

THE EFFECT OF THE 1937 AND 1938  
AGRICULTURAL CONSERVATION PROGRAMS  
IN SELECTED AREAS OF KANSAS

by

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## INTRODUCTION

The Agricultural Conservation Program of the Agricultural Adjustment Administration made net payments of approximately 46 million dollars to Kansas farm operators and landlords for the three program years in which the program has been in effect--1936, 1937, and 1938. This money was paid to those who complied with certain regulations established by the program. Those farmers who did not meet the requirements did not receive payments.

The purpose of this study was to determine some of the effects of the ACP regulations and payments on the organization of farms in selected areas of Kansas. Consideration of all possible effects on farm organization was too broad a subject; it was necessary to limit the study to the effect on the use of crop land and the numbers of livestock on farms.

The uses of crop land refer to the kinds and quantities of different crops grown on the land and, to a lesser extent, the tillage methods used. The effect of the ACP has been shown as the changes in the acreages of the different crops grown. Changes in the total acres of crop land per farm and the tillage methods used also are indicated. The effect on

the numbers of livestock has been shown as the increase or decrease in the average number per farm.

### Review of Literature

Only a small quantity of published literature was available showing actual effects of the ACP on the organization of farms. This was not surprising since the ACP was not in existence until 1936. Most of the literature dealt with desirable policies and probable effects of the programs.

Woodworth and others (9) showed the effect of the ACP on soil-conserving uses for New Hampshire farms. Soil-conserving uses included such practices as the application of fertilizers and the seeding of pasture crops. The effect on the acreage of other crops was not shown. They worked with sample farms arranged in two groups--sample farms enrolled in the program in 1937 and all sample farms. A measure of the change in soil-conserving uses was obtained by comparison with 1935 uses. The greater part of the increase in soil-conserving uses was on the farms enrolled in the program. Final results were expressed as absolute changes in tons, acres, etc., for the sample farm groups.

Using a sample of 562 Iowa farms with continuous records for the period 1929-32, Wilcox and Matteson (6,7) compared 1938 corn acreage allotments on individual farms with the acreage of corn grown on the farms during previous years. They found the non-complying farmers to be those who were asked to make the greatest reduction in the acreage grown in previous years. This fact was most apparent when using a 1936-37 base period as compared to a 1929-32 base period. It was necessary to make adjustments in the 1936-37 base to remove the effect of the ACP during 1936-37. With reference to the 1936-37 base period, farmers in the 1938 program were required to reduce corn five acres per 100 acres of crop land and received a payment of \$28 per acre reduced, compared to a reduction of nine acres asked of non-complying farmers, with a payment of \$15 per acre. Using the 1929-32 base period, it was shown that soil-conserving crops had increased about four acres per 100 acres of crop land on complying farms and had decreased about eight acres on non-complying farms; there was an increase of about two acres for the sample as a whole.

The effect of the 1939 ACP in Iowa was studied by Wilcox and Crickman (8). The change in acreage of the principal crops, with reference to 1929-32 and 1936-37 base

periods, was compared for complying and non-complying farms. Again, those farmers who did not comply were asked to make the greatest reductions. Soil-building goals were earned by seeding the normal acreages of legumes.

Nourse, Davis, and Black (3) gave a general discussion of the Agricultural Adjustment Administration from 1933 to January 6, 1936, for the United States as a whole. Many qualifying statements accompanied most statistical data cited to show changes resulting from the AAA. The study included the effect on farmers' incomes, general farm management, consumers, and general economic recovery. The gain in farmers' incomes for the three-year period was estimated at 1.3 to 2.0 billion dollars, less 10 to 25 percent for farm products purchased by farmers.

The effect of the AAA on wheat acreage and production in the United States was investigated by Davis (1). He discussed changes with reference to 1921-32 and 1930-32 base periods. He concluded that a change in weather conditions probably was the greatest influence in causing a reduction in production. No comparison was made between signers and non-signers except by way of estimates not based on sample farm data.

Howe (5) discussed the probable effect of the AAA on maintaining proper balances between regions of the United States. In general, information on actual accomplishments was lacking. Special attention was given to feed and livestock production in the Cornbelt and the South, regional shifts in cotton acreage, and effects upon wheat acreage and production. He concluded that shifts or alternations obtained between regions depend on the requirements for compliance and the number complying.

Johnston (2) conducted a detailed study of the effect of the AAA on the organization and operation of farms in Illinois. In general, his method was to make comparisons between complying and non-complying farms without reference to a base period. When a base period was used, it was to show year-to-year changes which occurred on all farms as one group. Consequently, there was no way of separating changes caused by such factors as prices or weather conditions from changes caused by the AAA program.

#### Method of Procedure

The two areas in Kansas selected for the study are shown in Fig. 1. Type-of-farming area I, located in southeast Kansas, included Wilson, Neosho, Crawford, Montgomery,

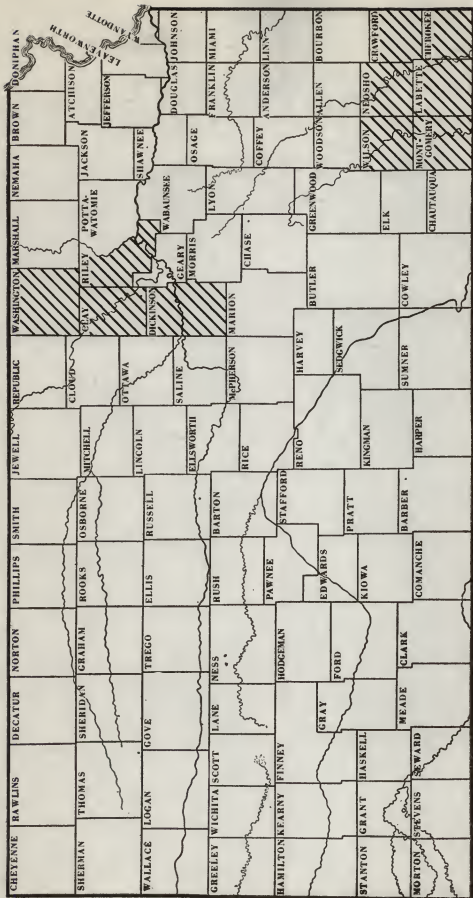


FIG. 1. Location of sampled areas in Kansas.



Labette, and Cherokee counties. The other area was located in east north central Kansas and consisted of Washington, Clay, Riley, and Dickinson counties. The latter area was chosen to correspond closely with the area in which Farm Bureau-Farm Management Association No. 1 was most active.

Seventy-five farm operators were interviewed in Area I during November, 1937. The choice of farms was determined by first locating small areas thought to be representative of the whole area. The small areas were chosen by consulting county agricultural agents, leading farmers familiar with the counties, and by studying soil maps. Three small areas were chosen for Area I--one centered at Erie in central Neosho County, one southwest of Parsons in northwestern Labette County, and one between Altamont and Oswego in eastern Labette County.

After the small areas were selected, the sample farms within these areas were located by calling on all operators who could be found at home until a sufficient number of schedules had been obtained. The operators were asked to give desired farm-management data for the 1937 crop year. They also were asked to give the approximate average use of their land and number of livestock kept for the period 1933-35.

A sample of 75 farms also was obtained in north central Kansas. The small sample areas within the large area were chosen in the same manner as in Type-of-farming Area I. In Clay County, 20 farms west of Clay Center were studied; in Dickinson County, 19 farms north and south of Abilene; in Riley County, 18 farms west and northwest of Manhattan; and in Washington County, 18 farms centered around Washington. The sample was obtained by interviewing all farm operators who could be reached within the selected areas until a sufficient number of schedules were obtained. The operators were visited in December, 1937, and asked to give data for the 1937 crop year and the base period 1922-32.

The sample farms in north central Kansas were visited again in February, 1939, to obtain data on the 1938 crop year. Data were obtained from 69 of the original 75 operators. Of the six from whom no data were obtained, one was deceased, two had moved from the area, two had quit farming, and one refused to give additional information.

#### THE AGRICULTURAL CONSERVATION PROGRAM IN KANSAS

A general understanding of the operation and purpose of the ACP was necessary before beginning a study of the effects of the program. The ACP is a part of the Agricultural

Adjustment Administration. Other parts that were in direct operation on Kansas farms were the wheat parity program, wheat loan program, wheat insurance program, corn parity program, corn loan program, sugar beet program, range program, and tobacco program.

