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 1935 on the FARM ACCOUNTING ROUTE in WINONA COUNTY, MINNESOTA

By

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SOURCE OF DATA

Method of Study

A three-year 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 of the area were chosen with the aid of the county agricultural agent, Mr. H. C. Pedersen. 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 1935 was prepared from these farmers' records.

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 de-

Facts About the Organization and Production of the Farms

	Average	Range for each item
Acres in barley	51	0 to 161
Acres in oats	35	0 to 146
Acres in mixed oats and barley	3	0 to 22
Acres in mixed oats and wheat	7	0 to 74
Acres in wheat	11	0 to 27
Acres in corn	26	14 to 52
Acres in flax	1	0 to 8
Acres in other grains	11	0 to 52
Acres in alfalfa	18	4 to 44
Acres in clover and timothy	11	0 to 67
Acres in wild hay	3	0 to 8
Acres in other hay	5	0 to 18
Acres in other crops	3	- to 6
Total crop acres	185	59 to 438
Acres in wood and pasture	135	17 to 378
Acres in farmstead, road and waste	14	6 to 39
Total acres per farm	334	96 to 711
% of land tillable	58	31 to 85
Number of cows	19	8 to 43
Number of other cattle	25	10 to 50
Number of sheep	21	0 to 64
Number of pounds hogs produced	9459	664 to 20492
Total number of chickens	187	0 to 730
Number of laying hens	117	0 to 523
Total hours of man labor	8504	5273 to 17509
Total man hours on livestock	3802	1820 to 7863
Total man hours on crops	2559	1285 to 4710
Total man hours miscellaneous labor	2468	1162 to 5661
Total hours hired labor	3617	0 to 10834
Total hours unpaid family labor	1688	48 to 9575
Total hours operator labor	3199	1880 to 4034
Hours per man per work day	9.5	7.4 to 12.3
Hours per man per Sunday	3.2	2.1 to 5.2
Tractor farms:		
Number of farms	14	
Total crop acres per farm	210	120 to 438
Number of work horses per farm	6	3 to 9
Average no. hours worked per horse	904	700 to 1157
Number crop acres per horse	39	24 to 65
Non-tractor farms:		
Number of farms	5	
Total crop acres per farm	118	59 to 188
Number of work horses per farm	6	4 to 8
Number hours worked per horse	840	633 to 1064
Number of crop acres per horse	18	15 to 24

posit of loessial material. The loessial soils are very productive. The surface soil is deficient in lime. Limestone underlies this area at no great depth and limestone outcrops are common. The soil washes easily and the steeper slopes are subject to considerable sheet erosion.

The growing season varies from 140 to 160 days. The average annual rainfall is approximately twenty-nine inches, seventy per cent of which is received during the months of April to September, inclusive. According to the report of the 1930 Federal Census, 59 per cent of the farms were classed as dairy farms and 19 per cent as general farms. Forty per cent of the farm land was in pasture. Barley, wheat, oats, flax, rye, and corn are the principal grain crops. Alfalfa, clover, and mixed clover and timothy are the principal hay crops.

Description of the Farms

The average size of the farms studied in 1935 was 335 acres. This is approximately 92 per cent larger than the average for the county as given in the 1930 Census. Fifty-five per cent of the area of these farms was in crops. This compares with 50 per cent for the county as a whole. Fourteen per cent of the crop area was in corn, 22 per cent in oats, 28 per cent in barley, 10 per cent in alfalfa, and 6 per cent in clover or mixed clover and timothy. This is slightly less corn, and clover and timothy hay and more barley and alfalfa than the average for the county for 1929. Other facts about the organization and production of these farms are presented on page 2.

There is a soil erosion problem on each of the farms studied. Most of the farmers are cooperating with the Federal Soil Conservation Service in an erosion control program. As this program is just getting under way on these farms, the effects of such a program on costs and returns are not yet apparent and therefore are not considered in this report.

Description of the 1935 Crop Season

The year 1935 might be characterized as one of excessive moisture. A heavy early fall of snow prevented the ground from freezing during the winter of 1934-35 and as a result fall grains were protected and in the spring most of the moisture from the melting snow was absorbed into the ground. A combination of an abundance of moisture and of cool weather during April, May and June favored an abnormally high yield of hay. However, because of the rank growth and because of exposure to rain, the quality of the hay was below normal. As rainy weather continued through July and August, grain harvest was delayed. Grain was lost because of lodging and of sprouting in the shock. Spring wheat suffered severly from rust.

METHODS OF COMPUTING AND PRESENTING DATA

Financial Statements

Average earnings, inventories and household and personal expenses are presented on pages 4 to 6 for all farmers, for the five farmers with the highest labor earnings, and for the five farmers with the lowest.

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 is excluded and the landlord's expenses are included in expenses. The landlord's share of the crops is included in the receipts. The value of farm produce used in the house is included in receipts and board furnished hired laborers is included in expenses. Board for hired labor was charged at $15 per month. Wages for unpaid family labor are calculated at 20 cents per hour. All interest actually paid is omitted and five per cent interest charged on the total inventory.

Financial Statement

	All farms	Five farmers with highest earnings	Five farmers with lowest earnings
RECEIPTS			
Dairy products	$1049	$973	$995
Cattle	771	1067	457
Hogs	725	572	691
Sheep and wool	93	85	75
Poultry and eggs	310	354	447
Horses	110	63	80
Barley	344	607	259
Wheat	147	42	204
Flax	36	89	8
Other crops	99	84	90
Income from work off the farm	252	264	309
Miscellaneous	143	125	168
A.A.A. payments	105	84	119
Total Cash Farm Receipts	4184	4409	3902
Farm Produce Used in House	363	379	379
Increase in Inventory	14	-	-
TOTAL FARM RECEIPTS	4561	4788	4281
EXPENSES			
Cattle bought	153	21	51
Hogs bought	45	23	16
Sheep bought	7	2	2
Poultry bought	29	31	24
Horses bought	64	52	20
Feed for livestock	292	150	416
Other livestock expense	37	34	37
Crop expense	199	198	281
Hired labor	366	276	381
Real estate	213	159	68
Machinery	358	354	410
Tractor	207	156	147
Truck	121	133	111
Auto	83	34	102
Electricity	40	40	37
Taxes	244	234	296
Insurance	39	47	39
Miscellaneous	29	26	35
Total Cash Farm Expenses	2526	1970	2473
Board for Hired Labor	167	121	193
Decrease in Inventory	-	105	141
TOTAL FARM EXPENSES	2963	2196	2807
Returns to Capital and Family Labor	1868	2592	1474
Interest on Farm Inventory	862	818	965
Family Labor Earnings	1006	1774	509
Wages for Unpaid Family Labor	338	253	567
OPERATOR'S LABOR EARNINGS	668	1521	-58

