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Department of Agriculture

and

Vocational Division
Minnesota Department of Education

Cooperating

ANNUAL REPORT

of the

FARM MANAGEMENT SERVICE for VETERANS

TAKING ON-THE-FARM TRAINING

in

NORTHWESTERN MINNESOTA

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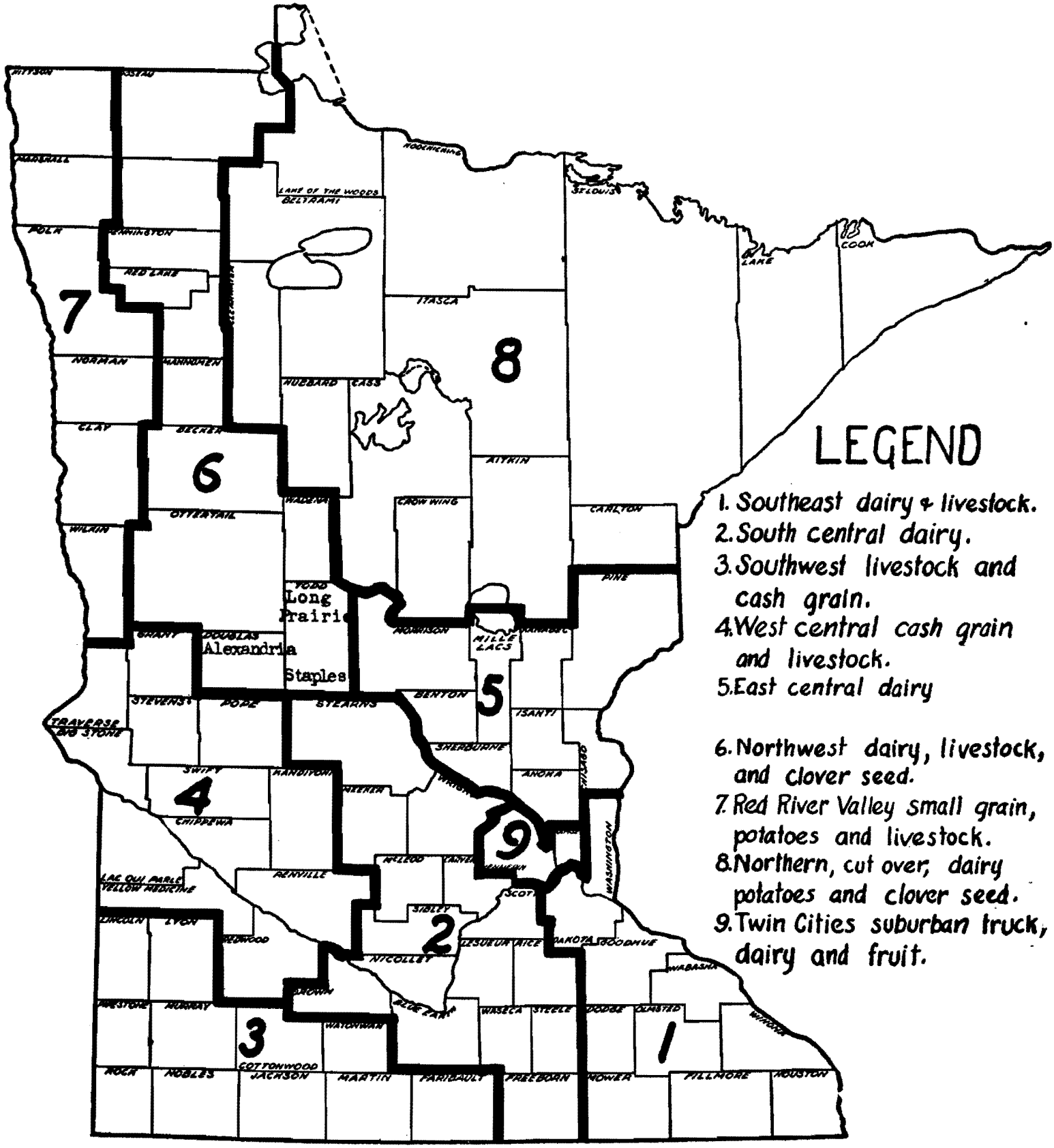

Type of Farming Areas in Minnesota and Location of Schools Submitting Farm Records for this Report.

REPORT OF THE FARM MANAGEMENT SERVICE FOR VETERANS TAKING ON-THE-FARM TRAINING IN NORTHWESTERN MINNESOTA, 1947

T. R. Nodland and G. A. Pond

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INTRODUCTION

In the fall of 1946, the Vocational Division of the Minnesota Department of Education asked the University of Minnesota to set up a farm management service for veterans taking on-the-farm training in the public schools throughout the state. The service was initiated on January 1, 1947. The cooperating agencies are the Division of Agricultural Economics, University of Minnesota, and the Vocational Division, Minnesota Department of Education representing the public schools.

The purpose of the project as far as the schools are concerned is (1) to give assistance to the instructors in the mechanics of keeping farm records and (2) to aid in the analysis of the farm business through the use of records as a basis for vocational guidance. Schools with an on-the-farm training program can enroll their students in the farm management service. The enrollment is on a voluntary basis insofar as the number of schools participating and the number of veterans enrolled in the service are concerned.

The analysis of the records and the preparation of the reports are handled by the Division of Agricultural Economics under the direction of G. A. Pond and T. R. Nodland. The State Department of Education was represented by Leo L. Knuti, State Supervisor of Agricultural Education until October 1, 1947. He was followed by G. R. Cochran. Ralph Adams of the Division of Agricultural Economics aided in the preparation of this report.

This report deals with the veterans enrolled by three schools located in northwestern Minnesota (Type-of-Farming Area 6)[1]. The map inside the front cover shows the location of the schools. The following tabulation shows by schools the number of farm records submitted in 1947:

Alexandria	45
Long Prairie	6
Staples	15
Total	66

The subsequent pages in this report show the data for 65 farms. One farm was omitted from all the averages in the tables because the record was not sufficiently complete for a full analysis.

The records kept by the enrollees included farm inventories at the beginning and at the end of the year, cash farm receipts and expenses, feed consumed by the various classes of livestock, family living received from the farm, liabilities and assets other than the farm capital and household and personal cash expenses and receipts.

Only records from actual farm operators are included in this report. All types of tenure arrangements from full owners to partnerships in which the operator furnishes little or no capital are represented.

FARM INVENTORIES

The capital investment per farm varied from $1456 to $36279. The average investment for all farms included in this report and for the one-fifth high and the one-fifth low in operator's labor earnings is shown in Table 1.

Landlords or partners supplied some capital in 47 out of the 65 cases included in this report. The landlord's investment has been included in Table 1 in order to show the total amount used per farm.

FARM EARNINGS

Operator's labor earnings is a measure of the relative financial success of a farmer as compared with other farmers and represents the returns above all farm expenses and a charge for the use of farm capital. For purposes of comparison, the earnings are presented on a full-owner basis.

There are two methods of computing operator's labor earnings. Table 2 shows the earnings statement on a cash basis and Table 3 shows the earnings on an enterprise or accrual basis. The principal difference in the two statements is in the method of handling the net increase or decrease in the value of farm capital. In the cash statement the net increase or decrease in farm capital is entered as one item. In the enterprise statement the net change in the inventory has been included in each enterprise in order to compute "total returns and net increases", or "total expenses and net decreases" by enterprises.

