

FACTORS RELATING TO THE FINANCIAL STATUS OF OKLAHOMA  
COOPERATIVE PATTERNS DERIVED FROM  
THE BUREAU DATA FOR COOPERATIVES

by

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## INTRODUCTION

Cooperative cotton gins in Oklahoma, like most other business concerns, were hard-pressed during the early part of the 1930-1940 decade. The reasons for this, however, were more than just the general business decline which affected every business. It is the aim of this study to consider some of those reasons.

For the major part, the scope of this study includes the relationship between climatological, governmental, and business cyclical factors as they affect cooperative cotton gins in Oklahoma. One criterion for the determination of financial success is the ability of the gins to liquidate their indebtedness. Some of these conditions will be represented by a summary of the loans outstanding, additional loans advanced, and repayments received by the Wichita Bank for Cooperatives, a semi-federal lending agency.

The analysis of the data was made in connection with the author's work in the Wichita Bank for Cooperatives. The methods used for collection of data were field observations, analyses and summarizations of material in the files of the Wichita Bank for Cooperatives, and contacts with the Oklahoma Federal Statisticians, the Oklahoma State Corporation Commission, the County Agricultural Agents in Oklahoma, and the executives of the Wichita Bank for Cooperatives.

Much literature was available pertaining to the cotton industry as a whole, but literature regarding loans and operations of cooperative cotton gins in Oklahoma was limited.

Helpful suggestions were gained from books on the operations of the cotton markets and on grading standards as well as books regarding actual production of cotton.

There were a few pamphlets containing valuable information on the operations of cotton gins in Oklahoma and Texas. These gave expenses, incomes, and gross profit comparisons of cooperative cotton gins. Another source of valuable information was a survey made by the Cooperative Research Department of the Farm Credit Administration. This was a survey of actual experiences which various Banks for Cooperatives had had with cooperative cotton gins. Some useful data were obtained from this survey, especially that portion pertaining to the Wichita Bank for Cooperatives.

#### GENERAL FACTORS

Some of the underlying factors affecting Oklahoma cooperative cotton gins when the Wichita Bank for Cooperatives was organized in 1934 were as follows: (1) limited initial membership, (2) undercapitalization, (3) poor management, (4) poor records, (5) influence of cottonseed oil companies on cooperative cotton gins, and (6) ecological factors in production.

These will be discussed in the above order, with the major emphasis on the ecological factors affecting production because these were the most important in causing unfavorable financial conditions in cooperative cotton gins in Oklahoma during the depression years.

When most of the cooperative cotton gins were organized in Oklahoma, in the decade from 1920 to 1930, a definite membership was anticipated. Since most of these gins were organized by the Farmers' Union of Oklahoma it was only natural that this state organization of farmers expected the members of the gin also to be members of the Farmers' Union. In that way the membership was somewhat limited and excluded some cotton producers who did not wish to join the Farmers' Union. Later the clause specifying this requirement for membership was revised in most gin company by-laws and membership then became less limited. This revision was partly due to the demand of cotton producers and partly due to the efforts of the Wichita Bank for Cooperatives.

Many of the cooperative cotton gins were undercapitalized at the time of their organization and remained so for a period of years thereafter. It was, therefore, the experience of the Bank to find many of these gins needing recapitalization.

Another factor which needed greater attention during the early 1930's was that of management. To a large extent the Boards of Directors of many of the cotton gins were not in a position to determine the qualifications of a good manager because most of them were general farmers and cotton growers not possessing the knowledge of cotton gin management and, therefore, were unable to select a capable and efficient manager. To keep expenses at a minimum, many managers were hired only through the ginning season of four to six months and were paid a low salary for their services. This meant that only mediocre

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\* The Wichita Bank for Cooperatives will hereinafter be referred to as the "Bank".

managers could be obtained since they were forced to obtain employment elsewhere for the remaining part of the year. This condition led to the hiring of inexperienced managers who would sometimes indirectly be costly to the cotton gin. The Bank tried to correct this situation with its educational program and with its citations of experiences in other states where it was proved that good, well-paid managers were necessary for the successful operation of the cooperatives.

In general, the records of the cooperative cotton gins had been poorly kept prior to 1934. This was because many managers did not understand how to keep proper records. Most managers were not trained along this line and if they had kept books before, it was usually in an old-line gin where only daily report sheets are kept and all the accounting procedure is handled through the main office. In case bookkeepers were hired, they generally had had little experience and usually no experience with cooperative accounting. To correct this situation the Bank has been sponsoring a Cooperative Gin Bookkeepers' School in which the principles of cooperative accounting are taught. These schools have proved to be popular with gin managers, boards of directors, and bookkeepers.

Most of the cottonseed oil companies in Oklahoma were in good financial condition in the early 1930's when some of the cotton gins were needing financial support. Many gins borrowed money from the oil companies at high rates of interest. This caused some of the gins to be dominated by the oil mills and it was hard for the gins to clear their financial difficulties

under this set-up.

Probably the most important factors causing trouble for the cotton gins in Oklahoma during the depression years were ecological in nature. These will be discussed under the following topics: Location of Cotton Acreages, Cotton and Wheat Acreages, Prices of Cotton and Wheat, Cotton Yields and Rainfall, and Cotton Production and Its Importance.

#### LOCATION OF COTTON ACREAGES

To obtain an analysis of the cotton acreages in Oklahoma as compared with other crop acreages and the effects which their changes had upon the cooperative cotton gins used in this study, only the more important cotton-producing counties were used. Nearly all the cotton gins which have borrowed from the Bank are located in the southwestern part of Oklahoma. Twenty-three counties were selected which include nearly all the cotton acreage west of a line from Oklahoma City due south to the Oklahoma-Texas border. In the southwestern section a different type of farming is practiced than that in the eastern section.

Figure 1 shows the division which has been selected and the counties included. It also shows the location of all the gins to which the Bank has made loans. Only two gins were located outside the southwestern section and most of the gins were located in the four counties of Jackson, Kiowa, Caddo, and Tillman. These two sections consistently represent the major cotton acreage which has been planted in Oklahoma from 1920 to date. According to the Agricultural Census, 81 to 85 percent





of the cotton planted in Oklahoma was planted in these two sections for every census year from 1920 to 1940 inclusive. The southwestern section includes Beckham, Blaine, Caddo, Canadian, Carter, Cleveland, Comanche, Cotton, Custer, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McLain, Oklahoma, Roger Mills, Stephens, Tillman, and Washita counties. The southeastern section includes Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, LeFlore, McCurtain, McIntosh, Marshall, Murray, Okfuskee, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole counties.

The type of farming in the southeastern section is much more diversified than that of the southwestern section and the soil is generally poorer. The farms are smaller in the southeastern section and more sparsely located in some parts because not all of the land is tillable. The topography of the southeastern section is much rougher and more heavily wooded than the southwestern section, leaving much less tillable soil.

According to the U. S. Agricultural Census in 1929, the average cotton acreage per farm in the southeastern section was 20.8 acres whereas in the southwestern section it was 48.1 acres. In 1934 the average cotton acreage per farm in the southeastern section was 13.5 acres compared to 31.4 acres in the southwestern section. In 1939 the average cotton acreage per farm in the southeastern section was 12.2 acres compared to 28.8 acres in the southwestern section. These data show that the cotton acreage per farm in the southwestern section was more than twice that of the acreage per farm in the southeastern

section. This substantiates the statement that cotton farms are smaller in the southeastern section of Oklahoma than in the southwestern section. Much of the cotton in the southeastern section is still grown with mules and horse-drawn equipment. Such equipment is adapted to this section because of the small farms and comparatively rough topography. The situation is somewhat different in the southwestern section since the land is much more level. Thus, mostly tractor-drawn implements are used, and farming is done on a larger scale.

There have been some changes in the cotton acreages of the southeastern and southwestern sections in the past 20 years. The following table indicates the changes.

Table 1. Cotton acreages in southwestern and southeastern sections of Oklahoma, with the acreage in the southwestern section in percent of total acreage.

