UNIVERSITY OF MINNESOTA
Department of Agriculture
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics
Cooperating

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A Preliminary Report of Data Secured in 1937 on the FARM ACCOUNTING ROUTE in WINONA COUNTY, MINNESOTA

By

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SOURCE OF DATA

Method of Study

A study of the organization and management of a selected group of farms in Winona County was started on March 1, 1935. This study is being conducted under the supervision of the Division of Agricultural Economics of the University of Minnesota in cooperation with the Bureau of Agricultural Economics of the United States Department of Agriculture.* Farms which were representative of the better managed farms in the area were chosen with the aid of the county agricultural agent, Mr. H. C. Pederson. The farmers cooperating in this study keep a complete record of cash receipts and expenses, a daily record of the labor used on each crop and class of livestock, and a record of farm produce used in the house. These records are checked at least twice per month by a field man and supplemented with inventories, feed records, reports of cropping practices and yields, and other significant facts about the farm business. The data collected are sent to the central office at University Farm, St. Paul, where a detailed set of records for each farm is kept. This report on farmers' earnings and crop and livestock returns for 1937 was prepared from these farmers' records.

Note: Completion of this project was made possible by workers supplied on Federal Students' Work Project, 1937-38, Project No. 88-90 and Project No. 4841, Subproject 420, Minnesota Works Progress Administration. Sponsor: University of Minnesota.

*The Economics of Soil Conservation, Division of Research, United States Department of Agriculture, also cooperated in 1937-38.

Description of the Area

Winona County lies in the southeastern part of the state. The topography varies from gently rolling to very hilly. Much of the county is covered with a deposit of very productive loessial material. The surface sol is deficient in lime, but lime deposits underlie it at a relatively shallow depth. The soil washes easily, with the steeper slopes subject to considerable erosion. The growing season varies from 140 to 160 days. The average rainfall is approximately 29 inches, 70 per cent of which is received during the months of April to September, inclusive. Livestock and livestock products constitute the major source of income.

Description of the Farms

The average size of the farms studied in 1937 was 273 acres, in 1936 it was 301 acres, and in 1935 334 acres. The average size of all Winona County farms in 1934 was 170 acres, as given in the 1935 census. A larger proportion of the land was in legumes on the farms studied than for the county as a whole. Other facts about the organization and production of these farms are presented on page 3.

There is a soil erosion problem on most of the farms studied. Most of the operators are cooperating with the Federal Soil Conservation Service in an erosion control program. Although the farmers have been adopting strip and contour farming and other recommendations of the Soil Conservation Service for controlling erosion, in most cases all of the advised changes have not been completed and therefore the full effects of the program are not yet apparent.

Description of the Crop Seasons

Heavy precipitation, plus the moisture from the winter snows on unfrozen ground, provided sufficient moisture for good yields in 1935. Heavy summer rains, however, interfered with the curing of hay and drying of grain in the shock. Moisture was plentiful during the early part of the 1936 season, but scant rains and high temperatures during July reduced yields of grain and corn. Seeding began in 1936 almost two weeks later than in 1935. Grain harvest, however, began almost a week earlier in 1936. Rainfall, again, was satisfactory in the spring of 1937, but scant rains and high temperatures during the early part of July again reduced the yield of the second cutting of alfalfa hay. On the whole, however, crop yields were much higher than in 1935 and 1936.

METHODS OF COMPUTING AND PRESENTING DATA

Financial Statements

Average earnings, inventories and household and personal expenses are presented for all farmers, for the five farmers with the highest labor earnings, and for the five farmers with the lowest earnings. Averages for 1935 and 1936 and for the three years also are given.

Some of the farms studied were either partly or entirely rented. The rental contracts varied. In order to have the data for these farms comparable with the owned farms, they were adjusted to a full ownership basis. All farm property, regardless of ownership, was included in the inventory. Cash rent was excluded from the expenses and the landlord's expenses were included. The landlord's share of the crops was included in the receipts. The value of farm produce used in the house was included in receipts and the value of board furnished hired laborers was included in expenses. Board for hired labor was charged at $15 per month. Wages for unpaid family labor were calculated at 20 cents per hour. All interest actually paid was omitted and five per cent interest was charged on the total inventory.

The returns to capital and family labor is the amount left as pay for the use of the farm capital and for the labor of the farm operator and his family.

Family labor earnings is what is left as pay for the labor of the operator and his family, after deducting an allowance for interest on the investment from the returns to capital and family labor. The operator's labor earnings is the amount left to the farm operator as pay for his labor and management after all farm expenses, interest on the investment and an allowance for the unpaid family labor have been paid. A minus (-) operator's labor earnings indicates the extent to which the receipts were insufficient to cover the expenses.

Livestock Statements

The comparative costs and returns for each of the different classes of livestock maintained are presented for 1935, 1936 and 1937 in this preliminary report together with an average for the three years. All data are shown on the basis of a standard unit such as one head or 100 pounds gain in weight. Both quantities—pounds of feed, days of pasture, man and horse hours, pounds produced, etc.—and money costs and returns are shown. The amounts of feed, with the exception of pasture, are given in pounds rather than in bushels or tons. All corn has been reduced to a shelled corn basis. The man hours include both regular daily chore labor and irregular labor such as tending sick animals, marketing livestock and livestock products, and hauling feed and bedding. The horse hours likewise include both regular and irregular work.

Local prices were used, insofar as possible, in determining the costs and returns. Marketable feeds were charged at local prices and non-marketable feeds on a comparative-feeding-value basis. No charge was made for straw or for corn stalk pasture. Man labor was figures at 20 cents per hour and horse work was charged to the individual farm at the rate determined for that farm. The shelter charge was based on the annual cost of the buildings housing livestock, prorated on the basis of the space occupied. The equipment charge was based upon the annual cost of the particular equipment used by that class of livestock. The expense for portable brooder houses and hog houses was included in the equipment charge an omitted from the shelter charge. The equipment charge also includes a charge for the use of the auto and truck in connection with the livestock work. Interest was calculated at five per cent on the average of the beginning and ending inventories. Miscellaneous cash costs include such cash expenses as veterinary fees, medicine, salt, minerals, fuel for brooders, incubators and tank heaters, horse-shoeing, sheep-shearing, etc. In arriving at the manure credit, consideration was given to the kind and the amount of feed consumed and the proportion of the fertilizing elements returned in the manure. Credit was allowed for manure produced, regardless of whether or not it was utilized.

The value of livestock production was determined by adding the sales, the products used in the house and the ending inventory and then deducting from this sum the sum of the beginning inventory and purchases. In the case of the different classes of cattle, transfers from one group to another were considered the same as purchases and sales. The weight produced was calculated in the same manner as the value produced except that weights were used instead of values.

The returns have been expressed in several ways. The gain is the amount left after deducting all the charges listed in the table. The return over feed cost is what is left after deducting the feed cost from the value of the product, excluding manure. In other words, the return over feed cost and the manure are what the farmer has to pay him for his labor, the horse work, shelter, equipment, interest and miscellaneous cash costs. In each case a minus (-) indicates a failure to meet the particular expenses involved.

In considering the returns from livestock, one should keep in mind that these are comparative figures and include some charges which do not represent actual cash outlay. The feed, man labor, horse work, use of buildings and equip-

ment, and interest on the investment have been charged to the enterprise, although they may represent very little direct cash expense. Therefore, a minus return means that the particular class of livestock has failed to pay the usual market prices charged for the different factors. There may be no other more profitable alternative use for the buildings, much of the labor, or for the non-marketable feeds. A return above the price of marketable feeds and cash expenses may justify continued production although these figures fail to show a gain.

Crop Statements

The comparative cost and return for 1935, 1936 and 1937 for each of the principal crops grown on the farms studied are presented on pages 20 to 26. The data for each farm were computed as if the farmer was a full-owner. The factors of cost were charged at local prices. Man labor was charged at 20 cents per hour. Horse work was charged at 8 cents per hour in 1935 and 1936, and at 9 cents in 1937. Two-plow tractors were charged at 45 cents per hour in 1935 and at 50 cents in 1936 and 1937, and three-plow tractors at 60 cents in 1935 and at 65 cents in 1936 and 1937. Seeds were charged at purchase prices, or at farm prices plus the cost of cleaning. Manure was charged at 50 cents per ton plus the cost of application. Forty per cent of the total manuring charge was allocated to the land covered and the balance was prorated on an acre basis to the remaining land normally receiving manure. Flat charges per acre were made for seed for hay crops for machinery and for land. The local farm prices on December 1 were used in determining the value of the crop.