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[1]For a description of the area, see Engene, S. A. and Pond, G. A. "Agricultural Production and Types of Farming in Minnesota," Minn. Agri. Expt. Sta. Bul. 347, May, 1940

Table 1. Summary of Farm Inventories, 1947*

Items	Your farm Jan. 1	Your farm Dec. 31	Average of 65 farms Jan. 1	Average of 65 farms Dec. 31
Size of farm (acres)			179	
Size of business (work units)**			290	
Dairy and dual purpose cows			$1182	$1177
Other dairy & dual purpose cattle			424	501
Beef cattle			109	117
Hogs			231	377
Sheep			16	41
Poultry			131	149
Productive livestock (total)			2093	2362
Horses			97	84
Crop, seed, and feed			1150	1468
Power mach. (farm share)			903	1146
Crop & general mach. (farm share)			722	963
Livestock equipment & supplies			280	323
Mach & equipment (total)			1905	2432
Misc.			4	1
Buildings, fences, etc.			4184	4178
Land			5225	5225
Total farm capital			14658	15750

Items	13 most profitable farms Jan. 1	13 most profitable farms Dec. 31	13 least profitable farms Jan. 1	13 least profitable farms Dec. 31
Size of farm (acres)	250		156	
Size of business (work units)**	450		255	
Dairy & dual purpose cows	$1883	$1997	$1142	$1055
Other dairy & dual purpose cattle	739	881	356	376
Beef cattle	324	296	4	-
Hogs	443	775	130	136
Sheep	-	-	16	90
Poultry	193	178	138	157
Productive livestock (total)	3582	4127	1786	1814
Horses	129	122	105	77
Crop, seed, and feed	2176	2851	753	813
Power mach. (farm share)	1046	1335	916	1129
Crop & general mach.	1331	2050	565	584
Livestock equipment & supplies	491	514	208	279
Mach. & equipment (total)	2868	3899	1689	1991
Misc.	6	4	12	-
Buildings, fences, etc.	5494	5268	3976	3895
Land	8441	8441	3684	3684
Total farm capital	22696	24712	12005	12275

*For the purpose of comparison, all the data shown in this report with the exception of Tables 6 and 7 are presented on a full-owner basis. The assets, expenses and receipts of the landlord were included in the records from rented farms.

**See page 13 for an explanation of "work units."

Table 2. Summary of Farm Earnings (Cash Statement), 1947

Items	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms
FARM RECEIPTS				
Dairy and dual-purpose cows	_____	$ 295	$ 344	$ 238
Dairy products	_____	1592	2985	1423
Other dairy & dual-purpose cattle	_____	296	452	319
Beef cattle	_____	95	303	6
Hogs	_____	763	1633	402
Sheep and wool	_____	22	-	41
Poultry	_____	93	108	103
Eggs	_____	516	744	530
Horses	_____	11	8	10
Corn	_____	98	57	73
Small grain	_____	933	1977	290
Other crops	_____	131	179	111
Machinery & equip. sold	_____	105	109	151
Agricultural adjustment payments	_____	17	61	8
Income from work off the farm	_____	62	84	75
Miscellaneous	_____	8	7	8
(1) Total farm sales	_____	5037	9051	3788
(2) Increase in farm capital	_____	1092	2016	270
(3) Family living from the farm	_____	493	641	410
(4) Total farm receipts (1)+(2)+(3)	_____	6622	11708	4468
FARM EXPENSES				
Dairy and dual-purpose cows bought	$_____	$125	$106	$ 80
Other dairy and dual-pur.cattle bot	_____	64	61	73
Beef cattle bought	_____	17	-	-
Hogs bought	_____	99	161	46
Sheep bought (incl. feeders)	_____	26	-	73
Poultry bought (including turkeys)	_____	74	85	68
Horses bought	_____	12	17	2
Misc. livestock expense	_____	43	64	36
Misc. crop expenses	_____	250	539	143
Feed bought	_____	567	860	731
Custom work hired	_____	184	268	164
Mech.power mach.(farm share)(new)	_____	454	443	511
Mech. power mach. (farm share)(upkp.)	_____	191	284	141
Mech.power (f.share)(gas,oil,etc.)	_____	385	573	306
Crop and general mach. (new)	_____	370	956	100
Crop and general mach. (upkeep)	_____	89	175	103
Livestock equipment (new)	_____	87	76	128
Livestock equipment (upkeep)	_____	18	24	34
Buildings and fencing (new)	_____	235	66	264
Buildings and fencing (upkeep)	_____	118	252	88
Hired labor	_____	116	269	116
Taxes	_____	162	270	122
General farm and insurance	_____	38	38	42
(5) Total farm purchases	_____	3724	5587	3371
(6) Decrease in farm capital	_____	-	-	-
(7) Interest on farm capital	_____	760	1185	607
(8) Unpaid family labor	_____	457	541	524
(9) Board furnished hired labor	_____	46	99	43
(10) Total farm exp.(sum of (5) to (8)	_____	4987	7412	4545
(11) Oper. labor earnings (4) - (10)	_____	1635	4296	-77

Table 3. Summary of Farm Earnings (Enterprise Statement) 1947*

Items	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms
RETURNS AND NET INCREASES				
Dairy and dual purpose cows	_____	$1882	$3566	$1543
Other dairy & dual pur. cattle	_____	505	888	400
Beef cattle	_____	92	297	3
Hogs	_____	869	1894	420
Sheep - farm flock	_____	22	-	42
Chickens	_____	606	825	643
All productive livestock	_____	3976	7470	3051
Crops, seed and feed	_____	621	1215	-273
Agricultural conservation payments	_____	17	61	8
Income from labor off the farm	_____	47	45	66
Miscellaneous	_____	114	137	88
(1) Total returns & net increases	_____	4775	8928	2940
EXPENSES AND NET DECREASES				
Horses	_____	$ 81	$ 69	$117
Tractor	_____	360	545	285
Truck	_____	40	58	39
Auto (farm share)	_____	259	285	241
Gas engine and elect.exp.(f.shr)	_____	45	72	38
Hired power	_____	86	129	80
Total power	_____	871	1158	800
Crop and general machinery	_____	229	383	202
Livestock equipment	_____	61	74	91
Buildings, fencing and tiling	_____	305	478	386
Misc. productive livestock exp.	_____	42	63	35
Labor	_____	672	983	732
Real estate taxes	_____	144	235	105
Personal property tax	_____	18	35	17
Insurance	_____	16	15	16
General farm	_____	22	23	26
Interest on farm capital	_____	760	1185	607
(2) Total expenses & net decreases	_____	3140	4632	3017
(3) Oper.labor earnings(1)-(2)	_____	1635	4296	-77

*Cash receipts and expenses are adjusted for changes in inventory for each enterprise and for each item of expense in order to show total receipts and net increases, and total expenses and net decreases. The operator's labor earnings are the same as those on page 4.

FAMILY LIVING FROM THE FARM

The family living from the farm is the estimated value of the farm produce used in the house and shelter furnished the farmer and his family by the farm. It is a part of the income of the farm and a part of the expenses of operating the household even though cash transactions are not involved. The omission of the farm produce used in the home results in an incomplete record of both farm income and personal expense.

