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THESIS

THE AGRICULTURE OF ILLINOIS

FOR THE DEGREE OF MASTER OF SCIENCE

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THE AGRICULTURE OF ILLINOIS

In no region on earth are agricultural products grown in such variety and quantity as in the Mississippi valley.

In the center of this valley, in the most favored locality, lies the State of Illinois, stretching across a central belt of territory 385 miles long by 218 miles wide, included between north latitude $38^{\circ} 58'$ and $42^{\circ} 30'$, and longitude $10^{\circ} 25'$ and $14^{\circ} 30'$ west from Washington. The Mississippi separates the State from Missouri and Iowa on the west, and the Ohio and Wabash rivers separate it from Kentucky and Indiana on the south, while Lake Michigan borders the north east corner for a distance of 60 miles.

The total area of the State is 56850 square miles or 36256000 square acres. Of this total, 650 square miles are water surface. Although twelfth in order of size in the United States, it has, according to the last census, more acres of improved land than any other state. In area it equals one fourth of France, 42 Rhode Islands, or 26 Delawares. Several of its counties are larger than Rhode Island. McLean and LaSalle are each, larger than Delaware.

TOPOGRAPHY

Excepting perhaps Louisiana and Delaware, Illinois is the most level state in the Union. In general it is one vast prairie, extending in a gentle south westerly slope from Lake Michigan to the Ohio and the Mississippi rivers. The general fall of the Illinois river is very gradual, rarely exceeding a foot to the mile, "and for a course of 300 miles to the south west is for the most of the distance but one inch to the mile".

A great portion of the southern part of the State is cut up by streams to such an extent that the land is quite hilly. For a distance of 60 or 70 miles north of Cairo the surface was originally covered with a luxuriant forest growth, while in central and northern parts of the State the forests were confined mostly to streams, with occasional groves on the prairies. The extreme northern part is also somewhat broken, especially in the north western counties, Jo Daviess, Stephenson, Carroll, and Ogle. There are considerable elevations along the Illinois and Mississippi rivers. The bluffs of the Mississippi are, in some places, hundreds of feet high and might be taken for small mountains. By far the greater part of the State is distributed in vast prairies or barrens which form one ~~vast~~ continuous undulating plain, interrupted only by occasional river bluffs, and hills, formed by the washing of streams. One may go many miles on the prairies without encountering an elevation that is worthy to be called a hill. No where in the United States is there such a broad area of uniformly

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fertile and level soil. The borders of the vast prairies, however, are not sharply defined, but are intersected by long strips of timber advancing into and receding from the prairie land toward the streams whose banks are always lined with forests.

The mean elevation of the surface of the State above sea level is about 800 feet. The highest point is 1257 feet in Jo Daviess county and the lowest is 290 feet at the mouth of the Ohio river. An idea of the uniform level of the State may be obtained from the following list of elevations, beginning with the north and going to the south end of the State.

ELEVATION ABOVE SEA LEVEL

Galena	608	Paxton	790	Effingham	595
Freeport	758	Bloomington	821	Edwardsville	483
Rock Island	569	Peoria	486	Belleville	535
Rockford	728	Carthage	678	Olney	475
Woodstock	916	Lincoln	728	Mt. Carmel	435
Geneva	720	Clinton	726	Albion	464
Sycamore	867	Urbana	718	Mt. Vernon	506
Dixon	745	Danville	691	Pinckneyville	444
Princeton	700	Decatur	666	Chester	403
Joliet	541	Springfield	602	Murphysborough	428
Kankakee	638	Jacksonville	616	Shawnetown	352
Ottawa	487	Winchester	531	Jonesborough	528
Galesburg	782	Carlinville	626	Golconda	293
Quincey	484	Taylorville	622	Metropolis	346
Pontiac	639	Shelbyville	628	Cairo	313
Watseka	638	Vandalia	502		

CLIMATE

Illinois lies in a region which has a large body of cold water on the north and another large body of warm water on the south. These conditions make the State subject to sudden changes of temperature. We are not close enough to either body of water to receive the greatest influence, but are near enough to both to get sudden and alternating extremes. The storms which pass over the State originate in very different latitudes, varying from the semi-tropical Gulf of Mexico, from whence come most of our storms, to the semi-frigid regions of British America. Storms arising from the Gulf, pursue a north easterly course across the states and a large per cent of them pass over Illinois, while those starting from the northern states or from British America travel east or south east and in sweeping around the Great Lakes, as most of them do, pass over the north end of the State. Thus the Great Lakes exert a marked influence on our climate by

directing storms across the State that would otherwise miss it entirely, And this in connection with the fact that we get the Gulf storms, makes Illinois more subject to change than any other state. Illinois is peculiarly well situated for tornadoes. This seems especially true of the central and west central parts. From the vicinity of Springfield and Jacksonville fifty tornadoes have been reported.

The mean annual temperature for each of the three divisions of the State as given in the 1880 census report is, for the northern third 45°-50°, central third 50°-55°, southern third 55°-60°, thus showing a difference of about 10° in the mean annual temperature between the north and the south parts of the State.

The average temperature for January and for July in the northern, central, and southern parts of the State, as given by Greely in his "American Weather", and deduced from 18 years observation, is as follows:

Average Temperature for January.		Average Temperature for July.	
Rockford	20°	Northern Boundary	70°
Springfield	25°	Champaign	75°
Effingham	30°	*Cairo	80°

which shows a difference of 10 degrees between northern and extreme southern parts of the State for both months.

From the same authority we learn that extreme northern Illinois has 174 days of the year that are above 50°, while central Illinois (Jacksonville) has 218, and we may conclude from the map that Cairo has at least 230 days of the year that are above 50°, thus showing a total difference of 50 days between extreme northern and extreme southern parts. This difference in climate is further shown by the fact that at Mt. Vernon 35 days of the year average below 32°, at Springfield 83 days, and at Ottawa 94 days, making a total difference of 59 days.

The average date of the last killing frost in central, southern, and northern sections is given as follows: Cairo, April 1st.; Jacksonville, April 15th.; Jo Daviess county May 1st., thus showing about a months difference in season.

The annual rainfall for Illinois, as given in the census report for 1880, is not the same in all parts of the State. North of a line connecting Rock Island and Champaign it averages 30 to 35 inches, while south of that line, excepting a few counties south and south west of Springfield, it averages 40 to 45 inches.

The rainfall for the Spring and Summer months also varies in different

* Cairo is a short distance north of the isotherm of 80°.

localities. North of a line running east from Alton across the State, it is 20 to 25 inches, while south of that line the average is 25 to 30 inches.

SOIL

The prairies of Illinois are more fertile than those of many of the more western states. As we go farther west, and come nearer to the Rocky Mountains, the land becomes more barren, sandy, and drouthy. No state in the Union has as much good fertile soil, so uniformly distributed, and so universally productive as Illinois. Because of the great fertility of the soil, and the ease with which it is made to produce crops, farming methods were, and are still, more careless than they should be. Rotation of crops, and application of manure to soil, were not generally practiced on Illinois farms until comparatively recent times. Failures in crops are almost entirely due to drouth or excessive rainfall, other conditions being rarely unfavorable. The great fertility of our soil is illustrated in the tracts of land along the Mississippi River, extending from Alton to Kaskaskia and known as the "American Bottoms", which have been in cultivation for over a century without perceptible deterioration.

In regard to origin, Illinois soils may be divided into three great classes; drift, alluvial, and those formed in situ. All of the prairies, and hence the greater portion of all the surface soils, are of drift formation. Geology teaches that at one time almost the entire State was covered by glaciers which brought with them from the north, imbedded in the snow and ice, large quantities of rock, soil, and debris of various kinds. When the glaciers receded this material was deposited and to-day forms the drift soil of our vast prairies.

The glaciers however did not cover the entire State. Jo Daviess county in the north west corner, Calhoun county, a narrow strip lying between the Illinois and Mississippi rivers near the mouth of the former, and in the extreme southern part of the State the counties of Hardin, Union, Johnson, Pope, Massac, Pulaski, and Alexander were untouched. In these counties then, the soil must have been formed, for the most part, in situ. That is to say, through the action of heat, freezing, thawing, rain, vegetation, ect., the upper layers of rock were decomposed, leaving a layer of soil on the surface which deepened year by year as the decomposing process went on. Soils formed in this way have not the depth and fertility of those of drift deposits.

Alluvial soils are formed in localities where streams overflow their banks and leave a deposit of fine silt over the low bottom lands. The largest areas of this soil are found near the mouths of rivers.

An old writer has divided the soils of the State into six classes on

a basis of their composition and texture as follows:

1st. Bottoms bearing a heavy growth of timber. This land is usually dark colored, of the best quality, and almost inexhaustible. It is found along all the principal rivers.

2nd. Newly formed land at the mouths of rivers. There is a considerable area of this land at the mouth of the Wabash, and at the juncture of the Ohio and Mississippi rivers. It is annually flooded and is quite unhealthy.

3rd. Dry prairies or upland bottoms, approaching the rivers and bordering on the bottom lands, but elevated a few feet above them. The soil is much the same as that of the bottom lands. The prairies of the Illinois river belong to this class and are the most extensive ones of the kind east of the Mississippi.

4th. Upland prairies, usually found in large areas at the head waters of rivers. They are usually very flat, and before the days of tile drainage were wet, marshy, and covered with a dense growth of tall coarse grass, with an occasional small grove of timber.

5th. Timbered land, very fertile, moderately hilly, and well watered.

6th. Hilly sterile land, destitute of timber or covered with stunted oaks and other trees.

From the "Glacial and Soil Map of Illinois", prepared by Frank Leverett, the following information regarding the surface formations was obtained.

The older drift plains are found in two great areas. The first, or larger one, includes nearly all that portion of the State south and south west of a line passing through Rock Island, Decatur, Shelbyville, and Paris. This plain is quite uniformly mixed with "loess and associated silts" together with some sand along the streams. It is in this formation that the hardpan areas of southern Illinois are found. There is an especially large quantity of sand found in Mason county, and also in the western part of Tazwell where the "sand covered river basin" is 25 miles broad in its widest place. The second, or smaller area of the older drift formation, is found in the north west corner of the State and includes Stephenson, Winnebago, Boone, Ogle, Carroll, and the northern portions of Whiteside and Lee counties. This area also contains much "loess and associated silts" excepting in Boone county and the northern part of Lee and southern part of Ogle.

The newer drift plains cover, in general, the north east quarter of the State and are separated from the older drift plains by a prominent glacial moraine which extends south west from Boone county through DeKalb, Lee, and Bureau; then south through Marshall, Peoria, and Tazwell; thence south east into DeWitt, and south through Macon and Christian into Shelby; thence

east through Coles and Edgar counties to the border of the State.

All the region north of this moraine, or drift ridge, is of comparatively recent formation (geologically speaking) and includes what is known as the "Grand Prairie Region" of the State. Much of the land is very flat but none the less fertile. Since the introduction of tile drainage this region has taken the lead in agricultural products, and the great depth and fertility of its soil will doubtless keep it in the front rank. The soil contains much "loess and associated silts" with but little sand. Vegetable matter, which is contained in abundance, gives it a uniform black color and also adds to its fertility. Throughout the area are many long moraines or low ridges extending in a general north westerly and south easterly direction.

The southern third of the State is much more broken and hilly than the central and northern portions, and over considerable areas the soil is light colored with hardpan near the surface. There is also a great deal more forest covered land in this region than in central and northern parts of the State.

AGRICULTURE OF THE EARLY SETTLERS

The early settlers of Illinois were not attracted by the broad fertile prairies. The scarcity of shade and water, and the abundance of swampy land and insects, caused them to seek wooded regions along the streams where water and game were abundant and fuel easily obtainable from the woods. For these reasons the "Grand Prairie Regions" were last to be occupied.

Ford, in his "History of Illinois", gives the following information regarding the early inhabitants. "In 1818 the entire population of the State numbered about 45000. Some 2000 of these were descendants of the old French settlers in the villages of Kaskaskia, Prairie DuRocher, Prairie Du Pont, Cahokia, Peoria, and Chicago. These people had fields in common for farming, and farmed, built houses, and lived in the style of the peasantry in old France of an hundred years ago. They had made no improvements in any thing, nor had they adopted any of the improvements made by others".

"The original settlers had many of them intermarried with the native indians, and some of the descendants of these partook of the wild, roving disposition of the savage, combined with the politeness and courtesy of the frenchman. Many of them spent their time in the Spring and Fall hunting up and down the lakes and rivers in pursuit of deer, fur, and wild fowl, and generally returned home well loaded with skins, fur, and feathers, which were the great staples of trade. Those who staid at home contented themselves with cultivating a few acres of corn in their common fields for

bread, and providing a supply of prairie hay for their few cattle and horses".

"From what we can learn their horses and cattle were small and of inferior quality, due largely, no doubt to lack of proper care and food. The french pony was noted however for its strength and endurance. Oxen were used largely for work, and were hitched by the horns rather than by a yoke".***** "In 1818 the settled part of the State extended a little north of Edwardsville and Alton; south along the Mississippi to the mouth of the Ohio; east in the direction of Carlyle to the Wabash river; and down the Wabash and Ohio rivers to the mouth of the latter. But there was yet a very large unsettled wilderness tract of country within these boundaries, lying between the Kaskaskia river and the Wabash; and between the Kaskaskia and the Ohio".

