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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 1933  
on the  
  
FARM ACCOUNTING ROUTE  
  
in  
  
STEVENS COUNTY, MINNESOTA

By

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Mimeographed Report No. 65  
Division of Agricultural Economics  
University Farm  
St. Paul, Minnesota  
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## SOURCE OF DATA

### Method of Study

The Division of Agricultural Economics of the University of Minnesota, the West Central Agricultural Experiment Station at Morris, and the Bureau of Agricultural Economics of the United States Department of Agriculture are co-operating in an accounting study of twenty-four farms in Stevens County in West Central Minnesota. This study was started March 1, 1932. Farms which are representative of the area were selected in cooperation with the county agricultural agent, Mr. Frank Douglass, and Mr. Allen W. Edson of the West Central Experiment Station. The farmers cooperating in this work keep a complete record of cash receipts and cash expenditures, a daily record of the labor used on each crop and class of livestock, a record of the farm produce used in the house, and other significant facts about the farm operations. 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. From these records, the costs presented in this preliminary report have been computed. All data presented are preliminary and may be subject to later analysis and revision.

Data showing the labor by operations and the cost and return for the principal crops grown on each of the farms studied were presented in Mimeographed Report No. 61, Division of Agricultural Economics. The cost and returns for the livestock raised on each of these farms were presented in Mimeographed Report No. 64. The averages presented in Reports No. 61 and 64 are here summarized.

### Description of the Area

Stevens County is located in the west central portion of the state. All of the county lies within the glaciated area, the northwestern part lying within the bed of the glacial Lake Agassiz. As a result of glaciation, the topography is for the most part flat to gently rolling with numerous sinks and depressions, in many of which stagnant water stands all year. The level areas are large and in wet years some difficulty is experienced in farming the land that has not been artificially drained with ditches or tile. The soil material is high in lime and due to the fine texture, the leaching has not extended below an average depth of two feet. Liming is seldom needed, even for alfalfa. In most of the county, the soil is very productive if well drained.

The climate is marked by wide variations in temperature. The growing season approximates 133 days and the average annual rainfall is about 24 inches, two-thirds of which comes in the growing season. A mixed type of farming prevails. Corn, oats, barley, wheat, flax seed and some rye are grown. Alfalfa and wild hay are the principal roughages. Sweet clover is grown for both pasture and hay. Beef cattle, dairy cattle, hogs and poultry are found thruout the county. Recently, the raising of turkeys has become an important enterprise on many farms.

### Description of the Farms

Facts about the organization of the farms studied are presented on page 3. The average size of the farms studied in 1933 was 375 acres and in 1932 it was 352 acres. This is approximately 43 and 35 per cent, respectively, larger than the average for the county as given in the 1930 census. The 1930 census lists the farms varying from 260 to 499 acres in size as being the most numerous group in Stevens County. Approximately 82 per cent of the farm acreage is in crops. Approximately 46 per cent of the crop acreage was in oats, barley and wheat, 26 per cent in corn, 15 per cent in hay, and 10 per cent in flax. According to the census, 47 per cent of the crop acreage in Stevens County was in wheat, oats and barley in 1929, 23 per cent was in corn, 14 per cent in hay, and 3 per cent in flax. Sixty-seven per cent of the corn in the county was husked, 23 per cent cut and shocked, 4 per cent put in the silo, and 7 per cent hogged or grazed off.

Of the twenty-two farms studied in 1933, seven were owned by the operator, two were rented, and thirteen were partly owned and partly rented. Thirty-two per cent of the total land operated was rented. Both share and cash rental leases were employed.

### The Crop Season of 1933 Marked by Severe Drouth

The year 1933 was one of severe drouth in Stevens County. Less than two thirds of the normal amount of rainfall was received during the year (see Table 1). The shortage of moisture in 1933 was more severe in its consequences as a result of the shortage in both 1931 and 1932. The southern part of the county suffered considerably more than the northern part. The temperatures during the summer months of 1933 were also much higher (averaging over 9 degrees higher in June) than normal.

Facts About the Organization of the Farms

	<u>1932</u>		<u>1933</u>
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Acres in corn	79.2	81.6	29.0 to 192.5
Acres in oats	57.5	47.8	0 to 109.6
Acres in barley	37.1	37.7	0 to 96.6
Acres in wheat	30.7	41.3	0 to 155.8
Acres in wheat and oats	12.6	14.0	0 to 38.9
Acres in flax	26.1	31.9	0 to 86.5
Acres in other grain and grain mixtures	5.6	6.9	0 to 36.4
Acres in alfalfa	15.5	15.9	0 to 49.7
Acres in tame hay	7.3	9.3	0 to 79.1
Acres in wild hay	14.7	14.9	0 to 46.1
Acres in miscellaneous hay	.6	5.1	0 to 17.6
Acres in miscellaneous crops	2.2	1.8	0 to 16.8
Total crop acres	289.1	308.2	106.9 to 548.0
Acres in pasture	44.8	47.1	5.9 to 133.8
Acres in farmstead, roads, waste, etc.	17.7	19.2	6.5 to 32.5
Total acres per farm	351.6	374.5	119.2 to 703.4
Number of cows	14	15	0 to 39
Number of pounds pork produced	14515	9791	0 to 27420
Number of sheep	20	21	0 to 35
Number of pounds turkey produced	1328	1734	0 to 10088
Number of pounds other poultry produced	926	992	186 to 4878
Number of chickens	204	228	14 to 438
Number of laying hens	114	118	11 to 299
Total hours man labor	7217	7082	3373 to 10624
Total hours livestock labor	3443	3299	1330 to 5419
Total hours crop labor	2533	2195	932 to 3494
Total hours miscellaneous labor	1241	1588	370 to 3454
Total hours hired labor	1513	1353	0 to 4579
Total hours unpaid family labor	1982	2359	0 to 8000
Total hours proprietor labor	3381	3095	1975 to 3943
Hours per man per work day	10.2	9.5	6.1 to 11.8
Hours per man per Sunday	4.1	3.6	1.7 to 6.2
Tractor farms:			
Number of farms using tractors	14	13	
Total crop acres	294	361	198 to 514
Number of work horses per farm	7.0	6.7	3.0 to 11.4
Average hours worked per horse	909	773	471 to 1102
Number of crop acres per horse	52.4	56.8	36.3 to 92.8
Non-tractor farms:			
Number of farms using tractors only	9	8	
Total crop acres	171	193	107 to 358
Number of work horses per farm	5.0	6.2	4.0 to 12.1
Average hours worked per horse	930	871	782 to 1072
Number of crop acres per horse	33.5	30.8	24.1 to 40.3

Table 1

Normal Rainfall and Departure from Normal Rainfall, in Inches,  
at Morris, Minnesota\*

Year	Jan. Feb. Mar.	April	May	June	July	Aug.	Sept.	Oct. Nov. Dec.	Annual
Normal	2.35	2.27	2.98	3.95	3.76	2.84	2.37	3.08	23.60
Departure from Normal in Inches <sup>†</sup>									
1931	-.58	-1.66	-1.01	-1.12	-1.38	+.38	-1.15	+2.14	-4.38
1932	+.35	-.97	-.03	-1.97	-.44	+.09	-1.74	+.81	-3.90
1933	+.14	-1.18	-.11	-1.16	-2.54	-.42	-.98	-2.04	-8.29

\*Data from reports of the United States Weather Bureau.

†A minus (-) indicates a rainfall below normal. A plus (+) indicates a rainfall greater than normal.

As a result of the high temperatures and the shortage of moisture, crop failure was extensive. The average abandonment on the farms studied varied from 12 per cent in the case of flax to 33 per cent for wheat (see Table 2). As a

Table 2

Utilization of Crops Seeded to be Harvested as Grain, 1933

Crop	Percentage Utilization of Seeded Acreage			
	Harvested as grain	Cut for hay	Pastured	Abandoned
Wheat	64	3	-	33
Oats	62	17	3	18
Barley	73	2	4	21
Oats and barley	74	-	-	26
Oats and wheat	77	7	-	16
Flax	87	-	1	12

result of the impending shortage of feed, crops were harvested which under ordinary conditions would have been abandoned. Wherever possible, the acreage that could not be cut for grain was either cut for hay or was pastured. The severity of the drouth is further indicated by the production on the acreage that was harvested for grain (see Table 3). The average yield per acre harvested is

Table 3

Yield of Specified Crops per Acre Harvested  
Stevens County

Crop	1933		1932		County* average 1923-32
	County*	Route farms	County*	Route farms	
Spring wheat, bu.	6	5.4	12	13.5	12.4
Oats, bu.	9	11.1	31	45.2	32.8
Barley, bu.	5	7.5	22	25.6	25.6
Flax, bu.	4	3.2	7	7.8	8.5
Corn, bu.	6	8.99.2	27	28.8	28.1

\*County data obtained from reports of the State Department of Agriculture.

given for Stevens County and also for the farms which are cooperating in this study.

As a result of the shortage of feed, rations for livestock were reduced to the minimum and farm animals were in much poorer condition at the end of the year than at the beginning. Practically no fattening of cattle was done, other than to finish those that were on feed at the beginning of the year. Many pigs were sold before and during the emergency pig-buying program and other hogs were marketed at lighter than usual weights. The expectation of the establishment of a dairy production control program led many farmers to retain cows that normally would have been sold because of the feed shortage.

Generally speaking, the prices received for farm products were higher in 1933 than in 1932. As a result, the returns from livestock production were more favorable than in 1932.

### METHODS OF COMPUTING AND PRESENTING DATA

#### Financial Statements

Average inventories and earnings are presented on pages 6 and 7 for all farms, for the five farms having the highest earnings and for the five farms having the lowest earnings.

Most of the farms studied were either partly or entirely rented, with the rental contracts varying from farm to farm. In order to have the data for these farms comparable, all the farms have been adjusted to a straight ownership basis. The inventories include all of the farm property regardless of ownership and the receipts and expenses include those of the landlord as well as of the tenant. Cash rent paid is omitted from the expenses and the landlord's share of crops is included in the receipts. For this reason, sales of grain may be larger than they would be if the farms were entirely owned. The value of the house occupied by the operator was excluded from the value of the farm buildings and all repairs and expenses on the house were omitted from the farm expenses. Payments received on wheat contracts, which averaged \$44, are included in miscellaneous receipts. Wages received for C.W.A. work, averaging \$38 per farm, are included with income from work off the farm. In calculating these financial statements, feed received from drouth relief agencies, averaging \$6, was included in the expenses as feed bought at market prices. The value of the farm produce used in the house was credited as part of the farm income and board furnished labor was considered as a farm expense. Board for hired labor was charged at \$15 per month. The wage for unpaid family labor, 15 cents per hour, was estimated on the basis of wages paid to hired laborers. All interest actually paid has been omitted and interest charged on the total inventory at 5 per cent.