The value of the family living as shown in Table 4 amounts to 7.4 per cent of the total farm receipts on these farms. The values assigned are a conservative market price on the farm. If these products had been purchased, the amount paid out would have been considerably higher.

The rental value of the dwelling is calculated by taking 10 per cent of the average inventory value of the dwelling.

Table 4. Family Living From the Farm, 1947

Items	Your farm	Average 65 farms	13 most profitable farms	13 least profitable farms	Your farm	Average 65 farms	13 most profitable farms	13 least profitable farms
Adult equiv.- family	____	2.3	2.7	2.3				
- others	____	.3	.4	.3				
Whole milk	____	596 qts.	714	541	____	$62.61	$69.26	$56.52
Skim milk	____	95 qts.	134	-	____	3.60	6.01	-
Cream	____	137 pts.	206	105	____	30.30	48.09	26.17
Farm made butter	____	7 lbs.	7	11	____	5.28	6.30	8.09
Beef	____	314 lbs.	667	135	____	51.57	98.46	15.76
Hogs	____	278 lbs.	442	258	____	59.94	89.71	57.71
Poultry	____	83 lbs.	68	99	____	17.71	15.72	20.80
Eggs	____	94 doz.	144	115	____	35.85	56.78	38.56
Potatoes	____	10 bu.	11	8	____	13.95	17.22	13.56
Vegetables & fruits					____	21.46	22.92	23.22
Farm fuel	____	5 cds.	2	1	____	26.49	13.43	10.77
Rental vl. of house					____	164.48	197.17	139.30
Total						$493.24	$641.07	$410.46

HOUSEHOLD AND PERSONAL EXPENSES AND RECEIPTS

Household and personal accounts are important if the family is to manage its financial affairs wisely. The household and personal expenses and receipts are presented in Table 5. These farmers spent an average of $113 per month for family living in addition to the food, fuel and housing furnished by the farm.

Most of the personal receipts were in the form of veterans' compensation payments. In 1947 each unmarried veteran taking on-the-farm training could receive up to $65.00 per month and married veterans up to $90.00 per month provided the income from farming and the compensation payments did not exceed $2400.00 for the year. Disabled veterans received somewhat larger compensation payments and they were not subject to any limitations on earnings.

Table 5. Household and Personal Expenses and Receipts for Those Farmers Who Kept Complete Accounts of These Items, 1947

Items	Your farm	Average of 58 farms	12 most profitable farms	12 least profitable farms
Number of persons in family	_____	3.0	3.7	2.9
Number of adult equivalents in family	_____	2.3	2.7	2.2
Number of other adult equivalents*	_____	.3	.4	.3
EXPENSES				
Food and meals bought	$_____	$431	$563	$406
Operating and supplies	_____	116	173	91
Clothing and clothing materials	_____	139	161	114
Personal care, personal spending	_____	110	171	66
Furnishings and equipment	_____	170	227	142
Education, recreation and development	_____	77	76	68
Medical care and health insurance	_____	99	114	116
Church, welfare, gifts	_____	77	114	56
Personal share of auto expense	_____	78	76	92
Household share of elect.&gas eg. exp.	_____	12	14	10
H.H.& pers. shr. of new auto. & motors bot.	_____	52	55	123
Total	_____	$1361	$1744	$1284
State and federal income tax	_____	2	10	-
Insurance	_____	26	31	29
Total household and pers. cash exp.	_____	1389	1785	1313
Food furnished by the farm	_____	267	375	186
Fuel furnished by the farm	_____	23	15	10
House rental	_____	149	158	108
Total cash expenses and perquisites	_____	1828	2333	1617
Investments	_____	12	39	1
RECEIPTS				
Sale of investments	_____	61	29	28
Income from outside investments	_____	-	1	-
Veterans compensation	_____	1011	716	1048
Misc. income	_____	26	16	-

*Hired help or others boarded

NET WORTH

A net worth statement includes a listing of all the assets and liabilities as of a given date. The difference between the farmer's total assets and his liabilities is his net worth. A net worth statement for owners, cash and crop shared renters and livestock share partnerships is presented in Table 6. Both the farm and personal assets and liabilities are included.

The difference between the operator's net worth at the beginning and at the end of the year shows the gain in net worth. It represents the financial progress that has been made during the year.

Table 6. Net Worth Statement for Those Farmers Who Kept a Complete Record of All Assets and Liabilities, 1947 (Operator's Share)

	Your farm		18 Owners	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Total acres in farm	———		114.6	
Owned	———		114.6	
Rented	———		-	
Total farm capital	———	———	$8955	$9944
Accounts receivable	———	———	12	6
Stocks and bonds	———	———	167	101
Life insurance	———	———	85	89
Other outside investments	———	———	1	1
Total outside investments	———	———	253	191
Cash on hand and in bank	———	———	193	105
Other household & personal assets	———	———	599	780
Total cash, household & personal assets	———	———	792	885
TOTAL ASSETS	———	———	10012	11026
Federal Land Bank Mortgage	———	———	387	376
Other mortg. on land operated	———	———	2153	1987
Production credit	———	———	69	40
Other chattel mortgages	———	———	470	384
Notes payable	———	———	397	400
Accounts payable	———	———	96	77
TOTAL LIABILITIES	———	———	3572	3264
Farmer's net worth	———	———	6440	7762
Gain in net worth		———		+1322

	14 cash & crop share renters		16 partnerships	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Total acres in farm	173.0		206.7	
Owned	-		-	
Rented	173.0		206.7	
Total farm capital	3549	4980	2392	4117
Accounts receivable	14	16	122	121
Stocks and bonds	151	110	395	360
Life insurance	166	172	54	62
Other outside investments	-	1	-	1
Total outside investments	317	283	449	423
Cash on hand and in bank	146	174	345	261
Other household and personal assets	990	1087	772	1012
Total cash, household & personal assets	1136	1261	1117	1273
TOTAL ASSETS	5016	6540	4080	5934
Federal Land Bank Mortgage	-	-	-	-
Other mortg. on land operated	71	56	94	123
Chattel mortgages	1141	925	110	57
Notes payable	266	287	131	171
Accounts payable	310	255	6	16
TOTAL LIABILITIES	1788	1523	341	367
Farmer's net worth	3228	5017	3739	5567
Gain in net worth		+1789		+1828

Table 7. Summary of Farm Earnings by Tenure, 1947 (Operator's Share)

