6-1-1940

# Farm Performance in North Central South Dakota 1930-1939

M. Meyers

BULLETIN 343 JUNE, 1940

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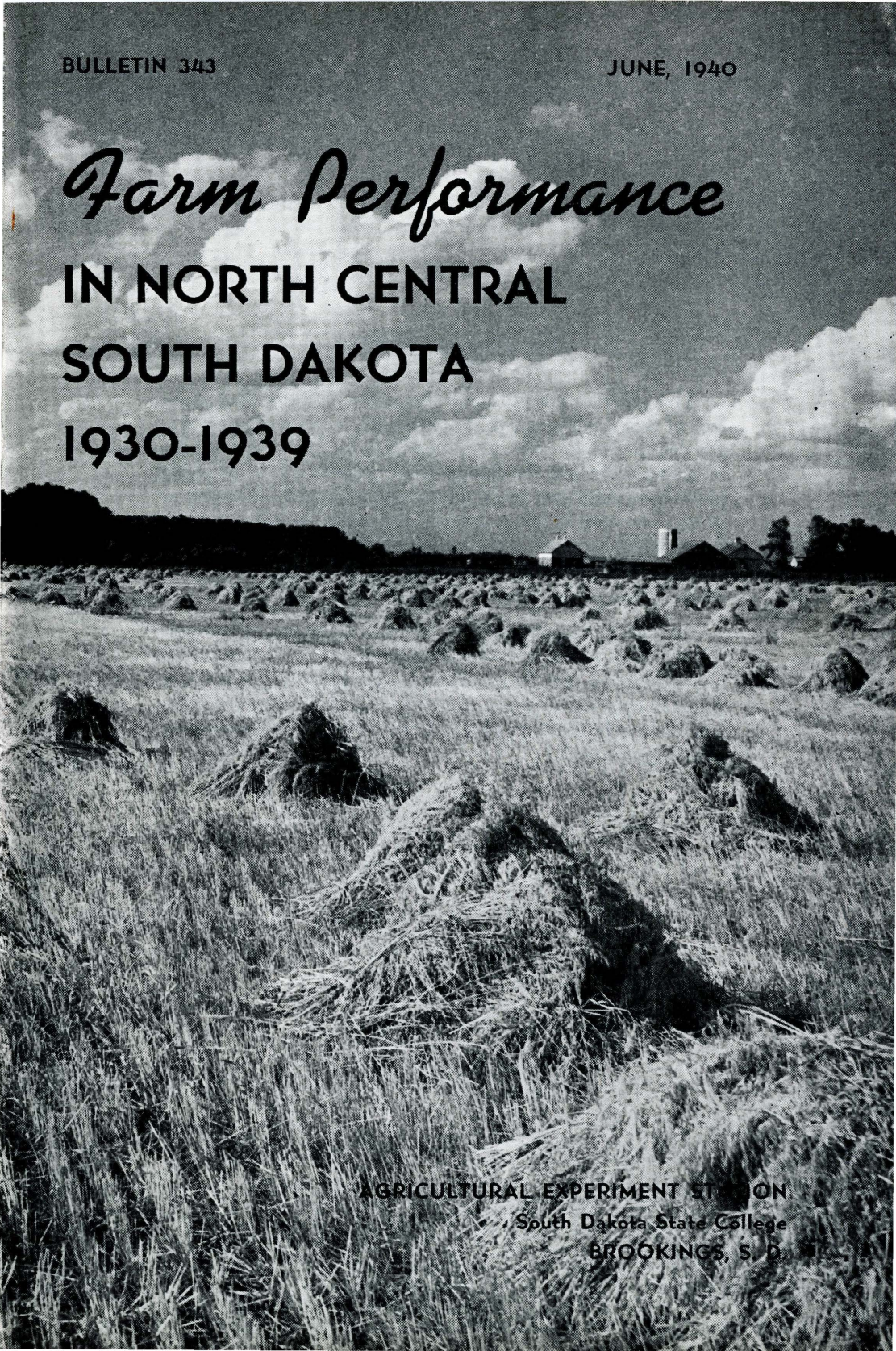

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## *To Begin With—*

This report is not primarily concerned with the wisdom, or lack of that quality, shown in putting all, or parts of north central South Dakota into cultivation. It is too late to lament the breaking of the sod, the change from range to farms. Breaking plows have done their work; plowmen have come—for better or worse. Our task is not to lament, but rather to improve these farms which we have occupied, to make of them the most efficient-producing, family-sustaining, permanent units possible under existing conditions.

Neither is this summary set up to recount the afflictions—drought, low prices, grasshopper infestations—visited upon the area during the past decade. Here are the records of wheat area farms during "hard" times, presented as such because the information may be useful in planning more efficient and permanent farm organization.

# *Summary*

This report presents the performance during the last decade, of farms in the north central counties of South Dakota, and discusses the factors which were indicated by farm records to have most influence on financial results.

Part I briefly discusses the physical and social characteristics of the area.

Part II indicates that while this area has become known as a "wheat area," study of the general wheat situation and of results furnished by cooperating farmers during the period 1930-39, leads one to question the advisability of intensive wheat growing in these counties except in times of wheat shortages and high prices. In studying the wheat production of the area it is necessary to guard against inaccuracies due to use of "harvested acre" yields, and "average" prices which are not adjusted for the variabilty in area production from year to year.

Part III summarizes the 620 annual farm records studied and determines, among other facts, that the average farm studied had the following organization and performance:

AVERAGE SIZE—887 acres, with 522 acres in crop land, of which 172 acres were in wheat.

TENURE—46.1 percent of acreage owned, 53.9 percent leased.

AVERAGE NET WORTH—$13,288.

AVERAGE LIVESTOCK—Approximately 55 animal units of livestock were carried, principally cattle and hogs, though the sheep became numerically more important toward the end of the period.

AVERAGE YIELDS—Yields were low during the period, wheat, for example averaging only 4.6 bushels per seeded acre.

AVERAGE ANNUAL CASH RECEIPTS—$2,656, of which 66.9 percent came from livestock and livestock products, only 10.5 percent from crops, 11.7 percent from AAA payments, and 10.9 percent from other sources.

AVERAGE ANNUAL CASH EXPENSES—$2,148.

AVERAGE ANNUAL NET CASH INCOME—$508.

AVERAGE ANNUAL OPERATOR'S LABOR EARNINGS—A loss of $408.

Part IV compares the organization and performance of high and low income groups of farms, 1932-39, and indicates that the financially, more successful farms, displayed the following characteristics:

1. The more successful farms were larger, but with relatively less land in crops and less acres in wheat.
2. They utilized more livestock, especially more roughage consuming animals.
3. The high income farmers obtained higher crop yields and in individual cases, higher livestock efficiencies.
4. They carried larger reserves of grain, roughage and cash as insurance against unfavorable years.
5. They maintained the value of their farm plant during the "hard times" while the low income farmers were eating up their capital.
6. The high income operators seemed to display throughout the period a quality of management, difficult to measure but definitely superior to the less successful farmers. This was shown in their more rapid changes as in farming to meet economic and climatic variations. This human factor was in a large measure, responsible for the fact that these high income operators with an annual average net cash income of $738 and a steady gain in net worth were able to pay all charges and yet show an operator's labor earnings figure of $320 per year. As against this, the low income group showed an average annual net cash income of $163, an average annual loss in net worth of $769, and an operator's labor income of a minus $1,118.

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[1]During the 10-year period supervisory and field work was carried on by the following men, in addition to the author: Sherman E. Johnson, C. M. Hampson, Poul Christopherson, Ralph Henderson, Ben Anderson, Victor Fenner, H. P. Hanson, Wallace McMartin, Leo Kaiser and Gerald Korzan.

During the period 1932-34, assistance was received from the Division of Farm Management and Costs, Bureau of Agricultural Economics, U.S.D.A.

The author is indebted to: The 165 farmers who contributed the records on which this report is based; county agents and Extension specialists for frequent assistance; all the Station workers who have contributed suggestions and criticisms; and in particular to H. P. Hanson, Gabriel Lundy, A. G. Nelson and Gerald Korzan, for liberal quantities of assistance, encouragement, and criticism.

# Farm Performance in North Central South Dakota, 1930-1939

By Max Meyers[1]

## Introduction

Between the James and Missouri Rivers, where prairie farming reluctantly gives way to plains ranching, lies South Dakota's agricultural transition zone. As climatic conditions and economic price levels reach differing relationships varying types of farming gain temporary superiority, at least in the minds and utterances of those men whose tasks are to operate, supervise, or sell the farms.

From the northern portion of this zone has come a large part of South Dakota's spring wheat production, hence earning for these several counties a rather general title as the "Spring Wheat Area." Naturally, cash grain farming in a rather high risk area has accentuated the tendency toward extreme fluctuations in farm production and income, with resulting sharp repercussions in related activities.

During the 1920's various agencies, including the United States Department of Agriculture, South Dakota Cost of Production Division and South Dakota Agricultural Experiment Station, sponsored investigational work into the problems of the area. Much of this work aimed at determining the cost of producing wheat, and the factors responsible for changes in such costs.[2]

In 1930, the South Dakota Agricultural Experiment Station, cognizant of the problems of the area, started a study of farm business records which has been continued to the present time and results of which are summarized in this report. During that year a cost accounting route was conducted in Potter county, and although no field work was carried on in 1931 many of the same farmers continued the records. Starting in 1932 the study was expanded by obtaining record cooperators in Brown, Campbell, Faulk, Potter, Spink, Sully and Walworth counties. These cooperating farmers were provided with record forms, and were visited semi-annually by representatives of the department. Though the area suffered climatic and economic hardship, the study was continued through 1939 to complete a ten-year period.

During the early years of the study six circulars, based on then current data, were issued. These circulars, which are obtainable from the South Dakota Agricultural Experiment Station, were:

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2. U.S.D.A. Bulletin 943—*"Cost of Producing Wheat on 481 Farms in N. D., S. D., Minn.,"* 1921.
S. D. State Dept. of Agriculture, Circ. No. 4—*Handbook on S. D. Farm Production Costs, 1923.*

Circ. No. 2 (March 1932) *Indebtedness on 48 Potter County Farms, 1930.* C. M. Hampson, Poul Christophersen.

Circ. No. 6 (Oct. 1932)—*Tractor and Horse Power in the Wheat Area.* C. M. Hampson, Poul Christophersen.

Circ. No. 8 (Jan. 1933)—*Emergency Farm Adjustments in the Wheat Area.* R. S. Kifer, Poul Christophersen, Sherman E. Johnson.

Circ. No. 19 (May 1934)—*An Economic Study of Farms in the Spring Wheat Area of South Dakota.* C. M. Hampson, Poul Christophersen.

Circ. No. 20 (May 1934)—*Estimated Returns From Farms of Large, Medium, and Small Size of Business in the Spring Wheat Area of South Dakota.* C. M. Hampson, Poul Christophersen.

Circ. No. 21 (May 1934)—*Estimated Returns From Operating 800 Acres in the Spring Wheat Area Under Four Different Plans.* C. M. Hampson, Poul Christophersen.

This report is intended to be a summary of the results obtained from 10 years of farm accounts plus data and information of a related nature gathered to aid in analysis of the records.

## Part I—Factual Information Concerning The Area

**Location.** The data on which this report is based were gathered from farms in seven north central counties of the state. The results and conclusions are generally applicable to the nine-county area shown by the Figure 1, page 10. This nine-county area contains 6,442,240 acres, or 13.1 percent of the area of the state. However, it contains 19.6 percent of South Dakota's cropland.

**Elevation and Topography.** Elevations within the area range approximately from 1300 to 2100 feet above mean sea level. A large proportion of the land is suitable for cropping, at least according to pioneer standards of selec-

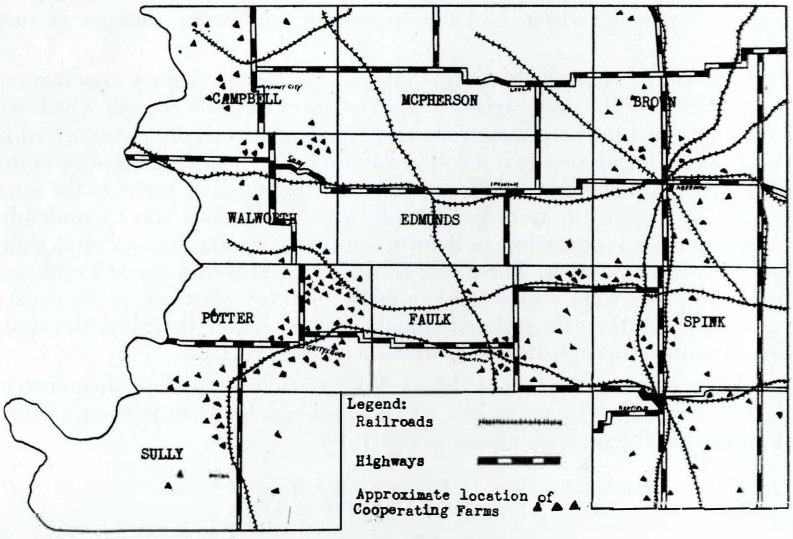


Fig. 1. Map of Nine County Area.

tion, but at the present time there exists organized effort to remove rougher fields from crop use. Substantial acreages are glacial moraine and other rough lands suited only for grazing use. The location of the rougher areas is indicated in the soils map, page 12. In general the area ranges from level ancient lake bottom, on the east, to rolling country further west. The streams are in some cases bordered by extremely rough areas.

**Soils.** The locations of principal soil types are shown by Fig. 2, page 12. Williams, Barnes and Beardon soils predominate. The two first named are glaciated soils with somewhat stony topsoils of varying depth. The third type is lacustrine in origin. In general, the soils of the area are quite fertile, reasonably easy to work, and not to be considered a limiting factor under ordinary conditions. However, in some instances erosion, especially wind erosion, has left warnings of more damage to come.

**Climate.** No other factor exerts such effect on the agriculture of this area as does climate. And of the climatic factors none is so important and few are so variable as precipitation. Table 1 below, shows the average annual precipitation and extremes recorded for weather stations within the area.

**TABLE 1. AVERAGE AND EXTREME ANNUAL PRECIPITATION***
**Wheat Area Weather Stations**

| County | Station | From-To | Years | Calendar Year Lowest | Calendar Year Average | Calendar Year Highest |
|---|---|---|---|---|---|---|
| Brown | Aberdeen | 1891-1939 | 49 | 12.65 | 24.33 | 38.39 |
| Campbell | Pollock | 1911-1939 | 29 | 3.66 | 15.13 | 27.18 |
| Edmunds | Ipswich | 1898-1939 | 42 | 9.84 | 18.36 | 29.34 |
| Faulk | Faulkton | 1893-1939 | 47 | 9.64 | 18.45 | 28.21 |
| McPherson | Eureka | 1909-1939 | 31 | 5.85 | 15.77 | 24.89 |
| Potter | Gettysburg | 1912-1939 | 28 | 8.00 | 15.90 | 26.72 |
| Spink | LaDelle | 1897-1939 | 43 | 11.64 | 23.07 | 35.58 |
| Sully | Onida | 1914-1939 | 26 | 10.44 | 15.48 | 30.26 |
| | Ft. Sully | 1870-1894 | 25 | 11.49 | 17.07 | 24.05 |
| Walworth | Mobridge | 1912-1939 | 21 | 6.15 | 14.75 | 26.86 |

* Taken from: Precipitation & Growing Season Data for Central South Dakota by Aaron G. Nelson and Gabriel Lundy.

These data will show that the precipitation averages from 15 to 25 inches annually, decreasing rapidly from east to west. Approximately two-thirds of the moisture comes during the growing season. The annual average precipitation would seem barely adequate though not ample, to produce satisfactory yields of grains. However, further study of the range between extremes at the same station, the variation between adjacent years, and the fluctuations of the average at one station might be taken to indicate two possibilities.

1. That due to extreme variation the "average" precipitation has relatively less value as a measure of possible productivity than it is given in other, more humid, areas.
2. That our precipitation records do not yet extend over enough years to really determine the "average" for a station.

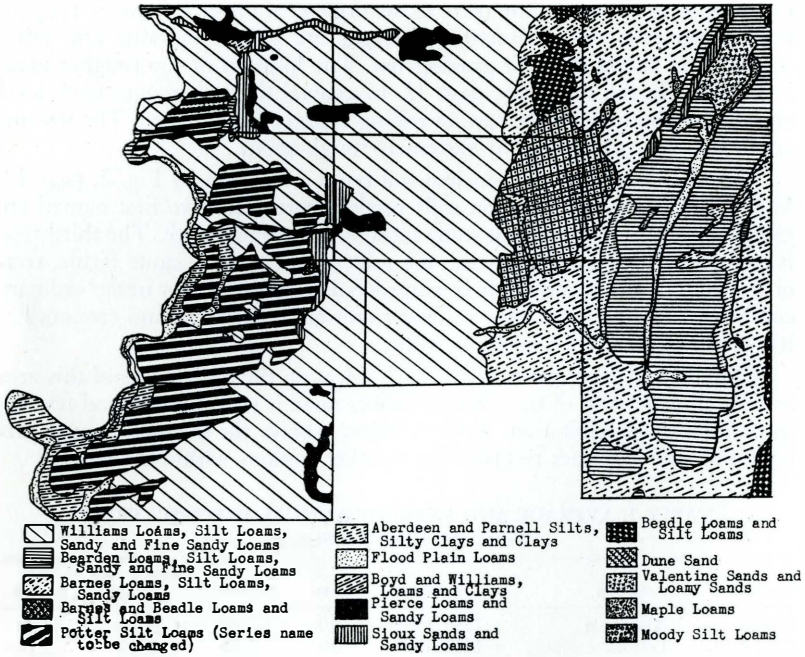


**Fig. 2.** Distribution of Principal Soil Series in North Central South Dakota. (Adapted from Reconnoissance Soil Map of South Dakota by J. G. Hutton and W. I. Watkins, 1935).

