Developments in Oklahoma's Agriculture

A Narrative and Graphic Summary With Some Projections to 1970

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NOTE ON INTERPRETATION OF CHARTS BASED UPON U. S. CENSUS DATA

The charts in this publication containing U. S. Census data need care in interpretation. For the sake of consistency, data for all these charts are plotted on the census years: 1925, 1930, 1935, 1940, 1945, 1950 and 1954. Data pertaining to livestock numbers, land acreages, land values, population, and other information census takers could enumerate as applicable to the census year, are depicted correctly by the years specified on the charts. Data pertaining to crop acreages and incomes apply to the years immediately preceeding the census years except in 1954. Crop acreages, farm sales, and farm income estimates for the 1954 census apply to 1954.

Developments in Oklahoma's Agriculture: A Narrative and Graphic Summary With Some Projections to 1970

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Foreword

Large and numerous changes have taken place in Oklahoma's agriculture and in the economy of the state during the past two or three decades. Since 1940, in particular, Oklahoma has experienced a rapid decline in the number of people engaged in farming and a rapid increase in the number of people employed in non-farming occupations. Further shifting of people from farming to non-farm occupations may be expected. Major developments within agriculture have accompanied this transition in the structure of Oklahoma's economy. Acreage per farm has about doubled in the past 30 years, and capital requirements of farmers have more than doubled. A major shift in emphasis from crop to livestock farming has been one of the more significant developments. Continuation of some of the major trends is probable.

This publication presents these trends with some projections to 1970. It is designed to make available to agricultural and other leaders the basic developments in Oklahoma's agriculture, how these developments relate to general economic progress in the state, and what we may expect in the future.

Statistical data from the United States Census Reports, Agricultural Statistics, and other source materials of the United

* The author wishes to acknowledge the helpful suggestions of the staff in Agricultural Economics in developing the data for this report and in preparing the manuscript. In particular, he wishes to acknowledge the assistance of G. P. Collins, Associate Professor of Agricultural Economics, and Gerhard Neufeld, statistical aid of the Department, in compiling the data upon which this report is based.

States Department of Agriculture, were used in compiling this information. A limitation in the information arises from the fact that some United States census data are available only for each fifth year and some only for every tenth year. Trends based upon these reports may not be as accurate as others which are based upon annual data.

Many readers will require only a knowledge of general trends and relationships rather than the detailed statistics from which the trends are derived. Therefore, this publication presents only the graphic and interpretative summaries of the developments. However, detailed tabulated data on which these summaries are based may be obtained by request from the Department of Agricultural Economics, Oklahoma State University, Stillwater, Oklahoma.

Developments in Farm Technology

Farming no longer can be viewed as an occupation that will yield a good living irrespective of the farm family's resources, know-how, and business ability. Today's farm is a complex business. Technical advances in farming primarily are responsible for this change. By technological advance, we mean improvements in farm machinery and other farm capital, increased knowledge on how to produce livestock and crops and how to manage farm resources. In short, it is the application of science to farming and to other industries which serve agriculture.

Many advances in farming require additional capital outlays. Machinery, irrigation, and fertilizers are examples of advances requiring additional farm investments and operating capital. Farmer adoption of these kinds of technical advances are more pronounced in periods of high farm incomes. This is a major reason for a greater adoption rate of new technology in the past 10 to 15 years than in the depression years of the 30's. Advances which require little or no additional farm

capital also are made at a greater rate during periods of farmer prosperity. At such times, with wider margins for profit, the use of improved crop varieties, improved strains of livestock, or improved feeding practices, all offer monetary advantages which may be less pronounced during periods of relatively low farm prices. The charts to follow will reflect this pattern in farmer adoption of new technology.

Adoption of new technologies by farmers benefits the total economy of the state. These benefits accrue from increased production per unit of resources used in farming, from a reduction in the number of people needed to manage our agricultural resources, and from the consequent availability of more rural people for other productive work. Realization of the benefits of technological advance depends to a large extent upon the development of non-farm job opportunities in the State and elsewhere. As the excess farm population shifts to non-farm jobs, or to part-time farming, the market for farm products is increased, cost per unit of farm output is decreased, the individual farmer's share of the total agricultural income is increased, and the resources and market for non-agricultural industries are increased.

The charts to follow indicate some of the major trends in farm machinery and power, irrigation, use of fertilizers and lime, size of farm businesses and other factors indicative of the technological change and consequences of this change on Oklahoma's agriculture.

Chart 1. Displacement of horses and mules with tractor power, Oklahoma, 1930-1954.

This chart shows a decline in horses and mules on Oklahoma farms from about 800,000 in 1930, to near 100,000 in 1954. This represents a decline from about four horses or mules per farm in 1930 to less than one per farm in 1954. In this same period, farm tractors in the state increased from about 25,000 or one in eight farms, to more than 100,000 or about nine per ten farms. This is one of the more pronounced indicators of farm mechanization, one aspect of farm technological advance.

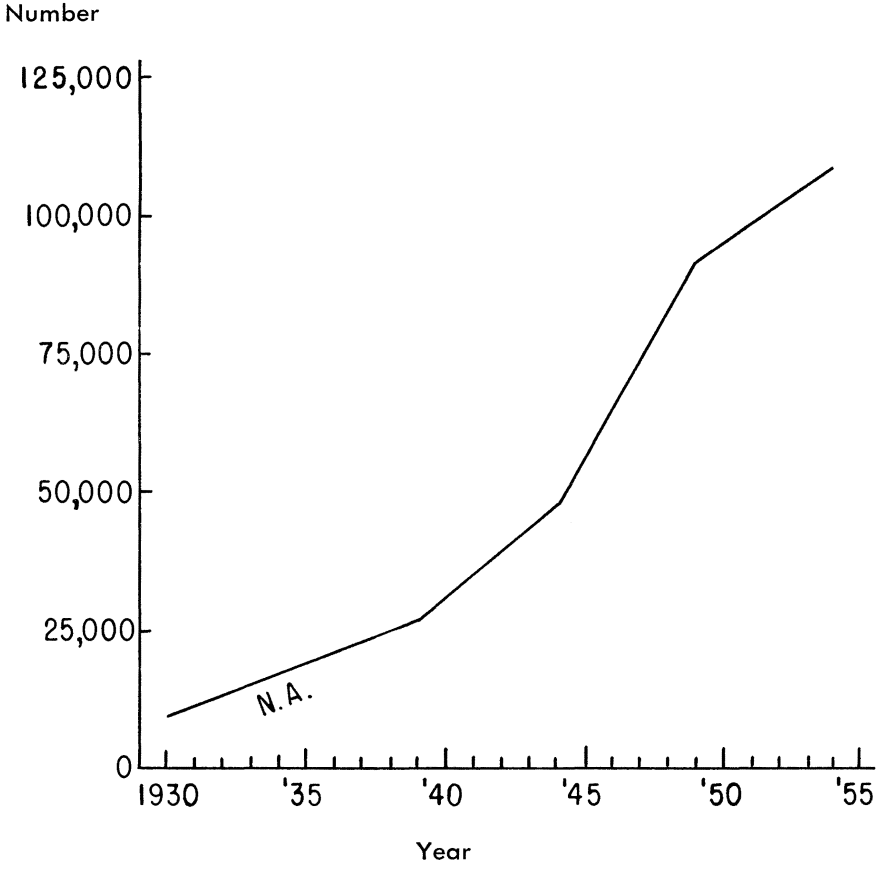


Chart 2. Number of farms in Oklahoma reporting use of electricity, 1930-1954.

Electricity is an important source of farm power as well as an item in family consumption. Less than 10,000 farms in the state in 1930 reported having electrical service, whereas, more than 100,000 or about 90 percent of the farms had electricity in 1954.

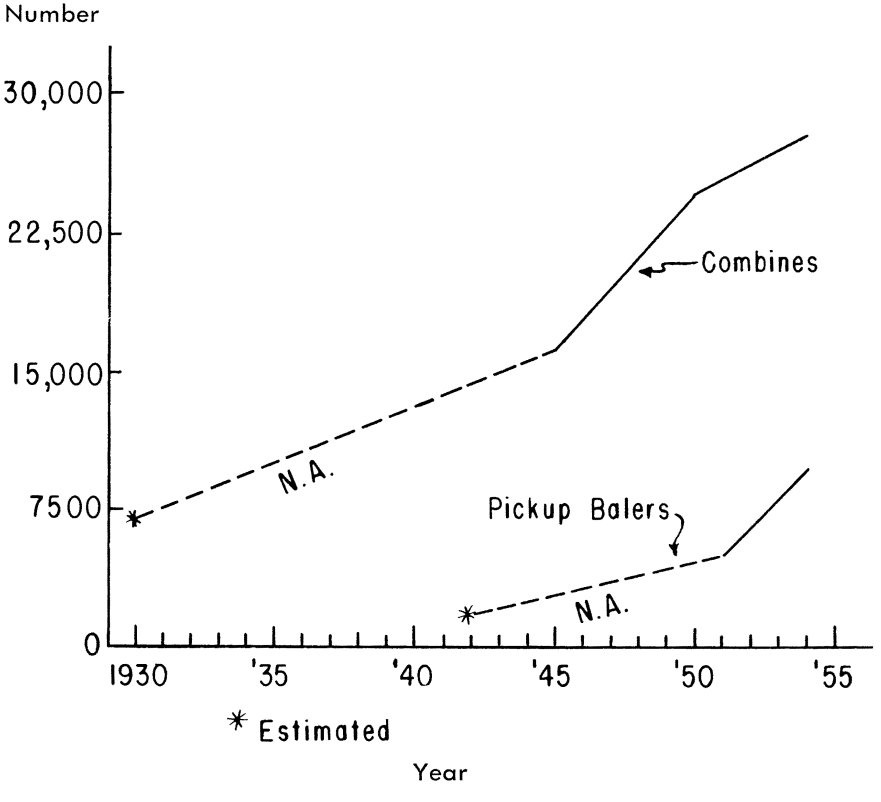


Chart 3. Number of combines and pickup hay balers on Oklahoma farms, 1930-1954.

This chart shows how two of our more important items in farmers' machinery inventories have increased, particularly since 1940. In 1954 there were about one combine per four farms and one hay baler per ten farms. Data were not available on the number of balers on Oklahoma farms prior to 1942, or the number of combines for the 1935 and 1940 census years.

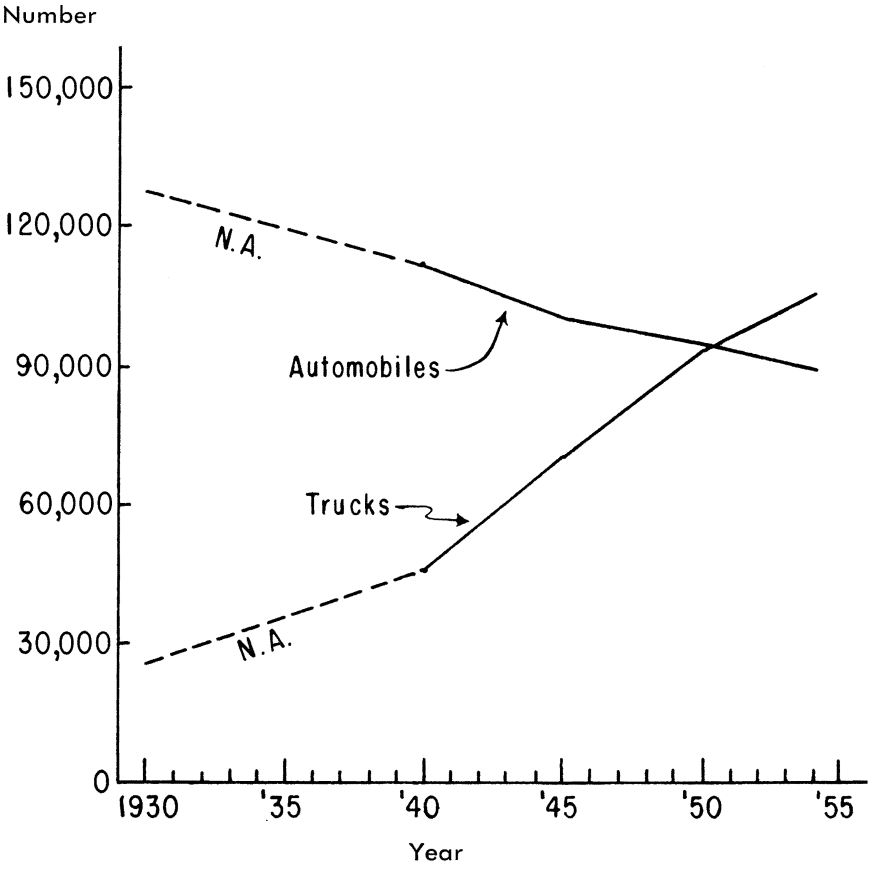


Chart 4. Number of trucks and automobiles on Oklahoma farms, 1930-1954.

Trucks and automobiles are sources of power for transporting farm products and farm production supplies on the farm and to and from market, and for farm family transportation. Trucks on Oklahoma farms have more than tripled since 1930. The total number of automobiles has declined, but because of the decrease in the number of farms, automobiles per farm have increased by about 50 percent.

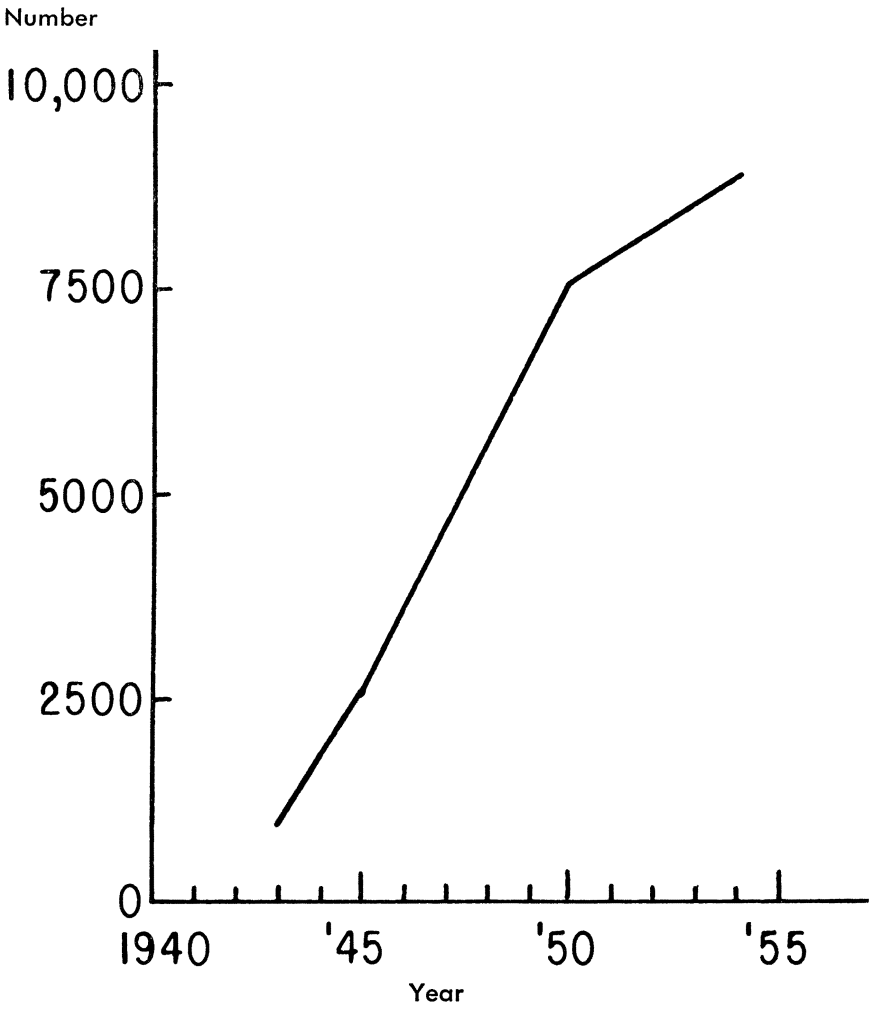


Chart 5. Number of farms in Oklahoma reporting milking machines, 1940-1954.