Year	Acreage in		Acreage in southwestern
	Southwestern	Southwestern	section in percent of
	section	section	total acreage
1919	1,116,480	1,152,817	50.81
1924	1,239,328	1,906,817	60.63
1929	792,360	2,682,962	77.20
1934	600,793	1,326,849	71.76
1939	369,360	1,043,972	73.87

Source: U. S. Census of Agriculture.

Table 1 indicates that there was a definite shift in cotton acreage from 1919 to 1939. In 1919 about equal acreages of cotton were grown in the southwestern and the southeastern sections. The census shows that in 1924, 60 percent of all the cotton grown in the two sections was grown in the southwestern section and in 1929, 77 percent of all cotton grown in both sections was

grown in the southwestern section. During the depression years and since, more than 70 percent of the total acreage in the cotton sections was grown in the southwestern section, a fact which stresses its importance as contrasted to the southeastern section.

Prior to 1920 the cotton boll weevil had not migrated so far north as Oklahoma, but shortly after this date the weevil made its appearance. When the cotton boll weevil struck in Oklahoma it damaged a large acreage of cotton in the eastern sections. Most of the damage was done in the southeastern section, where, in some cases, crops were almost a total loss. This was in the early 1920's. Naturally it discouraged many cotton growers. Their tendency was to change to some other crop because control measures at that time were not too effective. For some reason the cotton boll weevil did not migrate to the southwestern section and has not as yet. A probable explanation of this is the moisture factor. The southwestern section is relatively dry compared to the southeastern section and the weevil does not thrive in dry weather, especially if the climate also is hot. The infestation of the cotton boll weevil in the southeastern section and the freedom from its infestation in the southwestern section are probably one of the main reasons for the shift in acreage from the southeastern to the southwestern section.

Another probable reason for this shift is soil erosion. In the southeastern section during the early 1920's the soil began to erode to a considerable extent, due partly to its cultivation

without proper control measures. Before control measures were taken, much of the choice soil for cotton growing had been washed away. The southwestern section is much more level and water erosion did not occur so easily; therefore, cotton could be grown to good advantage.

Other reasons for the shift to the southwestern section were the development of the light tractor and the fact that the southwestern section is much more suited to its use. Also, the farmers in the southeastern section were having increased competition from the southwestern cotton growers. This, along with a large supply and poor demand, discouraged their cotton outlook and tended to give them an incentive to shift to a more profitable crop.

#### COTTON AND WHEAT ACREAGES

It has been shown that most of the cotton produced in Oklahoma is grown in the southwestern part of the state even though the acreage in that area has been drastically reduced. Some of the land taken out of cotton production has been seeded to wheat. The greatest concern is with the southwestern section since it is the heaviest cotton-producing section and since the Bank has made most of its cotton gin loans there.

A comparison of cotton acreage with wheat acreage in the southwestern section shows that cotton acreage has decreased and wheat acreage has increased since 1930. Figure 2 indicates this change in graphic form. The cotton acreage in southwestern Oklahoma in 1931 was 2,100,000 acres. The acreage decreased

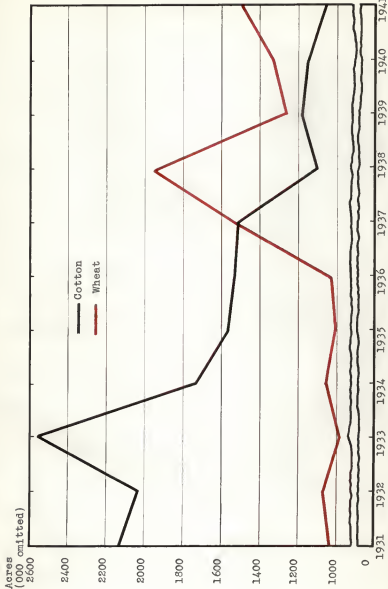


FIG. 2. Total acres of cotton and wheat harvested in southwestern Oklahoma from 1931 to 1941. (Source: U.S.D.A. annual cotton and wheat reports)(3)

slightly the following year and then increased in 1933 to 2,550,000 acres, a peak for the decade 1930-1940. There was a pronounced drop in cotton acreage in 1934 and a continuous decline from then until 1938, when only 1,100,000 acres were harvested. A 57 percent decrease in acreage occurred during a span of five years, 1933-1938. After 1938 the acreage increased slightly until 1941, when there was a new low of 1,040,000 acres.

During this period the wheat acreage also fluctuated but not to such a great extent. During the first six years of the decade wheat acreage in the southwestern section of Oklahoma did not reflect any marked changes. For the most part, the acreages were between 1,000,000 and 1,100,000 acres, thus varying less than 100,000 acres. In 1937 the first upward spurt was taken in wheat acreage, with 1,540,000 acres seeded. Then in 1938, when cotton acreage was at a new low, wheat acreage jumped to 1,840,000 acres, a peak for the decade. Wheat acreage decreased in 1939 to 1,260,000 acres and then steadily increased for the next two years, ending the period with 1,460,000 acres contrasted to 1,040,000 acres of cotton in 1941. Since 1935 the trends in wheat and cotton acreage have been in opposite directions, indicating shifts from one crop to the other.

Much of the tillable land in southwestern Oklahoma is suitable for both cotton and wheat. Therefore, these two crops tend to compete for a place in the cropping program. Such competition is not free because the Agricultural Adjustment Administration has restricted the acreage of both. The drastic reduction

in cotton acreage in 1934 and succeeding years was partly, but not entirely, due to the Agricultural Adjustment Administration program. No definite statistics are available as to the allotted acreage for these early years, but it is evident that cotton acreage was definitely affected by the program. In the entire state of Oklahoma more than 75 percent of the cotton acreage planted from 1933 to 1936 was under the Agricultural Adjustment Administration, according to Richards (11) in his book, "Cotton and the AAA". This means that the drastic reductions were to a large extent the result of acreage which was allotted to the growers. In the early period of the Agricultural Adjustment Administration from 1933 to 1936 it is evident from Fig. 2 that the wheat acreage did not materially change so the cotton acreage was not affected by wheat at this time. In these early years of the program most of the cotton growers planted their entire allotment acreage. Therefore, it is evident that the Agricultural Adjustment Administration was successful in reducing the cotton acreage in Oklahoma during the early years of its existence.

This was not true during all the years of this period, however, because in some of the later years the farmers did not plant their full quotas. In 1937 and 1938 wheat acreage increased and cotton acreage decreased, probably because of the relative prices of the two commodities. Compared to the price of cotton, the price of wheat seemed to the farmers to be more favorable, so there was a definite shift from cotton to wheat production. This was the result of insufficient restrictions

having been put on the acreage of wheat. For a few years after 1937 the farmers did not plant their full allotments of cotton but used their entire quotas for wheat. This was also partly due to the fact that there were marketing quotas established on cotton, with a penalty for overseeding as contrasted to no penalties for overseeding wheat.

In recent years a program was established whereby the cotton grower must plant a certain base acreage to cotton or lose his allotment privilege and also the right to plant as much cotton the subsequent year. As a result of this development, many cotton farmers planted more cotton or at least did not decrease their acreages further. This is evidenced by the fact that the year 1938 was a new low, after which a slight rise in acreage occurred. Another cause of an increase in cotton acreage was a decrease in the wheat acreage caused to some extent by a penalty clause placed on wheat with the establishment of wheat marketing quotas. A third cause of increased cotton acreage was that cotton prices again were as favorable as, if not more favorable than, wheat prices.

#### PRICES OF COTTON AND WHEAT

Cotton and wheat prices have shown great fluctuations during the past decade and have shown some rather striking correlations.

