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THE PENNSYLVANIA STATE COLLEGE

The Graduate School

Department of Agricultural Economics

EFFECT OF SOIL CONSERVATION SERVICE

PROGRAM ON FARMS IN TWO

AREAS OF PENNSYLVANIA

A Thesis

by

Arnold Clifford Lane

Submitted in partial fulfillment

for the degree of

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INTRODUCTION

The Soil Conservation Service follows the practice of setting up demonstration areas to show the usefulness of planned soil and water conservation on individual farms.

The West Branch Octorare Creek Watershed, Lancaster County, and the Kutstown demonstration area, Berks and Lehigh Counties, were selected in 1935 and 1937 respectively for erosion control demonstration areas.¹ Some of the principal reasons for the selection of these areas were: the badly eroded conditions prevailing in some parts of them, the farmers of these districts desired help, these sections were representative of two big areas in the state, and were different from any of the other three projects then in operation. Both sections practiced a type of farming that required a large percentage of the crop acreage to be clean tilled crops.

PURPOSE

The purpose of this study was to obtain specific information on farms cooperating with the Soil Conservation Service program and on those farms not cooperating,² before and after the introduction of the Soil Conservation program, about the following factors:

1. Changes in farm management practice.
2. Changes in kinds, acreages, and yields of crops grown.

¹The material used for this study was collected by the Soil Conservation Service in cooperation with the Department of Agricultural Economics of the Pennsylvania State College. Information used was taken from unpublished material.

²Hereafter farms cooperating with the Soil Conservation program will be denoted by the initials SCS. Those not cooperating will be referred to as Non-SCS farms or farmers.

3. Changes in numbers and types of livestock kept.
4. The combined influence of all factors of the program upon the maintenance of soil fertility and the most economical operation of the farm unit.

METHOD OF SELECTING FARMS AND COLLECTING DATA

In 1935 in Lancaster County, before many farmers had signed up with the Soil Conservation Service as cooperators, a group of 109 farms gave complete farm management records to the enumerators. Farms were selected in the following manner: The district was divided into sections and an attempt was made to get as full a coverage as possible for the section avoiding part-time farms. The factors limiting the number of records taken were the willingness of farmers to give records and the time and money allotted for this work.

Enumerators tried to obtain another set of records from all full-time farmers, making their living from farming, in 1936, and again in 1938 and 1940. Only those giving a record the previous year were continued. In 1940 there were 33 records taken from the original 109. The other 76 had either refused, died, or the farms had changed owners. This procedure gives us records for four periods and 29 of these records will be used here.

The same procedure was followed in Kutstown in 1937 and 1940. The number of original records taken in 1937 was 80, but in 1940 only 44 of these 80 were obtainable. Of these, 39 were suitable in this study.

All farmers giving records were interviewed by enumerators, who asked each man interviewed a definite set of questions that had been prepared for the survey.

Farms used in both the Lancaster and the Kutstown regions were well distributed in their respective areas.

LOCATION AND DESCRIPTION OF THE AREAS STUDIED

The West Branch Octoraro Creek Watershed is in the southeastern part of Lancaster County covering an area of about 30,000 acres most of which is farm land. This area is located approximately 15 miles southeast of the city of Lancaster and about 60 miles west of Philadelphia (Figure 1). The topography is gently rolling in the northern part of the watershed to rather steep hillsides in the southern portion of the area.³

The people in this section of the country look upon this county as the "garden spot of the nation." Part of the population are of Pennsylvania Dutch descent and part are Scotch Irish and are good farmers through tradition. Many are members of one of the "Plain Sects" which are characteristic of Lancaster County.

In spite of being one of the oldest and one the most intensively farmed sections of the East, it still is very fertile land. It is located near and has good transportation facilities to the large Eastern markets of Philadelphia, Baltimore, New York and the city of Lancaster.

The Kutstown project area lies principally in the northeastern part of Berks County, with a small part in northwestern Lehigh County in Eastern Pennsylvania. This project is approximately 15 miles northeast of Reading, Pennsylvania, and 12 miles west of Allentown, Pennsylvania,

³ Taken from "A Preliminary Economic Appraisal of the Soil Conservation Program in the West Branch Octoraro Creek Watershed in Lancaster, Pennsylvania, by David H. Walter, Associate Agricultural Economist, Soil Conservation Service.

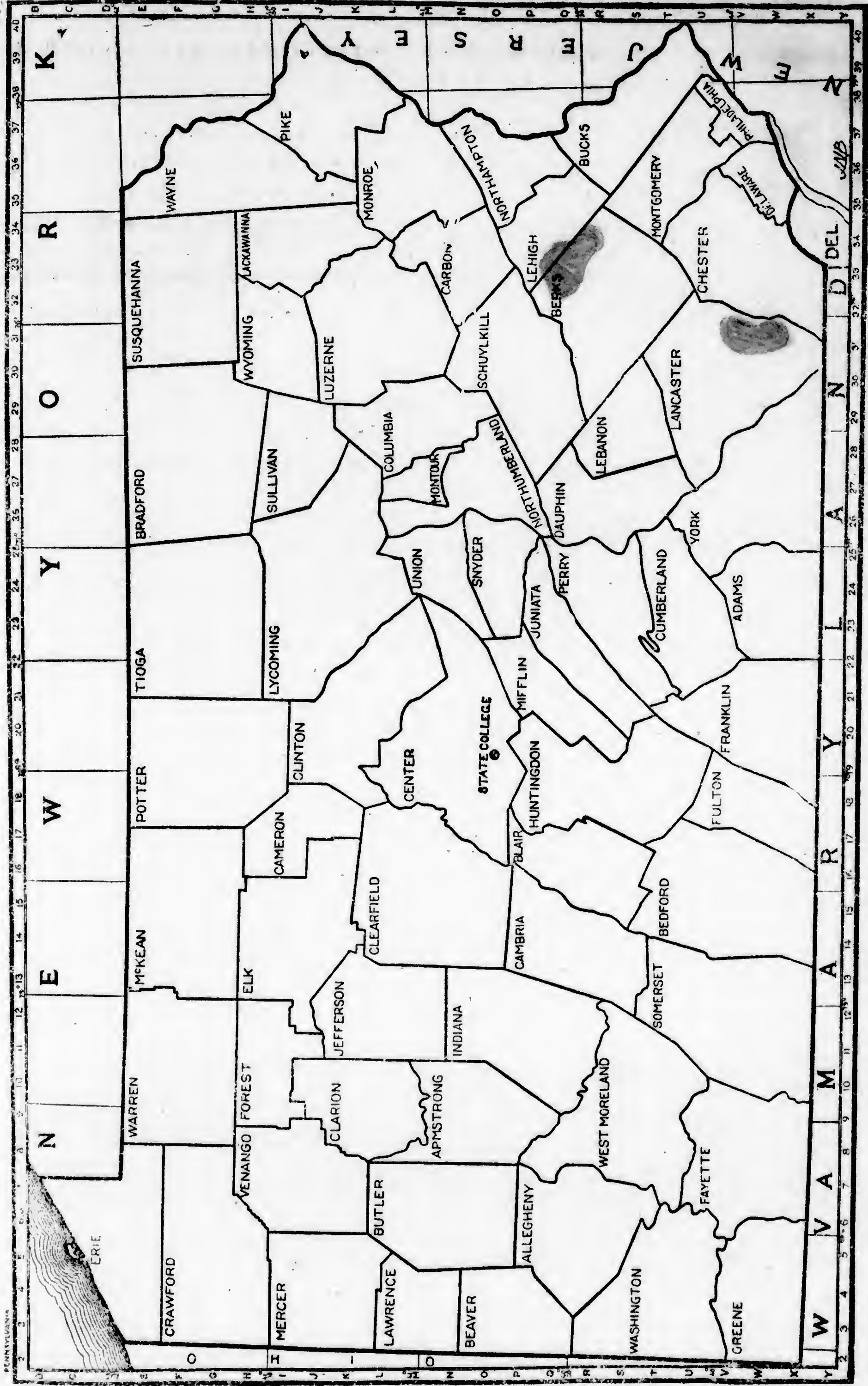


FIGURE 1 - Location of the Lancaster Soil Conservation Demonstration Area, Lancaster County, Pennsylvania, and the Kutztown Soil Conservation Demonstration Area, Lehigh and Berks Counties, Pennsylvania.

(Figure 1) covering an area of 116,233 acres. This section is primarily one of diversified farming with 60 per cent of the cash income from livestock and livestock products. Potatoes afforded the largest single source of cash crop receipts.

The topography varies from rolling and hilly land in the northern part to fairly flat valley land in the limestone section of the southern end.

In this section we find most of the people are Pennsylvania Dutch and good farmers. The type of farming practiced here necessitates a large per cent of the acreage cropped to be in clean tilled crops which are very susceptible to erosion.

Location in respect to markets and transportation facilities is very good. New York, Philadelphia, Reading, and Allentown are the principal markets.

CLIMATE

There was some difference in the climate between these two areas. In the Lancaster district the annual precipitation was 39.84 inches, slightly more than half falling during the growing season (Table 1). The average length of the growing season was 155 days (Table 3), and the average yearly mean temperature was 51.8 degrees Fahrenheit (Table 5). In both 1935 and 1940 the precipitation was above normal. July, 1935, was exceedingly wet and August rather dry, but the average of the two months was about normal. During 1940 all the months of the growing season had more than the average precipitation. April and September were the wettest months.

The growing season in 1935 was seven days longer than the 1934 to 1940 average, and the 1940 season was 17 days shorter than the

average. The last frost in the spring of 1935 was a week earlier than usual, and a week later than the average date in 1940. The first killing frost in the fall of 1935 came on October 5, but in 1940 it was a week early, coming on the 27th of September. The growing season of 1935 was a little warmer than both the 1940 season and the average season.

The average yearly mean temperature for the Kutstown section was 51.2 degrees Fahrenheit (Table 6) with an annual precipitation of 44.07 inches which was as well distributed throughout the year as that in Lancaster County (Table 2). Rainfall in the Kutstown section averaged 4.21 inches more per year than that of the Lancaster area. The total rainfall in 1937 was 2.96 inches under the average, and in 1940, 1.92 inches above normal. September, 1937, had only .91 inches, but the preceding month had a rainfall of over six inches. In both growing seasons there was ample rainfall for proper growth. The length of the average growing season was 178 days which was more than the growing season for either 1937 or 1940 (Table 4). There is not enough difference here to be significant.

The average mean temperature in 1937 was higher than normal by 1.3 degrees, and in 1940 it was lower by two degrees. The mean temperature of individual months during the growing season fluctuated farther from normal than did the yearly mean temperature (Table 6).

