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**University of Minnesota
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

SOUTHWESTERN MINNESOTA

1947

Cooperator: _____

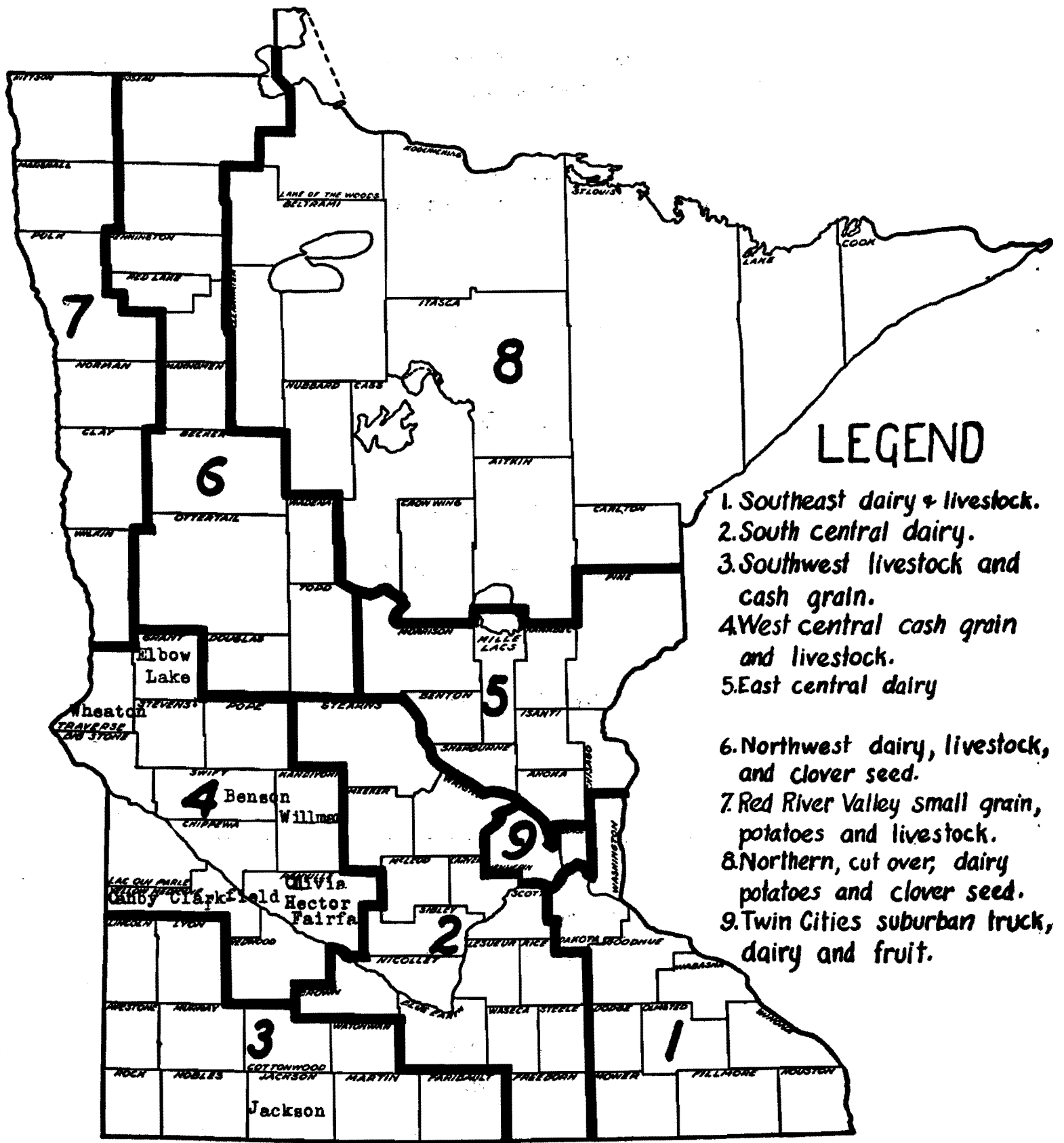
Mimeographed Report No. 171

Division of Agricultural Economics

University Farm

St. Paul II., Minnesota

August, 1948



LEGEND

1. Southeast dairy & livestock.
2. South central dairy.
3. Southwest livestock and cash grain.
4. West central cash grain and livestock.
5. East central dairy
6. Northwest dairy, livestock, and clover seed.
7. Red River Valley small grain, potatoes and livestock.
8. Northern, cut over, dairy potatoes and clover seed.
9. Twin Cities suburban truck, dairy and fruit.

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 SOUTHWESTERN MINNESOTA, 1947

T. R. Nodland, G. A. Pond and R. W. Adams

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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.