Figure 3 indicates the relative prices of cotton and wheat in index numbers to put them on a comparable basis. The years 1910-1914 were taken as the base period or 100 percent. The



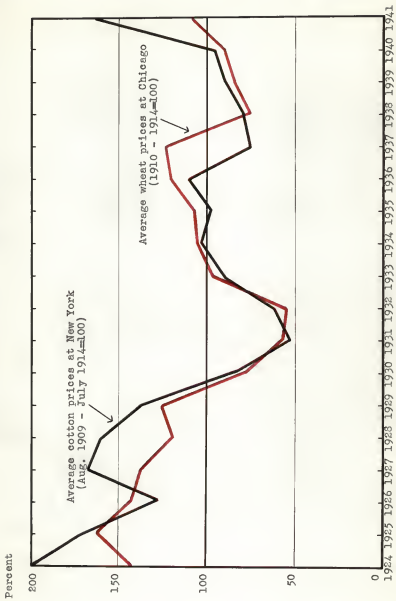


FIG. 3. New York average prices of cotton and Chicago average prices of wheat, index numbers, 1924-1941. (Source: U.S.D.A. agricultural statistics)(1)

prices in this case were 98 cents per bushel for wheat and 12.02 cents per pound for cotton. The price which was used for cotton was the average cash price for the year on the New York market, with the year starting on August 1. For wheat the average cash price for the year was taken at the Chicago market on the basis of the calendar year.

In 1924 the price of cotton in New York averaged 24.74 cents, which is 206 percent of the 1910-14 average. In 1925 and 1926 cotton prices declined to 126 percent, with an increase in 1927 to 170 percent of the 1910-14 average. From then there was a decline which ended with a low in 1931 of about 6.34 cents a pound or 53 percent of the 1910-14 average. After 1931 prices advanced until 1937. After a price slump in 1937 the price gradually increased, with a sharp increase in 1941.

The price of wheat in 1924 was \$1.39, 142 percent of the base price. Wheat prices increased in 1925 compared with 1924 while cotton prices declined during this period. Wheat prices gradually declined, however, from 1925 to 1929. Following the crash in the stock and commodity markets in 1929, the price of wheat dropped to 53 cents a bushel in 1931 and remained at 53 cents in 1932. Partly as the result of improvement in general business conditions, cotton prices advanced from 1931 to 1936 and wheat prices tended upward from 1932 to 1937. After a marked drop in cotton prices in 1937 and in wheat prices in 1938, the prices of both crops advanced steadily.

As shown in Fig. 3, the price of cotton compared with wheat was relatively high from 1924 to 1930. This fact probably

influenced the increase in cotton acreage in southwestern Oklahoma during that period. From 1935 to 1938 the opposite was true; that is, the price of wheat was greater than that of cotton. This explains to some degree the shift in acreage from cotton to wheat from 1935 to 1938. Since then the purchasing power of both commodities has increased but the recovery in the purchasing power of cotton has been the more pronounced, partly because of the abandonment of the gold standard, according to Garside (8). Prices of cotton, a world commodity, quickly reflected the depreciation of the dollar. In 1936 wheat prices increased to a greater extent than did cotton prices and in 1937 wheat prices continued steady to higher while cotton prices declined quite sharply to 75 percent of the base. The price of wheat, on the other hand, was 120 percent of the base but dropped drastically in 1938 while cotton prices remained steady during this year. This indicates that there was a lag of one year from 1936 to 1938, as seen in the declines in wheat prices steadily following cotton price declines by one year. This may have been due in part to the changes which were made in the Agricultural Adjustment Administration. Figure 2 shows that the wheat acreage continued to show a sharp increase in 1938 and that cotton acreage was drastically reduced. These acreage figures indicate that farmers in southwestern Oklahoma studied the prices of the various commodities as one criterion in determining the crops to grow.

## COTTON YIELDS AND RAINFALL

The yield of cotton, like the yields of most crops, is dependent to a great extent upon the quantity of rainfall and the time of year in which it falls. A high positive correlation exists between rainfall and the yield of cotton in southwestern Oklahoma (Fig. 4).

In 1932 the average annual rainfall was 31.8 inches and the average yield of cotton in southwestern Oklahoma was 167 pounds per acre, a slight increase over 1931 yields. However, in 1933 with an average annual rainfall of only 26.2 inches, cotton production per acre averaged 222 pounds, the highest yield for the period under consideration. The probable reason for the increase in yield with a decrease in the rainfall is the factor of moisture carry-over. Previous to 1933 rainfall had been excessive for the best growing conditions of cotton. The moisture carried over from 1932, together with the rainfall in 1933, was sufficient to produce a good crop that year.

By the end of 1933, however, nearly all the reserve moisture had been used and with another decrease in rainfall in 1934 a drastic decrease in yield resulted. It will be noticed from Fig. 4 that yields dropped from a peak of 222 pounds per acre to a low of 45 pounds per acre in two consecutive crop years. The rainfall in 1934 totaled only 22.9 inches. This shows a definite positive correlation between rainfall and cotton yields.

For the remaining years in the period under consideration a fairly close correlation was noticed. For the three years

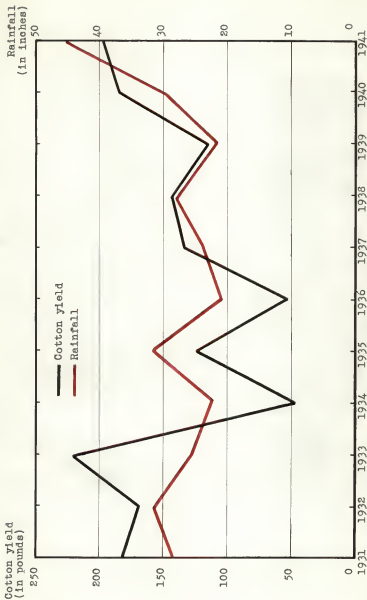


Fig. 4. Average cotton yield per acre harvested and average annual rainfall in southwestern Oklahoma from 1931 to 1941. (Source: U.S.D.A. annual cotton reports and U.S. Dept. of Commerce climatological data)(2,3)

1937, 1938, and 1939 a very close correlation between rainfall and yield was observed, with a slight deviation in 1940 and 1941. In 1941 the rainfall was 46.2 inches and cotton yields were 198 pounds per acre. This was an increase of only 19 pounds over the average yield in 1940 when only 29.8 inches of rain fell. It is probable that there was too much rainfall in 1941, thus affecting the yield adversely. It appears that a rainfall of approximately 30 inches proves most beneficial to cotton in southwestern Oklahoma. Of course the time of the year in which the rain fell would make a difference.

Probably the most beneficial rains for the production of cotton in southwestern Oklahoma are those during the growing season from about March 1 to August 31. Since most of the cotton is planted in April and May a good, moist seedbed is desirable. Therefore, any moisture falling shortly after March 1 probably can be utilized to good advantage. The growing season usually ends by September, when the cotton is open, and any rain falling after that time is likely to be more harmful than beneficial to the current year's crop.

In Fig. 5 the seasonal rainfall from March 1 to August 31 is compared to cotton yields. A closer correlation is observed in Fig. 5 than in Fig. 4. From 1934 to 1939 inclusive seasonal rainfall and yields of cotton approached a perfect positive correlation. This was not true in Fig. 4, so it is evident that the rain which fell during the summer period was much more beneficial.

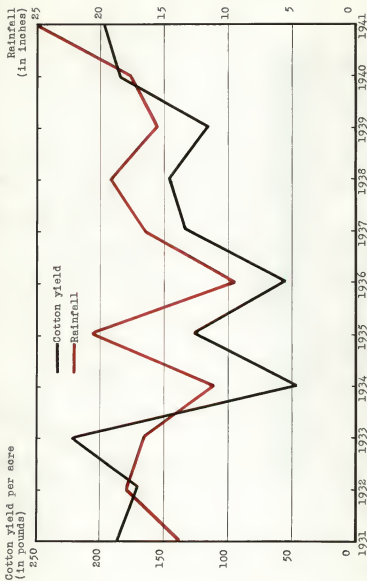


Fig. 5. Average cotton yield per acre harvested and average rainfall from March 1 to August 31 in southwestern Oklahoma from 1931 to 1941. (Source: U.S.D.A. annual cotton reports and U.S. Dept. of Commerce climatological data)(2,3)

Cotton yields per acre and total production dropped suddenly in 1934 and have continued at a low level since that time. The Wichita Bank for Cooperatives began to finance Oklahoma cotton gins in 1934. Loans made during the first few seasons were based to a certain extent upon cotton production prior to 1934. For this reason, among others, the repayment record of some of the cooperative gins has not been up to normal expectancy. General rainfall conditions have indicated that if the rainfall had continued through the years after 1933 as it did prior to this time, good cotton yields would have been obtained.

