

UNIVERSITY OF MINNESOTA  
Department of Agriculture  
and the  
United States Department of Agriculture  
Soil Conservation Service

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Third  
Annual Report  
of the  
Farm Management Service  
for  
Farmers in Soil Conservation Demonstration Areas  
for the year  
1937  
(April 1937 to March 1938)

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Third Annual Report of the Farm Management Service for Farmers  
in Soil Conservation Demonstration Areas

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Introduction

Through a joint agreement between the Division of Agricultural Economics of the University of Minnesota and the Soil Conservation Service of the United States Department of Agriculture, a complete farm record service has been made available to farmers in the Soil Conservation Demonstration Areas of Minnesota. Farmers in the Gilmore Creek Area at Winona, the Beaver Creek Area at Caledonia, and the Deer-Bear Creek Area at Spring Valley, who were cooperating with the Soil Conservation Service and operating their farms under a complete erosion control program, had the opportunity to keep records. This is the third year that records were kept in the Gilmore Creek and Deer-Bear Creek Areas; and the second year in the Beaver Creek Area.

The work of supervising these records is taken care of by James C. Jensen of Spring Valley, Minnesota, Austin B. Sanford of Caledonia, Minnesota, and C. Herman Welch, Jr., of St. Paul, Minnesota, members of the staff of the Soil Conservation Service. The summary and analysis are under the direction of G. A. Pond and W. P. Ranney of the Department of Agricultural Economics of the University of Minnesota. The record books were furnished by the Division of Agricultural Extension, University of Minnesota, which is also cooperating in this study.

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Full cooperation has been given during the past year by members of the Divisions of Operations and Economic Research, Soil Conservation Service, and the Division of Agricultural Extension, University of Minnesota, as well as county agricultural agents in the locality.

### Records Kept

The records kept by the cooperators included inventories at the beginning and end of the year, cash receipts and expenses, a report of feed fed to the various classes of livestock, and a record of farm produce used by the family. Supplementary information was also secured during the year regarding crop and livestock production practices.

The cooperators were assisted and supervised in keeping their records by the fieldmen from the Soil Conservation Service, who visited each farm several times during the year. In addition to securing the supplementary information, the fieldmen's duties included numerous services, viz., helping the farmer place uniform values on real estate and equipment, checking the cash and feed records, answering any questions that might arise as to how the entries should be made in the account book, and helping with farm management problems which came up due to changes brought about by the introduction of a complete erosion control program.

At the end of the year, the books were taken to the central office at the University Farm where they were checked for completeness and accuracy. Then the fieldman of the Soil Conservation Service visited each cooperator and asked for corrections and secured any data which had been omitted.

Forty of the books contained complete household statements which were summarized and tabulated on page 21. This portion of the summary was an extra service given in addition to the regular farm accounts and it was entirely up to the cooperator as to whether he kept that portion of the record or not.

### Topography, Soils, Climate

The Gilmore Creek Area, in which 9 records were completed, is located at the southwestern edge of the city of Winona, in Winona county. The valley and side coulees are very narrow with steep sides. The ridges are narrow, varying from a few rods to usually less than one-fourth of a mile in width. The upland soils fall mainly into two types, Clinton silt loam, a forest soil developed on loess, and Dubuque silt loam, a forest soil developed on residual limestone. The valley soils consist mostly of Jackson silt loam and Chariton silt loam. A considerable portion of the steep valley slopes is classified as rough, stony land. Serious sheet and gully erosion has taken place over the area. The annual rainfall of this area is approximately 34 inches and is distributed throughout the year satisfactorily for crop production; approximately 64 per cent occurs during the frost-free period. The winters are cold, and followed by short but warm summers; the annual mean temperature is 46 degrees. Droughts may endure for short periods; or unusual precipitation, with heavy water and soil losses may occur; but these unusual periods are not frequent.

The Beaver Creek Area in which 19 of the records were kept is located in Houston county in the southeastern portion of the state. The area may be divided into two parts, the gently undulating to moderately rolling prairie region of the upper one-third of the watershed, and the undulating to hilly region of the lower two-thirds of the area.

In the upper portion of the area the greatest agricultural development has taken place, since the land is more level, less cut up by ravines, and has a lower degree of erosion all of which permit more land in cultivation and much larger fields. The soil in this section is predominantly a deep prairie soil (Tama Silt Loam) which is high in organic matter, but needs lime for the best production of alfalfa or sweet clover.

The lower two-thirds of the area is composed of a main valley with accompanying tributary valleys surrounded by high steep ridges. The bottom of the valley is excellent corn land but due to annual overflow is not adaptable to other crops. A broad terrace on either side affords excellent soil for cultivated fields, many of which extend part way up the lower slopes of the adjoining ridges. Due to the steep character of the ridge slopes about 25 per cent of the area is on land too steep for crops or pasture so is predominantly in woods. On the ridge tops we again find fields with soil very similar to that of the soils on the lower slopes of the ridges. This is a forest soil (Fayette Silt Loam), low in nitrogen, shows a marked response to barnyard manure or legumes in rotation and needs lime for the best growth of alfalfa or sweet clover. Sheet erosion has taken a severe toll and many of the old fields have less than three inches of topsoil remaining.

The Deer-Bear Creek Area, in which 29 records were completed, is located in Fillmore and Mower counties and is drained by the middle branch of the Root River. The topography varies from very gently rolling to almost level land, in the upper part of the area, to very steep, hilly and rough land in the lower end. In many cases the upper end of the area lacks sufficient undulation of surface to allow proper drainage, in contrast to the lower, where creeks have cut deeply into the underlying limestone. The entire area has been glaciated almost equally between soils composed of drift material and of loessial mantle overdrift. Carrington, and Lindley, silt loam soils with glacial drift derivation and Tama, Clinton, silt loams with loess derivation are among the more important soil types of the area. Erosion varies from slight amounts of sheet erosion in the upper reaches of the drainage areas to severe sheet and gully erosion in the middle and lower parts of the area. The mean annual temperature for the area is 45 degrees Fahrenheit, with a range of -37 to 108 degrees, occurring in January and July, respectively. The average growing season is around 150 days with an annual precipitation of 32 to 33 inches well distributed throughout the growing season.

#### Type of Farming

Agriculture in the three areas covered by this report centers primarily around the dairy enterprise with smaller proportions of hogs, poultry and sheep included. In the Deer-Bear Creek and Beaver Creek Areas a few farmers have both dairy cattle and beef cattle enterprises. Dairy products were sold principally as cream altho a few farmers had an outlet for whole milk. In those cases where cream was sold, the skimmilk was fed to calves, hogs, and poultry.

The principal crops grown are oats, barley, hay, and corn. The proportion of total farm land devoted to crop production and rotation pasture land varies from 40 per cent on some of the rougher farms in the Gilmore Creek Area to more than 80 per cent on some of the Deer-Bear Creek farms, with an average of 59 per cent for all farms studied. Approximately 20 per cent of the areas is devoted to permanent pasture, with twice as much woodland in the Gilmore Creek Area as in the Deer-Bear Creek Area, and an average of 12 per cent of all the farms being handled as protected timber areas.

### Purpose of the Project

The farm management unit of the Operations Division of the Soil Conservation Service has three main objectives; first, enabling the cooperator to know the returns he is getting for his labor and management, second, to secure information which when compared with similar data secured on other farms will enable the cooperator to increase his efficiency and organize his farm on a more profitable basis and third, to rebalance the farm business in light of economic conditions after the establishment of the erosion control program.