The A&A had its beginning in May, 1933, as set forth by the Agricultural Adjustment Act. This act resulted in the wheat program, corn-hog program, and cattle-buying program in Kansas until January 6, 1936.

The wheat program made payments to Kansas farmers in 1933, provided their land was signed up for the 1934 program. Two-year contracts were signed in 1934, the farmers agreeing to reduce their wheat acreage 15 percent in 1934 from a historical base composed of the three years 1930 to 1932. The reduction asked in 1935 was 10 percent of the base. Three-year wheat contracts were signed, beginning with the wheat crop year of 1936, but were invalidated by a Supreme Court decision early in that year. A five-percent reduction from the wheat base was asked for 1936. A later act made these contracts valid and payments were made to signers meeting the requirements.

The corn-hog program was in full operation in Kansas for the crop years 1934 and 1935. The emergency slaughter of pigs and sows was conducted in August and September, 1935.

Farmers participating in the 1934 program were required to reduce their corn acreages 90 percent and their hog enterprises 25 percent. These reductions were to be made from the base years 1932-33. The 1935 corn-hog program called for a reduction of 10 percent in corn acreage and hog production. An important feature of the 1935 corn-hog program, following the drought year of 1934, was a ruling requiring a minimum production of not less than 25 percent of the number of hogs raised in the base period.

The ACP was started under the authority granted by the Soil Conservation and Domestic Allotment Act which immediately followed the Supreme Court decision of January, 1936. The 1936 and 1937 programs required a reduction of 15 percent in the acreage of crops classified as soil-depleting. The bases used were not strictly historical because adjustments in bases were allowed for abnormal weather conditions and for meeting requirements for good farm-management practices. Approximately 60 percent of the total payments available for a farm were to be earned by reducing the acreage of soil-depleting crops and 40 percent by performing soil-building practices. The total payment available for each farm was dependent on the productivity rating of the farm. However, the rate of payment for the soil-building practices was not varied by productivity indexes.

Some of the important Kansas crops classified as soil-depleting were wheat, corn, oats, sorghums for grain, barley, millet, rye, and soybeans when not used as an emergency forage crop. Some of the soil-conserving crops were alfalfa, sweet clover, red clover, lespedeza, and perennial grasses including timothy. A few common soil-building practices for which payments were made included seeding alfalfa, sweet clover, and perennial grasses; summer fallowing; contour farming; terrace construction; contour furrowing of pastures; plowing under green manure crops; and application of superphosphate and ground limestone when seeding legumes.

The 1938 ACP was similar to the 1936 and 1937 programs except that greater emphasis was placed on the control of soil-depleting crops. Of the total payments available for Kansas farms, approximately 86 percent was to be earned by not exceeding soil-depleting acreage allotments and the remainder by performing soil-building practices. Some changes were made in the rates by which the soil-building allowance could be earned. For example, the payment for seeding alfalfa was reduced from \$4 to \$3 per acre and seeding sweet clover changed from \$3 to \$1.80 per acre. Special corn acreage allotments were issued for farms in important corn-producing counties in eastern Kansas. These allotted

acresages for corn could not be exceeded on individual farms if full payments were to be earned. Reductions in payments for exceeding wheat acreage allotments were not made until the 1939 wheat parity program and ACP became effective.

In general, the payments made to farmers by the ACP were for the purpose of reducing the acreage of certain surplus crops that commonly deplete the soil and for stimulating the use of farm-management practices that aid in maintaining soil fertility. Such practices included the growing of legume crops and the prevention of soil erosion.

Because of changing conditions and other administrative difficulties, it was not always possible to adjust the acreage allotments in such a manner that the payments would be for changes that would not have been made without the payments. In such cases, no actual changes resulted from the payments. Some other times, the payments were in excess of the amount needed to induce the farmers to make the changes necessary to comply with the program regulations. Payments not actually causing changes in the management of the farms were considered as direct grants separate from those payments or parts of payments actually inducing changes.

## SELECTED AREAS STUDIED

The characteristics of the selected areas studied were of importance in determining the nature of the changes caused by the ACP. The program allowed for variations in compliance regulations, which made it possible for farm operators to comply under different climatic and soil conditions.

## Characteristics of Type-of-farming Area I

Type-of-farming Area I had the greatest rainfall of any area in Kansas. The average annual rainfall at Osawego for the 47-year period (1890-1936) was 39.3 inches. There were large variations from the average from year to year. The highest annual rainfall was in 1915, when 55.0 inches was recorded; the lowest was in 1917, when 26.6 inches fell. The greater part of the rainfall occurred during the growing season. The average rainfall from April to September, inclusive, for the 47-year period was 25.9 inches.

Type-of-farming Area I also had the longest growing season of any area in Kansas. The average growing season, including several counties directly west, was 186 days.



Temperatures subject to wide fluctuations were characteristic of other parts of Kansas. Maximum summer temperatures frequently were more than 100 degrees. These high temperatures often were accompanied by dry winds from the south, which resulted in a high rate of evaporation and damage to growing crops.

The topography is level to gently rolling, with small sections of hilly sandstone formations. The large amount of rainfall and the level topography resulted in drainage and leaching problems, and erosion took place on sloping soils.

The soils of Area I are old soils, acid in reaction, and naturally low in phosphate content. For the purpose of this study, the soils were divided into Groups A and B.

Group A included soils developed from limestone or of alluvial formation. Because of their age and the abundant rainfall, most of these soils tend to be acid, regardless of their origin. They are the more fertile soils and, except for the alluvial soils, usually have more slope than soils in Group B. Erosion has become a problem on many Group A soils.

Group B included residual soils usually derived from shale or sandstone and often with claypan subsoils developed at a depth of 6 to 18 inches. It would have been possible



to subdivide the B group into level, light-colored soils formed from shale and level-to-rolling soils formed from sandstone. Compared with Group A, Group B soils were more acid, more deficient in phosphate, and less subject to erosion.

#### Characteristics of North Central Kansas

The area studied in north central Kansas differed from Type-of-farming Area I in several respects. The average annual rainfall at Clay Center for the 30-year period (1902-1936) was 27.7 inches. The average for April to September, inclusive, was 20.6 inches.

The average growing season of the area studied was 170 days. The growing season in Kansas varied from 196 days in southeastern Kansas to 154 days in northwestern Kansas.

Maximum summer temperatures were a factor which often adversely affected crop conditions. In some years--1913 and 1934, for instance--the temperature was more than 100 degrees 40 to 50 days during the summer. For other years, such as 1915 and 1927, there were no days with temperatures of 100 degrees or more.

This area is composed of residual soils formed from limestone, sandstone, and shale, with limestone predominating. Claypan subsoils are uncommon. The area included a

portion of the soils formed from Dakota sandstone. Soil survey work for the purpose of mapping soil types was conducted in only part of the area, which made it impossible to classify the soils into groups as in Type-of-farming Area I.

In general, the topography is rolling, with variations consisting of level or hilly sections. Many of the sloping soils, particularly those formed from Dakota sandstone, are badly eroded.

#### Areas and Samples Compared

The method of sampling was described under Method of Procedure, but no attempt was made to learn to what extent the sample proved to be representative of the whole area. Table 1 is a comparison of the size of the farms as given by the 1935 census for Type-of-farming Area I with the size of the farms in the sample. The sample contained only a small proportion of the large number of small farms (less than 100 acres) existing in the whole area. This, in part, was caused by omission of the suburban sections of towns in taking the sample. Many of the operators of the small farms were laborers who had seasonal employment in mining and other industries.

Table 1. The size of farms in sample compared with the size of farms in Area I, as indicated by the 1935 census.

Size Group	Number of farms		Percent	
	Area I 1935	Sample 1937	Area I 1935	Sample 1937
Less than 100 acres	6,777	8	44.1	10.7
100 to 174 acres	4,443	25	28.0	33.3
175 to 259 acres	2,293	19	14.9	26.7
260 to 459 acres	1,595	13	10.4	31.7
500 to 999 acres	220	4	1.4	5.3
1,000 acres or more	25	1	.2	1.3
Total	15,347	75	100.0	100.0

The sample contained a smaller percentage of owners and a larger percentage of part-owners than did the whole area. The percentage of tenants differed little, with 41.3 percent in the sample and 45.4 percent in the whole area (Table 2). The low percentage of owners in the sample was directly related to the fact that the sample contained a low percentage of small farms. A greater proportion of the small farms were owned by the operators.