This report deals with the veterans enrolled by ten schools located in southwestern Minnesota (Type-of-Farming Area 3 and 4)¹. The map on the inside front cover of this report shows the location of the schools. The following tabulation shows by schools the number of farm records submitted in 1947:

Benson	5	Hector	6
Canby	7	Jackson	1
Clarkfield	13	Olivia	6
Elbow Lake	11	Wheaton	16
Fairfax	3	Willmar	2
		Total	70

The subsequent pages in this report show the data for 62 farms. Eight farms were omitted from all the averages in the tables because the records were 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 \$4132 to \$41981. The average investment for all farm 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 50 out of the 62 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.

¹For 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		Average of 62 farms	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Size of farm (acres)			204	
Size of business (work units)**			231	
Dairy and dual purpose cows			\$397	\$479
Other dairy & dual purpose cattle			150	230
Beef cattle			82	79
Hogs			520	784
Sheep			57	152
Poultry			120	123
Productive livestock (total)			1326	1847
Horses			44	35
Crop, seed, and feed			1061	1843
Power mach. (farm share)			1079	1366
Crop & general mach. (farm share)			805	1073
Livestock equipment & supplies			130	183
Mach. and equipment (total)			2014	2622
Misc.			-	2
Buildings, fences, etc.			4255	4264
Land			8515	8515
Total farm capital			17215	19128

Items	12 most profitable farms		12 least profitable farms	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Size of farm (acres)	240		234	
Size of business (work units)**	285		209	
Dairy & dual purpose cows	\$435	\$591	\$227	\$269
Other dairy & dual purpose cattle	101	295	105	164
Beef cattle	90	42	35	52
Hogs	1258	2076	236	421
Sheep	-	90	235	622
Poultry	101	119	88	115
Productive livestock (total)	1985	3213	926	1643
Horses	54	27	22	29
Crop, seed, and feed	1776	3855	960	1179
Power mach. (farm share)	1104	1719	1173	1288
Crop & general mach.	1127	1440	617	901
Livestock equipment & supplies	160	225	114	166
Mach & equipment (total)	2391	3384	1904	2355
Buildings, fences, etc.	6906	6733	4880	4800
Land	10910	10910	6426	6426
Total farm capital	24022	28122	15118	16432

*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 62 farms	12 most profitable farms	12 least profitable farms
FARM RECEIPTS				
Dairy and dual-purpose cows		\$ 88	\$ 65	\$ 35
Dairy products		434	533	274
Other dairy & dual-purpose cattle		131	93	103
Beef cattle		117	95	5
Hogs		1601	3012	846
Sheep and wool		41	-	117
Poultry		148	153	210
Eggs		441	508	316
Horses		6	21	2
Corn		1033	1670	558
Small grain		1776	2958	1266
Other crops		285	475	173
Machinery & equip. sold		139	62	90
Agricultural adjustment payments		16	4	21
Income from work off the farm		64	21	103
Miscellaneous		15	51	7
(1) Total farm sales		6335	9721	4126
(2) Increase in farm capital		1913	4100	1314
(3) Family living from the farm		348	379	386
(4) Total farm receipts (1)+(2)+(3)		\$8596	\$14200	\$5826
FARM EXPENSES				
Dairy and dual-purpose cows bought	\$	\$112	\$ 97	\$ 47
Other dairy and dual-pur.cattle bot		92	149	44
Beef cattle bought		35	-	5
Hogs bought		187	331	204
Sheep bought (incl. feeders)		82	90	319
Poultry bought (including turkeys)		71	102	66
Horses bought		8	8	17
Misc. livestock expense		59	90	45
Misc. crop expenses		420	668	422
Feed bought		635	920	509
Custom work hired		206	242	254
Mech. power mach.(farm share)(new)		535	759	333
Mech.power mach.(farm share)(upkp.)		218	178	303
Mech. power (f.share)(gas,oil,etc.)		482	501	497
Crop and general mach. (new)		441	514	409
Crop and general mach. (upkeep)		116	143	106
Livestock equipment (new)		79	100	76
Livestock equipment (upkeep)		22	35	22
Buildings and fencing (new)		231	130	275
Buildings and fencing (upkeep)		85	104	77
Hired labor		110	199	71
Taxes		235	277	280
General farm and insurance		37	47	35
(5) Total farm purchases		4498	5684	4416
(6) Decrease in farm capital		-	-	-
(7) Interest on farm capital		909	1304	789
(8) Unpaid family labor		399	466	633
(9) Board furnished hired labor		31	61	13
(10) Total farm exp.(sum of (5) to (9))		5837	7515	5851
(11) Oper. labor earnings (4) - (10)		2759	6685	-25