#### COTTON PRODUCTION AND ITS IMPORTANCE

During the depression years the total production of cotton in southwestern Oklahoma was considerably lower than in any recent previous period. Not only was the production low in the southwestern section of Oklahoma, but for the entire state as well.

Figure 6 shows the total production of cotton from 1924 to 1941 for both the southwestern section and the entire state. These production figures are given in bales having an average gross weight of 500 pounds.

In 1924 the state production was 1,810,000 bales, which increased in 1926 to 1,773,000 bales, a peak for the period 1924-1941. A sharp decline occurred after 1926 and in 1927 the production was 1,037,000 bales, after which there were minor fluctuations until 1934 when there was the most drastic change of the entire 18 years. There was a reduction in the crop for



Production in bales  
(000 omitted)

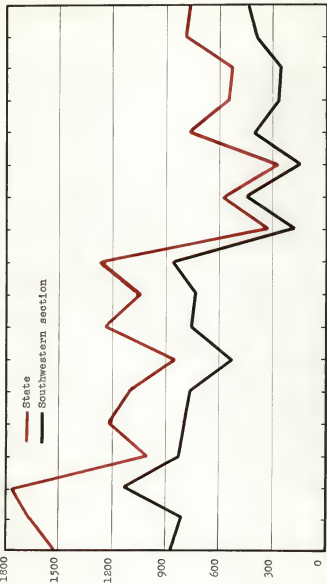


FIG. 6. Cotton production in the southwestern section as compared to the state production in Oklahoma from 1924 to 1941. (Source: U.S.D.A. annual cotton reports)(3)

the state from 1,266,000 bales in 1933 to 321,000 bales in 1934. There was a slight increase in production in 1935 but a further decline in 1936 when production of cotton dropped to a low of 290,000 bales. Production increased to 773,000 bales in 1937, after which some slight decreases were experienced followed by an increase in 1940 and a slight decrease in 1941.

A study of the southwestern section of Oklahoma indicates that the production of cotton there follows closely that of the total state production. One reason for this is that most of the total state production is in this section.

In 1924 the southwestern section produced 860,000 of the 1,510,000 bales produced in the state. A slight decline occurred in 1925, with an increase in 1926 to the peak of the period (1924-1941) of 1,128,000 bales. A gradual decline occurred from 1926 to 1930, followed by an increase until 1933. In 1934, the most drastic reduction in the entire period was experienced, as was true for the state as a whole. In the southwestern section in 1933, 865,000 bales were produced compared with 156,000 bales in 1934. The production figures for the southwestern section paralleled the state figures in 1935 and 1936, with an increase in 1935 and then a corresponding decrease the next year. A gradual increase with few fluctuations occurred after 1936, ending the period with 435,000 bales in 1941.

Previous to 1930 it was thought by agriculturalists that Oklahoma would continue to produce more than one million bales of cotton annually since the state had done so for some 10 to

15 years previously. In the first few years of the 1930's this prediction was correct, with the exception of 1930 when production was 854,000 bales.

Likewise it was expected that in the southwestern section about 800,000 bales would be produced. Production was about that much excepting in 1930 when it dropped to 518,000 bales. It is evident that the southwestern section was by far the most important section of the state in the early 1930's when 800,000 bales were expected from this section with only one million bales expected for the entire state.

In 1934 there was a drastic decline in production. This was caused by several factors, among which the most important were lack of moisture and the small acreage harvested. In the southwestern section the cotton acreage was reduced from 2,550,000 acres in 1933 to 1,720,000 acres in 1934. The large reduction in acreage was caused in part at least by adverse weather conditions. Only 22.9 inches of rain fell in the southwestern section of Oklahoma in 1934--a decrease of three inches from the previous year and a nine-inch decrease from 1932. This reduced the yield from 222 pounds per acre in 1933 to 45 pounds in 1934.

Considering the factor of yield alone, it is obvious why some of the cotton gins had a hard time making any profit during 1934. This would not have been so serious had this condition existed only in 1934. Figure 3 shows a slight increase in production for the next year, with another drop later and then a slow increase. This indicates that the southwestern section

of Oklahoma went into this adverse situation suddenly and has been slow to recover.

Figure 4 shows a somewhat better yield in 1935 (123 pounds) and then a drop before the steady climb through the years back to normal about 1940. Cotton acreage, on the other hand, as shown in Fig. 2, did not make an upward swing after 1934 but continued on a level for a few years and then decreased further. By the end of 1941 cotton production was only 1,042,000 acres and was lower than in any year in the 1930's in southwestern Oklahoma. However, yields have improved somewhat but not enough to offset the decrease in acreage, so total production has remained below normal.

It is obvious that the cotton gins in Oklahoma had a hard time meeting expenses because they had much less cotton to gin after 1933. As a result, several gins were forced out of existence in 1934. There were 816 cotton gins operating in the state of Oklahoma in 1933 compared with 760 in 1934, according to the Oklahoma State Corporation Commission.

From 1924 to 1934 there had been an average of about 1,500 bales of cotton per gin for the 832 gins then in operation in Oklahoma. In 1933 there was an average of 1,551 bales per gin and in 1934 the average dropped to 422 bales. It usually takes at least 1,200 bales of cotton in Oklahoma per gin to make expenses over a period of years. With only 422 bales per gin in 1934, the gins were in a rather precarious position.

The year 1934 was the first in which the Bank for Cooperatives operated; therefore, the situation which confronted it

relative to the financing of cooperative cotton gins was difficult. The credit, from the standpoint of the gins, could not have come at a more opportune time and because of this credit many of them were able to continue their operations whereas otherwise, in all probability, they would have been forced to cease operations, at least temporarily.

#### RESULTS OF VOLUME IN OPERATIONS

As a general rule, manufacturing and service concerns operate at lower per unit cost as volume increases up to the point of optimum utilization of their plants. A cotton gin is no exception to the rule. One of the greatest problems of Oklahoma cotton gins during the period 1934-41 was their inability to obtain enough cotton to gin to utilize their plants to the maximum capacity. Volume, therefore, is one of the most important factors determining the success of cotton gins. The following table emphasizes this fact.

Table 2. Net gain, expenses per bale, and average patronage dividends paid, by volume of ginnings in the United States for the 1936-37 season.

Number of bales ginned	Number of asso- ciations	Net gain per asso- ciation	Expense per bale	*Patronage dividends paid per association
Less than 500	50	\$ -492.00	\$15.00	\$ 263.00
500 - 999	70	-374.00	8.00	234.00
1,000 - 1,499	71	701.00	7.00	775.00
1,500 - 1,999	47	2,620.00	5.00	1,654.00
2,000 - 2,999	46	4,772.00	5.00	3,055.00
3,000 - 3,999	29	7,295.00	5.00	6,503.00
4,000 - 4,999	11	9,605.00	4.00	7,309.00
5,000 and over	6	25,517.00	6.00	14,087.00

\* Includes ginning charges, profit on bagging and ties, and other miscellaneous income except profit or loss from sale of cotton. Source: A statistical handbook of farmers' cooperatives (12).

Table 2 shows that during the year 1936-1937 the larger the volume of cotton ginned per gin in the United States the larger the gain. The plants which ginned less than 1,000 bales suffered a loss while those which ginned more than 1,000 bales made gains in proportion to the number of bales ginned. The expenses per bale tended to decrease with an increase in volume, with sharper decreases in the lower brackets. Table 2 shows that as the volume became extremely large the expenses per bale increased, indicating that the plants with this extremely large volume were ginning too many bales for the greatest efficiency of the plant. However, only six gins were represented in this group, a small sample on which to base definite conclusions. Patronage dividends paid increased with volume. This is the result one would expect since earnings increased with volume. Obviously, the plants which ginned less than 1,000 bales paid dividends out of capital. Based upon the experience of the past, a cotton grower could expect an increase in dividends with an increase in volume of cotton ginned.

