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AGRICULTURAL EXTENSION DIVISION
UNIVERSITY OF MINNESOTA

F. W. Peck, Director

MINNESOTA FARM BUSINESS NOTES

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Prepared by the Division of Agricultural Economics
University Farm, St. Paul, Minnesota

VARIATIONS IN EARNINGS OF TWENTY SELECTED DAIRY FARMERS
Prepared by W. P. Ranney and J. B. McNulty

The University of Minnesota has been cooperating with a group of about 150 dairy farmers in eight counties in southeastern Minnesota in studying the factors and methods of management affecting farm earnings. In this treatise is presented a comparison of the earnings and of some phases of the management of twenty of these farmers who have operated continuously during the past seven years on the same farms.

Table 1. Average Cash Receipts and Expenses and Earnings per Farm, 1929-1935, and Miscellaneous Items of Prices Received and Crop Yields, 1928-1935

	Averages per Farm						
	1929	1930	1931	1932	1933	1934	1935
Cash receipts:							
Dairy products	\$1927	\$1607	\$1223	\$976	\$972	\$1173	\$1217
Cattle	698	737	441	316	325	385	618
Hogs	2020	2220	1269	669	710	749	919
Poultry and eggs	635	632	663	608	686	1048	1339
Crops	597	458	326	362	395	325	452
Miscellaneous	<u>302</u>	<u>324</u>	<u>235</u>	<u>211</u>	<u>229</u>	<u>868</u>	<u>968</u>
Total cash receipts	6179	5978	4157	3142	3317	4548	5513
Cash expenses:							
Machinery and buildings	999	1047	616	496	455	558	1100
Hired labor	389	417	321	241	211	220	316
Feed and crop	806	875	595	463	411	644	862
Livestock expense	492	522	241	164	185	367	921
Taxes	280	294	290	270	210	224	202
Miscellaneous	<u>81</u>	<u>85</u>	<u>87</u>	<u>71</u>	<u>78</u>	<u>71</u>	<u>93</u>
Total cash expenses	3047	3240	2150	1705	1550	2084	3494
Net cash income	\$3132	\$2738	\$2007	\$1437	\$1767	\$2464	\$2019
Increase in farm inventory	1003	-	-	-	415	370	878
Farm produce used in house	<u>343</u>	<u>330</u>	<u>252</u>	<u>196</u>	<u>191</u>	<u>228</u>	<u>283</u>
Total income less cash expenses	4478	3068	2259	1633	2373	3062	3180
Decrease in farm inventory	-	635	984	1084	-	-	-
Board for hired labor	138	162	111	78	82	79	143
Interest at 5% on farm inventory*	1487	1484	1146	875	856	876	908
Wages for unpaid family labor	<u>246</u>	<u>308</u>	<u>201</u>	<u>158</u>	<u>198</u>	<u>161</u>	<u>183</u>
Total other charges	1871	2589	2442	2195	1136	1116	1234
Operator's labor earnings	\$2607	\$479	\$-183	\$-562	\$1237	\$1946	\$1946

*For the purpose of comparison, all of the financial statements were worked up on a full owner basis, applying a uniform charge of five per cent to the entire investment in every case.

The average size of the twenty farms represented in Table 1 was 195 acres, which is about 32 per cent larger than the average of all farms in the same area. They had about 25 per cent more productive livestock per 100 acres. The dairy herd produced an average of 250 pounds of butterfat per cow during the seven-year period which is approximately 25 per cent above the average for all farms, and crop yields averaged about 20 per cent higher. Because of the better organization and practices in effect on these twenty farms, the earnings were undoubtedly higher than the average for all farms in the same area.

The average operator's labor earnings, as shown in Table 1, varied widely during the last seven years, from \$2607 in 1929 to a loss of \$562 in 1932, and back to \$1946 in 1934 and 1935. The range in yearly average earnings was much greater than the similar range in net cash income, because the increases and decreases in inventory valuations due to pronounced price changes as well as the changes in net cash income affect the fluctuations in earnings.