"The pursuits of these people were agricultural. A very few merchants supplied them with the few necessities that could not be grown or manufactured at home. Prices were high and money scarce with the settlers. They raised their own provisions; tea and coffee were scarcely used, except on special occasions. The farmers sheep furnished wool for his winter clothing; cotton and flax furnished the material for his summer clothing. The fur of the raccoon made his cap. The skins of cattle or of deer made his shoes or moccasins, and a log cabin made entirely of wood without glass, nails, screens, hinges or locks was the home of most of the people. Each farmer built his own house, made his own plows and harness, beadsteads, chairs, stools and tables. the carts and wagons for hauling were usually made entirely from wood".

"Commerce was almost unknown. Until 1817 everything of foreign growth or manufacture was either brought up from New Orleans in boats or else wagoned across the mountains from Philadelphia to Pittsburg, and from there floated down the Ohio".

"In 1830 the population had spread north from Alton as far as Peoria, principally along the rivers and creeks. Settlements were sparsely scattered along the Mississippi to Galena and along the Illinois to Chicago. The country on the Sangamon river had settled up rapidly; Sangamon county then being the leading county in population". The interior of the south part of the State had been settled up, but all the Rock and Fox river countries were wilderness. Practically all the settlements were confined to the margins of timber in the vicinity of streams. But very few people had ventured upon the wide open prairies.

The early settlers had many difficulties and hardships to encounter. Their farming implements were of the rudest kind, and worse than that their methods of farming were not correct. They came to a state whose soil and

climate were, in many cases, very different from that to which they were accustomed. Consequently the old methods could not be applied with profit. Crops with which they were familiar could not, in many cases, be grown at all. Much had to be learned by experience. There was no tradition to depend upon and no experience of neighbors that could be followed.

To ascertain the capabilities of a piece of ground for producing the most wealth is a very complicated problem, and has not yet been satisfactorily solved by Illinois farmers. We may suppose then that it was much more difficult of solution to the pioneers.

Some idea of the early settlements of the State may be obtained from a study of the leading counties in population for each decade from 1790 (when there were practically no people in the State) until the present time.

In the following list the counties are given in order of population.

1790

But very few people in the State.

1800

Total 2453. About equally divided between StClair and Randolph counties.

1810

Total 12282. Practically all in StClair and Randolph counties.

1820

Total 55182. Madison, StClair, White, Randolph, Edwards, Gallatin.

1830

Total 157445. Sangamon, Morgan, Greene, Gallatin, StClair, Madison.

1840

Total 476183. Morgan, Sangamon, Adams, Madison, StClair, Fulton.

1850

Total 851470. Cook, LaSalle, Adams, StClair, Madison, Sangamon.

1860

Total 171195. Cook, LaSalle, Adams, StClair, Peoria, Fulton.

1870

Total 2539891. Cook, LaSalle, Adams, StClair, Peoria, Madison.

1880

Total 3077871. Cook, LaSalle, StClair, McLean, Adams, Peoria.

1890

Total 3828351. Cook, LaSalle, Peoria, StClair, Kane, McLean.

Most of the early settlers of Illinois came from the older eastern and southern states and of course brought with them very different methods for doing farm work. In a locality settled by Kentuckians, for instance, could

be seen a style of farming very different from that practised in a settlement of New Yorkers. Some of these methods were valuable, while others that were not useful had to be righted by experience.

According to the 1880 census reports, Ohio people are found in greatest numbers in McLean, Champaign, Vermilion, Shelby, Fulton, and Macon counties, or generally speaking, in the north central parts of the State. The New Yorkers are found in greatest numbers in DeKalb, Kane, LaSalle, McHenry, Whiteside, Will, and Winnebago counties. Indiana people came in greatest numbers to Champaign, Coles, Edgar, Iroquois, and Vermilion counties. The Pennsylvania population is found largely in LaSalle, Whiteside, Stephenson, Carroll, Fulton, Lee, Ogle and Peoria counties, in much the same general region as the New Yorkers, but slightly farther to the south. The Kentucky settlements, while they spread over more ground perhaps than those from any other state, are found almost entirely in the southern sections. Large numbers of them came to Adams, Alexander, Coles, Gallatin, Hancock, Macon, Macoupin, Massac, Morgan, Pike, Sangamon and White counties. Missouri people settled in Adams, Macoupin, Madison, Pike, Randolph, StClair, and Sangamon. The Tennesseans confined themselves rather more to the southern counties than did the Kentucky pioneers, and are found in largest numbers in the counties of Alexander, Franklin, Hamilton, Jackson, Jefferson, Johnson, Marion, Massac, Pope, Saline, Union and Williamson. The Virginians are mostly in McLean, Sangamon, and Vermilion counties.

The foreign population is found in largest numbers in the following counties (Cook not included). The English in Henry, Jo Daviess, Kane, LaSalle, Peoria, Rock Island, StClair, Sangamon, Whiteside, Will, and Winnebago. Irish in Kane, DeKalb, LaSalle, Sangamon, McLean, Peoria, and Will. Germans in Monroe, StClair, Adams, Clinton, LaSalle, Madison, Randolph, and Will. Norwegians and Sweeds in Bureau, Henry, Knox, Rock Island, and Winnebago counties.

FARMING LAND, STATISTICS ETC.

In 1880 Illinois had 31873645 acres in farms. The total land surface is 35840000 which showed the proportion of land in farms to total land surface to be .384 and made the State a close second to Indiana which ranked first with .389. In the whole United States the ratio of land in farms to total land surface was, in 1880 .289, but in 1890 this ratio increased to .327 per cent.

There has been a marked change in the number and in the size of farms in Illinois since 1850, as is shown in the following table.

Date.	Number of Farms.	Average Size of Farms.
1850	76208	158
1860	143310	146
1870	202803	128
1880	255741	124
1890	240681	127

The steady increase in the number of farms until 1880 is probably due to the fact that the State was rapidly settled up by a class of people who were mostly farmers, each man getting hold of a piece of land for himself. Sometime near 1880 the limit seems to have been reached. Between 1880 and 1890 there was a decrease of 15060 farms, which seems to show that the moneyed men are coming to own land in large tracts, while the number of renters increases.

When the State was new, and land plenty and cheap, the pioneers in many cases got hold of very large farms. But as the State became older, and land higher in price, smaller farms were purchased. Because of this increase in value of land many large holders sold out their farms in small pieces. This broke up many large estates and reduced the average size of farms, in 1880 however the minimum seems to have been reached, for in 1890 the average farm is three acres larger than in 1880. This again seems to indicate that capitalists are getting hold of land in large tracts, and in proportion as this is done the renting class will increase in numbers.

Some idea may be obtained of the rank Illinois takes as an agricultural state by examining the following extracts from the 1880 census reports.

Total Number of Farms.	Total Acres in Farms.	Acres of Improved Land in Farms.
Ohio 251450	Tex. 51406937	Ill. 25669060
Ill. 240681	Mo. 30780290	Ia. 25428899
Mo. 238043	Ill. 30498277	Kan. 22303301
Tex. 228126	Ia. 30491541	
Valuation of Land Fences and Buildings.	Valuation of Implements and Machinery.	Estimated value of Farm Products 1889
Ill. \$1262870587	N.Y. \$46659465	Ill. \$184759013
Ohio \$1050031828	Pa. \$39046855	N.Y. \$161593009
	Ia. \$36665315	Ia. \$159347844
	Ill. \$34456938	

In total number of farms Illinois ranks a close second to Ohio. In total acres of land in farms Illinois comes third, with Texas first and Missouri second. In total acres of improved land in farms Illinois is easily first, having more than the three states of Michigan, Wisconsin, North Dakota,

and even more than all the western states of Montana, Wyoming, California, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon, and California combined. Illinois is also first in valuation of land fences and buildings, with Ohio second. In valuation of implements and machinery, New York is first with Pennsylvania second, Iowa third, and Illinois fourth. The estimated value of farm products is considerably greater for Illinois than for any other state. New York is second with Iowa third. Illinois products are valued higher than those of Michigan, Wisconsin, North Dakota, and Delaware taken together, or greater than those of the western states combined. This includes Montana, Wyoming, Colorado, and New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon and California.

By reference to the maps on pages 18 and 19 which present graphically the the per cent of unimproved land by counties in 1880 as contrasted with the same for 1890, it will be observed that a great amount of land was improved during the 10 years. This is especially true of the southern counties, many of which had as much as 15 per cent, and some as high as 20 per cent of the land improved during the 10 years. The improvement was greater in the southern counties because of the vast areas of forest that have been cleared off.

The roughest ground in the State lies in the southern and south eastern counties. There is also considerable broken ground along the Mississippi as far north as Adams county. Calhoun and Alexander are by far the poorest in the State, each having between 50 and 60 per cent of unimproved land. These very broken areas are comparatively small however and cover only a minute portion of the total surface. In 1890, twenty nine counties had less than 10 per cent, and sixty three counties had less than 20 per cent of unimproved land.

TRANSPORTATION

About two thirds of Illinois is bounded by navigable waters, and is nearly bisected in a north easterly and south westerly direction by the Illinois river. The total navigation of the State exceeds 1000 miles and is divided up as follows: Illinois river 250 miles, Lake Michigan 60 miles, Wabash river 120 miles, the Ohio 130 miles, and the Mississippi 550 miles.

The early settlers necessarily had to depend entirely on water courses for their commerce. In the early times markets were poor and scarce. Before the time of steamboats the Illinois farmer rafted his produce down the river to New Orleans, which was about the only market available. There he had to compete with farmers of the southern states. Consequently the market was usually glutted and products had to be sold at a loss. The return home from New Orleans was a perilous journey usually performed on foot, through

three ^{or four} nations of hostile indians. Besides this it took a year or two to complete the trip, and upon arriving at home the farmer found his land desolate, and grown up in weeds during his absence.

Ford, in his "History of Illinois", says that steamboats began running the western waters in 1816. From this date until the building of railroads commenced, farmers sent practically all their grain and much of the live stock to market by way of the boats. Stock was driven long distances to market. Hogs were driven as much as 100 and often as high as 150 to 200 miles. Cincinnati was for a long time the leading market of Illinois farmers. Cattle have been driven from Illinois to the Philadelphia markets.

In 1850 congress granted to the State, in order to aid in the building of a railroad from Cairo to Chicago and Galena, alternate sections of land along the route, amounting in all to about 2600000 acres. The State gave this grant to the Illinois Central Railroad Company which built the first great line of railroad in the State. The completion of this road in 1856 marked the beginning of a great railroad building era. So rapidly have roads been built that now there is hardly a place in the State ten miles from a railroad, and many places have competing lines. The Railroad and Warehouse Commission reports that in 1890 there were 10163 miles of main line railroad in Illinois.

Railroads were the great factor in the development of inland agriculture. After they were built products could be quickly and cheaply sent to the best markets in the world, without the trouble of hauling or driving a long distance to a river town and there waiting for the slow moving boat to carry the produce to an uncertain market. In early days the large cities were built along the water courses, but now some of these very cities are in ruins, while the inland railroad towns are the thriving business centers.

FARM IMPROVEMENTS

Illinois has always been well to the front in agricultural improvements of every kind.

Farm implements have changed greatly during the last 50 years, from reap hook to self-binder, from flail to steam thresher, and from the clumsy wooden mouldboard plow to the light steel gang plow of the present time.

Perhaps no one improvement has done so much toward developing the State as the introduction of tile drainage. Previous to 1865 or 1870 vast areas of land in Illinois were absolutely worthless for agricultural purposes because of the wet soil. This was especially true of central and east central counties. By means of tile drainage most all of this land has put in cultivation and is to-day the best farming land in the State.

The earliest fences were made almost entirely of rails. With the open-

ing of the prairies where timber was scarce, hedges of various kinds were experimented upon, and "as early as 1845 the osage hedge was quite generally introduced in Morgan and adjoining counties". When railroads began bringing pine lumber so cheaply from the northern states, much plank fence was built. After a time the price of pine went up so high that hedge was perhaps the leading fence until 1870 or 1880 when barbed wire became popular.

LIVE STOCK

Illinois is well adapted for stock growing; the best foods are cheaply and easily grown, and the climate is of the best for most classes of farm animals. The State is peculiarly well located for the production of breeding stock. The leading through lines of railroad connecting east and west points pass through the State, thus making it convenient for buyers to stop off on their way east or west.

According to the 1890 census returns, Illinois is first in number of horses, having a total of 1335289, Iowa second with 1312079. In number of cattle Illinois is fourth in rank with 3083119 head. In number of hogs Iowa is first with 8268779, Illinois second with 5924818 head. In number of sheep Illinois is fifteenth in rank.

Dairy interests in northern Illinois are considerable. Most attention is given to milk selling and butter making. Very little cheese is made. In central and southern parts of the State there are comparatively few dairies, most of which supply milk to cities.

The diagrams on pages 32 to 47 give in numbers, and also graphically, the number of horses, cattle, sheep, and hogs on Illinois farms June 1st, 1890.