Average Farm Inventories

	All farms	Five with highest earnings	Five with lowest earnings
Land and buildings	$11072	$10548	$12927
Horses	750	579	725
Cattle	1446	1393	1374
Sheep	110	86	142
Swine	294	181	353
Turkeys and poultry	80	93	95
Feeds, seeds and miscellaneous	1358	1534	1425
Auto (farm share)	70	70	68
Truck (farm share)	115	46	59
Tractor	315	230	374
Machinery and equipment	1633	1604	1766
Total	17243	16364	19308

Farm Produce Used in the House

	All Farms		Five Farmers with Highest Earnings		Five Farmers with Lowest Earnings	
	Quantity	Value	Quantity	Value	Quantity	Value
Milk	1625 qt.	$47.55	1485 qt.	$42.40	2122 qt.	$62.73
Cream	291 pt.	27.57	325 pt.	30.13	261 pt.	25.02
Butter	3 lb.	.84	-	-	-	-
Skimmilk	79 qt.	.30	91 qt.	.34	24 qt.	.08
Eggs	205 doz.	42.14	247 doz.	50.99	248 doz.	51.14
Poultry	159 lb.	19.94	155 lb.	21.05	161 lb.	20.26
Hogs	992 lb.	92.99	935 lb.	88.20	897 lb.	86.08
Cattle	247 lb.	14.00	30 lb.	2.25	332 lb.	17.32
Sheep	10 lb.	.54	40 lb.	2.16	-	-
Potatoes	46 bu.	17.70	44 bu.	19.68	46 bu.	20.72
Fuel		68.45		85.80		64.00
Fruits and vegetables		31.25		36.20		32.00
Total		363.27		379.20		379.35
Size of family (man equivalent)		4.9		4.9		5.5

Household and Personal

	All farms	Five farmers with highest earnings	Five farmers with lowest earnings
Inventories:			
House, woodshed and smokehouse	$2823	$3600	$2841
Furnishings and equipment	451	506	350
Clothing, jewelry, etc.	224	145	220
Electric plant and motors*	8	3	2
Gas engine*	2	-	2
Auto and truck*	246	326	246
Total	3754	4580	3661
Cash Expenses:			
Food	292	325	316
Operating and supplies	39	21	76
Furnishings and equipment	59	45	39
Additions and repairs on house	53	77	13
Hired help	22	28	33
Electricity*	30	42	32
Clothing and materials	141	113	165
Health	47	80	26
School expenses	21	46	24
Reading materials	6	4	8
Church, charity, etc.	39	32	63
Recreation	18	5	24
Personal	136	205	127
Life insurance and savings	144	201	182
Auto and truck*	314	306	467
Total cash expenses	1361	1530	1595
Cash Receipts:			
Household and personal	271	435	481
Net Cash Expenses	1090	1096	1114
Value of Farm Produce Used	363	379	379
Decrease in Inventory	19	88	-2+
Interest on Average Inventory	188	229	183
Total Household and Personal Expenses	1660	1792	1674

*Household and personal share.
+Increase in inventory.

The returns to capital and family labor is the amount left as pay for the use of the capital invested 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 in 1935 are presented in this preliminary report. 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 fro straw or for corn stalk pasture. Man labor was figured 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 is based upon the annual cost of the particular equipment used by that class of livestock. The expense for portable brooder houses and hog houses has been included in the equipment charge and 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 has been 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, hatching expense, fuel for brooders, incubators and tank heaters, horseshoeing, 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 equipment, 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.

Cattle

Cows. The cow herds were divided into two groups upon the basis of breeding and method of management. Herds of cows of dairy breeding which were managed with particular emphasis on butterfat production were called dairy herds. Herds composed of mixed breeds which were kept for raising calves as well as producing butterfat were classed as milk-and-beef herds. Because the major emphasis with both the dairy and the milk-and-beef herds was on butterfat production, the data for these two groups appear in the same table (see page 9).

The costs and returns for the dairy and the milk-and-beef herds are for cows only. They neither include any feed or 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 their 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. Calculated in this manner, the butterfat production may be less than that obtained by dairy herd improvement associations because in the latter case no allowance is made for waste and shrinkage.

In comparing the dairy herds with the milk-and-beef herds, it will be noticed that, on the average, the cows in the dairy herds received twice as much grain and more roughage than the cows in the milk-and-beef herds. The dairy cows produced an average of 49 pounds of butterfat more than the milk-and-beef cows. Over 40 per cent more man labor was used per cow in the dairy herds.

The gain per milk-and-beef cow was approximately the same as that for a dairy cow. However, a dairy cow provided a market for considerably more labor and feed than did a milk-and-beef cow. The return over feed cost per dairy cow was one-third larger than that per milk-and-beef cow. It is interesting to note that the largest gain and the largest loss occurred in the dairy herds.

Other Cattle. The cost and return for other cattle are presented on page 10. This class includes all cattle except cows. In the dairy herds it includes, primarily, the bull and the heifers being raised for milking herd replacements. In the milk-and-beef herds, this class also includes any stocker or feeder cattle. Because of the shortage of feed, very little fattening of cattle was done in 1935.

All Cattle. Expenses and returns per animal of all cattle, including cows and other cattle, are presented on page 11. In these statements any milk used by calves is included in the feed and in the credit for dairy products fed to livestock. The dairy cattle received more grain and roughage and were given more hours of care than were the milk-and-beef cattle. The return over feed costs was larger for dairy cattle than for milk-and-beef cattle, but due to the larger amount of labor used, the gain per animal unit was larger for milk-and-beef cattle than for dairy cattle.

