FACTORS CONTRIBUTING TO CONTINUOUS HIGH OR LOW NET FARM INCOME

By

PAUL WILSON GRIFFITH

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INTRODUCTION

It is a general observation and common knowledge that some farmers are more successful, financially and otherwise, than some of their surrounding neighbors. Because of this fact and as this situation exists even though many of the farms are similar in many respects, both farmers and professional agricultural workers have tried to determine which particular factors contributed to these differences.

The author has observed during the past 20 years[1] that some farmers are consistently successful and on top while some others are just as consistently at the bottom of the agricultural ladder. This observation was further confirmed in 1941 and 1942 when the author served as fieldman for one of the Kansas farm management associations.

In studying the farm records and in assisting the farmers in the farm management analysis of their farm business, a certain pattern of ranking of farms according to net income seemed to be present always. This observation that farms tend to follow a net income pattern and do not readily shift their position or rank based on net income prompted this study.

Although there is a great deal of literature on farm management and farm business analysis, there has been very little reported on the income ranking of farms and the shifting or maintaining of

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[1] Twelve years of this period were spent in agricultural Extension work and the most of the remaining time was spent managing a wheat and livestock ranch.

income rank. Bennett (1) studied the problem and reported his findings in 1928. He made a compilation of data covering farms from four different areas; namely, Montana, Wisconsin, Ohio, and Indiana. Each area was studied separately and the farms charted in rank grouping over the four to seven year periods.

Another study along similar lines was made by Dixon and Hawthorne (3) in 1925. However, their work was primarily on the effect of certain farm business factors on net farm income. This study covered 2,725 farms in 12 different areas in the United States. The main purpose was to determine the resulting net income rank of the individual farm which scored above average in one, two, three, or all four factors. The factors studied were size of business, crop yields, returns from livestock, and efficiency in use of labor.

In Kansas a detailed study on income rank of farms and the holding or shifting of rank had not been made prior to this one.

The purpose of this study was to try to determine which factors contribute to this tendency of farms to stay in the high or low quartile or middle one-half when farms are grouped on the basis of net income. Can it be demonstrated that Kansas farms have a tendency to follow a consistent pattern of net income rank through a period of years? If an actual rank pattern is demonstrated, is the high, the low, or the middle net income group more consistent in maintenance of rank than the others? What farm business factors seem to contribute the most to continuous high or low net farm incomes? Are there definite relationships between certain farm business factors or does each factor affect

net income rank in an individual manner? What is the result of net income differences between high and low income groups if yearly totals are accumulated over a five year period? These were the main questions studied in this research problem.

METHODS AND PROCEDURES

Source of Information

Most of the information for this study was obtained from farm records kept by cooperating farmers in the farm management association located in north central Kansas. This association is known as Farm Management Association No. 1 and hereafter will be referred to as such. Figure 1 shows the five counties included in this study, which made up part of Association No. 1. Marion County is not included in this study with the other five counties of Area 6a because no records were available for the years 1931 to 1945 in this county.

Farm management service is available to farmers in northeast, central, and southwest Kansas. In 1946, more than 800 farmers in 67 counties received this service by cooperating in the four associations. The purpose of these associations is to give assistance and instruction to cooperating farmers in better farm practices and proper farm organization. Emphasis is placed on proper balance between crops to maintain soil fertility, the control of soil erosion, the use of right kinds of livestock which are fitted to the physical resources of the farm and the operator's managerial

ability, and proper balance between crops and livestock in line with the financial resources of the farms and the long-time outlook for the commodities produced. This educational program is built around complete farm records of the farm business kept in a uniform manner in farm account books. These account books are kept by each cooperating farmer under the supervision of a trained fieldman. These records are sufficiently complete and accurate for summary and analysis of the farm business. Records in Association No. 1 have been available from and including 1931 up to the present time. In this study each of the 681 complete account books which were available from Area 6a for the period 1931 to 1946, inclusive, were reviewed.

Description of Area and Farms

The type-of-farming Area 6a was selected for this study for three main reasons. First, the area includes the counties which were in one of the original farm management associations and, thus, complete farm records are available from 1931 to the present. Secondly, the area is predominately a general farming area with wheat as the major crop enterprise. Third, the author is personally acquainted with a large number of farms on which records are available. This last item enabled the author to eliminate farms from the study which have peculiarities not evident in the records, but which made the farm operations abnormal as compared with the average farm.

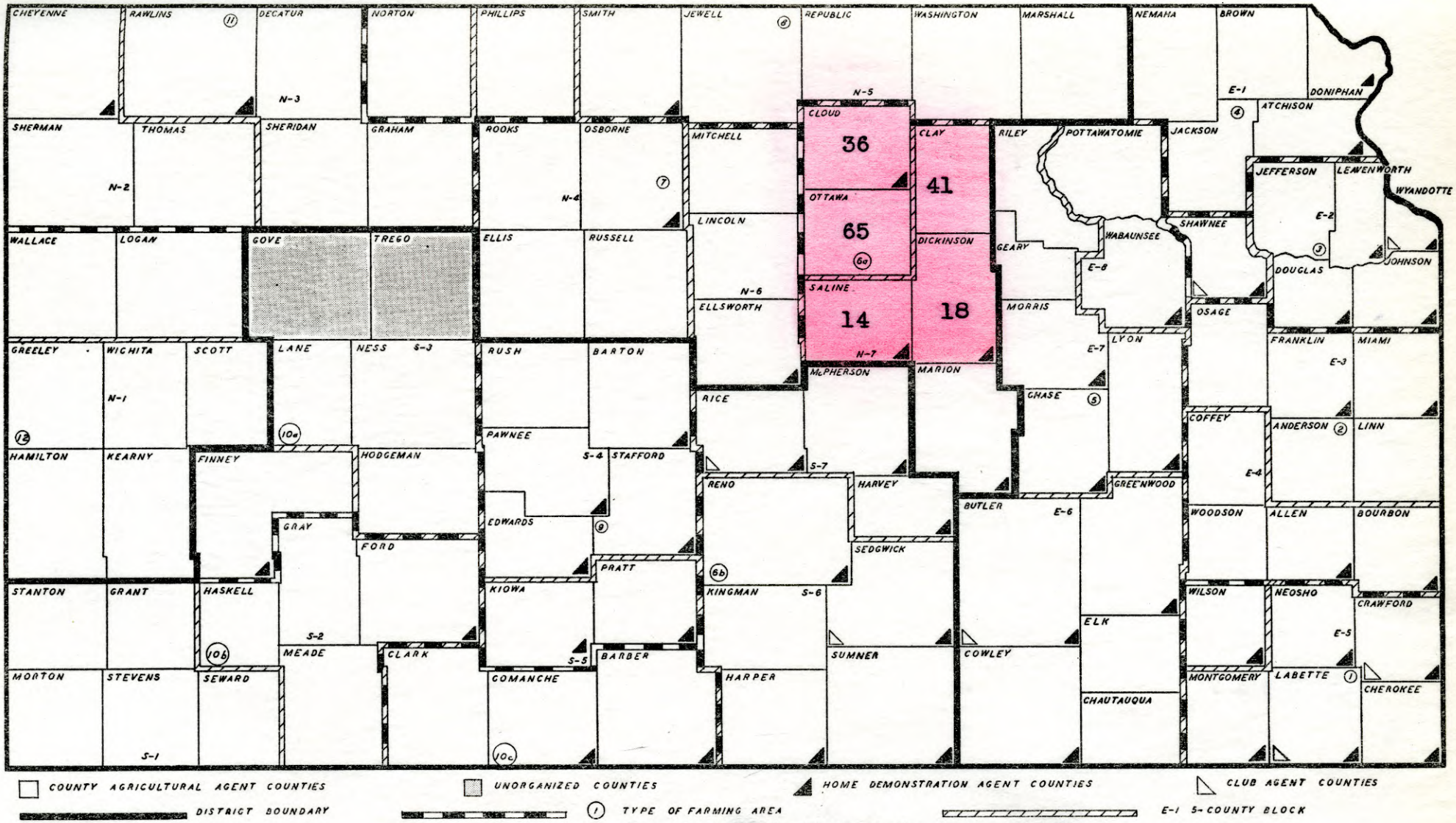

Figure 1. Counties in 6a included in this study.