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

Items	Your farm	Average of 62 farms	12 most profitable farms	12 least profitable farms
RETURNS AND NET INCREASES				
Dairy and dual purpose cows		\$535	\$677	\$382
Other dairy & dual pur.cattle		210	204	171
Beef cattle		79	64	17
Hogs		1735	3556	881
Sheep - farm flock		53	-	185
Chickens		559	611	544
All productive livestock		3171	5112	2180
Crops, seed and feed		2822	5590	1271
Agricultural conservation payments		16	4	21
Income from labor off the farm		34	16	64
Miscellaneous		114	169	131
(1) Total returns & net increases		6157	10891	3667
EXPENSES AND NET DECREASES				
Horses		\$ 49	\$ 54	\$ 39
Tractor		461	462	498
Truck		39	32	81
Auto (farm share)		298	254	311
Gas engine and elect.exp.(f.shr.)		24	38	16
Hired power		76	94	83
Total power		947	934	1028
Crop and general machinery		321	405	313
Livestock equipment		47	69	47
Buildings, fencing and tiling		247	299	366
Misc.productive livestock exp.		58	89	45
Labor		597	782	789
Real estate taxes		225	266	268
Personal property tax		10	11	12
Insurance		18	23	17
General farm		19	24	18
Interest on farm capital		909	1304	789
(2) Total expenses & net decreases		3398	4206	3692
(3) Oper.labor earnings(1)-(2)		2759	6685	+25

*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 five 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 ten per cent of the average inventory value of the dwelling.

Table 4. Family Living From the Farm, 1947

Items	Your farm	10 most 12 least			Your farm	10 most 12 least		
		Average 54 farms*	profit-able farms*	profit-able farms*		Average 54 farms	profit-able farms*	profit-able farms
Adult equiv.- family	—	2.2	2.3	2.0	—			
- others	—	.2	.3	.8	—			
Whole milk	—	288 qts.	189	196	—	\$31.64	\$17.31	\$25.32
Skim milk	—	95 qts.	196	114	—	2.47	2.10	1.91
Cream	—	78 pts.	65	101	—	18.15	15.46	25.48
Farm made butter	—	6 lbs.	-	4	—	4.57	-	3.25
Beef	—	227 lbs.	270	155	—	33.25	27.00	18.00
Hogs	—	271 lbs.	292	243	—	63.47	69.10	53.52
Poultry	—	68 lbs.	60	102	—	15.42	13.30	24.00
Eggs	—	77 doz.	66	85	—	28.04	24.35	31.88
Potatoes	—	5 bu.	2	1	—	7.78	3.70	2.65
Vegetables & fruits	—				—	9.87	6.38	8.66
Farm fuel	—				—	2.15	-	.42
Rental vl. of house	—				—	178.56	262.52	190.52
Total	—				—	395.37	441.22	385.61

*The records from eight farm operators who did not maintain a household were omitted from this table.

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 \$135 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 55 farms	11 most profitable farms	11 least profitable farms
Number of persons in family		3.0	3.3	2.6
Number of adult equivalents in family		2.2	2.4	2.0
Number of other adult equivalents*		.2	.2	.1
<u>EXPENSES</u>				
Food and meals bought	\$	\$475	\$551	\$473
Operating and supplies		167	233	111
Clothing and clothing materials		182	194	153
Personal care, personal spending		100	118	66
Furnishings and equipment		307	539	363
Education, recreation and development		66	107	49
Medical care and health insurance		111	113	60
Church, welfare, gifts		81	89	66
Personal share of auto expense		75	82	85
Household share of elect. & gas eg. exp.		12	21	11
H.H. & pers. shr. of new auto. & motors bot		40	15	59
Total		1616	2062	1496
State and federal income tax		7	8	25
Insurance		60	83	68
Total household and pers. cash exp.		1683	2153	1589
Food furnished by the farm		194	189	221
Fuel furnished by the farm		2	-	-
House rental		161	244	201
Total cash expenses and perquisites		2040	2586	2011
Investments		146	528	3
<u>RECEIPTS</u>				
Sale of investments		11	-	16
Income from outside investments		24	-	1
Veterans compensation		1098	1199	975
Misc. income		145	85	324

*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		11 Owners	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Total acres in farm			181.5	
Owned			181.5	
Rented			-	
Total farm capital			\$12530	\$14996
Accounts receivable			70	12
Stocks and bonds			205	182
Life insurance			58	61
Other outside investments			182	182
Total outside investments			445	425
Cash on hand and in bank			354	414
Other household & personal assets			879	1102
Total cash, household & personal assets			1233	1516
TOTAL ASSETS			14278	16949
Mortg. on land operated			6331	6487
Mortg. on outside real estate			-	-
Chattel mortgages			572	385
Notes payable			203	564
Accounts payable			381	186
TOTAL LIABILITIES			7487	7622
Farmer's net worth			6791	9327
Gain in net worth				+2536

36 cash & Crop share renters*

	36 cash & Crop share renters*	
	Jan. 1	Dec. 31
Total acres in farm	215.5	
Owned	-	
Rented	215.5	
Total farm capital	\$4007	\$5802
Accounts receivable	81	42
Stocks and bonds	133	114
Life insurance	83	111
Other outside investments	1	329
Total outside investments	217	554
Cash on hand and in bank	298	365
Other household and personal assets	920	1195
Total cash, household & personal assets	1218	1560
TOTAL ASSETS	5523	7958
Mortg. on land not operated	-	292
Chattel mortgages	1025	874
Notes payable	466	282
Accounts payable	144	223
TOTAL LIABILITIES	1635	1671
Farmer's net worth	3888	6287
Gain in net worth		+2399

*One rented for cash, 29 cash and crop share and 6 crop share.