One of the biggest labor savers on dairy farms is the milking machine. Dairy farms adopting this technological improvement increased from about 1,000 in 1942 to nearly 9,000 in 1954. This took place during a period when the number of dairy cows and heifers in the state declined by more than 50 percent (see chart 26).

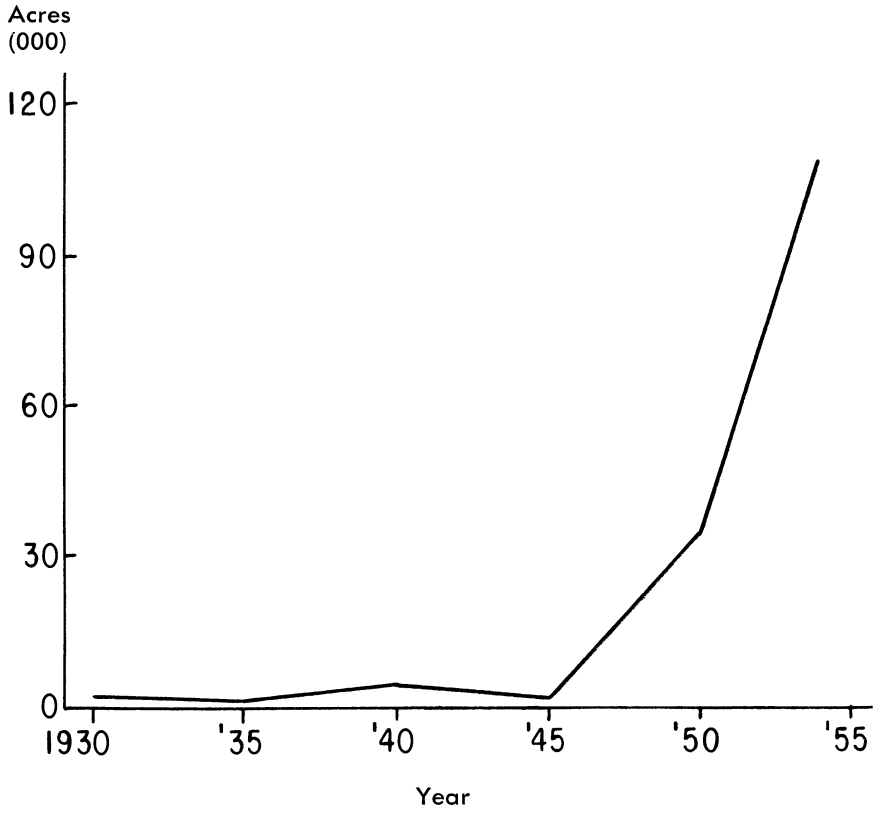


Chart 6. Acres of irrigated land in Oklahoma, 1930-1954.

A very promising development within Oklahoma's agriculture is the large increase in number of acres irrigated since 1945. Water is a major limiting factor in agricultural production, but this limitation can be reduced in Oklahoma with further developments in irrigation. The 105,000 acres irrigated in 1954, however, is but a small fraction of the State's total agricultural land, and much development and conservation of water resources will be needed if the increase in number of acres irrigated is to continue at the rate of the past decade.

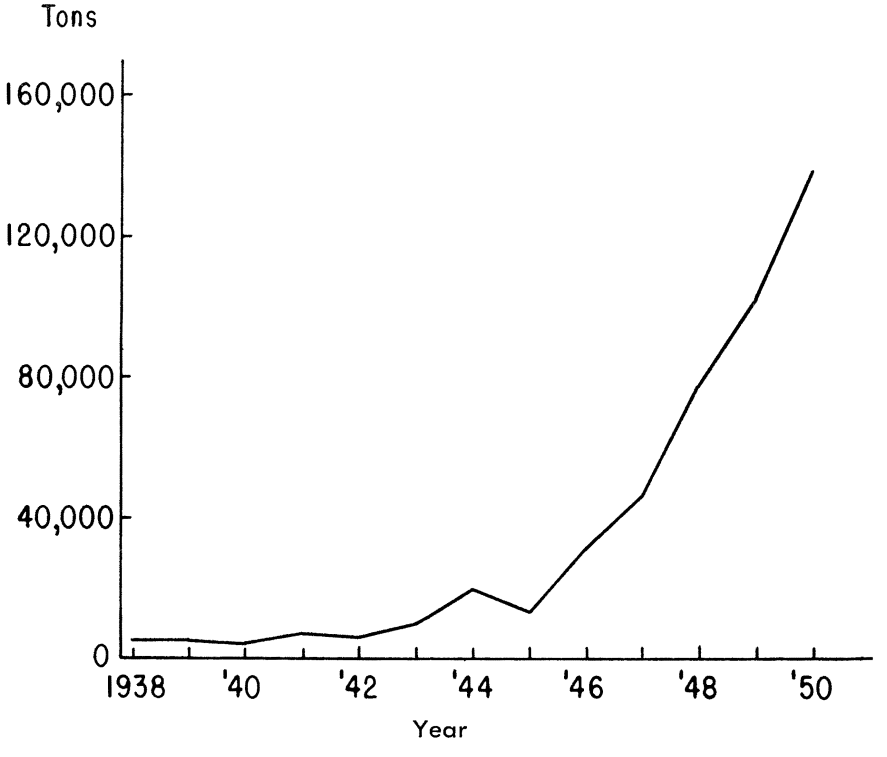


Chart 7. Tons of fertilizer applied on Oklahoma farm land, 1938-1950.

There was about a ten-fold increase in the usage of fertilizer on Oklahoma farms from 1945 to 1950. Prior to 1944, less than three pounds of fertilizer per cropland acre annually was used by Oklahoma farmers. In 1950, fertilizer usage was at the rate of 25 pounds per cropland acre, and, since 1950, there have been some further increases in fertilizer use.

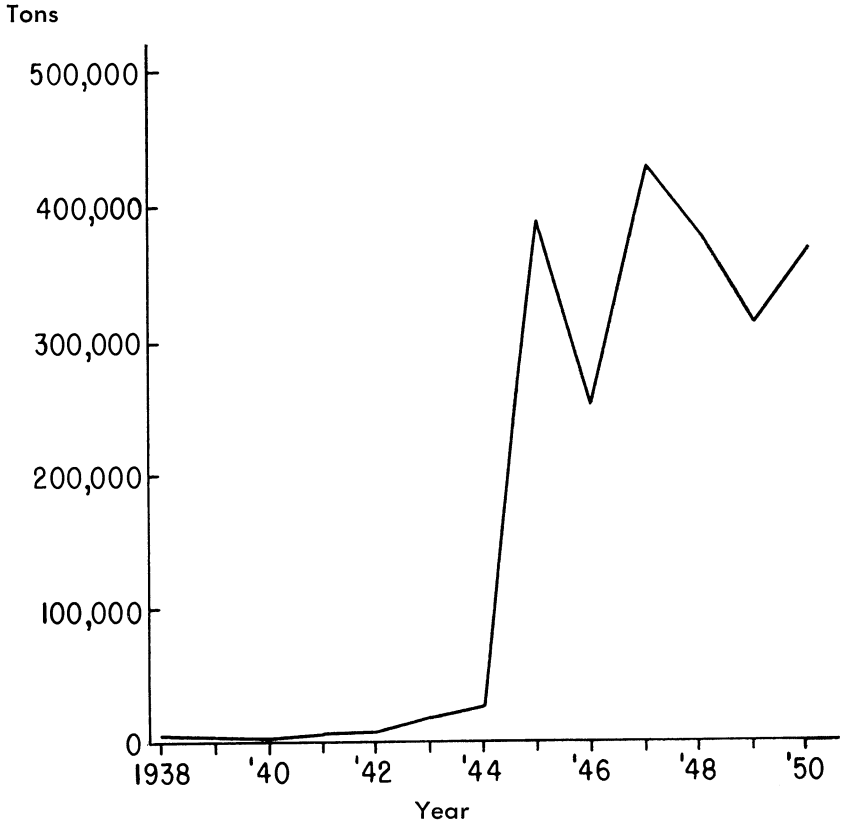


Chart 8. Limestone applied on Oklahoma farms through the ASC program, 1938-1950.

This chart shows the pattern of limestone usage by farmers in the state through the ASC program only. As in the case of fertilizer, usage of lime increased markedly in the period, 1945-1950. The increase in acreage of the legume crops requiring lime is partly responsible for this rise in lime usage.

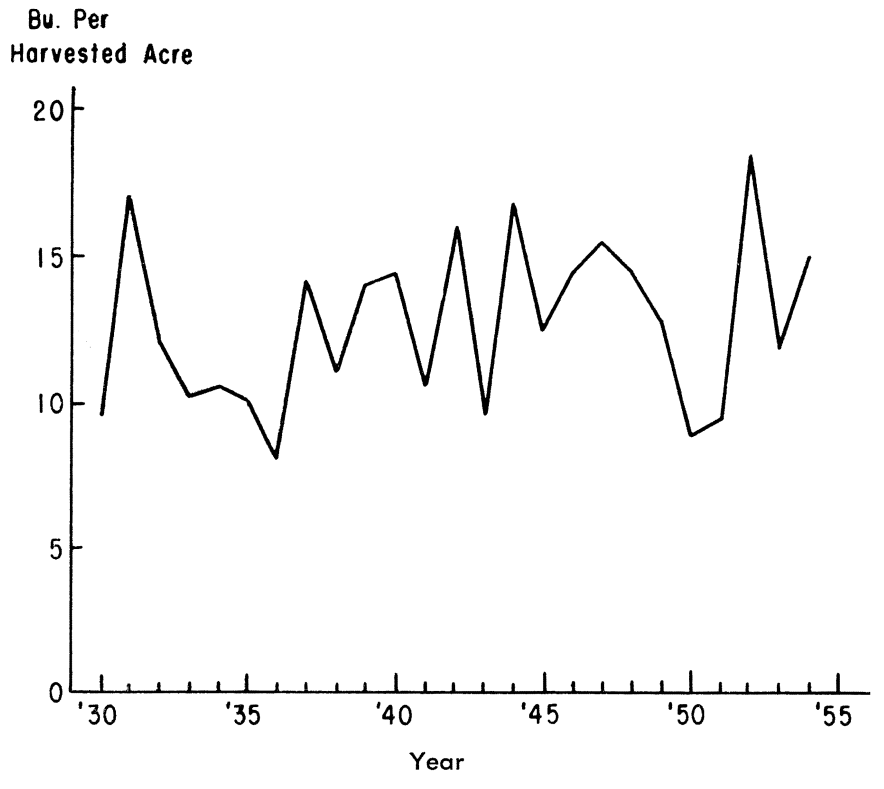


Chart 9. Trend in yield of wheat per acre, Oklahoma, 1930-1954.

One expected consequence of technological change is increased yields of crops per acre. However, the entire effect of technical advance on crop yields does not show up in the yield trends for three major reasons: (1) depletion in the capacity of our soils to sustain crop yields during long periods of time without remedial soil management measures, (2) a sequence of low moisture years in the latter years of our trend analysis and in the mid-thirties, and (3) the shifting of crops to land of different productivity as acreage adjustments have taken place. In spite of these factors, a slight upward trend in wheat yields per acre in the state can be noted.

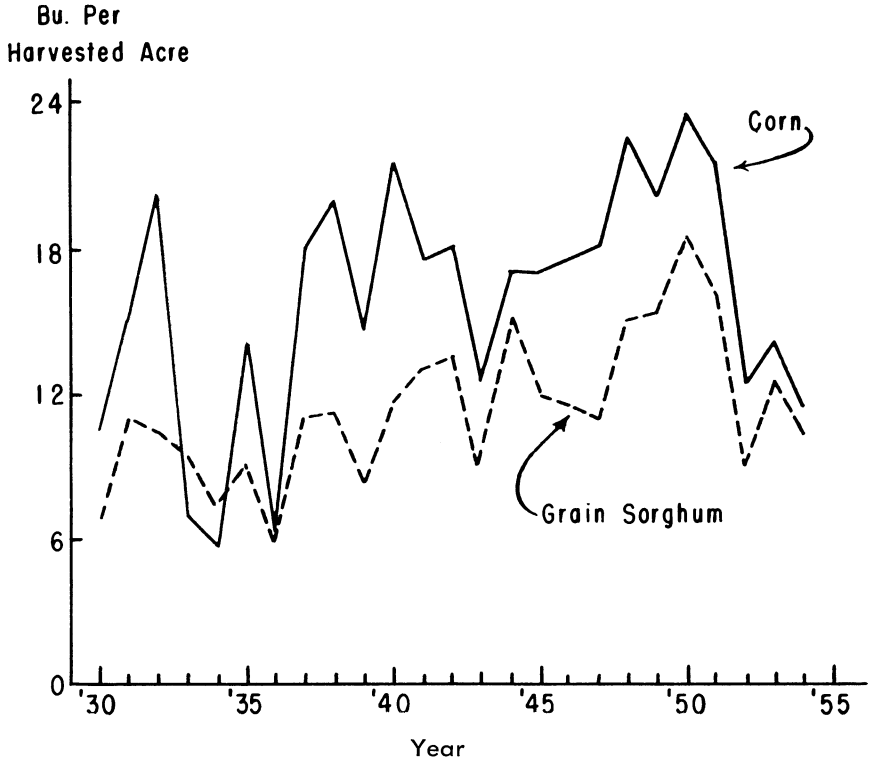


Chart 10. Trends in yields of grain sorghum and corn, Oklahoma, 1930-1954.

There has been a definite upward trend in grain sorghum yields since 1930, although the low moisture conditions brought about a downturn after 1951. A similar increase in yields per acre can be noted for corn, although there is more variability in year to year corn yields than in sorghum yields.