In 1931 and 1932 most of these farmers received nothing for their own services; in fact, the average gross income did not cover average total cash expenses. The losses as shown in Table 1 did not include losses due to adjustments downward in the values of real estate in 1931 and 1932 and of cows in 1932. These adjustments were not included in the inventory decreases in the financial statements, but the decreased valuation resulted in a lower interest charge.

The average operator's labor earnings was the same in 1935 as in 1934 in spite of the fact that the net cash income was about \$450 lower in 1935 than in the previous year. Average total cash expenses were \$1410 higher in 1935, while average total cash receipts were up only \$965. The large increase in total cash expenses resulted from increased purchases of livestock, new machinery and buildings, and increased repairs and upkeep. Livestock herds had been depleted in some cases on account of the drouth; replacements were made in 1935 at prices considerably above those that prevailed for several years previously. Machinery and building purchases and repairs increased decidedly in 1935 owing to the fact that larger receipts enabled the farmers to make replacements and repairs that had been postponed during the severe depression. The value of these purchased items was included in the inventory. Hence, the increased expenditures were offset by increases in inventories and did not materially affect the operator's labor earnings.

Approximately 80 per cent of the cash receipts of these farms were for livestock and their products. Changes in prices for these items constituted the major factor influencing the fluctuations in net cash receipts. The latter were also affected by fluctuations in numbers of livestock kept. The downward tendency in number of hogs raised during the latter part of the period was at least partly offset by an upward trend in numbers of poultry and sheep. Other items which caused fluctuations in either cash receipts or expenses were: crop yields, especially the very low yields in 1934; changes in prices of crops sold and feeds bought; changes in wages for hired help and in prices of miscellaneous items; and the A.A.A. receipts of \$442 in 1934 and \$318 in 1935, which are included in the miscellaneous cash receipts.

Net cash receipts, and consequently earnings, were materially affected by the tendency for changes in the total cash expenses to lag behind changes in total cash receipts. The decrease in cash receipts was first evidenced in 1930 and the increase in 1933. The change in cash expenses came one year later in each case, respectively. The lag was most noticeable in the case of taxes. They did not come down materially until 1932 and have been fairly constant since 1933.

Variations in Earnings Among Farms

Not only was there a wide range in average earnings during the seven-year period, but there was also a range of approximately \$4000 among the twenty farms each year. It has been found that eight factors are associated with the variations in earnings among these farmers: (1) butterfat production per cow; (2) returns above feed cost for other productive livestock; (3) number of productive livestock units per 100 acres; (4) crop yields; (5) percentage of tillable land in the higher return crops; (6) size of business; (7) amount of work accomplished per worker; (8) control of power, machinery, and building expenses.

Two important questions arise in connection with these factors and their relations to earnings. Have the farmers been able to make any changes in their businesses to correct a low standing in one or more of these various factors? What effect have such changes had on earnings on the individual farms? It is difficult to show in most cases the absolute improvements made by the individual farmers or to show the results of these changes. They are tied up with changes and results due to weather, fluctuations in the price level, government adjustment programs, etc. It is possible, however, to show changes that took place on these twenty farms in their relative rankings in the eight factors listed above, and the effects that such changes had on their relative earnings.

Table 2. Relative Changes in Earnings Among Twenty Dairy Farms Due to Relative Changes in their Ranking in the Factors Related to Earnings, 1929-1931 to 1933-1935

Changes in ranking in eight factors* from the earlier to the later period (% of average)	Change	No. of farms in group	Change in earnings
Farms showing a decrease	-7%	9	\$-168
Farms showing an increase	+6%	11	+136

*Although some of the factors are more important than others, and vary in importance from year to year, they were allowed equal weight in this analysis.

