SOME FACTORS AFFECTING THE EARNINGS OF FARMERS

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INTRODUCTION

All studies of farm earnings show wide variations among individual farmers in a given community within a particular year. Even though weather, soil, market opportunities and other factors affecting earnings are fairly constant from farm to farm some farmers have earnings four or five times as high as those of others in the same neighborhood.

It is the purpose of this study (1) to show some of the differences in earnings that exist among farmers, (2) to show the trends in expenses and receipts from year to year and (3) to analyze the effect of some of the major management factors on earnings.

The data used in this study were secured from the farm records of the members of the Southwestern Minnesota Farm Management Service. This service is a cooperative farm management service operated by the Institute of Agriculture of the University of Minnesota, the Southwestern Minnesota Farm Management Association and the United States Department of Agriculture. It began operation in 1940. This report includes the records secured over the ten-year period 1943 to 1952. A total of 1405 farm-year records were obtained from farmers living in 13 counties and were distributed as follows:

Nobles	371	Cottonwood	70
Redwood	210	Watonwan	66
Jackson	181	Lincoln	13
Faribault	162	Pipestone	10
Murray	147	Brown	6
Martin	87	Lyon	5
Rock	77	Total	1405

The farms included in this study are larger and maintain more livestock than the average farm in southwestern Minnesota. The operators in general are above average in managerial ability. Nevertheless the farms are reasonably representative of the types of farming followed in this section of the state and serve to illustrate the wide range in accomplishments among farmers in general.

FARMERS' EARNINGS, 1943-52

The average size of farm, capital investment and income per farm are shown in table 1. The income from sale of hogs and beef cattle make up 59 per cent of the total sales for the ten-year period. The other items in the order of their importance are crops, 18 per cent; dairy cattle and dairy products, 8 per cent; poultry and eggs, 8 per cent; and sheep and wool, 4 per cent. The remaining 3 per cent of the sales are made up of the sale and trade-in value of machinery and equipment, income from work off the farm and other miscellaneous items. In addition to the average total sales of $20,048 for the ten-year period there was an increase in inventory of $2,056. The inventory increase is to a considerable extent due to rising price levels throughout most of the period resulting in a higher value being placed on feed and livestock on hand. A substantial part of the increase is also the result of purchases of new machinery, equipment and buildings.

Table 1. Capital Investment and Income per Farm, 1943-1952

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	Average 1943-52
Number of farms	164	163	153	142	137	136	131	139	122	118	140
Total acres per farm	280	268	268	260	243	250	249	257	256	260	259
Capital investment per farm	$37602	$36000	$35876	$36811	$39671	$44143	$46452	$50868	$54868	$58082	$44037
Farm Receipts:											
Hogs	$5630	$4671	$4484	$6166	$8662	$8207	$6358	$6801	$7930	$7322	$6623
Beef Cattle	3590	2478	3777	3711	4248	4508	4988	6438	9411	8115	5126
Dairy Products	916	865	906	1083	1031	1046	874	885	1015	1124	975
Dairy Cattle	419	392	473	515	688	616	572	904	781	765	612
Sheep and Wool	968	768	926	834	766	421	308	810	753	1057	761
Eggs	905	911	977	993	1043	1108	1052	790	1055	875	971
Poultry	622	829	659	620	444	418	485	590	838	184	569
Small grain (including flax)	1382	669	949	1446	2436	3818	1626	1694	1240	1217	1648
Corn	724	578	587	814	1183	1498	1606	1542	997	1245	1077
Other crops (including soybeans)	510	600	673	878	911	1160	772	677	901	981	806
Mach., equipment and power sold	182	232	278	387	411	380	482	460	650	390	385
Income from work off the farm	255	310	295	343	344	306	277	290	398	341	316
Agricultural adjustment payment	264	74	51	121	61	65	29	57	72	70	86
Miscellaneous	67	70	48	67	83	124	66	112	130	154	92
Total farm sales	16434	13447	15083	17978	22311	23675	19495	22050	26171	23840	20048
Increase in farm capital	2	-	314	3223	5634	1542	1260	5214	2561	1216	2056
Family living from the farm	588	572	635	679	667	702	649	669	708	748	662
Total farm receipts	17024	14019	16032	21880	28612	25919	21404	27933	29440	25804	22766

The total farm receipts fluctuated a great deal. During 1944 they were only 62% of the ten-year average as compared to 125% in 1951. Much of this wide fluctuation from year to year is due to changes in the prices received by farmers. In addition weather changes caused some variation in total farm receipts through its effect on crop yields.

The farm sales are shown graphically in figure 1. The cash sales of dairy cattle and dairy products and poultry and eggs remained quite constant over the ten years in spite of the generally rising price levels. This indicates a steady decline in the quantity of these products that have been produced. The income from the sale of crops has fluctuated with weather conditions and price changes. The income from crops was particularly large during 1947 and 1948 when the support prices for flax and soybeans were at their high point. The receipts from beef cattle showed a marked increase and exceeded the receipts from the sale of hogs during 1951 and 1952.

The proportion of farm sales from various sources is shown in figure 2. This chart emphasizes the increase in receipts from beef cattle and the decrease in poultry and egg sales.

Farm purchases, likewise, more than doubled from the low in 1944 to the high in 1951. (Table 2) However, there was less fluctuation from year to year than in the case of receipts. The expenses climbed rather steadily until 1952 when there was some decrease from the high peak of 1951. The purchases of feed and feeder cattle are by far the largest items of expense amounting to 17 and 13 per cent respectively, of the total farm purchase.

Labor earnings, the measure of financial success used, varied from $2,810 in 1944 to $11,391 in 1947. This is the return to the operator for his labor and management. It is obtained by adding the cash sales, the value of family living from the farm and any increase in farm capital and deducting from this the sum of cash farm expenses, any decrease in farm capital, and a charge for the use of capital and unpaid family labor.

The expenses which are deducted from total farm sales to secure net cash income are shown in figure 3. The expenses include the purchase of capital items such as new buildings, power, machinery and equipment as well as current operating expenses.

The proportion of the total farm sales used to pay various farm expenses and the amount remaining for the operator to pay for living expenses and for savings are shown in figure 4. During 1950 and 1951 more than 80 per cent of the total farm sales were needed to pay farm expenses. Expenses increased rather steadily until 1952 when there was a substantial reduction in payments for feeder cattle.