TABLE 1 - Precipitation at Lancaster, Lancaster County, Pennsylvania

Month	1934	1935	1939	1940	Average for 53 years
	Inches	Inches	Inches	Inches	Inches
January	2.41	3.3	3.12	1.16	3.19
February	2.10	2.4	5.54	2.55	2.67
March	4.55	2.42	2.85	4.62	3.32
April	3.98	4.68	3.98	6.43	3.26
May	4.35	1.62	0.50	4.21	2.95
June	3.51	3.72	3.65	2.19	4.06
July	5.41	6.35	4.18	2.44	4.28
August	4.39	1.90	6.26	4.24	4.08
September	9.83	3.99	2.81	6.08	3.37
October	1.36	1.56	6.08	2.72	3.09
November	3.40	5.99	0.58	5.09	2.38
December	2.58	2.70	2.36	3.10	3.19
Total	47.87	40.63	41.91	44.83	39.84

TABLE 2 - Precipitation at Allentown, Lehigh County, Pennsylvania

Month	1936	1937	1939	1940	Average for 28 years
	Inches	Inches	Inches	Inches	Inches
January	6.48	5.47	3.02	1.32	3.59
February	2.80	2.41	4.30	2.56	3.36
March	5.97	2.36	4.82	5.59	3.40
April	3.04	4.10	4.05	5.44	3.71
May	2.87	2.81	1.73	4.57	3.40
June	6.10	3.65	2.51	2.73	3.94
July	1.14	5.46	3.59	6.33	4.61
August	3.96	6.58	2.62	2.96	4.90
September	0.87	0.91	1.33	4.01	3.34
October	3.84	3.73	3.00	2.00	3.55
November	1.47	2.02	1.38	4.75	2.76
December	5.31	1.61	2.51	3.73	3.51
Total	43.85	41.11	34.86	45.99	44.07

TABLE 3 - Length of Growing Season at Lancaster, Lancaster County, Pennsylvania

Year	Date of last killing frost in spring	Date of first killing frost in fall	Number of days free of killing frost
1935	April 26	October 5	162
1940	May 12	September 27	138
Average	May 3	October 5	155

TABLE 4 - Length of Growing Season at Allentown, Lehigh County, Pennsylvania

Year	Date of last killing frost in spring	Date of first killing frost in fall	Number of days free of killing frost
1937	April 17	October 9	175
1940	April 24	October 17	176
Average	April 19	October 15	178

TABLE 5 - Temperature at Lancaster, Lancaster County, Pennsylvania

Month	Degrees Fahrenheit		
	1935	1940	Average for 37 years
January	27.9	20.5	29.7
February	29.2	31.6	31.0
March	44.1	36.4	39.7
April	48.8	47.2	49.1
May	58.4	61.1	60.7
June	70.0	69.7	70.0
July	77.0	75.5	73.7
August	73.0	70.2	72.0
September	62.7	63.2	65.5
October	51.8	50.2	53.8
November	46.7	43.5	43.4
December	27.6	36.8	33.4
Average	51.4	50.5	51.8

TABLE 6 - Temperature at Allentown, Lehigh County, Pennsylvania

Month	Degrees Fahrenheit		
	1937	1940	Average for 28 years
January	36.2	22.3	29.8
February	32.8	30.6	28.9
March	35.6	32.8	38.2
April	48.8	45.4	48.5
May	63.2	59.6	60.3
June	71.6	67.9	70.0
July	74.8	74.2	73.9
August	75.4	69.3	71.7
September	63.8	62.6	65.3
October	52.4	49.2	52.9
November	43.2	41.8	42.4
December	32.0	35.2	31.9
Average	52.5	49.2	51.2

ECONOMIC CONDITIONS IN PERIOD COVERED

The poor economic conditions of the farmers in 1935 was one of the factors that brought about this program. Their purchasing power was lower than it was before the first World War (Table 7). The index of prices paid for commodities they bought was higher than the index of prices they received for products sold (Tables 8 and 9). The index of purchasing power of 21 Pennsylvania farm products for 1935, 1937 and 1940 is shown by Table 7.

In 1937 there was a more favorable balance here in Pennsylvania. The index of prices received was higher than the index of prices paid (Tables 7 and 8). The situation in 1940 was not quite as bad as that of 1935, but the farmers were still in an unfavorable position. Small grains and potatoes were more profitable in 1937 than at any other time. Dairy cows and retail milk prices have climbed steadily. Wholesale milk was higher in 1940 than in 1935, but was still higher

in 1937. Eggs were the highest in 1935 and chickens in 1937. Beef cattle rose from 1935 to 1940, but was lower in 1937 than in 1935. Hogs, horse and hay prices have fallen off since 1935. Dairy farmers were in the most favorable position in 1940. Tobacco prices rose 25 points from 1935 to 1937 and 21 points in 1940.

TABLE 7 - Index of Purchasing Power of 21 Pennsylvania Farm Products
(1910 - 14 = 100)

Year	All commodities	Commodities used in production	Commodities Used in Living
1935	96	99	95
1937	102	103	103
1940	98	98	99

(The Agricultural Situation, January 1935, June 1939, and October 1941)
(U.S.D.A. Bureau of Agricultural Economics, July 1941)

TABLE 8 - Indices of Prices Paid by Farmers and Prices Received by
Farmers
(1910 - 14 = 100)

Year	Index of prices received by Pennsylvania farmers for 21 Pennsylvania farm products	Index of all commodities	Index of prices paid by farmers for commodities used in production	Index of commodities used in living
1935	114	119	115	120
1937	129	127	125	125
1940	117	119	119	118

(Pennsylvania Farm Economics, March 1941)
(U.S.D.A. Bureau of Agricultural Economics, July 1941)

TABLE 9 - Index of Prices Received by Pennsylvania Farmers for Specified Crops
(1910 - 14 = 100)

Crop	1935	1937	1940
Wheat	88	115	78
Corn	110	134	99
Oats	97	92	89
Buckwheat	75	92	81
Rye	81	109	83
Barley	86	103	79
Horses	80	86	70
Dairy cows	114	144	149
Wholesale milk	118	133	127
Retail milk	162	176	182
Eggs	112	106	93
Chickens	128	137	121
Beef cattle	112	107	122
Hogs	114	129	76
Veal calves	105	124	123
Potatoes	67	122	110
Apples	116	124	106
Hay	75	77	71
Tobacco	106	131	152

(Pennsylvania Farm Economics, March 1939 and March 1941)

DESCRIPTION OF THE FARMS

The description of the farms includes the farm acreage, the crop acreage, the number of specific types of livestock, the capital, the receipts and the expenses. Also included are various measures of the farm returns. These measures are farm income and labor income.

Of the two groups of farms, the Lancaster farms had the largest total acreage, averaging 125.0 acres per farm. The Kutztown farms averaged 119.1 acres per farm.

The proportion of the total farm acreage that was in crop land was largest on the Kutztown farms. On these farms an average of 77.1 per cent of the farm acreage was in crop land compared with 61.9 per cent on the Lancaster farms.

Lancaster farms had a larger proportion of the farm in woods, pasture, and other land.

The distribution of farm acreage of the two groups of farms is shown in Table 10.

TABLE 10 - Land Use on Lancaster Farms in 1935 and on Kutstowm Farms in 1937

Land use	29 Lancaster farms		39 Kutstowm farms	
	Acres	Per cent	Acres	Per cent
Crops	77.4	61.9	91.9	77.1
Woods	14.6	11.7	13.2	11.1
Pasture	24.5	19.6	6.1	5.1
Farmstead	5.2	4.2	5.8	4.9
Other land	3.3	2.6	2.1	1.8
Total	125.0	100.0	119.1	100.0

Nearly all the crop land fell into these three classifications: Clean tilled, semi-erosion resistant, and erosion resistant crops. Crops such as strawberries, pyrethrum, and many others are not included for they are not generally grown. The Lancaster farms had the largest acreages of clean tilled crops, averaging 39.7 per cent of their total acreage. The Kutstowm farms had the greatest per cent of land in semi-erosion and erosion crops, averaging 43.5 and 29.1 per cent respectively (Table 11).

The distribution of livestock on farms in both of these areas was about equal. Dairy cattle are the most important kind of stock kept. Lancaster leads with an average of 10.3 cows compared to 10.0 for Kutstowm. Beef cattle, averaging 5.7 per farm, were next in importance in Lancaster, but least important in Kutstowm where they had only .5 per farm.

TABLE 11 - Acres of Clean Tilled, Semi-Erosion Resistant, and Erosion Resistant Crops on 29 Lancaster Farms in 1935 and on 39 Kutztown Farms in 1937

Class	29 Lancaster farms, 1935		39 Kutztown farms, 1937	
	Acres of crops	Per cent of total	Acres of crops	Per cent of total
Clean tilled crops	30.7	39.7	24.5	26.7
Semi-erosion resistant crops	24.9	32.2	40.0	43.5
Erosion resistant crops	21.0	27.1	26.7	29.1
Other crops	0.8	1.0	0.7	0.7
Total	77.4	100.0	91.9	100.0

The numbers of hens, horses and mules, herd bulls, and brood sows were about the same in both areas. Kutztown, with 8.4 other hogs per farm, leads Lancaster which had only 4.6 per farm (Table 12).

TABLE 12 - Numbers of Specified Kinds of Livestock on 29 Lancaster Farms in 1935 and on 39 Kutztown Farms in 1937

Kind of stock	29 Lancaster farms, 1935		39 Kutztown farms, 1937	
	Average per farm	Per cent of farms reporting	Average per farm	Per cent of farms reporting
Cows	10.3	100.0	10.0	100.0
Young cattle	3.3	72.4	3.5	87.2
Herd bulls	0.9	75.9	1.2	84.6
Beef cattle	5.7	27.6	0.5	7.7
Horses and mules	3.9	100.0	4.1	100.0
Brood sows	0.7	58.6	1.0	56.4
Other hogs	4.6	86.2	8.4	100.0
Laying hens	223.3	100.0	224.9	100.0

Crop Acreage

The principal crops grown were corn, oats, wheat, and hay, which make 87.2 per cent of all acres in crops on Lancaster farms. These same four crops comprised 85.9 per cent of all acres in crops on the Kutstown farms. Other crops, such as barley, potatoes, tobacco and canning crops, were also important. These acreages are shown in Tables 13 and 14.

TABLE 13 - Average Acreage, Yield and Per Cent of Farms Growing Specified Crops on 29 Lancaster Farms, 1935

Crop	Average acreage	Average yield per acre	Per cent of farms reporting
Corn, grain	21.7	53.1 bushels	100.0
Corn, silage	1.8	12.5 tons	34.5
Oats	5.2	33.3 bushels	70.0
Barley	1.5	36.1 bushels	13.8
Wheat	18.1	25.5 bushels	96.5
Tobacco	0.3	1,414 pounds	13.8
Potatoes	2.5	112.4 bushels	89.6
Soy bean hay	0.6	2.2 tons	17.2
Alfalfa hay	1.4	1.8 tons	31.0
Mixed hay	15.9	1.4 tons	100.0
Timothy hay	2.5	1.0 ton	27.6
Clover hay	0.7	1.6 tons	6.9
All hay	20.9	1.4 tons	100.0
Other crops	5.4	---	---
Acres double-cropped	.2	---	---
Total	77.6	---	---

Crop Yields

In 1935 Lancaster farms averaged per acre: 53.1 bushels of corn, 33.3 bushels of oats, 25.5 bushels of wheat, 112.4 bushels of potatoes, and 1.4 tons for all hay. These yields, like those of the Kutstown farms in 1937, were above the state average as we would normally expect.

TABLE 14 - Average Acreage, Yield and Per cent of Farms Growing Specified Crops on 39 Kutstowm Farms, 1937

Crop	Average acreage	Average yield per acre	Per cent of farms reporting
Corn, grain	14.7	48.1 bushels	100.0
Corn, silage	1.5	10.3 tons	15.4
Oats	13.6	27.1 bushels	100.0
Barley	0.9	34.6 bushels	12.8
Wheat	22.7	20.1 bushels	100.0
Potatoes	7.9	154.4 bushels	97.4
Rye	2.7	16.8 bushels	46.1
Alfalfa hay	5.2	2.5 tons	48.7
Clover hay	1.4	0.5 ton	10.2
Mixed hay	14.7	1.2 tons	76.9
Timothy hay	3.2	1.1 tons	17.9
Meadow hay	2.3	0.8 ton	35.9
All hay(except soybean)	26.7	1.4 tons	100.0
Other crops	1.4	---	---
Acres double-cropped	0.4	---	---
Total	92.2	---	---

Kutstowm farms in 1937 showed the following average yields per acre: 48.1 bushels of corn, 27.1 bushels of oats, 20.1 bushels of wheat, 154.4 bushels of potatoes, and 1.4 tons of all hay. Tables 13 and 14 show average acreage and yields, also the per cent of farms reporting crops for these areas. It is well for the reader to realize that these figures have been presented with no idea of comparing the 1935 Lancaster yields with those of Kutstowm for 1937, but have been presented as base periods.

