TRENDS IN MICHIGAN AGRICULTURE
1900-1945

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William Edward Dickinson

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This is to certify that the

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presented by

WILLIAM E. DICKISON

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of the requirements for

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Kenneth T. Wright
Major professor
for E B Hill

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TRENDS IN MICHIGAN AGRICULTURE
1900 - 1945

by

William Edward Dickison

A THESIS

Submitted to the School of Graduate Studies of Michigan
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TRENDS IN MICHIGAN AGRICULTURE

1900 - 1945

VITA

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

FIGURE PAGE

FIGURE PAGE

FIGURE PAGE

TRENDS IN MICHIGAN AGRICULTURE
1900 - 1945

William Edward Dickison

CHAPTER I
INTRODUCTION

The primary purpose of this study is to determine the changes and trends taking place in leading products in Michigan agriculture for interpretation and use in promoting more sound farm management. Secondly, to predict in so far as possible the future developments that seem likely to take place in the major enterprises in Michigan agriculture such as trends in types and numbers of livestock, and kinds and acres of crops grown.

THE PROBLEM

Successful farming depends on the proper utilization of land, labor and capital to secure the greatest net returns over a long period of years. The proper use of these factors, however, requires that farmers know (1) the changes and trends taking place in Michigan agriculture, (2) the importance of Michigan agriculture in the national picture, and (3) the effect of national trends on the major enterprises in Michigan agriculture. Farmers have great difficulty in getting a picture of these trends and changes so that they can

make desirable adjustments in their own farm organization and plans.

Data are now available but not in a form that farmers can best use. Insufficient attempts have been made to interpret and analyze these trends, the knowledge of which is necessary for successful and efficient organization and operation of Michigan farms. There is a need for information on an area and county level that the Extension Service and others working with farmers may use. There is a need for information on changes taking place in Michigan agriculture for policy making decisions.

The general organization of the remainder of this thesis will be as follows: Chapter II, Land and Numbers of Farms; Chapter III, Major Field Crops with a section devoted to the important fruit growing areas and important truck crop areas; Chapter IV, Livestock and Poultry; Chapter V, Income; Chapter VI, Area Trends; and Chapter VII, Summary and Conclusion.

The major source of data used were the Agricultural Census of 1900, 1910, 1920, 1925, 1930, 1935, 1940 and 1945. In addition, the Crop Reports for Michigan, the Dairy Situation, Livestock and Meat Situation, Poultry and Egg Situation, and the Wool Situation published by the Bureau of Agricultural Economics were also used.

Michigan is divided into 17 Type of Farming Areas which are shown in Figure 1 on a natural line basis. In order to

incorporate county data into area data these type of farming areas were placed on county lines as shown in Figure 2. A type of farming area refers primarily to the kinds and amounts of the different crop and livestock enterprises composing the farm organization. Type of farming areas are usually determined by natural and economic factors but may be modified or influenced by biological and personal factors. At present political conditions are often very important in determining type of farming.

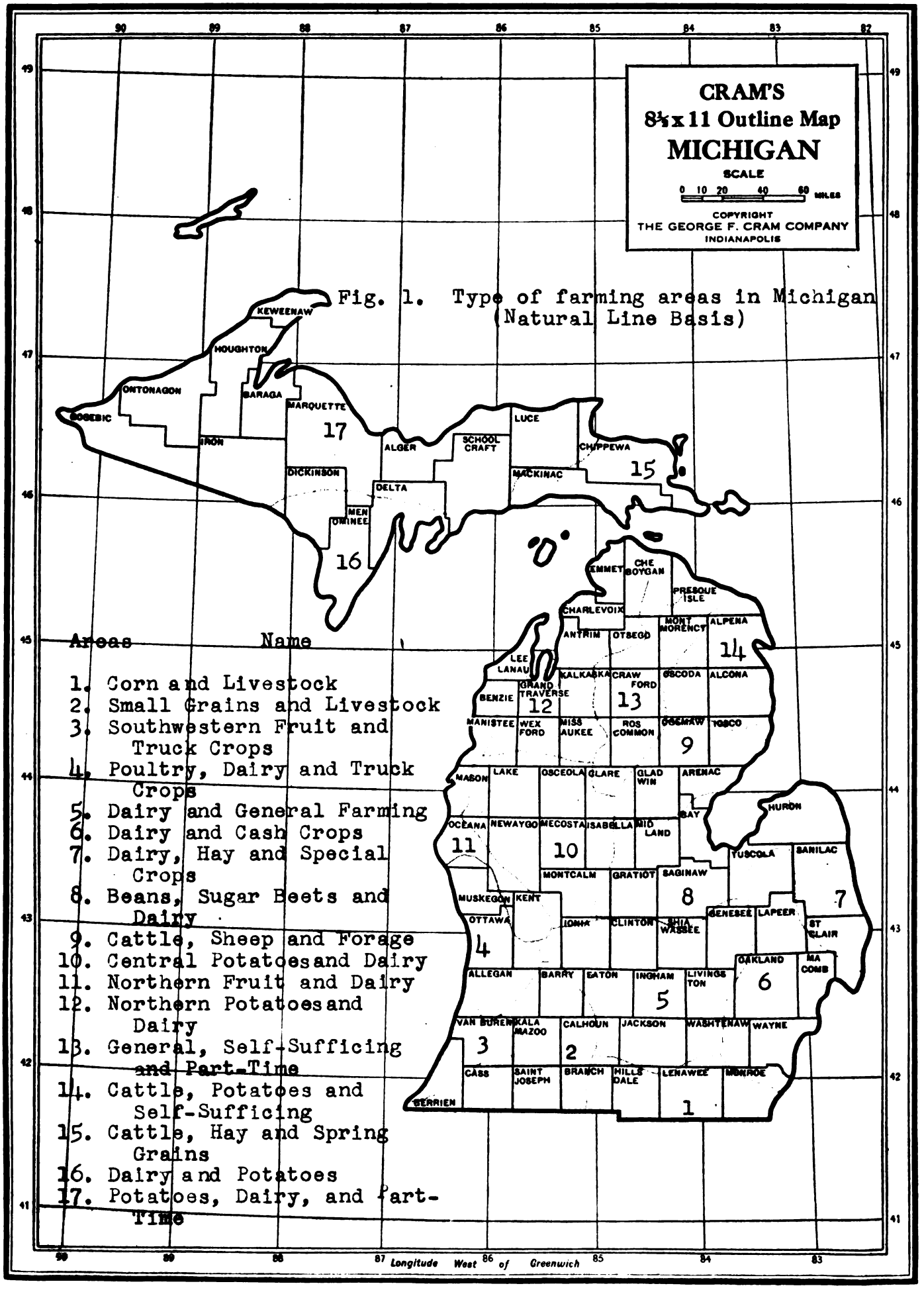


Fig. 1. Type of farming areas in Michigan (Natural Line Basis)

Areas	Name
1.	Corn and Livestock
2.	Small Grains and Livestock
3.	Southwestern Fruit and Truck Crops
4.	Poultry, Dairy and Truck Crops
5.	Dairy and General Farming
6.	Dairy and Cash Crops
7.	Dairy, Hay and Special Crops
8.	Beans, Sugar Beets and Dairy
9.	Cattle, Sheep and Forage
10.	Central Potatoes and Dairy
11.	Northern Fruit and Dairy
12.	Northern Potatoes and Dairy
13.	General, Self-Sufficing and Part-Time
14.	Cattle, Potatoes and Self-Sufficing
15.	Cattle, Hay and Spring Grains
16.	Dairy and Potatoes
17.	Potatoes, Dairy, and Part-Time

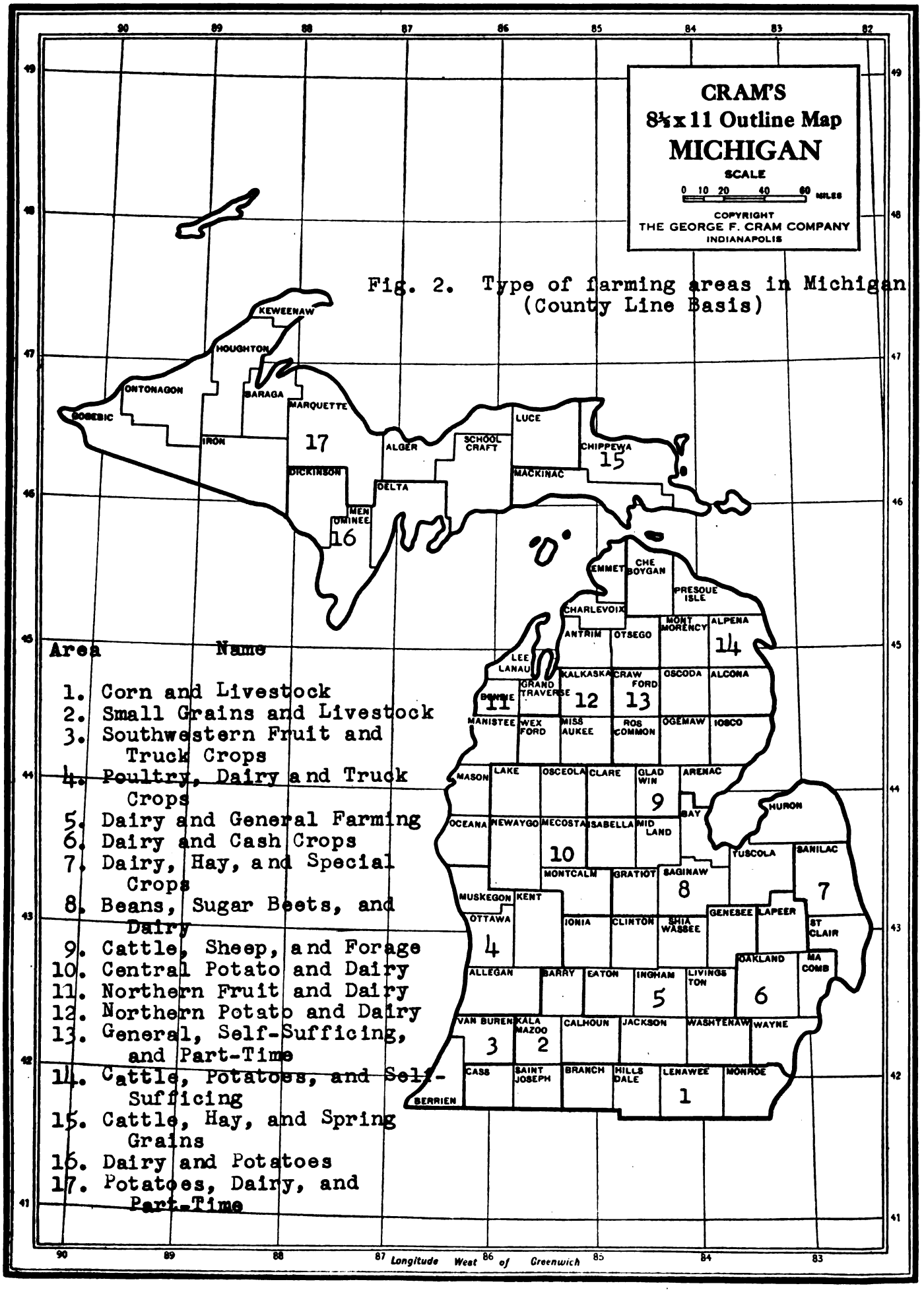


Fig. 2. Type of farming areas in Michigan (County Line Basis)

Area	Name
1.	Corn and Livestock
2.	Small Grains and Livestock
3.	Southwestern Fruit and Truck Crops
4.	Poultry, Dairy and Truck Crops
5.	Dairy and General Farming
6.	Dairy and Cash Crops
7.	Dairy, Hay, and Special Crops
8.	Beans, Sugar Beets, and Dairy
9.	Cattle, Sheep, and Forage
10.	Central Potato and Dairy
11.	Northern Fruit and Dairy
12.	Northern Potato and Dairy
13.	General, Self-Sufficing, and Part-Time
14.	Cattle, Potatoes, and Self-Sufficing
15.	Cattle, Hay, and Spring Grains
16.	Dairy and Potatoes
17.	Potatoes, Dairy, and Part-Time

CHAPTER II

LAND AND NUMBER OF FARMS

Soil Resources

Figure 3 shows the distribution of first class land by counties in Michigan.[1] The land classification in Figure 3 was determined by rating the various land types upon the basis of their physical suitability for the prevailing types of farming, in conjunction with farmers' present and past experience on a particular land type. Any soil or land type which is given the rank of first class for general agriculture must be suitable for the successful production of a number of crops, but not for every crop. We find that those counties with the greatest amount of first class land are in the southeastern part of the state. All are in Type of Farming Areas 1, 5, 6, 7 and 8. Counties with the least amount of first class land are all located in the northern half of the lower peninsula and the upper peninsula.

In the national picture Michigan ranks 26th among all states in the amount of land in farms and 16th in the amount of land available for crops.[2]

1/ Adapted from Table 3 Agricultural Land Classes in Michigan by Counties from Michigan Special Bulletin 231 Agricultural Land Classification and Land Types of Michigan.

2/ Crop Report for Michigan, Jan., 1940 U.S.D.A. with Michigan Department of Agriculture.

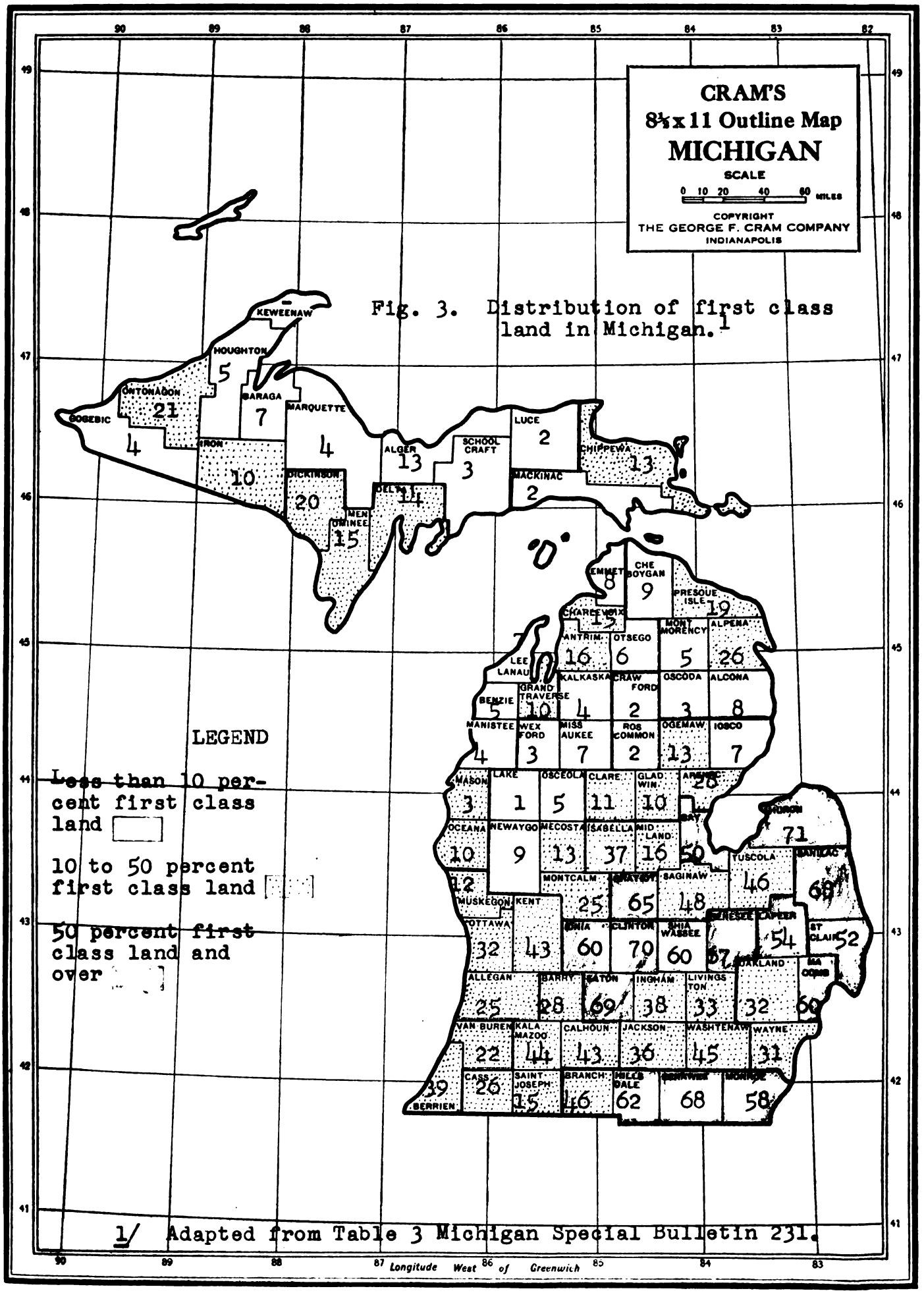


Fig. 3. Distribution of first class land in Michigan.[1]

1/ Adapted from Table 3 Michigan Special Bulletin 231.

Number of Farms

In addition to the census definition of a farm given below, the farm must consist of three acres of land or have produced agricultural products valued at $250 or more.[3] This definition of a farm was essentially the same for the 1945, 1940, 1935, 1930, and 1925 Censuses of Agriculture. The definition used for the 1920 and 1910 Censuses of Agriculture was somewhat more inclusive. In those years farms of less than three acres with products valued at less than $250 were included provided they required the continuous services of at least one person. Because of the difference in price level, the $250 limit for the minimum value of products for farms of under three acres resulted in the inclusion in 1945 of more farms at or near the lower limits of value or acreage than were included in the earlier censuses.[4]

The number of farms in Michigan reached a high point of 206,960 in 1910 and since then has decreased to 175,268

3/ Census of Agriculture 1945, P VII. "A farm is all the land on which some agricultural operations are performed by one person, either by his own labor alone or with the assistance of members of his household, or hired employees. The land operated by a partnership is likewise considered a farm. A 'farm' may consist of a single tract of land, or a number of separate tracts, and the separate tracts may be held under different tenures, as when one tract is owned by the farmer and another tract is rented by him. When a landowner has one or more tenants, renters, croppers, or managers, the land operated by each is considered a farm."

4/ Census of Agriculture 1945.

in 1945. Although the total number of farms has been decreasing certain size groups of farms have decreased less than others and some have increased as shown by Table 1.

Table 1. Number of farms by size groups in Michigan, Census Years 1920, 1930, 1940 and 1945

Census Year	Acreage Size Group							
	Total	Under 10	10 - 19	20 - 99	100 - 259	260 - 499	500 - 999	1000 & over
1920	196,447	6,003	6,741	112,156	65,881	4,839	634	193
1930	169,372	5,780	6,455	89,933	61,126	5,275	636	167
1940	187,589	12,675	18,951	86,810	62,001	6,220	763	169
1945	175,268	11,202	*	*	62,091	8,457	1,064	214

*not available

The increase or decrease of farms by size groups has been somewhat different in Michigan than in the United States (Table 2). The decrease in the 20-99 acre group has been greater in Michigan than in the United States, also the 260-499 acre group has increased in Michigan while decreasing in the United States.

Table 2. Number of farms by size groups in the United States Census Years 1920, 1930, 1940 and 1945[5]

Census Year	Total	Acreage Size Group: Under 10	10 - 19	20 - 99	100 - 259	260 - 499	500 - 999	1000 & over
		Thousands						
1920	6,448	289	508	2,978	1,980	476	150	67
1930	6,289	359	560	2,815	1,863	451	160	81
1940	6,097	506	559	2,512	1,796	459	164	101
1945	5,859	594	526	2,286	1,693	473	174	113

Within Michigan there has been a variance in the trend of farm numbers. The number of farms in Michigan have decreased 14 percent since 1900. All areas have shown a decrease except 9, 14, 15, 16, and 17 which have shown an increase in number of farms (Figures 4 and 5). These areas are all in the northern part of the state where the development of agriculture has been later than in the southern part. The leading counties in number of farms are Kent, Allegan, Berrien, Saginaw and Genesee.

5/ Changes in Farming, p. 42.

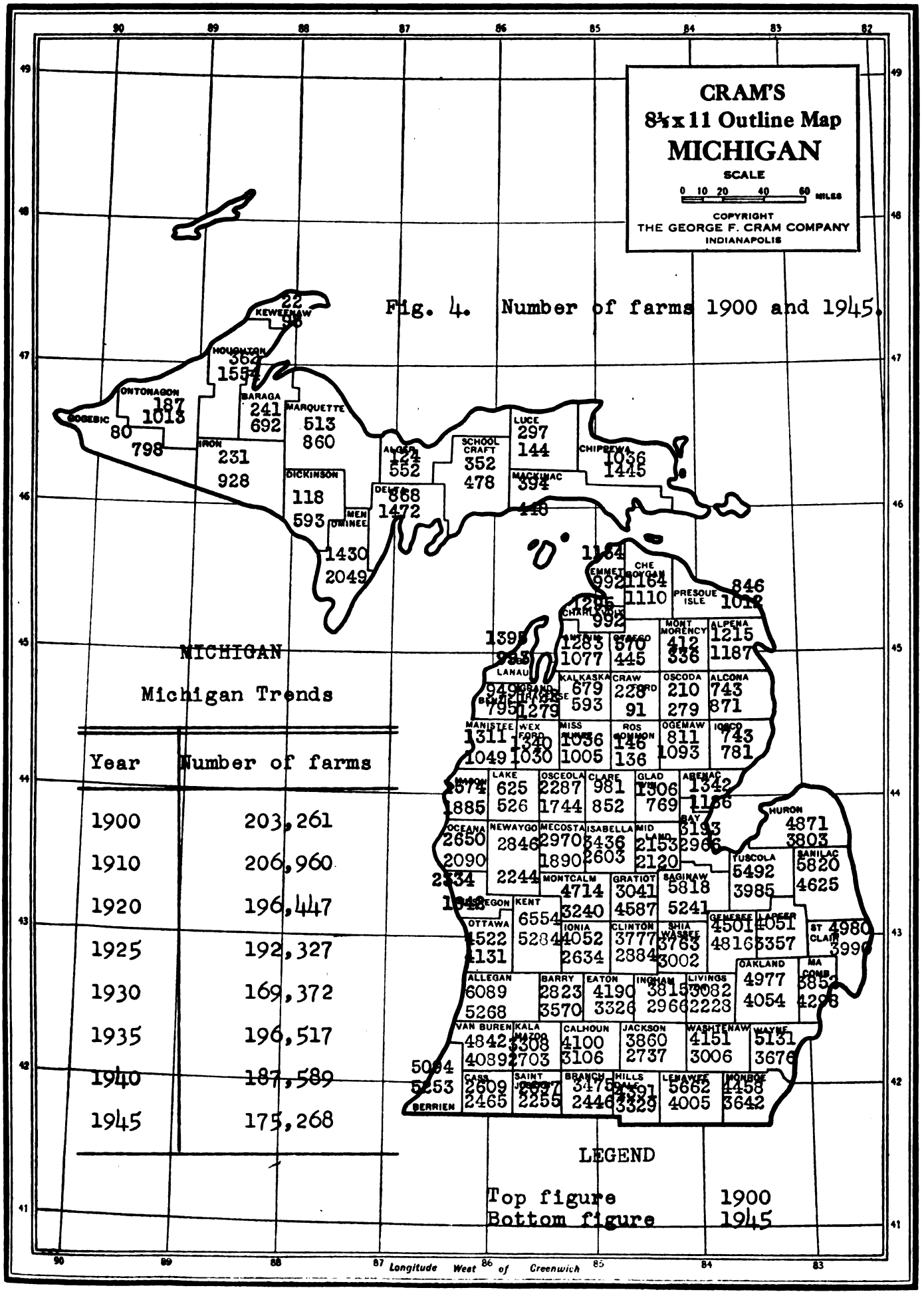


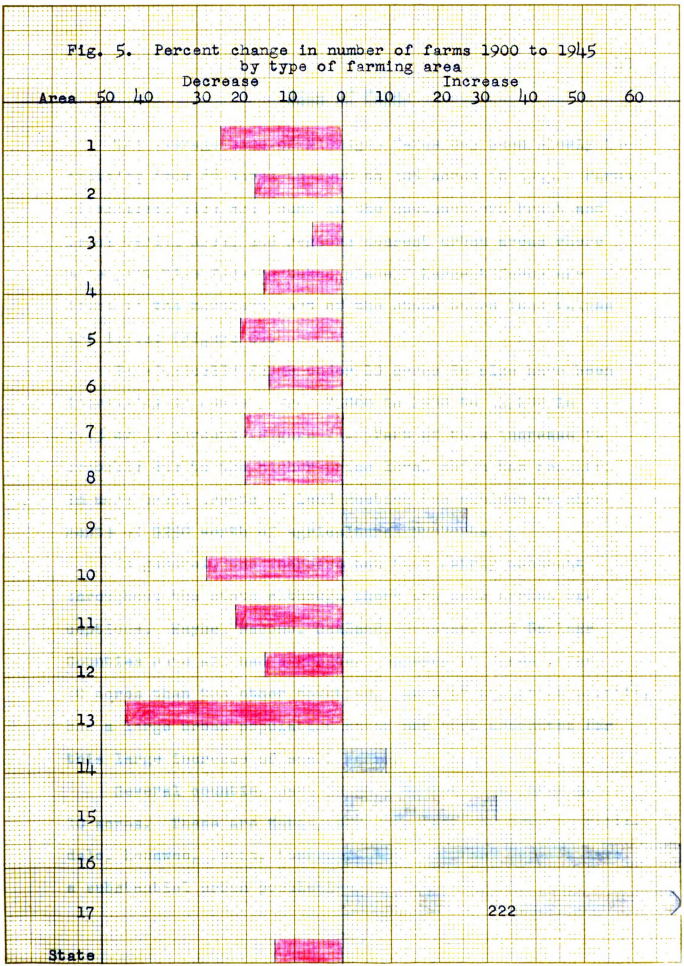
Fig. 4. Number of farms 1900 and 1945.

MICHIGAN

Michigan Trends

Year	Number of farms
1900	203,261
1910	206,960
1920	196,447
1925	192,327
1930	169,372
1935	196,517
1940	187,589
1945	175,268

Fig. 5. Percent change in number of farms 1900 to 1945 by type of farming area



Size of Farms

The average size of Michigan farms has been slowly increasing from 86 acres in 1900 to 105 acres in 1945. Farms of smallest size are found in the Southwestern Fruit and Truck Garden Area, and regions nearest urban areas where more part time farming takes place. Largest farms are found in the northern part of the state where land values are lowest (Figure 6).

Paradoxically farms under 10 acres in size have been increasing in number, from 7,066 in 1900 to 11,202 in 1945 or 59 percent (Figure 7). Part of this increase is probably due to the higher price level which has resulted in more small tracts of land meeting the minimum requirements of $250 worth of agricultural products.

In general, the increase has been fairly constant throughout the state although there are some marked exceptions. Wayne, Macomb, Oakland, Genesee, and Saginaw Counties have all had a greater increase of farms under 10 acres than the other counties. Each of the above counties has a large urban population which may have accounted for this large increase of small farms.

Several counties have shown a decrease in farms under 10 acres. These are Huron, Sanilac, Jackson, Branch, Hillsdale, Lenawee, Ionia, Montcalm, Kalamazoo and Jackson have a substantial urban population.

Farms from 10 to 19 acres in size have also been increasing in number as have farms in the 260 to 499, 500 to 999, and 1000 and over acre groups. The largest decrease has taken place in the 20 to 99 acre group with a smaller decrease in the 100 to 259 group (Table 1).

This shift can be characterized as a trend toward larger, more commercial family farms rather than toward large-scale farming. It has been made possible and has been accelerated by technological changes, especially by adoption of mechanical power and complementary equipment.

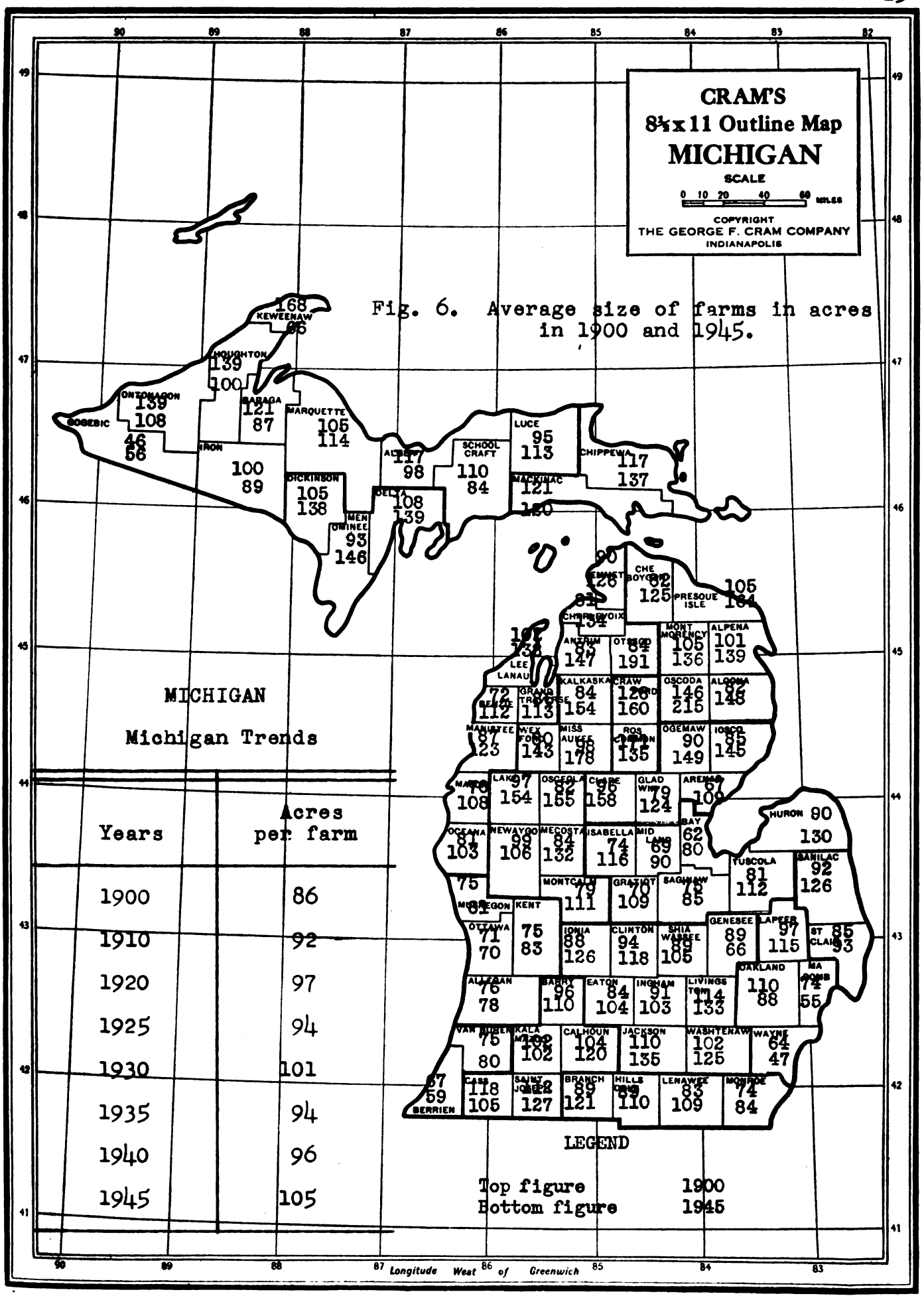


Fig. 6. Average size of farms in acres in 1900 and 1945.

MICHIGAN

Michigan Trends

Years	Acres per farm
1900	86
1910	92
1920	97
1925	94
1930	101
1935	94
1940	96
1945	105

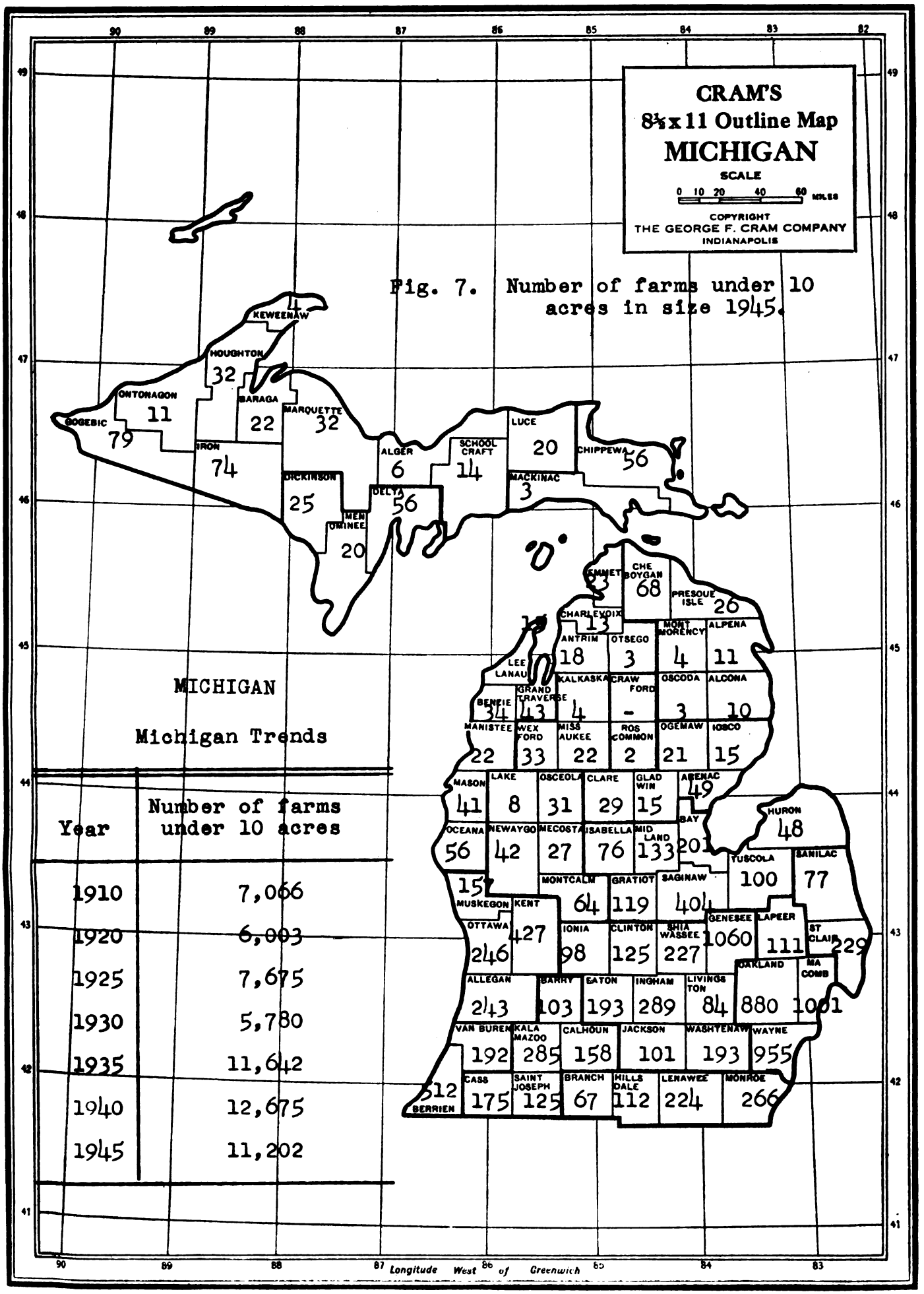


Fig. 7. Number of farms under 10 acres in size 1945.

MICHIGAN

Michigan Trends

Year	Number of farms under 10 acres
1910	7,066
1920	6,003
1925	7,675
1930	5,780
1935	11,642
1940	12,675
1945	11,202

Land in Farms

About half of the total land area in Michigan is in farms. This varies from over 85 percent in most southern counties to less than 20 percent in the majority of the northern counties (Figure 8).

Although the percentage of land in farms has shown a slight increase of 4 percent for the state since 1900 there is a definite trend for the percentage to decrease in the south and increase in the north (Figure 9). Type of farming areas 1, 2, 3, 4, 5, 6, 7, 10, 11 and 13 have all shown a decrease in total land in farms. All other areas have shown an increase of land in farms.

Those counties with large growing urban populations such as Wayne, Macomb, Oakland and Genesee have shown the greatest decrease. This trend is likely to continue as long as opportunities are open for employment in the cities resulting in small and unproductive farms shifting from full-time to part-time operation, and even to rural homes on which little or no farming is done. If depression conditions should prevail for any length of time this trend could be reversed, as many unemployed people are likely to try to make at least a part of their living from the land.

As good roads, electricity, and other conveniences become more readily available in rural areas more and more

people engaged in non-farm employment will seek to establish rural homes. Thus the number of part-time farms and rural homes will be augmented from two sources: Farm people shifting from full-time to part-time farming, and urban people seeking homes on the land.

Counties with the most land in farms are Sanilac, Huron, Saginaw, Tuscola and Lenawee. These are larger than the average county, but in addition are all located in areas having a high percentage of first class land.

Some new land may be brought under cultivation by irrigation, drainage, and clearing but the total acreage is not likely to be large. Probably about half of these developments would take place on existing farms and the rest would involve bringing new areas into production.

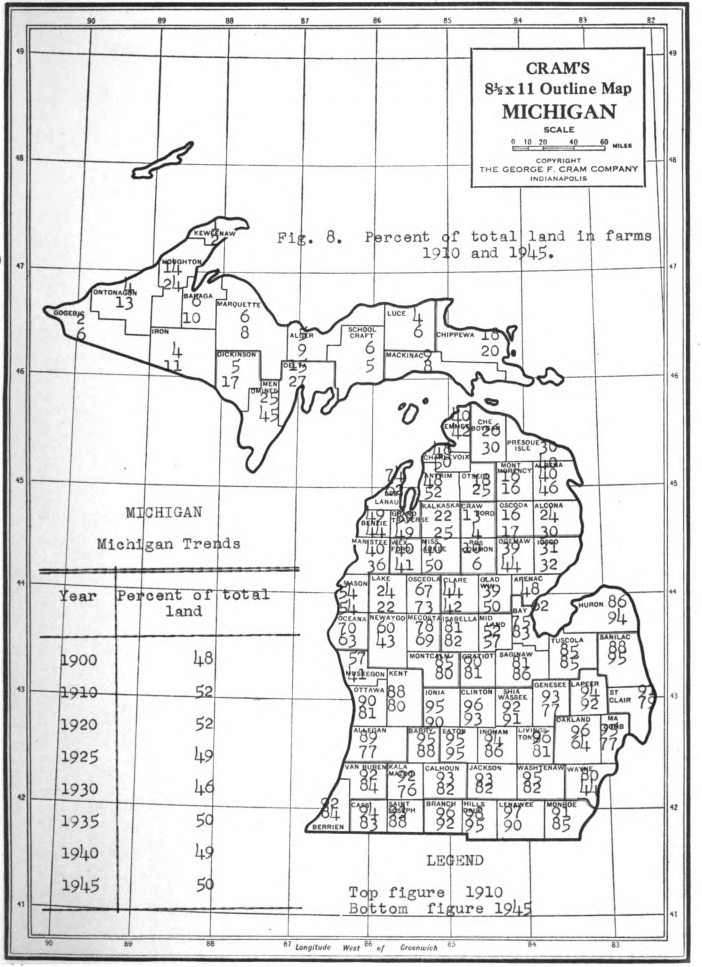


Fig. 8. Percent of total land in farms 1910 and 1945.

MICHIGAN

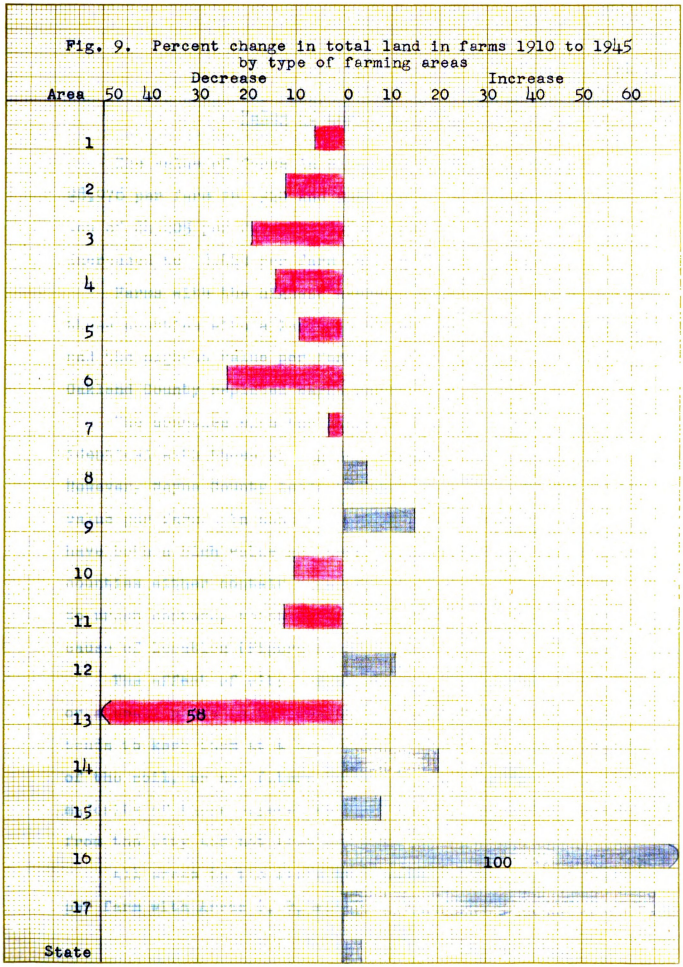
Michigan Trends

Year	Percent of total land
1900	48
1910	52
1920	52
1925	49
1930	46
1935	50
1940	49
1945	50

LEGEND

Top figure 1910
Bottom figure 1945

Fig. 9. Percent change in total land in farms 1910 to 1945 by type of farming areas



Value of Land and Farms

The value of farms in Michigan reached a high of $8,976 per farm in 1920 and then decreased steadily to a low of $4,205 per farm in 1935. Since then the value has increased to $6,843 per farm in 1945 (Figure 10).

Farms with the highest average value are found in those counties with a large urban population. Wayne County had the highest value per farm in 1900 and 1940. In 1945 Oakland County replaced Wayne County.

The counties with the highest value per acre are not identical with those having the highest value per farm. However, Wayne County leads in both value per acre and value per farm. In addition Oakland and Macomb Counties have both a high value per acre and per farm. These three counties either contain large urban areas or are adjacent to urban centers, which would result in higher values because of location (Figure 11).

The effect of city buyers who are looking for homes or a small place in the country raises the land values or tends to keep them at a high level. The natural productivity of the soil, or any future income is only incidental to the majority of these buyers, as their income and living comes from the city and not from the farm.

All areas in the state have shown an increase in value per farm with Areas 8, 9, and 14 showing the largest

increase in value per farm. Likewise all areas have shown an increase in value of land per acre with areas 13 and 17 showing the greatest increase.

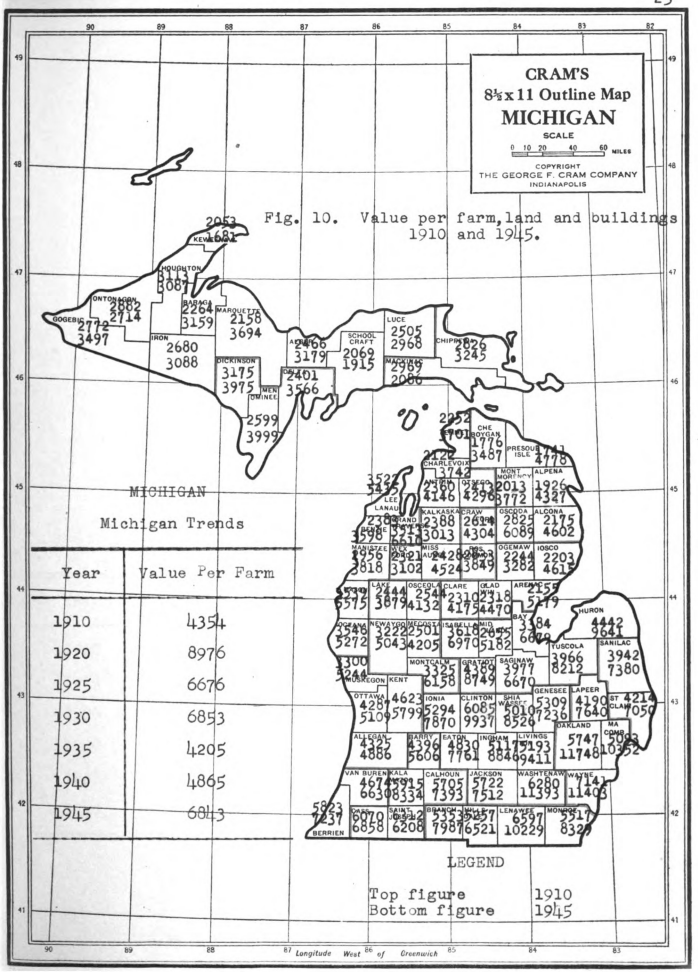


Fig. 10. Value per farm, land and buildings 1910 and 1945.

Michigan Trends

Year	Value Per Farm
1910	4354
1920	8976
1925	6676
1930	6853
1935	4205
1940	4865
1945	6813

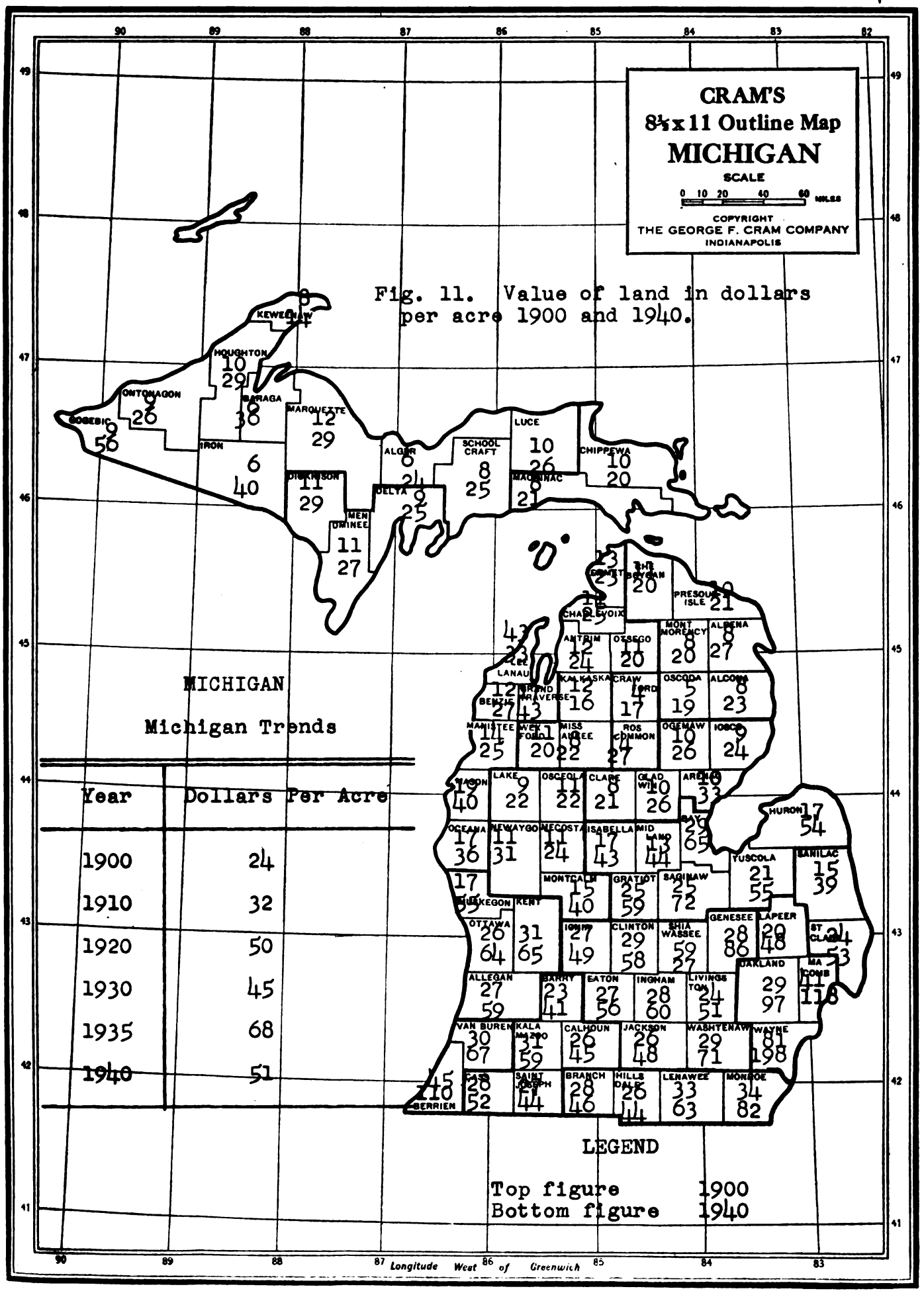


Fig. 11. Value of land in dollars per acre 1900 and 1940.

Summary

Most of the first class land in Michigan is found in the southern half of the state, with the greatest concentration in Areas 1, 5, 6, 7 and 8. First class land is found only in limited areas throughout the northern half of the Lower Peninsula and the Upper Peninsula.

The number of farms have decreased 14 percent in Michigan. In the northern part of the state Areas 9, 14, 15, 16 and 17 have shown an increase in the number of farms. All other areas have shown a decrease.

The average size of Michigan farms has been slowly increasing, with only Areas 3, 6, 13, and 17 showing a decrease. At the same time the number of small farms under 10 acres in size have been rapidly increasing.

Approximately half of the total land area in Michigan is in farms. There has been a tendency for the land in farms to decrease in the southern half of the state and increase in the northern half and Upper Peninsula.

The average value per farm and value of land per acre has increased in every area. The highest value per farm and per acre is found in those counties with or near a large urban center.

Looking into the future, some of the same forces are likely to continue to influence changes in the number and

sizes of farms as have operated over the last two decades. We might expect a further large increase in the number of part-time farms and rural homes. The full-time family-operated farms are likely to be fewer and larger. There might be some further increase in the number of large-scale farms, but they will still constitute a relatively small percentage of the total number of farms.

CHAPTER III

Field Crops

A. Forages

Forages occupy a position of great importance in Michigan agriculture. Forage production takes up over a third of the tillable land and has a greater average annual value than that of any other crop except corn. The most important form of harvested forage is hay because it does not deteriorate rapidly in storage, is fed to all forage-eating animals, can be handled commercially, and can be produced without great expense for labor, machinery, and buildings. Hay is a necessary crop in a good rotation and because of the great number of different plants that may be utilized for hay makes possible the production of hay wherever it is possible to produce crops at all.

Alfalfa

Alfalfa was introduced in the western states about 1850 and for a long time was regarded as a western crop. It does not do well on sour soils and lack of lime may have been largely responsible for its poor showing in the eastern half of the country.

As recently as 1920 more than 80 percent of the alfalfa acreage in the United States was west of the 95th meridian.

The acreage in the eastern states has increased until during the past decade 52 percent of the total acreage was east of this line. This expanded eastern acreage is due primarily to information on methods of production, and to recognition of alfalfa as a superior forage crop, rather than to development of varieties adapted to eastern conditions. Also there are no alfalfa varieties that are very well adapted to eastern conditions, chiefly because there have been relatively few intensive breeding programs in the East.[6]

The increase in acreage of alfalfa is one of the most remarkable changes that has taken place in Michigan agriculture since 1899. In that year 35 of the 83 counties reported no acreage of alfalfa hay at all. In 1944 all but one of the counties were growing alfalfa and that one Keweenaw County had reported alfalfa on the three previous census reports.

The leading counties in acreage of alfalfa in 1944 were Oakland, Sanilac, Saginaw, Montcalm and Jackson (Figure 12). The acreage of alfalfa declined somewhat after 1942 (13b). This decrease in acreage was probably due to the increase in cultivated crops such as beans

6/ 1948 Yearbook of Agriculture p. 358.

and soybeans whose production was stimulated by the war. Another factor may have been the high cost of alfalfa seed.

Every area in the state has shown an increase in alfalfa acreage from 1930 to 1945 (Figure 14). Areas showing the greatest increase are 7, 9, 10 and 14.

