Bulletin B-564
March, 1961

A Statistical Analysis of

The Relationship Of Governmental Control Programs And Cotton Acreage In Southwestern Oklahoma

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OKLAHOMA STATE UNIVERSITY
RESEARCH INSTRUCTION EXTENSION
SCIENCE SERVING AGRICULTURE
1891
EXPERIMENT STATION

Contents

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Cotton acreage in Oklahoma increased more or less continuously from the early 1890's through the late 1920's. It reached a peak in the period 1925-29. Oklahoma cash income from the sale of cotton lint averaged 122 million dollars annually during this five year period. This was approximately 59 percent of the cash receipts from crops and almost 40 percent of total cash receipts from all farm marketings.

Cotton has become less important in Oklahoma agriculture since 1929. Acreage has gradually decreased and by 1959, the value of lint production was down to 53 million dollars, less than 9 percent of total cash receipts. It has been generally accepted that governmental acreage control programs have been responsible for part of this decline but no attempt has been made to evaluate the effect of the programs on cotton acreages in Oklahoma. Consequently, the Oklahoma Agricultural Experiment Station undertook a study to determine the factors affecting cotton acreage in the State in order to provide some basis for evaluating the effects of acreage control programs.

The procedure used in this study contains three parts. First, the magnitude of change in cotton acreage by various type-of-farming areas in the State is determined. Second, economic and statistical relationships of cotton producers' acreage response are developed for the most important areas of cotton production. Third, these relationships are used to evaluate the effects of acreage allotments programs on cotton acreage in this area.

*The research reported herein was done under Oklahoma Agricultural Experiment Station Project 876. This research was a part of the research conducted under the Oklahoma phase of the cotton sub-project of Southern Regional Price Policy Project SM-14. Experiment Stations cooperating in SM-14 include Arkansas, Georgia, Kentucky, Mississippi, Oklahoma, Puerto Rico, Texas and Virginia.

Acreage Changes in Oklahoma

Estimates of cotton acreage by counties are available from the U. S. Census of Agriculture for the preceding year at five-year intervals. In addition, estimates are available from the Agricultural Marketing Service, U. S. Department of Agriculture. For the purpose of this study, the county estimates are grouped into aggregates for Type-of-farming Areas, for Eastern and Western Oklahoma, and for the State as a whole. The data are presented in Table I.

Harvested acreage of cotton in 1929 totaled 4,148,228 acres. Of this amount, about one half was in Type-of-farming Areas 11 and 12 in Southwestern Oklahoma. Cotton acreage represented about one-third of the land in farms in these two areas. The harvested acreage of cotton in Oklahoma decreased in each subsequent census year, and by 1954 it had dropped 78 percent. About two-thirds of Oklahoma's acreage was in Type-of-farming Areas 11 and 12, and cotton represented about one-tenth of the land in those areas.

Preliminary estimates from the Agricultural Marketing Service indicate that the downward trends in cotton acreage have continued. Acreage was estimated at 625,000 acres in 1959, a decrease of 85 percent in the 30 year period. The decrease has been greater than 90 percent for Type-of-farming Areas 1 and 2, Areas 4, 5, and 10, Areas 7, 8, and 13, and Area 9 (Figure 1). Apparently cotton agreage has continued to decline in Eastern Oklahoma relative to Western Oklahoma and has tended to concentrate in Type-of-farming Areas 11 and 12. More than 70 percent of the 1959 State acreage was in Areas 11 and 12.

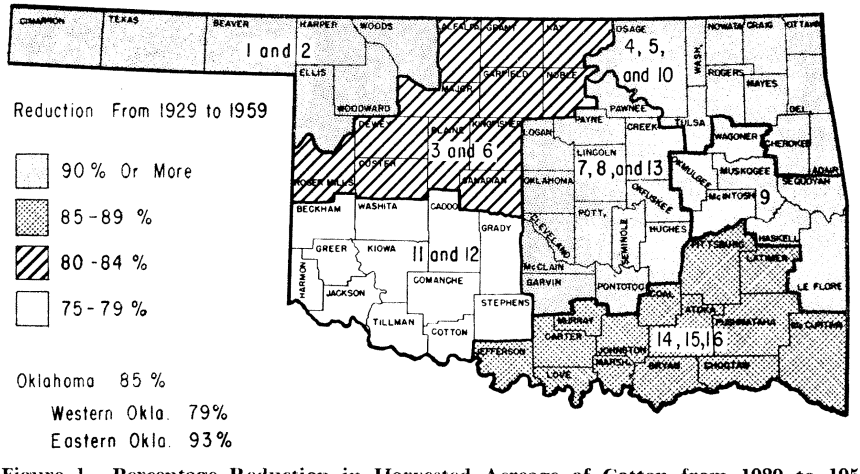

Figure 1.—Percentage Reduction in Harvested Acreage of Cotton from 1929 to 1959 by Oklahoma Type of Farming Areas.