14 - Saline-------- 8 farms--- 20 account book years
18 - Dickinson-----49 farms---177 account book years
36 - Cloud---------36 farms---165 account book years
41 - Clay----------49 farms---217 account book years
65 - Ottawa--------28 farms---102 account book years

Definition of Terms

Rank or income rank refers to net income groups divided into the high 25 percent, middle 50 percent, or the low 25 percent of the farms arrayed on net income basis.

Net income is the difference between total cash farm receipts plus or minus inventory change in value of crops and livestock and the total cash farm expenses plus depreciation on building improvements, machinery, and equipment.

Gross farm income is the total cash income of the farm business plus or minus any inventory change in the value of crops or livestock.

Total investment managed is the January 1 value of all working capital and real estate including rented property operated in the farm unit.

Farm includes the land, buildings, livestock, and equipment operated as a complete unit.

Association refers to Farm Management Association No. 1.

Selected farms are the 10 farms which were used as case studies.

FACTORS AFFECTING INCOME RANK

Trends of all Association Farms in Area 6a

The first step in this study was to develop a pattern sheet for all farms in this area on which records were available. The

farms were charted to show which of the income groups, high 25 percent, middle 50 percent, or low 25 percent, they each belonged to during the years their records were available.

During the period 1931 to 1946, 170 different farms had 681 account books which were complete enough for detailed analysis. These books were studied and the entire group charted similarly to the method illustrated by Fig. 2.

In studying this large preliminary chart of rank of farms, one characteristic of the pattern of ranking was outstanding. A very large majority of the farms held their same net income group rank for several consecutive years before moving into another income group. Table 1 summarizes the frequency of this consistency of rank.

It can be observed that this study included 681 account book years. However, 73 of these years occurred singly, therefore, exclude the possibility of successive years. These single years were eliminated in the calculation of successive years.

The farms included in this study held their rank for two successive years or more, 63 percent of the time. They held their rank for three years or more, 38 percent of the time; for four years, 22.7 percent; and for five years or more, 11.2 percent.

Table 1 indicates that the farms generally followed a tendency toward a more or less definite pattern when ranked according to net income.

Table 1. Frequency of net income rank held for two or more successive years when farms are arrayed on net income by high 25 percent, middle 50 percent, and low 25 percent groups--farm management association - Kansas, Area 6a, 1931-1946.

County (No. - Name)	Total farms	Total account book years	Years occurring Singly	Total years 2 or more	Successive years: 2 yrs. or more: Years	% total	3 yrs. or more: Years	% total	4 yrs. or more: Years	% total	5 yrs. or more: Years	% total
14 - Saline	8	20	8	12							6	50.0
18 - Dickinson	49	177	21	156	97	61.8	51	32.7	18	11.5	10	6.4
36 - Cloud	36	165	17	148	103	69.6	63	42.6	45	30.4	17	11.5
41 - Clay	49	217	16	201	125	62.2	85	42.3	58	28.9	30	14.9
65 - Ottawa	28	102	11	91	58	63.7	32	35.2	17	18.7	5	5.5
TOTALS	170	681	73	608	383	63.0	231	38.0	138	22.7	68	11.2

Trends of Ten Selected Farms

The next step was to select from the 170 farms, 10 representative farms for individual case studies. Table No. 2 summarizes the pattern of net income rank for these 10 selected farms.

It was noted that these 10 selected farms followed the same general pattern of holding their income rank for successive years as did the entire group. The only difference was that the selected group have a slightly higher successive frequency than did the entire group. One farm, No. 36-56, followed a successive years pattern during the entire eight years that its records have been available. It was also striking that all but two of these farms had periods of four years or more in succession. These farms were not selected with this in mind. In fact an effort was made in selecting farms to get representative farms including high, medium, and low incomes, and to get a representation from all five counties in the area. Another factor in the selection was to get records of long-tenure if possible.

Figure 2 shows the rank of each individual farm from this selected group for each year that they had a record available. Figure 2 can be used to cross check many of the following tables and charts when one wants to know a farm's exact rank for a specific year.

Table 2. Frequency of net income rank held for two or more successive years when farms are arrayed on net income by high 25 percent, middle 50 percent, and low 25 percent, ten selected farms, Area 6a, 1931-1946.

Farm	Total account book years	Years occurring Singly	Years occurring Total 2 or more	Successive Years: 2 yrs. or more: Years	2 yrs. or more: % total	3 yrs. or more: Years	3 yrs. or more: % total	4 yrs. or more: Years	4 yrs. or more: % total	5 yrs. or more: Years	5 yrs. or more: % total
14-2	8		8	6	75.0	6	75.0	6	75.0	6	75.0
18-5	9		9	8	88.9	8	88.9	5	55.6	5	55.6
18-41	9		9	8	88.9	6	66.7				
18-47	8		8	6	75.0	4	50.0	4	50.0		
36-14	16		16	11	69.7	7	43.7	4	25.0		
36-41	8	1	7	6	85.7	4	57.1	4	57.1		
36-56	8		8	8	100.0						
41-33	13		13	7	53.8	7	53.8	4	30.9		
41-44	9		9	8	88.9	8	88.9	5	55.6	5	55.6
65-20	15		15	12	80.0	10	66.7	4	26.7		
Totals	103	1	102	80	78.4	60	58.8	36	35.3	16	15.7

	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931
14-2	M	H	H	H	H	H	H	L								
18-5										L	H	H	H	H	H	
18-41	L	L	L	M	M	H	H	H	M							
18-47	L	L	M	L	L	L	L	M								
36-14	H	M	M	M	H	L	L	L	L	M	M	L	M	M	L	H
36-41		L				H	H	H	H	M	H	H				
36-56	L	L	M	M	L	L	M	M								
41-33	L	M	L	M	L	L	L	L	M	H	M	M	M			
41-44	H	H	H	H	H			L	M	M	M					
65-20		M	L	L	L	M	L	M	M	M	L	L	L	M	M	

Figure 2. Income rank grouping of ten selected farms--Farm Management Association No. 1, Area 6a

H - High income group (upper 25 percent of farms arrayed on net income)
M - Middle income group (middle 50 percent of farms arrayed on net income)
L - Low income group (lower 25 percent of farms arrayed on net income)

Effect of Investment Managed

The next step was to study the farm business analyses of these 10 selected farms to see if it could be determined which factors of production or organization caused this pattern of ranking farms. This first analysis measure studied was the "total investment managed". This includes not only the operator's own investment in working capital and real estate, but also the value of real estate rented. The investments managed were arrayed into the three income groups--high 25 percent, middle 50 percent, and low 25 percent. In the high group, which included 32 account book years, the investment managed ranged from $54,459 down to $19,280, and the average for the high group was $35,905. In the middle group, which included 34 years, the range was from $49,234 down to $11,665, except one farm had an investment of $8,125. This group had an average of $21,321. The low group, which included 37 years, ranged from $40,531 down to $10,008 with an average of $20,650.

To summarize briefly, the approximate ranges (eliminating two extremes) and averages in round figures were:

High----- $20,000 to $45,000----Average $36,000

Middle--- $12,000 to $40,000----Average $21,000

Low------ $10,000 to $35,000----Average $20,000

Total---- $10,000 to $45,000----Average $26,000

The next step was to make brackets of investment levels and find how the farms ranked according to these brackets. Table 4 shows the results of using the investment brackets and three income groupings in combination.