The main reason for this marked increase in alfalfa acreage may be found in Figure 13a which shows the yield of alfalfa hay from 1924 to 1948. The yield of alfalfa has been higher than the yield of all tame hay for every year. The yield of alfalfa is also included in the yield of all tame hay which largely accounts for the narrowing of the margin between them in later years as alfalfa hay has accounted for an increasing percentage of all tame hay acreage.

One reason for the higher yields of alfalfa is the deeper root system of the plant which often reaches 10 to 12 feet thus enabling it to reach water where other forage plants are unable to and not because it can survive on less water as many people have believed.

Alfalfa is susceptible to winter killing and heaving which has slowed its advance in the northern part of Michigan especially in poorly drained areas such as Chippewa and Mackinac Counties.

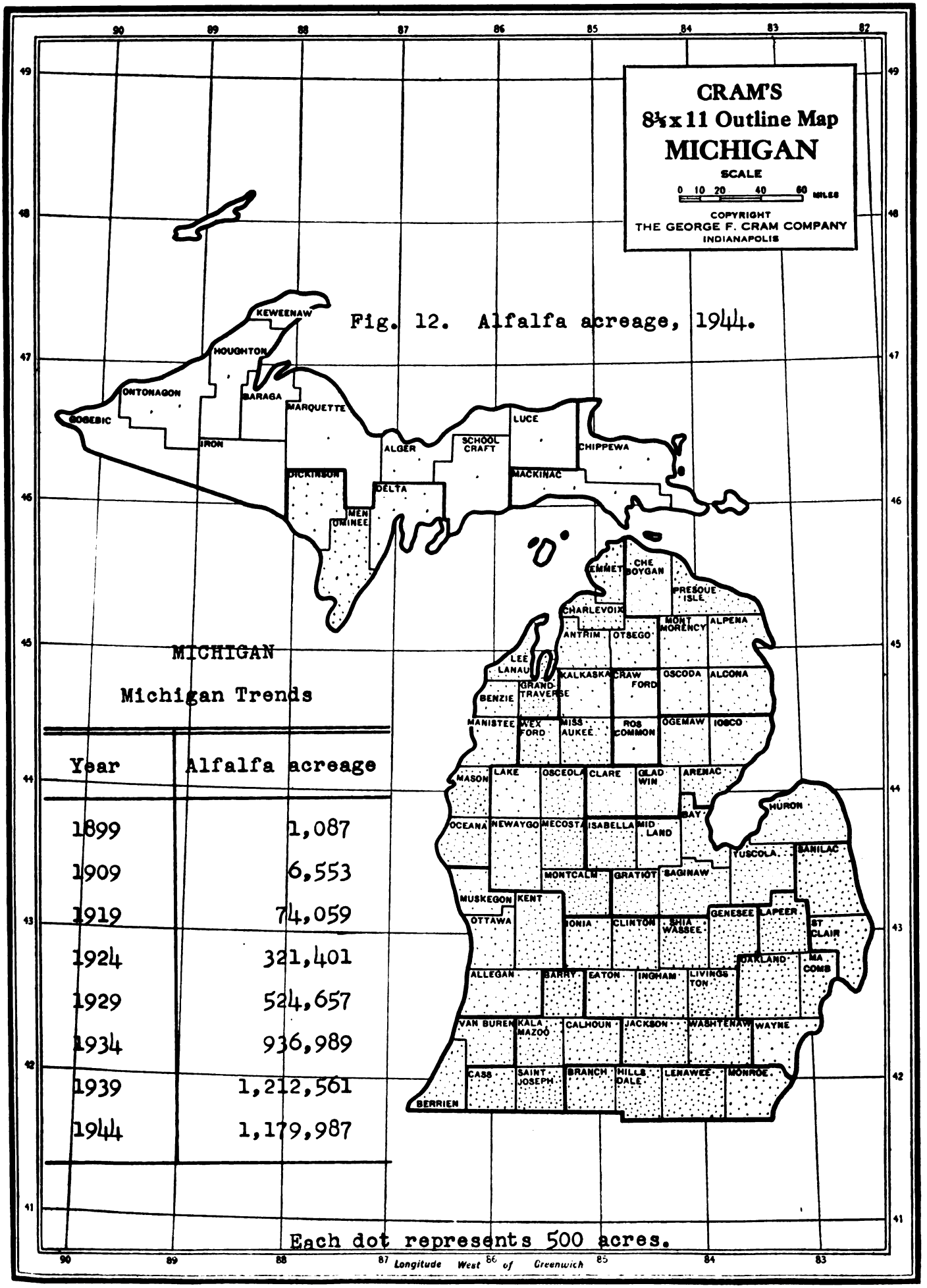


Fig. 12. Alfalfa acreage, 1944.

MICHIGAN

Michigan Trends

Year	Alfalfa acreage
1899	1,087
1909	6,553
1919	74,059
1924	321,401
1929	524,657
1934	936,989
1939	1,212,561
1944	1,179,987

Each dot represents 500 acres.

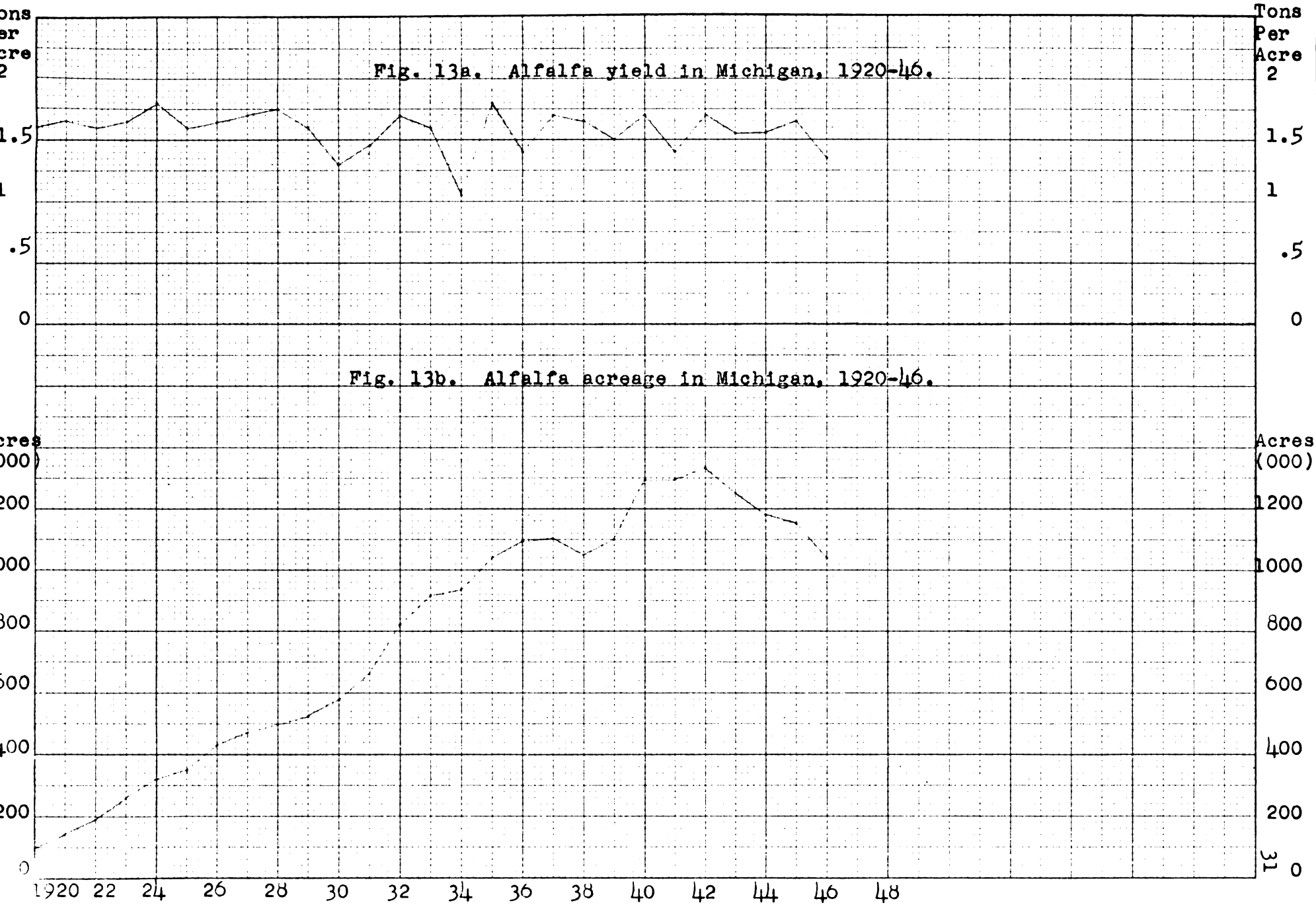
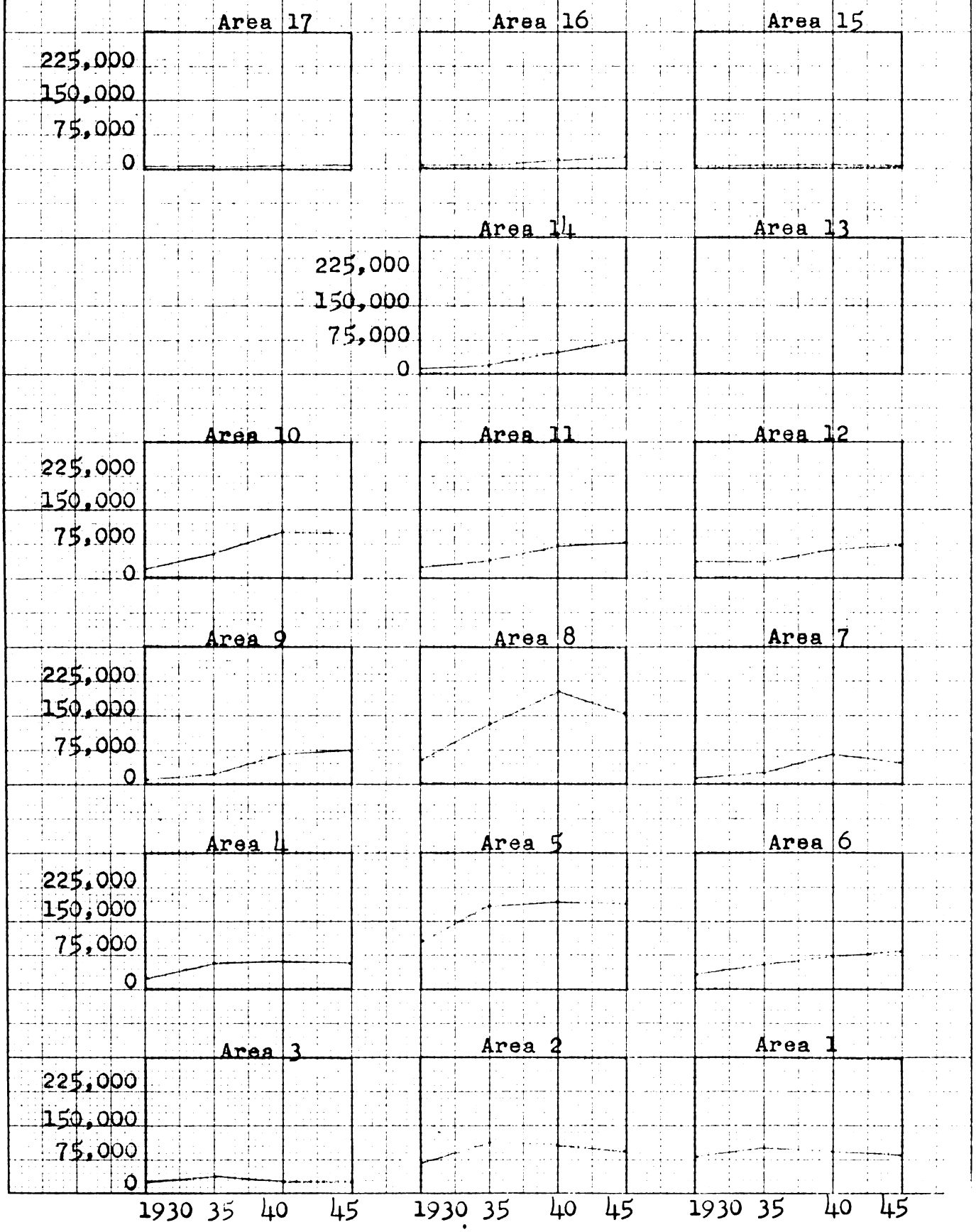


Fig. 13a. Alfalfa yield in Michigan, 1920-46.

Fig. 13b. Alfalfa acreage in Michigan, 1920-46.

Fig. 14. Acres of alfalfa 1930 to 1945 by type of farming areas.



All Tame Hay

In addition to alfalfa other important tame hays are clover and timothy, sweet clover and soybean hay. Clover and timothy are by far the most important having an acreage about equal to that of alfalfa.

Hay is the most important crop in Michigan in acreage comprising about a quarter of the tillable land. Hay acreage increased from 19 percent of the tillable land in 1899 to 30 percent of the tillable land in 1924. It then dropped to 20 percent in 1934 and has since increased to 25 percent in 1944 (Figure 15). Most of this increase in hay acreage since 1934 has taken place in the northern part of the state as Areas 1 through 8 all show a decrease in hay acreage (Figures 16 and 17). The large hay acreage in the northern part of the state is due to the lack of competing crops and limited choice of crops available to northern farmers.

The leading hay counties in Michigan are Sanilac, St. Clair, Chippewa, Huron, and Allegan. Nationally Michigan has been among the first 10 states in hay acreage and production.

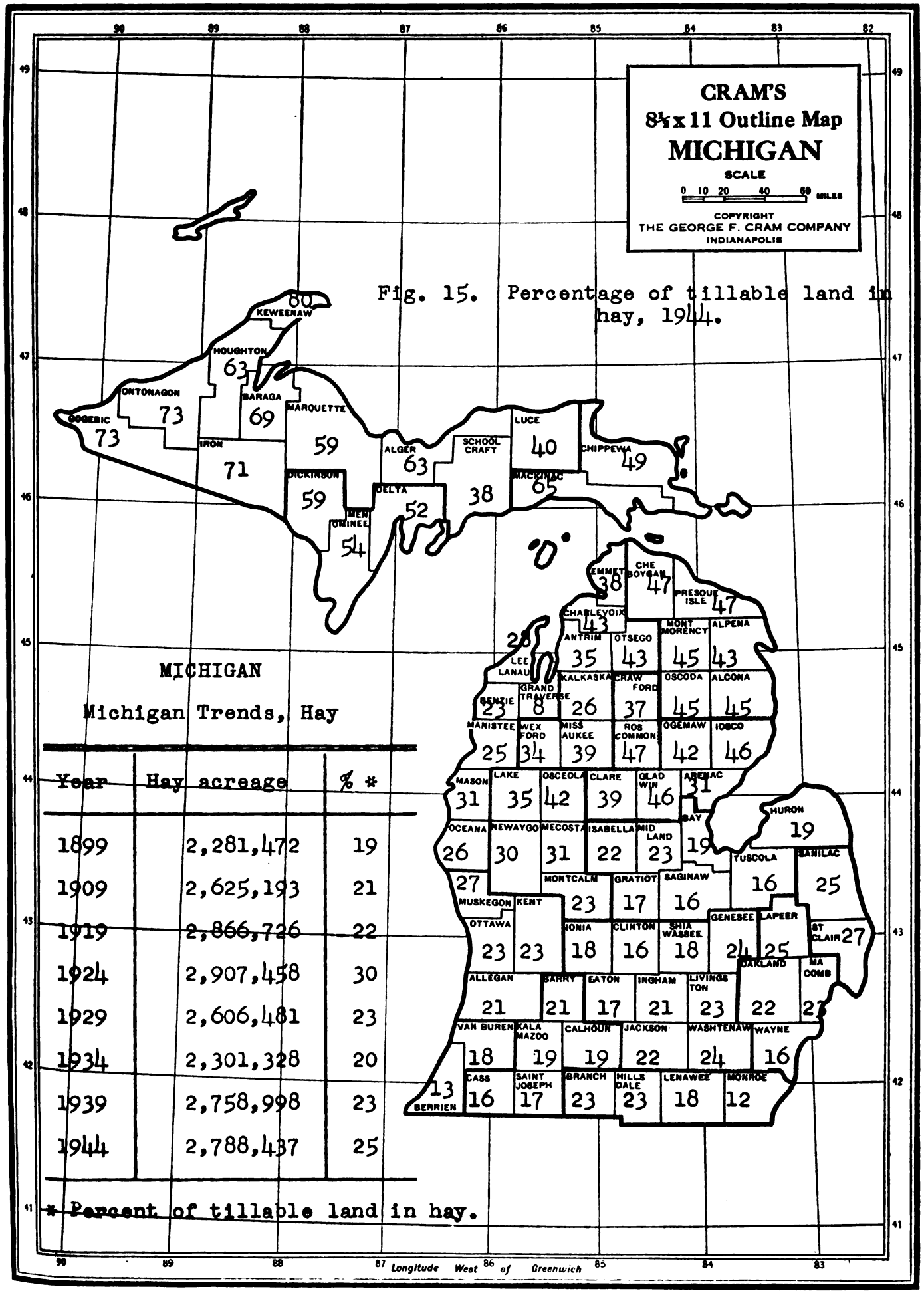


Fig. 15. Percentage of tillable land in hay, 1944.

MICHIGAN

Michigan Trends, Hay

Year	Hay acreage	% *
1899	2,281,472	19
1909	2,625,193	21
1919	2,866,726	22
1924	2,907,458	30
1929	2,606,481	23
1934	2,301,328	20
1939	2,758,998	23
1944	2,788,437	25

* Percent of tillable land in hay.

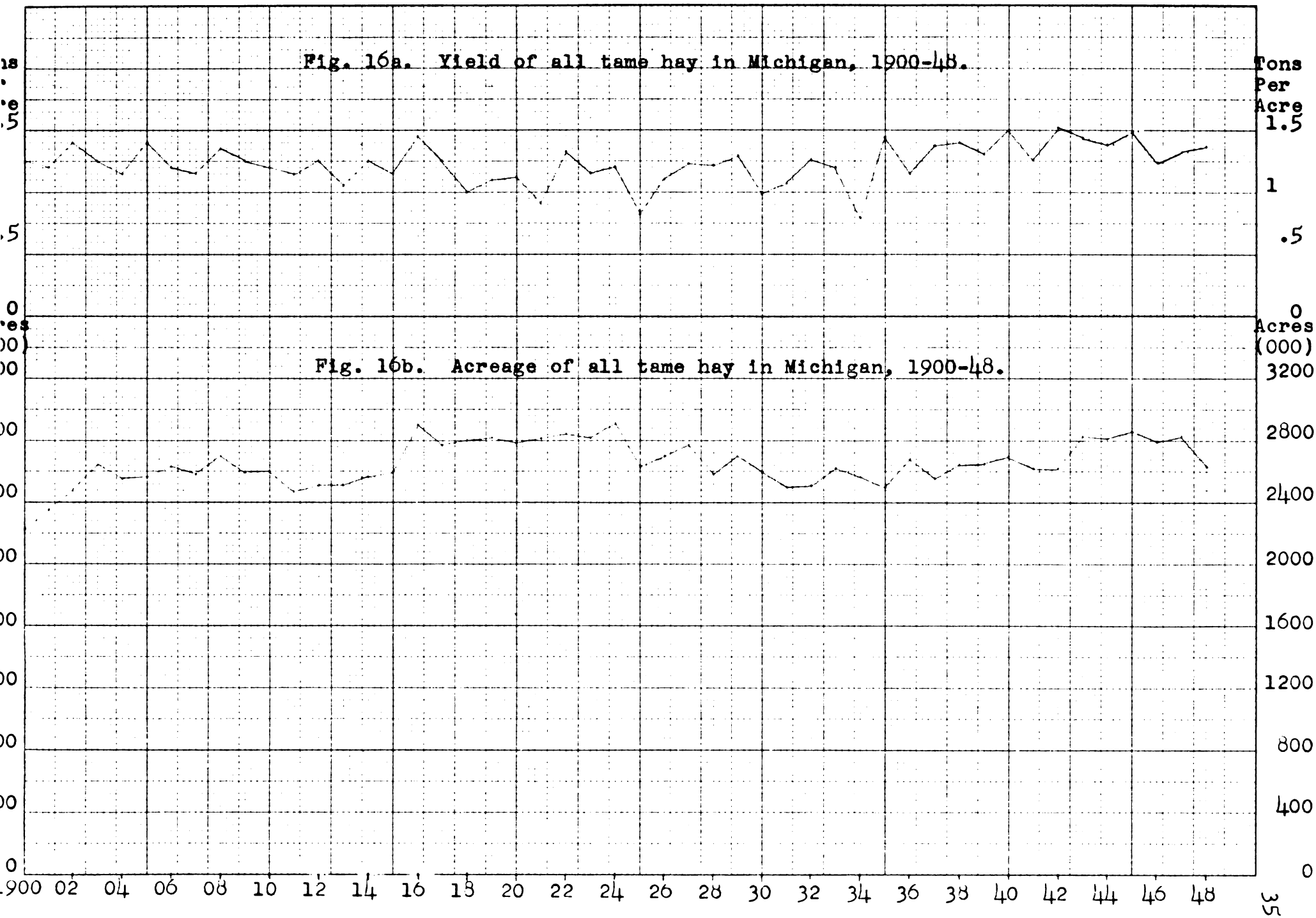


Fig. 16a. Yield of all tame hay in Michigan, 1900-48.

Fig. 16b. Acreage of all tame hay in Michigan, 1900-48.

Summary

Alfalfa has shown the greatest increase in acreage of any Michigan crop, but has declined somewhat since 1942. This rapid increase in acreage has been largely due to its high yield per acre. Tame hay acreage has been decreasing in the southern half of the state and increasing in the northern half. Areas 5 and 8 have the largest acreages of both alfalfa and all tame hay.

With the emphasis on conservation and soil maintaining systems of farming the acreage of hay and pasture is likely to increase. As farmers include more hay and pasture in their crop rotations the gradual shift that has taken place toward higher quality and higher yielding legume hays is likely to be accelerated. This higher protein content of the hay crop will help to balance the ration, and the increased yield of hay will offset at least part of the reduction in volume of production that otherwise would accompany a smaller acreage of intertilled crops.

Shifts in the direction of more hay and pasture, that induce production of more milk and meat, need to become the most profitable production alternatives in the areas where such shifts are desirable, if the changes are to be carried out by the farmers. If market forces are not

sufficiently strong to bring about the shifts that are needed to achieve the goals of conservation and high-level nutrition these shifts could be accelerated by either support prices for milk and meat or assistance in lowering the cost of producing these products.

B. Grain Crops

Corn is the most important cereal grain grown in Michigan and is followed by oats, winter wheat, barley, rye and buckwheat in that order. In the United States wheat ranks next to corn in importance. Oats, barley, and corn are used chiefly as feed for livestock and are called "coarse grains" to distinguish them from wheat, rye, and buckwheat, which are used for food and are generally referred to as "food grains."

Corn

The United States is by far the greatest corn producing country in the world growing over half the world's corn acreage. Corn ranks far ahead of any of the other cereals in importance for livestock feeding, over 90 percent of the corn crop being fed to farm animals. It is very palatable to livestock and highly digestible.

Although Michigan is north of the corn belt, 1,400,306 acres of corn were harvested for grain in 1944. Corn produces more total pounds per acre and more total digestible nutrients than any other grain crop in the areas and on land to which it is adapted, as shown by a comparison with other Michigan grain crops using average yields (Table 3). Corn is equaled in digestible protein per acre by barley and exceeded only by soybeans among Michigan grain crops.

Michigan corn acreage is concentrated in the southern part of the state particularly in Lenawee and Monroe Counties (Figure 18). Since 1899 corn acreage in Michigan has increased 18 percent. This increase has taken place in Areas 1, 8, 9, 12, 14 and 16 as all other areas have shown a decrease in acreage since 1899. In the past decade and a half corn acreage has increased in most of the southern part of the state with Areas 1 and 5 showing the greatest increase (Figure 21). Area 7 is the only area showing a decrease in corn acreage since 1930 and the reduction did not occur until 1940. Areas 13 through 17 grew too little corn to show any significant change in acreage.

The percentage of all Michigan farmers growing corn decreased from 74 percent in 1919 to 43 percent in 1929 and then increased to 66 percent in 1939. The corresponding national figures for the same periods were 77 percent in 1919, 66 percent in 1929 and 68 percent in 1939.[7]

Much has been written about hybrid corn and the increasing yields that have been brought about through its use. However little has been said about the protein content of corn which has been slowly decreasing falling about

7/ Bureau of Agriculture Economics. A Graphic Summary of Farm Crops (United States Department of Agriculture Miscellaneous Publication No. 512, 1943) p. 17.

one percent in the last 25 years. This loss of one percent protein has significance in that considering the large tonnage of corn harvested, this one percent drop in protein content of corn is the equivalent to the protein content of the entire soybean crop of the nation grown for seed.[8]

The average yield of corn harvested for grain by counties in Michigan is shown in Figure 20. In 1944 the leading Michigan counties in acreage of corn were Lenawee, Monroe, Hillsdale, Branch and Washtenaw all of which are in an area having higher than average yields. Prior to 1934 we find Allegan, Kent, St. Joseph and Cass Counties among the leaders in acreage, all of which are in an area having lower than average yields. The trend appears to be for corn production to become concentrated in areas having higher than average yields.

It appears that the yield of corn per acre in Michigan has not increased greatly since 1900 (Figure 19a). Probably the influence of hybrid corn has been less in Michigan than in corn belt states because Michigan is outside the corn belt except for the few southeastern counties.

8/ G. Bohstedt, "Newer Knowledge of Feeding Livestock", Shorthorn World, p. 108, August 10, 1949.

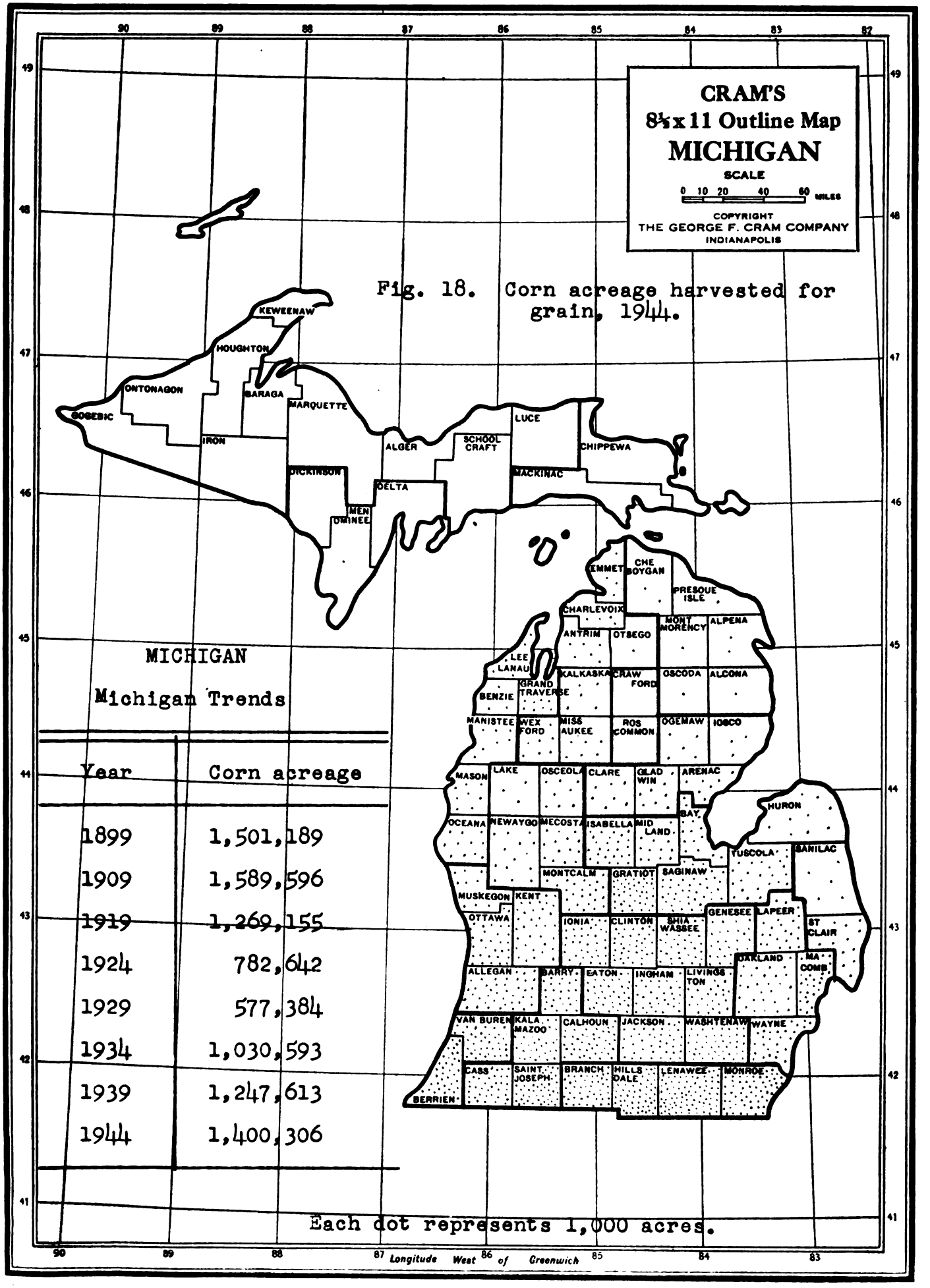


Fig. 18. Corn acreage harvested for grain, 1944.

MICHIGAN

Michigan Trends

Year	Corn acreage
1899	1,501,189
1909	1,589,596
~~1919~~	~~1,269,155~~
1924	782,642
1929	577,384
1934	1,030,593
1939	1,247,613
1944	1,400,306

Each dot represents 1,000 acres.

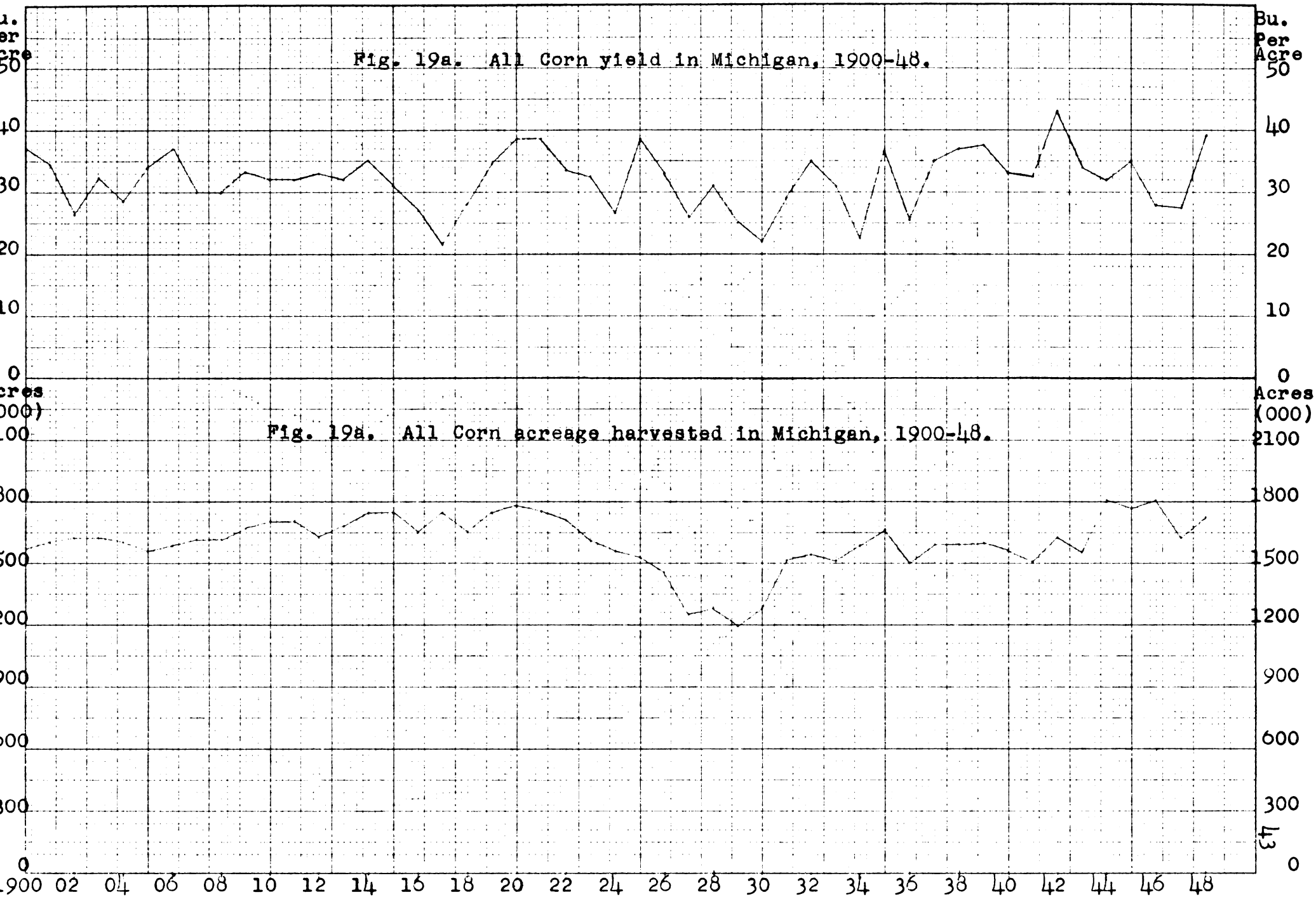


Fig. 19a. All Corn yield in Michigan, 1900-48.
Bu. Per Acre
50
40
30
20
10
0
Fig. 19a. All Corn acreage harvested in Michigan, 1900-48.
Acres (000)
2100
1800
1500
1200
900
600
300
0
1900 02 04 06 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

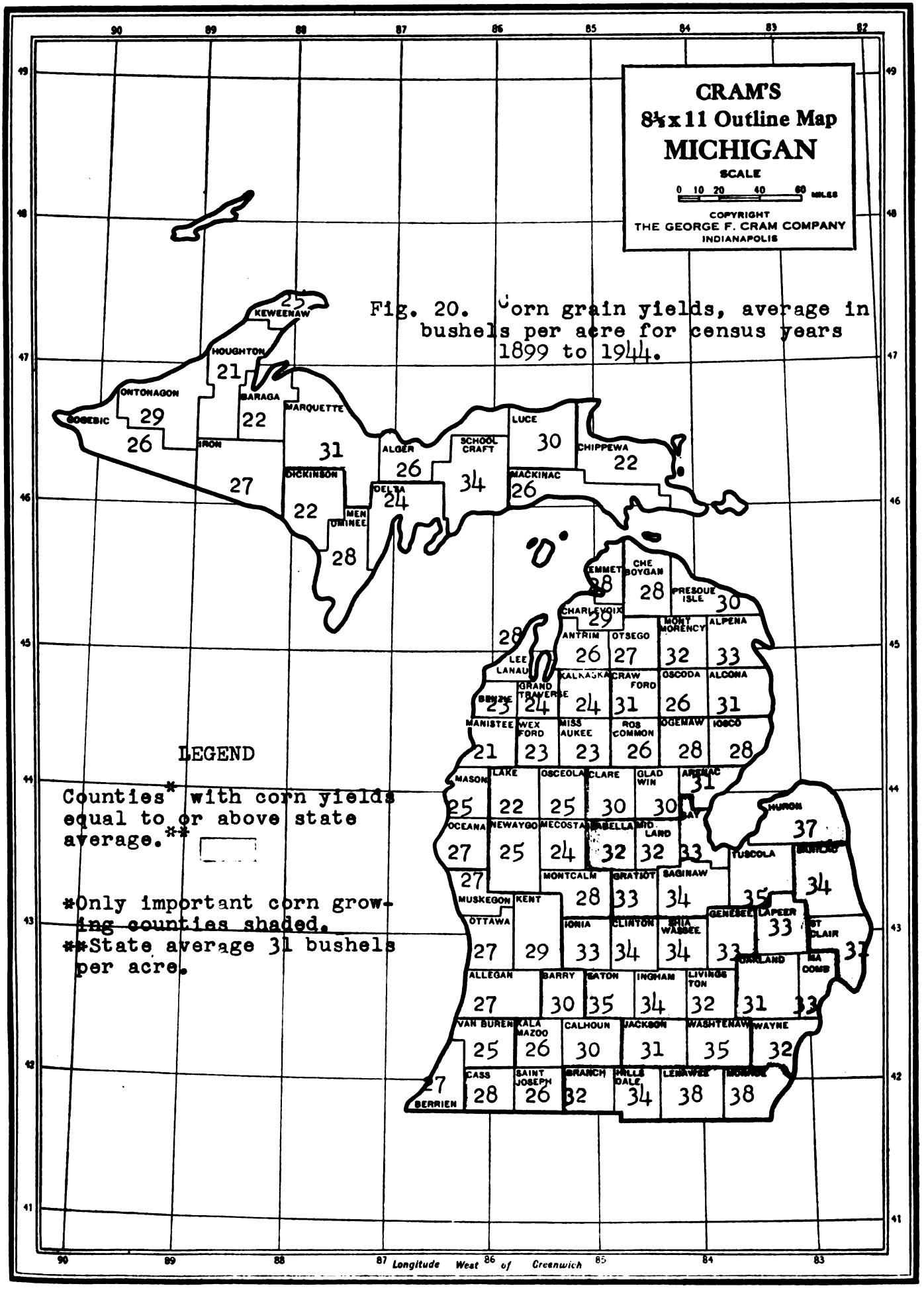


Fig. 20. Corn grain yields, average in bushels per acre for census years 1899 to 1944.

Fig. 21. Acres of corn for grain 1930 to 1945 by type of farming areas.

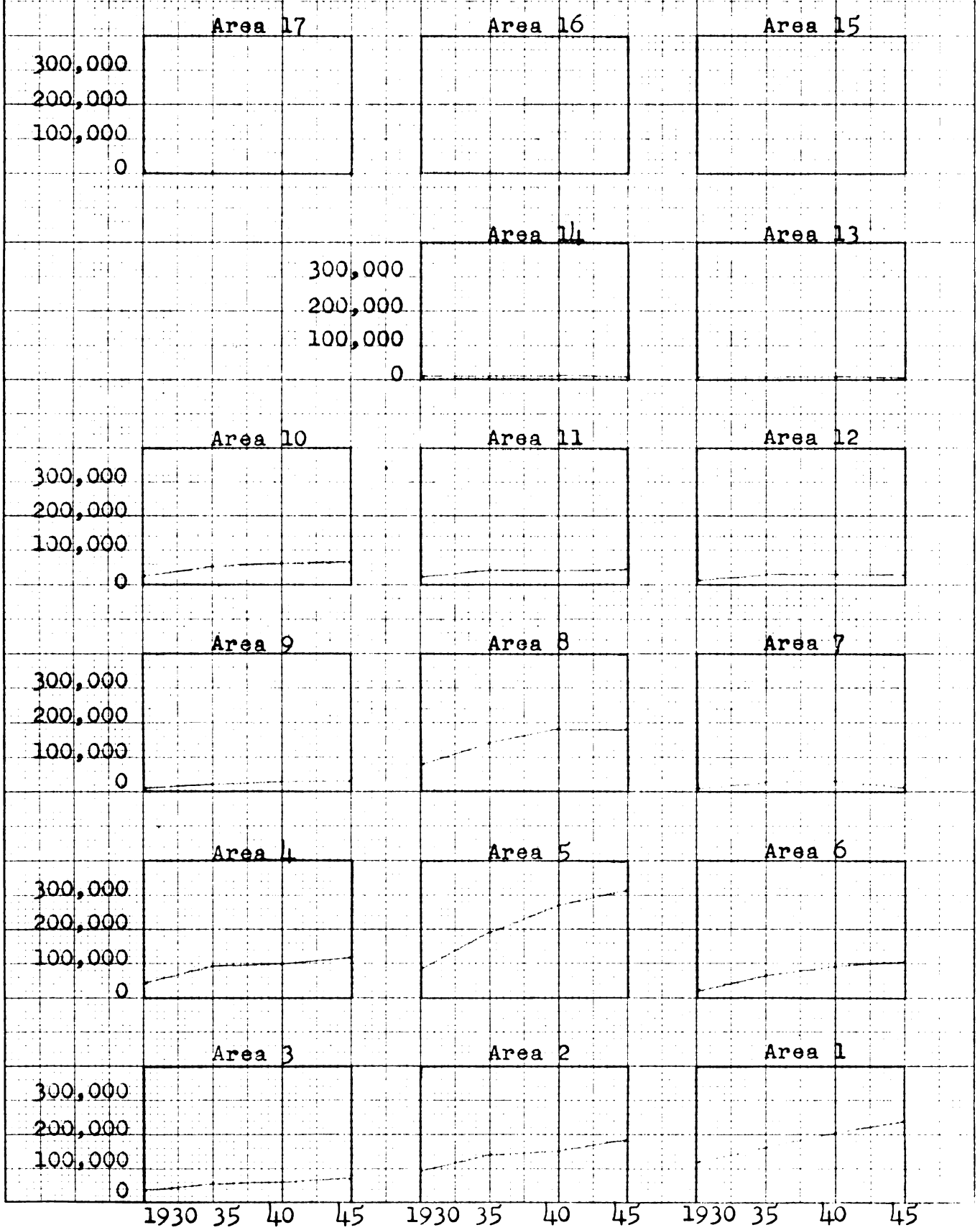


Table 3. Comparison of feed produced per acre and total digestible crude protein and total digestible nutrients per acre from crops raised, grain only.[1]

Crop	Weight per bushel	Average Michigan[2] yield per acre	Pounds per acre	TDNS[3] pounds per acre	Digestible protein pounds per acre
Corn	56	31	1736	1391	115
Oats	32	32	1024	718	96
Winter wheat	60	19	1140	913	98
Barley	48	24	1152	895	115
Rye	56	12	672	511	67
Soybeans	60	14	840	736	283

1/ A. Boss and G. A. Pond, Modern Farm Management, (Saint Paul: The Webb Publishing Company, 1947) pp. 494

2/ Average Michigan Yields are an average of 8 census reports.

3/ TDN and Digestible Protein percent from Morrison's Feeds and Feeding, 21st edition, Appendix Table 1.

Corn Silage

Corn is the most important silage crop in the United States constituting about 85 percent of the acreage of all crops cut for silage. In Michigan corn comprises over 90 percent of the acreage of all crops cut for silage. Corn silage is fed principally to dairy cattle during the winter months. Some is fed to beef cattle and a smaller quantity to sheep.

About 6 percent of the United States corn crop is made into silage. In Michigan from 15 to 20 percent of the corn crop is made into silage, but the acreage of silage corn is steadily decreasing. In 1924 there were 325,770 acres of silage corn in 1929 296,810 acres and in 1939 234,387 acres.

Acreage of corn silage has been increasing in Sanilac and St. Clair Counties until they were the leading counties in acreage in 1939. Yields have been above state average in these two counties (Figure 22). Ottawa, Kent, and Allegan Counties have had below average yields and they have also dropped from among the leaders in acreage of corn silage.

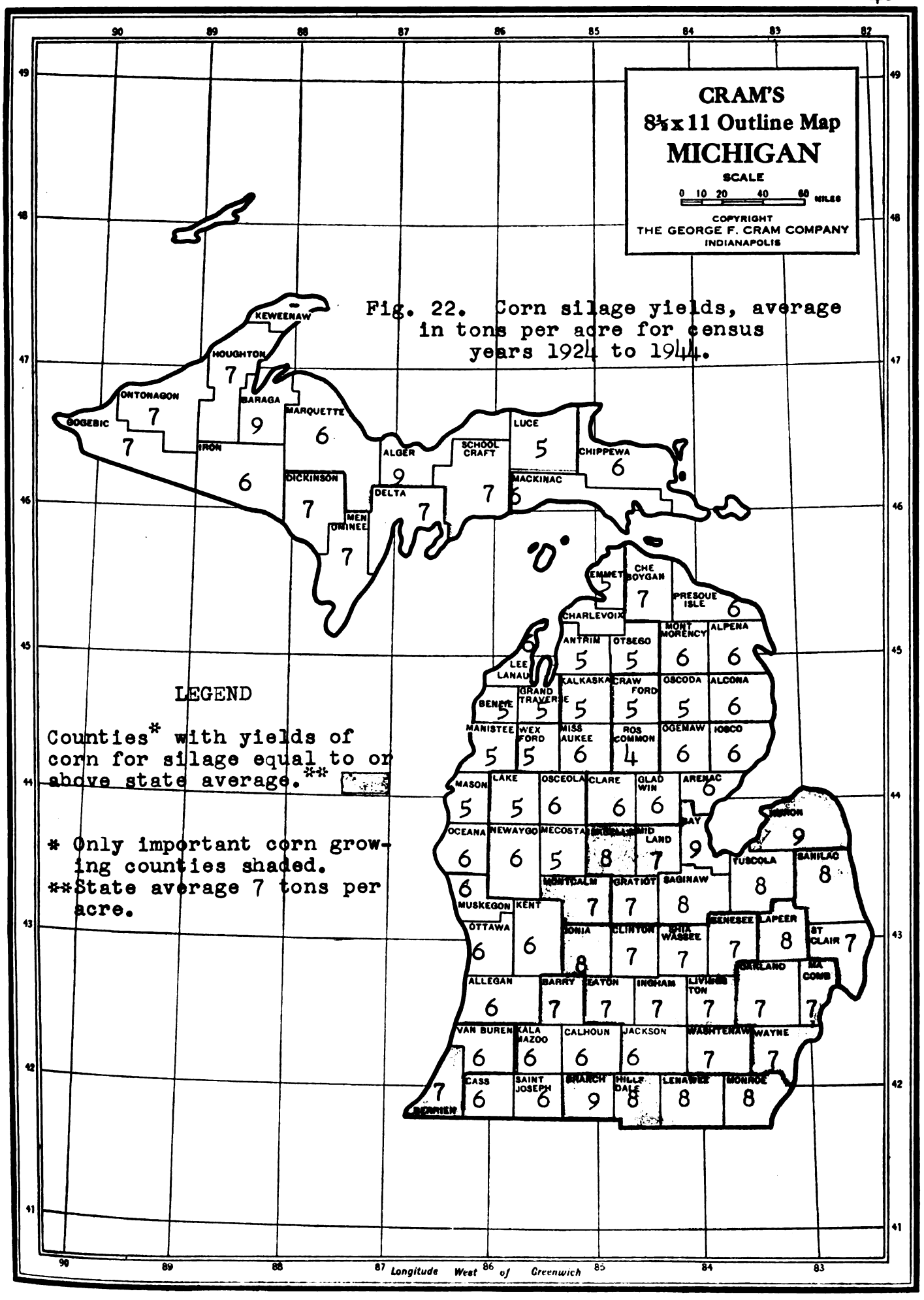


Fig. 22. Corn silage yields, average in tons per acre for census years 1924 to 1944.

Oats

Oats rank third in acreage among the cereal grains in the United States and are next to corn in importance as a feed grain. In Michigan oats rank next to corn in importance exceeding the wheat acreage. The valuable bone and muscle-building ingredients contained in oats make them the principle small-grain feed for young livestock, horses and breeding stock.

Michigan oat acreage is approximately one and a quarter million acres or about ten times the barley acreage. Oats are less demanding in soil and climate than barley and thus are usually easier to grow, although they do not produce as many pounds per acre, total digestible nutrients or protein as barley.

The leading counties in oat acreage are Sanilac, Huron, Saginaw, Lenawee and Tuscola. In general those counties with the largest acreage of oats are also counties with better than average yields (Figures 23, 25).

Only Areas 1, 3, 6, and 7 have shown a decrease in oat acreage all others have increased since 1899. Areas 9, 10, and 17 have shown the greatest increase although they do not grow the largest acreage of oats (Figure 26). About 11 percent of the tillable land in Michigan has been planted to oats since 1909. Oat acreage is quite likely to remain high

in Michigan due to its popularity as a livestock feed and the ease in which it is grown.

Since 1940 oat yields have reached new heights. Prior to then no definite trend could be noted (Figure 24).

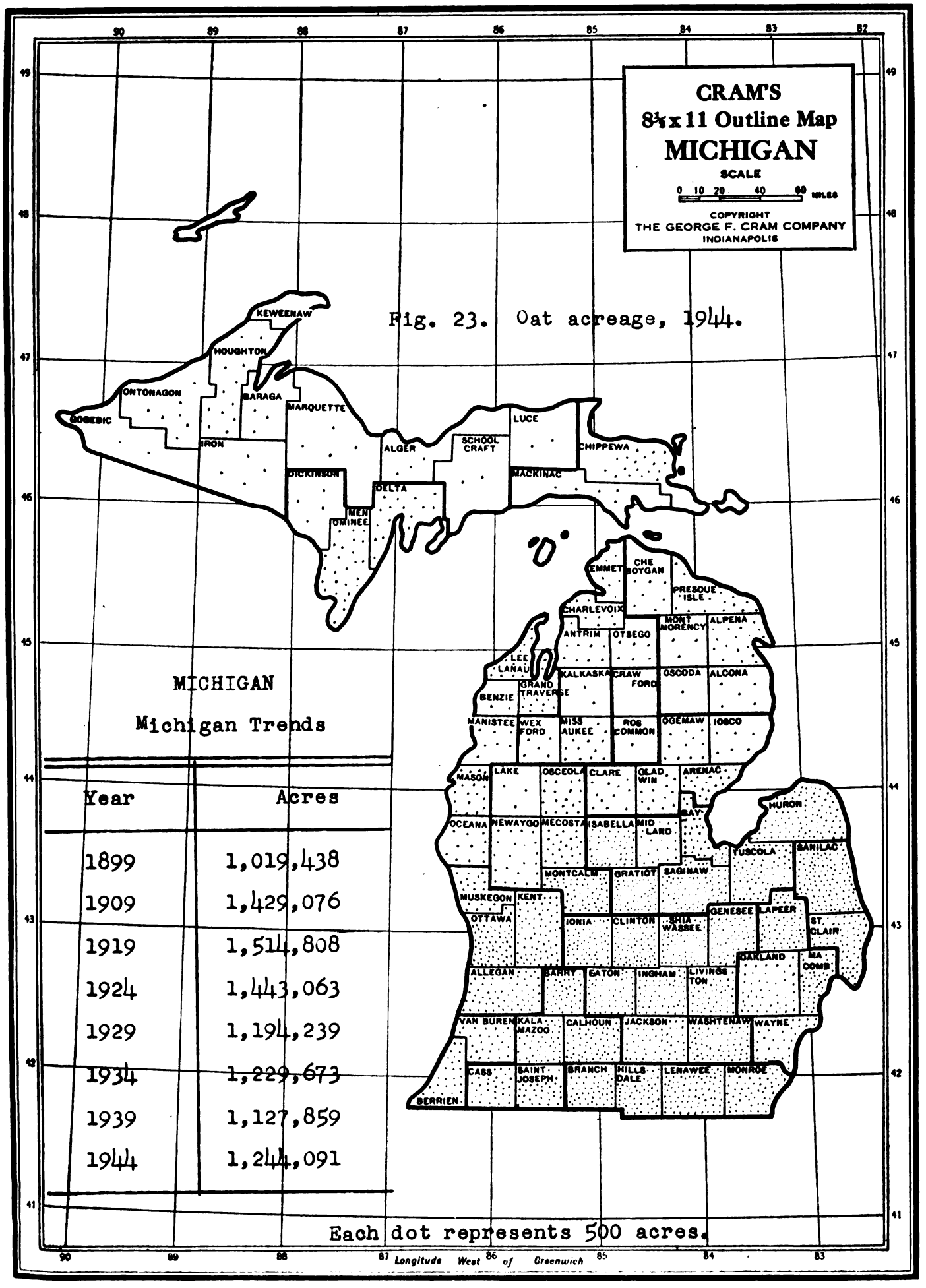


Fig. 23. Oat acreage, 1944.