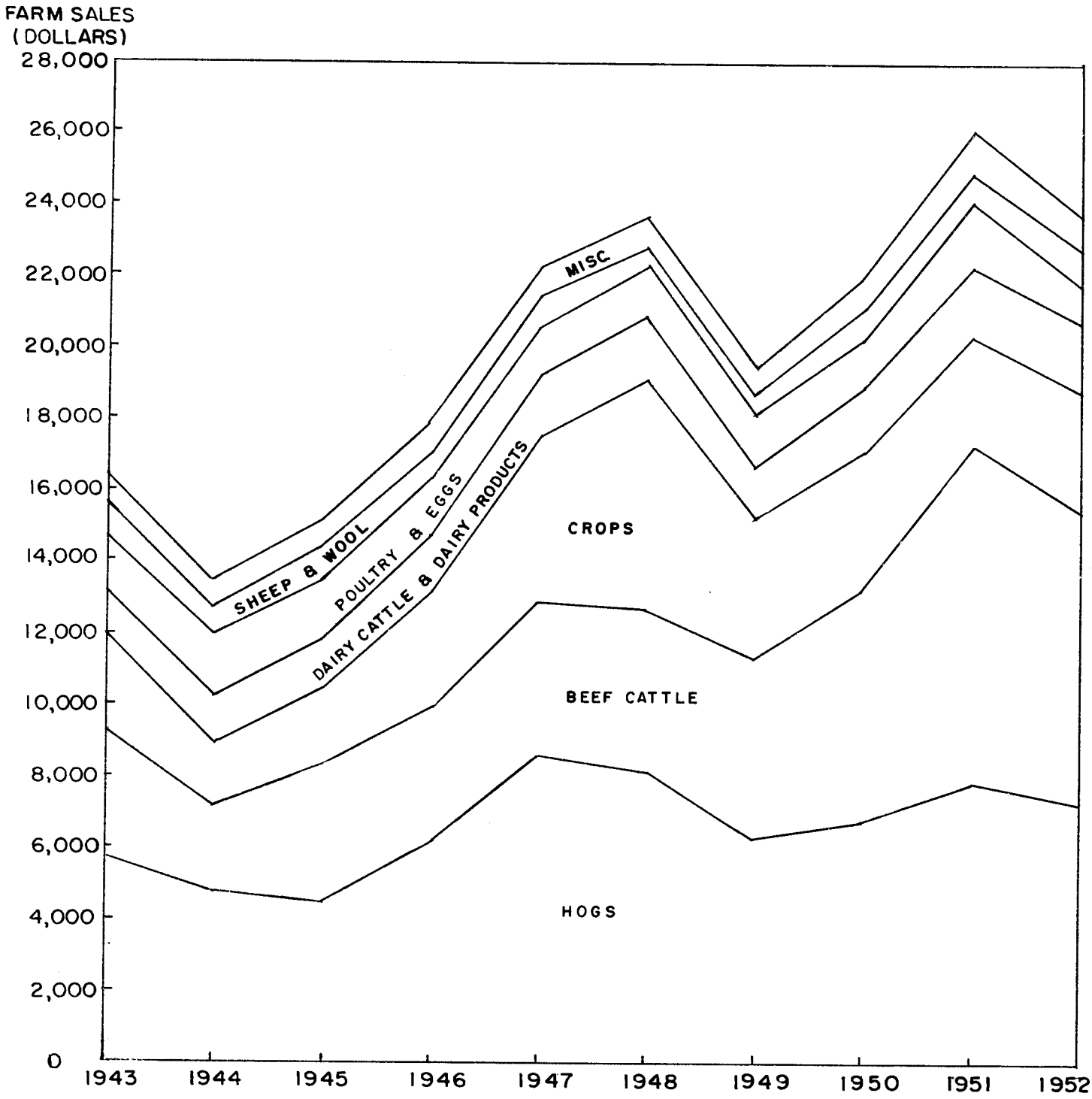

Fig. 1 Farm Sales, 1943-1952

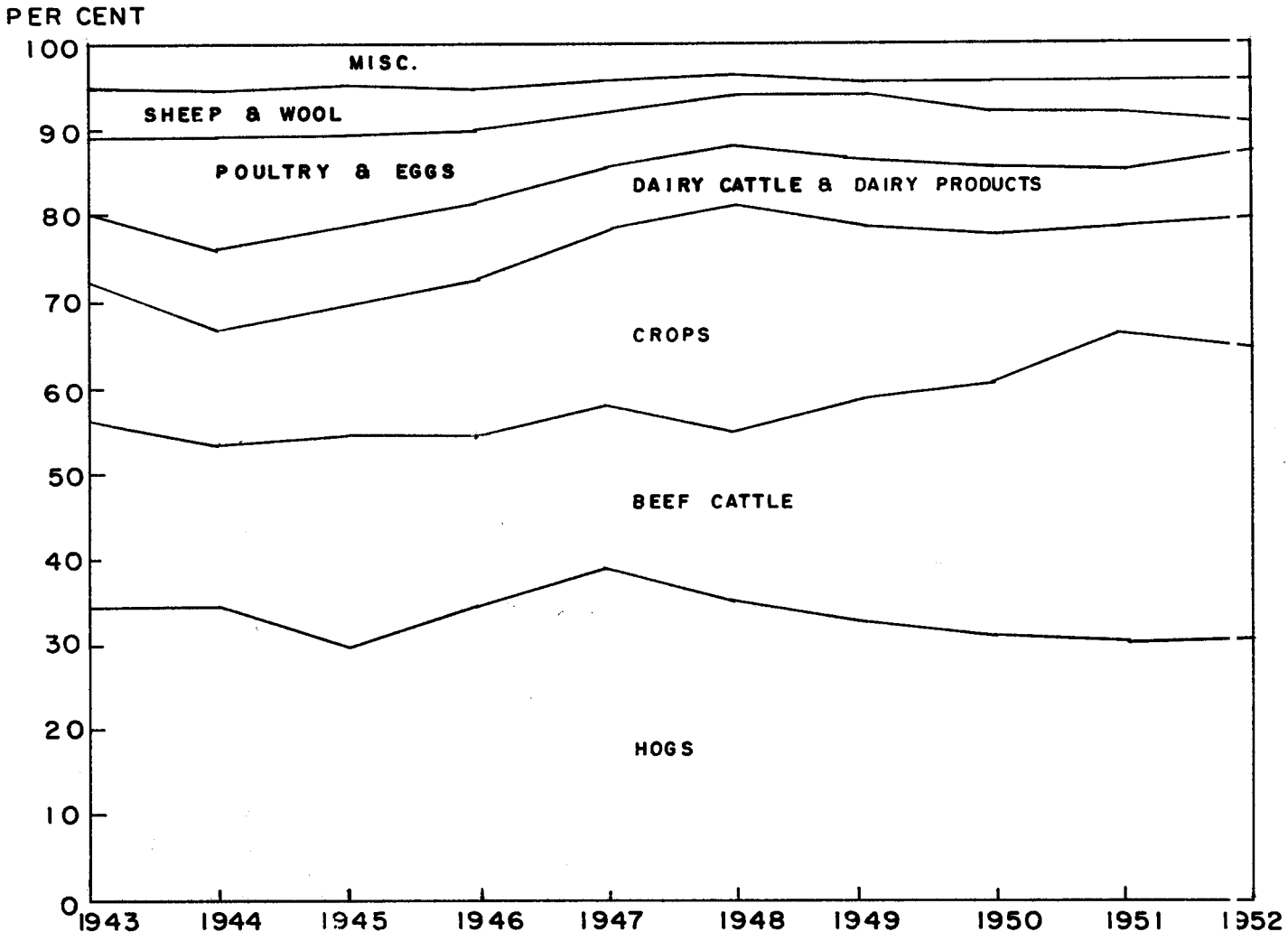

Fig. 2 Proportion of Farm Sales from Various Sources, 1943-1952

Table 2. Average Expenses and Labor Earnings per Farm, 1943-1952

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	Average 1943-52
Farm Purchases:											
Dairy cattle	$135	$112	$118	$237	$135	$170	$214	$321	$252	$264	$196
Beef cattle	1187	1109	1390	1754	1916	2341	2733	4120	5581	4461	2659
Hogs	408	315	377	382	646	389	441	478	395	361	419
Sheep	694	321	600	464	301	97	365	543	881	569	483
Poultry	165	200	195	164	156	133	179	164	246	122	172
Horses	33	43	15	14	14	11	2	6	5	4	15
Miscellaneous livestock expenses	199	173	194	198	270	273	304	328	391	369	270
Miscellaneous crop expenses	507	582	575	750	1055	1112	851	966	995	1079	847
Feed	3080	2164	2416	2669	4014	3926	2929	3807	4973	4318	3430
Custom work hired	215	261	292	300	394	421	375	382	406	439	349
Mech. power mach. (farm share, new)	180	337	200	449	847	1173	1116	1164	1063	610	714
Mech. power mach. (farm share, upkeep)	147	172	235	308	363	358	290	311	309	321	281
Mech. power mach. (gas, oil, etc.)	470	527	582	655	753	919	943	997	1027	1117	799
Crop & general machinery (new)	221	332	414	601	897	1328	1319	1248	1121	871	835