	Your farm	18 Owners	14 cash & cr. shr. renters	16 partnerships
FARM RECEIPTS				
Dairy and dual purpose cows		141	230	149
Dairy products		844	1283	1274
Other dairy and dual purpose cattle		195	148	172
Beef cattle		5	-	154
Hogs		565	826	474
Sheep and wool		13	55	-
Poultry		76	116	48
Eggs		300	550	404
Horses		9	9	3
Corn		66	106	31
Small grain		242	459	606
Other crops		43	132	62
Machinery & equipment sold		97	14	115
Agricultural adjustment payments		11	2	18
Income from work off the farm		64	74	65
Misc.		7	5	4
(1) Total farm sales		2678	4009	3579
(2) Increase in farm capital		989	1431	1725
(3) Family living from the farm		388	426	439
(4) Total farm rec. (1)+(2)+(3)		4055	5866	5743
FARM EXPENSES				
Dairy and dual purpose cows bot		64	267	83
Other dairy & dual pur. cattle bot		67	66	48
Beef cattle bot.(including feeders)		9	25	19
Hogs bot		27	158	63
Sheep bot (including feeders)		48	53	-
Poultry bot (including turkeys)		65	94	41
Horses bot		6	19	16
Misc. livestock expenses		28	65	28
Misc. crop expenses		132	208	149
Feed bot		537	606	400
Custom work hired		133	176	123
Mech. power mach.(farm share)(new)		282	286	654
Mech. power mach.(farm share)(upkeep)		119	164	245
Mech. power (farm share)(gas,otl,etc.)		262	333	35
Crop and general mach.(new)		126	346	568
Crop and general mach. (upkeep)		42	92	89
Livestock equipment (new)		69	147	81
Livestock equipment (upkeep)		20	18	12
Land, buildings & fencing (new)		234	3	2
Buildings and fencing (upkeep)		130	26	40
Hired labor		40	166	173
Taxes (real estate & pers.property)		83	12	22
General farm and insurance		30	32	29
Cash rent		-	330	119
Interest paid		114	55	17
(5) Total farm purchases		2667	3747	3374
(6) Decrease in farm capital		-	-	-
(7) Interest on farm capital		358	158	145
(8) Unpaid family labor		83	281	147
(9) Board furnished hired labor		13	98	57
(10) Total farm exp.(Sum of (5) to (9)		3121	4284	3723
(11) Operator's labor earn. (4) - (10)		934	1582	2020
(12) Ret.cap. & family lab.(7)+(8)+(11)		1375	2021	2312

RETURNS TO CAPITAL AND FAMILY LABOR

The return to capital and family labor represents the amount available to the operator for living expenses, payment on indebtedness, and savings. The landlord's expenses and receipts are not included.

The average return to capital and family labor for 18 owners, 14 cash and crop share renters and 16 livestock share partnerships is shown in Table 7. The statement includes only the veterans share of the earnings of the partnership. The earnings as shown in Table 7 are on an actual basis as compared to the full-owner basis in Tables 2 and 3.

MANAGEMENT FACTORS AND THEIR RELATION TO EARNINGS

Every study of farm earnings shows a wide variation in earnings among farmers in a given year. The average labor earnings of those farmers ranking in the upper 20 per cent of the range according to earnings was $4296 and of those in the lower 20 per cent was $-77. This is a range of $4373 between the average earnings of these two groups. Some of the causes for these differences in earnings, such as weather, may be beyond the control of the individual farmer. Other factors are within his control. The more important management factors affecting earnings and their relationships with earnings are presented in the following tables. These factors vary from year to year in their relative influence on earnings.[1]

Crop Yields. The measure of crop yields used is the crop yield index. It is a comparison of the yield per acre of all crops on a given farm with the average yields for all farms included in the study. High crop yields make their maximum contribution to earnings if they are the result of good crop selection, the use of adapted varieties, skill and timeliness in performing the operations.

Table 8. Relation of Crop Yields to Farm Earnings

Index of crop yields		No. of	Average operator's
Range	Average	farms	labor earnings
Below 70	51	13	$ 737
70 - 129	99	39	1703
130 and above	146	13	2330

Choice of Crops. Over a period of years certain crops have a definite advantage over others. The crops are classified on page 16 as A, B, C or D crops on the basis of their average net returns per acre. The relation of choice of crops to earnings is shown in Table 9. The relationship is not marked because of the small crop acreage on most of these farms.

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[1] See Pond, G. A. "Why Farm Earnings Vary." Minn. Agri. Expt. Sta. Bul. 386, June, 1945.

Table 9. Relation of Choice of Crops to Farm Earnings

Percent of tillable land in high return crops		No. of farms	Average operator's labor earnings
Range	Average		
Below 23.0	15.6	15	$1152
23.0 - 37.9	29.3	34	1342
38.0 and above	44.9	16	2712

Return from Livestock. This is a measure of feeding efficiency. The majority of these farmers maintain dairy cattle, hogs and poultry. Five farmers maintained sheep, and seven had some beef cattle. One farmer did not keep any livestock. Most of the crops raised and some additional purchased feed are fed to livestock. Since feed is the major item of cash in livestock production, an increase in feeding efficiency results in a higher earnings.

Table 10. Relation of Returns From Productive Livestock to Farm Earnings

Index of returns for $100 feed consumed by productive livestock*		No. of farms	Average operator's labor earnings
Range	Average		
Below 77.	62	12	$1032
77. - 124.	99	40	1681
125 and above	144	12	2150

*The index is weighted by the number of animal units of each class of livestock.

Amount of Livestock. This factor measures the importance of livestock in the farm business. It is the amount of livestock units per 100 acres in the farm other than land in timber, roads, waste and farmstead. Livestock are important in that they add to the size of business. They provide employment throughout the year and aid in maintaining or building up the fertility of the land.

Table 11. Relation of Amount of Livestock to Farm Earnings

Livestock units per 100 acres		No. of farms	Average operator's labor earnings
Range	Average		
Below 7.0	4.8	13	$1380
7.0 - 17.9	13.1	36	1622
18.0 and above	22.7	16	1872

Size of Business. Productive man work units are a measure of size of business. The relationship of size of business to farm earnings is shown in Table 12. Average farm earnings tend to increase with an increase in size of business if size is accompanied by good management. For farmers operating their farms at a loss, the larger the volume of business, the larger will be the loss. Normally a large business has an advantage over a small business because they utilize more efficiently and to better advantage available labor, power, machinery, equipment and buildings.

Table 12. Relation of Size of Business to Farm Earnings

Work units Range	Average	No. of farms	Average operator's labor earnings
Below 150	128	14	$ 773
150 - 399	276	36	1384
400 and above	475	15	3042

Work Accomplished Per Worker. The work accomplished per worker is determined by dividing the total man work units by the number of workers on the farm during the year. An increase in the productive work accomplished per worker reduces the labor charge per unit of business. Planning of the farm work and economical use of labor-saving machinery help to increase the output of work per worker.

Table 13. Relation of Work Accomplished Per Worker to Farm Earnings

Work units per worker Range	Average	No. of farms	Average operator's labor earnings
Below 140	116	14	$1072
140 - 244	185	39	1226
245 and above	302	12	3622

Control Over Expenses. The depreciation and cash cost of upkeep for power, machinery, equipment and buildings per unit of work is used as a measure of the efficiency of their use on a farm. Some farmers lack power, machinery and buildings for satisfactory operation. In case of others, an excessive investment in these items may constitute an important factor limiting earnings.

Table 14. Relation of Expenses to Farm Earnings

Expenses per work unit Range	Average	No. of farms	Average operator's labor earnings
$7.00 and above	$9.09	13	$ 783
$3.00 - $6.99	4.84	42	1765
Below $3.00	2.35	10	2197

CUMULATIVE EFFECT OF EXCELLING IN A NUMBER OF MANAGEMENT FACTORS

The relation of several management factors to operator's labor earnings has been shown in the preceding section. Because of the large number of interrelationships between these factors the exact relationship between one factor and earnings can not be determined. The combined or cumulative influence of the seven management factors on earnings is shown in Table 15. Insofar as these factors are within the farmer's control, he may be well paid for his efforts to improve his efficiency as measured by them.