Table 4. Investment managed, grouped by total investment and net income, ten selected farms, Area 6a, 1931-1946, inclusive.

Total investment	Total years	Net income groups		
		High	Middle	Low
		(Years)		
$50,000 or more	1	1	-	-
45,000 to 49,999	2	1	1	-
40,000 to 44,999	7	6	-	1
35,000 to 39,999	16	12	3	1
30,000 to 34,999	13	6	3	4
25,000 to 29,999	12	4	3	5
20,000 to 24,999	11	1	4	6
15,000 to 19,999	17	1	9	7
10,000 to 14,999	23	-	10	13
5,000 to 9,999	1	-	1	-
Totals	103	32	34	37

The turning point of the high group was about $35,000 with 62.5 percent of the years above this figure. The middle group had 11.8 percent of the years above $35,000 and the low group only 5.4 percent.

The high group had 93.7 percent of the years above $25,000 investment while the middle group had 70.6 percent of the years below $25,000, and the low group had 70.3 percent below this investment.

The high group did not have any years below $15,000 investment, but the middle group had 32.4 percent and the low group 35.2 percent below this investment.

After a careful study of Table 4, along with the individual record books, $30,000 was taken as an arbitrary size of investment managed, and two large classes established--one with investment $30,000 or more and the other less than $30,000. Then each farm was classified accordingly. Table 5 shows the results of this classification of the ten selected farms.

Table 5. Effect of investment managed on the rank of ten selected farms, Area 6a, 1931-1946.

Farm	Total years	Investment $30,000 or more: Years	Rank (Years) High	Rank (Years) Middle	Rank (Years) Low	Investment less than $30,000: Years	Rank (Years) High	Rank (Years) Middle	Rank (Years) Low
14-2	8	7	6	1	-	1	-	-	1
18-5	9	7	6	-	1	2	2	-	-
18-41	9	9	3	3	3	-	-	-	-
18-47	8	-	-	-	-	8	-	2	6
36-14	16	2	1	1	-	14	2	6	6
36-41	8	7	5	1	1	1	1	-	-
36-56	8	-	-	-	-	8	-	4	4
41-33	13	2	-	1	1	11	1	5	5
41-44	9	5	5	-	-	4	-	3	1
65-20	15	-	-	-	-	15	-	7	8
Total	103	39	26	7	6	64	6	27	31

From Table 5 it was apparent that the total investment managed is one of the major factors contributing to high or low incomes. When the farms managed an investment of $30,000 or more, they were in the high income group 66.7 percent of the time and in the low group only 15.4 percent of the time. When they had less than $30,000 investment, they were in the low group 48.4 percent of the time and in the high group only 9.4 percent of the time.

The data shown in Tables 4 and 5 indicated that it takes a certain amount of investment managed to produce a high or low net income. To test this theory a scatter diagram of investment managed and resulting net income was constructed. Figure 3 shows the results of charting the relation of investment managed to net income.

After all the spots had been located on the chart, a straight line curve was arbitrarily placed on it at the ratio of $12,000 investment equals $1,000 net income. The reason for the use of this curve, particularly with the ratio stated above, was that several years ago the author made a limited study of the relation of investment managed to net income and the above relationship was indicated. While this line did not bear out this relationship exactly, it showed a strong tendency to follow such a pattern. The high income group seemingly needed less than $12,000 investment managed to produce $1,000 net income and the low group needed more investment per $1,000 net income. The following results were shown by Fig. 3.

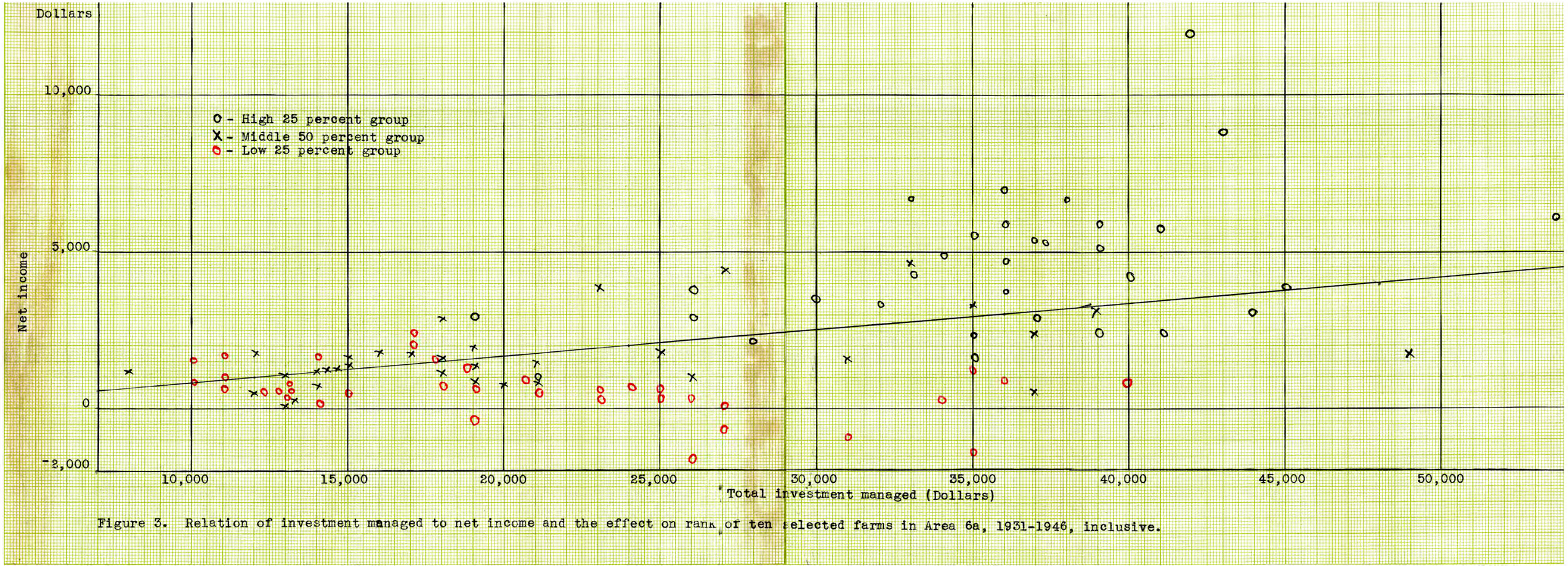

Figure 3. Relation of investment managed to net income and the effect on rank of ten selected farms in Area 6a, 1931-1946, inclusive.

	High group	Middle group	Low group	Total
Farms above line	23	11	5	39
Farms on line	1	5	3	9
Farms below line	8	18	29	55
Totals	32	34	37	103

Effect of Wheat Yields

As wheat is the principal crop in Area 6a, the relation of wheat yields to net incomes and rank of farms in income groups was studied. The 10 selected farms were arrayed into the three income groups, listing in each group the yield per acre of wheat for each account book year.

A study of the data showed that the high income group ranged from 32.2 bushels per acre down to 12.0 bushels except for two individual records which were 6.7 and 5.4 bushels, with an average for the group of 18.8 bushels. The middle group ranged from 28.3 bushels down to 6.4 bushels with an average of 14.9 bushels. The low group ranged from 26.7 bushels down to .5 bushels, with an average of 12.0 bushels. The difference in yields when comparing the high to middle to low income groups was as follows:

	High income group	Middle income group	Low income group
Highest yield	32.2 bus.	28.3 bus.	26.7 bus.
Yield of middle point farms	19.5	14.0	12.0
Lowest yield	5.4	6.4	.5
Average yield	18.8	14.9	12.0

Table 6. Wheat yields per acre, grouped by yield and net income, ten selected farms, Area 6a, 1931, to 1946, inclusive.