Of course a few days of "hot winds" can discount a season of ample rainfall. Likewise a few days difference in the arrival of rains during the critical period for crops can mean success or failure.

Hence, the average annual precipitation serves only as a general indication of moisture conditions.

The mean annual temperature for the area has ranged from 39 to 47 degrees Fahrenheit. Highest recorded temperature in the area was 118 degrees, the lowest –51 degrees.

Average length of growing season at the various stations within the area ranges from 120 to 143 days. The extreme range recorded is from 49 days (Pollock, 1917) to 172 days (Aberdeen, 1922).

**The People.** While explorers, and fur traders, visited and left mention of this territory as early as 1800, actual settlement, creation of counties and development of towns did not come until 1870-1890. Railroads pushed into the area soon after the earliest settlers. Infrequent ranches gave way before successive waves of settlers, first, farmers from states to the east, later, foreign-born groups, principally Russo-Germans.

Wheat farming became the type of farming, and a "wheat-mining" philosophy pervaded many of the communities, a philosophy which has not entirely disappeared. More lately, years of low yields have brought increased emphasis on livestock production, have tended to encourage somewhat less speculative enterprises, though this is not true in every case.

Population of the nine-county area was 81,660 in 1910, 88,725 in 1920, 95,177 in 1930. In 1930 the area supported 13.7 percent of South Dakota's people, the population density being 9.46 persons per square mile. Fifty-three and one-tenth percent of these people lived on farms. A sharp decline in farm population took place between 1930 and 1935, approximately 8 percent of the 1930 total leaving farms. However, many of these may have moved to nearby towns. In 1935, an average of 4.24 people occupied each of the area's 11,000 farms.[3]

**Transport and Markets.** The railroads and principal roads serving this area are indicated on the nine-county map, page 10. During the depression years there has been some desire on the part of railroads to abandon part of their trackage in this area, due to decreased volume of business. Unquestionably too, trucks haul a considerable portion of the freight, both incoming and outgoing. Most of the grain sold goes to Minneapolis, although some wheat is milled locally. Livestock goes to Huron, Aberdeen, Watertown, South St. Paul, Sioux Falls, and Sioux City. Several local livestock auctions have been established in recent years. The area is well supplied with trade centers. Aberdeen is the largest town, but numerous others aid in supplying farm needs and furnish an outlet for at least a portion of their production.

3. U. S. Census, 1910, 1920, 1930, 1935.

## Part II—The Relative Importance of the Area in Wheat Production And Factors Affecting the Status of Wheat Growing in the Area

Lure of wheat profits was, unquestionably, a major factor responsible for sending plows into the grasslands of this area. Hopes of bumper crops of "two-dollar" wheat, though seldom realized, yet inspired much of the farming effort causing current problems.

Not without reason did this come to be considered a wheat growing area. The soils, the terrain, price levels at times, all favored production of wheat as a cash crop. Furthermore, large quantities of wheat have been produced on these farms. However, in order to understand the place of this small area in the wheat industry it is necessary to consider the situation of wheat growing in the world, nation and state.

World production of wheat, excluding Russia and Chinese production, during the past 15 years up to and including 1938, has averaged 3,730,866,667 bushels anually.[4] Ever since World War I wheat production has been geared to higher levels than the demand would warrant, and it is estimated that the present acreage devoted to wheat, about 285 million acres, is at least 15 million more than necessary. Furthermore, the principal wheat importing nations, mainly European countries, have been waging campaigns to become more self-sufficient. Consequently, the principal wheat exporting nations, Argentina, Australia, Canada and the United States have been bothered with surpluses and low wheat prices.

The United States produces an estimated 15 percent of the world's wheat. During the 17 years prior to 1939 this country harvested an average of 783,-172,764 bushels per year. This wheat is produced in several well defined areas: 1. The eastern, soft winter wheat region, 2. the northern Great Plains area, producing chiefly hard red spring and durum wheats, 3. the southern Great Plains, hard red winter wheat area, 4. the Pacific and Intermountain area. For the country as a whole, approximately two-thirds of the wheat acreage is devoted to winter wheat and one-third to spring varieties.

An average production of 783 million bushels compared with an average domestic disappearance, during the period 1928-1937, of 663 million bushels would indicate a serious surplus accumulation with resultant need for export outlets, and depressing effects on domestic prices. Carry-over from the 1938 crop of 254 million bushels added to the 1939 crop made the total supply in the fall of 1939 exceed a billion bushels. It is estimated that carry-over as of July 1940 will be approximately 300 million bushels.

The United States, then, does not under present conditions, need or desire increased wheat production. Rather the present trend is toward decreased acreage and increased regulations of production. Of course, the current war situation, if continued, may reverse the trend and set aside what is now accepted as desirable practice.

4. Wheat production statistics, unless otherwise credited, were obtained from U. S. Census; U. S. Dept. of Agriculture publications; and data gathered by S. D. Crop and Livestock Reporting Service, compiled by Agricultural Experiment Station, South Dakota State College.

South Dakota wheat production records for 57 years, 1882-1938, averaged 30,771,050 bushels, ranging as low as 732,000 in 1934 to a high of 60,000,000, in 1915. South Dakota has harvested during the last 17 years 4.8 percent of the United States wheat acreage, and 3.5 percent of the total production. It is significant of the variation inherent under Great Plains conditions that the share of national wheat production harvested by South Dakota growers has ranged as low as .14 percent of the U. S. total, and as high as 6.9 percent.

The state holds, however, a somewhat more important place in the country's wheat growing industry than the percentage of total production data would indicate. Only one-third of the nation's wheat acreage is devoted to spring wheats, including hard red spring and durum types, both of which have somewhat specialized uses. While South Dakota harvests only 4.8 percent of the world wheat acreage of the U. S., 96.1 percent of this is spring wheat which means that the state harvests close to one-sixth of the spring wheat of the nation. About two-thirds (69.6 percent) of this is hard red spring wheat, and the remainder (30.4 percent) is durum.[5]

The "wheat area" of South Dakota, which for statistical purposes, was defined as containing nine counties mapped on page 10, though containing only 13.1 percent of the total state acreage has, during the last 17 years, harvested annually 36.8 percent of the state's wheat acreage and 34.8 percent of the state's wheat production. For the same period the average annual production was 9,632,000 bushels. This is only 1.23 percent of the U. S. average annual production. However, as in the case of the State as a whole the production is somewhat more important than the percentage indicates because of 98.9 percent of the area production was spring wheat—69.7 percent hard red spring; 29.2 percent durum—and only 1.1 percent was winter wheat. These nine counties then, have averages close to 4 percent of the nation's spring wheat acreage.

5. Percentages calculated from 26 years wheat production data as obtained from S. D. Crop and Livestock Reporting Service.

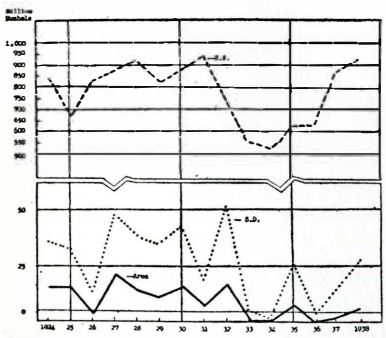


**Fig. 3.** Yearly Wheat Production in the United States, South Dakota, and Nine County Area, 1924-38.

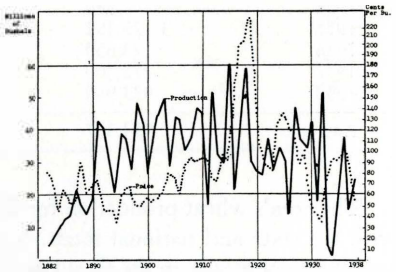


**Fig. 4.** Annual Production and Average Annual Farm Prices of Wheat in South Dakota, 1882-1938.

Greater intensity of wheat growing is evident in the area than in the state as a whole. The 17 year averages show 15.6 percent of the area acreage in wheat harvested, as against 5.5 percent of the state as a whole. This represents 29.4 percent of the crop acreage as against 15.7 percent. Farms in the area have harvested an average of 91.4 acres of wheat per farm per year as compared to a state average of 32.8 acres.

Extreme variation in production has been characteristic of the area. While acreage seeded to wheat, has ranged about 1¼ to 1½ million acres, the acreage harvested in the 17 year period varied from 880 in 1934 to 1,536,-780 in 1928. Likewise the production has varied from a low of 1500 bushels in 1934 to 20,752,400 bushels in 1927. It is this uncertainty of yields more than low average production that has increased farm management problems of the area.

Since the close of the period of early expansion in cropping, and the sudden spurt in production due to World War prices, 1915-1920, it is difficult to discern any definite trends in the wheat growing of the area. As is shown by Table 2 below, there has been extreme variation, due apparently more to physical causes than to human volition, but no real trends.

**TABLE 2. AREA WHEAT PRODUCTION, 1924-1938**
**(Totals for nine-county area)**

| Year | Acres Harvested | Bushels per Harvested Acre | Total Production | S. D. Farm Price, bu. |
|---|---|---|---|---|
| 1924 | 1,104,397 | 14.6 | 16,120,200 | $1.24 |
| 1925 | 1,214,406 | 12.3 | 14,995,000 | 1.35 |
| 1926 | 861,435 | 4.1 | 3,532,900 | 1.24 |
| 1927 | 1,364,931 | 15.2 | 20,752,400 | 1.14 |
| 1928 | 1,536,780 | 9.4 | 14,532,300 | .89 |
| 1929 | 1,405,787 | 7.6 | 10,660,900 | 1.00 |
| 1930 | 1,433,410 | 10.9 | 15,582,400 | .56 |
| 1931 | 1,209,488 | 6.4 | 7,708,500 | .44 |
| 1932 | 1,382,011 | 12.6 | 17,415,300 | .34 |
| 1933 | 292,731 | 2.5 | 729,400 | .69 |
| 1934 | 880 | 6.6 | 1,500 | .92 |
| 1935 | 1,129,192 | 6.6 | 7,449,300 | .91 |
| 1936 | 123,650 | 1.6 | 201,900 | 1.15 |
| 1937 | 772,800 | 3.0 | 2,302,100 | .95 |
| 1938 | 933,900 | 6.1 | 5,678,800 | .52 |
| Average | 984,387 | 9.3 | 9,177,526 | .89 |

The area's wheat production for the same period is compared in Figure 3 with the state and national totals. It is evident that while there is a certain amount of similarity in the fluctuations, both lines showing the drought period of 1933-34 for example, the state and area lines show local variations by which the United States totals are unaffected.

**Wheat Prices.** In the matter of prices received and expected for wheat, there seems to be a general tendency among farmers and others to over estimate the frequency with which "good" prices will obtain. For example, many people think of "dollar" wheat as normal. Yet study of the average annual prices per bushel during the past 57 years will quickly dispell such beliefs. During only 12 years in 57 has the average annual farm price of South Dakota wheat been above $1.00 per bushel; only 6 times has it been above $1.25; and only twice above $2.00. The average South Dakota farm price for the period was $0.846 and the price was below a dollar 78.9 percent of the time. If the years 1916-20, the world war period, are omitted from this calculation the average South Dakota farm price for the 52 year period becomes $0.751 per bushel.

During more recent periods the average South Dakota farm price for wheat has held close to the same range. For the 18 years, 1921-38, the average was $0.892; for 15 years, 1924-38, it was $0.889; for 12 years, 1927-38, $0.793; and for the decade, 1929-38, the average dropped to $0.748 per bushel.

All price averages given thus far are simple arithmetic averages of annual prices as determined by the Agricultural Economics Department and the South Dakota Crop and Livestock Reporting Service. These annual averages were weighted by marketings during the year, but no allowance made for differences in yearly marketings when calculating average prices for periods of years. It has been occasionally stated that such price averages are of relatively small value in this region because the farmers produce and sell their larger crops in years of low prices.

If this assumption is true, then one cannot determine the wheat income of an area, or a farm, by multiplying the total production for a period by the average farm price for that period of years. Nor can one use the "average" price in long term budgeting. To put it in other terms, Farmer Brown may have actually received less per bushel for his 10 year's wheat production than the average farm price for that period, even though he sold each year's grain at the yearly average.

Study of Figs. 3 and 4 would indicate that peak production in this area generally coincided with larger production elsewhere, and that prices usually were lower in years of greater production. However, in order to check this contention that an arithmetic average of annual farm prices for a period of years does not truly reflect the price actually received by the farmer for his production of wheat, during such period further analysis was instituted.

Several periods of years were selected on which South Dakota and area production and price data are available. For each period, the annual farm price averages were totaled and averaged to obtain the arithmetic average price for the term of years, just as those given on page 16. As against this, the actual average price received per bushel during the period was reached by calculating the farm value of each year's total production, (bushels x annual average price) then totaling the values for the period, dividing the total value by total production.

As a result of numerous comparisons of arithmetic average prices and actual prices received for various periods, it can be stated that over the period 1882-1938, the wheat growers of South Dakota actually received slightly higher prices per bushel than the arithmetic average price for the period would indicate. However, when the war years, 1916-20, were omitted from the calculation, the growers actually received during the remaining 52 year period, $0.74 per bushel or 1.1 cents less than the arithmetic average of $0.751. For the 18 year period 1921-38, the actual price received was 2.5 cents lower than the arithmetic average price.

In the case of the nine-county area for the 12 years, 1927-38, the actual average price was 3.6 cents lower than the arithmetic average. For the 10 years, 1929-38, the loss was even greater, being 13.7 cents, as the actual price received was only $0.611.

Such evidence would indicate that this region, during recent years at least, has shown a regrettable but definite tendency to produce its larger wheat crops in years when large crops elsewhere have depressed the prices. Most growers have been under the necessity of selling crops in the year produced. Consequently these findings can be considered to discount the common practice of estimating wheat income for a period by multiplying the total production times a simple arithmetic average of annual prices for the period. Likewise, this indicates that the use of such averages in budgeting for this area is likely to give misleading results.

Pending regulation of climate, and resultant year-to-year uniformity of production, the tendency to produce more wheat in low price years can be offset in practice by:

1. Controlled marketing by independent producers, involving holding crops until higher prices prevail.
2. Cooperative, or governmental, control to obtain for the growers the same result.

The first option has been practiced occasionally and successfully by foresighted and financially able producers for many years. During the past several years, under the guidance of the United States Department of Agriculture, cooperative endeavor has appeared in this field.

### Yields: Real and Imaginary

Just as there is a rather common tendency to overestimate wheat prices, there exists a similar tendency to overstate, either by word or definition, wheat yields when speaking of the results for a particular year or a period of years. Such tendencies can cause no particular harm when confined to reminiscence, but may be a source of disaster if used as a basis for planning a wheat growing enterprise.

The first source of inaccuracy in statements of yields, namely, a very human habit of deceiving ourselves and everyone else, need not cause undue worry. Such inaccuracies can be avoided by use of official data gathered annually and from the least prejudiced, most accurate sources available.

More serious damage may come from misunderstanding of the terms or definitions involved in presentation of official yield data. The most common of these involves the use of yields based on acreage harvested rather than on acres seeded. Obviously, the farmer planning his crop production budget should estimate yields and returns on the basis of acres seeded, for a large share of his costs apply even though no crop is obtained. However, in past years it has been difficult, if not almost impossible, to obtain accurate area data on acreages seeded to particular crops. Hence, federal and state yield statistics have generally been put on a harvested acreage basis and presented as such. Those using the data have not always been careful to state or understand the basis on which calculated and the results have been disappointment, if not actual loss of time and money. Abandonment of seeded acreage is an important, and disappointing factor in calculation of yields, especially in dry periods.

As an example of the discrepancy between yields calculated on the two bases, Table 3 compares the wheat yields per harvested and seeded acre, 1933-38, for the seven county area where records were obtained. Admittedly the two yield series are not strictly comparable, and admittedly the period studied was characterized by poor crops. Nevertheless, this data points to the conclusion that in less favorable years, abandonment of wheat acreage is a factor demanding consideration, and yields based on seeded acreage are more accurate for budgeting farm production.

**TABLE 3. COMPARISON OF WHEAT YIELD AVERAGES**
**(Seven County area, 1933-1938)**

| Year | Average Yield Per Harvested Acre* | Average Yield Per Seeded Acre† |
|---|---|---|
| 1933 | 2.6 | 1.0 |
| 1934 | 1.9 | 0.4 |
| 1935 | 6.8 | 5.4 |
| 1936 | 1.7 | 0.1 |
| 1937 | 3.0 | 1.3 |
| 1938 | 6.5 | 4.8 |
| Average per acre | 3.75 | 2.17 |

* Calculated from data published by S. D. Crop and Livestock Reporting Service.

† Calculated from data obtained in Wheat Area Farm Record Study.

Additional evidence exists in federal and state statistics for recent years, to indicate that actual yields of wheat per seeded acre were considerably lower than commonly accepted averages based on harvested acreages. Naturally, this difference becomes more important in periods of poor crops when abandonment of seeded acreage may reach 95 percent.

In estimating future wheat yields for this area it would seem advisable to base the estimates on seeded acreage, or to allow for 15 to 20 percent acreage abandonment.