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

	Your farm	11 Owners	36 cash & cr. shr. renters
FARM RECEIPTS			
Dairy and dual purpose cows		\$103	\$ 75
Dairy products		348	351
Other dairy and dual purpose cattle		69	102
Beef cattle		243	72
Hogs		819	1544
Sheep and wool		105	19
Poultry		171	112
Eggs		495	350
Horses		3	7
Corn		310	421
Small grain		811	1105
Other crops		106	205
Machinery & equipment sold		302	88
Agricultural adjustment payments		13	9
Income from work off the farm		148	46
Misc.		5	10
(1) Total farm sales		4051	4516
(2) Increase in farm capital		2466	1795
(3) Family living from the farm		303	334
(4) Total farm rec. (1)+(2)+(3)		6820	6645
FARM EXPENSES			
Dairy and dual purpose cows bot		\$ 82	\$150
Other dairy & dual pur. cattle bot		53	87
Beef cattle bot. (including feeders)		144	9
Hogs bot		120	147
Sheep bot (including feeders)		273	58
Poultry bot (including turkeys)		58	67
Horses bot		18	6
Misc. livestock expenses		62	55
Misc. crop expenses		350	334
Feed bot		455	583
Custom work hired		152	187
Mech. power mach. (farm share) (new)		792	439
Mech. power mach. (farm share) (upkeep)		149	228
Mech. power (farm share) (gas, oil, etc.)		426	496
Crop and general mach. (new)		379	453
Crop and general mach. (upkeep)		107	118
Livestock equipment (new)		47	72
Livestock equipment (upkeep)		17	23
Land, buildings & fencing (new)		100	44
Buildings and fencing (upkeep)		203	30
Hired labor		50	138
Taxes (real estate & pers. property)		177	7
General farm and insurance		40	33
Cash rent		-	161
Interest paid		309	49
(5) Total farm purchases		4563	3974
(6) Decrease in farm capital		-	-
(7) Interest on farm capital		381	196
(8) Unpaid family labor		135	300
(9) Board furnished hired labor		17	43
(10) Total farm exp. (Sum of (5) to (9))		5096	4513
(11) Operator's labor earn. (4) - (10)		1724	2132
(12) Ret. cap. & family lab. (7)+(8)+(11)		2240	2628

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 11 owners and 36 cash and crop share renters 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 \$6685 and of those in the lower 20 per cent was \$-25. This is a range of \$6710 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 Range	Average	No. of farms	Average operator's labor earnings
Below 75	56	12	\$ 796
75 - 124	100	37	2613
125 and above	140	13	4985

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.

¹See 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 35.0	23.8	10	\$1817
35.0 - 54.4	44.6	39	2912
54.5 and above	63.6	13	3141

Return from Livestock. This is a measure of feeding efficiency. The majority of these farmers maintain some cattle, hogs and poultry. Six farmers 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 63	54	10	\$1531
64 - 139	94	36	3107
140 and above	167	10	3097

*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 2.0	.8	11	\$1916
2.0 - 10.4	5.8	38	2927
10.5 and above	14.4	13	2982

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 140	121	10	\$1826
140 - 309	218	40	2354
310 and above	365	12	4885

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 125	106	13	\$1719
125 - 224	165	38	2607
225 and above	266	11	4512

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
\$9.50 and above	\$11.38	10	\$ 870
\$4.75 - \$9.49	6.89	41	2881
Below \$4.75	3.62	11	4019

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 inter-relationships 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, 1 or 2	21	_____	XXXXXXXXXXXX	\$1360
3 or 4	25	_____	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	2976
5, 6 or 7	16	_____	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	4255

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 stlage	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 62 farms	12 most profit- able farms	12 least profit- able farms
Operator's labor earnings	\$ _____	\$2759	\$6685	\$-25
(1) Crop yields*	_____	100	129	73
(2) % of tillable land in high ret. crops**	_____	45.5	43.8	39.7
(3) Ret. for \$100 feed to prod. livestock***	_____	100	113	80
(4) Prod. livestock units per 100 acres****	_____	6.7	6.1	7.3
(5) Size of business - work units	_____	231	285	209
(6) Work units per worker	_____	165	190	139
(7) Pwr., mach., equip., & bldg. exp. per work unit	\$ _____	\$7.04	\$6.10	\$8.61
Items related to some of the above measures:				
(3) Index of return for \$100 feed from				
Dairy cattle (See pages 20 and 21)	_____	100	133	103
Beef breeding herd	_____	100	-	-
Beef cattle - feeders	_____	100	-	-
Hogs (See page 23)	_____	100	103	92
Sheep - farm flock (See page 25)	_____	100	-	41
Chickens (See page 24)	_____	100	106	87
(4) Number of animal units	_____	10.7	12.2	11.0
(5) Work units on crops	_____	127	162	129
Work units on productive livestock	_____	99	120	75
Other work units	_____	5	3	5
(6) Number of family workers	_____	1.3	1.3	1.4
Number of hired workers	_____	.1	.2	.1
Total number of workers	_____	1.4	1.5	1.5
(7) Power expense per work unit	\$ _____	\$4.30	\$3.25	\$5.11
Crop machinery expense per work unit	_____	1.43	1.50	1.51
Livestock equip. expense per work unit	_____	.19	.23	.22
Bldgs. & fencing exp. per work unit	_____	1.12	1.12	1.77

*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 62 farms included in this summary are located between the dotted lines across the center of this page.