Crop & general machinery (upkeep)	157	174	195	258	290	368	310	292	306	323	267
Livestock equipment (new)	138	91	78	97	122	108	88	124	157	124	113
Livestock equipment (upkeep)	87	78	94	92	114	131	126	125	142	121	111
Buildings and fencing (new)	236	297	370	409	754	941	908	741	1082	1023	676
Buildings and fencing (upkeep)	168	192	219	268	311	413	384	331	286	331	290
Hired labor	739	651	636	723	796	944	872	843	910	835	795
Real estate taxes	279	252	259	298	311	362	398	426	439	485	351
Personal property taxes	56	59	52	69	67	97	101	108	126	142	88
Insurance	40	41	41	49	61	71	56	78	77	87	60
General farm expense	72	80	84	108	112	140	146	146	165	162	122
Total farm purchases	9613	8563	9631	11316	14699	16226	15450	18049	21335	18538	14342
Decrease in farm capital	-	412	-	-	-	-	-	-	-	-	-
Interest on farm capital	1880	1800	1794	1841	1984	2207	2323	2543	2743	2904	2202
Unpaid family labor	335	316	322	363	422	421	356	360	367	335	360
Board furnished hired labor	147	118	83	105	116	127	102	99	79	91	107
Total farm expenses	11975	11209	11830	13625	17221	18981	18231	21051	24524	21868	17011
Labor earnings	5049	2810	4202	8255	11391	6938	3173	6882	4916	3936	5755

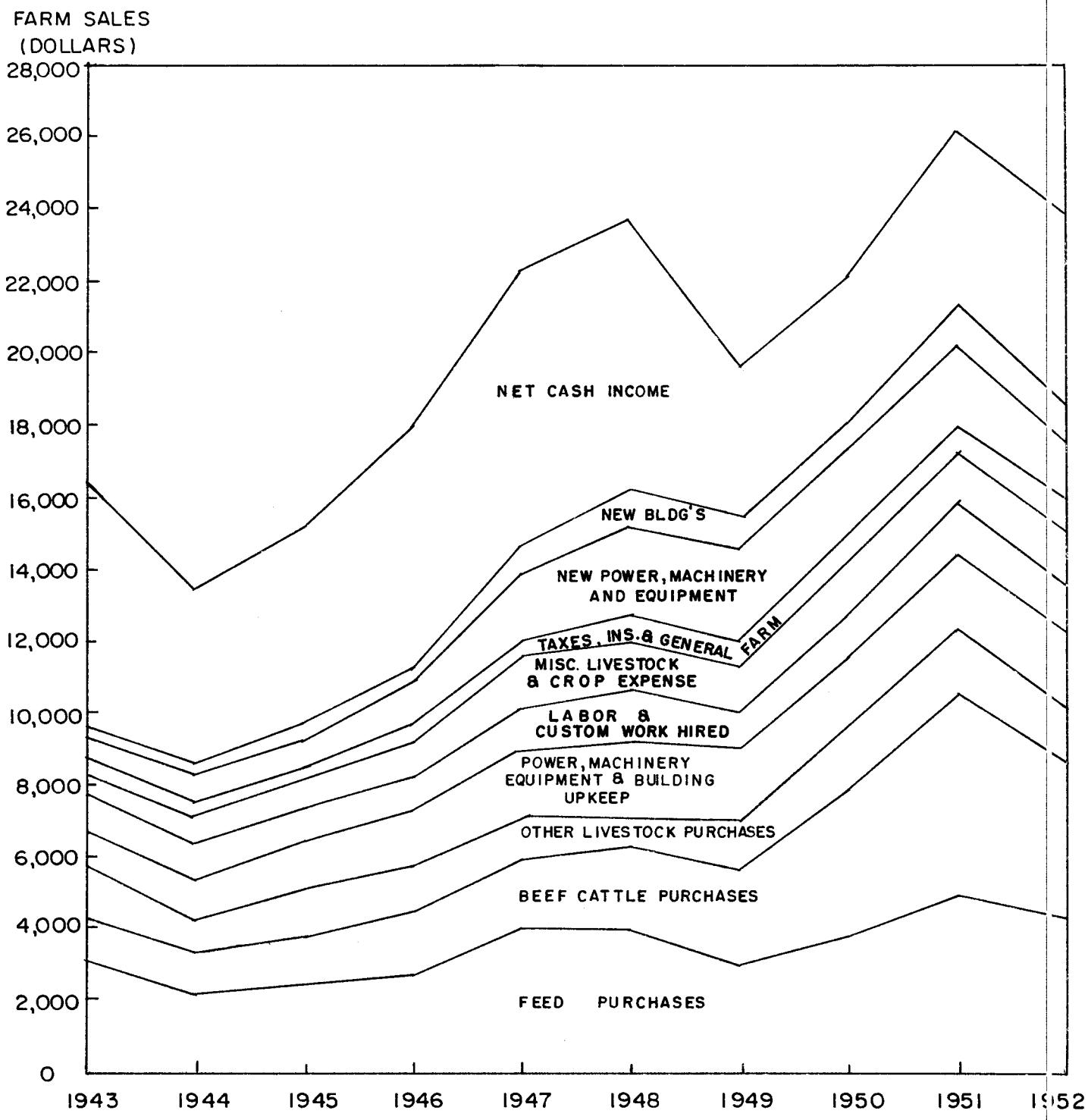

Fig. 3 Farm Purchases and Net Cash Income, 1943-1952.