## Relative Returns From Grain Crops

Wheat must, of necessity, compete with other grains and flax for a place on the farms of this area. The relative returns from the various grains will influence the use of the land, though prejudice or lack of accurate information on relative costs, will often hinder the change toward more profitable land use.

Competitive relationships change, of course, and it is not the purpose of this study to analyze such changes in detail. However the following table (Table 4) showing returns per acre, for the various crops based on data furnished by cooperatives in this study, is introduced to indicate the competitive relationship during the 9 years, 1930-38.

**TABLE 4. RETURNS FROM GRAIN CROPS**
**Wheat Area Farms, 1930-38**

| | Av. Yield Per Seeded Acre | Av. Price Per Bu. (Weighted) | Annual Gross Per Acre | Rent | Seed | Balance for other expenses |
|---|---|---|---|---|---|---|
| Barley | $8.711 | $.265 | $2.31 | $.770 | $.265 | $1.275 |
| Corn | 5.19 | .333 | 1.73 | .576 | .067 | 1.087 |
| WHEAT | 4.445 | .538 | 2.39 | .796 | .538 | 1.056 |
| Oats | 8.61 | .182 | 1.57 | .573 | .273 | .774 |
| Rye | 3.589 | .304 | 1.09 | .363 | .304 | .423 |
| Flax | 1.081 | 1.43 | 1.55 | .516 | .715 | .319 |

While this tabulation does not present a pleasant story, it does picture actual results on wheat area farms during a rather unfavorable period of years. It is evident that wheat has not shown superiority in cash returns per acre during this period.

## Conclusions

1. This area is in many ways suited to the production of large quantities of good quality wheat. It has in the past produced about one-third of South Dakota's wheat, and the state produced 3.5 percent of the U. S. bushelage, about one-sixth of the spring wheat of the nation.

2. Variability is the keynote of climate, yields, and prices. Hence averages, unless very carefully prepared, and more carefully used, have little meaning.

3. The arithmetic average of S. D. farm wheat prices for 57 years, 1882-1938, was $0.846 per bushel, and for the 10 years, 1929-38, $0.748 per bushel. But due to the tendency for wheat prices to be lower in years of large crops, the producers of this area actually received less than the arithmetic average price per bushel for their production over periods of years.

4. Calculation of yields on a harvested acre basis tends to encourage exaggeration. Abandonment being an important factor in this area, yields based on seeded acreages should be used for planting purposes.

5. During recent years, wheat has not proved more profitable per seeded acre than barley and corn.

## Part III—Basic Data Concerning Organization and Performance of Wheat Area Farms, 1930-39

One of the primary reasons for undertaking this study of farm business in the Spring Wheat Area was the need for information concerning the organization of the farms, the physical and financial performance, especially under conditions of climatic and economic stress. Farmers in seven wheat area counties supplied such information during the period 1930-39. These operators were selected in such a manner as to ditribute the farms over the various soil, topographical, and precipitation areas within the north central part of the state, as is shown in Figure 1, page 10.

An average of 66 individual farm records were studied annually. The numbers of records by years from 1930 to 1939 were 48, 29, 120, 98, 85, 81, 51, 40, 53, 58. In all 165 operators supplied 658 usable annual, business records. Cooperators furnishing 8 to 10 year records supplied 44 percent of the data studied, while at the other extreme, 6.8 percent of the data came from annual records that were not a part of a longer record.

### The Cooperators and Their Families

Information concerning the operators and their families was not gathered systematically during the earlier years of this farm business study. However, during 1939 a survey was made covering the 58 operators then cooperating, in order to gain a somewhat more comprehensive knowledge of the people farming in the area. Results of this survey indicate that the average cooperator was:

> 49 years of age; American born, of north-European ancestry; born and reared in his present home county; an eighth grade graduate, possibly with some high school training; a resident of his present neighborhood for 37 years.
>
> Operator of the present farm for 24 years; married, with a wife and 2 or 3 children; living in a "fair to good" house not entirely modern; possessed "fair to good" farm buildings; owner of a portion of his farm, plus mortgage, leasing remainder.

The cooperators ranged in age from 32 to 70 years. Ninety-six and five-tenths percent were American born, 52.6 percent in their present home county. Forty-nine and one-tenth percent are of Germanic ancestry, 19.3 percent British, 14.0 percent Scandinavian, 15.8 percent American.

Fifty-nine and six-tenths percent had an eighth grade education or less, 50.8 percent having completed the eighth grade. Thirty-one and six-tenths percent had at least some high school training. Twelve and three-tenths percent had attended the School of Agriculture, South Dakota State College. Three and five-tenths percent had attended business college; 8.8 percent had attended college at least one year. The range was from fourth grade to four year college degree.

These men had lived in the present neighborhood from 4 to 59 years. They had been on the present farms from 4 to 59 years.

The size of family, including the operator, ranged from 1 to 14, with an average of 4.4.

In general, these cooperators represented somewhat better than average farmers in their communities, as might be expected of a group that would voluntarily cooperate over a period of years, in keeping of farm records. They tended to be the same people who cooperate in other Station and Extension Service programs which are carried on in their communities. Consequently the results of this study should be interpreted in realization of this fact.

## Organization of the Farms

**Size of Farm and Land Use.** The farms studied during the 10 year period were larger than the average for the area. According to the 1935 Agricultural Census, the 11,000 farms in this nine-county area averaged 500.3 acres in size, with 310.6 acres, or 62.1 percent in cropland. As is shown in Table 5 the average farm of this study contained 887.3 acres of which 522 acres, or 58.8 percent was in cropland.

Table 5 lists the physical dimensions, land use pattern, and tenure pattern of the "average" farm studied. The extreme range is also listed for each item. It is worth noting that approximately one-fifth of the average farm, one-third of the cropland, has been kept in wheat.

**TABLE 5. THE AVERAGE AND EXTREMES IN LAND USE AND TENURE**
**Wheat Area Farms, 1930-39**

| | PER FARM PER YEAR | | | | |
|---|---|---|---|---|---|
| Acres | Average of 620 Cases | Percent of Total Acres | Percent of Crop Acres | Highest Recorded | Lowest Recorded |
| Total in Farm | 887.34 | 100 | ---- | 7080* | 122* |
| Crop | 522.03 | 58.8 | 100 | 1762 | 103 |
| Wheat | 171.73 | 19.35 | 32.9 | 891 | 0 |
| Flax | 4.9 | .55 | .9 | 210 | 0 |
| Rye | 25.6 | 2.88 | 4.9 | 290 | 0 |
| Feed Grain | 119.02 | 13.41 | 22.8 | 504 | 0 |
| Row Crops | 115.59 | 13.02 | 22.1 | 485 | 0 |
| Legumes | 21.01 | 2.37 | 4.0 | 200 | 0 |
| Fallow & Misc. | 64.18 | 7.23 | 12.3 | 662 | 0 |
| Native Grass | 333.64 | 37.6 | ---- | 5780 | 0 |
| Farmstead & Waste | 31.67 | 3.56 | ---- | 143 | 3 |
| Extra Pasture Leased (Not in Farm) | 8.22 | ---- | ---- | 1000 | 0 |
| Total Acres Owned | 408.87 | 46.07 | ---- | 4000 | 0 |
| Total Acres Leased | 478.47 | 53.93 | ---- | 7080 | 0 |

* Individual cases not totals of columns.

Annual averages of size of farm and land use are given in Appendix Table A, page 51.

Farm sizes and land use patterns varied considerably during the past ten years, due principally to the efforts of operators to offset the effects of climatic and economic fluctuations. Fig. 5 depicts the yearly variations in average size and land use. The results for 1931 should be discounted due to the

relatively small number of records analyzed that year but with this exception the graph reflects the actual trends.

The data given in Table 5 and Table A, indicate that farms of this area increased in size steadily during the last eight years of the ten, and the increase was nearly proportionate for crop and non-crop land. Wheat acreages fluctuated widely but tended to increase over the period. Row crop acreages decreased noticeably toward the end of the period, and observations indicated a considerable change from corn to sorghums. Legume and flax acreages dropped markedly, but summer fallow acres increased.[6]

**Tenure Status.** On the basis of 627 annual records over the period 1930-39, 18.2 percent of the operators were tenants, 70.6 percent part owners, and 11.2 percent full owners of farm units. Eighty-eight and eight-tenths percent of the men were leasing land, and 53.9 percent of the land was under lease. During the period there was an increase in leasing of land, a slight decrease in ownership.

**Equipment of the Farms.** The majority of the farms studied were reasonably well equipped for ordinary operations. For power the average farm utilized 5.6 draft horses and 1.15 tractors. The extreme range on horses was from 0 to 15, on tractors from 0 to 3, per farm. There was approximately one auto per farm, with the extreme of 3 per farm. Two farmers out of five had motor trucks, one farm using 3. Likewise two farmers out of five owned threshers or combines, the extreme being two per farm.

In addition to this equipment these farms carried a rather complete line of tillage, harvesting, and miscellaneous tools and equipment. The average equipment investment per crop acre was $4.38. Although there was a slight decrease in horse numbers during the 1930-39 period, there seemed to be no

6. Experimental evidence at Highmore and Eureka substations indicates that summer fallowing is an unprofitable practice for the area.

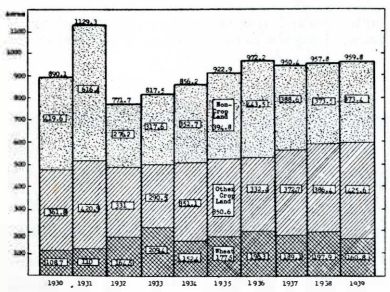

**Fig. 5.** Average Annual Acreages per Farm. Wheat Area Farms, 1930-39. (See Appendix Table A.)

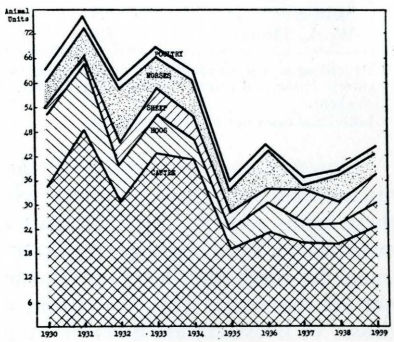

**Fig. 6.** Average Annual Animal Units per Farm. Wheat Area Farms, 1930-39. (See Appendix Table B.)

other change in the amount of equipment available. However, depreciation ran ahead of appreciation, for the 1938 and 1939 inventories indicated much lower values for equipment than shown earlier in the period. This indication was supported by field observations. While the operators have the same lines of machinery, it is just so much older and in many cases has not been adequately maintained.

**Livestock Organizations.** Livestock numbers on the farms studied, varied considerably during the period 1930-39, due to climatic and economic disturbances. However, the average livestock organization of the farms is indicated by that of the "average" farm as given in Table 6. Perusal of this table will indicate that while this area is referred to as a "wheat area," these were livestock-producing farms as well as wheat farms. Cattle raising was the principal livestock enterprise.

**TABLE 6. THE AVERAGE AND EXTREMES IN LIVESTOCK ORGANIZATION, Wheat Area Farms, 1930-39**

| Item | PER FARM PER YEAR | | | | |
|---|---|---|---|---|---|
| | Average 620 Cases | Percent of Total A.U. | Percent of Productive A.U. | Highest Recorded | Lowest Recorded |
| Livestock-Numbers | | | | | |
| Stock Cows | 11 | xx | xx | 215 | 0 |
| Milk Cows | 8 | xx | xx | 33 | 0 |
| Sows | 11 | xx | xx | 88 | 0 |
| Pigs Raised | 53 | xx | xx | 351 | 0 |
| Ewes | 27 | xx | xx | 600 | 0 |
| Lambs Raised | 19 | xx | xx | 482 | 0 |
| Laying Hens | 110 | xx | xx | 400 | 0 |
| Turkeys (hens) | 8 | xx | xx | 133 | 0 |
| Livestock-A.U.* | | | | | |
| Total A.U. | 54.6 | 100 | — | 436† | 5.7† |
| Productive A.U. | 48.6 | 89.0 | 100 | 426† | 4.0† |
| Cattle | 32.4 | 59.3 | 66.7 | 392 | 1.8 |
| Hogs | 8.1 | 14.8 | 16.7 | 39 | 0 |
| Sheep | 5.5 | 10.1 | 11.3 | 106 | 0 |
| Poultry | 2.0 | 3.7 | 4.1 | 21 | 0 |
| Colts, Non-Work Horses | .6 | 1.1 | 1.2 | | 0 |
| Saddlers | .4 | .7 | — | 25 | 0 |
| Work Horses | 5.6 | 10.3 | — | | 0 |

* According to the standards of this study one animal unit equals: 1 cow or two-year old; 2 yearlings; 4 calves; 1 sow and litter; 7 other hogs; 7 ewes; 14 lambs; 1 mature horse; 2 colts; 35 turkeys; or 100 chickens.

† Individual cases not totals of columns.

However, averages for the 10 year period give no indications of the sharp fluctuations in livestock numbers which occurred during that time. In 1930 these farms were for the most part fully stocked, in some cases apparently overstocked. Feed shortages and extremely low price levels combined to decimate the herds and flocks, a reduction from which many of the farms have not yet recovered. These variations in livestock numbers, and in types and classes of livestock, are given in Appendix Table B, page 51, and depicted in Fig. 6. Naturally the sharpest decline came in numbers of concentrate consuming animals. Hog numbers decreased greatly, sheep numbers increased relatively.

These farms averaged one animal unit per 16.3 acres of farm, per 9.6 acres cropland, per 5.2 acres of feed crop.

**Financial Organization of the Farms.** Over the period 1930-39 the operators showed an average annual net worth of $13,086.64, this being an equity of 66.8 percent in their gross assets. Almost 70 percent of the average investment was in real estate, though only 62 percent of the average liabilities was secured by real estate mortgage. Table 7 indicates the financial structure of this average farm business. Generally the picture is of rather large farms, carrying a substantial, though not overwhelming, debt load. However, the effects of unsatisfactory economic conditions are indicated by the fact that "other" liabilities—mainly accrued taxes and interest—composed 17.1 percent of the total liabilities.

**TABLE 7. THE AVERAGE AND EXTREMES IN FINANCIAL ORGANIZATION, Wheat Area Farms, 1930-39**

| Item | PER FARM PER YEAR | | | | |
|---|---|---|---|---|---|
| | Average 620 Cases | Percent of Total Assets | Percent of Liabilities | Highest Recorded | Lowest Recorded |
| TOTAL ASSETS: | $19,595.38 | 100 | .... | $90,040* | $963* |
| Fixed Assets (R.E.) | 13,636.01 | 69.6 | .... | 89,631 | 0 |
| Working Capital | 5,959.37 | 30.4 | .... | 28,162 | 963 |
| Livestock | 2,310.30 | 11.8 | .... | 16,270 | 64 |
| Equipment | 2,288.68 | 11.7 | .... | 7,390 | 260 |
| Crops | 1,060.99 | 5.4 | .... | 5,063 | 0 |
| Cash | 299.40 | 1.5 | .... | 3,975 | 0 |
| TOTAL LIABILITIES: | 6,508.75 | 33.2 | 100 | 54,234* | 0* |
| Liabilities (R.E.) | 4,088.00 | .... | 62.8 | 37,775 | 0 |
| Liabilities on Working Capital | 2,420.75 | .... | 37.2 | 17,594 | 0 |
| On Livestock | 726.00 | .... | 11.1 | 8,900 | 0 |
| Equipment | 278.00 | .... | 4.3 | 3,517 | 0 |
| Feed & Seed Loans | 307.00 | .... | 4.7 | 325 | 0 |
| Other (Mainly Accruals) | 1,109.75 | .... | 17.1 | 12,051 | 0 |
| NET WORTH: | 13,086.63 | 66.8 | .... | 55,258* | −6070* |

* Individual cases not totals of columns.

Yearly variations in average assets, liabilities, and net worth, are given and depicted in Appendix Table C, page 52, and Fig. 7 and 8. It will be noted that both assets, liabilities and net worth of the average farm declined during the period. The decrease in assets affected principally real estate. The slight increase in cash assets may be attributed to AAA payments arriving close to inventory time. Real estate liabilities comprised the principal burden throughout. Equipment debts became almost negligible by 1939, due to gradual repayment, repossession, depreciation. The farmers are almost ready to re-equip —on credit in all too many instances. Feed and seed loans became significant item during this period and are not yet liquidated. Livestock debts, other than feed loans, decreased somewhat, a change probably due to low prices combined with more stringent credit and collateral policies on the part of local banks.

Average liabilities did not decrease as rapidly as average assets, consequently the farms showed an average annual decrease in net worth of $401. This decline can be attributed in part to general decrease in price levels, in part to depreciation of property, in part to increased borrowing to cover operating deficits.

**Labor Utilization and Efficiency.** The farms studied required an average of 22.89 man months labor per year. As is indicated in Table 8, the operators contributed slightly more than half the required labor, other members of the families almost a third. The acreages and number of animal units handled per man reflect an attempt on the part of those farmers to cut production costs by applying their labor to larger areas and numbers.

**TABLE 8. AVERAGE LABOR UTILIZATION AND EFFICIENCY**
**Wheat Area Farms, 1930-39**

| Item | PER FARM PER YEAR | | | |
|---|---|---|---|---|
| | Average 631 Cases | Percent of Total Mo. | Highest Recorded | Lowest Recorded |
| Total Months Man Labor | 22.89 | 100 | 68 | 12 |
| Hired Labor, Mo. | 4.23 | 18.5 | 40 | 0 |
| Family Labor, Mo. | 6.86 | 29.9 | 32 | 0 |
| Operator, Mo. | 11.8 | 51.6 | 12 | 0 |
| Acres per man per yr. | 464.57 | | | |
| Crop Acres per man per yr. | 273.31 | | | |
| Animal Units per man per yr. | 28.58 | | | |

Fig. 9 charts the yearly labor utilization by types of labor. While size of farms and crop acreages increased over the period, the labor used did not increase proportionately. It will be observed that the operators tended to work full time every year, but that family labor, and to a greater extent hired labor, tended to vary with the climatic crop and economic conditions.