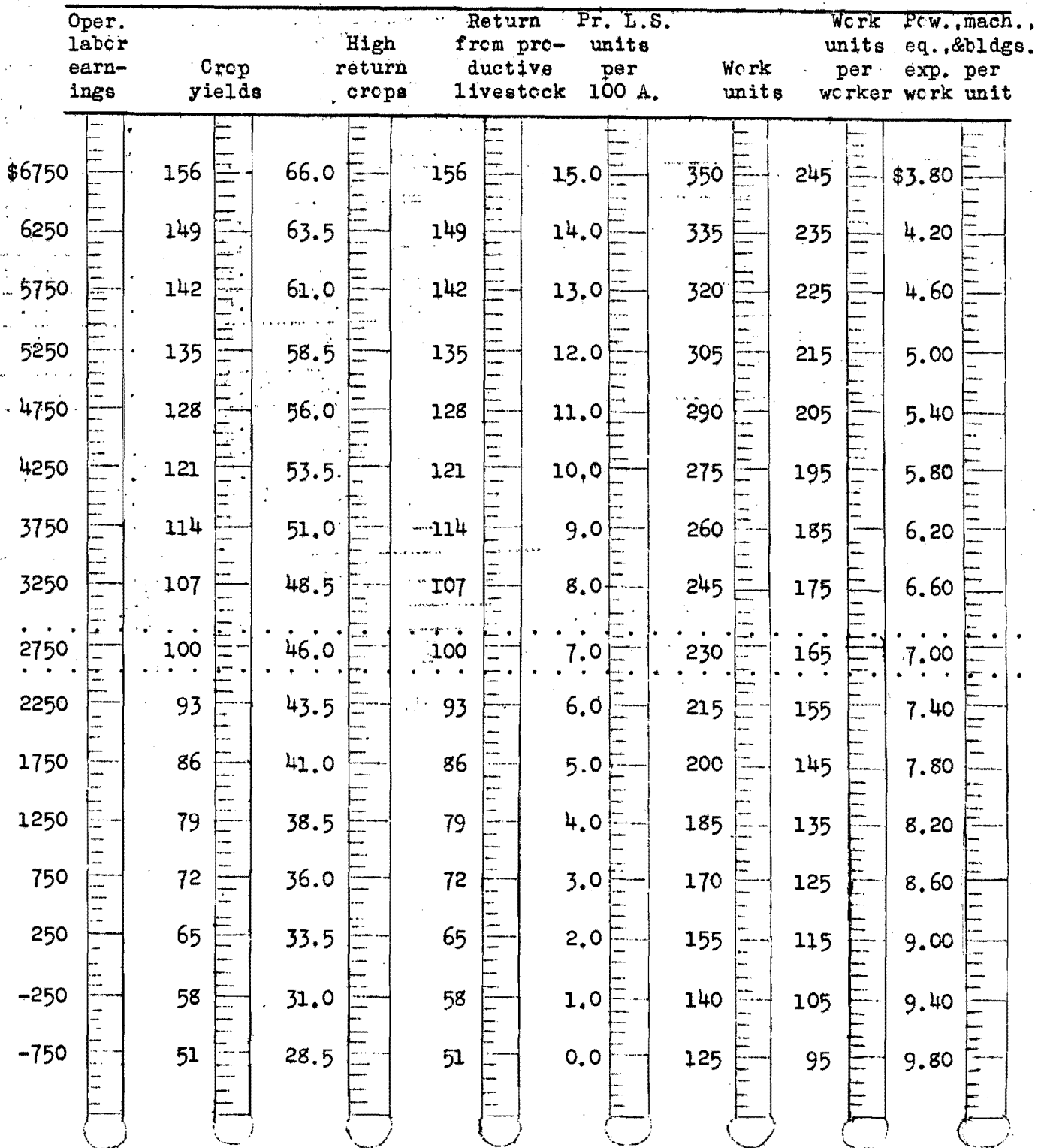


Table 18. Distribution of Acres in Farm, 1947

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 62 farms	12 most profitable farms	12 least profitable farms	Acres per farm growing crop
Scybeans	(B) 31	_____	7.5	12.7	5.2	14.9
Flax	(C) 38	_____	16.2	21.1	17.7	26.4
Barley	(D) 30	_____	11.2	19.0	6.7	23.2
Oats	(D) 60	_____	39.3	38.9	53.5	40.7
Wheat	(D) 27	_____	9.6	13.5	4.2	22.0
Rye, Millet and buckwheat	(D) 15	_____	4.0	4.1	4.4	16.5
Total small grain and scybeans	62	_____	87.8	109.3	91.7	87.8
Garden and truck crops	(A) 1	_____	-	-	.1	1.0
Corn grain	(A) 60	_____	47.4	64.1	43.3	49.0
Corn silage	(B) 12	_____	2.4	2.4	3.4	12.3
Corn fodder	(D) 4	_____	.7	-	.7	10.3
Total cultivated crops	62	_____	50.5	66.5	47.5	50.5
Alfalfa hay	(A) 28	_____	4.0	5.9	3.4	8.8
Other hay and seed crops	* 19	_____	2.1	3.5	3.3	7.0
Total tillable land in hay	34	_____	6.1	9.4	6.7	11.2
Total tillable land in pasture**	13	_____	3.9	9.4	4.6	18.5
Tillable land not cropped	(D) 15	_____	5.9	.2	21.4	24.4
Total tillable land	62	_____	154.2	194.8	171.9	154.2
Wild hay (non-tillable)	30	_____	6.5	5.5	8.2	13.5
Non-tillable pasture	43	_____	15.6	13.7	17.4	22.5
Timber (not pastured)	8	_____	1.8	.5	5.8	13.3
Roads and waste		_____	19.5	18.6	22.0	
Farmstead		_____	6.8	6.6	8.6	
Total acres in farm		_____	204.4	239.7	233.9	
Per cent land tillable		_____	75.4	81.3	73.5	
Per cent tillable land in high ret. crops		_____	45.4	43.8	39.7	

*Scybean hay and clover and timothy hay were given a rating of C, and timothy or bromegrass hay and annual hay, D.

**Alfalfa for pasture was given a rating of A and clover and timothy for pasture, C.

Table 19. Crop Yields Per Acre, 1947

Crop	Your farm	Average of 62 farms	12 most profitable farms	12 least profitable farms
Scybeans, bu.	_____	13.0	15.8	7.0
Flax, bu.	_____	10.1	12.8	6.8
Barley, bu.	_____	19.9	23.7	21.9
Oats, bu.	_____	26.0	36.4	18.2
Wheat, bu.	_____	14.4	15.7	-
Rye, bu.	_____	22.0	-	-
Millet, bu.	_____	8.5	-	-