The returns to capital and family labor is what is left to pay interest on the investment and for the labor of the farm operator and his family. Family labor earnings is what is left after taking care of cash expenses, inventory differences and allowing five per cent on the investment. The operator's labor earnings is what the operator has left after paying all farm expenses, interest on the investment, and allowing hired man's wages for the unpaid family labor. A minus (-) indicates a failure to meet all the charges involved.

On the average, the earnings in 1933 were almost \$1000 per farm higher than in 1932. Increased prices and receipts from wheat contracts and C.W.A. work helped to offset the decrease in the quantity of crops and livestock produced. Cash farm receipts exceeded cash farm expenses by \$1200 in 1933. This represents the amount that could be used in meeting interest payments and family living expenses. After allowing for a decrease in inventory of \$290 and other non-cash

Financial Statement

	1932	1933		
	All farms	All farms	Five highest	Five lowest
<u>RECEIPTS</u>				
Cattle	\$713	\$575	\$264	\$1067
Hogs	376	453	421	595
Sheep and wool	84	88	9	146
Poultry and eggs	331	409	635	176
Dairy products	304	348	299	361
Horses	40	16	-	32
Corn	14	7	13	6
Oats	49	25	47	4
Barley	48	60	124	6
Flax	220	117	231	48
Wheat	102	116	223	70
Other crops	39	24	23	36
Income from work off the farm	133	204	134	165
Miscellaneous	65	102	132	107
(1) Total Cash Farm Receipts	2518	2544	2555	2819
(2) Farm Produce Used in House	188	216	232	193
(3) Increase in Farm Inventory	-	-	332	-
(4) TOTAL FARM RECEIPTS	2706	2760	3119	3012
<u>EXPENSES</u>				
Hired labor	132	84	64	108
Cattle bought	201	50	11	15
Hogs bought	11	16	19	19
Sheep bought	22	7	5	4
Poultry bought	17	31	40	30
Horses bought	28	2	-	-
Other livestock expense	48	40	31	44
Feed bought	168	258	245	236
Crop expense (twine, threshing, etc.)	143	98	111	98
Buildings, fences, etc.	57	85	149	47
Machinery	173	164	99	206
Auto (farm share)	24	22	22	21
Gas, kerosene, oil, etc. (farm share)	186	186	135	231
Taxes	280	238	192	327
Insurance	26	37	19	57
Miscellaneous	20	26	22	28
(5) Total Cash Farm Expenses	1536	1344	1164	1471
(6) Decrease in Farm Inventory	1098	290	-	1041
(7) Board of Hired Labor	74	64	68	76
(8) TOTAL FARM EXPENSES	2708	1698	1232	2588
(9) Returns to Capital and Family Labor (4 - 8)	-2	1062	1887	424
(10) Interest on Farm Inventory at 5%	854	865	813	1211
(11) Family Labor Earnings (9 - 10)	-856	197	1074	-787
(12) Est. Wage for Unpaid Family Labor	297	356	410	409
(13) OPERATOR'S LABOR EARNINGS (11 - 12)	-1153	-159	664	-1196

Average Farm Inventories

	<u>1932</u>	<u>1933</u>		
	<u>All farms</u>	<u>All farms</u>	<u>Five highest</u>	<u>Five lowest</u>
Land	\$9625.62	\$9974.60	\$9249.20	\$13606.20
Buildings (excluding house operator lives in)	2349.41	2483.77	2095.50	4103.80
Work horses	385.33	376.57	468.60	396.30
Other horses	40.46	45.23	25.50	116.00
Cattle	1080.29	1023.34	754.65	1907.95
Hogs	170.20	105.81	104.22	164.66
Sheep	71.48	81.14	13.70	130.50
Poultry	118.78	106.54	167.98	68.04
Machinery	2198.72	2129.22	1942.81	2700.79
Auto (farm share)	98.38	57.04	30.36	76.24
Feed	<u>938.80</u>	<u>921.50</u>	<u>1362.18</u>	<u>941.06</u>
Total	17077.47	17304.76	16264.70	24211.54

Farm Produce Used in the House

	<u>1932</u>		<u>1933</u>			
	<u>All Farms</u>		<u>All Farms</u>		<u>Five highest</u>	<u>Five lowest</u>
	<u>Quantity</u>	<u>Value</u>	<u>Quantity</u>	<u>Value</u>		
Cream	400 pt.	\$24.88	480 pt.	\$34.39	\$32.03	\$18.66
Farm churned butter	76 lb.	14.32	97 lb.	21.11	30.65	10.78
Whole milk	876 qt.	16.40	604 qt.	12.99	9.60	16.58
Skim milk	508 qt.	1.68	728 qt.	1.84	1.94	2.26
Hogs	712 lb.	19.58	694 lb.	21.78	23.93	17.79
Cattle	483 lb.	15.30	484 lb.	16.16	8.80	20.75
Sheep	14 lb.	.43	-	-	-	-
Poultry	162 lb.	13.52	188 lb.	13.32	12.96	11.36
Eggs	175 doz.	19.47	181 doz.	20.37	28.46	16.71
Potatoes	22½ bu.	7.28	19½ bu.	8.92	6.70	11.62
Fruits, vegetables		10.96		7.91	7.00	10.40
Farm produced fuel		<u>44.04</u>		<u>58.86</u>	<u>70.00</u>	<u>56.00</u>
Total		187.86		217.65	232.07	192.91
Size of family (man equivalent)		3.96		4.23	4.10	4.47

receipts and expenses, there remained \$1062 with which to pay for the use of the capital invested and the labor of the operator and his family. When interest at 5 per cent and the unpaid family labor at 15 cents an hour are deducted, the operator lacked \$159 of breaking even.

In 1933 the operator's labor earnings were low largely as a result of the drouth. In 1932 the earnings were low largely because of low prices for farm products but also partly because of dry weather.

#### Livestock Statements

The comparative cost and return for each of the different classes of livestock maintained in 1933 are presented. Averages for 1932 are also indicated. 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 cost and return are shown. The amounts of feed, with the exception of pasture, are given in pounds rather than bushels or tons. All corn has been adjusted 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.

The weight of livestock produced was obtained by adding the weight on the closing inventory to the weight sold and used in the house and then deducting from this total the sum of the weight bought and the weight on the opening inventory. The value of livestock production was determined in the same manner except that values instead of weights were used. Transfers of cattle from one class to another were handled in the same manner as purchases and sales.

Local prices were used, insofar as possible, in determining the cost and return. Marketable feeds were charged at local prices and non-marketable feeds on a comparative-feeding-value basis. No charge was made for straw or corn-stalk pasture. Man labor was figured at 15 cents per hour and horse work was charged to the individual farm at the rate determined for that farm. The man labor rate is based upon wages paid to hired men and includes an allowance for board. 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. It includes a charge for any use made of the auto and truck. Interest has been figured at 5 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, horse-shoeing, sheep-shearing, etc. In arriving at the credit for manure, consideration was given to the kind and the amount of feed consumed, the proportion of the fertilizing elements returned in the manure, and the value of manure when measured in terms of increased crop yields. Credit was allowed for manure produced regardless of how it was utilized.

In studying the tables and in considering the income from livestock, one should keep in mind that these are comparative figures and represent charges which are not all actual cash expenses. All feed, man labor, horse work, use of buildings and equipment, and interest on the investment have been charged to the enterprise altho they may represent very little direct cash outlay. Therefore a minus return merely 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 altho these figures fail to show a gain.

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. The return per hour represents what the enterprise returned for each hour of man labor used by it, after all charges except labor had been deducted. In each case a minus (-) indicates a failure to meet the particular expenses involved.

### Cattle

The cattle enterprise was divided into the separate classes and tables are presented for cows, feeder cattle, and miscellaneous or other cattle. Finally a table is shown for the entire cattle enterprise.

Cows. The cow herds were divided into three groups upon the basis of method of management. Herds of cows of dairy breeding which were handled 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. Herds which were kept primarily for the raising of beef calves were called beef-breeding 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 (page 10).

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 calves were in some cases 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 the same quantity of milk per day as those being hand fed. 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 (sales, 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 materially less than that obtained by dairy herd improvement associations because in the latter case no allowance is made for waste and shrinkage and frequently only part of the cows are tested.

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 over twice as much grain and approximately 500 pounds more roughage per cow than the cows in the general purpose herds. In 1933 the dairy cows produced an average of 93 pounds of butterfat more than the milk-and-beef cows. Fourteen per cent more man labor was used per cow in the dairy herds.

The difference between the dairy herds and the milk-and-beef herds in the return over all costs is larger in 1933 than in 1932. As the price of butterfat increases, the difference in favor of the dairy herds will probably increase. The dairy cow furnishes a market for more labor and feed than the milk-and-beef cow. It is interesting to note that the largest gain as well as the largest loss occurred in the dairy herds.

## Cost and Return per Cow

	Dairy Herds			Milk-and-Beef Herds		
	1932		Range for each item	1933		Range for each item
	Average	Average		Average	Average	
Number of farms	8	6		12	11	
Number of cows per farm	13.6	16.1	10.2 to 23.2	9.6	12.1	3.4 to 16.0
Man labor, hours	175.6	163.5	128.1 to 229.3	152.5	143.1	91.6 to 217.8
Horse work, hours	11.5	11.7	1.8 to 28.8	11.2	5.3	0 to 15.0
Costs:						
Feed	\$32.29	\$31.18	\$21.51 to \$43.16	\$19.80	\$17.60	\$10.18 to \$28.35
Man labor	26.34	24.52	19.22 to 34.40	22.87	21.46	13.74 to 32.58
Horse work	.54	.63	.09 to 1.64	.61	.28	0 to .71
Shelter	4.93	5.65	2.40 to 9.33	4.78	4.77	2.01 to 8.63
Equipment	5.23	4.28	.52 to 7.95	2.43	1.75	.91 to 3.49
Interest at 5%	2.23	2.26	1.72 to 3.27	1.58	1.64	1.28 to 2.02
Miscellaneous cash	.72	1.12	.22 to 2.28	.25	.26	.06 to .57
Depreciation	3.11	3.05	1.87 to 5.14	1.00	2.05	1.55 to 6.65
Total costs	75.39	72.69	51.16 to 96.43	53.32	49.81	32.25 to 75.14
Manure credit	2.00	1.84	1.26 to 2.73	1.26	1.22	.51 to 2.60
Net cost	73.39	70.85	49.72 to 93.70	52.06	48.59	31.74 to 72.95
Value of dairy products:						
Sold	41.16	49.26	38.59 to 68.40	20.26	20.32	9.48 to 33.18
Used in house	4.21	4.13	2.15 to 6.57	6.92	7.39	2.71 to 18.51
Fed to livestock	12.08	9.88	4.54 to 13.64	8.63	10.90	5.72 to 17.44
Total product	57.45	63.27	48.02 to 86.04	35.81	38.61	18.81 to 54.14
Return over all costs	-15.94	-7.58	-25.39 to 14.18	-16.25	-9.98	-21.45 to -1.93
Return over feed cost	25.16	32.09	18.79 to 46.41	16.01	21.01	8.09 to 31.10
Price received per lb. B.F.	.21	.22	.20 to .25	.18	.21	.20 to .22
Feeds:						
Corn, lb.	339	593	0 to 1541	291	65	0 to 250
Small grain, lb.	2235	1106	538 to 1632	998	677	0 to 1403
Other concentrates, lb.	149	275	0 to 1000	11	11	0 to 87
Hay and fodder, lb.	5037	4452	3187 to 9017	3991	4426	924 to 11692
Silage, lb.	2154	4895	0 to 11679	2296	3419	0 to 8354
Pasture, days	142	124	106 to 144	143	133	115 to 153
Butterfat per cow	225	249	199 to 339	154	156	74 to 219

\*Appreciation.