CROP PRODUCTION

A fair idea may be obtained of the great agricultural resources of the State by an examination of the census returns.

According to the 1880 reports, most of the cereal production in the United States occurs between ~~40° and 43°~~ 38° and 45° north latitude, while between 40° and 43° may be considered the center of the belt. Illinois is entirely within the most productive strip, and excepting a few miles on the north, stretches across the entire belt.

We also find that 52.9 per cent of the total cereal production occurs between the elevation of 500 and 1000 feet above sea level. In this respect Illinois is favorably situated having almost the entire surface within these limits.

Again, 98 per cent of the total cereal products in the United States comes from regions having a mean annual temperature of 40°-60°, while 84.3

per cent comes from regions whose mean annual temperature is 45°-50°. In this particular Illinois is favorably located, having a mean annual temperature of about 50°. 85.2 per cent of the cereal products comes from regions having an annual rainfall of 30-32 inches. The average rainfall for Illinois is 40 inches.

Crop production depends more directly upon the temperature and rainfall for the growing season than for the entire year. 86 per cent of the total cereal products comes from regions having an average July temperature of 70°-80°, while 97 per cent of the total product occurs where the average rainfall for the spring and summer months is between 15 and 30 inches. In these respects Illinois is favorably situated, having an average July temperature of 76° and an average spring and summer rainfall of about 25 inches.

In 1879 Illinois was the leading state in each of the three cereals; corn, wheat, and oats. But in 1889 Iowa took the lead in corn and oats with Illinois second. Minnesota ranked first in wheat production, with California second and Illinois third. In the same year (1889) Illinois produced 14.3 per cent of all the corn, wheat, and oats, grown in the United States.

Some of the changes that took place in the production of cereals in Illinois from 1880 to 1890 may be learned from the following figures. It will be observed that the yields of corn, wheat, rye, and barley, decreased slightly, while the yield of oats increased very greatly.

Yield of Cereals in 1879 and 1889 Compared.

Corn	Wheat	Oats	Rye	Barley
1879=325792481bu.	5111050.2bu.	62139200bu.	3121785bu.	1229523bu.
1889=289697256"	37389444"	137624825 "	2628946"	1197206"

Corn is by far the most important crop in the State. It is also the oldest crop. According to Flagg*, "Marquette, in 1673; Allouez, in 1676; and Membre, in 1679, all mention its cultivation by the Illinois Indians two centuries ago". Reynolds tells us that not much corn was raised by the French in pioneer times, as they did not use it to any great extent for bread, and their stock wintered out for the most on the range. He adds, however, that as early as 1800 it had begun to take a prominent place in the list of cereals. It was not until the central and northern parts of the State became settled, and stock raising grew into prominence, that corn was grown extensively.

By reference to the maps on pages 20 and 26, it will be observed that corn is the leading crop all over the State, but in central and north central

* Vol. 13, Transactions of the Department of Agriculture. Ill., 1875.

sections it receives most prominence. In Gallatin, Logan, Macon, Mason, Moultrie, and Piatt counties between 40 and 45 per cent of the cultivated land is in corn.

Wheat was grown at a very early day. Good authorities say that flour was shipped to New Orleans as early as 1746. Flagg says that up to 1830, or perhaps as late as 1840, winter wheat was probably quite generally grown, but spring wheat was not much sown. He also adds that as cultivation increased and lands became less easily worked, the young growth was less luxuriant, and diseases, injurious insects, and winter killing, became more common. For this reason wheat growing became less frequent in southern counties. About 1850 the introduction of the drill, he says, gave a powerful impetus to the declining industry. Spring wheat was grown extensively in northern Illinois from 1840 to 1860, but it is now generally regarded as an unprofitable crop in that locality. In recent years the very low price of wheat has decreased the acreage considerably and will probably decrease it still more.

By examining the maps on pages 21 and 27 it will be observed that the great wheat producing regions are the southern and river counties. Bottom and timber lands are especially adapted to the growth of wheat, much more so than the prairie soils. In Randolph, StClair, Monroe, and Washington counties between 35 and 51 per cent of the cultivated land is given to wheat, while Alexander, Calhoun, Jackson, Jersey, and Massac counties have between 30 and 35 per cent. Most of the great corn and oats counties of central and northern parts of the State have less than 5 per cent of the cultivated land in wheat.

Oats are of comparatively recent introduction into the State. Flagg says he can find no mention made of them before 1820. Since that time however their growth has steadily increased, especially in northern counties. The maps on pages 22 and 28 show that Clinton, Dupage, DeWitt, Effingham, Ford, Kendall, Livingston, McLean, Marshall, Ogle, Stark, Will, Woodford, and Winnebago counties take the lead, each having between 20 and 25 per cent of the cultivated land in oats.

Rye is not a prominent crop in the State. It is grown more perhaps for early pasture than for grain. The maps on pages 23 and 29 show it to be grown most extensively in Stephenson county where 5.8 per cent of the cultivated land is in rye. Whiteside and Winnebago come next with 4 to 4.5 per cent.

* Barley is a minor crop. Most prominence is given to it in Boone and Stephenson counties, which have between 2 and 3 per cent of their cultivated land in barley, while Lake, McHenry, and Ogle counties have between 1 and 2

per cent.

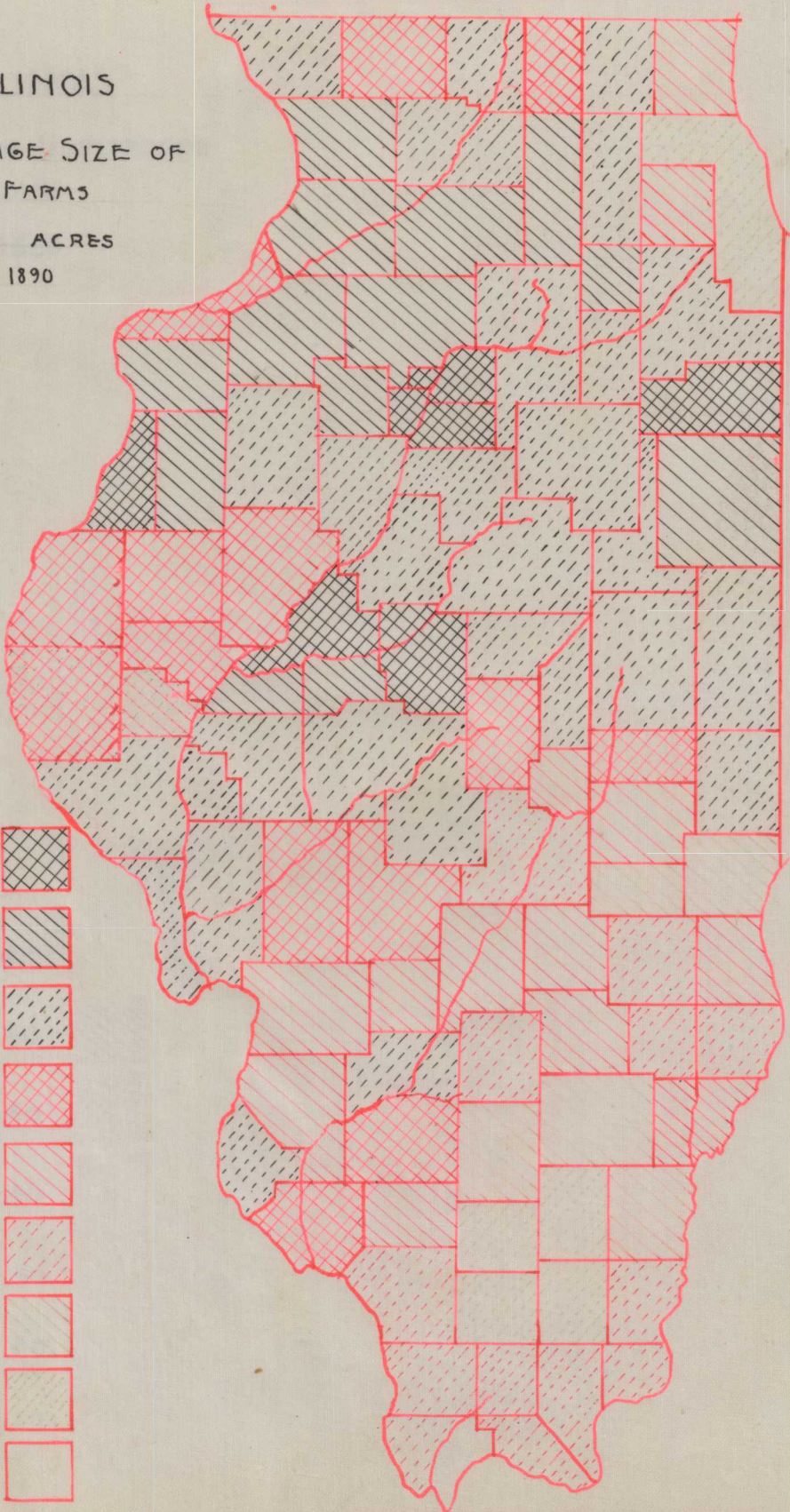
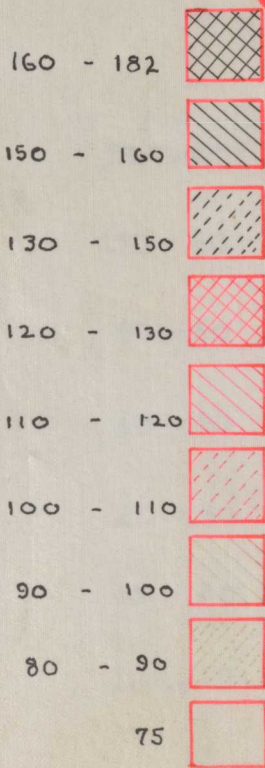
Buckwheat is not much grown. Boone and Cumberland counties are in the lead, with only .2 to .35 of one per cent of the cultivated land given to the crop. Carroll, Crawford, Clay, DeKalb, Kane, McHenry, Richland, Stephenson, and Wayne counties come next with between .1 and .2 of one per cent.

Tobacco, although a minor crop, receives considerable attention in the southern counties, Franklin, Hamilton, Crawford, Saline, and Williamson. In the north, Grundy and Jo Daviess are the only counties in which it is largely grown. The crop has steadily decreased in the State. In 1859 the total yield was 6885262 pounds, while in 1889 it was only 3042936.

Hemp is also a minor crop. In 1889 the total yield for the State was 556 tons, a large part of which was grown in Champaign and adjoining counties.