Table 1.—Harvested Acreage of Cotton and Percentage of Land in Farms, Designated Areas, Oklahoma, 1929-59

	1929	1934	1939	1944	1949	1954	1959
				Acres			
Oklahoma	4,148,228	2,626,668	1,671,481	1,480,194	1,227,911	903,254	625,000
Western Oklahoma	2,385,010	1,321,652	896,425	856,399	768,020	702,630	498,310
Type of Farming Areas:							
1 and 2	7,446	9,139	1,674	433	454	1,893	590
3 and 6	332,100	233,073	105,962	86,446	88,500	102,317	59,520
11 and 12	2,045,464	1,079,440	788,789	769,520	679,066	598,420	438,200
Eastern Oklahoma	1,763,218	1,305,016	775,056	623,795	459,891	200,624	126,690
Type of Farming Area:							
4, 5 and 10	58,202	73,763	28,227	21,910	26,776	8,346	3,945
7, 8 and 13	771,079	537,775	299,653	252,174	126,924	47,366	30,435
9	440,410	306,441	207,970	171,659	135,974	61,013	35,870
14, 15 and 16	493,527	387,037	239,206	178,052	170,217	83,899	56,440
				Percentage of All Land in Farms			
Oklahoma	12.3	7.4	4.8	4.1	3.4	2.5	n.a.
Western Oklahoma	12.4	6.7	4.7	4.4	3.9	3.6	n.a.
Type of Farming Areas:							
1 and 2	.12	.14	.02	.01	.01	.03	n.a.
3 and 6	4.8	3.4	1.6	1.2	1.3	1.5	n.a.
11 and 12	33.1	17.0	12.6	12.0	10.9	9.7	n.a.
Eastern Oklahoma	12.1	8.3	4.9	3.7	2.8	1.2	n.a.
Type of Farming Areas:							
4, 5 and 10	1.6	1.9	.7	.5	.6	.2	n.a.
7, 8 and 13	15.3	10.0	5.7	4.6	2.5	.9	n.a.
9	21.4	13.9	9.6	7.6	6.1	2.7	n.a.
14, 15 and 16	12.7	9.1	5.5	4.0	3.5	1.7	n.a.

Source: Computed from data in U. S. Census of Agriculture 1930, 1935, 1940, 1945, 1950 and 1955 and from preliminary 1959 estimates of the Agricultural Marketing Service, U.S. Department of Agriculture. Data for 1930 through 1950 were computed as a part of Oklahoma Agricultural Experiment Station Project 521, under the direction of Raymond B. Marshall.

n.a. Not available.

Type-of-farming Areas 11 and 12 correspond roughly with Crop Reporting District VII in coverage of counties. Almost half the State's acreage was in this area in 1959 and relationships determined for this area should be applicable to the surrounding counties. Only Beckham and Washita counties on the north and Grady and Stephens counties on the east are excluded from District VII. No counties included in District VII are excluded from Areas 11 and 12. On the basis of this close correspondence, Crop Reporting District VII is used as the geographical area for the study of factors affecting acreage of cotton in Southwestern Oklahoma.

Acreage Changes in District VII

Acreage of cotton in cultivation July 1, 1929 in District VII totaled 1,429,600 acres. In subsequent years acreage decreased. The decrease in cotton acreage occurred simultaneously with the initiation of governmental control programs.** The loan operations of the Federal Farm Board began in 1929 and continued in 1930. However, in the next two years, loan operations ceased or were drastically curtailed and prices dropped to very low levels. Acreage in this area declined.

Under the Agricultural Adjustment Act of 1933, a portion of the cotton acreage in cultivation July 1, 1933 was destroyed and allotments were set for subsequent crops. In Oklahoma, approximately 1.2 million acres were destroyed or abandoned. Allotments for 1934 and 1935 in District VII were set at about 905,000 acres or one-third less than the 1929 acreage. After the control and tax features of the 1933 Act and the Bankhead Act were declared unconstitutional, the Soil Conservation and Domestic Allotment Act was passed. Payments of 5.0 to 5.5 cents per pound plus other benefits were made for diverting acreage from cotton and District VII acreage continued to decrease. Under the Agricultural Act of 1938 allotments were reimposed. District VII allotments were set at 660,000 acres, down 25 percent from the 1934 allotment. As compared with acreage in cultivation July 1, 1929, the reduction was more than 50 percent.