According to data in Table 3, the relation between volume and expenses per bale in Oklahoma and Texas gins is about the same as for the United States as a whole. This, however, means that these data are compared with 4-80 and 5-80 gin plants throughout the United States.

Table 3. Average ginning expenses of Oklahoma and Texas cooperative cotton gins by volume of ginnings for the seasons of 1932-33 to 1935-36.

Number of bales ginned	4-80 plants*		5-80 plants**	
	Annual	Average	Annual	Average
	association	expenses	association	expenses
	records	per bale	records	per bale
Less than 500	16	\$16.39	36	\$17.42
500 - 999	25	7.44	65	8.09
1,000 - 1,499	22	4.93	55	5.83
1,500 - 1,999	29	4.22	64	4.82
2,000 - 2,499	5	3.56	54	4.17
2,500 - 2,999	8	3.43	47	3.72
3,000 - 3,499	3	2.51	31	3.35
3,500 - 3,999	-	-	9	3.16
4,000 - 4,499	2	2.79	14	2.76
4,500 - 4,999	-	-	11	2.50
5,000 - 5,499	2	2.34	4	2.58
5,500 - 5,999	-	-	2	2.85
6,000 - 6,500	-	-	1	2.36

\* 4-gin stands of 80 saws each.

\*\* 5-gin stands of 80 saws each.

Source: Burgess and Weaver, Expenses, income and dividends of Oklahoma and Texas cooperative cotton gins (6).

Table 3 emphasizes the importance of volume to cotton gins. It has been pointed out that expenses per unit tended to decrease as volume increased for cotton gins over the entire United States. Table 3 indicates that this situation is true for both four- and five-stand gin plants in Oklahoma and Texas. On the basis of the data in Tables 2 and 3, the decrease in per unit expense as volume increases was not constant. For example, an increase in volume from 500 to 999 bales resulted in a 53 percent reduction in per bale expense whereas an increase in bales ginned from 1,000 to 1,499 resulted in only a 24 percent reduction in expenses per bale. There is a minimum below which

overhead expenses per unit cannot be reduced. Decreases in per unit expenses appear to be relatively small at about 4,000 bales for 4-80 plants and about 5,000 bales for the 5-80 plants. There were a few exceptions to decreasing per unit expenses with increasing volume, which occurred in greater volumes than 5,000, one being in the 5,000 to 5,499 group which increased from \$2.50 per bale to \$2.58 and the other being in the 5,500 to 5,999 group which was an increase from \$2.58 per bale to \$2.65. These facts further substantiate the 5,000 bale figure which was arbitrarily set as the capacity figure by Burgess and Weaver (5) as a result of their study of Oklahoma and Texas cooperative cotton gins.

Figure 7 is a graphic representation of the above discussion. Burgess and Weaver (5) prepared this chart by constructing dot charts and drawing a line through the median of these dots. The median lines shown in Fig. 7 are averages of all the associations listed in Table 3 for the two sizes of gin plants. This shows that the expenses per unit tended to level out and thus became more or less stable with the increase in volume. After the point of the capacity of the gin was reached, this line tended to rise slightly. Considering the upward trend of expenses per unit which is associated with decreasing volume, it should be noted that there was a sharp increase in expenses per bale with the gins which ginned less than 1,000 bales. The 5-80 gin plants show greater per unit expenses at the lower volumes than the 4-80 plants because the smaller plants were designed for a smaller capacity and therefore are more efficient with



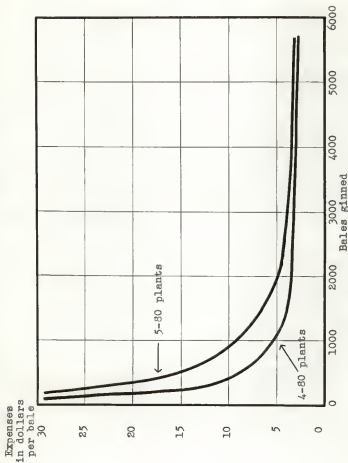


Fig. 7. Relation of average ginning expenses to volume of cotton ginned on 4-80 and 5-80 plants, Oklahoma and Texas cooperative cotton gins for seasons 1932-33 to 1935-36. (Source: Burgess & Weaver, Expenses, income, and dividends of Oklahoma and Texas cooperative cotton gins)(5)

small volumes. The expenses of the two sizes of gins with the same volume were compared and in every case the smaller plant had lower expenses per unit at the same volume than did the larger plant. It has been stated, however, that the maximum efficiency of the 5-80 gin plants is 5,000 bales whereas that of the 4-80 plants is 4,000. If the per unit expenses are figured on the basis of capacity comparisons, then the smaller gin plants would not have the smaller expenses per bale when the gins were operating at optimum capacity.

Texas cooperative cotton gins tend to be comparable to the Oklahoma cotton gins in their operations and results. This is shown in a study made of Texas cooperative cotton gins that borrowed from the Houston Bank for Cooperatives. Table 4 is a presentation in tabular form of one of the phases studied.

Table 4. Average net income per bale for 5-stand gin plants owned by associations borrowing from the Houston Bank for Cooperatives, seasons 1934-35 to 1939-40.

Number of bales ginned	: Annual : associ- : ation : records	: Net income per bale : from ginning, : wrapping, cottonseed, : cotton, and sidelines
Less than 500	3	\$ -6.08
500 - 999	28	- .60
1,000 - 1,499	36	1.01
1,500 - 1,999	38	1.63
2,000 - 2,499	35	1.94
2,500 - 2,999	21	2.12
3,000 - 3,499	7	3.11
3,500 - 3,999	5	2.38
4,000 - 4,499	6	2.47
4,500 - 4,999	3	2.38

Source: Hermann, Gin loan experiences of the Banks for cooperatives (9).

As shown in Table 4, net income varies directly with volume. Most of the cooperative gins in Oklahoma are 5-stand plants and are comparable in operation methods and results to Texas gins. According to this survey made by Hermann (9), the cooperative gins in Texas were most successful if they had a volume of 3,000 bales or more. However, a net income was realized in gins having a volume of only 1,000 bales or more. A loss occurred in most gins with a volume of less than 1,000 bales. According to these studies, volume is one of the most important factors in the successful operation of cooperative gins.

#### VOLUME CORRELATIONS IN SOUTHWEST OKLAHOMA COOPERATIVE COTTON GINS

As stated, cotton is grown in Oklahoma in two sections of the state. The southwestern section is of greater concern in this study because more than 90 percent of the loans made to cotton gins in Oklahoma by the Bank for Cooperatives are located in this section.

Figure 8 is a graphic presentation of the relation of volume and net profit in gins to which the Bank for Cooperatives has made loans. It was not possible to obtain records for all forty of the gins to which the Bank has made loans, so an average of the number of records available was used. In considering all associations on which records were available, a comparison was made between all associations and fifteen associations out of this total on which complete records were available. The

Net profit

Bales ginned

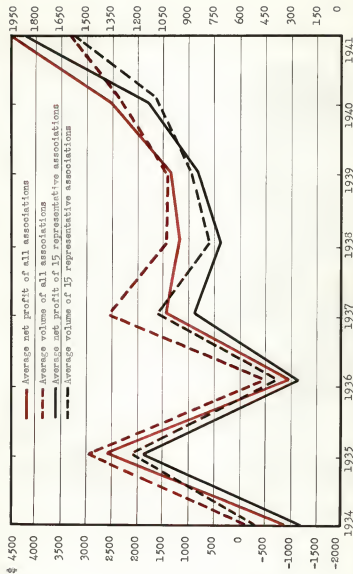


Fig. 8. Average net profit compared to average volume of all cooperative cotton gins with available records who were borrowers of the Wichita Bank for Cooperatives and average net profit compared to average volume of 15 representative associations with complete records from 1934 to 1941. (Source: Wichita Bank for Cooperatives)

greatest number of associations for which records were available for any one year was thirty-four and the least number was twenty-two (Table 5).