ILLINOIS
AVERAGE SIZE OF
FARMS
IN ACRES
1890

BETWEEN



ILLINOIS

PERCENT OF UNIMPROVED
LAND

1880

BETWEEN

50 - 60



40 - 50



30 - 40



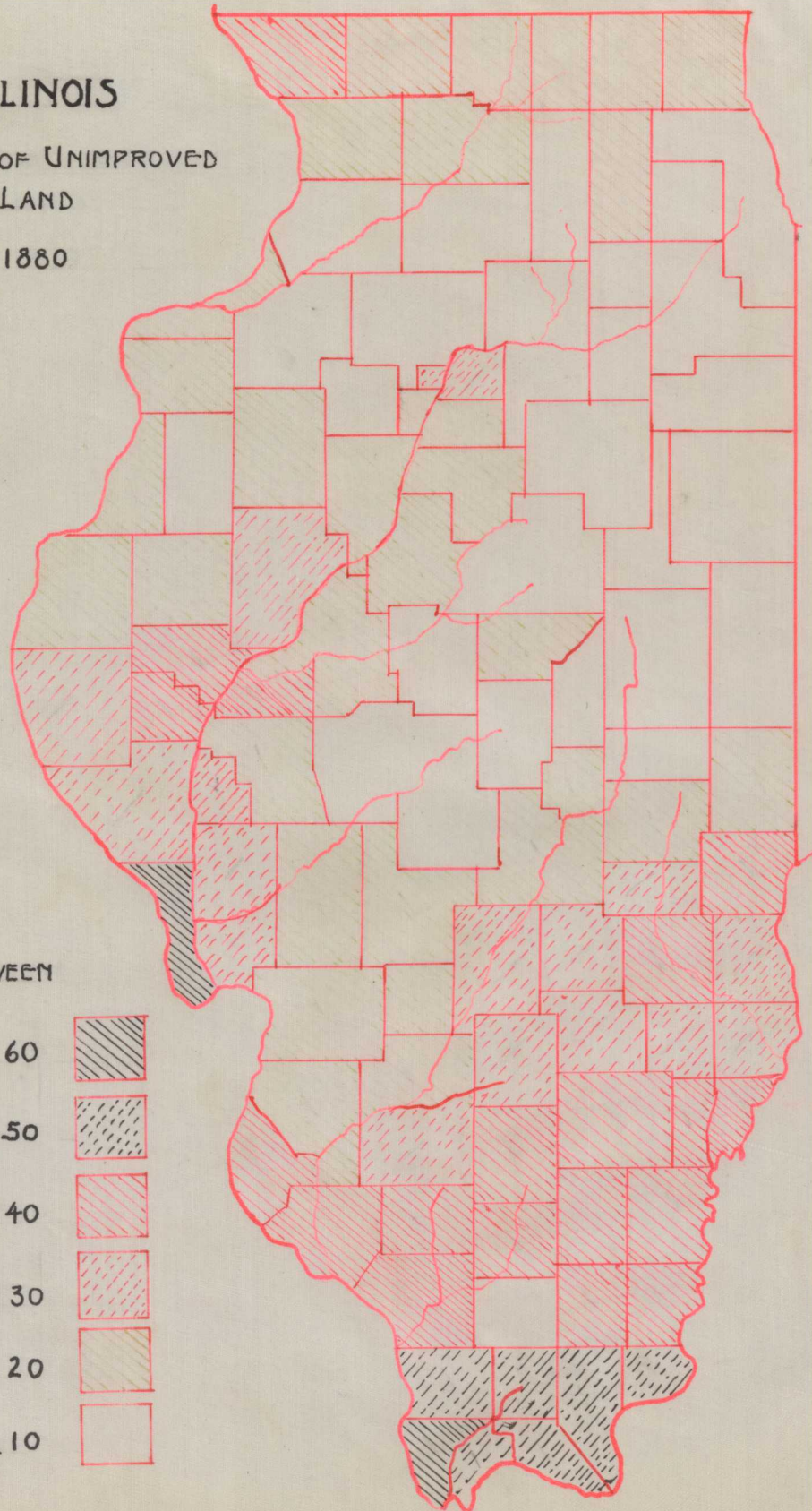
20 - 30



10 - 20

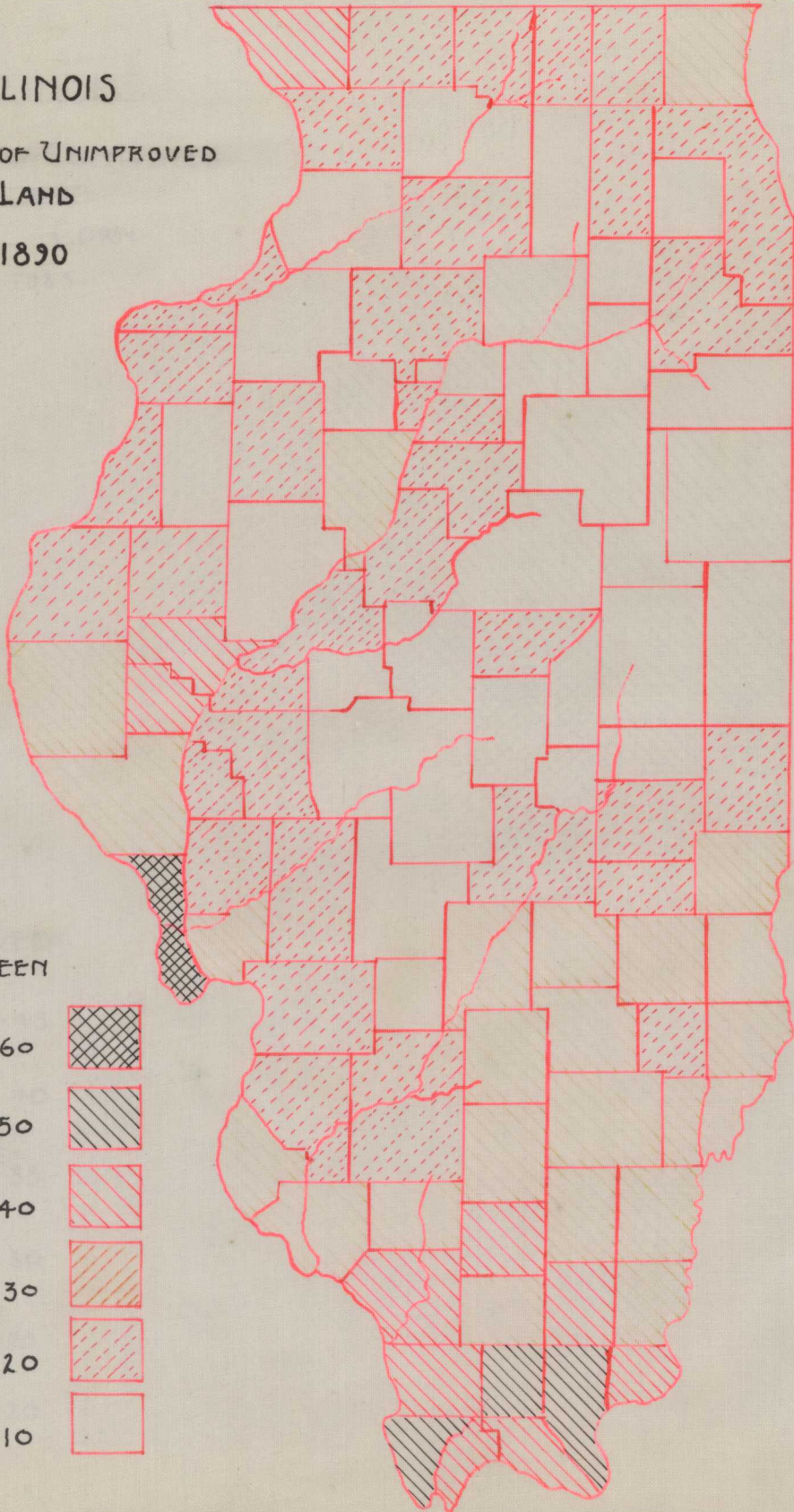


Less Than 10



ILLINOIS

PERCENT OF UNIMPROVED
LAND
1890



BETWEEN

50 - 60

40 - 50

30 - 40








20 - 30

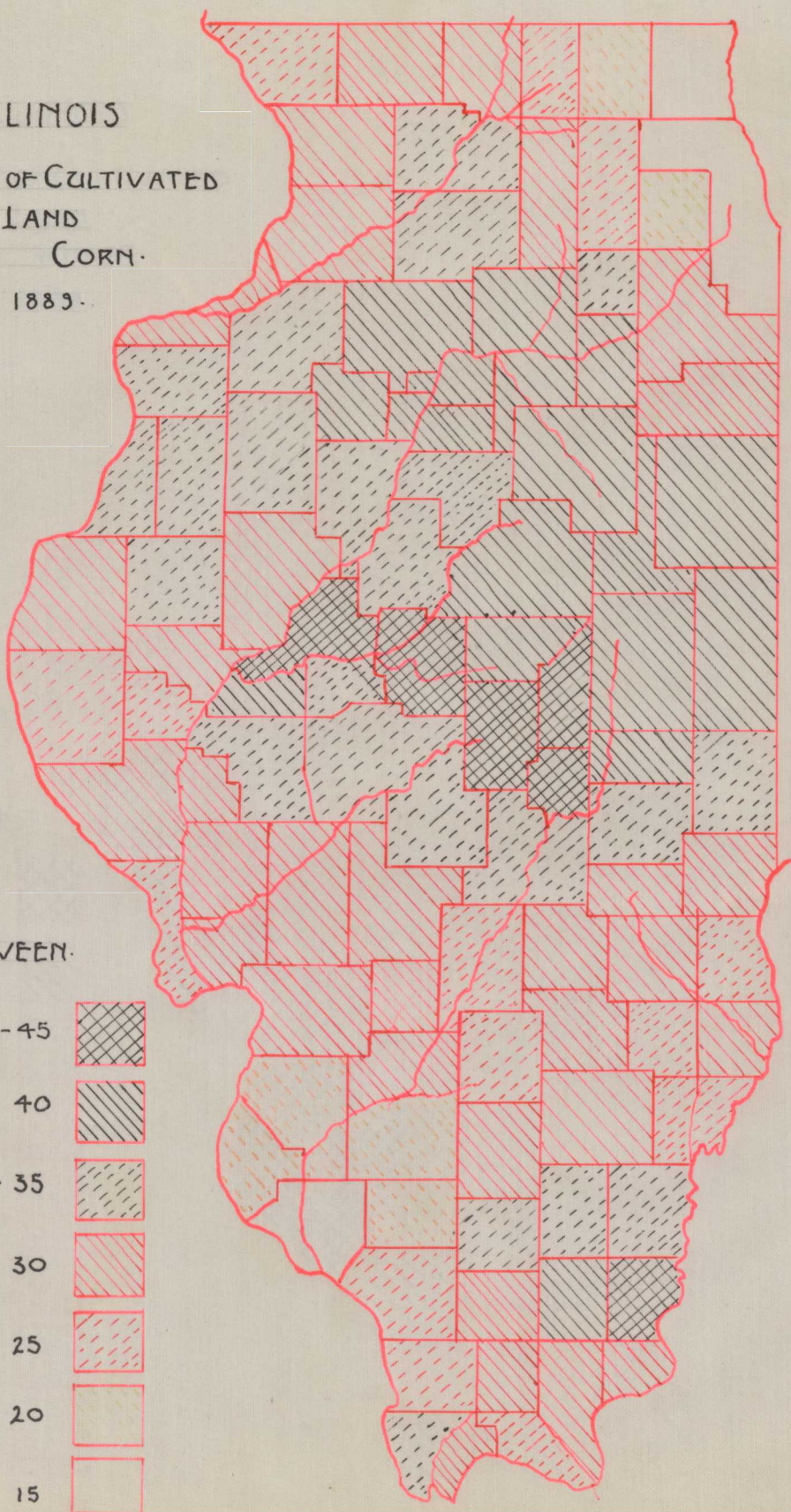
10 - 20

Less than 10

ILLINOIS
PERCENT OF CULTIVATED
LAND
IN CORN.
1889.

BETWEEN.

- 40 - 45 
- 35 - 40 
- 30 - 35 
- 25 - 30 
- 20 - 25 
- 15 - 20 
- 10 - 15 



ILLINOIS

PERCENT OF CULTIVATED
LAND
IN WHEAT.
1889.

BETWEEN

35 - 51



30 - 35



25 - 30



20 - 25



15 - 20



10 - 15



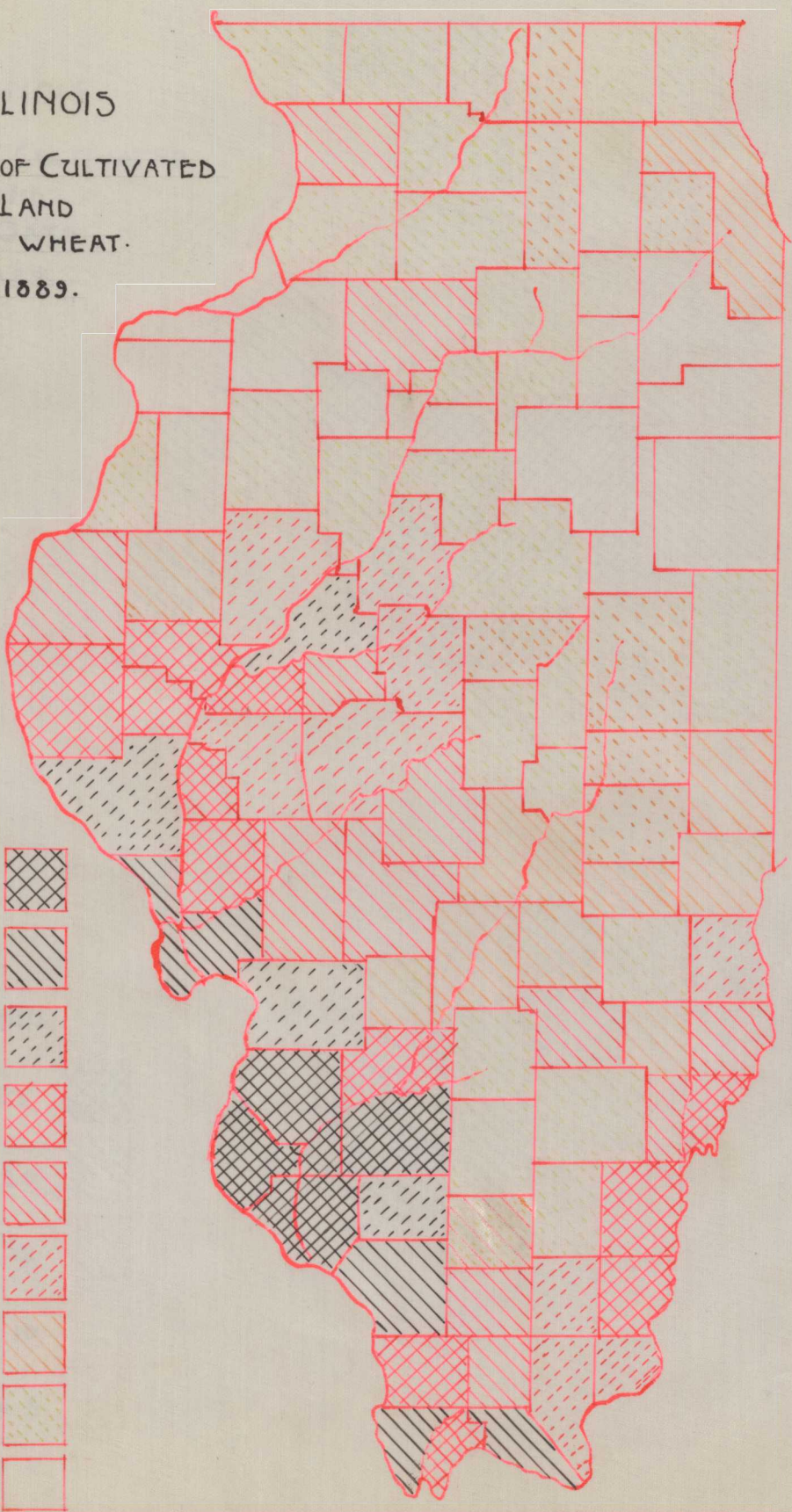
5 - 10



1 - 5



Less than 1



ILLINOIS

PERCENT OF CULTIVATED
LAND
IN OATS
1889.