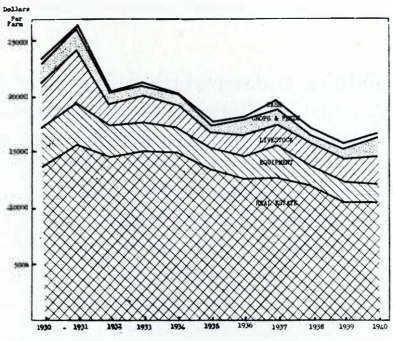

**Fig. 7.** Average Annual Assets per Farm. Wheat Area Farms, 1930-1939. (See Appendix Table C)

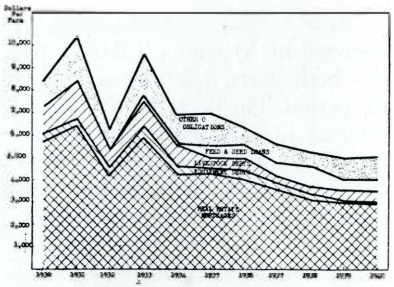

**Fig. 8.** Average Annual Liabilities per Farm. Wheat Area Farms, 1930-39. (See Appendix Table C)

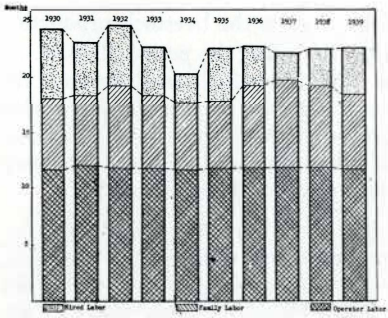

**Fig. 9.** Average Labor Utilization per Farm per Year, Wheat Area Farms, 1930-1939.

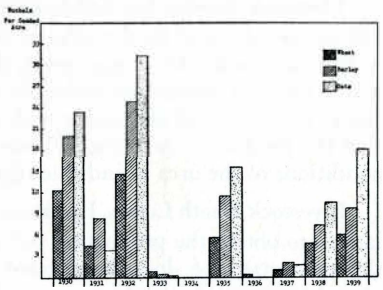

**Fig. 10.** Grain Yields per Seeded Acre. Wheat Area Farms, 1930-1939. (See Appendix Table D.)

## Yields and Production

**Crop Yields.** Table 9 gives the average and extreme yields per seeded acre of the common crops. In order to obtain accurate and usable yield data, all yields were calculated on a seeded acre basis.

**TABLE 9. YIELDS AND EFFICIENCIES, WHEAT AREA FARMS 1930-39**

| Item | Average Per Farm | Highest Recorded | Lowest Recorded |
|---|---|---|---|
| Wheat, per acre | 4.6132 bu. | 27.8 bu. | 0 |
| Barley, per acre | 8.8098 bu. | 41.16 bu. | 0 |
| Oats, per acre | 9.60 bu. | 55.15 bu. | 0 |
| Rye, per acre | 3.5039 bu. | 26.46 bu. | 0 |
| Flax, per acre | 1.0814 bu. | 8.06 bu. | 0 |
| Corn, per acre | 5.2329 bu. | 26.48 bu. | 0 |
| Sorghums, per acre | .756 T. | 4.44 T. | 0 |
| Alfalfa, per acre | .5351 T. | 3.46 T. | 0 |
| Wild Hay | .2723 T. | 1.875 | 0 |
| Eggs, per hen | 70.4 | 240. | 4.0 |
| Butterfat, per cow | 157.9 lbs. | 484. lbs. | 21.4 lbs. |
| Beef, per A.U. of Cattle | 320.94 lbs. | * | * |
| Pigs, weaned per litter | 5.42 | * | * |
| Pork, per A.U. of Hogs | 1338.2 lbs. | * | * |
| Mutton, per A.U. of Sheep | 208.32 lbs. | * | * |
| Wool, per sheep sheared | 8.09 lbs. | * | * |

* Not calculated for all individual cases.

Appendix Table D, page 53 and Figs. 10 and 11 show the variations in yields of six common crops over the ten-year period. It is evident that 1930, 1932, 1935 and 1939 were the better crop years of the ten, while 1931, 1937 and 1938 were unfavorable, and 1933, 1934 and 1936 could be classed as failures. Of the grains, wheat showed least variation in yield from year to year, oats gave the highest bushel yields, barley the most pounds of grain per acre, rye and flax were least productive.

**Livestock Production Efficiencies.** Table 9 gives the livestock production efficiencies obtained by the farmers of the area during the period 1930-39. As is the case with the crops yields, these productive efficiencies represent the actual levels of production rather than what might be desired, or even what might be considered obtainable with approved methods. Figs. 12 and 13 show that the production per unit of livestock followed quite closely the feed crop conditions of the area as indicated by yields given on Figs. 10 and 11.

**Livestock Death Losses.** Livestock weight losses were included in the calculations to obtain the production per animal unit shown in Fig. 12. However, the percentage of loss encountered by the cooperating farmers during the period 1930-39 is itself of interest. Cattle losses excepting birth losses, as determined from 348 records covering 16,051 animals averaged 5.36 percent annually. Hog losses after weaning, based on 215 cases covering 11,719 animals, averaged 11.3 percent annually. Sheep losses after weaning, in 144 cases totalling 11,777 sheep, averaged 10.11 percent per year.

**Cash Returns Per Animal Unit.** Average annual receipts per animal unit of livestock were $32.58. On the basis of kinds of stock the returns were: cattle $22.38; hogs $90.86; sheep $25.27; poultry $69.00; and horses $6.21.

## Receipts, Expenses, Earnings

**Cash Receipts.** Table 10 indicates the source and amounts of cash receipts, as well as percentage derivations, and extremes, for the average farm studied. It is significant that in this "wheat area" 66.9 percent of the total cash receipts came from the sale of livestock and livestock products, only 10.5 percent from the sale of crops. Granting that the period was unfavorable for crop production, it would seem that the livestock enterprises were supporting the farms. Government agricultural payments, though not initiated until 1934, represented a significant portion of the cash receipts—11.7 percent. Actually the AAA payments represented 15 to 25 percent of the cash receipts per farm in the years paid.

The yearly average cash receipts by sources are given in Appendix Table E, page 54, and depicted in Fig. 14. Again the importance of livestock income and the relative unimportance of crop returns are emphasized. It will be

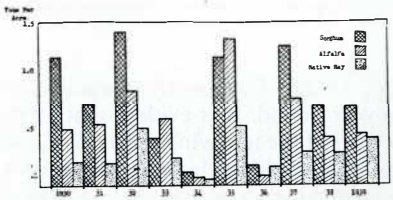


**Fig. 11.** Forage Yields per Seeded Acre. Wheat Area Farms, 1930-1939. (See Appendix Table D.)

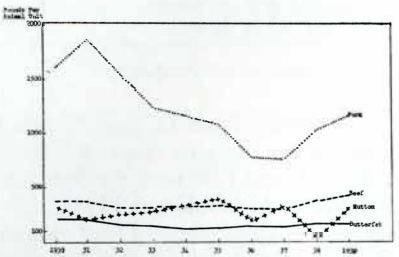


**Fig. 12.** Average Annual Production per Animal Unit. Wheat Area Farms, 1930-39.

**TABLE 10. THE AVERAGE AND EXTREMES IN CASH RECEIPTS**
**Wheat Area Farms, 1930-39**

| Item | PER FARM PER YEAR | | | | |
|---|---|---|---|---|---|
| | Average 620 Cases | Percent of Total Cash Receipts | Percent of Live-stock Receipts | Highest Recorded | Lowest Recorded |
| Beef Receipts | $479 | 18.0 | 26.9 | $11,283 | $ 0 |
| Pork | 736 | 27.7 | 41.4 | 6,367 | 0 |
| Mutton | 94 | 3.5 | 5.3 | 2,051 | 0 |
| Poultry | 76 | 2.9 | 4.3 | 1,159 | 0 |
| Horses | 41 | 1.5 | 2.3 | 1,660 | 0 |
| Butterfat | 246 | 9.3 | 13.8 | 2,643 | 0 |
| Wool | 45 | 1.7 | 2.5 | 1,218 | 0 |
| Eggs | 62 | 2.3 | 3.5 | 588 | 0 |
| Total Livestock Products | 1779 | 66.9 | 100.0 | 11,837* | 18.0* |
| Wheat | 184 | 6.9 | ---- | 2,662 | 0 |
| Flax | 16 | .6 | ---- | 728 | 0 |
| Other Crops | 78 | 2.9 | ---- | xx | x |
| Total Crops | 278 | 10.5 | ---- | 3,306* | 0* |
| Labor Off Farm | 185 | 7.0 | ---- | 1,655 | 0 |
| Miscellaneous | 103 | 3.9 | ---- | 1,889 | 0 |
| AAA | 311 | 11.7 | ---- | 2,973 | 0 |
| Total Cash Farm Receipts | 2656 | 100.0 | ---- | 13,904* | 304* |

* Individual cases not totals of columns.

noted that the years of higher livestock receipts followed the years of better crops, thus reflecting more favorable feed situations. However, the livestock receipts in 1934 came in part from forced liquidation of breeding herds.

**Cash Expenses.** Table 11 presents the average cash expenditures per farm per year for the area, also giving percentages distributions and extreme items. It is reasonably accurate to say that of the average annual cash expenses of $2148 per farm, 60 percent went for operating expenses, 30 percent for charges on capital, 10 percent for new investment. Fig. 15 and Appendix Table F, picture the variations in classes of expenditures by years. An indica-

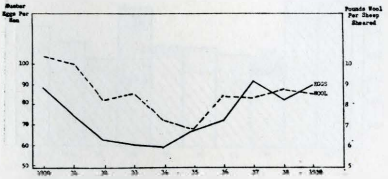

**Fig. 13.** Average Annual Production of Wool and Eggs per Animal. Wheat Area Study, 1930-1939.

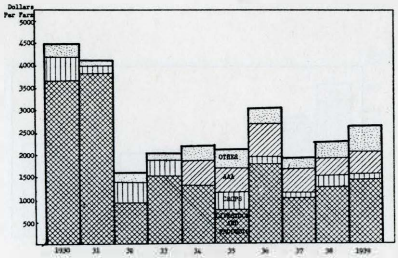


**Fig. 14.** Average Annual Cash Receipts per Farm by Sources. Wheat Area Farms, 1930-1939. (See Appendix Table E.)

tion is here given of the relative inflexibility of operating expenses, as well as a tendency to hold new investment expenditures relatively constant, both at the expense of capital payments in lean years.

Yearly average cash receipts and cash expenses are graphed together in Fig. 16 so as to show the variations in net cash receipts. It will be noted that in 1932, a year of good crops and very low prices, expenses were larger than receipts.

**TABLE 11. THE AVERAGE AND EXTREMES IN CASH EXPENSES**
Wheat Area Farms, 1930-39

| Item | PER FARM PER YEAR | | | | |
|---|---|---|---|---|---|
| | Average 620 Cases | Percent of Total Cash Exp. | Percent | Highest Recorded | Lowest Recorded |
| Livestock Bought | $140 | 6.5 | 10.9 | $2612 | $ 0 |
| Feed Bought | 269 | 12.5 | 21.0 | 5932 | 0 |
| Livestock Exp. (other) | 33 | 1.5 | 2.6 | 298 | 0 |
| Seed Bought | 79 | 3.7 | 6.2 | 1528 | 0 |
| Crop Expense | 40 | 1.9 | 3.1 | 533 | 0 |
| Labor Hired | 176 | 8.2 | 13.8 | 2000 | 0 |
| Tractor | 224 | 10.4 | 17.5 | 1115 | 0 |
| Truck | 25 | 1.1 | 2.0 | 243 | 0 |
| Auto | 99 | 4.6 | 7.7 | 487 | 0 |
| Repairs | 98 | 4.6 | 7.7 | 656 | 0 |
| Custom Work | 14 | .6 | 1.1 | 900 | 0 |
| Miscellaneous | 18 | .8 | 1.4 | 500 | 0 |
| Board for Hired Labor | 64 | 3.0 | 5.0 | 540 | 0 |
| Total Operating Exp. | 1279 | 59.5 | 100.0 | 9071* | 199* |
| Cash Rent | 125 | 5.8 | 19.1 | 1505 | 0 |
| Pasturage Changes | 1 | .1 | .2 | 327 | 0 |
| Insurance | 36 | 1.7 | 5.5 | 365 | 0 |
| Taxes | 186 | 8.7 | 28.5 | 1167 | 10 |
| Interest | 305 | 14.2 | 46.7 | 2531 | 0 |
| Total Capital Expense | 653 | 30.4 | 100.0 | 4094* | 23* |
| New Investments | 216 | 10.1 | xxx | 20,500 | 0 |
| Total Cash Farm Exp. | 2148 | 100.0 | xxx | 22,944* | 318* |

* Individual cases not totals of columns.

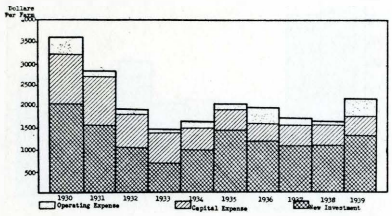


**Fig. 15.** Average Annual Cash Expenses per Farm by Classes. Wheat Area Farms, 1930-1939. (See Appendix Table F.)

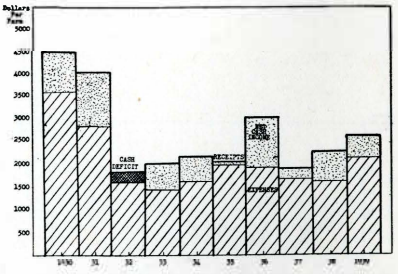


**Fig. 16.** Cash Receipts and Cash Expenses per Farm per Year. Wheat Area Farms, 1930-1939.

TABLE 12. AVERAGE ANNUAL EARNINGS
Wheat Area Farms, 1930-39

| Item | Av. 10 Yrs. 620 Cases | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Cash Receipts | $2656 | $4541 | $4105 | $1664 | $2073 | $2221 | $2117 | $3070 | $1866 | $2262 | $2689 |
| Cash Operating Expense | 1279 | 2124 | 1598 | 1110 | 753 | 1025 | 1476 | 1179 | 1077 | 1136 | 1324 |
| Net Above Operating Exp. | 1377 | 2417 | 2507 | 554 | 1320 | 1196 | 641 | 1891 | 789 | 1126 | 1365 |
| Cash Capital Expense | 653 | 1170 | 1151 | 772 | 660 | 500 | 452 | 445 | 490 | 441 | 447 |
| Net Above Operating and Capital Expense | 724 | 1247 | 1356 | –218 | 660 | 696 | 189 | 1446 | 299 | 685 | 918 |
| New Investments | 216 | 436 | 179 | 98 | 83 | 148 | 157 | 320 | 197 | 125 | 419 |
| Net Cash Income | 508 | 811 | 1177 | –316 | 577 | 548 | 32 | 1126 | 102 | 560 | 499 |
| Net Change in Inventories | –402 | 1357 | –2612 | –53 | –733 | –2388 | 738 | 1055 | –925 | –1038 | 581 |
| Return to Management Labor and Owned Capital | 106 | 2168 | –1435 | –369 | –156 | –1840 | 770 | 2181 | –823 | –478 | 1080 |
| Interest on Owned Assets (@4%) | 523 | 645 | 624 | 571 | 544 | 493 | 460 | 496 | 498 | 459 | 450 |
| FAMILY LABOR INCOME | –417 | 1523 | –2059 | –940 | –700 | –2333 | 310 | 1685 | –1321 | –937 | 630 |
| Farm Products Used | 211 | 303 | 206 | 185 | 178 | 211* | 211* | 183 | 263 | 222 | 223 |
| FAMILY LABOR EARNINGS | –206 | 1826 | –1853 | –755 | –522 | –2122 | 521 | 1868 | –1058 | –715 | 853 |
| Unpaid Family Labor | 202 | 420 | 315 | 266 | 134 | 118 | 127 | 168 | 276 | 139 | 201 |
| OPERATORS LABOR EARNINGS | –408 | 1406 | –2168 | –1021 | –656 | –2240 | 394 | 1700 | –1334 | –854 | 652 |
| Family Living Expense | 714 | 1137 | 818 | 598 | 588 | 623 | 671 | 669 | 719 | 673 | 716 |

* Average used.

**Miscellaneous and Non-Cash Items.** In the determination of farm earnings, several miscellaneous and non-cash items must be considered. These are: Family labor, home used farm products, board furnished hired labor.

Unpaid family labor: In 631 cases studied, the average unpaid family labor amounted to 6.8 man months, valued at $202. The highest case recorded indicated family labor valued at $1405, the lowest records used no family labor.

Home used farm products: The average of 484 cases over eight years, indicated home use of farm products valued at $211. Annual averages ranged from $178 to $303. Gardens furnished 7.9 percent of the average products used, farm fuels accounted for 3.1 percent, eggs used—222 dozens—furnished 14.5 percent of the total value. Dairy products—equivalent to 332 pounds butterfat—accounted for 39.5 percent and meats 35.1 percent. A little more than 25 percent by value of the meat used was beef, almost 40 percent was pork, 33 percent was poultry, while only 1.1 percent was mutton.