Capital

The Lancaster farms had the largest capital investment, the average being \$12,196. The average investment on the Kutstowm farms was \$11,882. On the Lancaster farms 63.8 per cent of the average capital was in real estate. This proportion compares with 54.4 per

cent on the Kutstown farms. Of the two groups considered the Kutstown farms had the largest investment in machinery and livestock, averaging 10.8 per cent and 21.9 per cent respectively, against 6.5 per cent and 16.4 per cent for Lancaster farms. Distribution of capital is presented in Table 15.

TABLE 15 - Financial Organization on 29 Lancaster Farms in 1935, and on 39 Kutstown Farms in 1937

	29 Lancaster farms, 1935		39 Kutstown farms, 1937	
	Dollars	Per cent	Dollars	Per cent
Capital				
Real estate	\$7,777	63.8	\$6,468	54.4
Machinery	796	6.5	1,286	10.8
Livestock	2,004	16.4	2,595	21.9
Feed and supplies	1,619	13.3	1,533	12.9
Total	12,196	100.0	11,882	100.0
Receipts from:				
Crops	701	21.5	1,069	28.6
Livestock products	1,446	44.4	1,792	48.0
Livestock increase	632	19.4	563	15.1
Feed and supply increase	226	6.9	22	0.6
Miscellaneous	170	5.2	110	2.9
Real estate increase	82	2.5	127	3.4
Equipment increase	-	-	53	1.4
Total receipts	3,257	100.0	3,736	100.0
Expenses:				
Current	2,079	-	2,484	-
Equipment decrease	18	-	-	-
Total expenses	2,097	-	2,484	-
Farm income	1,160	-	1,252	-
Interest on investment at 5 per cent	610	-	594	-
Labor income	550	-	658	-

Receipts

The largest average gross receipts, \$3,736, were on the Kutztown farms. The Lancaster farms, with 44.4 per cent of total receipts from livestock products, had average gross receipts of \$3,257. On the Kutztown farms 48.9 per cent of the total receipts was from livestock products; 15.1 per cent from livestock increase; 28.6 per cent from crops and the other 8.9 per cent of gross income was from an increase in capital. On Lancaster farms sales of crops accounted for 21.5 per cent of gross receipts; livestock amounted to 19.4 per cent; and increase in capital, 14.7 per cent. In Table 15 these divisions are shown.

Expenses

On farms in both districts current expenses were the principal ones. The Lancaster farmers averaged \$2,079 as compared to \$2,484 for the Kutztown farmers. Lancaster farms also had a decrease in farm equipment of \$18 per farm. Total expenses for Lancaster farms averaged \$2,097, while the Kutztown farms averaged slightly higher, with \$2,484 for total expenses. Table 25 shows a breakdown of current expenses for Lancaster farms.

Table 15 shows that Lancaster farmers had an average farm income of \$1,160, and Kutztown farmers had an average of \$1,252. Labor income is the sum left over after subtracting a charge for interest on investment of five per cent of the total capital. In the case of Lancaster farms, labor income equaled \$550 per farm, and for the Kutztown area, \$658 per farm. Table 37 gives current expenses and their importance for the Kutztown farms.

THE SOIL CONSERVATION PROGRAM IN THE LANCASTER AREA*

The Lancaster area was first settled by white people about the year 1700. From the very first they have overlooked the serious problem of soil conservation. A high per cent of the crop land has always been in cultivated crops such as corn, potatoes and tobacco, and land in these crops is especially subject to severe sheet erosion caused by water run-off. The rainfall is about 40 inches annually. As it is impossible for the soil to absorb the entire amount of water much erosion is noticed after heavy rains on cultivated land.

The water absorptive and holding capacity of the soils of this area have been lowered by past erosion and depletion of organic matter. The chief soils found here are Chester and Manor, which are naturally subject to moderate erosion. Originally the top soil was from 12 to 15 inches in depth and erosion was not noticed at first, because sheet erosion goes on practically unnoticed and the relatively fertile subsoil helped to maintain the yields per acre. In late years the use of commercial fertilizers and new varieties of seed have helped to keep yields normal.

In the southern part of the project area a large part of these cultivated crops were on rough land with slopes ranging up to 40 per cent. The topography in the northern end was smoother with a few slopes of not more than 12 per cent.

Before the introduction of the Soil Conservation Service program into Lancaster County, there were practically no erosion

*Taken from "A Preliminary Economic Appraisal of the Soil Conservation Program in the West Branch Octorara Creek Watershed in Lancaster, Pennsylvania, by David H. Walter, Associate Agricultural Economist, Soil Conservation Service.

control measures practiced. The type of farming planned there did not economically justify these better practices in the farmers' minds.

Factors that tend to increase or decrease the amount of erosion are principally, rainfall, nature of soil, slope of land, type of vegetation, contour or non-contour planting, the length and steepness of slope being worked at the same time, and the type of crops grown. The longer the slope the greater the run-off and consequently the greater the extent of the erosion.

The aim of the Soil Conservation Service has been to plan the best land use on each farm for the conservation of land and water under the prevailing system of farming. In an effort to reduce erosion, improved land uses and farm practices have been recommended and included in a five-year farm conservation program. Some important control measures recommended have been contour strip cropping, increase in acreage and improvement of hay and pasture land, reforestation, protecting woodland from grazing, and the use of various structures such as terraces, contour furrows, and permanent waterways to supplement the other control measures.

The width of the strips used in strip cropping varied from 75 to 125 feet depending on the per cent slope. The greater the slope the narrower the strips. Strips usually follow the contour if possible.

An increase in hay and pasture land has usually been recommended if either or both changes would fit into the program. Land too steep to be profitably farmed was often planted to trees. Some of this good steep land could, by the use of diversion ditches and terraces, be kept in erosion resistant crops such as permanent hay or pasture land.

Recommended Changes

The Soil Conservation Service has drawn up a detailed five-year working plan for recommended changes in land use planning and practices for the operator to follow. This is called the cooperators' agreement. In this agreement changes in land use were outlined.

The original number of farmers signing cooperators' agreements¹ in Lancaster County was 26 out of the 108. Only 19 farms will be discussed here for only 19 economic records were obtained from these farms in 1940. In following out the original program as outlined, there was called for a reduction of 1.1 acres of crop land, and .8 acres of miscellaneous land per farm; an increase of 1.2 acres of pasture, and .7 acres of woodland on all farms by 1940 (Table 16).

TABLE 16 - Land Use Changes as Called For in the Soil Conservation Service Agreement for 19 Cooperating Farms in the Lancaster Area, Lancaster County, Pennsylvania*

Land use	ACRES PER FARM			
	Before contract	After contract	Change	
			+	-
Crop land	65.5	64.4		1.1
Pasture	23.9	25.1	1.2	
Woodland	14.7	15.4	0.7	
Miscellaneous	5.9	5.1		0.8
Total	110.0	110.0	-	-

* Does not include rented land.

The changes in acres of those crops giving the best erosion protection has been increased and the crops giving the poorest pro-

¹Rented land on these farms is not included in the agreement.

tection have had a decrease in Lancaster County. An increased acreage was called for in the erosion resistant crops. The decreases were planned in the clean-tilled and semi-erosion resistant crops, and amounted to 2.9 acres of clean-tilled and 1.5 acres of semi-erosion resistant crops. Table 17 shows these changes in crop land.

TABLE 17 - Changes in Crop Acreages That Were Called For in the Soil Conservation Service Cooperative Agreements on 19 Lancaster Farms, Lancaster County, Pennsylvania

Type of crop	Average per farm:				Per cent change	
	Acres before contract	Acres after contract	Acreage change		+	-
Clean tilled	24.8	21.9	2.9		11.6	
Semi-erosion resistant	20.0	18.5	1.5		7.5	
Erosion resistant	20.6	23.9	3.3		16.0	
Other land	0.1	0.1	-	-	-	-
Total acres in crops	65.5	64.4	-	1.1	-	

Other changes called for in the agreement are the transferring of 1.1 acres of crop land and .1 acres of miscellaneous land to permanent pasture, and .7 acres of miscellaneous land to woodland.

Farms in this project will undergo a few physical changes. A number of fields will be made larger in size but strip and contour farming will break some large fields up into many small fields. Each contour or field strip will be considered as a separate field. Under this arrangement the average size field has been changed from 8.0 acres to 2.4 acres per field, and the number of fields increased from 8.2 to 26.4 fields per farm

*Does not include rented land

Changes Accomplished

In 1940 survey records were obtained from 29 farms in Lancaster County. Nineteen of these were SCS farms and 10 were not.

In this comparison of SCS and non-SCS farms, I shall try to show some of the benefits derived from the better practices followed. Not all of these changes and improvements can be traced to the SCS program.

Land Use

Land use on cooperating and non-cooperating farms in Lancaster county 1935 and 1940 is shown by Table 18.

In 1935 sixty per cent of the land on SCS farms was in crop land, while 65.5 per cent of the total land on non-SCS farms was in crop land. SCS farms had the largest percentage of other land and land in woods, 2.8 and 14.3 per cent respectively, compared with 2.2 and 6.9 per cent for non-SCS farms. Non-SCS farms lead in per cent pasture with 21.1 per cent against 18.8 per cent for SCS farms.

This program was set up so the agreements would not cover extra land rented or additional land purchased. In order to derive the most good from the program all rented and purchased land should be managed the same as that covered in the agreement. It is not the specific agreement that should make the difference, but the sound theory behind the agreement. From now on all material covered in this study will include the whole farm unit whether it is hired or owned land. This change in area is unimportant as far as the comparisons go.

Land use of all land in farms is shown in Table 18 for both 1935 and 1940. The most important changes noted here are an increase in size of farms in the non-SCS groups by 9.8 acres and a decrease in

the size of the SCS farms by 4.3 acres. The per cent of the total acreage in woods increased by 1.1 per cent on SCS farms and by .1 per cent on nonSCS farms. The per cent of land in pasture and farmstead increased in both groups. Acres and per cent of total acres in crops decreased in both groups. The per cent decrease on SCS farms was 6.5 per cent and 6.7 per cent on non-SCS farms. Other land also decreased by .6 per cent on SCS farms but increased 7.2 per cent on non-SCS farms in 1940 (Table 18).

Crop land on all 29 farms was broken up into clean tilled, semi-erosion resistant, erosion resistant, and other land. SCS farms in 1935 averaged 29.8 acres in clean tilled crops, 23.9 acres in semi-erosion resistant crops, 20.1 acres of erosion resistant, and .6 acres of other land. Clean tilled crop acreage averaged 32.6 on non-SCS, semi-erosion resistant acreage equaled 26.8, erosion resistant was 22.6, and other land acreage was 1.1 acres. Changes in these groups from 1935 to 1940 are shown in Table 19.

SCS crop acreage decreased 18.1 and 16.7 per cent in clean tilled and semi-erosion resistant crops. An increase of 1.4 per cent in erosion resistant crops was the only increase. Other land, which was relatively unimportant, decreased by 50 per cent. The per cent change in clean tilled crops for non-SCS farms showed an increase of +0.3. A decrease in percentage of semi-erosion resistant and erosion resistant crops of 2.2 and 8.8 was found. Total crop acreages decreased in both groups of farms. The decrease was 10.3 per cent on SCS farms, and 2.7 per cent on non-SCS farms.