During World War II, cotton acreage allotments were discontinued but acreage continued to decline until 1949 when the trend was reversed. District VII allotments were set for 1950 at 402 thousand acres but were discontinued for the 1951 crop. In 1951, acreage jumped to 765,000 but declined in 1952 and 1953. In 1954 and subsequent years allotments

**For a description of these programs, see C. Curtis Cable, Jr., *A Chronology of Government Programs for American Upland Cotton*, Arkansas Agricultural Experiment Station Bulletin 587, April 1957.

were effective and both allotments and acreages continued the downward trend. In general, the commodities which have replaced cotton in District VII are wheat, grain sorghums, and cattle.

Analysis of Factors Affecting Acreage

Planned acreage, rather than harvested acreage, is of most importance in this study, because it results from the interplay of economic and institutional factors upon the producer. However, data on planned or intended acreage of cotton were not available. Acreage of cotton in cultivation July 1 was the only estimate of planned acreage at the time of this study and it is used as an indicator of planned acreage.

In general terms, the acreage of cotton in cultivation July 1 is assumed to be dependent on the price of cotton, the cost of producing cotton, and the prices of commodities which compete with cotton for land, labor, and capital resources in the District.*** The specific equation fitted is:

$$Y=a+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7 \qquad (1.1)$$

where:

Y = District VII acreage of cotton in cultivation July 1 (1,000 acres)

X_1 = District VII cotton allotment in the current year or acreage in cultivation in the previous year (1,000 acres)

X_2 = Deflated cotton loan rate for Middling 7/8 inch cotton or deflated price received by Oklahoma farmers in the previous year (cents per pound)

X_3 = Deflated price received by Oklahoma farmers for wheat in the previous year (cents per bushel)

X_4 = Deflated Oklahoma wage rate for harvesting cotton in the previous year (cents per 100 pounds)

X_5 = Percentage reduction from full yield in the previous year for Olahoma†

X_6 = Deflated price received by Oklahoma farmers for grain sorghum in the previous year (cents per 100 pounds)

X_7 = Deflated price received by Oklahoma farmers for cattle in the previous year (dollars per 100 pounds).

***The development of the economic model and the presentation of additional results are included in Roger P. Hill, "An Economic Analysis of Factors Affecting Cotton Acreage in Southwestern Oklahoma," unpublished M.S. Thesis, Oklahoma State University, May 1960.

The equation was estimated by the least squares single equation technique with all data expressed in natural units. Each price series was deflated by an average of the monthly indexes of prices received by Oklahoma farmers for all commodities computed for the crop year of that commodity. The crop years are as follows: August through July for cotton, June through May for wheat, September through December for grain sorghum, and January through December for cattle. The wage rate series was deflated by the cotton crop year index of prices paid by U. S. farmers for commodities used in living and production. The data are presented in Appendix Table 1.

The years 1929 through 1957 were divided into two periods, A and B, for estimation of parameters. Period A includes 16 non-allotment years including 1936. Period B includes 12 allotment years plus 1937 or a total of 13 years. The years 1936 and 1937 could be considered as either non-allotment or allotment years since the estimated reduction resulting from the diverted acreage program could be interpreted as equivalent to a reduction caused by an effective allotment. In this study 1936 was included as a non-allotment year and 1937 was included as an allotment year. This procedure permitted one such year of diverted acreage to be included in each period.

Period A

The estimated regression coefficients for Equation (1.1) in Period A are included in Table II and listed as Equation A-1. The standard errors of the regression coefficients are shown in parenthesis below each estimate. This equation explains approximately 91 percent of the variation in acreage. The estimate of the effect of each factor except wage rates is larger than its standard error, but only the parameter for acreage in the previous year is statistically significant at the 95 percent confidence level.

Similar estimates were obtained with wage rates (X_6) omitted. These estimates are listed as Equation A-II in Table II. The R^2 value is about the same and only slight changes in the size of the parameters are noted. The regression coefficients for both the acreage in cultivation the previous year and the price of wheat are statistically significant at the 95 percent confidence level or above. The other coefficients are statistically significant only at the 80 percent confidence level or above.