Cost per Head for Beef Breeding Herd

	<u>1932</u>	<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Number of farms	4	4	
Number of head per farm	30.4	28.5	16.1 to 40.4
Man labor, hours	47.6	38.3	23.1 to 45.0
Horse work, hours	6.4	4.9	1.2 to 6.8
Costs:			
Feed	\$14.93	\$11.64	\$9.20 to \$14.36
Man labor	7.13	5.60	3.46 to 6.75
Horse work	.41	.28	.06 to .37
Shelter	3.88	3.99	1.94 to 5.91
Equipment	.59	.39	.06 to .67
Interest at 5%	2.30	2.18	1.51 to 3.12
Miscellaneous cash	.19	.21	.06 to .50
Depreciation	.56	9.70	1.61 to 24.96
Total costs	29.99	33.99	24.76 to 51.85
Credits:			
Cream sold	2.10	2.51	0 to 6.47
Dairy products used	2.13	1.96	1.17 to 3.33
Skim milk fed	.55	.36	.07 to .92
Manure	.83	.82	.51 to 1.06
Total credit	5.61	5.65	2.09 to 9.14
Net cost	24.38	28.34	18.54 to 46.14
Calves raised	.74	.76	.45 to .99
Cost per calf raised	\$32.95	\$37.29	\$20.97 to \$47.83
Feeds:			
Corn, lb.	83	36	12 to 54
Small grain, lb.	573	250	53 to 550
Hay and fodder, lb.	2138	2760	858 to 3941
Silage, lb.	3646	3083	0 to 4669
Pasture, days	140	140	122 to 154

Beef Breeding Herds. The beef breeding herds are kept primarily for raising beef calves. For this reason, the cost of the bull is included with the cost of the cows and the data are presented on a per head basis for the entire breeding herd (page 11). The credit for dairy products fed does not include any whole or skim milk fed to calves. The entire cost of the cows and bull, less any credit for manure or dairy products is charged against the calves raised. The cost per calf is obtained by dividing the net cost by the calves raised. This cost roughly approximates the cost of a 400 pound feeder calf as the only additional cost would be a charge for the pasture and labor it received.

Cost and Return for Feeder Cattle  
(Per 100 pounds gain in weight)

	<u>1932</u>	<u>1933</u>	<u>1933</u>
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Number of farms	10	10	
Pounds produced per farm	8654	4563	1095 to 14040
Man labor, hours	4.4	4.0	1.3 to 7.0
Horse work, hours	1.6	.8	0 to 1.6
Costs:			
Feed	\$4.52	\$4.93	\$3.93 to \$7.06
Man labor	.65	.60	.19 to 1.04
Horse work	.10	.04	0 to .08
Shelter	.27	.43	.02 to 1.61
Equipment	.20	.25	0 to 1.98
Interest at 5%	.38	.24	.14 to .35
Miscellaneous cash	.03	.01	0 to .02
Total cost	6.15	6.50	3.16 to 8.59
Manure credit	.34	.31	.20 to .47
Net cost	5.81	6.19	2.91 to 8.25
Value produced	5.40	9.22	6.25 to 13.72
Return over all costs	-.41	3.03	-2.00 to 7.42
Return over feed cost	.88	4.29	-.86 to 8.85
Average selling price*	5.06	4.87	3.79 to 5.72
Feeds:			
Corn, lb.	628	526	297 to 1289
Small grain, lb.	266	303	0 to 703
Protein feed, lb.	2	1	0 to 13
Hay and fodder, lb.	444	280	106 to 460
Silage, lb.	155	278	0 to 884
Pasture, days	1	1	0 to 9

\*For farms selling cattle.

Feeder Cattle. This class includes the cattle being fattened for market and covers only the feeding period. A number of farms fattened one or two animals for sale or for home butchering. These farms were eliminated from the averages for feeder cattle (page 12) thru the exclusion of all farms on which less than 1000 pounds gain in weight was attained during the feeding period. Due to the impossibility of determining the pork credit for feed picked up behind cattle, this item was omitted from all calculations. The fattening of cattle in 1933 consisted largely of the completion of the fattening of the cattle that were started on feed in 1932. Because of the shortage of feed, very few cattle were started on feed in 1933.

# Cost and Return per Head of Other Cattle

	Dairy Herds			Milk-and-Beef Herds		
	1932	1933		1932	1933	
	Average	Average	Range for each item	Average	Average	Range for each item
Number of farms	8	6		10	11	
Number of head per farm	14.00	14.91	6.49 to 22.24	16.06	16.09	7.94 to 24.99
Man labor, hours	20.5	19.1	12.8 to 29.9	18.4	17.6	9.9 to 23.3
Horse work, hours	5.1	3.9	1.3 to 8.2	4.8	2.7	0 to 5.2
Costs:						
Feed	\$16.39	\$13.33	\$9.98 to \$17.09	\$12.32	\$14.74	\$10.15 to \$23.93
Man labor	3.07	2.87	1.92 to 4.49	2.75	2.63	1.49 to 3.49
Horse work	.24	.20	.07 to .42	.24	.15	0 to .35
Shelter	3.03	2.79	.68 to 6.04	1.43	1.91	.55 to 3.25
Equipment	.24	.30	.06 to .74	.22	.24	.01 to .59
Interest at 5%	.80	.70	.53 to 1.03	.69	.73	.61 to 1.04
Miscellaneous cash	.21	.23	.05 to .79	.14	.14	.03 to .43
Total costs	23.98	20.42	14.16 to 27.76	17.79	20.59	14.95 to 31.77
Manure credit	.84	.71	.46 to .94	.53	.65	.38 to 1.04
Net cost	23.14	19.71	13.54 to 26.98	17.26	19.93	14.47 to 31.09
Value of product	7.02	12.97	5.41 to 19.99	8.89	11.90	-12.75 to 19.91
Return over all costs	-16.12	-6.74	-15.94 to 3.68	-8.37	-8.03	-28.74 to 5.44
Feeds:						
Corn, lb.	272	128	0 to 213	163	239	11 to 846
Other grain, lb.	482	211	12 to 367	467	290	105 to 626
Hay and fodder, lb.	2178	1903	1362 to 2827	1417	1774	515 to 3756
Silage, lb.	432	1472	0 to 5883	857	1246	0 to 2965
Whole milk, lb.	334	328	14 to 576	259	649	242 to 1683
Skimmilk, lb.	1745	1674	512 to 2325	1367	1193	390 to 2351
Pasture, days	114	100	78 to 121	124	73	28 to 102

Other Cattle. Data for other cattle are presented for the farms on which dairy or milk-and-beef herds were kept (page 13). This class includes all cattle except the cows and feeders. This class represents, primarily, the heifers being raised for replacement altho in some cases one or two calves being fattened for sale or home butchering are also included.

Cost and Return for All Cattle - Beef Herds  
(Per animal unit)

	<u>1932</u>		<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>	
Number of farms	4	4		
Animal units per farm	54.2	46.6	25.1 to	70.1
Man labor, hours	38.6	29.7	19.2 to	37.6
Horse work, hours	6.2	4.8	1.8 to	6.5
Costs:				
Feed	\$17.25	\$14.57	\$11.50 to	\$20.13
Man labor	5.80	4.45	2.88 to	5.65
Horse work	.40	.27	.10 to	.36
Shelter	3.67	3.40	1.67 to	4.97
Equipment	.53	.37	.12 to	.59
Interest at 5%	2.11	2.04	1.79 to	2.63
Miscellaneous work	.29	.33	.06 to	.95
Total costs	30.05	25.43	21.30 to	31.02
Manure credit	1.04	.91	.70 to	1.20
Net cost	29.01	24.52	20.38 to	29.82
Value of product:				
Animal	13.93	12.88	11.99 to	14.10
Dairy	2.59	3.00	.83 to	5.77
Total product	16.52	15.88	14.01 to	16.83
Return over all costs	-12.49	-8.64	-14.39 to	-3.55
Return over feed cost	-.73	1.31	-5.20 to	4.78
Feeds:				
Corn, lb.	771	549	402 to	848
Small grain, lb.	861	428	247 to	565
Commercial feeds, lb.	8	12	0 to	49
Hay and fodder, lb.	1950	2300	935 to	3443
Silage, lb.	2693	2761	0 to	4190
Pasture, days	146	156	137 to	184

All Cattle. Expenses and returns for the entire cattle enterprise, including cows, feeders and other cattle, calculated on an animal unit basis are presented (pages 14 and 15). In these statements, any milk used by calves is omitted from the feeds used and from the value of dairy products fed to livestock. A study of the tables shows the lowest feed consumption per animal unit in the beef herds and the highest in the dairy herds. The amount of man labor used per animal unit was decidedly lower with the beef herds than with either of the other two groups. The shelter cost was higher for the dairy herds than the others. This indicates the general use of more expensive shelter for dairy cows than for beef cows.

In 1933 there was some difference between the dairy herds, the milk-and-beef herds, and the beef herds in the return over all charges. However, when the number of farms in each group is considered, the difference is not large enough to be of much significance. The dairy herds gave the largest return over feed costs but the expense for factors other than feed was enough larger so that the return over all charges was approximately the same as for the other groups. The beef herds showed the smallest return over feed but expenses other than feed were much less than for the other groups.