BETWEEN

20 - 25



15 - 20



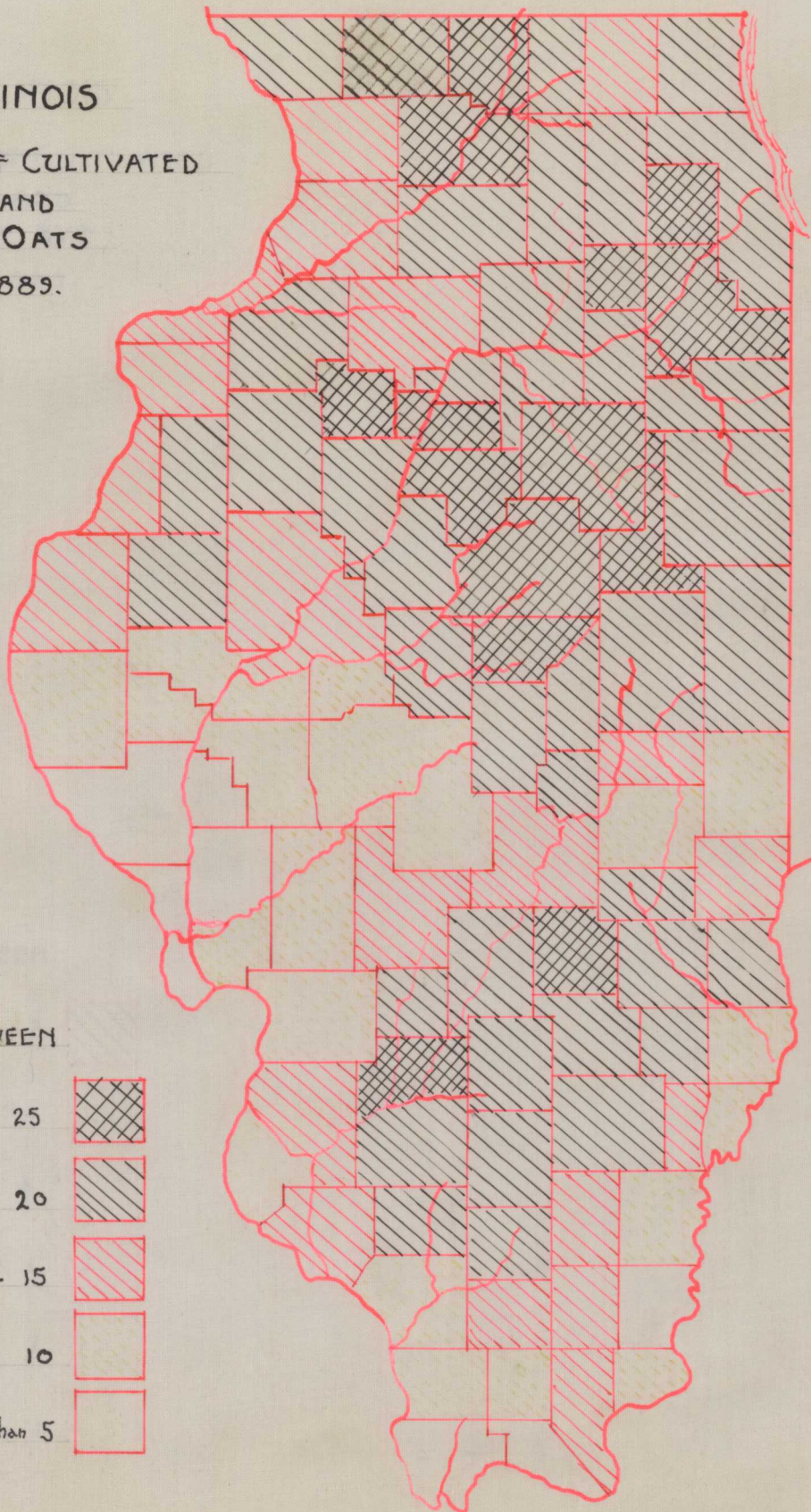
10 - 15



5 - 10



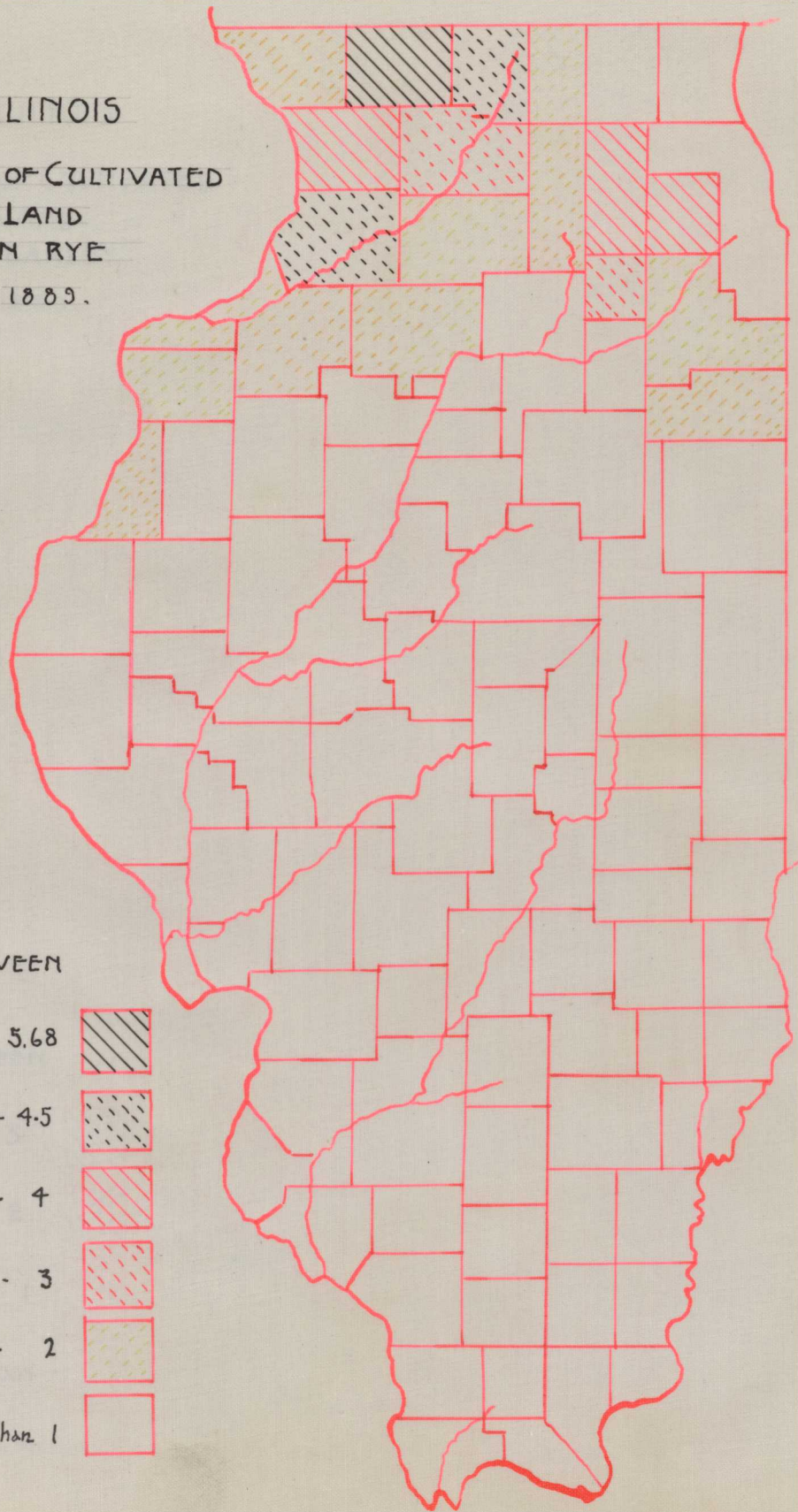
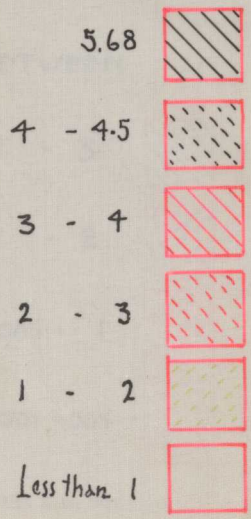
less than 5



ILLINOIS






PERCENT OF CULTIVATED
LAND
IN RYE
1889.