Table 5. Average net profits and volume of cotton gins in Oklahoma by years, with the number of associations included in the average.

Year	: Number of : : associations :	: Average : : net profits :	: Average volume : : (in bales) :
1934	22	\$ -382.11	528
1935	33	2,505.59	1,436
1936	34	-1,198.49	424
1937	34	1,847.47	1,354
1938	33	1,222.89	1,040
1939	31	1,276.13	1,016
1940	29	2,445.70	1,324
1941	26	4,439.18	1,559

Source: Wichita Bank for Cooperatives' financial files.

The average net profit of all associations in Fig. 8 for 1934 means the average of the net profit of twenty-two cotton gins on which records were available. An analogous situation occurs with volume. The average net profit and average volume for 1935 include thirty-three gins which may or may not include all of the twenty-two gins on which records were taken in 1934. In order that the data may not be biased, a sample of fifteen gins was taken on which all records were available for the eight years as depicted in Fig. 8 by the average net profit and average volume of fifteen representative associations.

In the case of the representative gins the net profit follows closely with the volume and indicates a high positive

correlation. In 1935 when there was a good cotton crop the volume for these gins increased. Profits in 1935 were \$1,938.15 for the average gin compared with a loss of \$1,247.22 for the average gin in 1934. Likewise, with a decrease in volume in 1936 there was a decrease in net income from operations. The net profit or net income considered consists of the profit or loss from operations after depreciation has been taken, bad debts charged off, interest on loans, and other expenses subtracted from gross earnings.

The volume and net profit with all associations shows somewhat the same relationship in 1939 when volume decreased slightly compared with 1938 but there was a slight increase in net profit. The reason for the increase in income with decrease in volume in 1939 was that practically all of the cotton was placed under government loan. This prevented the gins from purchasing cotton. The cotton account of most gins showed a loss. This was a result of their attempts to purchase the cotton which was not put in the loan at high prices in order to secure added ginning.

It should be noted that the net profit increased at a greater rate than a corresponding increase in volume at all volumes more than 1,000 bales in the case of the representative associations. The higher the volume the greater the increase in net profits tended to be insofar as these gins were concerned. One reason the profit was proportionately greater at higher volumes was that there are many fixed expenses in a cotton gin and the fixed expenses remain the same regardless of volume. The net profit, therefore, increased more in proportion than did

the volume because about the same amount of total expenses occurred in the volumes under 1,000 bales as did over 1,000, and in the latter case there were more bales over which expenses were allocated. Variable expenses include wages, power and light, etc., and the increase in proportion to the volume thus tended to keep net profit in line with volume. The net profit increase was due partly to the fixing of ginning rates by law. There is no way for the gin to lower ginning rates as volume increases. Most businesses reduce rates or margins as volume increases or will reduce them to increase volume. This is why increases in net profit develop so rapidly after a certain number of bales are ginned. When the gin buys cotton and cotton seed, margins for which are not fixed by law, then some decrease in net profit may develop.

Volume is one of the most important, if not the most important, factor in determining the success of a cotton gin. If an adequate volume is assured in a cooperative gin, the first step toward its success has been taken and other factors affecting its success may be adjusted accordingly. There are other contributing factors such as management, ginning rates, general price level, and cotton prices. Management, especially, plays an important role in the success of a cotton gin.

#### GINNING RATES

In the state of Oklahoma cotton gins are a public utility and are regulated by the state. The State Corporation Commission has been granted authority to make these regulations. The gins

are subject to several restrictions on the method used for ginning, the condition of the gin saws and other equipment, also the rate which shall be charged the farmer for ginning his cotton, and other factors. At the beginning of each ginning season the Corporation Commission sets the rates to be charged for the ginning of seed cotton as a public business within the state. The Commission conducts a hearing annually for the purpose of determining rates which it considers just and reasonable to both gin operators and to cotton growers.

At these hearings statistics are presented concerning costs of ginning cotton, the prospective crop for the current season, and other pertinent information. The Commission also has authority to set the price which may be charged for bagging and ties. Various prices of jute and cotton bagging are obtained and presented to the Commission, after which such prices are taken into consideration at the hearing. Either cotton or jute bagging may be used, but it must meet certain standards for strength and durability which are set by the Commission.

There is an investigating committee in the Commission which gathers all available data from reliable sources to be considered at the hearing. All those interested in either the ginning or growing of cotton from the standpoint of rates to be established attend the hearing. Usually some representative managers of ins are called upon to present their views. Such managers are selected from various parts of the state in order to get a statewide representation. Various state organizations, including the Farmers' Union, Oklahoma Cotton Growers' Association, Oklahoma



State Ginners' Association, and others also have representation at the hearings.

According to the views of the ginners, the rates have been too low, especially during the depression years. According to the Corporation Commission, the rates were set so that a reasonable profit could be realized. However, it appears now that the ginners were right in their statement that rates were too low. There never has been a restriction on the cost of bagging and ties nor on the distributing houses where they are purchased. This left one avenue for profit in some years because the bagging and ties could be purchased at a figure under the price to be charged the grower. Table 6 presents the rates for ginning and the amount which the gin was allowed to charge for bagging and ties.

Table 6. Ginning rates for picked and bolly cotton with bagging and tie rates for the years 1924 to 1941 in southwestern Oklahoma.

Year	Ginning rates		Bagging and tie rates
	Picked cotton	Bolly cotton	
	per 100 pounds	per 100 pounds	per pattern
1924	35 (¢)	50 (¢)	\$1.50
1925	32½	50	1.60
1926	30	45	1.90
1927	30	42½	1.50
1928	35	42½	1.45
1929	35	42½	1.45
1930	35	42½	1.45
1931	25	30	1.15
1932	25	30	1.00
1933	25	30	1.00
1934	25	30	1.00
1935	25	27½	1.00
1936	25	27½	1.25
1937	25	27½	1.25
1938	25	27½	1.25
1939	25	27½	1.25
1940	25	27½	1.40
1941	25	27½	1.75

Source: Oklahoma State Corporation Commission (4).

Table 6 shows that the rates charged during the 1930's were definitely lower than those of the previous years. This means that because of this factor and short crops the gins faced financial difficulties.

The rate set for the bagging and ties was generally in line with the variation in the price at which the patterns could be purchased. In case the seed was sold to the gin, the cost of bagging and ties and the rate charged for ginning were deducted from the seed check which the gin gave the farmer for the purchase of his seed. When the farmer caught his seed and took it home, the gin had to set up an account for him and collect for ginning and the cost of bagging and ties. This often presented a problem in the depression years when the farmers had barely a subsistence income. During this period many gins lost some accounts because of the farmers' catching their seed and not paying for their ginning. Because of low seed prices in some years, the seed did not pay the ginning cost. Such an account was harder to collect than when the farmer caught his seed and thus charged the entire cost of ginning.

Other than profit on bagging and ties, the gins had another important source of revenue which proved to be profitable during the depression years. That was the revenue from hauling seed to the cottonseed oil mill. This transportation was paid by the mill. The transportation was on an F.O.B. gin basis and if the gin could arrange to haul its own seed by truck the allowance for transportation usually was more than sufficient to cover trucking costs.

# LOAN ADVANCES AND REPAYMENTS

The Wichita Bank for Cooperatives is authorized to make three types of loans; namely, facility, operating capital, and commodity loans. Interest rates changed from time to time but remained relatively the same during the period under consideration. That is, the rate on commodity loans remained the lowest and the rate on facility loans remained the highest. Likewise, the length of loan generally followed directly the interest rate, with the commodity loan having the shortest term and facility loans the longest. From 1934 to 1941 inclusive, only two types of loans were made to cotton gins, these being facility and operating capital loans.

In 1934, the first year of the Bank's existence, loans amounting to \$123,317.45 were advanced to cooperative cotton gins in Oklahoma. Of this amount, \$22,550.00 was made as operating capital loans with the remainder of \$100,767.45 as facility loans. The amount of these loans by years is shown graphically in Fig. 9. In 1934 only twelve gins borrowed from the Bank. Most of the loans in the earlier years were facility loans.