†Full yield is the yield that would have been possible if all climatic conditions had been ideal and there were no insect or disease damage in a particular year. The percentage reduction from full yield used in this study is the total of the reductions resulting from deficient moisture, excess moisture, boll weevil, plant diseases and other factors.

Table II.—Estimated Parameters for Factors Affecting Cotton Acreage July 1, Oklahoma Crop Reporting District VII, 1929-1957

	Cotton Acreage (t—1)	Cotton Price (t—1)	Wheat Price (t—1)	Wage Rate (t—1)	Yield Reduction (t—1)	Grain Sorghum Price (t—1)	Cattle Price (t—1)	a	R^2
Period A (non-allotment)*									
Equation A-I	.596 (.233)	74.278 (55.848)	—25.203 (11.019)	.299 (2.643)	9.937 (6.004)	—5.808 (4.249)	—182.30 (131.30)	2479.962	.914
Equation A-II	.588 (.209+)	74.180 (52.664)	—24.596 (9.088)		9.786 (5.520)	—5.671 (3.842)	—177.14 (115.90)	2433.272	.914
	Cotton Allotment (t—1)	Loan Rate (t—1)	Wheat Price (t—1)	Wage Rate (t—1)	Yield Reduction (t—1)	Grain Sorghum Price (t—1)	Cattle Price (t—1)	a	R^2
Period B (allotment)*									
Equation B-I	1.195 (.300)	5.085 (13.074)	.342 (1.824)	2.381 (1.761)	1.687 (1.485)	—.264 (.918)	37.87 (36.28)	—686.929	.976
Equation B-II	.882 (.064)	7.464 (9.383)	—.376 (1.118)					—28.213	.963

*Numbers in parentheses are standard errors of the regression coefficients.

The parameters are interpreted in terms of unit changes as follows:

a.) an increase in the acreage of cotton of one thousand acres is associated with an increase of 0.6 thousand acres of cotton in the following year.

b.) an increase in the price of cotton of one cent per pound is associated with an increase in cotton acreage in cultivation July 1 of 74.2 thousand acres in the following year.

c.) an increase in the price of wheat of one cent per bushel is associated with a decrease in cotton acreage of 24.6 thousand acres in the following year.

d.) an increase in the percentage reduction from full yield of one percentage point is associated with an increase in cotton acreage of 9.8 thousand acres in the following year.

e.) an increase in the price of grain sorghum of one cent per hundredweight is associated with a decrease of 5.7 thousand acres of cotton in the following year.

f.) an increase in the price of cattle of one dollar per hundredweight is associated with a decrease of 177 thousand acres of cotton in the following year.

The coefficients of Equation A-II can also be interpreted in terms of elasticity of acreage response to price. Precise elasticity estimates, however, can be obtained only for a given set of prices. In this study, estimates are obtained primarily for mean values of the variables, since the data were in natural units.

The price elasticity of acreage response is estimated at 1.05, which indicates that a one percent increase in the price of cotton would result in an increase of about one percent in cotton acreage. The estimates range from 1.14 for 10 cent cotton to 1.04 for 35 cent cotton. If these estimates are considered as estimates of the short run price elasticity of acreage response and if a simple Nerlove distributed lag adjustment model is assumed, the long run price elasticity estimates can be computed from the parameter for acreage in the previous year (X_1).†† Under these assumptions the long run price elasticity estimate is 2.53. This estimate indicates that the full adjustment of acreage response to a change in the price of cotton does not occur in the first year. It would take several years for the adjustment to approach completion.

††Mark Nerlove, *Distributed Lags and Demand Analysis for Agricultural and Other Commodities*, Agricultural Marketing Service, U. S. Department of Agriculture, Agricultural Handbook No. 141, June 1958.

Cotton acreage in District VII is quite responsive to changes in the prices of competing commodities. Measured at mean values, a one percent increase in the price of wheat would decrease cotton acreage by 2.33 percent, one percent increase in the price of grain sorghums would decrease cotton acreage by 0.73 percent, and a one percent increase in the price of cattle would decrease cotton acreage by 1.45 percent. These cross elasticity estimates are relatively high.

Period B

The estimated regression coefficients for equation (1.1) in Period B are included in Table II and listed as equation B-I. Although this equation accounted for about 98 percent of the variation in cotton acreage during allotment years, only the coefficient for allotment (X_1) was statistically significant. Even in equation B-II which included only the allotment, loan rate, and wheat price as potential explanatory variables, variables other than allotments were not statistically significant. On the basis of these results the size of the allotment is the most important variable affecting cotton acreage when allotments are effective. Apparently other economic factors are relatively unimportant compared with the size of allotments during these years.