The costs presented are relative rather than absolute costs. Because many of the cost items, such as the farmer's own labor and the use of his own land, machinery and equipment, do not represent actual current "out-of-pocket" cash expense, it was necessary for purposes of comparison to estimate their value. Care must, therefore, be used in interpreting these data; but since the costs have been calculated on the same basis for all crops, they can be used in comparisons between crops.

Facts About the Organization and Production of the Farms

	1937			1936	1935	Average
	Five high earnings	Five low earnings	All farms	All farms	All farms	three years
Acres per Farm:						
Barley	32	41	27	38	51	39
Oats	50	40	26	26	35	29
Mixed oats and barley	-	-	5	5	3	4
Mixed oats and wheat	-	4	8	2	7	6
Wheat	-	-	11	8	11	10
Corn	36	28	28	32	26	29
Flax	15	21	-	4	1	2
Other grain	1	4	3	7	11	7
Alfalfa	25	18	20	14	18	17
Clover and timothy	12	14	17	23	11	17
Wild hay	2	3	1	2	3	2
Other hay	3	5	3	3	5	4
Other crops	9	8	6	15	3	8
All crops	185	186	157	179	185	174
Woods and pasture	156	141	105	109	135	116
Farmstead, road and waste	13	12	11	13	14	13
All land	354	339	273	301	334	303
Livestock per Farm:						
Cows, no.	24	18	20	20	19	20
Other cattle, no.	26	27	23	26	25	25
Sheep, no.	15	23	19	18	21	19
Hogs, pounds produced	14730	12418	11888	13124	9459	11490
Laying hens, no.	195	141	142	204	187	178
Other chickens, no.	114	69	208	130	117	152
Hours of Man Labor per Farm:						
Total	10198	9339	8885	9319	8829	9011
Livestock	5734	4147	4330	4544	3802	4225
Crops	2409	2491	2267	2469	2559	2432
Other	2055	2701	2288	2308	2468	2355
Operator	3684	3027	3298	3290	3200	3263
Unpaid family labor	2412	2373	2109	2373	1688	2057
Hired	3822	3632	3188	3410	3617	3405
Exchange received	279	306	290	246	324	287
Hours Worked per Day:						
Work days	11.4	9.8	10.5	10.5	9.5	10.2
Sundays	5.8	2.8	4.2	4.3	3.2	3.9
Work horses per farm	6	6	5	6	6	6
Hours worked per horse	733	768	745	848	887	827
Crop acres per horse	25	37	30	33	34	32

Receipts, Expenses and Earnings per Farm

	1937			1936	1935	Average
	Five high earnings	Five low earnings	All farms	All farms	All farms	three years
Receipts:						
Dairy products	$2067	$1222	$1458	$1360	$1049	$1289
Cattle	997	716	721	671	771	721
Hogs	1227	1275	1056	1169	725	984
Sheep and wool	149	165	102	102	93	99
Poultry and eggs	237	352	1035	528	310	624
Horses	14	6	108	111	110	110
Barley	375	339	278	560	344	394
Wheat	50	225	111	96	147	118
Other crops	195	146	197	294	135	209
Work off farm	112	338	195	151	252	198
Miscellaneous	310	414	329	536	143	336
A.A.A. payments	218	168	192	231	105	176
Total cash farm receipts	8092	5366	5782	5809	4184	5258
Farm produce used	441	320	352	384	363	366
Increase in inventory	-	-	59	1009	14	361
TOTAL FARM RECEIPTS	8533	5686	6193	7202	4561	5985
Expenses:						
Cattle bought	41	89	71	334	153	186
Hogs bought	123	16	54	95	45	65
Sheep bought	-	1	6	16	7	10
Poultry bought	84	22	50	88	29	56
Horses bought	-	29	32	65	64	54
Feed for livestock	1738	497	917	698	292	636
Other livestock expense	194	51	100	48	37	62
Crop expense	258	256	227	215	199	214
Hired labor	266	457	356	360	366	361
Buildings, fencing	144	141	143	425	213	260
Machinery	382	634	419	384	358	387
Tractor	409	410	329	313	207	283
Truck	113	142	135	126	121	127
Auto	81	242	148	95	83	109
Electricity	50	46	39	39	40	39
Taxes	326	331	285	268	244	266
Insurance	60	49	50	55	39	48
Miscellaneous	31	34	30	29	29	29
Total cash farm expenses	4300	3447	3391	3653	2526	3190
Board for hired labor	156	147	143	156	167	155
Decrease in inventory	94	445	-	-	-	-
TOTAL FARM EXPENSES	4550	4039	3534	3809	2693	3345
Returns to capital and family labor	3983	1646	2659	3393	1868	2640
Interest on average inventory	976	982	866	900	862	876
Family labor earnings	3007	664	1793	2493	1006	1764
Wages for unpaid family labor	650	474	422	453	338	404
OPERATOR'S LABOR EARNINGS	2357	190	1371	2040	668	1360

Average Farm Inventories

	1937 Five high earnings	1937 Five low earnings	1937 All farms	1936 All farms	1935 All farms	Average three years
Land and buildings	$10786	$12633	$10251	$11215	$11072	$10846
Horses	775	640	778	793	750	774
Cattle	2324	1660	1697	1763	1446	1635
Sheep	232	103	99	91	110	100
Swine	434	440	395	370	294	353
Poultry	401	98	215	135	80	143
Feeds, seeds and miscellaneous	1593	1697	1402	1447	1358	1402
Auto (farm share)	122	224	149	72	70	97
Truck (farm share)	175	137	140	149	115	135
Tractor	611	430	459	366	315	380
Machinery and equipment	2073	1584	1743	1637	1633	1671
Total	19526	19646	17328	18038	17243	17536

Farm Produce Used in the House

	Quantities Used: 1937 Five high earnings	1937 Five low earnings	1937 All farms	1936 All farms	1935 All farms	Average three years	Value: 1937 Five high earnings	1937 Five low earnings	1937 All farms	1936 All farms	1935 All farms	Average three farms
Milk, qts.	2055	1540	1375	1536	1625	1512	$73.67	$51.68	$47.18	$50.05	$47.55	$48.26
Cream, pts.	226	185	576	277	291	381	27.09	21.66	27.21	29.49	27.57	28.09
Butter, lb.	-	-	-	-	3	1	-	-	-	.04	.84	.29
Skimmilk, qts.	245	86	164	152	79	132	.90	.13	.76	.67	.30	.57
Eggs, doz.	225	246	213	214	205	211	39.96	44.04	37.69	43.01	42.14	40.94
Poultry, lb.	218	206	165	209	159	178	34.08	29.39	24.46	24.85	19.94	23.08
Hogs, lb.	838	760	745	804	992	847	67.41	58.75	59.94	75.24	92.99	76.06
Cattle, lb.	312	-	194	393	247	278	23.81	-	15.02	26.82	14.00	18.63
Sheep, lb.	-	-	-	-	10	3	-	-	-	-	.54	.18
Potatoes, bu.	57	28	36	39	46	40	51.07	23.90	31.93	26.35	17.70	25.33
Fuel	-	-	-	-	-	-	77.00	49.00	59.90	67.08	68.45	65.14
Fruits and vegetables	-	-	-	-	-	-	46.00	41.00	48.00	40.63	31.25	39.96
Total							440.99	319.55	352.09	384.23	363.27	366.53
Size of family (man equivalent)							5.7	4.6	4.7	4.6	4.9	4.7

Household and Personal Statement*

	1937 Five low earnings	1937 Five high earnings	1937 All farms	1936 All farms	1935 All farms	Average three years
Inventories:						
House, woodshed and smokehouse	$3390	$3107	$2644	$2614	$2823	$2694
Furnishings and equipment	469	366	476	415	451	447
Clothing, jewelry, etc.	171	245	219	218	224	220
Electric plant and motors+	39	2	14	7	8	10
Gas engine+	-	-	-	-	2	1
Auto and truck+	380	203	214	233	246	231
Total	4449	3923	3567	3487	3754	3603
Cash Expenses:						
Food	310	319	326	312	292	310
Operating and supplies	65	71	65	50	39	51
Furnishings and equipment	27	105	88	95	59	81
Additions and repairs on house	22	145	94	171	53	106
Hired help	43	5	18	19	22	20
Electricity+	44	47	31	33	30	31
Clothing and materials	128	92	143	134	141	139
Health	32	120	87	50	47	62
School expenses	-	36	15	17	21	18
Reading materials	3	9	5	5	6	5
Church, charity, etc.	15	43	37	47	39	41
Recreation	7	6	22	19	18	20
Personal	135	289	140	128	136	135
Life insurance and savings	133	132	191	126	144	153
Auto and truck+	536	351	286	296	314	298
Total	1500	1770	1548	1502	1361	1470
Farm produce used	404	320	348	384	363	365
Decrease in inventory	-	-	-	-	19	-
Interest on inventory	222	196	179	174	188	181
Total expense	2126	2286	2075	2060	1931	2016
Receipts:						
Cash receipts	1529‡	124	416‡	121	271	269
Increase in inventory	94	73	68	145	-	65
Total	1623	197	484	266	271	334
Net cash expense	503	2089	1591	1794	1660	1682
Size of family	4.6	5.1	4.6	4.6	4.9	4.7

*For farms furnishing complete records of household and personal expenses.
+Household and personal share.
‡Large primarily because of inheritance of substantial sums.