Cost and Return per Cow

	Dairy Herds		Milk-and-Beef Herds	
	Average	Range for each item	Average	Range for each item
Number of farms	13		7	
Number of cows per farm	19	8 to 43	19	13 to 33
Butterfat per cow, lb.	209	139 to 273	150	129 to 164
Man labor, hours	141.2	88.1 to 208.7	98.1	73.1 to 132.2
Horse work, hours	4.7	0 to 13.3	2.5	1.0 to 6.4
Costs:				
Feed	$30.27	$16.12 to $55.09	$22.55	$14.59 to $33.41
Man labor	28.25	17.63 to 41.75	19.61	14.61 to 26.44
Horse work	.39	0 to .69	.20	.08 to .42
Shelter	8.91	4.55 to 15.16	5.84	2.67 to 11.90
Equipment	3.89	2.06 to 6.86	3.88	1.52 to 13.36
Interest at 5%	2.40	2.03 to 2.77	1.80	1.24 to 2.12
Miscellaneous cash	1.20	.21 to 3.12	.75	.18 to 1.75
Depreciation	-	0 to 12.06	-	0 to 5.57
Total costs	75.31	62.38 to 100.74	54.63	43.08 to 68.48
Manure credit	2.77	1.11 to 4.51	2.32	1.25 to 3.44
Appreciation	2.06	0 to 16.03	2.64	0 to 11.71
Total credit	4.83	1.62 to 19.96	4.96	2.00 to 14.05
Net cost	70.48	56.24 to 90.74	49.67	40.17 to 59.66
Value of dairy products:				
Sold	61.13	35.65 to 100.76	43.42	38.12 to 49.45
Used in house	4.73	3.03 to 9.91	3.16	1.51 to 4.56
Fed to livestock	12.13	8.64 to 17.45	10.89	8.40 to 14.71
Total product	78.00	52.83 to 116.52	57.47	49.28 to 67.78
Return over all cost	7.52	-19.76 to 33.93	7.80	-3.50 to 21.55
Return over feed cost	49.79	28.99 to 80.09	37.56	20.85 to 53.94
Price received per pound of B.F.	.33	.31 to .35	.34	.31 to .38
Feeds:				
Corn, lb.	93	0 to 423	71	0 to 374
Small grain, lb.	371	0 to 794	232	0 to 595
Other concentrates, lb.	291	0 to 1155	74	0 to 209
Hay, lb.	2028	533 to 3876	2030	885 to 4022
Fodder and stover, lb.	175	0 to 829	333	0 to 1098
Silage, lb.	6994	3864 to 10997	5043	2406 to 6071
Total concentrates, lb.	755	0 to 1934	377	0 to 1113
Total roughage,* lb.	4534	2620 to 6476	4044	3033 to 4824
Pasture, days	139	98 to 159	147	137 to 168

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

Cost and Return per Head of Other Cattle

	Dairy Herds		Milk-and-Beef Herds	
	Average	Range for each item	Average	Range for each item
Number of farms	13		7	
No. of head per farm	21	10 to 41	32	19 to 50
Man labor, hour	18.2	7.4 to 29.9	11.0	5.9 to 18.7
Horse work, hour	1.4	0 to 3.1	1.2	.4 to 2.8
Costs:				
Feed	$18.94	$15.12 to $26.15	$17.35	$13.40 to $25.46
Labor	3.64	1.49 to 5.97	2.20	1.19 to 3.72
Horse work	.12	0 to .32	.09	.04 to .20
Shelter	5.50	2.32 to 12.40	5.39	1.18 to 11.53
Equipment	.22	0 to .54	.14	.02 to .32
Interest at 5%	1.36	.96 to 2.37	1.11	.88 to 1.74
Miscellaneous cash	.27	.07 to .61	.11	.06 to .15
Total costs	30.05	22.38 to 45.78	26.39	18.40 to 38.41
Manure credit	1.51	1.17 to 2.27	1.37	1.13 to 1.72
Net cost	28.54	20.97 to 43.51	25.02	16.68 to 37.17
Value of product	28.88	17.10 to 41.21	27.52	22.12 to 35.98
Return over all costs	.34	-12.91 to 8.83	2.50	-8.44 to 12.47
Return over feed cost	9.94	-2.91 to 16.96	10.17	3.27 to 18.57
Feeds:				
Grain, lb.	222	9 to 617	257	37 to 505
Mill feeds, lb.	33	0 to 209	7	0 to 30
Hay, lb.	846	210 to 1475	831	156 to 1999
Fodder and stover, lb.	91	0 to 238	458	0 to 843
Silage, lb.	3010	1156 to 4566	2460	851 to 3539
Total concentrates, lb.	255	9 to 717	264	40 to 535
Total roughages, lb.	1940	1333 to 3132	2109	1728 to 2334
Whole milk, lb.	240	38 to 430	285	95 to 879
Skimmilk, lb.	1899	784 to 3291	855	590 to 1157
Pasture, days	117	62 to 177	111	11 to 144

Cost and Return per Animal Unit of All Cattle

	Dairy Cattle		Milk-and-Beef Cattle	
	Average	Range for each item	Average	Range for each item
Number of farms	13		7	
Animal units per farm	30	18 to 62	35	23 to 43
Man labor, hours	100.9	53.8 to 135.9	60.8	43.2 to 86.1
Horse work, hours	3.8	0 to 9.5	2.6	1.0 to 5.7
Costs:				
Feed	$32.31	$22.66 to $47.28	$27.00	$24.50 to $33.75
Man labor	20.16	10.75 to 27.06	12.17	8.64 to 17.23
Horse work	.33	0 to .56	.19	.07 to .37
Shelter	9.45	5.55 to 18.22	7.77	2.49 to 13.19
Equipment	2.60	1.30 to 4.62	2.22	.90 to 7.70
Interest at 5%	2.47	1.96 to 3.28	2.02	1.53 to 2.77
Miscellaneous cash	.93	.23 to 2.39	.48	.15 to 1.06
Total costs	69.25	54.23 to 95.63	51.85	43.68 to 60.51
Manure credit	2.82	1.78 to 3.96	2.46	1.80 to 3.39
Net costs	65.43	52.21 to 91.67	49.39	40.29 to 58.05
Value of product:				
Animal	20.99	10.26 to 39.43	26.58	13.36 to 41.48
Dairy	49.40	27.65 to 82.28	30.40	23.86 to 42.28
Total product	70.39	46.99 to 105.32	56.98	43.45 to 68.23
Return over all costs	4.96	-22.02 to 19.50	7.59	-2.25 to 20.71
Return over feed cost	38.08	18.57 to 62.97	29.98	18.59 to 37.06
Feeds:				
Corn, lb.	68	0 to 323	192	0 to 612
Small grain, lb.	383	0 to 786	203	10 to 363
Mill feeds, lb.	172	23 to 581	33	0 to 120
Hay, lb.	1873	679 to 3371	1779	765 to 3964
Fodder and stover, lb.	176	0 to 669	648	0 to 1316
Silage, lb.	6548	4202 to 10131	4969	2054 to 6288
Milk, lb.	162	40 to 257	209	90 to 381
Skimmilk, lb.	1493	883 to 2687	792	576 to 1021
Total concentrates*, lb.	899	417 to 2001	595	287 to 1230
Total roughage,+ lb.	4233	2721 to 5909	4084	3477 to 4778
Pasture, days	170	105 to 220	193	146 to 235