Yields per acre (bus.)	Total years	Income groups: High (years)	Middle (years)	Low (years)
30 and more	1	1	-	-
25 to 29.9	6	3	1	2
20 to 24.9	21	12	6	3
15 to 19.9	21	8	7	6
10 to 14.9	32	6	14	12
5 to 9.9	17	2	6	9
Less than 5	5	-	-	5
Totals	103	32	34	37

It was noted that in the high group that 24 of the 32 years were 15 bushels or more. Thus, 75 percent of the years were 15 bushels and only 25 percent below. In the middle group, 14 of the 34 years or 41 percent were above 15 bushels and 59 percent below. In the low group 11 of the 37 years or 30 percent of the

years were above 15 bushels and 70 percent of the years below. In other words the high group was approximately the same percent (75 percent) above 15 bushels as the low group was below (70 percent) 15 bushels.

The 10 selected farms were arrayed on the basis of wheat yields of 15 bushels per acre and less than 15 bushels. Table 7 shows the results of this array. Checking Table 7 with Fig. 2 showed that high income and high yield tend to go together.

Table 7. Wheat yields per acre and their effect on the rank of ten selected farms, Area 6a, 1931-1946, inclusive.

Farm	Total years	15 bushels and more				Less than 15 bushels			
		Years	Net income group (Years)			Years	Net income group (Years)		
			High	Middle	Low		High	Middle	Low
14-2	8	7	6	1	-	1	-	-	1
18-5	9	5	4	-	1	4	4	-	-
18-41	9	6	2	2	2	3	1	1	1
18-47	8	1	-	-	1	7	-	2	5
36-14	16	8	3	3	2	8	-	4	4
36-41	8	5	3	1	1	3	3	-	-
36-56	8	2	-	1	1	6	-	3	3
41-33	13	4	1	2	1	9	-	4	5
41-44	9	7	5	1	1	2	-	2	-
65-20	15	4	-	3	1	11	-	4	7
Totals	103	49	24	14	11	54	8	20	26

Effect of Gross Income per Man

Efficient use of labor and getting maximum production per man was studied to determine the relationship to the net income groups. The data from the selected farms were arrayed from high to low on the basis of gross income per man by net income groups of high 25 percent, middle 50 percent, and low 25 percent.

The high income group ranged from $12,207 down to $2,052 gross income per man with an average of $5,960. The middle group ranged from $8,107 down to $138.00 with an average of $2,913. The low 25 percent group ranged from $5,833 down to $394.00 with an average of $2,565.

The next step was to array the account book years of the high, middle, and low groups by gross income per man based on one thousand dollar brackets. The results are shown in Table 8.

In the high income group, 23 of the 32 years were above $4,000 gross income per man, which is 71.9 percent. The middle group had 26.5 percent above the $4,000 level and the low group was 18.9 percent above this level. In the years below $4,000 the reverse of the percentage of above $4,000 level was the general trend with the high 28.1 percent, the middle 73.5 percent, and the low 81.9 percent.

The individual 10 selected farms were then ranked on the basis of two groups, above and below $4,000 income per man. The results are shown in Table 9. This table can be compared with Fig. 2 to correlate exact years of high, middle, and low rank.

Table 8. Gross income per man, grouped by gross income and net income groups, ten selected farms, Area 6a, 1931-1946, inclusive.

Gross income per man	Total years	Net income group		
		High (years)	Middle (years)	Low (years)
$9,000 and more	3	3	-	-
$8,000 to 8,999	5	4	1	-
$7,000 to 7,999	2	2	-	-
$6,000 to 6,999	7	5	2	-
$5,000 to 5,999	8	4	1	3
$4,000 to 4,999	14	5	5	4
$3,000 to 3,999	13	7	3	3
$2,000 to 2,999	25	2	11	12
$1,000 to 1,999	19	-	8	11
Less than $1,000	7	-	3	4
Totals	103	32	34	37

Table 9. Gross income per man of ten selected farms, Area 6a, 1931-1946, inclusive.

Farm	Total years	Gross income $4,000 and more				Gross income less than $4,000			
		Years	Net income group (Years)			Years	Net income group (Years)		
			High	Middle	Low		High	Middle	Low
14-2	8	6	5	1	-	2	1	-	1
18-5	9	6	6	-	-	3	2	-	1
18-41	9	6	1	2	3	3	2	1	-
18-47	8	-	-	-	-	8	-	2	6
36-14	16	4	1	2	1	12	2	5	5
36-41	8	7	5	1	1	1	1	-	-
36-56	8	2	-	1	1	6	-	3	3
41-33	13	3	-	2	1	10	1	4	5
41-44	9	5	5	-	-	4	-	3	1
65-20	15	-	-	-	-	15	-	7	8
Totals	103	39	23	9	7	64	9	25	30

Effect of Expenses per $100 Gross Income

The financial efficiency or expense side of the farm business was the next factor to be considered. Again the same general method of studying these factors was used to explore the relation of "expenses per $100 gross income" to the net income rank of the selected farms.

The data from the farm account books of the 10 selected farms were arrayed from the lowest to highest "expenses per $100 gross income" by the three net income groups of high, middle, and low. The results showed that the high group ranged from $34.22 up to $73.60 expenses per $100 gross income with an average of $52.67. The middle group ranged from $40.67 up to $92.62 with an average of $66.24. The low group, except for one low year of one farm which was $37.91, ranged from $50.96 to $128.25 expenses per $100 gross income.

The selected farms were classified on the basis of 10 dollar brackets of expenses per $100 gross by net income groups. The results of this study are shown in Table 10.

It was quite striking that the high income group never exceeded $80.00 expenses per $100 gross income while the low group exceeded this amount of expenses 73 percent of the time.

Past analysis of farm management records in Kansas have shown that about two-thirds of every dollar of gross income taken in goes back out as farm expenses. Then by arbitrarily selecting $65 as the breaking point, the ten selected farms were arrayed in the three income groups. Table 11 shows the results of this array. Comparing Table 11 with Fig. 2 showed that generally the farms that were consistently high income farms were also consistently low in percentage of expenses.

Table 10. Expenses per $100 gross income, grouped by expenses and by net income rank, ten selected farms, Area 6a, 1931-1946, inclusive.

Expenses per $100 gross income	Total years	Net income groups: High (years)	Middle (years)	Low (years)
Less than $40.00	5	4	-	1
$40.00 to 49.99	11	8	3	-
$50.00 to 59.99	23	12	8	3
$60.00 to 69.99	20	5	9	6
$70.00 to 79.99	14	3	8	3
$80.00 to 89.99	15	-	4	11
$90.00 to 99.99	10	-	2	8
$100.00 to 109.99	1	2	-	1
$110.00 to 119.99	1	-	-	1
$120.00 and over	3	-	-	3
Totals	103	32	34	37

Table 11. Expenses per $100 gross income and the effect on rank of ten selected farms, Area 6a, 1931-1946, inclusive.

Farm	Total Years	Less than $65				$65 or more			
		Years	Net income group			Years	Net income group		
			High	Middle (Years)	Low		High	Middle (Years)	Low
14-2	8	7	6	1	-	1	-	-	1
18-5	9	8	8	-	-	1	-	-	1
18-41	9	1	1	-	-	8	2	3	3
18-47	8	4	-	1	3	4	-	1	3
36-14	16	5	2	3	-	11	1	4	6
36-41	8	5	5	-	-	3	1	1	1
36-56	8	4	-	3	1	4	-	1	3
41-33	13	1	-	1	-	12	1	5	6
41-44	9	8	5	3	-	1	-	-	1
65-20	15	8	-	5	3	7	-	2	5
Totals	103	51	27	17	7	52	5	17	30

CASE STUDIES OF INDIVIDUAL FARMS

This section of the research study explored the factors which caused farms to change their individual ranking from one income group to another group. The causal factors were studied to determine if they are controllable by the farm manager. This involved case studies of each of the ten selected farm management association farms and their records from Area 6a for the period 1931 to 1946, inclusive.