Cows

The costs and returns are for cows only. They neither include any feed nor expense for the bull nor any credit for calves born. Due to the fact that in some cases calves were allowed to nurse for a short time, it was necessary to estimate the consumption of whole milk while nursing. It was assumed that the calves that were nursing received two gallons of milk per day. The value of the dairy products fed includes all milk and skimmilk fed to calves as well as to the other classes of livestock. The butterfat per cow was calculated by dividing the total butterfat utilized (including that sold, used in the house, and fed to livestock) by the average number of cows in the herd.

Cost and Return per Cow*

	1937	1936	1935	Average 3 years
Number of farms	25	24	20	
Number of cows per farm	20	20	19	20
Butterfat per cow, lb.	224	207	189	307
Man labor, hours	142	140	126	136
Horse work, hours	4.1	5.2	3.9	4.4
Costs:				
Feed	$41.81	$37.49	$27.57	$35.64
Man labor	27.53	28.11	25.23	26.96
Horse work	.41	.52	.32	.41
Shelter	7.16	7.25	7.83	7.41
Equipment	3.87	4.06	3.89	3.94
Interest at 5%	2.67	2.43	2.19	2.43
Miscellaneous cash	1.22	1.24	1.04	1.17
Total costs	84.73	81.10	68.07	77.96
Manure credit	4.28	3.75	2.61	3.55
Appreciation	2.69	.42	2.26	1.79
Total credit	6.97	4.17	4.87	5.34
Net cost	77.76	76.93	63.20	72.63
Value of dairy products:				
Sold	77.26	69.73	54.93	67.30
Used in house	4.06	4.17	4.18	4.14
Fed to livestock	16.15	15.22	11.70	14.36
Total product	97.47	89.12	70.81	85.80
Return over all costs	19.71	12.19	7.61	13.17
Return over feed cost	58.29	52.05	45.50	51.95
Price received per pound of B.F., cts.	37.3	36.5	33.1	35.6
Feeds:				
Corn, lb.	211	187	86	159
Small grain, lb.	693	677	323	564
Other concentrates, lb.	268	229	214	234
Hay, lb.	3307	3266	2029	2531
Fodder and stover, lb.	359	260	230	283
Silage, lb.	5701	5908	6311	5973
Total concentrates, lb.	1172	1093	623	763
Total roughage,+ lb.	5566	5495	4363	5141
Pasture, days	138	168	142	149

Range for specified items, 1937:			
No. of head per farm	12	to	48
Butterfat per cow, lb.	151	to	327
Man labor, hours	64	to	253
Horse work, hours	0.4	to	9.4
Net cost	$41.72	to	$119.05
Value of total product	64.56	to	163.55
Return over all costs	-2.61‡	to	45.88
Return over feed cost	41.13	to	104.88
Price received per pound of B.F., cts.	30.6	to	47.0
Total concentrates fed, lb.	26	to	2471
Total roughages,+ lb.	3881	to	9523
Pasture, days	114	to	162

*See pages 3 and 8 for methods of computing.
+Three pounds of silage considered as one pound of roughage.
‡Costs greater than value of production.

Other Cattle

Other cattle include all cattle except cows. The dairy herds include herds in which calves were raised only for replacement, for sale as breeding stock or for sale as veal. The milk-and-beef herds include those where some cattle, raised or purchased, were fattened for sale as beef.

Cost and Return per Head of Other Cattle
Dairy Herds

	1937	1936	1935	Average 3 years
Number of farms	20	17	13	
Number of head per farm	20	18	20	19
Man labor, hours	22.1	22.9	18.2	21.1
Horse work, hours	1.9	2.1	1.5	1.8
Costs:				
Feed	$25.07	$22.53	$19.47	$22.35
Man labor	4.42	4.58	3.64	4.21
Horse work	.19	.20	.13	.17
Shelter	5.54	5.22	5.91	5.56
Equipment	.27	.05	.21	.18
Interest at 5%	1.54	1.62	1.34	1.50
Miscellaneous cash	.41	.41	.26	.36
Total costs	37.44	34.61	30.96	34.33
Manure credit	2.09	1.94	1.50	1.84
Net cost	35.35	32.67	29.46	32.49
Value of product	32.27	30.02	28.86	30.38
Return over all costs	-3.08*	-2.65	-.60	-2.11
Return over feed cost	7.20	7.49	9.39	8.03
Feeds:				
Grain, lb.	338	295	228	287
Mill feeds, lb.	23	26	33	27
Hay, lb.	1624	1540	825	1330
Fodder and stover, lb.	206	132	89	142
Silage, lb.	2148	2177	3070	2484
Total concentrates, lb.	361	321	261	314
Total roughages,* lb.	2546	2298	1937	2260
Whole milk, lb.	274	273	275	274
Skimmilk, lb.	2077	2152	1909	2048
Pasture, days	100	124	111	112
Range for specified items, 1937:				
No. of head per farm			6 to	52
Net cost			$22.52 to	$83.04
Value of product			15.96 to	77.86
Return over all costs			-21.55 to	9.44
Return over feed cost			-14.36 to	27.84
Total concentrates, lb.			37 to	767
Total roughage,+ lb.			1600 to	3349
Whole milk, lb.			47 to	1996
Skimmilk, lb.			1081 to	3512
Pasture, days			20 to	148

*A minus indicates a cost greater than the value of production.
+Three pounds of silage considered as one pound of roughage.

Cost and Return per Head of Other Cattle
Milk-and-Beef Herds

	1937	1936	1935	Average 3 years
Number of farms	5	7	7	
Number of head per farm	39	45	34	39
Man labor, hours	14.7	15.4	11.0	13.7
Horse work, hours	.8	1.2	.9	1.0
Costs:				
Feed	$24.71	$19.82	$16.35	$20.30
Man labor	2.94	3.08	2.20	2.74
Horse work	.08	.10	.07	.08
Shelter	3.14	3.95	4.63	3.91
Equipment	.08	.09	.16	.11
Interest at 5%	1.40	1.52	1.17	1.36
Miscellaneous cash	.16	.25	.13	.18
Total costs	32.51	28.81	24.71	28.68
Manure credit	2.05	1.74	1.39	1.73
Net cost	30.46	27.07	23.32	26.95
Value of product	23.22	24.34	27.55	25.04
Return over all costs	-7.24*	-2.73	4.23	-1.91
Return over feed cost	-1.49	4.52	11.20	4.74
Feed:				
Grain, lb.	566	271	247	361
Mill feeds, lb.	5	6	8	6
Hay, lb.	1583	1398	871	1284
Fodder and stover, lb.	428	286	460	391
Silage, lb.	2131	1989	2349	2156
Total concentrates, lb.	571	277	255	368
Total roughages,+ lb.	2721	2347	2114	2394
Whole milk, lb.	110	155	220	162
Skimmilk, lb.	1321	818	837	992
Pasture, days	92	135	121	116
Range for specified items, 1937:				
No. of head per farm			19 to	62
Net cost			$22.47 to	$40.99
Value of product			19.74 to	30.41
Return over all costs			-15.38 to	-1.94
Return over feed cost			-10.83 to	6.93
Total concentrates, lb.			70 to	995
Total roughages,+ lb.			2016 to	3652
Whole milk, lb.			41 to	210
Skimmilk, lb.			722 to	2711
Pasture, days			21 to	128

*A minus indicates a cost greater than the value of production.
+Three pounds of silage considered as one pound of roughage.