Table 15. Relation of Operator's Labor Earnings to the Number of Factors in Which the Farmer Excels

No. of factors in which farmer excels	No. of farms	Your farm	The length of the lines is in proportion to the average operator's labor earnings	Average operator's labor earnings
None or 1	11	____	xxxxx	$ 779
2 or 3	23	____	xxxxxxx	1051
4 or 5	24	____	xxxxxxxxxxxxxx	1851
6 or 7	7	____	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	4161

The array in Table 15 suggests that it may be well worth while for each cooperator to study carefully his ranking on pages 14 and 15, and learn his standing in respect to each of the seven factors as indicators of elements of strength and weakness in his farm business.

EXPLANATION OF "WORK UNITS"

The total "work units" for any one farm is a measure of the size of that farm business. A work unit as used in this report is the average accomplishment of a farm worker in a ten hour day, working on crops and productive livestock at average efficiency or ten hours of work off the farm for pay. The number of work units for each class of livestock and each acre of crop are presented in Table 16.

Table 16. Number of Work Units for Each Class of Livestock and Each Acre of Crop

Item	No. of work units	Item	No. of work units
Dairy and dual pur. cows	14.0 per cow	Small grain	.7 per acre
Other dairy & du.pur. cattle	4.0 per an. unit*	Corn, husked	1.1 per acre
Beef breeding herd	4.0 per an. unit*	Corn, hogged	.7 per acre
Feeder cattle	.35 per 100 lbs.	Corn shredded	2.2 per acre
Sheep - farm flock	1.8 per an. unit*	Corn silage	1.7 per acre
Hogs	.3 per 100 lbs.	Corn fodder	1.0 per acre
Turkeys	.7 per 100 lbs.	Alfalfa hay	.9 per acre
Hens	22.0 per 100 hens	Soybean hay	1.4 per acre
Soybeans for grain	.7 per acre	Other hay crops	.6 per acre

*Animal unit represents one cow; one bull, one feeder steer or heifer, two head of other cattle, seven head of sheep, fourteen lambs, five hogs, ten pigs, 100 hens or 1400 pounds of turkeys produced.

Table 17. Measures of Farm Organization and Management Efficiency, 1947

Measures used in chart on page 15	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms
Operator's labor earnings	$____	$1635	$4296	$-77
(1) Crop yields*	____	100	119	81
(2) % of tillable land in high ret. crops**	____	30.0	34.6	22.0
(3) Ret. for $100 feed to prod. livestock***	____	100	107	94
(4) Prod. livestock units per 100 acres****	____	13.8	14.2	14.7
(5) Size of business - work units	____	290	450	255
(6) Work units per worker	____	193	265	159
(7) Pow., mach., equip., & bldg. exp. per work unit	$____	$5.31	$4.54	$6.07
Items related to some of the above measures:				
(3) Index of return for $100 feed from				
Dairy cattle (See pages 20 and 21)	____	100	100	102
Beef breeding herd	____	100	-	-
Beef cattle - feeders	____	100	-	-
Hogs (See page 23)	____	100	107	93
Sheep - farm flock (See page 25)	____	100	-	-
Chickens (See page 24)	____	100	94	78
(4) Number of animal units	____	18.2	29.6	16.3
(5) Work units on crops	____	90	132	70
Work units on productive livestock	____	192	310	174
Other work units	____	8	8	11
(6) Number of family workers	____	1.4	1.5	1.5
Number of hired workers	____	.1	.2	.1
Total number of workers	____	1.5	1.7	1.6
(7) Power expense per work unit	$____	$3.21	$2.53	$3.36
Crop machinery expense per work unit	____	.77	.81	.71
Livestock equip. expense per work unit	____	.22	.16	.37
Bldgs. & fencing exp. per work unit	____	1.11	1.04	1.63

*Given as a percentage of the average.

**Crops are marked in Table 18 as (A), (B), (C), and (D). All of acres in (A) crops, one half of acres in (B) crops, and one fourth of acres in (C) crops are used in calculating per cent of tillable land in high return crops.

***An index weighted by the animal units of livestock.

****Acres in timber not pastured, roads, waste and farmstead were not included.

Thermometer Chart

Using your figures from page 14, locate your standing with respect to the various measures of farm organization and management efficiency. The averages for the 65 farms included in this summary are located between the dotted lines across the center of this page.