The first step was to determine if the changes of rank occurred more often during certain years. The summary is given in Table 16. The change of rank was considered only when two years or more of continuous farm records were available. In a few cases a period of years showswithout records, and a change of rank has taken place sometime during this period. Those changes of rank have been omitted from the study because the exact year of change could not be determined and the record of the year previous to the change was not available to compare with the year of rank change.

Table 12 gave a total of 103 farm record years in which 36 definite rank changes were studied. The change of rank occurred only about 35 percent of the time when all farms were averaged together. However, three farms; namely, 36-14, 41-33, and 65-20, had 21 of these rank changes or 58 percent of the total changes. When these three farms were removed from the totals, it left 15 changes of rank in 59 account book years, or only 25 percent of the time did rank changes take place. In other words, on the average these other seven farms changed rank only once in four years.

The last eight years of the period, 1939 to 1946, inclusive, where a consistently large number of the 10 farms appeared each year did not indicate that rank changes occurred more often in any particular year. This seemed to indicate that management might have much more influence on comparative net incomes than weather, prices, and other factors outside the farm fence line when individual farms are considered.

The preceding results indicated that possibly farm business factors controlled by farmers were responsible for shifting of farms from one income group to another. This prompted a case study of the 103 selected farm records from Area 6a. Twenty different farm business factors were studied. Then the changes in the factors were tabulated for the 36 account book years in which a shift of rank occurred. Fifteen of these 36 farms moved up into a higher income group, and 21 farms moved into lower income groups. The farm business factors were scored for each farm to show if the factor increased, made no change (less than five percent), or decreased. The farms that moved up into a higher income were classed into one group for scoring and each farm scored individually by separate years. The same procedure was used for each individual farm in the group of farms which shifted to lower income groups. The summary results of this scoring are shown in Table 13.

Table 12. Summary of changes of rank from one income group (high, middle, low)[1] to another group by ten selected farms, Farm Management Association No. 1, Area 6a.

Farm No.	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	No. of changes of rank	No. times changes more than 1 step
14-2									L	H	H	H	H	H	H	M	2	1
18-5		H	H	H	H	H	L							H	H	H	1	1
18-41								M	H	H	H	M	M	L	L	L	3	-
18-47									M	L	L	L	L	M	L	L	3	-
36-14	H	L	M	M	L	M	M	L	L	L	L	H	M	M	M	H	8	2
36-41					H	H	M	H	H	H	H				L		2	-
36-56									M	M	L	L	M	M	L	L	3	-
41-33				M	M	M	H	M	L	L	L	L	M	L	M	L	7	-
41-44						M	M	M	L			H	H	H	H	H	1	-
65-20	M	M	L	L	L	L	M	M	M	L	M	L	L	L	M			-
Total changes in rank	X	1	2	0	1	1	4	3	3	3	2	3	3	3	4	3	36	4
Total farms	2	3	3	4	5	6	6	6	9	8	8	8	8	9	10	8	103	farm records

[1] H - High income group (upper 25 percent of farms arrayed on net incomes)
M - Middle income group (middle 50 percent of farms arrayed on net incomes)
L - Low income group (lower 25 percent of farms arrayed on net incomes)

Table 13. Summary of number of changes in farm business factors when farms moved from one income group (high, middle, low) to another group. 103 selected farm records, Area 6a, 1931-1946, inclusive, with 36 farms changing rank groups.

Farm business factors	15 farms moving into higher income groups: Factor changes from previous yr.			21 farms moving into lower income groups: Factor changes from previous yr.		
	Up	None[1]	Down	Up	None[1]	Down
Size of business						
Total investment managed	5	5	5	6	11	4
Gross farm income	13	1	1	8	3	10
Total acres operated	5	7	3	6	11	4
Crop acres operated	5	9	1	8	6	7
Number of men	8	4	3	11	6	4
Crop production						
Percent of farms in cultivation	4	9	2	3	8	10
Percent of cropland in legumes[2]	4	5	3	12	2	6
Crop yield - per acre						
Wheat	12	-	3	10	2	9
Corn[2]	3	-	3	4	2	5
Grain sorghums[2]	2	1	2	2	-	5
Alfalfa[2]	5	-	2	5	2	5
Livestock production						
Percent gross income from livestock	5	4	6	11	3	7
Total livestock receipts	11	-	4	9	2	10
Egg receipts per hen[2]	8	3	3	11	2	6
Dairy product receipts per cow[2]	11	-	3	9	6	6
Labor and equipment						
Gross income per man	11	1	3	8	2	11
Crop acres per man	6	6	3	7	1	13
Machinery investment per crop acre	4	4	7	10	4	7
Total machinery cost per crop acre	6	2	7	14	3	4
Total expenses per $100 gross income	-	2	13	18	1	2

[1]None - less than five percent change
[2]Some farms did not have this factor

SUMMARY OF CHANGES IN FARM BUSINESS FACTORS

In studying the changes in farm business factors as the farms moved from one income group to another, the following observations were made from Table 13.

Size of Business

Total Investment Managed. In the 15 farms that moved up in income rank, the changes in total investment managed were divided equally among increase, no change, and decrease. In the 21 farms that shifted down in income rank, more than one-half of the farms stayed stationary in investment managed with those farms which changed about equally divided between up and down. It appeared that moderate changes in size of investment managed alone did not influence the rank of the farm to as great extent as did other factors. However, the total size of investment managed will affect total volume and the resulting net income if coupled with good management.

Gross Farm Income. This factor seemed to be directly correlated to changes in net income rank. Thirteen of the 15 farms that moved up in rank increased in gross income over the previous year. One farm made no change and one farm moved down. In the farms that moved down in income rank, the effect of gross income was not as striking; however, 10 of the 21 farms went down in gross income, three farms made no change, and eight farms increased their gross income.

Total Acres Operated. In both groups the total acres tended to increase more than decrease; however, a large part of each group registered no change.

Crop Acres Operated. The farms that moved into higher income groups showed a stronger tendency for increased size of crop acres than for decreased crop acres, specifically five to one. However, nine farms of the 15 or 60 percent registered no change. In the farms that shifted to lower income groups, the change in crop acres was almost equally divided between increase, no change, and decrease in total crop acres.

Number of Men. Both income groups showed strong tendency to increase the total man power used. More than one-half of the farms in each group increased the number of men used.

Crop Production

Percent of Farm in Cultivation. There was no significant change in the percentage of farm land in grass and in crops acres in the group that moved to higher income group. The same general ratio of crop acres and grass was maintained with a slight increase in cultivated acres. In the group of farms that moved to a lower rank in net income, a decided decrease was shown in the percent of farm in cropland.

Percent of Cropland in Legumes. Very little change was shown by the farms that moved to a higher income group. However, this group did show a slight tendency to increase legume acreage. The group of farms that moved into a lower rank had a decided increase

percent of cropland in legumes. However, when a detailed study was made of each farm it was found that the increase in legumes was generally very short lived and most all farms dropped in legume acreage the following year. Only two of the 12 farms that showed legume increases continued to increase the acreage. Only four of the 12 farms had over 25 percent of the cropland in legumes and only two of these maintained this percentage the following year. The majority of the farms were continually below the recommended 25 percent of the cropland in legumes.