All Cattle

Expenses and returns per unit of all cattle, including cows and other cattle, are presented. One cow, one bull, one feeder steer or heifer, or two head of other cattle, was considered as one unit. In this statement for "all cattle", the milk used by the calves is included both in the feed and in the credit for dairy products fed to livestock.

Cost and Return per Unit of All Cattle
Dairy Herds

	1937	1936	1935	Average 3 years
Number of farms	20	17	13	
Units per farm	31	27	39	29
Man labor, hours	103.0	126.0	99.0	109.0
Horse work, hours	4.4	5.5	4.1	4.7
Costs:				
Feed	$43.35	$40.78	$31.36	$38.50
Man labor	20.61	24.79	19.76	21.72
Horse work	.43	.56	.34	.44
Shelter	7.99	8.74	9.53	8.76
Equipment	2.66	2.99	2.49	2.71
Interest at 5%	2.80	2.88	2.43	2.70
Miscellaneous cash	1.12	1.21	.83	1.05
Total costs	78.96	81.95	66.74	75.88
Manure credit	4.16	3.76	2.67	3.53
Net cost	74.80	78.19	64.07	72.35
Value of product:				
Animal	21.07	20.57	21.24	20.96
Dairy	65.76	65.94	47.54	59.75
Total product	86.83	86.51	68.78	80.71
Return over all costs	12.03	8.32	4.71	8.36
Return over feed cost	43.48	45.73	37.42	42.21
Feeds:				
Corn, lb.	172	178	68	143
Small grain, lb.	626	597	351	525
Mill feeds, lb.	178	179	172	176
Hay, lb.	3307	3054	1719	2693
Fodder and stover, lb.	326	306	199	277
Silage, lb.	5549	5502	6510	5854
Milk, lb.	131	176	171	159
Skimmilk, lb.	1536	1596	1450	1527
Total concentrates,* lb.	1254	1249	861	1121
Total roughage,+ lb.	5483	5194	4088	4922
Pasture, days	164	204	166	178
Range for specified items, 1937:				
Units per farm			16 to	75
Man labor, hours			49 to	138
Net cost			$51.11 to	$103.14
Total value of product			64.14 to	124.93
Return over all costs			-11.30 to	30.93
Return over feed cost			28.44 to	72.06
Total concentrates,* lb.			462 to	2133
Total roughage,+ lb.			3694 to	9287
Pasture, days			123 to	202

*Six pounds of milk or skimmilk considered as one pound of concentrates.
+Three pounds of silage considered as one pound of roughage.

Cost and Returns per Unit of All Cattle
Milk-and-Beef Herds

	1937	1936	1935	Average 3 years
Number of farms	5	7	7	
Units per farm	42	44	37	41
Man labor, hours	75	67	65	69
Horse work, hours	1.5	2.9	2.1	2.2
Costs:				
Feed	$38.24	$39.92	$28.78	$35.64
Man labor	14.98	13.42	12.93	13.78
Horse work	.15	.26	.16	.19
Shelter	5.55	7.14	7.60	6.76
Equipment	1.66	1.86	2.42	1.98
Interest at 5%	2.28	2.73	2.09	2.37
Miscellaneous cash	.60	.77	.67	.68
Total costs	63.46	66.10	54.65	61.40
Manure credit	3.47	3.92	2.72	3.37
Net cost	59.99	62.18	51.93	58.03
Value of product:				
Animal	22.67	27.27	26.14	25.36
Dairy	36.16	37.83	33.85	35.95
Total product	58.83	65.10	59.99	61.31
Return over all costs	-1.16	2.92	8.06	3.28
Return over feed cost	20.59	25.18	31.21	25.66
Feeds:				
Corn, lb.	281	261	192	245
Small grain, lb.	644	532	262	479
Mill feeds, lb.	54	67	32	51
Hay, lb.	2798	3367	2065	2743
Fodder and stover, lb.	661	399	607	559
Silage, lb.	3677	5118	5044	4613
Milk, lb.	95	152	191	146
Skimmilk, lb.	1161	916	872	983
Total concentrates,* lb.	1188	1038	663	963
Total roughage,+ lb.	4685	5473	4352	4837
Pasture, days	141	223	201	188
Range for specified items, 1937:				
Units per farm			22 to	65
Man labor, hours			27 to	125
Net cost			$45.07 to	$76.91
Total value of product			40.77 to	73.41
Return over all cost			-5.36 to	5.25
Return over feed cost			5.31 to	27.46
Total concentrates,* lb.			504 to	2048
Total roughage,+ lb.			3704 to	5622
Pasture, days			63 to	181

*Six pounds of milk or skimmilk considered as one pound of concentrates.
+Three pounds of silage considered as one pound of roughage.

Sheep

The cost and return per head for sheep are presented below. The number of head of sheep is the average number of mature head for a year when two lambs up to six months of age are considered as one mature sheep. The fleece weight was calculated by dividing the total clip by the number of sheep sheared. The per cent death loss is based on the total number of sheep and lambs, regardless of the length of time that they were on the farm. The lambs raised per ewe is the number of lambs raised to six months of age divided by the number of ewes at lambing time.

Cost and Return per Sheep

	1937	1936	1935	Average 3 years
Number of farms	12	12	12	
Number of sheep per farm	39	35	33	36
Man labor, hours	3.6	2.4	2.6	2.8
Horse work, hours	.3	.1	.3	.2
Costs:				
Feed	$1.84	$1.49	$1.56	$1.63
Man labor	.73	.48	.51	.57
Horse work	.02	.01	.03	.02
Shelter	.59	.70	.59	.63
Equipment	.10	.11	.12	.11
Interest at 5%	.25	.24	.25	.25
Miscellaneous cash	.15	.19	.18	.17
Total cost	3.68	3.22	3.24	3.38
Manure credit	.16	.13	.11	.13
Net cost	3.52	3.09	3.13	3.25
Value produced:				
Sheep	3.60	3.50	2.77	3.29
Wool	1.71	1.84	1.73	1.76
Total product	5.31	5.34	4.50	5.05
Return over all costs	1.79	2.25	1.37	1.80
Return over feed cost	3.47	3.85	2.94	3.42
Weight of fleece, lb.	8.8	7.9	8.3	8.3
Per cent lamb crop	98	104	86	96
Per cent death loss, lambs	9	13	19	14
Per cent death loss, sheep	14	13	10	12
Feeds:				
Grain, lb.	24	16	21	20
Hay and fodder, lb.	188	168	108	155
Silage, lb.	123	58	240	140
Total roughage,* lb.	226	187	188	200
Pasture, days	210	211	156	192
Range for specified items, 1937:				
Number of sheep per farm			10 to	115
Man labor, hours			2 to	6.5
Net cost			$2.15 to	$6.19
Total product			2.63 to	8.48
Return over all costs			-1.28 to	7.63
Return over feed cost			.13 to	9.93
Weight of fleece, lb.			5.8 to	12.6
Per cent of lamb crop			67 to	119
Per cent of death loss, lambs			0 to	29
Per cent of death loss, sheep			0 to	31
Grain, lb.			0 to	82
Total roughage,* lb.			56 to	378
Pasture, days			181 to	254

*Three pounds of silage considered as one pound of roughage.

Hogs

The cost and return per one hundred pounds of hogs are presented below. The number of pigs per litter was calculated by adding together the number of pigs raised to six months of age and those that were sold or butchered at an earlier age. This sum was divided by the number of litters farrowed. The average market weight and the price received per hundred pounds are based on the total sales of hogs and pigs. The pounds of hogs produced include any gain in weight of breeding hogs and likewise the expenses include the cost of maintaining the breeding herd. The return over all costs is the difference between the net expenses per hundred pounds and the selling price. It does not include any receipts from corn-hog benefit payments. The return over feed is the difference between the feed cost and the selling price.