There were 100 Farmers' Cooperative Cotton Gins in Oklahoma in 1934 when the Bank for Cooperatives was organized, and eighty-eight were reported by the end of 1941. Practically all of these were organized by the Oklahoma Farmers' Union and were financed in most instances by this organization, by the farmers, and by an independent cotton gin machinery and equipment company. Nearly all the first loans made by the Bank to these cotton gins were refinancing loans. The first lending experience by the

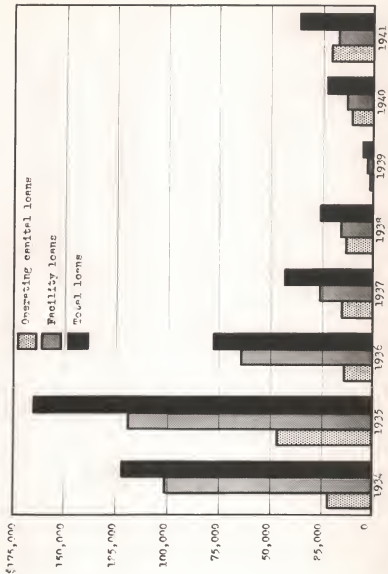


Fig. 9. Loans advanced to cooperative cotton gins in Oklahoma by the Wichita Bank for Cooperatives by years from 1934 to 1941. (Source: Wichita Bank for Cooperatives)

Bank to these gins included little, if any, financing of new plants. Later, however, when the gins began to pay off their re-financed loans, the Bank advanced them money for new additions or improved equipment to replace the old.

From 1937 to 1941 a much larger percentage of the total loans were operating capital loans. As the depression became more severe the gins had to borrow operating funds to keep their plants going. There was no incentive and perhaps no need for expanding plant facilities during this period.

In 1935 loans were made to twenty-one gins compared to only twelve in 1934. This accounts for the total loans being \$47,367.61 more in 1935 than in 1934. In Fig. 9 and subsequent figures, loans advanced (Figs. 9, 10) or repayments made (Figs. 11, 12) by forty cooperative gins means that this is the total number dealt with during the period under review. This does not necessarily imply that the forty all had loans at one time.

Annual advances decreased from 1935 to 1939 and in the latter year a low of only \$2,500.00 was advanced to only four of the forty associations. This did not necessarily mean that the gins did not need money in 1939. Many associations were not in a position to warrant further credit from the Bank. The unfortunate financial position of the gins at this time was not entirely their fault, as has been pointed out. Another reason for this decrease in loans was the relation which the gins had with cottonseed oil companies. Many of the gins solicited cottonseed oil companies when they needed money because that method of financing was more convenient than dealing with the Bank for Cooperatives even though much more costly.

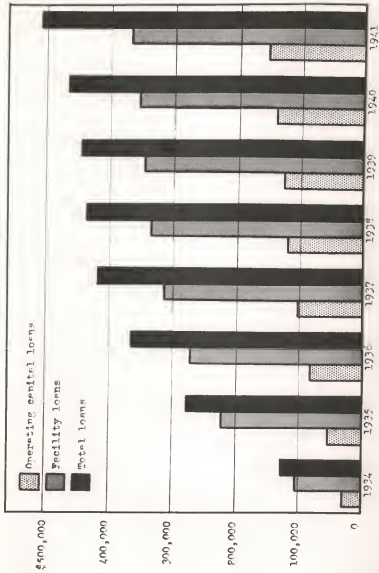


Fig. 10. Cumulative loans advanced to cooperative cotton gins in Oklahoma by the Wichita Bank for Cooperatives from 1934 to 1941. (Source: Wichita Bank for Cooperatives)

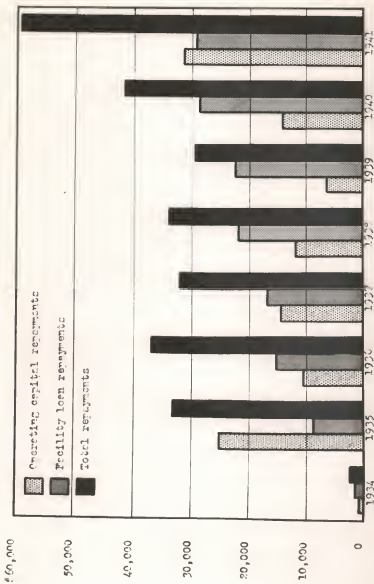


Fig. 11. Repayments made to the Wichita Bank for Cooperatives by cooperative cotton gins in Oklahoma by years from 1934 to 1941. (Source: Wichita Bank for Cooperatives)

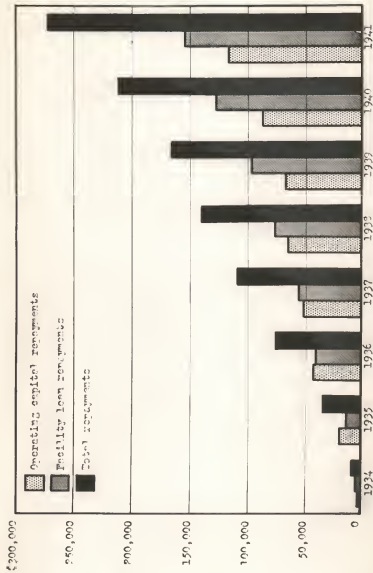


FIG. 12. Cumulative requirements made to the Wichita Bank for Cooperatives by cotton gin in Oklahoma from 1934 to 1941. (Source: Wichita Bank for Cooperatives)



The loans advanced during the last five years covered by this study have been about the same every year with the exception of 1939. The cumulative loans advanced have shown a steady increase of about the same amount every year (Fig. 10). The total loans advanced as of the end of 1941 were \$512,845.00, consisting of \$354,743.15 of facility loans and \$157,901.85 of operating capital loans. Another reason for the increase in operating capital loans the last few years was the Bank's changing its terms of interest payments from a quarterly basis to a yearly basis and the fact that the firms had realized how costly the method of financing by the cottonseed oil companies had become.

To determine the amount of loans outstanding at the end of any year, the repayments must be considered. Figure 11 shows the repayments made to the Bank each year on operating capital and facility loans, separately and in total. The cumulative repayments for each type of loan with their total are given in Fig. 12. Since 1934 was the year in which the Bank was organized, it could not be expected that many of the loans would be repaid that year; and total repayments amounted to only \$2,015.35. Total yearly repayments from 1935 to 1939 inclusive ranged from \$29,700.00 to \$38,100.00, with the lowest repayment record in 1939, which was also the year when the least amount of new loans was advanced.

Consideration must be given to the fact that while these repayments were being made, more loans were being advanced so that, normally, repayments should increase in proportion to additional advances. Although this favorable relationship of repayments

equaling additional loans did not exist, repayments were at least rather steady with some decrease which was climaxed in 1939, a year also associated with the least amount of advances.

Operating capital repayments were much greater in proportion to the facility repayments in 1935 than in any other year (Fig. 11). This is because the facility loans are made for a much longer period of time. Repayment programs provided for payments first to be applied to operating loans. It is also the policy of the Bank to organize repayment plans in such a manner that some payment on a volume basis will be made each year. This further indicates the reason for small repayments in 1939. After 1935 it was not until 1941 that operating capital repayments exceeded facility repayments, probably because of the increase in the ratio between operating capital loans advanced and facility loans as shown in Fig. 1.

Although operating capital loan repayments exceeded facility repayments in 1935 and 1941 (Fig. 11) the total results over the eight-year period show that more facility repayments have been made than operating capital repayments. This is shown in Fig. 12 under repayments for 1941, a cumulative result over the entire eight years. Figure 12 is graphed on such a small scale that the total repayments appear to be about the same every year. This fallacy in appearance can be corrected by noting the actual repayments by years in Fig. 11.

Table 7 shows the total advances made for each year in percent of total advances over the eight years as contrasted to the total repayments for each year in percent of the total repayments for the eight years.

Table 7. Yearly advances and repayments in percent of total advances and total repayments for the years 1934 to 1941.

