of a large amount of organic matter. The finer particles have not been washed out, and the formation of a heavy soil has been the result.

Corn, oats, and hay are the principal crops grown on this soil. Corn will average 50 bushels per acre, and many farmers obtain 60 or 70 bushels. Oats gives excellent returns when the crop does not lodge too badly. Timothy and clover do well also, the yield being from 1 ton to 3 tons of hay per acre. This is an excellent soil for corn, and may be considered a typical one for this crop. It is also a good soil for oats and hay. The Miami black clay loam is a very productive soil. It is rather sticky, which interferes somewhat with its cultivation, but upon the whole it is well adapted to general farming.

The following table gives mechanical analyses of this type:

*Mechanical analyses of Miami black clay loam.*

No.	Locality.	Description.	Organic matter.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>
8726	1½ miles NW. of Galesburg.	Black clay loam, 0 to 20 inches.	4.69	0.10	0.16	0.12	0.48	6.02	79.68	13.44
8727	Subsoil of 8726.....	Clayey silt, 22 to 36 inches.	.32	.22	.96	.70	1.20	5.58	78.40	12.58

#### KASKASKIA LOAM.

The Kaskaskia loam consists of a brown silty loam or heavy loam of a rather granular and somewhat sticky character. A small percentage of sand is also present, the proportion being greatest along the smaller streams. The texture of the soil varies more than does that of the other types of the area, being heaviest in the lower places, where there are sometimes small areas a few acres in extent which have almost a clay soil. It contains a considerable amount of organic matter, which gives it a dark-brown color. There is no sharp division between the soil and subsoil. The subsoil, a heavy silty loam or silty clay, is heavier than the soil, contains less organic matter, and has a brown or drab color. It is somewhat plastic, especially in the lower lying and heavier areas.

The table on the following page of mechanical analyses shows the texture of the soil and subsoil.

*Mechanical analyses of Kaskaskia loam.*

No.	Locality.	Description.	Organic matter.								
				Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.	
			<i>P. ct.</i>	<i>I. t.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	
8720	3 miles NE. of Victoria.	Silty loam, 0 to 17 inches.	4.16	0.04	0.32	0.70	2.68	11.04	67.68	17.24	
8722	2½ miles SE. of Maquon.	Brown silty loam, 0 to 14 inches.	3.50	.26	.98	.86	1.80	4.18	67.86	23.76	
8721	Subsoil of 8720.....	Silty loam, 19 to 38 inches.	1.55	.02	.50	1.02	5.26	14.44	61.20	17.56	
8723	Subsoil of 8722.....	Drab silty clay, 14 to 36 inches.	.90	.26	.90	.50	1.40	3.52	67.90	25.52	

The Kaskaskia loam is not an important type and occupies only 6.4 per cent of the area. It occurs as strips of bottom land along the streams, varying in width according to the size of the stream, the smaller streams having very narrow bottoms. The widest areas are found along Spoon River. Above Maquon the bottom is rather narrow and in some places the bluffs come very close to the river on both sides. Below this point the valley becomes much wider and is, in the widest places, nearly 2 miles from bluff to bluff.

With the exception of old stream channels, which are frequently found, the surface of the Kaskaskia loam is quite level. It is situated from 10 to 15 feet above the level of the streams and is subject to occasional overflow. The lowest land in the bottom is often farthest from the stream. This frequently causes the water to stand on the surface near the bluffs, as well as in the lower places in other parts of the field. Many of the fields have been drained, either by open ditches or by tiling. The greater proportion of this soil requires artificial drainage to secure good crops. This soil is of alluvial origin. The valleys have been cut out by the erosion of the streams, and the materials of which the soil is composed have been washed down from the uplands and deposited here during periods of overflow.

Corn is almost the only crop grown in these bottoms. In good seasons and when the crop is not destroyed by floods yields of from 50 to 75 bushels per acre are not uncommon. The average, however, is much below this. Some oats and hay are grown and fair yields are obtained. Much of this type, especially along the smaller streams, is used for pasture.

The Kaskaskia loam is well suited to corn, oats, and hay, and makes fine pasture land. It is a very productive soil, and were it not subject to overflow would be one of the most valuable types in the area.

Some of the farmers say that they do not lose a crop more than once in ten years. The spring floods are apt to make planting late.

#### AGRICULTURAL METHODS.

While there are a great many farmers in Knox County who employ the latest and most improved methods in the cultivation of their fields, still there are a large number who follow the practices used by their fathers before them. It is the general opinion, however, that more farmers are each year adopting modern methods. There has been a decided improvement within the last few years, and the Knox County farmers compare favorably in their agricultural practices with those of any other section of the country. A large number of the farmers own and live upon their farms and thus give them their personal attention.