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

Cost and Return per Sheep

	Average	Range for each item
Number of farms	12	
Number of sheep per farm	33	9 to 64
Man labor, hours	2.6	1.5 to 5.0
Horse work, hours	.3	0 to .8
Costs:		
Feed	$1.56	$.89 to $3.43
Man labor	.51	.30 to 1.01
Horse work	.03	0 to .07
Shelter	.59	0 to 2.48
Equipment	.12	.01 to .36
Interest at 5%	.25	.20 to .37
Miscellaneous cash	.18	.12 to .26
Total cost	3.24	1.62 to 5.22
Manure credit	.11	.03 to .20
Net cost	3.13	1.51 to 5.07
Value produced:		
Sheep	2.77	0 to 5.06
Wool	1.73	.98 to 2.68
Total product	4.50	2.68 to 7.14
Return over all costs	1.37	-2.39 to 4.62
Return over feed cost	2.94	-.76 to 5.94
Weight of fleece, lb.	8.3	5.9 to 11.3
Per cent lamb crop	79	0 to 132
Per cent death loss, lambs	19	0 to 40
Per cent death loss, sheep	10	0 to 26
Feeds:		
Grain, lb.	21	0 to 58
Hay and fodder, lb.	108	0 to 243
Silage, lb.	240	0 to 1047
Total roughage,* lb.	188	60 to 349
Pasture days	156	108 to 181

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

Sheep

The cost and return per head for sheep are presented above. 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 equal to 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 100 Pounds of Hogs Produced

	Average	Range for each item
Number of farms	19	
Pounds produced per farm	9741	664 to 20492
Man labor, hours	2.9	1.2 to 4.7
Horse work, hours	.3	0 to .9
Costs:		
Feed	$4.94	$3.55 to $6.67
Man labor	.57	.24 to .95
Horse work	.03	0 to .07
Shelter	.24	0 to .65
Equipment	.19	.02 to 1.86
Interest at 5%	.18	.10 to .43
Miscellaneous cash	.05	0 to .13
Total cost	6.20	4.66 to 8.05
Manure credit	.37	.26 to .53
Net cost	5.83	4.40 to 7.56
Average selling price, per cwt.	8.99	8.02 to 9.87
Return over all costs	3.16	1.44 to 4.60
Return over feed	4.05	2.33 to 5.72
Average weight of hogs sold	235	161 to 335
Pigs raised per litter	5.9	4.3 to 8.0
Feeds:		
Corn, lb.	236	160 to 310
Small grain, lb.	151	38 to 329
Commercial feed, lb.	17	0 to 62
Total concentrates, lb.	404	320 to 532
Skimmilk equivalent,* lb.	597	159 to 1222
Pasture, days	27	0 to 42

*One pound of tankage considered as ten pounds of skimmilk.

Hogs

The cost and return per one hundred pounds of hogs are presented above. Spring or early summer litters of pigs were farrowed on seven farms, fall litters only on four farms and both spring and fall litters on eight farms. 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. Generally speaking, the swine enterprise was very profitable on these farms in 1935.

Cost and Return per 100 Hens

	Average	Range for each item
Number of farms	19	
Number of laying hens per farm	124	50 to 523
Number of other chickens per farm	79	0 to 207
Eggs per hen	116	87 to 181
Man labor, hours	329	114 to 561
Horse work, hours	9	1 to 32
Costs:		
Feed	$175.76	$99.12 to $242.95
Man labor	65.82	22.76 to 112.24
Horse work	.77	.08 to 2.50
Shelter	18.51	- to 63.69
Equipment	20.08	7.16 to 40.39
Interest at 5%	3.65	2.24 to 6.03
Miscellaneous cash	17.36	.58 to 50.84
Total cost	301.95	146.14 to 465.01
Manure credit	9.49	6.56 to 13.16
Net cost	292.46	139.53 to 456.45
Value of product:		
Poultry	76.49	-37.94* to 163.54
Eggs	218.44	143.45 to 355.23
Total product	294.93	137.01 to 488.02
Return over all costs+	2.47	-136.46 to 142.61
Return over feed cost+	119.17	-9.79 to 269.48
Selling price per doz. eggs	.23	.20 to .25
Feeds:		
Corn, lb.	3244	717 to 8189
Small grain, lb.	5851	2349 to 12521
Other concentrates, lb.	2477	120 to 6799
Meat scrap and tankage	337	0 to 858
Skimmilk	6126	0 to 17821
Total concentrates	11572	5812 to 17972
Skimmilk equivalent, lb.‡	11855	2178 to 25856

*A minus indicates a net loss in value of poultry.
+A minus (-) indicates a loss, or a failure to cover the charges.
‡One pound of meat scrap or tankage considered as 17 pounds of skimmilk.

Chickens

The data for chickens are presented on this page 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 income from each.

Cost of Horse Work per Horse

	Average	Range for each item
Number of farms	19	
Horses per farm	6	3 to 9
Crop acres per horse	34	15 to 65
Man labor, hours	54	32 to 101
Costs:		
Feed	$40.87	$26.39 to $51.42
Labor	10.78	6.43 to 20.16
Shelter	10.14	4.40 to 17.04
Equipment	5.49	1.34 to 9.21
Interest at 5%	4.91	1.28 to 9.13
Miscellaneous cash	.79	.09 to 2.05
Depreciation	6.50	0 to 18.42
Total cost	79.48	53.00 to 92.30
Credits:		
Manure	5.50	2.01 to 5.20
Appreciation	0	0 to 22.33
Total credit	5.50	2.01 to 25.89
Net cost	73.98	49.68 to 88.31
Hours worked	887	633 to 1157
Cost per hour, cents	8.3	5.2 to 10.9
Feed:		
Grain, lb.	2286	952 to 3494
Hay, fodder and stover, lb.	3808	1889 to 6280
Silage, lb.	794	0 to 2193
Total roughage,* lb.	4073	1901 to 6487
Pasture, days	70	44 to 92

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

Work Horses

Average costs per horse and per hour of horse work are presented on this page. Tractors were used for drawbar power on fifteen of the farms. As the cost per hour of work was practically the same on the non-tractor farms as on the tractor farms, all farms were included in calculating the averages presented.

Automobiles

The cost per mile of operation for automobiles is presented on page 16. The cost of automobile operation is calculated in the same manner as the cost of truck operation.

Automobiles

	Average	Range for each item
No. of farms	18	
Miles driven per car	7409	3479 to 16,235
Miles per gallon of gasoline	14.0	10.0 to 17.0
Cost per mile of operation:		
Labor	$.001	$- to $.003
Gasoline and oil	.013	.010 to .019
Repairs, etc.	.013	.004 to .042
Depreciation	.008	- to .023
Interest at 5%	.002	.001 to .005
Total cost	.037	.025 to .081

Trucks

No. of farms	12	
Miles driven per year	4126	200 to 12,308
Miles per gallon of gasoline	12.7	4.9 to 17.3
Cost per mile of operation:		
Labor	$.004	$- to $.016
Gasoline and oil	.016	.011 to .033
Repairs, etc.	.026	.004 to .082
Depreciation	.011	- to .051
Interest at 5%	.004	.001 to .019
Total cost	.061	.032 to .124

Trucks

The cost per mile of operation for trucks is shown above. The labor charge for trucks is the value, at twenty cents per hour, of the time the regular farm workers spent in repairing and servicing the trucks. It also includes a charge for any use of horses or automobile in repairing the truck. Miscellaneous cash costs include the cost of the license, repairs, parts, tires, insurance and also greasing when it was done at a service station. The miles driven are based on a check of the speedometer reading at the beginning and end of the year.