Year	Percent of yearly advances to total advances	Percent of yearly repayments to total repayments
1934	24.46	.74
1935	38.86	12.75
1936	15.49	13.82
1937	8.72	11.92
1938	5.21	12.59
1939	.50	10.68
1940	4.96	15.57
1941	7.80	21.93
	100.00	100.00

Source: Wichita Bank for Cooperatives.

Table 7 also emphasizes the fact that most of the advances were made during the first few years of the Bank's existence. Seventy-three percent of the loans made during the eight-year period were advanced during the first three years of the period. Repayments, on the other hand, were more steady, being from 10 percent to 15 percent for every year excepting the first and the last. It is obvious that in the first year there would be little repayment and the relatively large amount in 1941 is due to generally good crop yields and high prices of commodities. There apparently is no correlation between the percentages of yearly advances to the total advances and the percentages of yearly repayments to the total repayments. A definite correlation, however, was not anticipated because of the fact that entirely different factors affect advances than affect repayments.

## SUMMARY

1. Oklahoma cooperative cotton gins, like all business concerns, were hard-pressed during the depression years. The reasons, however, were different in the case of cotton gins from those in most other businesses. The object of this study was to point out some of these reasons with their probable explanations. There is little literature on this subject, but much material was made available by the Wichita Bank for Cooperatives.

2. Certain unfavorable factors existed in 1934 when the Wichita Bank for Cooperatives was organized. Among these was a membership problem. Most of the gins were organized by the Oklahoma Farmers' Union and thus Farmers' Union membership was expected of every prospective gin member. This was altered later. Many of the gins were undercapitalized at the time of their organization. Many inexperienced managers had been hired because of lack of knowledge of qualifications of a good manager and insufficient funds to pay an experienced man. The records of the gins were in poor condition because of the fast turnover of bookkeepers and lack of proper cooperative knowledge. Some of the gins were also dominated by cottonseed oil companies because of their having borrowed money from these companies.

3. Most of the cotton gins borrowing from the Wichita Bank for Cooperatives were located in the southwestern section of Oklahoma. During the past 20 years there has been a shift in the production areas of cotton in Oklahoma from the southeastern section to the southwestern section. Some reasons for this were

cotton boll weevil infestation in the southeastern section compared with freedom from infestation in the southwestern section, better soil conditions in the southwest, and the development of the light tractor, which could not be used effectively in the southeastern section because of topography.

4. After 1930 the cotton acreage decreased in the southwestern section and was replaced by wheat. This was caused partly by the mandatory cotton acreage reduction by the Agricultural Adjustment Administration. Another cause was the establishment of marketing quotas on cotton several years before they were placed on wheat. Still another cause was that wheat prices were more favorable than cotton prices for several years.

5. Cotton and wheat prices followed a similar secular trend from 1924 to 1941. Considering seasonal trends, however, cotton was relatively high in price compared to wheat from 1924 to 1930, after which wheat assumed the lead. From 1935 to 1938 wheat definitely had the advantage over cotton as far as prices were concerned. From 1938 to 1941 the price of cotton was more favorable, so its purchasing power equaled and sometimes exceeded that of wheat. Considering the general trend of both cotton and wheat from 1924 to 1941, it was found that the prices of each commodity were 150 to 200 percent of the 1910-14 base average in the earlier years. In the middle of the 1920-30 decade the price trend started falling and continued downward until it reached the low in 1931 and 1932 of about 50 percent of the 1910-14 base. The prices fluctuated, with an upward swing by the end of the 1924-41 period.

6. Cotton yields from 1931 to 1941 were correlated very closely with rainfall. There was some deviation from the correlation in the first few years because of excessive rainfall which decreased the yield slightly. In 1933 the average cotton yield in southwestern Oklahoma was 222 pounds per acre. It then fell to 45 pounds in 1934 partly as a result of insufficient rainfall. After 1934 there was a fairly close correlation between annual rainfall and cotton yield and an even closer correlation between the rainfall from March 1 to August 31, the cotton growing season. The period of 1931 to 1941 ended with an upward trend in the rainfall and thus an upward trend in yield, with an average of nearly 200 pounds in 1941. Over this eleven-year period, about 30 inches of rainfall per annum proved the most beneficial if most of it was during the growing season.

7. Cotton production for Oklahoma decreased quite markedly from 1924 to 1941. The southwestern section was estimated to produce 800,000 bales as compared with 1,000,000 bales for the entire state. Thus it may be seen that the southwestern section was responsible for producing most of the cotton in the state. The most drastic reduction occurred in 1934, when production in the southwestern section dropped to 156,000 bales from 865,000 bales in 1933. Production increased somewhat but remained very low to the end of the 1924-1941 period, mainly because of adverse weather conditions and a continual reduction in cotton acreage. This low production caused some volume difficulties for the gins since at least 1,200 bales are required for the profitable operation of an Oklahoma cotton gin through one season. In 1933

there was an average of 1,551 bales for every cotton gin in the state, but in 1934 there were only 422 bales per gin.

8. Adequate volume is very important for cotton gins throughout the United States. It was found that the greater the volume the greater was the net profit up to the point of optimum utilization of the gin plants. Similar results as to volume were found to be true of Oklahoma and Texas cooperative cotton gins. The optimum utilization point for Oklahoma and Texas gins was found to be 4,000 bales for 4-80 gin plants and 5,000 bales for 5-80 plants. According to a study made of the cooperative cotton gins borrowing from the Houston Bank for Cooperatives, net income per bale varied directly with volume. The greater volume always reflected greater profit up to the capacity of the plant. Most of the gins were 5-stand plants and were most successful at about a 3,000-bale volume. However, the average plant made a profit with 1,000 bales.

9. Actual records from the Wichita Bank for Cooperatives were analyzed in regard to volume and net profit. It was found that in Texas and Oklahoma, as in the United States, net profit was correlated very closely with volume. Close correlations were shown by using all the records available and by selecting a representative sample of gins. The period from the establishment of the Wichita Bank for Cooperatives in 1934 to 1941 was used. In 1934 and 1936 volume was extremely low and a loss was experienced in most of the gins. From 1937 to 1941 profits were made which averaged from about \$600 to \$4,500 for all associations to which

the Wichita Bank for Cooperatives had made loans. Net profits increased at a greater rate accordingly than did volume after all volumes above 1,000 bales. If adequate volume can be assured, a net profit is nearly always the result.

10. The Oklahoma State Corporation Commission is charged with the responsibility of setting the ginning rates and the amount which the gins can charge customers for bagging and ties. As a result of this authority being vested in the state, the cotton gins are to some extent at the mercy of the state. The rates are set each year after the Commission has held a public hearing to consider the matter. During the most difficult period for the gins as far as volume was concerned, the rates were the lowest for several years, thus adding more burdens for the cotton gins since they could not charge more than was set by the Commission. In 1931 the ginning rate for picked cotton was lowered from 35 cents to 25 cents, where it remained through 1941. In 1931 the rate for bolly cotton was lowered from 42½ cents to 30 cents and then lowered again in 1935 to 27½ cents, where it remained through 1941. Bagging and tie rates followed this general trend, only more fluctuations occurred.

11. The Wichita Bank for Cooperatives made three types of loans--commodity, operating capital, and facility--from 1934 to 1941, but only the last two were made to Oklahoma cotton gins. The greatest amount of advances to the gins was made in the first years of the Bank's existence. About \$125,000 was advanced in 1934, of which \$23,000 was operating capital and \$100,000 was facility. In 1935 the greatest amount of loans was made, a total



of about \$165,000. In the following years loans were made but in smaller amounts until in 1939 less than \$3,000 was advanced. This was followed by two years of increasing advances. Nearly all of these first loans were refinancing loans. The decrease by years in advances was due in part to the fact that some gins were being refinanced by other means and some were not in sound enough financial condition to warrant loans.

12. Repayments made to the Wichita Bank for Cooperatives were negligible in 1934 since it was the first year any loans were made. In 1935 total repayments amounted to about \$35,000 and repayments remained between \$30,000 and \$40,000 through 1938. A drop was experienced in 1939, followed by marked increases until nearly \$60,000 was repaid in 1941.

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