A comparison of the size of farms in the sample with all farms in the four counties in north central Kansas (Table 3) showed relatively few small farms in the sample but not so great a difference as that which existed in Area I. This probably was caused by the omission of suburban sections of towns in taking the sample, as in Area I.

The sample in north central Kansas contained 7 percent less owned farms and 7 percent more tenant farms than the four-county area. There was little difference in the percentage of part-owners (Table 4).

The data in Tables 1 to 4 show that the samples do not correspond exactly with the entire areas. However, these differences were not great enough to result in any important influence on the final results.

Table 2. The tenure of farm operators in sample compared with the tenure of farm operators in Area I as indicated by the 1935 census.

Tenure	Number of farms		Percent	
	Area I 1935	Sample 1937	Area I 1935	Sample 1937
Owners	5,560	18	36.2	24.0
Part-owners	2,775	36	18.1	34.7
Managers	53	0	.3	0
Tenants	6,959	31	45.4	41.3
Total	15,347	75	100.0	100.0

Table 3. The size of farms in sample compared with the size of farms as given by the 1935 census for Clay, Dickinson, Riley, and Washington counties.  $\Delta$

Size Group	Number of farms		Percent	
	Four counties : 1935	Sample : 1937	Four counties : 1935	Sample : 1937
Less than 100 acres	2,109	6	24.2	0.0
100 to 174 acres	2,745	20	30.2	26.7
175 to 259 acres	1,976	27	21.7	36.0
260 to 459 acres	1,706	20	19.3	20.7
500 to 999 acres	329	2	3.0	2.0
1,000 acres or more	45	0	.5	0
Total	9,000	75	100.0	100.0

$\Delta$  Sample farms were located in Clay, Dickinson, Riley, and Washington counties.

Table 4. The tenure of farm operators in the sample compared with the tenure of farm operators as given by the 1935 census for Clay, Dickinson, Riley, and Washington counties.<sup>/1</sup>

Tenure	Number of farms		Percent	
	Four counties 1935	Sample 1937	Four counties 1935	Sample 1937
Owners	3,439	23	37.8	30.7
Part-owners	1,091	14	15.6	18.7
Managers	32	0	.4	0
Tenants	5,528	36	43.2	50.6
Total	9,090	75	100.0	100.0

<sup>/1</sup> Sample farms were located in Clay, Dickinson, Riley, and Washington counties.

## EFFECT OF THE AGRICULTURAL CONSERVATION PROGRAM

### Farmers' Reactions

Any effects on the use of crop land or numbers of livestock caused by the ACP were brought about by the action of the farm operators or landlords. The farm operators usually were the persons who made the changes necessary to comply with the program. This fact necessitated an investigation of the reaction of farmers to ACP regulations and payments.

Some farmers participated in the ACP and some did not. There was a variety of reasons for this. The reasons for participating or not participating were divided into two groups. The first group consisted of those that could be measured readily in money units. These were such factors as enter into a calculation of the money income to be obtained from different crops for any one year. Although these factors could be expressed in dollars, they were always estimates of the expected returns as determined by the farmers when making choices. Variations in expected crop yields and prices were common causes of differences in estimates.

The amount of the payment to be obtained from the ACP for following certain cropping practices also was an estimated amount. Many of the farmers in the areas studied apparently had little information which they considered reliable for basing estimates of ACP payments for the 1937 and 1938 program years. Only 35 percent of the farmers interviewed in north central Kansas for the 1938 crop year could give an estimate of the approximate amount of the ACP payment to be obtained on their farms by participating.

Some changes in the use of crop land or numbers of livestock affect incomes over a longer period than one year. For example, part of the income obtained from growing



alfalfa cannot be realized until after the alfalfa has been replaced by crops that draw on the stored soil nitrogen. Farmers were found to be looking at the long-time effects differently, depending upon individual characteristics and other factors such as tenure.

With similar farm-management practices there were differences in costs between farms because of differences in land, capital, labor, and management. Land varied as to fertility, topography, distance to markets, and number of acres. Variations in capital were important because of quantity and type of machinery, equipment, and livestock. Some operators were unable to make changes because of the lack of credit. Labor differed between farms because of variations in acquired and natural abilities.

The factor causing the most variation in management--assuming land, labor, and capital to be constant--was difference in a knowledge of facts. As previously stated, most of the factors given monetary values had to be estimated. The reliability of these estimates made by the farmers depended principally upon the extent of their knowledge of the facts involved.

Up to this point, the discussion of farmers' reactions has dealt with factors which could be readily expressed in

dollars. There were other factors which were important in some cases. Among these were prejudices as to political parties in power or individuals responsible for administration of the program. The operators interviewed frequently mentioned such things as a desire to be independent from any governmental regulations or assistance. There was some concern about the increase in public debt; some thought their taxes eventually would be increased because of the ACP.

In conclusion, the difference in farmers' reactions to the program resulted from different valuations of the factors involved. Some of these valuations could be expressed in dollars; others were intangible. The difference in measurable values placed on the factors and the final decision reached were dependent upon (1) the difference in the wants of the individual farmers, particularly in regard to differences in short-time and long-time points of view; (2) the reliability and extent of the information at the farmer's disposal, including information as to weighting of the different parts; and (3) differences in costs because of variations in land, capital, labor, and management. The differences in the immeasurable values were dependent on all three points, with greater variation in individual wants for items which could not be valued in dollars.

The work conducted by Wilcox and Matteson (6,7) in Iowa showed that farmers usually based their decisions on values readily measurable in dollars. Non-complying farmers in Iowa would have received \$15 per acre of reduction of their customary acreage of corn compared to a payment of \$23 per acre of reduction for complying farmers in 1933. The writer found that farmers not complying in northwestern Kansas would have received \$8 per acre in 1937 and \$10 in 1938 for reductions in soil-depleting crops, compared to payments of \$26 per acre in 1937 and \$17 in 1938 for farms complying. In the same area the percentage of farmers not complying with the AAA reduction programs for the period 1934 to 1936, inclusive, increased or decreased in direct relationship with the price of wheat. The principal crop produced in this section of Kansas was wheat.

Robinson (4), working with Kansas farmers, found a coefficient of correlation of .91 between the percentage of the largest annual county wheat acreage from 1911 to 1934 contained in the county wheat base and the percentage of the wheat land signed up in the 1935-35 wheat adjustment program. This tended to show that the principal factor determining compliance with the program was the size of the reduction asked in the potential or possible acreage of wheat.

### Changes in the Use of Crop Land

The use of crop land on the sample farms in Type-of-farming Area I for 1937 and for the base period 1923-32 is shown in Table 5. Base period data could not be obtained from part of the 75 operators interviewed because they did not farm in the area during 1923-32. A total of 61 operators furnished usable base-period data. A comparison of the use of crop land in 1937 on the total sample of 75 farms and the 61 farms remaining after those without base period data had been removed showed no important changes. The greatest absolute difference was in corn acreage; 12.7 percent of the crop land was devoted to corn on the 75 farms, compared with 13.4 percent on the 61 farms.

Important changes in the acreage of crops were made between 1923-32 and 1937. Corn decreased from 29.6 percent to 13.4 percent and wheat increased from 35.3 percent to 50.0 percent. Other changes were not so great. There was little change in sorghums and other non-legumes. All legumes decreased with the exception of lespedeza, which increased 2.7 acres per 100 acres of crop land. Idle and fallow land increased from .1 percent to 5.3 percent.

Table 5. A comparison of the use of crop land for 1937 on all Area I sample farms, and for 1922-32 and 1937 on 61 of the sample farms having identical operators for the base period.