Fertility Maintenance on SCS and Non-SCS Farms

The rates of application for fertilizer and manure per acre

TABLE 18 - Land Use on Soil Conservation Service Cooperating and Non-Cooperating Lancaster Farms Before and After the Influence of the Soil Conservation Service Program

Land Use	1935				1940				Changes in Acres 1935 - 1940	
	19 SCS		10 Non-SCS		19 SCS		10 Non-SCS		19 SCS	10 Non-SCS
	Acres	Per cent	Acres	Per cent	Acres	Per cent	Acres	Per cent		
Crops	74.4	60.0	83.1	65.5	64.1	53.5	80.4	58.8	-10.3	-2.7
Woods	17.7	14.3	8.7	6.9	18.4	15.4	9.6	7.0	+0.7	+0.9
Pasture	23.3	18.8	26.8	21.1	28.7	24.0	27.4	20.0	+5.4	+0.6
Farmstead	5.1	4.1	5.5	4.3	5.9	4.9	6.5	4.8	+1.8	+1.0
Other land	3.5	2.8	2.8	2.2	2.6	2.2	12.8	9.4	-0.9	+10.0
Total	124.0	100.0	126.9	100.0	119.7	100.0	136.7	100.0	-4.3	+9.8

TABLE 19 - Acreages of Clean Tilled, Semi-Erosion Resistant, and Erosion Resistant Crops for Lancaster, 1935 and Changes in 1940

	1935 Acreages of crops		Change in acres 1935 to 1940		Per cent change from 1935 to 1940	
	19 SCS	10 Non-SCS	19 SCS	10 Non-SCS	19 SCS	10 Non-SCS
	Acres	Acres	Acres	Acres	Per cent	Per cent
Clean tilled crops	29.8	32.6	-5.4	+ .1	-18.1	+0.3
Semi-erosion resistant crops	23.9	26.8	-4.0	- .6	-16.7	-2.2
Erosion resistant crops	20.1	22.6	+0.3	-2.0	+1.4	-8.8
Other land	0.6	1.1	-0.3	-0.1	-50.0	-91.0
Total	74.4	83.1	-10.3	-2.7	-12.3	-3.2

of crops was higher on the SCS farms. The increase in purchased fertilizer per acre of crops from 1935 to 1940 was also greater than that on the non-SCS farms. The increase amounted to 83 cents on the SCS farms and to 70 cents per acre on the non-SCS farms. The tons of manure applied to SCS farms increased .3 tons per acre. The increase on non-SCS farms was .4 tons per acre.

The rate of application of lime per acre of crop land fell off on both groups of farms. The cooperating farms decreased by .08 tons per acre and the non-SCS farms by .13 tons per acre. The tons of lime applied per acre of crops decreased on both groups of farms, yet the cost of lime per farm increased. This is partly accounted for when we realize that the Government gave large quantities of lime away in 1935 but did not in 1940.

TABLE 20 - Rates of Application Per Acre of Crop for Fertilizer, Manure, and Lime on 29 Lancaster County Farms, 1935 and 1940

	Average 19 SCS farms		Average 10 Non-Scs farms	
	1935	1940	1935	1940
Cost of fertilizer per acre	\$2.36	\$3.19	\$2.07	\$2.77
Tons of manure per acre of crop	2.8	3.1	2.5	2.9
Tons of lime per acre of crop	0.14	0.06	0.2	0.07

Changes in acreages of important crops are shown in Table 21. There was an increase in hay land of .4 acres on cooperating farms, and a decrease on non-SCS farms of two acres. The total crop land decreased 9.3 acres on the SCS farms in Lancaster County and .5 acres on the non-SCS farms.

Corn and wheat acreages decreased on SCS farms between 1935 and 1940. Corn acreages decreased on non-SCS farms but wheat increased. Acres in tobacco increased on both groups of farms, but the increase was greater on non-SCS farms. Alfalfa hay showed a substantial gain on SCS farms with an average increase of 4.7 acres. This crop decreased in acreage on non-SCS farms by .6 acres. Clover hay increased on farms in both groups and mixed hay dropped. This may be due to the way the farmers classified their hay land. Some will call mixed hay with a good deal of clover in it clover hay one year and mixed hay the next time they are asked.

Yields on these same Lancaster farms have dropped in some cases and have been higher in others. For the periods studied corn yields dropped 19 bushels to the acre on non-SCS farms, and only

TABLE 21 - Acreages and Changes in Acreages of the Important Crops on Cooperating and Non-Cooperating Farms in the Lancaster Area, Lancaster County, Pennsylvania, 1935 and 1940

Crop	1935		1940		Change from 1935 to 1940	
	19	10	19	10	19	10
	SCS	Non-SCS	SCS	Non-SCS	SCS	Non-SCS
	Acres	Acres	Acres	Acres	Acres	Acres
Corn for grain	20.8	23.3	11.8	18.9	-9.0	-4.4
Silage corn	1.7	2.1	4.6	3.6	+2.9	+1.5
Oats	5.3	5.1	3.5	2.4	-1.8	-2.7
Barley	1.5	1.6	4.9	3.0	+3.4	+1.4
Wheat	17.0	20.3	11.6	20.6	-5.4	+0.3
Soy bean hay	0.7	0.3	1.5	0.9	+0.8	+0.6
Tobacco	0.2	0.4	1.5	2.0	+1.3	+1.6
Potatoes	2.5	2.7	2.0	3.4	-0.5	+0.7
Alfalfa	1.0	2.2	5.7	1.6	+4.7	-0.6
Clover	0	2.0	5.3	4.8	+5.3	+2.8
Mixed hay	16.6	14.7	7.7	12.8	-8.9	-1.9
Timothy	2.2	3.1	1.5	1.4	-0.7	-1.7
All hay (except soybean)	20.0	22.6	20.4	20.6	+0.4	-2.0
All other crops	5.2	5.3	3.8	5.2	-1.4	-0.1
Acres double-cropped	.34	0	1.34	0.2	+1.0	+0.2
Total acres of crops	74.7	83.1	65.4	80.6	-9.3	-0.5

TABLE 22 - Average Yields and Changes in Yields per Acre on 19 SCS and 10 Non-SCS Farms in Lancaster County, Pennsylvania, 1935 and 1940

Crop	Unit	1935		1940		Change from 1935 to 1940	
		19	10	19	10	19	10
		SCS	Non-SCS	SCS	Non-SCS	SCS	Non-SCS
Corn for grain	Bushel	53.3	52.7	43.8	33.7	-9.5	-19.0
Silage corn	Ton	12.5	12.5	8.6	12.9	-3.9	+0.4
Oats	Bushel	32.8	34.5	36.7	45.5	+3.9	+11.0
Wheat	Bushel	26.1	24.4	23.3	23.0	-2.8	-1.4
Barley	Bushel	36.8	35.4	30.7	27.4	-6.1	-8.0
Tobacco	Pound	1,327	1,500	1,198	1,152	-129	-348
Potatoes	Bushel	119.4	101.2	200.1	147.6	+80.7	+46.4
Soy bean hay	Ton	1.9	1.3	1.5	1.8	-0.4	+0.5
Alfalfa	Ton	1.5	2.3	2.2	3.0	+0.7	+0.7
Clover	Ton	-	1.6	1.4	0.9	+1.4	-0.7
Mixed hay	Ton	1.3	1.5	1.3	1.2	0	-0.3
Timothy	Ton	1.0	1.2	1.0	0.8	0	-0.4
All hay	Ton	1.4	1.5	1.6	1.25	+0.2	-0.3

nine bushels per acre on SCS farms, while wheat dropped 2.8 bushels per acre on SCS farms and only 1.4 bushels on non-SCS farms.

Yields per acre of tobacco fell off in both groups and increased in both for potatoes. All hay yields increased on cooperating farms and decreased on non-cooperating farms. Table 22 shows these and other changes in yields.

The crop index on cooperating farms was 129 in 1935, and 112 in 1940. On non-cooperating farms the crop index was 124 in 1935, and 109 in 1940. There was no significant difference found here in the percentage drop. Decreases in yields are partly accounted for by a heavy Japanese Beetle infestation, a late spring frost, and a shortened cooler growing season in 1940. September, 1940, had over six inches of rainfall which interfered with the harvesting and yields of some of the crops. Normal precipitation for September is about 3.4 inches.

Receipts from livestock and livestock products were very important in Lancaster County. Therefore, it was advantageous to keep a favorable balance of stock. Table 23 shows that there was practically no difference in the numbers of specified kinds of livestock kept on SCS farms or non-SCS farms. The SCS farms had a margin of one cow per farm over the non-SCS farms in both 1935 and 1940. Beef cattle and horses decreased a little more on non-SCS farms than on SCS farms. The number of other livestock, except hens, varied about the same on all farms. The decrease in the number of laying hens was greater by 44 hens per farm on non-SCS farms between 1935 and 1940.

Dairy cows, beef cattle, and hens were the most important

TABLE 23 - Numbers of Specified Kinds of Livestock on 19 SCS and 10 Non-SCS Farms in the Lancaster Area, 1935 and 1940

Kind of livestock	1935		1940		Change from 1935 to 1940	
	19 SCS	10 Non-SCS	19 SCS	10 Non-SCS	SCS	Non-SCS
	Number	Number	Number	Number	Number	Number
Dairy cows	10.6	9.7	11.2	10.1	+0.6	+0.4
Young cattle	4.0	2.1	5.0	4.3	+1.0	+2.2
Herd bulls	.8	1.2	.7	1.1	-0.1	-0.1
Beef cattle	5.4	6.3	5.1	5.2	-0.3	-1.1
Horses and mules	3.7	4.3	3.4	2.6	-0.3	-1.7
Breed sows	.7	.8	.9	1.0	+0.2	+0.2
Other hogs	4.5	4.7	6.2	13.7	+1.7	+9.0
Laying hens	201	266	199	220	-2.0	-46.0

kinds of livestock kept on these farms. Dairy cows were the most important, with beef cattle and hens about equal in importance. Hens were kept on more farms than were beef animals.

The average number of brood sows and other hogs per farm increased on both classes of farms. The increase in other hogs was much greater on non-SCS farms.

Financial Organization of SCS and Non-SCS Farms in Lancaster County

Capital. The capital invested in non-SCS farms was greater in both 1935 and 1940 than on SCS farms. In 1935 the SCS farms had a total investment of \$11,489, and the non-SCS farms had \$13,730. Both of these increased, and in 1940 the SCS farms had an average capital of \$14,511, and the non-SCS \$17,660. Real estate on SCS farms for 1935 and 1940 equaled 63.3 and 67.4 per cent of total capital, compared to 64.4 and 72.5 per cent of total capital for the non-SCS farms in these same two periods. Machinery comprised 6.3 and 4.9 per cent of total capital for SCS and non-SCS farms in 1935, and 6.9

and 7.1 per cent for cooperators and non-cooperators in 1940. Live-stock on SCS farms amounted to 17.5 per cent in 1935 and 17.1 per cent in 1940. On the non-SCS farms the percentage was 14.8 in 1935, and 10.8 in 1940. Feed and supplies dropped in importance on both groups of farms in this 5-year period. The average for the SCS farms was 12.95 per cent in 1935 and 10.6 per cent in 1940. For these same years on non-SCS farms the percentages were 13.9 and 9.6 respectively (table 24).