Since success under our present economic order is measured in terms of dollars and cents, and since the profit motive is the governing factor in our modern agriculture, it is important that both the cooperator and the soil conservationist know what returns the farmer is obtaining for his capital, management, and labor. In other words, the farmer's income is the yardstick by which we measure the success of his enterprise and if the soil conservation program is to succeed it must increase or at least maintain the farmer's income. This information may be obtained through farm account books and furnish a common basis from which the conservationist and the farmer may build a better erosion control program for that farm.

In any community we find certain farms above the average yet almost adjoining it will be a farm far below the community standard. Sometimes physical conditions will make it impossible to change the situation, but frequently it is a question of inefficiency and poor management.

Through the records kept for the farm management service, each cooperator furnishes data dealing with the operation of his farm or affecting its income. By comparing this data with that obtained on the most profitable farms the operator can often find many ways of operating his farm more efficiently.

Farms cannot be operated efficiently if the soil has been allowed to become so badly eroded as to reduce crop yields. In order to prevent this, very decided changes have been made in the field plans of the individual farm and in the crop rotations. These changes are bound to upset the fine balance formerly existing on a well-managed farm. Readjustment of labor and livestock is bound to follow and the sooner these readjustments are made the easier it will be. By means of farm account books both the cooperator and the fieldman can see just how the income is being affected and take steps to improve the situation. At the same time, the fieldman is able to get the information which he can apply on other farms in the locality and know that he has concrete evidence to back his statements.

Fortunately most practices which make for efficient farm management are also important measures in good erosion control. In this section of the country livestock farming is in practically every case the most profitable type of operation, but it requires efficient handling if the full benefits are to be received, - good quality pasture throughout the grazing season, high quality roughages for the feeding season, and above all a balanced ration. Good erosion control requires fencing out of very steep hillsides to woods, to prevent silting and gullyng of fertile land lower down the slope. Other land that is not so steep but too rough to cultivate makes excellent permanent hayfields and pasture. Of our various permanent hay crops alfalfa is one of the best and without question it is the best roughage we have for dairy cattle. Well-balanced rotations make for higher crop yields and at the same time are important factors in good erosion control. In other words, good farm management and good erosion control in this area call for efficient livestock farming, good land utilization and all done with a minimum of labor.

## Analysis of the Farm Business

On pages eight and nine are presented financial summaries of the year's business, showing the average results for the 57 farms on which the work was completed for the twelve months' period, April 1937 to March 1938, the average results for the highest one-fifth of the farms in respect to Operator's Labor Earnings, and the average for the lowest one-fifth. In the "your farm" column, in the copy sent to the farmer, the results of his individual farm business are inserted in order that he may compare his figures with the averages of the various groups.

The data on pages 10 to 24 should suggest to each cooperator some possibilities for improvement in his production, control of expenses, and in his organization of the various enterprises and of the business as a whole. There are some variations in soil and climatic conditions and available markets in this area, which, of course, affect the choice of crops and classes of livestock. Each farm is an individual problem and has its particular advantages and limitations in respect to natural resources and markets. However, it is significant that the same general factors account for financial success in all three of the soil conservation areas.

### Capital Investment in Farm Business

The data on page 7 show that the average size of the farms in this report was 204 acres. The average farm inventory was \$15,042. This does not include the value of the house in which the operator lived. In 1937, 49 per cent of the average farm inventory consisted of land; 20 per cent of permanent improvements; 5 per cent of feeds and supplies; 10 per cent of machinery and equipment; and 16 per cent of livestock, of which about one-third or an average of \$711 was the average inventory value of milk cows.

### Returns to Operators for Their Labor and Management (See page 8)

The average cash receipts per farm were \$3,627. In addition, farm produce to the value of \$317 was consumed by the farm family and there was an average inventory increase of \$66 per farm. The total average receipts per farm were the sum of these three items, \$4,010. The average total expense per farm, \$2,175, includes \$2,080 cash expense and an estimated allowance of \$95 for board of hired labor. The difference between the total income and total expense figure is \$1,835. This is the return which the farmer received for his own labor and management, the services of members of his family and the use of his capital. After deducting a charge of 5 per cent on the average inventory valuation, \$752, for the services of capital, there remains \$1,083 for the services of the farmer and his family. The average value of family labor used, if computed at hired man's wages, was \$247. The average operator's labor earnings are the family earnings less their allowance of \$247, or \$836. This is the return to the farmer for his labor and management over and above a 5 per cent return for his capital and going wages for other members of the family.

The average total value of farm produce used in the house, \$317, represents an important item in the farmer's income. This produce is figured at farm prices; if it was purchased at retail price, the total value would be approximately double this figure. On many farms a saving could be made if more produce were raised on the farm rather than purchased. The table on page 21 shows the average amounts and values for each item included in the total of farm produce used in the house.

### Household and Personal Expenses

In the case of a farm with no debt, the family has, besides the operator's labor earnings, two other sources of income to expend for living and personal expense. One is the amount charged as interest on investment, and the other is the amount allowed for family labor. On the other hand, a farm with a heavy debt must pay interest and in most cases at a higher rate than the 5 per cent charged. In these cases, the Operator's Labor Earnings and the allowance for family labor constitute practically the only sources of funds for family living; and if in these cases the farm shows a minus Operator's Labor Earnings more than enough to offset the allowance for family labor, it means that there is no income for family living expenses outside of the farm produce furnished by the farm for the household. These farmers and others, whose family incomes are not sufficient to cover household and personal cash expenses, must go deeper and deeper in debt, in order to meet these expenses.

It is important to know the family income and the reasons why it is not higher. It is also worth-while to know the household and personal expenses and whether they are within the family income. Forty farmers included in this report kept a detailed record of personal and household expenses. The distribution of these expenses is shown on page 21, with averages for the 40 farms, and for the 8 most profitable and 8 least profitable in this group.

Taking into consideration the number of members (adult equivalents)\* in his family and the number in the average family, each farmer can compare his item of expense with those of the average.

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\*All members of the family including women and children are reduced to a full man equivalent on the basis of relative food consumption; the "other" adult equivalents as shown in table on page 21, are the hired help boarded. They must be added to the adult equivalents as shown for the family in studying the food expense per adult persons.

Summary of Farm Inventories

Items	Your farm	Average of 57 farms	12 most profitable farms	12 least profitable farms
Size of farm (acres)	_____	204	226	250
Size of business (days of prod.work) (1)	_____	597	807	610
Average farm inventory (without house)	_____	\$15,042	\$18,242	\$17,708
Land	_____	7,374	8,570	9,121
Farm improvements	_____	3,096	3,453	3,647
Machinery and equipment (total)	_____	1,465	1,875	1,587
General machinery and equipment	_____	947	1,195	950
Tractor	_____	242	302	307
Truck and trailer	_____	74	120	85
Auto (farm share)	_____	160	205	202
Gas engine (farm share)	_____	14	19	13
Electrical equipment (farm share)	_____	28	34	30
Miscellaneous supplies	_____	39	20	99
Feeds and seeds	_____	689	1,010	737
Horses (total)	_____	479	549	475
Horses	_____	420	480	419
Colts	_____	59	69	56
Productive livestock (total)	_____	1,900	2,765	2,042
Cows	_____	711	927	562
Other cattle	_____	549	815	748
Hogs	_____	321	652	266
Sheep	_____	238	287	376
Poultry	_____	81	84	90

(1) Explanation of term: "Days of Productive Work".