Crops	Percentage of crop land		
	Entire sixty-one sample farms sample of having identical opera- tors during base period		
	1937	1922-32	1937
Corn	12.7	29.6	13.4
Wheat	50.0	55.3	50.0
Oats	16.1	15.3	15.9
Sorghum	5.2	5.7	4.9
Other non-legumes	3.0	2.5	3.2
alfalfa	1.7	3.9	1.3
Cowpeas or soybeans	.9	2.3	.3
Red clover or sweet clover	1.3	1.7	1.5
Lespedeza	2.8	.1	2.8
Idle or fallow	6.3	.1	5.8

It would not be correct to assume that the change in crop acreages from 1922-32 to 1937 was a result of the ACP. There were other variable factors which probably caused considerable change in crops. A lack of normal rainfall and high summer temperatures probably were responsible for much of the shift from corn to wheat. Weather conditions and severe grasshopper infestations were important in the changes in legume crops. Other factors were improvements in crops and machinery and changes in price relationships. The

ACP effect cannot be distinguished from other effects in the data in Tables 5, 7, or 8. Thirty of the 61 farms in Type-of-farming Area I with base period data were in compliance with the 1937 ACP.

By obtaining the legal description of the sample farms and referring to soil maps, it was possible to group the farms according to soil type. Using the two groups of soil types (A and B) as given in the description of the soils of Area I, the farms were divided into three groups (Table C). Group I farms had crop land consisting of only Group A soil types, Group II farms had only Group B soil types, and Group III farms had both Group A and B soil types. The Group III farms averaged 311.4 acres of total land per farm, compared to 234.7 acres for Group I farms and 203.7 acres for Group II farms. The larger size of Group III farms probably was not caused by the soils but by the fact that the larger the area of the farm, the more chance of containing several different soil types.

Group I farms had a larger percent of corn and a smaller percent of sorghums. The sweet clover and red clover were growing on Group A soils. Practically all the alfalfa was on Group A soils; only .1 percent of the crop land was growing alfalfa on the Group II farms. Instead,

the Group II farms were growing cowpeas and soybeans, legumes that would tolerate acid soils more readily. The crops grown on the Group III farms reflected the characteristics of both the other groups of farms. This was a logical situation since Group III had a mixture of soils.

Table 6. A comparison of the use of crop land for 1937 on Area I sample farms grouped by general soil type.

Crops	Percentage of crop land		
	Group I 23 farms <sup>/2</sup>	Group II 30 farms <sup>/3</sup>	Group III 23 farms <sup>/4</sup>
Corn	16.2	12.5	10.6
Wheat	52.0	51.9	46.5
Oats	14.7	18.1	15.4
Sorghum	3.9	5.5	6.1
Other non-legumes	1.9	3.7	3.0
Alfalfa	2.1	.1	2.9
Cowpeas or soybeans	.3	1.4	.8
Red clover or sweet clover	3.1	0	1.1
Lespedeza	1.1	1.6	5.1
Idle or fallow	4.7	5.3	8.5

<sup>/2</sup> All crop land consisted of Group A soil types. Group A soil types were usually developed from limestone or were alluvial soils. They were generally more fertile.

<sup>/3</sup> All crop land consisted of Group B soil types. Group B soil types were residual soils usually derived from shale or sandstone and often had developed claypan subsoils.

<sup>/4</sup> Farms having crop land consisting of both Group A and Group B soil types.



Table 7. A comparison of the use of crop land for 1937 on all north central Kansas sample farms, and for 1929-32 and 1937 on 62 of the sample farms having identical operators for the base period.

Crops	Percentage of crop land		
	Entire sample of 75 farms	Sixty-two sample farms having identical operators during base period	
	1937	1929-32	1937
Corn	13.7	34.5	14.2
Wheat	53.9	30.1	56.9
Oats	3.1	3.1	3.4
Sorghum	6.1	5.7	6.2
Other non-legumes	2.7	1.3	2.3
Alfalfa	7.6	10.2	8.1
Sweet clover	1.1	2.1	1.4
Idle or fallow	1.8	0	2.0

Table 8. A comparison of the use of crop land for 1936 on all north central Kansas sample farms, and for 1929-32 and 1936 on 57 of the sample farms having identical operators for the base period.

Crops	Percentage of crop land		
	Entire sample of 69 farms	Fifty-seven sample farms having identical operators during base period	
	1936	1929-32	1936
Corn	10.2	34.7	11.2
Wheat	63.9	37.9	61.4
Oats	7.5	3.3	7.3
Sorghum	6.2	5.6	6.7
Other non-legumes	3.0	1.2	3.4
Alfalfa	5.0	10.3	5.3
Sweet clover	1.4	2.0	1.1
Idle or fallow	2.8	0	3.1



The use of the crop land on the 75 sample farms in north central Kansas in 1937 was similar to that in Area I (Tables 5 and 7). Per 100 acres of crop land, the north central Kansas farms had practically the same acreage of corn, sorghums, and sweet clover as area I, 8.9 acres more wheat, 5.6 acres more alfalfa, 8.0 acres less oats, and 4.5 acres less idle or fallow.

Base period data were available for 62 of the north central Kansas sample farms in 1937. A comparison of the use of crop land on the 75 sample farms and the remaining 62 farms after eliminating those without base-period data showed little significant change in the sample (Table 7). The greatest absolute difference was in wheat, with 53.9 percent of the crop land in wheat on the 75 farms and 56.9 percent on the 62 farms.

The more important changes in use of crop land from 1926-32 to 1937 consisted of a decrease in corn of 20.3 acres per 100 acres of crop land, an increase of 19.3 acres of wheat, a decrease of 2.1 acres of alfalfa, and an increase of 2.0 acres of idle or fallow. There was little change in oats, sorghums, and sweet clover. As in Area I, these changes were not entirely a result of the ACP. Twenty-six of the 62 farms were complying with the 1937 program. Abnormal weather conditions were important in the

decrease in corn. Drought conditions and grasshopper infestation probably were more severe than in Area I. Other factors such as prices and improvements in crops and machinery also would apply to north central Kansas.

As previously explained, 69 of the original 75 sample farms were visited again one year later to obtain data for the 1938 crop year. Compared to the 1937 crop year for the 75 farms, the 69 remaining farms in 1938 decreased corn and alfalfa and increased wheat. Little change was made in other crops (Tables 7 and 8).

Base-period data were available for 57 of the 69 farms visited for 1938. No important difference was made in the use of crop land by reducing the sample to 57 farms (Table 8). As in 1937, the greatest absolute change was a decrease in wheat of 2.5 acres per 100 acres of crop land.

Compared to the period 1928-32, the changes for the 1938 crop year on the basis of 100 acres of crop land were a decrease of 23.5 acres of corn and a like increase of 23.5 acres in wheat. Alfalfa decreased 4.5 acres and idle or fallow increased 3.1 acres. Changes in other crops were less marked. The factors apparently causing these changes were the same as discussed for the 1937 crop year. Prices and yields for wheat were especially favorable in the area

In 1937; this explains the further increase in wheat acreage. Nineteen of the 57 farms were cooperating with the 1936 ACP.

#### Changes in Numbers of Livestock

Data showing the numbers of livestock on the sample farms have been presented in the same manner as the use of crop land data, except that livestock numbers were shown as the average number per farm. The number per farm was obtained by averaging the beginning and ending inventories. To overcome any discrepancy that might have occurred in these figures because of differences in the size of the farms, a comparison of the size of the farms is given at the bottom of the livestock tables or may be obtained for crop land from Table 12.

The principal livestock on sample farms in Area I for 1937 were cattle and hogs. Chickens were the most important poultry (Table 9). A common method of handling cattle was to maintain a dual-purpose cow herd of six to eight cows. Part of the calves were produced for replacements or to be sold for beef at one or two years of age, and part were allowed to suckle the cows until they could be sold for veal, after which time the cows were milked for the remainder of the lactation period.

Table 9. A comparison of the average number of livestock and acres of land per farm for 1937 on all Area I sample farms, and for 1928-32 and 1937 on 61 of the sample farms having identical operators for the base period.