Cost and Returns per 100 Pounds Hogs Produced

	1937	1936	1935	Average 3 years
Number of farms	23	24	19	
Pounds produced per farm	12,643	13,124	9,741	11,836
Man labor, hours	3.4	3.4	2.9	3.2
Horse work, hours	.2	.3	.3	.3
Costs:				
Feed	$6.36	$6.62	$4.94	$5.98
Man labor	.69	.67	.57	.64
Horse work	.02	.03	.03	.03
Shelter	.25	.20	.24	.23
Equipment	.11	.09	.19	.13
Interest at 5%	.16	.15	.18	.16
Miscellaneous cash	.05	.06	.05	.05
Total cost	7.64	7.82	6.20	7.22
Manure credit	.40	.35	.37	.37
Net cost	7.24	7.47	5.83	6.85
Average selling price per cwt.	9.31	9.18	8.99	9.16
Return over all costs	2.07	1.71	3.16	2.31
Return over feed	2.95	2.56	4.05	3.19
Average weight of hogs sold	236	226	235	232
Pigs raised per litter	6.4	6.0	5.9	6.3
Feeds:				
Corn, lb.	189	214	236	213
Small grain, lb.	223	147	151	174
Other concentrates, lb.	12	12	17	14
Total concentrates, lb.	424	373	404	400
Skimmilk equivalent,* lb.	713	578	597	663
Pasture, days	9	27	27	21
Range for specified items, 1937:				
Pounds produced per farm			1975 to	29740
Man labor, hours			2.3 to	7.8
Net cost			$5.07 to	$14.10
Average selling price per cwt.			7.45 to	10.78
Return over all costs			-3.32 to	5.40
Average weight of hogs sold			185 to	293
Pigs raised per litter			2.3 to	8.7
Total concentrates, lb.			260 to	553
Skimmilk equivalent,* lb.			356 to	1499
Pasture, days			0 to	50

*Skimmilk and buttermilk plus ten times the weight of tankage fed.

Chickens

The data for chickens are presented on the basis of one hundred hens. In a few instances, a small number of ducks or geese were raised. In such cases the feed, labor and other expenses, and the receipts for ducks and geese are included. Portable brooder houses were considered as equipment in arriving at the costs for shelter and equipment. The division of the costs between the production of eggs and the production of poultry was made on the basis of the proportion of the income obtained from each.

Cost and Returns per 100 Hens

	1937	1936	1935	Average 3 years
Number of farms	24	23	19	
Number of laying hens per farm	145	136	124	135
Number of other chickens per farm	71	77	79	76
Eggs per hen	141	121	119	127
Man labor, hours	296	355	329	327
Horse work, hours	7.7	9.1	9.0	8.6
Costs:				
Feed	$190.96	$201.93	$175.76	$189.55
Man labor	59.25	71.04	65.82	65.37
Horse work	.73	.90	.77	.80
Shelter	16.79	18.31	18.51	17.87
Equipment	21.44	15.96	20.08	19.16
Interest at 5%	3.65	3.83	3.65	3.71
Miscellaneous cash	11.77	13.05	17.36	14.06
Total cost	304.59	325.02	301.95	310.52
Manure credit	8.52	9.22	9.49	9.08
Net cost	296.07	315.80	292.46	301.44
Value of product:				
Poultry	63.53	69.32	76.49	69.78
Eggs	220.40	209.08	218.44	215.97
Total product	283.93	278.40	294.93	285.75
Return over all costs	-12.14	-37.40	2.47	15.69
Return over feed cost	92.97	76.47	119.17	96.20
Selling price per dozen eggs	.19	.21	.23	.21
Feeds:				
Corn, lb.	2719	3687	3244	3217
Small grain, lb.	4228	4226	5851	4768
Other concentrates, lb.	3054	2778	2477	2770
Meat scraps and tankage, lb.	417	425	337	393
Skimmilk, lb.	3769	6217	6126	5371
Total concentrates, lb.	10001	10691	11572	10755
Skimmilk equivalent,+ lb.	10858	13448	11855	12054

Range for specified items, 1937:			
Number of laying hens per farm	47	to	336
Number of other chickens per farm	18	to	269
Eggs per hen	89	to	213
Man labor, hours	127	to	480
Net cost	$160.91	to	$450.52
Value of poultry	5.79	to	150.62
Value of eggs	137.83	to	351.95
Value of total product	161.05	to	420.01
Return over all costs	-113.11	to	103.09
Return over feed cost	27.55	to	232.75
Selling price per dozen eggs	16.6	to	22.5

*A minus (-) indicates a loss or a failure to cover the changes.

+One pound of meat scrap or tankage considered as 17 pounds of skimmilk.

Work Horses

Average cost per work horse and per hour of horse work are presented. Costs and income for colts and other horses that are not worked are not included. Tractors were used for drawbar power on nineteen farms in 1937, on eighteen farms in 1936 and on fifteen farms in 1935.

Cost of Horse Work per Horse

	1937	1936	1935	Average 3 years
Number of farms	25	24	19	
Horses per farm	5	6	6	6
Crop acres per horse	30	33	34	32
Man labor, hours	55	63	54	57
Costs:				
Feed	$35.91	$40.14	$40.87	$38.97
Labor	10.95	12.56	10.78	11.43
Shelter	10.01	8.44	10.14	9.53
Equipment	4.30	4.82	5.49	4.87
Interest at 5%	5.32	5.20	4.91	5.14
Miscellaneous cash	1.08	1.02	.79	.96
Depreciation	6.90	9.00	6.50	7.47
Total cost	74.47	81.18	79.48	78.38
Manure credit	3.00	4.15	5.50	4.22
Net cost	71.47	77.03	73.98	74.16
Hours worked	745	848	887	827
Cost per hour, cents	9.6	9.1	8.3	9.0
Feed:				
Grain, lb.	1727	2328	2286	2114
Roughages,* lb.	3713	4536	4073	4107
Pasture, days	72	82	80	78
Range for specified items, 1937:				
Horses per farm			3 to	8
Crop acres per horse			15 to	55
Man labor, hours			35 to	79
Net cost			$46.35 to	$100.95
Hours worked			455 to	1037
Cost per hour, cents			5.6 to	15.1
Grain, lb.			720 to	3208
Roughage,* lb.			304 to	5044
Pasture, days			44 to	107

*Hay, fodder and stover plus one-third the weight of silage.

Automobiles and Trucks

Cost per mile of operation for automobiles and trucks is presented. In these statements, the labor charge is the value, at twenty cents per hour, of the time the regular farm workers spent in repairing and servicing the machines. It also includes a charge for any use of horses in repairing them. Other cash expenses include the cost of license, repairs, parts, tires, insurance, and similar items. The miles driven are based on a check of the speedometer reading at the beginning and end of the year.

Cost per Mile for Automobiles

	1937	1936	1935	Average 3 years
Number of farms	22	23	18	
Miles driven per car	8254	8422	7409	8028
Miles per gallon of gasoline	15.5	15.0	14.0	14.8
Cost per mile of operation:				
Labor	$ -	$.001	$.001	$.001
Gasoline, oil and grease	.013	.012	.013	.013
Other cash expenses	.011	.012	.013	.012
Depreciation	.007	.005	.008	.006
Interest at 5%	.002	.002	.002	.002
Total cost	.033	.032	.037	.034
Range for specified items, 1937:				
Miles driven per car			1000 to	21000
Miles per gallon of gasoline			8.8 to	20.0
Cost per mile of operation, cents			2.3 to	5.2

Cost per Mile for Trucks

	1937	1936	1935	Average 3 years
Number of farms	15	14	12	
Miles driven per truck	6365	4792	4126	5094
Miles per gallon of gasoline	14.3	12.4	12.7	13.1
Cost per mile of operation:				
Labor	$.001	$.002	$.004	$.003
Gasoline, oil and grease	.015	.017	.016	.016
Other cash expenses	.014	.022	.026	.021
Depreciation	.010	.009	.011	.009
Interest at 5%	.003	.004	.004	.004
Total cost	.043	.054	.061	.053
Range for specified items, 1937:				
Miles driven per truck			1320 to	16219
Miles per gallon of gasoline			7.0 to	22.1
Cost per mile of operation, cents			2.2 to	9.0

Tractors

The number of hours tractors were operated and the cost per hour of operation are presented below for both two-plow and three-plow tractors. The labor of the regular farm workers used in servicing and repairing is charged at twenty cents per hour. The use of the automobile, truck and horses in repairing or servicing is charged at the rates found on the farms studied. Other cash expenses include the cash cost of repairing, parts, etc. Interest is calculated on the average of the beginning and ending inventories.