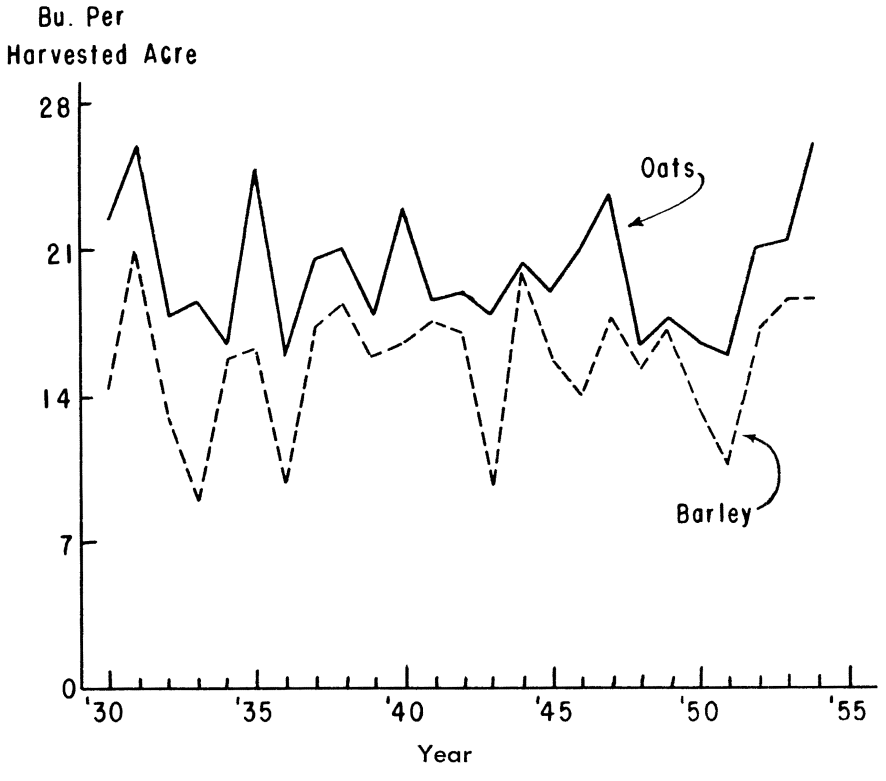


Chart 11. Trends in yields of oats and barley, Oklahoma, 1930-1954.

No definite upward or downward trends can be noted in oat or barley yields per acre during the past 30 years. Yields of both crops have increased since 1950, during years of unfavorable moisture conditions, and this could be due to the shifting of the acreage of these crops to more productive land.

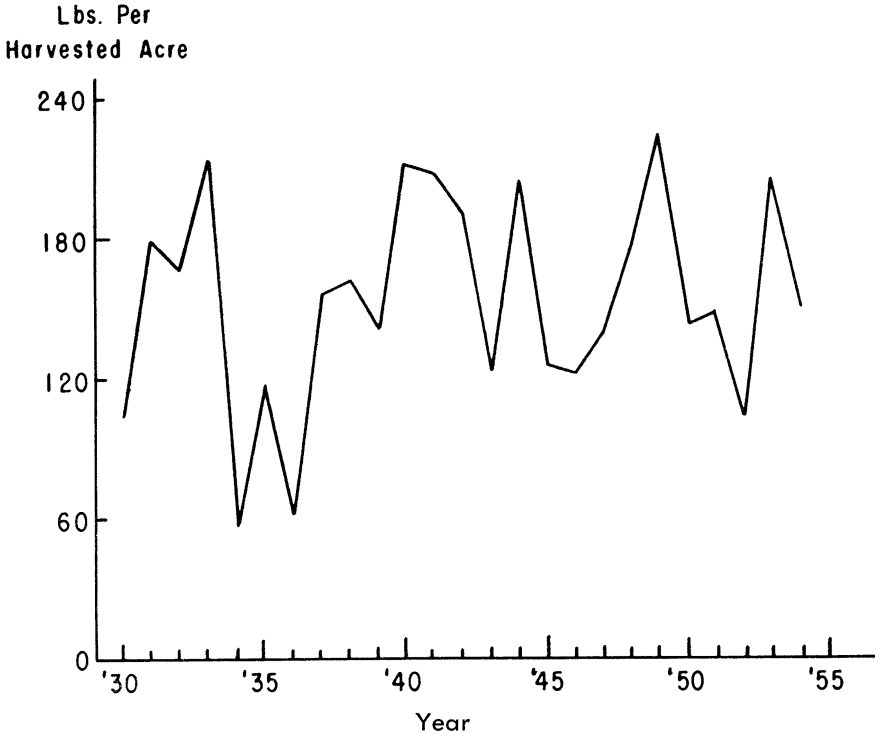


Chart 12. Trends in yields of cotton, Oklahoma, 1930-1954.

Yield per acre of cotton for the state remained about constant despite the reduction in acreage permitting the growing of this crop on more productive land. Large year-to-year variation in cotton yields may be submerging some yield trends. Also, mechanization in cotton production may have little effect on yield, but it has reduced production costs.

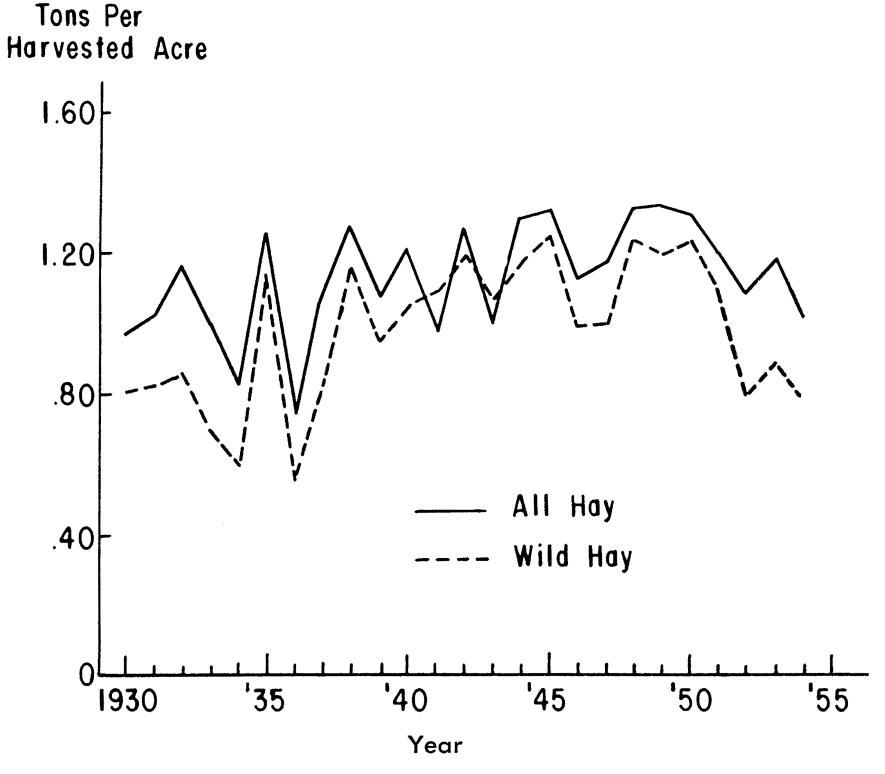


Chart 13. Trends in yields of all hay and wild hay, Oklahoma, 1930-1954.

With the exception of the low moisture years since 1951, hay yields in the state have increased since 1930. Substitution of tame for wild hay has been partly responsible for this increase. Retarding factors on hay yield increases have been the large increase in hay acreage, which involves a larger proportion of hay acreage on less productive land, and the increase in acreage of alfalfa harvested for seed, which reduces the number of hay cuttings per year.

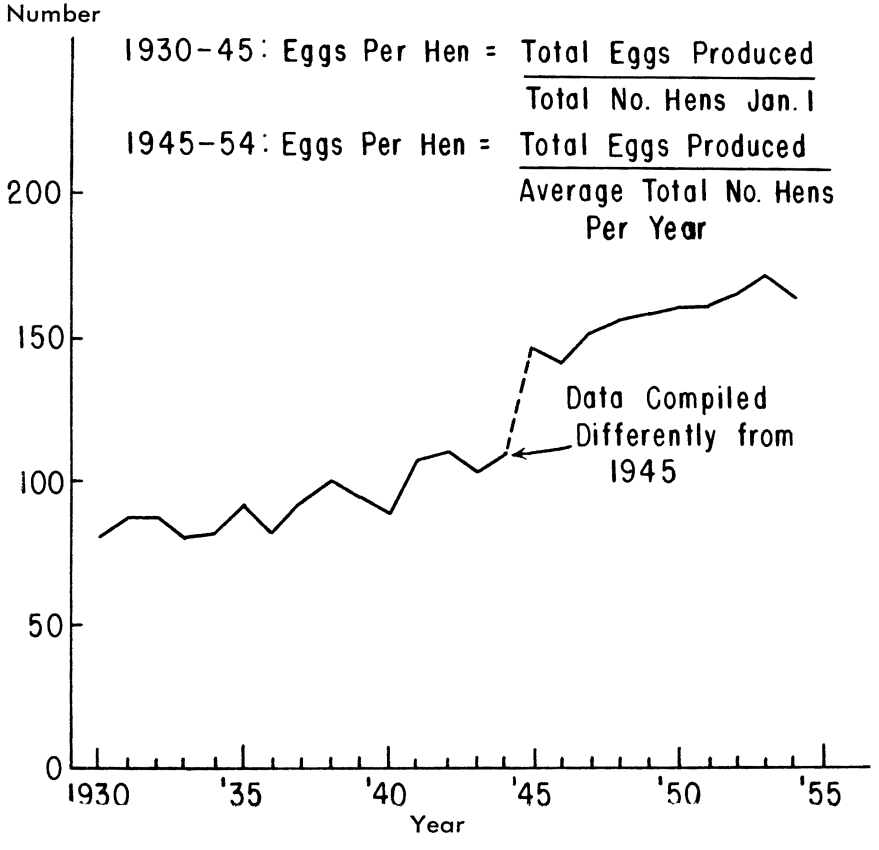


Chart 14. Trends in production of eggs per hen, Oklahoma, 1930-1954.

Data are inadequate for depicting effects of technological developments in livestock production as has been done for crop production. However, one indicator of change in productivity in livestock production is the change in production of eggs per hen in the state since 1930. Even though there was a change in the method of figuring egg production per hen after 1945 (see chart), the upward trend has been quite significant. This has been due mainly to three developments: (1) improvements in feeds and feeding, (2) shift from a poultry economy of small farm flocks to a large number of commercial-sized, laying flocks which are better housed and managed, and (3) improvement in breeds and strains of hens for egg production.

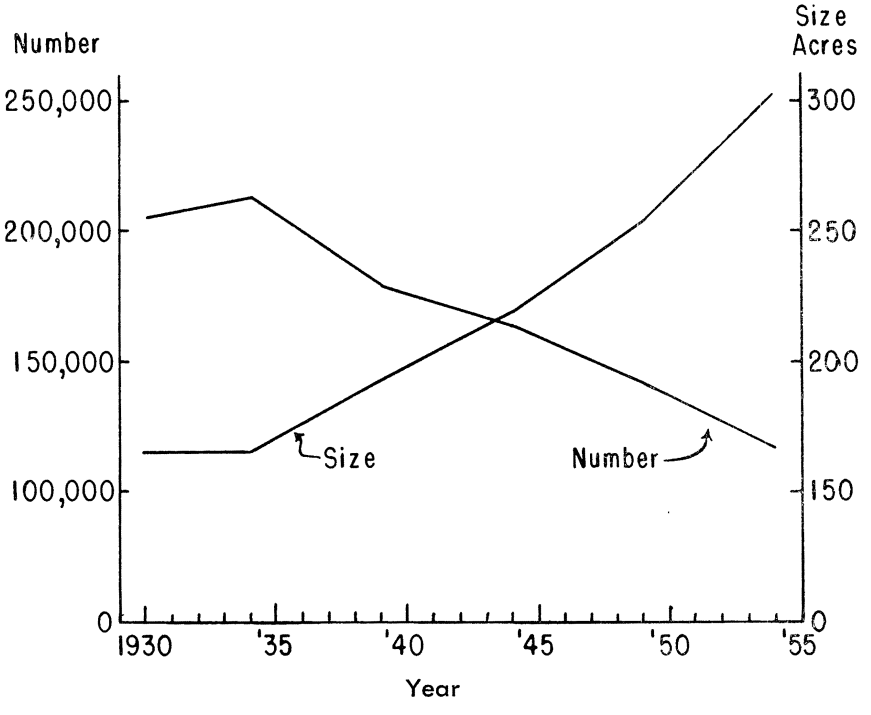


Chart 15. Trends in number of sizes of farms, Oklahoma, 1930-1954.

As stated earlier, the increased application of science in farming has the effects of increasing the size of farms, decreasing the number of farms, decreasing the number of people in agriculture, and decreasing the number of people employed in agriculture relative to the total labor force. The next few charts show these trends. Changes in size of farm and number of farms in the state are inversely related. While the number of farms decreased from a peak of about 210,000 in 1935 to 118,000 in 1954, the size increased from 165 acres to about 300 acres per farm.

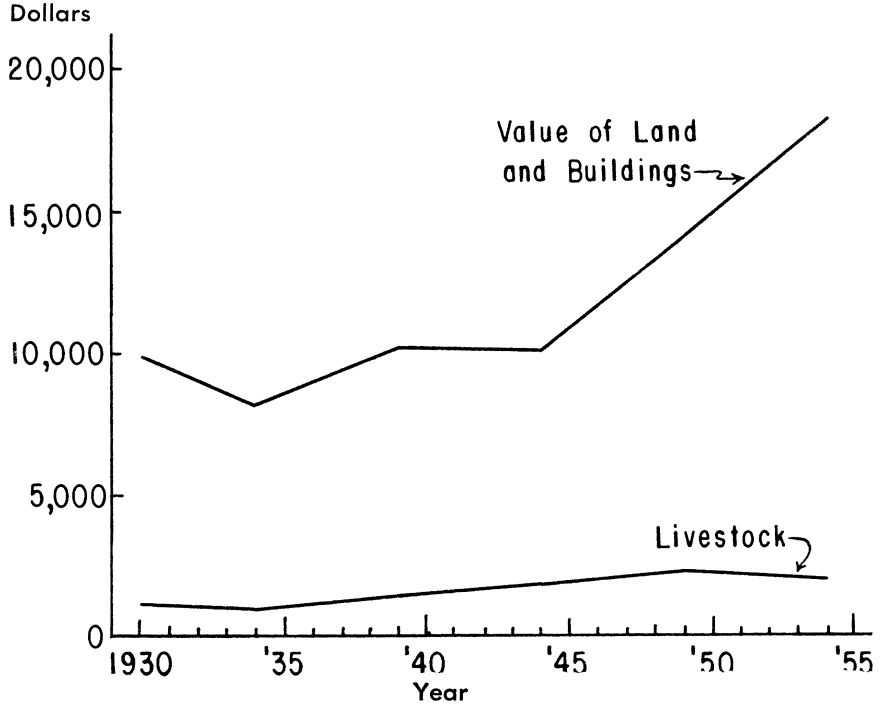


Chart 16. Trends in value of real estate and livestock per farm, Oklahoma, 1930-1954 (adjusted to 1949-54 value of the dollar).