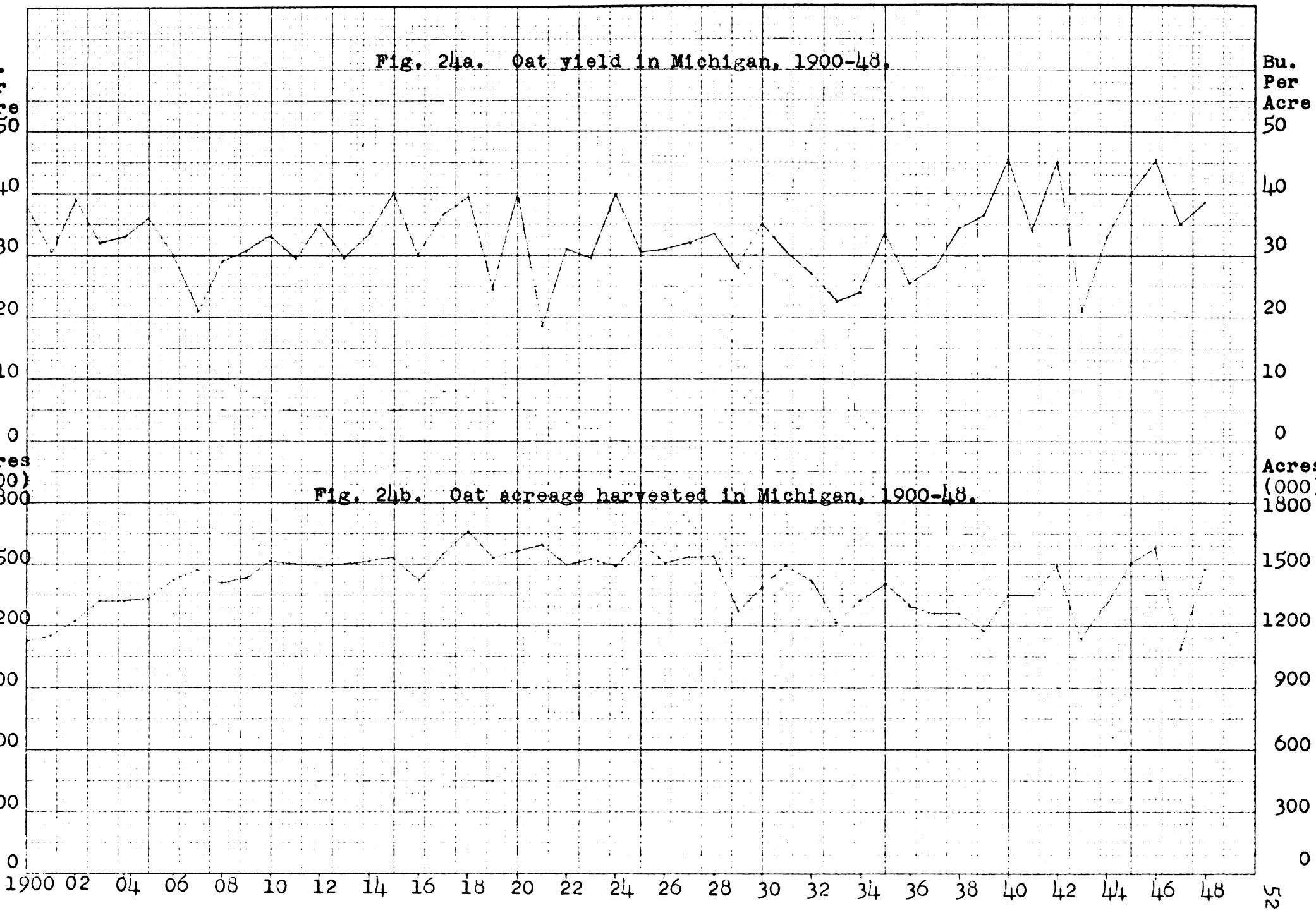


Fig. 24a. Oat yield in Michigan, 1900-48.
Bu. Per Acre
50
40
30
20
10
0
Fig. 24b. Oat acreage harvested in Michigan, 1900-48.
Acres (000)
1800
1500
1200
900
600
300
0
1900 02 04 06 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

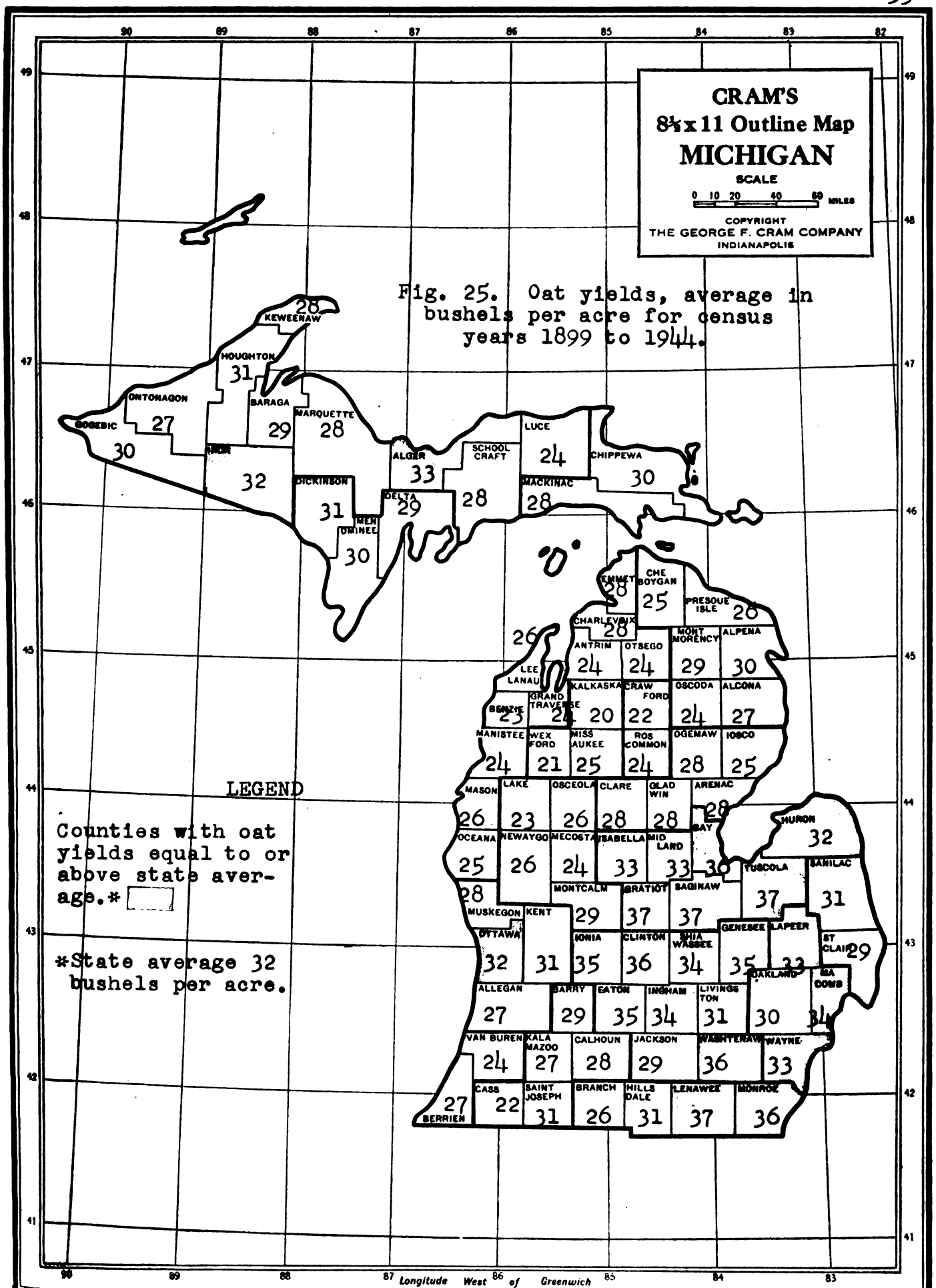
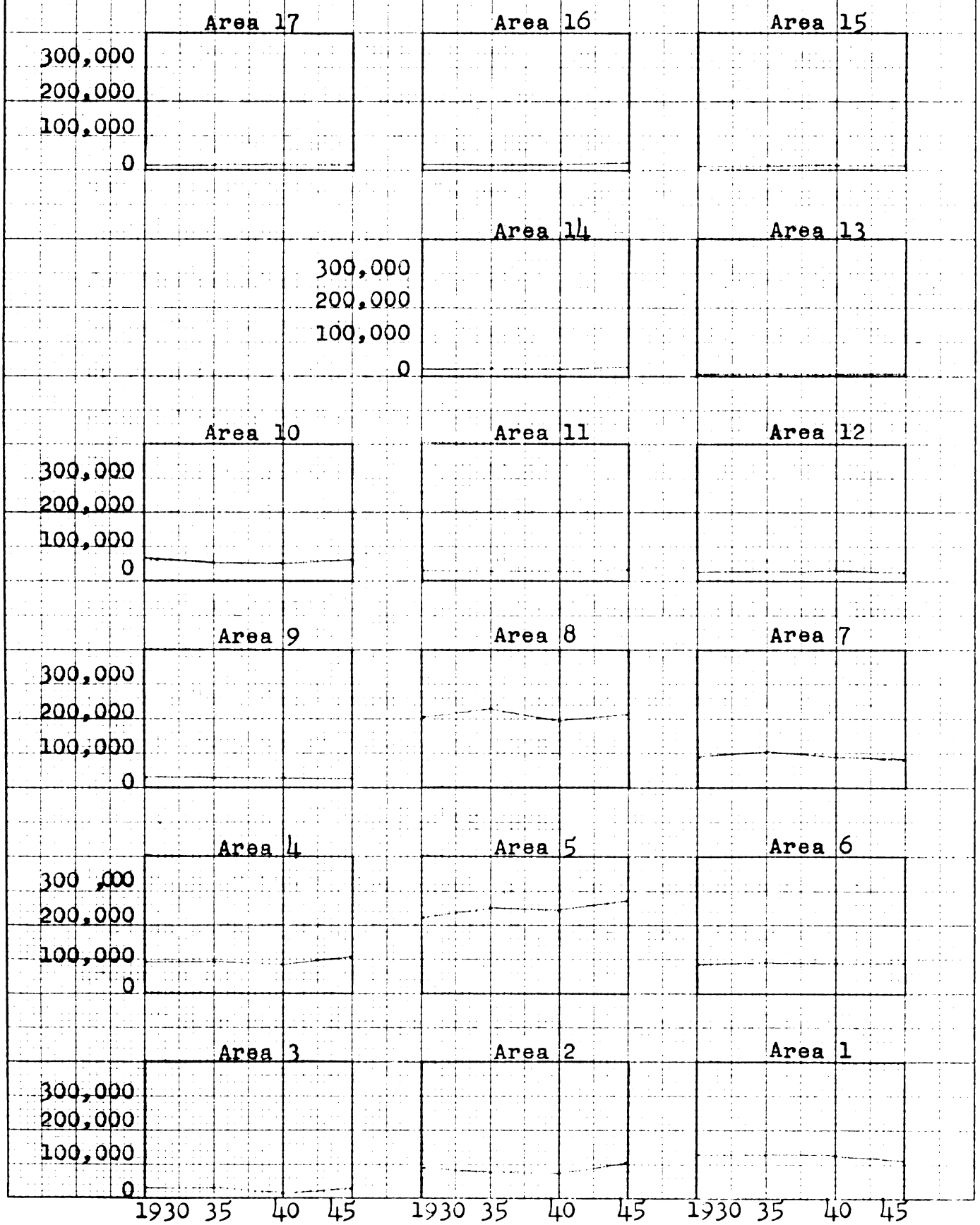


Fig. 25. Oat yields, average in bushels per acre for census years 1899 to 1944.

Fig. 26. Acres of oats 1930 to 1945 by type of farming areas.



Wheat

In the United States wheat is second only to corn in importance among the cereals, while in Michigan wheat ranks third. Approximately 75 percent of the wheat acreage is winter wheat with the other 25 percent devoted to spring wheat including Durum wheat. Usually most of the wheat is raised for the manufacture of flour and human food, relatively little being fed to livestock. However, when wheat is low in price, or when feed grains are short in supply and there is a surplus of wheat it has been used extensively for livestock feed. The wheat by-product feeds such as wheat bran and middlings are the most important by-product stock feeds.

Prior to the 1930 census winter wheat and spring wheat were not separated but were included together under one heading. The percentage of all farmers growing wheat in Michigan has been decreasing from 52 percent in 1919 to 38 percent in 1929 to 37 percent in 1939.

Winter Wheat

Most of the winter wheat grown in Michigan is classified as soft distinguishing it from the hard winter wheat grown in the Great Plains.

Winter wheat acreage has expanded rapidly in Michigan since 1943. In that year about 670,000 acres were in winter

wheat, in 1948 almost 1,400,000 acres were in winter wheat. Before 1943 acreage varied between 700,000 and 1,000,000 acres (Figure 28).

In 1944 the leading counties in winter wheat acreage were Lenawee, Clinton, Sanilac, Eaton and Monroe all of which had yields above average (Figures 27, 29). In 1930 Calhoun and Allegan Counties were among the leaders. The yield per acre has been below average for these two counties. Thus there appears to be a shifting of production to areas having high yields per acre. If this trend continues one would expect Saginaw, Tuscola, Gratiot and Washtenaw Counties to be leading winter wheat counties in the future. They all have fairly large acreages of wheat and have had yields considerably above the state average.

All areas in Michigan except Areas 2, 3, and 4 have shown an increase in acreage of winter wheat (Figure 30). Since 1940 these areas have increased in acreage also. The largest percentage increase has taken place in Areas 14, 15, and 16 although the total acreage grown is still small.

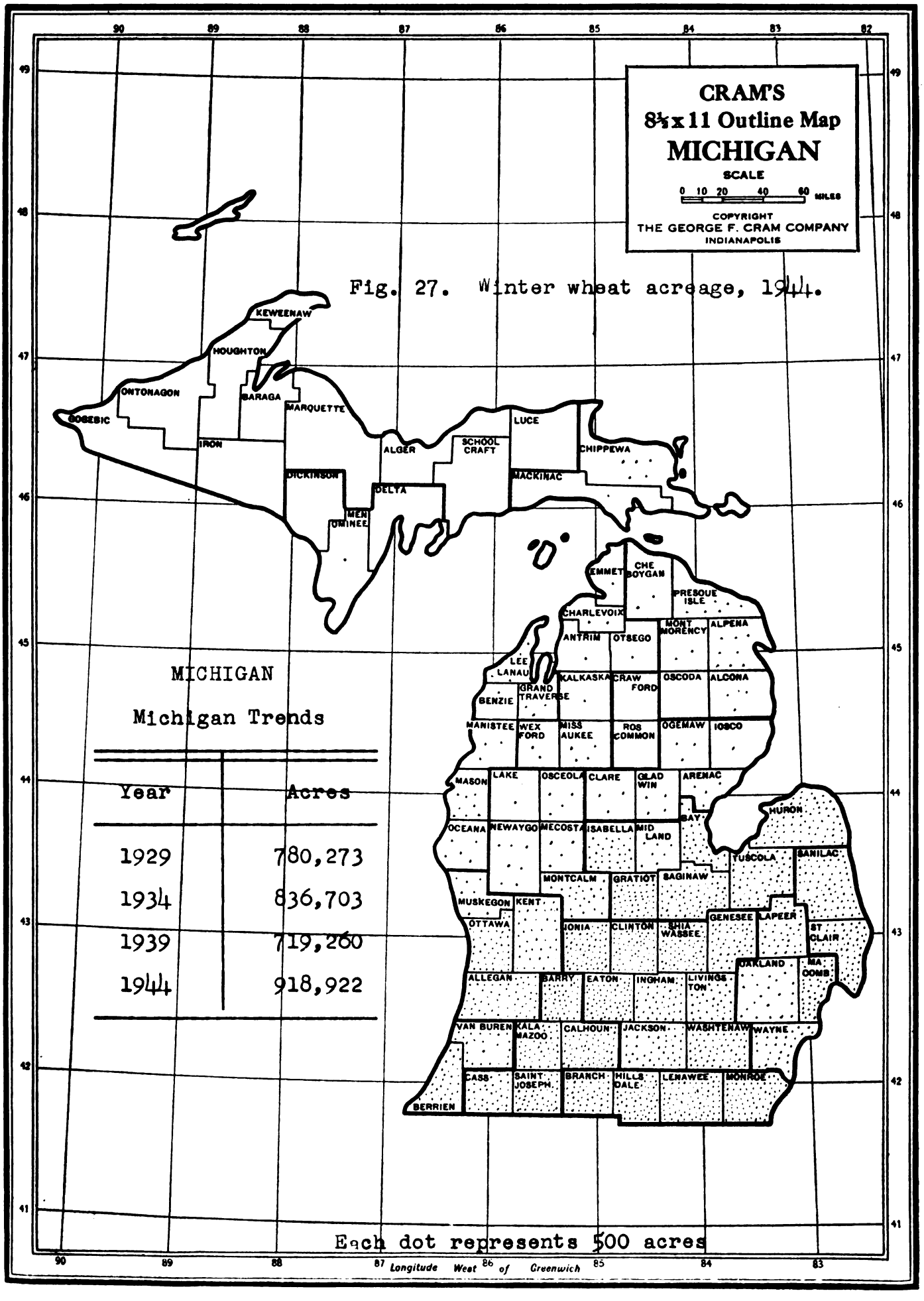
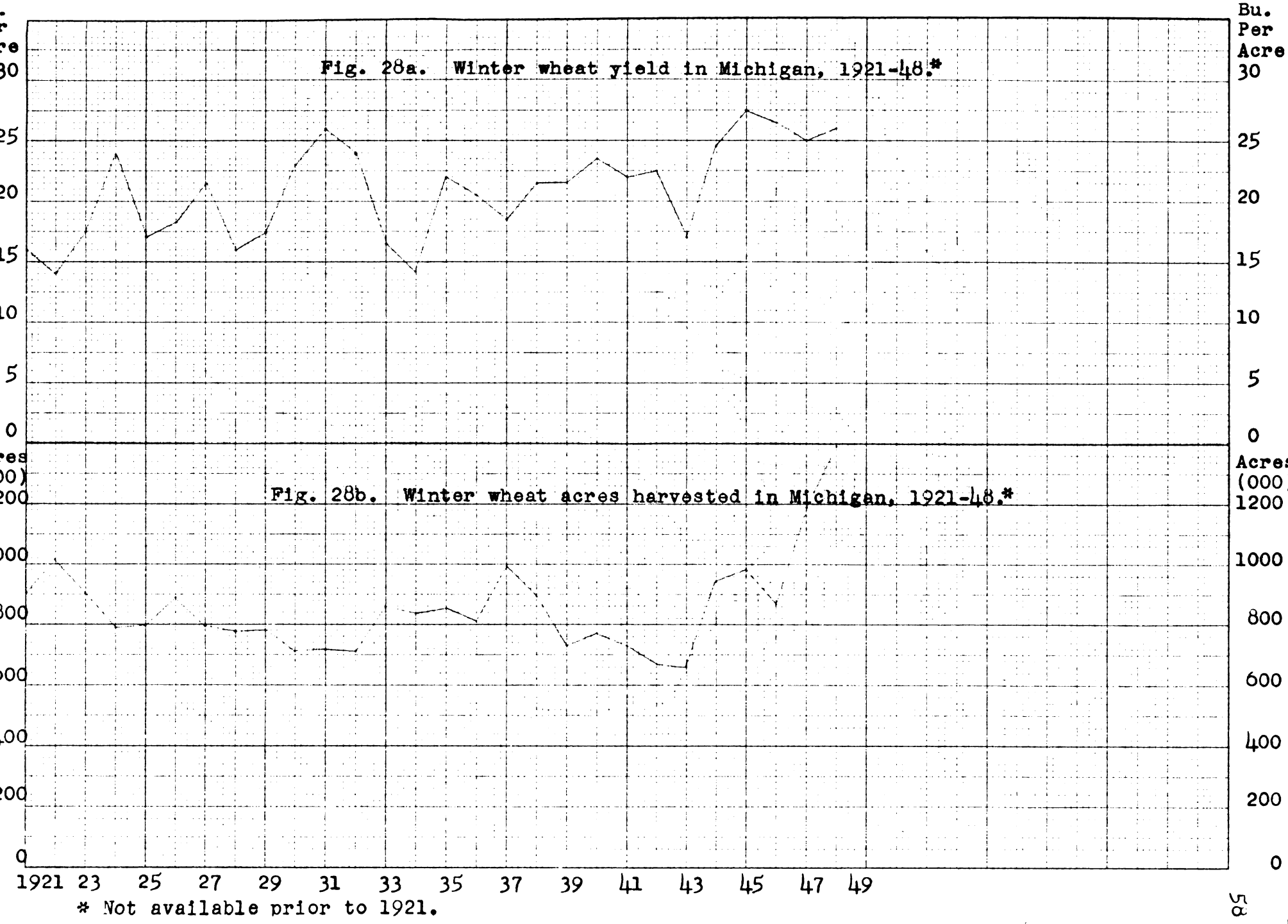


Fig. 27. Winter wheat acreage, 1944.



* Not available prior to 1921.

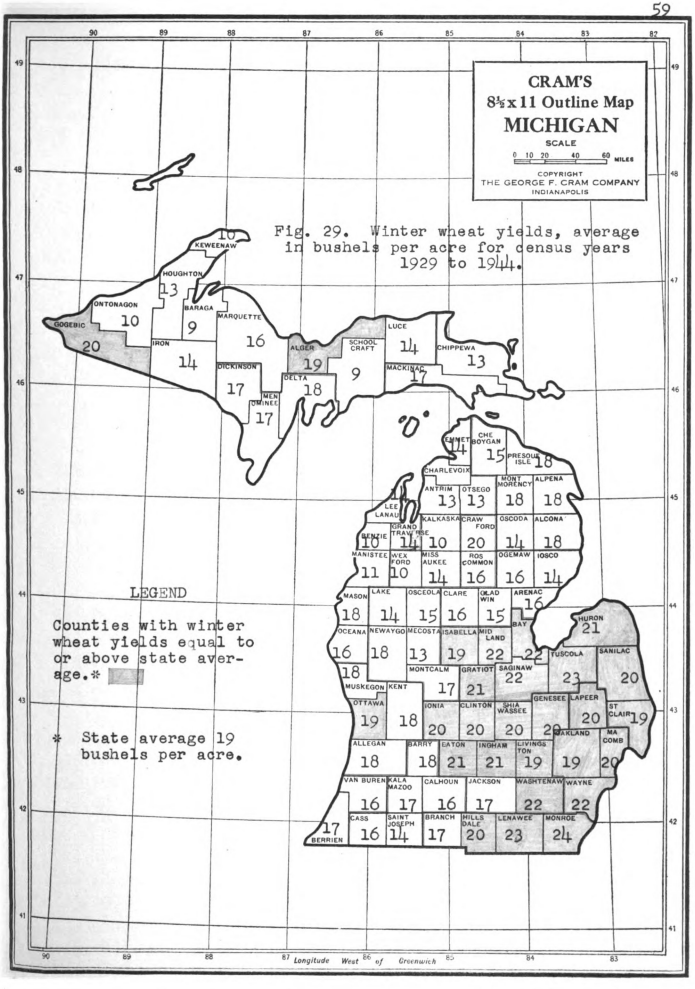
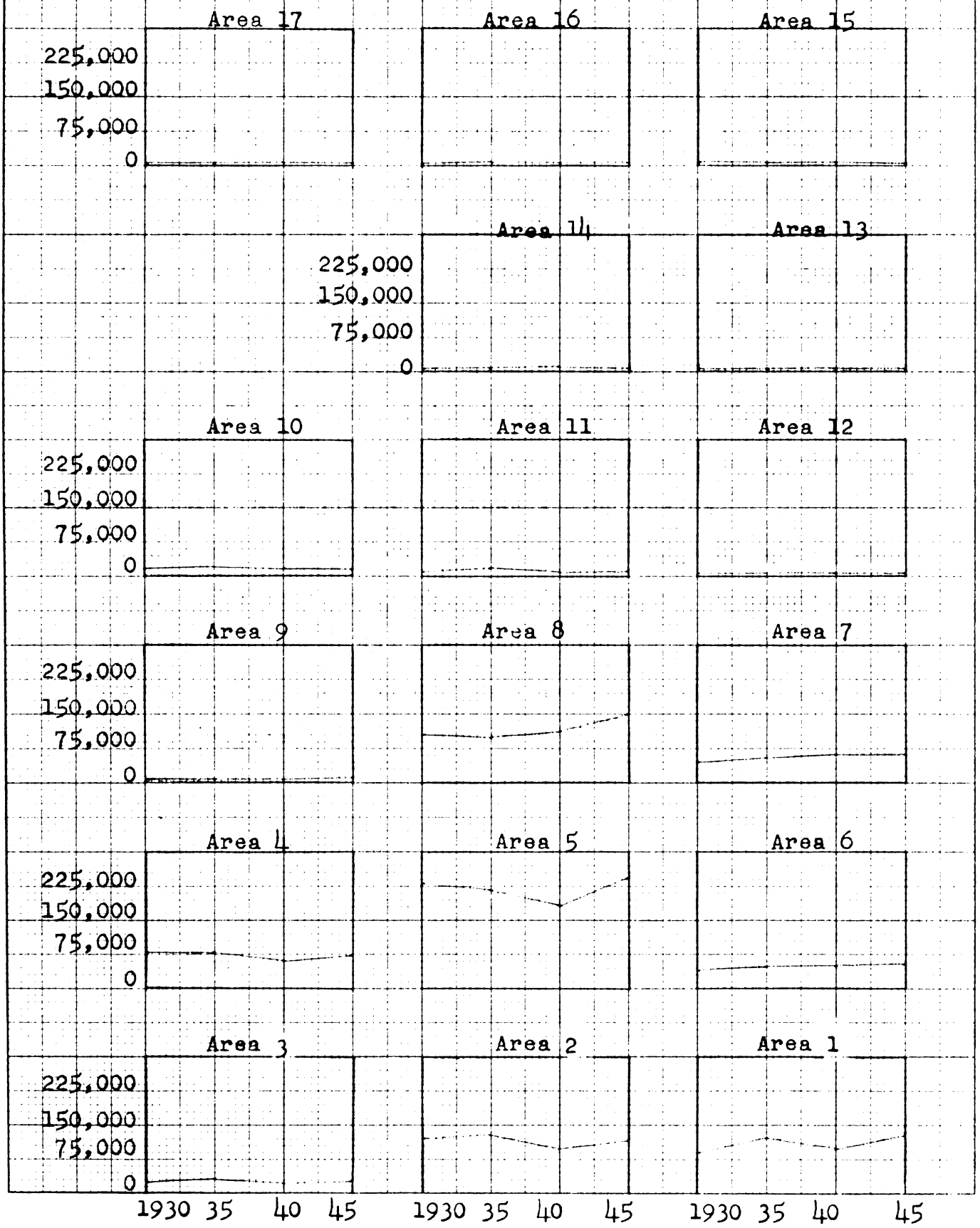


Fig. 29. Winter wheat yields, average in bushels per acre for census years 1929 to 1944.

Fig. 30. Acres of winter wheat 1930 to 1945 by type of farming areas.

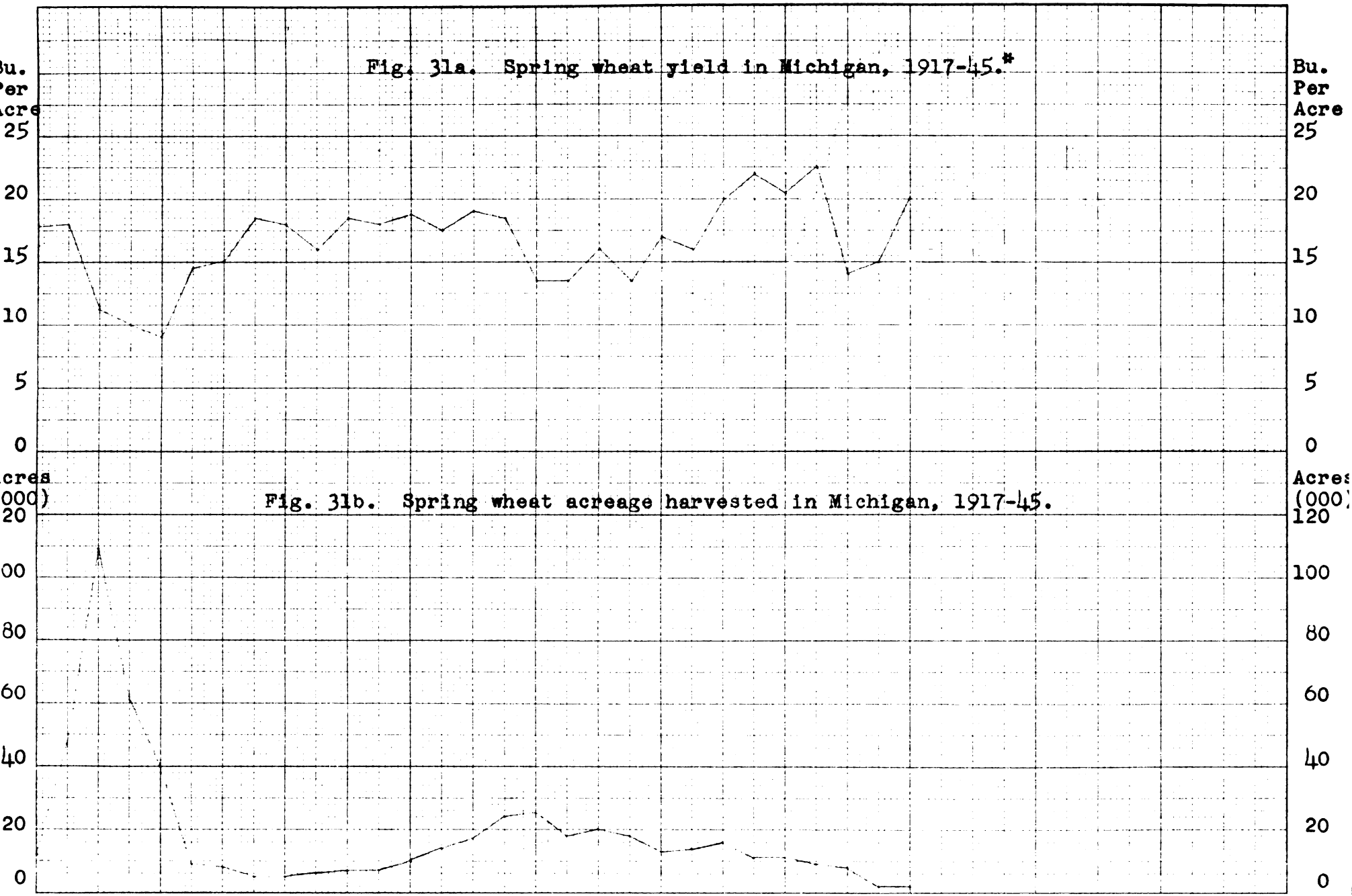


Spring Wheat

Spring wheat acreage in Michigan is only a fraction of winter wheat acreage and has been decreasing steadily from a high of 109,000 acres in 1919 to 2,000 acres in 1945 (Figure 31). This sharp reduction in spring wheat acreage undoubtably is one of the reasons for the decrease in proportion of farmers growing wheat in Michigan. However, spring wheat acreage has increased somewhat in Areas 1, 3, 4, 5, and 13.

Probably the greatest single reason for the decline in acreage of spring wheat is the low yield. Spring wheat yields have been consistently below that of winter wheat and much lower than yields of other spring grains.

In addition to lower yields the acreage of spring wheat seems to be constantly shifting from county to county. However Monroe County was the leading county in 1939 and 1944. Monroe County also has a higher average yield than any other county (Figure 32).



* Not available prior to 1917.

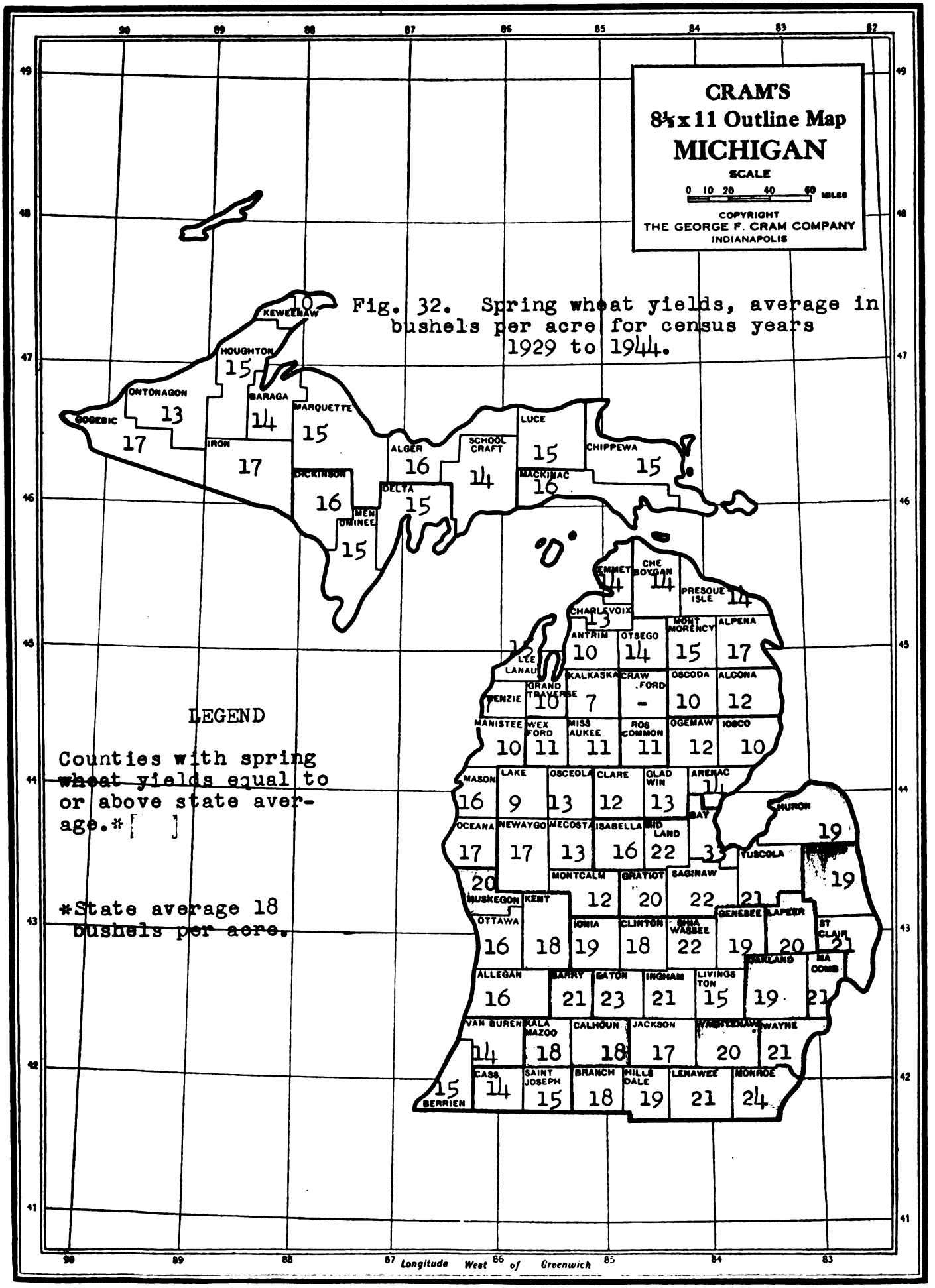


Fig. 32. Spring wheat yields, average in bushels per acre for census years 1929 to 1944.

Barley

Barley ranks fourth in importance among the grain crops in the United States. In Michigan the barley acreage is concentrated in the "Thumb" with Huron, Tuscola, Sanilac, Saginaw, and Gratiot Counties leading in acreage (Figure 33).

Under Michigan conditions barley produces more total pounds, total nutrients and protein per acre than oats, despite a barley yield below that of oats (Table 3).

The counties with the highest barley yield per acre also, have the largest acreages of barley, with the exception of Sanilac County (Figure 35). In 1909 Sanilac County led in barley acreage, the low yield per acre may have been a strong factor in the decrease in acreage in Sanilac County.

Acreage of barley in Michigan has fluctuated sharply leveling off at about 125,000 acres in the last few years (Figure 34). Since 1900 only Areas 1, 6 and 13 have shown a decrease in barley acreage (Figure 36).

Barley requires a well drained heavy soil where summers are cool. It is especially suited to a short growing season. It is unlikely that Lenawee and Monroe Counties will be found among the leaders in barley acreage again. It is however very possible that barley acreage will expand in those northern counties with heavy soils where the growing season is too short for corn.

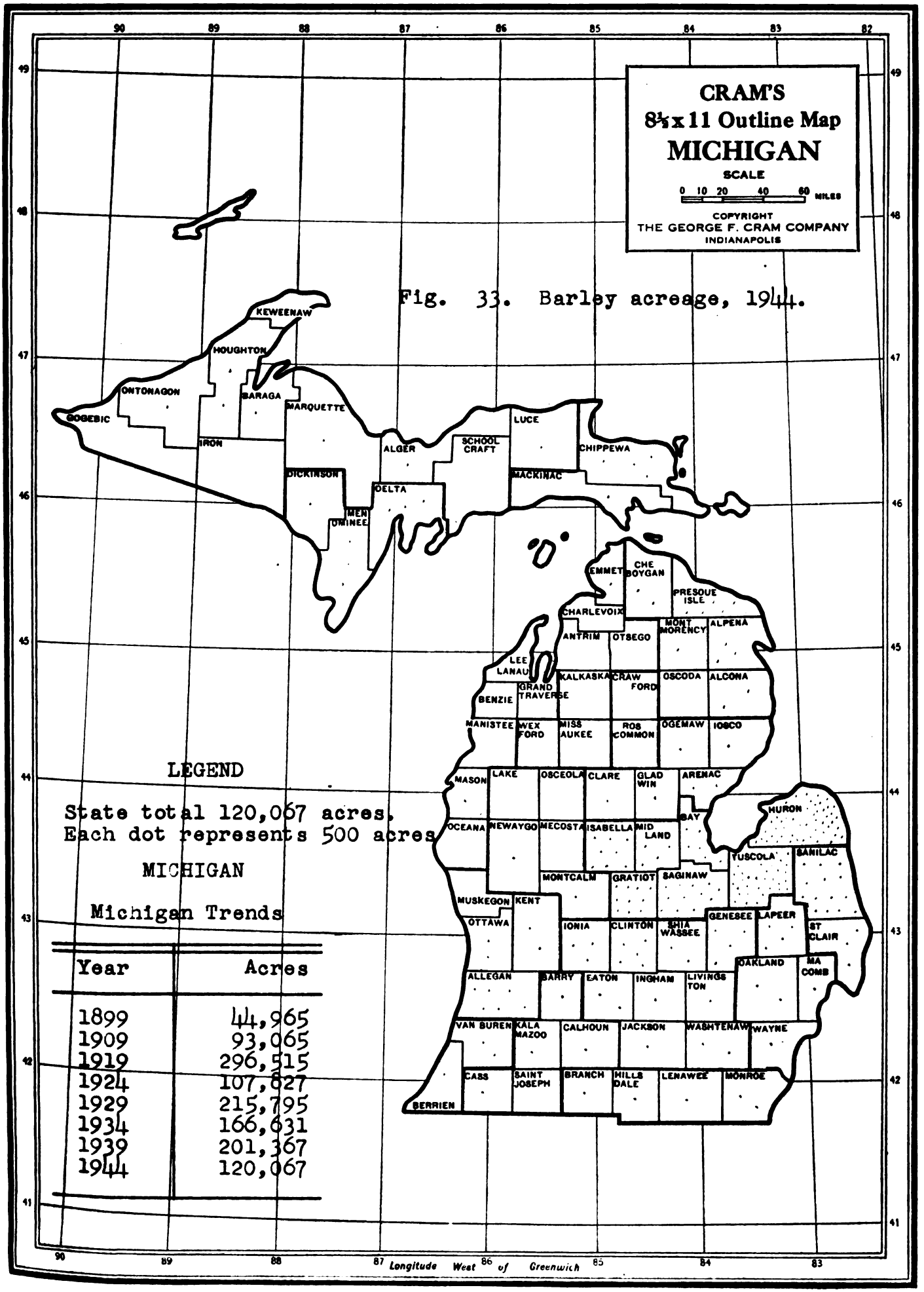


Fig. 33. Barley acreage, 1944.

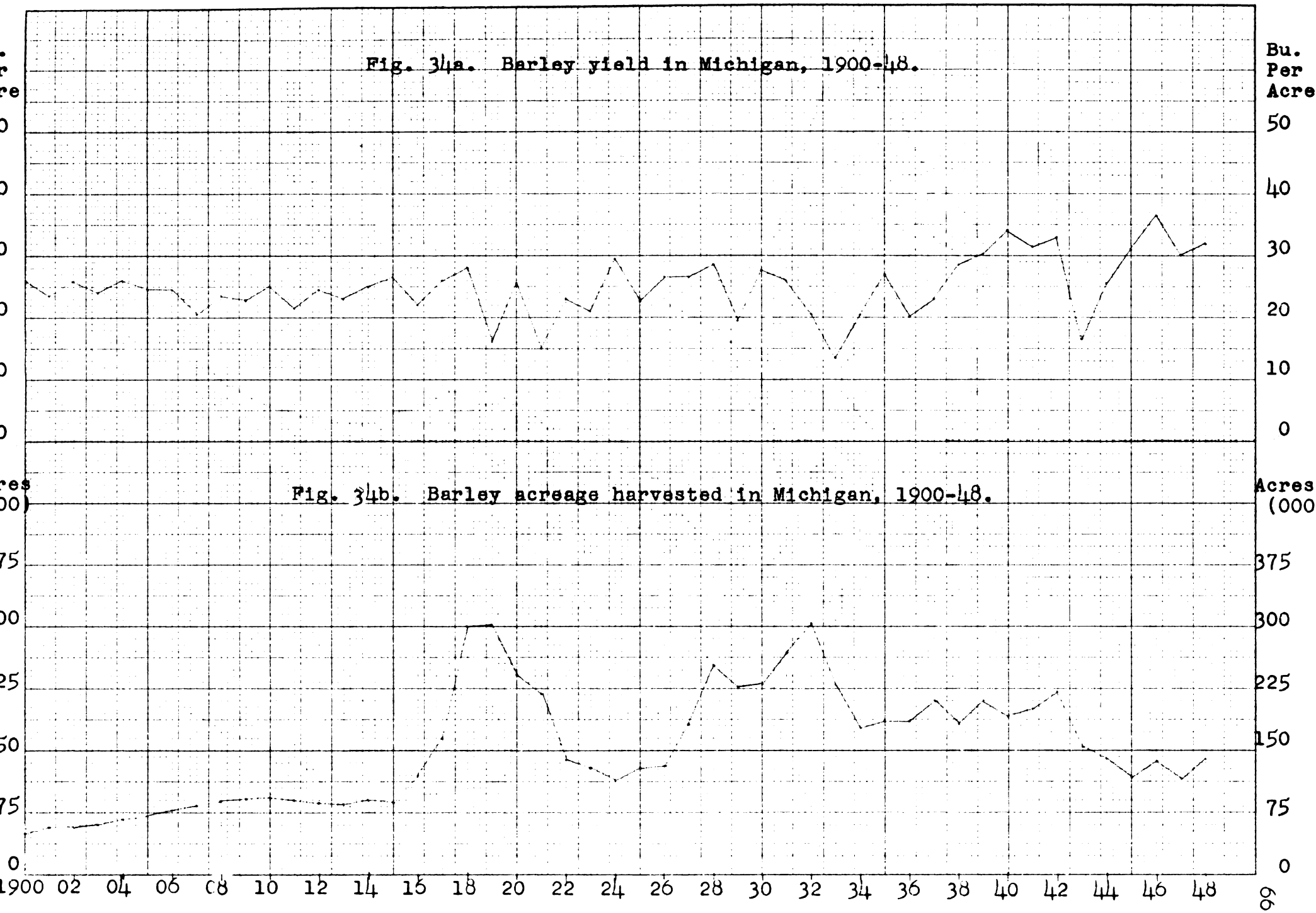


Fig. 34a. Barley yield in Michigan, 1900-48.
Bu. Per Acre
50
40
30
20
10
0
Fig. 34b. Barley acreage harvested in Michigan, 1900-48.
Acres (000)
375
300
225
150
75
0
1900 02 04 06 08 10 12 14 15 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

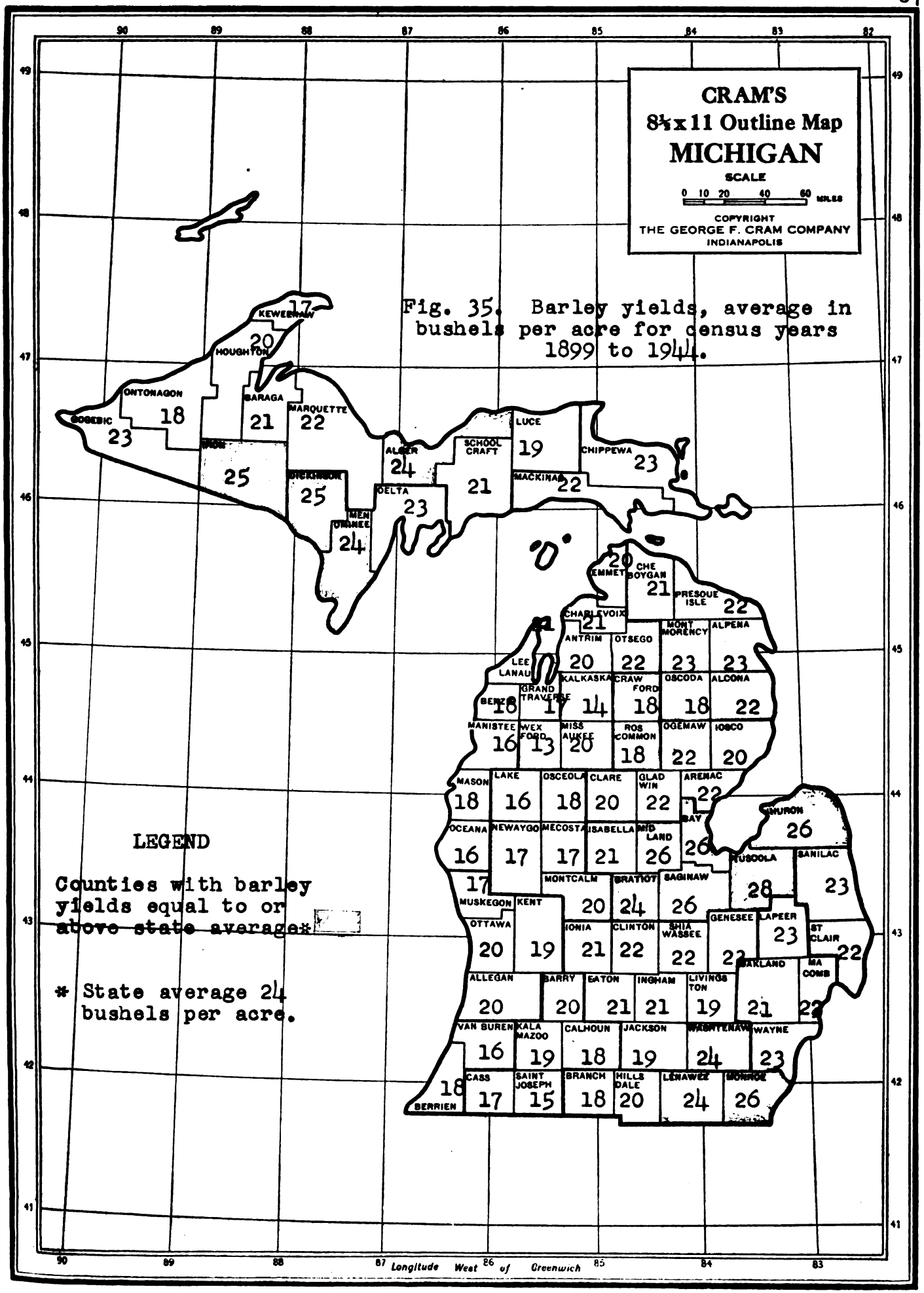
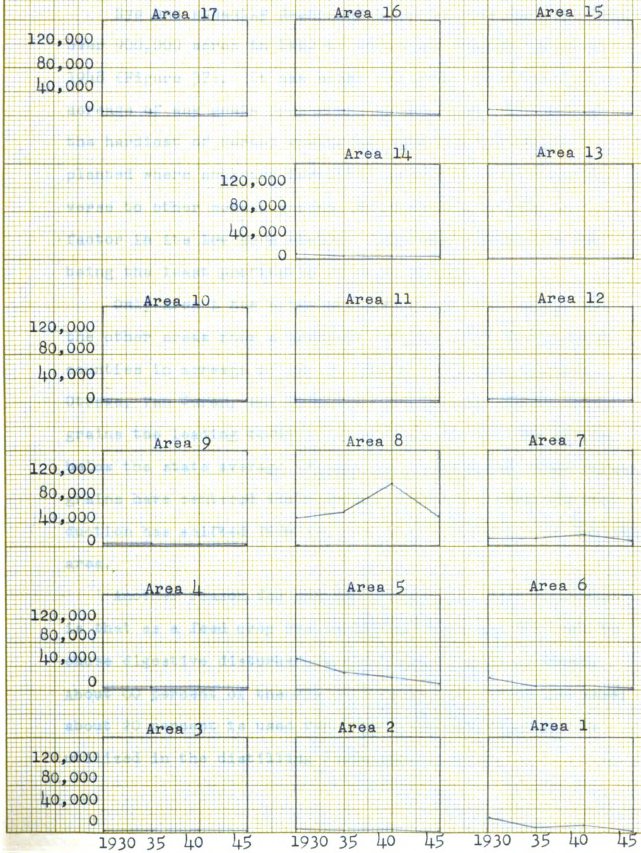


Fig. 35. Barley yields, average in bushels per acre for census years 1899 to 1944.

Fig. 36. Acres of barley 1930 to 1945 by type of farming areas.



Rye

Rye has steadily decreased in acreage in Michigan from over 900,000 acres in 1919 to less than 100,000 acres in 1948 (Figure 37). It has shown the greatest decrease in acreage of any grain crop grown in Michigan. Rye one of the hardiest of cereal grains has been traditionally planted where soil and fertility conditions have been adverse to other cereal grains, which is undoubtedly a factor in its low acre yields. This has resulted in rye being the least profitable of small grains.

Only Area 1 has shown an increase in rye acreage all the other areas show a decrease (Figure 39). The leading counties in acreage of rye in 1944 were Oceana, Allegan, Ottawa, Van Buren, and Montcalm. Unlike the other cereal grains the leading counties in acreage of rye have yields below the state average (Figure 38). While the other cereal grains have centered their production in one area rye production has shifted from year to year settling in no specific area.

Another reason for the marked decrease in rye acreage is that as a feed crop rye is unpalatable, and more apt to cause digestive disturbances than barley, corn or wheat. About 60 percent of the rye crop is used for feed and seed; about 20 percent is used for flour, and the remainder is utilized in the distilling industry.