Impacts of Governmental Control Programs on Acreage

Producers did not respond in the same way to the same set of economic forces in allotment years as they did in non-allotment years. Consequently, there is no unique way to evaluate the effect of governmental programs on cotton acreage in District VII. An approximation of the general effects of such programs, however, can be determined from the equations developed in the previous section.

In general, economic factors were important during non-allotment years but unimportant relative to the size of allotments during allotment years. For the purpose of evaluation of programs it is assumed that the economic factors would have been operative in all years of the period if acreage controls had not been imposed. Furthermore it is assumed that the parameters in equation A-II would be representative of the effects of these economic factors and that the data for these factors would be the same without governmental controls as actually existed under controls. There was no objective basis for determining the price data; but as long as the relative price relationships among agricultural

commodities remained approximately the same, the same conclusions would be reached regardless of the precise level of prices.

Two methods of estimation are used. In the first method, Method I, the removal of cotton allotments is visualized as being effective in an individual year. For example, the cotton acreage in 1933 is used as the value of X_1 in equation A-II to compute an estimated acreage (Y_1) for 1934 under no controls. The actual acreage in 1934 is used in the equation to compute estimated acreage that would have been planted in 1935 if no allotments had existed. Similar computations were made for each subsequent year.

In the second method, Method II, no allotments for any year are visualized. The estimated acreage (Y_2) in 1934 is computed from equation A-II with the 1933 acreage used as the value of X_1. For 1935, the estimated acreage (Y_2) is computed with the previous year's estimated acreage as the value for X_1. This sequence of computations was continued until an interruption occurred in the operation of acreage controls.

The results from the two methods of estimating acreage of cotton in cultivation in the absence of acreage allotments are presented in Figure 2. The magnitude of effects indicated by the two methods are somewhat different. In the pre-war period 1937-42, the average estimated acreage is about one-third below actual average acreage for Method I and about two-thirds below for Method II. Under Method II, no cotton acreage was estimated for 1938 and 1940 because of high relative

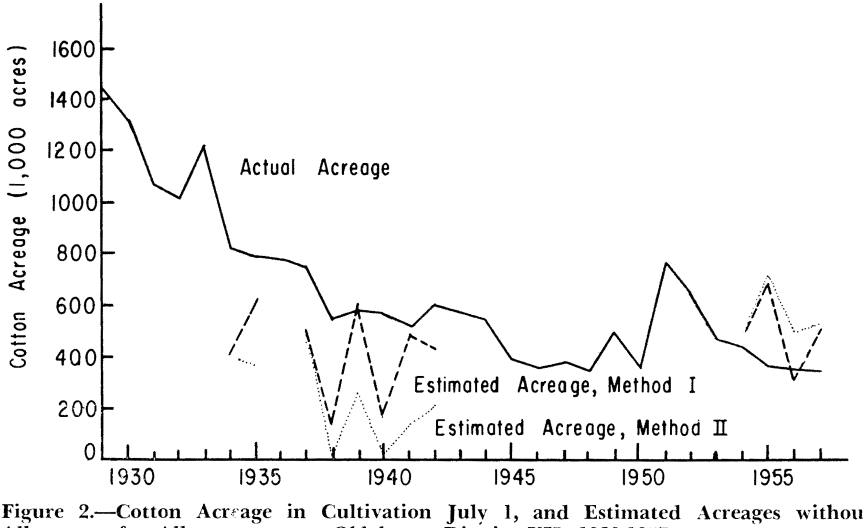

Figure 2.—Cotton Acreage in Cultivation July 1, and Estimated Acreages without Allotments for Allotment years: Oklahoma District VII, 1929-1957.

prices of wheat in the 1938 estimate and high relative prices of cattle and grain sorghum in the 1940 estimate. These high relative prices, particularly for wheat, probably would not have occurred in the absence of governmental control programs. In the post-war period 1954-57, the average estimated acreage is almost one-third higher than the actual average for Method I and almost one-half higher for Method II.

Although there are differences in both concepts and computations involved in the two methods, both series indicated that allotments in the pre-war period had the effect of keeping cotton acreage in cultivation at a higher level than would have been in cultivation in the absence of allotments. In the post-World War II period, allotments had the opposite effect; without allotments, acreage would have been higher than actually existed.