Cost per Hour for Tractors

	1937	1936	1935	Average 3 years
Two-Plow Tractors				
Number of farms	10	9	4	
Hours worked per year:				
Drawbar	275	194	292	254
Belt	71	59	79	70
Totals	346	253	371	324
Per 100 hours of operation:				
Labor, hours	8.8	10.6	9.4	9.6
Fuel, gallons	212	235	192	213
Oil, quarts	17	25	25	22
Cost per hour of operation:				
Labor	$.018	$.021	$.029	$.023
Fuel, oil and grease	.308	.366	.284	.319
Other cash expenses	.050	.033	.066	.050
Use of auto, truck and horses	.003	.003	.005	.004
Depreciation	.144	.085	.108	.113
Interest at 5%	.068	.099	.046	.071
Total cost	.591	.607	.538	.578
Range for specified items, 1937:				
Total hours worked per year			94 to	514
Fuel per 100 hours, gallons			111 to	339
Oil per 100 hours, quarts			10 to	27
Cost per hour of operation			$.364 to	$.698
Three-Plow Tractors				
Number of farms	11	9	9	
Hours worked per year:				
Drawbar	388	443	372	401
Belt	161	137	183	160
Total	549	580	555	561
Per 100 hours of operation:				
Labor, hours	8.7	10.6	10.7	10.0
Fuel, gallons	246	245	252	248
Oil, quarts	22	31	35	29
Cost per hour of operation:				
Labor	$.017	$.021	$.021	$.020
Fuel, oil and grease	.380	.352	.295	.342
Other cash expenses	.099	.053	.195	.115
Use of auto, truck and horses	.002	.002	.005	.003
Depreciation	.145	.087	.002*	.077
Interest at 5%	.067	.056	.050	.058
Total cost	.710	.571	.564	.615
Range for specified items, 1937:				
Total hours worked per year			229 to	1012
Fuel per 100 hours, gallons			166 to	333
Oil per 100 hours, quarts			8 to	40
Cost per hour of operation			$.415 to	$.958

*Appreciation resulting from extensive repairs.

Comparative Cost and Return per Acre for Barley and Oats

	Barley				Oats			
	1937	1936	1935	Average 3 years	1937	1936	1935	Average 3 years
Number of farms	23	19	19		18	17	18	
Acres per farm	30	40	53	41	36	34	40	37
Costs and returns:								
Man labor	$1.93	$1.62	$1.61	$1.72	$1.78	$1.65	$1.63	$1.69
Horse and tractor	2.23	2.07	1.84	2.04	2.16	2.13	1.94	2.08
Seed	2.41	1.55	2.12	2.03	1.29	.87	1.34	1.17
Twine	.30	.17	.16	.21	.29	.18	.17	.21
Threshing	.77	.49	.61	.62	1.26	.87	.90	1.01
Manure	1.68	1.29	.79	1.25	1.78	1.10	.75	1.21
Machinery	1.05	1.05	1.06	1.06	1.05	1.05	1.06	1.05
Operating costs	10.37	8.24	8.19	8.93	9.61	7.85	7.79	8.42
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total costs	13.87	11.74	11.69	12.43	13.11	11.35	11.29	11.92
Crop value (December 1)	17.03	19.32	11.28	15.88	10.60	12.67	7.63	10.30
Crop value less cost*	3.16*	7.58+	-.41+	3.45+	-2.51	1.32	-3.66	-1.62
Yield, bushels	26.2	16.8	20.5	21.2	42.4	28.8	31.8	34.3
Cost per bushel: Average	$.53	$.70	$.57	$.59	$.31	$.39	$.36	$.35
Lowest	.32	.40	.35	.32	.20	.29	.24	.20
Highest	.76	1.16	.91	1.16	.48	.69	.64	.69
December 1 price, malting barley	.65	1.15	.55	.78	.25	.44	.24	.31
Amounts of labor, power and materials:								
Before harvest:								
Man labor, hours	3.4	3.7	3.1	3.4	3.4	4.0	3.2	3.5
Horse work, hours	7.7	10.2	10.3	9.4	8.6	12.2	11.6	10.8
Tractor work, hours	1.4	1.1	.8	1.1	1.2	1.0	.7	1.0
Harvest:								
Man labor, hours	6.2	4.4	4.9	5.2	5.5	4.2	4.9	4.9
Horse work, hours	6.2	5.2	5.3	5.4	6.0	4.8	5.9	5.6
Tractor work, hours	.4	.3	.3	.3	.2	.3	.3	.3
Seed, bushels	2.0	2.0	1.7	1.9	2.1	2.2	2.3	2.2
Twine, pounds	3.2	1.8	2.2	2.4	3.1	2.5	2.4	2.7

*A minus (-) indicates a cost greater than the value of the crop.

+At malting barley prices. Using feed barley prices of 42 cents in 1937, 73 cents in 1936, and 35 cents in 1935, crop value less cost would be $-2.87, $.52 and $-4.51 respectively. The three-year average would be $-2.28.

Comparative Cost and Return per Acre of Wheat

	Winter Wheat				Spring Wheat		
	1937	1936	1935	Average 3 years	1937	1935	Average 2 years
Number of farms	17	13	10		6	9	
Acres per farm	14	13	14	14	7	10	8
Costs and returns:							
Man labor	$1.84	$1.94	$2.22	$2.00	$1.67	$1.70	$1.68
Horse and tractor	2.17	2.31	2.08	2.19	2.25	1.85	2.05
Seed	2.32	1.95	1.97	2.08	2.62	1.83	2.22
Twine	.24	.16	.21	.20	.25	.18	.22
Threshing	.57	.67	.75	.66	.49	.42	.46
Manure	1.56	1.08	.58	1.07	1.05	.68	.86
Machinery	1.05	1.16	1.05	1.09	1.05	1.05	1.05
Operating cost	9.75	9.27	8.86	9.29	9.37	7.71	8.54
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total cost	13.25	12.77	12.36	12.79	12.87	11.21	12.04
Crop value (December 1)	13.52	19.94	21.86	18.44	13.50	8.25	10.88
Crop value less cost*	.27	7.17	9.50	5.65	.63	-2.96	1.16
Yield, bushels	16.9	16.8	23.5	19.1	15.0	11.0	13.0
Cost per bushel: Average	$.78	$.76	$.53	$.67	$.86	$1.02	$.93
Lowest	.54	.46	.34	.34	.59	.70	.59
Highest	1.25	1.79	1.10	1.79	1.24	1.51	1.51
December 1 price	.80	1.18	.93	.97	.90	.75+	.82+
Amounts of labor, power and materials:							
Before harvest:							
Man labor, hours	3.6	4.2	2.7	3.5	3.3	3.2	3.2
Horse work, hours	9.9	13.7	9.6	11.1	6.4	10.8	8.6
Tractor work, hours	1.0	.8	.7	.8	1.6	.6	1.1
Harvest:							
Man labor, hours	5.6	5.5	8.4	8.5	5.0	5.3	5.2
Horse work, hours	6.0	7.0	9.4	7.5	6.7	5.2	6.0
Tractor work, hours	.3	.2	.3	.3	.2	.4	.3
Seed, bushels	1.6	1.7	1.6	1.6	1.7	1.6	1.6
Twine, pounds	2.8	2.3	3.1	2.7	2.9	2.6	2.8

*A minus (-) indicates a cost greater than the value of the crop.
+Low price because of inferior quality.