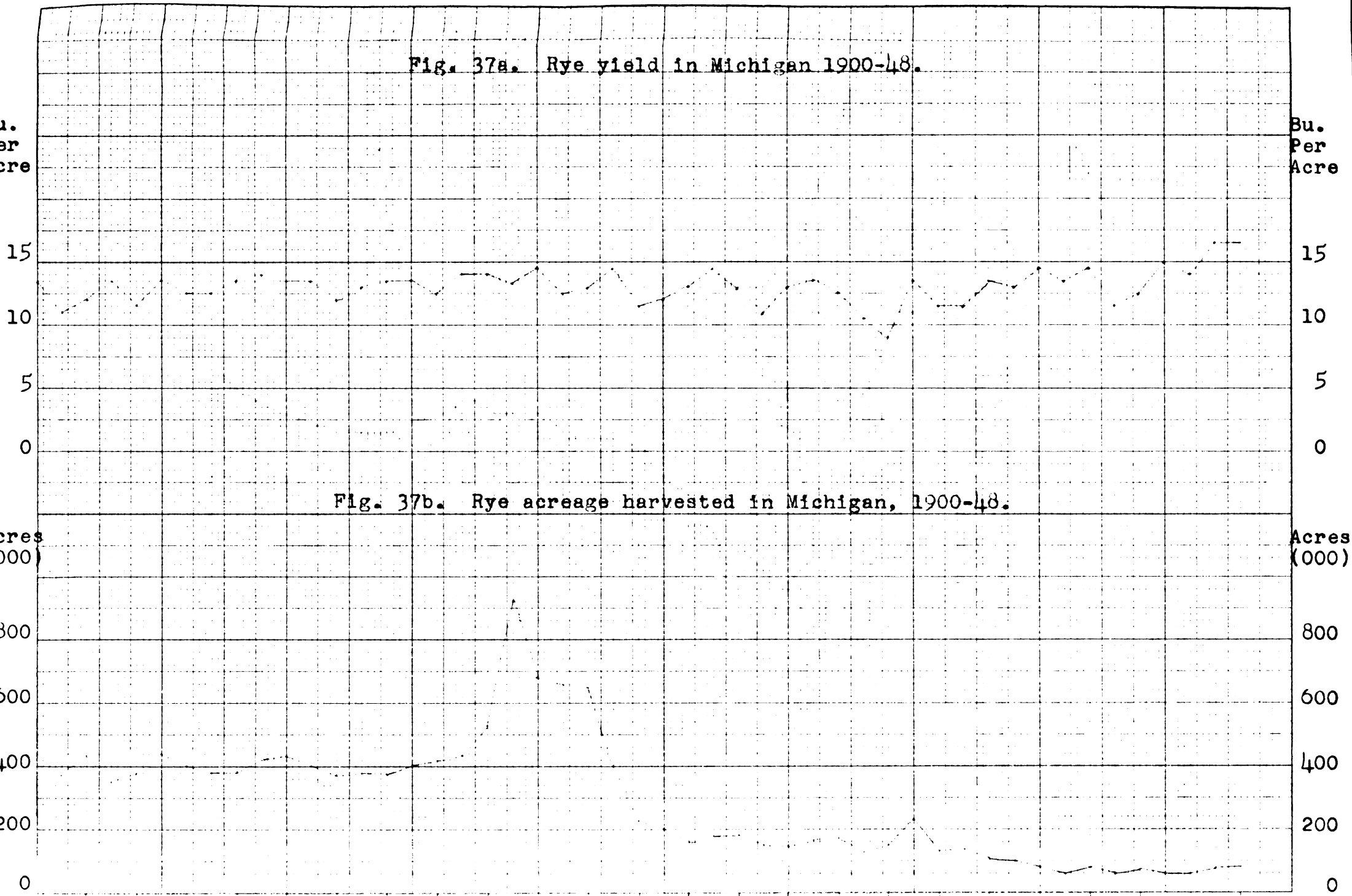


Fig. 37a. Rye yield in Michigan 1900-48.

Fig. 37b. Rye acreage harvested in Michigan, 1900-48.

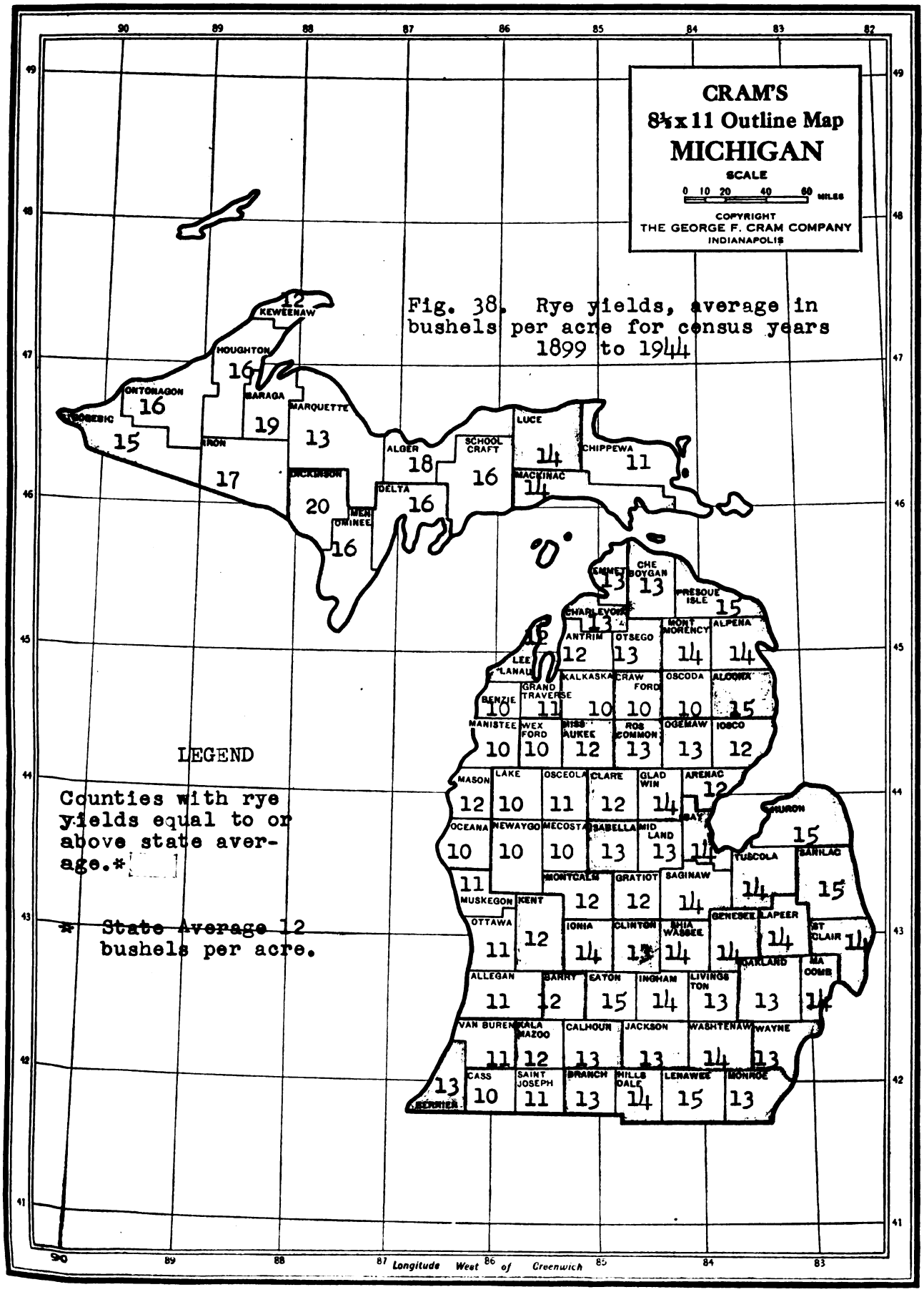
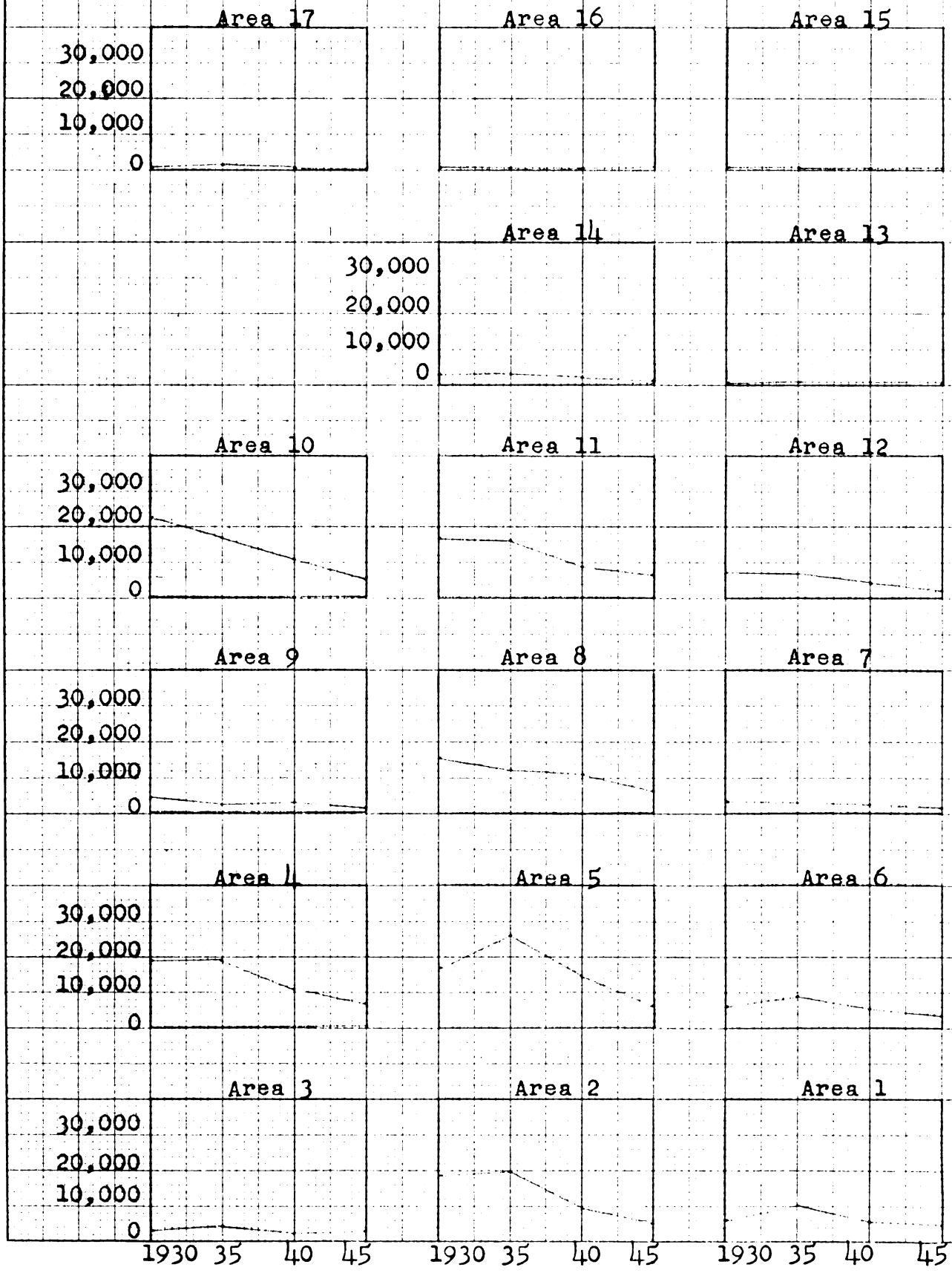


Fig. 38. Rye yields, average in bushels per acre for consus years 1899 to 1944

Fig. 39. Acres of rye 1930 to 1945 by type of farming areas.



Buckwheat

Buckwheat acreage has fallen sharply in Michigan from a high of 95,000 acres in 1918 to about 25,000 acres in 1948 (Figure 40). The national trend has been much the same with 58 percent of the 1929 acreage. Buckwheat has the ability to utilize relatively unavailable forms of plant food, and thus grows on poor soils better than most crops. Because of this it has been a valuable plant to plow under and supply organic matter and plant nutrients in an available form.

Although buckwheat acreage has decreased in all areas except 12, 14, 15, 16, and 17 it may increase in the future if agriculture conservation incentive payments are continued. Production of buckwheat appears to be continually shifting and has not centered in any one area although Monroe County has led in acreage most years. Monroe County has also had yields above the state average (Figure 41).

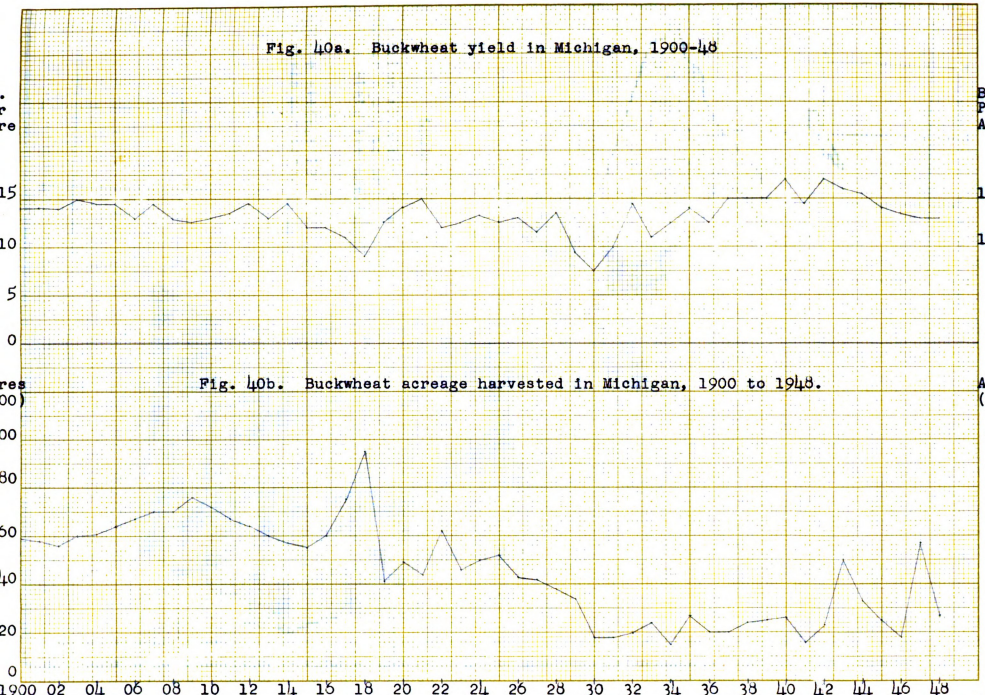


Fig. 40a. Buckwheat yield in Michigan, 1900-48

Fig. 40b. Buckwheat acreage harvested in Michigan, 1900 to 1948.

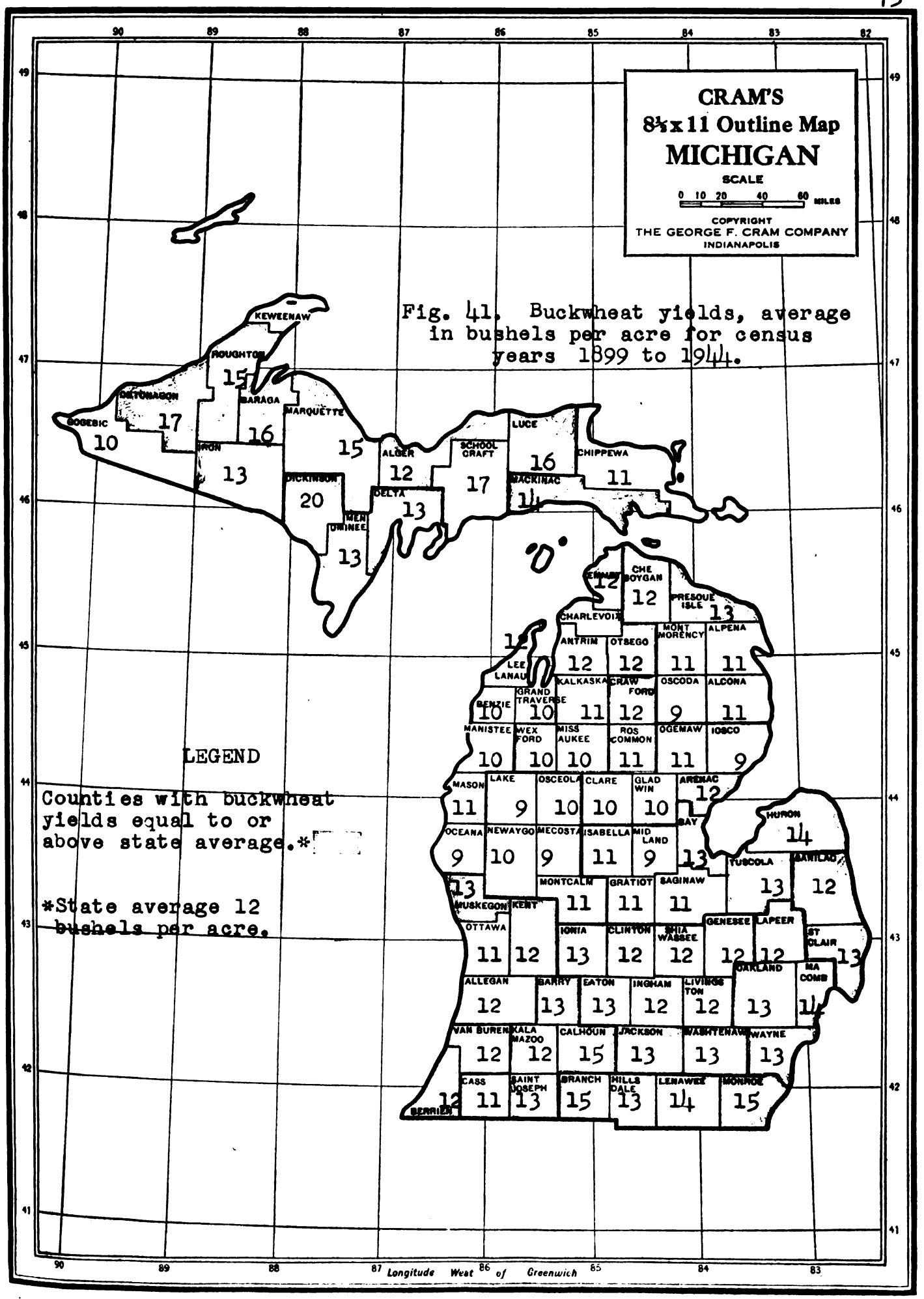


Fig. 41. Buckwheat yields, average in bushels per acre for census years 1899 to 1944.

Emmer and Spelt

Emmer and spelt are types of wheat similar in feeding value to oats and commonly called speltz. In Michigan the total acreage has increased from 6,742 in 1909 to 14,935 in 1939. They were not reported in the 1945 census.

In 1909 the leading counties in acreage were Alcona, Schoolcraft, Menominee, Cheboygan and Ogemaw all in the northern part of the state. By 1939 the main producing area appears to have shifted to the southwestern part of the state, with St. Joseph, Cass, Kalamazoo and Berrien Counties leading in acreage. Chippewa was the only northern county remaining among the leaders. The average yield of emmer and spelt by counties for Michigan is shown by Figure 42.

Since emmer and spelt are noted as a poor land crop they may continue to increase in the southwestern part of the state even though yields are low simply because it does better than oats or barley.

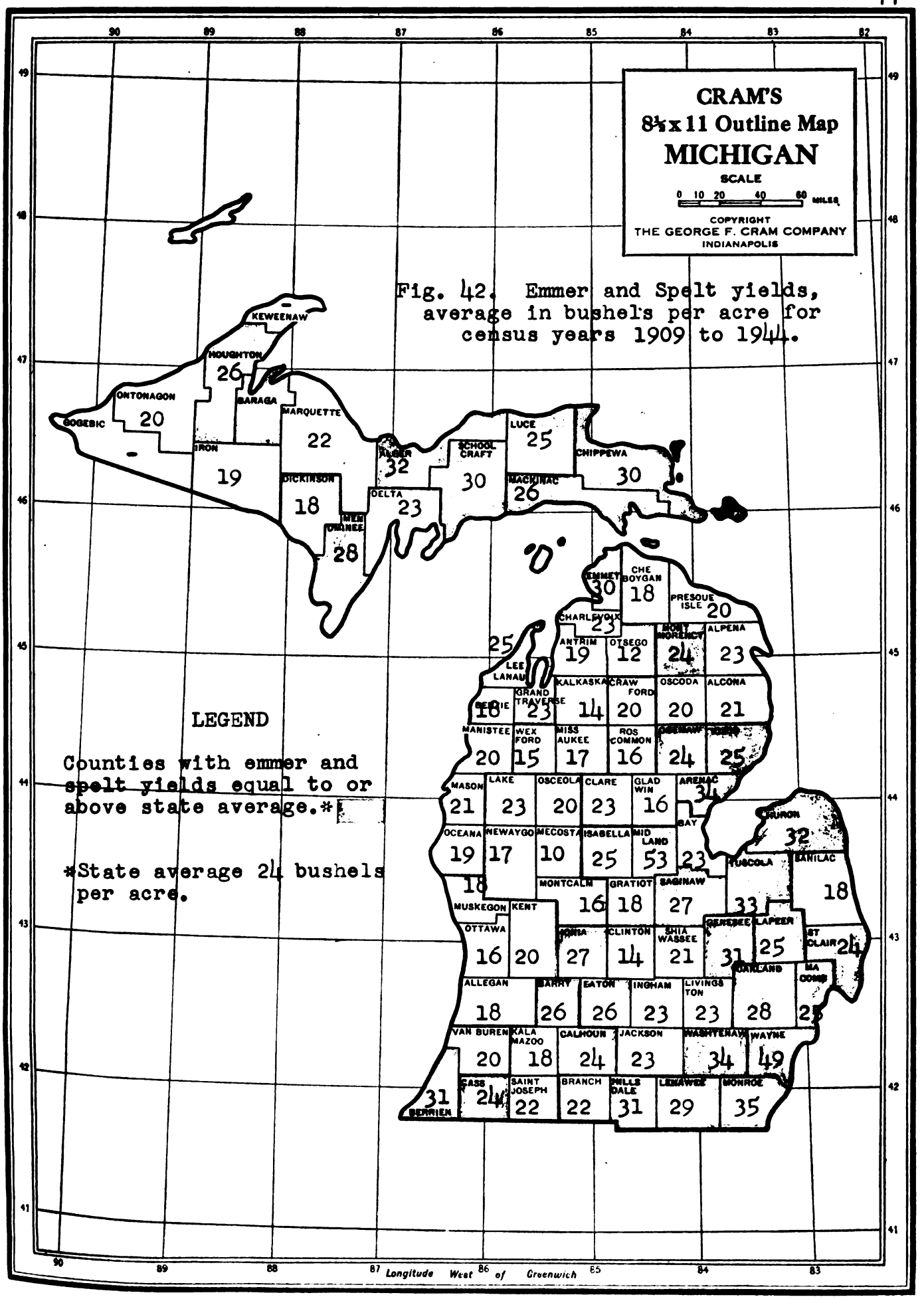


Fig. 42. Emmer and Spelt yields, average in bushels per acre for census years 1909 to 1944.

Soybeans

Soybeans were mentioned in United States literature for the first time in 1804 as being "adapted to Pennsylvania." For the next 90 years they remained a rare garden plant. In 1898 the United States Department of Agriculture began to introduce new varieties and started improvement through breeding and selection. At present over 100 varieties are grown and developed for seed in the United States.[9]

Soybeans were first reported in the 1920 census in Michigan. From 1919 to 1939 various counties led in soybean acreage including Sanilac, Saginaw, St. Joseph and Arenac, but by 1939 production became centered in Lenawee and Monroe Counties. These two counties also have had high yields (Figure 44).

It appears that after soybeans were introduced in Michigan a long period of experimentation went on before production became centered in Monroe and Lenawee Counties.

From 1936 to 1942 soybean acreage rose rapidly from about 15,000 acres to 145,000 acres, since 1942 it has dropped to 60,000 acres (Figure 43). All areas except 9, 14, and 17 have shown an increase in soybean acreage since 1929.

9/ The Soybean and How It Grew, The Borden Company.

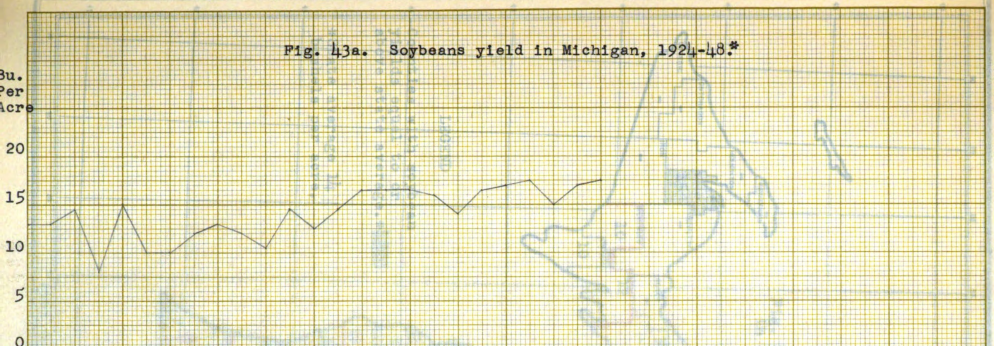


Fig. 43a. Soybeans yield in Michigan, 1924-48.*

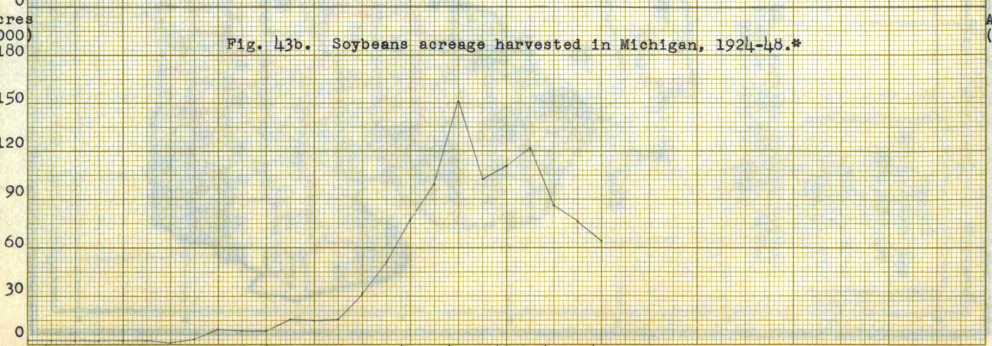


Fig. 43b. Soybeans acreage harvested in Michigan, 1924-48.*

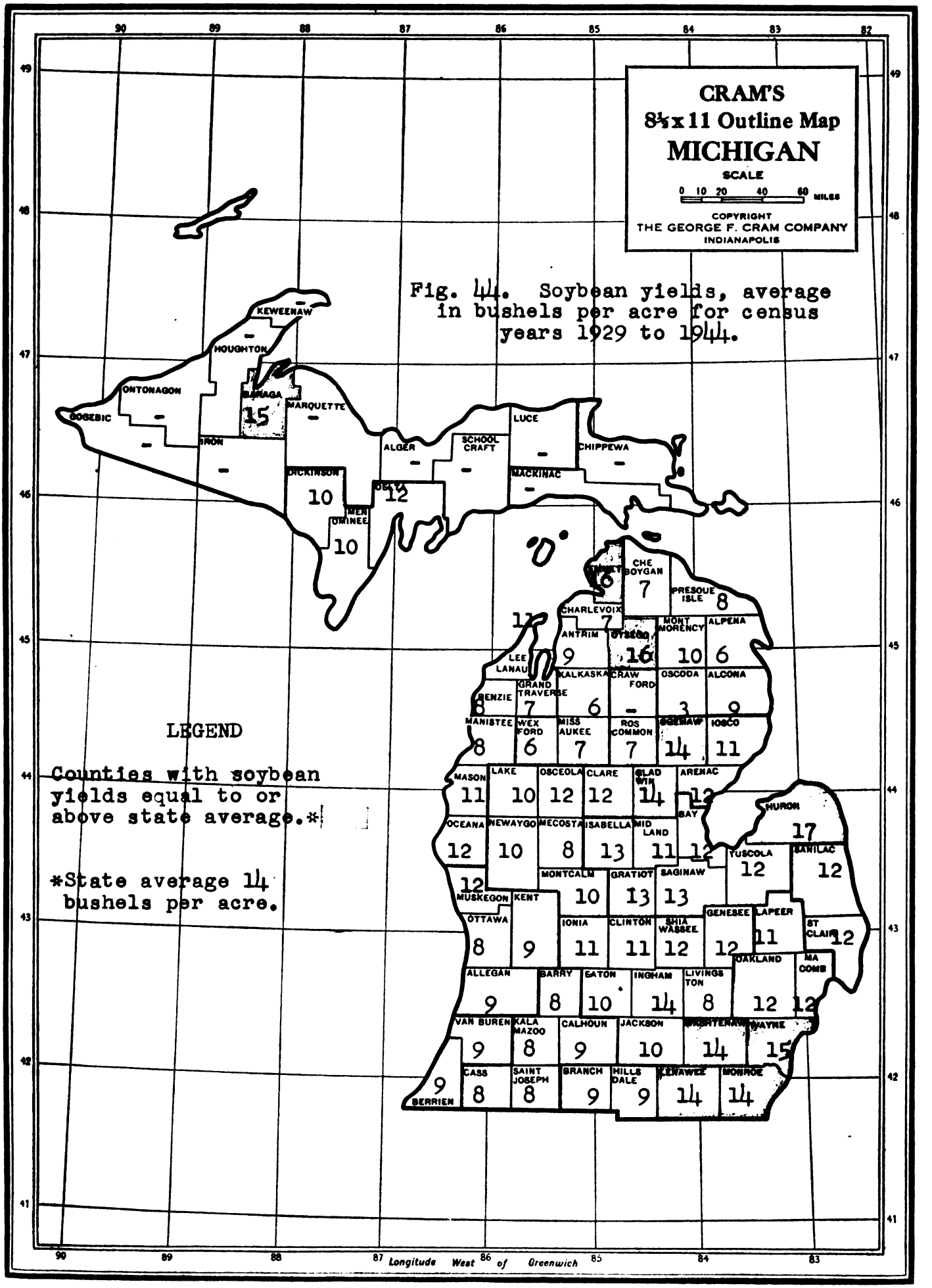


Fig. 44. Soybean yields, average in bushels per acre for census years 1929 to 1944.

Grain Crop Summary

Corn acreage in Michigan has increased 18 percent since 1900. Corn produces more total pounds per acre and more total digestible nutrients than any other feed crop and is the leading feed crop in Michigan.

Oat acreage is about 10 times the barley acreage in Michigan and oats is the second most important feed crop ranking next to corn. Oat acreage is fairly well distributed throughout the state.

Winter wheat acreage has expanded rapidly in Michigan until it is almost as large as the corn acreage. A considerable portion of Michigan's wheat is used for livestock feed.

Spring wheat acreage has been decreasing, only about 2000 acres being grown in 1945. The low yields of spring wheat compared to other spring grown grains have probably been the greatest factor in this decrease in acreage.

Barley acreage in Michigan is concentrated in the "Thumb." Barley is also raised in many northern counties having a heavy soil. In these localities it is an important feed crop.

Rye acreage has also been decreasing rapidly in Michigan. Low yields are probably the major factor in this decrease. Although only a small acreage is grown mixed grain acreage has been increasing. The higher yields obtained are probably the factor responsible for the increase in acreage.

Emmer and spelt acreage is also increasing and may continue to increase particularly in southwestern Michigan simply because it produces better there than any other grain crop.

Buckwheat acreage has decreased to about 25,000 acres. This crop may increase in acreage in the future particularly if agriculture conservation incentive payments are continued.

Soybean acreage has increased greatly since its introduction to Michigan. Acreage has decreased the last few years but soybeans will continue to be an important crop in southern Michigan.

C. Miscellaneous Field Crops

Field Beans

Field beans have been increasing in acreage in Michigan from 167,025 acres in 1899 to cover 600,000 acres in 1944. Only Areas 1 and 3 have shown a decrease. The majority of the beans grown in Michigan are the white pea or "navy" bean. About 85 percent of the United States crop of navy beans is grown in Michigan. These are practically all used for human consumption.

In 1899 Genesee, Eaton, Livingston, Shiawassee and Jackson Counties were the leading counties in bean acreage. By 1944 Huron, Tuscola, Sanilac, Saginaw and Gratiot Counties were leading in acreage of field beans. These counties all have yields well above the state average (Figure 47). Jackson and Livingston Counties have had yields well below the state average which probably accounts for their decrease in acreage and decline from among the leading bean growing counties. Bean production has expanded and become concentrated in the counties of the Saginaw Valley where yields are higher.

With this expansion and concentration of bean production in a more favorable area, bean yields per acre have tended to be higher (Figures 45, 46).

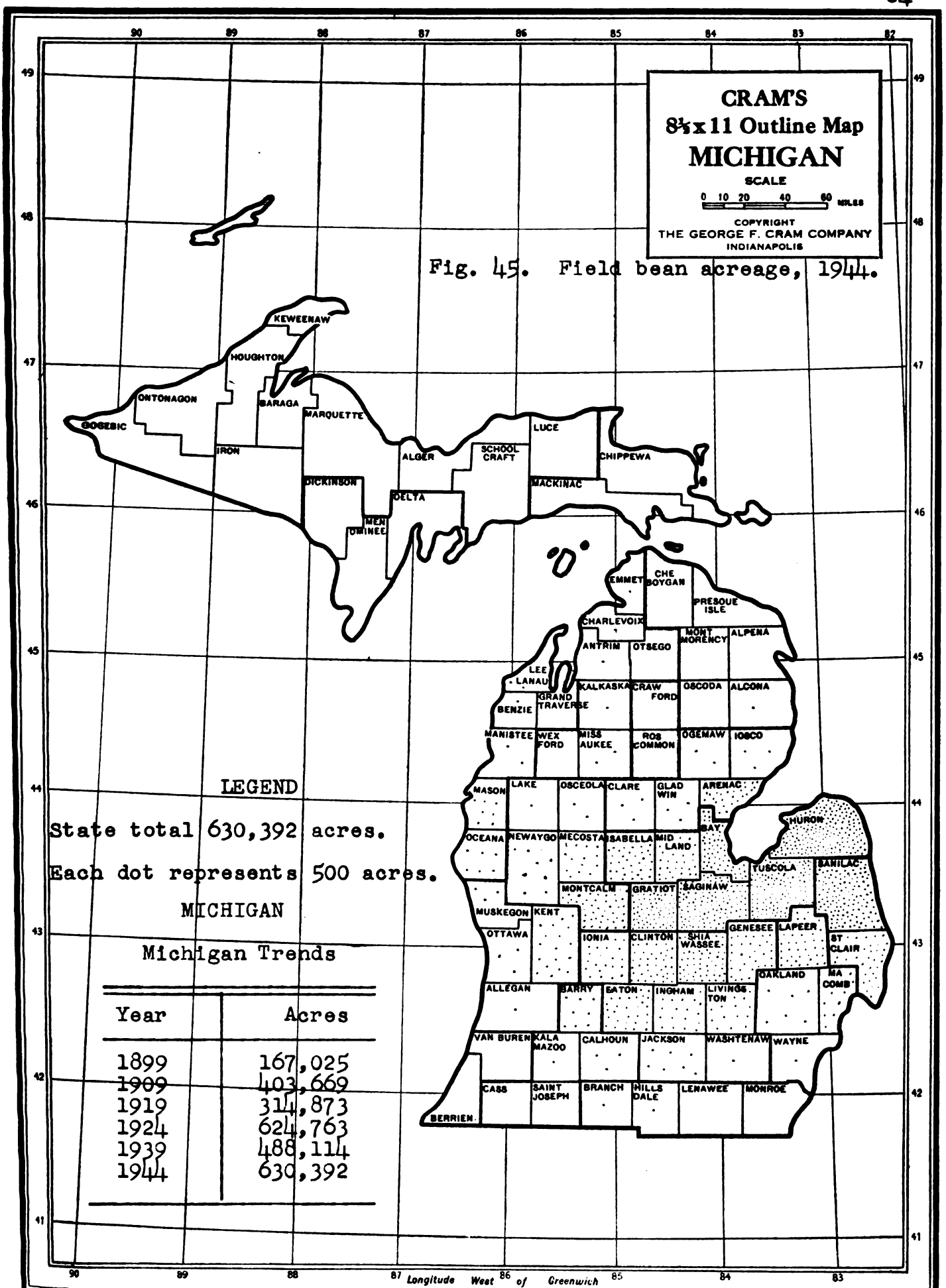
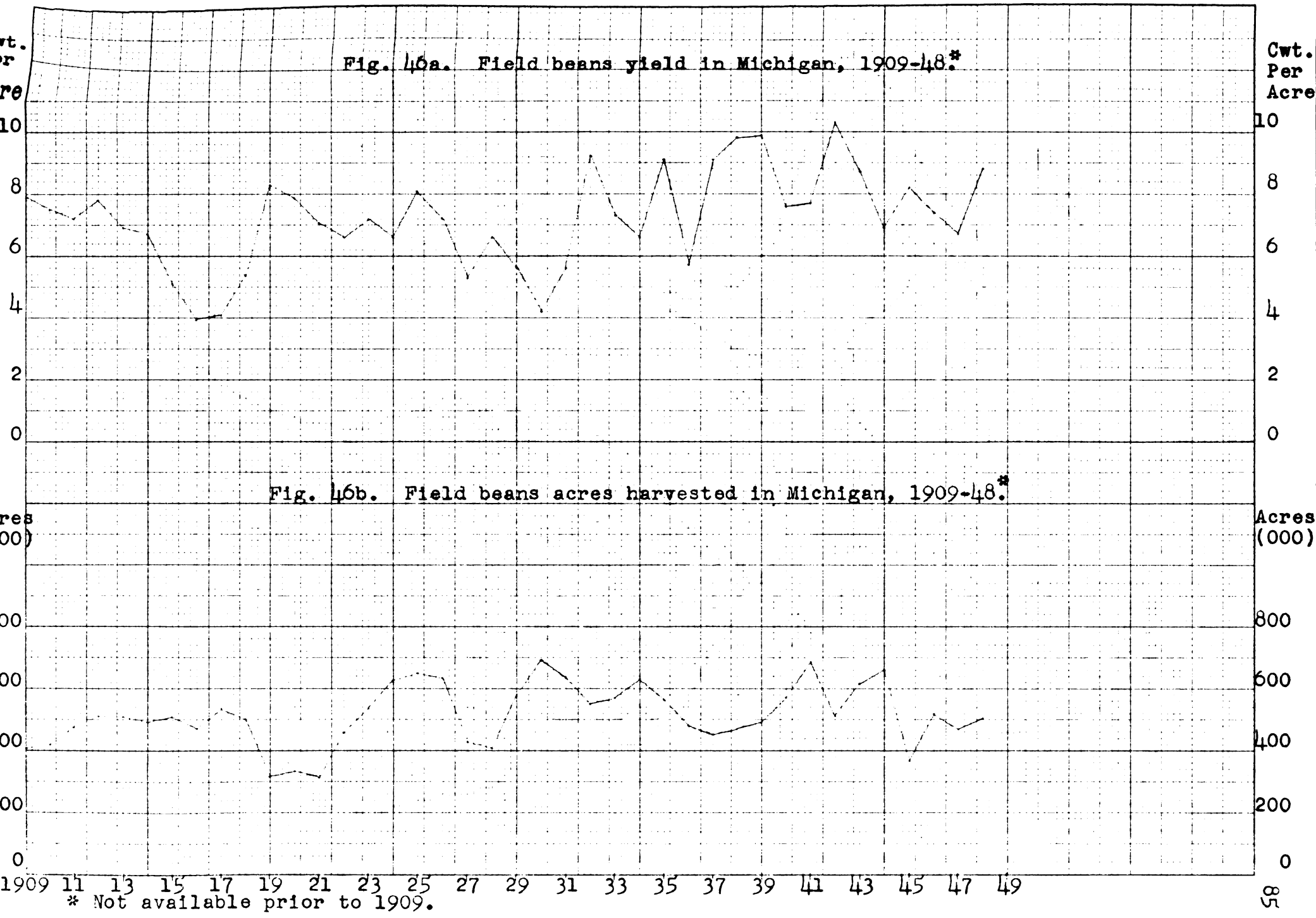


Fig. 45. Field bean acreage, 1944.



* Not available prior to 1909.

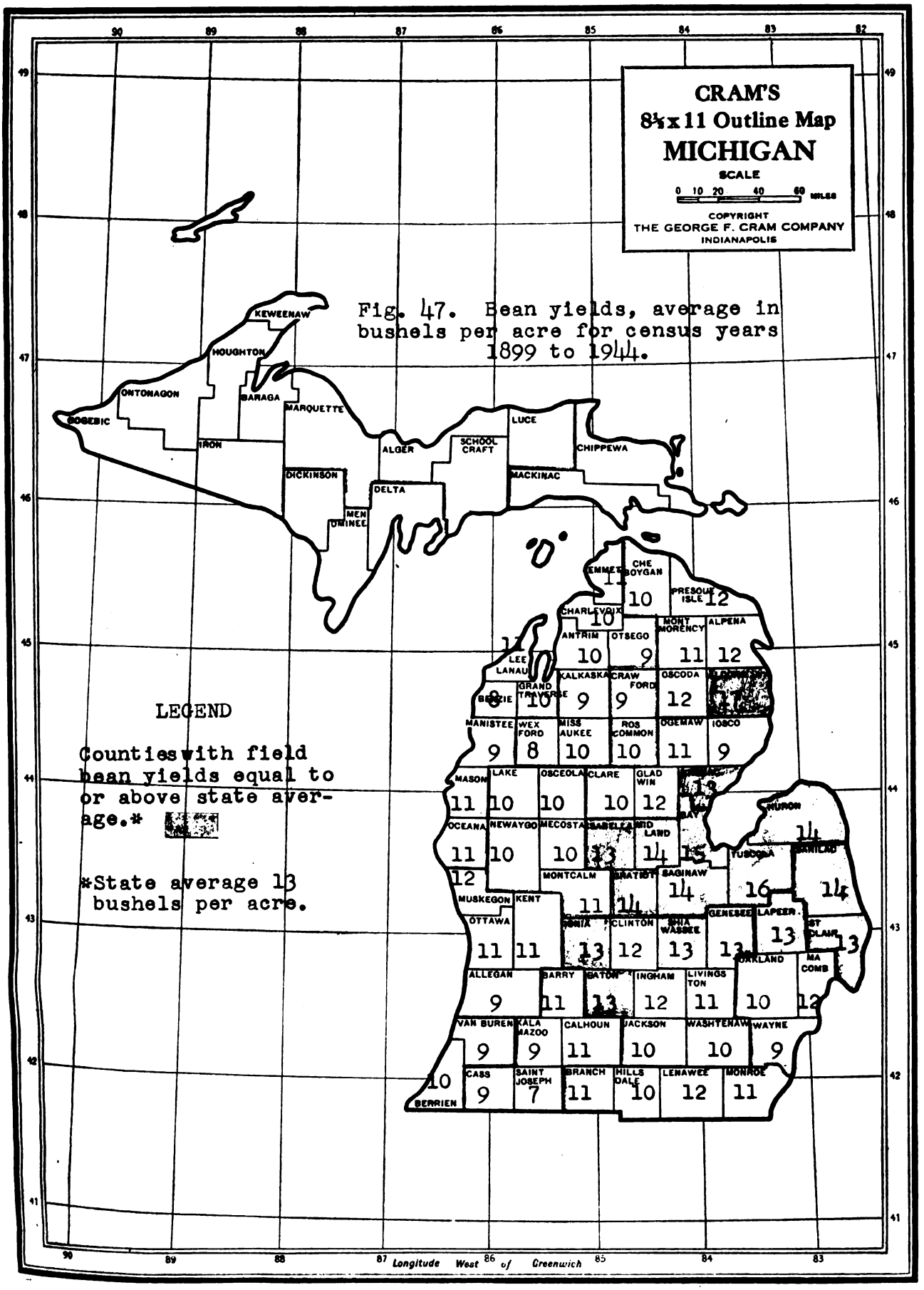


Fig. 47. Bean yields, average in bushels per acre for census years 1899 to 1944.

Potatoes

Potato production requires a cool moist growing season and potatoes prefer a loamy, fertile soil. Potato acreage has been falling in Michigan from about 320,000 acres in 1934 to 100,000 acres in 1948. Since 1930 only Area 17 has shown an increase in potato acreage (Figure 51). In this respect potato acreage has paralleled rye acreage.

There has been a marked shift in the areas of potato production in Michigan since 1899. In that year Montcalm, Kent, Oakland, Wayne and Mecosta Counties were the leading counties in acreage. In 1944 Montcalm, Bay, Presque Isle, Oakland and Houghton Counties were the leading counties in acreage. In 1947 Bay County exceeded Montcalm in potato acreage for the first time and has since maintained first place. Potato yields are much higher in the northern counties of Presque Isle and Houghton (Figure 50). However, potato acreage has remained large in Oakland County and expanded in Bay County because they are closer to the large city markets (Figure 48). The growers thus save a considerable amount on transportation which gives them a larger net return per bushel enabling them to compete even with their lower yields. In addition Bay County potato producers are able to place their potatoes on the market somewhat earlier than others and thus secure a premium for early potatoes.

The general upward trend of potato yields in Michigan is the result of two things (Figure 49). One is the adoption of a whole group of improved practices such as raising higher yielding varieties, use of more fertilizer, and more effective insect and disease control. The second is that these improvements, combined with mechanization, have pushed more of the production into the hands of specialized commercial growers who use the new methods on large acreages, in areas that are especially adapted to potatoes.

Thus the harvested acreage of potatoes has gone generally upward in California, Idaho, and Maine; while in the Lake States of Minnesota, Wisconsin and Michigan acreage has had a downward trend.

Although the potato stands second only to wheat as a human food, the per capita consumption has decreased from 196 pounds in 1909 to 140 pounds in 1939. Consumption is likely to decrease still further if potato prices are pegged at prices out of reach of that segment of the population that normally would be the largest user.

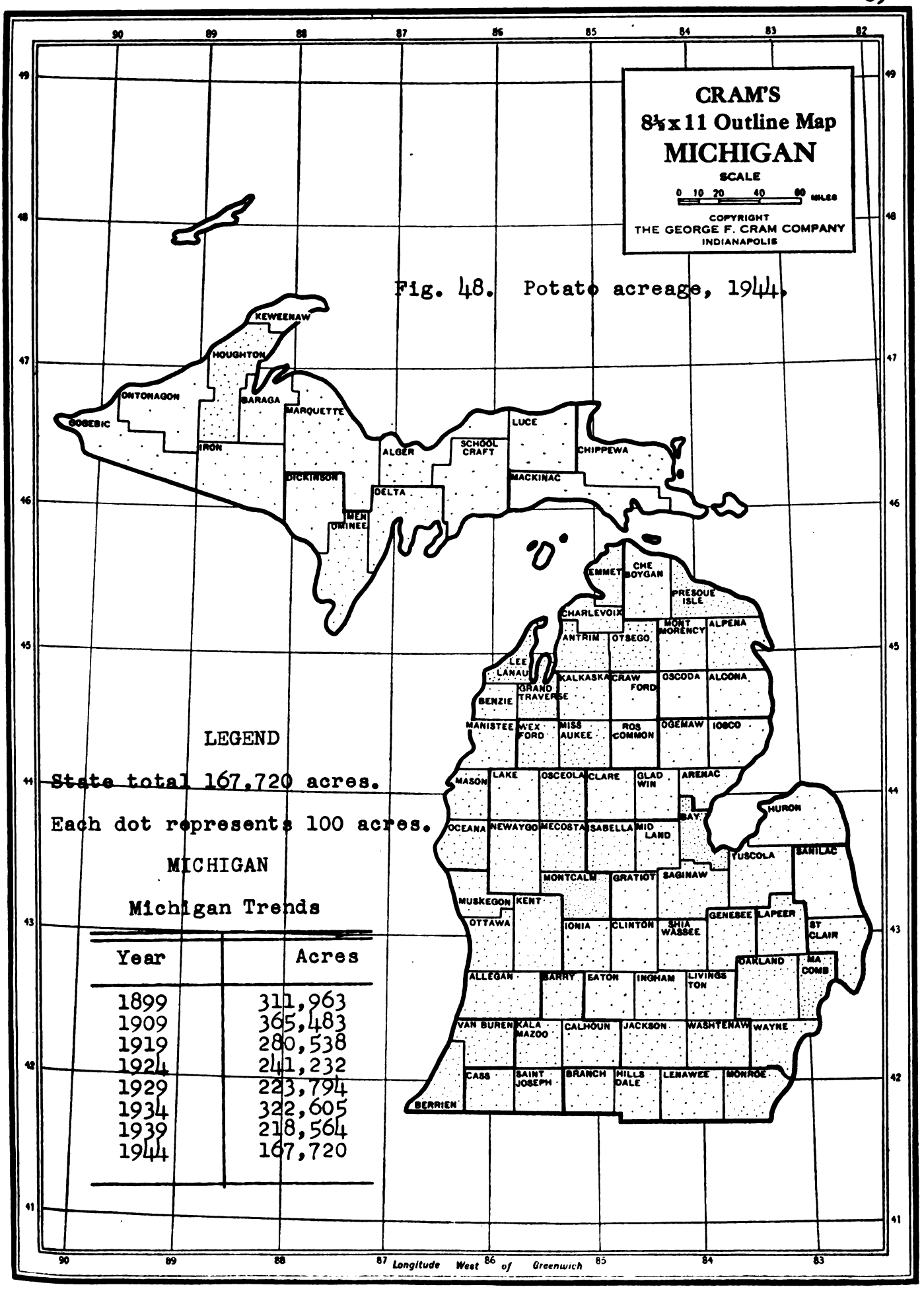


Fig. 48. Potato acreage, 1944.

LEGEND

State total 167,720 acres.

Each dot represents 100 acres.