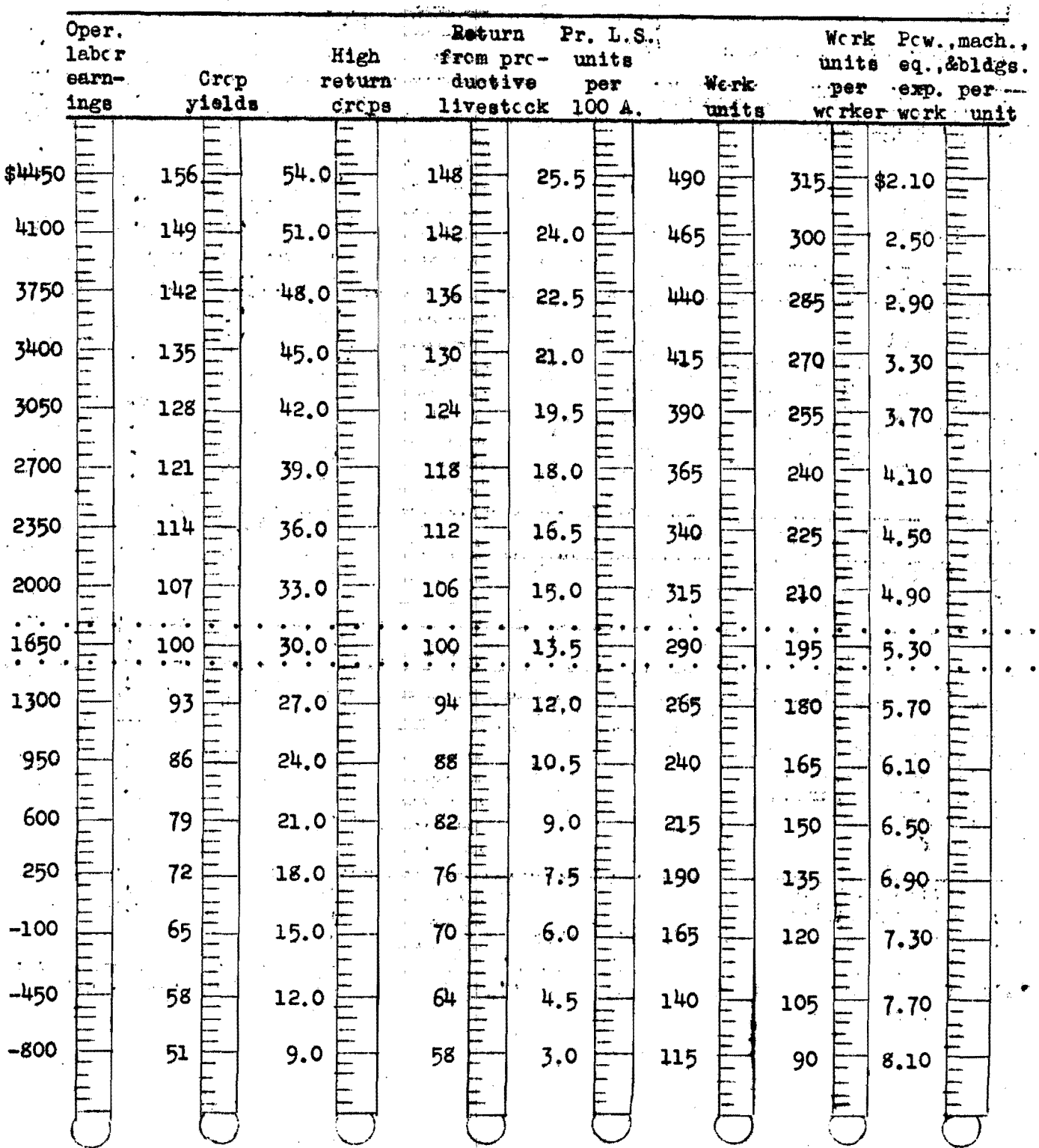

Table 18. Distribution of Acres in Farm, 1947

Crop: (A), (B), (C) and (D) refer to ranking used in calculating % of tillable land in High Return Crops (see page 10)		No. growing this crop	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms	Acres per farm growing crop
Flax	(A)	16		5.1	13.1	1.5	20.9
Wheat	(B)	29		7.1	6.7	3.5	16.0
Barley	(B)	20		5.5	9.4	-	17.8
Oats	(C)	61		27.3	40.8	21.4	29.1
Rye, buckwheat and soybeans	(D)	18		3.9	3.7	2.9	14.0
Total small grain and soybeans		61		48.9	73.7	29.3	52.2
Garden and truck crops	(A)	2		-	-	-	.4
Potatoes	(B)	10		.1	.3	.2	.8
Corn grain	(C)	47		14.1	26.2	7.9	19.5
Corn silage	(C)	43		9.6	13.5	11.8	14.5
Corn fodder	(D)	12		1.1	1.0	1.1	5.8
Total cultivated crops		62		24.9	41.0	21.0	26.1
Alfalfa hay	(A)	29		4.1	7.5	1.5	9.3
Alfalfa seed	(B)	3		.2	.7	-	4.3
Red or alsike clover hay	(B)	12		1.5	3.6	1.7	8.3
Red or alsike clover seed	(B)	4		.4	1.0	-	5.9
Mixed legumes & non-legumes	(C)	14		4.3	6.9	2.3	19.8
Timothy and/or brome hay & seed	(D)	17		5.2	9.8	3.7	19.8
Wild hay on tillable land	(D)	12		4.1	2.4	4.9	22.0
Annual hay	(D)	10		.6	.7	.8	4.2
Total tillable land in hay		58		20.4	32.6	14.9	22.9
Legumes or sudan grass*		5		.8	2.1	-	9.5
Other tillable pasture	(D)	10		2.0	-	1.5	13.2
Total tillable land in pasture		13		2.8	2.1	1.5	13.8
Tillable land not cropped	(D)	4		.8	-	.8	13.3
Total tillable land		65		97.8	149.4	67.5	97.8
Wild hay (non-tillable)		41		10.7	8.1	13.2	16.9
Non-tillable pasture		62		41.1	62.2	46.0	43.1
Timber (not pastured)		28		12.2	6.5	15.1	28.3
Roads and waste				11.6	17.9	8.6	
Farmstead				5.5	6.3	5.1	
Total acres in farm				178.9	250.4	155.5	
Per cent land tillable				54.7	59.7	43.4	
Per cent tillable land in high ret. crops				30.0	34.6	22.0	

*Alfalfa pasture was given a rating of A; other legumes and legume mixtures, C and sudan grass, C.

Table 19. Crop Yields Per Acre, 1947

Crop	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms
Flax, bu.	_____	10.1	13.0	7.0
Wheat, bu.	_____	16.3	21.7	8.9
Barley, bu.	_____	24.9	26.5	-
Oats, bu.	_____	31.8	36.9	26.3
Rye, bu.	_____	9.6	-	-
Buckwheat, bu.	_____	8.4	-	-
Potatoes, bu.	_____	96.	104.	83.
Corn, grain, bu.	_____	28.6	30.8	26.9
Corn silage, tons	_____	5.0	5.9	3.0
Corn fodder, tons	_____	1.9	3.2	1.1
Alfalfa hay, tons	_____	1.9	1.8	.8
Alfalfa seed, lbs.	_____	129	-	-
Red or alsike clover hay, tons	_____	1.7	2.1	1.2
Red or alsike clover seed, lbs.	_____	98	-	-
Other leg. & leg. mix. for hay, tons	_____	1.4	1.4	-
Brome or timothy hay, tons	_____	1.8	2.0	2.4
Wild hay on tillable land, tons	_____	1.1	-	1.6
Annual hay, tons	_____	2.3	-	-
Wild hay on non-tillable land, tons	_____	.9	1.0	.5

POWER AND MACHINERY EXPENSES

Power and machinery expense per crop acre is an indication of the economy with which capital is invested in these items. The crop acres per farm ranged from eight to 286 with an average of 105 (Table 20). The expenses are high on the farms with a small acreage. In some cases, low expenses for labor might be offset by high power and equipment costs. The farmer is interested in operating at the lowest cost for power, machinery and labor combined.

Table 20. Power and Machinery Expenses Per Crop Acre, 1947

Items	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms
Crop acres per farm	_____	104.9	155.4	78.4
Tractor and horse exp. per crop acre	_____	$4.47	$3.79	$5.94
Crop & gen. mach. exp. per crop acre	_____	2.25	2.13	2.51

The feed cost for horses is a part of the cost of power on these farms maintaining horses. The annual feed cost per horse is shown in Table 21. Seventeen farmers did not maintain horses.

Table 21. Feed Costs For Horses, 1947

Items	Your farm	Average of 48 farms
Feed per horse, lbs.:		
Grain	_____	330
Hay	_____	4290
Fodder and stover	_____	116
Feed cost per horse:		
Grain	_____	$8.40
Roughage	_____	22.43
Pasture	_____	5.87
Total feed cost	_____	36.70
Number of work horses	_____	2.5
Number of colts	_____	-

AMOUNT OF LIVESTOCK

Nearly all the farmers maintained some dairy cattle. The average number of dairy cows per farm was approximately nine head (Table 22). Eighty per cent of the farmers kept poultry and seventy per cent raised hogs.

Table 22. Amount of Livestock, 1947

	Your farm	Average of 65 farms	13 most profitable farms	13 least profitable farms
Number of milk cows	_____	9.4	14.9	8.7
Number of other dairy cattle	_____	9.2	13.8	9.1
Number of sheep*	_____	2.4	-	4.0
Number of hens	_____	122	167	120
Number of litters of pigs raised	_____	2.2	5.2	.9
Pounds of hogs produced	_____	3593	8001	1596
Number of horses	_____	1.9	2.2	2.0
Number of colts	_____	-	.2	-

*Two lambs under six months of age considered as one head.