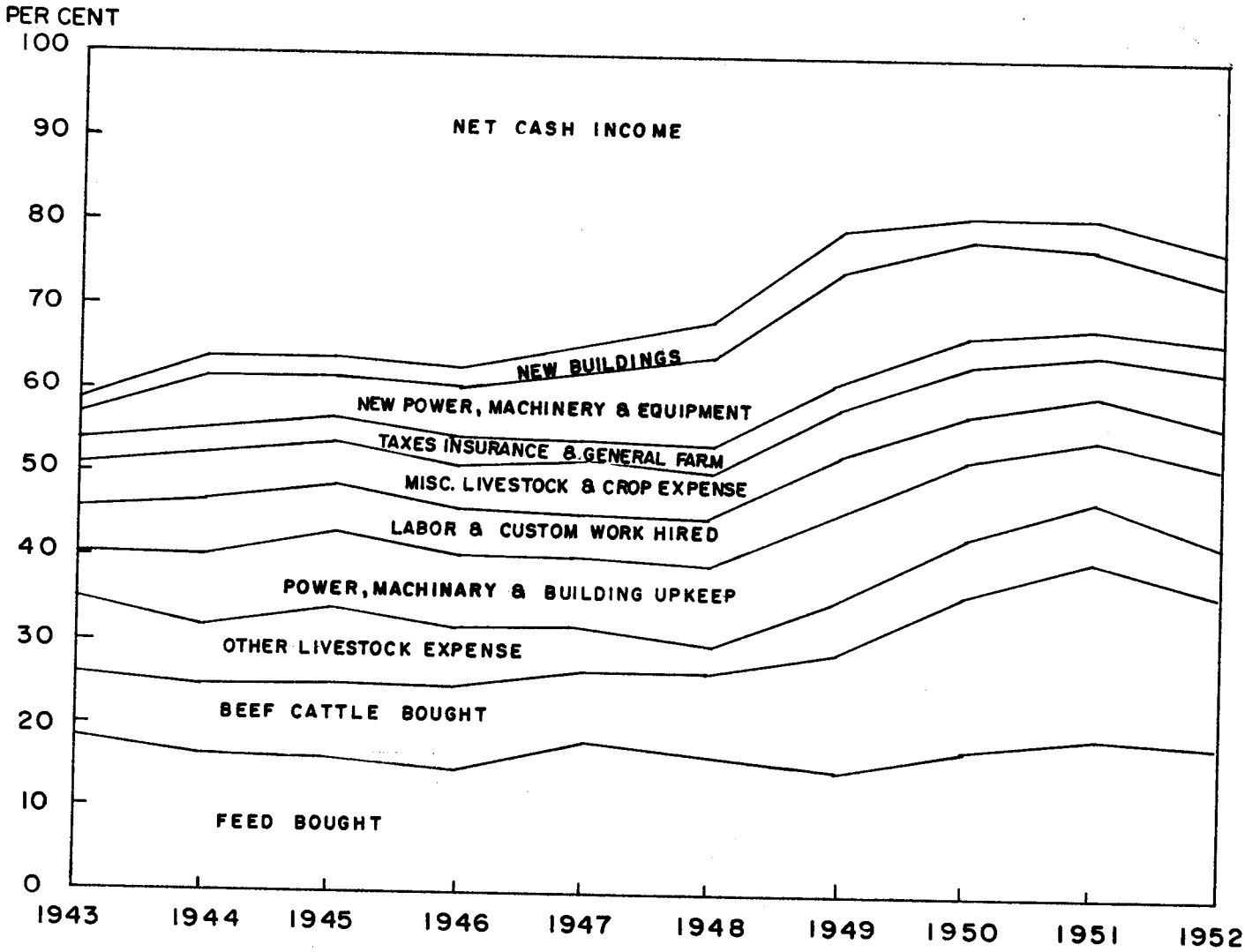

Fig. 4 Proportion of Total Farm Sales Used to Pay Various Farm Expenses, 1943-1952

Range in Earnings by Years

The variation in earnings among farmers in any given year is greater than the range in average earnings from year to year (table 3). The range between the one-fifth of the farms high in earnings and the one-fifth low in earnings varied from $6,686 in 1944 to $17,213 in 1946. This range is also presented graphically in figures 5, 6 and 7 for the years 1943, 1947 and 1949. The average range between the high and low earnings groups during the ten-year period was $10,940.

Table 3. Average Labor Earnings and Range Between One-Fifth of Farmers High in Earnings and One-Fifth Low in Earnings, 1943-1952

Year	Average of all farms	Average of 1/5 high in earnings	Average of 1/5 low in earnings	Range between 1/5 high and 1/5 low in earnings
1943	$5049	$10858	$1525	$9333
1944	2810	6633	- 53	6686
1945	4202	8980	1021	7959
1946	8255	15285	3599	11686
1947	11391	21788	4575	17213
1948	6938	14914	1838	13076
1949	3173	8199	-732	8931
1950	6882	14482	1696	12786
1951	4916	11614	51	11563
1952	3936	9337	-829	10166
Average	5755	12209	1269	10940

Weather and prices are important factors contributing to variations in earnings from year to year, however they are not in general important causes of variations in earnings among farmers in any one year. Occasionally hail storms and other adverse weather conditions will affect a small area. Ordinarily the effect of weather on earnings will be relatively uniform over several counties. Likewise there is not likely to be great variations in prices received by farmers in one year except as there are some differences in quality of product and in time of marketing. The data in tables 4 and 5 show the average prices received by farmers for products sold and the average farm prices of feed.