The total "Days of Productive Work" for any one farm are a measure of size of that farm business. The average number of "ten-hour days" of man labor required per head of productive livestock and per acre of crops is used in combining the crops and the livestock in one single measure of size of business.

The number of days of productive work for each animal and each acre of crops, computed from data presented in Minnesota Technical Bulletin 44, "A Study of Dairy Farm Organization in Southeastern Minnesota", are listed as follows:

Item	Per	No. of days : of prod.work:	Item	Per	No. of days of prod.work
Cows	Cow	15.6	:Corn for grain	Acre	2.1
Other cattle	Animal unit*	7.6	: (husked)		
Sheep	Animal unit*	2.7	:Corn for grain	Acre	2.8
Poultry	100 hens	20.1	: (husk.& shred.)		
Hogs	100 lbs. hogs produced	.55	:Corn for silage	Acre	2.6
Alfalfa	Acre	1.5	:Corn hogged	Acre	1.25
Tame & wild hay	Acre	.6	:Corn for fodder	Acre	1.8
Small grain & flax	Acre	1.0	:Sweet corn	Acre	3.0
Small grain hogged	Acre	.4	:Potatoes	Acre	6.4
Canning peas	Acre	2.5	:Sugar beets	Acre	4.0
			:		

\*Animal Unit represents one cow, one bull, two head of young cattle, seven head of sheep, fourteen lambs, five hogs, ten pigs, 100 hens, or 1400 pounds of turkeys.



## Summary of Farm Earnings

Items	Your farm	Average of 57 farms	12 most profitable farms	12 least profitable farms
<b>CASH EXPENSES</b>				
Tractor (new & exp.)	\$ _____	\$166	\$163	\$302
Truck (new & exp.)	_____	76	146	98
Auto (new & exp.) (farm share)	_____	147	127	195
Gas engine (new & exp.) (farm share)	_____	12	17	14
Electricity (new & exp.) (farm share)	_____	9	13	14
Machinery and equipment (new)	_____	180	351	240
Machinery and equipment (exp.)	_____	41	58	45
Buildings, fences, tiling (new)	_____	128	108	375
Buildings, fences, tiling (exp.)	_____	37	37	74
Hired labor	_____	217	267	323
Feed for livestock	_____	369	636	364
Other expense for livestock	_____	55	69	61
Horses bought	_____	33	7	50
Cows bought	_____	37	143	8
Other cattle bought	_____	115	73	271
Hogs bought	_____	42	111	16
Sheep bought	_____	16	39	4
Poultry bought	_____	19	13	26
Crop (seed, twine, spray)	_____	141	188	157
Taxes and insurance	_____	226	253	278
General farm	_____	14	13	18
(1) Total cash expense	_____	2,080	2,832	2,933
(2) Decrease in farm inventory	_____	-	11	-
(3) Board for hired labor	_____	95	133	173
(4) Total expense (sum of (1),(2)&(3))	_____	2,175	2,976	3,106
<b>CASH RECEIPTS</b>				
Horses	_____	39	31	28
Cows	_____	152	277	128
Dairy products	_____	919	1,374	630
Other cattle	_____	504	646	962
Hogs	_____	920	1,909	825
Sheep	_____	161	217	255
Poultry	_____	122	103	84
Eggs	_____	135	140	147
Small grain	_____	113	258	95
Corn	_____	20	57	2
Hay	_____	20	39	17
Root crops	_____	16	14	33
Other crops	_____	31	47	20
Miscellaneous	_____	189	272	207
Income from work off the farm	_____	137	260	63
Agricultural Conservation payments	_____	149	199	174
(5) Total cash receipts	_____	3,627	5,843	3,670
(6) Increase in farm inventory	_____	66	-	125
(7) Farm produce used in house	_____	317	379	330
(8) Total receipts (sum of (5) & (6))	_____	4,010	6,222	4,125
Total expenses (4)	_____	2,175	2,976	3,106
(9) Ret. to cap. & fam. labor (8) - (4)	_____	1,835	3,246	1,019
(10) Interest on farm inventory	_____	752	912	885
(11) Family labor earnings (9) - (10)	_____	1,083	2,334	134
(12) Unpaid family labor	_____	247	270	441
(13) Oper. labor earnings (11) - (12)	_____	836	2,064	-307

Summary of Farm Earnings (A)

Items	Your farm	Average of 57 farms	12 most profitable farms	12 least profitable farms
<b>EXPENSES AND NET DECREASES</b>				
Total power	\$ _____	\$415	\$532	\$541
Hired	_____	67	99	61
Tractor	_____	65	72	100
Truck	_____	23	33	38
Auto (farm share)	_____	78	96	115
Gas engine (farm share)	_____	10	11	13
Elec. plant or current (farm share)	_____	8	13	10
Horses	_____	164	208	204
General machinery and equipment	_____	114	137	135
Buildings, fencing, tiling	_____	116	126	144
Productive livestock misc. expense	_____	27	37	26
Crop	_____	98	124	125
Real estate taxes	_____	175	199	220
Personal property tax	_____	22	27	32
Insurance	_____	29	27	26
General farm	_____	14	13	18
Hired labor & board, & unpaid family labor	_____	559	670	937
Interest on farm inventory	_____	752	912	885
(1) Total	_____	2,321	2,804	3,089
<b>RETURNS AND NET INCREASES</b>				
All productive livestock	_____	2,933	4,567	2,637
Cows	_____	1,187	1,734	849
Other cattle	_____	468	719	520
Hogs	_____	856	1,659	792
Sheep	_____	132	182	205
Poultry	_____	290	273	271
Crops, feed, vegetables and fuel	_____	-71	-169	-101
Agricultural Conservation payments	_____	149	199	174
Miscellaneous	_____	9	11	9
Income from work off the farm	_____	137	260	63
(2) Total	_____	3,157	4,868	2,782
Total expenses (1)	_____	2,321	2,804	3,089
(3) Oper. labor earnings (2) minus (1)	_____	836	2,064	-307

(A) 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 8.

Analysis of the Reasons for Differences in Operator's Earnings

The financial statement on the preceding pages shows that there is a wide range in earnings. The average operator's labor earnings for the twelve most profitable farms was \$2,064, and for the twelve least profitable farms -\$307. The difference between the averages for these two groups was \$2,371. Some of the causes for these differences in earnings may be beyond the control of the farmer. It is significant, however, that the data secured from the records on these 57 farms indicate that there are several very definite factors that enable some farmers to make substantial earnings on these farms that are subject to rather serious erosion, while others fail to meet expenses. These factors and their relationship with earnings are the following:

Table 1. Relation of Dairy Production to Farm Earnings.

Group	Lbs. butterfat per cow Average	No. of Farms	Average Earnings
Below 175	145	19	\$519
175 - 224	197	24	778
225 and above	246	14	1,366

High production per cow tends to lower the cost of producing a pound of butterfat. This is very important on those farms on which butterfat sales are the major source of income.

Table 2. Relation of Returns Above Feed for Other Productive Livestock to Farm Earnings.

Group	Returns above feed per animal unit of prod. livestock other than cows Average	No. of Farms	Average Earnings
Below \$15	\$3	14	\$293
\$15 - 34	24	28	868
35 and above	48	15	1,284

These farms have, in addition to the dairy herd, quite an investment in other classes of productive livestock, as young cattle, hogs, sheep, or poultry. Most or all of the feed raised is fed, and considerable additional feed is purchased. Feed is the major item of cost in livestock production. High returns from livestock above the value of feed usually accompany greater profits from the livestock. This means another addition to the farm earnings.