As corn is by far the most important crop grown, the chief interest in cultural methods centers in the cultivation of this grain. After the stalks are cleared from the field, usually by raking into windrows and burning, the ground is prepared by breaking with gang plows, followed by a disk or toothed harrow and a roller. The corn is usually put in with a check planter, in rows about 3 feet 8 inches apart, and with two or three stalks in a hill. The harrow is used just before or after the plants appear, and is followed by the cultivator, usually four workings being given. Many large shovel and disk cultivators were noticed, as were also some weeders and surface cultivators. The latter leave the soil in much better condition, and the use of these or smaller shovels is to be recommended. The corn is husked by hand in the field—very few shredders being used—cribbed, shelled, and sold in that form. Very little is used for fodder, although the stock are often allowed to gather up what they can after the grain is secured.

Oats is usually sown with an end-gate seeder and disked or cultivated in. When mature this crop is cut with a self-binder, and usually thrashed out of the shock in the field. Considerable loss is often sustained from the lodging of the oats, especially if a storm comes about the time it is ready to harvest.

Grass and clover are sown in the oats. Sometimes it is difficult to secure a good stand of clover, especially if the removal of the oats crop is followed by dry weather. Much more timothy is grown than clover. Grass does not improve the land like clover, and it would be much better for the soil if more of the latter crop were grown. In the southern part of the county, where more wheat is produced, grass and clover are often sown in the wheat. Most of the hay is put up in barns, and a large part of it is baled and shipped.

More attention is being given to rotation of crops than formerly, but a more systematic rotation should be practiced, as it would greatly

assist in maintaining the productivity of the soil. The object of many farmers is to get a crop of corn as often as possible. The ground is planted in this grain for three or four years, and often much longer, and then oats are sown, usually for only one year, to be followed by grass or clover for two or three years. Many, however, follow the oats with corn again. It will be seen that this is not a good rotation, and more leguminous crops should be introduced into it. Clover does well on all the soils, and it is believed that alfalfa could be successfully grown on the Miami and Marshall silt loams. Inoculation of the soil would probably be necessary, as no alfalfa has been grown in this section. More attention should be given to the saving of manure and to its use upon the fields. The raising of more and better stock to consume the waste products of the farm and to make more manure would, it is believed, result in greater profits to the farmers.

#### AGRICULTURAL CONDITIONS.

Knox County is a rich agricultural country. Her farmers are generally prosperous and well-to-do. Those who own, live upon, and cultivate their farms usually have well-built dwelling houses, with good, substantial barns and outhouses. The dwellings are usually of wood, although some are built of brick. Many of the farmers have handsome residences, and the surroundings evidence thrift and prosperity. The houses upon the farms worked by tenants are less pretentious and the farms are not usually so well kept. Farmhouses of the better class cost from \$2,000 to \$3,000 and the barns from \$1,500 to \$2,500. The average, however, is probably considerably less than these figures. Very few of the farmers are in debt. Many of the most successful ones have moved into the towns.

The number of farms cultivated by owners and those cultivated by tenants is about equal, the former being a little in the majority. As is usually the case, those operated by the owners are in better condition, better cultivated, and show more attention to the improvement of the land and the maintenance of its productivity than where the farms are worked by tenants. Two systems of renting are practiced—the cash and the share systems—and about an equal number of farms are cultivated under each system. Under the cash system the tenant pays so much money an acre for the use of the land, the price varying, of course, according to the quality and location of the land. The best farms rent for from \$5 to \$7 an acre, while one-half the latter sum is asked for the poorer ones. The average is about \$5.25 an acre. Under the share system the owner usually receives one-half of the crop, delivered at the elevator or nearest market. There are a few farms operated by managers, but they constitute less than 1 per cent of the total number in the county.

The average size of the farms in Knox County is 144 acres.<sup>a</sup> Nearly one-third of them have between 100 and 175 acres, while 7 contain more than 1,000 acres. These large tracts, however, really constitute several farms so far as their operation is concerned. The farms are less in number at the present time than a few years ago, and the tendency is unmistakably toward fewer and larger farms. One reason given for this is that the men who have made money in farming buy the fields next to them whenever they are offered for sale.

The price of land varies according to its quality, location, condition, and the value of the improvements. The Marshall silt loam will bring from \$75 to \$125 an acre, and some may sell a little above the latter figure. The Miami silt loam brings less than any other soil in the area. It is assessed at one-third to one-half as much as the Marshall silt loam. The more broken areas can be bought for \$20 to \$35 an acre, while the more level tracts bring as much as \$50 to \$75 an acre. The Kaskaskia loam is worth from \$35 to \$75 an acre. If it were protected from overflow the price would be higher.