Cost and Return for All Cattle  
(per animal unit)

	Dairy Herds			Milk-and-Beef Herds		
	1932	1933		1932	1933	
	Average	Average	Range for each item	Average	Average	Range for each item
Number of farms	8	6		12	11	
Animal units per farm	21.4	24.8	15.4 to 35.1	24.7	22.1	6.0 to 35.2
Man labor, hours	125.6	118.9	88.8 to 167.6	87.1	94.3	52.5 to 145.0
Horse work, hours	10.5	10.2	2.7 to 20.7	10.3	5.4	0 to 14.8
Costs:						
Feed	\$27.64	\$25.90	\$18.11 to \$34.72	\$19.10	\$17.51	\$10.86 to \$24.21
Man labor	18.84	17.83	13.32 to 25.14	13.07	14.15	7.87 to 21.76
Horse work	.49	.54	.12 to 1.18	.56	.29	0 to .70
Shelter	5.17	5.34	2.49 to 8.71	3.38	4.38	1.62 to 6.85
Equipment	3.49	2.97	.37 to 4.91	1.34	1.15	.69 to 2.08
Interest at 5%	2.00	1.92	1.44 to 2.75	1.52	1.60	1.27 to 2.00
Miscellaneous	.60	.85	.19 to 1.51	.24	.25	.06 to .47
Total costs	58.23	55.35	41.75 to 73.74	39.21	39.33	24.06 to 53.33
Manure credit	1.83	1.66	1.14 to 2.45	1.42	1.33	.54 to 2.82
Net cost	56.40	53.69	40.34 to 71.29	37.79	38.00	23.52 to 50.51
Value of product:						
Animal	4.62	6.56	.72 to 13.94	14.11	13.93	6.82 to 21.72
Dairy	32.99	38.20	29.08 to 45.88	13.50	16.46	7.23 to 23.91
Total product	37.61	44.76	34.67 to 60.82	27.61	30.39	20.10 to 45.63
Return over all costs	-18.79	-8.93	-21.88 to 11.92	-10.18	-7.61	-20.47 to 5.32
Return over feed cost	9.97	18.86	7.93 to 35.07	8.51	12.88	5.39 to 25.87
Feeds:						
Corn, lb.	410	553	0 to 1351	897	410	10 to 991
Small grain, lb.	1757	876	440 to 1225	1070	687	287 to 1176
Commercial feeds, lb.	104	188	0 to 654	9	7	0 to 59
Hay and fodder, lb.	4500	4102	2731 to 7871	3386	4086	823 to 11452
Silage, lb.	1821	3899	0 to 10203	1839	2797	0 to 6953
Pasture, days	167	139	123 to 162	150	134	100 to 213

Cost and Return per Sheep\*

	<u>1932</u>	<u>1933</u>	<u>Range for each item</u>
	<u>Average</u>	<u>Average</u>	
Number of farms	9	7	
Number of sheep per farm	53	65	20 to 108
Pounds of sheep produced per farm	3541	1744	-1360 to 3975
Man labor, hours	3.9	2.4	1.3 to 4.7
Horse work, hours	1.3	.9	.3 to 2.0
Costs:			
Feed	\$1.30	\$1.07	\$.40 to \$1.76
Man labor	.59	.35	.20 to .70
Horse work	.07	.04	.01 to .10
Shelter	.24	.26	.01 to .94
Equipment	.14	.13	.01 to .30
Interest at 5%	.19	.20	.13 to .28
Miscellaneous cash	.15	.15	.02 to .44
Total costs	2.68	2.20	1.30 to 2.87
Manure credit	.07	.07	.01 to .14
Net cost	2.61	2.13	1.27 to 2.82
Value produced:			
Sheep	.48	3.31	1.73 to 5.38
Wool	.83	1.42	.46 to 1.83
Total product	1.31	4.73	3.41 to 6.97
Return over all costs	-1.30	2.60	.78 to 4.56
Return over feed cost	.01	3.66	1.69 to 5.86
Weight of fleece, lb.	9.2	8.5	3.5 to 11.0
Lambs raised per ewe	.7	.8	.5 to 1.1
Per cent death loss, lambs	25	28	13 to 48
Per cent death loss, sheep	8	15	6 to 27
Feeds:			
Grain, lb.	63	47	2 to 156
Hay and fodder, lb.	338	321	51 to 70
Silage, lb.	64	103	0 to 256
Pasture, days	163	113	0 to 145

\*Two lambs under six months of age considered equal to one sheep.

Sheep

In the table (page 16) for sheep, the number of head 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 was arrived at by dividing the number of deaths by the total number of individual sheep or 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. The high death loss on lambs was largely the result of unfavorable weather at lambing time. The death loss of mature sheep was primarily the result of old age and shortage of feed. Due to the low prices for aged ewes prevailing in 1932, many old ewes were retained for the 1933 lamb crop that normally would have been sold. In 1933 the death loss on these ewes was quite large.

With higher prices both for sheep and for wool, the returns were more favorable in 1933 than in 1932.

Cost and Return per 100 Pounds of Hogs Produced

	<u>1932</u>		<u>1933</u>
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Number of farms	24	20	
Pounds produced per farm	14516	10749	3420 to 20555
Man labor, hours	2.9	3.3	1.3 to 5.9
Horse work, hours	.3	.3	0 to .8
Costs:			
Feed	\$2.03	\$3.30	\$1.95 to \$6.47
Man labor	.43	.49	.20 to .88
Horse work	.02	.01	0 to .04
Shelter	.10	.17	0 to .67
Equipment	.14	.17	.04 to .39
Interest at 5%	.06	.06	.02 to .09
Miscellaneous cash	.05	.03	0 to .16
Total costs	2.83	4.23	2.79 to 7.94
Manure credit	.14	.14	.08 to .23
Net cost	2.69	4.09	2.68 to 7.71
Average selling price, per cwt.	2.62	3.59	2.95 to 4.46
Average weight of hogs sold, lb.	225	179	120 to 268
Pigs raised per litter	6.0	5.9	2.9 to 9.1
Feeds:			
Corn, lb.	261	245	118 to 539
Small grain, lb.	197	189	36 to 625
Commercial feed, lb.	1	4	0 to 26
Skim milk equivalents, lb.*	155	190	0 to 625
Pasture, days	23	26	0 to 50

\*One pound tankage or meat scraps considered equivalent to ten pounds skim milk.

Hogs

Fall pigs were raised on three of the farms studied in 1933 but the proportion of the total pigs farrowed in the fall was not large enough to be significant. The pigs per litter is the number of pigs raised to six months of age plus the pigs sold or butchered at less than six months of age, divided by the number of farrowings. The average market weight is the average weight for all hogs and pigs sold. The price received per hundred pounds is the average price received for all hogs sold, including the premium received for the sows and pigs sold in the emergency hog reduction program. The pounds produced include any gain in weight for breeding hogs and likewise the expenses and receipts include those for the breeding herd. The data do not include any charge for feed salvaged from cattle.

Cost and Return per 100 Chickens

	<u>1932</u>		<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>	
Number of farms	22	20		
Number of laying hens per farm	118	123	30 to	299
Number of other chickens per farm	93	117	20 to	273
Meat produced, lb., per 100 chickens	498	448	18 to	798
Man labor, hours	190.9	162.3	63.6 to	300.8
Horse work, hours	5.9	5.3	0 to	14.2
Costs:				
Feed	\$36.13	\$53.92	\$36.95 to	\$80.84
Man labor	28.63	24.34	9.55 to	45.13
Horse work	.31	.26	0 to	.63
Shelter	7.58	7.39	0 to	26.33
Equipment	9.42	7.58	1.31 to	18.42
Interest at 5%	1.99	1.57	1.19 to	2.39
Miscellaneous cash	8.00	5.16	.02 to	19.33
Total cost	92.06	100.22	67.94 to	137.08
Manure credit	1.94	2.01	1.42 to	2.84
Net cost	90.12	98.21	66.12 to	134.84
Value of product:				
Poultry*	29.60	20.15	-10.79 to	47.87
Eggs	45.80	46.50	27.51 to	88.19
Total product	75.40	66.65	29.89 to	114.00
Return over all costs	-14.72	-31.56	-65.76 to	17.40
Return over feed cost	39.27	12.73	-22.26 to	76.87
Average selling price per doz. eggs	.12	.12	.09 to	.14
Eggs laid per hen	88	95	61 to	148
Feeds:				
Grain, lb.	5527	5444	3907 to	7940
Commercial feed, lb.	211	358	22 to	1494
Skimmilk equivalents, lb.+	4836	5739	513 to	13296

\*Value of poultry is net value of poultry produced after allowing for differences in inventory values.

+Skimmilk plus 17 times meat scraps and tankage.

Chickens

The data for chickens are presented on the basis of one hundred chickens (page 18). In a few instances, a small number of ducks or geese were raised. In such cases, the feed, labor, other expenses and the receipts are included with those for chickens and the number of chickens adjusted accordingly. The amount of meat produced was calculated in the same manner as for feeder cattle and for hogs. The cost per dozen eggs was calculated by deducting from the total cost all income from the production and sale of meat, and dividing the remainder by the number of dozens of eggs sold and used in the house. The selling price per dozen eggs was obtained by dividing the total cash receipts for eggs by the total number of dozens sold. Portable brooder houses were included with the equipment rather than with the buildings. For this reason, the equipment charge on a particular farm may be large and the shelter charge small or vice versa.

Cost and Return for Turkeys  
(Per 100 pounds produced)

	<u>1932</u>	<u>1933</u>	<u>1933</u>
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Number of farms	14	13	
Pounds produced per farm	2280	2942	164 to 10088
Man labor, hours	31.3	16.5	8.1 to 32.6
Horse work, hours	.5	.5	0 to 1.1
Costs:			
Feed	\$5.71	\$5.63	\$1.98 to \$9.66
Man labor	4.70	2.47	1.21 to 4.89
Horse work	.02	.02	0 to .06
Shelter	.10	0	0 to 0
Equipment	1.19	.73	0 to 1.36
Interest at 5%	.30	.15	0 to 1.36
Miscellaneous cash	.98	.74	.01 to 1.82
Total cost	13.00	9.74	4.95 to 16.88
Manure credit	.32	.20	.08 to .30
Net cost	12.68	9.54	4.86 to 16.58
Value of product:			
Turkeys	8.69	13.35	10.14 to 15.35
Eggs	.44	.02	0 to .25
Total product	9.13	13.37	10.14 to 15.60
Return over all costs	-3.55	3.83	-6.44 to 9.55
Return over feed cost	3.42	7.74	.48 to 12.15
Average selling price per lb.	.12	.14	.12 to .15
Feeds:			
Grain, lb.	873	591	245 to 1059
Commercial feeds, lb.	43	24	0 to 109
Skimmilk equivalents, lb.*	827	389	0 to 1078

\*Skimmilk plus 17 times meat scraps and tankage.