Receipts. SCS farms had the largest average gross receipts in 1935 with \$3,299 and in 1940 with \$3,720. Non-SCS farms also showed an increase in receipts from \$3,266 in 1935 to \$3,419 in 1940. Receipts from livestock in this first year were 61.8 per cent of the total for SCS farms and 66 per cent for non-SCS farms. By 1940, SCS farms were receiving 65.5 per cent from this source and non-SCS farms had dropped to 57.4 per cent. Crop receipts amounted to 18.8 and 26.1 per cent in cooperating and non-cooperating farms in 1935. In 1940 they had risen to 21.3 per cent for cooperators and 30.8 per cent for non-cooperators. The per cent of receipts from an increase in feed and supplies inventory on SCS farms in 1935 was 8.3, which decreased to 5.2 by 1940. Non-SCS farms also showed a change in feed and supplies increase from 4.3 per cent of receipts in 1935 to an expense in 1940. Miscellaneous receipts decreased on SCS farms from 6.0 per cent of receipts to 3.6 per cent. Non-SCS farms increased from 5.7 to 9.9 per cent. Real estate increase made up 5.1 per cent of SCS farm receipts in 1935 and 1.0 per cent in 1940. Non-SCS farms had no receipts from this source. Only in 1940 were there any receipts from increase in equipment which averaged 1.3 per cent of receipts on

cooperating farms and 1.9 per cent on non-cooperating farms (Table 24).

Expenses. Current expenses made up the largest percentage of the total expense (Table 24). Real estate, equipment, and feed and supply decreases accounted for only a small part of the expenses on either group of farms. In Table 25 is shown the major items included in current expenses.

Some of the most important items of expense are hired labor and board, family labor and board, purchased grain, building and machinery expenses, fertilizer, milk hauling, auto, tractor. The total increase in current expenses on SCS farms was \$429, and \$597 on the non-SCS farms (Table 25). The increase in total expenses on all SCS farms was \$405, and the increase in total receipts was \$481, compared to an increase in total expenses of \$597 and an increase in total receipts of \$153 on non-SCS farms (Table 24).

Farm income increased on SCS farms by \$76 and decreased by \$619 on non-SCS farms. Interest on investment increased \$157 on SCS farms and \$196 on non-SCS farms in this period.

Labor income on cooperating farms decreased from \$578 in 1935 to \$497 in 1940. The decrease was greater on non-SCS farms, dropping from \$497 to \$-328 (Table 24).

Factors responsible for some of the difference in the average labor income on the two groups of farms. While the average capital invested per farm has increased on both groups of farms, it has increased more on the non-SCS farms. On the non-SCS farms there was a \$3,000 increase in capital, but only a \$400 increase in receipts from 1935 to 1940. In 1940 the receipts were only 19.4 per cent of capital invested, while in 1935 they were 23.8 per cent (Table 27). The number

TABLE 24 - Financial Organization on 19 Cooperating and 10 Non-Cooperating Farms in Lancaster, Pennsylvania, 1935 and 1940

	Average per farm, 1935:				Average per farm, 1940:			
	19 SCS farms		10 Non-SCS farms		19 SCS farms		10 Non-SCS farms	
	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent
Capital								
Real estate	7,215	63.3	8,842	64.4	9,781	67.4	12,804	72.5
Machinery	714	6.3	948	6.9	711	4.9	1,254	7.1
Livestock	1,990	17.5	2,032	14.8	2,481	17.1	1,907	10.8
Feed and supplies	1,470	12.9	1,908	13.9	1,538	10.6	1,695	9.6
Total	11,389	100.0	13,730	100.0	14,511	100.0	17,660	100.0
Receipts from:								
Crops	621	18.8	854	26.1	804	21.3	1,053	30.8
Livestock products	1,362	41.3	1,607	49.2	1,884	49.8	1,478	43.2
Livestock increase	675	20.5	550	16.8	593	15.7	486	14.2
Feed and supply increase	273	8.3	139	4.3	196	5.2	—	—
Miscellaneous	198	6.0	116	3.6	216	5.7	337	9.9
Real estate increase	170	5.1	—	—	37	1.0	—	—
Equipment increase	—	—	—	—	50	1.3	65	1.9
Total	3,299	100.0	3,266	100.0	3,780	100.0	3,419	100.0
Expenses								
Current	2,128	—	1,999	—	2,557	—	2,596	—
Feed and supply decrease	—	—	—	—	—	—	219	—
Real estate decrease	—	—	86	—	—	—	49	—
Equipment decrease	24	—	7	—	—	—	—	—
Total	2,152	—	2,092	—	2,557	—	2,864	—
Farm income	1,147	—	1,174	—	1,223	—	555	—
Interest on investment	569	—	687	—	726	—	883	—
Labor income	578	—	487	—	497	—	-328	—

TABLE 25 - Current Expenses With Changes from 1935 to 1940 on 19 SCS and 10 Non-SCS Farms in Lancaster, Lancaster County, Pennsylvania

Item of Expense	Average per farm					
	19 SCS farms			10 Non-SCS farms		
	1935	1940	Change	1935	1940	Change
Hired labor and board	\$237	\$337	+100	\$269	\$471	+202
Family board and labor	301	295	-6	298	170	-128
New buildings and repairs	346	204	-142	100	183	+83
New machinery and repairs	63	133	+70	108	213	+105
Purchased grain	343	430	+87	337	454	+117
Feed grinding	38	29	-9	54	46	-8
Fertilizer	165	233	+68	181	228	+47
Lime	16	38	+22	9	17	+8
Grass and other seeds	73	115	+42	74	145	+71
Threshing	40	47	+7	34	41	+7
Milk hauling	90	120	+30	93	74	-19
Taxes	90	101	+11	120	106	-14
Truck	46	45	-1	6	23	+17
Tractor	22	93	+71	60	162	+102
Auto - farm use	66	74	+8	92	78	-14
Insurance	31	32	+1	34	32	-2
All other	161	231	+70	130	153	+23
Total	2,128	2,557	+429	1,999	2,596	+597

of years that it would take capital to equal receipts had increased from 4.0 to 5.2 years. On the other hand, receipts from cooperating farms equaled 29 per cent of capital in 1935 and 26 per cent of capital in 1940. The number of years it would take receipts to equal capital on the 1935 basis amounted to 3.4 years, and on the 1940 basis, 3.8 years (Table 26). This shows a better use of capital on the SCS farms and over-capitalization on the non-SCS farms. Interest on investment in 1935 was \$686 on non-cooperating farms and \$569 on cooperating farms. In 1940 interest on investment on both groups had increased, but the interest charge on non-cooperating farms had increased to \$883, while on the cooperating farms it had increased to \$726. The

TABLE 26 - A Comparison of Certain Factors Affecting Labor Income Before and After the Introduction of the Soil Conservation Program in the Lancaster Area, Lancaster County, Pennsylvania

Factors	Average per farm			
	1935		1940	
	19 SCS farms (Before)	10 Non-SCS farms	19 SCS farms (After)	10 Non-SCS farms
Productive man work units	552	544	554	602
Productive man work units per man	250	237	264	267
Pounds of milk sold per cow	5,134*	5,207***	5,245**	4,479***
Crop index	129.1	124.0	112.3	109.4
Acres in crops	74.4	83.1	64.1	80.4
Number of hens	206.3	266.5	192.5	225.9
Eggs sold per hen	52.7	64.0	47.1	80.4
Number of cows	10.7	9.7	11.3	10.3
Number of years required for receipts to equal capital	3.4	4.0	3.8	5.2
Total capital investment	\$11,389	\$13,730	\$14,511	\$17,660
Productive man work units per \$1,000 capital investment	48.5	39.6	38.2	34.1
Labor income	\$577.89	\$487.00	\$497.37	\$-328.00

*Milk sold on only 16 SCS farms in 1935

**Milk sold on only 17 SCS farms in 1940

***Milk sold on only nine farms in both 1935 and 1940

amount charged for interest on the investment¹ on the SCS farms in 1940 was \$157 more than on the SCS farms, while in 1935 it was only \$117.

¹Interest on investment is figured at five per cent on the average capital

TABLE 27 - A Comparison of the Business Analyses of 19 SCS Farms and 10 Non-SCS Farms in Lancaster County, 1935 and 1940

Factors	Average per farm			
	1935		1940	
	19 SCS farms	10 Non-SCS farms	19 SCS farms	10 Non-SCS farms
Labor income	\$577.89	\$487.00	\$497.37	\$-328.00
Size:				
Productive man work units	552	544	554	602
Acres in crops	74.4	83.1	64.1	80.4
Acres in pasture	23.3	26.8	28.7	27.4
Number of cows	10.7	9.7	11.3	10.3
Capital	\$11,389	\$13,730	\$14,511	\$17,660
Balances:				
Pasture acres per animal unit pastured	2.3	2.1	1.6	1.6
Acres of crops per animal unit	3.2	3.9	2.8	3.4
Tons of manure per acre crops	2.8	2.5	3.1	2.9
Purchased fertilizer per acre crops	\$2.36	\$2.07	\$3.19	\$2.77
Productions:				
Crop index	129.1	124.0	112.3	109.4
Pounds of milk sold per cow	5,134	5,207	5,245	4,479
Value of dairy products sold per cow	\$104	\$108	\$129	\$95
Eggs sold per hen	52.7	64.0	47.1	80.4
Labor efficiency:				
Productive man work units per man	250	237	264	267
Acres of crops per man	33.9	35.6	31.5	35.4
Animal units per man	8.8	9.6	10.5	10.9
Other factors:				
Gross receipts	\$3,299	\$3,266	\$3,780	\$3,419
Gross receipts in per cent of average capital	29.0	24.7	26.0	19.4
Total expense	\$2,152	\$2,092	\$2,557	\$2,864
Per cent of receipts from:				
Crops	16.6	25.8	18.5	29.8
Livestock	61.9	64.2	66.1	54.0
Miscellaneous	6.5	3.7	5.9	6.5
Per cent of investment in:				
Real estate	63.3	64.4	67.4	72.5
Machinery	6.3	6.9	4.9	7.1
Livestock	17.5	14.8	17.1	10.8
Farm income	\$1,147	\$1,174	\$1,223	\$555

An increase in the pounds of milk sold per cow on SCS farms and a decrease on non-SCS farms changed the receipts per cow on SCS farms from \$104 in 1935 to \$129 in 1940. On non-SCS farms receipts per cow dropped from \$108 to \$95 for the same period. Milk production per cow increased from 5,134 pounds to 5,245 during this period on cooperating farms, and the number of cows also increased from 10.7 to 11.3 per farm. The number of cows on non-SCS farms increased from 9.7 to 10.3 per farm, but milk production decreased from 5,200 pounds to 4,479 pounds per cow (Table 26). From information available at present there is no way of determining with certainty whether this drop was due to poorer livestock, to lighter feeding, to poorer management, or a combination of these.

Productive man work units per man increased on the non-SCS farms from 237 to 267, and on the SCS farms from 250 to 264. The greater increase was on non-SCS farms where more of the labor was hired and less family labor was used. This increase in labor efficiency has brought both groups together, but there is still room for improvement. Acres of crops per man decreased on the SCS farms by 1.4 acres, and on non-SCS farms by .2 acres. Animal units per man increased from 8.8 to 10.5 on SCS farms, and from 9.6 to 10.9 on non-SCS farms.