Table 3. Relation of Amount of Productive Livestock to Farm Earnings.

Group	Productive livestock units per 100 A. Average	No. of Farms	Average Earnings
Below 12.0	10.2	7	\$445
12.0 to 19.9	15.4	30	797
20.0 and above	24.5	20	1,032

On some farms the returns from livestock are so low that they do not cover feed and other costs. Such livestock is unprofitable, especially if there is more than enough to utilize what would otherwise be waste feed. This was especially true during the spring of 1937, when feed prices were very high.

If the livestock is yielding a net return, an increased amount of livestock adds to size of business and the opportunity to increase the farm earnings. Livestock produces manure and aids in keeping up the fertility of the land, and utilizes waste products on the farm. Livestock also helps to provide productive employment throughout the year. Any method that aids in utilizing the available resources to full and efficient capacity should add to the farm income.

Table 4. Relation of Crop Yields to Farm Earnings.

Per cent crop yields were of the average for all the 57 farms		No. of Farms	Average Earnings
Group	Average		
Below 85	74	12	\$629
85 - 114	101	34	702
115 and above	125	11	1,476

High production per acre, up to certain limits, tends to lower the cost per bushel of grain or per ton of hay. Any possible method of management that will increase crop yields and therefore lower cost of production more than the extra expense incurred in securing the higher yields should be given consideration. As a rule, plowing under legumes and manure and control of erosion tend to increase crop yields on these farms.

Table 5. Relation of Choice of Crops to Farm Earnings.

Per cent of tillable land in high return crops*	Deer-Bear Creek			Beaver Creek			Gilmore Creek		
	Area			Area			Area		
Group	Aver. per cent	No. of Farms	Aver. Earn.	Aver. per cent	No. of Farms	Aver. Earn.	Aver. per cent	No. of Farms	Aver. Earn.
Below area average	33	15	\$908	34	11	\$804	42	4	\$298
Above area average	47	14	1,083	52	8	909	54	5	314

\*Crops are marked on page 15 as (A), (B), (C), (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.

As a rule, on these farms, such crops as alfalfa, sweet clover, red clover, corn, barley, winter wheat, and flax bring a higher net return per acre than other crops usually grown. Additions can be made to earnings by putting a greater percentage of the tillable land into these higher return crops.

Soil erosion and fertility maintenance are vital problems on the farms included in this study. Biennial and perennial legumes, especially alfalfa and sweet clover, form a sod that helps to check erosion, conserve humus and soil fertility. If properly inoculated they tend to increase the nitrogen content of the soil. Legume hays and pastures are also valuable for feed, for they lessen the necessity to purchase high-priced protein feeds. Alfalfa is undoubtedly the most profitable crop available for these farms.

Table 6. Relation of Size of Business (days of prod. work) to Farm Earnings.

Days of productive work	Average	No. of Farms	Average Earnings
Below 500	364	21	\$566
500 to 799	620	25	812
800 and above	990	11	1,406

Average farm earnings tend to increase with an increase in size of business where size of business is measured by days of productive work. However, for those farmers who are operating their farms at a loss, the larger the volume of business the larger will be the loss. On the other hand, a farmer who is making a profit, could make a larger profit if he increased his size of business, providing that in so doing he does not lower materially the efficiency in some one or more important branches of his business. Those farmers who have large businesses usually have more flexibility of their organization than does the man with a small business, and can utilize more efficiently and to better advantage available labor, power, machinery, and buildings.

Table 7. Relation of Amount of Work Accomplished per Worker to Farm Earnings.

Days of productive work per worker		No. of	Average
Group	Average	Farms	Earnings
Below 250	191	14	\$291
250 - 399	318	32	830
400 and above	458	11	1,549

More days of productive work accomplished per worker reduce the labor charge per unit of business. Higher labor accomplishment can be secured in several ways. In the first place the business must be large enough so that there will be at least sufficient work available for the family labor. The farm should be so organized that the labor requirements are well distributed throughout the year. Handling pastures in an efficient manner, in such a way that as large a proportion as possible of the year's feed for livestock may be obtained from them, helps to reduce labor requirements. Proper planning of the farm work, economical use of labor saving machinery, etc., help to increase the work accomplished per worker.

Table 8. Relation of Power, Machinery and Building Expense to Farm Earnings.\*

Expense per day of productive work		No. of	Average
Group	Average	Farms	Earnings
\$1.30 and above	\$1.50	17	\$420
.90 to 1.29	1.09	22	852
Below .90	.74	18	1,210

\*Includes building, fencing, and all machinery expense, horse feed, and miscellaneous horse expense.

The expense factor shows a higher relation with earnings when prices are very low than when they are high. Some farms are under-equipped. On a few farms, excessive expenses constitute the main factor causing earnings to be very low. Some of the cash expenses can be kept down by careful management. Oftentimes necessary repairs and improvements can be made by using the available farm labor rather than by hiring extra help. Repairs and overhauling should be done before spring work begins insofar as possible; or on rainy days or in other spare time during the summer. Reducing the number of horses to the minimum required for efficient operation of the farm, helps reduce the power expense. In some cases farmers can offset some or all of the power and machinery expense by using their equipment for outside work.

#### Effect of Well-Balanced Efficiency on Farm Profits

It is quite evident from this report that few farmers have a monopoly on efficiency. Quite often farm operators show efficient management in one part of the farm business, which is offset by poor results in other phases. These farmers get medium returns while those who fall down all along the line get the lowest returns, and on the other hand those few who can manage to attain high efficiency in all parts of their organization receive returns well above the average. This is well illustrated in Table 9.

Table 9. Relation of Operator's Labor Earnings to the Number of Factors in Which the Farmer Is Above the Average

No. of factors in which farm excels	No. of Farms	Your Farm	The length of the shaded lines are in proportion to the average operator's labor earnings	Average Operator's Earnings
Seven or eight	3	_____	xx	\$2,500
Five or six	17	_____	xxxxxxxxxxxxxxxxxxxx	1,178
Three or four	22	_____	xxxxxxxxxxx	755
One or two	15	_____	xxx	236

The array in Table 9 indicates that it will be worth-while for each cooperator to study carefully his ranking on pages 13 and 14, and learn his standing in respect to each of the above factors and the elements of strength and weakness in his farm business.