The current capital requirements for entry into farming in Oklahoma provide a barrier to many who desire to farm. Capital invested in machinery was not included in this graph because data on value of machinery on Oklahoma farms were not available after 1945. However, the increase in the amount of machinery since 1945 shown on earlier graphs indicates a substantial addition to the capital investment per farm. The investment in livestock declined after 1949 due to the drop in livestock prices, but land investment per farm continued to increase. Although capital requirements for farming have increased, the percentage of farm operators who own their farms also has increased. In 1935, about 30 percent of Oklahoma farm operators were owners; in 1945 about half were owners; by 1954, two-thirds of the farmers in the State owned the land they operated.

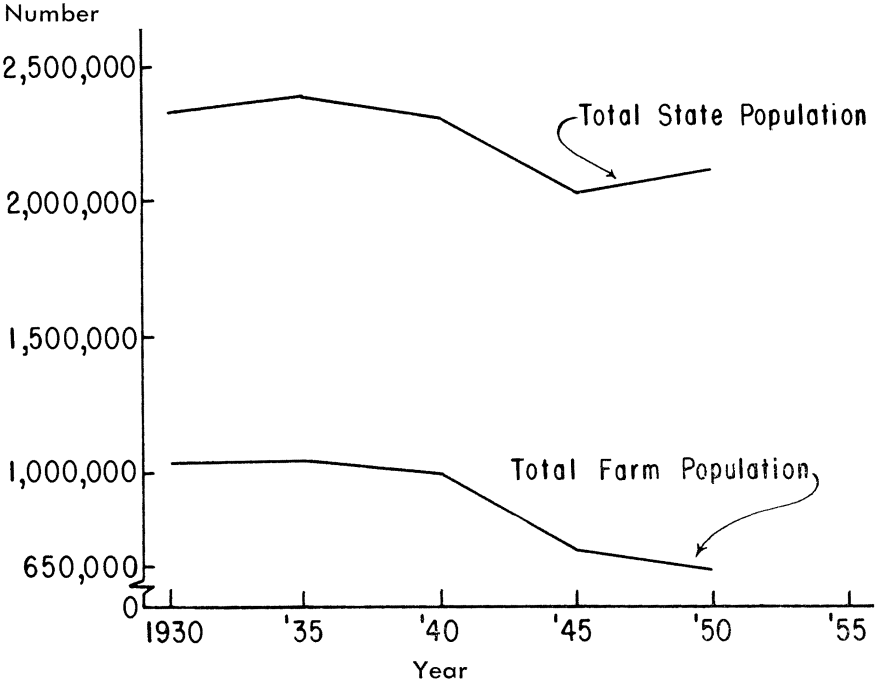


Chart 17. Trends in Oklahoma population: farm and total, 1930-1950.

The major downturn in Oklahoma's farm population occurred after 1940. The decrease in farm population in the 1940-50 period was from about 1,000,000 to 575,000. The loss in farm population was compensated by a gain in urban population in that total population in the state remained about constant in this period. The net migration from the state during 1940-50 was about half a million people.

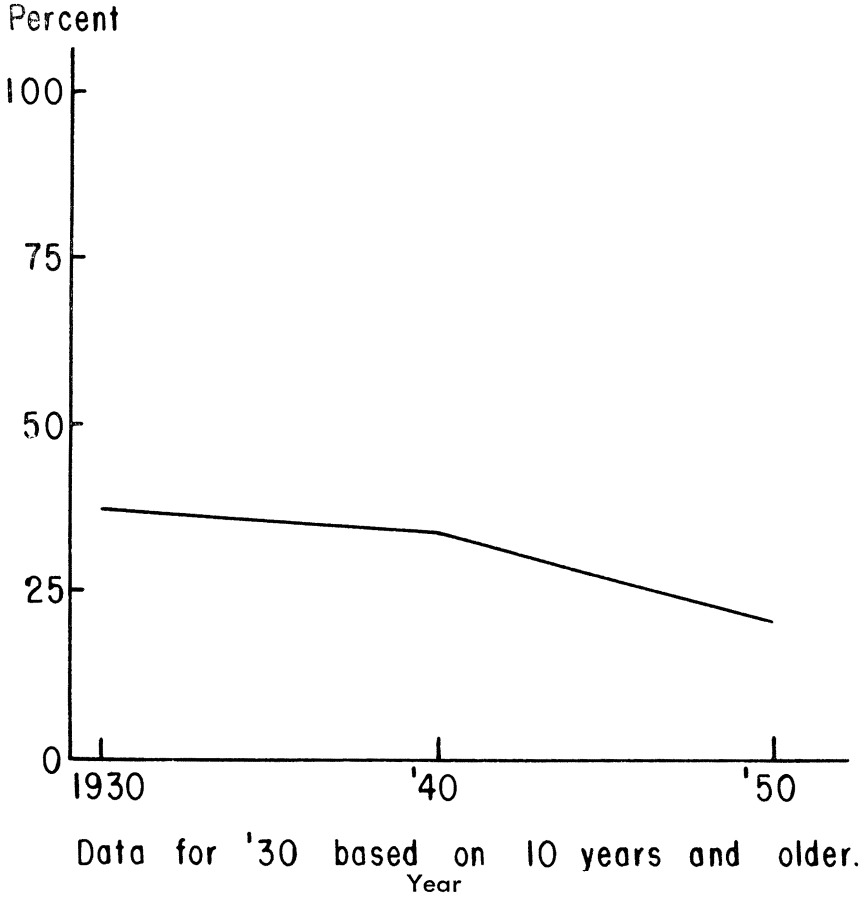


Chart 18. Trends in agricultural employment in Oklahoma as a percent of total employment, 1930-1950.

This chart indicates the decrease in agricultural employment to be from about 37 percent of total employment in 1930 to about 21 percent in 1950. Although this decrease in employment in agriculture is large, it underestimates the actual decrease in this period because it does not reflect the shift from full to part-time farming by many farm workers. Nationally, the labor force employed in agriculture was 25 percent of the total in 1930 and about 12 percent of the total in 1950.

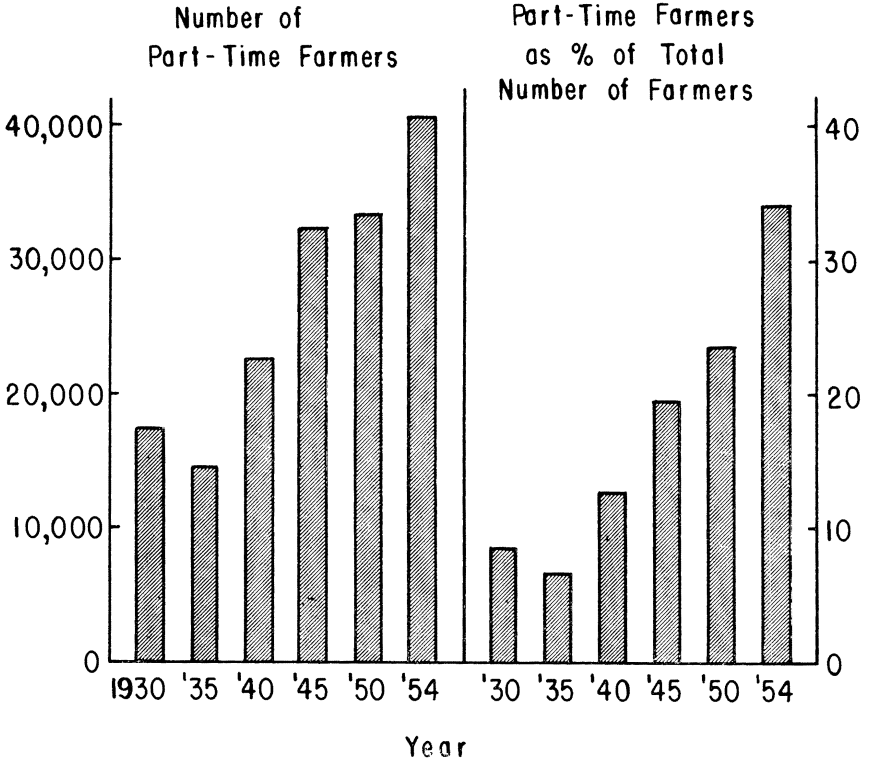


Chart 19. Trends in part-time farming in Oklahoma, 1930-1954.

More than one-third of Oklahoma's farms in 1954 were classed as part-time farms by the United States Census. Prior to 1940, fewer than 10 percent were classed as part-time farms. The increasing opportunity for part-time, non-farm work by rural people has permitted many to stay in agriculture who otherwise would have moved to urban residences within the state, or to employment opportunities outside the state.

Developments in Land Use and Livestock Production

Major adjustments in the kinds of farming practiced by Oklahoma farmers have accompanied agriculture's technological revolution. In general, livestock farming has replaced much of the earlier emphasis on cash crops. The most significant trends have been a decrease in cotton and corn acreage and an increase in cattle. The charts to follow show some of the major trends in land use and livestock production, and indicate shifts in production for the state as a whole and among areas within the state.

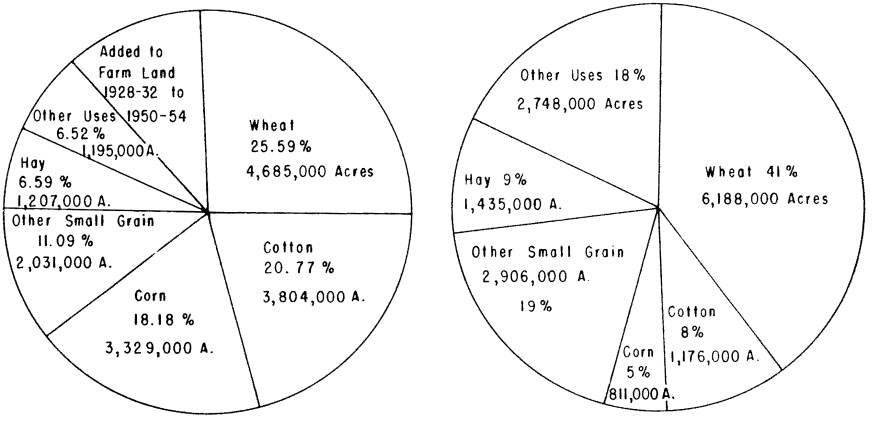
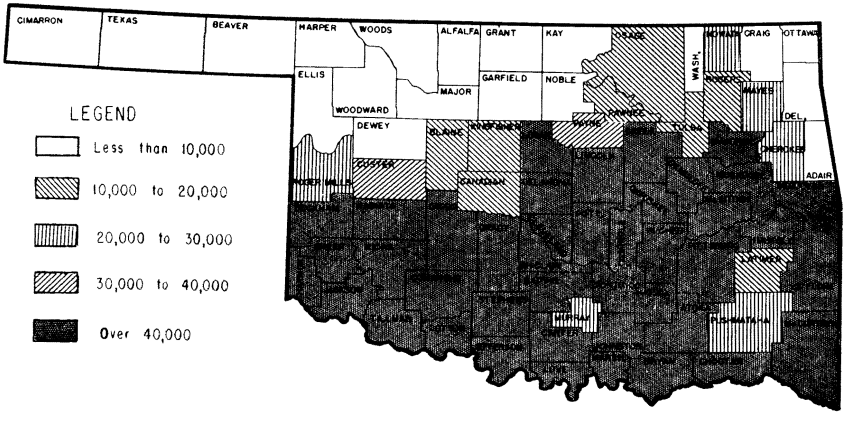


Chart 20. Use of farm land in Oklahoma, percent of 1950-1954 total.

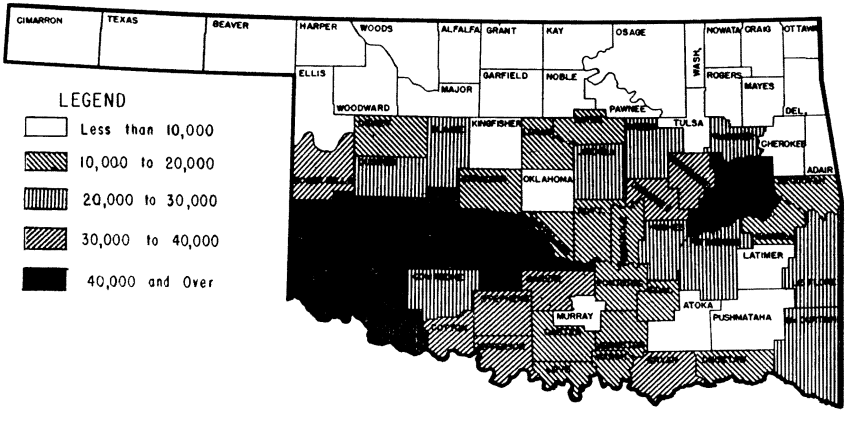
(a) 1928-32 average (b) 1950-54 average

These two charts provide a direct comparison of total farm land use in the 1950-54 period and in the 1928-32 period. About 3-1/2 million acres were added to the farm land between the two periods. This is shown on the 1928-32 chart as increase in farm land, 1928-32 to 1950-54. The crops that have increased in acreage in the State are wheat, grains other than wheat

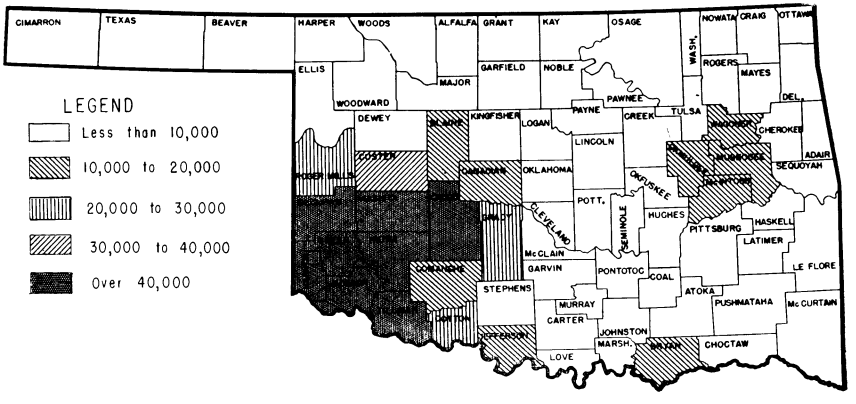
and corn, and hay. The "other use" category increased substantially, and a large part of this was pasture acreage. Crops that have decreased in acreage are corn and cotton.