The size of the farm business has increased on both groups of farms. Total productive man work units per farm increased from 552 to 554 on SCS farms, and from 544 to 602 on non-SCS farms. With this increase in size, we notice an \$800 increase in expenses on non-SCS farms and only a \$153 increase in receipts. The SCS farms had an increase of \$500 in expenses and nearly \$500 increase in receipts

(Tables 25 and 27). The number of cows per farm increased by .6 in both groups, and the acres of crops per farm decreased on both groups of farms. The decrease was 10 acres per farm on SCS farms and 2.7 acres per farm on non-SCS farms. Animal units per farm increased from 23.5 on SCS farms to 25.9. The increase in animal units per farm on non-SCS farms was from 25.6 to 26.4. A larger per cent of the animal units on SCS farms were dairy cattle than on the non-SCS farms.

During the 5-year period studied the purchasing power of milk has been higher than any other farm product with the exception of tobacco, which was grown on a relatively few of these farms. This being true, the farmers deriving the greatest part of their income from milk should be in a better position at the end of the year. The cooperating farms averaged more cows per farm, more milk per cow, and a larger part of their receipts from dairy products than the non-cooperating farms. The SCS farmers increased their income from dairy products from 32.1 per cent of total receipts in 1935 to 41.8 per cent in 1940, and they also increased their receipts from crops from 16.6 per cent to 18.5 per cent. During this same period non-SCS farmers received 32.8 per cent of total receipts from dairy products in 1935 and 27.3 per cent in 1940. Their receipts from crops increased from 25.8 to 29.8 per cent (Table 27).

SCS farmers obtained 61.9 and 66.1 per cent of their 1935 and 1940 incomes respectively from livestock and livestock products, while non-cooperating farmers had 64.2 per cent of their total from these sources in 1935 and only 54 per cent in 1940.

Seventeen and one-half per cent of the total investment in

SCS farms was in livestock in 1935 and 17.1 per cent in 1940. Non-SCS farms had 14.8 per cent invested in livestock in 1935 and only 10.8 per cent in 1940 (Table 27).

The purchasing power of cash crops was less in 1940 than in 1935. Non-SCS farms had more cash crops in 1940 than the SCS farms

THE SOIL CONSERVATION PROGRAM IN THE KUTZTOWN AREA

The Kutztown region, like other areas selected for demonstration work, had a variety of conditions that created a serious erosion problem. This district practiced diversified farming and kept a large percentage of the crop land in clean tilled crops. Profitable farming in the future depends upon conserving and building up the top soil that remains.

Recommended Changes for Kutztown

The Soil Conservation Service drew up agreements for farmers wishing to cooperate and helped the farmers to plan changes and improvements for their farms.

Of the 80 farm records obtained in 1937 only 39 were taken in 1940 that were suitable. Twelve of these were cooperators and 27 were not cooperators.

A tabulation of proposed changes on farms included in the program showed a reduction per farm of 3.9 acres of crop land, .3 acre of woodland, and 2.4 acres of miscellaneous land by 1942. An increase in pasture land of 6.6 acres per farm is planned (Table 28).

Acreages of those crops giving the best erosion protection have been increased, and crops giving poorer erosion control

have been decreased in acreage. An increase of 1.1 acres per farm in erosion-resistant crops was planned. Acreages per farm of clean tilled crops were decreased by 1.4 acres. Semi-erosion resistant crops were decreased by 2.5 acres, and other land by 1.1 acres. Table 29 shows these suggested changes in acreages.

TABLE 28 - Land Use Changes as Called for in the Soil Conservation Service Agreements for 12 Farms in the Kutstown Area*

Land use	Average acres per farm				Per cent change
	Before contract	After contract	+	-	
Crop land	100.2	96.3		3.9	-3.9
Pasture	9.6	16.2	6.6		+40.8
Woodland	20.5	20.2		0.3	-1.5
Miscellaneous	7.4	5.0		2.4	-32.5
Total	137.7	137.7			

*Does not include rented land

TABLE 29 - Changes in Crop Acreages that were Called for in the Soil Conservation Service Cooperative Agreements on 12 Farms in the Kutstown Area*

	Average acres per farm				Per cent change
	Before contract	After contract	+	-	
Clean-tilled	25.5	24.1		1.4	-5.5
Semi-erosion resistant	42.0	39.5		2.5	-6.0
Erosion resistant	31.0	32.1	1.1		+3.5
Other land	1.7	0.6		1.1	-35.2
Total	100.2	96.3		3.9	-3.9

*Does not include rented land

On some farms fields were made larger by removal of fence rows and other obstructions. In other instances old fields were cut up into strips and farmed on the contours. The average number of fields per farm was increased while the size of fields was decreased.¹

Changes Accomplished on Kutztown Farms

Survey records were taken from farmers in this district in the same manner as those taken in Lancaster County. The year 1937 was used as the base year for Kutztown instead of 1935, which was the year used for Lancaster.

Changes in land use on SCS farms from 1937 to 1940 were: crop land changed from 72.8 to 69.2 per cent of total, woods from 14.9 to 14.8 per cent, pasture from 7.0 to 8.8 per cent, farmstead from 4.5 to 4.7, and other land from .8 to 2.5 per cent of total.

Non-SCS farms had the following changes in per cent of total: crop land decreased from 79.5 to 76.5 per cent, woods changed from 8.9 to 8.8 per cent, pasture shifted from 4.2 to 7.5 per cent, farmstead increased from 4.5 to 5.1 per cent, and other land decreased from 2.3 to 2.1 per cent. Total acres in non-SCS farms in 1937 were 110.8, and in 1940, 116.7 acres. SCS farms increased in acreage from 137.7 in 1937 to 153.4 acres in 1940. While SCS farms increased in size, their acres in crops in 1940 made up a smaller percentage of the total farm acreage than in 1937. Acres in crops decreased by 3.6 per cent (Table 30).

Before the program of the SCS went into effect the SCS farms

¹The number of fields increased and the size decreased because each contour or strip field was considered to be a separate field.

had 25.5 acres in clean tilled crops, 42.0 acres in semi-erosion resistant crops, 31.0 acres in erosion resistant crops, and 1.5 acres in other crops. The total average acreage was 100.2 acres per farm. In 1940 they had increased six acres per farm which resulted in an increase of clean tilled acres by .3 per cent; of erosion resistant crops by 3.4 per cent; a decrease in semi-erosion resistant crops by 2.5 per cent; and a decrease in other crops by .2 per cent.

The non-SCS farms had also increased their acres of crops by 1.2 acres per farm in 1940. These farmers increased their clean tilled crops by 2.3 acres, their other crops by .3 acres, and decreased the acres of semi-erosion resistant crops by 1.4 acres per farm. Acres of erosion resistant crops did not change (Table 31).

Fertility Maintenance on SCS and Non-SCS Kutstowm Farms

The cost of fertilizer on SCS farms in the Kutstowm area decreased by six cents per acre between 1937 and 1940. Manure applied per acre decreased .1 ton, and the application of lime doubled. Non-SCS farms increased the cost of fertilizer applied per acre by 16 cents, the amount of manure per acre of crops by .2 ton, and the lime per acre by .06 ton (Table 32).

Changes in crop acreages. Since 1937 there has been a number of changes in acreages of certain crops. The acres of corn on SCS farms had increased 2.8 acres compared to an increase of 1.7 acres for non-SCS farms. Acres of all hay increased by 4.9 acres on SCS farms and decreased by .2 acre on non-SCS farms. Barley acreages increased in both groups, and wheat acreages decreased in about the same proportion. The number of acres of potatoes did not change in either

TABLE 30 - Land Use on SCS and Non-SCS Kutztown Farms Before and After the Influence of the Soil Conservation Service Program

Land use	1937				1940				Changes in acres 1937 - 1940	
	12 SCS farms		27 Non-SCS farms		12 SCS farms		27 Non-SCS farms		12 SCS farms	27 Non-SCS farms
	Acres	Per cent	Acres	Per cent	Acres	Per cent	Acres	Per cent		
Crop land	100.2	72.8	88.1	79.5	106.2	69.2	89.3	76.5	+6.0	+1.2
Woods	20.5	14.9	9.9	8.9	22.7	14.8	10.3	8.8	+2.2	+0.4
Pasture	9.6	7.0	4.6	4.2	13.5	8.8	8.7	7.5	+3.9	+4.1
Farmstead	6.3	4.5	5.6	5.1	7.1	4.7	6.0	5.1	+0.8	+0.4
Other land	1.1	0.8	2.6	2.3	3.9	2.5	2.4	2.1	+2.8	-0.2
Total	137.7	100.0	110.8	100.0	153.4	100.0	116.7	100.0	+15.7	+5.9

TABLE 31 - Acres of Clean Tilled, Semi-Erosion Resistant, and Erosion Resistant Crops for 1937 and 1940, and Per Cent Change, Kutstown Area, Lehigh and Berks Counties, Pennsylvania

Type crop	1937 Acreages of crops		Change in acres 1937 to 1940		Per cent change from 1937 to 1940	
	12 SCS farms	27 Non-SCS farms	12 SCS farms	27 Non-SCS farms	12 SCS farms	27 Non-SCS farms
	Acres	Acres	Acres	Acres	Acres	Acres
Clean tilled crops	25.5	24.1	+1.8	+2.3	+0.3	+2.2
Semi-erosion resistant	42.0	39.1	-0.2	-1.4	-2.5	+1.8
Erosion resistant	31.0	24.8	+4.6	0	+3.4	-0.3
Other crops	1.7	0.1	-0.2	+0.3	-0.2	+0.3
Total	100.2	88.1	+6.0	+1.2	-	-

TABLE 32 - Rates of Application per Acre of Crops for Fertilizer, Manure, and Lime on 39 Kutstown Farms, 1937 and 1940

	Average per acre			
	12 SCS farms		27 Non-SCS farms	
	1937	1940	1937	1940
Cost of purchased fertilizer	\$2.11	\$2.05	\$1.93	\$2.09
Tons of manure	2.1	2.0	1.8	2.0
Tons of lime	0.05	0.10	0.02	0.08

group. There were increases in alfalfa hay of six acres on non-SCS farms and 3.6 acres on SCS farms. This increase makes the total acres of alfalfa about even on farms of both classes. The total acres of corn and barley are slightly higher on SCS farms. Non-SCS farms grew more acres of wheat. Total acres of crops increased on both SCS and

non-SCS farms. The crop acreage on SCS farms increased six acres per farm and .8 acres on non-SCS farms. Table 33 shows principal crops, acreages, and their changes in acreages.

TABLE 33 - Acreages and Changes in Acreages of the Important Crops on Cooperating and Non-Cooperating Farms in the Kutztown Area, Lehigh and Berks Counties, 1937 and 1940

Crop	1937		1940		Change from 1937 to 1940	
	12	27	12	27	12	27
	SCS farms	Non-SCS farms	SCS farms	Non-SCS farms	SCS farms	Non-SCS farms
	Acres	Acres	Acres	Acres	Acres	Acres
Corn for grain	14.8	14.7	17.6	16.4	+2.8	+1.7
Silage corn	1.7	1.4	1.4	1.7	-0.3	+0.3
Oats	14.9	13.1	15.5	12.4	+0.6	-0.7
Barley	1.3	0.7	6.9	4.9	+5.6	+4.2
Wheat	22.8	22.7	18.2	19.4	-4.6	-3.3
Rye	3.0	2.6	0.5	1.2	-2.5	-1.4
Potatoes	8.1	7.8	8.1	7.8	0	0
Soy bean hay	0.3	0	0.5	0.2	+0.2	+0.2
Alfalfa hay	5.7	4.9	9.3	10.9	+3.6	+6.0
Clover hay	2.0	1.2	0	0.4	-2.0	-0.8
Mixed hay	16.1	14.0	21.3	11.8	+5.2	-2.2
Timothy hay	5.1	2.3	3.5	0	-1.6	-2.3
Meadow hay	1.6	2.7	1.3	1.8	-0.3	-0.9
All hay except soy bean	30.5	25.1	35.4	24.9	+4.9	-0.2
All other crops	2.8	0.6	2.1	0.6	-0.7	0
Acres double-cropped	0	0.6	0	0.2	0	-0.4
Total acres	100.2	88.7	106.2	89.5	+6.0	+0.8

Yields. There has been a decrease in crop index from 112.6 in 1937 to 102 in 1940 on SCS farms. The decrease was greater on non-SCS farms in this period. It dropped from 119 in 1937 to 101.1 in 1940. Some of the crops for which yields have decreased are: corn, 11.1 bushels on cooperating farms and 5.7 bushels on non-cooperating farms; barley, 10.9 and 4.9 bushels per acre respectively on SCS and non-SCS farms; and rye, 5.3 and 1.5 bushels per acre on SCS and Non-SCS farms respectively. Oat yields increased on both groups of farms; 12.6

bushels on cooperating farms and 2.8 bushels on non-cooperating farms. Potato yields dropped 24 bushels per acre on SCS farms and 8.9 bushels on non-SCS farms in 1940. Yields of all principal crops grown in the Kutztown area are shown in Table 34.