Tractors

The number of hours tractors were operated and the cost per hour of operation are presented on page 17 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 farm involved. Miscellaneous cash costs include the cash cost of repairing, parts, etc. Interest is calculated on the average of the beginning and ending inventories.

Tractors

	Average	Range for each item
Two-Plow Tractors		
Number of farms	4	
Hours worked per year:		
Drawbar	486	90 to 961
Belt	132	64 to 215
Total	618	154 to 1176
Per 100 hours of operation:		
Labor, hr.	14.1	5.5 to 25.6
Fuel, gal.	191	180 to 204
Oil, gal.	7.5	6.0 to 9.7
Cost per hour of operation:		
Labor	$.028	$.011 to $.051
Fuel and oil	.267	.207 to .302
Repairs, etc.	.046	.017 to .083
Use of auto, truck and horses	.006	.001 to .015
Depreciation	.057	- to .089
Interest at 5%	.024	.008 to .040
Total cost	.428	.384 to .461
Three-Plow Tractors		
Number of farms	9	
Hours worked per year:		
Drawbar	287	144 to 485
Belt	159	- to 271
Total	446	186 to 725
Per 100 hours of operation:		
Labor, hr.	10.9	2.6 to 22.0
Fuel, gal.	252	196 to 307
Oil, gal.	8.4	2.4 to 14.9
Cost per hour of operation:		
Labor	$.022	$.005 to $.044
Fuel and oil	.303	.158 to .448
Repairs, etc.	.204	.017 to .985
Use of auto, truck and horses	.004	- to .015
Depreciation	.021	-.673 to .270
Interest at 5%	.059	.034 to .128
Total cost	.613	.336 to .863

Crop Statements

The comparative cost and return for 1935 for each of the principal crops grown on these farms are presented on pages 19 to 26. 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.

The factors of cost are charged at local prices. Man labor was charged at 20 cents per hour. This rate is based on wages paid to hired laborers on these farms and includes an allowance for board. Horse work was charged at 8 cents per hour, a two-plow tractor at 60 cents per hour, and a three-plow tractor at 80 cents per hour. The machinery charge includes an allowance for depreciation, repairs, interest on investment, and shelter for the machinery. The machinery charge also includes the expense for any use of the truck or auto. The seed charge for hay is based upon the cost of seeding divided by the expected life of the stand. Manure was charged at 50 cents per ton, plus the cost of hauling and spreading. Forty per cent of the total manure cost was charged against the crop on the land to which the manure was applied and the balance was prorated on an acre basis to the rest of the crops on the land which normally might receive manure.

Uniform rates have been used for all crops so that comparisons may be made between the different crops and different farms. The costs and yields on rented land have been adjusted to a full owner basis. Land has been charged at $2.50 per acre for wild hay and at $3.50 per acre for all other crops. The local farm price on December 1 was used in determining the returns from the various crops. The costs are presented on the basis of one acre. The cost per bushel or per ton also is given.

SOME FACTORS AFFECTING EARNINGS

The data presented 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 the farm business, within limits, the greater will be the earnings. This is illustrated by the data from the farms studied (see Table 1). In this table the size of farm is

Table 1

Size of Business and Operator's Labor Earnings on Profitable Farms

Size of farm	No. of farms	Per Farm	
		Total P.M.W.U.*	Operator's labor earnings
Under 750 P.M.W.U.*	11	535	$534
Over 750 P.M.W.U.	9	1014	833

*Productive man work units.

(Discussion continued on page 26.)

Cost and Return per Acre of Barley

	Average	Range for each item
Number of farms	19	
Acres per farm	53	26 to 161
All work up to harvest:		
Man hours	3.1	1.8 to 5.4
Horse hours	10.3	2.6 to 24.2
Tractor hours	.8	0 to 2.5
Harvesting:		
Man hours	4.9	3.5 to 7.7
Horse hours	5.3	1.8 to 11.2
Tractor hours	.3	0 to .8
Costs:		
Man	$1.61	$1.17 to $2.30
Horse and tractor	2.04	1.54 to 2.64
Seed	2.12	1.42 to 2.83
Twine	.16	.09 to .23
Threshing	.61	.32 to .99
Manure	.79	0 to 1.84
Machinery	1.06	1.05 to 1.17
Land	3.50	3.50 to 3.50
Total	11.89	10.32 to 13.66
Yield, bu.	20.7	11.3 to 36.0
Cost per bu.	$.57	$.36 to $.92
December 1 price	.39	.35* to .55*
Crop value at December 1 price	8.07	3.96 to 12.60
Net return+	-3.82	-6.61 to 1.74

Cost and Return per Acre of Oats

Number of farms	18	
Acres per farm	40	15 to 146
All work up to harvest:		
Man hours	3.2	1.8 to 4.8
Horse hours	11.6	2.1 to 23.5
Tractor hours	.7	0 to 2.0
Harvesting:		
Man hours	4.9	3.1 to 6.8
Horse hours	5.9	2.6 to 9.1
Tractor hours	.3	0 to .9
Costs:		
Man	$1.63	$1.12 to $2.14
Horse and tractor	2.12	1.65 to 2.66
Seed	1.34	.56 to 1.86
Twine	.17	.09 to .34
Threshing	.90	.45 to 1.52
Manure	.75	.25 to 1.51
Machinery	1.06	1.05 to 1.19
Land	3.50	3.50 to 3.50
Total	11.47	9.98 to 13.12
Yield, bu.	31.8	16.9 to 55.4
Cost per bu.	$.36	$.24 to $.64
December 1 price	.24	.24 to .24
Crop value at December 1 price	7.63	4.06 to 13.30
Net return+	-3.84	-6.84 to .18

*Feeding barley 35 cents; malting barley 55 cents.
+A minus (-) indicates a failure to cover the costs indicated.