Turkeys

The turkey flocks on the farms studied were kept primarily for the production of meat. The production of turkey eggs for sale was relatively of no importance. For this reason, the data for turkeys are presented on the basis of one hundred pounds gain in weight (page 19).

Work Horses

The farms were divided into two groups for the presentation of the data on work horses (page 20). One group consists of the farms on which tractors were used for drawbar work and the other group is composed of the remainder of the farms. The farms on which tractors were used were larger and raised more acres of crops per horse than the farms without tractors. Practically speaking, in 1933 there was no difference between the two groups in the average cost per horse. However, a larger number of hours worked on the farms without tractors resulted in a lower cost per hour.

Cost of Horse Work per Horse

	<u>1932</u>		<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>	
<u>Farms Using Tractors for Drawbar Work</u>				
Number of farms	14	13		
Man labor, hours	54.0	39.0	18.5 to	66.8
Costs:				
Feed	\$23.72	\$21.99	\$12.97 to	\$34.82
Man labor	8.04	5.85	2.77 to	10.02
Shelter	6.03	5.89	1.28 to	14.17
Equipment	5.01	3.64	1.93 to	6.16
Interest at 5%	3.25	2.86	1.68 to	4.98
Miscellaneous cash	.33	.39	.03 to	2.44
Depreciation	5.16	3.86	.69 to	11.52
Total cost	51.54	44.48	33.72 to	53.64
Manure credit	1.64	1.28	.82 to	1.73
Net cost	49.90	43.20	32.85 to	52.22
Hours worked	908 $\frac{1}{2}$	773	470 $\frac{3}{4}$ to	1102
Cost per hour, cents	5.5	5.6	3.7 to	7.1
Crop acres per horse	52.4	56.8	36.3 to	92.8
Feeds:				
Grain, lb.	3314	2188	695 to	3922
Hay, lb.	4310	4215	2350 to	5974
Pasture, days	70	84	43 to	121

Farms Not Using Tractors for Drawbar Work

Number of farms	9	8		
Man labor, hours	59.8	46.3	35.8 to	61.2
Costs:				
Feed	\$21.85	\$24.85	\$19.11 to	\$30.03
Man labor	8.96	6.94	5.36 to	9.16
Shelter	4.36	4.37	2.03 to	7.80
Equipment	4.09	3.20	2.08 to	4.34
Interest at 5%	2.91	3.01	1.06 to	4.05
Miscellaneous	.54	.64	.05 to	1.72
Depreciation	6.87	2.33	6.61* to	8.48
Total cost	49.58	45.34	36.05 to	56.68
Manure credit	1.61	1.61	1.25 to	2.34
Net cost	47.97	43.73	34.76 to	55.00
Hours worked	930 $\frac{1}{2}$	871	782 $\frac{1}{2}$ to	1071 $\frac{1}{2}$
Cost per hour, cents	5.2	5.0	4.0 to	6.1
Crop acres per horse	33.5	30.8	24.1 to	40.3
Feeds:				
Grain, lb.	3194	2487	1280 to	3345
Hay, lb.	4391	5086	3519 to	6391
Pasture, days	85	70	8 to	101

\*Appreciation.

Cost of Auto Operation  
(per farm)

	<u>1932</u>		<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>	
Number of farms	23	21		
Miles driven	7462	9123	3333 to	21795
Gasoline, gal.	483	626	210 to	1160
Oil, gal.	14	17	6 to	40
Costs:				
Gasoline and oil	\$88.09	\$105.90	\$36.91 to	\$244.01
Miscellaneous cash*	83.73	77.83	25.41 to	299.89
Interest at 5%	13.10	11.77	1.12 to	42.50
Decrease in inventory	68.04	74.52	160.00 <sup>+</sup> to	300.00
Man labor	4.72	6.38	0 to	19.95
Total cost	257.68	276.40	105.81 to	741.02
Cost per mile, cents	3.5	3.0	1.9 to	6.0
Miles per gal. of gasoline	15.4	14.6	10.0 to	17.6

\*Includes purchases of cars.

<sup>+</sup>Increase in inventory.

Automobiles

The cost of operation of the automobiles is presented on a per farm basis rather than per car (page 21). More than one car was maintained on farms and the expenses were not divided. The labor charge is the value of the time the regular farm workers spent repairing and servicing the cars. Miscellaneous cash includes any cash paid for repair work, insurance, parts, tires, and greasing hired done at a service station. All oil and gasoline, regardless of whether bought in bulk or small lots at service stations, is included under gasoline and oil. Because the records cover the period March first to February twenty-eighth and the time for buying 1933 auto licenses was extended beyond March 1, 1933, the miscellaneous cash cost ~~for 1932~~ do not include the license, except where a new car was bought and a license obtained for the remainder of 1932. The purchase price of cars bought is included in the miscellaneous cash. The miles driven do not include any miles travelled in getting repairs for the auto. Because of the difficulty of obtaining a satisfactory charge for shelter and its comparative lack of importance, it was omitted from the calculations.

Tractors

The tractors were divided into two classes, namely, two-plow and three-plow tractors. The number of four-plow tractors used was too small to provide any significant comparisons and for that reason were omitted. The costs are presented on the basis of a ten-hour day (page 22). The cost per hour can be obtained by dividing the cost per day by ten. The state gas tax is not included in the fuel cost as it was quite generally refunded. Miscellaneous cash includes cash paid for repairs, parts, etc. Depreciation is the difference between the value at the beginning and end of the year. Interest was calculated on the average of the beginning and ending inventories. There were no tractors bought during the year. Man labor is the value of the time the regular farm workers spent repairing, servicing, etc. The use of the truck or auto in getting repairs, etc. for the tractor is charged on a mileage basis. The expenses as given do not include a charge for shelter. Some of the tractors were housed, and some were not. In any case, the charge for shelter would be of minor importance.

Cost of Tractor Work per Ten-Hour Day

	<u>1932</u>	<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
<u>Two-Plow Tractors</u>			
Number of farms	8	7	
Hours worked:			
Drawbar	481	476 $\frac{1}{2}$	38 $\frac{1}{4}$ to 924
Belt	143 $\frac{1}{2}$	80 $\frac{1}{2}$	9 $\frac{1}{2}$ to 161 $\frac{1}{2}$
Total	624 $\frac{1}{2}$	557	116 $\frac{1}{2}$ to 947 $\frac{3}{4}$
Costs:			
Fuel, oil and grease	\$2.75	\$2.16	\$1.49 to \$2.86
Miscellaneous cash	.51	.19	.04 to .37
Depreciation	1.51	2.19	.91 to 4.29
Interest at 5%	.44	.47	.18 to .97
Man labor	.16	.15	.10 to .34
Use of truck and auto	.05	.01	0 to .05
Total expense	5.42	5.17	3.21 to 7.92
Gallons of fuel:			
Gasoline	16.7	14.3	.8 to 17.7
Kerosene	2.2	1.8	0 to 9.5
Distillate	.2	.8	0 to 3.8
Total	19.1	16.9	12.8 to 21.3
Gallons of oil	.8	.6	.2 to .9

Three-Plow Tractors

Number of farms	7	7	
Hours worked:			
Drawbar	298 $\frac{1}{4}$	255 $\frac{1}{2}$	27 $\frac{1}{2}$ to 446 $\frac{1}{2}$
Belt	213 $\frac{1}{4}$	145	24 to 278
Total	511 $\frac{1}{2}$	400 $\frac{1}{2}$	227 to 597 $\frac{1}{2}$
Costs:			
Fuel, oil and grease	\$3.60	\$3.30	\$2.22 to \$5.06
Miscellaneous cash	.18	.37	0 to .96
Depreciation	2.91	3.08	1.59 to 6.61
Interest at 5%	1.00	.96	.36 to 1.68
Man labor	.07	.07	.05 to .11
Use of truck and auto	.01	.01	0 to .03
Total expense	7.77	7.79	5.63 to 14.24
Gallons of fuel:			
Gasoline	21.5	18.3	3.7 to 38.6
Kerosene	.8	.5	0 to 1.8
Distillate	4.2	8.5	0 to 19.1
Total	26.5	27.3	22.3 to 38.6
Gallons of oil	1.1	.9	.5 to 1.2

### Crop Statements

The comparative cost and return for 1933 for each of the ten principal crops grown on these farms is presented on page 27 and following. Averages for 1932 are also shown. The data for 1933 are based upon the harvested acreage in order that they will be comparable with the data for 1932. Only the costs actually incurred on the harvested acreage are included. The costs presented are relative rather than absolute costs.

As with livestock, the factors of cost are charged at local prices. Man labor was charged at 15 cents per hour in both 1932 and 1933. Horse work was charged at 5.3 cents per hour in 1932 and 5.5 cents in 1933. The use of two-plow tractors was charged at 65 and 50 cents per hour, three-plow at 80 and 65 cents, and four-plow at \$1.00 and 80 cents, respectively, in 1932 and 1933. The seed charge for hay is based on the cost of seeding divided by the expected life of the stand. Manure was charged at 25 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 to the rest of the crops in the rotation on an acre basis. The machinery charge includes an allowance for depreciation, repairs, interest on the investment and shelter. It also includes the expense for any use of the truck or auto.

Uniform rates have been used for all crops so that comparisons may be made between different crops and different farms. A uniform charge for the use of land is used for each crop, since the varied rental systems on the different farms, including cash rented, share rented, and owned land, would tend to obscure these comparisons. All costs, except those for flax, were figured at the farm. Marketing charges for flax, when it was hauled direct to market at threshing time, have been included. The costs do not include any labor for hauling hay from the stack nor fodder from the shock since hauling practices and size of loads vary so widely.

All crops have been valued at uniform December first farm prices, except as they vary in quality. The value of crops, such as silage, which have no regular market price was computed by comparing their feeding value with other crops, for which a local market price was available. Some farmers undoubtedly receive different prices and also have labor and machinery costs differing from those used. The reader, in interpreting these figures, must make such adjustments in the returns as are necessary to fit any individual case.

The costs are presented on the basis of one acre. The cost per bushel or per ton is also given.

In order to show the full effect of the drouth on the 1933 crop, the cost and return per acre for the grain crops were calculated on the basis of the acreage seeded instead of the acreage harvested (see Table 4). In arriving at

Table 4

#### Cost and Return per Seeded Acre of Specified Crops Stevens County, 1933

	Oats	Barley	Wheat	Oats and wheat	Flax
Net cost	\$6.33	\$6.15	\$6.16	\$6.39	\$6.68
Yield, bu.	7.0	5.0	3.7	7.5	2.8
Cost per bu.	\$ .90	\$1.23	\$1.66	\$ .85	\$2.39
Crop value December 1	1.96	2.10	2.55	2.62	4.17
Crop value less cost*	-4.37	-4.05	-3.61	-3.77	-2.51

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

the net cost, the total cost incurred on the entire acreage seeded was calculated and the value of any hay produced was deducted. The net cost was divided by the number of acres seeded in order to reduce it to an acre basis. The average yield was obtained by dividing the total yield of grain by the entire acreage that was seeded to be harvested for grain.