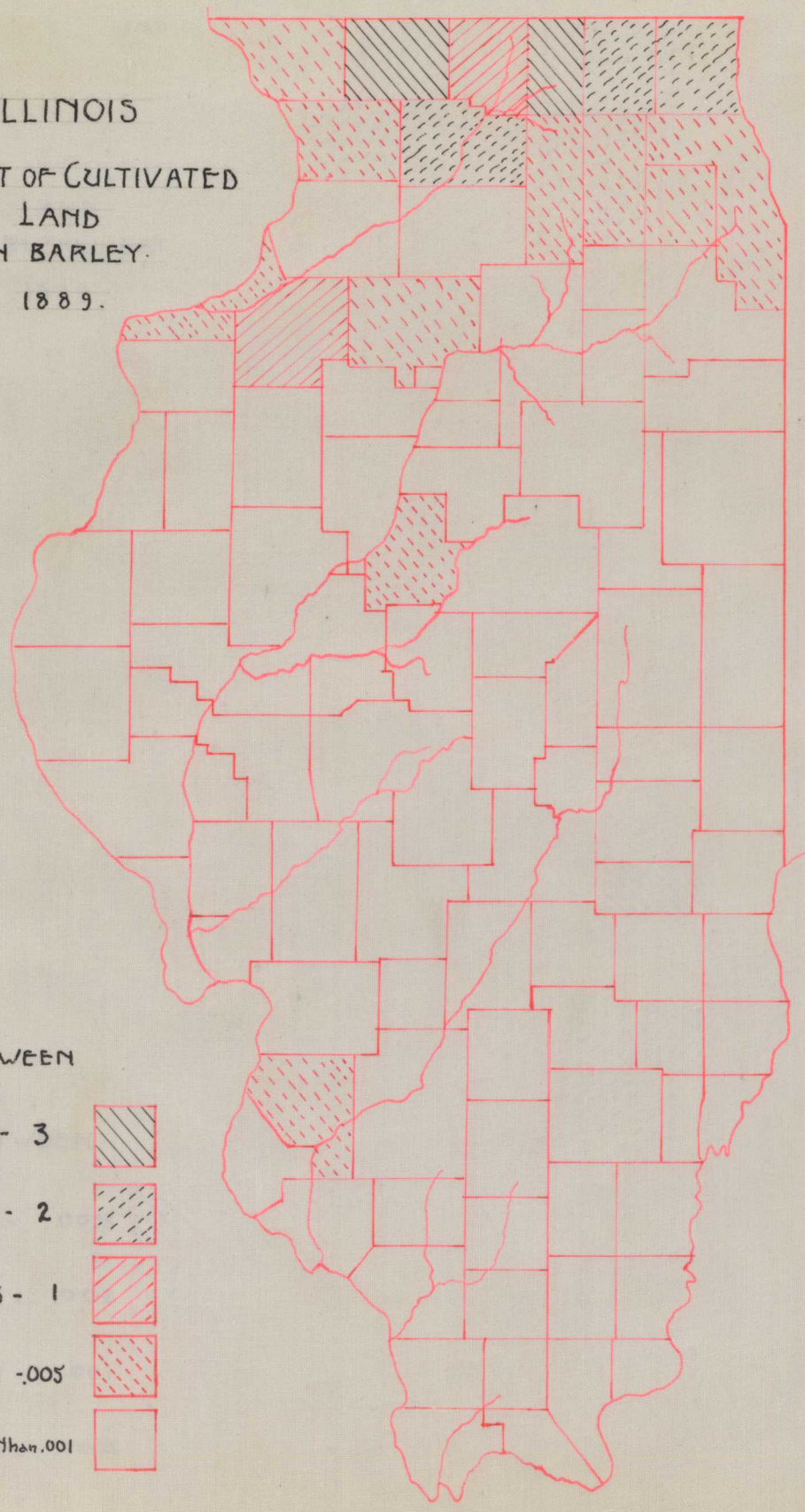
BETWEEN



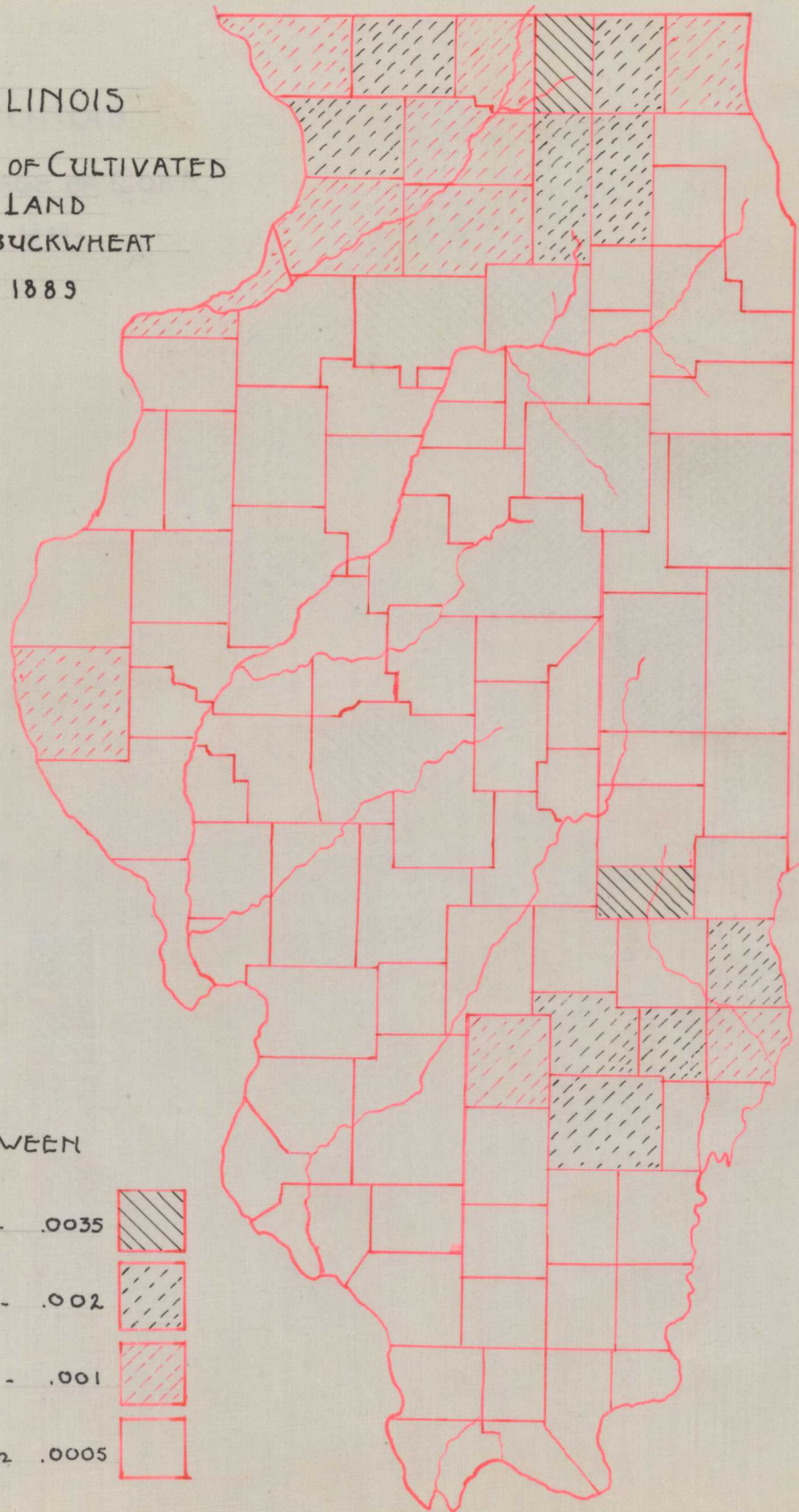
ILLINOIS
PERCENT OF CULTIVATED
LAND
IN BARLEY.
1889.

BETWEEN





- 2 - 3 
- 1 - 2 
- .005 - 1 
- .001 - .005 
- Less than .001 



ILLINOIS
PERCENT OF CULTIVATED
LAND
IN BUCKWHEAT
1889



BETWEEN

- .002 - .0035 
- .001 - .002 
- .0005 - .001 
- Less than .0005 

ILLINOIS
ACREAGE OF CORN,
1889

BETWEEN

224000 &
150000



150000 &
100000



100000 &
70000



70000 &
50000



50000 &
30000



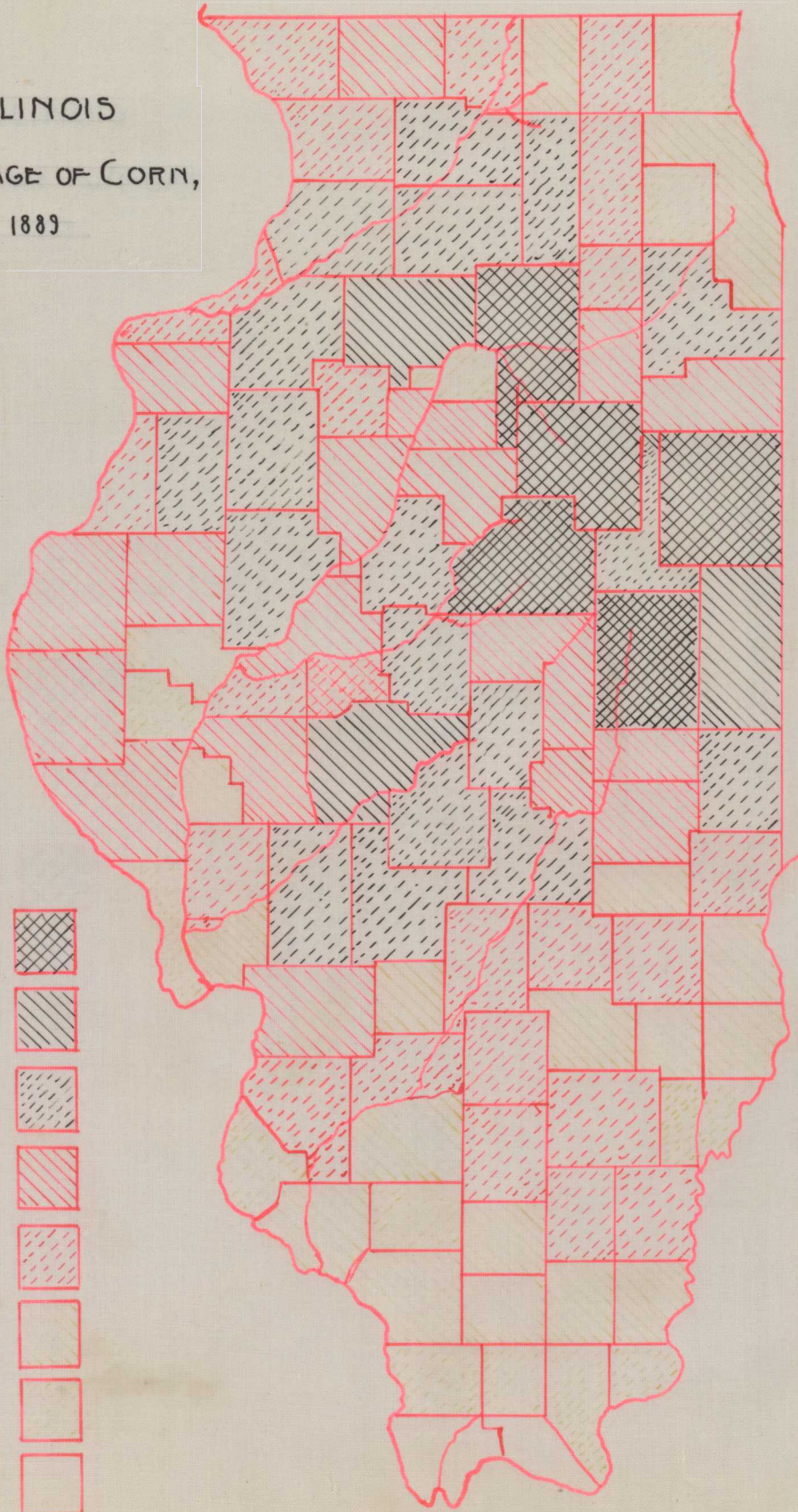
30000 &
15000



15000 &
10000



10000 &
15000



ILLINOIS
ACREAGE OF WHEAT
1889.