Measures of Farm Organization and Management Efficiency

Measures used in chart on page 14.	Your Farm	Average of 57 farms	12 most profitable farms	12 least profitable farms
Operator's Labor Earnings	\$ _____	\$836	\$2,064	-\$307
(1) Pounds of butterfat per cow	_____	192	206	173
(2) Return over feed(pr.lvst.other than cows)*	\$ _____	\$25	\$39	\$16
(3) Productive livestock units per 100 acres	_____	17.9	22.8	18.0
(4) Crop yields**	_____	100	113	93
(5) % of tillable land in high return crops***	_____	41.7	39.2	40.2
(6) Size of business--days of productive work	_____	597	807	610
(7) Days of productive work per worker	_____	314	385	236
(8) Power and eq. exp. per day of prod. work	\$ _____	\$1.10	\$1.02	\$1.36

Measures and items related to some of the above measures:

(2) Return over feed per head other cattle	\$ _____	\$2.10	\$4.96	\$ .60
Return over feed per 100 lbs.hogs prod.	_____	2.21	3.70	2.43
Return over feed per hen	_____	1.14	1.72	.98
Return over feed per head sheep	_____	1.98	1.54	1.49
(6) Days of productive work on crops	_____	154	186	172
Days of productive work on prod.livestock	_____	398	534	417
Days of other productive work	_____	45	87	21
(7) Total number of workers	_____	2.0	2.2	2.6
Number of family workers	_____	1.5	1.5	1.8
Number of hired workers	_____	.5	.7	.8
(8) Power expense per day of productive work	\$ _____	\$ .70	\$ .68	\$ .90
Mach. & equip. exp. per day of prod. work	_____	.19	.18	.21
Bldg. & fencing exp. per day of prod. work	_____	.21	.16	.25

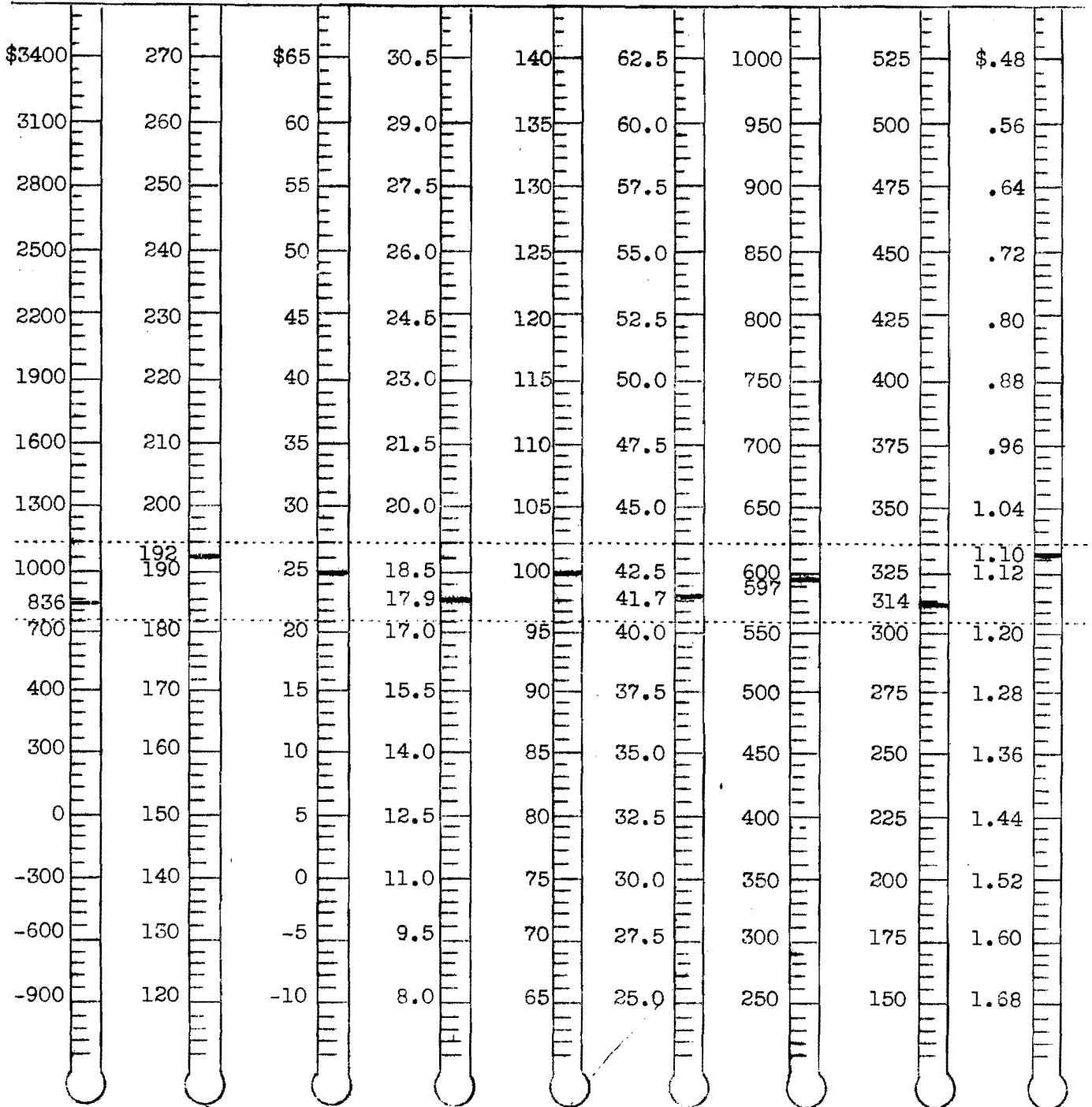
\*Given as returns over feed cost per animal unit of productive livestock other than cows.

\*\*Given as a percentage of the average.

\*\*\*Crops are marked on page 15 as (A), (B), (C), (D). All of the 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.

Using your figures from page 13, locate your standing with respect to the various measures of farm organization and management efficiency. The averages for 57 farms included in this summary are located between the two dotted lines across the center of this page.

Oper. labor earnings	Lbs. b.f. per cow	Returns over feed per u.prod. lvs.k.other than cows	Pr.l.s. units per 100 A.	Crop yields	% of tillable land in high re- turn crops	Days of prod. work	Days pr.work per worker	Power & eq. exp. per day pr. work
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Distribution of Acres in Farm

Crop (A) (B) (C) (D) refer to ranking used in calculating % of tillable land in High Return Crops (see page 11).	No. of farms growing this crop	Your Farm	Aver. of 57 farms	12 most profit- able farms	12 least profit- able farms
Winter wheat	(B) 23	_____	4.2	6.8	4.4
Spring wheat	(C) 11	_____	1.1	.5	2.6
Oats	(D) 36	_____	13.6	21.2	8.7
Barley	(B) 36	_____	10.2	18.5	8.0
Rye	(D) 6	_____	.7	.0	2.4
Flax	(B) 5	_____	.8	.6	1.2
Wheat and oats	(C) 3	_____	1.0	.7	.0
Oats and barley	(C) 18	_____	7.4	2.3	19.1
Miscellaneous	(C) 14	_____	4.3	4.5	5.8
<b>Total grain</b>		_____	<b>43.3</b>	<b>55.1</b>	<b>52.2</b>
Corn, grain	(B) 50	_____	14.4	20.7	13.9
Corn, silage	(C) 50	_____	11.5	13.7	11.7
Corn, fodder	(D) 15	_____	2.8	2.7	5.7
Potatoes	(A) 15	_____	.5	.3	1.1
Truck crops	(A) 9	_____	.3	.2	.1
<b>Total cultivated crops</b>		_____	<b>29.5</b>	<b>37.6</b>	<b>32.5</b>
Alfalfa	(A) 54	_____	21.4	23.6	17.7
Red clover	(B) 8	_____	1.3	.2	4.4
Other legumes & mixtures	(C) 37	_____	8.0	7.4	12.9
Timothy	(D) 18	_____	3.1	5.0	7.0
Annual hay (millet, Sudan grass, sm. grain, etc.)	(D) 1	_____	.5	.0	2.2
Miscellaneous hays and seed crops	(C) 10	_____	1.5	1.6	3.4
Wild hay (non-tillable land)		_____	.1	.0	.0
<b>Total hay</b>		_____	<b>35.9</b>	<b>37.8</b>	<b>47.6</b>
<b>Total crop acreage</b>		_____	<b>108.7</b>	<b>130.5</b>	<b>132.3</b>
Sweet clover pasture	(B)	_____	2.5	.0	4.8
Alfalfa pasture	(A)	_____	.4	.0	.5
Red clover or rape pasture (hogs)	(B)	_____	.0	.0	.1
Miscellaneous legume pasture	(C)	_____	9.6	11.9	6.9
Other tillable pasture	(D)	_____	6.3	4.6	8.0
Non-tillable pasture		_____	42.1	48.7	64.3
<b>Total pasture</b>		_____	<b>60.9</b>	<b>65.2</b>	<b>84.6</b>
Tillable land not cropped		_____	3.8	5.5	5.9
Timber (not pastured)		_____	21.0	15.6	16.3
Roads and waste		_____	4.3	4.0	5.7
Farmstead		_____	5.0	5.6	5.2
<b>Total acres in farm</b>		_____	<b>203.7</b>	<b>226.4</b>	<b>250.0</b>
<b>% of land tillable</b>		_____	<b>65.1</b>	<b>69.0</b>	<b>62.4</b>
<b>% of tillable land in high return crops</b>		_____	<b>41.7</b>	<b>39.2</b>	<b>40.2</b>