Corn grain, bu.	_____	27.2	34.2	22.9
Corn silage, tons	_____	5.6	-	5.0
Corn fodder, tons	_____	1.1	-	-
Alfalfa hay, tons	_____	1.9	1.8	2.4
Other leg. & leg. mix. for hay, tons	_____	1.8	2.4	-
Brome or timothy hay, tons	_____	1.3	-	-
Annual hay, tons	_____	1.2	-	-
Wild hay on non-tillable land, tons	_____	.8	1.3	.4

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 45 to 341 with an average of 151 (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 62 farms	12 most profitable farms	12 least profitable farms
Crop acres per farm	_____	150.9	190.6	153.9
Tractor and horse exp. per crop acre	_____	\$3.58	\$2.77	\$3.69
Crop & gen. mach. exp. per crop acre	_____	2.31	2.17	2.38

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

Table 21. Feed Costs For Horses, 1947

Items	Your farm	Average of 24 farms
Feed per horse, lbs.:		
Grain	_____	478
Hay	_____	3881
Feed Cost per horse:		
Grain	_____	\$14.59
Roughage	_____	21.80
Pasture	_____	7.28
Total feed cost	_____	\$43.67
Number of work horses	_____	2.1
Number of colts	_____	-

AMOUNT OF LIVESTOCK

Nearly all the farmers maintained some dairy or dual purpose cattle. However, the average number of dairy cows per farm was small (Table 22). Eighty per cent of the farmers kept hogs and seventy-six per cent raised poultry.

Table 22. Amount of Livestock, 1947

	Your farm	Average of 62 farms	12 most profitable farms	12 least profitable farms
Number of milk cows	_____	3.2	3.0	2.2
Number of other dairy cattle	_____	3.3	2.8	2.8
Number of sheep*	_____	6.7	1.9	27.9
Number of hens	_____	102	117	74
Number of litters of pigs raised	_____	5.2	8.2	3.4
Pounds of hogs produced	_____	7093	14418	3832
Number of horses	_____	.9	1.1	.7
Number of colts	_____	-	-	-

*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	3.1	3.6
Heifers	1.1	1.3
Hens	110	138
Hogs	13	20

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
	Cows	Other	All	breeding herd
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 and Dual Purpose Cows, 1947