Wheat Yields. The individual farms that shifted to higher income groups showed a decided trend in increase of wheat yields. Twelve of the 15 farms showed an increase in wheat yields. Only one of the three farms that decreased in wheat yield failed to recover the decrease the following year. In the group of farms that moved to a lower income rank, 48 percent of the farms increased in yields, 43 percent decreased in yields, and the remaining nine percent maintained the same yields. The average yields of this lower rank group were much lower than the higher rank group.

Corn, Grain Sorghum, and Alfalfa Yields. The acreages of these crops were on the average much smaller than the wheat acreage. Also, these crops were not grown on all farms; therefore, changes in yields are not as significant as changes in wheat yields. However, the higher rank farms showed a definite tendency toward higher alfalfa yields on the farms growing alfalfa with five farms that increased in yield and two that decreased. On the lower rank farms, five farms increased in alfalfa yield, two farms made no change, and five farms decreased in yield.

Livestock Production

Percent of Gross Income from Livestock and Total Livestock Receipts. In the farms that moved into the higher income group, there was no decided shift in any direction in the percent of gross income derived from livestock. Five farms increased the percent of gross income from livestock, four farms maintained the same percent, and six farms decreased in percent from livestock. However, there was a decided shift toward more total dollars from livestock and livestock products. Eleven of the farms increased in total dollars from livestock, and only four farms decreased. This indicated that these farms tended to maintain balance in their farm operations. These farms increased their total gross income, had increased wheat yields, and increased total dollars received from livestock but still retained about the same percent of income from each, livestock and crops.

The group of farms that moved into lower income rank tended to increase the percent of income from livestock, but did not as a group increase the total receipts from livestock. This indicated that as the gross income decreased in this group, the livestock projects produced a larger proportion of the total income due mainly to less total gross income.

Egg Receipts per Hen and Dairy Product Receipts per Cow. In both income groups and on all farms except one, the poultry and dairy projects were minor or supplemental projects. One farm had a sizeable poultry project, but most years it did not contribute a great deal toward net income. In fact in many of the years, this

farm produced very little net income from the poultry project. In general, both income rank groups showed increases in receipts per hen and per cow. This was due largely to the increasing price level.

Labor and Equipment

Gross Income per Man. The farms that moved to a higher income group had a definite trend toward more gross income per year of man labor. Eleven of the 15 farms or over 73 percent showed an increase in gross income per man while only 20 percent showed a decrease. The farms moving into lower income groups showed a mixed result in gross income per man. However, the trend established was toward lower gross income per man. Eleven farms of the 21 or more than 52 percent showed a decrease in gross income per man. Two of the farms or nine percent showed no change, and eight of the farms or 39 percent increased the gross income per man. However, in studying the farms that increased in gross income per man, none of the eight farms increased as much as $1,000 per man. The farms that decreased in gross income per man showed that eight of the eleven farms dropped more than $1,000 gross income per man, with four of these decreasing more than $2,000 per man.

Crop Acres per Man. The changes in this farm business factor followed rather closely the trend shown by the gross income per man. The group of farms that moved up in income rank had a less

definite trend toward more crop acres per man, and the group of farms that moved to a lower rank showed a stronger trend toward less crop acres per man.

Machinery Investment per Crop Acres. In this factor, the two income groups showed almost reverse trends from one another. The group of farms that moved to higher income showed that 46 percent of the farms decreased the machinery investment per crop acres, 27 percent of the farms remained the same, and 27 percent increased the investment. The farms that moved into the lower income rank had 48 percent of the farms which increased the machinery investment per crop acre, 19 percent the farms with no change, and 33 percent of the farms with a decrease in investment.

Total Machinery Cost per Crop Acre. In this factor the trends were very similar to the machinery investment per crop acre. The farms that moved into high income ranks had 46 percent of the farms with lower total machinery costs per crop acre, 14 percent of the farms with no change, and 40 percent of the farms with an increased cost per crop acre. The farms that moved into lower income ranks had 67 percent of the farms with higher total machinery costs per crop acre, 14 percent of the farms with no change, and 19 percent of the farms with lower costs per crop acre.

Total Expenses per 100 Dollars of Gross Income. This farm business factor showed the most definite trend of any of the 20 factors studied. The farms that moved into higher income group showed a decided trend toward lower expenses per $100 of gross income. Eighty-seven percent of these farms had lower expenses per

$100 of gross income. The remaining 13 percent of the farms had no change in this factor. None of this group of farms had an increase in expenses per $100 of gross income. In the group of farms that moved into a lower income rank, the trend was the opposite of the high income rank group. In the low group, 85 percent of the farms had an increase in total expenses per $100 of gross income. Five percent made no change, and 10 percent of the farms decreased the expenses per $100 of gross income.

NET INCOME DIFFERENCES BETWEEN HIGH AND LOW INCOME GROUPS

The case studies of the 10 selected farms in Area 6a indicated some differences in trends and tendencies between high and low income groups. Because of these tendencies, the high and low income farms in Farm Management Association No. 1 in Area 6a were studied as groups as summarized by Hodges et al. (5). The study was made to see if a larger number of farms showed the same tendencies as did the case study farms. Also, the differences in accumulated net income over a five year period were studied.

If farms are arrayed by net income groups, high 25 percent, low 25 percent, and middle 50 percent, the difference between the net incomes of the high and low groups is noticeable. However, when this difference in net income is accrued for a five year period, the results generally are almost unbelievable. Figure 4 shows in graphic form the difference in the total net income earned by the high and low income groups in Farm Management Association No. 1 during the period 1942 to 1946, inclusive.

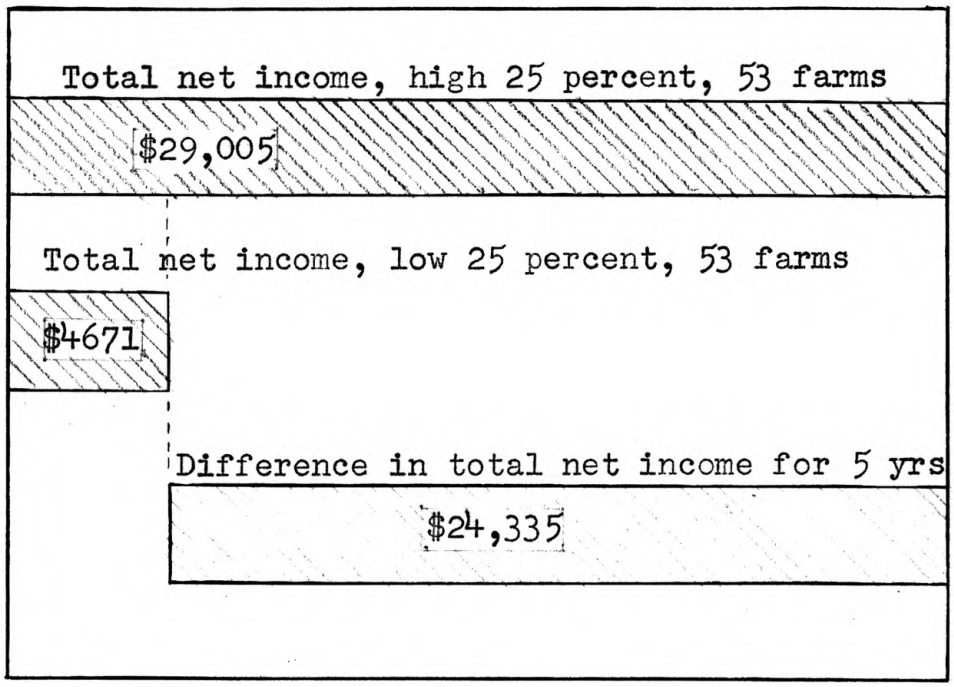

Fig. 4. High vs. low income farms, Area 6a, 1942-1946, inclusive.