MICHIGAN

Michigan Trends

Year	Acres
1899	311,963
1909	365,483
1919	280,538
1924	241,232
1929	223,794
1934	322,605
1939	218,564
1944	167,720

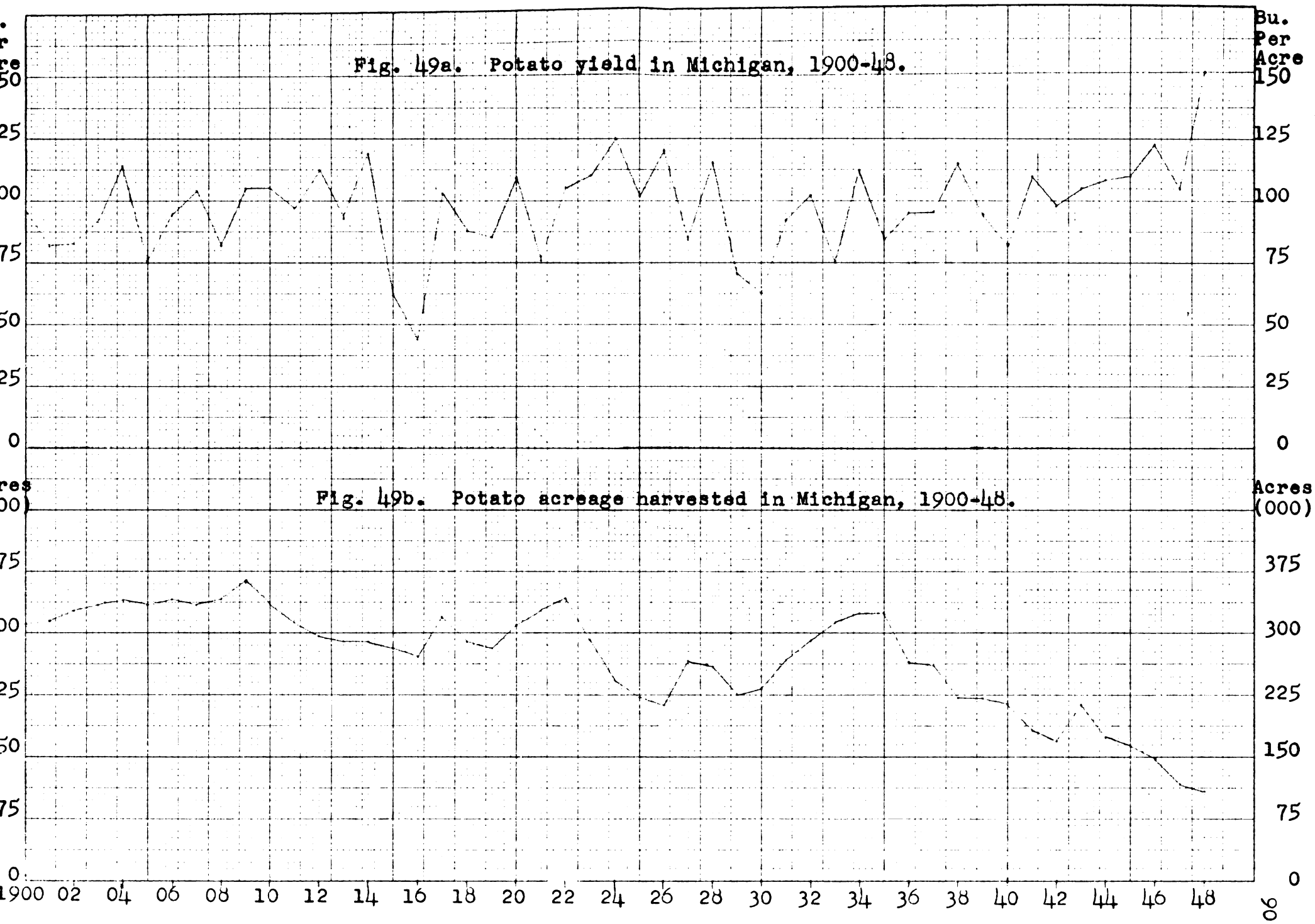


Fig. 49a. Potato yield in Michigan, 1900-48.
Bu. Per Acre
150
125
100
75
50
25
0
Fig. 49b. Potato acreage harvested in Michigan, 1900-48.
Acres (000)
375
300
225
150
75
0
1900 02 04 06 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

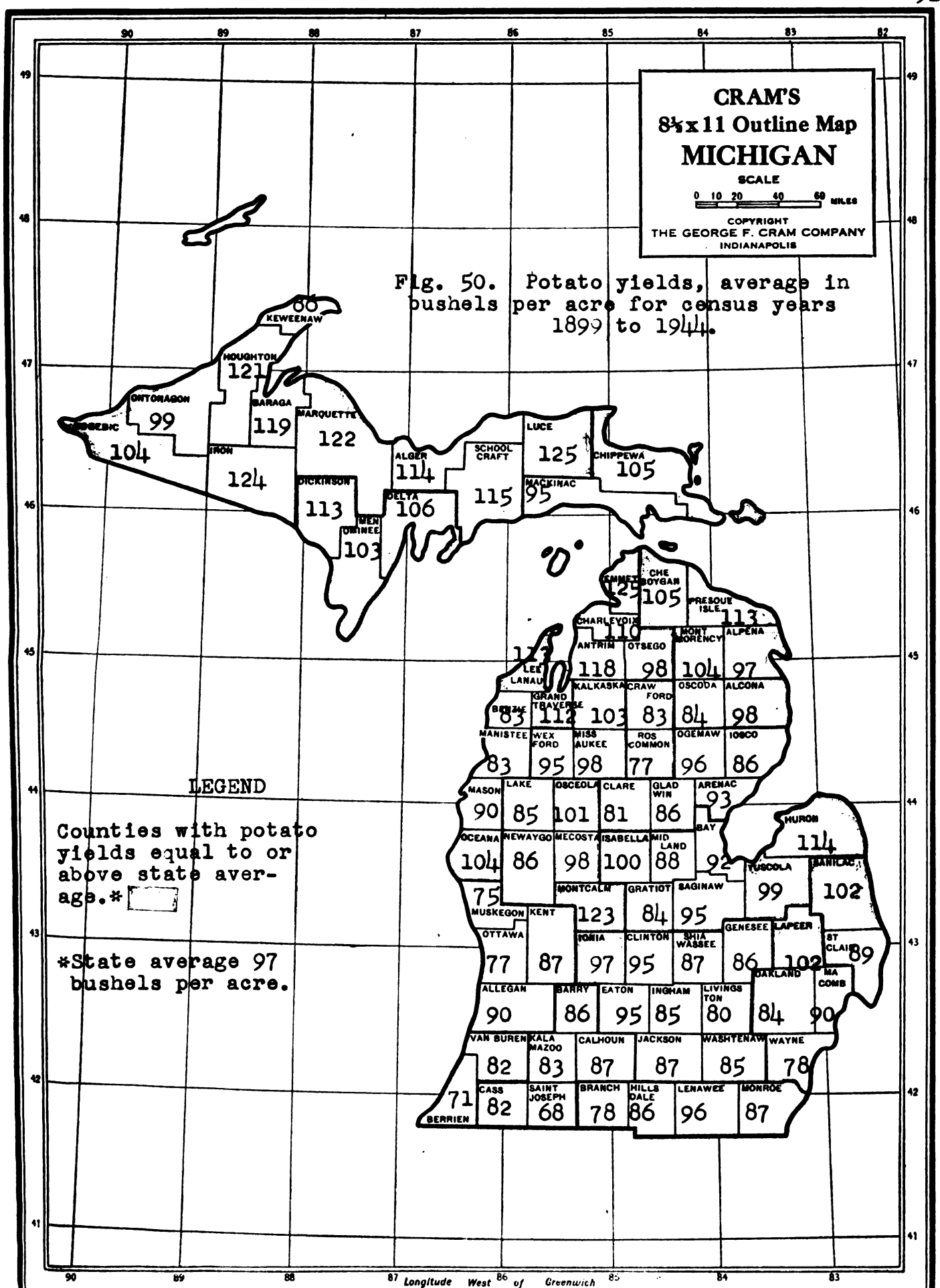
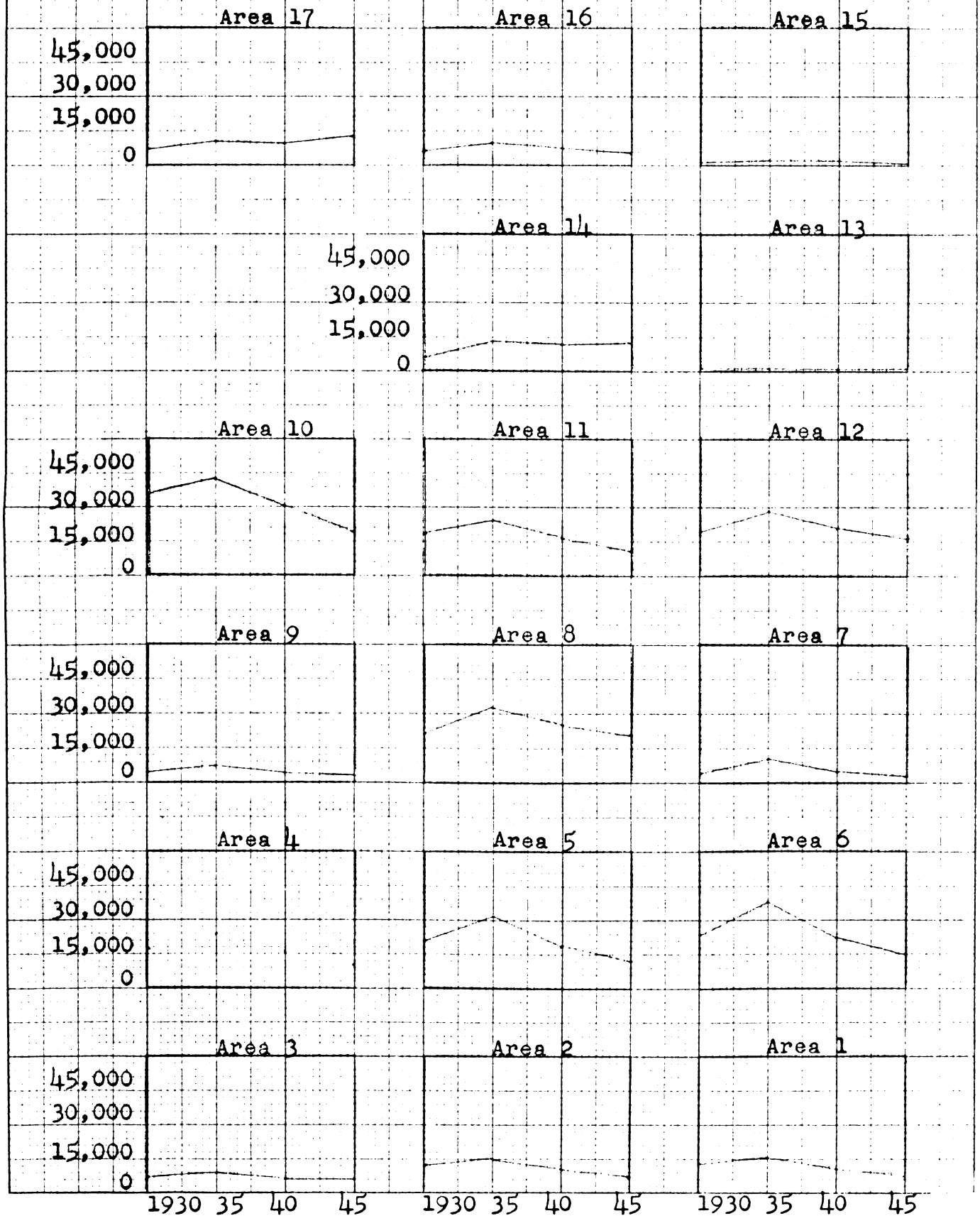


Fig. 50. Potato yields, average in bushels per acre for census years 1899 to 1944.

Fig. 51. Acres of potatoes, 1930 and 1945, by type of farming areas.



Sugar Beets

Successful production of sugar beets requires an adequate supply of moisture, warm days, and fairly cool nights during the growing season. Sugar beet acreage in Michigan has decreased from a high of 150,000 acres in 1933 to 50,000 acres in 1948 (Figure 53). Michigan sugar beets are grown mostly on heavy, fertile soil in the Saginaw Valley (Figure 52). This area has had the highest yields in the state (Figure 54).

Sugar beets in Michigan are grown without irrigation thus average yields are only about half that obtained under irrigation in Western States. Despite this there are many more sugar beets grown in Michigan today than in 1899. However, the lower yields in Michigan are probably responsible for the decline in acreage that has taken place since 1933.

In 1944 the leading counties in acreage of sugar beets were Tuscola, Sanilac, Saginaw, Huron and Bay. All of these counties have had above average yields. In 1899 Ottawa County was one of the leading counties in sugar beet acreage, but yield per acre was below average which may have been a factor in the decline of sugar beet acreage in Ottawa County.

Future acreage of sugar beets in Michigan will depend in part upon the amount of protective tariff and import duties on sugar from other countries.

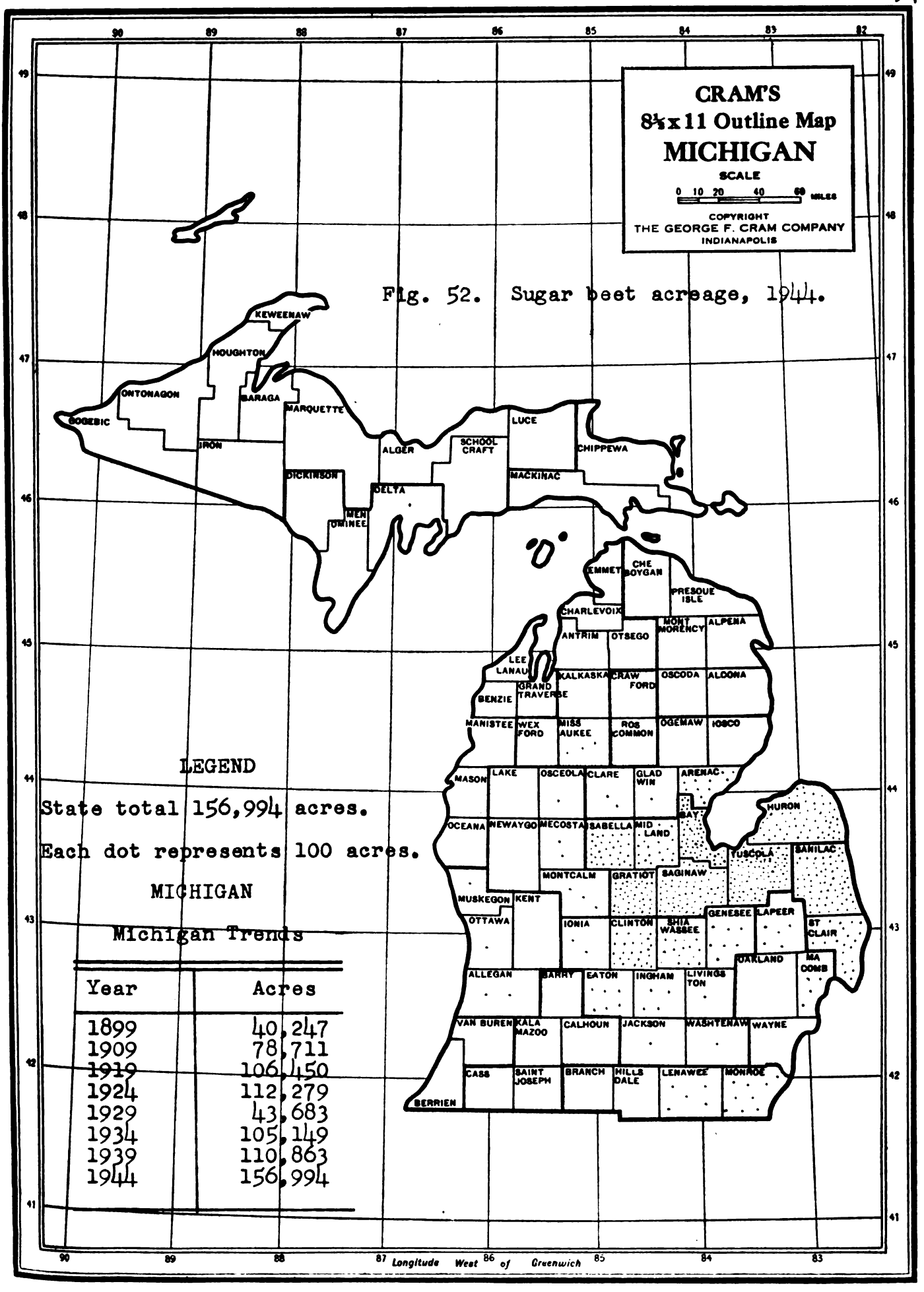
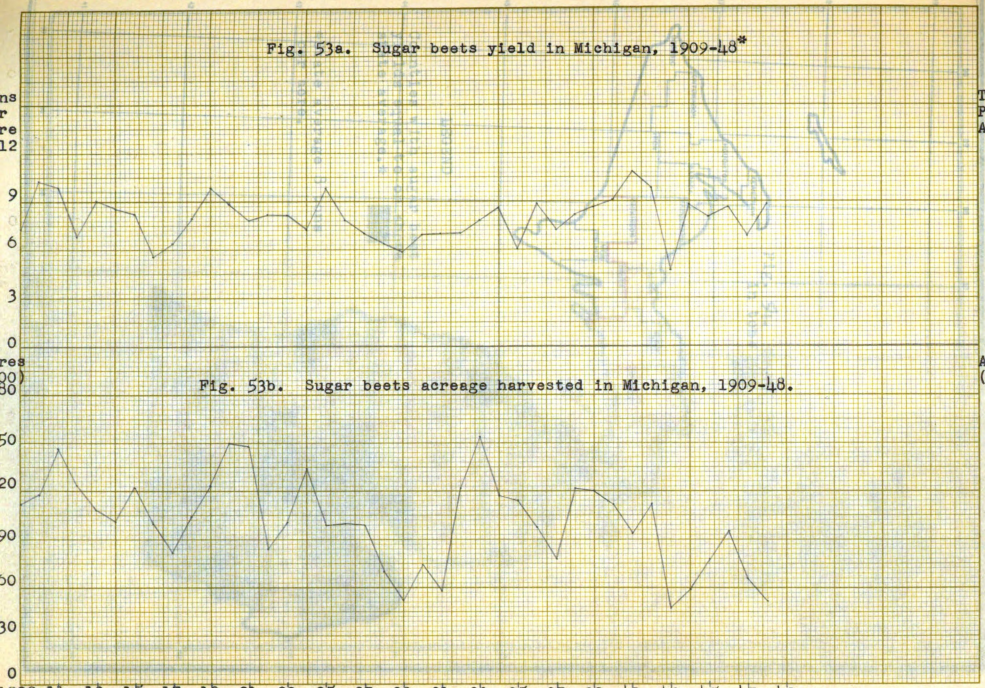


Fig. 52. Sugar beet acreage, 1944.



* Not available prior to 1909.

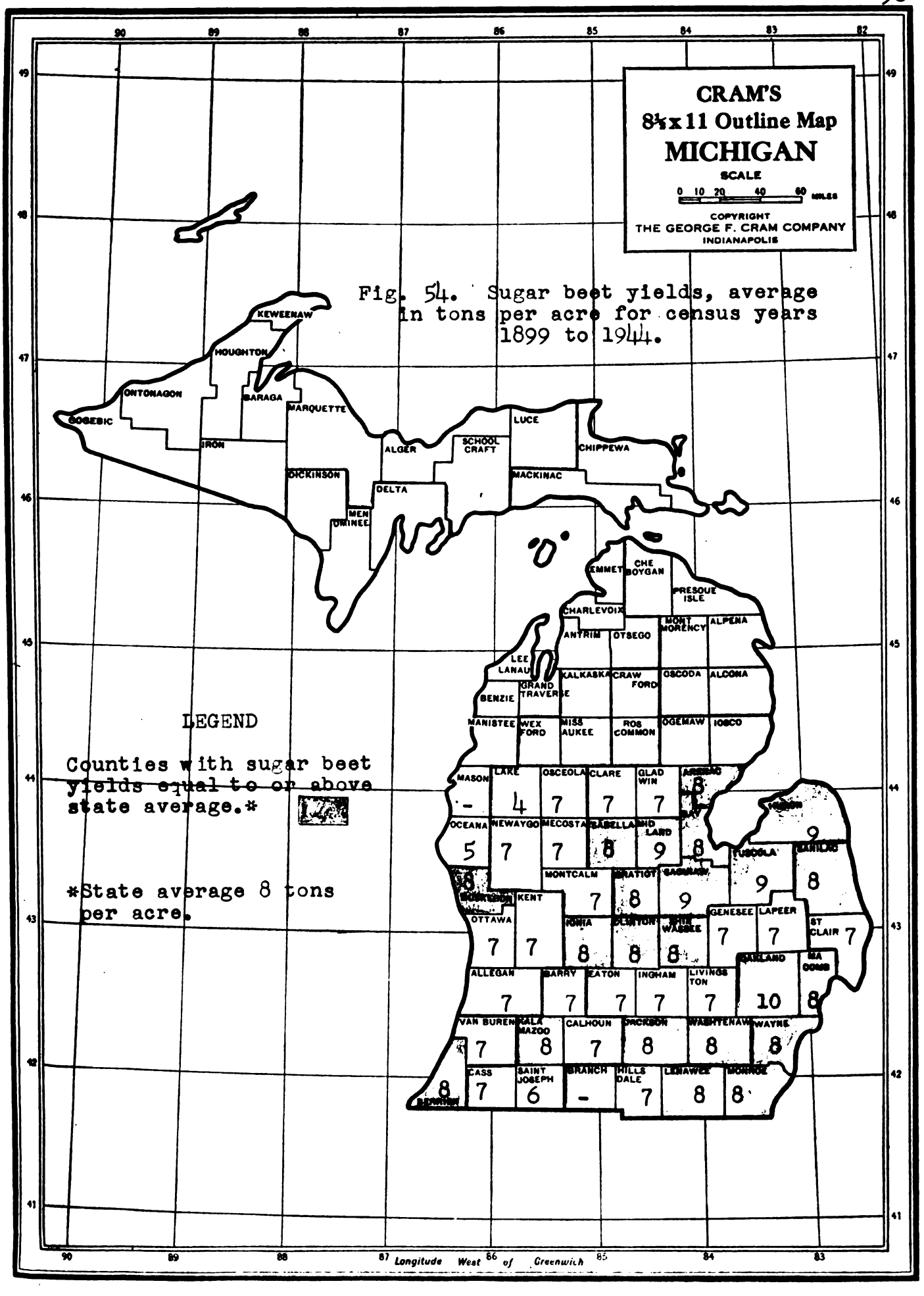
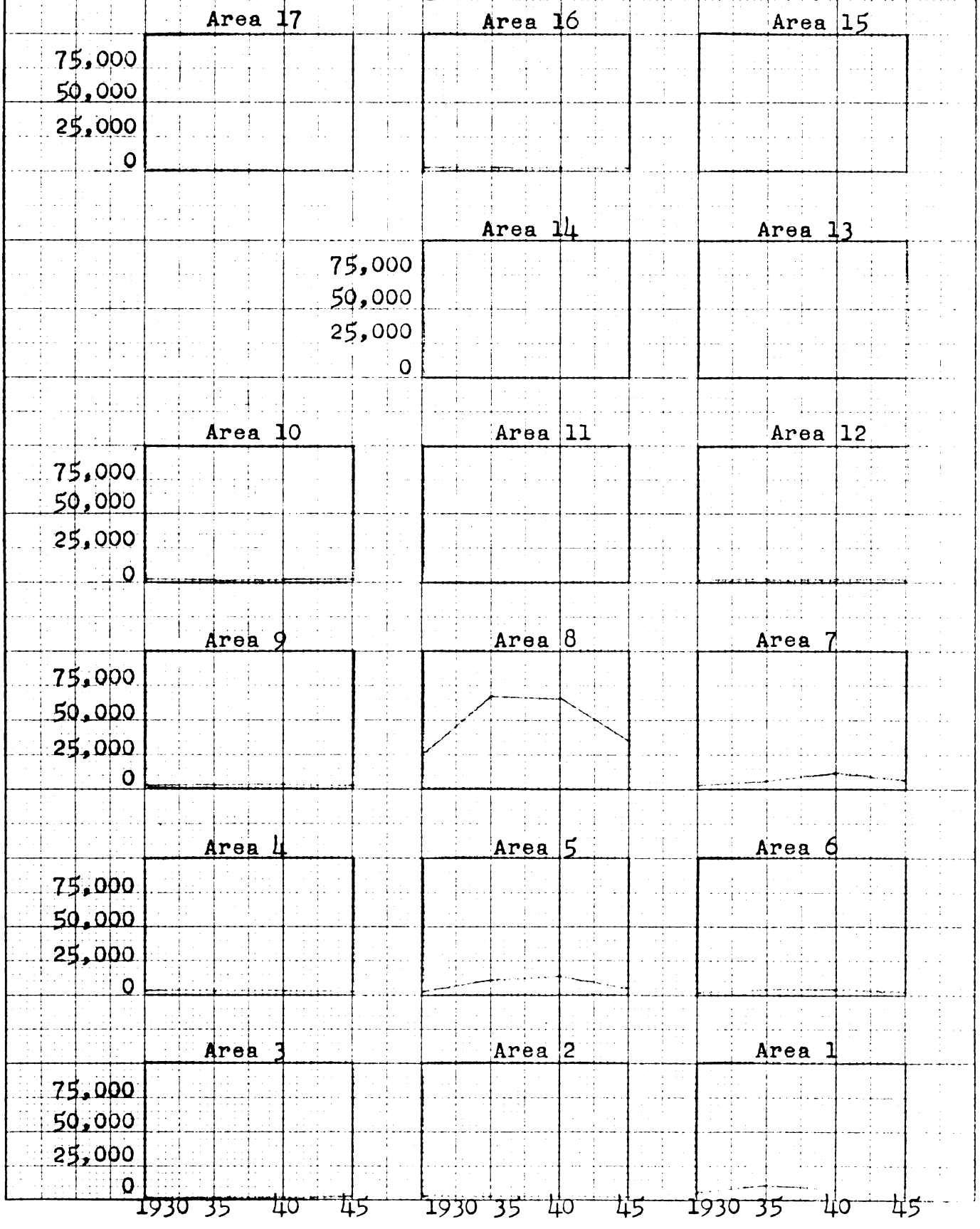


Fig. 54. Sugar beet yields, average in tons per acre for census years 1899 to 1944.

Fig. 55. Acres of sugar beets, 1930 to 1945, by type of farming areas.



Flax

Almost the entire acreage of seed flax in Michigan is grown in Chippewa and Mackinac Counties. This acreage has developed since 1929 and has averaged over 5,000 acres for the past decade. Weed-free land is needed for successful production.

Future flax acreage will depend on the price and competition from alternative crops. Since flax is about the only important cash crop grown in the area it appears that acreage will stabilize at the present level. If production incentives are maintained at high levels flax acreage is very likely to increase.

In the past considerable fibre flax has been grown in the "Thumb" but acreage has gradually decreased due to high labor demands.

Miscellaneous Field Crop Summary

Field bean acreage has expanded greatly in Michigan. Most of this expansion has taken place in the Saginaw Valley where a favorable soil and growing season are found.

Potatoes have been decreasing in acreage in the state, although certain counties have increased potato acreage such as Bay, Houghton and Presque Isle. Area 17 is the only area showing an increase in acreage. Changes in eating habits, quality of Michigan potatoes and marketing methods are factors which have contributed to this decrease in acreage.

Sugar beet acreage has been decreasing. The low yield per acre of Michigan sugar beets as compared to Western yields, competition from field beans and potatoes, and the high labor requirements have probably all contributed to the decreased acreage of sugar beets.

Flax seed production will probably remain centered in Area 15 where favorable soil and climate are found. The lack of a competing crop is another factor in favor of its continued production in this area.

Field Crop Summary

Several definite trends have taken place in Michigan agriculture since the turn of the century. The introduction of alfalfa has been one of the most important, increasing from an insignificant acreage in 1899 to almost half the total hay acreage in 1944. The growth of soybean acreage has been a valuable addition to Michigan agriculture especially in the southeastern part of the state.

The shifting of production of certain crops to the most favorable areas is another trend that has been noted. It is significant that those crops which have been increasing in acreage or maintaining a high acreage have centered their production in the most favorable areas. Corn, wheat, oats and beans have all tended to increase in areas having the best yields.

Likewise those crops which are decreasing in acreage such as rye and buckwheat have found no favorable area of production. Michigan farmers seem to be following the "Law of Comparative Advantage" or the tendency of each area to use their resources in the production of those crops which will give the greatest returns. A very good example of this is the replacement of grasses by higher yielding alfalfa in areas adapted to alfalfa production.

It is very doubtful if the yield per acre of Michigan field crops has increased as greatly as some writers would

lead one to believe. Not only is this true of Michigan but of the United States as well. Yields of 10 crops have not shown a trend to increase until about 1940 (Figure 56). Whether this trend will continue or is a temporary phenomenon remains to be solved through time.

Sherman E. Johnson has written, "The increases above the 1935-39 average reflect partly better-than-average weather, but more especially the combination of greater use of lime and fertilizer, legume rotations, winter cover crops, terracing, strip cropping, contour farming, crop variety improvement, and some shifting to crops that yield a larger product to the acre."[10]

The use of commercial fertilizer was greatly accelerated in the immediate prewar and war years (Figure 57). A considerable part of larger farm production can be attributed to the greater use of lime and fertilizer. The potential contribution of these materials to the establishment of stable and soil-maintaining systems of farming will be of great importance.

On many soils it is necessary to apply lime in order to get full use of commercial fertilizer, especially the phosphates. Lime and phosphate applications are required for successful stands of legumes and grasses that are so

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10/ Yearbook of Agriculture, 1943-47, Science and Farming (Washington, D.C.: United States Government Printing Office, 1947), P 926.

necessary in a good crop rotation, and for soil maintenance.

The increase in consumption of fertilizer is actually an acceleration of a long-time upward trend that was interrupted in the severe depression of the early 1930's. The largest part of the increase has been applied to the cash crops, although a growing proportion of the fertilizer now goes on legumes and grasses. Lower prices for farm products undoubtedly would mean some decrease in purchases of fertilizer for cash crops, but it does not seem at all probable that sales would drop back to prewar levels.

From the standpoint of maintenance of land resources Michigan Farmers are vitally interested in the use of lime and fertilizer for the establishment of crop rotations that contain sufficient acreages of grasses and legumes. Greatly increased consumption of lime and fertilizer for this purpose would help to achieve more stable systems of farming.

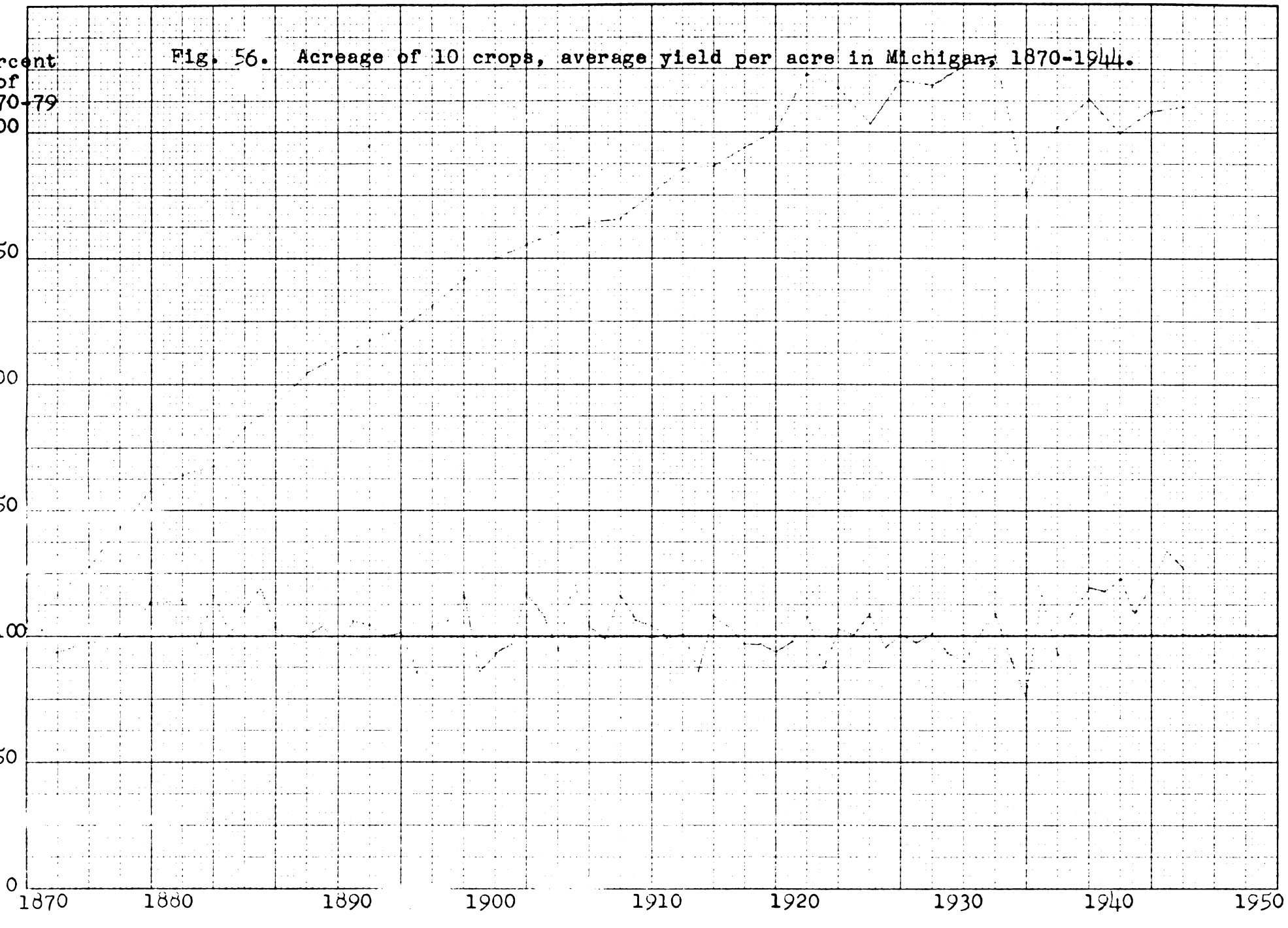
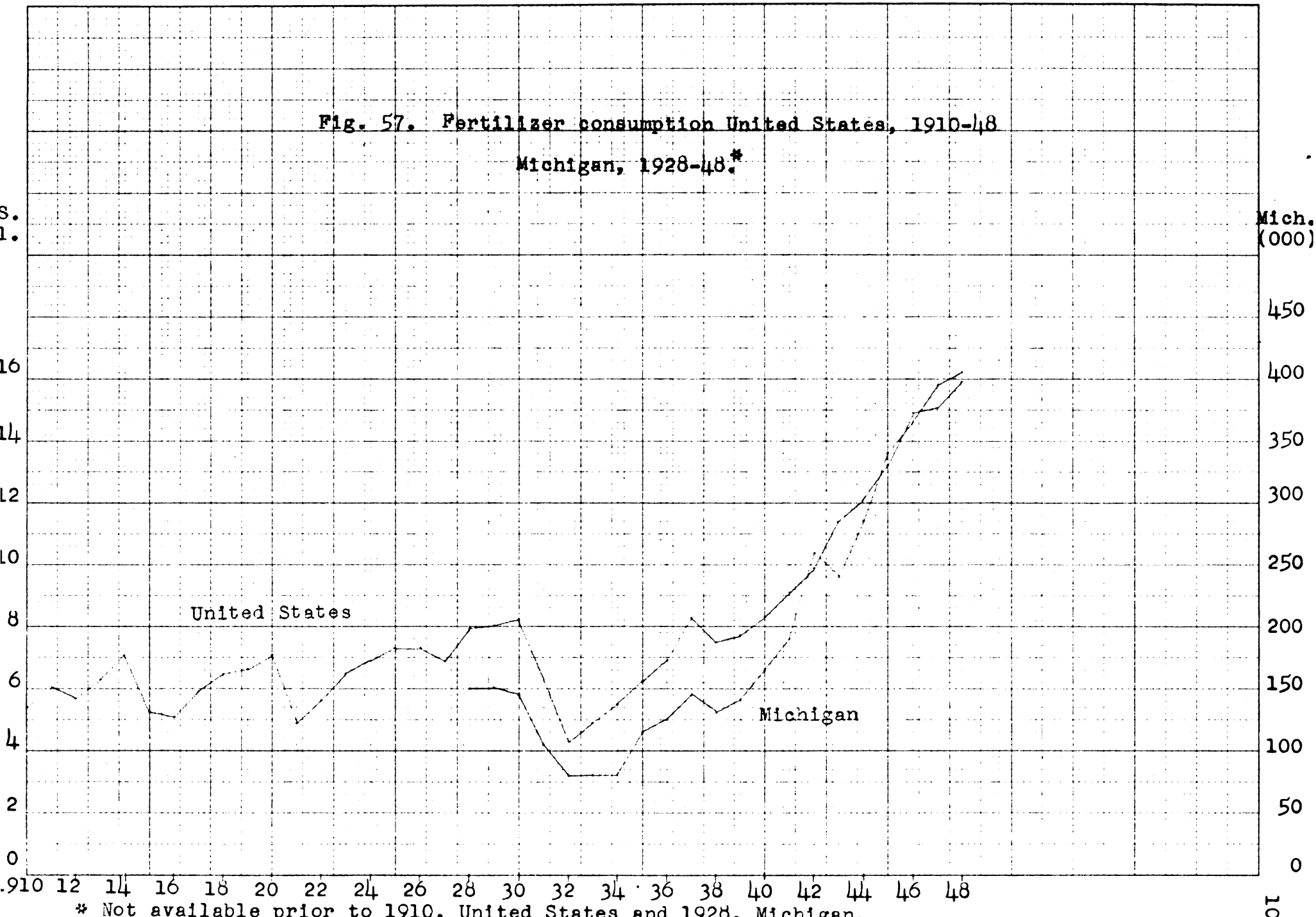


Fig. 56. Acreage of 10 crops, average yield per acre in Michigan, 1870-1944.

Fig. 57. Fertilizer consumption United States, 1910-48
Michigan, 1928-48.*



* Not available prior to 1910, United States and 1928, Michigan.

Fruit Section

In the United States acreage of deciduous fruit trees of bearing age reached its highest level in the late 1920's and early 1930's. During the last decade the acreages of most of the deciduous fruit trees have declined gradually but citrus trees has increased; this is attributed almost entirely to the rapidly expanding production of citrus fruits.

Per capita consumption of 18 fruits and berries increased from an average of 170 pounds a year for the period 1910-14 to an average of 200 pounds a year for the period 1935-39. Average annual per capita consumption of apples for 1910-14 was 67 pounds; for 1935-39 it was only 42 pounds, whereas consumption of citrus fruits per capita increased from 19 pounds per year to 50 pounds between the same periods.

The annual per capita consumption of oranges increased about 150 percent from 1920 to 1940, lemons 165 percent, grapefruit 200 percent, cherries 450 percent, grapes 33 percent, and pears about 50 percent. Peaches, plums and prunes remained about the same except for slight year-to-year fluctuations.[11]

Trends in number of fruit trees from 1910 to 1945 were determined for each area using all counties. The census of 1910 instead of 1900 was used because several severe storms struck the state between 1899 and 1906 which killed many trees and damaged many more. Michigan has not experienced

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11/ A Graphic Summary of Farm Crops, United States Department of Agriculture, 1943, P 83.

such a severe storm since 1906. For that reason it was thought the 1910 census would be more typical of tree numbers than the 1900 census.

Data were used for only the important fruit growing counties from the other censuses. An explanation of how these counties were selected will be given under the various fruit crops.

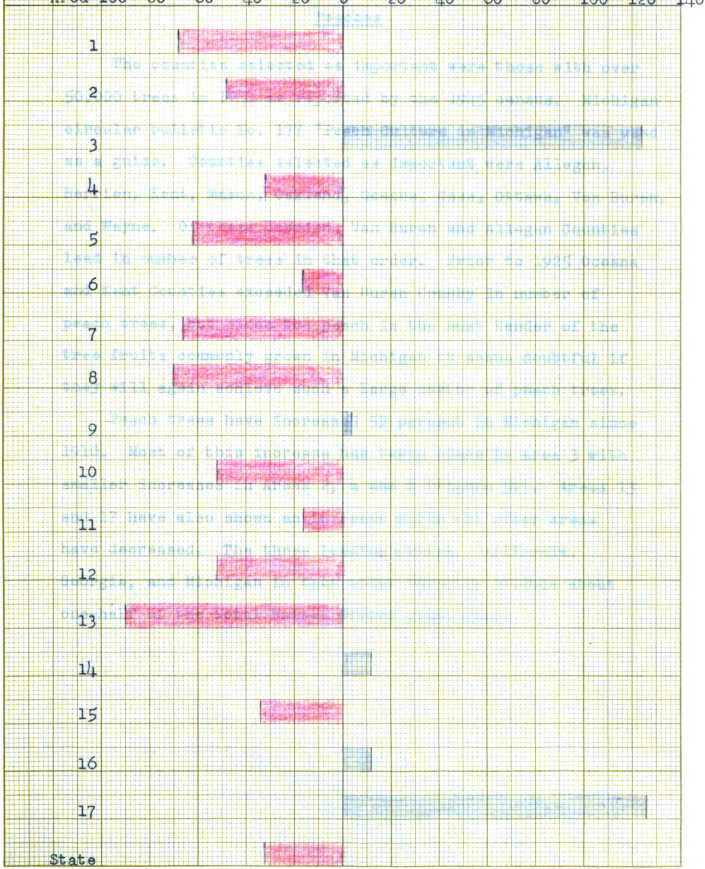
Apples

The counties selected as important were the 21 commercial counties as listed in the Crop Report for Michigan. They are Antrim, Benzie, Grand Traverse, Leelanau, Manistee, Mason, Muskegon, Newaygo, Oceana, Allegan, Berrien, Cass, Kalamazoo, Kent, Ottawa, Van Buren, Calhoun, Ionia, Macomb, Oakland and Wayne. In addition data was used from 16 other counties which had over 40,000 apple trees in 1944 as reported by the 1945 census. They were Cheboygan, Genesee, Hillsdale, Huron, Ingham, Jackson, Lapeer, Lenawee, Livingston, Montcalm, Saginaw, Monroe, St. Clair, Sanilac, Tuscola and Washtenaw Counties.

Apple trees have decreased over 30 percent in Michigan since 1910. All areas show a decrease in apple trees except 3, 9, 14, 16 and 17 (Figure 58). This decline in numbers has taken place chiefly on general farms with small orchards and in low producing orchard areas. This decrease in numbers has been offset by increased bearing capacity in the more productive commercial areas such as Area 3.

The leading counties in number of apple trees are Berrien, Van Buren, Kent, Oakland and Allegan. These five counties have led in number of apple trees since 1899, although Allegan has fallen from second place in 1909 to fifth place in 1944.

Fig. 58. Percent change in number of apple trees 1910 to 1945 by type of farming area.

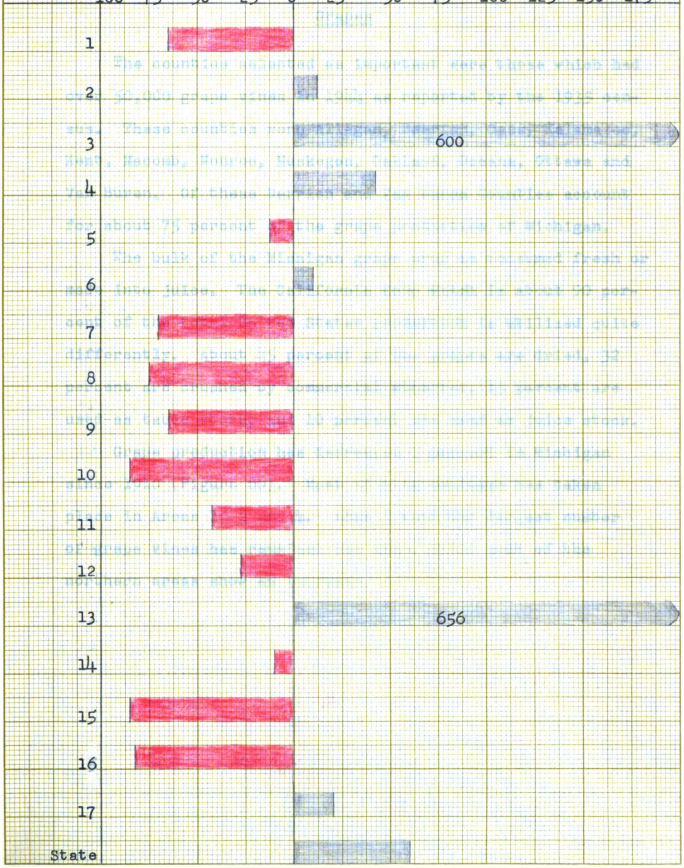


Peaches

The counties selected as important were those with over 50,000 trees in 1944 as reported by the 1945 census. Michigan circular bulletin No. 177 "Peach Culture in Michigan" was used as a guide. Counties selected as important were Allegan, Berrien, Kent, Mason, Oakland, Oceana, Cass, Ottawa, Van Buren, and Wayne. Of these Berrien, Van Buren and Allegan Counties lead in number of trees in that order. Prior to 1925 Oceana and Kent Counties exceeded Van Buren County in number of peach trees, but since the peach is the most tender of the tree fruits commonly grown in Michigan it seems doubtful if they will again achieve such a large number of peach trees.

Peach trees have increased 59 percent in Michigan since 1910. Most of this increase has taken place in Area 3 with smaller increases in Areas 2, 4 and 6 (Figure 59). Areas 13 and 17 have also shown an increase while all other areas have decreased. The three leading states, California, Georgia, and Michigan in that order normally produce about one-half of the total United States peach crop.

Fig. 59. Percent change in numbers of peach trees 1910 to 1945 by type of farming areas.



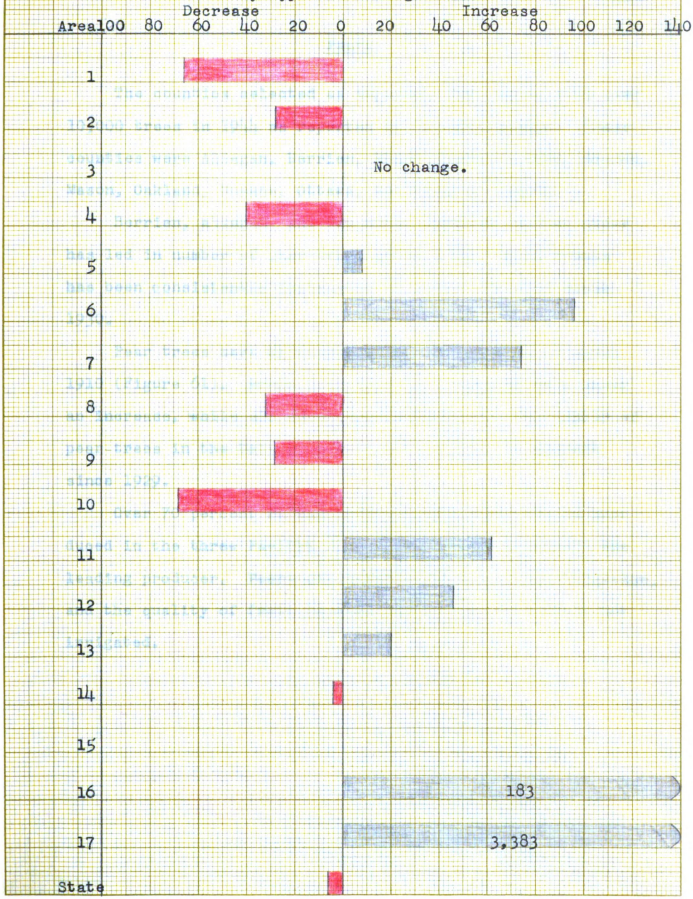
Grapes

The counties selected as important were those which had over 50,000 grape vines in 1944 as reported by the 1935 census. These counties were Allegan, Berrien, Cass, Kalamazoo, Kent, Macomb, Monroe, Muskegon, Oakland, Oceana, Ottawa and Van Buren. Of these Berrien and Van Buren Counties account for about 75 percent of the grape production of Michigan.

The bulk of the Michigan grape crop is consumed fresh or made into juice. The California crop which is about 90 percent of the total United States production is utilized quite differently. About 45 percent of the grapes are dried, 32 percent are crushed by commercial wineries, 13 percent are used as table stock, and 10 percent are used as juice stock.

Grape production has decreased 6 percent in Michigan since 1910 (Figure 60). Most of this decrease has taken place in Areas 1, 2 and 4. Area 3 with the largest number of grape vines has remained the same, while most of the northern areas show an increase.

Fig. 60. Percent change in number of grape vines 1910 to 1945 by type of farming areas.



Pears

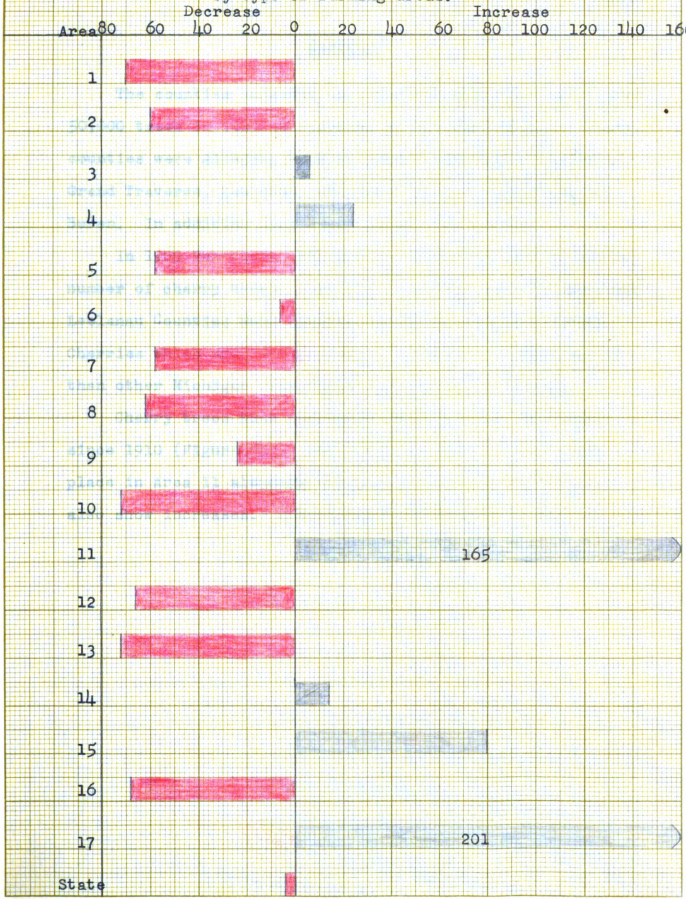
The counties selected as important were those with over 10,000 trees in 1944 as reported by the 1945 census. These counties were Allegan, Berrien, Grand Traverse, Kent, Macomb, Mason, Oakland, Oceana, Ottawa, Van Buren and Wayne.

Berrien, Allegan, and Van Buren Counties in that order has led in number of pear trees since 1909. Mason County has been consistently increasing in pear production since 1930.

Pear trees have decreased 5 percent in Michigan since 1910 (Figure 61). Areas 3, 4, 11, 14, 15 and 17 have shown an increase, while all others have decreased. The number of pear trees in the United States has decreased 32 percent since 1929.

Over 70 percent of the United States pear crop is produced in the three Pacific Coast States with California the leading producer. Pears are produced mostly under irrigation, and the quality of fruit is high. The Michigan crop is not irrigated.

Fig. 61. Percent change in number of pear trees 1910 to 1945 by type of farming areas.



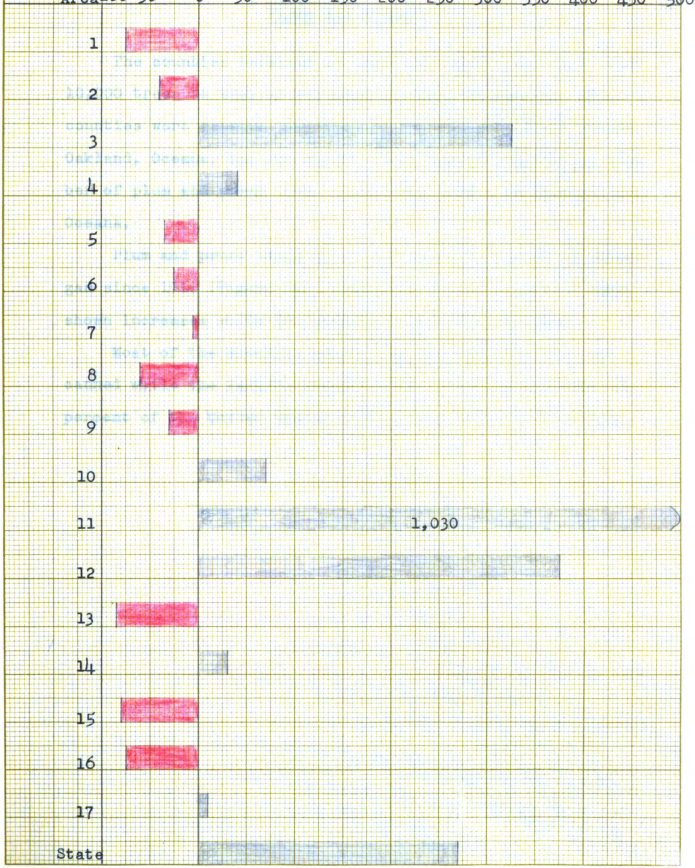
Cherries

The counties selected as important were those with over 50,000 trees in 1944 as reported by the 1945 census. These counties were Allegan, Antrim, Benzie, Berrien, Charlevoix, Grand Traverse, Leelanau, Manistee, Mason, Oceana and Van Buren. In addition Charlevoix County was added.

In 1909 Van Buren, Allegan and Berrien Counties led in number of cherry trees. In 1944 Grand Traverse, Oceana, and Leelanau Counties were leading in number of cherry trees. Cherries which are better adapted to short growing seasons than other Michigan tree fruits are moving northward.

Cherry trees have increased 269 percent in Michigan since 1910 (Figure 62). Most of this increase has taken place in Area 11 although Areas 3, 4, 10, 12, 14 and 17 also show increases. All other areas have decreased.

Fig. 62. Percent change in number of cherry trees 1910 to 1945 by type of farming areas.



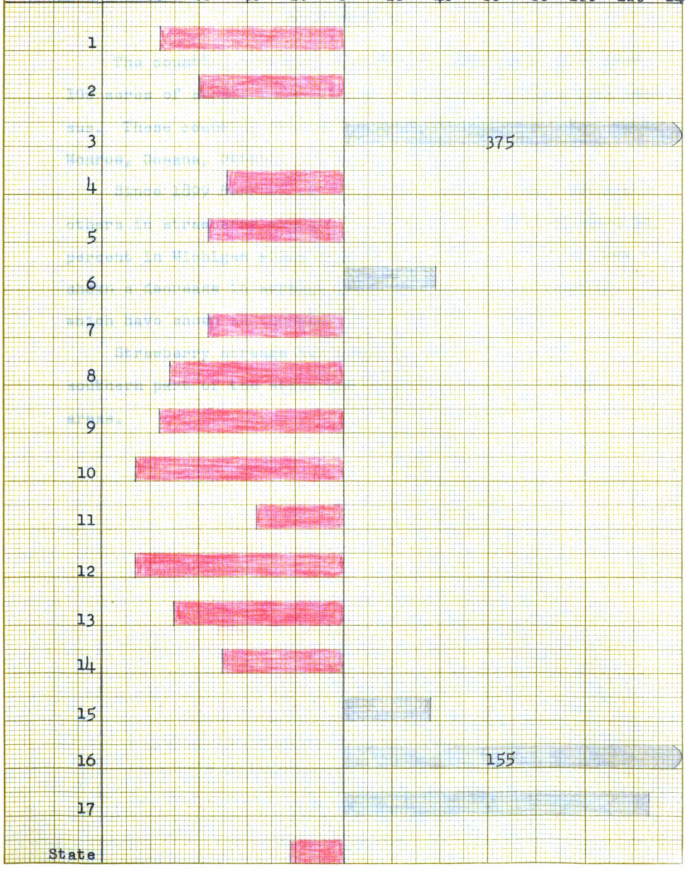
Plums and Prunes

The counties selected as important were those with over 10,000 trees in 1944 as reported by the 1945 census. These counties were Allegan, Berrien, Grand Traverse, Kent, Mason, Oakland, Oceana, and Van Buren. The leading counties in number of plum and prune trees since 1924 have been Berrien and Oceana.