Board furnished hired labor: In 632 cases studied, the average board bill for hired labor was $64 per year. The annual averages ranged from $35 to $99. The average charge was $0.50 per day.

Another item worthy of consideration, though not needed for calculation of farm earnings, is family living expense. The 314 records of family living costs indicated actual annual average expenditures of $714. Annual averages ranged from $588 to $1137.

**Earnings.** Summarization of farm business records involves many measurements of results, and must include numerous factors. Table 12, page 31, represents an attempt to present the financial results for average farm of the study. The averages for the period were calculated so as to give equal weight to all years even though numbers of cooperators varied.

The picture presented is not particularly favorable. Only 2 years of the 10 were the net cash incomes large enough to cover family living expenses; only 4 years of 10 were operator's labor earnings above zero. Fig. 17, depicting operator's labor earnings by years emphasizes this point.

How then, did the farmers meet the shortage in cash income? An indication can be gathered from the annual decreases in net worth, a possibility that capital charges were permitted to accrue, that money obtained by borrowing on farm capital was used to defray family expenses.

It is significant that a certain amount of new improvements were obtained despite the economic troubles of the period.

However, the general pessimism of these results should not be taken to mean that all operators failed to make expenses or wages during the period. To the contrary, some farmers, in the group studied, turned in results superior to the average. The next section of this report deals with the comparison of high and low income farms and the factors responsible for the differences.

## Part IV—A Comparison of High and Low Income Groups of Farms To Determine Factors Influencing Financial Returns

Even during the drought and depression years, some farms proved profitable, though the majority of the farms studied were operating at a loss. No one factor appeared primarily responsible for such variations in earnings. In order to determine which factors influenced the financial returns during the period of the study, a comparison was made between two groups of farms on which detailed, eight-year records, 1932-39, were available.

Thirty comparable, eight-year business records were available from among the 165 farms cooperating. The thirty records were arrayed, using, as a measure of financial returns, an item calculated as "Average annual return to interest, unpaid labor, and management."[7] This measure was used because of the presence of bias influences affecting the determination of other more commonly used measures. On this basis it was found that the average annual return for the high ranking farm was $2325, for the lowest, a minus $21.60; a difference of $2346.60.

For purposes of comparison, the highest and lowest thirds, consisting of groups of 10 farms each, were chosen from the array and all available organization and performance data tabulated and summarized for each group. The pertinent portions of the comparison are presented on the following pages, where the first group made up of 10 farms are referred to as the *HIGH INCOME FARMS,* and lowest group of 10 as the *LOW INCOME FARMS.*

**TABLE 13. RETURN TO UNPAID LABOR AND CAPITAL**
**High and Low Income Groups**

| Year | High Income Farms | Low Income Farms | Difference |
|---|---|---|---|
| 1932 | $ –16.20 | $–202.20 | $186.00 |
| 1933 | 252.60 | –408.00 | 660.60 |
| 1934 | 20.90 | –497.70 | 518.60 |
| 1935 | 2566.40 | 1090.30 | 1476.10 |
| 1936 | 1975.10 | 748.80 | 1226.30 |
| 1937 | 285.00 | –344.40 | 629.40 |
| 1938 | 1068.30 | 448.30 | 620.00 |
| 1939 | 2748.40 | 1071.40 | 1677.00 |
| Average | 1112.50 | 238.29 | 874.21 |

As is shown in Table 13, an appreciable difference was noted between the average annual returns of the two groups of farms when arrayed as indicated above. This difference in earnings can be considered important. One thousand one-hundred and twelve dollars, the average high group return, will pay the interest charges on a Wheat Area farm business and leave something over for family and operator labor. To take another view, this sum will pay interest on borrowed capital and leave a remainder sufficient to feed and clothe

7. Cash receipts minus operating expenses, land charges, new investment, plus or minus changes in net worth.

a family. However, the average return for the low income group, $238, will not provide wages to the family and operator, or furnish sufficient income to meet family living expenses.

## Operators and Their Families

Acording to information gathered by survey in 1939, the high and low income groups compared as follows:

**AGE OF OPERATORS**—Average age in 1939, for the high income group, 50.1 years; for the low income group 51.8 years.

**RACIAL BACKGROUND**—Both groups predominantly German, Scandinavian; American born.

**EDUCATION OF OPERATORS**—High income farmers had an average of 9.2 years of school, low income operators, 9.7. No significant differences for samples as small as these.

**ORIGINAL HOME**—Of the high group, 7 were born and reared in their present home county, 3 in other areas. Of the low group, 6 were born locally, 4 elsewhere.

**FARMING EXPERIENCE**—The high income group had been farming 24.7 years, the low group, 27.9 years.

**EXPERIENCE ON PRESENT FARM**—The high income group farmers had averaged 29.9 years on their present farm, though they had not been listed as operators for all of that period of residence. The low income group averaged 22.1 years.

**YEARS IN PRESENT NEIGHBORHOOD**—High income group farmers indicated a longer average residence in their present neighborhood; 41.3 years as against 35.5 for the low income farmers.

**SIZE OF FAMILY**—High income farmers averaged somewhat larger numbers of members of family at home in 1939. The average including operator was 5.3 as compared to 3.8 for the low income farmers.

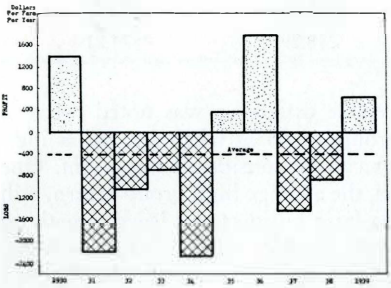

**Fig. 17.** Average Annual Operator's Labor Earnings. Wheat Area Farms, 1930-39. (See Table 12)

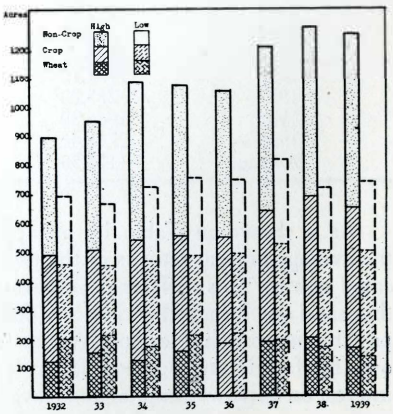


**Fig. 18.** Average Land Use per Farm. High and Low Income Groups, 1932-39.

**QUALITY OF FARM BUILDINGS**—When buildings were rated by departmental representative as very good, good, fair, or poor, and points awarded proportionately on the basis of 5-3-1-0, it was found that the high income farms averaged 3.8 points or "good" to" very good." In the same manner the low income group averaged 2.6 points, or "fair" to "good."

**QUALITY OF HOUSES**—The houses were also ranked in the manner indicated above. High income farms averaged 3.4 (good-very good) low income farms averaged 2.4 points (fair-good).

## Organization of the Farms

**Size of Farm, Land Use.** Farms in the high income group averaged considerably larger throughout the eight year period, than did the farms in the low income groups—1107.56 acres per farm as compared with 735.37 acres, a difference of 372.19 acres. As is indicated in Table 14, these high income farms contained a smaller percentage of crop land, smaller percentages of wheat and of fallow, having higher percentages in feed crops, row crops, legumes, and native grasslands.

Fig. 18 compares the average size of farms for the income groups by years, and also the land use patterns.[8] It will be seen that the high income farms have been consistently larger, with more emphasis on pasture and feed crops, less on wheat and fallow.

**Tenure.** High income operators owned, on the average, 8.3 percent less of the land they operated than did the low income group. However, in light of their larger farm units, and the fact that the high group actually owned a larger acreage, 528.7 compared to 414.2 acres, though a smaller percentage of their total farm land, it is questionable whether much significance should be attached to the differences. Table 14 presents the differences in average tenure. In the high income group nine operators were part owners, one a full tenant. In the low income group all 10 operators were part owners though one cooperator operated only his owned quarter section for a portion of the eight-year period.

Variations were noted in the percent of land owned and leased by the two income groups. The proportions have remained relatively constant in the case of the high income farms, but the percentage of owned land on low income farms decreased steadily throughout the period. While the low income farmers owned—or at least held legal claim—to a larger percentage of their land in 1930, than did the high group operators the situation was reversed by 1939.

**Equipment.** The high income farms carried a larger equipment inventory throughout the period. This is shown by an average machinery and equipment inventory value of $2537 for the high income farms as compared with $1522 for the low group. Average equipment values per acre were $2.29 for the high group, $2.07 for the low. Average equipment values per crop acre were $4.35 for high group as against $3.10.

8. Appendix Tables A and G, pages 51 and 55.

**TABLE 14. LAND USE AND TENURE, HIGH AND LOW INCOME GROUPS AVERAGES OF EIGHT-YEAR RECORDS, 1932-39**

| Item | HIGH INCOME GROUP | | | LOW INCOME GROUP | | |
|---|---|---|---|---|---|---|
| | Average | Percent of Total Acres | Percent of Crop Acres | Average | Percent of Total Acres | Percent of Crop Acres |
| Total Acres in Farm | 1107.56 | 100 | xxx | 735.37 | 100 | xxx |
| Crop Acres | 583.0 | 52.6 | 100 | 491.1 | 66.8 | 100 |
| Wheat | 164.5 | 14.8 | 28.1 | 192.7 | 26.1 | 39.2 |
| Feed Grain | 178.0 | 16.1 | 30.6 | 127.3 | 17.3 | 26.0 |
| Row Crops | 125.8 | 11.4 | 21.6 | 93.8 | 12.7 | 19.1 |
| Legumes | 27.0 | 2.4 | 4.6 | 8.8 | 1.2 | 1.8 |
| Fallow | 78.5 | 7.1 | 13.5 | 61.4 | 8.3 | 12.5 |
| Non-Crop Land | 524.56 | 47.4 | xxx | 244.27 | 33.2 | xxx |
| Land Owned | 528.76 | 47.8 | xxx | 414.2 | 56.1 | xxx |
| Land Leased | 578.8 | 52.2 | xxx | 323.6 | 43.9 | xxx |

High income farms carried an average of 6.8 horses as compared with 5.9 for low income farms, and 1.4 tractors as compared with .96. This means that the high income farmers probably applied somewhat more power per crop acre than did the low income operators. The high income farms utilized somewhat more other heavy equipment than the low income group as is indicated by an average per farm per year of .6 truck; 1 auto; .5 combine or separator; as against, .3 truck; .9 auto; and .2 combine or thresher.

**Livestock Organization.** Just as the high income farms were appreciably larger than the low income units, so the high group averaged much higher livestock numbers throughout the period. The average high income farm car-

**TABLE 15. LIVESTOCK ORGANIZATIONS, HIGH AND LOW INCOME GROUPS, AVERAGE OF EIGHT YEAR RECORDS, 1932-39**

| Item | HIGH INCOME GROUP | | | LOW INCOME GROUP | | |
|---|---|---|---|---|---|---|
| | Average | Percent Total A.U. | Percent of Productive A.U. | Average | Percent Total A.U. | Percent of Productive A.U. |
| Total Animal Units | 67.56 | 100 | xxx | 38.34 | 100 | xxx |
| Productive A.U. | 60.75 | 89.93 | 100 | 32.44 | 84.61 | 100 |
| Cattle | 37.36 | 55.1 | 61.3 | 21.76 | 56.7 | 66.9 |
| Hogs | 9.3 | 13.8 | 15.3 | 6.02 | 15.7 | 18.6 |
| Sheep | 11.7 | 17.3 | 19.3 | 2.56 | 6.68 | 7.89 |
| Poultry | 2.4 | 3.6 | 3.9 | 2.1 | 5.4 | 6.47 |
| Horses | 6.8 | 10.1 | xxx | 5.9 | 15.5 | xxx |
| No. of Cows Milked | 7.95 | xxx | xxx | 5.21 | xxx | xxx |

ried 67.56 animal units per year, while the average low income farm averaged only 38.34 animal units. Table 15 outlines the livestock organizations of the average farms of the two income groups, and indicates the principal differences. Note that the high income farms carried proportionately more sheep, proportionately less hogs, horses, and poultry in proportion to total livestock numbers than did the low income farms.

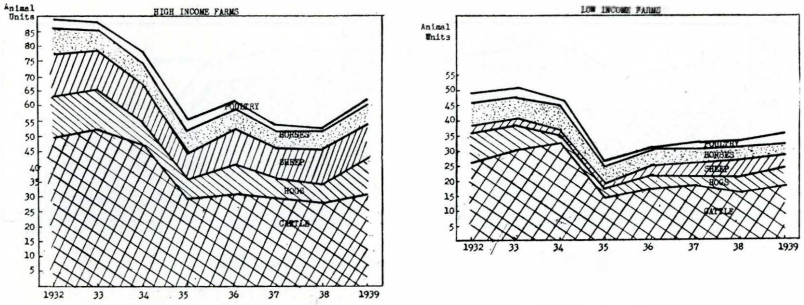


**Fig. 19.** Animal Units Per Farm by Kinds of Stock, 1932-39.

Fig. 19 indicates the composition by kinds of stock, of the livestock populations of the average farms.[9] It will be noted that while the total animal units on the high income farms varied considerably from year to year, the relative proportions of kinds of stock remained almost constant. There were more fluctuations in this regard among the low income farms. Probably the differences in feed reserves mentioned on page , influenced this item. At any rate, the high income farms carried a relatively larger number of roughage consuming, relatively fewer concentrate consuming animals. This situation permits somewhat easier adjustment to drought years than is true of the situation of the low income farms with a higher proportion of concentrate consuming animals.

The high income farms carried more livestock in proportion to size of farm than did the low income group. The high farms averaged 16.4 farm acres, 10.4 crop acres, 6.19 feed crop acres per animal unit, whereas the low farms averaged 19.2 farm acres, 11.6 crop acres, 7.8 feed crop acres respectively.

**Financial Organization.** As is to be expected, the high income farms, larger in acreage, in livestock, in equipment, averaged considerably higher in value of total assets than did the low income farms—$24,486 against $20,454 per farm per year, a difference of $4032. Likewise, the high income farms showed higher liabilities though only $1646 higher per farm per year, consequently having a net worth of $16,336 as compared with $14,473 for the average low income farm. Table 16 compares the average annual assets, liabilities, and net worth of the two groups. It should be noted that the high group had a larger proportion of their assets and liabilities in working capital, other than real estate, than did the low income farms.

Figs. 20 and 21 depict the variations by classes in assets and liabilities for the income groups.[10] Again it is evident that the high income farms had a

9. Appendix Table B, page 51.

10. Appendix Table C, page 52.

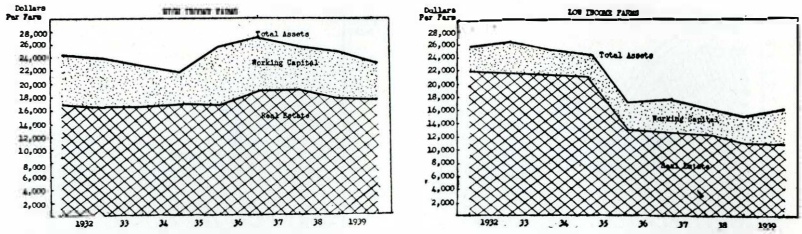


**Fig. 20.** Average Annual Assets by Classes, 1932-39.

greater percentage of their investment and liabilities in working capital, not in fixed investment as land and buildings.

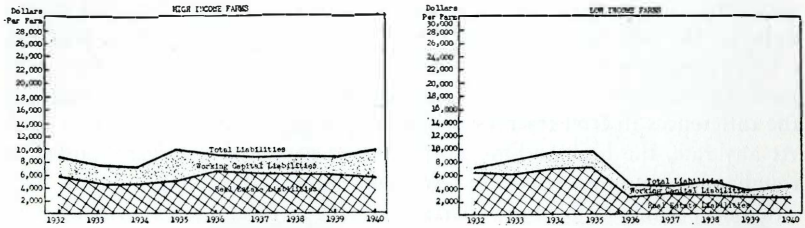


**Fig. 21.** Average Annual Liabilities by Classes, 1932-39.

**TABLE 16. FINANCIAL ORGANIZATION, HIGH AND LOW INCOME GROUPS, EIGHT YEAR AVERAGES, 1932-39**

| Item | HIGH INCOME GROUP | | | LOW INCOME GROUP | | |
|---|---|---|---|---|---|---|
| | Average Per Farm | Percent of Total Assets | Percent of Total Liabilities | Average Per Farm | Percent of Total Assets | Percent of Total Liabilities |
| TOTAL ASSETS: | $24,486 | 100 | xxx | $20,454 | 100 | xxx |
| Fixed Assets (R.E.) | 17,238 | 70.4 | xxx | 16,372 | 80 | xxx |
| Working Capital | 7,248 | 29.6 | xxx | 4,082 | 20 | xxx |
| TOTAL LIABILITIES: | 8,383 | xxx | 100 | 6,737 | xxx | 100 |
| On R.E. | 5,684 | xxx | 67.9 | 4,544 | xxx | 75.9 |
| On Working Capital | 2,699 | xxx | 32.1 | 2,193 | xxx | 24.1 |
| NET WORTH: | 16,336 | 66.7 | xxx | 14,473 | 70.8 | xxx |

Furthermore, as is shown in Fig. 22, the net worth of the high income farms tended to remain steady, and even to increase slightly during the eight year period while the low income farm showed a loss in this respect. In fact, the high group averaged a gain in net worth per farm, per year of $158, but the low group showed a loss of $769 per farm per year.