(a) 1925



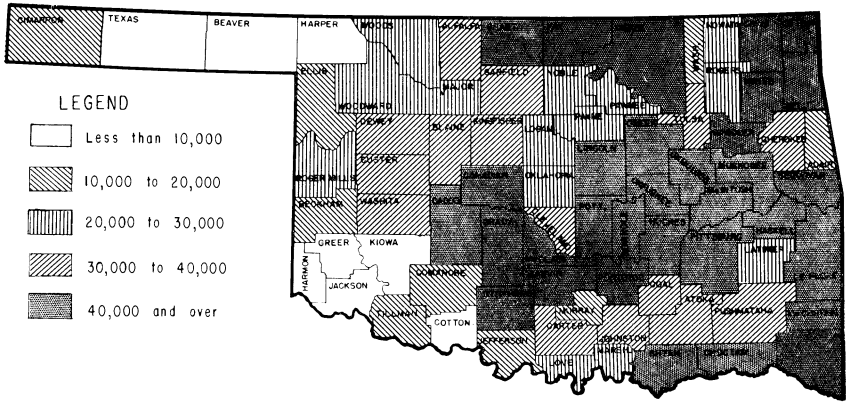
(b) 1940



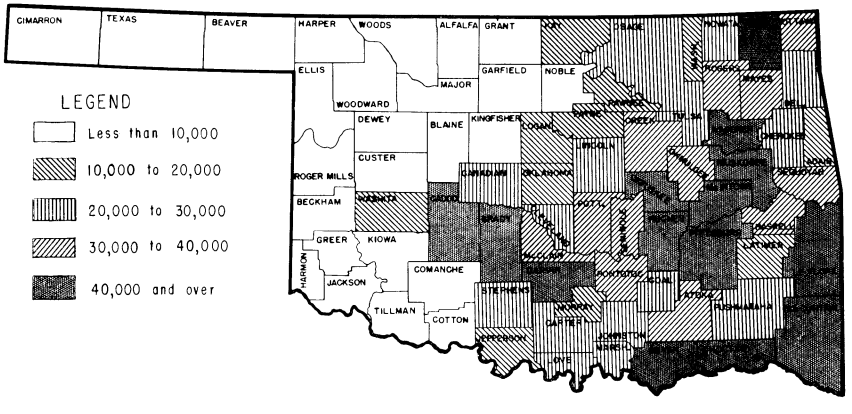
(c) 1954

Chart 21. Harvested acres of cotton by counties in Oklahoma, 1925-1954.

These three charts show the shift in location of major cotton production density in the State accompanying the overall decrease in acreage. In 1925, the cotton acreage was approximately evenly distributed throughout the southern half of the State. In 1940, a marked decrease in total acreage from 1925 can be noted, but this decrease occurred mainly in the southeast quarter of the State. By 1954, the acreage of cotton remaining in the State was concentrated mainly in the southwestern counties.


LEGEND
Less than 10,000
10,000 to 20,000
20,000 to 30,000
30,000 to 40,000
40,000 and over
CIMARRON
TEXAS
BEAVER
HARPER
WOODS
ALFALFA
GRANT
ELLIS
MAJOR
GARFIELD
NOBLE
WOODWARD
DEWEY
BLAINE
KINGFISHER
CUSTER
ROGER MILLS
BECKHAM
GREER
KIOWA
HARMON
JACKSON
COMANCHE
TILLMAN
COTTON

(a) 1925


LEGEND
Less than 10,000
10,000 to 20,000
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30,000 to 40,000
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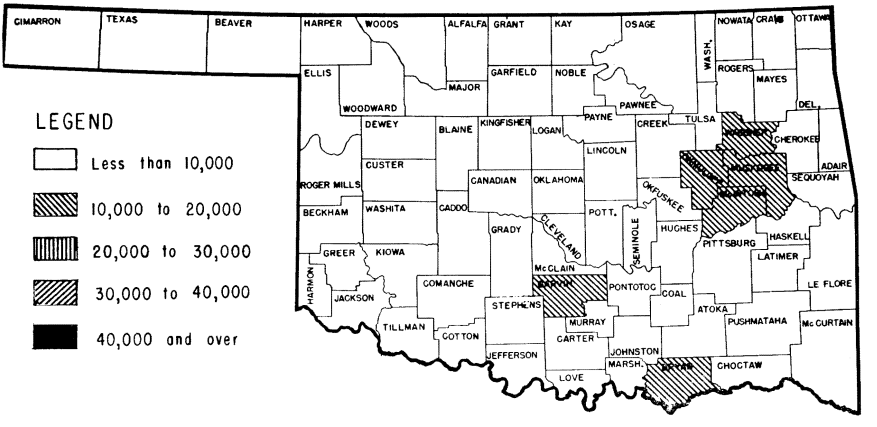
CIMARRON
TEXAS
BEAVER
HARPER
WOODS
ALFALFA
GRANT
ELLIS
MAJOR
GARFIELD
NOBLE
WOODWARD
DEWEY
BLAINE
KINGFISHER
CUSTER
ROGER MILLS
BECKHAM
GREER
KIOWA
HARMON
JACKSON
COMANCHE
TILLMAN
COTTON

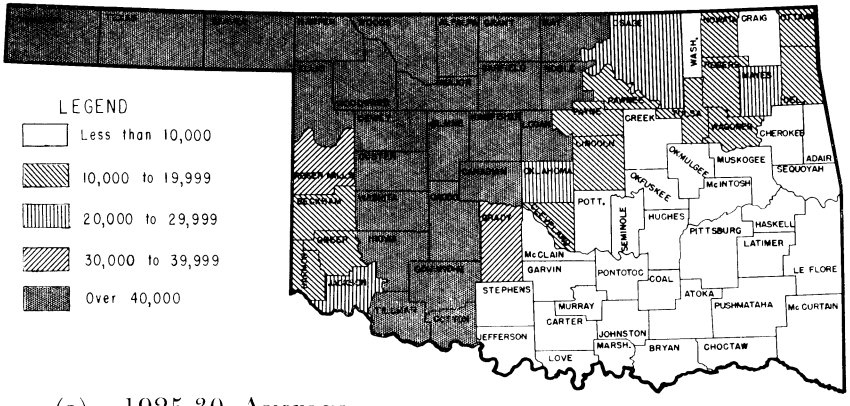
(b) 1940



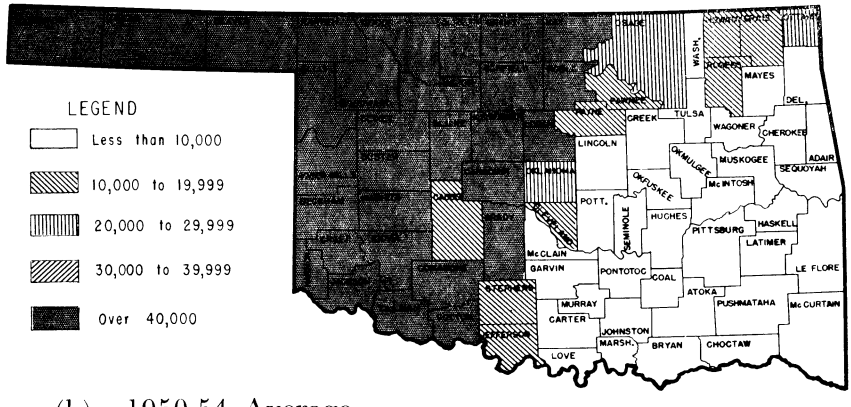
(c) 1954

Chart 22. Harvested acres of corn by counties in Oklahoma, 1925-1954.

The corn acreage was widely distributed among the counties in the State in 1925, but as the acreage decreased, the location of production shifted east. Wheat, sorghum and the other small grains replaced corn in the western part of the State. The 1954 chart indicates that corn has been reduced to a minor crop in the State. The remaining acreage is concentrated in Wagoner, Muskogee, McIntosh, Okmulgee, Bryan and Garvin counties. What has taken the place of corn and cotton in the eastern part of the State? Much of this land, primarily in the more hilly areas, is now brushland or forest, and another major portion of the acreage taken out of corn and cotton is now in pasture and/or hay. Specialty crops, such as vegetables and small fruits, have increased in the eastern part of the State. However, the acreage of these crops still is small in relation to the total.



(a) 1925-30 Average



(b) 1950-54 Average

Chart 23. Harvested acres of wheat, Oklahoma, 1925-1954.

During the 1925-54 period, wheat replaced cotton as the leading cash crop in the State. The major concentration of wheat acreage has remained west of a line from Cotton to Kay counties. With few exceptions, the increase in wheat acreage in the 30-year period occurred evenly in the west and northwest counties. The major exception was Caddo county, which experienced a decrease in wheat acreage since 1930.

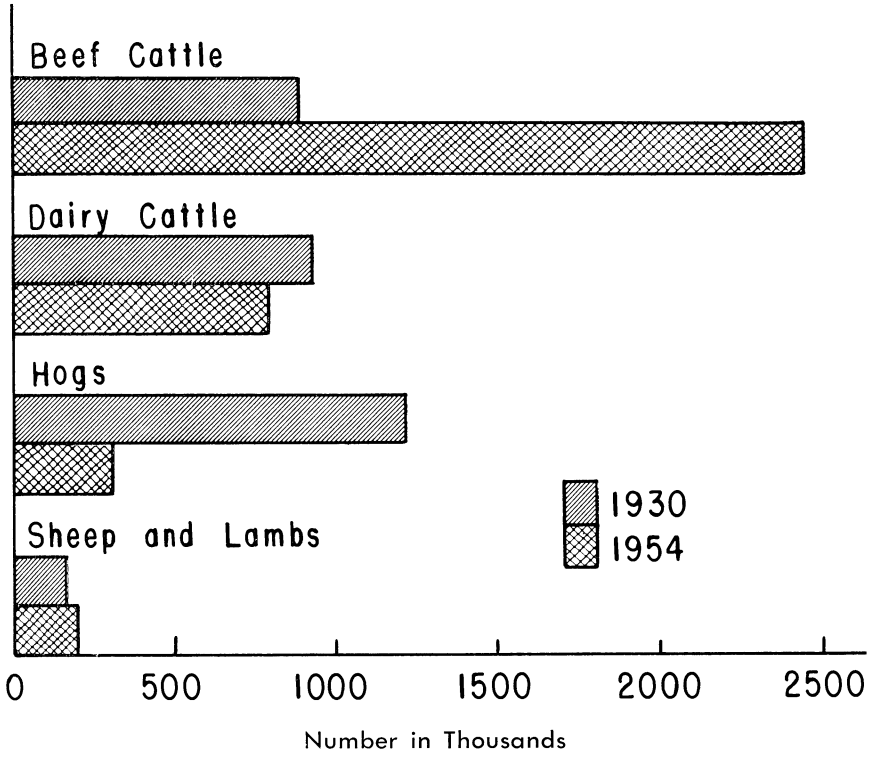


Chart 24. Changes in livestock numbers in Oklahoma, 1930-1954.

This chart summarizes the major developments in our livestock production in the past 25 years. The most significant changes have been about a three-fold **increase** in numbers of beef cattle from 1930 to 1954, and a 75 percent **decrease** in numbers of hogs in the same period. Dairy cattle have decreased slightly, and the number of sheep increased a little. Considerable year to year variation in livestock numbers has taken place. These variations and other trends in livestock production are depicted in the next few charts.

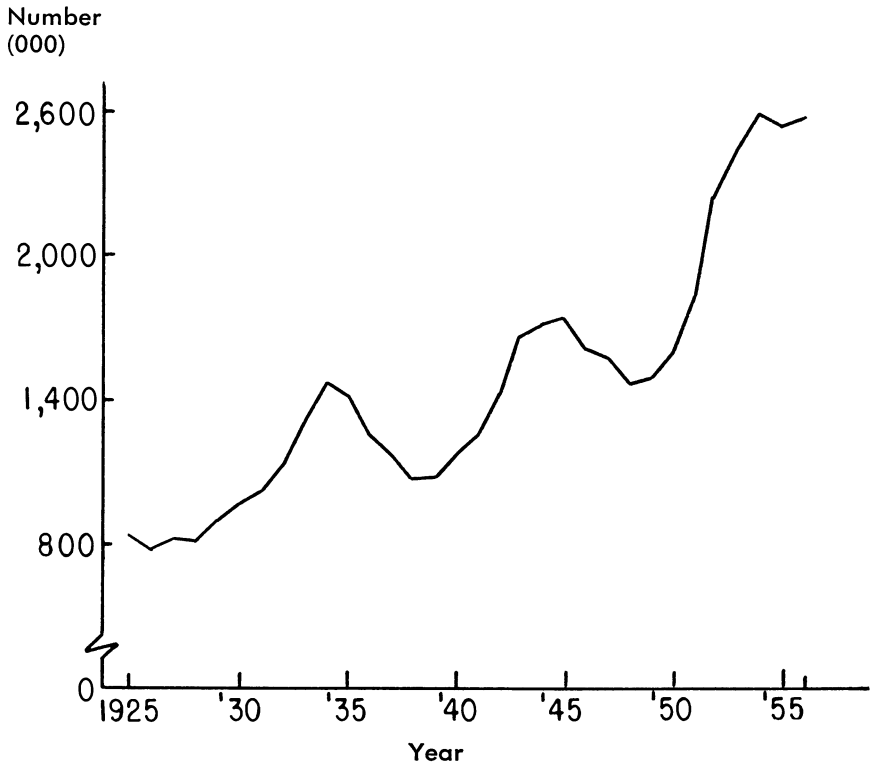


Chart 25. Trends in number of beef cattle on Oklahoma farms, 1925-1956.

The number of beef cattle increased from about 800 thousand in 1925 to nearly 2.6 million head in 1956. This exaggerates the actual trend slightly because 1925 was near the bottom of a cattle cycle, and 1956 was near a peak in a cycle. There was about one head of cattle per 14 acres farm land in the State in 1956, or an average of 21 head per farm. The cattle cycles can be observed in the chart. The increase in beef cattle numbers has been fairly evenly distributed among different sections of the State. However some individual counties vary from the State trend.