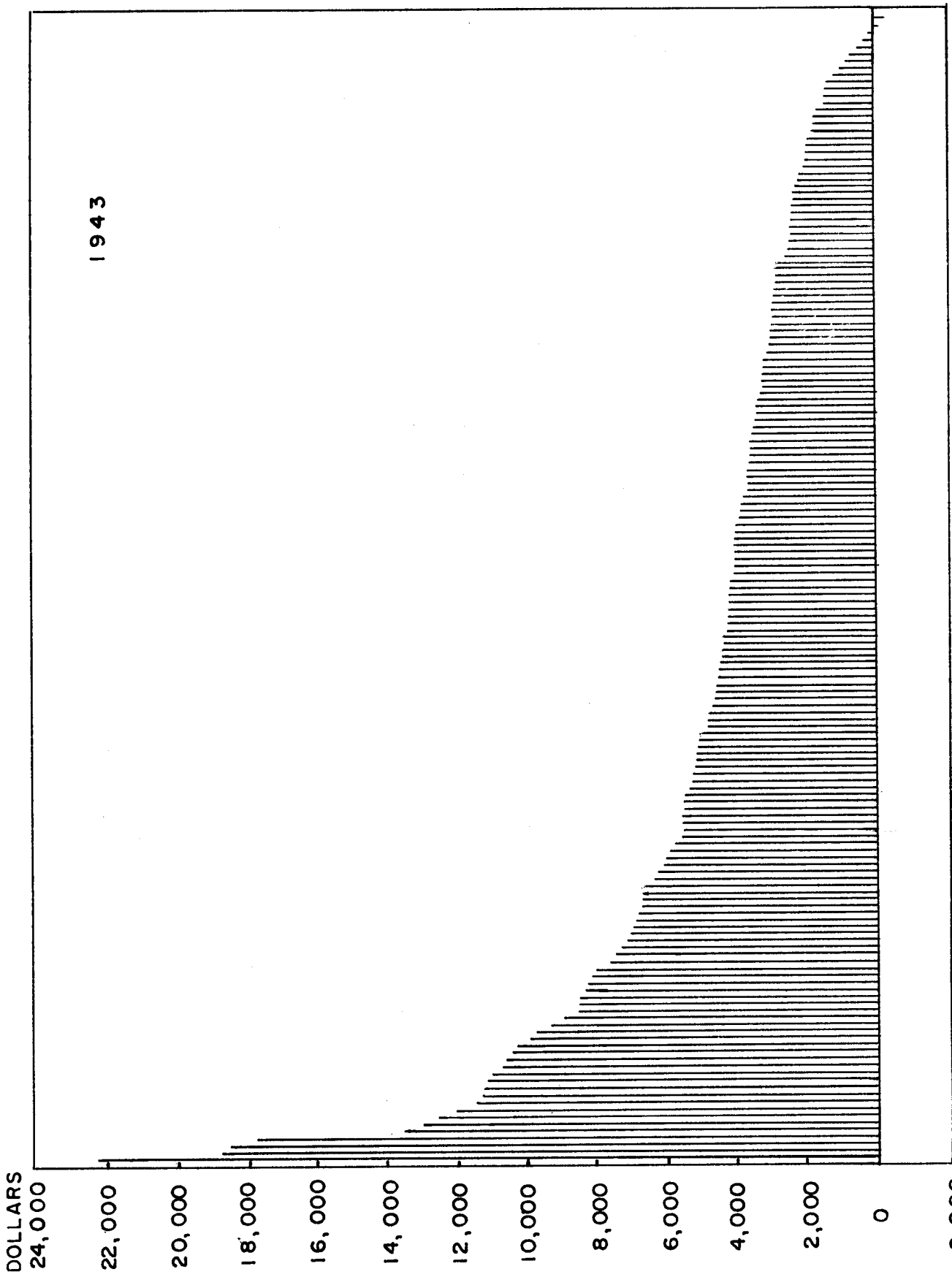

Fig. 5 Range in labor earnings in 1943. Each line represents the earnings of one farmer.