There was some increase in the number of hogs and poultry maintained on these farms during the year (Table 23). The small number of two-year old and yearling heifers indicates that the number of cows kept is not likely to show an increase in the near future unless this increase is effected by the purchase of cows or heifers.

Table 23. Number of Livestock Per Farm On Hand at Beginning and End of Year

	Average Number On Hand	
	January 1, 1947	December 31, 1947
Milk cows	10	9
Two-year old heifers	1	2
Yearling heifers	2	2
Hens	125	164
Hogs	6	9

TOTAL FEED COSTS AND RETURNS FROM YOUR LIVESTOCK ENTERPRISES

The total "return over feed costs" for each class of livestock is shown in Table 24. This differs from the "return over feed" shown in the enterprise statement in that it is the total for each class of livestock instead of a return "per head" "per unit" or "per 100 pounds". These data indicate the relative importance of different classes of livestock as a source of income and as a market for feed. The total return is the same as the returns and net increases shown on page 5. The value of milk consumed by calves is included in the total returns from dairy or dual purpose cows and in the total feed cost for other dairy or other dual purpose cattle. The value of milk consumed by calves is not included in either the total returns or the feed cost of "all dairy" or "all dual purpose" cattle. The return over feed is not a net return, but rather the amount available from the gross income, after paying the feed bill, to cover the outlay for hired labor, power, equipment, taxes, insurance, interest and veterinary bills and to provide a return for the use of family labor and capital.

Table 24. Total Feed Costs and Returns From Your Livestock Enterprises, 1947

	Dairy or dual purpose cattle			Beef breeding herd
	Cows	Other	All	
Total returns				
Total feed cost				
Total return over feed				

	Feeder cattle	Hogs	Farm flock of sheep	Chickens
Total returns				
Total feed cost				
Total return over feed				

Feed is the largest single item of cost for all classes of livestock. However, the proportion of the total cost represented by feed varies considerably between classes of livestock. Feed makes up approximately 45 per cent of the total costs of maintaining dairy cattle and poultry, 50 per cent in the case of a farm flock of sheep and 75 to 90 per cent for hogs, feeder cattle and feeder lambs. Consequently, it is necessary to secure a relatively higher return over feed from dairy cattle and poultry than from the other livestock enterprises in order to be able to cover all the costs other than feed.

DAIRY CATTLE

The quantity of feed consumed, value of feeds and returns from dairy cattle are presented in Tables 25, 26 and 27. The statements include eight herds which were classified as dual purpose cattle.

Table 25. Factors of Cost and Returns from Dairy Cows, 1947

Items	Your farm	Average of 60 farms	12 farms highest in butterfat per cow	12 farms lowest in butterfat per cow
Pounds of butterfat per cow		216	298	131
% butterfat in milk		3.7	3.6	3.6
Price rec. per lb. B. F. sold (cents)		85.1	87.7	81.7
As manufacturing cream (cents)		79.6	81.8	75.6
Other (cents)		88.8	90.7	86.0
Feeds per cow, lbs:				
Corn		561	603	517
Small grain		832	1160	542
Commercial feeds		290	425	90
Legume hay		3120	4458	2819
Other hay		1994	1163	3054
Fodder and stover		536	545	48
Total concentrates		1683	2188	1149
Total hay and fodder		5650	6166	5921
Silage		5460	7163	4021
Total digestible nutrients*		4963	5893	4469
T.D.N. per lb. B.F.		23.0	19.8	34.1
% T. D. N. that is protein		12.5	12.9	10.4
Feed cost per cow:				
Concentrates	$	$45.29	$57.93	$33.10
Roughages		46.62	53.45	45.13
Pasture		5.39	5.26	5.65
TOTAL FEED COSTS	$	$99.30	$116.64	$83.88
Value of produce per cow:				
B.F. Sales	$	$165.43	$239.34	$88.73
Dairy produce used in house		13.02	12.51	11.14
Milk to livestock		17.88	19.26	15.92
Net increases in value of cows		.77	-5.83	-.55
TOTAL VALUE PRODUCED	$	$197.10	$265.28	$115.24
RETURNS ABOVE FEED COST PER COW	$	$97.80	$148.64	$31.36
RETURNS FOR $100 OF FEED	$	$210	$240	$157
Feed cost per lb. B.F. (cents)		46.0	39.1	64.0
% fall freshening		34	40	29
Number of cows**		10.2	10.6	10.0

*Not including nutrients received from pasture.

**All dairy cows which have at some time in the past freshened are included in the dairy herd, and affect the average number of cows used in computing this table. There is some variation in the number of months of dry period per cow; however, this variation is small for the majority of farms.

Table 26. Feed Costs and Returns from Other Dairy Cattle, 1947

Items	Your farm	Average of 60 farms	12 farms highest in butterfat per cow	12 farms lowest in butterfat per cow
Feeds per head, lbs.:				
Concentrates	_____	395	437	288
Hay and fodder	_____	1633	1644	2288
Silage	_____	1424	1352	1421
Skim milk	_____	1019	948	1141
Whole milk	_____	322	312	445
Feed cost per head:				
Concentrates	$_____	$9.13	$11.41	$7.51
Roughages	_____	14.58	14.36	16.75
Milk	_____	16.07	14.86	20.47
Pasture	_____	2.67	2.62	3.37
TOTAL FEED COSTS PER HEAD	$_____	42.45	43.25	48.10
Net inc. in value of other dairy cattle	_____	60.09	55.76	66.85
RETURNS ABOVE FEED COST PER HEAD	$_____	17.64	12.51	18.75
RETURNS FOR $100 OF FEED	$_____	$188	$147	$167
Number of head of other dairy cattle	_____	9.9	10.6	9.2

Table 27. Feed Costs and Returns From All Dairy Cattle, 1947

Items	Your farm	Average of 60 farms	12 farms highest in butterfat per cow	12 farms lowest in butterfat per cow
Feeds per animal unit, lbs.:				
Concentrates	_____	1344	1683	953
Hay and fodder	_____	4838	4918	5475
Silage	_____	4556	5690	3535
TOTAL FEED COSTS PER ANIMAL UNITS	$_____	$83.19	$93.51	$74.04
Value of produce per animal unit:				
Dairy products	_____	$122.69	$168.02	$69.23
Net increase in val.of dairy cattle	_____	36.62	32.64	33.04
TOTAL VALUE PRODUCED	_____	$159.31	$200.66	$102.27
RETURNS ABOVE FEED PER ANIMAL UNIT	$_____	76.12	107.15	28.23
RETURNS PER $100 OF FEED	$_____	$205	$227	$157
Animal units of dairy cattle	_____	15.5	16.2	14.8

The return over feed cost per cow varied from -$71.81 to $221.99 among the 60 herds covered by this study. Some of the important factors that affected the return over feed were:

1. Rate of production (pounds butterfat per cow)
2. Price received for butterfat
3. Feeding efficiency (pounds T.D.N. fed per pound butterfat)
4. Quality of ration (percentage of protein in T.D.N.)
5. Economy of ration (feed cost per pound butterfat.)

The herds which ranked low in these factors had low returns over feed. As indicated in Table 28, the seven herds which ranked below the average of the whole group in all of these factors showed a return over feed of $20.76 per cow. On the other hand the eight herds which ranked above the average of the whole group in each of these five factors had a return over feed per cow of $132.04. These data suggest that dairy returns could be very materially increased by more attention to these five management factors.