Kind of livestock or use of land	Entire sample of 75 farms	Sixty-one sample farms having identical opera- tors during base period		
	1937	1928-32	1937	
Average number of livestock per farm				
Milk cows	7.0	8.7	7.3	
Stock cows	.9	2.1	1.1	
Stockers purchased	3.4	4.7	2.0	
Sows	1.3	3.5	1.2	
Pigs raised	9.5	38.7	9.4	
Stock hogs	4.4	5.5	4.2	
Hens	103.9	155.1	113.6	
Ewes	2.9	2.2	3.5	
Lambs	3.5	2.2	3.7	
Work stock	3.1	3.5	3.3	
Colts	.5	.9	.4	
Turkeys	11.7	3.9	11.8	
Average number of acres per farm				
Crop land	141.1	147.2	153.3	
Permanent pasture	70.3	71.2	74.3	
Total farm land	245.3	254.2	265.5	

The change which may have occurred in the sample by removing those farms without base-period data was not important for livestock, with the possible exception of stecker or feeder cattle purchased. They averaged 3.4 head per farm

for the 75 farms but only 3.0 head for the remaining 61 farms. The average number of hens kept was 103.9 for the 75 farms and 113.6 for the 62 farms; this difference was not of great importance because of the relatively large numbers kept, as compared to other livestock numbers. The omission of 14 of the farms resulted in an increase of the average size from 245.8 acres to 265.5 acres (Table 9).

A comparison of changes in livestock from 1922-32 to 1937 showed a large decrease in hog numbers. There were 3.5 sows per farm in 1922-32 but only 1.2 in 1937. Milk cow numbers remained rather constant. The number of hens decreased from 155.1 to 113.6 while turkeys increased from 3.9 to 11.3. Work stock decreased from 5.5 to 3.3 per farm. The size of the farms increased from an average of 254.2 acres to 265.5 acres total land.

Livestock on sample farms for 1937 in north central Kansas were principally cattle and hogs as in Area I. However, north central Kansas differed from Area I in that the calves were seldom sold as veal and that there were more beef cows. The numbers of sows and work stock per farm were nearly equal for the two areas. There were 31 more hens per farm in north central Kansas but fewer turkeys. The average size of the farms differed by only 3.4 acres (Table 10).

Table 10. A comparison of the average number of livestock and acres of land per farm for 1937 on all north central Kansas sample farms, and for 1921-32 and 1937 on 62 of the sample farms having identical operators for the base period.

Kind of livestock or use of land	Entire	Sixty-two sample farms	
	sample of 75 farms	having identical opera- tors during base period	
	1937	1921-32	1937
Average number of livestock per farm			
Milk cows	6.3	7.9	6.5
Stock cows	1.9	6.2	2.2
Stockers purchased	2.0	5.0	3.0
Sows	1.4	7.1	1.4
Pigs raised	12.5	70.0	12.7
Stock hogs	2.9	1.3	2.3
Hens	134.8	137.8	140.1
Ewes	1.8	1.0	2.2
Lambs	1.6	1.0	2.0
Work stock	3.2	5.5	3.4
Colts	.3	.5	.3
Turkeys	3.0	.5	3.1
Average number of acres per farm			
Crop land	151.1	150.7	150.8
Permanent pasture	73.8	80.4	75.4
Total farm land	224.4	231.6	226.0

The reduction in the number of farms because some lacked base-period data made little change in the average number of livestock per farm. With the exception of hens, the greatest absolute difference was only .6 head in the

average number of stock hogs purchased per farm. The change in average size of farms was only .6 acre.

Compared to the 1923-32 base period, practically all livestock had decreased in north central Kansas by 1937. Milk cows had decreased 1.3 head; stock cows, 4 head; sows, 5.7 head; and work stock, 2.1 head. The change in hog numbers corresponded to the change in corn acreage per farm. There were 47.7 fewer hens per farm. The size of the farms decreased from 253.6 acres to 243.0 acres (Table 10).

The number of livestock on the sample farms in north central Kansas for 1938 was similar to the number in 1937. There was some decrease in numbers of cattle, work stock, and hens. Hogs and sheep showed a slight increase. The greatest difference between 1937 and 1938 which had a direct bearing on the livestock data was an increase in the average size of the farms from 242.4 acres to 251.2 acres (Tables 10 and 11).

Little change was made in the 1938 livestock data by eliminating the farms without base-period data. The changes from 1923-32 to 1938 were similar to those changes discussed for 1923-32 to 1937 livestock data for north central Kansas (Table 11).



Table 11. A comparison of the average number of livestock and acres of land per farm for 1938 on all north central Kansas sample farms, and for 1928-32 and 1930 on 57 of the sample farms having identical operators for the base period.

Kind of livestock or use of land	Entire	Fifty-seven sample farms	
	sample of 69 farms	having identical opera- tors during base period	
	1938	1928-32	1930
Average number of livestock per farm			
Milk cows	6.2	7.9	6.3
Stock cows	1.3	6.7	2.0
Stockers purchased	2.6	3.1	3.0
Sows	2.1	7.4	1.2
Pigs raised	16.0	75.5	13.3
Stock hogs	3.6	.1	3.5
Hens	129.3	193.4	133.7
Ewes	2.3	1.1	2.3
Lambs	2.2	1.1	2.6
Pork stock	2.9	5.7	3.0
Colts	.2	.5	.2
Turkeys	.6	.5	.3
Average number of acres per farm			
Crop land	159.9	159.4	156.5
Permanent pasture	72.4	82.7	75.3
Total farm land	231.2	240.6	250.8

#### Agricultural Conservation Program Effect on Crop Land

Previous data discussed are of such a nature that the effect of the ACP could not be distinguished from changes caused by other factors. Elimination of many of the factors



not remaining constant was accomplished by comparing the difference in the changes from the base period for farms complying and farms not complying with the ACP. These two groups of farms, those complying and those not complying with the ACP regulations necessary to receive payments, had like conditions for such factors as weather and prices. However, there were some less important factors which could not be eliminated by this method. Possible shortcomings of the method should be understood before attempting to indicate the effect of the ACP.

It was not possible to select a sample that would permit the comparison of each complying farm with a non-complying farm that was similar in every way. There were so many possibilities for variation between farms that such a sample was impossible for all practical means. It would have been necessary to compare not only the land but also the capital and the farm operators. Since it was impossible to compare farms for this type of experiment, there were some differences between the complying and the non-complying sample farms during the base period. This was not a serious fault except for the following possibilities.

The original base-period differences of the complying farms might have caused some of the change considered an

effect of the ACP. Likewise, the original base-period differences of the non-complying farms might have caused some of the change considered the effect of not complying with the ACP. A third fault of the method, not closely related to the others, was the possibility that non-complying farms were not entirely free from the ACP effect. For example, any change in the prices of farm products resulting from the ACP would affect the non-complying farms as much as the others. In the case of livestock enterprises, it was possible that non-complying farm operators might have increased or decreased their livestock because of available supplies of feeds of different kinds produced on complying farms.

Farmers were found to be participating in the ACP some years and staying out other years. Approximately two-thirds of the 18 sample farms complying with the 1939 program in north central Kansas had not complied for one or both of the two previous years. To the same extent, the farmers not complying in 1939 had complied part of the previous years. This indicates the extent that it was impossible to eliminate the ACP effect from non-complying farms, and vice versa, when classifying the farms on the basis of their relationship with the ACP for any one year regardless of the state

of participation for previous years. Another procedure would have been to compare only those farms continuously in compliance and continuously out of compliance for the entire period since the beginning of the program.

In this study an attempt was made to show the effect of the 1937 program in 1937 and the 1938 program in 1938. If the samples were limited only to those continuously in the program and out of the program, the results obtained would apply only to special types of farms which were but a part of those complying for any one year. A study of the 1938 ACP should show the effect on both the farms in continuous compliance and those of an in-and-out type of compliance. This was accomplished by taking the different groups as a whole rather than separating them and then recombining, using proper weighting.

The groups of farms continuously complying and not complying were too small to make it possible to draw conclusions concerning the nature of the effect of the ACP in such cases. However, the writer completed work in Nemaha County, Kansas, which showed that the effect of the ACP in 1938 was only slightly different from the effect on all farms complying in 1938.

The 30 sample farmers complying with the 1937 ACP in Area I increased their crop land from 164.3 acres per farm

in 1929-32 to 189.4 in 1937. The probable error of the change in acreage was  $\pm 9.2$  acres. The non-complying farmers decreased their crop land from 130.7 acres to 119.4 acres; the probable error was  $\pm 6.6$  acres. The difference between the changes in crop land was 36.4 acres, with a probable error of 11.2 acres. This indicated that, in comparison with non-complying farmers, farmers complying with the ACP were increasing their crop land. In this case the ratio of the difference in changes and the probable error showed the results to be statistically significant (Table 14).