BETWEEN

80000 &
107716

60000 &
80000

40000 &
60000

30000 &
40000

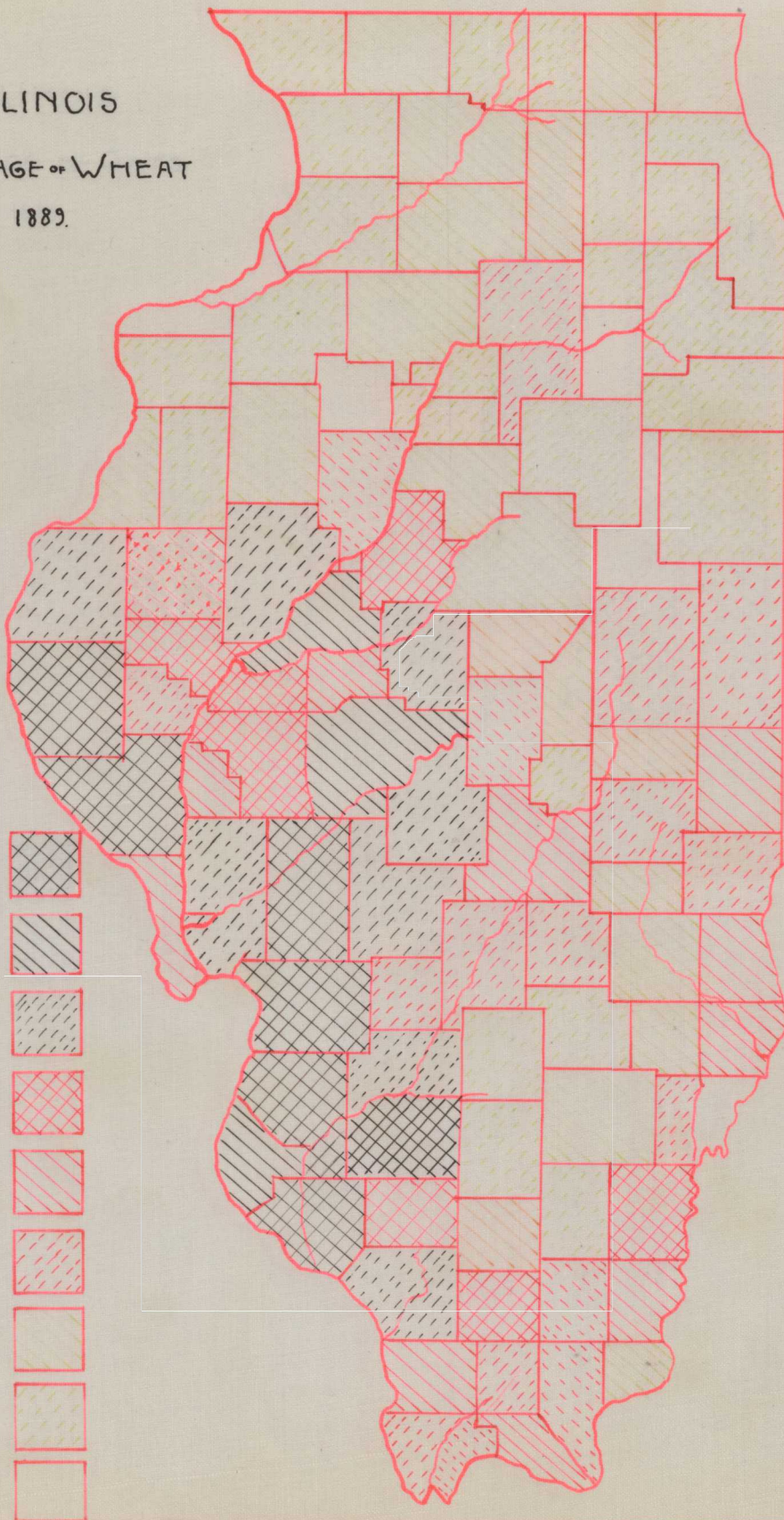
20000 &
30000

10000 &
20000

5000 &
10000

1000 &
5000

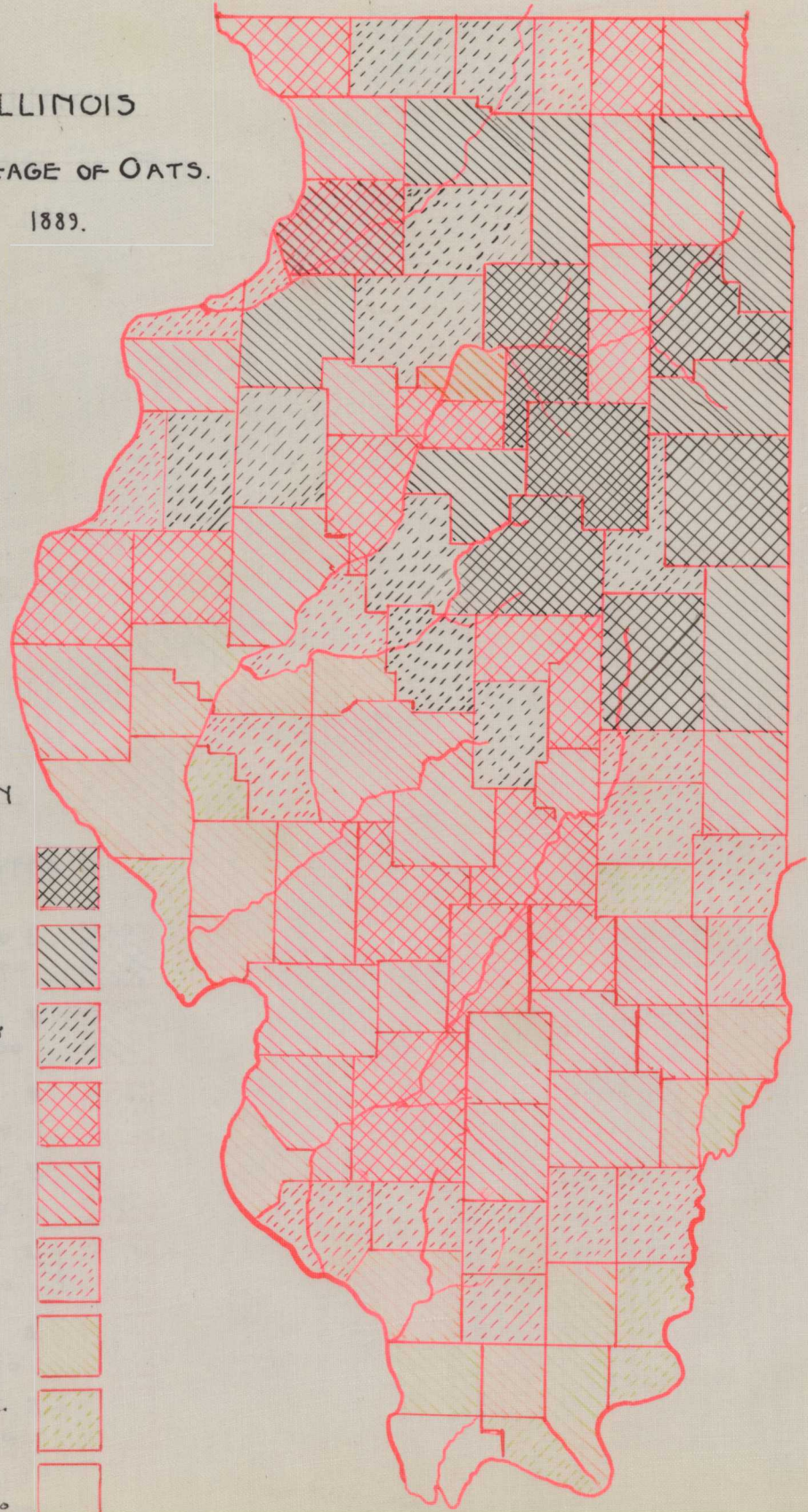
Less than
1000



ILLINOIS
 ACREAGE OF OATS.
 1889.

BETWEEN

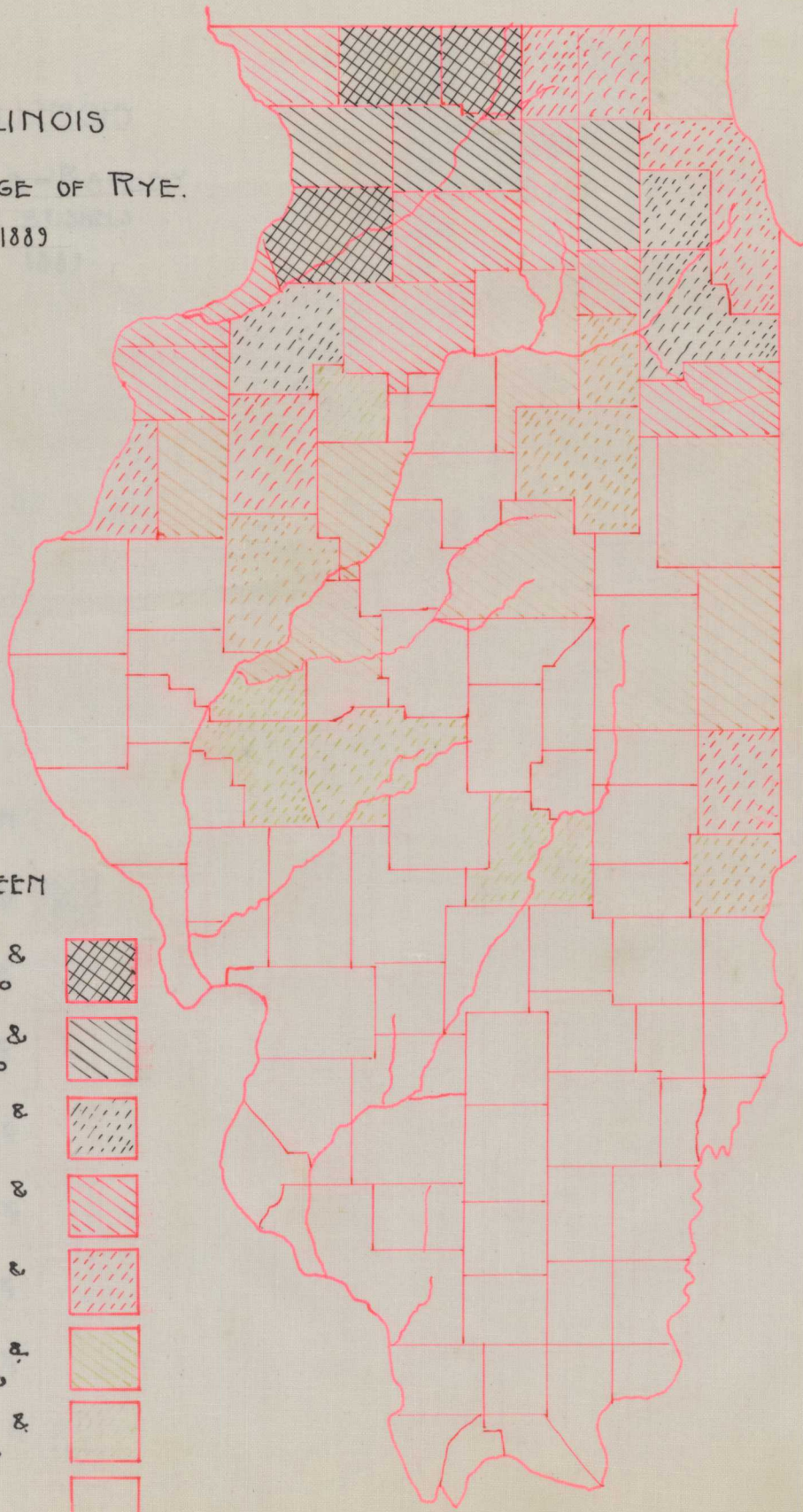
- 100000 &
142733
- 60000 &
100000
- 50000 &
60000
- 40000 &
50000
- 30000 &
40000
- 15000 &
30000
- 5000 &
15000
- 2000 &
5000
- Less than 2000



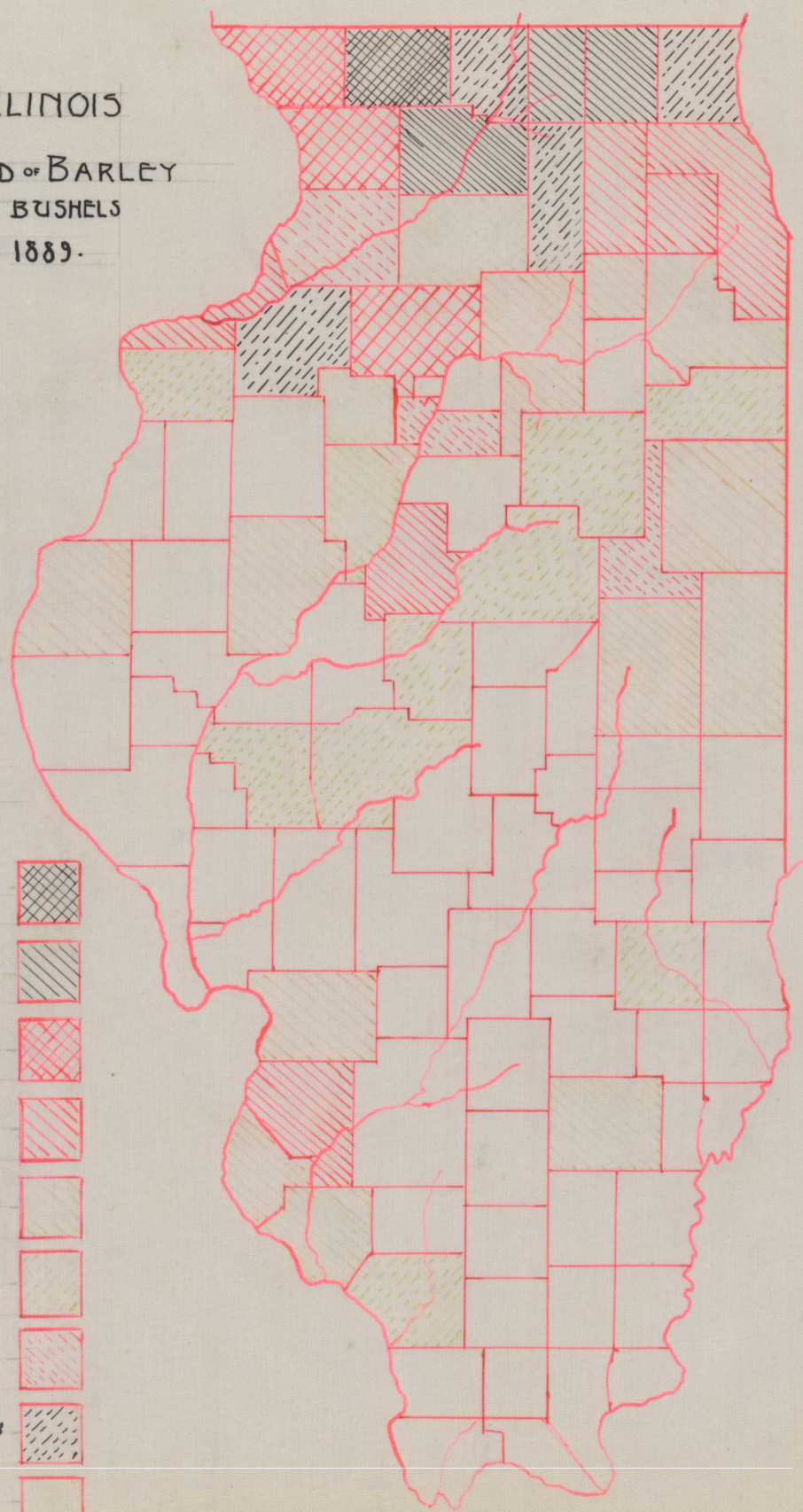
ILLINOIS
ACREAGE OF RYE.
1889

BETWEEN










- 11000 &
16000
- 7000 &
11000
- 5000 &
7000
- 3000 &
5000
- 2000 &
3000
- 1000 &
2000
- 500 &
1000
- Less than
500



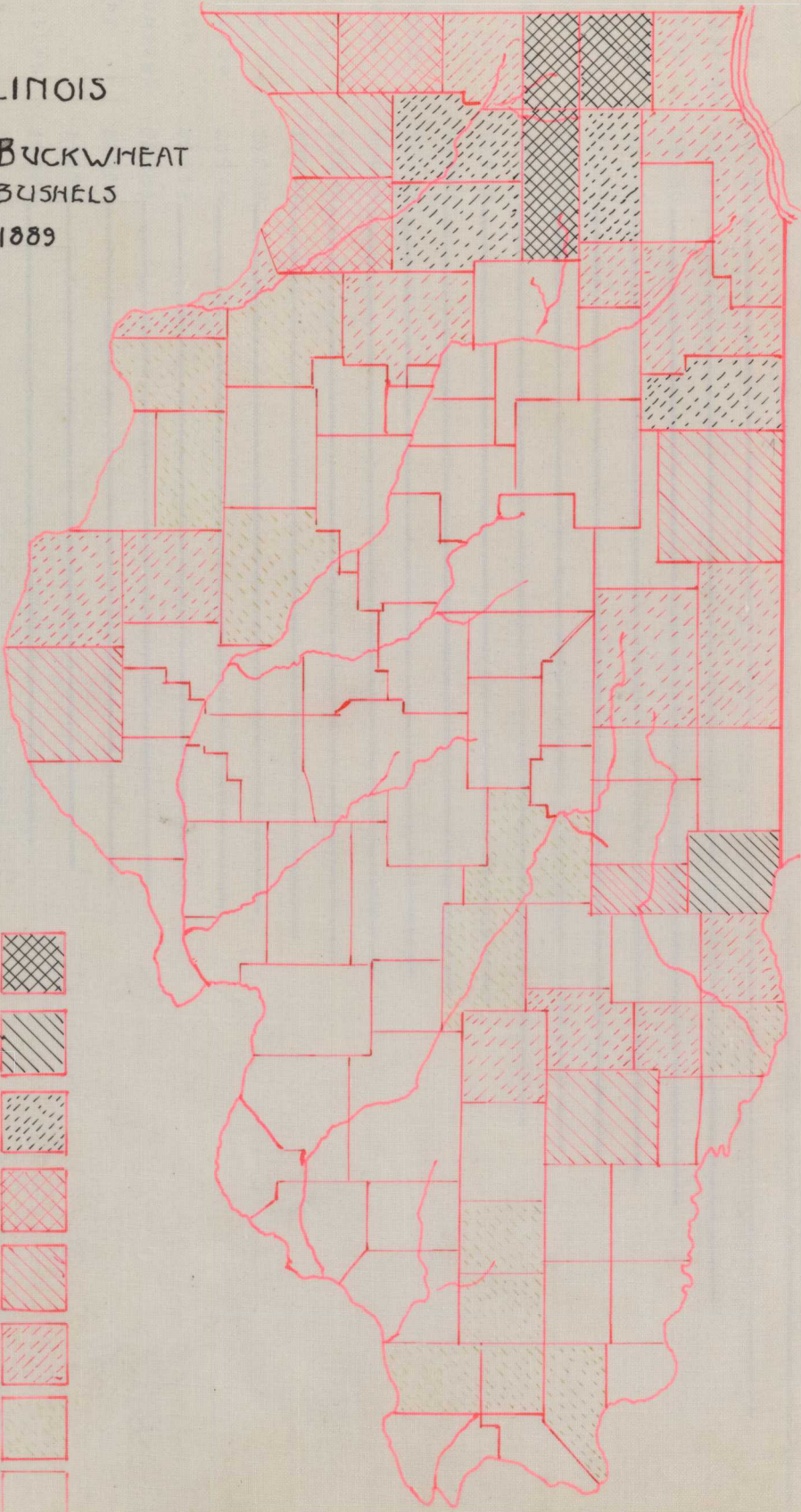
ILLINOIS
 YIELD OF BARLEY
 IN BUSHELS
 1889.