Comparative Cost and Return per Acre for Oats and Barley, Rye, Flax, and Oats and Wheat

	Oats and Barley				Rye	Flax	Oats & Wheat
	1937	1936	1935	Average 3 years	1935	1935	1935
Number of farms	6	7	4		5	4	5
Acres per farm	21	19	18	19	27	6	23
Costs and returns:							
Man labor	$2.03	$1.83	$1.52	$1.80	$1.39	$2.78	$1.76
Horse and tractor	2.26	2.04	1.90	2.07	1.50	3.01	2.04
Seed	2.13	1.28	2.00	1.80	1.84	1.57	1.85
Twine	.27	.22	.16	.22	.17	.02	.19
Threshing	1.40	.82	.67	.96	.36	1.48	.71
Manure	1.64	1.59	.35	1.19	.65	.38	.73
Machinery	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Operating cost	10.78	8.83	7.65	9.09	6.96	10.29	8.33
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total cost	14.28	12.33	11.15	12.59	10.46	13.79	11.83
Crop value (December 1)	13.67	15.95	6.60	12.08	5.21	9.48	12.30
Crop value less cost*	-.61	3.62	-4.55	.51	-5.25	-4.31	.47
Yield, bushels	40.2+	27.5+	21.3+	29.7+	12.4	6.0	22.6+
Cost per bushel: Average	$.36	$.45	$.52	$.42	$.84	$2.30	$.52
Lowest	.28	.34	.35	.28	.60	1.33	.38
Highest	.42	.86	.83	.86	1.59	4.59	1.52
December 1 price	.34	.58	.31	.41	.42	1.58	.54
Amounts of labor, power and materials:							
To harvest:							
Man labor	3.9	4.0	3.3	3.7	2.4	5.6	2.9
Horse work	9.3	12.0	12.6	11.3	6.1	17.5	7.7
Tractor work	1.3	.8	.5	.9	.8	1.0	1.1
Harvest:							
Man labor, hours	6.1	5.1	4.3	5.2	4.6	8.3	5.9
Horse work, hours	5.6	5.2	4.0	4.9	4.7	11.3	5.6
Tractor work, hours	.4	.5	.5	.5	.3	.4	.5
Seed, bushels	2.3	2.1	2.2	2.2	1.7	.8	2.0
Twine, pounds	2.9	2.7	2.3	2.6	2.3	-	2.5

*A minus (-) indicates a cost greater than the value of the crop.
+At 40 pounds per bushel.

Comparative Cost and Return per Acre for Corn for Grain

	Husked from Standing Stalks				Cut and Shredded			
	1937	1936	1935	Average 3 years	1937	1936	1935	Average 3 years
Number of farms	15	10	15		16	11	7	
Acres per farm	11	15	10	12	10	10	11	10
Costs and returns:								
Man labor	$4.01	$4.62	$4.45	$4.36	$5.74	$5.18	$5.92	$5.61
Horse and tractor	4.36	4.16	4.40	4.30	4.93	4.34	4.83	4.70
Seed	.67	.76	.42	.62	.52	.64	.48	.55
Twine	-	-	-	-	.49	.25	.27	.34
Husker or shredder	.28	-	.19	.16	2.23	1.49	1.74	1.82
Manure	2.26	3.12	1.80	2.39	3.48	3.08	2.48	3.01
Machinery	1.55	1.55	1.55	1.55	2.50	2.48	2.50	2.49
Operating cost	13.13	14.21	12.81	13.38	19.89	17.46	18.22	18.52
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total cost	16.63	17.71	16.31	16.88	20.70+	18.88+	20.54+	20.04+
Crop value (December 1)	20.70	31.40	16.38	22.84	22.05	27.30	13.89	21.28
Crop value less cost*	4.07	13.69	.07	5.94	1.35	9.02	-6.65	1.24
Yield, bushels	46.0	31.4	38.1	38.5	49.0	27.5	32.3	36.3
Cost per bushel: Average	$.36	$.56	$.43	$.44	$.42	$.69	$.64	$.55
Lowest	.26	.35	.26	.26	.27	.33	.36	.27
Highest	.99	1.90	1.07	1.90	.95	2.21	1.31	2.21
December 1 price	.45	1.00	.43	.63	.45	1.00	.43	.63
Amounts of labor, power and materials:								
Before harvest:								
Man labor, hours	9.7	11.8	11.8	11.1	11.1	10.5	11.9	11.2
Horse work, hours	17.3	24.3	28.1	23.2	22.8	24.1	28.1	25.0
Tractor use, hours	2.5	1.4	1.1	1.7	1.8	1.2	.9	1.3
Harvest:								
Man labor, hours	10.3	11.3	10.4	10.7	17.6	15.4	17.6	16.9
Horse work, hours	14.3	17.3	17.0	16.2	21.2	21.8	25.8	22.9
Tractor use, hours	.3	-	.3	.2	-	-	-	-
Seed, bushels	.16	.20	.19	.18	.17	.19	.19	.18
Twine, pounds	-	-	-	-	6.0	3.2	4.4	4.5

+Net cost after deducting credit for stover of $2.69 in 1937, $2.08 in 1936, $1.18 in 1935 and $1.98 for the three-year average.

*A minus (-) indicates a cost greater than the value of the crop.

Comparative Cost and Return per Acre for Alfalfa and for Clover and Timothy Hay

	Alfalfa				Clover and Timothy		
	1937	1936	1935	Average 3 years	1937	1935	Average 2 years
Number of farms	21	15	19		13	7	
Acres per farm	23	11	15	16	15	12	14
Costs and returns:							
Man labor	$1.81	$2.50	$2.80	$2.37	$1.32	$1.70	$1.51
Horse and tractor	1.48	1.69	1.86	1.67	1.07	1.28	1.18
Seed	1.20	1.20	1.10	1.17	1.85	1.10	1.47
Manure	1.79	1.44	.75	1.33	1.96	.81	1.39
Machinery	1.06	1.20	1.21	1.16	.56	.82	.69
Operating cost	7.34	8.03	7.72	7.70	6.76	5.71	6.24
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total cost	10.84	11.53	11.22	11.20	10.26	9.21	9.74
Yield, tons	2.1	1.9	3.1	2.4	1.4	2.3	1.8
Cost per ton: Average	$5.16	$6.07	$3.62	$4.67	$7.33	$4.00	$5.41
Lowest	3.30	2.35	2.29	2.29	4.49	2.76	2.76
Highest	7.77	13.43	6.68	13.43	13.83	5.34	13.83
Amounts of labor and power:							
First cutting:							
Man labor, hours	6.3	6.6	7.6	6.8	6.5	7.2	6.8
Horse work, hours	9.2	10.0	11.4	10.2	9.3	11.8	10.5
Tractor use, hours	.3	.2	.2	.2	.4	.2	.3
Second cutting:							
Man labor, hours	2.8	3.8	5.2	3.9	.1	1.3	.7
Horse work, hours	4.3	6.3	7.6	6.1	.1	3.2	1.6
Tractor use, hours	.1	.1	.2	.1	-	-	-
Third cutting:							
Man labor, hours	.2	2.1	1.2	1.2	-	-	-
Horse work, hours	.3	2.9	1.7	1.6	-	-	-
Tractor use, hours	-	.1	-	-	-	-	-
Per cent of acreage cut twice	88	96	90	91	2	34	18
Per cent of acreage cut three times	13	35	26	25	-	-	-

Comparative Cost and Return per Acre for Corn for Silage and for Clover Hay

	Corn for Silage				Clover Hay		
	1937	1936	1935	Average 3 years	1937	1936	Average 2 years
Number of farms	23	22	20		6	14	
Acres per farm	14	18	13	15	10	18	14
Costs and returns:							
Man labor	$4.07	$3.92	$4.34	$4.11	$.85	$1.43	$1.15
Horse and tractor	4.48	4.00	4.06	4.18	.74	1.12	.93
Seed	.56	.74	.64	.65	2.70*	2.63*	2.66*
Twine	.46	.26	.34	.35	-	-	-
Silage cutter	2.05	2.05	2.40	2.17	-	-	-
Manure	2.66	3.28	2.41	2.78	1.07	1.25	1.16
Machinery	2.50	2.50	2.50	2.50	.56	.57	.57
Operating cost	16.78	16.75	16.69	16.74	5.92	7.02	6.47
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total cost	19.19+	16.90+	19.39+	18.49+	9.42	10.52	9.97
Yield, tons	8.2	5.1	7.4	6.9	.8	1.3	1.0
Cost per ton: Average	$2.34	$3.31	$2.62	$2.68	$11.78	$8.09	$9.97
Lowest	1.50	.96	2.02	.96	9.35	4.68	4.68
Highest	3.77	5.68	3.96	5.68	14.17	13.37	14.17
Amount of labor, power and materials:							
Before harvest:							
Man labor, hours	10.5	11.3	10.1	10.6	-	-	-
Horse work, hours	20.5	24.8	24.0	23.1	-	-	-
Tractor use, hours	2.2	1.5	1.1	1.6	-	-	-
Harvest:							
Man labor, hours	9.8	8.3	11.6	9.9	4.2	7.3	5.8
Horse work, hours	15.0	14.4	19.0	16.1	6.4	10.9	8.6
Tractor use, hours	.1	-	-	-	.3	.4	.4
Seed, bushels	.21	.22	.24	.22	-	-	-
Twine, pounds	5.5	3.0	4.8	4.4	-	-	-

*Includes cost of seed and labor and power for seeding.
+Net cost after deducting credit for corn knocked off by binder of $1.09 in 1937, $3.35 in 1936, $.80 in 1935 and $1.75 for the three-year average.