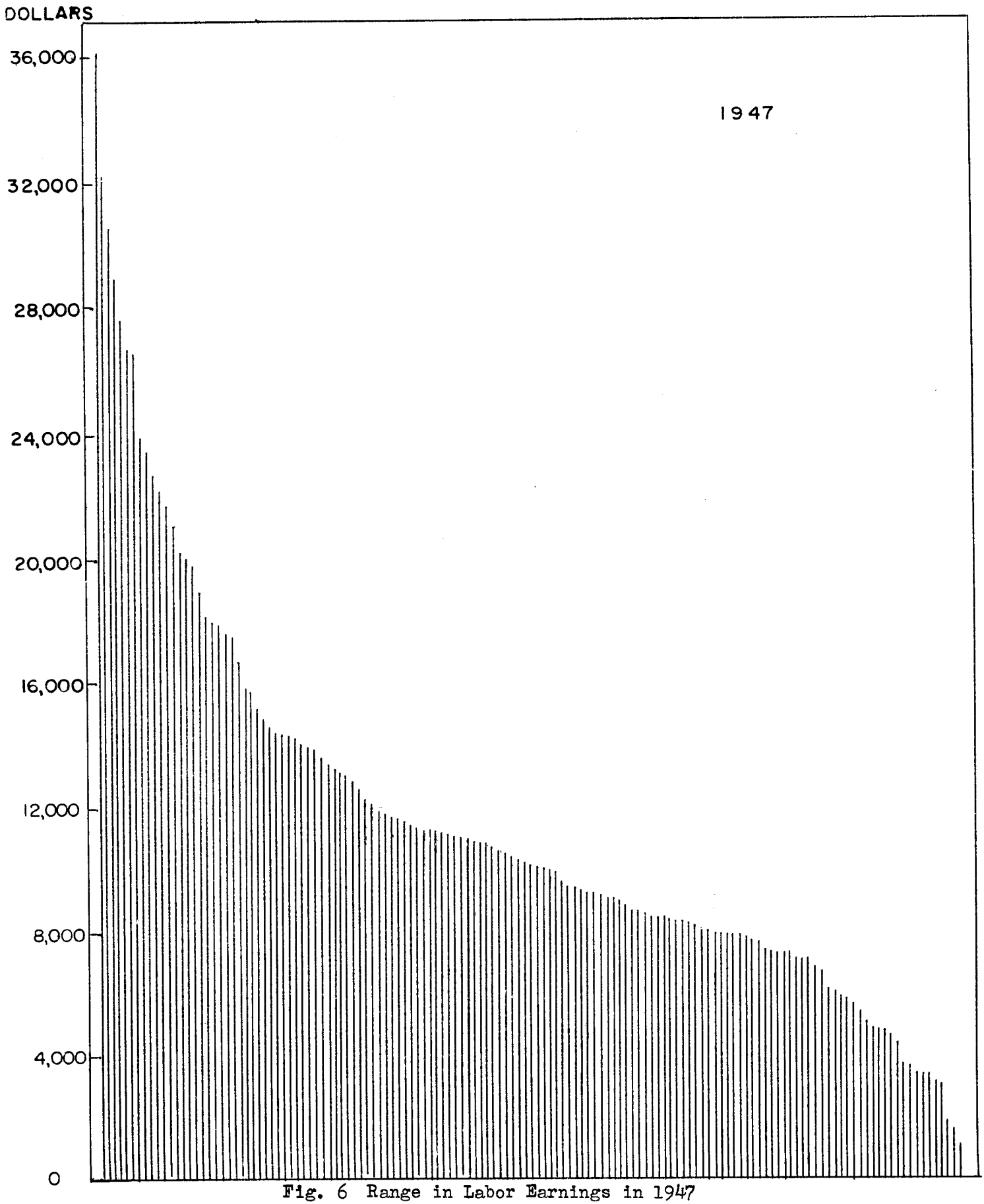

Fig. 6 Range in Labor Earnings in 1947

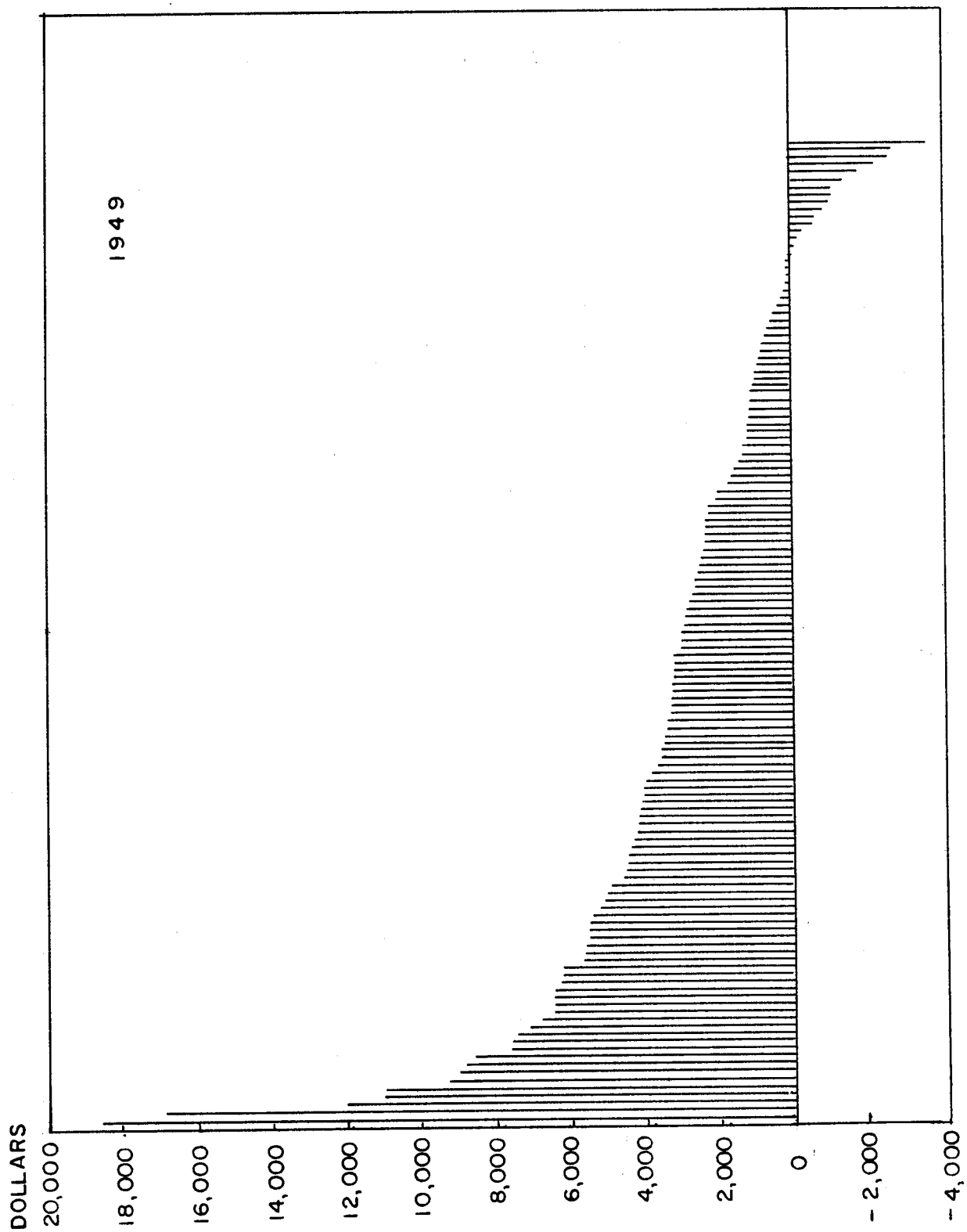

Fig. 7 Range in Labor Earnings in 1949

Table 4. Average Prices Received by Farmers for Livestock and Livestock Products and for Flax and Soybeans, 1943-1952

Year	Butter-fat* lb.	Fat Cattle* 100 lb.	Hogs* 100 lb.	Wool* lb.	Eggs* doz.	Native Lambs* 100 lb.	Flax** bu.	Soy-beans** bu.
1943	$.53	$13.68	$13.80	$ .41	$.35	$13.02	$2.85	$1.80
1944	.58	13.83	13.12	.41	.31	13.15	2.90	2.02
1945	.62	14.95	14.27	.41	.35	13.93	2.91	2.06
1946	.76	16.54	17.17	.42	.34	18.33	3.95	2.59
1947	.76	23.45	24.66	.43	.38	21.16	6.12	3.34
1948	.86	29.12	23.29	.37	.40	23.17	5.75	2.35
1949	.66	24.50	18.29	.42	.39	21.60	3.65	2.22
1950	.66	27.24	17.93	.55	.30	27.03	3.41	2.48
1951	.75	33.73	19.61	1.00	.40	29.93	3.68	2.68
1952	.80	30.16	17.34	.42	.34	22.86	3.80	2.65

* Average prices received on farms keeping records
** State average seasonal price as reported by the Minnesota State-Federal Crop and Livestock Reporting Service.

Table 5. Average Farm Price of Principal Feeds, 1943-1952

Year	Corn	Oats	Bran	Soybean meal	Tankage	Alfalfa
	bu.	bu.	cwt.	cwt.	cwt.	ton
1943	$ .88	$.60	$2.10	$2.82	$4.00	$11.00
1944	.90	.70	2.20	3.15	4.18	15.00
1945	.84	.64	2.18	3.00	4.10	15.00
1946	1.14	.70	2.70	3.80	5.10	16.00
1947	1.54	.90	3.20	4.80	6.75	22.00
1948	1.64	.88	4.00	5.10	6.45	20.00
1949	1.02	.59	2.80	4.05	6.25	20.00
1950	1.20	.72	2.80	3.95	6.30	21.00
1951	1.36	.81	3.20	4.00	6.15	19.00
1952	1.34	.76	3.45	5.60	6.50	17.00
Average	1.19	.73	2.86	4.03	5.58	17.60

Some Management Factors That Affect Earnings

Some of the variations in earnings from year to year and from farm to farm are due to variations in weather, prices and other factors over which the farmer has little, if any, control and to which he must adjust his business in so far as he can. However there are certain management factors more or less within the control of the individual operator that account for a substantial part of the variations in earnings among farmers such as shown in figure 5, 6 and 7. These may be grouped into four classes as follows:

1. Size of business
2. Crop yields
3. Efficiency in production
4. Organization of the farm unit

Some of these factors such as (3) and (4) can be further divided into several sub-factors. There is considerable relationship among these factors and sub-factors as well as between each factor and the farmer's earnings.

Size of Business

Volume or size of business in this study is expressed in terms of work units. A work unit is based on the acres of a given crop or the number or production of each class of livestock that could be raised or produced by one man in ten hours working at average efficiency.

The relationship of size of business to earnings is shown in tables 6 and 7. Operator's earnings increase steadily with increases in size. The data in table 8 shows that the relationship of size to earnings was relatively constant for each of the ten years. Only in 1949 and in 1952 is there any indication that volume is not an important factor affecting earnings.

Table 6. Average Labor Earnings on Farms Classified According to Size of Business (Productive Man Work Units), 1943-1952

Productive man work units Range	Average	Labor earnings
Lowest 1/5 of farms	295	$3383
Second 1/5 of farms	393	4391
Third 1/5 of farms	473	5425
Fourth 1/5 of farms	588	6321
Highest 1/5 of farms	833	9272

Table 7. Average Labor Earnings on Farms Classified According to Size of Business (Productive Man Work Units), 1943-1952

	Productive man work units				
Year	Lowest 1/5 of farms	Second 1/5 of farms	Third 1/5 of farms	Fourth 1/5 of farms	Highest 1/5 of farms
1943	$2812	$4088	$4377	$6017	$8035
1944	1501	1935	2621	3461	4529
1945	2402	2812	3739	4971	7075
1946	4861	6476	7498	9680	12771
1947	6690	8409	10906	11950	19034
1948	4578	4902	6939	6790	11480
1949	2109	2050	3327	2817	5558
1950	4070	4974	6435	8492	10421
1951	2086	4029	4404	5598	8607
1952	2721	4230	4002	3439	5206
Average	3383	4391	5425	6321	9272

Table 8. Relationship of Size of Business (Productive Man Work Units) to Other Management Factors, 1943-1952

Productive man work units Range	Ave.	Total acres	Index of crop selection	Animal units per 100 acres	Index of crop Yields	Index return per $100 feed	Work unit per worker	Power, mach., bldg. expense
Lowest 1/5 of farms	295	176	53.5	18.2	98	96	236	$7.58
Second 1/5 of farms	393	206	54.1	22.6	101	100	278	6.39
Third 1/5 of farms	473	247	55.0	21.5	98	102	293	5.99
Fourth 1/5 of farms	588	283	56.5	26.6	103	103	304	6.18
Highest 1/5 of farms	833	383	57.2	27.7	101	100	362	5.32

The data in table 8 indicates some of the reasons why earnings increase with increased volume of business. On farms with a larger volume of business livestock production was relatively more important and contributed materially to the size of business. These farms with a large business have an advantage in labor efficiency (work units per worker) and in control over expenses (power, machinery and building expense per work unit) and to a lesser extent in the selection of crops.