Cost and Return per Acre of Winter Wheat

	Average	Range for each item
Number of farms	10	
Acres per farm	14	1 to 27
All work up to harvest:		
Man hours	2.7	1.1 to 6.8
Horse hours	9.6	1.3 to 36.6
Tractor hours	.7	0 to 2.1
Harvesting:		
Man hours	8.4	5.2 to 12.6
Horse hours	9.4	5.2 to 15.5
Tractor hours	.3	0 to 1.1
Costs:		
Man	$2.22	$1.47 to $3.21
Horse and tractor	2.26	1.27 to 4.00
Seed	1.97	.73 to 3.18
Twine	.21	.11 to .35
Threshing	.75	.36 to 1.49
Manure	.58	0 to 1.16
Machinery	1.05	1.05 to 1.07
Land	3.50	3.50 to 3.50
Total	12.54	9.72 to 15.64
Yield, bu.	23.6	15.5 to 32.3
Cost per bu.	$.53	$.35 to $1.01
December 1 price	.93	.93 to .93
Crop value at December 1 price	21.95	14.42 to 30.04
Net return*	9.41	-1.22 to 18.78

Cost and Return per Acre of Spring Wheat

Number of farms	9	
Acres per farm	10	4 to 20
All work up to harvest:		
Man hours	3.2	2.0 to 5.1
Horse hours	10.8	2.5 to 22.8
Tractor hours	.6	0 to 1.4
Harvesting:		
Man hours	5.3	3.3 to 8.7
Horse hours	5.2	2.1 to 9.7
Tractor hours	.4	0 to .9
Costs:		
Man	$1.70	$1.15 to $2.51
Horse and tractor	2.04	1.53 to 2.60
Seed	1.83	1.14 to 2.44
Twine	.18	.10 to .31
Threshing	.42	.21 to 1.00
Manure	.68	0 to 2.04
Machinery	1.05	1.05 to 1.06
Land	3.50	3.50 to 3.50
Total	11.40	10.36 to 13.94
Yield, bu.	11.0	6.6 to 16.8
Cost per bu.	$1.04	$.71 to $1.57
December 1 price	.75	.75 to .75
Crop value at December 1 price	8.25	4.95 to 12.60
Net return*	-3.15	-5.41 to .69

*A minus (-) indicates a failure to cover the costs indicated.

Cost and Return per Acre of Oats and Wheat

	Average	Range for each item
Number of farms	5	
Acres per farm	23	3 to 74
All work up to harvest:		
Man hours	2.9	2.0 to 3.8
Horse hours	7.7	2.6 to 16.4
Tractor hours	1.1	0 to 2.5
Harvesting:		
Man hours	5.9	5.4 to 6.4
Horse hours	5.6	3.9 to 8.9
Tractor hours	.5	0 to .8
Costs:		
Man	$1.76	$1.54 to $2.06
Horse and tractor	2.37	2.03 to 3.23
Seed	1.85	1.13 to 2.45
Twine	.19	.17 to .22
Threshing	.71	.19 to 1.05
Manure	.73	.49 to 1.30
Machinery	1.05	1.05 to 1.05
Land	3.50	3.50 to 3.50
Total	12.16	11.53 to 12.62
Yield, bu.*	22.6	7.6 to 30.5
Cost per bu.	$.54	$.40 to $1.52
December 1 price	.54	.54 to .54
Crop value at December 1 price	12.20	4.10 to 16.47
Net return+	.04	-7.43 to 4.32

Cost and Return per Acre of Oats and Barley

Number of farms	4	
Acres per farm	18	13 to 21
All work up to harvest:		
Man hours	3.3	1.8 to 5.1
Horse hours	12.6	4.8 to 22.3
Tractor hours	.5	0 to .8
Harvesting:		
Man hours	4.3	3.6 to 4.9
Horse hours	4.0	1.6 to 8.0
Tractor hours	.5	0 to .8
Costs:		
Man	$1.52	$1.32 to $1.96
Horse and tractor	2.08	1.59 to 2.42
Seed	2.00	1.55 to 2.38
Twine	.16	.12 to .21
Threshing	.67	.41 to .89
Manure	.35	0 to .79
Machinery	1.05	1.05 to 1.05
Land	3.50	3.50 to 3.50
Total	11.33	9.98 to 12.10
Yield, bu.*	21.3	13.6 to 27.8
Cost per bu.	$.53	$.36 to $.85
December 1 price	.31	.31 to .31
Crop value at December 1 price	6.60	4.08 to 8.34
Net return+	-4.73	-7.61 to -1.64

*At 40 pounds per bushel.
+A minus (-) indicates a failure to cover the costs indicated.

Cost and Return per Acre of Rye

	Average	Range for each item
Number of farms	5	
Acres per farm	27	12 to 42
All work up to harvest:		
Man hours	2.4	1.6 to 4.3
Horse hours	6.1	2.8 to 16.8
Tractor hours	.8	0 to 1.5
Harvesting:		
Man hours	4.6	2.9 to 6.6
Horse hours	4.7	2.4 to 7.7
Tractor hours	.3	0 to .5
Costs:		
Man	$1.39	$1.06 to $1.74
Horse and tractor	1.70	1.39 to 2.00
Seed	1.84	1.58 to 2.23
Twine	.17	.09 to .22
Threshing	.36	.19 to .50
Manure	.65	0 to 1.51
Machinery	1.05	1.05 to 1.05
Land	3.50	3.50 to 3.50
Total	10.66	9.60 to 11.32
Yield, bu.	12.4	6.9 to 16.9
Cost per bu.	$.86	$.61 to 1.64
December 1 price	.42	.42 to .42
Crop value at December 1 price	5.21	2.90 to 6.84
Net return*	-5.45	-8.42 to -3.15

Cost and Return per Acre of Flax

Number of farms	4	
Acres per farm	6	4 to 8
All work up to harvest:		
Man hours	5.6	3.1 to 7.9
Horse hours	17.5	4.5 to 31.0
Tractor hours	1.0	0 to 2.0
Harvesting:		
Man hours	8.3	3.9 to 13.8
Horse hours	11.3	2.4 to 19.4
Tractor hours	.4	0 to 1.6
Costs:		
Man	$2.78	$1.41 to $4.33
Horse and tractor	3.24	2.51 to 3.83
Seed	1.57	1.19 to 2.12
Twine	.02	0 to .07
Threshing	1.48	.38 to 3.81
Manure	.38	0 to .97
Machinery	1.05	1.05 to 1.05
Land	3.50	3.50 to 3.50
Total	14.02	11.42 to 19.26
Yield, bu.	6.1	3.8 to 8.4
Cost per bu.	$2.30	$1.38 to $4.59
December 1 price	1.58	1.58 to 1.58
Crop value at December 1 price	9.64	6.00 to 13.27
Net return*	-4.38	-5.42 to 1.67

*A minus (-) indicates a failure to cover the costs indicated.