The estimated acreages obtained from the use of Methods I and II assume actual data for the prices of competing commodities. However, variations in these prices will result in alternative estimates of acreage. Alternative price relationships between cotton and competitive enterprises can be illustrated with wheat, the most important competitive commodity in District VII. For this illustration, cattle and grain sorghum prices are used in equation A-II at their 1954-57 average levels, yield reduction is used at the 1953-56 average level, and cotton acreage in cultivation July 1, 1957 plus cotton acreage in acreage reserve is used as X_1. The results, presented in Table III, can be derived from the following formula in which the coefficients have been adjusted for a price level of 250 percent of the 1910-14 average:

$$Y_1 = 1634.1489 + 29.6721\ X_2 - 9.8383\ X_3 \qquad (1.2)$$

where:

Y_1=estimated cotton acreage in cultivation July 1 (1,000 acres)
X_1=price of cotton (cents per pound)
X_2=price of wheat (cents per bushel).

With a wheat price of $1.75 per bushel and a cotton price of 25 cents per pound, the estimated acreage is 654.2 thousand acres. This acreage is almost twice the 1957 acreage. It would be necessary for the price of cotton to decline to about 15 cents per pound with wheat at $1.75 per bushel before estimated acreage would be less than the 1957 acreage. Alternatively, with a cotton price of 25 cents per pound, the wheat price would have to rise to about $2.06 before estimated acreage would be less than the 1957 acreage.

If allotments were removed from both cotton and wheat, the free

Table III.—Estimated Cotton Acreage With Various Prices of Cotton and Wheat; Oklahoma District VII

Price of Cotton (cents per pound)	Price of Wheat (dollars per bushel)	Estimated Acreage (1,000 acres)
15	1.75	357.5
20	1.75	505.9
25	1.75	654.2
30	1.75	802.6
35	1.75	951.0
40	1.75	1099.3
25	.90	1490.5
25	1.00	1392.1
25	1.25	1146.2
25	1.50	900.2
25	1.75	654.2
25	2.00	408.3
25	2.25	162.3

market prices probably would decline from current levels. If the prices were 25 cents per pound for cotton and 90 cents per bushel for wheat, the acreage estimated from equation (1.2) is 1,490.5 thousand acres. This is slightly greater than the acreage in 1929 and indicates that at these price relationships practically all the resources adaptable to cotton production would be shifted to the cotton enterprise in District VII. Even if the price of cotton declined to 20 cents with wheat at 90 cents per bushel, cotton acreage would approximate the 1928-30 average acreage.

The general results from the comparison of estimated acreages under various wheat and cotton price combinations indicate that the estimated acreages in the post-World War II period would be at higher levels than allotments permitted. Estimated acreages would decrease below allotments only if cotton prices were very low compared with wheat prices. These results are similar to the results obtained from Method I and Method II computations.

Summary and Conclusions

Cotton acreage in Oklahoma reached a peak in the 1925-1929 period and represented about 12 percent of all land in farms. It was about equally divided between Eastern and Western Oklahoma at that time. Since 1929, Oklahoma cotton acreage has steadily decreased. Cotton acreage represented only 2.5 percent of all land in farms in 1954 and had decreased an additional one-third by 1959. Moreover, cotton acreage decreased relatively more in Eastern Oklahoma than in Western Oklahoma. Acreage in Western Oklahoma has been concentrated in Type-of-farming Areas 11 and 12, the southwestern part of the State. Except for these areas, the reductions in cotton acreage since 1929 have been 85 percent or more.

A statistical analysis of factors affecting cotton acreage in Crop Reporting District VII, the southwestern part of Oklahoma, was made in order to evaluate the effect of governmental acreage control programs on changes in cotton acreage. Factors important in determining acreage in the non-allotment period include: the prices of cotton, wheat, grain sorghums, and cattle; the acreage of cotton in the previous year; and a yield reduction factor in the previous year. A one percent increase in the price of cotton was associated with a 1.05 percent increase in cotton acreage in the short run and a 2.53 percent increase in the long run. A one percent increase in the prices of wheat, grain sorghum, or cattle was associated with decreases in acreage of 2.33, 0.73, or 1.45 percent respectively. Only the size of the allotment was important during allotment years.