Yield of Crops per Acre

Crop	Your farm	Average 57 farms	12 most profitable farms	12 least profitable farms
Winter wheat, bu.	_____	15.7	15.5	15.2
Spring wheat, bu.	_____	16.6	19.3	14.9
Oats, bu.	_____	37.0	41.6	36.8
Barley, bu.	_____	23.9	25.0	23.4
Rye, bu.	_____	12.9	-	12.8
Flax, bu.	_____	6.5	3.1	4.5
Wheat and oats, bu.	_____	33.7	37.5	-
Oats and barley, bu.	_____	37.5	39.3	36.5
Oats, wheat and barley, bu.	_____	35.0	46.3	27.3
Corn, grain, bu.	_____	34.8	37.4	25.8
Corn, silage, tons	_____	6.5	7.4	5.8
Corn, fodder, tons	_____	2.2	3.0	2.1
Potatoes, bu.	_____	73.2	27.2	65.4
Soybean hay, tons	_____	1.1	-	.7
Sweet clover, tons	_____	1.4	.6	1.5
Alfalfa, tons	_____	2.0	2.2	1.9
Red clover, tons	_____	1.7	1.5	2.1
Clover and timothy, tons	_____	1.6	1.9	1.7
Timothy hay, tons	_____	1.5	1.4	1.5

Summary of Amount of Livestock

Items	Your farm	Average 57 farms	12 most profitable farms	12 least profitable farms
No. of horses	_____	4.3	5.1	5.0
No. of colts	_____	.8	.6	.9
No. of cows	_____	13.7	17.4	12.2
No. of cows per worker	_____	7.4	8.3	5.1
Head of other cattle	_____	21.2	28.3	31.1
Litters of pigs raised	_____	6.8	11.9	6.7
Pounds of hogs produced	_____	9950	18259	9388
Head of sheep (2 lambs equal 1 head)	_____	30.9	40.4	50.5
No. of hens	_____	93.4	91.3	104.6
Total no. of prod. livestock animal units	_____	34.5	46.2	40.9
% of tot. prod. lvst. units that are cows	_____	44.7	42.5	38.9
% of tot. prod. lvst. units that are o. cattle	_____	30.7	31.4	35.6
% of tot. prod. lvst. units that are hogs	_____	12.0	15.7	10.9
% of tot. prod. lvst. units that are sheep	_____	9.1	8.1	11.5
% of tot. prod. lvst. units that are poultry	_____	3.5	2.3	3.1
Number of farms with tractors	_____	37	8	7

Factors of Cost and Return in Dairy Production

Items	Your Farm	Average 57 farms	13 farms highest in B.F. per cow	12 farms lowest in B.F. per cow
<u>COWS</u>				
Pounds of butterfat per cow		192	249	132
Feeds per cow, lbs.:				
Corn		122	113	88
Small grain		598	768	504
Com. feeds - under 25% protein		58	81	69
Com. feeds - over 25% protein		49	62	9
Tame hay		1126	384	1561
Alfalfa		2763	3283	1841
Wild hay		22	37	0
Corn fodder		200	439	59
Silage		6389	9223	3373
Total concentrates		827	1024	670
Total dry roughage		4111	4143	3461
Total digestible nutrients		3775	4409	2802
Total digest. nutrients per lb. B.F.*		20.1	17.7	22.4
% protein in ration		14.1	14.0	14.3
% cows fresh-Sep. to Dec., incl.		43.5	49.0	32.9
Feed cost per cow:				
Concentrates	\$	\$9.82	\$12.17	\$7.49
Roughages		27.20	31.77	19.49
Pasture		5.49	5.23	6.10
TOTAL FEED COSTS	\$	\$42.51	\$49.17	\$33.08
Value of produce per cow:				
Butterfat sales	\$	\$63.24	\$92.85	\$37.64
Dairy produce used in the house		6.44	5.60	5.94
Milk to other livestock		12.11	14.01	10.40
Appreciation or depreciation		2.05	1.16	1.89
TOTAL VALUE OF PRODUCT	\$	\$83.84	\$113.62	\$55.87
RETURNS ABOVE FEED COST PER COW	\$	\$41.33	\$64.45	\$22.79
Price received per lb. B.F. sold:				
As manufacturing cream	\$	\$.37	\$.37	\$.37
As market milk & cream & cheese milk		.49	.58	.36
Feed cost per lb. B.F.		.23	.20	.26
Number of cows**		13.7	13.4	11.4

\*Not including nutrients secured from pasture.

\*\*All 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 the farms.

Feed Costs and Returns for Other Cattle and Sheep

Items	Your Farm	Average of all farms	Farms highest in returns above feed per head	Farms lowest in returns above feed per head
Other cattle: number of farms		57	12	12
Feeds used per head, lbs.:				
Concentrates	_____	224	286	498
Hay and fodder	_____	1471	1358	2264
Silage	_____	1774	1352	1498
Whole milk	_____	460	289	852
Skimmilk	_____	1076	611	1327
Feed cost per head:				
Concentrates	\$ _____	\$2.77	\$3.62	\$6.10
Roughages	_____	8.51	7.40	10.86
Milk	_____	8.87	5.43	15.78
Pasture	_____	1.98	2.12	2.07
TOTAL	\$ _____	\$22.13	\$18.57	\$34.81
RETURNS PER HEAD	\$ _____	\$24.23	\$34.24	\$23.45
RETURNS ABOVE FEED COST PER HEAD	\$ _____	\$2.10	\$15.67	-\$11.36
% death loss	_____	6	4	5
Lbs. of butterfat per cow	_____	192	176	203
Number of head of young cattle	_____	21.2	21.9	30.3
Sheep: number of farms		24	8	8
Feeds used per head,* lbs.:				
Concentrates	_____	31	6	63
Tame hay	_____	58	12	78
Alfalfa	_____	139	158	106
Corn fodder and wild hay	_____	73	68	65
Silage	_____	73	37	119
Feed cost per head:				
Concentrates	\$ _____	\$ .39	\$ .08	\$ .78
Roughages	_____	1.12	.99	1.09
Pasture	_____	.90	.90	.91
TOTAL	\$ _____	\$2.41	\$1.97	\$2.78
Value of production per head:				
Wool	\$ _____	\$1.93	\$2.07	\$1.86
Mutton	_____	2.46	4.09	.82
TOTAL	\$ _____	\$4.39	\$6.16	\$2.68
RETURNS ABOVE FEED COST PER HEAD	\$ _____	\$1.98	\$4.19	-.10
Price per lb. wool sold	\$ _____	\$ .33	\$ .34	\$ .36
Value per lamb sold	_____	6.31	6.77	5.37
% lamb crop	_____	98	109	79
% death loss	_____	17	17	19
No. of head of sheep	_____	73.4	49.5	125.2