In north central Kansas the 1937 complying sample farmers decreased their crop land 3.6 acres but the 1938 complying farmers increased their crop land 12.6 acres. The non-complying farmers decreased their crop land 7.9 acres for 1937 and 10.6 acres for 1938. The effect of the ACP was an increase in crop land of 4.3 acres in 1937 and 23.2 acres in 1938 (Table 12).

The effect of the 1937 ACP on the use of crop land for sample farms in Area I is given in Table 13. Corn acreage decreased on both complying and non-complying farms but the decrease was greatest on the complying farms, leaving a decrease of 7.9 acres per 100 acres of crop land as the indicated effect of the ACP. The effect of the ACP on wheat was an increase of 3.0 acres, which accounts for only part

Table 12. A comparison of the average acres of crop land per farm for the base period 1929-33 and 1937 or 1938 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in acreage on complying farms. Selected areas in Kansas.

Area and year	Acres crop land per farm						Difference of change (ACP effect)	Difference of change (ACP effect)			
	Complying farms		Non-complying farms		Change	Difference of change (ACP effect)					
	1929 to 1932	1937 or 1938	1929 to 1932	1937 or 1938							
North central Kansas, 1937	151.2	147.6	-3.6	6.0	100.8	152.7	-7.9	+6.4	+4.3	± 0.0	.49
North central Kansas, 1938	156.7	169.5	+12.8	10.8	100.9	150.5	-10.0	± 6.6	+20.2	± 12.4	1.37
Type-of-farming Area I, 1937	164.3	109.4	+55.1	9.5	100.7	119.4	-11.3	± 5.0	+36.4	± 11.2	3.23

± A quotient of three or more is considered significant. Three indicates that there are about 98 chances in 100 that the true difference is greater (or less) than zero when using a sample of this size.

Table 13. A comparison of the percentage of crop land in various crops for the base period 1929-32 and 1937 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in acreage on complying farms. Kansas Type-of-farming Area I.

Crops	Percentage of crop land				Difference of change (ACP effect)	Difference : ence P.E./E
	30 complying farms 1929 to 1937 Change	30 non-complying farms 1929 to 1937 Change	1929	1937		
Corn	31.2±11.3	19.9 ± 3.6	27.6±15.6	12.0 ± 1.5	-7.9 ± 3.9	2.02
Wheat	31.4±49.1	16.7 ± 4.6	40.0±53.7	13.7 ± 4.3	+3.0 ± 6.3	.47
Oats	16.4±14.1	2.3 ± 1.2	21.3±19.6	2.2 ± 1.1	-1.1 ± 1.3	.07
Scrgrass	5.4 ± 4.0	1.4 ± .7	6.1±5.7	4.4 ± 1.0	-1.0 ± 1.2	.84
Other non-legumes	3.6 ± 3.9	.3 ± 1.4	1.2±2.1	.9 ± .5	-.6 ± 1.5	.40
Alfalfa	6.4 ± 2.9	3.5 ± 1.9	.9 ± .1	.8 ± .4	-2.7 ± 1.9	1.42
Cowpeas or soybeans	5.2 ± 1.2	2.0 ± .7	1.3 ± .9	.4 ± .5	-1.6 ± .9	1.86
Red clover or sweet clover	2.3 ± 2.3	0 ± .6	.9 ± 0	.9 ± .5	+.9 ± .6	1.15
Lespedeza	0 ± 4.2	4.2 ± 1.3	.2 ± .3	.1 ± .2	+4.1 ± 1.3	3.10
Idle or fallow	.1 ± 8.0	7.9 ± 1.7	0 ± 2.0	2.0 ± .8	+5.9 ± 1.9	3.13

/E A quotient of three or more is considered significant. Three indicates that there are about 98 chances in 100 that the true difference is Greater (or less) than zero when using a sample of this size.

of the greater proportional decrease in corn. The acreage of alfalfa, cowpeas, and soybeans decreased on the complying farms more than on the non-complying farms. A large decrease in the acreage of these crops on non-complying farms was not possible because they had very small acreages during the base period. Lespedeza increased 4.2 acres on complying farms, compared to an increase of only .1 acre on other farms. Considering all legumes together, the effect of the ACP was an increase of .7 acre per 100 acres of crop land. Adverse weather conditions made it more difficult for complying farms to increase legumes, and non-complying farms continued their practice of growing few legumes. The most significant effect of the program was an increase of 5.9 acres in idle or fallow.

In north central Kansas in 1937 the ACP caused a decrease in corn, wheat, oats, and all other non-legume crops. The decrease in non-legumes on the sample farms was 12.3 acres per 100 acres of crop land compared to an increase of 12.3 acres in legumes and idle or fallow. The acreage of alfalfa and sweet clover on complying farms increased only 2.0 acres but decreased 6.2 acres on the other farms. The ACP caused an increase of 4.1 acres in idle or fallow. The most significant changes were the increases in alfalfa and idle or fallow (Table 14).



Table 14. A comparison of the percentage of crop land in various crops for the base period 1928-32 and 1937 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in acreage on complying farms. North central Kansas.

Crops	Percentage of crop land				Difference of change (ACP effect)	Difference in P. S. / $\sqrt{5}$					
	26 complying farms	36 non-complying farms	1929 to 1937	Change							
Corn	41.2	17.4	23.8	3.5	29.9	11.9	18.0	2.1	-5.8	4.1	1.41
Wheat	32.9	43.3	15.9	2.1	41.6	62.7	21.1	3.1	-5.2	3.7	1.39
Oats	7.8	7.8	0	.8	8.3	8.3	.5	.9	-.5	1.2	.41
Sorghum	5.8	6.2	.4	1.0	5.7	6.2	.5	.7	-.1	1.2	.03
Other non-legumes	1.8	2.7	1.1	.5	1.1	2.9	1.8	.6	-.7	.7	1.00
Alfalfa	3.1	9.3	1.7	1.5	11.7	6.9	4.8	.9	+6.5	1.7	3.82
Sweet clover	2.6	2.9	.3	.9	1.7	.3	1.4	.3	+1.7	.9	1.73
Idle or fallow	0	4.4	4.4	.7	0	.3	.3	.1	+4.1	.7	5.88

$\sqrt{5}$  A quotient of three or more is considered significant. Three indicates that there are about 93 chances in 100 that the true difference is greater (or less) than zero when using a sample of this size.

A comparison of the change in the acreage of crops grown on 1938 complying farms showed some variation from the results obtained for 1937. Corn had decreased less from the base period on complying farms than on other farms. This resulted in an increase of 4.0 acres as the indicated effect of the ACP. Some adjustments in the ACP total soil-depleting allotments were made in 1938, which permitted some farms having large acreages of legumes during the base period to comply without making large increases in non-depleting uses as compared to the base period. Consequently, the measured effect of the ACP was an increase of only 1.8 acres of alfalfa. Alfalfa decreased 3.3 acres on complying farms and 5.1 acres on other farms. The only statistically significant effect of the ACP was an increase of 7.2 acres in idle or fallow (Table 15).

Besides payments made for not exceeding acreage allotments, the ACP had an influence on the use of crop land through payments made for performing soil-building practices. Reliable base-period data were not available for these practices. Consequently, the only possible comparison to indicate the effect of the ACP was between complying and non-complying farms for the years 1937 and 1938.

Table 15. A comparison of the percentage of crop land in various crops for the base period 1928-32 and 1939 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in acreage on complying farms. North central Kansas.