The economic relationships during the non-allotment years were used to estimate acreages that would have been planted in allotment years if allotments had not been in effect. The estimates indicate that acreage allotments in the pre-war period had the effect of keeping cotton acreage at a higher level than would have been planted without allotments. Estimated acreages ranged from one-third to two-thirds below actual acreages at the existing prices. Thus, most of the pre-war decline in acreage was caused by favorable prices for alternative commodities; however, allotments on the most important alternative, wheat, prevented the movement of some resources from cotton to wheat. The opposite effect was indicated for the post-World War II period. Acreage was estimated at one-third to one-half higher than actual acreage in the latter period for the existing prices of cotton, wheat, grain sorghum and cattle.

In the post-war period, the price of cotton would have had to decline to about 15 cents per pound with wheat at $1.75 per bushel for

cotton acreage to be as low as the 1957 allotment. Alternatively, the price of wheat would have had to rise to $2.06 per bushel with cotton at 25 cents per pound for the actual acreage to be equal to the 1957 allotment. Market prices of 90-cent wheat and 25-cent cotton would result in an increase in District VII cotton acreage back to the 1929 level where practically all the resources adaptable to cotton production would be shifted to the cotton enterprise.

Appendix Table I.—Data Used in Statistical Analysis of Factors Affecting Cotton Acreage July 1; Oklahoma District VII, 1929-1957

Year	Cotton Acreage District VII		Allotment	Deflated cotton loan rate	Deflated wheat price	Deflated wage price	Yield reduction	Deflated grain sorghum price	Deflated cattle price
	In cultivation July 1 Y_1	In cultivation July 1 the previous year X_1	X_1	X_2	X_3	X_4	X_5	X_6	X_7
	(1,000 acres)			cents/ pound	cents/ bushel	cents/ cwt.	pct.	cents/ cwt.	dollars/ cwt.
1929	1430.0	1317.0		11.90[3]	71	88	42	90	5.56
1930	1324.0	1430.0		12.10[3]	72	87	45	97	5.62
1931	1077.0	1324.0		10.00[3]	78	58	54	79	5.49
1932	1022.0	1077.0		9.27[3]	60	43	30	65	5.97
1933	1223.0	1022.0		12.82	56	51	36	100	6.54
1934	825.0		904.8[1]	11.43	87	61	28	160	4.62
1935	793.7		904.8[1]	9.35	77	65	72	210	3.44
1936	777.9	793.7		9.90[3]	80	61	47	110	4.67
1937	756.8		782.2[2]	9.28	82	61	75	170	4.68
1938	558.2		662.2	9.54	99	63	37	78	5.26
1939	595.3		643.3	9.06	64	58	35	84	6.33
1940	579.3		655.3	8.56	68	53	41	129	7.00
1941	523.2		647.0	9.67	60	58	22	94	6.80
1942	606.1		600.2	9.95	64	85	27	97	6.64
1943	573.5	606.1		10.12[3]	65	94	31	105	6.13
1944	546.0	573.5		10.89	76	105	50	127	5.53
1945	400.5	546.0		9.92	76	110	23	92	4.89
1946	364.9	400.5		8.68	73	103	51	116	5.56
1947	386.0	364.9		8.71	68	119	50	118	5.47
1948	344.5	386.0		10.32	71	106	42	128	5.66
1949	505.2	344.5		10.20	71	108	38	70	6.92
1950	363.6		402.4	8.66	70	98	24	71	6.88
1951	764.6	363.6		9.34	63	101	59	70	7.75
1952	644.5	764.6		11.00	67	106	45	71	7.97
1953	471.4	644.5		12.03	75	107	60	88	7.00
1954	446.3		478.4	12.34	83	109	31	80	5.29
1955	364.6		373.7	13.10	85	108	56	86	5.39
1956	357.0		366.0	11.98	85	107	22	64	5.60
1957	351.5		364.9	10.99	82	94	54	90	5.52
Means									
Period A	740.94	747.37		10.450	70.1	90.4	43.9	95.4	6.046
Period B	547.74		598.86	10.301	77.4	78.5	40.3	108.7	5.650

Source: Obtained or computed from data in Appendix Table II.
[1]Based on percentage relationship between District VII and state data.
[2]Estimated from diverted acreage data.
[3]Deflated price received by farmers for cotton in the previous year.