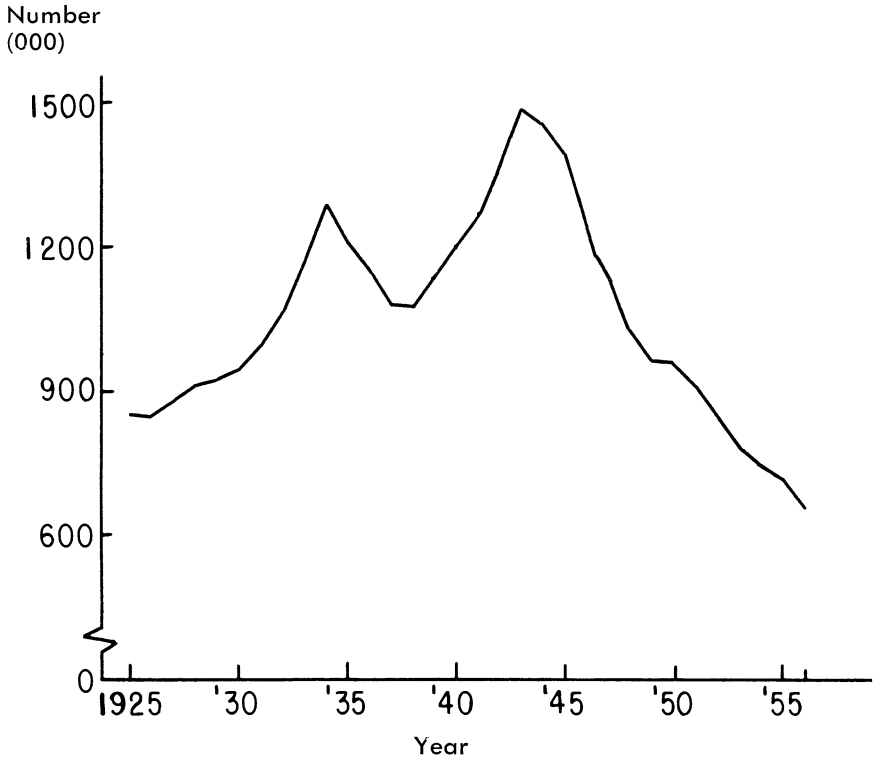


Chart 26. Trends in number of dairy cattle on Oklahoma farms, 1925-1956.

The number of dairy cattle in Oklahoma increased to a peak of near 1-1/2 million head in 1943, and have since declined to about 650 thousand. The increase in the market for ice cream and whole milk in the State since 1945 has been insufficient to maintain the farmers' interest in dairy production. This applies particularly to the small dairymen. Prior to 1945, many farmers in the State kept dairy cows for cream production, but with the decline in demand for butter, many of these small scale dairymen switched to beef cattle production. This shift was pronounced in eastern Oklahoma.

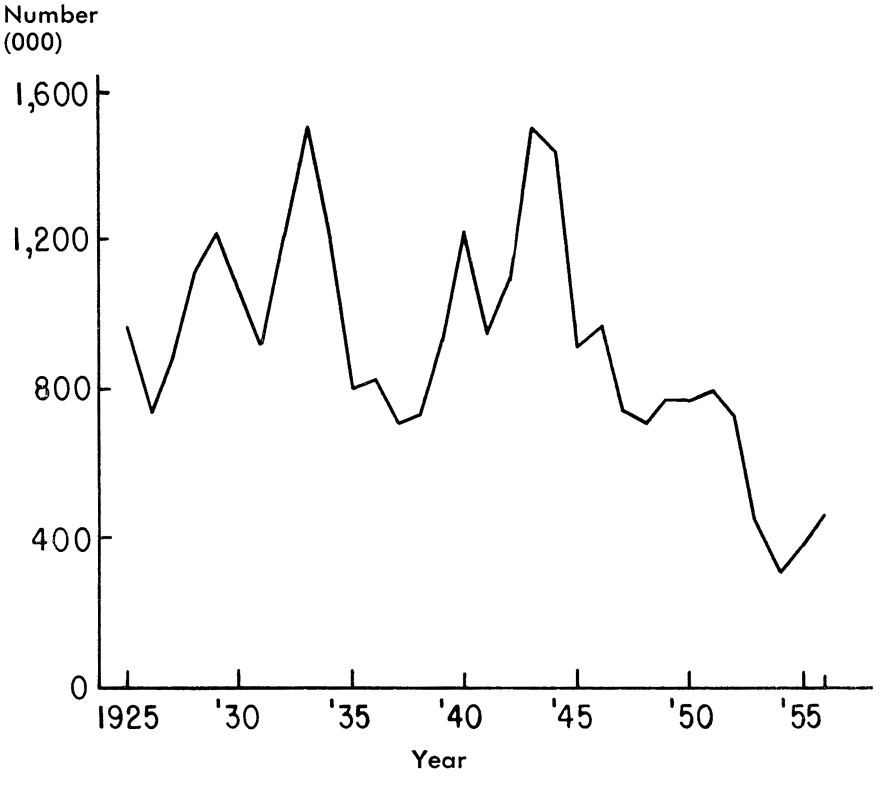


Chart 27. Trends in number of hogs on Oklahoma farms, 1925-1956.

The number of hogs varied widely, with no pronounced trend, from 1925 to 1944 but, between 1944 and 1954, there has been a rather sharp downturn in hog numbers. This decrease in hog numbers after 1944 may be explained partly by the increased interest in beef cattle production and by the unfavorable hog-grain price ratios. Hog numbers have increased since 1954.

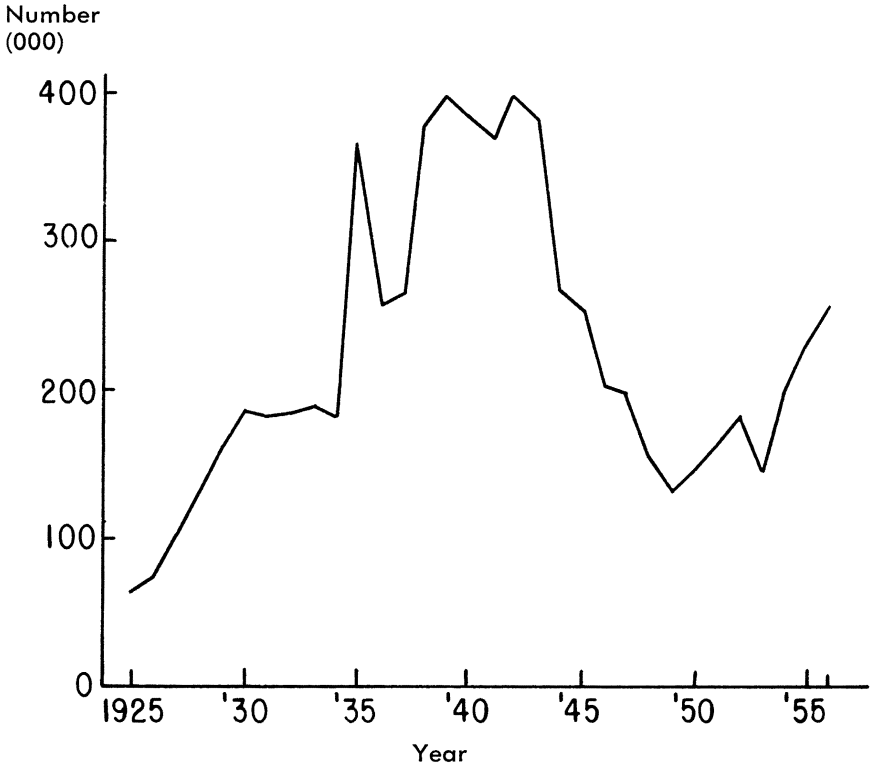


Chart 28. Trends in number of sheep and lambs on Oklahoma farms, 1925-1956.

The number of sheep in the State more than quadrupled from 1925 to World War II period, and then declined until an upward trend began about 1950. Current sheep numbers are only about 60 percent of those during the peak years of 1940 and 1942 (250 thousand compared with 400 thousand), but the recent upward trend may continue if price relationships favor sheep production.

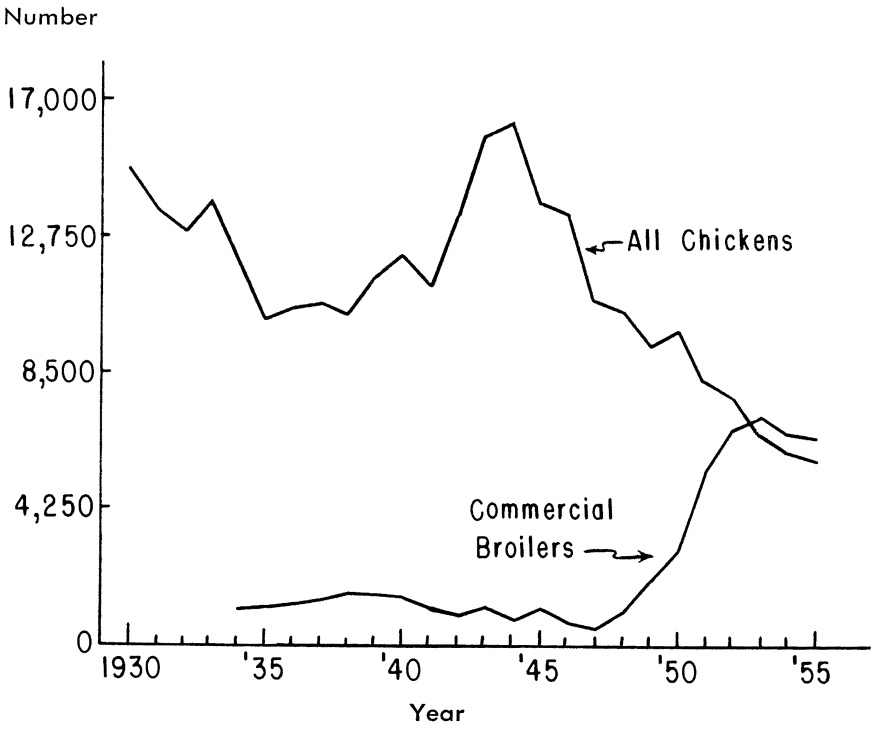


Chart 29. The number of chickens on Oklahoma farms, 1930-1955.

The number of chickens on Oklahoma farms decreased to the mid 1930's, increased to a peak of about 16 million in 1944, and have since declined to about 6 million. Commercial broiler production has increased significantly since 1947, and, therefore, the number of chickens for egg production has declined more than indicated by the "all chicken" trend line. The drop in number of chickens on Oklahoma farms probably was due to the reduction in the number of "non-commercial" or small farm flocks.

Developments in Farm Income

The available income data indicate that farm income is declining relative to non-farm income in Oklahoma. In terms

of the 1949-54 purchasing power of the dollar, the value of farm product sales in the State averages about the same in the post war period as in the pre-depression period. However, "real income" to the people of the State is higher in the post war period (since 1945) than in any preceeding period. This correlates with the increase in non-agricultural employment relative to agricultural employment in the State.

Oklahoma's changing agricultural situation fits into the agricultural pattern for the nation as a whole. For the Nation, 31 percent of the labor force was employed in agriculture in 1910. This has decreased to the current level of about 10 percent. National statistics also indicate that, in 1910, farm products represented 16 percent of the total value of all production (farm and non-farm). However, currently, the value of agricultural products produced in the United States is less than 6 percent of the value of total national production. The shifting of the farm labor force to non-farm jobs is a major characteristic of the national economic development. It also is a characteristic of Oklahoma's economic development. A graph presented earlier indicated that currently about 20 percent of the gainfully employed people in the State are engaged mainly in agriculture. The State's economy has been more "agriculturally oriented" than the nation as a whole, and it is possible this greater degree of emphasis on agriculture should continue. But income statistics indicate Oklahoma's farm income per farmer has lagged behind the income per farmer nationally. This lag may suggest that the State is out of balance in its agricultural and non-agricultural developments. Income statistics by counties of Oklahoma point out the main source of this unbalance, that is, the very low agricultural income per farmer in many of the eastern Oklahoma counties.

The following charts indicate some major trends in sources of income to people in the State, trends in sources of agricultural income, and the value of products sold per farmer by counties. The agricultural income trends first are depicted, then, to com-

plete the income picture, charts showing agricultural income trends in relation to other sources of income to the people in the State are presented.

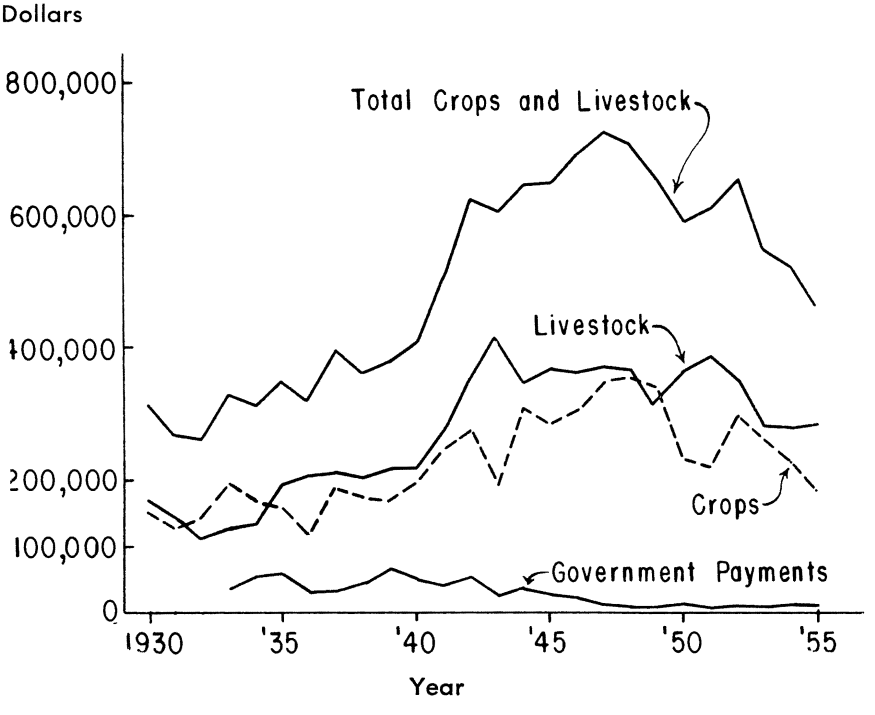


Chart 30. Trends in total value of farm products marketed in Oklahoma, 1930-1955 (adjusted to 1949-1954 value of the dollar).

This chart shows three major features of the State's agricultural income the past 30 years: (1) decrease in income from sale of crops, (2) increase in income from livestock and livestock products, and (3) a total "real" agricultural income which has remained nearly constant except for the depression years. Government payments to farmers, beginning during the depression, have declined, and, since 1940, these payments have been only a small fraction of the total value of farm products sold.

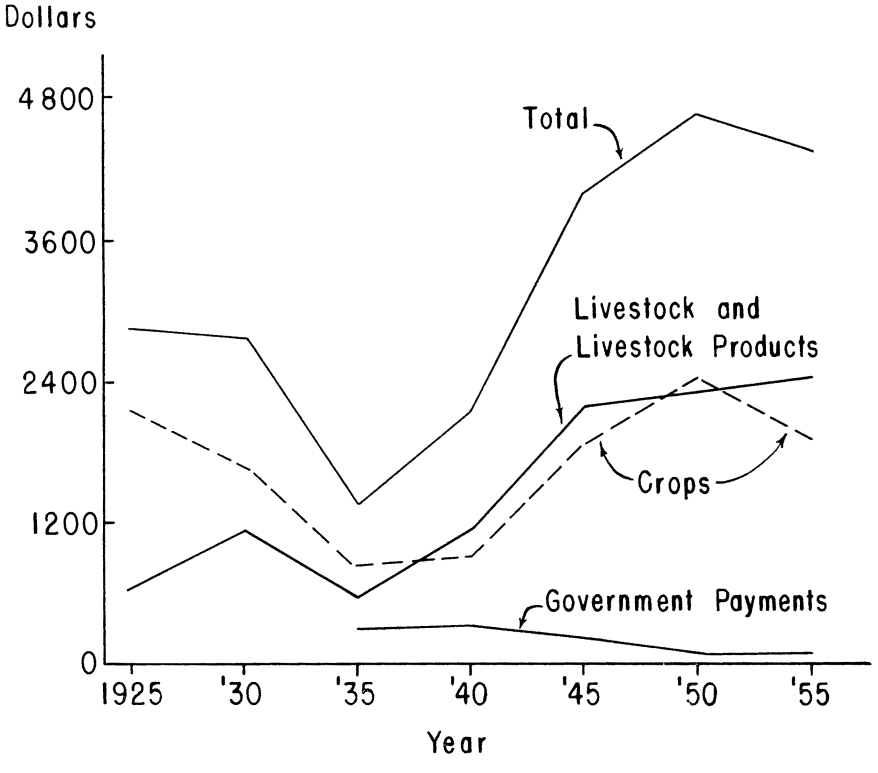


Chart 31. Trend in value of farm products marketed in Oklahoma per farm, 1925-1954 (adjusted to 1949-1954 value of the dollar).