The difference in net income earned by the high income group over the low income group for the five year period was $24,335. This difference would buy an average 320 acre farm in Area 6a. This striking and almost startling difference was probably due to better management on the high income farms. Table 14 makes a comparison of some of the factors which contributed to the high and low net incomes earned by the two groups of farms.

Table 14. Comparison of high and low income farms for five year period, 1942 to 1946, inclusive, Area 6a.

Analysis factor	Five year average: High 25% 53 farms	Five year average: Low 25% 53 farms	High farm in % of low farms
Total investment managed	$40,222	$23,529	171
Total acres	473	362	128
Crop acres	326	228	143
Number of men	1.8	1.6	112
Total livestock receipts	$ 6,264	$ 3,214	195
Wheat production acres	148	106	140
Yield per acre	19	14	136
Machinery cost per crop acre	$ 5.57	$ 6.63	84
Total gross income	$11,487	$ 5,656	203
Total farm expenses	$ 5,686	$ 4,722	120
Average net income	$ 5,801	$ 934	621
Total net income for five year period	$29,005	$ 4,670	621

In comparing differences between the high and low income groups as shown by Table 14, it was observed that the high income farms were larger in size but not in proportion to the difference in net income. The total investment managed which includes all real estate and working capital operated (both rented and owned property), was 71 percent larger in the high income group. In comparing the total acres, crop acres, and number of men, the difference between the high and low group was not so great. This was particularly

true of the number of men used to operate the farms. The high income group used only 12 percent more man power to operate 71 percent more investment, 28 percent more total acres, and 43 percent more crop acres.

In analyzing the income produced by livestock, some striking results of good management were observed. The high income farms produced 95 percent more livestock receipts than the low income group. When the wheat acreage was removed as cash grain acreage, it left 178 crop acres for feed production in the high income group and 122 feed crop acres for the low group. When the crop acres plus 10 acres for farmstead roads and waste were subtracted from each group, it left 136 acres of grass for the high income group and 124 acres of grass for the low group. Summarizing these data gave the following results:

Income group	No. men	Grass	Feed crops	Feed purchased	Livestock receipts
High	1.8	136 A.	178 A.	$1387	$6264
Low	1.6	124 A.	122 A.	1178	3214
Difference	.2	12 A.	56 A.	$ 209	$3050

This summary shows that the high income group produced $3050 more livestock income by using .2 more men, 12 acres more of grass, 56 additional crop acres, and purchasing $209 more feed. The differences in these results were very likely due to quality of management applied in the two groups of farms.

Another place where management was quite evident was in machinery costs per crop acre and total expenses. The high net income group produced over twice as much net income with one 20 percent increase in total farm expenses. The end product, net income, as stated before, when accrued over a five year period was almost unbelievable. The high income farms produced more than six times the net income produced by the low income group.

COMPARISONS WITH OTHER STUDIES

In this study, it was observed that the farms had considerable tendency to hold net income rank for more than one year. In Area 6a, there were 608 farm records with successive record years occurring. Sixty-three precent of these farms held the same net income rank for two years or more in succession. Thirty-eight percent held their rank for three years or more in succession, and 22.7 percent held their rank four years or more.

The data from the 10 selected farms in Area 6a indicated even higher consistency than all association farms. There were 102 records with successive second years. Of these 102 records, 78.4 percent held the same income rank for two years or more in succession. Approximately 59 percent held the same rank for three successive years or more, and 35.3 percent held their rank for four years or more.

From a compilation of studies on variation in labor income and change in labor income rank on identical farms over periods of four to seven years, Bennett (1, p. 95, 97) made these observations.

There was practically no tendency for 23 farms in the Gallatin Valley of Montana in 1919-1923 to maintain their labor income rank from year to year. Bennett stated, "The compiler of these data explained the absence of consistency on the ground that had the years been more normal in natural and economic conditions, consistency would have appeared."

In Bennett's study of 25 Ohio farms for the years 1912-1918, the normal years greatly exceeded the abnormal years. The consistency in maintaining rank had a clearer defined tendency than did the Montana farms. Bennett stated:

> Those who expect extreme inconsistency can discover inconsistency in a qualified form; those who expect notable consistency can discover consistency in qualified form. Its significance for our purpose is to indicate that, though unquestionably a tendency does exist for farms to maintain their relative rank from year to year, the tendency is assuredly not well marked or in any way striking.

Bennett observed similar results from farm studies in Wisconsin and Indiana. Bennett's summary on the maintenance of labor income rank by farms was as follows:

> Now it is possible that, had we data for a large group of farms in a long settled area covering a distinctly pre-war period like 1903-12, a great deal more of consistent maintenance of rank might be observed than, let us say, in data covering a Great Plains area for the years 1915-21. It is further possible that, given a very long (say 15 years) period, an era of stable price level, and a long settled area, we should find a notable consistency. Perhaps the degree of consistency depends upon size of the group, character of the area, and general economic conditions.

The scatter diagram, Fig. 3, which charted the relationship of investment managed to net farm income, indicated that there was a fairly definite trend toward a correlation between these two factors. The higher net income group fairly consistently had a higher net income per $1000 of investment managed than did the lower net income group. This indicated that better management had been applied to the higher rank group.

In a study of 118 Wisconsin dairy farms, Black et al. (2, p. 439, 493) reports that there is tendency for correlation between investment managed and resulting net income. However, he points out that only 27 percent of variation in net income observed in the scatter diagram can be associated with size of business. Therefore, 73 percent of the variations are explained by something else.

Black's conclusions are similar to the results observed in this study. The farms that are above the correlation curve had more efficient operators with larger managerial capacity than the farm and operation below the line.

The tendencies shown by the scatter of high, middle, and lower income rank farms on Fig. 3 seemed to indicate that increase in size of farm alone without a corresponding increase in managerial capacity would not generally result in higher net income.

In discussing the effect of size of farms on the net farm income, Forster (4, p. 270) states his conclusions as follows:

> In this discussion the fact has been emphasized that the size of the farm is closely related to the capacity of the farmer. It can not be said that an increase in the size of the farm will increase the net farm income.

> This idea may appear to be contrary to fact, since net income and size are usually correlated, i.e., as the size of the farm increases, the net income also increases. From this relation, the incorrect deduction has been made that to increase the net income of a given farm, the farmer should increase the size of his farm. But such a deduction can not be made. On the contrary, such advice might very well result in a decrease in the net farm income.
>
> Why are there these two concepts, namely, that net farm income increases as the size of the farm increases, and that increasing the size of a given farm may result in a decrease in net income? The question is an important one that is not, as a rule, clearly understood. In any given case it may be assumed that the farmer has tried to the best of his ability and knowledge to associate himself with that size of business which will yield the maximum net returns. Assuming this to be correct, the farmer has, in any case, assembled that amount of land, labor and equipment which for his capacity and conditions will yield the maximum net income. If, then, this balance between capacity and size is disturbed by either increasing or decreasing the size of the farm, net income will most surely decline. It should not be concluded, however, that a given farmer can not increase his net income by adjusting the size of his farm. It seldom, if ever, happens that farmers have succeeded in obtaining a perfect balance between their capacity and the size of the farm they are operating. When this is the case, changes in size may result in an increase in the net income.....

The efficient use of labor seemed to have had a strong influence on net income rank of the farms included in this study. When gross income (production converted into dollars) per man of the two income groups, high and low, were compared, striking differences were observed. The high income group had an average gross income per man above $4000 more than 72 percent of the time. The low income group was below $4000 gross income per man over 82 percent of the time.

The years that these farms moved up in net income rank, there was a strong tendency for the gross income per man to increase. A similar tendency in crop acres per man was shown by these farms.

According to Hopkins (6, p. 196) the number of acres of crops handled per man (12 months of labor) is affected by two influences. First, it is directly related to efficiency, and second it is inversely related to the intensity with which the cropland is worked. Hopkins also found that on the farms studied (in Iowa) there was more variation in efficiency than in intensity.