TABLE 34 - Average Yields and Changes in Yields on Cooperating and Non-Cooperating Farms in the Kutztown Area, Lehigh and Berks Counties, Pennsylvania, 1937 and 1940.

Crop	Unit	Yield per acre:					
		1937		1940		Change from 1937 to 1940	
		12 SCS farms	27 Non-SCS farms	12 SCS farms	27 Non-SCS farms	12 SCS farms	27 Non-SCS farms
Corn	Bushel	51.7	46.6	40.6	40.9	-11.1	-5.7
Silage corn	Ton	9.6	10.6	9.7	12.3	+0.1	+1.7
Oats	Bushel	26.3	27.5	38.9	30.3	+12.6	+2.8
Barley	Bushel	34.4	34.8	23.5	29.9	-10.9	-4.9
Wheat	Bushel	20.2	20.0	19.6	20.0	-0.6	0
Rye	Bushel	17.9	16.4	12.6	14.9	-5.3	-1.5
Potatoes	Bushel	153.6	154.8	129.6	145.9	-24.0	-8.9
Soy bean hay	Ton	2.3	0	1.5	1.5	-0.8	+1.5
Alfalfa	Ton	2.4	2.6	2.1	2.3	-0.3	-0.3
Clover	Ton	0.5	0.4	0	0.7	-0.5	+0.3
Mixed hay	Ton	1.2	1.2	1.1	1.1	-0.1	-0.1
Timothy	Ton	1.0	1.1	0.8	0	-0.2	-1.1
Meadow hay	Ton	0.8	0.8	1.2	0.8	+0.4	0
All hay except soy bean	Ton	1.3	1.4	1.3	1.5	0	+0.1

Receipts from livestock and livestock products are almost as important in the Kutztown area as they were in Lancaster. The SCS farms in the Kutztown district obtained 56.3 per cent of their total income from livestock and livestock products in 1937 and 63.8 per cent from those same sources in 1940. The non-SCS farms received 56.8 per cent and 57.1 per cent from livestock and livestock products in 1937 and 1940 respectively.

The principal kinds of livestock found on these farms were

dairy cattle, hens and hogs. In 1937 SCS farmers had 10.8 dairy cows, 9.6 hogs, and 229 laying hens per farm. For the same period the non-SCS farmers had 9.7 dairy cows, 9.3 hogs, and 223 laying hens per farm. By 1940 the number of dairy cows on SCS farms had increased to 12.4, and the number of laying hens to 239. Dairy cows increased to 10 cows per farm on non-SCS farms and hogs to 12.1 by 1940. Hogs decreased on SCS farms from 9.6 to 8.7 in 1940, and hens decreased on non-SCS farms from 223 to 187 in the same period. Changes in the numbers of livestock are shown in Table 35.

TABLE 35 - Number of Specified Kinds of Livestock on 12 SCS and 27 Non-SCS Farms and Changes from 1937 to 1940 in the Kutstown Area

Kind of Livestock	Average per farm					
	12		27		12	
	SCS Farms	Non-SCS Farms	SCS Farms	Non-SCS Farms	SCS Farms	Non-SCS Farms
	1937	1940	1937	1940	Change	Change
Dairy cows	10.8	9.7	12.4	10.0	+1.6	+0.3
Young cattle	5.4	2.6	5.8	3.4	+0.4	+0.8
Herd bulls	1.4	1.1	1.0	.9	-0.4	-0.2
Beef cattle	1.0	.3	.95	0	0	-0.3
Horses and mules	4.4	3.9	4.4	3.7	0	-0.2
Brood sows	1.2	1.0	.9	1.1	-0.3	+0.1
Other hogs	8.4	8.3	7.8	11.0	-0.6	+2.7
Laying hens	229	223	239	187	+10.3	-35.7

Financial Organization of SCS and Non-SCS Farms in the Kutstown Area

Capital. The capital invested in SCS farms was larger in both 1937 and 1940 than the investment in non-SCS farms. In 1937 SCS farms had a total investment of \$12,775, and the non-SCS farms had \$11,485. The investments were lower in 1940 when the SCS farms had an average investment of \$12,150 and the non-SCS, \$10,600 per farm. Real estate

on SCS and non-SCS farms in 1937 equaled 51.5 and 55.9 per cent respectively of the total investment, compared to 56.0 per cent and 60.6 per cent respectively in 1940. Machinery comprised 9.6 per cent and 11.4 per cent of total capital for SCS and non-SCS farms in 1937, and 11.7 per cent and 13.4 per cent for cooperators and non-cooperators respectively in 1940.

Livestock in 1937 on SCS farms made up 25 per cent of the total capital, and 20.9 per cent in 1940. On non-SCS farms in these same two years livestock represented a slightly lower per cent of the total investment. In 1937 the percentage of feed and supplies on SCS and non-SCS farms was 13.9 per cent and 12.4 per cent respectively. In 1940 they were slightly lower (Table 36).

Receipts. Total receipts were larger on the SCS farms in both 1937 and 1940. Receipts for both groups of farms decreased from the base year to 1940. The decrease on SCS farms was from \$4,230 in 1937 to \$4,031 in 1940. On non-SCS farms the receipts decreased from \$3,538 in 1937 to \$3,290 for the same period. Receipts from livestock in the first year were 63.3 per cent of total receipts on SCS farms and 62.5 per cent of the total on non-SCS farms. For 1940 livestock receipts on SCS farms represented 64.3 per cent of the total receipts and on non-SCS farms they were 60 per cent. Receipts from livestock increased on SCS farms but did not on non-SCS farms from 1937 to 1940. Receipts from crops increased on both groups of farms during this period, although the increase was greater on non-SCS farms. On these farms the increase was from 15.9 per cent in 1937 to 25.8 per cent in 1940, while on the SCS farms the increase was from 25.1 per cent in 1937 to 30.3 per cent in 1940. Miscellaneous receipts

decreased on SCS farms but increased on non-SCS farms.

The per cent of receipts from real estate inventory increase amounted to 3.8 per cent on cooperating farms and 3.2 per cent on non-cooperating farms in 1937. By 1940 real estate inventory increase accounted for 4.8 per cent on non-cooperating farms, but showed a decrease on cooperating farms. A decrease was found in the equipment inventory for both groups.

Expenses. Current or operating expenditures accounted for the largest part of the total expense. Of the total current expenses listed in Table 37, hired and family labor, purchased grain, fertilizer, building and machinery expense, milk hauling, truck, tractor, auto, and taxes were the important ones. The increase in current expenses on SCS farms from 1937 to 1940 was \$297, compared to an increase on non-SCS farms of \$473. On SCS farms there was an increase in total expenses of \$321 from 1937 to 1940, and for this same period receipts decreased \$199. For the same period the non-SCS farms had an increase in total expenses of \$473, and a decrease in total receipts of \$248.

Farm income decreased \$522 on SCS farms from 1937 to 1940 and \$721 on non-SCS farms.

Labor income on cooperating farms decreased from \$657 in 1937 to \$167 in 1940. The decrease was greater on the non-cooperating farms, which dropped from \$659 to \$-18 (Table 36).

Factors Responsible for Some of the Difference in
the Average Labor Income on the Two Groups
of Farms

While the average capital invested per farm decreased on

TABLE 36 - Financial Organization on 12 Cooperating and 27 Non-Cooperating Farms in the Kutztown Area, Lehigh and Berks Counties, Pennsylvania, 1937 and 1940

	Average per farm, 1937:				Average per farm, 1940:			
	12 SCS farms		27 Non-SCS farms		12 SCS Farms		27 Non-SCS farms	
	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent
Capital								
Real estate	6,579	51.5	6,420	55.9	6,804	56.0	6,423	60.6
Machinery	1,226	9.6	1,309	11.4	1,422	11.7	1,420	13.4
Livestock	3,194	25.0	2,332	20.3	2,539	20.9	1,823	17.2
Feed and supplies	1,776	13.9	1,424	12.4	1,385	11.4	934	8.8
Total	12,775	100.0	11,485	100.0	12,150	100.0	10,600	100.0
Receipts from:								
Crops	1,062	25.1	1,073	30.3	642	15.9	850	25.8
Livestock products	1,989	47.0	1,705	48.2	2,282	56.6	1,629	49.5
Livestock increase	690	16.3	507	14.3	312	7.7	345	10.5
Miscellaneous	198	4.7	71	2.1	161	4.0	157	4.8
Feed and supply increase	—	—	51	1.4	313	7.8	125	3.8
Real estate increase	159	3.8	113	3.2	—	—	158	4.8
Equipment increase	132	3.1	18	0.5	321	8.0	26	0.8
Total	4,230	100.0	3,538	100.0	4,032	100.0	3,290	100.0
Expenses:								
Current	2,895	—	2,305	—	3,192	—	2,778	—
Feed and supply decrease	41	—	—	—	—	—	—	—
Real estate decrease	—	—	—	—	65	—	—	—
Total	2,936	—	2,305	—	3,257	—	2,778	—
Farm income	1,296	—	1,233	—	774	—	512	—
Interest on investment	639	—	574	—	607	—	530	—
Labor income	657	—	659	—	167	—	-18	—

TABLE 37 - Current Expenses and Changes from 1937 to 1940 on 12 SCS Farms and 27 Non-SCS Farms in the Kutztown Area

Item of Expense	Average per farm					
	12 SCS farms			27 Non-SCS farms		
	1937	1940	Change	1937	1940	Change
Hired labor and board	\$312	\$431	+\$119	\$313	\$448	+\$135
Family labor	356	333	+23	193	154	-39
New buildings and repairs	355	55	-300	219	292	+73
New machinery and repairs	243	509	+266	137	188	+51
Purchased grain	559	652	+93	404	538	+134
Feed grinding	24	17	-7	26	24	-2
Fertiliser	205	218	+13	167	183	+16
Lime	36	50	+14	21	31	+10
Grass and other seed	127	119	-8	135	129	-6
Threshing	10	13	+3	11	11	0
Milk hauling	111	148	+37	112	141	+29
Taxes	106	112	+6	94	91	-3
Truck	82	75	-7	98	112	+14
Tractor	111	180	+69	112	136	+24
Auto - farm use	39	64	+25	37	64	+27
Insurance	35	35	0	36	37	+1
All other	184	180	-4	190	199	+9
Total	2,895	3,192	+297	2,305	2,778	+473

both groups of farms, it decreased more on the non-SCS farms. On the SCS farms there was a \$625 decrease in capital, and a \$247 decrease in receipts from 1937 to 1940. In 1940 the receipts were 34.6 per cent of the capital invested, while in 1937 they were 34.8 per cent (Table 39). The number of years it would take capital to equal receipts has not changed. It was 2.9 years for both periods. On the non-SCS farms total capital invested decreased \$885 and receipts decreased \$259 from 1937 to 1940. Receipts on non-cooperating farms equaled 32.4 per cent of the average capital invested in 1937, and 32.6 per cent in 1940. The number of years it would take receipts to equal capital invested was 3.1 years for both periods (Table 38). SCS farms made a more efficient use of capital, but the margin of their efficiency was not large.