# MAN LABOR USED IN PERFORMING CROP OPERATIONS

The data from these farms show a wide variation in the efficiency with which labor is used in crop production. The average amount of man labor used per acre in 1932 and 1933 in performing the different crop operations with varying size of power units follows. The range in the amounts used in 1933 is also presented.

<u>Summary of Hours of Man Labor Used per Acre in Performing Crop Operations</u>				
Operation	1932	1933		
	All farms	Average	Largest amount	Smallest amount
Seedbed preparation:				
Plowing: 4 horses	2.2	2.3	2.8	1.8
5 horses	2.4	2.0	2.4	1.7
2-plow tractor	1.4	1.4	1.9	1.0
3-plow tractor	.8	.9	1.1	.8
Disking: 4 horses	.54	.56	.80	.44
2-plow tractor	.22	.25	.33	.17
3-plow tractor	.16	.20	.29	.13
Harrowing: 4 horses	.24	.24	.43	.16
6 horses	.21	.18	.25	.15
2-plow tractor	-	.16	.24	.11
3-plow tractor	-	.18	.24	.14
Seeding and harvesting grain:				
Drilling: 4 horses	.52	.46	.57	.37
2-plow tractor	.31	.25	.33	.18
Broadcasting: 2 horses	.24	.53	.73	.40
Oats:				
Cutting: 4 horses	.8	.8	1.3	.5
2-plow tractor	.5	.8	2.0	.4
Shocking	1.0	.6	1.1	.2
Threshing: Man hours	1.6	1.2	2.1	.7
Horse hours	3.1	2.3	4.1	1.4
Barley:				
Cutting: 4 horses	.8	.8	1.3	.5
2-plow tractor	.3	.8	1.4	.4
3-plow tractor	-	.6	.9	.3
Shocking	.9	.7	2.2	.2
Threshing: Man hours	1.8	1.3	3.2	.4
Horse hours	3.4	2.6	6.3	.9
Wheat:				
Cutting: 4 horses	.8	.8	2.0	.4
2-plow tractor	.5	.7	1.0	.5
3-plow tractor	-	.6	1.1	.4
Shocking	.8	.5	1.0	.3
Threshing: Man hours	1.6	1.1	2.3	.5
Horse hours	2.8	2.1	4.6	1.0

Summary of Hours of Man Labor Used per Acre in Performing Crop Operations

Operation	1932	1933		
	All	All Farms		
	farms	Average	Largest amount	Smallest amount
Oats and wheat:				
Cutting: 4 horses	.7	.7	.9	.4
2-plow tractor	.5	.6	.7	.6
Shocking	.8	.7	1.3	.3
Threshing: Man hours	1.6	1.0	1.6	.6
Horse hours	3.1	2.0	3.1	1.1
Flax:				
Cutting: Horses	.9	1.0	1.9	.4
2-plow tractor	.6	.7	1.2	.3
Shocking	.7	.6	1.6	.2
Threshing: Man hours	1.9	1.5	4.9	.8
Horse hours	3.5	2.6	8.8	1.5
Planting and harvesting corn:				
Planting: Horses	.8	.7	.9	.5
Tractor	.3	.3	.4	.3
Cultivating: 1-row horses	-	-	-	-
2-row horses	.8	.6	.8	.5
2-row tractor	.4	.4	.5	.3
Cutting: 3 horses	1.6	1.5	2.1	1.0
4 horses	-	1.3	1.9	.7
Shocking	2.0	1.1	1.8	.5
Filling silo: Man hours	5.8	4.5	7.9	2.9
Horse hours	8.4	6.3	9.0	4.4
Husking: Hand	6.0	3.2	6.2	1.5
Machine - tractor	2.8	-	-	-
Harvesting Hay:				
Alfalfa:				
1st cutting: Mowing - 2 horses	1.1	1.0	1.5	.4
Raking - 2 horses	.6	.6	1.0	.3
Hauling to barn:				
Man hours	2.2	1.6	3.7	.2
Horse hours	3.3	1.9	4.1	.4
Stacking:				
Man hours	2.1	-	-	-
Horse hours	3.0	-	-	-
2nd cutting: Mowing - 2 horses	1.1	.9	1.4	.6
Raking - 2 horses	.5	.4	.6	.3
Hauling to barn:				
Man hours	.8	1.0	1.5	.4
Horse hours	1.2	1.0	1.3	.9
Stacking:				
Man hours	2.2	-	-	-
Horse hours	2.8	-	-	-
Wild hay:				
Mowing - 2 horses	1.4	1.3	2.9	.6
Raking - 2 horses	.6	.6	1.1	.3
Hauling to barn: Man hours	3.0	2.2	4.2	.7
Horse hours	4.7	3.4	8.5	1.0
Stacking: Man hours	3.7	1.8	3.3	.6
Horse hours	4.6	1.2	2.0	.5

### USING FARM RECORDS TO INCREASE EARNINGS

A comparison of the average earnings in 1933 on the five high-earnings farms with that on the five low-earnings farms shows a difference of \$1860. The total range in operator's labor earnings was from \$1130 to a loss of \$1889. On ten of the twenty-two farms, the operators had something left to pay for their labor.

#### Size of Business

One of the factors responsible for this variation in earnings is the variation in size of business. The size of the farm business was measured in terms of productive man work units in order to include both crops and livestock. A productive man work unit is the average amount of work on crops or productive livestock that was accomplished on the farms studied in a ten-hour day.

Generally speaking, a larger business may be conducted more efficiently than a small business. But when prices and production are such as to result in losses even with efficient management, the larger the business the larger will be the total loss. Conversely, when conditions are such that the farm business returns a profit, the larger the business, other things being equal, the larger will be the total profits. The data for the farms studied, illustrate this point (Table 5).

Table 5

Size of Business and Operator's Labor Earnings Stevens County, 1933			
Size of business in terms of productive man work units	Number of farms	Average size	Average operator's labor earnings
<u>Farms with Earnings</u>			
Under 500 units	5	341	\$314
500 or more units	5	735	523
<u>Farms with Losses</u>			
Under 500 units	5	373	-257
500 or more units	7	673	-915

On the farms which showed profits, the larger farms returned the larger earnings. On those that showed losses, the larger farms incurred the larger losses.

#### Crop Yields

A second factor responsible for part of the variation in farm earnings is crop yields. Large yields per acre usually result in low cost per bushel or ton and in addition give more total crop from a given acreage. This is illustrated in Table 6.

(Discussion continued on page 32)

Cost per Acre of Producing Husked Corn

	<u>1932</u>	<u>1933</u>	<u>Range for each item</u>
	<u>Average</u>	<u>Average</u>	
Number of farms	19	13	
Acres harvested per farm	57	25	3 to 78
All work up to harvest:			
Man hours	7.2	6.4	3.5 to 9.0
Horse hours	22.3	19.7	1.1 to 29.8
Tractor hours	.9	.8	0 to 3.1
Harvesting:			
Man hours	5.4	3.1	.7 to 6.2
Horse hours	10.4	5.0	1.4 to 10.3
Tractor hours	.3	0	0 to 0
Costs:			
Man, horse and tractor	\$4.35	\$3.23	\$2.37 to \$4.05
Seed	.18	.15	.11 to .19
Manure	.71	.80	.18 to 2.00
Mechanical picker	.24	0	0 to 0
Other machinery	1.05	1.06	1.05 to 1.14
Land	2.50	2.50	2.50 to 2.50
Total	<u>\$9.03</u>	<u>\$7.74</u>	6.47 to 9.75
Yield, bu.	28.8	9.2	2.9 to 19.6
Cost per bu.	\$.31	\$.84	\$.40 to \$2.59
December 1 price	.12	.38	.38 to .38
Crop value at December 1 price	3.46	3.50	1.10 to 7.45
Net return	-5.57	-4.24	-6.41 to -.41

Cost per Acre of Producing Oats

Number of farms	23	19	
Acres harvested per farm	59	33	2 to 66
All work up to harvest:			
Man hours	2.3	2.2	.7 to 5.2
Horse hours	7.4	8.3	1.5 to 16.8
Tractor hours	.6	.3	0 to 1.1
Harvesting:			
Man hours	3.7	2.7	1.5 to 5.0
Horse hours	5.6	4.7	1.7 to 10.0
Tractor hours	.1	.2	0 to .7
Costs:			
Man, horse and tractor	\$2.07	\$1.71	\$.98 to \$2.50
Seed	.72	.51	.33 to .72
Twine	.17	.09	.06 to .17
Threshing	.87	.21	.04 to .58
Manure	.40	.49	0 to 1.94
Machinery	.91	.90	.90 to .90
Land	2.50	2.50	2.50 to 2.50
Total	<u>\$7.64</u>	<u>\$6.41</u>	5.17 to 8.57
Yield, bu.	45.2	11.1	2.0 to 29.0
Cost per bu.	\$.17	\$.58	\$.25 to \$3.40
December 1 price	.08	.28	.28 to .28
Crop value at December 1 price	3.62	3.11	.56 to 8.12
Net return	-4.02	-3.30	-7.00 to .82

Cost per Acre of Producing Barley

	<u>1932</u>	<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Number of farms	21	20	
Acres harvested per farm	42	31	3 to 97
All work up to harvest:			
Man hours	2.2	2.0	.6 to 3.9
Horse hours	7.1	7.2	0 to 17.4
Tractor hours	.5	.3	0 to 1.1
Harvesting:			
Man hours	3.9	3.4	1.4 to 8.7
Horse hours	5.9	6.1	1.5 to 20.6
Tractor hours	.2	.3	0 to 1.4
Costs:			
Man, horse and tractor	\$2.05	\$1.89	\$.79 to \$3.86
Seed	1.00	.54	.41 to .93
Twine	.17	.10	.05 to .16
Threshing	.75	.22	.06 to .52
Manure	.53	.57	.06 to 1.22
Machinery	.90	.90	.90 to .91
Land	2.50	2.50	2.50 to 2.50
Total	\$7.90	\$6.72	4.91 to 9.15
Yield, bu.	25.6	7.5	2.1 to 17.3
Cost per bu.	\$.31	\$.90	\$.49 to \$3.90
December 1 price	.19	.42	.42 to .42
Crop value at December 1 price	4.86	3.15	.88 to 7.27
Net return	-3.04	-3.57	-7.31 to -.93