**Labor Utilization and Efficiency:** High income farms utilized more months of labor per farm per year than did the low income farms. The difference was made up of family and hired labor. However, the labor on the high

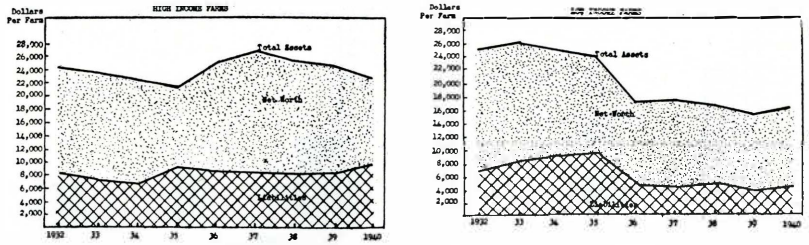


**Fig. 22.** Average Annual Assets, Liabilities, Net Worths, 1932-39.

income farms was used more extensively with regard to land and livestock, as is shown in Table 17 and in Fig. 23.

**TABLE 17. LABOR UTILIZATION AND EFFICIENCIES HIGH AND LOW INCOME FARMS, 1932-39**

| | HIGH INCOME | | LOW INCOME | | DIFFERENCE | |
|---|---|---|---|---|---|---|
| Item | Per Farm Per Yr. | Percent of Tot. Mo. | Per Farm Per Yr. | Percent of Tot. Mo. | In Amount | In Percent |
| Total Mo. Man Labor | 24.8 | 100 | 20.9 | 100 | 3.9 | xxx |
| Hired Labor | 4.5 | 18.1 | 3.7 | 17.7 | .8 | .4 |
| Family Labor | 8.4 | 33.9 | 5.2 | 24.9 | 3.2 | 9.0 |
| Operators' Labor | 11.9 | 48.0 | 12.0 | 57.4 | –.3 | –9.4 |
| Acres per Man Per Yr. | 539.9 | xxx | 423.7 | xxx | 116.2 | xxx |
| Crop Acres Per Man Per Yr. | 284.2 | xxx | 282.0 | xxx | 2.2 | xxx |
| Animal Units Per Man Per Yr. | 32.9 | xxx | 22.0 | xxx | 10.9 | xxx |

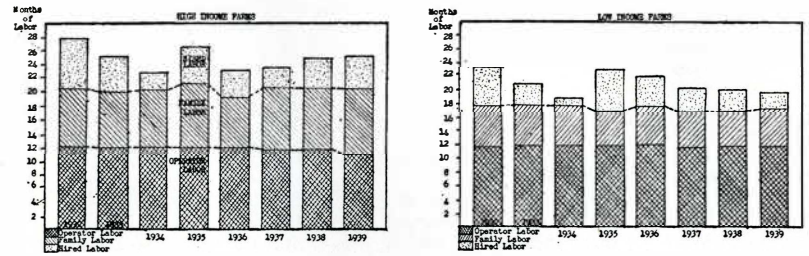


**Fig. 23.** Average Yearly Labor Utilization, 1932-39.

## Yields: Production Efficiencies

**Crop Yields.** High income farmers, though operating more land and using relatively less labor yet managed to obtain markedly higher yields of common crops during the eight years studied. Table 18 shows the average yield per seeded acre of four crops, obtained by the income groups. The annual average yields of these same crops are shown graphically in Figs. 24 and 25.

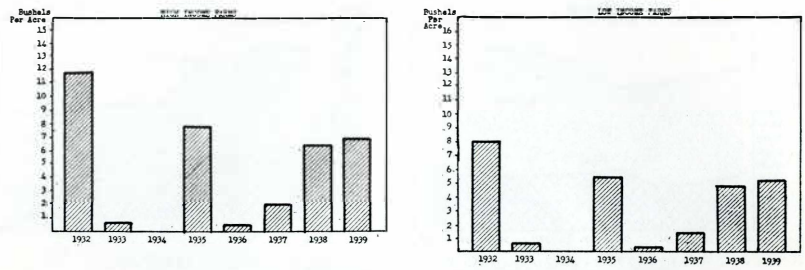

**Fig. 24.** Average Wheat Yields per Seeded Acre, 1932-39.

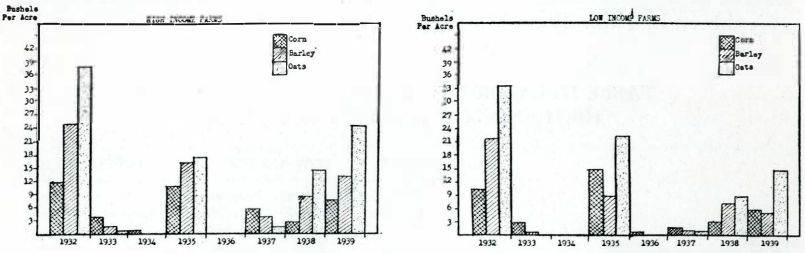


**Fig. 25.** Average Grain Yields per Seeded Acre, 1932-39.

**TABLE 18. YIELDS PER ACRE AND LIVESTOCK PRODUCTION PER ANIMAL UNIT, AVERAGES FOR HIGH AND LOW INCOME FARMS, 1932-39**

| Item | YIELDS PER SEEDED ACRE | | |
|---|---|---|---|
| | High Income Farms | Low Income Farms | Difference |
| Wheat | 4.4 bu. | 3.2 bu. | 1.2 bu. |
| Barley | 9.6 | 5.6 | 4.0 |
| Oats | 12.2 | 9.6 | 2.6 |
| Corn | 5.6 | 4.9 | .7 |
| Eggs per hen | 57.6 | 76.8 | –19.2 |
| Butterfat per cow | 130.4 lbs. | 138.4 lbs. | –8.0 lbs. |
| Beef per A.U. Cattle | 346.6 lbs. | 359.5 lbs. | –12.9 lbs |
| Pigs weaned per litter | 6.1 | 6.3 | –.2 |
| Pork per A. U. hogs | 1068.7 lbs. | 1086.3 lbs. | –17.6 lbs. |
| Mutton per A.U. sheep | 204.3 lbs. | 308.0 lbs. | –103.7 lbs. |
| Wool per sheep sheared | 7.9 lbs. | 10.0 lbs. | –2.1 lbs. |

**Livestock Production Efficiencies.** High income farms, operating larger crop and livestock units with relatively less labor, did not obtain quite the productive efficiency per unit of livestock, that was obtained by the low income farmers. As can be seen by Table 18, the low income farmers averaged slightly higher livestock efficiencies throughout.

Apparently these differences are explainable on grounds that the more extensive utilization of labor on the larger farms prevented application of

optimum care to livestock enterprises, while low income farms with smaller livestock units tended to intensify their production. Differences indicated are not significant except in the items of mutton, wool, and egg production. Low income farms had so few sheep as to render the difference here to no advantage. Egg sales constituted a small percentage of the farm income for either group; 1.2 percent for high income farms, 5.1 percent for low income farms.

However, analysis of the yields and production data given here, as well as that in Table 9, page 27, and Appendix Table D, page 53, indicates that the yields and production on farms of this area could be increased considerably even in unfavorable periods. For example, individual operators in the group of twenty here considered, have shown the following yields as eight year averages; 4.8 bushels wheat per seeded acre, 14.6 bushels barley, 20.4 bushels oats, 13.6 bushels corn. Likewise the individual operators have shown eight year livestock production efficiencies well above the group averages listed in Table 18. Some of these individual averages were:

3 operators averaged better than 200 lbs. butterfat per cow.
1 operator obtained 107 eggs per hen.
2 operators obtained over 450 lbs. beef per animal unit cattle.
3 operators weaned an average of 8 or more pigs per litter.
5 operators obtained 1300 lbs. to 1800 lbs. pork per A. U. of hogs.
2 operators obtained over 400 lbs. mutton per A. U. of sheep.
7 operators obtained above 8.6 lbs. wool per sheep sheared.

These performances are not quoted as goals, but simply to indicate that many operators are bettering the averages even in poor years.

For those farmers interested in improving livestock production, the following estimates, or standards, might well serve as goals. Each of these standards can be attained by the farm livestock producer if care is given to selection of breeding stock, to feeding, and general handling.[11]

200 lbs. butterfat per cow (for dual purpose cows)
150 eggs per hen
500 lbs. beef per A. U. of cattle
1400 lbs. pork per A. U. of hogs
7 pigs weaned per litter
650 lbs. mutton per A. U. of sheep
8.6 lbs. wool per sheep sheared

**Cash receipts per animal unit.** The low income farms with their slightly higher productive efficiency of livestock averaged slightly higher cash receipts per animal unit of livestock, though this was not true of all classes of stock.

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11. Estimates furnished by W. E. Poley, Poultry Dept., T. M. Olson, Dairy Dept., Turner Wright, F. U. Fenn, and J. C. Watson, Animal Husbandry Dept.

**TABLE 19. AVERAGE ANNUAL CASH RECEIPTS PER ANIMAL UNIT**
**By income groups, 1932-39**

| Kind of stock | CASH RECEIPTS PER ANIMAL UNIT | |
|---|---|---|
| | High Income Group | Low Income Group |
| All livestock | $25.75 | $26.07 |
| Cattle | 19.07 | 21.35 |
| Hogs | 57.41 | 51.02 |
| Sheep | 24.02 | 30.14 |
| Horses | 6.14 | 2.58 |
| Poultry | 70.94 | 64.48 |

## Reserves

Due to the extreme variation in year to year climatic conditions which obtain in Great Plains areas, a practice of carrying reserves of seed, feed, and cash can be considered necessary to successful farm operation over any period of years. In order to compare the reserve carrying propensities of high and low income operators, the January 1 supplies of grain, roughage, and

**TABLE 20. AVERAGE ANNUAL RESERVES, HIGH AND LOW INCOME FARMS, 1932-39**

| Item | HIGH INCOME FARMS Per Farm Per Year | LOW INCOME FARMS Per Farm Per Year | Differences |
|---|---|---|---|
| Grain (Pounds) | | | |
| Reserve, Jan. 1 | 91,482 | 56,597 | 34,885 |
| Pounds used for Seed | 21,200 | 19,655 | 1,545 |
| Pounds used for Feed | 95,337 | 52,890 | 42,447 |
| Percent Grain Reserve | 78.5 | 78 | .5 |
| Reserve for Feed after Seeding | 70,282 | 36,942 | 33,340 |
| Percent Feed Grain Reserve is of Feed Used | 73.7 | 69.8 | 3.9 |
| Feed Grain Reserve per A.U.* | 1,040.3 | 965.5 | 76.8 |
| Roughage (Tons) | | | |
| Reserve, Jan. 1 | 99.0 | 67.8 | 31.2 |
| Tons Used | 136.4 | 76.5 | 59.9 |
| Percent Roughage Reserve | 72.6 | 88.7 | −16.1 |
| Reserve Per A.U.* | 1.5 | 1.8 | −.3 |
| Cash (Dollars) | | | |
| Reserve, Jan. 1 | $388.10 | $226.90 | $161.20 |
| Percent of Total Cash Exp.† | 16.8 | 13.8 | 3.0 |
| Percent of Cash Operating Exp.† | 30.3 | 22.7 | 7.6 |

* Annual Average Animal Units from Table 15.

† Annual Average Expense totals from Table 21.

cash, were calculated and analyzed in relation to the requirements of the same farm during the years studied. Table 20 and Figs. 26, 27, and 28 show the results of such analysis. It is evident that neither group of operators maintained anything approaching real uniformity in reserves from year to year, but it does seem that the high income group fared somewhat better in this respect.

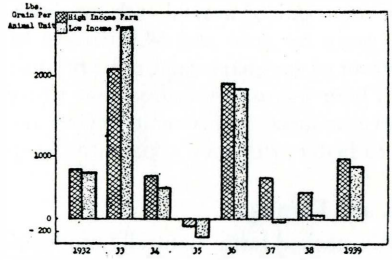



**Fig. 26.** Average Annual Grain Reserves per Animal Unit, 1932-39. (Based on January 1, feed inventories and average livestock numbers)

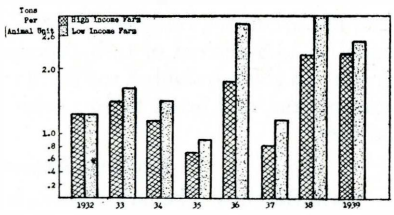
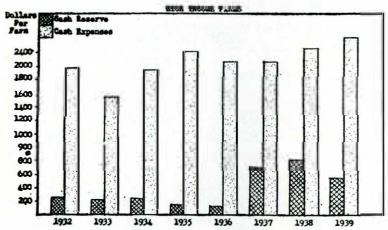



**Fig. 27.** Average Annual Roughage Reserves per Animal Unit, 1932-39. (Based on January 1, feed inventories and average livestock numbers).



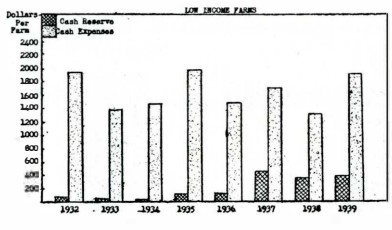




**Fig. 28.** Comparison of Annual Cash Reserves, Jan. 1, and Cash Expenses per Farm, 1932-39.

In only one year, for the high income farms, and two years for the low group, were grain reserves insufficient to meet seeding requirements. In all cases the amount of grain seeded was subtracted from total grain reserves before calculating the amount available as feed reserves.

The high income farms carried larger reserves of feed grain in relation to the animal units of livestock, than did the low income farms. However, the low income farms showed larger roughage reserves per animal unit of livestock. In light of the fact than on the high income farms, livestock were 82.6 percent roughage consumers, while on the low income farms livestock were only 78.9 percent roughage consumers, it would seem that the relationship in types of feed reserves was just reversed from that which might be desired.

High income farms carried larger cash reserves, both in the amount and in relation to cash expense requirements. The average high income farm showed an average cash reserve on January 1 of $388.10, while the comparable amount for the low income farms was $226.90. It is worth noting that average cash reserves for both income groups increased noticeably after initiation of AAA programs.

High income farms, in general, then, carried over sufficient grain for seed need and 73.7 percent of the feed needs in the following year. Then, starting likewise, there was roughage held on January 1, equal to 72.6 percent of

needs, and cash equal to 16.8 percent of the required annual cash expenses. Low income farms, held on January 1, grain for seed and 69.8 percent of feed requirements; roughage for 88.7 percent of roughage required, and cash equal to 13.8 percent of cash expenses. There was no indication that either group was able to establish sufficient reserves to meet requirements beyond the current year, and hence be in a position to better withstand consecutive crop failures.

### Receipts, Expenses, and Earnings

**Cash Receipts.** The larger, more heavily stocked farms naturally produced higher cash receipts. As is shown in Table 21 the average cash receipts, per farm, per year were $3049.35 for the high group and $1809.71 for the low group. The principal differences were attributable to larger sales of livestock

TABLE 21. AVERAGE ANNUAL CASH RECEIPTS, BY SOURCES HIGH AND LOW INCOME FARMS, 1932-39

| | HIGH INCOME FARMS | | | LOW INCOME FARMS | | |
|---|---|---|---|---|---|---|
| Received From Sale Of | Per Farm Per Year | Percent of Total Cash Receipts | Percent | Per Farm Per Year | Percent of Total Cash Receipts | Percent |
| Cattle | $545.26 | 17.9 | 31.4 | $301.31 | 16.6 | 30.3 |
| Hogs | 533.92 | 17.5 | 30.7 | 307.16 | 17.0 | 30.7 |
| Sheep | 178.42 | 5.8 | 10.3 | 48.35 | 2.7 | 4.8 |
| Poultry | 133.26 | 4.4 | 7.7 | 43.51 | 2.4 | 4.4 |
| Horses | 41.80 | 1.4 | 2.4 | 15.20 | .8 | 1.5 |
| Butterfat | 167.10 | 5.5 | 9.6 | 63.27 | 9.1 | 16.3 |
| Wool | 102.70 | 3.4 | 5.9 | 28.80 | 1.6 | 2.9 |
| Eggs | 37.00 | 1.2 | 2.1 | 91.90 | 5.1 | 9.2 |
| Total Livestock and Products | 1,739.46 | 57.0 | 100.0 | 999.50 | 55.2 | 100.0 |
| Wheat | 202.60 | 6.6 | 76.9 | 211.90 | 11.7 | 76.9 |
| Other Crops | 61.0 | 2.0 | 23.1 | 63.80 | 3.5 | 23.1 |
| Total Crops | 263.60 | 8.6 | 100.0 | 275.70 | 15.2 | 100.0 |
| Labor Off Farm | 348.20 | 11.4 | xxx | 92.10 | 5.1 | xxx |
| AAA | 473.40 | 15.5 | xxx | 349.2 | 19.3 | xxx |
| Miscellaneous | 224.69 | 7.4 | xxx | 93.21 | 5.2 | xxx |
| Total Cash Receipts | 3,049.35 | 100.0 | xxx | 1,809.71 | 100.0 | xxx |

and products, and to more return from labor off farm and custom work. The high group received only slightly larger income from the AAA, and miscellaneous receipts, and approximately the same amounts as the low income farms from sale of crops.

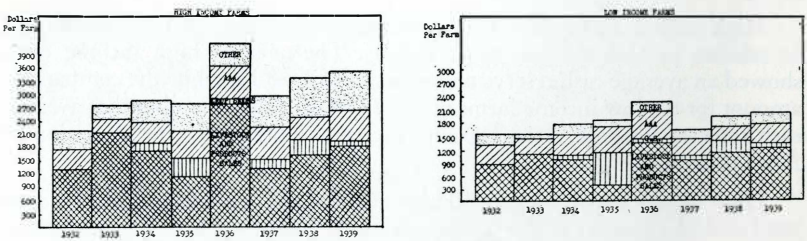



Fig. 29. Average Annual Cash Receipts by Sources, 1932-39.