TABLE 38 - A Comparison of Certain Factors Affecting Labor Income Before and After the Introduction of the Soil Conservation Program in the Kutztown Area

Factors	Average per farm			
	1937		1940	
	12 SCS farms (Before)	27 Non-SCS farms	12 SCS farms (After)	27 Non-SCS farms
Productive man work units	552	496	682	577
Productive man work units per man	221	219	259	262
Pounds of milk sold per cow	4,682	5,379	5,563	5,733
Crop index	112.6	119.0	102.3	101.1
Acres in crops	100.2	88.1	106.2	89.3
Number of hens	229	222	239.3	187.3
Number of eggs sold per hen	79.2	70.7	93.2	92.8
Number of cows	10.9	9.9	12.7	10.2
Number of years required for receipts to equal capital	2.9	3.1	2.9	3.1
Total capital investment	\$12,775	\$11,485	\$12,150	\$10,600
Productive man work units per \$1,000 capital investment	43.2	43.2	56.1	54.5
Labor income	\$656.67	\$658.89	\$166.67	\$-17.78

Interest on investment in 1937 was \$639 on cooperating farms and \$574 on non-cooperating farms. By 1940 interest on investment had dropped to \$608 on cooperating farms and to \$530 on non-cooperating farms.

An increase in the pounds of milk sold per cow was found on farms in both groups. The SCS group had the larger increase with an additional 881 pounds of milk sold per cow for 1940. On non-SCS

TABLE 39 - A Comparison of the Business Analyses of 12 SCS Farms and 27 Non-SCS Farms in the Kutztown Area, 1937 and 1940

Factors	Average per farm			
	1937		1940	
	12 SCS farms	27 Non-SCS farms	12 SCS farms	27 Non-SCS farms
Labor income	\$656.67	\$658.89	\$166.78	\$-17.78
Size:				
Productive man work units	552	496	682	577
Acres in crops	100.2	88.1	106.2	89.3
Acres in pasture	9.6	4.6	13.5	8.7
Number of cows	10.9	9.9	12.7	10.2
Capital investment	\$12,775	\$11,485	\$12,150	\$10,600
Balance:				
Pasture acres per animal unit pastured	1.3	1.1	1.0	0.9
Acres of crops per animal unit	4.9	4.7	4.5	4.8
Tons of manure per acre crops	2.1	1.8	2.0	2.0
Purchased fertilizer per acre crops	\$2.11	\$1.93	\$2.05	\$2.09
Production:				
Crop index	112.6	119.0	102.3	101.1
Pounds of milk sold per cow	4,682*	5,379**	5,563*	5,733**
Value of dairy products sold per cow	\$120	\$117	\$129	\$114
Eggs sold per hen	79.2	70.7	93.2	92.8
Labor efficiency:				
Man work units per man	221	219	259	262
Acres of crops per man	40.6	38.7	39.3	40.7
Animal units per man	7.6	6.8	7.4	7.3
Other factors:				
Gross receipts	\$4,452	\$3,721	\$4,205	\$3,462
Receipts in per cent of average capital	34.8	32.4	34.6	32.6
Total expenses	\$3,156	\$2,488	\$3,430	\$2,950
Per cent of receipts from:				
Crops	25.1	30.3	15.9	25.8
Livestock	63.3	62.5	64.3	60.0
Miscellaneous	4.7	2.1	4.0	4.8
Per cent of investment in:				
Real estate	51.5	55.9	56.0	60.6
Machinery	9.6	11.4	11.7	13.4
Livestock	25.0	20.3	20.9	17.2
Feed and supplies	13.9	12.4	11.4	8.8
Farm income	\$1,296	\$1,233	\$ 775	\$512

*Only 11 SCS farms sold milk in 1937 and only 10 in 1940

**Only 25 non-SCS farms sold milk in 1937 and only 23 in 1940

farms the increased milk production resulted in a \$9 increase in receipts per cow on SCS farms and a decrease in receipts of \$3 per cow on non-SCS farms. The decrease in receipts per cow on non-SCS farms, in spite of the increased production of milk, may be due to the lower price received for milk in 1940. The index of the price of wholesale milk was 133 in 1937 and 127 in 1940. This decrease in the price of milk may also help to explain why receipts on SCS farms increased only \$9 with an increased milk production per cow of almost 900 pounds.

The average number of dairy cows increased from 10.9 to 12.7 on SCS farms, and from 9.9 to 10.2 on non-SCS farms from 1937 to 1940 (Table 39).

From the information available it is impossible to determine with any degree of certainty whether this increase in production was due to better stock, heavier feeding, better management, or a combination of these factors.

In 1940 the crop index on SCS farms had dropped from 112.6 in 1937 to 102.3, compared to a drop from 119 to 101.1 in the same period on non-SCS farms. Again the production factor favors the cooperating farms.

Total productive man work units increased on the SCS farms by 130, and on the non-SCS farms by 81. With this increase in total man work units we find an increase of 38 productive man work units per man on SCS farms and of 43 on non-SCS farms (Tables 38 and 39).

Acres of crops per man decreased 1.3 acres from 1937 to 1940 on SCS farms and increased by two acres on non-SCS farms for the same period.

Animal units per man decreased from 7.6 to 7.4 on SCS farms

and increased from 6.8 to 7.3 on non-SCS farms from 1937 to 1940.

The size of the farm business increased on both SCS and Non-SCS farms. Productive man work units increased from 552 to 682 on SCS farms and from 496 to 577 on non-SCS farms. Acres of crops increased from 100.2, in 1937, to 106 in 1940 on SCS farms, and from 88.1, in 1937, to 89.3 acres per farm on non-SCS farms. Animal units per farm increased from 23.9 in 1937 to 25.3 in 1940 on the SCS farms, and from 19.6 to 19.9 on the non-SCS farms in the same period. A larger percentage of the animal units on SCS farms were dairy cattle than on the non-SCS farms.

During the three-year period studied the purchasing power of milk was higher than that of any other farm product produced on these farms. Considering this fact, it was found that the farmers deriving the largest part of their income from dairy products were in a better financial position than those specializing in other products. The cooperating farms averaged more cows per farm, more milk per cow, and a larger part of their total receipts from dairy products than the non-cooperating farms. The SCS farmers increased their income from dairy products from 34.8 per cent of total receipts in 1937 to 41.6 per cent in 1940; their receipts from crops dropped from 25.1 per cent to 15.9 per cent during this same period.

For non-SCS farmers the changes were a little different. Thirty-seven per cent of their total income was from dairy products in 1940 which showed an increase from the 34.7 per cent in 1937. Receipts from crops dropped from 30.3 per cent in 1937 to 25.8 per cent in 1940 for the non-SCS farms.

SCS farmers obtained 63.3 percent and 64.3 per cent of

their 1937 and 1940 incomes respectively from livestock and livestock products, while non-cooperating farmers received 62.5 per cent of their total receipts from livestock and livestock products in 1937 and only 60 per cent in 1940.

Twenty-five per cent of the total capital invested on SCS farms was in livestock in 1937 and 20.9 per cent in 1940. The non-SCS farms had 20.3 per cent invested in livestock in 1937 and only 17.2 per cent in 1940 (Table 39).

The purchasing power of cash crops was less in 1940 than in 1937. Index numbers of prices received for dairy cows, milk, chickens and eggs were higher than for cash crops.

SUMMARY

Four groups of farms, two in Lancaster County and two in Lehigh and Berks Counties, were included in this study. They were the Soil Conservation Service cooperating farms and non-cooperating farms in Lancaster County, and the Soil Conservation Service cooperating and non-cooperating farms in the Kutztown area located in Lehigh and Berks Counties.

The farm acreage of the Lancaster SCS farms in 1935 averaged 124 acres, and the non-SCS farms, 126.9 acres. In the Kutztown area the SCS farms averaged 137.7 acres in 1937, and 110.8 acres on non-SCS farms. By 1940 these acreages had changed to 119.7 acres for the Lancaster SCS farms, and to 136.7 acres for the non-SCS farms. In the Kutztown area there was an increase to 153.4 acres for the SCS farms, and 116.7 acres for the non-SCS farms.

Lancaster SCS farms had 74.4 acres in crops and non-SCS farms

had 83.1 acres in crops in 1935. Kutztown SCS farms had 100.2 acres in crops and non-SCS farms, 88.1 acres in crops in 1937.

Animal units per farm averaged 23.5 on SCS farms, 25.6 on non-SCS farms in Lancaster in 1935; and 23.9 on SCS farms and 19.6 on non-SCS farms in the Kutztown area in 1937. There was a small change in animal units on all groups of farms from the base period to 1940.

In the Lancaster area the farm capital averaged \$11,389 on the SCS farms in 1935 and \$14,511 in 1940. For the Kutztown region the average was \$12,775 for SCS farms in 1937, and \$12,150 in 1940. On the non-SCS farms the 1937 average was \$11,485, and in 1940 it was \$10,600.

Receipts on the Lancaster farms in 1935 were \$3,299 for SCS farms and \$3,266 for non-SCS farms. The 1940 receipts for these same two groups were \$3,780 for SCS farms and \$3,419 for non-SCS farms.

There was a farm income of \$1,147 for SCS farms in 1935 and of \$1,223 in 1940. The non-cooperating farms had a farm income of \$1,174 in 1935 and of \$555 in 1940.

Receipts for the Kutztown SCS farms were \$4,452 in 1937 and \$4,205 in 1940. The non-SCS farms had average receipts of \$3,721 in 1937 and \$3,462 in 1940.

There was a reduction in labor incomes on both groups of farms in both the Lancaster and the Kutztown areas. The labor incomes for the SCS farmers remained higher than for the non-SCS farmers in both areas.

Whether or not the Soil Conservation Service program was

responsible for the higher incomes of the cooperating farmers cannot be completely answered by this study. Undoubtedly the program contributed, but the important thing was the introduction of better cropping practices which should conserve and build up the soil in the years to come. Better fertility means better yields, and better yields mean higher income.

There has been a decrease in crop index for all four groups of farms, but the decrease was not so great on SCS farms. This may have been due to the increased acreage of hay land on cooperating farms, that had been treated with lime and fertilizer which resulted in larger yields per acre.

The increase in livestock, and especially dairy cows, on SCS farms may have been brought about by the increased pasture and hay land. Whether or not this was the direct cause, it was surely a contributing factor for more livestock could now be economically handled than formerly. It is the opinion of the author that probably the most profitable type of farming in either of these areas at present is dairy.

Some of the objects of this program were to decrease the acres of crops that encouraged erosion, and to increase the acres in crops in semi-erosion and erosion resistant crops; to encourage the use of more fertilizer and lime; to teach farmers to plant on the contour and to strip crops when necessary.

A good indication that some of these practices recommended by the Soil Conservation Service program have met with favor is the increasing numbers of fields being strip-cropped and planted on the contour on farms belonging to the non-cooperating farmers in these districts.

**End of
Title**