Comparative Cost and Return per Acre for Soybean Hay and for Wild Hay

	Soybean Hay	Wild Hay		
	1935	1937	1935*	Average 2 years
Number of farms	5	6	10	
Acres per farm	6	5	4	4
Costs and returns:				
Man labor	$3.46	$1.08	$1.96	$1.52
Horse and tractor	3.18	.98	1.15	1.06
Seed	1.76	-	-	-
Twine	.14	-	-	-
Manure	1.12	-	-	-
Machinery	1.51	.55	.74	.65
Operating cost	11.17	2.61	3.85	3.23
Land	3.50	2.00	2.00	2.00
Total cost	14.67	4.61	5.85	5.23
Yield, tons	1.7	.9	1.5	1.2
Cost per ton: Average	$8.63	$5.12	$3.90	$4.35
Lowest	5.85	4.39	2.10	2.10
Highest	16.65	6.98	12.69	12.69
Amounts of labor, power and materials:				
Before harvest:				
Man labor, hours	7.7	-	-	-
Horse work, hours	19.4	-	-	
Tractor work, hours	1.2	-	-	-
Harvest:				
Man labor, hours	9.6	5.4	9.8	7.6
Horse work, hours	11.2	8.8	14.4	11.6
Tractor work, hours	.1	.4	-	.2
Seed, bushels	1.0	-	-	-
Twine, pounds	2.1	-	-	-

*Fifteen per cent of acreage cut twice.

SOME FACTORS AFFECTING EARNINGS

The data in this report show a wide variation among farms in the operator's labor earnings. These variations, in large part, are the result of differences in the size of business, in the selection of crop and livestock enterprises, and in the efficiency with which the individual enterprises are conducted.

Size of Business

When conditions are such that farming is profitable, the larger farm business, within limits, tends to yield the larger earnings. This is illustrated by the data from the farms studied in 1937 (see Table 1). In this table the size of farm business is measured in terms of the number of work units. A man work unit is the average amount of productive work on crops or livestock accomplished per man in 10 hours, or 10 hours of work off the farm for pay. As such, it serves as a measure of either crop or livestock production or both. On the average, the farmers

Table 1

Size of Business and Operator's Labor Earnings, 1937

Size of farm business	No. of farms	Per farm	
		Total work units	Operator's labor earning
Under 550 work units	11	475	$1173
550 to 749 work units	9	630	1450
750 and over work units	5	1024	1665

with a large business had larger earnings than the farmers with a small business. When conditions are such that farming is unprofitable, the operators of large farms may be expected to incur somewhat larger losses.

Selection of Crops

Most of the crops raised on southeastern Minnesota farms are utilized as feed for livestock. It is important that those feed crops yield a large quantity of nutrients per acre at a low cost. The production per acre and the relative cost per hundred pounds of digestible nutrients for the principal feed crops for Winona County are presented in Table 2. Since these data are averages for the county, they may not be directly applicable to all farms. However, they indicate the general relationships existing in this area. A farmer may use his own crop records to prepare a similar comparison in order to determine the most desirable cropping system for his farm.

Table 2

Production per Acre and Relative Cost per Hundred Pounds of Digestible Nutrients - Winona County

Crop	Average yield* (1917-36)	Total lbs. digestible nutrients+	% protein is of total nutrients+	Cost‡ per 100 lbs. of total nutrients
	bushel			
Grains:				
Corn	37.4	1711	8.7	$1.00
Barley	25.6	976	11.3	1.29
Winter wheat	18.3	870	11.1	1.46
Oats	35.1	790	13.8	1.51
Spring wheat	15.8	751	11.1	1.64
Roughages:	ton			
Alfalfa	2.6	2652	20.8	.42
Clover and timothy	1.7	1676	10.3	.58
Silage	7.8	2621	7.2	.78

*Yields of alfalfa, clover and timothy, and silage estimated from available data; all other yields from annual reports of State Department of Agriculture.
+Analysis of feeds from "Feeding the Dairy Herd", by Eckles, Minnesota Bulletin 218 (1932).
‡Average costs for Winona County Farm Accounting Route adjusted for differences in yield.

Some farmers raise crops for sale. The net return per acre is an important consideration in the selection of crops for this purpose. The comparative return per acre for the crops commonly grown for sale in Winona County is shown in Table 3. The calculation of costs and returns (similar to those presented) for

Table 3

Comparative Return per Acre for Selected Crops, Winona County

	Malting barley	Corn	Winter wheat	Spring wheat	Oats
Cost per acre*	$12.60	$17.20	$12.70	$12.30	$12.00
Yield (1917-36), bu.+	25.6	37.4	18.3	15.8	35.1
Price per bushel (1926-36)‡	$.73	$.58	$.84	$.86	$.33
Net return per acre	$6.09	$4.49	$2.67	$1.29	$-.42

*Average costs for 1935-37 for farms studied adjusted for differences in yields.
+Average yields for Winona County based on reports of the State Department of Agriculture.
‡Estimated from average price for the state on the basis of the relationship between Winona County and State prices for the period 1922-31.

each of the alternative crops, using data applicable to his farm, will aid the farmer in selecting the most profitable cash crops.

Selection of Livestock

Cattle, hogs, sheep and chickens differ in the relative proportions of concentrates, roughages, skimmilk and labor used in their production as may be seen from the data in Table 4.

Table 4

Numbers of Livestock and Amounts of Roughage, Skimmilk and Labor Used per 1000 Pounds of Concentrates, Winona County, 1937

	Number of head	Roughage, lbs.	Skimmilk, lbs.	Man labor, hours
Dairy cattle	.8	4372	1329	82
Milk-and-beef cattle	.8	4732	790	63
Sheep	41.7	9417	-	149
Swine	1.0	-	1682	8
Chickens	14.9	-	1086	30

Cattle use relatively large amounts of roughage in relation to the amount of grain used but only about one-half as much as sheep. Swine and chickens utilize grain and skimmilk but little or no roughage. There also are differences between livestock in the amount of man labor used. As farms vary in the relative quantities of grain, roughage and skimmilk produced and in the amounts of available labor, the combination of livestock enterprises which will utilize most profitably the available feed and labor varies from farm to farm. Data, such as are presented in this report, when adjusted to the individual farm, are a valuable aid in determining the best selection of livestock enterprises.

Crop Yields

Farmers' earnings are affected by the yields of crops as well as by the selection of kinds of crops. The data in Table 5 show that the farmers obtaining high yields had higher earnings than those obtaining low yields.

Table 5

Crop Yields and Operators' Earnings,
Winona County, 1937

Crop yields	Number of farms	Yields, % of average	Operators' earnings
Lessthan 85% of average	5	71	$839
85 to 115% of average	15	101	1372
Over 115% of average	5	131	1778

Butterfat per Cow

The dairy enterprise is of major importance on each of these farms. As a result, its profitableness will exert a considerable influence on the farmer's earnings. One factor closely associated with profits from the dairy enterprise is the amount of butterfat per cow. This is shown by the data in Table 6. Although the feed cost was higher for the cows with a large production than for those with a small production, the value of the larger production was enough greater to more than offset the greater cost.

Table 6

Butterfat Production and Returns per Cow,
Winona County, 1937

Butterfat per cow	Number of farms	Butter-fat, lb.	Feed cost	Return over feed	Net gain
Under 190 pounds	7	167	$29	$45	$13
190-239 pounds	10	210	42	52	17
240 pounds and over	8	288	53	78	30

Labor Efficiency

Another factor closely associated with farmers' earnings is the efficiency of labor. The data in Table 7 show that the earnings were higher on those farms on which a large amount of work was accomplished per worker.

Table 7

Labor Efficiency and Operators' Earnings
Winona County, 1937

Work per worker	Number of farms	Units per worker	Operators' earnings
Under 230 units	9	199	$844
230 - 280 units	7	249	1450
Over 280 units	9	312	1768

The foregoing represent most of the more important types of factors affecting earnings. Each cooperating farmer will be able, by studying the data presented in this report and in reports numbers 95 and 99, to find ways of increasing his earnings thru improvement of his methods and practices in regard to these factors.