Cost and Return per Acre of Corn Husked from Standing Stalks

	Average	Range for each item
Number of farms	15	
Acres per farm	10	2 to 26
All work up to harvest:		
Man hours	11.8	6.3 to 22.4
Horse hours	28.1	11.1 to 57.2
Tractor hours	1.1	0 to 3.2
Harvesting:		
Man hours	10.4	3.6 to 18.2
Horse hours	17.0	4.6 to 37.5
Tractor hours	.3	0 to 1.7
Costs:		
Man	$4.45	$3.00 to $6.48
Horse and tractor	4.66	3.05 to 6.68
Seed	.42	.27 to .62
Manure	1.80	.23 to 7.11
Mechanical picker	.19	0 to 1.00
Other machinery	1.55	1.55 to 1.55
Land	3.50	3.50 to 3.50
Total	16.57	12.25 to 25.62
Yield, bu.	36.8	11.4 to 58.1
Cost per bu.	$.45	$.27 to $1.28
December 1 price	.43	.43 to .43
Crop value at December 1 price	15.82	4.90 to 24.98
Net return*	-.75	-17.02 to 7.93

Cost and Return per Acre of Corn Cut and Shredded

Number of farms	7	
Acres per farm	11	5 to 21
All work up to harvest:		
Man hours	11.9	7.9 to 22.4
Horse hours	28.1	16.3 to 57.2
Tractor hours	.9	0 to 2.2
Harvesting:		
Man hours	12.2	8.0 to 19.6
Horse hours	16.4	11.6 to 21.4
Tractor hours	-	- to -
Costs:		
Man	$4.84	$3.54 to $8.40
Horse and tractor	4.25	3.12 to 6.82
Seed	.48	.27 to .95
Twine	.27	.12 to .68
Shredding	1.74	.99 to 2.37
Manure	2.48	.63 to 7.12
Machinery	2.50	2.50 to 2.50
Land	3.50	3.50 to 3.50
Total	20.06	16.31 to 30.82
Stover credit	1.41	.75 to 1.80
Net cost	18.65	14.51 to 29.44
Yield, bu.	27.9	12.5 to 36.0
Cost per bu.	$.67	$.40 to $1.37
December 1 price	.43	.43 to .43
Crop value at December 1 price	12.00	5.38 to 15.48
Net return*	-6.65	-17.79 to .97

*A minus (-) indicates a failure to cover the costs indicated.

Cost per Acre of Producing Alfalfa Hay

	Average	Range for each item
Number of farms	20	
Acres per farm	14	3 to 44
First cutting:		
Man labor, hr.	7.6	3.0 to 20.4
Horse work, hr.	11.4	5.4 to 19.9
Tractor work, hr.	.2	0 to 1.2
Second cutting:		
Per cent cut	90	0 to 100
Man labor, hr.	5.2	0 to 10.6
Horse work, hr.	7.6	0 to 14.1
Tractor work, hr.	.2	0 to 1.9
Third cutting:		
Per cent cut	26	0 to 100
Man labor, hr.	1.2	0 to 5.9
Horse work, hr.	1.7	0 to 7.5
Total:		
Man labor, hr.	14.0	5.6 to 34.8
Horse work, hr.	20.7	9.0 to 38.4
Tractor work, hr.	.4	0 to 2.9
Costs:		
Man labor	$2.80	$1.06 to $6.95
Horse and tractor	1.93	.72 to 3.20
Seed	1.10	1.10 to 1.10
Manure	.75	0 to 1.62
Machinery	1.21	.65 to 1.55
Land	3.50	3.50 to 3.50
Total	11.29	7.45 to 16.51
Yield, tons	3.1	1.2 to 6.1
Cost per ton	$3.64	$2.29 to $8.68

Cost per Acre of Producing Soybean Hay

Number of farms	5	
Acres per farm	6	2 to 10
To harvest:		
Man hours	7.7	4.2 to 14.1
Horse hours	19.4	7.0 to 45.3
Tractor hours	1.2	0 to 3.4
Harvest:		
Man hours	9.6	4.8 to 16.1
Horse hours	11.2	5.1 to 19.3
Tractor hours	.1	0 to .5
Total:		
Man hours	17.3	11.4 to 24.0
Horse hours	30.6	16.3 to 58.7
Tractor hours	1.3	0 to 3.4
Costs:		
Man labor	$3.46	$2.28 to $4.80
Horse and tractor	3.42	2.43 to 4.70
Seed	1.76	.81 to 2.65
Twine	.14	0 to .36
Manure	1.12	0 to 2.33
Machinery	1.51	1.05 to 2.20
Land	3.50	3.50 to 3.50
Total	14.91	10.67 to 18.09
Yield, tons	1.7	.8 to 2.8
Cost per ton	$8.77	$6.04 to $16.65

Cost per Acre of Producing Wild Hay

	Average	Range for each item
Number of farms	10	
Acres per farm	4	3 to 7
Man labor, hr.	9.8	3.6 to 18.0
Horse work, hr.	14.4	5.4 to 29.0
Costs:		
Man labor	$1.96	$.73 to $3.58
Horse work	1.15	.43 to 2.32
Machinery	.74	.65 to 1.15
Land	2.00	2.00 to 2.00
Total	5.85	3.81 to 9.05
Yield, tons	1.5	.3 to 3.8
Cost per ton	$3.90	$2.83 to 12.69

Cost per Acre of Producing Clover and Timothy

Number of farms	7	
Acres per farm	12	3 to 24
First cutting:		
Man labor, hr.	7.2	5.3 to 8.9
Horse work, hr.	11.8	9.9 to 13.3
Tractor work, hr.	.2	0 to 1.2
Second cutting:		
Per cent cut	34	0 to 100
Man labor, hr.	1.3	1.4 to 4.2
Horse work, hr.	3.2	2.0 to 10.3
Tractor work, hr.	-	0 to .2
Total:		
Man labor, hr.	8.5	6.9 to 13.1
Horse work, hr.	15.0	12.0 to 20.9
Tractor work, hr.	.2	0 to 1.4
Costs:		
Man labor	$1.70	$1.37 to $2.62
Horse and tractor	1.32	.96 to 2.44
Seed	1.10	1.10 to 1.10
Manure	.81	.34 to 1.57
Machinery	.82	.65 to 1.15
Land	3.50	3.50 to 3.50
Total	9.25	8.03 to 11.24
Yield, tons	2.3	1.6 to 4.0
Cost per ton	$4.02	$2.81 to $5.34

Cost per Acre of Producing Silage Corn

	Average	Range for each item
Number of farms	20	
Acres per farm	13	4 to 25
To harvest:		
Man labor, hr.	10.1	5.3 to 16.8
Horse work, hr.	24.0	10.0 to 44.7
Tractor work, hr.	1.1	0 to 3.3
Harvest:		
Man labor, hr.	11.6	7.4 to 20.6
Horse work, hr.	19.0	12.6 to 31.6
Total:		
Man labor, hr.	21.7	16.0 to 30.1
Horse work, hr.	43.0	26.5 to 66.9
Tractor work, hr.	1.1	0 to 3.3
Costs:		
Man labor	$4.34	$3.21 to $6.02
Horse and tractor	4.26	3.13 to 5.35
Seed	.64	.28 to 1.67
Twine	.34	.16 to .67
Cutter	2.40	1.78 to 4.15
Manure	2.41	.29 to 3.79
Machinery	2.50	2.50 to 2.50
Land	3.50	3.50 to 3.50
Total	20.39	17.06 to 24.40
Yield, tons	7.9	5.2 to 12.5
Cost per ton	$2.58	$1.95 to $3.65

measured in terms of the number of productive man work units. A productive 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 enterprises or both. On the average, the farmers 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.