Table 28. Relation of Return Over Feed per Dairy Cow to the Number of Factors in Which Farmers Excelled

No. of factors in which farmers excelled	No. of farms	The length of the line is proportional to the average return over feed per cow	Average return over feed
None	7	xxxxx	$ 20.76
1	7	xxxxxxxxxxxxxxx	73.81
2	15	xxxxxxxxxxxxxxxxxx	87.69
3	11	xxxxxxxxxxxxxxxxxxxxxxxxx	117.65
4	12	xxxxxxxxxxxxxxxxxxxxxxxxxxx	128.37
5	8	xxxxxxxxxxxxxxxxxxxxxxxxxx	132.04

HOGS

The return over feed cost per 100 pounds of hogs produced varied from $15.99 for those farmers ranking in the upper third in feeding efficiency to a return of $.91 less than the feed cost for those in the lowest one-third. Some of the important factors that affected return over feed were:

1. Quantity of feed required to produce 100 pounds of hogs.
2. Price received
3. Number of pigs born per litter.
4. Number of pigs weaned per litter.

Table 29. Feed Costs and Returns from Hogs, 1947

Items	Your farm	Average of 45 farms	15 farms highest in returns above feed	15 farms lowest in returns above feed
Feed per cwt. hogs produced, lbs.:				
Corn	_____	356	241	450
Small grain	_____	161	123	199
Commercial feeds	_____	36	21	80
Total concentrates	_____	553	385	729
Skim milk and buttermilk	_____	236	191	318
Feed cost per cwt. hogs produced:				
Concentrates	$_____	$15.77	$10.13	$22.64
Skim milk and buttermilk	_____	1.04	.87	1.26
Pasture	_____	.26	.17	.41
TOTAL FEED COSTS	$_____	$17.07	$11.17	$24.31
Net increase in val.per cwt. hogs prod.	$_____	$24.83	$26.26	$23.39
RETURNS ABOVE FEED COST PER CWT. HOGS PROD.	$_____	$7.76	$15.09	$-.92
RETURNS FOR $100 OF FEED	$_____	$168	$247	$98
Ave. weight per hog sold, lbs.	_____	214	229	201
Price received per cwt. hogs sold	$_____	$24.45	$23.96	$24.50
No. of spring litters raised	_____	2.6	3.3	2.0
No. of fall litters raised	_____	.6	.4	.6
Total no. of litters raised	_____	3.2	3.7	2.6
No. of pigs born per litter	_____	7.7	7.9	7.2
No. of pigs weaned per litter	_____	6.6	7.0	5.6
Pounds of hogs produced	_____	4928	5218	4079

Five farmers ranked below the average in the four factors. They failed to receive a return large enough to cover the cost of feed (Table 30). The seven farmers who ranked above the average of the entire group in each of the four factors received a return over feed of $14.29 for each 100 pounds of hogs produced. These data suggest that superior management leads to high returns.

Table 30. Relation of Return Over Feed Per 100 Pounds of Hogs Produced to the Number of Factors in Which Farmers Excelled

No. of factors in which farmers excelled	No. of farms	The length of the line is proportional to the average return over feed per 100 pounds of hogs produced	Average return over feed
0	5	x	$ -.40
1	10	xxxxxxxxx	5.07
2	6	xxxxxxxxxxxxxxx	8.41
3	12	xxxxxxxxxxxxxxx	8.45
4	7	xxxxxxxxxxxxxxxxxxxxxxxxxxxx	14.29

CHICKENS

Twenty out of the 53 farmers raising chickens failed to receive a return large enough to cover the cost of feed. The average return over feed from the 53 flocks included in this report was 38 cents per hen (Table 31).

Table 31. Feed Costs and Returns from Chickens, 1947.

Items	Your farm	Average of 53 farms	13 farms highest in returns above feed	13 farms lowest in returns above feed
Feed per hen, lbs.:				
Grain	_____	100	83	148
Commercial feeds	_____	37	38	45
Total concentrates	_____	137	121	193
Skim milk and buttermilk	_____	10	9	13
TOTAL FEED COST PER HEN	$_____	$4.71	$4.29	$6.79
Value of produce per hen:				
Eggs sold and used in house	$_____	$4.50	$6.13	$3.25
Net increase in value of chickens	_____	.59	1.12	.70
TOTAL VALUE PRODUCED	_____	$5.09	$7.25	$3.95
RETURNS ABOVE FEED COST PER HEN	$_____	$.38	$2.96	-$2.84
RETURNS FOR $100 OF FEED	$_____	$117	$176	$51
Price rec'd per doz. eggs sold (cents)	_____	40.5	41.5	40.6
Eggs laid per hen	_____	133	177	96
Ave. no. of hens on farm during the yr.	_____	147	148	87
% of hens that are pullets	_____	70	80	68
% of death loss of hens	_____	13	9	16
Number of chicks put on feed	_____	264	315	255
Price paid per 100 chicks purchased	$_____	$24.70	$23.47	$22.96
Pounds of poultry produced	_____	646	883	606

Some of the important factors that affected the return over feed were:

1. Quantity of feed required per hen
2. Price received per dozen eggs sold
3. Eggs laid per hen
4. Per cent of hens that are pullets
5. Percentage death loss of hens

The data in Table 31 shows that the flocks which ranked low in these factors had low returns over feed. The six flocks which ranked below the average of the whole group in all but one factor failed to cover feed cost by $1.83 per hen. The eight flocks which ranked above the average of the whole group in each of the five factors had a return over feed per hen of $2.21.

Table 32. Relation of Return Over Feed Per Hen to the Number of Factors in Which Farmers Excelled

No. of factors in which farmers excelled	No. of farms	The length of the line is proportional to the average return over feed per hen	Average return over feed
1	6	xxxxxxxxx	$-1.83
2	12	x	- .24
3	18	x	.08
4	10	xxxxxxxx	1.69
5	7	xxxxxxxxxx	2.21

Table 33. Feed Costs and Returns from a Farm Flock of Sheep, 1947

Items	Your farm	Average of 5 farms
Feed per head,* lbs.:		
Concentrates	_____	17
Legume hay	_____	97
Other hay	_____	64
Fodder and stover	_____	21
Silage	_____	43
Feed cost per head:		
Concentrates	$_____	$ .66
Roughages	_____	1.23
Pasture	_____	1.11
TOTAL FEED COSTS	$_____	3.00
Value of produce per head:		
Wool	_____	$2.34
Net increase in value of sheep	_____	8.28
TOTAL VALUE PRODUCED	$_____	$10.62
RETURNS ABOVE FEED COST PER HEAD	_____	$7.62
RETURNS FOR $100 OF FEED	$_____	$431
Price per cwt. of lambs sold	$_____	$19.28
Price per lb. wool sold (cts.)	_____	39.0
Pounds of wool per sheep sheared	_____	7.0
Number of ewes kept for lambing	_____	27
% lamb crop**	_____	89
% death loss**	_____	7.1
Pounds of sheep produced	_____	1147
No. of head of sheep*	_____	29.6

*Two lambs under six months of age considered as one head.
**Lambs which die during month of birth are not included.