Cost per Acre of Producing Flax

Number of farms	21	17	
Acres harvested per farm	42	34	7 to 80
All work up to harvest:			
Man hours	3.3	2.4	1.1 to 5.3
Horse hours	9.8	9.1	3.1 to 21.5
Tractor hours	.8	.4	0 to 1.4
Harvesting:			
Man hours	3.7	3.0	1.5 to 8.2
Horse hours	5.2	4.9	1.8 to 15.3
Tractor hours	.3	.2	0 to .6
Costs:			
Man, horse and tractor	\$2.53	\$1.90	\$1.11 to \$3.54
Seed	.93	.89	.63 to 1.39
Twine	.15	.06	0 to .15
Threshing	.66	.32	.12 to .63
Manure	.43	.35	0 to 1.08
Machinery	1.01	.92	.90 to 1.03
Land	2.50	2.50	2.50 to 2.50
Total	\$8.21	\$6.94	5.93 to 8.36
Yield, bu.	7.8	3.2	1.3 to 7.6
Cost per bu.	\$1.05	\$2.17	\$.94 to \$5.52
December 1 price	.79	1.49	1.49 to 1.49
Crop value at December 1 price	6.16	4.77	1.94 to 11.32
Net return	-2.05	-2.17	-5.35 to 4.15

Cost per Acre of Producing Wheat

	<u>1932</u>	<u>1933</u>	<u>Range for each item</u>
	<u>Average</u>	<u>Average</u>	
Number of farms	17	18	
Acres harvested per farm	33	34	2 to 112
All work up to harvest:			
Man hours	2.3	2.2	.8 to 3.9
Horse hours	7.1	7.1	0 to 17.5
Tractor hours	.7	.5	0 to 1.4
Harvesting:			
Man hours	3.4	2.6	1.5 to 4.8
Horse hours	5.0	4.1	1.0 to 11.2
Tractor hours	.2	.3	0 to 1.5
Costs:			
Man, horse and tractor	\$2.04	\$1.83	\$1.21 to \$2.52
Seed	.97	.68	.43 to 1.04
Twine	.15	.08	.02 to .12
Threshing	.68	.28	.07 to .70
Manure	.29	.37	0 to .93
Machinery	.92	.90	.90 to .91
Land	2.50	2.50	2.50 to 2.50
Total	\$7.55	\$6.64	6.05 to 7.40
Yield, bu.	13.5	5.4	1.4 to 10.0
Cost per bu.	\$.56	\$1.23	\$.61 to \$3.95
December 1 price	.36	.69	.69 to .69
Crop value at December 1 price	4.86	3.73	.97 to 6.90
Net return	-2.69	-2.91	-4.56 to .85

Cost per Acre of Producing Oats and Wheat

Number of farms	9	12	
Acres harvested per farm	35	23	7 to 55
All work up to harvest:			
Man hours	2.5	2.2	1.1 to 3.4
Horse hours	9.3	7.4	1.7 to 15.5
Tractor hours	.2	.4	0 to 1.3
Harvesting:			
Man hours	3.6	2.6	2.1 to 3.7
Horse hours	5.9	3.8	1.6 to 5.3
Tractor hours	.1	.2	0 to .6
Costs:			
Man, horse and tractor	\$1.89	\$1.66	\$.99 to \$2.22
Seed	.98	.67	.49 to .82
Twine	.18	.09	.05 to .17
Threshing	.85	.23	.08 to .54
Manure	.33	.46	0 to 1.21
Machinery	.93	.90	.90 to .91
Land	2.50	2.50	2.50 to 2.50
Total	\$7.66	\$6.51	5.63 to 7.66
Yield, bu.	34.0	9.3	3.0 to 21.6
Cost per bu.	\$.23	\$.70	\$.31 to \$2.02
December 1 price	.16	.35	.35 to .35
Crop value at December 1 price	5.44	3.26	1.05 to 7.56
Net return	-2.22	-3.25	-5.02 to .88

Cost per Acre of Producing Alfalfa Hay

	<u>1932</u>		<u>1933</u>
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>
Number of farms	16	10	
Acres harvested per farm	16	21	5 to 50
Man hours	5.9	4.2	1.8 to 6.8
Horse hours	9.9	6.8	3.6 to 11.4
Costs:			
Man and horse	\$1.40	\$1.00	\$.47 to \$1.54
Seed	.60	.60	.60 to .60
Manure	.54	.76	0 to 1.96
Machinery	1.16	1.06	.80 to 1.35
Land	2.50	2.50	2.50 to 2.50
Total	<u>\$6.20</u>	<u>\$5.92</u>	4.56 to 7.81
Yield, tons	.9	.5	.2 to .8
Cost per ton	\$6.89	\$11.84	\$7.99 to \$25.30
Per cent of crop cut second time	65	47	0 to 100

Cost per Acre of Producing Wild Hay

Number of farms	18	15	
Acres harvested per farm	15	17	3 to 44
Man hours	5.7	4.2	1.7 to 7.9
Horse hours	9.2	6.8	2.9 to 15.8
Costs:			
Man and horse	\$1.33	\$1.02	\$.42 to \$2.06
Machinery	.70	.70	.70 to .70
Land	1.50	1.50	1.50 to 1.50
Total	<u>\$3.53</u>	<u>\$3.22</u>	2.62 to 4.26
Yield, tons	.9	.5	.2 to 1.1
Cost per ton	\$3.92	\$6.44	\$3.05 to \$14.65

Cost per Acre of Producing Corn Fodder

	<u>1932</u>		<u>1933</u>	
	<u>Average</u>	<u>Average</u>	<u>Range for each item</u>	
Number of farms	21	22		
Acres harvested per farm	20	38	8 to	82
All work up to harvest:				
Man hours	6.9	6.6	2.8 to	10.4
Horse hours	20.8	19.0	2.1 to	32.9
Tractor hours	1.0	1.5	0 to	3.1
Harvesting:				
Man hours	3.7	2.8	1.6 to	6.9
Horse hours	5.6	4.4	1.3 to	6.5
Costs:				
Man, horse and tractor	\$3.65	\$3.19	\$2.27 to	\$4.87
Seed	.32	.18	.12 to	.45
Twine	.26	.12	.06 to	.18
Manure	.67	.92	0 to	2.61
Machinery	1.65	1.65	1.65 to	1.65
Land	2.50	2.50	2.50 to	2.50
Total	\$9.05	\$8.56	7.13 to	11.96
Yield, tons	1.7	.8	.3 to	1.7
Cost per ton	\$5.32	\$10.70	\$7.04 to	\$23.77

Cost per Acre of Producing Corn Silage

Number of farms	12	14		
Acres per farm	20	29	15 to	59
All work up to harvest:				
Man hours	6.4	6.7	3 to	10.6
Horse hours	18.3	18.2	2.4 to	32.6
Tractor hours	1.3	1.0	0 to	3.2
Harvesting:				
Man hours	7.7	6.1	4.2 to	10.1
Horse hours	12.7	10.6	7.7 to	15.9
Costs:				
Man, horse and tractor	\$4.58	\$4.08	\$3.14 to	\$5.58
Seed	.27	.17	.12 to	.26
Twine	.23	.12	.03 to	.16
Manure	.69	1.00	0 to	2.61
Silo filling	1.23	1.14	.85 to	1.51
Machinery	1.65	1.65	1.65 to	1.65
Land	2.50	2.50	2.50 to	2.50
Total	\$11.15	\$10.66	9.00 to	14.11
Yield, tons	5.0	2.6	1.5 to	4.1
Cost per ton	\$2.23	\$4.10	\$2.61 to	\$6.71

Table 6

Yield per Acre and Cost and Return for Corn  
Stevens County, 1932

Yield per acre	No. of farms	Average yield	Cost	
			Per acre	Per bu.
Under 25 bu.	5	20.1	\$9.06	\$.45
25 to 34.9 bu.	9	28.8	9.11	.32
35 and over bu.	5	37.5	8.91	.24

The cost per acre is approximately the same but there is a wide variation in the cost per bushel. Because crop production furnishes the basis of cash receipts, either directly thru the sale of the crops themselves or indirectly thru the livestock fed on these crops, and because the reduction in the cost per bushel or ton is so marked, the relation between crop yields and operator's labor earnings is quite distinct. This relationship is indicated in Table 7.

Table 7

Crop Yields and Operator's Labor Earnings  
Stevens County, 1932

Crop yields	No. of farms	Average yields for the group	Operator's labor earnings
More than 10% below the average	8	23% below	\$-1474.10
10% below to 10% above the average	10	Average	-1240.19
More than 10% above the average	6	25% above	-582.38

The loss in the operator's labor earnings was much less on the farms having the high crop yields.

Choice of Crops

Because of the importance of crop production in the farm business, the operator's labor earnings will be affected by the choice of crops. The costs and returns for the different crops indicate a wide variation in their relative profitableness. Looking at crop selection from a long-time point of view, the variation in the relative desirability of the various crops is indicated in Tables 8 and 9. In these tables, the cost is the average cost per acre for the farms studied in 1932 adjusted for differences in the yield. On the basis of the data presented, corn is the cheapest source of feed grain, with barley second and wheat the most expensive. The data show wild hay as the cheapest source of roughage with alfalfa almost as cheap. However, the superior value of alfalfa hay as a feed, because of its higher protein and mineral content, more than offsets the small difference in cost. Alfalfa is particularly valuable in a region such as this, where it can be grown without difficulty and where many of the livestock are suffering from a deficiency of minerals. The harvesting of silage and fodder are a means of more completely utilizing the corn crop and of obtaining a substitute for hay when the hay crop is short. Their high cost and their low protein and mineral content make them less desirable than alfalfa. While no data are presented on sweet clover, it is similar to alfalfa in protein and minerals, high in yield and would probably rank with alfalfa in cost.

Table 8

Production per Acre and Relative Cost per 100 Pounds  
of Digestible Nutrients

Stevens County

Crop	Average yield* (1923-32)	Total digestible nutrients	% protein is of total nutrients	Cost of 100 lbs. of total nutrients
Grains:				
Corn	28.1 bu.	1286 lb.	6.3	\$.70
Barley	25.6 bu.	976 lb.	13.8	.81
Oats	32.8 bu.	739 lb.	11.3	.99
Wheat	12.4 bu.	590 lb.	11.2	1.27
Roughages:				
Alfalfa	1.7 ton	173 <sup>4</sup> lb.	20.7	.39
Wild hay	1.0 ton	96 <sup>4</sup> lb.	6.3	.37
Silage	5.8 ton	194 <sup>9</sup> lb.	7.2	.58
Corn fodder	1.6 ton*	115 <sup>4</sup> lb.	7.7	.78

\*Average yields for grains and wild hay taken from the annual reports of the State Department of Agriculture. Average yields of alfalfa, silage and fodder were estimated on the basis of their relationship to the other crops.