Items	Your farm	Average of 29 farms	10 farms	10 farms
			highest in butterfat per cow	lowest in butterfat per cow
Pounds of butterfat per cow	_____	205	277	137
% butterfat in milk	_____	3.5	3.3	3.6
Price rec. per lb. B.F. sold (cents)	_____	80.6	84.4	77.5
As manufacturing cream (cents)	_____	77.9	77.7	78.4
Other (cents)	_____	99.6	100.9	93.0
Feeds per cow, lbs:				
Corn	_____	1292	1311	1024
Small grain	_____	769	888	657
Commercial feeds	_____	67	67	63
Legume hay	_____	2488	2757	2401
Other hay	_____	2463	2350	2553
Fodder and stover	_____	993	1242	914
Total concentrates	_____	2128	2266	1744
Total hay and fodder	_____	5944	6349	5868
Silage	_____	3574	2515	4709
Total digestible nutrients*	_____	5174	5288	5044
T.D.N. per lb. B.F.	_____	25.2	19.1	36.8
% T.D.N. that is protein	_____	11.8	12.1	12.1
Feed cost per cow:				
Concentrates	\$ _____	\$62.00	\$67.18	\$50.55
Roughages	_____	53.44	53.79	56.24
Pasture	_____	8.30	8.52	8.32
TOTAL FEED COSTS	\$ _____	\$123.74	\$129.49	\$115.11
Value of produce per cow:				
B.F. Sales	\$ _____	\$146.63	\$201.75	\$ 93.35
Dairy produce used in house	_____	15.67	14.78	15.26
Milk to livestock	_____	18.78	26.68	13.69
Net increases in value of cows	_____	-2.78	2.99	-2.97
TOTAL VALUE PRODUCED	\$ _____	\$178.30	\$246.20	\$119.33
RETURNS ABOVE FEED COST PER COW	\$ _____	\$54.56	\$116.71	\$4.22
RETURNS FOR \$100 OF FEED	\$ _____	\$159	\$203	\$122
Feed cost per lb. B.F. (cents)	_____	60.4	46.7	84.0
% fall freshening	_____	57	56	57
Number of cows**	_____	5.6	4.6	6.0

*Net 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 and Dual Purpose Cattle, 1947

Items	Your farm	Average of 27 farms	10 farms highest in butterfat per cow	9 farms lowest in butterfat per cow
Feeds per head, lbs.:				
Concentrates	_____	618	729	448
Hay and fodder	_____	2385	2470	2467
Silage	_____	1220	930	1380
Skim milk	_____	1116	1527	490
Whole milk	_____	174	266	164
Feed cost per head:				
Concentrates	\$ _____	\$18.25	\$22.10	\$13.12
Roughages	_____	19.56	20.00	20.49
Milk	_____	10.56	14.36	7.66
Pasture	_____	3.20	3.44	3.03
TOTAL FEED COSTS PER HEAD	_____	\$51.57	\$59.90	\$44.30
Net inc. in value of other dairy cattle	_____	65.48	75.71	60.60
RETURNS ABOVE FEED COST PER HEAD	\$ _____	13.91	15.81	16.30
RETURNS FOR \$100 OF FEED	\$ _____	\$160	\$136	\$193
Number of head of other dairy cattle	_____	6.4	6.4	5.0

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

Items	Your farm	Average of 29 farms	10 farms highest in butterfat per cow	10 farms lowest in butterfat per cow
Feeds per animal unit, lbs.:				
Concentrates	_____	1797	1943	1518
Hay and fodder	_____	5346	5320	5636
Silage	_____	2944	2193	3766
TOTAL FEED COSTS PER ANIMAL UNITS	\$ _____	\$106.60	\$110.03	\$103.34
Value of produce per animal unit:				
Dairy products	_____	\$109.97	\$136.80	\$81.58
Net increase in val. of dairy cattle	_____	40.50	54.30	33.82
TOTAL VALUE PRODUCED	_____	\$150.47	\$191.10	\$115.40
RETURNS ABOVE FEED PER ANIMAL UNIT	_____	43.87	81.07	12.06
RETURNS PER \$100 OF FEED	\$ _____	\$156	\$186	\$126
Animal units of dairy cattle	_____	8.9	8.0	8.6

The return over feed cost per cow varied from -\$101.01 to \$214.50 among the 29 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.)

HOGS

The return over feed cost per 100 pounds of hogs produced varied from \$14.49 for those farmers ranking in the upper third in feeding efficiency to a return of \$1.00 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 50 farms	12 farms highest in returns above feed	12 farms lowest in returns above feed
Feed per cwt. hogs produced, lbs.:				
Corn		368	234	544
Small grain		167	137	179
Commercial feeds		18	18	21
Total concentrates		553	389	744
Skim milk and buttermilk		79	41	105
Feed cost per cwt. hogs produced:				
Concentrates	\$	\$16.42	\$10.43	\$22.32
Skim milk and buttermilk		.44	.51	.43
Pasture		.33	.38	.41
TOTAL FEED COSTS	\$	\$17.19	\$11.32	\$23.16
Net increase in val. per cwt. hogs prod.	\$	\$24.16	\$25.81	\$22.16
RETURNS ABOVE FEED COST PER CWT. HOGS PROD.	\$	\$6.97	\$14.49	-\$1.00
RETURNS FOR \$100 OF FEED	\$	\$155	\$235	\$98
Price received per cwt. hogs sold	\$	\$24.22	\$24.92	\$23.43
No. of spring litters raised		5.6	5.3	5.8
No. of fall litters raised		.8	1.2	.5
Total No. of litters raised		6.4	6.5	6.3
No. of pigs born per litter		7.5	6.8	7.1
No. of pigs weaned per litter		6.1	5.4	5.9
Pounds of hogs produced		8739	6784	7416