BETWEEN

200000	&	
259347		
130000	&	
174239		
40000	&	
86475		
20000	&	
40000		
10000	&	
20000		
5000	&	
10000		
1000	&	
5000		
500	&	
1000		
Less than		
500		

ILLINOIS
 YIELD OF BUCKWHEAT
 IN BUSHELS
 1889



BETWEEN

7000 & 7437	
5000 & 7000	
4000 & 5000	
3000 & 4000	
2000 & 3000	
1000 & 2000	
500 & 1000	
Less than 500	

NUMBER OF HORSES
ON FARMS JUNE 1st. 1890.

Total 1335289

Mc Lean	40957	_____
La Salle	35980	_____
Livingstone	32614	_____
Iroquois	29640	_____
Champaign	29145	_____
Sangamon	28304	_____
Bureau	28130	_____
Vermilion	27279	_____
Knox	23727	_____
Henry	23491	_____
Macoupin	23163	_____
Hancock	22967	_____
Ogle	22547	_____
Will	21876	_____
Warren	20969	_____
Whiteside	20846	_____
De Kalb	20541	_____
Mc Donough	20268	_____
Shelby	20209	_____
Lee	19574	_____
Christian	19135	_____
Adams	18531	_____
Montgomery	18416	_____
Tazewell	18295	_____
Macon	17924	_____
Logan	17524	_____

Peoria	17265	_____
Morgan	17119	_____
Mercer	16845	_____
Edgar	16737	_____
Mc Henry	16335	_____
Cook	16325	_____
Stephenson	16028	_____
Kankakee	15967	_____
Pike	15692	_____
Woodford	15389	_____
Madison	14396	_____
Winnebago	13850	_____
Kane	13637	_____
Jo Daviess	13427	_____
Ford	13388	_____
Coles	13161	_____
DeWitt	13120	_____
Carroll	13029	_____
Piatt	12361	_____
Fayette	11360	_____
Douglas	11344	_____
Grundy	11223	_____
Rock Island	11054	_____
Marshall	11037	_____
Lake	10966	_____
Schuyler	10761	_____
Wayne	10352	_____
Moultrie	10287	_____
Clark	10198	_____
Henderson	9848	_____

34.

Jefferson	9817	_____
Stark	9729	_____
Kendall	9728	_____
St Clair	9618	_____
Menard	8978	_____
Dupage	8864	_____
Washington	8701	_____
Marion	8699	_____
Bond	8482	_____
Crawford	8431	_____
Mason	8311	_____
Boone	8244	_____
Randolph	8082	_____
Effingham	7904	_____
Jasper	7873	_____
Cass	7643	_____
Jersey	7595	_____
Brown	7411	_____
Clay	7211	_____
Clinton	7201	_____
Hamilton	7164	_____
Cumberland	6786	_____
Lawrence	6501	_____
White	6469	_____
Richland	6369	_____
Williamson	6136	_____
Franklin	6107	_____
Scott	5902	_____
Jackson	5470	_____

Perry 5038 _____
Saline 4940 _____
Putnam 4842 _____
Union 4450 _____
Edwards 3987 _____
Gallatin 3739 _____
Wabash 3597 _____
Pope 3410 _____
Monroe 3350 _____
Johnson 3299 _____
Calhoun 3036 _____
Pulaski 1800 _____
Massac 1883 _____
Hardin 1481 _____
Alexander 1017 _____

35

NUMBER OF CATTLE
ON FARMS JUNE 1. 1890.

Total	3063119
Mc Lean	69600
Whiteside	68812
La Salle	66386
Henry	66359
Mc Henry	65311
Ogle	64511
Bureau	63962
Sangamon	60360
Knox	58587
Fulton	58428
Hancock	57533
Jo Daviess	56538
Lee	56461
Iroquois	55956
Kane	54002
De Kalb	53566
Livingstone	52725
Stephenson	52078
Warren	51667
Mc Donough	49426
Morgan	47959
Will	47956
Macoupin	47142
Vermilion	46717
Mercer	46289
Champaign	45962

Cook	45943
Adams	43510
Christian	43303
Carroll	42882
Winnebago	40415
Shelby	40291
Pike	39806
Edgar	38683
Kankakee	38426
Peoria	36368
Lake	35666
Greene	34132
Montgomery	33965
Rock Island	32652
Tazewell	31486
Macon	30311
Logan	30273
Dupage	28765
Wayne	28042
Henderson	27897
Coles	27322
Woodford	27279
Schuyler	26368
Madison	24679
Ford	23915
Douglas	23766
De Witt	23654
Boone	22992
Fayette	21968

37

Clark	21488	_____
Kendall	21363	_____
Menard	21081	_____
Grundy	21015	_____
Platt	20683	_____
Cass	20372	_____
Marshall	19808	_____
Jefferson	19296	_____
Stark	19294	_____
Moultrie	18141	_____
Jasper	18080	_____
White	17663	_____
Marion	17475	_____
St Clair	16931	_____
Browne	16640	_____
Crawford	16090	_____
Jersey	16058	_____
Randolph	16041	_____
Hamilton	16035	_____
Washington	15718	_____
Clay	15670	_____
Effingham	15113	_____
Jackson	14798	_____
Cumberland	14168	_____
Clinton	14024	_____
Scott	13922	_____
Mason	13571	_____
Franklin	13168	_____
Lawrence	13133	_____

Bond 12936 _____
Williamson 12807 _____
Perry 11853 _____
Saline 11571 _____
Richland 11403 _____
UNIon 10918 _____
Johnson 9557 _____
Gallatin 9537 _____
Edwards 9508 _____
Pope 9340 _____
Putnam 7978 _____
Wabash 7453 _____
Monroe 6149 _____
Pulaski 5419 _____
Massac 5778 _____
Calhoun 5310 _____
Hardin 5193 _____
Alexander 4374 _____

NUMBER OF SHEEP, NOT INCLUDING
SPRING LAMBS, ON FARMS JUNE 1, 1890.

Total 922631

Lake	65584	_____
Mc Lean	33178	_____
Fulton	28094	_____
Vermilion	27499	_____
Macoupin	25194	_____
Edgar	23149	_____
Sangamon	22819	_____
Montgomery	21683	_____
Pike	20667	_____
Shelby	20075	_____
Christian	18848	_____
Crawford	17147	_____
Wayne	16847	_____
Mc Henry	16727	_____
De Witt	15562	_____
Adams	15368	_____
Clark	14895	_____
Fayette	14252	_____
Morgan	13445	_____
Greene	12576	_____
Henry	11935	_____
Tazewell	11305	_____
Coles	11230	_____
Logan	11193	_____
La Salle	11073	_____
Jo Daviess	11041	_____

40

4

Champaign	10500	_____
Bureau	10204	_____
Bond	10170	_____
Edwards	9898	_____
Richland	9727	_____
Macon	9470	_____
Marion	9280	_____
Kendall	9269	_____
Jefferson	9037	_____
Winnebago	8759	_____
Brown	8674	_____
Iroquois	8669	_____
Lawrence	8529	_____
Hamilton	8443	_____
Douglas	8433	_____
Stephenson	8213	_____
Knex	8198	_____
Menard	8151	_____
Kane	8131	_____
Jasper	7881	_____
Clay	7865	_____
Livingstone	7724	_____
Madison	6822	_____
Will	6698	_____
Peoria	6680	_____
Stark	6570	_____
Whiteside	6426	_____
Hancock	6285	_____
Clinton	6276	_____

Boone	6156	_____
Williamson	6131	_____
Mc Donough	5855	_____
Randolph	5848	_____
Washington	4943	_____
Wabash	4893	_____
Marshall	4751	_____
Piatt	4691	_____
White	4613	_____
Schuyler	4609	_____
Pope	4594	_____
Cumberland	4481	_____
Effingham	4471	_____
Saline	4434	_____
Jersey	4413	_____
Jackson	4281	_____
Johnson	4272	_____
Moultrie	4256	_____
Franklin	4232	_____
Kankakee	4194	_____
Woodford	4182	_____
Warren	4158	_____
Ogle	4148	_____
De Kalb	4139	_____
Union	4104	_____
St Clair	3969	_____
Lee	3948	_____
Mercer	3855	_____

Ford	3740	_____
Ferry	3529	_____
Grundy	3218	_____
Scott	3198	_____
Dupage	3175	_____
Carroll	2812	_____
Calhoun	2594	_____
Rock Island	2573	_____
Cook	2141	_____
Putnam	2094	_____
Gallatin	2044	_____
Monroe	1788	_____
Hardin	1551	_____
Cass	1543	_____
Pulaski	1126	_____
Massac	980	_____
Alexander	727	_____
Mason	521	_____

NUMBER OF SWINE
ON FARMS JUNE 1. 1890.

Total	5924818	
Mc Lean	181359	_____
Fulton	162895	_____
Sangamon	139733	_____
Bureau	129867	_____
Henry	123939	_____
Champaign	119092	_____
La Salle	117123	_____
Vermilion	103558	_____
Livingstone	108502	_____
Warren	106633	_____
Adams	103972	_____
Ogle	102854	_____
Knox	100927	_____
Iroquois	100259	_____
Mc Donough	99454	_____
MORGan	99323	_____
Mercer	98535	_____
De Kalb	97862	_____
Whiteside	96889	_____
Hancock	95844	_____
Christian	93778	_____
Macoupin	94967	_____
Stephenson	91459	_____
Pike	90591	_____
Peoria	88823	_____
Shelby	87718	_____

44

Macon	84795	_____
Logan	84579	_____
Jo Daviess	83896	_____
Montgomery	73869	_____
Woodford	72861	_____
Lee	71587	_____
De Witt	71402	_____
Tazewell	71370	_____
Greene	67334	_____
Carroll	66203	_____
Madison	65609	_____
Coles	63074	_____
Rock Island	62691	_____
Piatt	60979	_____
Henderson	60260	_____
Edgar	58551	_____
Marshall	57074	_____
Menard	56949	_____
Winnebago	54542	_____
Douglas	54119	_____
Schuyler	53714	_____
Will	53400	_____
Ford	52926	_____
Mc Henry	51354	_____
Jersey	50982	_____
Kankakee	47338	_____
Kendall	44846	_____
Wayne	44012	_____
Jefferson	42450	_____
Kane	42142	_____

45

Brown	41575	_____
Stark	40885	_____
Williamson	39747	_____
St Clair	38659	_____
Moultrie	38037	_____
Scott	38026	_____
Clark	37941	_____
Cass	37735	_____
Fayette	37522	_____
White	37476	_____
Jackson	33880	_____
Randolph	33840	_____
Mason	33605	_____
Cumberland	32349	_____
Hamilton	32345	_____
Grundy	32061	_____
Franklin	31711	_____
Cook	31281	_____
Effingham	29590	_____
Marion	28703	_____
Bond	28322	_____
Crawford	28319	_____
Jasper	28147	_____
Clay	27737	_____
Boone	27106	_____
Union	26742	_____
Saline	26552	_____
Clinton	25635	_____
Dupage	25309	_____
Lake	25275	_____

Lawrence	23793	_____
Washington	23453	_____
Johnson	22926	_____
Richland	22369	_____
Perry	21907	_____
Gallatin	21388	_____
Calhoun	18784	_____
Monroe	18041	_____
Pope	17385	_____
Putnam	17143	_____
Edwards	17133	_____
Wabash	16743	_____
Massac	11862	_____
Pulaski	11460	_____
Hardin	10178	_____
Alexander	8543	_____

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