In Table 2 it is shown that eleven of the twenty farms raised their relative total ranking in the eight factors from the 1929-1931 three-year period to the 1933-1935 three-year period, and nine farmers lowered theirs. The earnings were put on a uniform price level on the basis of the average earnings for 1929 to 1935 inclusive, or \$1067. Relative to the average of all twenty farmers, the eleven farmers who improved their rankings were \$136 better off in earnings in the later three-year period. The other nine farmers were in a worse position than they were in the earlier period by \$168. The gain in relative position was \$304 in favor of the former group, or approximately 30 per cent of the average earnings of these twenty farmers for the seven-year period.

This relative gain of 30 per cent in earnings represents a substantial return for additional improvements made on some of these farms which already had in effect better organization and practices than the average of all farms. Other studies have shown that greater percentage increases in earnings resulted when similar improvements were made on farms on which organization and practices were of a lower standard. The variations in earnings among farms were to a considerable extent subject to the control of the individual farmers. On the other hand, the variations in average earnings of a group of farmers from year to year, as shown in the early part of this discussion, was due largely to influences outside the control of individual farmers.

MINNESOTA FARM PRICES FOR APRIL 1936
Prepared by W. C. Waite and W. B. Garver

The index number of Minnesota farm prices for the month of April, 1936 was 84. When the average of farm prices of the three Aprils 1924-25-26 is represented by 100, the indexes for April of each year from 1924 to date are as follows:

April 1924 - 82	April 1931 - 71
" 1925 - 106	" 1932 - 46
" 1926 - 112	" 1933 - 40
" 1927 - 110	" 1934 - 53
" 1928 - 106	" 1935 - 91*
" 1929 - 112	" 1936 - 84*
" 1930 - 101	

*Preliminary

The price index of 84 for the past month is the net result of increases and decreases in the prices of farm products in April, 1936 over the average of April, 1924-25-26 weighted according to their relative importance.

Average Farm Prices Used in Computing the Minnesota Farm Price Index,
April 15, 1936, with Comparisons*

	Apr. 15, 1935	Mar. 15, 1936	Apr. 15, 1935	Av. Apr. 1924-25- 26	% Apr. 15, 1936 is of Mar. 15, 1936	% Apr. 15, 1936 is of Apr. 15, 1935	% Apr. 15, 1936 is of Apr. 15, 1924-25-26
Wheat	\$.91	\$1.01	\$1.02	\$1.29	90	89	71
Corn	.45	.45	.80	.64	100	56	70
Oats	.20	.22	.50	.35	91	40	57
Barley	.41	.41	.84	.57	100	49	72
Rye	.38	.41	.55	.73	93	69	52
Flax	1.52	1.57	1.63	2.29	97	93	66
Potatoes	.55	.50	.37	.95	110	149	58
Hogs	9.70	9.50	8.30	9.69	102	117	100
Cattle	6.50	6.40	6.80	6.09	101	96	107
Calves	7.70	8.00	7.20	8.51	96	107	90
Lambs-sheep	8.67	8.76	7.03	11.44	99	123	76
Chickens	.145	.143	.131	.183	101	111	79
Eggs	.16	.16	.20	.22	93	79	71
Butterfat	.33	.34	.37	.42	97	89	79
Hay	4.90	5.63	17.52	11.62	87	28	42
Milk	1.62	1.66	1.73	1.98	98	94	82

*Except for milk, these are the average prices for Minnesota as reported by the United States Department of Agriculture.

Indexes and Ratios of Minnesota Agriculture*

	April 1936	March 1936	April 1935	Av. April 1924-26
U.S. farm price index	76.0	74.0	80.0	100.0
Minnesota farm price index	84.0	82.0	91.0	100.0
U.S. purchasing power of farm products	98.0	95.0	98.0	100.0
Minnesota purchasing power of farm products	109.0	105.0	112.0	100.0
U.S. hog-corn ratio	16.4	16.3	9.2	12.4
Minnesota hog-corn ratio	21.6	21.1	10.4	15.5
Minnesota egg-grain ratio	14.9	14.2	12.7	12.7
Minnesota butterfat-farm-grain ratio	45.4	44.8	23.5	36.8

*Explanations of the computation of these data are given in Farm Business Notes No. 144.