This chart is based upon the same data used to construct Chart 30. It shows that the "real" value of farm products sold per farm increased during the period after the depression years. This reflects the decrease in number of farmers sharing in the total agricultural income pie of the State. Although the "real" income per farm in Oklahoma has increased, it has been below the value of sales per farm nationally during the post war period. The national value of farm products sold per farm has averaged about 6,000 dollars per year during the post war period, which was about 25 percent greater than the gross income per Oklahoma farm during the same period.

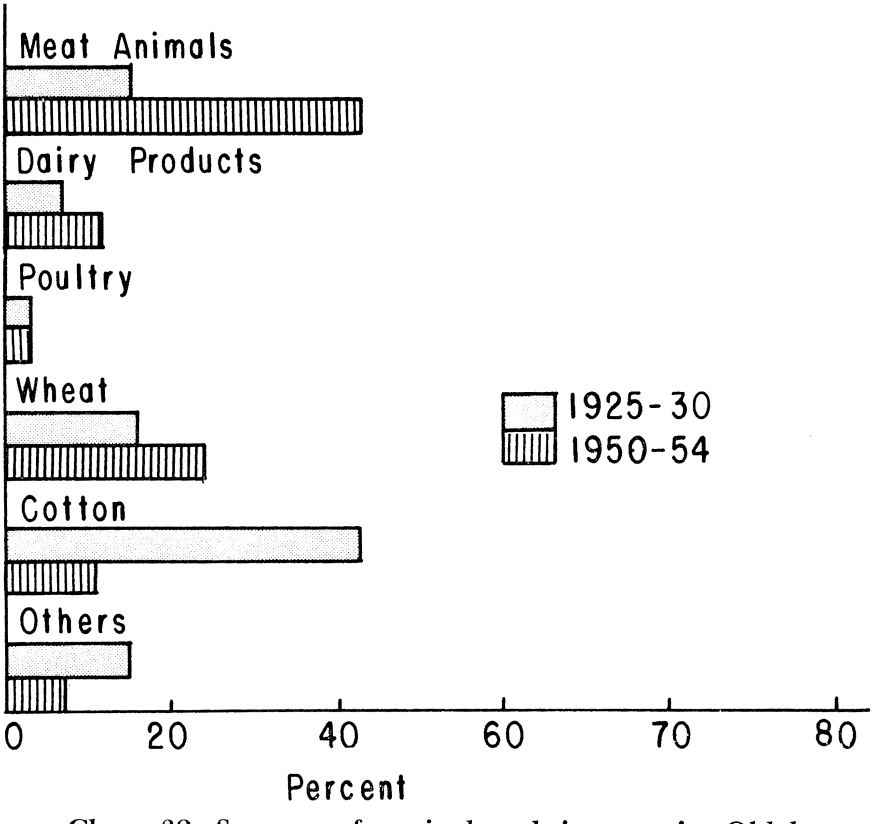


Chart 32. Sources of agricultural income in Oklahoma, 1925-1930, and 1950-1954 (in percent of total).

The previous two charts indicate a decline in crop income and an increase in livestock and livestock product income to Oklahoma farmers. This chart presents a more detailed breakdown of the sources of agricultural income, and provides a comparison of two periods in Oklahoma's agricultural development. The major changes were a decrease in income from cotton and an increase in income from meat animals. The proportion of the total income derived from wheat and dairy products increased from the 1925-30 period to the 1950-54 period, but the percentage of farm income from minor crops or miscellaneous sources decreased between these two periods.

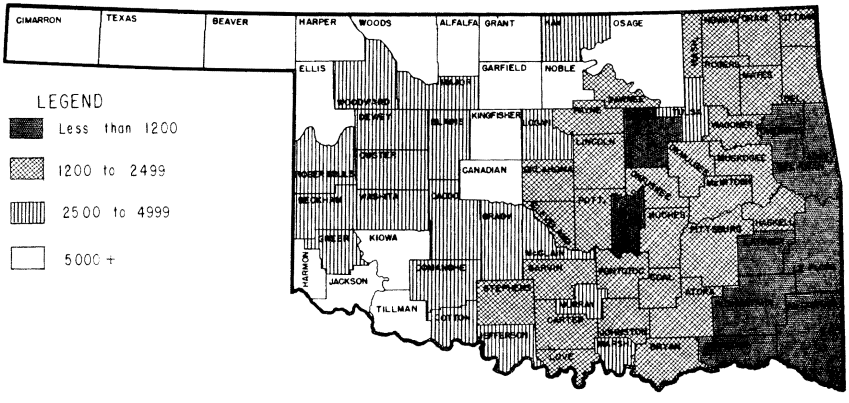


Chart 33. Dollar value of farm products sold per farm by counties, Oklahoma, during post-war period.

This chart depicts the character of the farm income distribution by counties in Oklahoma. There are nine counties in which the value of farm products sold per farm has been less than $1200 annually. Except for Seminole and Creek counties, these are concentrated in the east and southeast portion of the State. Another group comprising 30 counties, primarily in the eastern half of the State, had value of products sold per farm between $1200 and $2500. Thus, 39 of the State's counties must be classed as primarily composed of low production farms by USDA standards, and nine of these represent a serious low income problem.

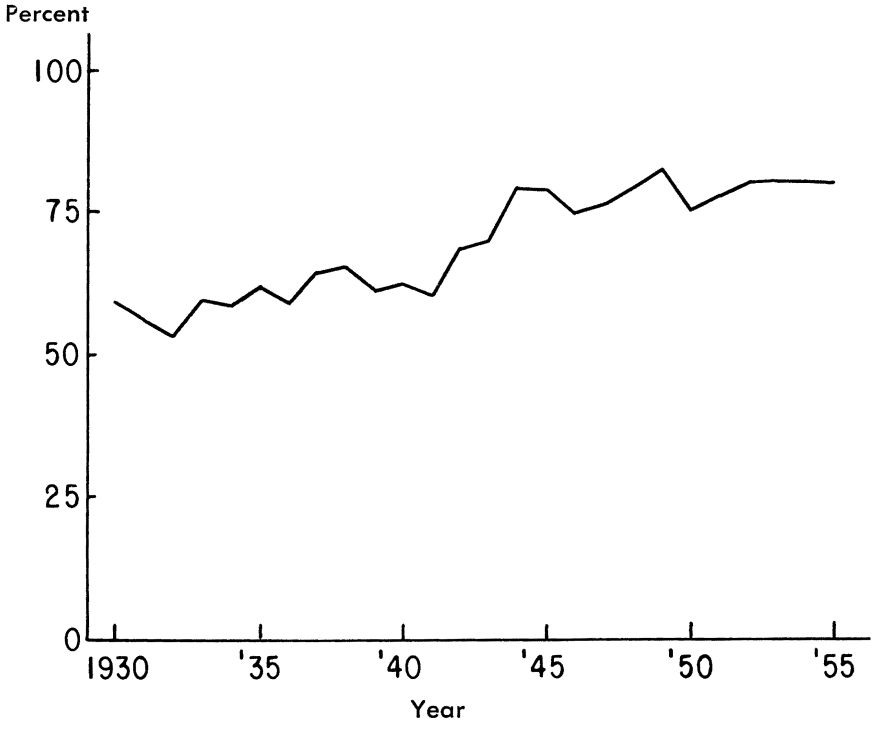


Chart 34. Personal income per capita in Oklahoma as percent of per capita personal income in the United States, 1930-1955.

Personal income includes wages and salaries earned, transfer payments from private business or government, and net earnings to proprietors of businesses (including farms). Neither social security taxes paid nor corporate income is included in personal income. Personal income provides a fairly good indicator of the economic well-being of people of Oklahoma compared with other people in the United States. The above chart indicates that Oklahoma's per capita personal income is below national average, but the State has made some important gains in this respect since 1930. The most significant increase in Oklahoma's per capita income relative to national per capita income occurred during the war years. Gains have been small during the post war years, and per capita income, up to 1955, still was nearly 20 percent below the national average.

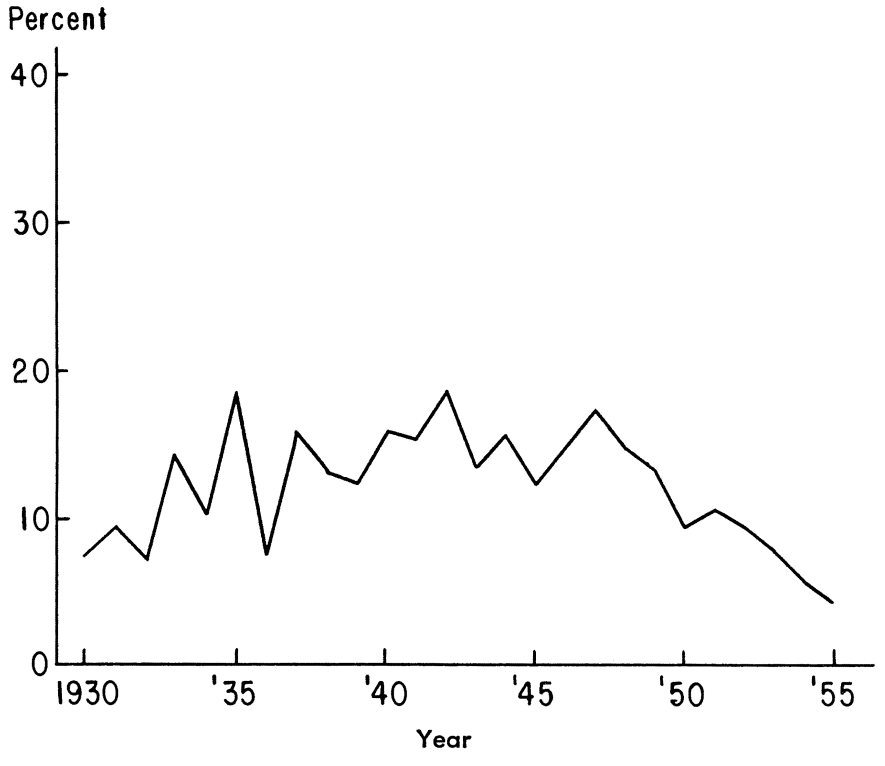


Chart 35. Trend in farm proprietor personal income as percent of total per capita income, Oklahoma, 1930-1955.

Farm proprietor personal income is the best available estimate of net farm income. It may be noted from the above chart that total farm proprietor personal income varied within a range of 12 to 18 percent of the total in Oklahoma, without any significant trend up or down, between 1937 and 1949. Since 1949, agriculture's contribution to total personal income has declined very markedly. This is due to several factors: drought, reduction in acreage of crops under acreage allotments, lower livestock prices, economic growth in non-farm income sources to a more prominent position in the State's economy.

etc. In the period 1949-55, wage and salary income from mining and manufacturing in the State increased from 14.1 to 18.2 percent of the total personal income. In the same period, wage and salary income from government (local, state, and federal) increased from about 10.2 to 14.4 percent of the total. The increase in Oklahoma's income from mining, manufacturing and government during the 1949-55 period is about equal to the loss in agricultural income in that period.

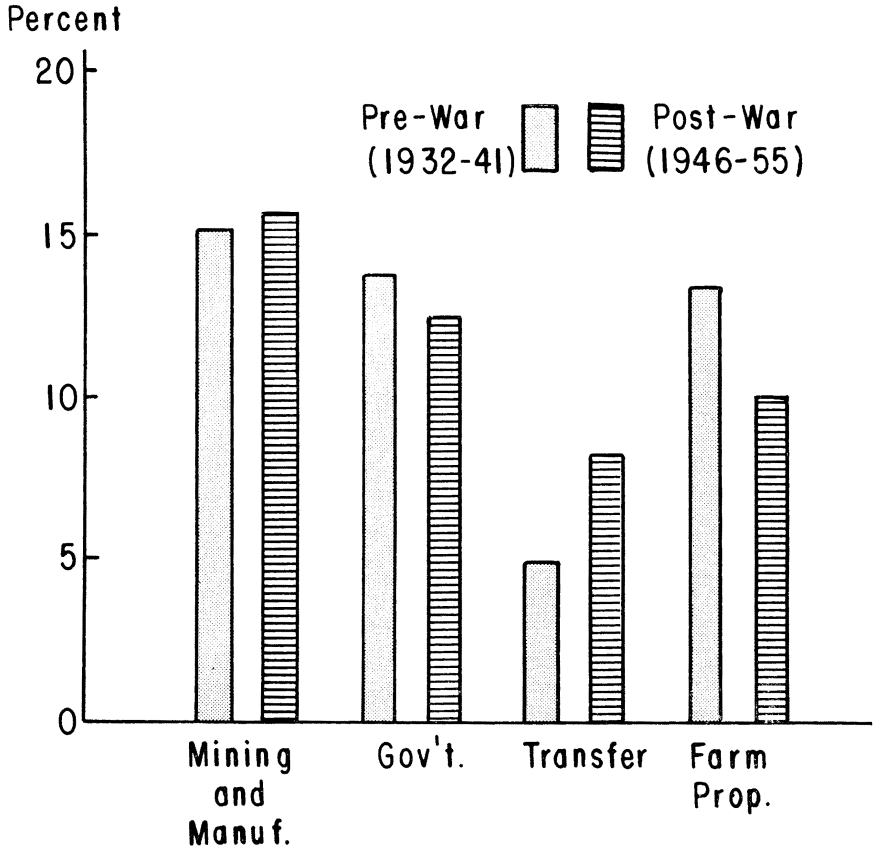


Chart 36. Percent of per capita personal income from mining and manufacturing, government, transfer payments, and agriculture (farm proprietor), Oklahoma, 1932-1941 and 1946-1955.