Crop Yields

An index of crop yields, weighted by the acreage in each crop, was used in this study. The relationship with earnings is shown in table 9. The relationship between crop selection and crop yields has already been mentioned. More livestock can be and are maintained on farms with high yields. Work accomplishment per worker did not vary with crop yields. Power and machinery costs increased to some extent with increased yields. This is due in part to somewhat smaller acreages on the high yielding farms. The advantages of large yields may be partially offset if the additional yields are secured at relatively high costs.

Table 9. Average Labor Earnings on Farms Classified According to Index of Crop Yields, 1943-1952

Index of crop yields Group	Average	Labor earnings
Lowest 1/5 of farms	74	$4261
Second 1/5 of farms	91	4917
Third 1/5 of farms	101	6018
Fourth 1/5 of farms	109	6683
Highest 1/5 of farms	125	6913

Efficiency in Production

Feeding Efficiency

The measure of feeding efficiency used is an index of return per $100 of feed consumed by all productive livestock. The index is weighted by the number of animal units in each class of livestock. The relationship of feeding efficiency to farm earnings is shown in table 10. Earnings increased consistently with each increase in the efficiency of the use of feed. There was little relationship between feeding efficiency and the other management factors.

Table 10. Average Labor Earnings on Farms Classified According to Index of Return per $100 Feed Consumed by Livestock 1943-1952

Index of return per $100 feed consumed by livestock		
Range	Average	Labor earnings
Lowest 1/5 of farms	72	$3612
Second 1/5 of farms	88	5355
Third 1/5 of farms	98	5810
Fourth 1/5 of farms	110	6354
Highest 1/5 of farms	133	7740

Labor Efficiency

In this study work units per worker are used as a measure of labor efficiency. It represents the total production of livestock and crops on the farm divided by the number of workers working on the farm. The data in table 11 show a marked relationship between work accomplished and earnings. This factor is closely related to size of business, intensity of livestock production and control over expenses (table 12). An addition to the size of business in the form of livestock generally spreads the work load throughout the year and provides for fuller employment of workers.

Table 11. Average Labor Earnings on Farms Classified According to Productive Man Work Units per Worker, 1943-1952

Productive man work units per worker		
Range	Average	Labor earnings
Lowest 1/5 of farms	194	$4015
Second 1/5 of farms	249	5138
Third 1/5 of farms	288	5818
Fourth 1/5 of farms	329	6167
Highest 1/5 of farms	413	7626

Table 12. Relationship of Labor Efficiency to Other Management Factors, 1943-1952

Productive man work units per worker		Total work	Total	Index of crop	Animal units per 100	Index of crop	Index return per $100	Power, mach., bldg.
Range	Ave.	units	acres	selection	acres	yields	feed	expense
Lowest 1/5 of farms	194	385	234	53.9	20.6	101	101	$7.81
Second 1/5 of farms	249	458	250	54.0	21.1	101	100	6.61
Third 1/5 of farms	288	510	261	55.6	22.9	100	101	6.10
Fourth 1/5 of farms	329	556	268	55.9	24.1	99	100	5.78
Highest 1/5 of farms	413	673	284	56.9	27.9	100	99	5.16

Efficiency in Cost Control

It was mentioned previously that the expenses for power, machinery, equipment and buildings constitute a large proportion of the total cash expenses (table 2 and figure 4). The importance of control over these expenses is emphasized in table 13. High costs hold earnings down on many farms. However, there is a limit to which a farmer can decrease his expenses and still maintain adequate production. It is also quite possible that a few farmers did not spend as much as they should to increase income.

Table 13. Average Labor Earnings on Farms Classified According to Power, Machinery, Equipment and Building Expense per Work Unit, 1943-1952

Power, machinery, equipment and bldg. expense per work unit		
Range	Average	Labor earnings
Highest 1/5 of farms	$9.60	$4618
Second 1/5 of farms	7.10	5687
Third 1/5 of farms	5.93	5739
Fourth 1/5 of farms	5.05	6310
Lowest 1/5 of farms	3.78	6435

Control over expenses is associated with size of business (table 14). Farmers to some degree can reduce cost per unit of output by adding to the volume of business. An addition to the volume of business may lead to a fuller utilization of machinery and equipment. These farmers added to volume of business by increasing their intensity of livestock and through a better choice of crops. In addition to lower costs per work unit they also achieved more output per worker.

Table 14. Relation of Power, Machinery, Equipment and Building Expense per Work Unit to Other Management Factors, 1943-1952

Power, mach., equip., and bldg. expense per work unit		Total work	Total	Index of crop	Animal units per 100	Index of crop	Index return per $100	Work units per
Range	Ave.	units	acres	selection	acres	yields	feed	worker
Highest 1/5 of farms	$9.60	433	269	54.7	20.7	102	96	249
Second 1/5 of farms	7.10	485	273	55.1	21.3	100	101	276
Third 1/5 of farms	5.93	512	262	54.5	22.8	100	101	295
Fourth 1/5 of farms	5.05	534	252	55.9	24.2	99	101	312
Lowest 1/5 of farms	3.78	618	240	56.1	27.5	99	102	342

Organization of the Farm Unit

Two factors that supply a measure of the all-over organization of the farm unit are used in this study, (1) choice of crops and (2) intensity of livestock production.

Choice of Crops

The selection of crops and the amount and kind of livestock produced are important factors affecting the farmers' financial success. In any area and for any given type of farming certain crops produce either a larger cash value product per acre or more and better feed per acre than do others. However in order to (1) distribute labor and machine use over the cropping season, (2) to maintain or improve soil productivity, (3) to provide the types of feed needed for a livestock program that best fits the farm and (4) to insure a balanced use of all the farmers' resources it is necessary to include several crops in a good cropping system. The best choice of crop depends on the size of farm, soil type and condition, local markets, labor, power, and machinery supply, type of farm capital available and similar factors. Since these vary widely from farm to farm hard and fast rules as to crop choice that will fit all farms cannot be laid down.