Fig. 29, showing variations in receipts by years, again emphasized the relative importance of livestock receipts, the recent importance of AAA payments, and the relative unimportance of crops receipts during the past eight years.[12]

**Cash Expenses.** While cash expenses of the high income farms were greater than those of the low income group, the difference was not equal to the difference in cash income. Table 22 indicates the average cash expenditures by classes. The high income farms paid out 75.8 percent of their cash receipts into cash expenses, while the low income farms paid out 91 percent,

**TABLE 22. AVERAGE ANNUAL CASH EXPENSES, BY DISTRIBUTION HIGH AND LOW FARM INCOMES, 1932-39**

| | HIGH INCOME FARMS | | | LOW INCOME FARMS | | |
|---|---|---|---|---|---|---|
| Item | Per Farm Per Year | Percent of Total Expense | Percent | Per Farm Per Year | Percent of Total Expense | Percent |
| Livestock Bought | $110.70 | 4.8 | 8.6 | $62.80 | 3.8 | 6.3 |
| Feed Bought | 227.70 | 9.8 | 17.8 | 190.49 | 11.6 | 19.1 |
| Other Livestock Exp. | 28.45 | 1.2 | 2.2 | 16.46 | 1.0 | 1.6 |
| Seed Bought | 69.90 | 3.0 | 5.5 | 105.00 | 6.4 | 10.6 |
| Other Crop Exp. | 35.41 | 1.5 | 2.8 | 26.39 | 1.6 | 2.6 |
| Labor Hired | 117.89 | 5.1 | 9.2 | 97.41 | 5.9 | 9.8 |
| Tractor Exp. | 251.51 | 10.9 | 19.6 | 176.49 | 10.7 | 17.7 |
| Truck Exp. | 30.78 | 1.4 | 2.4 | 16.84 | 1.0 | 1.7 |
| Auto Exp. | 134.50 | 5.8 | 10.6 | 77.60 | 4.7 | 7.8 |
| Repairs | 96.25 | 4.3 | 7.5 | 66.13 | 4.0 | 6.6 |
| Custom Work | 51.30 | 2.2 | 4.0 | 92.00 | 5.6 | 9.2 |
| Misc. Operating | 57.94 | 2.5 | 4.5 | 14.06 | .9 | 1.4 |
| Board for Hired Labor | 68.00 | 2.9 | 5.3 | 56.00 | 3.4 | 5.6 |
| Total Cash Operating Exp. | 1280.33 | 55.4 | 100.0 | 997.67 | 60.6 | 100.0 |
| Cash Rent | 107.00 | 4.6 | 15.0 | 64.80 | 3.9 | 12.1 |
| Insurance | 45.50 | 2.0 | 6.4 | 17.40 | 1.1 | 3.3 |
| Taxes | 235.90 | 10.2 | 33.1 | 208.90 | 12.6 | 39.1 |
| Interest | 324.50 | 14.0 | 45.5 | 243.50 | 14.8 | 45.5 |
| Total Cash Capital Expense | 712.90 | 30.8 | 100.0 | 534.60 | 32.5 | 100.0 |
| New Investment | 318.50 | 13.8 | xx | 115.00 | 7.0 | xx |
| Total Cash Expense | 2311.73 | 100.0 | xx | 1647.27 | 100.0 | xx |
| Percent of Total Receipts | xx | xx | 75.8 | xx | xx | 91.0 |

an indication that the overhead costs were not proportionate to size of farm, or scale of operation. A noticeably larger percentage of the high groups' expenditures went to new investments, a sign that the equipment and operating plant were being more nearly maintained.

Fig. 30 presents the yearly variation in classes of expenses for the two income groups.[13]

12. Appendix Table E, page 54.

13. Appendix Table F, page 54.

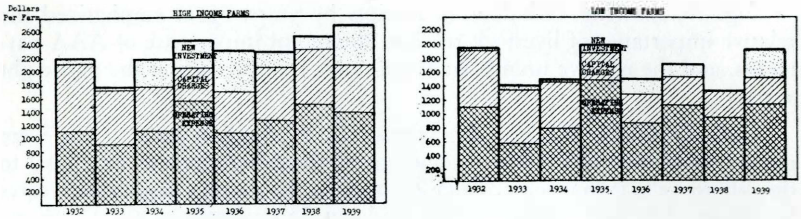



**Fig. 30.** Average Annual Cash Expenses by Classes, 1932-39.

**Net Cash Income.** Fig. 31 pictures the annual cash receipts, expenses, and net cash income. The high income farms showed a cash deficit only one year of the eight, 1932-39, while the low income groups showed deficits three years of the eight.

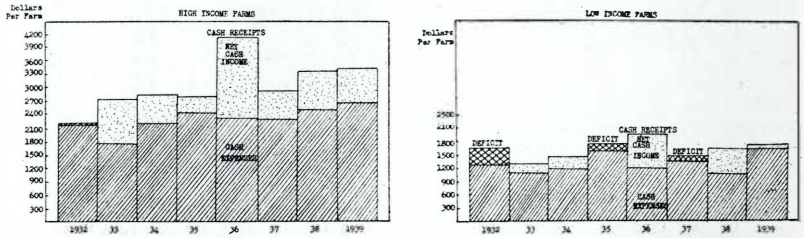



**Fig. 31.** Average Annual Cash Receipts, Cash Expenses, Net Cash Incomes, 1932-39.

**Non-Cash and Miscellaneous Items.** Values of home used products, unpaid family labor, and board for hired labor are included in the earnings summary on page 48. The amounts for these items were generally within the ranges indicated in data for the entire study on page 48.

**Earnings.** Table 23 presents average, and yearly earnings summaries for the high and low income farms. In addition to a larger average net cash income, the high group gained a further lead over the low income farms, through a gain in net worth while the low group farms showed a loss in this respect. The high group farmer with an annual average net cash income of $737, further increased by $158 gain on net worth, and $279 home used products, could pay himself $653 interest on net investment, pay his family labor $201, and still have an operators labor earnings of $320. While not ample, such returns were at least adequate to provide a reasonably comfortable farm family living. But the low income farmer, with a net cash income of only $162, minus an anual inventory loss of $769, had nothing left with which to pay interest to himself, wages to his family, or himself. His operator's labor earnings were a minus $1118. He and his family lived by decreasing their net worth.

As is indicated by the yearly earning data and by Fig. 32 which shows yearly variations in the operator's labor earnings, extreme variation took place in the earnings of both groups of farms. The high income farms had operators labor earnings above zero only three years in eight, while the low income farms obtained such status above the zero mark only twice in eight years.

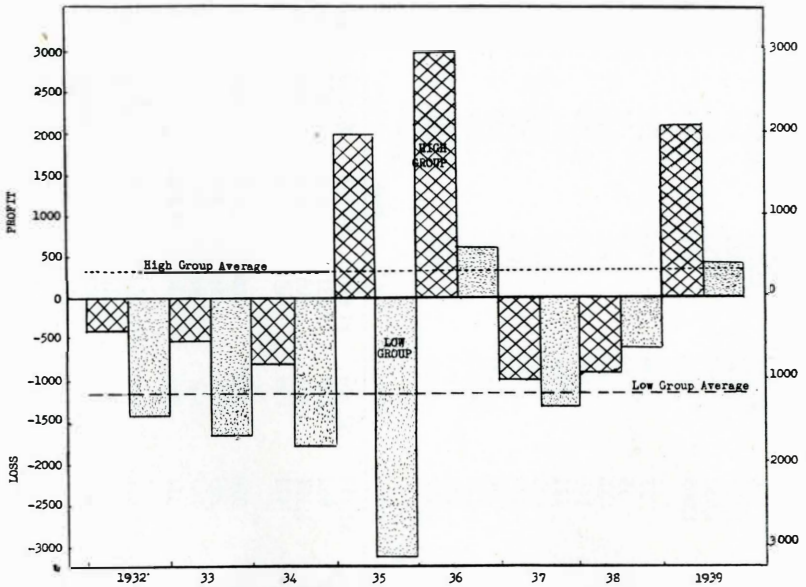



**Fig. 32.** Average Annual Operator's Labor Earnings, 1932-39.

## TABLE 23. AVERAGE ANNUAL EARNINGS, HIGH AND LOW INCOME FARMS, 1932-39

| Item | Average Per Farm Per Year High | Average Per Farm Per Year Low | 1932 High | 1932 Low | 1933 High | 1933 Low | 1934 High | 1934 Low |
|---|---|---|---|---|---|---|---|---|
| Total Cash Receipts | $3,049 | $1,810 | $2,159 | $1,524 | $2,714 | $1,528 | $2,850 | $1,750 |
| Total Cash Operating Exp. | 1,280 | 998 | 1,127 | 1,100 | 921 | 570 | 1,114 | 795 |
| Net Above Operating Exp. | 1,769 | 812 | 1,032 | 424 | 1,793 | 958 | 1,736 | 955 |
| Cash Capital Expense | 713 | 535 | 1,005 | 812 | 808 | 773 | 634 | 649 |
| Net Above Operating & Capital Expense | 1,056 | 277 | 27 | –388 | 985 | 185 | 1,102 | 306 |
| New Investments | 319 | 115 | 55 | 16 | 29 | 48 | 432 | 24 |
| NET CASH INCOME | 737 | 162 | –28 | –404 | 956 | 137 | 670 | 282 |
| Change in Net Worth | 158 | –769 | 149 | –398 | –949 | –1,156 | –977 | –1,477 |
| Return to Owned Capital and Labor | 895 | –607 | 121 | –802 | 7 | –1,019 | –307 | –1,195 |
| Interest on Av. Net Worth (4%) | 653 | 579 | 645 | 724 | 629 | 693 | 591 | 640 |
| FAMILY LABOR INCOME | 242 | –1,186 | –524 | –1,526 | –622 | –1,712 | –898 | –1,835 |
| Value Home Used Products | 279 | 203 | 300 | 254 | 279* | 203 | 279* | 203 |
| FAMILY LABOR EARNINGS | 521 | –983 | –224 | –1,272 | –343 | –1,509 | –619 | –1,632 |
| Value Unpaid Family Labor | 201 | 135 | 148 | 148 | 170 | 145 | 173 | 143 |
| OPERATORS' LABOR EARNINGS | 320 | –1,118 | –372 | –1,420 | –513 | –1,654 | –1,792 | –1,775 |

| Item | 1935 High | 1935 Low | 1936 High | 1936 Low | 1937 High | 1937 Low | 1938 High | 1938 Low | 1939 High | 1939 Low |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Cash Receipts | $2,795 | $1,848 | $4,134 | $2,253 | $2,920 | $1,636 | $3,336 | $1,930 | $3,487 | $2,009 |
| Total Cash Operating Exp. | 1,576 | 1,448 | 1,081 | 862 | 1,269 | 1,131 | 1,496 | 927 | 1,392 | 1,146 |
| Net Above Operating Exp. | 1,219 | 400 | 3,053 | 1,391 | 1,651 | 505 | 1,840 | 1,003 | 2,703 | 863 |
| Cash Capital Expense | 454 | 433 | 585 | 421 | 749 | 405 | 796 | 395 | 674 | 389 |
| Net Above Operating & Capital Expense | 765 | –33 | 2,468 | 970 | 902 | 100 | 1,044 | 608 | 2,029 | 474 |
| New Investments | 382 | 93 | 620 | 203 | 261 | 158 | 189 | --- | 580 | 378 |
| NET CASH INCOME | 383 | –126 | 1,848 | 767 | 641 | –58 | 855 | 608 | 1,449 | 96 |
| Change in Net Worth | 2,138 | –2,414 | 1,790 | 311 | –942 | –836 | –1,206 | –827 | 1,260 | 641 |
| Returned to Owned Capital and Labor | 2,521 | –2,540 | 3,638 | 1,078 | –301 | –894 | –351 | –219 | 2,709 | 737 |
| Interest on Av. Net Worth (4%) | 614 | 563 | 692 | 521 | 709 | 510 | 666 | 477 | 667 | 473 |
| FAMILY LABOR INCOME | 1,907 | –2,103 | 2,946 | 557 | –1,010 | –1,404 | –1,017 | –696 | 2,042 | 264 |
| Value Home Used Products | 278* | 203 | 201 | 171 | 321 | 212 | 280 | 182 | 297 | 196 |
| FAMILY LABOR EARNINGS | 2,186 | –2,900 | 3,147 | 728 | –689 | –1,192 | –737 | –514 | 2,339 | 460 |
| Value Unpaid Family Labor | 200 | 118 | 162 | 126 | 312 | 172 | 171 | 103 | 276 | 129 |
| OPERATORS' LABOR EARNINGS | 1,986 | –3,018 | 2,985 | 602 | –1,001 | –1,364 | –908 | –617 | 2,063 | 331 |

* Average for period used.

# *Conclusions*

Comparison and analysis of two groups of eight year farm business records, consisting of 10 farms each, indicate that certain factors influenced the earning power of wheat area farms during the period 1932-39. The more evident of these factors were:

1. **Size of farm and size of business.** High income farms were appreciably larger in acreage (average of 1107 acres against 735 for low income farms), carried more livestock (average of 67.6 A. U. against 38.3), used more equipment, returned cash receipts of $3049 against $1810. Apparently the increased size permitted lower overhead costs per unit, thus reducing relative cash expenses, and increasing net cash incomes.

2. **Distribution of Investment and Liabilities.** The higher income farmers kept relatively more of their investments and consequent liabilities confined to working capital, relatively less to real estate. It would seem that during the period studied leasing land was more profitable than ownership in as much as rental costs were somewhat more flexible than ownership costs.

3. **Use of Land, and Cropping Patterns.** Higher income farms showed relatively more pasture and hay acres, relatively less crop land. A larger proportion of their crop acres was devoted to feed crops, row crops, legumes, a smaller proportion to wheat, and fallow.

4. **Types of Livestock Used.** High income farmers not only used more livestock but had relatively more roughage consuming animals, relatively less concentrate consumers, than did the low income farmers. High income farmers utilized relatively larger flocks of sheep throughout the period.

5. **Utilization of Labor.** High income farmers utilized labor to better advantage, handled more crop acres and more animal units per man-year, than did the low income farmers, thereby keeping relative labor costs lower.

6. **Crop Yields.** High income farmers obtained somewhat higher yields per seeded acre of common crops. Many factors were involved in this item, but field observations indicated that utilization of good seeds, timeliness of operations, and general attention to crop production all were important.

7. **Livestock Productive Efficiencies.** While average productive efficiencies for the high income group did not excell those of the low income group, due probably to extensive labor use on the high income farms, and unusually small livestock populations on low income farms, yet records of individual farms, clearly indicated that more efficient livestock production was a factor in increasing farm earnings.

8. **Reserves of Seed, Feed,** and **Cash.** While no operators were able in this period to build up reserves which might be adequate protection against long droughts, nevertheless it is significant that the high income farmers held on January 1 of each year larger reserves of grain, roughage, and cash, than did the low income farms.

9. **Maintenance of Property, Net Worth.** While the reasons for the importance of this item are not entirely clear, the high income farmers were able to maintain, and even to increase, their net worth from year to year. Of course their larger cash receipts permitted greater new investments in replacement of equipment, but in addition it would seem that these operators maintained their operating equipment and plant in better condition than did the low income farmers.

10 **Quality of Management.** Probably the most important factor of all, one reflected in the nine previously mentioned, yet most difficult to measure accurately was the human element, the management factor. Unqustionably some operators were better able to combine the productive farm enterprises to financial advantage. Observation would indicate that the high income farmers possessed this ability to a higher degree than the low income farmers, but no other proof can be cited than the financial results of the farm businesses.

The foregoing factors represent those that seemed important to farm earnings during a period characterized by unfavorable climatic conditions, low price levels, and insect infestations. Probably these conditions were temporary just as future, more favorable conditions will be temporary, in the northern Great Plains under present economic institutions. Nevertheless, during this period these factors seemed important.

High income farmers showed average annual operator's labor earnings of $320. This plus interest on owned investment, $653, and payment for family labor of $201, meant that these people maintained an adequate level of living even though climatic and economic conditions were not too favorable. These averages serve as examples of the fact that even during "hard times" farms could be successfully operated in the area.