The above chart provides a comparison of the relative significance of some major sources of personal income in Oklahoma in two ten-year periods—the ten years preceding World War II and the ten years following the war. The proportion of Oklahoma's total personal income derived from agriculture was smaller in the post-war than in the pre-war period. The

main reason for this was the decline in farm proprietor personal income after 1947. Wage and salary income from government as a percent of the total was about the same in the two periods, but mining and manufacturing, and transfer payments have increased in significance. The larger proportion of personal income from transfer payments in the post-war period was due to two major factors: (1) veterans' income from the government while in school or on-the-job training, and (2) increase in welfare payments to individuals from the government. The proportion of Oklahoma's personal income from all other sources, which includes services, trade, construction, etc., was about the same in the two periods.

Some Projections to 1970

Predictions of the future are fraught with uncertainty. However, the past economic trends of Oklahoma's agriculture provide some clues to what may develop in the future. Projection of past trends provide estimates of future possibilities. These projections are not necessarily predictions of the future.

The most significant changes in Oklahoma's agriculture have been: (1) decrease in number of farms, (2) increase in acreage per farm, (3) decrease in farm population, (4) shift from predominately crop to predominately livestock farming, and (5) development of larger, more mechanized farm units. Technological progress in farming has been one of the underlying forces in these changes. Another major factor has been the rapid economic development, particularly after 1940, in the non-agricultural part of the economy which provided non-farm job opportunities to the State's farm people.

In this section, the number of farms, acres per farm and farm population are projected to 1970. In a section to follow, other Oklahoma agricultural trends of the future are discussed.

Problems, Opportunities, and Assumptions

Some of the major problems of the past, which are assumed

to continue having an influence on Oklahoma's agriculture, are as follows:

(1) limited opportunity to expand production of wheat, cotton and peanuts, the leading cash crops in the State, due to acreage allotments,

(2) difficulty of expanding market outlets for dairy and poultry products,

(3) difficulty of developing market outlets to permit an expanded production of vegetable, small fruit and specialty crops; and

(4) difficulty of farmers in many eastern Oklahoma counties in expanding farming operations to keep pace with the standards of efficiency attained in other areas of the State.

The limited opportunity to expand the production of wheat, cotton and peanuts arises from the "farm problem." The "farm problem" may be defined as the affinity to over-produce in relation to market outlets at prices considered reasonable to the farmers. This problem affects many crops, but it has its greatest impact in Oklahoma on wheat and cotton producers. The "farm problem" is not temporary—it has a long history, and it is likely to continue for some time in the future.

The market outlet problems arise from several sources. Most of the market for Oklahoma's dairy and poultry products is within the State, and the size of this market depends upon the State's population and consumption per person. Increase in the State's urban population will enlarge the market outlets for these products. In case of vegetable, small fruit and specialty crops, the problem mainly is difficulty of competing with already established production areas for markets.

The low income problem of many rural people in eastern Oklahoma also is a problem of rural people in many other states. This problem has developed in areas with limited resources for taking advantage of technological progress in farm-

ing or for developing non-farm income opportunities needed to compensate for the lag in agricultural development. Institutional and other conditions have developed to perpetuate the problem situation. The low income situation in eastern Oklahoma is likely to continue for several years, or perhaps through several future generations. However, some significant progress may be made by 1970.

In addition to the assumed continuation of the major Oklahoma agricultural problems of the past, the following assumptions are necessary for developing the projections:

(1) high levels of employment for the Nation will continue;

(2) non-farm economy of Oklahoma will continue to expand; and,

(3) technological progress in Oklahoma's agriculture will continue at a high rate.

These assumptions provide the basis for projecting the number of farms and the farm population of Oklahoma downward, and the size of farms and the scale of farm businesses upward.

Method of Projection and the Projections

Number of farms, acreage per farm, and farm population are highly correlated. Thus, projections for one of these provide the major basis for projecting the other two.

Rates of change in number of farms in Oklahoma during selected past periods were chosen as the main basis for the projections. The trend in total acreage of farm land in the State during 1945-54 was used in projecting acreage per farm, and trend in farm population per farm during 1945-50 was used in projecting the total farm population. These were the most recent estimates available for projecting trends in total land and population per farm.

A projected number of farms was developed for each of three annual rates of change:

(1) the 1935-54 average annual rate of —2.25 percent;

(2) the 1935-40 and 1945-54 average annual rate of —3.03 percent; and,

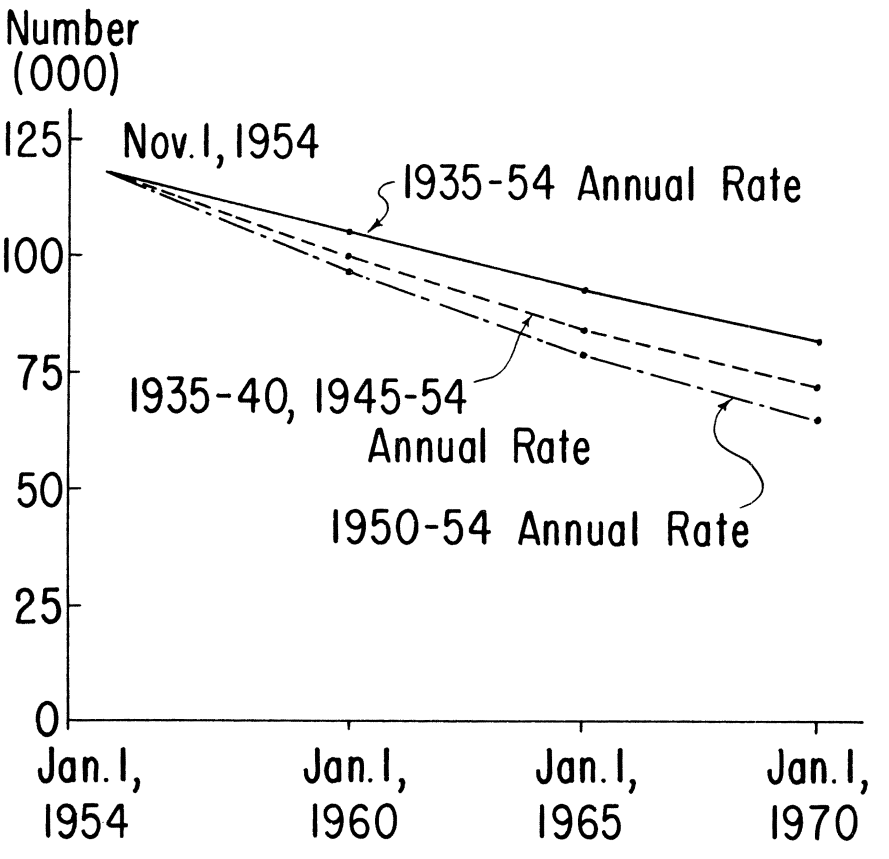
(3) the 1950-54 average annual rate of—3.56 percent.

Alternatives to these rates applied as constants were (1) a rate decreasing in size over time, and (2) a rate increasing in size up to 1970. A decreasing annual rate of change in number of farms in the State appeared unrealistic on the basis of past trends. An increasing annual rate was a possibility, but past trends were inadequate for estimating this.

The projected total amount of farm land in the State is 35,356,154 acres in 1960, 35,090,74 acres in 1965, and 34,825,374 acres in 1970. Expansion of urban centers in the State, highways, and other non-farm uses of land were expected to decrease the acreage of farm land.

The farm population per farm was projected from 4.12 persons in 1950 to 4.04 persons in 1970. These figures did not represent the average size of farm families because the urban farm population (people living in town and cities with farming as their major occupation) was included in calculating the number of people per farm.

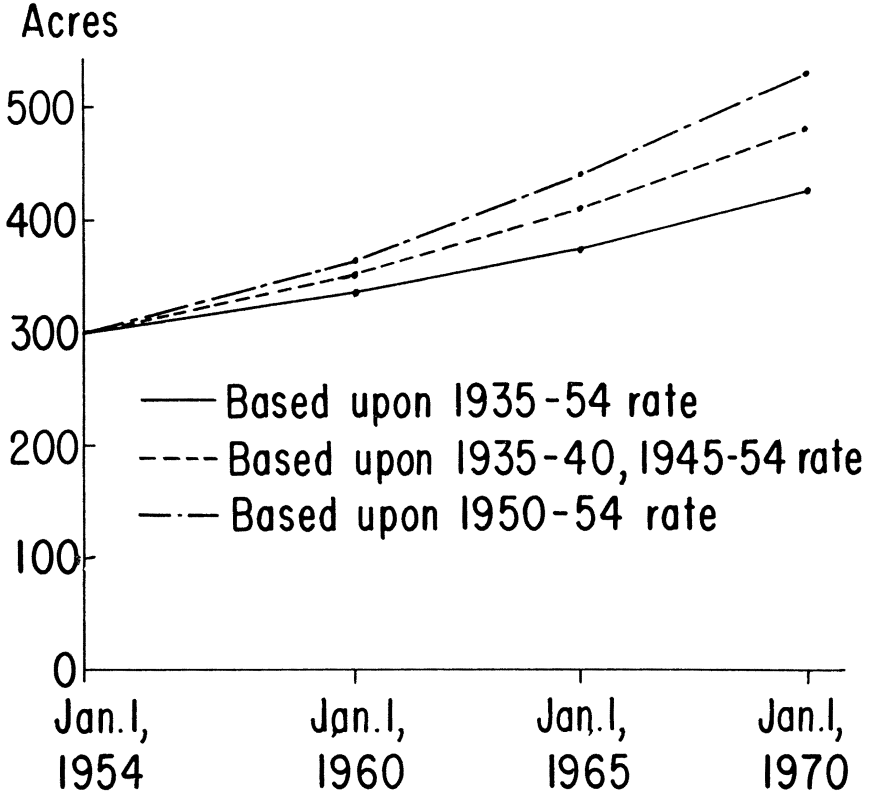
The estimates were made for 5-year intervals up to 1970 (1960, 1965, and 1970). The census estimates of number of farms, acreage per farm and farm population in 1960 will provide bases for checking the projections and for revising them.



(Based upon three rates of decline in number of farms —2.25, —3.03 and —3.56).

Chart 37. Projected number of farms in Oklahoma to 1970.

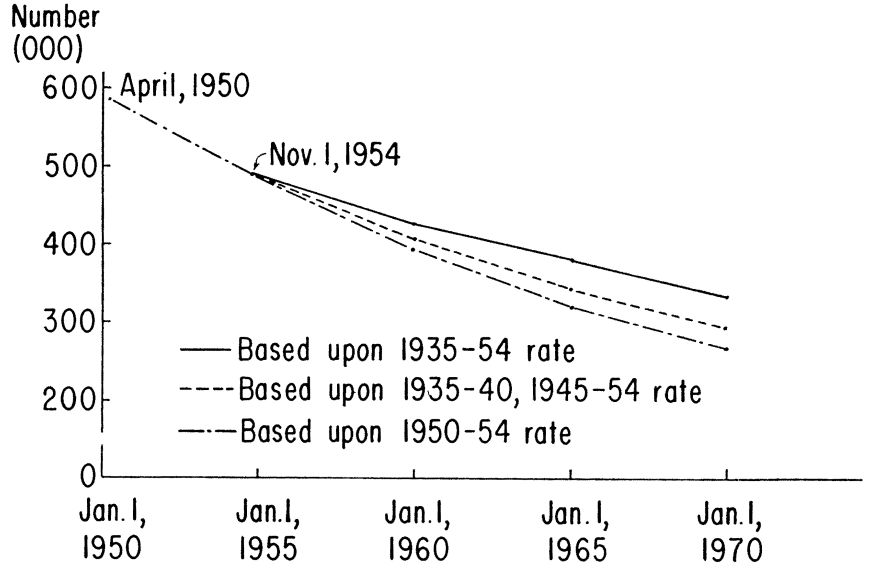
This chart depicts three trends in number of farms in Oklahoma to 1970 on the basis of three rates of change. The projected numbers in 1970 represent a decline from 1954 of 30 to 45 percent. Any of these three projections predict major farmer adjustments in land holdings during the years immediately ahead. The distribution of farms by sizes is predicted to change in the following manner: (1) increase in number of farms with 0-10 acres, (2) decrease in number of farms with 10-500 acres, and (3) increase in number of farms with more than 500 acres.



NOTE: Estimates for each projection based upon the 1945-54 trend in acres of farm land in Oklahoma.

Chart 38. Projected average size of farms in Oklahoma to 1970.

The projected acreages per farm in Oklahoma correlate with the three projections in number of farms. The projected acreages per farm in 1970 represent a 42 to 78 percent increase over the 1954 average farm size of 299 acres. It is expected that average farm size will increase in all areas of the State. Although the greatest potential for this increase is in eastern Oklahoma, where average farm size is far below that needed for efficient farming operations, the rural low income problem is likely to retard the increase in farm size in that area.



NOTE: Based upon trend in farm population per farm, 1945-50.

Chart 39. Projected farm population of Oklahoma to 1970 (includes rural farm and urban farm).

This chart was constructed in two stages. First, a single projection to 1954 was made on the basis of the actual change in number of farms between 1950 and 1954. Second, the three projections in number of farms provided the bases for developing three population projections after 1954. The 1970 estimates of farm population in Oklahoma represent a decline of 43 to 55 percent from 1950. Any of the three population projections predict a continued high rate of mobility from agriculture and into other employment.

Other Trends in the Future

Most of the major trends of the past in livestock and crop production are expected to continue in the immediate years

ahead. However, there are some exceptions. The major trends downward since about 1945 in numbers of dairy cattle, sheep and hogs in the State are not likely to continue. Some increase in these enterprises may be expected. Also, poultry production may expand in response to an increase in within-state markets for poultry products.

Beef cattle numbers in the State are expected to increase to a peak of 3 to 3.5 million head during the 1960's. However, a downturn in cattle numbers may develop prior to the increase to this peak. The increased emphasis on the beef cattle enterprise in Oklahoma is correlated with increases in farm size and the trend toward more extensive types of farming on the majority of the State's farms.

The past trend in shift of cropland use from cash crops to forages and pastures is expected to continue and to parallel the increase in emphasis on livestock production. However, this shift is expected to be at a smaller rate than in the past. There may be some increase in vegetable, small fruit and specialty crop production on some farms, but these crops will occupy a minor proportion of the State's farm land. Some of the present cotton and grain acreage is expected to be shifted to grasses and legumes.

The larger, more commercial, individual farms of the future will be characterized by increased capital requirements. The land, machinery and livestock investments per farm will increase, and the cash operating expenses per farm will increase. Capital requirements per farm are expected to about double between 1954 and 1970. A major problem of Oklahoma farmers in the future is expected to be that of acquiring sufficient capital to develop and maintain efficient farming operations. Already entry into farming by the rural youth is seriously limited by the capital problem, and this is likely to continue and become more intense. It is expected that businesses closely allied with farmers, such as machinery and feed dealers, marketing firms, etc., will share more in the capital investment in agricultural production than they have in the past. Also, it

is expected that a higher proportion of the farms in the future than in the past will be owned and/or operated by individuals or firms that have accumulated capital in non-farm occupations or other sources.