Appendix Table II.—Basic Data on Acreages, Prices, Indexes of Prices, Wage Rates, and Yield Reduction Used in Analysis of Factors Affecting Cotton Acreage, Oklahoma District VII, 1929-1957

Year	District VII Cotton Acreage		Prices Received by Oklahoma Farmers				Oklahoma Yield Reduction	Cotton Loan Rate 7/8" Mid.	Wage Rate for Harvesting Oklahoma Cotton	Index of Prices	
	in Cultivation	Allotment	Cotton	Wheat	Grain Sorghum	Beef Cattle				Received[4]	Paid[5]
	(1,000 acres)		(cents per lb.)	(per bu.)	(dollars per cwt.)		(pct.)	(cents per lb.)	(dollars per cwt. of cotton)	Aug.-July Avg.	Aug-July Avg.
1928	1,316.9	--	17.5	1.04	1.39	8.40	42	--	1.28	147	145
1929	1,429.6	--	16.1	.96	1.43	8.20	45	--	1.22	133	141
1930	1,324.2	--	8.7	.68	1.02	6.20	54	--	.73	87	125
1931	1,076.9	--	5.1	.33	.55	4.30	30	--	.45	55	105
1932	1,021.8	--	6.1	.32	.54	3.40	36	--	.48	57	95
1933	1,223.0	--	9.6	.68	.93	3.00	28	10.00	.65	78	107
1934	825.0	904.8[1]	11.8	.81	1.68	3.10	72	12.00	.75	105	116
1935	793.7	904.8[1]	10.6	.86	1.16	5.00	47	10.00	.70	107	115
1936	777.9	--	11.0	.99	1.84	5.20	75	--	.75	121	122
1937	756.8	782.2[2]	7.2	.96	.95	6.10	37	9.00	.75	97	119
1938	558.2	662.2	8.0	.56	.79	5.70	35	8.30	.70	87	120
1939	595.3	643.3	8.4	.65	1.12	6.30	41	8.70	.65	96	122
1940	579.3	655.3	9.1	.62	.91	6.60	22	8.90	.72	104	124
1941	523.2	647.0	15.5	.93	1.04	8.10	27	14.02	1.20	145	142
1942	606.1	600.2	17.3	1.11	1.55	9.50	31	17.02	1.50	171	159
1943	573.5	--	18.2	1.38	2.20	9.90	50	18.41	1.80	182	171
1944	546.0	--	18.7	1.39	1.66	8.90	23	20.03	1.95	185	177
1945	400.5	--	20.1	1.45	2.14	10.50	51	19.84	1.90	200	185

Appendix Table II.—Continued.

Year	District VII Cotton Acreage		Prices Received by Oklahoma Farmers				Oklahoma Yield Reduction	Cotton Loan Rate 7/8" Mid.	Wage Rate for Harvesting Oklahoma Cotton	Index of Prices	
	in Cultivation	Allotment	Cotton	Wheat	Grain Sorghum	Beef Cattle				Received[4]	Paid[5]
1946	364.9	--	30.1	1.80	2.41	12.20	50	22.83	2.60	263	218
1947	386.0	--	30.2	2.17	3.43	16.20	42	26.49	2.60	304	246
1948	344.5	--	28.6	1.98	2.14	20.70	38	28.79	2.65	279	246
1949	505.2	--	27.8	1.87	1.96	18.30	24	27.23	2.35	267	240
1950	363.6	402.4	38.5	2.02	1.88	22.00	59	27.90	2.65	322	263
1951	764.6	--	35.6	2.20	2.30	26.70	45	30.46	2.90	326	274
1952	644.5	--	31.3	2.12	2.86	21.70	60	30.91	2.85	281	266
1953	471.4	--	29.6	2.13	2.20	13.90	31	30.80	2.85	256	262
1954	446.3	478.4	31.2	2.18	2.20	13.80	56	31.58	2.85	256	263
1955	364.6	373.7	29.1	2.05	1.64	14.10	22	31.70	2.80	242	261
1956	357.0	366.0	28.4	2.00	2.18	13.30	54	29.34	2.55	245	270
1957	351.5[3]	364.9	22.7	1.93	1.64	15.69	—	28.81	2.50	262	--

[1]Based on percentage relationship between District VII and State data.
[2]Estimated from diverted acreage data.
[3]Includes acreage in the Acreage Reserve Program.
[4]Index of Prices Received for All Farm Commodities by Oklahoma Farmers.
[5]Index of Prices Paid by U. S. Farmers for Commodities Used in Living and Production.

Sources: Cotton Acreage: *A Statistical Handbook of Oklahoma Agriculture,* Oklahoma Agricultural Experiment Station Miscellaneous Publication No. MP-14 (January 1949) and reports of the Oklahoma Crop and Livestock Reporting Service.
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