The size of business is related to economy in the use of labor, power and equipment. The relationship between the size of business and economy in the use of labor is indicated by the data in Table 2. More productive work per worker was accomplished on the large farms than on the small farms.

Table 2

Size of Business and Labor Efficiency

Size of business	No. of farms	Average per Farm	
		P.M.W.U.*	P.M.W.U.* per worker
Under 600 P.M.W.U.*	7	475	216
600 to 1000 P.M.W.U.	9	737	315
Over 1000 P.M.W.U.	4	1263	371

*Productive man work units.

Selection of Livestock Enterprises

The data presented in this report show differences in profitability among the different classes of livestock. However, one year's data is not sufficient for determining the most profitable combination of livestock enterprises for a particular farm, particularly with the abnormal feed situation that existed in 1935.

Selection of Crops

The comparative return per acre varies among the different crops. The differences among crops from the standpoint of economy in the production of feed are indicated by the data in Table 3. This table shows the production per acre and the relative cost per hundred pounds of digestible nutrients for the common feed crops based on ten-year average yields and the average costs obtained on the farms studied, adjusted for differences in yield.

Table 3

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

Crop	Average yield* (1925-34)	Total lb. digestible nutrients	% protein is of total nutrients	Cost per 100 lbs. of total nutrients
Grains:	bu.			
Corn	37.2	1702	8.7	$.97
Barley	27.3	1040	11.3	1.16
Oats	34.9	786	13.8	1.47
Wheat	17.0	808	12.5	1.49
Roughages:	ton			
Alfalfa	2.6	2652	20.8	.41
Clover and timothy	1.7	1676	10.3	.55
Wild hay	1.0	964	6.2	.58
Silage	7.7	2587	7.2	.79

*Yields for alfalfa, clover and timothy, and silage estimated from available data. All other yields from annual reports of the State Department of Agriculture. Analysis of feeds from "Feeds and Feeding" by Henry and Morrison.

On the basis of past yields and present costs the lowest cost feed-grain crop is corn. It produces more nutrients per acre and at a lower cost than either oats, barley or wheat. Barley is next to corn in the amount of feed produced and in cheapness. When the higher percentage of protein in barley and the greater susceptibility to erosion of land in corn are considered, the difference between these two crops in the cost per 100 pounds of digestible nutrients becomes less significant.

Alfalfa, on the basis of the above data is the cheapest source of roughage. It also has the further advantages of producing the largest quantity of nutrients per acre and of containing the highest percentage of protein. Wild hay is a relatively cheap feed due to the absence of seedbed preparation and seeding costs, and to the fact that it is permitted to grow only on land not suited for other purposes and therefore at a low land cost. Silage has the disadvantage of a high cost and a very low protein content. However, it offers a method of utilizing the entire corn crop.

The differences among crops from the standpoint of profitableness as cash crops is indicated by the data in Table 4, which are based on ten-year average yields and prices and adjusted 1935 costs. On this basis flax is the most profit-

Table 4

Comparative Returns per Acre of Crops

	Flax	Corn	Winter wheat	Spring wheat	Barley	Oats
Cost per acre	$14.70	$16.60	$12.20	$11.80	$12.10	$11.55
Yield (1925-34), bu.	11.3	37.2	17.7	16.4	27.3	34.9
Cost per bu.	$1.30	$.45	$.69	$.72	$.44	$.33
Price per bu. (1926-35)	1.71	.55	.83	.86	.49	.32
Net return per acre	4.62	3.86	2.49	2.30	1.28	-.38

able cash crop, followed in order by corn, winter wheat, spring wheat, barley, and oats. The actual returns from the individual crops may vary from that shown, but the relative position likely will remain approximately the same.

When there is such a marked variation in the relative profitability of the different crops, the operator's labor earnings may be expected to vary with the selection of crops.

Efficiency in Conducting Enterprises

The net returns from the individual enterprises will determine the operator's labor earnings. The net return per cow is influenced by butterfat production. The data in Table 5 show that, on the average, the cows producing over 190 pounds of butterfat per year were more profitable than those producing less than that quantity. Naturally, there is a limit beyond which greater production may be obtained only at a cost so great as to result in a loss.

Table 5

Butterfat Production and Cost and Return per Cow

Production	No. of farms	Average production	Feed cost	Net return
Under 190 pounds	13	157	$21.86	$3.36
Over 190 pounds	7	247	38.18	15.53

One of the important factors affecting the returns from poultry is the number of eggs laid per hen. The data in Table 6 show that the flocks in which the production was over 130 eggs per hen were much more profitable than the flocks with lower egg production.

Table 6

Eggs Laid per Hen and Cost and Return per 100 Hens

Eggs per hen	No. of farms	Eggs per hen	Per 100 Hens	
			Cost	Net return
Under 105	7	93	$294.79	$-66.53
105 - 130	7	115	271.81	14.84
131 and over	5	160	318.10	81.76

The yield per acre is one of the important factors affecting the returns from crop production. This is illustrated by the data in Table 7.

Table 7

The Yield, Cost, and Return per Acre of Corn Husked from Standing Stalks

Yield	No. of farms	Average yield, bu.	Cost		Net return
			Per acre	Per bushel	
Under 35 bu.	5	21.8	$16.03	$.80	$-6.65*
35 to 45 bu.	6	39.7	17.02	.43	.06
Over 45 bu.	4	51.1	16.54	.33	5.42

*The value of the crop was $6.65 less than the cost.

The cost per acre is approximately the same for all three groups but there is a decided difference between the groups in the cost per bushel and in the net return per acre. The farms with the high yields had a much lower cost per bushel and a greater net return than those with low yields.

A few things that favor a large yield of crops per acre are (1) a well prepared seedbed, (2) seeding early, (3) the use of the varieties best adapted to the farm, and (4) the planting of clean seed of high vitality.

Numerous other factors affect the cost and return for the various farm enterprises and thereby affect the operator's earnings. A careful comparison of the data for his farm contained in this report and in mimeographed reports nos. 71 and 75 with that for the other farmers should enable each cooperator to improve his methods and increase his earnings.