Plum and prune trees have increased 22 percent in Michigan since 1910 (Figure 63). Areas 3, 6, 15, 16 and 17 have shown increases while all other areas have decreased.

Most of the Michigan production is consumed fresh or canned while the Pacific Coast production which is about 80 percent of the United States total is dried for the market.

Fig. 63. Percent change in number of plum and prune trees 1910 to 1945 by type of farming areas.



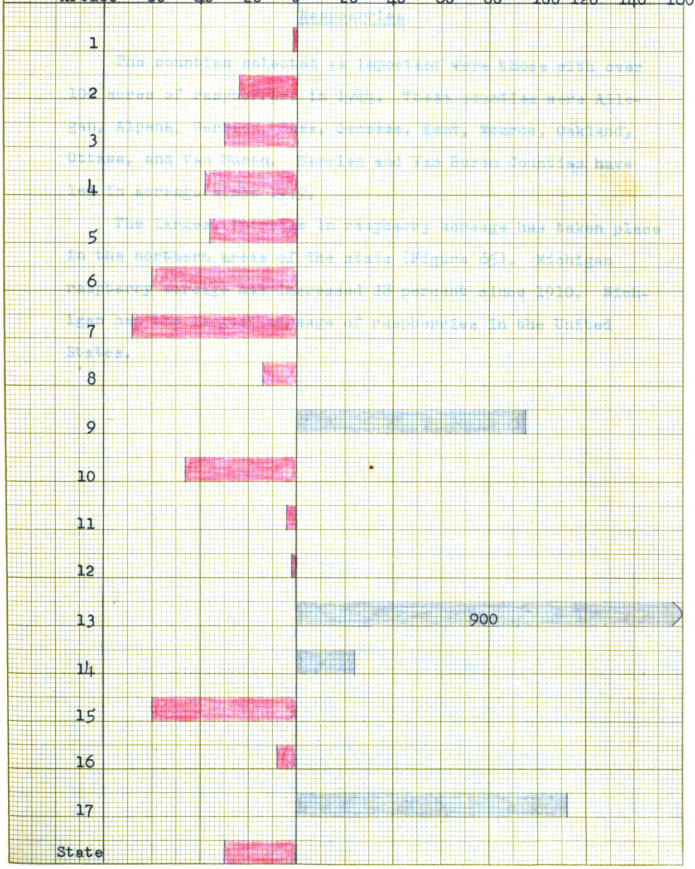
Strawberries

The counties selected as important were those with over 100 acres of strawberries in 1944 as reported by the 1945 census. These counties were Allegan, Barry, Berrien, Cass, Kent, Monroe, Oceana, Ottawa, Van Buren and Wayne.

Since 1899 Berrien and Van Buren Counties have led all others in strawberry acreage. Strawberries have decreased 30 percent in Michigan since 1910 (Figure 64). All areas have shown a decrease in acreage except Areas 9, 13, 14 and 17 which have shown an increase in strawberry acreage.

Strawberry acreage has tended to decrease in the southern part of the state and increase in the northern areas.

Fig. 64. Percent change in acres of strawberries 1910 to 1945 by type of farming areas.

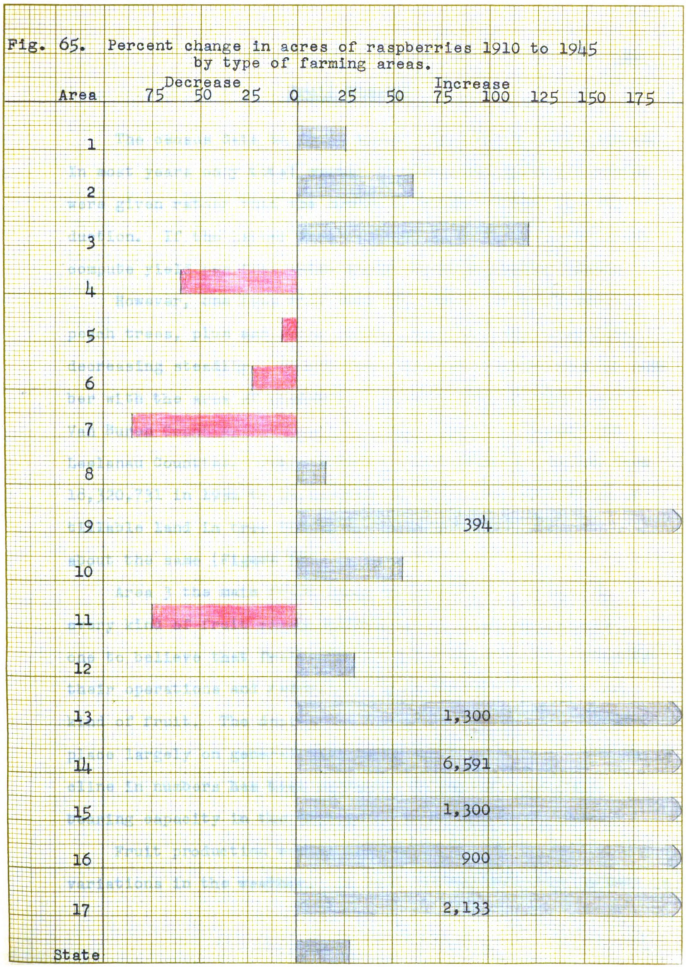


Raspberries

The counties selected as important were those with over 100 acres of raspberries in 1944. These counties were Allegan, Alpena, Berrien, Cass, Genesee, Kent, Monroe, Oakland, Ottawa, and Van Buren. Berrien and Van Buren Counties have led in acreage since 1919.

The largest increase in raspberry acreage has taken place in the northern areas of the state (Figure 65). Michigan raspberry acreage has increased 28 percent since 1910. Michigan has the largest acreage of raspberries in the United States.

Fig. 65. Percent change in acres of raspberries 1910 to 1945 by type of farming areas.



Fruit Summary

The census data on fruit shows some glaring inadequacies. In most years only total number of trees and total production were given rather than the number of bearing trees and production. If the latter were recorded it would be possible to compute yield per tree which might reveal important trends.

However, one does find that the number of apple trees, peach trees, plum and prune trees, and pear trees have been decreasing steadily. Cherry trees have been increasing in number with the area of production shifting from Allegan, and Van Buren Counties northward to Grand Traverse, Oceana and Leelanau Counties. Grape vines have decreased in number from 18,320,731 in 1934 to 10,355,496 in 1944. The percentage of tillable land in tree fruits and vineyards has remained about the same (Figure 66).

Area 3 the main fruit area, has shown an increase in every kind of fruit except strawberries. This would lead one to believe that fruit growers are attempting to diversify their operations and reduce risk by planting more than one kind of fruit. The decline in fruit tree numbers has taken place largely on general farms with small orchards. This decline in numbers has been partially offset by increased bearing capacity in the more productive commercial areas.

Fruit production varies greatly from year to year with variations in the weather. In this respect the fruit grower is

less likely to obtain a normal crop than the field crop farmer (Figure 67).

This is probably the greatest single reason why fruit trees are decreasing in the general farming areas. It is quite likely that this trend will continue. Fruit trees are increasing only in those areas best adapted to their production and there a trend toward diversified plantings is noted.

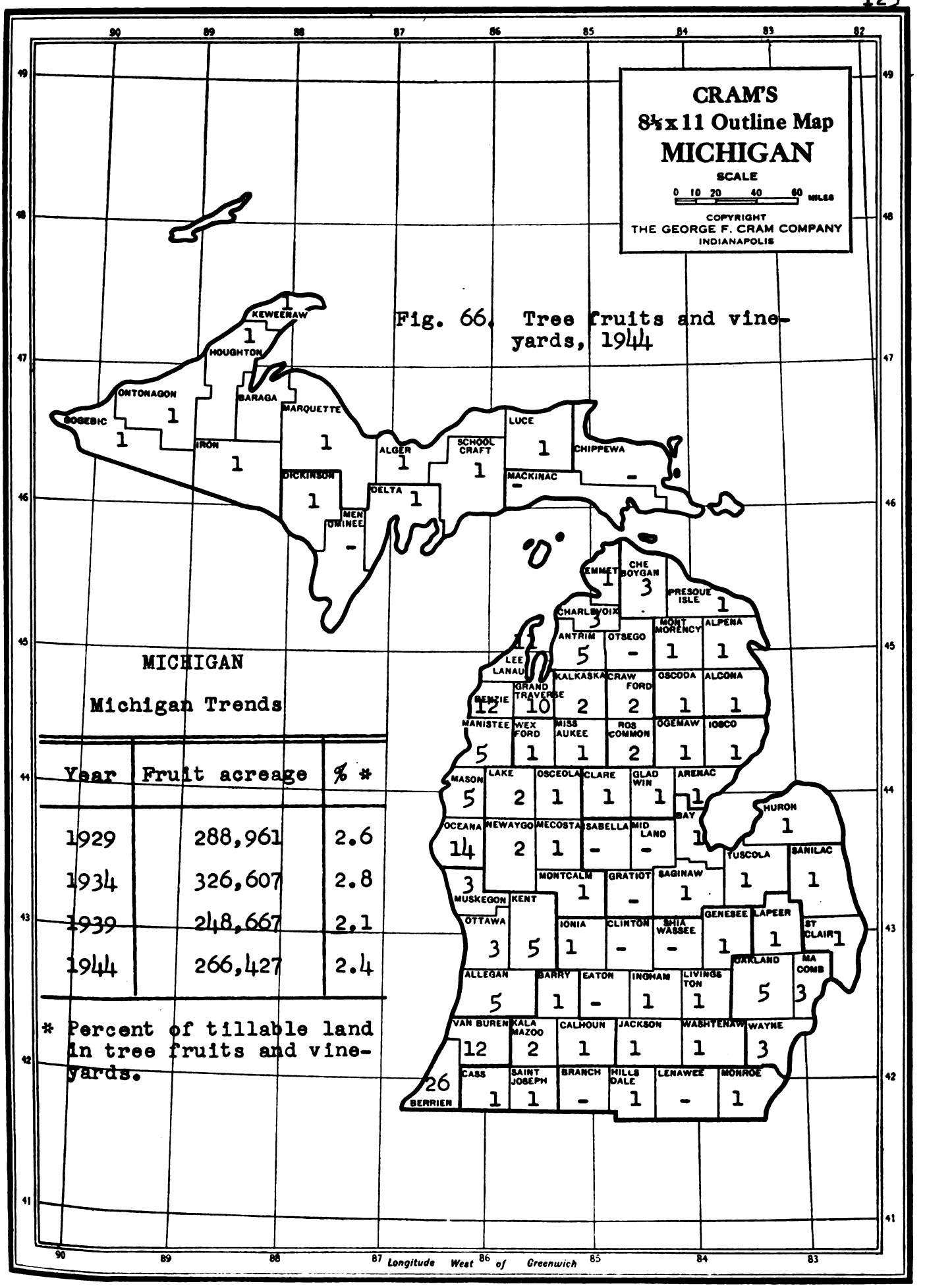


Fig. 66. Tree fruits and vineyards, 1944

MICHIGAN

Michigan Trends

Year	Fruit acreage	% *
1929	288,961	2.6
1934	326,607	2.8
1939	248,667	2.1
1944	266,427	2.4

* Percent of tillable land in tree fruits and vineyards.

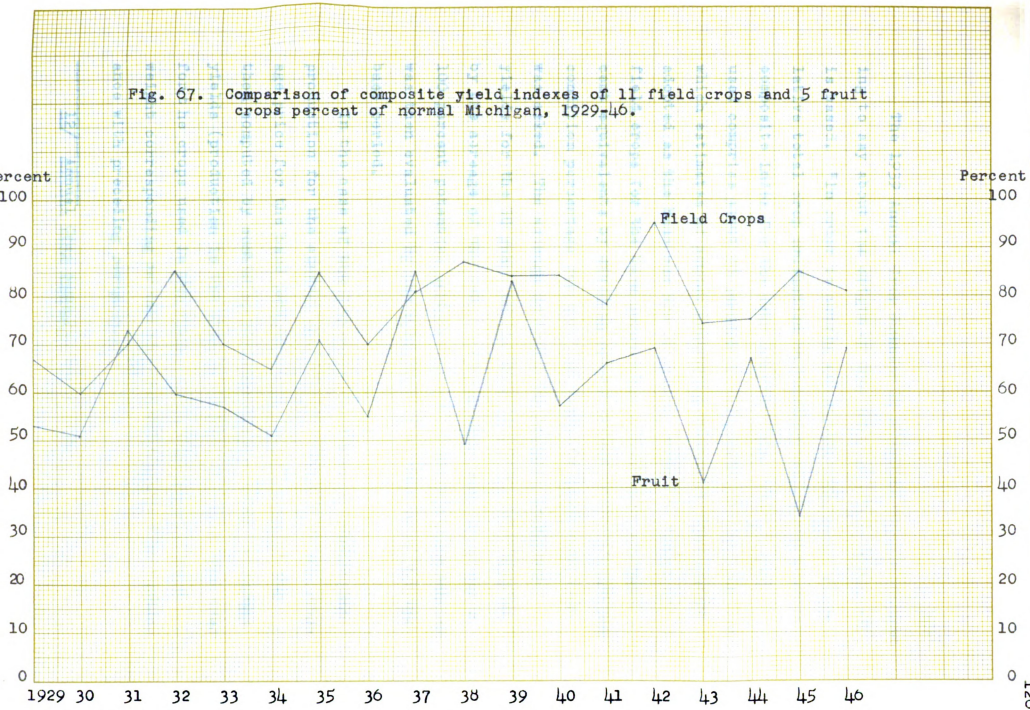


Fig. 67. Comparison of composite yield indexes of 11 field crops and 5 fruit crops percent of normal Michigan, 1929-46.

The 1939 Annual Crop Summary of Michigan has the following to say about the origin of the index on which Figure 67 is based. "In order to obtain and annual indication of relative total crop production in Michigan we have evolved a composite index for the year 1929 to date. The 16 crops used comprise about 96 percent of the value of all crops for which estimates of annual production are made. The period adopted as the base was the 10 years, 1928-37. Yields of field crops for the base years were converted to 100 percent equivalents by dividing actual yields by the respective condition percentage for the last month in which condition was asked. The average of these 100 percent equivalent yields for the 10 years of the base period was multifplied by the acreage of the crop in the current year to obtain a 100 percent potential production. Such potential production was then evaluated by the average price of the crop for the base period.

In the case of the fruits, the officially adopted par production for the current season was evaluated by the average price for the base period. Each composite index was then computed by combining the percentages of par or normal yields (production in the case of fruits) obtained each year for the crops used in the index, each crop being given a weight corresponding to the par valuation derived in accordance with preceding paragraph."[12]

12/ Annual Crop Summary, 1939, P 5.

Vegetable Section

Here again in collecting data on Michigan truck crops one finds the census very inadequate. The census did not show any data on truck crops until 1925 and 1930 and then on only five truck crops giving acreage but not production.

The Crop Report for Michigan lists Michigan as being among the leaders in cucumbers, both pickle and market, celery, cantaloups, onions, market asparagus, and canning beets. It seems that the Federal census could do a much more sensible and greater service could in securing information on these important vegetables rather than recording information on pecans, sweetpotatoes, yams and tobacco as is done at present.

Data were used on five crops cabbage, snap beans, peas, tomatoes, and sweet corn in important counties. Counties which were considered as important were those which grew over 200 acres of the vegetable in 1944.

The counties which grew over 200 acres of snap beans were Allegan, Antrim, Bay, Charlevoix, Kent, Lake, Macomb, Mason, Mecosta, Missaukee, Monroe, Newaygo, Oceana, Osceola, Saginaw, St. Clair and Wayne. Mecosta, Missaukee, and St. Clair were the leading counties in acreage.

Important cabbage growing counties are Allegan, Kent, Macomb, Monroe, Saginaw, St. Clair, and Wayne. Of these

Macomb and Wayne Counties are the greatest producers.

The important counties in sweet corn acreage are Allegan, Antrim, Bay, Berrien, Genesee, Grand Traverse, Ionia, Jackson, Kalamazoo, Kent, Lenawee, Livingston, Macomb, Monroe, Oakland, Ottawa, Saginaw, St. Clair, Shiawasee, Van Buren, Washtenaw and Wayne. Of these Wayne and Monroe Counties are the leaders in acreage of sweet corn.

The important counties in acreage of tomatoes are Bay, Berrien, Ionia, Jackson, Kent, Lenawee, Macomb, Monroe, Oakland, Saginaw, Van Buren and Wayne. Of these Berrien County is the greatest producer of tomatoes.

The important counties in acreage of peas are Eaton, Genesee, Huron, Ionia, Jackson, Muskegon, Newaygo, Saginaw, St. Clair, Sanilac, Shiawasee and Tuscola. The leading counties in acreage of peas were Sanilac, Shiawasee and Bay.

In general the leading counties in truck crop production are those with large urban areas or adjacent to such urban areas. Although one finds such northern counties as Mecosta and Missaukee among the leaders in snap beans and Antrim in sweet corn.

Since 1934 about 1 percent of the tillable land in Michigan has been in vegetables (Figure 68). It is very likely that the acreage of vegetables grown in Michigan will

remain at this level or increase as the per capita consumption of various vegetables both fresh and canned has been steadily increasing. This is probably due to the publicity given to their importance in balanced diets through indication of the vitamins contained in each vegetable as well as the calorie content per serving.

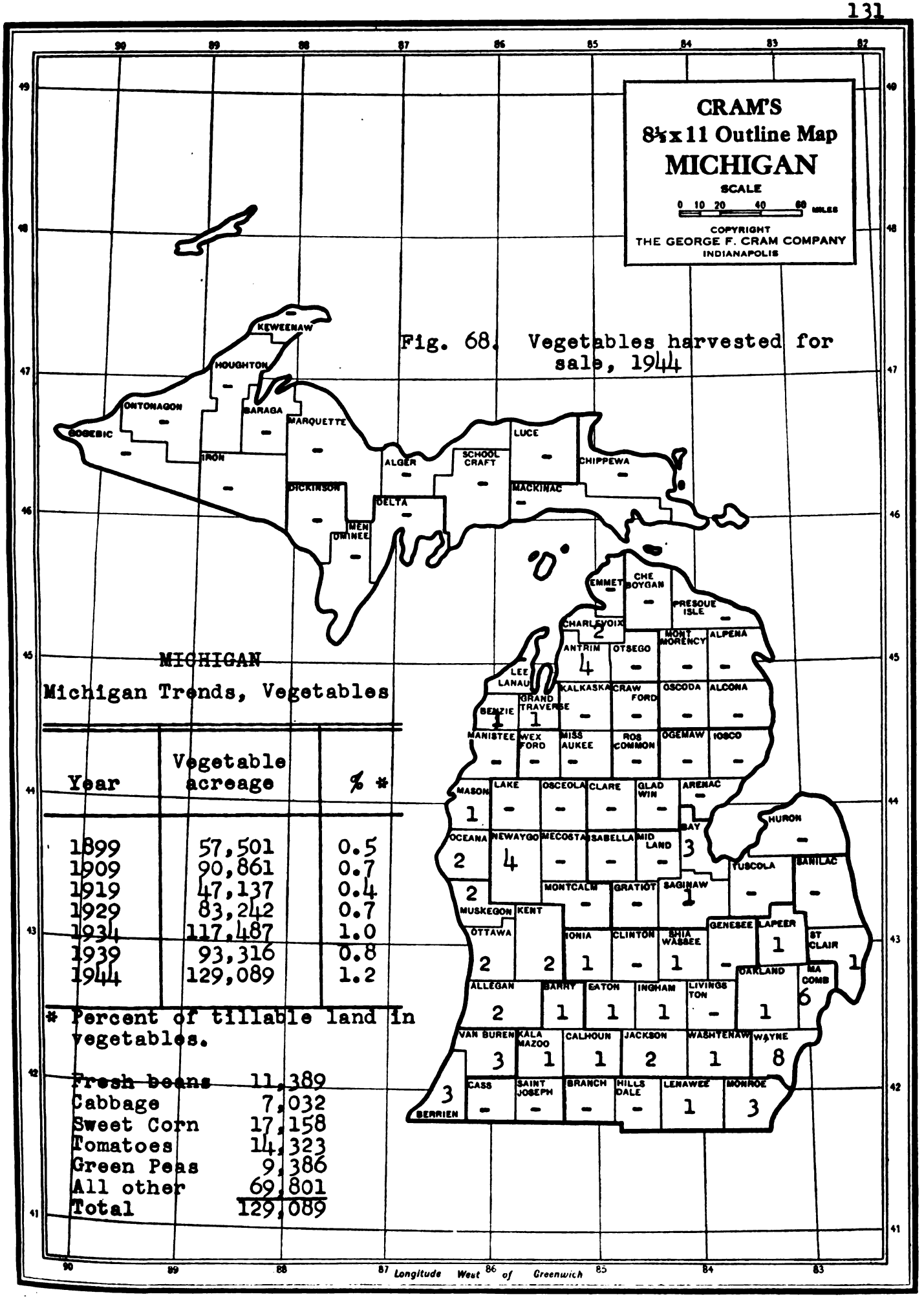


Fig. 68. Vegetables harvested for sale, 1944

MICHIGAN

Michigan Trends, Vegetables

Year	Vegetable acreage	% *
1899	57,501	0.5
1909	90,861	0.7
1919	47,137	0.4
1929	83,242	0.7
1934	117,487	1.0
1939	93,316	0.8
1944	129,089	1.2

* Percent of tillable land in vegetables.

Fresh beans	11,389
Cabbage	7,032
Sweet Corn	17,158
Tomatoes	14,323
Green Peas	9,386
All other	69,801
Total	129,089

CHAPTER IV

Livestock and Poultry

Nearly two-thirds of the farm income in Michigan is contributed by livestock and livestock products. The largest single source of income is derived from the sale of dairy products followed by meat animals, poultry and eggs and wool in that order.

The consumption of food products of animal origin may be limited by their cost or by taste preference. In countries of dense population, the consumption of animal food products is low, and the consumption of cereals and vegetables high, because cost favors the plant foods. In countries of abundant land areas, where animal life may be more economically maintained, the tendency is toward larger consumption of animal products. Within any country taste preference has the larger influence in determining the amount and variety of animal food products consumed in families of high income, whereas cost has the larger influence in families of low income.

Although the need of the general public for animal products creates a demand for them, farmers would not engage in livestock production without a profit incentive. This incentive is found in the ability of animals to bring about an increase in the farm income by converting many cultivated

crops into animal products of great usefulness and value, grazing of grass and other growth from nontillable areas, converting many otherwise useless by-product feed materials into useful animal products, providing an evenly distributed market for labor, reducing the cost of transportation and marketing of the products of the farm, contributing important items to the food supply of the family at lowest cost, and conserving soil fertility.

Dairy Cattle

Michigan ranks fourteenth among the states in numbers of all cattle and calves, eighth in numbers of milk cows and heifers, and sixth in milk production. Dairy products are the largest single source of farm income in Michigan comprising about a fourth to a third of all farm income. Dairy enterprise also provides veal calves, steers and cull cows.[13]

The number of milk cows in the United States increased steadily from 1867 up to the droughts of 1934 and 1936. Although the number of milk cows has failed to keep pace with the increase in population the production and consumption of milk has more than kept pace with the increasing population.

In the mid 1930's a marked trend from the sale of farm-separated cream to sales of whole milk was started in the United States and continued through 1948. This trend had more affect in the Lake States, including Michigan, than the rest of the country as shown by the following comparisons (Table 4).[14]

Table 4. Sales of whole milk as a percentage of total milk and cream sales United States and Lake States, 1939 and 1947

State & United States	1939	1947
Michigan	55	82
Wisconsin	79	98
Minnesota	14	55
United States	55	77

13/ Crop Report for Michigan, 1947.
14/ The Dairy Situation, U.S. Bureau of Agri. Econ. May, 1949.

Most of the whole milk sold in Michigan is sold in those areas adjacent to large urban centers (Figure 69). Whole milk sales are also high in the western part of the Upper Peninsula where many cheese plants are located.

A definite upward trend in milk production per cow may be noted in Figure 70. This trend was interrupted briefly during World War I, and then again for a longer time in the drought and depression of the 1930's.

The two most influential factors in achieving a still higher national average production per cow would be more feed per cow and better balanced rations. Because such a large proportion of the feed used by a dairy cow is required for maintenance, underfeeding means that most of the feed is used for body maintenance, and a relatively small part of it for milk production. Where dairy production is only a sideline underfeeding is rather common.

However there are economic limits to increased feeding which are reached before the physical limits are approached. These economic limits will vary with the price of the product in relation to the cost of feed, and in relation to other expenses. Many farmers feed their cows at levels far below the economic limits, even when milk is high in price in relation to feed. On the majority of farms to increase the feed supply per animal, would increase both output per head and net income to farmers.[15]

15/ Changes in Farming, U. S. Bur. of Agr. Economics, June, 1948.

In general the counties in Michigan with the highest milk production per cow are those located in areas having the highest percentage of first class land (Figure 71). In addition most of these counties sell a high proportion of fluid milk, which would indicate that dairying was more than just a sideline enterprise. Likewise most of the counties having low production per cow are located in that area of the state having a low percentage of first class land and low crop yields; also only a small proportion of the milk sold is sold as whole milk.

One exception to this is the counties in the Saginaw Valley area where some of the best land in Michigan is found. Huron, Saginaw, Bay and Midland Counties have all had low milk production per cow. These counties have consistently ranked considerably higher in numbers of all cattle than in numbers of dairy cows, which would lead one to believe that more beef or dual purpose type cattle would be found in this area. Since the census is not clear in enumerating beef and dual purpose cattle it is quite possible that producers in this area have shifted from milking cows to raising calves or from beef to milk depending on which price seemed most favorable, with the inevitable result that production per cow has remained below the state average. In addition a smaller percentage of the milk sold has been whole milk than in the neighboring counties.

Milk production per cow in Michigan has consistently been above the United States average. Milk production per cow in Michigan has been below milk production per cow in Wisconsin for herds under 30 cows. For herds of 30 cows and over production per cow has been higher in Michigan than in Wisconsin. Highest milk production per cow is found in the far western states and New England, while lowest production per cow is found in the south and southeastern region of the United States. The states having the highest percentage of their milk sold as whole milk tend to have the highest milk production per cow.[16]

Dairy cows, and cows and heifers milked have increased greatly in Michigan (Figures 72, 73). The greatest percentage increase has taken place in the northern part of the state. At the same time dairy cow numbers have increased, the percent of farms having dairy cows has dropped (Figure 74).

Some reasons for the importance of dairying in Michigan are that it utilizes the family labor, gives a good return per dollars worth of feed fed, and risk from price fluctuation is not great. Although the dairy farmer that continually pays a long price for replacements has a greater risk than the one that raises his own herd replacements.

The past 10 years have witnessed the rapid growth of dairy breeding cooperatives for artificial insemination. Through artificial insemination significant increases in

16/ The Dairy Situation, January, 1949, Table 8.

production per cow have been achieved on a wide scale in a relatively short time. It is very likely that the use of artificial insemination will increase in the next few years. On January 1, 1948 Michigan led all other states in the number of dairy breeding cooperatives and was third in total number of cows bred.[17]

17/ Dairy Breeding Cooperatives, Farm Credit Administration, January, 1949.

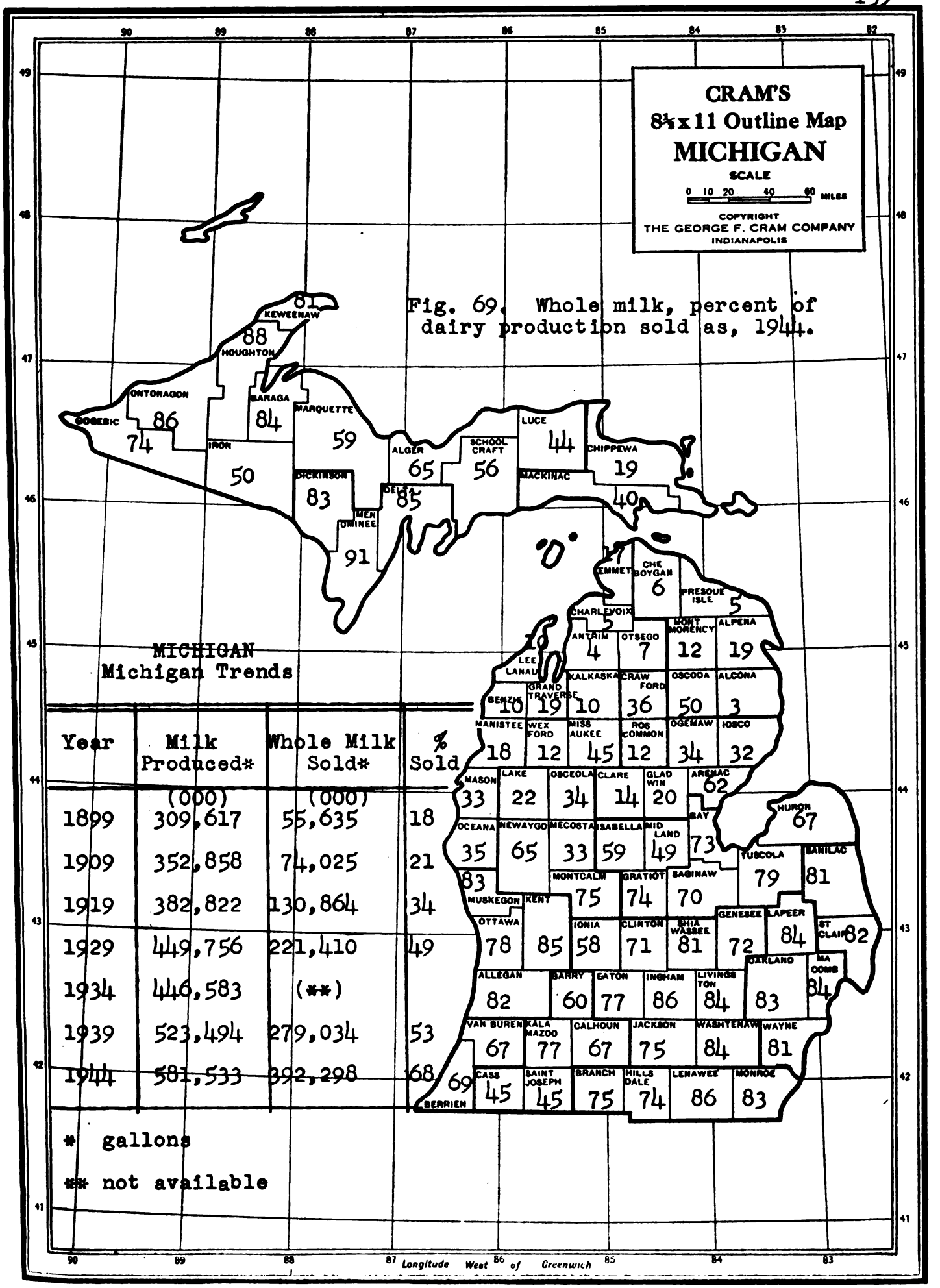


Fig. 69. Whole milk, percent of dairy production sold as, 1944.

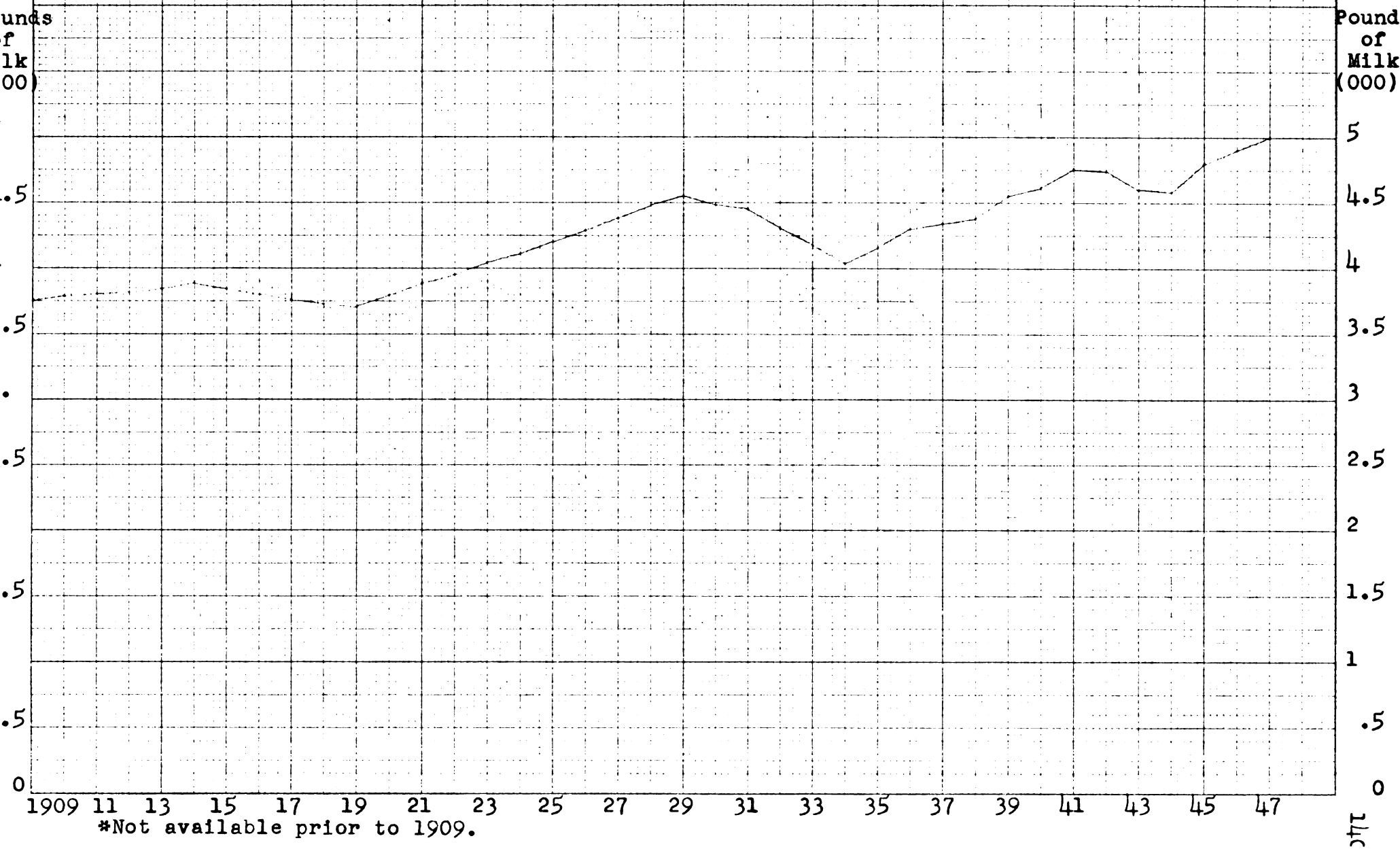
MICHIGAN
Michigan Trends

Year	Milk Produced*	Whole Milk Sold*	% Sold
	(000)	(000)	
1899	309,617	55,635	18
1909	352,858	74,025	21
1919	382,822	130,864	34
1929	449,756	221,410	49
1934	446,583	(**)	
1939	523,494	279,034	53
1944	581,533	392,298	68

* gallons

** not available

Fig. 70. Milk production per cow milked on farms, United States, 1909-47.*



*Not available prior to 1909.

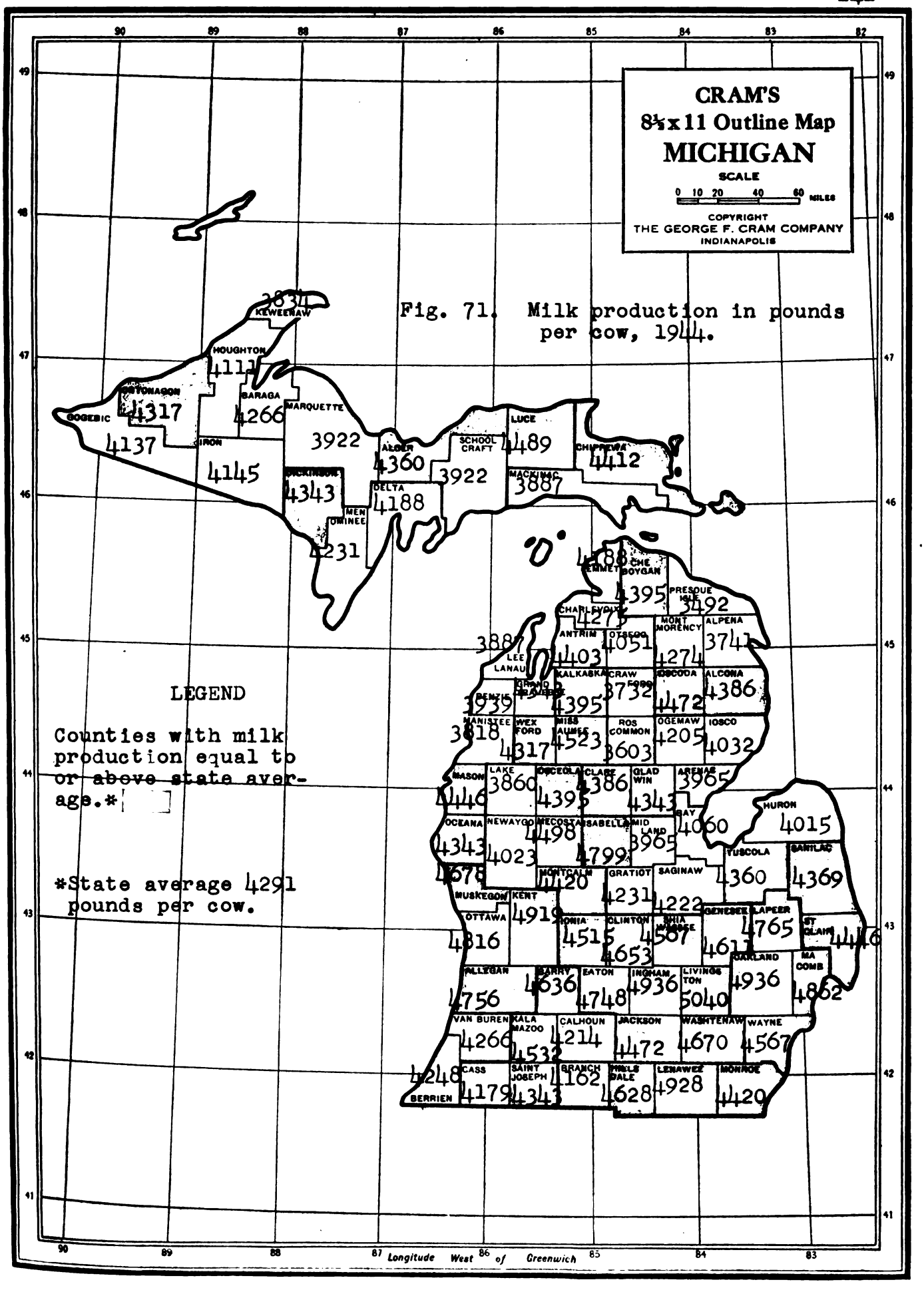
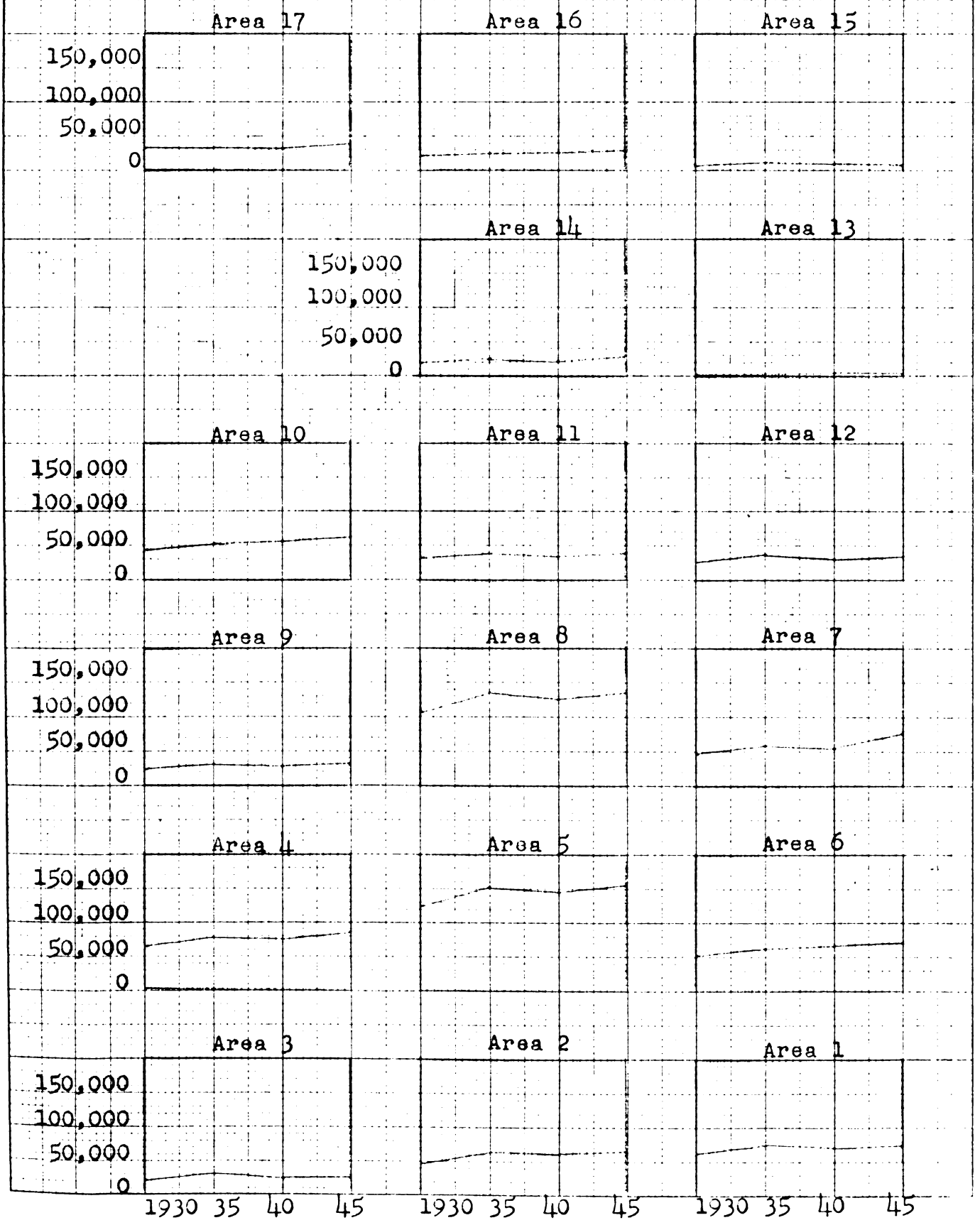


Fig. 71. Milk production in pounds per cow, 1944.

Fig. 72. Number dairy cows 1930 to 1945 by type of farming areas.



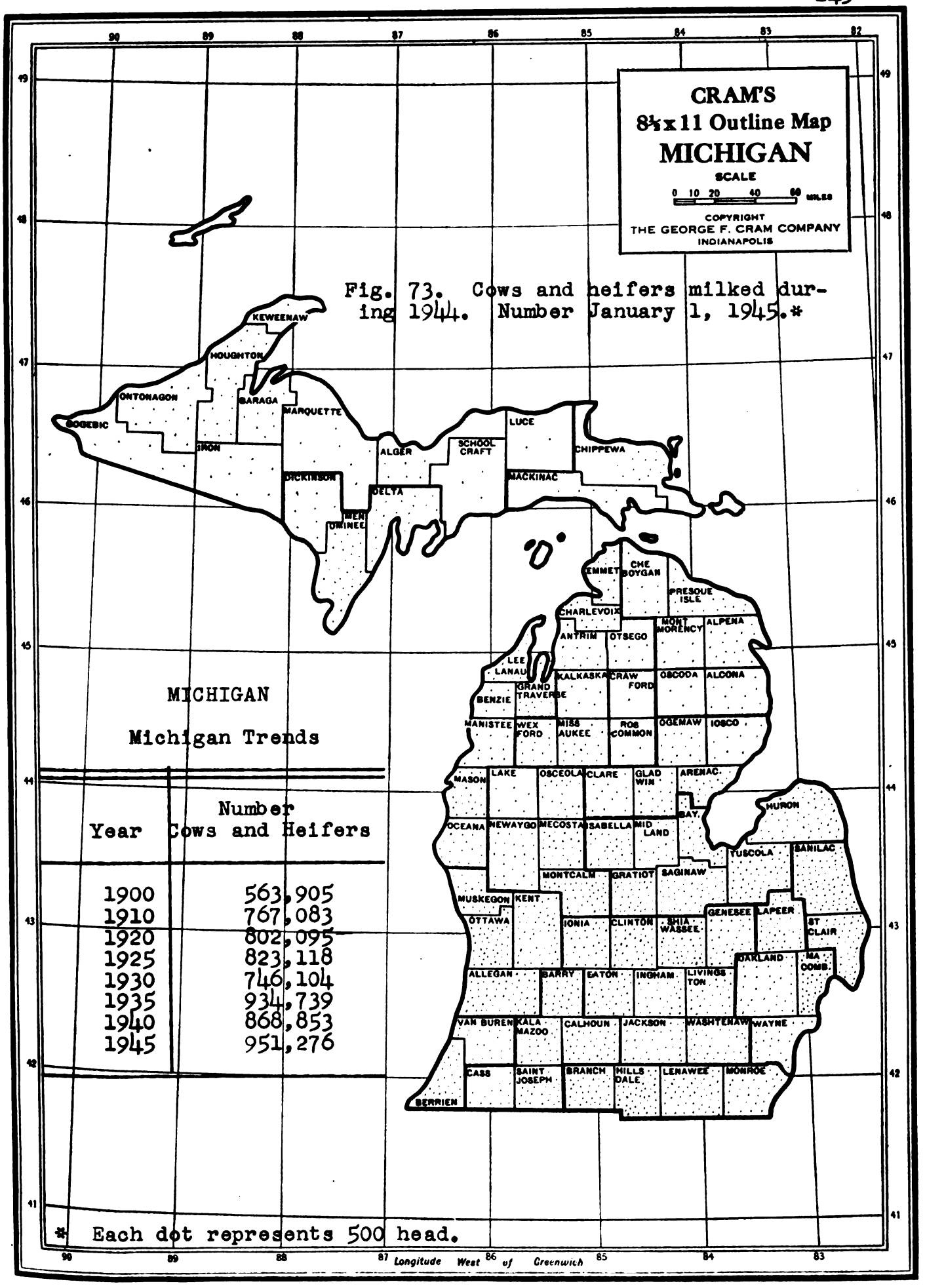


Fig. 73. Cows and heifers milked during 1944. Number January 1, 1945.*

MICHIGAN

Michigan Trends

Year	Number Cows and Heifers
1900	563,905
1910	767,083
1920	802,095
1925	823,118
1930	746,104
1935	934,739
1940	868,853
1945	951,276

* Each dot represents 500 head.

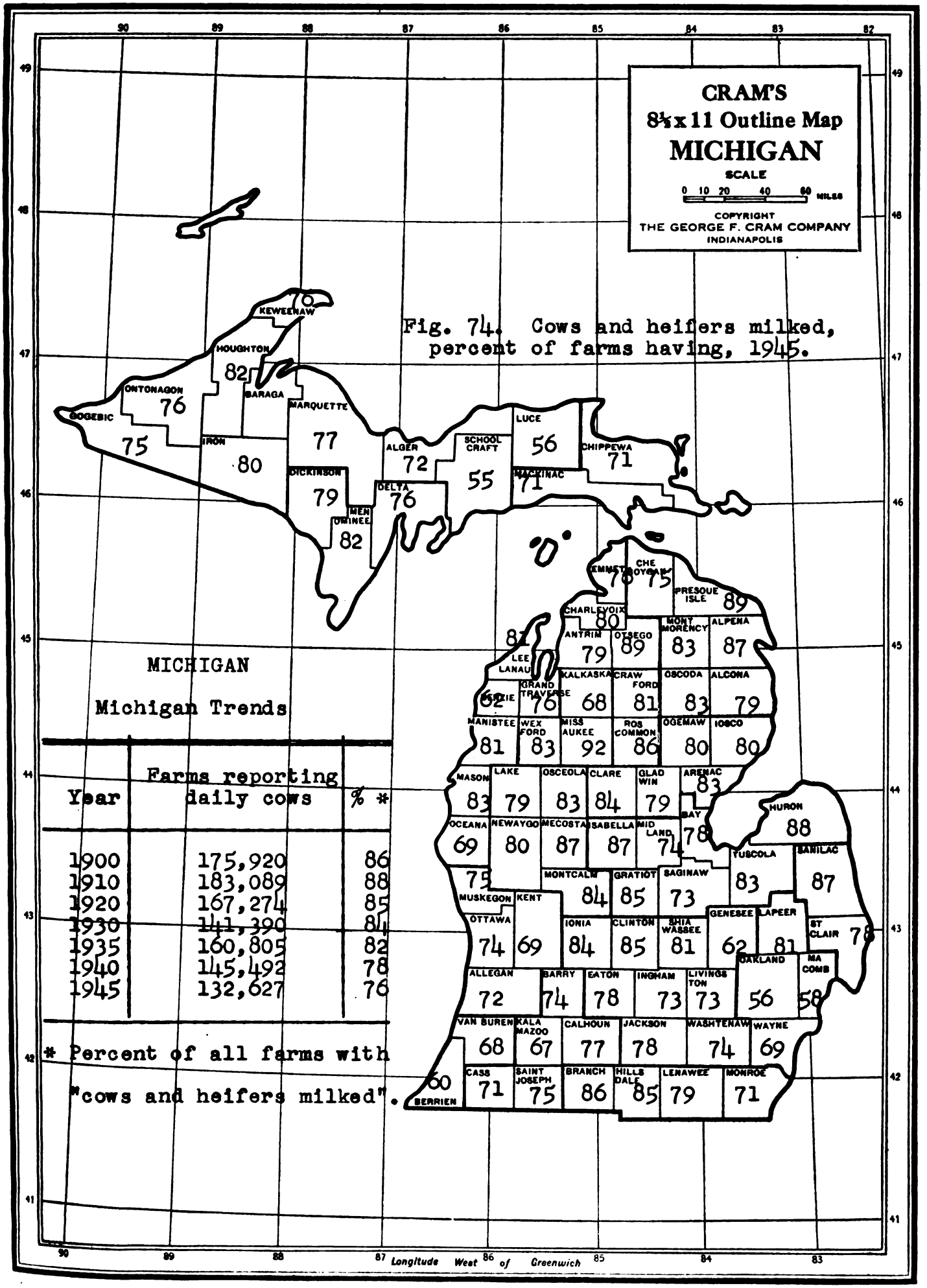


Fig. 74. Cows and heifers milked, percent of farms having, 1945.

MICHIGAN

Michigan Trends

Year	Farms reporting daily cows	% *
1900	175,920	86
1910	183,089	88
1920	167,274	85
1930	141,390	81
1935	160,805	82
1940	145,492	78
1945	132,627	76

* Percent of all farms with "cows and heifers milked".

Beef Cattle

It is almost impossible to secure a clear picture of the number of beef cattle from the available data. The census has recorded beef cattle only a few times and one can only assume that the cows and heifers not milked are kept mainly for beef. There are indications that this figure is considerably lower than the actual number of beef cattle. The 1925 census lists 69,889 beef cows of which 42,311 were milked. If we start on the assumption that cows and heifers not milked are mostly beef cattle, then the number of beef cattle in Michigan has more than tripled since 1920 (Figure 75). Beef cattle have increased in all areas except Area 15.

The periodic increases and decreases in cattle numbers commonly called the cattle cycle have been held responsible for the increases and decreases in the supply of beef. Typically, beef production is on the increase at the time the peak in cattle numbers is passed, and reaches its own peak about two years later. It then declines as cattlemen sell fewer calves from the current calf crop and fewer cattle from inventories.