Crops	Percentage of crop land				Difference of change (ACP effect)	Difference in acreage P.E. $\sqrt{5}$					
	19 complying farms 1928 to 1939	Change	58 non-complying farms 1928 to 1939	Change							
Corn	31.7	10.9	-20.3	3.4	56.1	11.5	-24.3	3.0	+4.0	± 4.5	.39
Wheat	36.9	55.1	+18.2	3.5	58.4	65.0	+26.6	3.3	-3.4	± 4.8	1.78
Oats	9.3	6.7	-2.6	1.0	7.9	7.6	.2	0.7	-2.4	± 1.2	2.00
Sorghum	6.7	5.9	-.8	1.1	5.1	7.1	+2.0	1.0	-2.8	± 1.5	1.97
Other non-legumes	1.8	4.3	+2.5	0.8	.9	2.9	+2.0	0.4	+ .6	± .9	.56
Alfalfa	10.0	6.7	-3.3	1.0	10.4	8.3	-2.1	1.0	+1.3	± 1.4	1.29
Sweet clover	5.6	2.7	-.9	.9	1.3	.5	-1.0	.4	+1.1	± 1.0	.10
Fallow or idle	0	7.7	+7.7	1.5	0	.5	+.5	.3	+7.2	± 1.5	4.80

$\sqrt{5}$  A quotient of three or more is considered significant. Three indicates that there are about 98 chances in 100 that the true difference is greater (or less) than zero when using a sample of this size.

The complying sample farmers in Area I contour-farmed 1.7 percent of the crop land, compared to .2 percent by other farmers for 1937. Seeding of legume crops of the kind for which payments were being made was performed on 7.6 percent of the crop land on complying farms and on only 1.2 percent of the crop land on other farms. However, little of this difference could be considered the effect of the ACP because the complying farms were found to be growing considerably more legumes during the period before AAA programs. The 30 complying farms performed the following practices, none of which was performed on the other farms: Construction of terraces, 22,440 feet; legumes for green manure, 64 acres; reseeding non-crop pasture, 340 acres; and application of ground limestone, 40 tons (Table 16).

In 1937, the complying sample farmers in north central Kansas contour-farmed 3.0 percent of the crop land and seeded legumes or grasses on 4.0 percent, compared with 1.3 percent contour-farmed and 1.1 percent seeded to legumes or grasses on other sample farms. There was little difference in the amount of terracing on the two groups of farms (Table 17).

Table 16. A comparison of soil-building practices performed on complying and non-complying sample farms in Kansas. Type-of-farming Area I, 1937.

Soil-building practices	Unit of measurement	Complying farms		Non-complying farms	
		Units per-formed	Percent of crop land	Units per-formed	Percent of crop land
Contour farming (all)	acres	94	1.7	6	.2
Terrace construction	feet	22,440	-	0	-
Seeding legumes or Grasses <sup>1/2</sup>	acres	275	4.3	0	0
Seeding lespedeza (annual legumes)	acres	151	2.3	45	1.2
Legumes for Green manure	acres	54	1.1	0	0
Reseeding non-crop pasture	seed(lbs.)	340	-	0	-
Application of ground limestone	tons	40	-	0	-

<sup>1/2</sup> Biennial and perennial legumes, and perennial grasses. More than 90 percent of the crops were legumes.

Table 17. A comparison of soil-building practices performed on complying and non-complying sample farms. North central Kansas.

Soil-building practices	Unit of measurement	Complying farms		Non-complying farms	
		Units performed	Percent of crop land	Units performed	Percent of crop land
1937					
Contour farming (all)	acres	130	3.0	95	1.3
Terrace construction	feet	2,400	-	2,800	-
Seeding legumes or grasses <sup>/7</sup>	acres	177	4.0	81	1.1
1938					
Contour intertilled crops	acres	29	.8	184	2.2
Contour seeding small grain	acres	79	2.3	150	2.0
Terrace construction	feet	0	0	5,200	-
Seeding legumes or grasses <sup>/7</sup>	acres	149	4.3	75	1.0
Bindweed control	acres	10	.3	0	0

<sup>/7</sup> More than 90 percent of this acreage was alfalfa and sweet clover.

In 1938 contour farming was performed on 3.1 percent of the crop land of complying farms but was exceeded by the other farms with 4.2 percent contour-farmed. Also, the non-complying farms had the most terrace construction, 5,200 feet, compared to none on the complying farms. Legumes or grasses were seeded on 4.3 percent of the crop land of complying farms but on only 1.0 percent of the other crop land.

#### Agricultural Conservation Program Effect on Numbers of Livestock

The indicated effect of the ACP on number of sows per farm in Area I was a decrease of 1.5 head. This corresponded with previous data showing a decrease in corn acreage of 7.9 acres per 100 acres of crop land as the effect of the ACP. The complying farms decreased work stock 2.7 head per farm compared with a decrease of 1.7 head on other farms. The ACP had little effect on cattle; decreased hogs, work stock, and hens; and increased sheep and turkeys (Table 18).

All kinds of livestock decreased in 1937 on sample farms in north central Kansas except stock hogs purchased, sheep, and turkeys on complying farms, and sheep and turkeys on non-complying farms. The differences in the changes on the two groups of farms showed the probable effect of the ACP to be an increase in milk cows, stock cows, stock hogs



Table 18. A comparison of the number of livestock per farm for the base period 1928-32 and 1937 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in number of head. Kansas Type-of-farming Area I.

Livestock	Number of head per farm										Difference since P.E./5	
	30 complying farms					31 non-complying farms						Difference of change (ACP effect)
	1928 to 1932	1937	Change	1928 to 1932	1937	Change	1928 to 1932	1937	Change			
Milk cows	8.6	5.8:-	1.8 ±	.9	8.7	7.3:-	.9 ±	.5:-	.9 ±	1.0:	.90	
Stock cows	3.0:	2.0:-	1.0 ±	.7	1.5:	.3:-	1.0 ±	.7:	0 ±	1.0:	0	
Stockers purchased:	6.1:	6.3:+	.2 ±	.7	3.2:	.9:-	2.3 ±	1.6:+	2.5 ±	1.8:	1.42	
Sows	4.4:	1.3:-	3.1 ±	.6	2.7:	1.1:-	1.6 ±	.3:-	1.5 ±	.7:	2.23	
Pigs raised	47.9:	9.7:-	38.2 ±	7.7	29.7:	9.1:-	20.6 ±	2.3:-	17.5 ±	8.0:	2.20	
Stock hogs	4.7:	6.9:+	2.2 ±	3.1:	6.5:	1.9:-	4.4 ±	2.7:+	6.6 ±	3.2:	.86	
Hens	160.3:	113.9:-	46.4 ±	15.3:	150.1:	113.3:-	36.8 ±	15.9:-	9.6 ±	22.1:	.43	
Ewes	2.0:	4.4:+	2.4 ±	1.6:	2.4:	2.8:+	.4 ±	.6:+	2.0 ±	1.7:	1.17	
Lambs	2.1:	3.9:+	1.8 ±	1.6:	2.3:	3.4:+	1.1 ±	.8:+	.7 ±	1.8:	.38	
Work stock	6.2:	3.5:-	2.7 ±	.4:	4.8:	3.1:+	1.7 ±	.3:-	1.0 ±	.5:	2.00	
Colts	1.2:	.2:-	1.0 ±	.3:	.6:	.5:-	.1 ±	.2:-	.9 ±	.4:	2.57	
Turkeys	4.7:	16.8:+	12.1 ±	5.9:	3.2:	6.9:+	3.7 ±	1.2:+	8.4 ±	6.0:	1.40	

/5 A quotient of three or more is considered significant. Three indicates that there are about 98 changes in 100 that the true difference is greater (or less) than zero when using a sample of this size.

purchased, sheep, work stock, and hens, and a decrease in hogs and turkeys. The most significant changes were in hens and work stock (Table 19).

The results obtained in north central Kansas for 1938 differed considerably from 1937 results. The effect of the ACP was an increase in stock cows, stecker or feeder cattle purchased, hogs, and sheep, and a decrease in milk cows, hens, colts raised, and turkeys. There was no change in work stock. The change in milk cows was the most statistically significant of any of the results. The increase in hogs corresponded with an increase in corn of four acres per 100 acres of crop land (Table 20).

In general, the comparison on complying and non-complying farms showed less significant effect from the ACP than was the case for the use of crop land. There were two reasons why the ACP would be expected to show less effect in such a comparison. First, the ACP regulations pertained to crops and land and would change livestock numbers only indirectly. Second, livestock enterprises often extended over a period longer than a year while most crops were annuals. From a statistical standpoint, this caused greater difficulty from the group of farms that complied in some years and not in others.

Table 19. A comparison of the number of livestock per farm for the base period 1928-32 and 1937 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in number of head. North central Kansas.