The securing of sufficient labor to carry on the farm work is often a difficult problem for the farmers. Oats and hay are crops which must be taken care of at the proper time. Corn will remain in the fields longer than hay or oats without serious injury, so that the farmer has a longer period in which to gather it. It is especially difficult to secure hands during the oats and hay harvest. Much of the labor here comes from Sweden and Ireland, while some of it is from the Eastern States. Practically no colored labor is employed. A large percentage of the farm hands are single men. They usually receive from \$20 to \$25 per month, with board for themselves and sometimes for a horse. Married men who live upon the place receive from \$25 to \$30 per month without board, and in addition have a house furnished them and ground for a garden. When labor is hired by the day it receives from \$1.25 to \$1.50 a day, although some farmers are glad to pay more in order to obtain good hands during the busy season. The farmers of this county spend nearly \$3,500,000 annually for labor in the fields. The labor is, in general, reliable and efficient.

As already stated, the staple product of Knox County is, and always has been, corn. The acreage planted to this crop is limited only by the necessity for a rotation of crops. Nearly 60 per cent of the total area of cultivated land is devoted to corn, and about 7,000,000 bushels are produced in the county in a good season. According to the Twelfth Census, Knox County ranks as the fourteenth county in the State in the number of bushels produced. The greater part of the corn is

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<sup>a</sup>Twelfth Census of the United States.

consumed at home, being fed to stock, which is believed to be more profitable than to ship it.

Oats is next in importance to corn. It is considered a less profitable crop, and is grown principally because of the necessity for some rotation of crops. A large proportion of the oats is shipped, the relative shipping as compared with the feeding value being greater than in the case of corn.

The production of hay is also an important industry. It occupies about one-half as large an area as oats. Timothy is the principal grass grown. It is quite often mixed with clover. The average yield is about  $1\frac{1}{2}$  tons per acre. Most of it is consumed within the county, but some of it is baled and shipped, and this is more commonly practiced than formerly. Clover is not so widely grown as timothy. It yields well and is very beneficial to the soil.

Other crops are produced, but are of less importance than the ones given above. Very little wheat is sown at the present time. Rye and barley produce good crops, but are regarded as less desirable than corn. Millet is sometimes raised, especially on farms without good meadows, or when wet weather has prevented corn planting. Broom corn is cultivated with profit in some sections, but is less extensively grown than formerly. This was one of the first localities in the West to grow this as a farm crop. The decrease in the acreage is attributed to a falling off in price and to a dislike for the work. Nearly every farmer cultivates at least a small patch of Irish potatoes for home use, but they are not grown on a commercial scale. Small orchards have been planted near almost every farmhouse, but the growing of fruit is given very little attention. Small fruits, such as strawberries, raspberries, and blackberries, are produced in limited quantities.

The raising of cattle and hogs has always been an important industry in the county. Until the railroad reached Chicago from Buffalo little fall feeding was done, but since that time this has been the general practice. A less number are fattened now than formerly. There appear to be more hogs raised than cattle. A fair grade stock is generally raised, and some of the farmers have fine registered cattle.

There is no great diversity of soils in Knox County, and therefore not so great an opportunity for a range of crops as is found in some other areas. While all the soils resemble each other in showing a large percentage of silt, their differences have been recognized by the farmers, and although the same crops are grown more or less upon all the types there is a variation in the proportion of the crops on the different soils. The Miami black clay loam is known as a very fine corn soil, and is largely planted to this crop. The Marshall silt loam is also a fine corn soil, but the necessity for rotation is more evident, and a larger proportion is seeded to oats and hay. The Miami silt loam is not classed as a good corn soil, but makes fine pasture, and

much of it is used for this purpose. The possibilities of this soil for fruit are not appreciated. Chiefly corn is grown on the Kaskaskia loam, because the soil and the conditions in the bottom lands adapt it to this crop.

The farmers of Knox County have exceptionally fine facilities for getting their crops to market. Two of the main lines of railroad from Chicago to the West pass through the county. The Chicago, Burlington and Quincy Railroad traverses the northern and western parts, passing through Galesburg. Branch lines of this road radiate from this point. The Atchison, Topeka and Santa Fe Railway crosses the county in an east and west direction. The Iowa Central runs through the southwestern part, as does also the Fulton County Narrow Gauge. The Chicago, Rock Island and Pacific crosses the extreme northeast corner. These roads furnish an excellent outlet for the products of the county, though there is sometimes considerable difficulty in obtaining cars. There is scarcely a point in the county more than 5 miles from some line of railroad.

The county is crossed in every direction by dirt roads, which are in good condition the greater part of the year, though in the winter and early spring they often become almost impassable in many places. None of them are macadamized. In the hilly areas no attempt has been made to lay out the roads so as to avoid steep hills, and it is impossible to haul very heavy loads over them.

The railroads furnish easy communication with all the great markets of the country. Chicago is only 163 miles from Galesburg, and Peoria lies but 53 miles to the east. Other smaller towns are situated near by. A large percentage of the products grown upon the farms are sold in the local markets. Galesburg, the county seat, is a thriving town of nearly 20,000 inhabitants. Knoxville and Abingdon are also flourishing towns of about 2,000 inhabitants each, and many smaller towns and villages are scattered over the county.

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