For the past several years another factor, productivity of the cattle herd, has exerted great influence on the supply of beef. The productivity of the national cattle herd is

more important than the size alone. Productivity as measured by annual live weight production has trended upward steadily over the past three decades as shown by Table 5.[18]

Table 5. Live weight production per beef cow in pounds 1920-1948[19] United States.

Period	Live weight production per cow Pounds
1920-29	386
1930-39	399
1940-48	452

This increased production per cow has been accomplished through the adoption of new practices for raising and feeding cattle putting gains on faster now than in earlier years. Stockmen are taking advantage of the rapid growth that young livestock will make and are holding back fewer animals for the slower gains obtained at older ages. Two year-old cattle require from 93 to 95 percent as much feed as 3-year-olds, yearlings 85 to 90 percent and calves 70 to 75 percent.[20]

Michigan has not shown the variations in cattle numbers that the United States as a whole has (Figure 76). Instead of decreasing from 1934 to 1938 and then increasing

18/ Productive Level of the Cattle Herd in Relation to Prospects for Output of Beef and Veal. The Livestock and Meat Situation, June, 1949.

19/ Adapted from Table 9, The Livestock and Meat Situation, June, 1949.

20/ Feeding cattle for Beef, Farmers Bulletin No. 1549.

Michigan cattle numbers increased steadily from 1935 to 1944. The most probable reason for this is the high percentage of dairy cattle in Michigan which has tended to modify the cattle cycle, cyclical variations being due largely to variations of cattle other than dairy cattle.

Commercial feeding of cattle in Michigan is confined to those counties in the southern part of the state which produce a surplus of feed crops such as Lenawee, Hillsdale and Monroe Counties. Thus most of the beef enterprises carried on in Michigan are breeding enterprises which reduces risk and amount of capital needed.

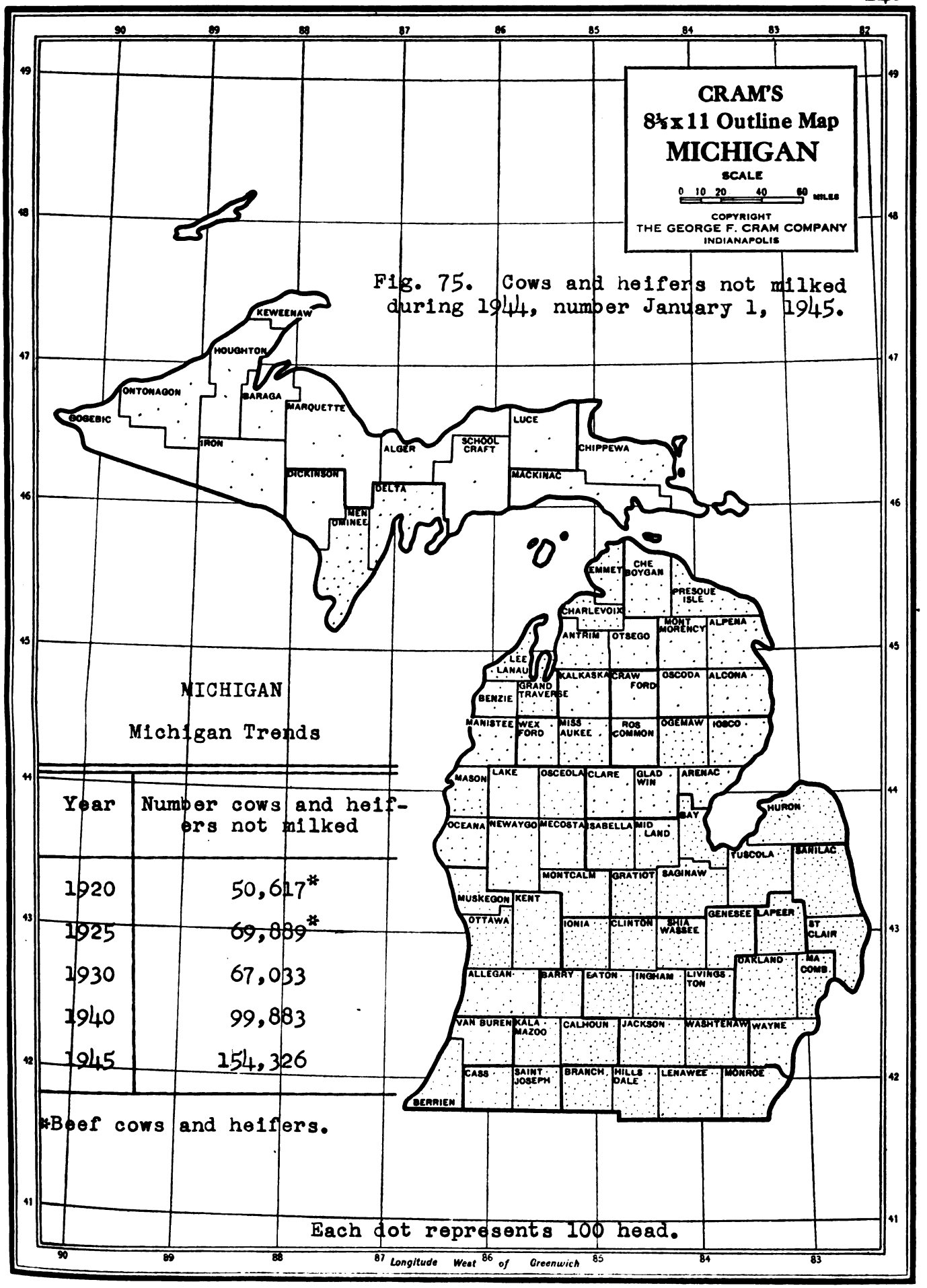


Fig. 75. Cows and heifers not milked during 1944, number January 1, 1945.

MICHIGAN

Michigan Trends

Year	Number cows and heifers not milked
1920	50,617*
1925	69,889*
1930	67,033
1940	99,883
1945	154,326

*Beef cows and heifers.

Each dot represents 100 head.

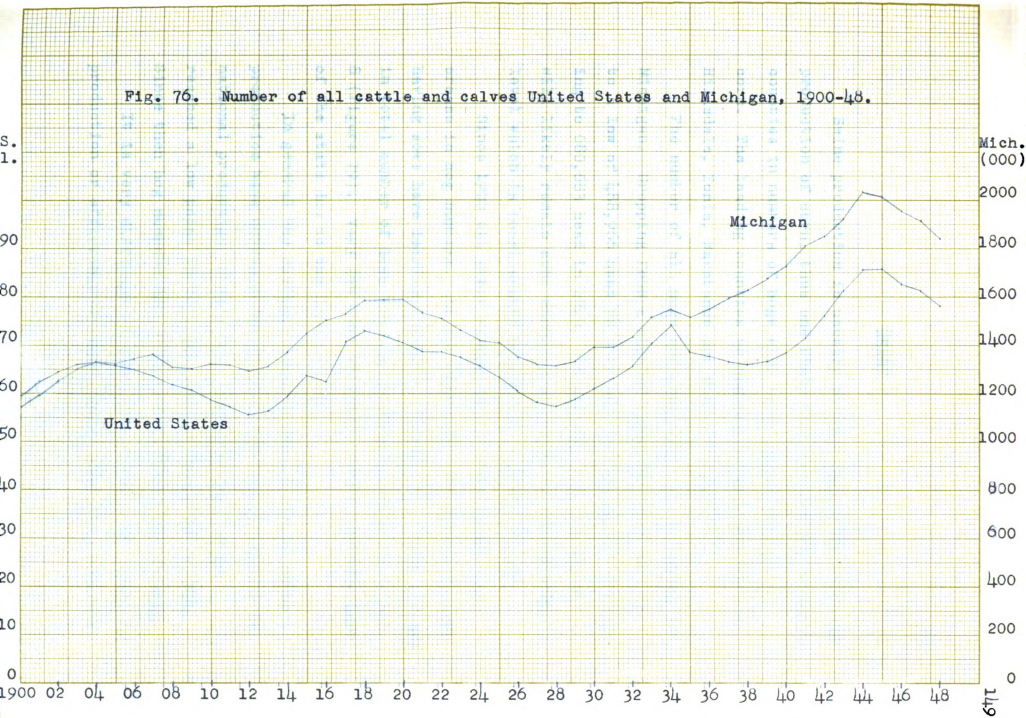


Fig. 76. Number of all cattle and calves United States and Michigan, 1900-48.

Swine

Swine production is usually closely identified with the production of corn, thus one finds that the leading Michigan counties in numbers of hogs also raise large acreages of corn. The leading counties in numbers of hogs are Lenawee, Hillsdale, Ionia, Washtenaw and Monroe (Figure 77).

The number of all hogs and pigs have varied greatly in Michigan. Dropping from a high of 1,245,833 head in 1910 to a low of 488,966 head in 1935 and then gradually increasing to 680,683 head in 1945. It appears that hog numbers will likely remain some where in the vicinity of the 1945 level which is considerably below that reached in 1910.

Since 1900 all areas except Area 17 have shown a decrease in hog numbers. At the same time the number of farms having sows have decreased greatly (Figure 78). Area 5 leads in total number of hogs followed closely by Areas 1, 2, and 8 (Figure 79). Very few hogs are found in the northern part of the state due to the lack of corn.

In general the cyclical variations in Michigan swine production have corresponded closely with the variations in national production (Figure 80). Michigan hog numbers reached a low point in 1935 and then increased until 1944. Since then hog numbers have steadily decreased in Michigan.

It is very difficult to obtain any measure of change in production or efficiency of feeding hogs from the available

data. However information obtained in the Corn Belt over a period of years on feed consumed by hogs indicates a reduction of 10 to 15 percent in the quantity of feed used per 100 pounds of pork from the decade of the 1920's to the decade of the 1930's.[21] The number of pigs saved, the prevention of disease, the improvement of breeds, and the feeding of balanced rations all tend toward increased efficiency in the use of feed. Even more improvement in this direction may be expected as work is now underway to produce hogs that are more efficient of feed into pork of the more desirable cuts.

21/ "Feed Consumption and Marketing Weight of Hogs", by L. Jay Atkinson and John W. Kelin, U. S. Dept. of Agriculture. Tech. Bul. 894, 1945, pp. 192.

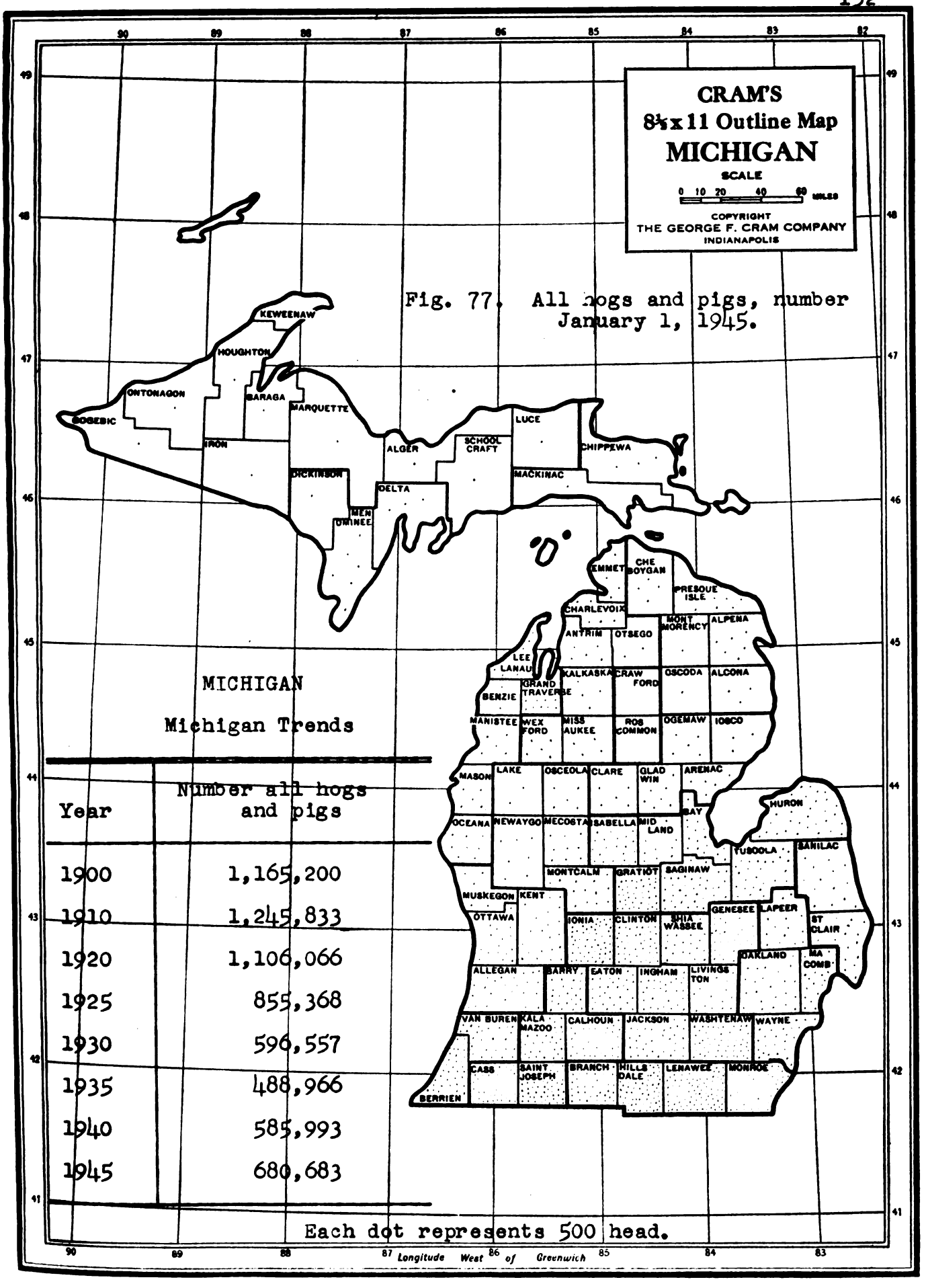


Fig. 77. All hogs and pigs, number January 1, 1945.

MICHIGAN

Michigan Trends

Year	Number all hogs and pigs
1900	1,165,200
1910	1,245,833
1920	1,106,066
1925	855,368
1930	596,557
1935	488,966
1940	585,993
1945	680,683

Each dot represents 500 head.

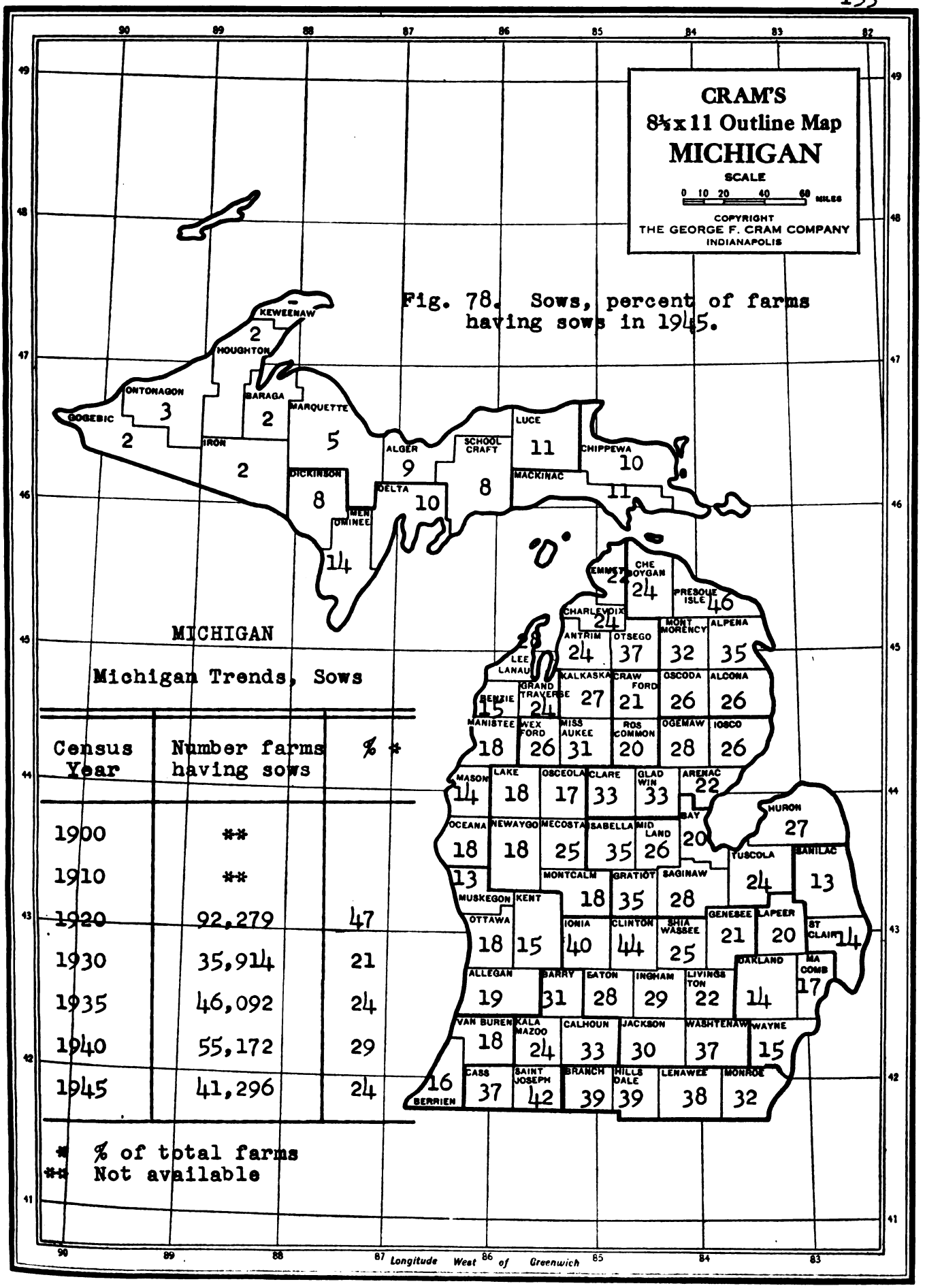


Fig. 78. Sows, percent of farms having sows in 1945.

MICHIGAN

Michigan Trends, Sows

Census Year	Number farms having sows	% *
1900	**	
1910	**	
1920	92,279	47
1930	35,914	21
1935	46,092	24
1940	55,172	29
1945	41,296	24

* % of total farms
** Not available

Fig. 79. Number all hogs 1930 to 1945 by type of farming areas.

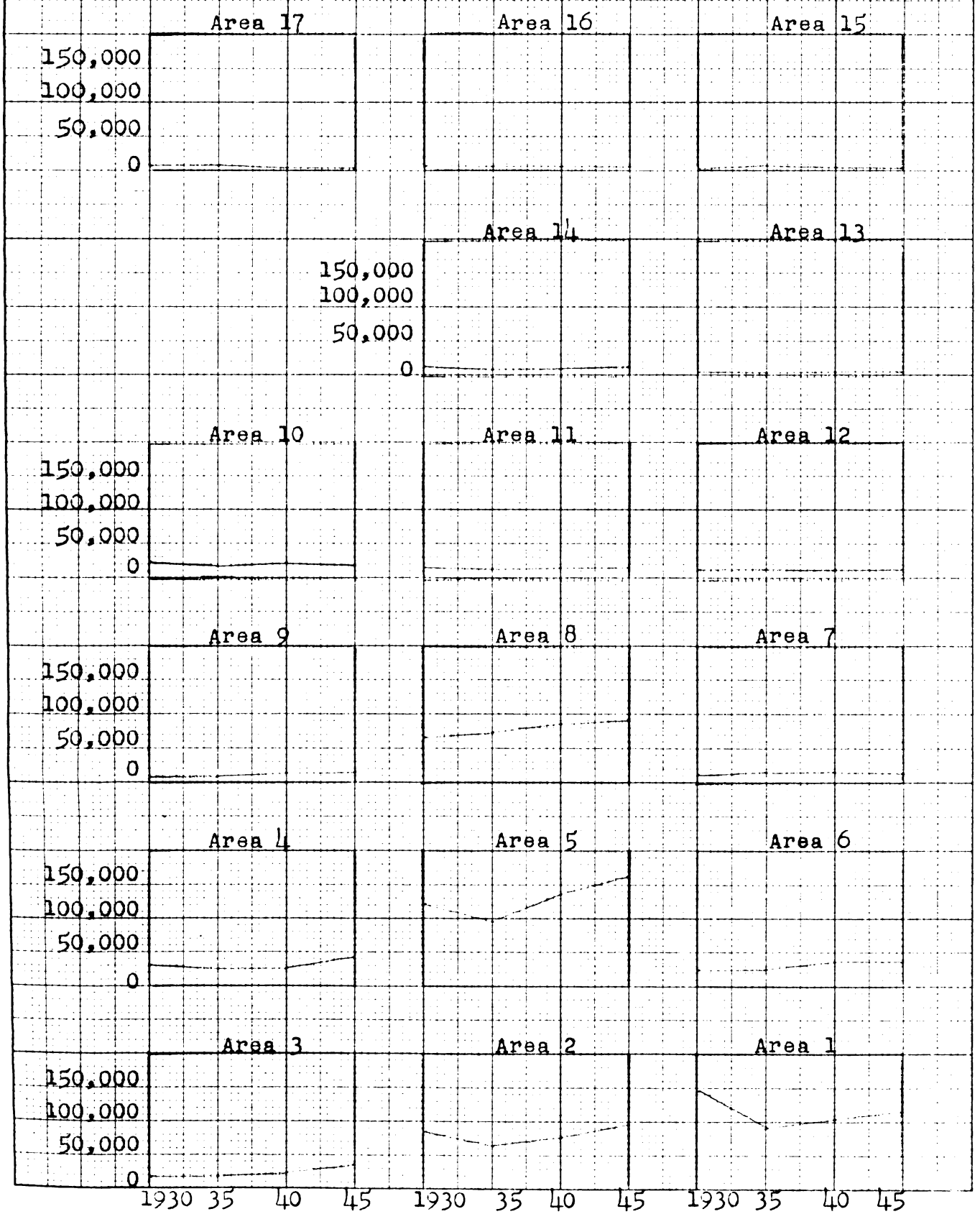
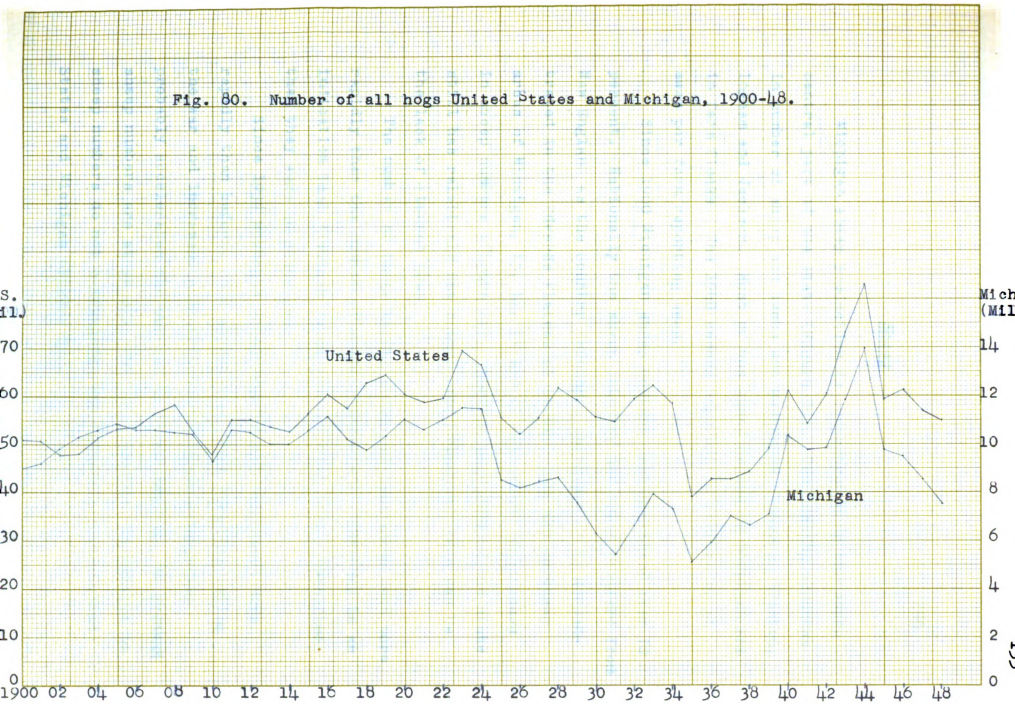


Fig. 80. Number of all hogs United States and Michigan, 1900-48.



Sheep

Michigan sheep production is concentrated in the south central part of the state (Figure 81). The leading counties in number of sheep and lambs are Washtenaw, Lenawee, Clinton, Ingham and Jackson. Most of the sheep raised in Michigan are in farm flocks. The 1940 census reported an average of 31 ewes per farm reporting ewes.

Since 1900 Michigan sheep numbers have decreased over 70 percent. Nationally the sheep industry has moved westward from New England as the country developed until now it is concentrated in the Edwards Plateau of Texas. Only the northern areas of Michigan, 13, 14, 15 and 17 have shown an increase in sheep numbers (Figure 82). However this part of the state still has relatively few sheep. One reason for this may be the lack of cleared land.

The number of farms having sheep have decreased even more rapidly than the number of sheep (Figure 83). This may be an indication that Michigan farms are becoming less diversified than they were 40 years ago.

Since 1939 Michigan sheep numbers have decreased more rapidly than before. The scarcity of fence material during the war and increased competition from other enterprises probably accelerated the decline in sheep numbers. At present sheep numbers are at an all time low. Cyclical variations in sheep numbers do not correspond very closely for the United States and Michigan (Figure 84).

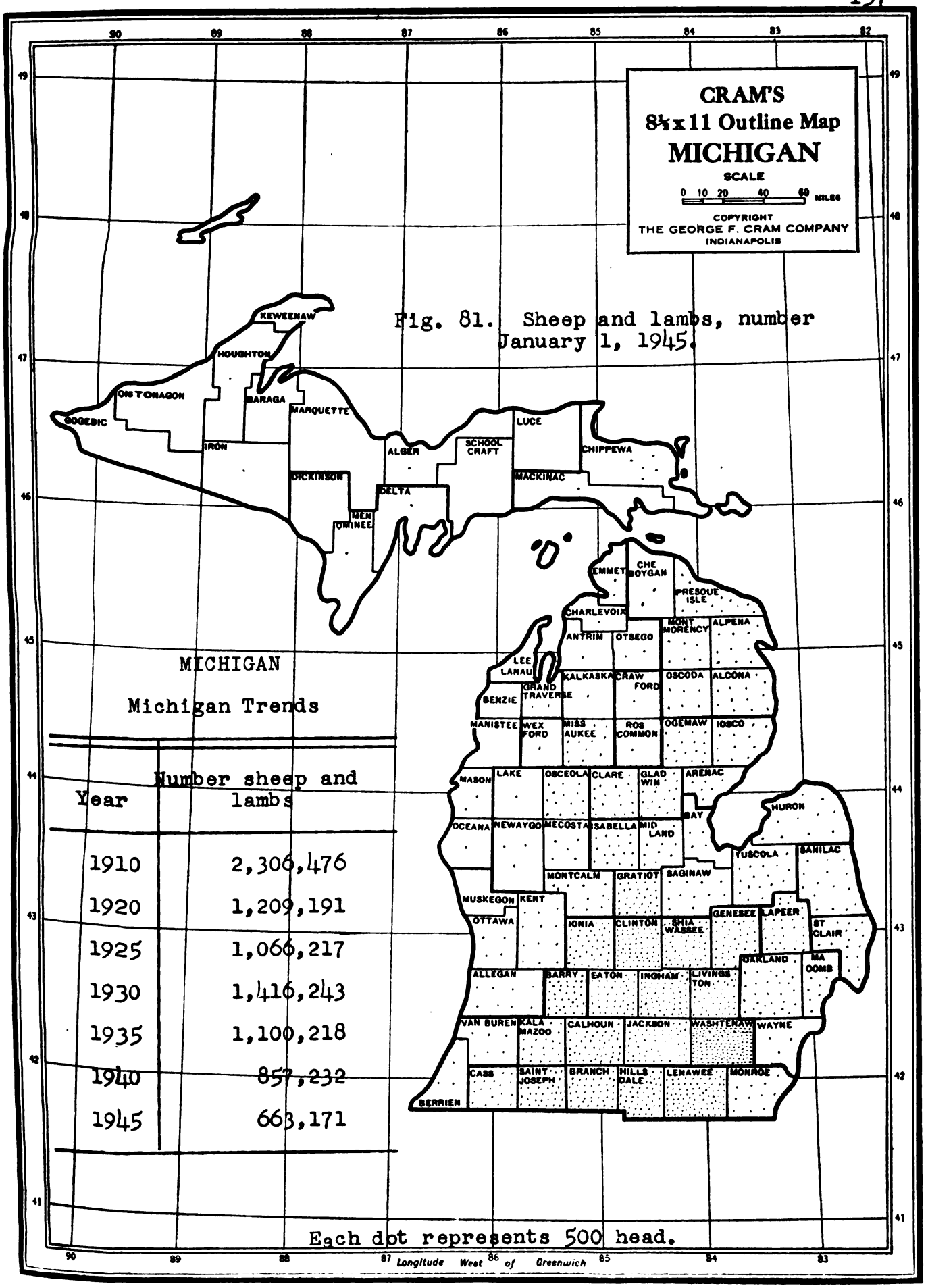


Fig. 81. Sheep and lambs, number January 1, 1945.

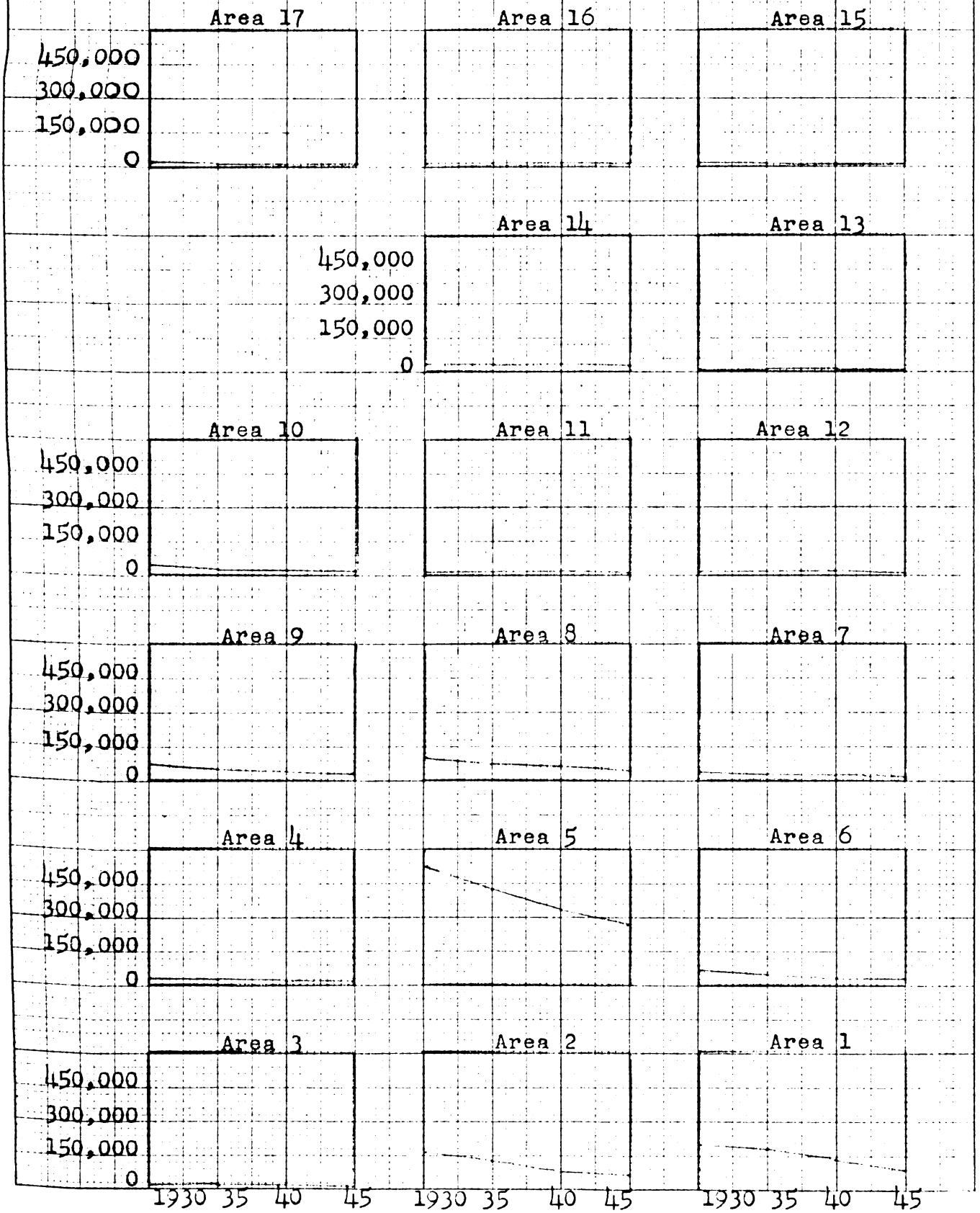
MICHIGAN

Michigan Trends

Year	Number sheep and lambs
1910	2,306,476
1920	1,209,191
1925	1,066,217
1930	1,416,243
1935	1,100,218
1940	857,232
1945	663,171

Each dot represents 500 head.

Fig. 82. Number sheep and lambs 1930 to 1945 by type of farming areas.



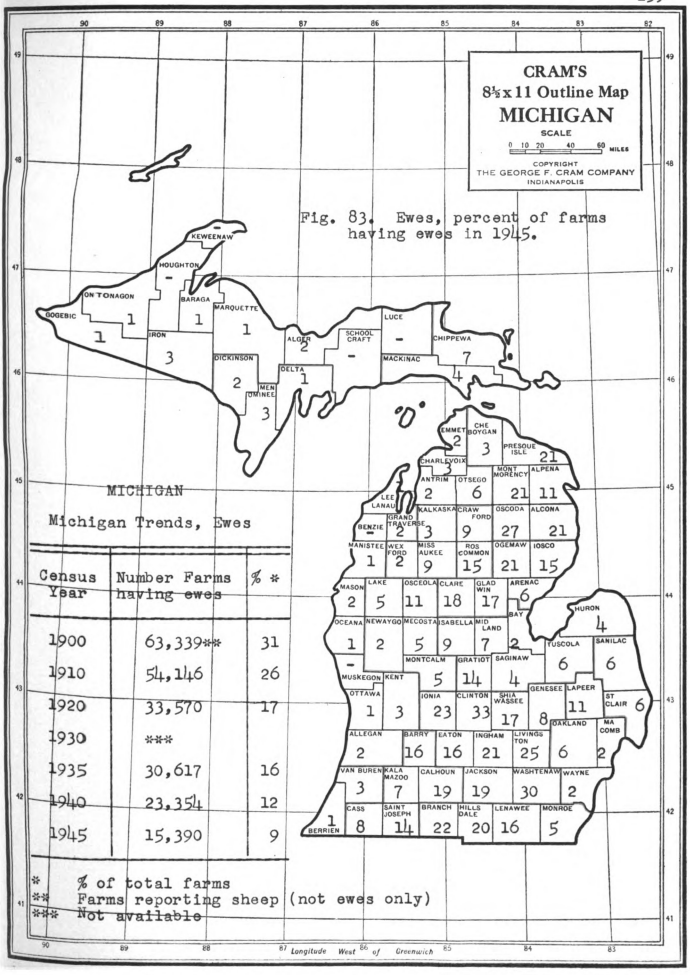


Fig. 83. Ewes, percent of farms having ewes in 1945.

MICHIGAN

Michigan Trends, Ewes

Census Year	Number Farms having ewes	% *
1900	63,339**	31
1910	54,146	26
1920	33,570	17
1930	***	
1935	30,617	16
1940	23,354	12
1945	15,390	9

* % of total farms

** Farms reporting sheep (not ewes only)

*** Not available

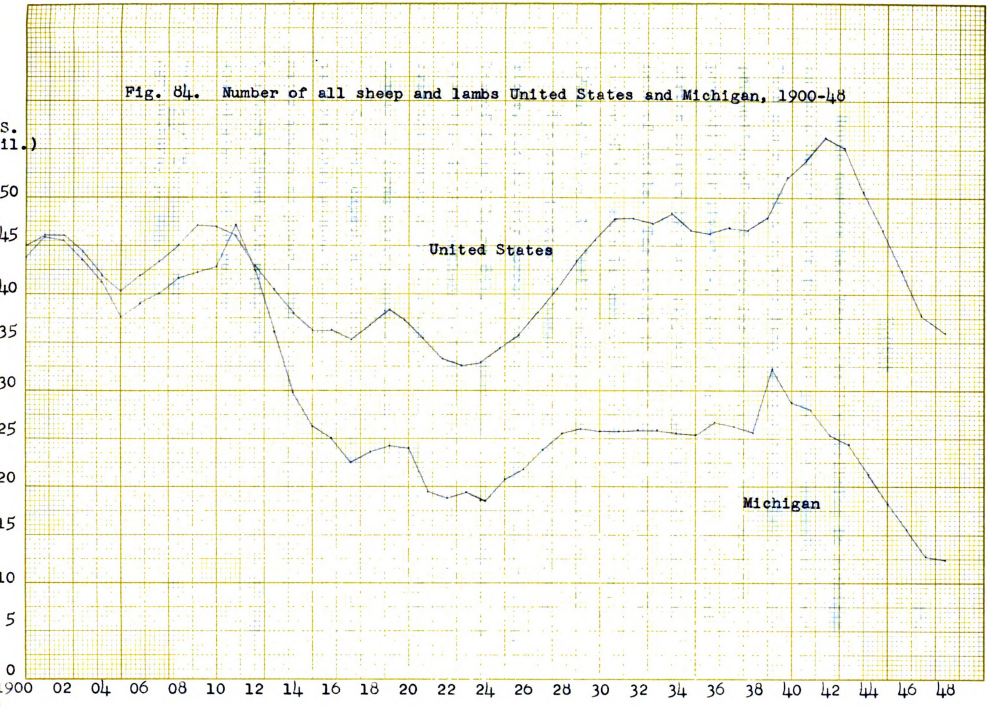


Fig. 84. Number of all sheep and lambs United States and Michigan, 1900-48

Horses

Horse numbers have been steadily declining in Michigan as more farmers shift from animal power to mechanical power. This has resulted in more land being made available for the production of food crops for human use or feed crops for production of livestock. Land thus released in the United States between 1920 and 1945 was enough to feed 16 million head of cattle. The saving in grain alone from the smaller number of work animals amounted to about 13 million tons in 1944, or enough to feed 25 million hogs to market weight.[22]

The distribution of horses is general throughout the state, the density corresponding fairly closely with the number of farms (Figure 85). The decrease in horse numbers has been less in the northern part of the state (Figure 86). However the number of horses has decreased more rapidly than the number of farms having horses (Figure 87).

One can expect a further decline in the number of horses as more farms secure tractors and horses cease to be the major source of power. The increase in number of small tractors fitted with equipment suitable for use on small farms should also tend to reduce horse numbers.

22/ Yearbook of Agriculture 1943-47, U. S. Dept of Agriculture, p. 925.

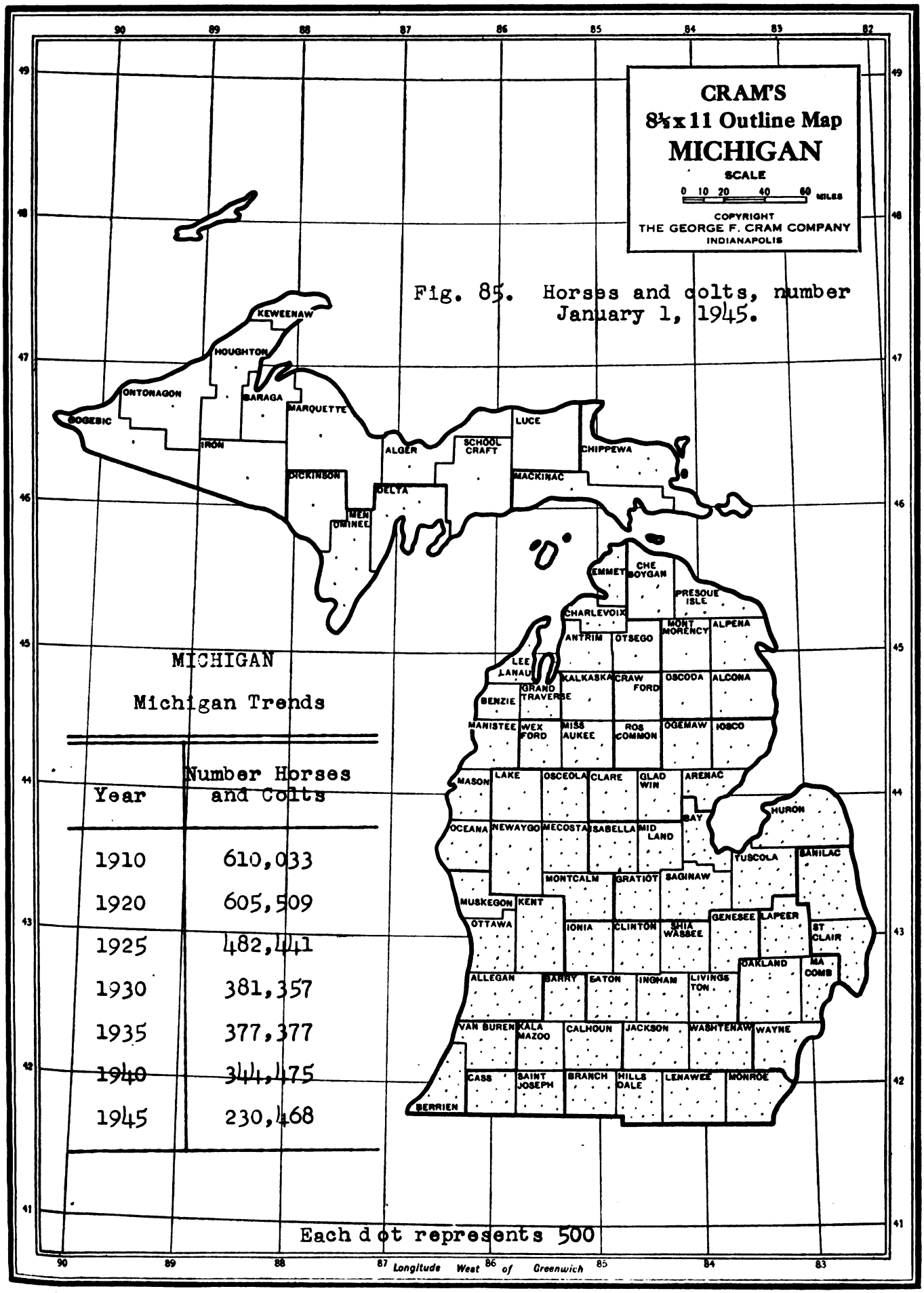


Fig. 85. Horses and colts, number January 1, 1945.

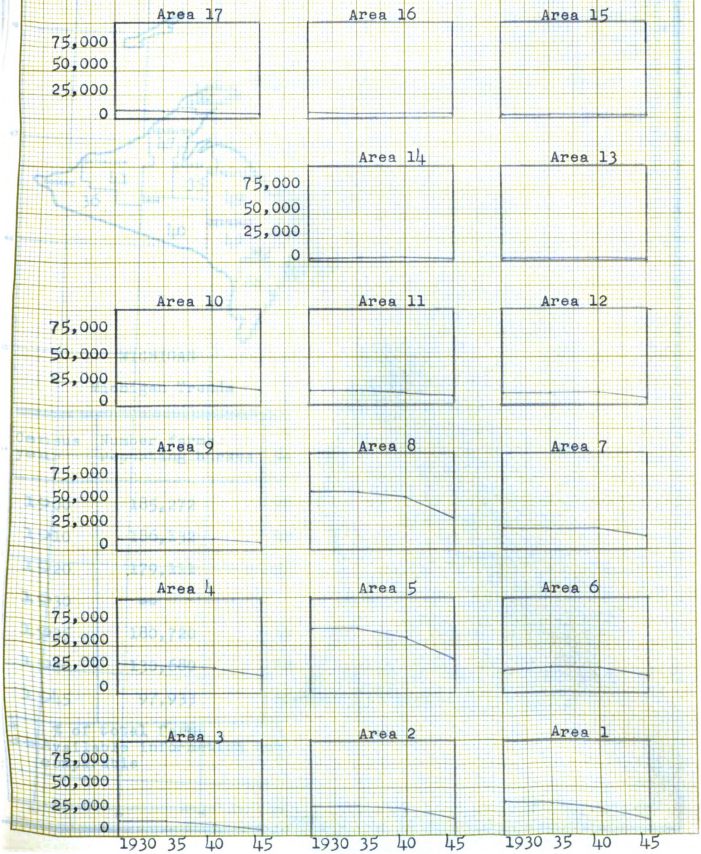
MICHIGAN

Michigan Trends

Year	Number Horses and Colts
1910	610,033
1920	605,509
1925	482,441
1930	381,357
1935	377,377
1940	344,475
1945	230,468

Each dot represents 500

Fig. 86. Number horses 1930 to 1945 by type of farming areas.



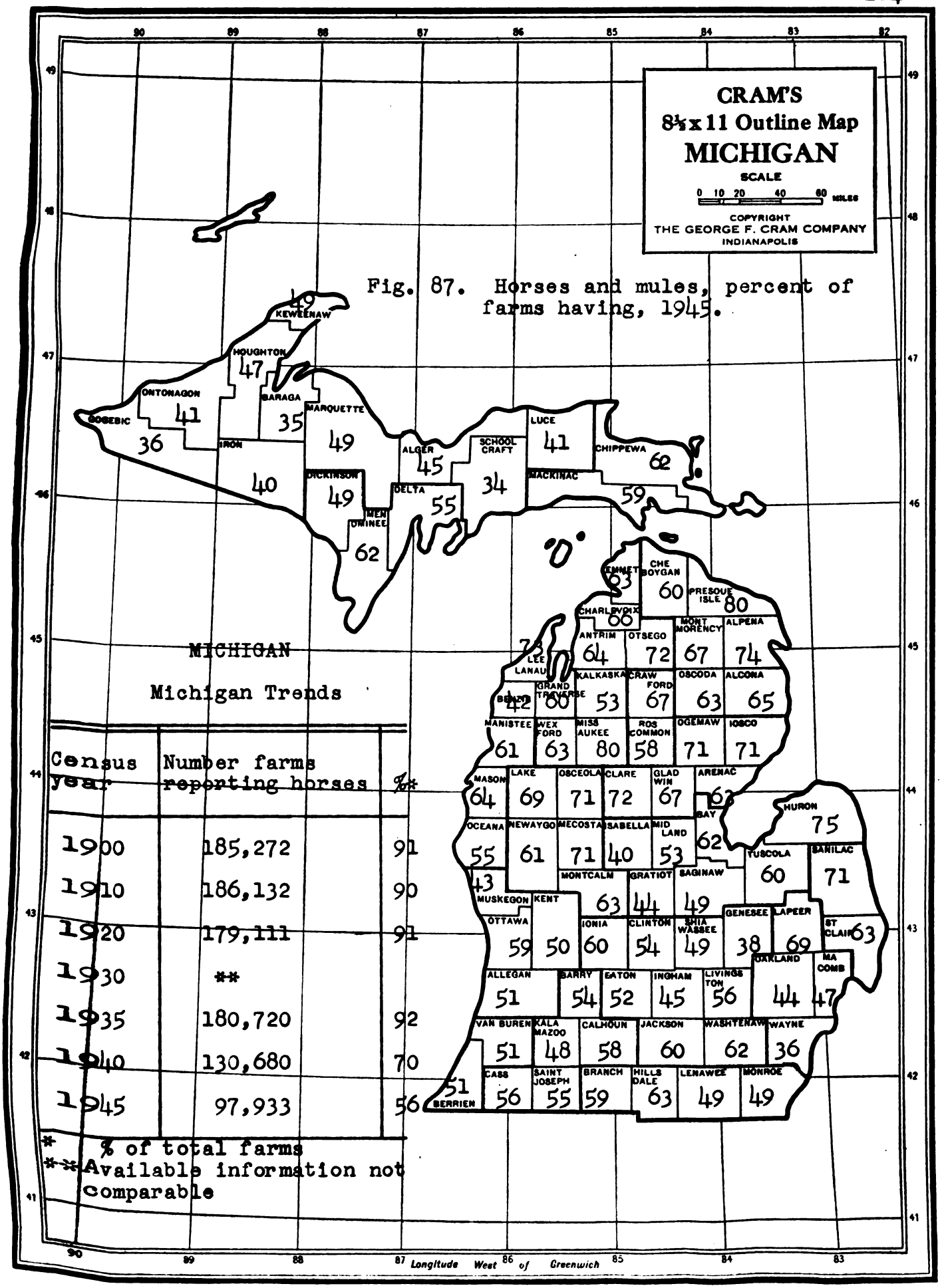


Fig. 87. Horses and mules, percent of farms having, 1945.

MICHIGAN

Michigan Trends

Census year	Number farms reporting horses	%*
1900	185,272	91
1910	186,132	90
1920	179,111	91
1930	**	
1935	180,720	92
1940	130,680	70
1945	97,933	56

* % of total farms

** Available information not comparable

Chickens

Most of the chickens in Michigan are concentrated in the southern half of the lower peninsula with Allegan, Saginaw, Lenawee, Ottawa and Monroe Counties leading in the number raised (Figure 88). Areas 5 and 8 have the largest number of chickens followed by Areas 1 and 4 (Figure 89). The number of chickens raised has increased from 9,967,039 in 1909 to 21,311,712 in 1944. Every area in Michigan has shown an increase in the number of chickens raised.

Since 1900 the average number of hens per farm has doubled, increasing from 43 in that year to 85 in 1945 (Figure 90). At the same time the percentage of farms with hens has dropped from 91 percent in 1900 to 76 percent in 1945 (Figure 91).

Not only have chickens become concentrated in larger flocks on fewer farms but the number of eggs per layer has increased greatly (Figure 92). Michigan production per layer has also been above the production per layer in the United States. The National Poultry Improvement Plan which coordinated Federal, state and commercial activities has probably been responsible for a large part of this increase in production due to a wider use and better supervision of improved breeding methods. Improved feeding and systematic culling have also contributed to this advance. This increased production means that the poultry enterprise has been transformed from a sideline to an important phase of the farm business.