## APPENDIX TABLE A.—AVERAGE ACRES PER FARM, BY USES, BY YEARS
### Wheat Area Farms 1930-39

| Item | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 10 Year Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Cases | 45 | 23 | 112 | 98 | 84 | 58 | 51 | 39 | 52 | 58 | xxx |
| Wheat | 108.7 | 110.0 | 164.5 | 209.4 | 152.4 | 177.5 | 196.3 | 189.1 | 197.9 | 160.8 | 171.7 |
| Flax | 22.7 | 5.2 | 7.2 | 1.8 | .1 | 12.0 | 3.1 | 1.1 | — | — | 4.9 |
| Feed Grains | 151.1 | 166.9 | 146.1 | 139.6 | 129.2 | 178.2 | 144.3 | 139.0 | 130.2 | 141.8 | 144.6 |
| Row Crops | 155.2 | 192.6 | 136.4 | 118.7 | 72.2 | 110.5 | 91.8 | 87.2 | 111.5 | 120.3 | 115.6 |
| Legumes | 30.1 | 36.8 | 26.8 | 27.0 | 23.5 | 9.2 | 22.3 | 14.3 | 6.4 | 11.1 | 21.0 |
| Fallow & Misc. | 2.7 | 1.4 | 14.4 | 3.2 | 126.1 | 40.8 | 70.9 | 131.2 | 138.2 | 152.3 | 64.2 |
| Total Cropland | 470.5 | 512.9 | 495.5 | 499.9 | 503.5 | 528.1 | 528.7 | 561.8 | 584.3 | 586.4 | 522.0 |
| Hay and Pasture | 392.7 | 586.1 | 246.1 | 290.7 | 318.6 | 369.1 | 414.5 | 350.8 | 332.9 | 333.6 | 333.6 |
| Farmstead, Waste | 26.9 | 30.3 | 30.1 | 26.9 | 34.1 | 25.2 | 29.0 | 37.7 | 40.6 | 39.8 | 31.7 |
| Total Farm | 890.1 | 1129.3 | 771.7 | 817.5 | 856.2 | 922.9 | 972.2 | 950.4 | 957.8 | 959.8 | 887.3 |
| Owned Land | 401.5 | 462.0 | 380.9 | 395.1 | 451.6 | 462.6 | 373.4 | 393.5 | 390.3 | 413.3 | 408.8 |
| Leased Land | 488.6 | 667.3 | 390.8 | 422.4 | 404.6 | 460.3 | 598.8 | 556.9 | 567.5 | 546.5 | 478.5 |

## APPENDIX TABLE B.—AVERAGE ANIMAL UNITS PER FARM, BY KINDS,
### By Years, Wheat Area Farms, 1930-39

| Item | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 10 Yr. Av. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cattle | 35.0 | 49.1 | 36.7 | 42.7 | 41.3 | 19.6 | 23.3 | 20.8 | 20.6 | 24.3 | 32.4 |
| Hogs | 18.1 | 16.6 | 9.2 | 9.4 | 4.7 | 4.4 | 7.5 | 4.7 | 4.8 | 6.7 | 8.1 |
| Sheep | 1.0 | 1.2 | 5.1 | 6.8 | 6.9 | 4.2 | 6.9 | 4.2 | 6.5 | 6.7 | 5.5 |
| Poultry | 2.7 | 3.0 | 2.5 | 2.3 | 1.7 | 1.6 | 1.6 | 1.4 | 1.2 | 1.9 | 2.0 |
| Colts, etc. | .4 | .3 | .5 | .6 | .9 | .5 | .8 | .6 | .7 | .8 | .6 |
| Total Productive Average | 57.2 | 70.2 | 54.0 | 61.8 | 55.5 | 30.3 | 40.1 | 31.7 | 33.8 | 40.4 | 48.6 |
| Work Horses | 5.3 | 5.6 | 6.5 | 6.5 | 6.7 | 5.2 | 4.6 | 4.4 | 4.0 | 3.9 | 5.6 |
| Saddlers | .6 | .9 | .4 | .4 | .4 | .4 | .2 | .3 | .3 | .3 | .4 |
| Total Animal Units | 63.1 | 76.7 | 60.9 | 68.7 | 62.6 | 35.9 | 44.9 | 36.4 | 38.1 | 44.6 | 54.6 |
| Roughage Consumers | 42.3 | 57.1 | 49.2 | 57.0 | 56.2 | 29.9 | 35.8 | 30.3 | 32.1 | 36.0 | 44.5 |
| Concentrates Consumers | 20.8 | 19.6 | 11.7 | 11.7 | 6.4 | 6.0 | 9.1 | 6.1 | 6.0 | 8.6 | 10.1 |

**APPENDIX TABLE C.—ASSETS, LIABILITIES, NET WORTH PER FARM, PER YEAR**
**Wheat Area Farms, 1930-40**

| | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 |
|---|---|---|---|---|---|---|
| TOTAL ASSETS: | $23329.20 | $26657.30 | $20635.70 | $21422.70 | $20547.50 | $17742.00 |
| Real Estate | 13975.00 | 15974.60 | 14816.10 | 15334.80 | 15143.00 | 13553.90 |
| Equipment | 3464.70 | 3529.90 | 2701.80 | 2485.20 | 2215.10 | 1984.90 |
| Livestock | 4053.00 | 4783.20 | 2079.10 | 2282.60 | 2112.60 | 1439.40 |
| Crops & Feeds | 1679.40 | 2142.10 | 889.20 | 1168.60 | 869.90 | 513.70 |
| Cash | 157.00 | 227.50 | 149.50 | 151.50 | 206.90 | 250.10 |
| Percent Assets in Working Capital | 40.1 | 40.1 | 28.2 | 28.4 | 26.3 | 23.6 |
| TOTAL LIABILITIES: | 8393.90 | 10463.30 | 6274.60 | 9654.50 | 6970.00 | 6984.00 |
| Real Estate Mtg. | 5704.00 | 6461.70 | 4245.00 | 5767.50 | 4333.90 | 4313.90 |
| Equipment Debts | 303.30 | 286.10 | 309.40 | 593.20 | 310.20 | 283.70 |
| Livestock Debts | 1284.90 | 1741.70 | 803.90 | 1227.40 | 896.10 | 471.00 |
| Feed & Seed Loans | ---- | ---- | ---- | 196.30 | 118.80 | 445.70 |
| Other Obligations | 1101.70 | 1973.80 | 916.30 | 1870.10 | 1311.00 | 1369.70 |
| Percent Liabilities On Working Capital | 32.1 | 38.3 | 32.4 | 40.3 | 37.8 | 38.2 |
| NET WORTH: | 14935.20 | 16194.00 | 14361.10 | 11768.20 | 13577.50 | 10758.00 |
| Percent of Total Assets | 64.0 | 60.7 | 69.6 | 54.9 | 66.1 | 60.6 |

| | 1936 | 1937 | 1938 | 1939 | 1940 | Average |
|---|---|---|---|---|---|---|
| TOTAL ASSETS: | $18258.60 | $18524.80 | $17292.60 | $15975.10 | $16856.10 | $19595.40 |
| Real Estate | 12790.10 | 12947.50 | 12115.10 | 10751.30 | 10650.50 | 13636.01 |
| Equipment | 1934.70 | 1939.40 | 1808.40 | 1702.10 | 1727.70 | 2288.68 |
| Livestock | 2242.60 | 1776.20 | 2001.10 | 2161.40 | 2472.60 | 2310.30 |
| Crops & Feeds | 1037.80 | 1276.30 | 718.50 | 811.30 | 1558.50 | 1060.99 |
| Cash | 253.40 | 585.40 | 649.50 | 549.00 | 446.80 | 299.40 |
| Percent Assets in Working Capital | 30.0 | 30.1 | 30.0 | 32.7 | 36.8 | 30.4 |
| TOTAL LIABILITIES: | 6393.10 | 5604.50 | 5297.30 | 5017.50 | 5086.00 | 6508.75 |
| Real Estate Mtg. | 4117.40 | 3584.00 | 3171.40 | 3008.20 | 2973.90 | 4088.00 |
| Equipment Debts | 277.50 | 289.10 | 200.20 | 100.40 | 111.70 | 278.00 |
| Livestock Debts | 534.00 | 368.80 | 366.30 | 463.10 | 448.70 | 726.00 |
| Feed & Seed Loans | 710.80 | 622.40 | 779.70 | 561.40 | 488.50 | 307.00 |
| Other Obligations | 753.40 | 840.20 | 779.70 | 884.40 | 1063.20 | 111.00 |
| Percent Liabilities On Working Capital | 35.6 | 36.1 | 40.1 | 40.1 | 41.5 | 37.5 |
| NET WORTH: | 11865.50 | 12920.30 | 11995.30 | 10957.60 | 11770.10 | 13086.64 |
| Percent of Total Assets | 65.0 | 69.7 | 69.4 | 68.6 | 69.8 | 66.8 |

**APPENDIX TABLE D.—YIELD PER SEEDED ACRE BY YEARS, 1930-39**

| Crops | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | Total Cases | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat—Bu. | 12.2888 | 4.4873 | 14.4924 | 1.0246 | 0.3711 | 5.4418 | 0.1248 | 1.2522 | 4.8293 | 6.1637 | 587 | 4.6132 |
| Barley—Bu. | 19.7266 | 8.4571 | 24.9127 | 0.5761 | 0.0183 | 1.1374 | | 2.0683 | 7.461 | 9.9255 | 573 | 8.8098 |
| Oats—Bu. | 23.5713 | 3.9632 | 31.8680 | 0.2365 | 0.0193 | 15.7389 | 0.014 | 1.5064 | 10.850 | 18.1489 | 545 | 9.60 |
| Rye—Bu. | 7.5949 | | 9.7823 | 0.7547 | | 10.4944 | 0.1632 | 1.751 | 2.9048 | 2.7610 | 250 | 3.5039 |
| Flax—Bu. | 4.0354 | 1.1741 | 1.24 | | | 0.9856 | | | None Seeded | None Seeded | 95 | 1.0814 |
| Corn—Bu. | 11.9117 | 3.8083 | 9.8754 | 1.4049 | 0.0111 | 7.9084 | 0.0779 | 3.6007 | 2.1827 | 5.8114 | 605 | 5.2329 |
| Sorghums—Tons | 1.176 | 0.735 | 1.392 | 0.417 | 0.102 | 1.170 | 0.174 | 1.271 | 0.704 | 0.70 | 632 | 0.756 |
| Alfalfa—Tons | .51 | .56 | .86 | .60 | .05 | 1.33 | .08 | .78 | .42 | .44 | 322 | .5351 |
| Native hay—Tons | .203 | .1943 | .5123 | .2398 | .0431 | .5282 | .1444 | .2914 | .2805 | .413 | 469 | .2723 |

**APPENDIX TABLE E.—AVERAGE CASH RECEIPTS PER FARM BY SOURCE**
**Wheat Area Farms, 1930-39**

| Item | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 |
|---|---|---|---|---|---|---|---|---|---|---|
| Beef Receipts | $624 | $1002 | $199 | $443 | $765 | $118 | $413 | $293 | $403 | $534 |
| Pork | 2351 | 2184 | 342 | 544 | 146 | 205 | 707 | 244 | 316 | 318 |
| Mutton | 13 | 99 | 50 | 134 | 125 | 86 | 149 | 52 | 106 | 126 |
| Poultry | 96 | 145 | 64 | 50 | 50 | 60 | 46 | 77 | 92 | 81 |
| Horses | 70 | 27 | 21 | 51 | 39 | 18 | 91 | 24 | 39 | 31 |
| Butterfat | 426 | 321 | 206 | 214 | 173 | 190 | 258 | 229 | 223 | 225 |
| Wool | 11 | 6 | 19 | 77 | 43 | 54 | 86 | 54 | 36 | 61 |
| Eggs | 124 | 84 | 43 | 40 | 36 | 51 | 50 | 58 | 64 | 68 |
| Total Livestock and Products | 3715 | 3868 | 944 | 1553 | 1377 | 782 | 1800 | 1031 | 1279 | 1444 |
| Wheat | 395 | 163 | 371 | 324 | 66 | 310 | 94 | 59 | 228 | 109 |
| Flax | 120 | 2 | 9 | 4 | 1 | 20 | 4 | ---- | ---- | ---- |
| Other Crops | 95 | 16 | 92 | 76 | 34 | 96 | 52 | 67 | 17 | 24 |
| Total Crops | 610 | 181 | 472 | 404 | 101 | 426 | 150 | 126 | 245 | 133 |
| Labor Off Farm | 159 | 35 | 195 | 70 | 256 | 255 | 231 | 213 | 199 | 241 |
| Miscellaneous | 59 | 20 | 53 | 45 | 58 | 115 | 133 | 75 | 119 | 356 |
| A.A.A. | ---- | ---- | ---- | ---- | 427 | 543 | 728 | 498 | 402 | 515 |
| TOTAL CASH FARM RECEIPTS | 4543 | 4104 | 1664 | 2072 | 2219 | 2121 | 3042 | 1943 | 2244 | 2689 |

**APPENDIX TABLE F.—AVERAGE CASH EXPENSES, PER FARM BY DISTRIBUTION WHEAT AREA FARMS, 1930-39**

| Item | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 |
|---|---|---|---|---|---|---|---|---|---|---|
| Livestock Bought | $261 | $299 | $106 | $123 | $ 60 | $ 92 | $114 | $ 76 | $121 | $148 |
| Feed Bought | 364 | 307 | 126 | 113 | 495 | 404 | 407 | 221 | 122 | 129 |
| Other Livestock Exp. | 83 | 99 | 24 | 19 | 9 | 10 | 15 | 15 | 29 | 28 |
| Seed Bought | 107 | 42 | 50 | 22 | 60 | 206 | 82 | 132 | 60 | 33 |
| Other Crop Exp. | 52 | 26 | 37 | 8 | 1 | 105 | 3 | 13 | 72 | 82 |
| Labor Hired | 520 | 265 | 302 | 94 | 55 | 129 | 77 | 72 | 100 | 146 |
| Tractor | 322 | 256 | 210 | 142 | 125 | 250 | 187 | 203 | 256 | 292 |
| Truck | 40 | 32 | 23 | 24 | 24 | 19 | 24 | 20 | 19 | 24 |
| Auto | 91 | 63 | 57 | 80 | 98 | 93 | 108 | 119 | 144 | 138 |
| Repairs | 167 | 134 | 80 | 62 | 39 | 86 | 62 | 78 | 125 | 141 |
| Custom Work | ---- | ---- | ---- | ---- | ---- | ---- | 30 | 54 | 6 | 48 |
| Miscellaneous | 17 | 7 | 4 | 5 | 19 | 13 | 20 | 8 | 34 | 52 |
| Board for Hired Labor | 99 | 67 | 90 | 60 | 40 | 70 | 50 | 35 | 48 | 63 |
| TOTAL OPERATING EXPENSE | 2123 | 1597 | 1109 | 752 | 1025 | 1477 | 1179 | 1046 | 1136 | 1324 |
| Cash Rent | 318 | 352 | 146 | 78 | 56 | 68 | 55 | 65 | 54 | 66 |
| Insurance | 95 | 49 | 32 | 19 | 17 | 26 | 17 | 28 | 26 | 55 |
| Taxes | 254 | 250 | 215 | 195 | 152 | 150 | 141 | 168 | 158 | 178 |
| Interest | 504 | 501 | 380 | 369 | 274 | 207 | 232 | 229 | 202 | 149 |
| TOTAL CAPITAL EXPENSE | 1171 | 1152 | 773 | 661 | 499 | 451 | 445 | 490 | 440 | 448 |
| NEW INVESTEMENTS | 436 | 179 | 98 | 83 | 148 | 157 | 320 | 197 | 125 | 419 |
| TOTAL CASH FARM EXPENSE | 3730 | 2928 | 1980 | 1496 | 1672 | 2085 | 1944 | 1732 | 1701 | 2191 |

**APPENDIX TABLE G.—PERFORMANCE DATA FOR INDIVIDUAL FARMS**
**Eight Year Averages, 1932-39**

| Farm Number | Acres in Farm | Percent in Crop | Percent Land Owned | Total Animal Units | Net Worth | Cash Receipts | Cash Expenses |
|---|---|---|---|---|---|---|---|
| High Income Group | | | | | | | |
| No. 1 | 1966 | 45.0 | 50.3 | 124.6 | $26513 | $5420 | $3713 |
| No. 2 | 630 | 65.7 | 85.7 | 75.7 | 26545 | 2977 | 1705 |
| No. 3 | 2398 | 27.9 | 32.5 | 126.6 | 16504 | 4285 | 3603 |
| No. 4 | 1059 | 66.8 | 55.2 | 47.3 | 7421 | 2668 | 2539 |
| No. 5 | 755 | 80.8 | 42.4 | 42.8 | 10946 | 3391 | 4210 |
| No. 6 | 969 | 55.4 | 62.4 | 56.6 | 10745 | 3118 | 2280 |
| No. 7 | 705 | 70.8 | 0 | 46.3 | 3150 | 1479 | 808 |
| No. 8 | 820 | 73.0 | 68.3 | 51.4 | 17763 | 2922 | 2567 |
| No. 9 | 697 | 49.0 | 86.2 | 47.7 | 18036 | 2299 | 1503 |
| No. 10 | 1076 | 52.7 | 44.6 | 56.4 | 25742 | 1935 | 1160 |
| Average | 1107.6 | 52.6 | 47.8 | 67.6 | 16336 | 3049 | 2229 |
| Low Income Group | | | | | | | |
| No. 21 | 936 | 37.1 | 64.8 | 53.8 | 16701 | 1217 | 901 |
| No. 22 | 409 | 88.7 | 39.5 | 30.3 | 4706 | 1427 | 1150 |
| No. 23 | 909 | 61.9 | 35.2 | 41.9 | 12308 | 2341 | 1931 |
| No. 24 | 693 | 97.6 | 80.5 | 36.2 | 22144 | 2056 | 1674 |
| No. 25 | 514 | 80.4 | 57.8 | 16.1 | 6038 | 1178 | 1119 |
| No. 26 | 725 | 44.6 | 88.3 | 53.5 | 27001 | 2173 | 1518 |
| No .27 | 644 | 45.8 | 98.8 | 42.3 | 21836 | 1440 | 872 |
| No. 28 | 416 | 79.0 | 31.8 | 32.9 | 7254 | 981 | 994 |
| No. 29 | 152 | 89.5 | 72.5 | 19.3 | 7558 | 1411 | 1201 |
| No. 30 | 1957 | 73.9 | 32.7 | 54.4 | 19182 | 3874 | 4549 |
| Average | 735.4 | 66.6 | 56.1 | 38.3 | 14473 | 1810 | 1591 |