In the farm management analyses of Kansas farm records made by Hodges et al. (5), some striking differences in net farm incomes between the high and low income rank groups appeared. The total net income earned by the high income farms in Area 6a for five year period, 1942-1946, exceeded the total net income earned by the low income group by $24,335. In analyzing the difference in farm organization and operation, it was evident that no one factor was responsible for this great difference. The size of investment managed, total livestock receipts, efficiency in use of labor and operating costs seemed to affect the total amount of net income more than did some of the other farm business factors.

These results are similar to those observed by Dixon and Hawthorne (3) over 25 years ago. They found that if farms were measured against the four farm business factors, size of business, crop yields, returns from livestock, and efficiency in use of labor, certain results could be expected in comparison to average net farm income for the area. Dixon and Hawthorne found that farms which

exceed the area average in only one factor, regardless of the kind of factor, seldom exceed 50 percent of the average labor income of all farms; and farms with two factors above average had a labor income equal to the area average. The farms with three factors above average had a labor income of 75 percent above the average, while the farms with all four factors above average received a labor income of 175 percent above the average.

SUMMARY AND CONCLUSIONS

This study indicated that the 170 individual farms from Association No. 1 in Area 6a had a strong tendency to follow a pattern in net income rank during the period 1931 to 1946, inclusive. These 170 farms had a total of 681 record years of which 608 occurred as successive years, making possible a large number of direct, year to year comparisons. These 608 records held the net income rank (high or low 25 percent or middle 50 percent of farms arrayed on net income) in the following pattern. Sixty-three percent of the farms held their same net income rank for periods of two successive years or more, 38 percent held their same rank for periods of three successive years or more, and 22.7 percent held the same rank for periods of four successive years or more.

The 10 selected farms upon which case studies were made indicated even a higher tendency toward holding the same income rank for a period of years. The data from these 10 selected farms showed that 78.4 percent held the same income rank for periods of two successive years or more, 58.7 percent held the same rank for periods

of three successive years or more, and 35.3 percent of the farms held the same rank for periods of four successive years or more.

The above results indicated that these farms tended to hold a certain net income rank for a period of years before shifting to another net income group of a different rank.

This study indicated that the total investment managed, wheat yields, gross income per man (total production per man converted into dollars), and farm expenses per $100 of gross income had considerable influence on the total net farm incomes and the net income rank of the farms.

The data from the 10 selected farms used for case studies showed that the high income rank farms (high 25 percent arrayed on net income) were above $35,000 in total investment managed 65.2 percent of the time, above $25,000 investment managed 93.7 percent of the time, and never below $15,000. The low income rank group (low 25 percent when arrayed on net income) showed almost the reverse in results. The data showed that the low income rank farms were above $35,000 in total investment managed only 5.4 percent of the time. These low farms were below $25,000 investment managed 70.3 percent of the time, and below $15,000 investment managed 35.2 percent of the time.

When the farms were divided into groups, above and below $30,000 investment managed, certain trends were observed. In the group above $30,000 investment managed, 66.7 percent were high income rank farms, 15.4 percent were low rank farms, and the balance were in the middle group. In the group of farms with less than $30,000

investment managed, only 9.4 percent were in the high income group, 48.4 percent in the low income group, and the balance in the middle group.

The construction of a scatter diagram indicated that these farms needed about $12,000 of investment managed to produce $1,000 of net income. The high income rank group tended to require a smaller investment managed per $1,000 of net income than the average, and the low rank farms required a larger than average investment managed per $1,000 of net income. Also, the later years of the period studied, 1931 to 1946, inclusive, indicated that a smaller investment managed was needed to produce $1,000 net income. However, it was observed that after the farm had been operating for several years and had established its income rank pattern, a moderate or small change in investment managed did not cause a great deal of change in income rank.

As Area 6a produces considerable wheat, the yield per acre of this crop seemed to influence the size of net income and the resulting income rank. The high income group had wheat yields above 15 bushels per acre approximately 75 percent of the time. The low income group's wheat yields were below 15 bushels per acre about 70 percent of the time.

The data on gross income per man showed about the same results as the wheat yields. The high income group averaged above $4,000 of gross income per man 72 percent of the time, and the low income group was below $4,000 82 percent of the time.

The factor of expenses per $100 of gross income had the most definite trend of any of the factors. The high net income rank group never exceeded $80.00 expenses per $100 gross income while the low income group exceeded $80.00 expenses per $100 of gross income 73 percent of the time.

In summarizing that phase of this study in which net income rank changes occurred on the 10 selected farms, the factors discussed below seem to have the most influence in causing change of rank. The material given below applies only to the year of change in rank and not to the other years when a farm held the same rank for several successive years. The first part of the study proper and the first part of this summary covered all the years when a farm held a rank of high, middle, or low for several successive years.

The gross farm income, wheat yields, maintenance of balance in farm organization as shown by percent of gross income from livestock and total livestock receipts, gross income per man, machinery investment and machinery costs per crop acre, and total expenses per $100 of gross income are the farm business factors which appeared to exert the greatest influence in changing income rank of the farm studied. Each of these factors is closely related to the rank of the farm and each contributes to the high or low income in accordance with its movement up or down. No one factor in this group seemed to out-weight all others. Gross income, wheat yields, gross income per man, and expenses per $100 of gross income appeared to have the most definite trends in the farms moving into high income rank. In the lower income group, the expense factors--machinery

cost per crop acre and expenses per $100 of gross income--have the most definite trends. Gross income, gross income per man, crop acres per man, and machinery investment per crop acre showed some influence but not as striking a trend as the two expense factors.

Some investigators may argue that total expenses per $100 of gross income is a result and not a cause. They will contend that as the gross income increases, the expenses per $100 of gross income will decrease. This generally is true on the same farm where a certain amount of fixed expenses occurs each year and equally good management is applied each year. However, it has been observed that when comparing two different farms with different management, an equal increase in production will not be reflected in an equal increase in net income. The difference will be due largely to the amount and quality of management applied to each farm. Many farms will have large gross incomes but will have also extremely large expenses, thus resulting in small net income. Other farms will have a similar size and organization and produce an equally large gross income; but due to efficient management, the increase in operating expenses is not in the same proportion as the increase in gross income. The observations of the data in this study indicated that the expenses per $100 of gross income were more closely related to good management than to the total volume of gross income, particularly when comparing similar farms in the same area.

Practically all of the important factors listed above are controlled by the farm operator. This study indicated that total acres and crop acres which in many cases are fixed did not have any great influence in the years the farm changed net income rank. Another

observation made was that rank changes did not occur in any greater number during any certain year. This indicated that prices and weather, while important, did not influence the farm rank change as much as some of the other controllable factors and the management of them by the farm operator.

The final phase of this study, the comparison of total net income earned during the five year period, 1942-1946, by the high and low net income groups including all farms in Farm Management Association No. 1, Area 6a, brought out some striking results. The difference between the high net income group and low income group in total net income earned in this five year period was $24,335. This difference would buy an average 320 acre farm in Area 6a. In studying the farm business factors as shown in the farm business analyses for the five years, it was evident that the same factors of investment managed, crop production, livestock production, and costs which caused differences in the selected farms, and caused shifts in net income rank, also had a bearing on this large difference in net income.

The results of this study, including all of its various phases, seemed to indicate that farms do have a tendency toward a consistent net income rank pattern. The data also indicated that certain farm business factors had more influence than other factors in establishing this tendency toward an income rank pattern. However, there also seemed to be an indication that it was a combination of several physical factors, plus or minus the capacity and efficiency

of the farm operator that caused the trend toward a more or less consistent net income rank pattern rather than just one or two isolated factors.

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