Livestock	Number of head per farm										Difference since F.S. <sup>15</sup>	
	23 complying farms					36 non-complying farms						Difference of change (ACP effect)
	1928 to 1937	Change	1928 to 1937	Change	1928 to 1937	Change	1928 to 1937	Change	1928 to 1937	Change		
Milk cows	7.2	6.6±	.6±	.4	8.2	6.7±	1.5±	.5±	.7	1.38		
Stock cows	5.8	1.9±	3.9±	1.8	6.5	2.4±	4.1±	1.1±	.2±	1.4		
Stockers purchased	3.4	1.0±	2.4±	1.3	6.2	4.4±	1.8±	1.5±	.6±	2.0		
Sows	3.4	1.0±	7.4±	2.5	6.1	1.7±	4.4±	.6±	3.0±	2.6		
Pigs raised	73.9	9.9±	64.0±	3.5	67.3	14.7±	52.6±	8.9±	11.4±	9.6		
Stock hogs	.3	3.5±	3.2±	1.9	2.1	1.5±	.6±	1.2±	3.8±	2.2		
Hens	160.9	140.8±	20.1±	8.6	207.0	139.5±	67.5±	15.8±	47.4±	19.0		
Ewes	2.3	4.4±	2.1±	3.1	0	.6±	.6±	.4±	1.8±	3.1		
Lambs	2.3	3.9±	1.6±	2.9	0	.6±	.6±	.4±	1.0±	2.9		
Work stock	5.2	3.6±	1.6±	.3	5.7	3.2±	2.5±	.2±	.9±	.4		
Colts	.3	.2±	.1±	.1	.6	.4±	.2±	.1±	.1±	.1		
Turkeys	1.2	2.3±	1.6±	1.1	0	3.4±	3.4±	1.9±	1.8±	2.2		

<sup>15</sup> A quotient of three or more is considered significant. Three indicates that there are about 98 chances in 100 that the true difference is greater (or less) than zero when using a sample of this size.

Table 20. A comparison of the number of livestock per farm for the base period 1928-32 and 1938 on complying and non-complying sample farms, and the indicated effect of the ACP on the change in number of head, North central Kansas.

Livestock	Number of head per farm						Difference of change (ACP effect)	Difference: p. % / 5		
	19 complying farms		38 non-complying farms		Change	Change				
	1928 to 1932	1938	1928 to 1932	1938						
Milk cows	9.4	5.3	4.1	.9	7.2	6.8	.4	3.7	1.9	3.70
Stock cows	3.1	.4	2.7	1.8	8.5	2.8	5.7	1.2	3.0	2.2
Stocker										
purchased	1.3	2.7	1.4	2.0	4.0	3.2	.8	1.0	2.2	2.2
sows	5.2	1.1	4.1	.8	8.6	2.2	6.4	1.8	2.3	2.0
Pigs raised	62.4	2.5	58.9	10.2	71.2	13.8	55.4	13.3	1.3	12.7
Stock hogs	0	6.1	6.1	2.6	.2	2.2	2.0	.6	4.1	2.7
Hens	188.2	117.2	71.0	22.0	195.6	142.0	53.6	11.7	17.4	12.6
Ives	0	6.5	6.5	3.8	1.6	1.0	.6	1.2	7.1	4.0
Lambs	0	6.3	6.3	3.9	1.6	2.9	.8	1.2	7.1	4.1
Pork stock	5.7	3.0	2.7	.3	5.6	2.9	2.7	.2	0	.4
Colts	.7	.2	.5	.4	.5	.3	.2	.2	.5	.4
Turkeys	0	0	0	0	.8	1.1	.3	.7	.3	.7

✓ A quotient of three or more is considered significant. Three indicates that there are about 98 chances in 100 that the true difference is greater (or less) than zero when using a sample of this size.

## SUMMARY AND CONCLUSIONS

The purpose of the study was to determine the effects of the ACP on the use of crop land and number of livestock kept on farms in Kansas Type-of-farming Area I and north central Kansas.

No previous work of this kind, known to the writer, had been conducted in Kansas. The most similar work was in Iowa by Wilcox and Matteson (5,6) and Wilcox and Crickman (7). Direct comparison with results in Kansas was not possible because of fundamental differences in the areas.

The study was based on sample farm data obtained from farm operators interviewed by the writer. Seventy-five operators were interviewed in Area I and 75 in north central Kansas for the 1937 crop year. Sixty-nine of the original 75 operators in north central Kansas were visited a year later for 1938 data.

The purpose of the ACP section of the AAA was to reduce the acreage of certain surplus crops that commonly deplete the soil and to encourage the use of farm-management practices that aid in maintaining soil fertility.

Kansas Type-of-farming Area I, located in the southeast corner of Kansas, had an average annual rainfall of

approximately 40 inches and an average growing season of 166 days. Many of the soils have developed claypan subsoils.

The area studied in north central Kansas had an average annual rainfall of approximately 28 inches and an average growing season of 170 days. Except for sloping cultivated fields where erosion has occurred, the soils are fertile. Claypan subsoils have not been developed.

Comparisons of the samples with the entire areas indicated that the samples had a smaller proportion of farms under 100 acres than actually existed for the entire areas. The sample in Area I had more part-owners and fewer owners. In north central Kansas the sample contained a larger percentage of owners and a smaller percentage of tenants.

Some farmers participated in the ACP and some did not, because of differences in valuations placed upon the factors involved. The differences in values were dependent upon (1) the difference in the wants of the individual farmers, (2) the reliability and extent of the information available, and (3) differences in costs because of variations in land, capital, labor, and management on the various farms. Work conducted by Wilcox and Matteson (5,6) in Iowa and by the writer in other parts of Kansas tended to show that most of the values determining participation with the ACP could be expressed directly in dollars.



Compared to the 1928-32 base period, farmers in both areas studied made large decreases in corn acreage and increases in wheat acreage. There was some decrease in the acreage of legumes. The principal factors thought to be responsible for these changes were low summer rainfall, high temperatures, grasshopper infestations, price changes, and improvement in crops and machinery.

With the exception of sheep and turkeys, livestock on the farms in both areas studied decreased from the base period. These changes in livestock were caused by the same factors that caused changes in the acreage and yields of crops.

In measuring the effect of the ACP, it was impossible to compare each complying farm with a like non-complying farm because of many variations in land, capital, and operators. This resulted in the possibility that some of the changes measured as the ACP effect may have been influenced partly by original differences in the farms. There was also difficulty in eliminating all the ACP influences from the non-complying farms.

Farmers complying with the 1937 ACP expanded their crop land 36.4 acres in Area I and 4.3 acres in north central Kansas as compared to non-complying farms. In north central Kansas for 1938 the comparative expansion of complying farms



was 23.2 acres. The increase of 36.4 acres in Area I was the only result found to be statistically significant.

The indicated effect of the 1937 ACP on the use of crop land in Area I was a decrease of 6.6 acres of non-legume crops per 100 acres of crop land and an increase of .7 acre of legumes and 5.9 acres of idle or fallow. The increases in lespedeza and idle or fallow were the only results found to be significant.

The effect of the ACP in north central Kansas for 1937 was found to be a decrease of 12.3 acres of non-legumes per 100 acres of crop land, and an increase of 8.2 acres of legumes and 4.1 acres of idle or fallow. The changes in the acreages of alfalfa and idle or fallow were found to be significant.

The effect in north central Kansas in 1938 was a decrease of 9.1 acres of non-legumes and an increase of 1.9 acres of legumes and 7.2 acres of idle or fallow. The change in idle or fallow was significant.

The complying farms in both areas were seeding more legumes than the other farms but since base-period data were lacking, conclusions as to the ACP effect were not possible.

The effect of the ACP on the average number of livestock per farm was not found to be statistically significant in either of the areas studied except for a decrease in milk

cows for 1938 in north central Kansas. However, there was some doubt as to the reliability of this result since the ACP effect in the same area for 1937 was found to be a slight increase in milk cows.

The probable reasons for the less significant results in the case of livestock were that the ACP regulations dealt directly with the use of crop land, affecting the livestock only indirectly through the crops, and that the livestock enterprises often extended over a longer period than a year, which caused the effect of the ACP on livestock to be carried over from a year when the farm was complying to a year when the farm was not complying.

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