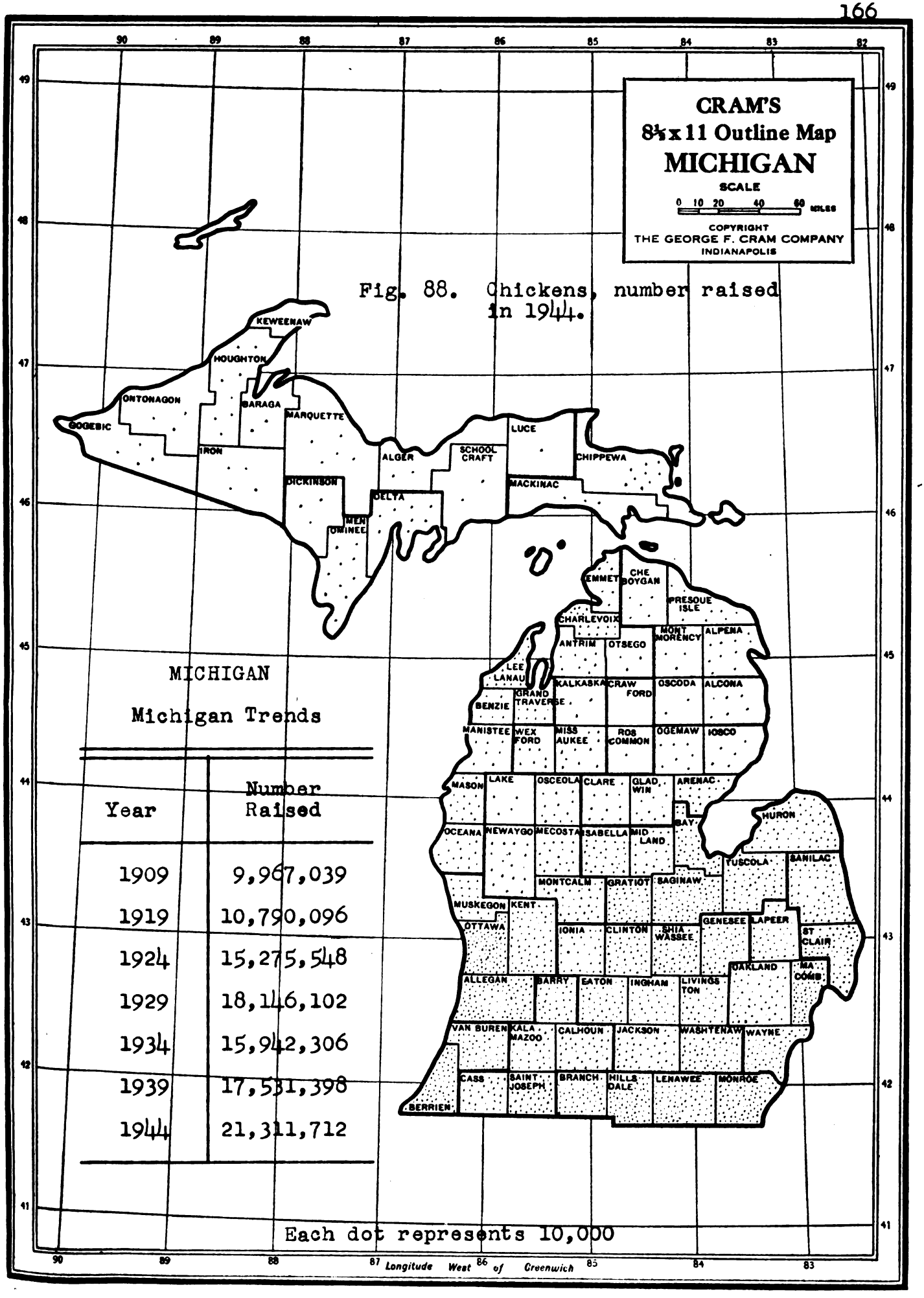


Fig. 88. Chickens, number raised in 1944.

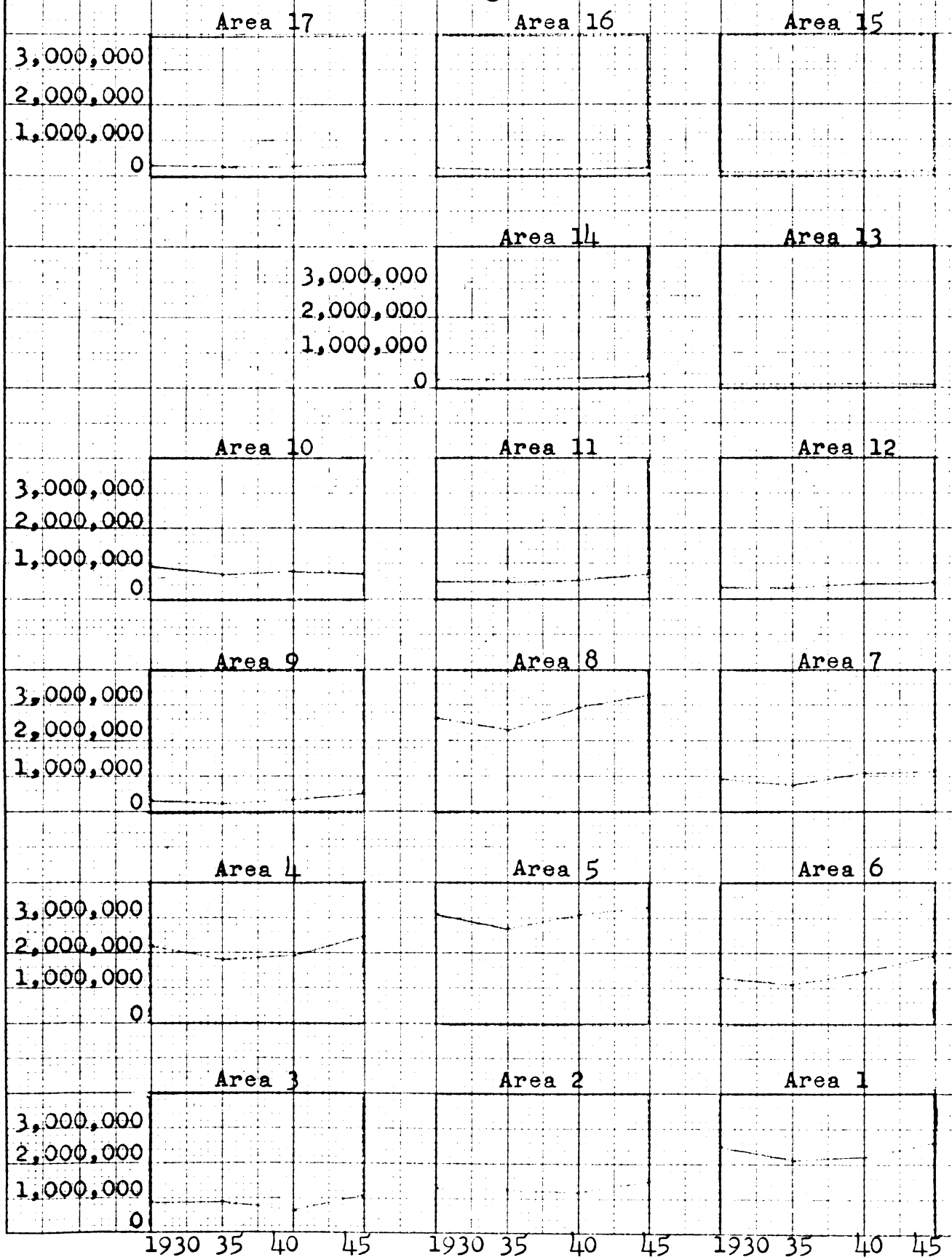
MICHIGAN

Michigan Trends

Year	Number Raised
1909	9,967,039
1919	10,790,096
1924	15,275,548
1929	18,146,102
1934	15,942,306
1939	17,531,398
1944	21,311,712

Each dot represents 10,000

Fig. 89. Number of chickens raised, 1930 to 1945 by type of farming areas.



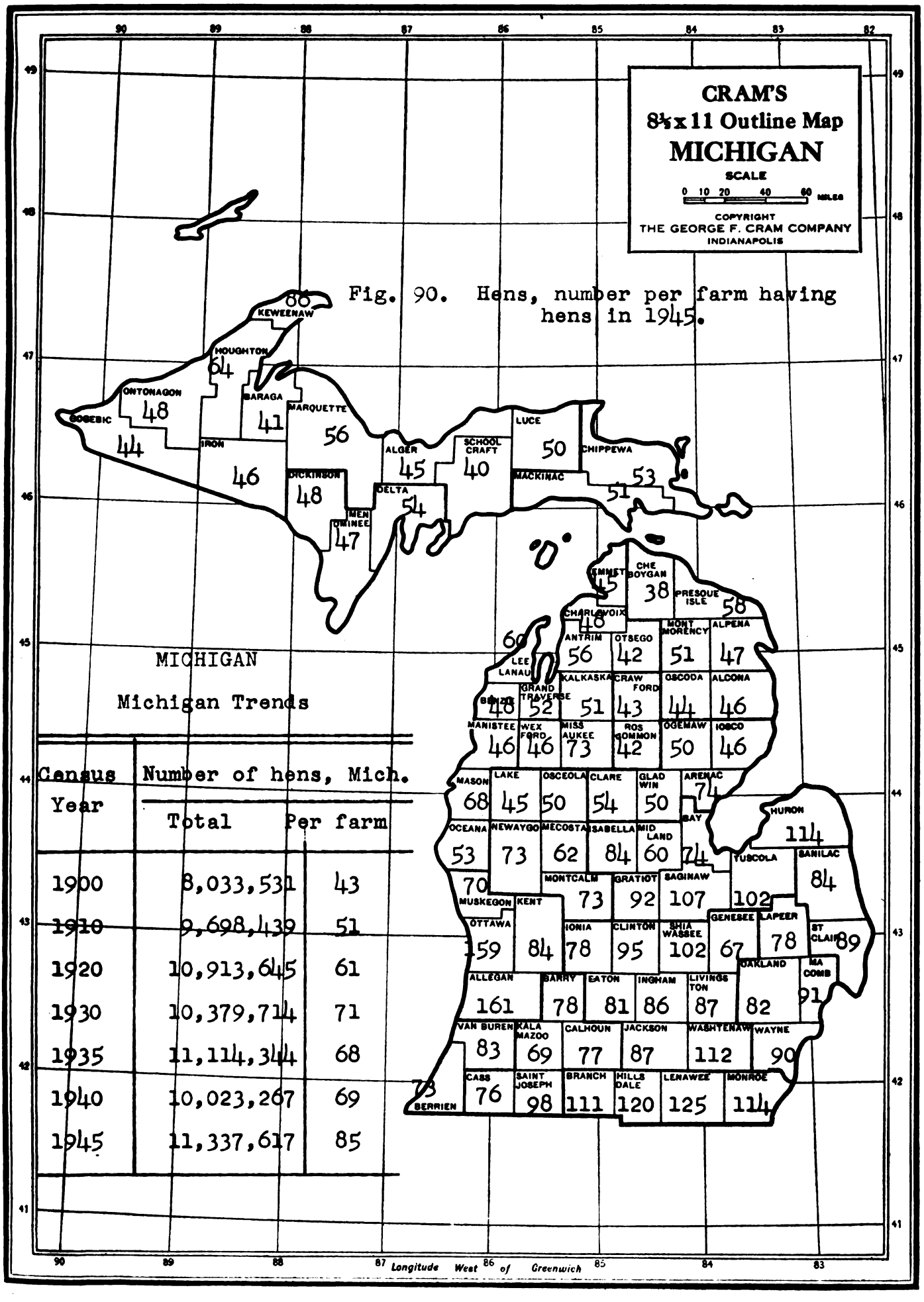


Fig. 90. Hens, number per farm having hens in 1945.

MICHIGAN

Michigan Trends

Census Year	Number of hens, Mich.	
	Total	Per farm
1900	8,033,531	43
1910	9,698,439	51
1920	10,913,645	61
1930	10,379,714	71
1935	11,114,344	68
1940	10,023,267	69
1945	11,337,617	85

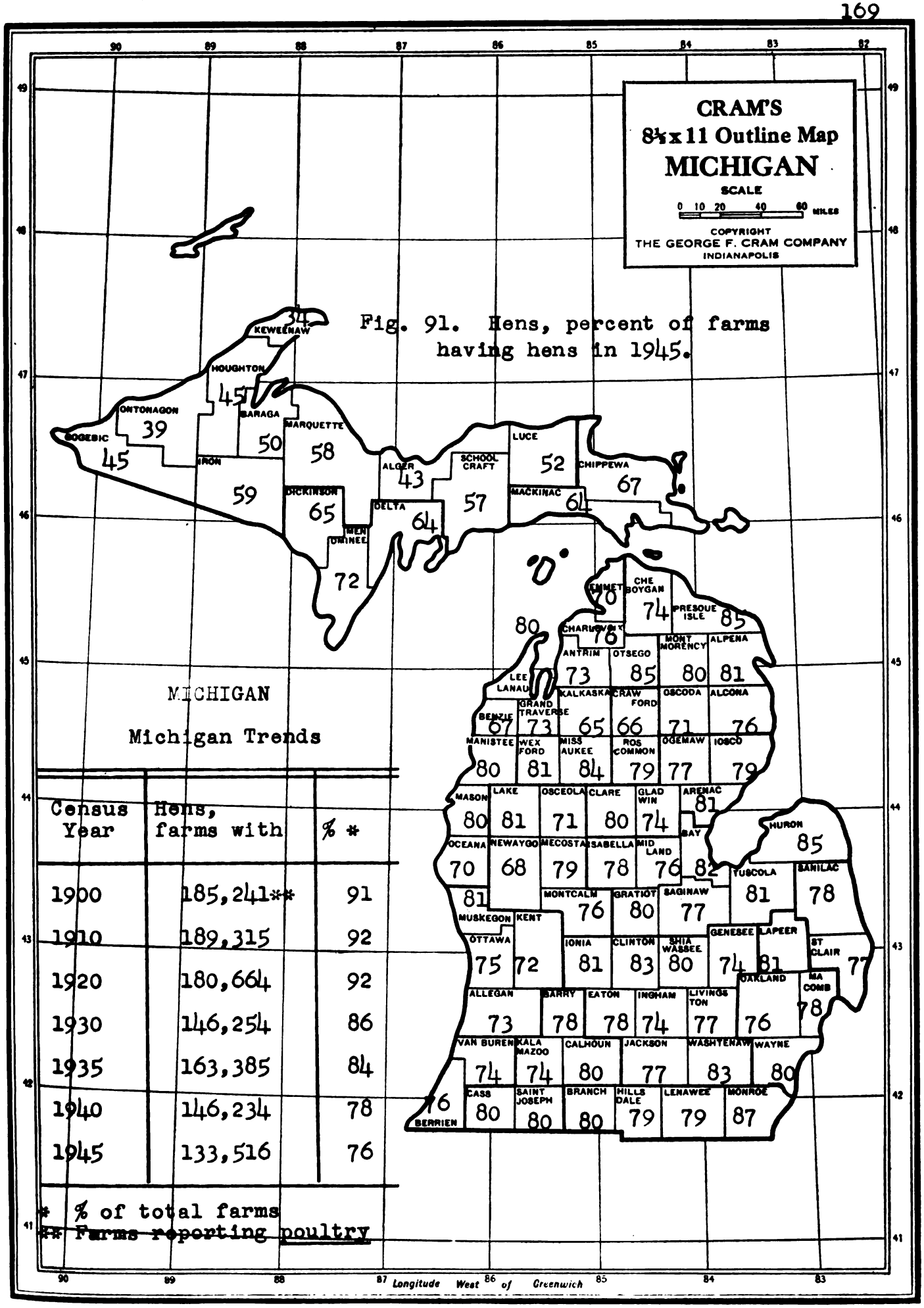


Fig. 91. Hens, percent of farms having hens in 1945.

MICHIGAN

Michigan Trends

Census Year	Hens, farms with	% *
1900	185,241**	91
1910	189,315	92
1920	180,664	92
1930	146,254	86
1935	163,385	84
1940	146,234	78
1945	133,516	76

* % of total farms
** Farms reporting poultry

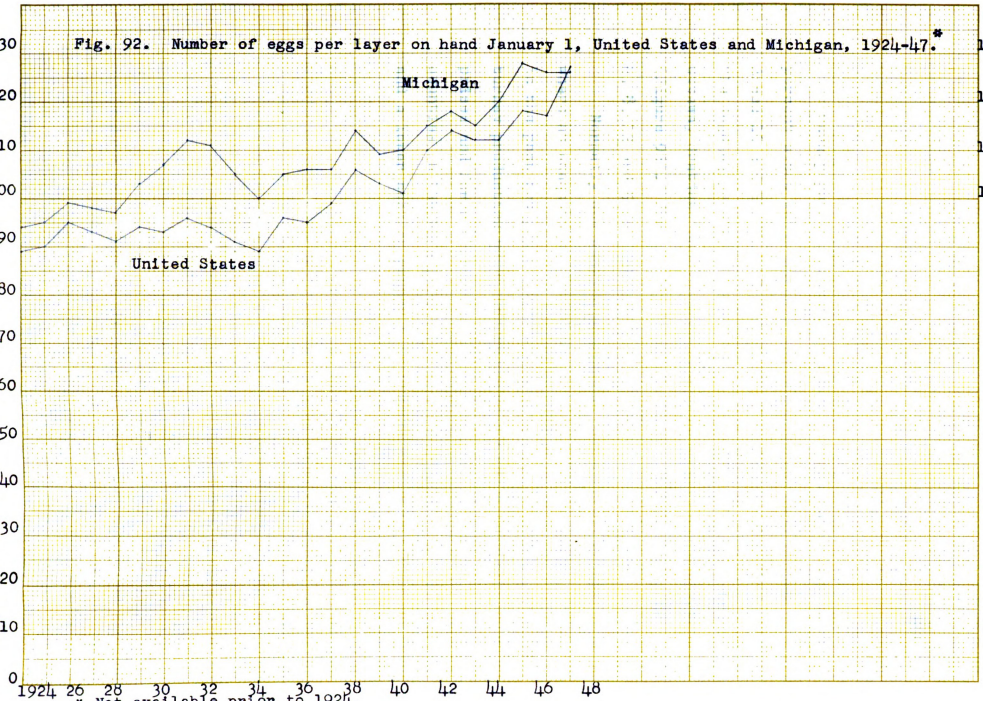


Fig. 92. Number of eggs per layer on hand January 1, United States and Michigan, 1924-47.*

* Not available prior to 1924.

Turkeys

Turkey production in Michigan has increased almost 150 percent since 1900, all areas showing an increase except Areas 16 and 17. For a number of years Sanilac County was the leading producer but in 1944 the leading counties were Ottawa, Gratiot, Benzie, Kent and Charlevoix in that order (Figure 93). The leading areas in total numbers are Areas 4, 8, 12 and 5 in that order (Figure 94).

Normally one would expect turkeys to be raised only where an adequate supply of feed grains were available, but in the past few years several northern counties have gone into turkey production quite extensively. Lack of competing enterprises and fewer disease problems may tend to keep these counties in the turkey business even with higher feed costs and a lower selling price.

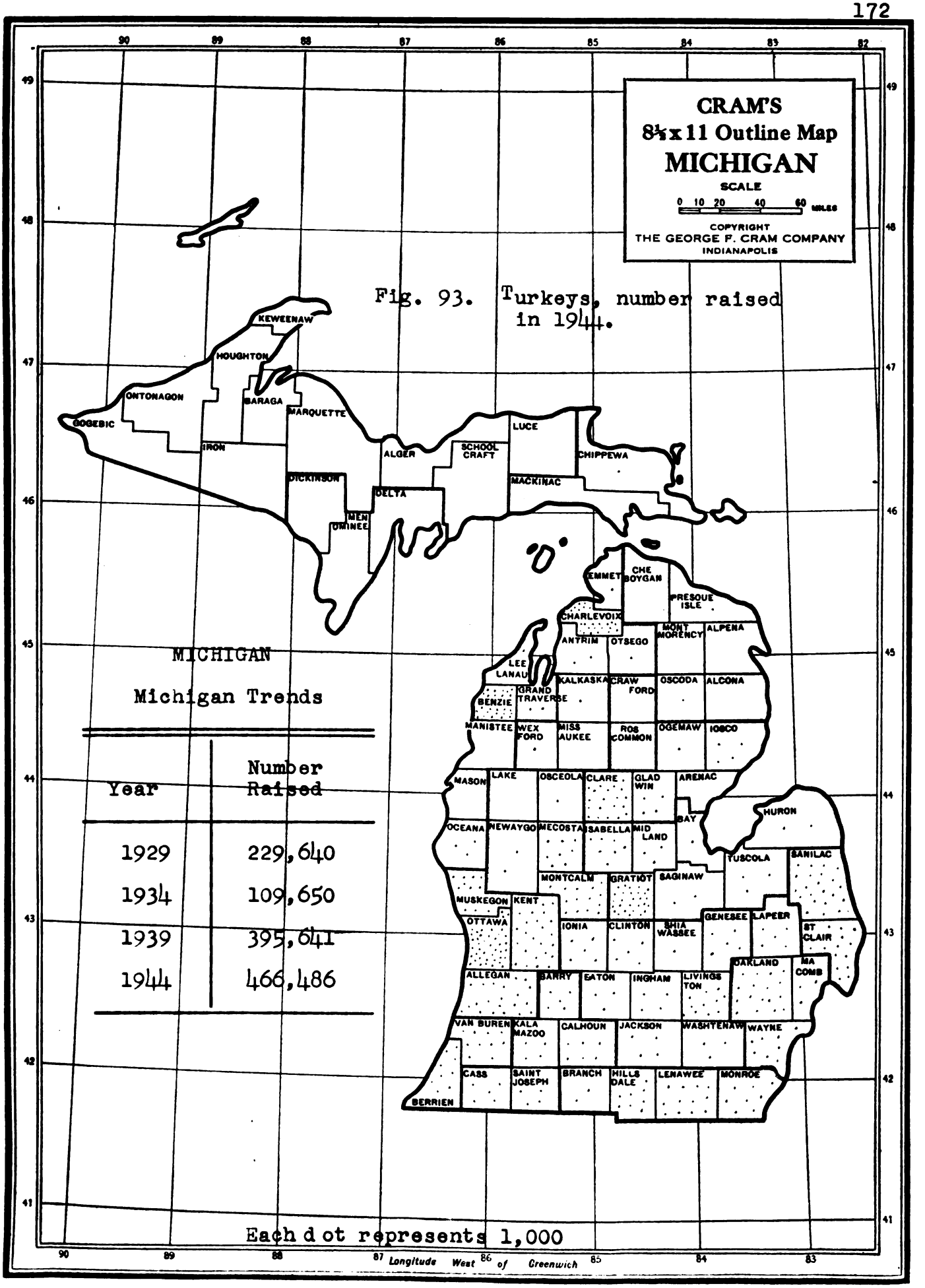


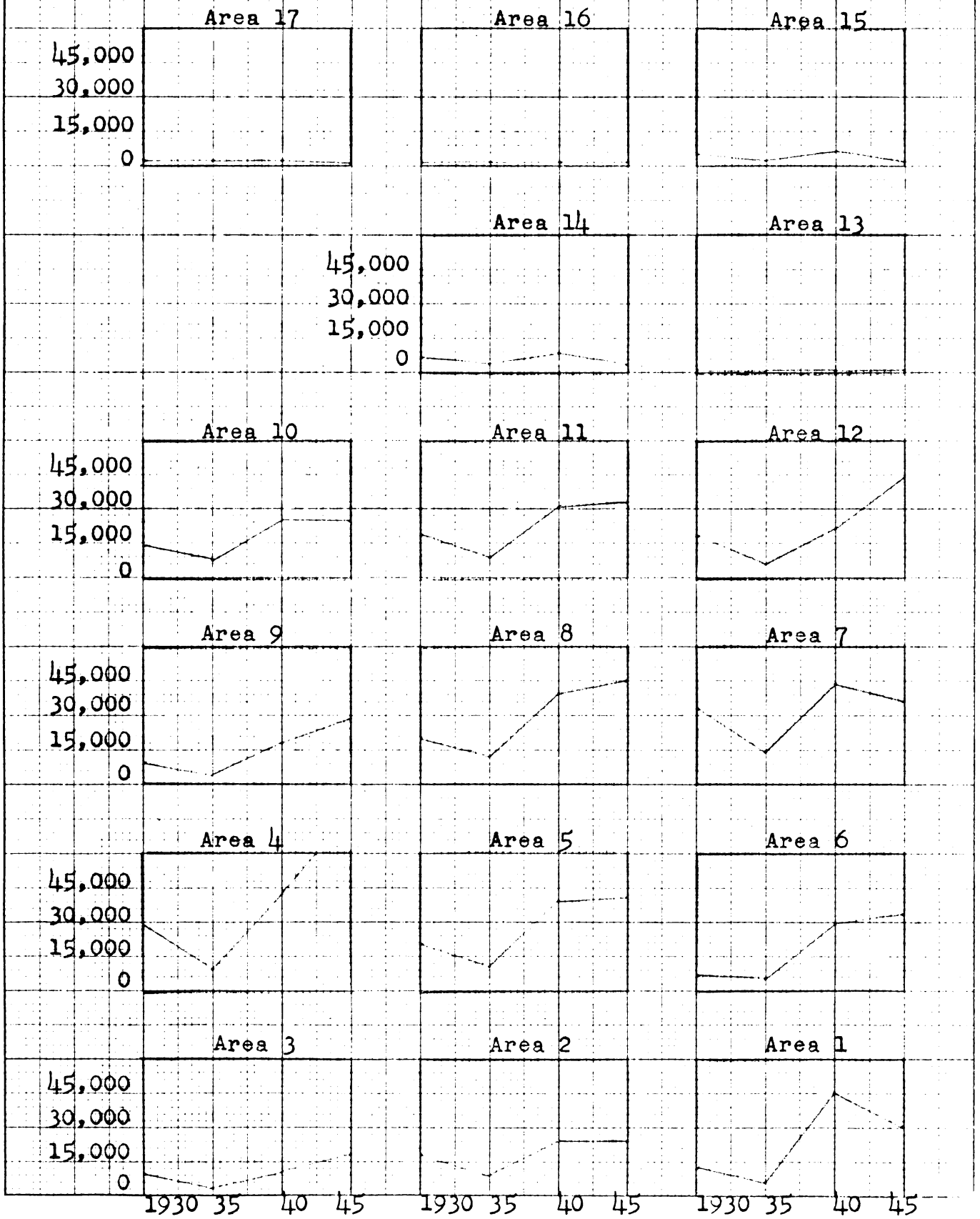
Fig. 93. Turkeys, number raised in 1944.

MICHIGAN

Michigan Trends

Year	Number Raised
1929	229,640
1934	109,650
1939	395,641
1944	466,486

Fig. 94. Number turkeys raised 1930 to 1945 by type of farming areas.



Summary of Livestock and Poultry Section

Nearly two-thirds of the farm income in Michigan is contributed by livestock and livestock products, with dairy products the largest single source of income. The majority of the livestock enterprises carried on in Michigan are breeding enterprises. Thus the risks encountered from price fluctuations are not so great as those encountered in non-breeding enterprises which tends to keep capital losses at a minimum therefore creating a more stable agriculture.

The leading livestock areas of Michigan correspond very closely to those areas which lead in the production of feed crops such as corn, oats, barley, wheat and soybeans. Thus it appears that in Michigan for an area to be successful in livestock production it must first be able to produce the necessary feed crops or a major portion required to sustain that livestock.

Several definite trends are noted in Michigan livestock production. Dairy cattle, beef cattle, poultry and turkeys have all been increasing in number while swine, sheep and horses have been decreasing in number. Livestock production as measured by egg production per layer, milk production per cow, and live weight production per beef cow has increased greatly. In addition there are indications that feeding efficiency has increased substantially and that improvements have been made in breeding.

Greater increases and improvements seem to have been made in livestock production than in crop production which was fairly constant until the last decade. It seems that in the future even greater improvements are possible in livestock production as more knowledge is acquired in feeding and breeding. Milk production per cow seems likely to increase as long as whole milk sales remain high. In the future more improvement can be expected from artificial breeding as it becomes more widely used.

CHAPTER V

INCOME

Theoretically the farm price reaches its maximum in the vicinity of the market where transportation expenses almost disappear, its minimum at the periphery of the trade area where the difficulties of marketing are greatest and its gradations are located concentrically around the market. It also follows that agricultural goods become more expensive as the market is approached, and that industrial goods are at a minimum in the market area and at a maximum where trade with the market stops. This price spread between the price of the product and the expense of producing the product is a determining factor in the optimum degree of farming intensity. Those areas nearest the market are likely to carry on intensive methods of farming and those farthest from the market extensive methods of farming.

The final result of this intensification is an increased land value which once originated, forces the maintenance of that intensity of farming, if the going rents and other costs are to be met. Also, the individual farmer in a given type of farming area must farm as intensively as the average farmer in order to pay going rents and costs.

The 1930, 1940 and 1945 censuses contained a figure representing the total value of farm products which was the value of farm products sold plus the value of farm products used by farm households. This figure gives an approximate

measure of gross farm income which is comparable for the above three censuses. This measure of gross farm income will differ somewhat from the gross farm income used by some states because it includes the value of farm products used by farm households, however other states include this figure in computing gross farm income.

A high farm income is necessary if farmers are to have electricity, water, modern homes and farm buildings, adequate machinery, adequate food and adequate medical care. Likewise those farms with high gross incomes are more likely to have higher net returns. It is therefore essential that if Michigan's farm families are to lead richer and fuller lives they must have high incomes.

Within Michigan there is a wide variance in gross income per farm from county to county (Figures 95, 96 and 97). The counties were divided into four quartiles on the basis of income. The first three quartiles each contain 21 counties and the last only 20 as there are only 83 counties in all.

In 1930 all of the high income counties were in the southern part of the state near the larger cities and in areas having the greatest percentage of first class land. But by 1945 several northern counties have appeared in the top income group while some southern counties have dropped out of the top group.

Several factors have probably been the cause of this. The increasing number of self-sufficient farms in some southern counties has tended to lower gross income per farm. From 1930 to 1945 Genesee County dropped from the top to the bottom group while the number of self-sufficient farms rapidly increased.

Three northern counties which were in the top income group in 1945, Leelanau, Grand Traverse and Oceana, are important fruit growing counties. In the fruit areas climate and price influence income much more than in other areas in Michigan. In addition the improvement that has taken place in Michigan roads would tend to facilitate marketing and place the northern part of the state in a better competitive position, particularly if volume increases.

In 1930 only 5.2 percent of Michigan's farms were classified as self-sufficient as compared to 17.6 percent in 1945. The percentage of some of the other leading farm classes in 1945 were Dairy 25.6, General 20.8, Crop 12.0, Livestock 8.6, Poultry 5.3, Fruit 4.1 and Vegetable farms 2.6

In 1945 two percent of the farms produced nothing while the upper 16 percent of the farms produced 52 percent of the farm products sold or used. The rapid increase of self-sufficient or subsistence farms in Michigan has

tended to widen the gap between the commercial and non-commercial farmer.

The future income received by Michigan farmers will depend upon several factors. Some of these factors are the size of population, level of employment, purchasing power that is available for consumers to buy farm products, potential volume of farm output, interregional competition in production of agricultural products by other states, and the rate of technological development in different states.

The population of the United States has been steadily increasing. Between 1919 and 1947 farm output per capita has increased by from 10 to 15 percent.[23] It appears that the shift from animal to mechanical power will rapidly proceed, but its affects on total output will diminish progressively as horse and mule numbers decline toward minimum levels. Increased output then will come largely from higher production per acre and per animal at a rate dependent upon new advances in technology.

Under conditions of prosperity a large volume of farm products might be marketed without heavy downward pressure on farm prices. Certain commodities such as wheat, cotton and potatoes are likely to remain out of balance in relation to their prospective market outlets. It appears that attempts

23/ Changes in Farming, p 56.

to reduce volume of output through production controls will be ineffectual, as other products could be substituted.

To reduce the total volume of agricultural output it is necessary to shift either capital, land or labor resources out of agriculture. Present indications are that an adequate supply of capital is needed for equipment and farm operations in order to achieve the most effective and efficient operation of the farm business. Too often the individual farmer has too little capital invested for an effective combination with the land and labor resources available.

Thus it appears that the only effective means by which the volume of output could be reduced is by a shift of workers from farming to other occupations. This could be accomplished only if non-farm employment is available for those who cannot find opportunities in agriculture. A movement of this kind would have the effect of decreasing the number of workers in agriculture and increasing the number of consumers of agriculture goods. Under conditions of depressed prices such a movement is very unlikely. During the depression of the early 30's a net landward movement occurred.

An outlet for farm products might be found in international trade. A large volume of exports would require the acceptance of goods and services in exchange. Michigan

farmers would then have to produce on a low cost basis in competition with other areas, and take and hold the lead in productive efficiency. Exports of non-farm products also help to create domestic employment and therefore increase the purchasing power for food and fiber.

Only through abundant and profitable production can farmers make full economic use of their resources. The nature of farm costs makes abundant production the most profitable use of their resources by individual farmers. Even when prices go down as a result of higher production the farmers who use the technological improvements have the protection of larger output and lower unit costs. It is the farmers who cannot take advantage of cost reducing improvements who will have lower incomes if the price goes down because of a larger output.

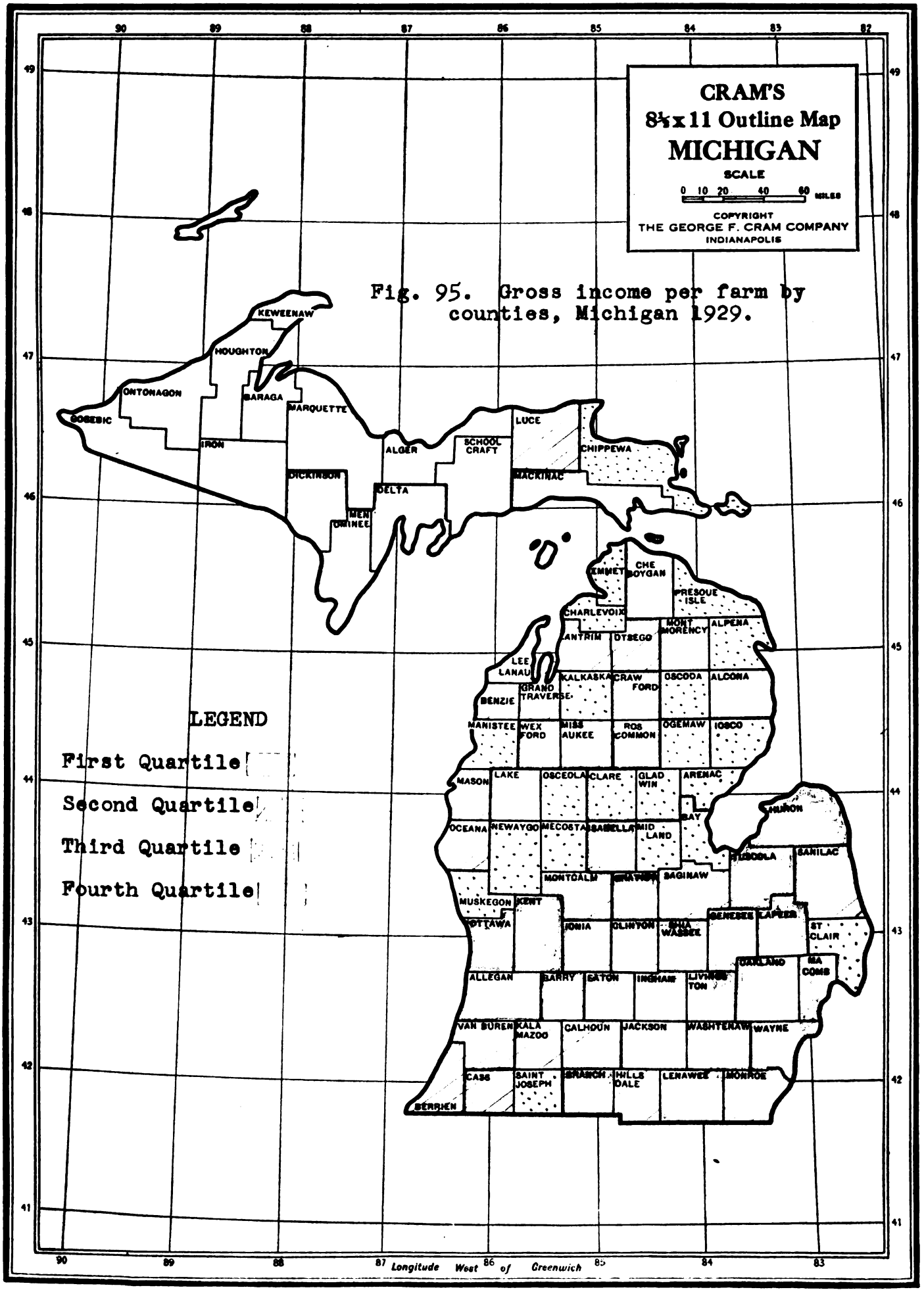


Fig. 95. Gross income per farm by counties, Michigan 1929.

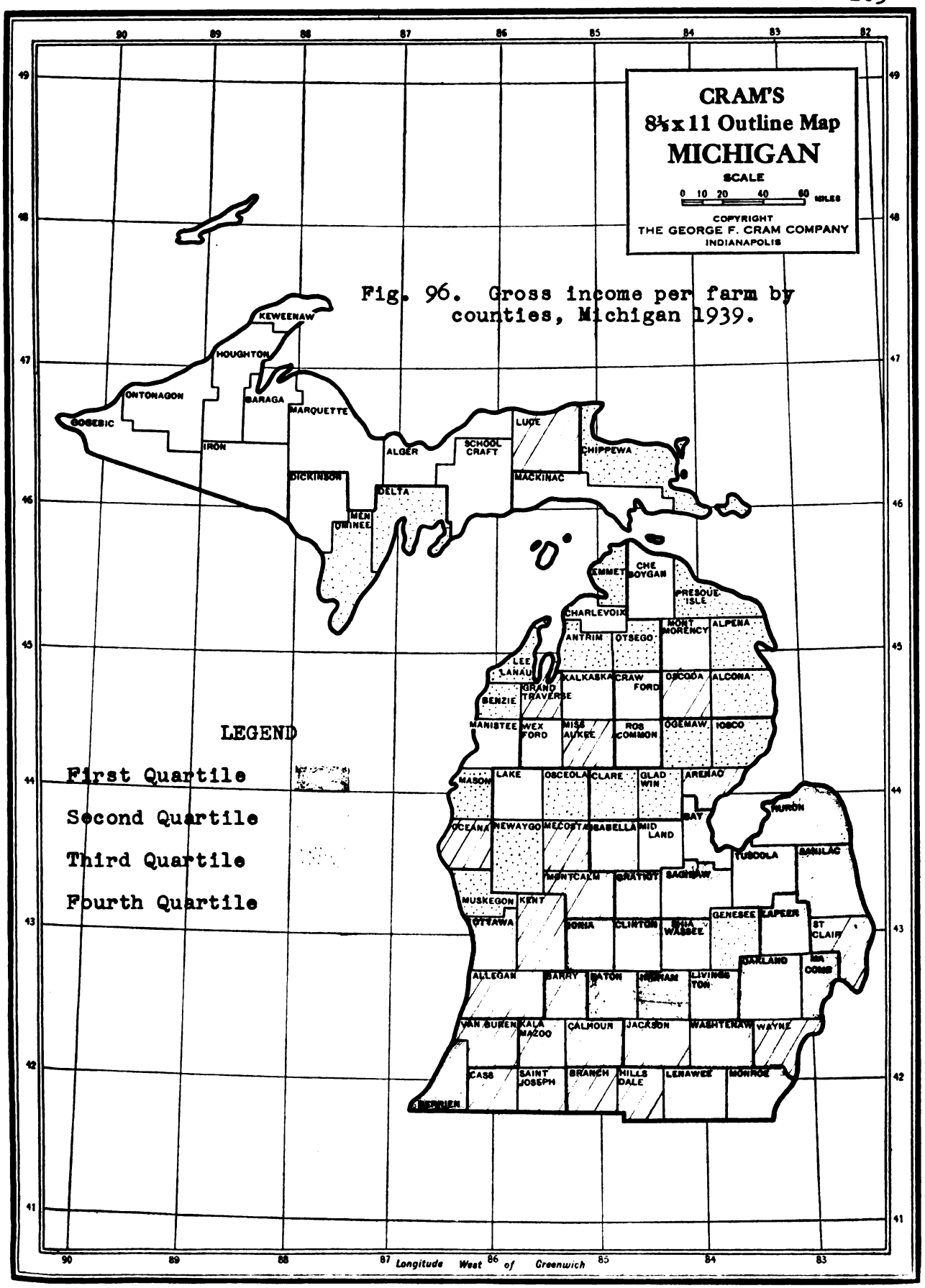


Fig. 96. Gross income per farm by counties, Michigan 1939.

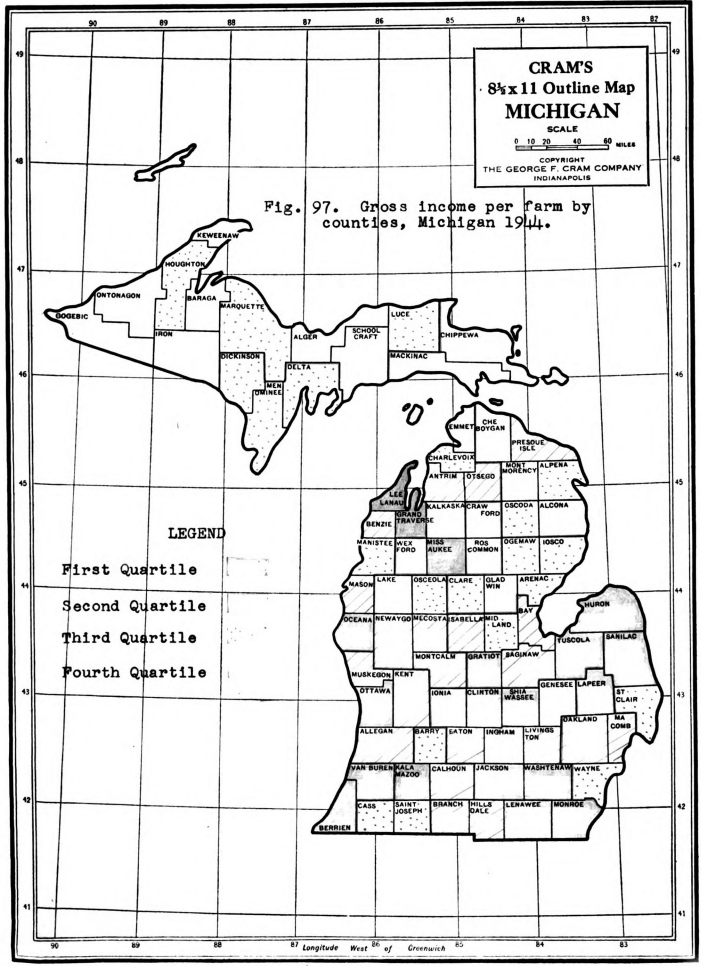


Fig. 97. Gross income per farm by counties, Michigan 1944.

CHAPTER VI

Area Trends

In order to facilitate and simplify the summary of Michigan's 17 different type of farming areas, the state has been divided into 3 regions as shown in Figure 98. The first of these regions includes type of farming areas 1 to 8 inclusive and is that part of southern Michigan below a line from Bay City to Muskegon. Region 2 is the northern part of the lower peninsula and includes type of farming areas 9 to 14 inclusive. Region 3 is the upper peninsula and includes type of farming areas 15, 16 and 17.

Region 1

The southern half of the lower peninsula contains the greatest amount of first class farming land in the state and consequently most of the agriculture in the state is located in this region. It contains almost all the acreage of corn, sugar beets, soybeans, beans and grapes grown in Michigan. This is the oldest agricultural area in the state, thus one notes that acreages of many crops have decreased such as hay, wheat, rye, potatoes and buckwheat. Of the livestock enterprises only cattle, both dairy and beef, and poultry have shown an increase.

This is an indication of two things, first farms are becoming more specialized and secondly the rapid growth of urban areas has enroached upon the agricultural land. Since 1930 the type of farming carried on in many of the counties has changed considerably. By 1945 self-sufficient farms were the predominating type in Cass, Genesee, Wayne, Macomb, Oakland, and Midland Counties. There were a large number of self-sufficient farms in several other counties including Monroe, Barry, Kalamazoo, Berrien, Kent, Ottawa, Muskegon, Eaton, Ingham, Jackson, Livingston, Lapeer, St. Clair and Saginaw Counties. In a period of low farm prices and industrial unemployment these self-sufficient farms would be in a very unfavorable position due to extremely low income and could present a serious problem in the affected areas.

All kinds of fruit have been decreasing in this region except in Type of Farming Area 3 where increases are noted. There is both a trend toward diversification in the commercial fruit area and a trend away from fruit production on general farms in non-commercial areas.

In general this region is favored by several advantageous factors, among these are the nearness to markets, large percentage of good agricultural land and the wide selection of crops that can be grown.

Region 2

This northern part of lower Michigan presents many different problems than the southern part of the state. This region contains no large cities and has a very high percentage of poor land.

The number of cherry trees has increased greatly in the counties of Grand Traverse, Leelanau, Benzie, Antrim and Charlevoix until now this is one of the leading cherry producing sections in the United States. Dairying has also increased making it the leading type of farming in the majority of these northern counties. Self-sufficient farms are predominant only in Benzie, Emmet and Crawford Counties.

The development of good roads has greatly aided this region by bringing the farms closer to market and making the region more accessible to tourists. The increased number of tourists greatly increases the size of the local markets.

Any further agricultural expansion is most likely to occur in cattle, poultry or special vegetable crops such as beans, peas, or sweet corn. The large area of forest land will prohibit any large scale development of agriculture in this region, mainly because the best economic use of a great part of this land appears to be in forests.

Region 3

Agriculture in the Upper Peninsula still remains in a pioneering stage. There are three distinct agricultural developments separated by vast acreages of forest and cut over land. These are located in Chippewa and eastern Mackinac Counties, Houghton and Ontonagon, and Menominee and Delta Counties. There are other scattered agricultural areas that have developed around mining or lumbering enterprises.

The overall agriculture of this region is increasing in size. The numbers of almost all classes of livestock except horses have been increasing as has the acreage of most crops. However the development of agriculture received a serious setback in the 1930's when non-farm employment soared to new heights. Only in recent years has it regained the losses suffered then. Self-sufficient farms are predominant in only Luce and Schoolcraft Counties.

The future of agriculture in this region depends very largely upon future markets. Any improvement in transportation will tend to improve the competitive position of the region, with other parts of the state. The ever growing number of tourists are an added incentive to local markets. It appears very likely that the population will not decrease and may very well increase in the future particularly if any new industries are developed in the

region. Thus one can look forward to an expansion of agriculture in those undeveloped areas having suitable agricultural land. However it is very unlikely that agriculture will ever develop to the stage reached in southern Michigan due to the large aggregate area of forest land, cut over land and swamp land. This type of land is more suited to recreation and forestry and should be utilized for these enterprises.

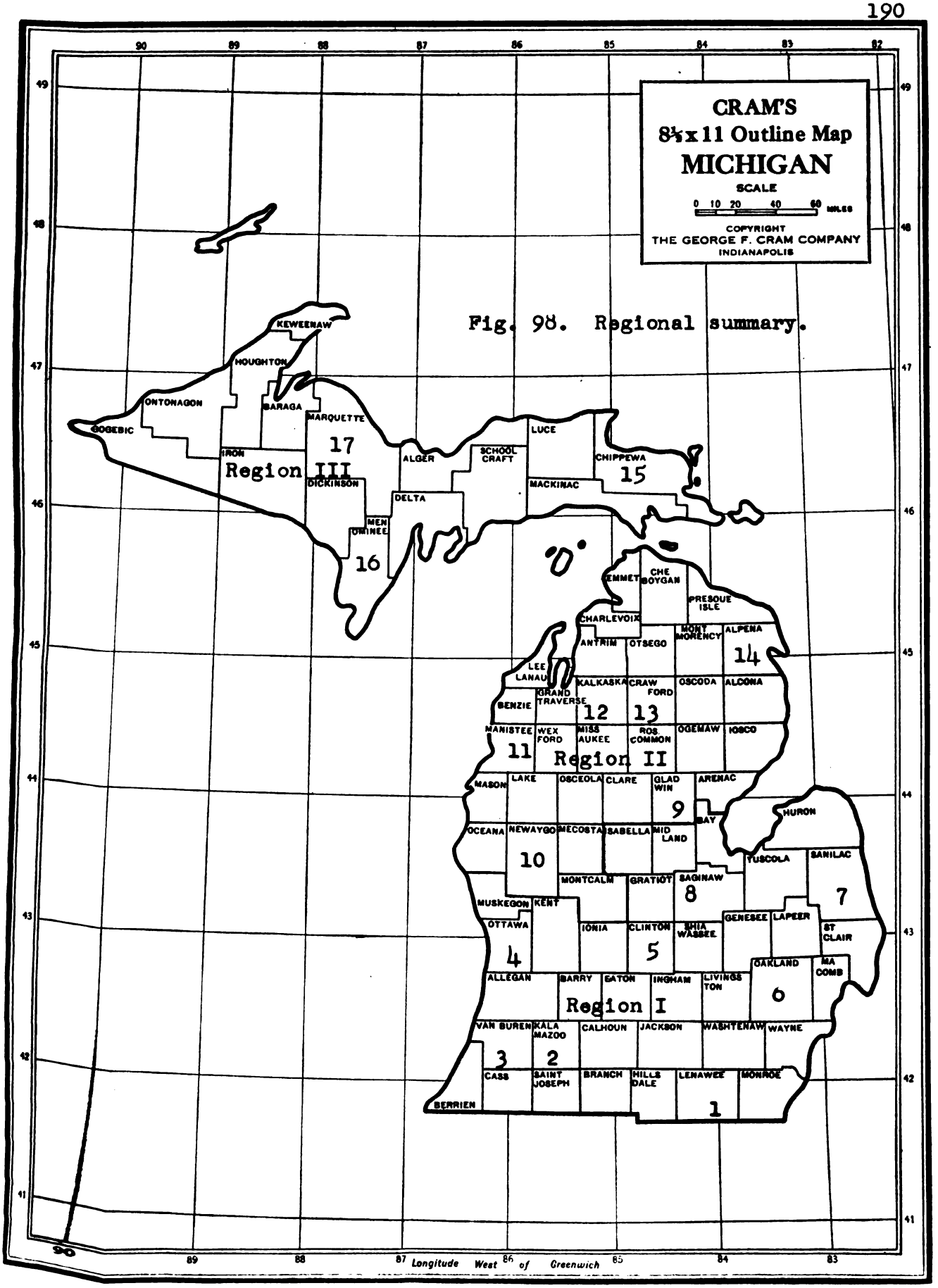


Fig. 98. Regional summary.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Diversity is the one characteristic that best describes Michigan's agriculture. There is no sharp line between diversification and specialization in Michigan agriculture. Very few Michigan farms depend on a single source of income or a single product, even the specialized fruit farms generally have several kinds and varieties of fruit. Thus there is a greater variance in the degree of diversification than there is between the diversified or specialized farm.

The causes of this great diversity in Michigan agriculture are many and varied. Climate, topography, soil types, markets, and economic conditions have all contributed to this diversity. In addition, Michigan is very much different from other states in that it is composed of two peninsulas which adds greatly to transportation problems. Michigan farmers are probably less influenced by what neighboring states are doing because of this isolation.

Agricultural production is influenced both indirectly and directly by changes in technique. Indirectly because agriculture participates in the improvements that originate in other fields of the national economy and directly in that agriculture develops better techniques. Every

improvement once it is made either increases output or decreases production costs. It can then be stated that a yield-increasing-improvement tends to strengthen the competitive portion of areas close to the market; while an improvement which reduces transportation costs strengthens the competitive portion of the areas far from the market.

Developments in farm mechanization such as the increase in tractors, combines, corn pickers, field balers, milking machines and the shift from steel to rubber tires have had a marked influence on Michigan agriculture. This increase in labor-saving machines means that the farmer is able to handle more land and livestock in the same amount of time, with the result that the progressive farmers buy or rent more land in order to utilize more fully these machines and reduce the investment per acre. One would then expect the commercial farms to become larger in size and fewer in number. A greater difference between the commercial and subsistence farm then becomes apparent. There are many indications that this is now happening in Michigan. As more machines become available this difference will become greater for the smaller farm is at a greater disadvantage as these technological changes take place.

If Michigan industry continues to expand or if there should be a trend toward decentralization of industry creating more non-farm work, then the number of part-time and subsistence farms would probably tend to increase.

As this trend toward fewer and larger farms and fewer farm workers continues, it creates a problem of what to do with the displaced farm workers. Most of these will have to be absorbed in industry and more farm youths will have to train for other positions. Those who do not secure adequate training or do not have the ability needed for successful farm management will be at a serious disadvantage.

Operators of small full-time farms will have the greatest difficulty in adopting new machinery and techniques. They will have a much better chance of becoming successful if they develop specialty lines which would enable them to compete with the larger family farms.

Most of the improvement and increase in production that took place in Michigan crops before 1940 came about through the introduction of new crops rather than through the improvement of the original crops. Since 1940 almost all crops have shown increases in yields. This may have been the result of soil conservation practices started in the 30's, the use of more fertilizer, the use of improved varieties, favorable weather, or the shift of production to the most favorable area. Probably all of these factors have had an effect on the increase in yields.

Through a combination of using better breeding animals, feeding methods, sanitation and other improved practices farmers have made great improvements in livestock

production. Greater improvement can be expected in the future, for the farmer has a greater number of factors under his control. The weather is still a major factor in crop production but is of much less importance in livestock production. If livestock improvement districts were organized in the same manner as soil conservation districts even greater improvement in livestock production could be achieved.

The future Michigan commercial farm will be larger with a high investment in labor-saving machines. It will require a well-informed operator with the knowledge and ability to manage a highly complex business.

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