There was considerable variation in the size and type of farms included in this study. There were also extreme and abnormal variations in the price of crops due to war and post-war adjustments. Examples of this are the extremely high prices placed upon flax and soybeans by government agencies during 1947 and 1948 to encourage increased production of these crops. As a consequence the relation of crop selection to earnings, based as it was on average yields and prices was not as significant for such years as 1947 and 1948 as it was in years of more normal prices. The variation in type and size among these farms also tended to offset the relationship of crop choice to earning that might be expected if farms were more uniform in regard to these factors. As a consequence the data in table 15 probably understates the normal relationship of crop selection to earnings. The relationship of crop choice to labor earnings is shown in table 15.

Table 15. Average Labor Earnings on Farms Classified According to Index of Crop Selection, 1943-1952

Index of crop selection Range	Average	Labor earnings
Lowest 1/5 of farms	42.6	$5551
Second 1/5 of farms	50.0	5534
Third 1/5 of farms	54.7	5895
Fourth 1/5 of farms	59.6	6155
Highest 1/5 of farms	69.4	5661

Intensity of Livestock Production

The number of animal units of productive livestock per 100 acres is used as a measure of the relative importance of livestock in the farming business. The relationship of this factor to earnings is shown in table 16 and the relationship of livestock intensity to other management factors is shown in table 17.

Table 16. Average Labor Earnings On Farms Classified According to Animal Units of Productive Livestock per 100 Acres, 1943-1952

Animal units of productive livestock per 100 acres Range	Average	Labor earnings
Lowest 1/5 of farms	10.5	$5544
Second 1/5 of farms	17.0	5680
Third 1/5 of farms	21.6	5541
Fourth 1/5 of farms	27.1	5771
Highest 1/5 of farms	40.4	6268

Table 17. Relation of Number of Animal Units per 100 Acres to Other Management Factors, 1943-1952

Animal units per 100 acres Range	Ave.	Man work units	Total acres	Index of crop selection	Index of crop yields	Index return per $100 feed	Work units per worker	Power, mach., bldg. expense
Lowest 1/5 of farms	10.5	453	295	51.9	94	98	277	$7.16
Second 1/5 of farms	17.0	470	269	53.4	97	101	281	6.34
Third 1/5 of farms	21.6	506	256	54.4	101	99	290	6.18
Fourth 1/5 of farms	27.1	557	245	56.3	105	99	306	5.92
Highest 1/5 of farms	40.4	596	231	60.3	104	104	320	5.86

More livestock per 100 acres results in a larger size of business. It is one method of increasing the size of business without acquiring more land. More livestock per 100 acres was associated with a better cropping system through the growing of legumes to feed the livestock. The effect of the latter plus manure produced by livestock was reflected in the higher average yields secured on the more highly intensified livestock farms. Labor, power, machinery and equipment are more fully utilized when livestock is added.

During the period covered by this study the raising of cash crops was relatively profitable as compared to raising feed crops and feeding them to livestock. There was also a wide diversity among farms included in this study in the kind, amount, and quality of livestock fed. As a result the amount of livestock per 100 acres, while an important factor under more nearly normal price conditions over a period of years, did not show the relationship that would reasonably be expected, especially with farms fairly similar in type.

Well-Balanced Farming Most Profitable

It is impossible to measure precisely the effect on earnings of each of the seven factors previously discussed because of the large number of interrelationships between the factors. It is possible, however to show the cumulative effect on earnings of a high rating in all factors (table 18 and figure 8). The average labor earnings of those farmers who were above the average of the group in each of the seven factors were $6,480 higher than the labor earnings of those who were below average in all the factors. Over the ten-year period included in this study this amounts to $64,800 difference in earnings between the two groups. This would pay for a very good farm.

Table 18. Average Labor Earnings and Management Factors on Farms Classified According to Number of Factors in Which the Farmer Was Above Average

No. of factors in which farmer excelled	No. of farms	Labor earnings	Total work units	Index of crop selection	Animal units per 100 acres	Index of crop yields	Feeding efficiency	Work units per worker	Power, mach. & bldg. expense
0	6	$3273	369	46.7	13.1	87	84	226	$8.04
1	14	3530	379	48.8	15.7	93	88	241	7.67
2	25	4358	404	52.0	18.0	97	97	255	7.26
3	32	5382	483	55.1	20.9	99	101	283	6.26
4	28	6289	546	57.2	25.7	101	104	310	5.89
5	21	7762	666	59.2	29.6	105	103	343	5.37
6	12	8175	705	60.7	34.8	109	111	370	4.53
7	3	9753	746	66.0	41.1	117	115	358	4.48

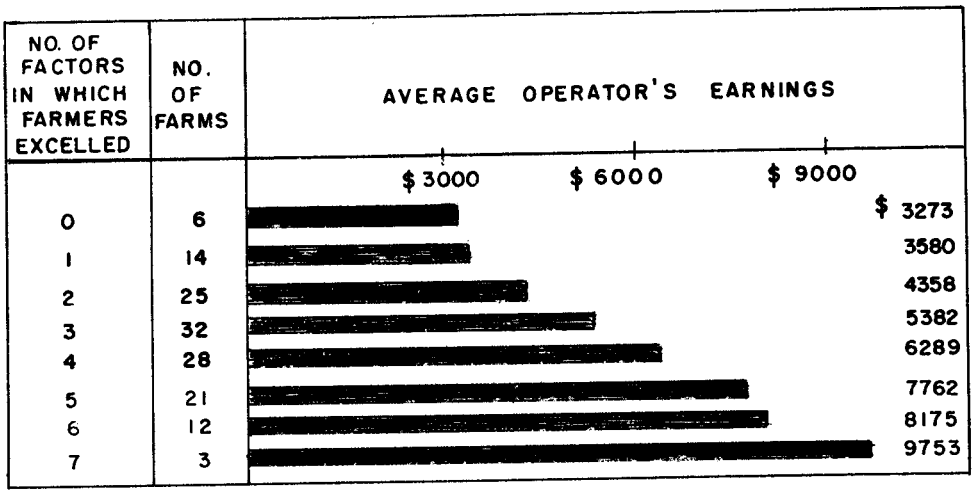

Fig. 8 Average operator's earnings on farms grouped according to number of management factors in which the farmer was above average

Each Farm An Individual Problem

Good management for a particular farm or farmer does not necessarily imply excellence in all the management factors discussed. Conditions vary widely from farm to farm. In some cases it may not be economical to push all factors to a high level. Quality of soil may be a factor limiting crop yields. It is often prohibitively expensive to push production on inferior soils to a high level. The capable manager will direct his efforts at those factors which will lend themselves to improvement most economically. If his soil is naturally unproductive he may find it will add more to his earnings to improve his feeding methods or keep more livestock even if he has to buy feed rather than to try to attain yield levels that are only profitable on good soils.

Each operator must appraise his own situation and intensify his operations where the application of labor and capital will yield the largest returns. However the more of these factors he can improve the more likely he is to achieve high earnings. It is highly important in improving the management of a farm to have as a guide a set of farm accounts such as those of the members of the Southwest Minnesota Farm Management Association. Such records will not only point out where there is a need for improvement in the management plan but will serve as a check on the operator's efforts to imporve his business and determine the response he is getting. Obviously the more of the factors that a farmer can improve profitably the greater will be his earnings. Good records carefully kept and studied are an invaluable guide to planning the most profitable plan of operation for any given farm or farmer.