<sup>4</sup>Nutrients calculated on the basis of 1.2 tons yield. The balance is estimated as lost thru waste and shrinkage.

From the standpoint of crops produced for sale, the data in Table 9 indicate a greater net return per acre for flax and corn than for the other crops. Barley was third. However, with the increased demand for malting, barley may become relatively more profitable. The choice of the variety of barley may also become of greater significance. Of the three varieties commonly grown in Stevens County, and which yield well, Velvet is of acceptable malting quality and both Trebi or Canadian and Glabron are inferior for malting. All three varieties are acceptable for feeding.

Table 9

Comparative Returns per Acre of Crops  
Stevens County

	Corn	Wheat	Flax	Oats	Barley
Cost per acre	\$9.03	\$7.55	\$8.21	\$7.32	\$7.90
Yield, average 1923-32, bu.	28.1	12.4	8.5	32.8	25.6
Cost per bushel	\$.32	\$.61	\$.97	\$.22	\$.31
December 1 price 1930-32	.32	.52	1.16	.17	.28
Net return per acre*	0	-1.10	1.65	-1.74	-.73

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

Choice of Livestock

The relative costs and returns per animal unit for the various classes of livestock are shown in Table 10. On the average, sheep, hogs and turkeys returned more than enough to pay all charges against them. They were also the most profitable classes of livestock in 1932. Chickens and beef cattle were the only classes in 1933 that failed to return something for the labor used.

Table 10

Relative Costs and Returns per Animal Unit\* of Livestock  
Stevens County, 1933

Class of livestock	Hours		Pounds of Feed		Feed cost	Return	
	Man	Horse	Grain <sup>†</sup>	Hay & fodder <sup>‡</sup>		Over all charges	Per man hour
Cattle:							
Dairy	118.9	10.2	1622	5402	\$25.90	\$-8.93 <sup>§</sup>	\$.07
Milk-and-beef	94.3	5.4	1104	5018	17.51	-7.61	.07
Beef*	29.7	4.8	989	3220	14.57	-8.64	-.14
Sheep	16.8	6.3	329	2485	7.49	18.20	1.23
Hogs	58.7	4.6	8316	-	60.99	3.20	.20
Chickens	162.3	5.3	6376	-	53.92	-31.56	-.04
Turkeys	123.1	4.0	5646	-	47.68	39.02	.47

\*One cow, 1 bull, 1 feeder steer or heifer, 2 young cattle, 7 sheep, 14 lambs, 5 hogs, 10 pigs, 100 mature chickens, 200 chickens under six months of age, 33-1/3 mature turkeys, or 67 young turkeys, respectively, were considered the equivalent of one animal unit.

<sup>†</sup>Ten pounds of skim milk considered equivalent to one pound of grain.

<sup>‡</sup>Three pounds of silage considered equivalent to one pound of hay.

<sup>§</sup>A minus (-) indicates a loss.

\*Includes only the farms maintaining a beef-breeding herd.

One year's records are inadequate for drawing definite conclusions as to the relative profitableness of the various classes of livestock over a period of years. Whether or not the relationship existing this past year will remain true during the coming years depends a great deal upon the relative changes in the prices of livestock and livestock products. Judging from the variation in net returns between different farms, it would appear that the method of handling the livestock was fully as important as the selection of the class of livestock, if not more so.

The data presented emphasize some of the differences in characteristics of the various classes of livestock which should be kept in mind in planning the livestock program.

In the first place, chickens, turkeys and dairy cows use relatively large quantities of man labor. Sheep and beef cattle use relatively small amounts. Secondly, hogs, chickens, and turkeys are produced almost entirely on grains, whereas cattle and sheep utilize considerable hay and fodder. Thirdly, chickens, hogs and turkeys use relatively large quantities of grains, sheep very little, and cattle use amounts varying with the emphasis on butterfat production and the proportion of the cattle being fattened. Fourthly, grain being relatively more expensive than hay and fodder, the classes of livestock using large quantities of grain have high feed costs.

#### The Adoption of Profitable Methods

The profit from the farm business depends upon the method of conducting the enterprises as well as upon the choice of enterprises. This is clearly indicated by the variation among farms in the net returns from the same crop or class of livestock. Some of the more profitable practices in raising livestock have been indicated. Others are suggested in the following discussion.

Dairy Cows. One important factor affecting the returns from dairy cows is the amount of butterfat produced per cow. The data presented in Table 11 show that with an increase in production the loss decreased.

Table 11

Butterfat Production and Returns per Dairy Cow  
Stevens County, 1933

Butterfat production per cow	No. of farms	Average production	Gain
Under 220 pounds	3	207	\$-10.78
Over 220 pounds	3	290	-4.39

High butterfat production per cow is the result of good breeding and proper feed and care.

Data obtained from other studies indicate that if the cows have the ability to produce large quantities of butterfat, the more feed per cow, particularly concentrates, and the higher the per cent of protein in the feed, the higher is the production. However, with low prices for butterfat it becomes less profitable to feed for maximum production. The data obtained from the Stevens County dairy farms indicate that in most cases the lack of ability of the cows is as important a limiting factor as unsatisfactory feeding. The capacity of the cows can be improved in the course of time thru a process of breeding and selection for high butterfat production.

Milk-and-Beef Cows. Generally speaking, the cows in the milk-and-beef herds do not have the ability to produce large quantities of butterfat. For this reason, the expenditure of extra feed and labor in order to obtain higher production is not justified. In some cases, the milk-and-beef cows received more feed and labor than dairy cows that produced over fifty per cent more butterfat. The control of expenses in line with production is of major importance. When the price of butterfat is high relative to the price of feed, it becomes more profitable to feed for a large production of butterfat.

Beef Breeding Herd. A beef breeding herd does not require and generally will not pay for the feed, labor, and shelter that a dairy cow should have. In general, the purpose of maintaining a beef breeding herd is to secure high quality beef calves at the lowest possible cost. To do this it is necessary to keep down costs and to secure a relatively high percentage calf crop.

Feeder Cattle. The relationship between rapidity of gains or the gain in weight per head per day and the economy of gains for feeder cattle is indicated in Table 12.

Table 12

Relationship Between Gain per Day and Feed Used per 100 Pounds  
Gain in Weight for Feeder Cattle  
Stevens County, 1933

Gain per head per day	No. of farms	Average gain	Feed per 100 lb. Gain	
			Concen- trates, lb.	Rough- age, lb.
Under 1.6 pounds	5	1.3	915	445
Over 1.6 pounds	5	2.4	745	301

The cattle that made the larger gain per day used a smaller amount of feed per 100 pounds gain in weight. Full feeding a well balanced ration is conducive to rapid gains.

Hogs. As with feeder cattle, within limits, rapid gains tend to result in more economical production than slow gains. This is indicated by the data in Table 13.

Table 13

Gain per Head per Day and Feed Consumed per 100 Pound Gain  
in Weight by Hogs  
Stevens County, 1933

Gain per head per day	No. of farms	Average gain	Pound of feed* per 100 lb. gain in weight
Under .9 lb.	6	.7 lb.	565
.9 to 1.1 lb.	8	1.0 lb.	458
Over 1.1 lb.	6	1.4 lb.	344

\*Ten pounds of skim milk considered equivalent to one pound of grain.

In general, greater labor efficiency is obtained with an increase in the size of the enterprise. The data in Table 14 show that as the total weight of hogs produced increased the amount of man labor used per 100 pounds gain in weight decreased.

Table 14

Relationship Between the Total Weight of Hogs Produced  
and Labor Efficiency  
Stevens County, 1933

Pounds of hogs produced per farm	No. of farms	Average production	Man hours per 100 lb.
Under 6000 lb.	6	4336	4.5
6000 to 13000 lb.	9	10443	2.7
Over 13000 lb.	5	18556	2.5

Chickens. One of the important factors influencing the returns from chickens is the egg production per hen. The relationship between egg production and returns is indicated in Table 15.

Table 15

Relationship Between Egg Production per Hen and Returns per 100 Chickens  
Stevens County, 1933

Eggs produced per hen	No. of farms	Average production	Return over all charges
Under 70 eggs	3	66	\$-44.31
70 to 100 eggs	9	82	-41.05
Over 100 eggs	8	121	-16.10

As the egg production per hen increased, the loss decreased.

One of the important practices affecting egg production is the feeding of skimmilk or the equivalent in other high protein feed. The data in Table 16 show that as the amount of skimmilk or its equivalent fed increased the egg production also increased.

Table 16

Relationship Between the Amount of Skimmilk Fed  
and the Egg Production per Hen  
Stevens County, 1933

Skimmilk fed per 100 chickens	No. of farms	Average amount fed	Eggs laid per hen
Under 3000 lb.	3	1468	84
3000 to 5000 lb.	6	3463	90
Over 5000 lb.	11	8157	101

Another factor affecting the returns from the poultry was the production of chickens for market. The data in Table 17 show that as the weight of live poultry produced increased the loss from the flock decreased. Since 1929 the price of eggs has declined much more than the price of poultry. As a result, the production of market poultry has been relatively more profitable than the production of eggs.

Table 17

Relationship Between Weight of Live Poultry Produced  
and Returns per 100 Chickens  
Stevens County, 1933

Live poultry produced	No. of farms	Average production	Return over all charges
Under 350 lb.	6	180	\$-43.06
350 to 650 lb.	11	513	-28.66
Over 650 lb.	3	750	-19.70

Turkeys. One of the factors affecting the profitableness of the turkey enterprise is the death loss. The data in Table 18 indicate that the farms with the low death losses received higher returns than those with high death losses. Death losses can be reduced by the use of clean range and proper housing and feeding.

Table 18

Per Cent of Death Loss and Return over All Charges  
per 100 Pounds of Turkeys  
Stevens County, 1933

Per cent of death loss	No. of farms	Average death loss	Return over all charges
15 to 25%	5	17%	\$4.59
40 to 49%	5	44%	3.30

Work Horses. The use of pasture for horses when they are not working rather than feeding grain and hay helps to reduce the cost.

Crops. Some of the profitable practices in raising crops are:

1. The planting of high yielding varieties of the crops grown.
2. The use of cleaned disease-free seed.
3. Planting relatively early.
4. Properly preparing the seedbed.
5. Omitting any operations in seedbed preparation which are not essential for proper preparation.

Information regarding other profitable practices may be obtained from the Agricultural Experiment Station at Morris or from the County Agricultural Agent.