Three 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 six farmers who ranked above the average of the entire group in each of the four factors received a return over feed of \$10.43 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	3	xx	\$ -.97
1	16	XXXXXXXXXXXXXXXXXX	6.59
2	18	XXXXXXXXXXXXXXXXXX	7.64
3	5	XXXXXXXXXXXXXXXXXX	8.47
4	6	XXXXXXXXXXXXXXXXXX	10.43

CHICKENS

Sixteen out of the 47 farmers raising chickens failed to receive a return large enough to cover the cost of feed. The average return over feed from the 47 flocks included in this report was 66 cents per hen (Table 31).

Table 31. Feed Costs and Returns from Chickens, 1947

Items	Your farm	Average of 47 farms	12 farms highest in returns above feed	12 farms lowest in returns above feed
Feed per hen, lbs.:				
Grain		117	83	160
Commercial feeds		37	52	45
Total concentrates		154	135	205
Skim milk and buttermilk		6	8	7
TOTAL FEED COST PER HEN	\$	\$5.18	\$4.72	\$6.87
Value of produce per hen:				
Eggs sold and used in house	\$	\$4.59	\$5.52	\$3.56
Net increase in value of chickens		1.25	2.93	.71
TOTAL VALUE PRODUCED		\$5.84	\$8.45	\$4.27
RETURNS ABOVE FEED COST PER HEN	\$	\$.66	\$3.73	-\$2.60
RETURNS FOR \$100 OF FEED	\$	\$126	\$197	\$62
Price rec'd per doz. eggs sold (cents)		37.8	38.1	38.0
Eggs laid per hen		146	178	114
Ave. no. of hens on farm during the yr.		132	112	122
% of hens that are pullets		79	96	70
% of death loss of hens		13	13	15
Number of chicks put on feed		339	436	338
Price paid per 100 chicks purchased	\$	\$21.52	\$18.27	\$19.51
Pounds of poultry produced		957	1454	747

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 nine flocks which ranked below the average of the whole group in all of the factors or excelled in only one failed to cover feed cost by \$1.68 per hen. The seven flocks which ranked above the average of the whole group in four or five factors had a return over feed per hen of \$3.58.

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
None or 1	9	xxxxxxxx	-\$1.68
2	8	x	.21
3	23	xxxx	.84
4 or 5	7	xxxxxxxxxxxxxxxxxxxx	3.58

Table 33. Feed Costs and Returns From Feeder Cattle, 1947

Items	Your farm	Average of 6 farms
Feeds per cwt. beef produced, lbs.:		
Corn	_____	341
Small grain	_____	64
Commercial feeds	_____	34
Legume hay	_____	235
Other hay	_____	108
Fodder and stover	_____	57
Total concentrates	_____	439
Total dry roughages	_____	400
Silage	_____	731
Feed cost per cwt. beef produced:		
Concentrates	\$ _____	\$12.61
Roughages	_____	5.50
Pasture	_____	.12
TOTAL FEED COSTS	\$ _____	\$18.23
Net increase in value of feeders	\$ _____	\$23.35
RETURNS ABOVE FEED COST PER CWT.		
BEEF PRODUCED	_____	\$5.12
RETURNS FOR \$100 OF FEED	_____	\$135
Price rec'd per cwt. beef sold in 1947	\$ _____	\$22.26
Price paid per cwt. beef bought	\$ _____	17.00
No. of animal units	_____	3.1
Pounds of beef produced	_____	2380

Table 34. Feed Costs and Returns from a Farm Flock of Sheep, 1947

Items	Your farm	Average of 6 farms
Feed per head,* lbs.:		
Concentrates	_____	81
Legume hay	_____	302
Other hay	_____	241
Silage	_____	45
Feed cost per head:		
Concentrates	\$ _____	\$2.30
Roughages	_____	4.73
Pasture	_____	1.12
TOTAL FEED COSTS	\$ _____	\$8.15
Value of produce per head:		
Wool	_____	\$2.16
Net increase in value of sheep	_____	\$13.75
TOTAL VALUE PRODUCED	\$ _____	\$15.91
RETURNS ABOVE FEED COST PER HEAD	_____	\$7.76
RETURNS FOR \$100 OF FEED	\$ _____	\$255
Price per cwt. of lambs sold	\$ _____	\$21.85
Price per lb. wool sold (cents)	_____	35.4
Pounds of wool per sheep sheared	_____	9.5
Number of ewes kept for lambing	_____	36
% lamb crop**	_____	129
% death loss**	_____	4.3
Pounds of sheep produced	_____	2823
No. of head of sheep*	_____	60.7

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

**Lambs which die during month of birth are not included.