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

Feed Costs and Returns for Hogs and Poultry

Items	Your Farm	Average of all farms	Farms highest in returns above feed	Farms lowest in returns above feed
<hr/>				
Hogs: number of farms		55	11	11
<hr/>				
Lbs. of feed per 100 lbs. hogs produced:				
Corn	_____	228	136	304
Small grain	_____	212	168	315
Commercial grain feeds	_____	12	20	2
Total grain and commercial feeds	_____	452	324	621
Tankage	_____	1	2	1
Skimmilk	_____	422	302	555
<hr/>				
Cost of feed per 100 lbs. hogs produced:				
Grain and commercial feeds	\$ _____	\$5.45	\$3.99	\$7.39
Tankage and skimmilk	_____	.67	.50	.86
Pasture	_____	.18	.20	.16
Total Feed Cost per 100 lbs. Hogs Prod.	\$ _____	\$6.30	\$4.69	\$8.41
RETURNS PER 100 LBS. HOGS PRODUCED	\$ _____	\$8.51	\$9.79	\$7.83
RET. ABOVE FEED COST PER 100# HOGS PROD.	\$ _____	\$2.21	\$5.10	-\$ .58
Price received per 100# hogs sold	\$ _____	\$9.01	\$9.67	\$8.58
Total no. of litters	_____	7.9	8.0	5.6
Total no. of pigs weaned per litter	_____	6.8	6.6	6.9
% of two-litter system	_____	28.2	14.9	11.2
% of first-litter cows	_____	54.3	50.1	55.9
Pounds of hogs produced	_____	10312	9810	5390
<hr/>				
<hr/>				
Poultry: number of farms		54	11	11
<hr/>				
Lbs. of feed per hen:				
Concentrates	_____	90	88	98
Skimmilk	_____	57	46	53
Cost of feed per hen:				
Concentrates	\$ _____	\$1.35	\$1.29	\$1.63
Skimmilk	_____	.08	.07	.08
TOTAL	\$ _____	\$1.43	\$1.36	\$1.71
Value of product per hen:				
Eggs sold and used in house	\$ _____	\$1.71	\$1.96	\$1.60
Poultry sold and used in house plus appreciation or less depreciation	_____	.86	2.10	.05
TOTAL	\$ _____	\$2.57	\$4.06	\$1.65
RETURNS ABOVE FEED COST PER HEN	\$ _____	\$1.14	\$2.70	-\$ .06
Price received per dozen eggs sold (cts.)	_____	18.2	18.6	18.0
Eggs laid per hen	_____	114	135	108
No. of hens	_____	98	86	94
% of hens that are pullets (at end of yr.)	_____	71	86	58
% death loss of hens	_____	15	15	24

Feed Costs per Horse and Other Power Expense Items

	Your farm	Average* of 57 farms	12 most profitable farms	12 least profitable farms
Feed per horse,** lbs.:				
Grain	_____	1407	1867	1091
Tame hay and alfalfa	_____	3532	3623	3261
Wild hay and fodder	_____	252	124	541
Feed costs per horse:				
Grain	\$ _____	\$15.61	\$20.49	\$11.72
Roughage	_____	15.24	15.19	14.22
Pasture	_____	2.79	2.68	2.71
TOTAL	\$ _____	\$33.64	\$38.36	\$28.65
Number of work horses	_____	4.3	5.1	5.0
Number of colts	_____	.8	.6	.9
Total acres in farm	_____	204	226	250
Crop acres per horse	_____	26	26	30
Tractor and horse exp. per crop acre	\$ _____	\$2.20	\$2.55	\$2.53
Farm power exp. per day prod. work	_____	.70	.68	.90

\*One farm had no horses,

\*\*Two colts equal one horse.

Distribution of Farm Produce Used in House

	Quantities				Value			
	Your farm	Average 57 farms	12 most profitable	12 least profitable	Your farm	Aver. 57 farms	12 most profitable	12 least profitable
Whole milk	_____	956 qts.	885	750	\$_____	\$31.48	\$28.23	\$25.23
Skimmilk	_____	131 qts.	317	243	_____	.35	.70	.79
Cream	_____	397 pts.	520	416	_____	42.25	49.57	46.62
Farm-made butter	_____	16 lbs.	43	19	_____	5.98	16.21	6.84
Eggs	_____	177 doz.	182	205	_____	31.18	32.47	36.45
Poultry	_____	28 head	30	24	_____	14.97	18.86	11.61
Cattle	_____	296 lbs.	379	404	_____	16.91	24.83	23.38
Hogs	_____	465 lbs.	530	468	_____	37.23	43.06	36.49
Sheep	_____	12 lbs.	6	0	_____	.77	.58	.00
Potatoes	_____	26 bu.	31	26	_____	16.75	20.17	16.91
Vegetables & fruit	_____	-	-	-	_____	64.72	96.83	57.16
Farm fuel	_____	18 cds.	18	26	_____	54.71	47.84	68.32
Total					\$_____	\$317.30	\$379.35	\$329.80
Average value of farm dwelling					\$_____	\$1835	\$2044	\$2176
Interest and depreciation on farm dwelling					_____	130	140	145

Distribution of Household and Personal Expenses for Those Farms which Kept Complete Accounts of These Expenses

	Your farm	Average 40 farms	8 most profitable	8 least profitable
Number of persons, ) Family	_____	3.6	3.7	3.3
adult equivalent ) Other*	_____	.5	.5	.8
Food	\$_____	\$225.75	\$199.35	\$248.26
Operating and supplies	_____	51.10	68.68	66.35
Furnishing and equipment	_____	48.79	52.03	64.81
Clothing and materials	_____	92.24	129.43	67.51
Health	_____	41.49	59.96	54.01
Development and recreation	_____	76.99	48.81	69.12
Personal	_____	32.77	34.45	27.50
Life insurance and savings	_____	49.64	53.23	61.71
Personal share of auto expense	_____	52.30	51.32	63.99
Housing	_____	8.38	3.11	2.42
Total Household & Personal Cash Exp.	\$_____	\$679.45	\$700.37	\$725.68
Food furnished by the farm	\$_____	\$268.53	\$318.36	\$246.55
Fuel furnished by the farm	_____	59.01	69.75	59.38
Interest and deprec. on farm dwelling	_____	127.70	123.21	145.78
Interest and deprec. on misc.items**	_____	43.15	41.33	47.35
Total Household & Personal Expenses	\$_____	\$1,177.84	\$1,253.02	\$1,224.74

\*Hired help or others boarded.

\*\*Personal share of auto, gas engine, electric plant, and household goods.

## Summary of Farm Earnings

Items	Deer-Bear Creek	Beaver Creek	Gilmore Creek
	Area	Area	Area
Number of farms	29	19	9
<u>CASH EXPENSES</u>			
Tractor (new & exp.)	\$252	\$106	\$ 18
Truck (new & exp.)	54	130	30
Auto (new & exp.) (farm share)	174	84	196
Gas engine (new & exp.) (farm share)	15	11	5
Electricity (new & exp.) (farm share)	2	21	3
Machinery and equipment (new)	257	111	74
Machinery and equipment (exp.)	50	34	25
Buildings, fences, tiling (new)	164	94	84
Buildings, fences, tiling (exp.)	50	23	28
Hired labor	288	118	195
Feed for livestock	409	289	411
Other expense for livestock	75	35	32
Horses bought	61	2	9
Cows bought	41	41	14
Other cattle bought	211	15	20
Hogs bought	50	46	7
Sheep bought	30	2	0
Poultry bought	22	13	22
Crop (seed, twine, spray)	174	115	91
Taxes and insurance	254	199	194
General farm	17	8	19
(1) Total cash expense	2650	1497	1477
(2) Decrease in farm inventory	45	-	-
(3) Board for hired labor	115	77	68
(4) Total expense (sum of (1),(2),& (3))	2810	1574	1545
<u>CASH RECEIPTS</u>			
Horses	45	25	51
Cows	199	109	89
Dairy products	791	956	1254
Other cattle	746	295	162
Hogs	1178	894	147
Sheep	293	36	0
Poultry	84	80	332
Eggs	163	87	148
Small grain	206	9	33
Corn	23	24	2
Hay	25	16	13
Root crops	2	7	82
Other crops	29	23	53
Miscellaneous	271	132	45
Income from work off the farm	207	79	34
Agricultural Conservation payments	195	94	118
(5) Total cash receipts	4457	2866	2563
(6) Increase in farm inventory	-	149	244
(7) Farm produce used in house	340	314	253
(8) Total receipts (sum of (5) & (6))	4797	3329	3060
Total expenses (4)	2810	1574	1545
(9) Ret.to cap.& fam.labor (8) minus (4)	1987	1755	1515
(10) Interest on farm inventory	815	627	813
(11) Family labor earnings (9) minus (10)	1172	1128	702
(12) Unpaid family labor	179	280	395
(13) Oper.labor earnings (11) minus (12)	993	848	307

Distribution of Acres in Farm and Average Yields per Acre

	Distribution of Acres			:	Crop Yields		
	Deer-Bear Creek Area	Beaver Creek Area	Gilmore Creek Area		Deer-Bear Creek Area	Beaver Creek Area	Gilmore Creek Area
Winter wheat	7.0A.	1.0A.	2.5A	:	14.6 bu.	18.7 bu.	18.9 bu.
Spring wheat	1.4	.3	2.1	:	19.1 "	20.0 "	11.9 "
Oats	12.4	15.8	12.6	:	36.1 "	39.1 "	35.1 "
Barley	14.9	3.9	8.5	:	24.1 "	25.5 "	21.2 "
Rye	.7	.0	2.5	:	14.7 "	-	11.0 "
Flax	1.5	.0	.0	:	6.5 "	-	-
Oats and wheat	1.6	.4	.0	:	31.8 "	37.5 "	-
Oats and barley	9.6	6.1	2.8	:	36.7 "	41.5 "	27.5 "
Miscellaneous	7.6	1.0	.5	:	-	-	-
Total grain	56.7	28.5	31.5	:			
Corn, grain	17.1	15.2	4.3	:	34.0 bu.	36.3 bu.	34.4 bu.
Corn, silage	14.5	8.3	8.4	:	5.9 tons	6.8 tons	8.1 tons
Corn, fodder	5.4	.0	.2	:	2.2 "	-	2.0 "
Potatoes	.2	.0	2.4	:	58.2 bu.	42.9 bu.	88.3 bu.
Truck crops	.4	.1	.4	:	-	-	-
Total cultivated crops	37.7	23.6	15.7	:			
Alfalfa	26.2	15.0	19.4	:	1.8 tons	2.2 tons	2.0 tons
Clover	1.4	2.0	.0	:	1.8 "	1.7 "	-
Other legumes & mixtures	6.6	5.0	19.9	:	-	-	-
Timothy	5.3	1.0	.2	:	1.6 "	1.5 "	.5 "
Annual hay	.9	.0	.0	:	1.3 "	-	-
Misc. hays and seed crops	2.4	.5	.2	:	-	-	-
Wild hay (non-tillable)	.0	.2	.0	:	-	1.4 "	-
Total hay and seed	42.7	23.7	39.7	:			
Total crop acreage	137.1	75.8	86.9	:			
Sweet clover pasture	4.9	.0	.0	:			
Alfalfa pasture	.4	.3	.0	:			
Red clover or rape pasture	.1	.1	.0	:			
Misc. legume pasture	13.8	2.4	11.4	:			
Other tillable pasture	11.6	.1	2.2	:			
Non-tillable pasture	37.0	38.6	65.9	:			
Total pasture	67.8	41.5	79.5	:			
Tillable land not cropped	5.8	1.8	1.5	:			
Timber & brush (not pastured)	12.2	26.1	38.4	:			
Roads and waste	5.6	2.7	3.4	:			
Farmstead	6.3	3.6	4.0	:			
Total acres in farm	234.8	151.5	213.7	:			
Per cent of land tillable	75.8	54.9	52.3	:			



Measures of Farm Organization and Management Efficiency

	Deer-Bear Creek Area	Beaver Creek Area	Gilmore Creek Area
Operator's labor earnings	\$993	\$848	\$307
Pounds of butterfat per cow	202	185	174
Returns over feed (prod.livestock other than cows)	\$21	\$32	\$27
Productive livestock units per 100 acres	17.7	19.5	15.4
Crop yields	97	108	93
Per cent of tillable land in high return crops	39.4%	41.8%	48.5%
Size of business - days of productive work	678	515	510
Days of productive work per worker	352	280	259
Power, machinery and building expense per day of productive work	\$1.13	\$1.09	\$1.04
Returns over feed per head other cattle	\$2.02	\$1.04	\$4.58
Returns over feed per 100 lbs. hogs produced	1.81	2.93	1.93
Returns over feed per hen	.92	1.44	1.27
Returns over feed per head sheep	1.59	3.92	-

Amount of Livestock

No. of horses	4.9	3.3	4.4
No. of colts	1.1	.3	.8
No. of cows	12.3	14.2	16.9
No. of cows per worker	6.8	7.6	8.7
Head of other cattle	26.3	17.3	12.9
Litters of pigs raised	7.9	7.7	1.2
Pounds of hogs produced	12284.0	10058.0	2202.0
Head of sheep	57.6	4.9	.0
No. of hens	101.2	77.5	101.4
Total number of productive livestock animal units	40.5	28.8	26.9
% of total prod. livestock units that were cows	34.7	51.3	62.8
% of total prod. livestock units that were other cattle	32.5	29.8	26.9
% of total prod. livestock units that were hogs	13.3	13.7	4.1
% of total prod. livestock units that were sheep	16.3	2.3	.0
% of total prod. livestock units that were poultry	3.2	2.9	6.2

Soil Conservation and the Farm Organization

High crop yields generally tend to reduce the cost per unit of producing a crop. This is indicated by the data in the table below.

From these data it can be readily seen that high yields tend to give greater economy of production. The data in Table 4 on page 11 of this report show how closely crop yields are associated with farm earnings.

Relation of Crop Yields to Cost - Winona County, 1935-1937\*

	Barley						Alfalfa					
	1935		1936		1937		1935		1936		1937	
	Yield: Bu.	Cost: per Bu.	Yield: Bu.	Cost: per Bu.	Yield: Bu.	Cost: per Bu.	Yield: Ton	Cost: per Bu.	Yield: Ton	Cost: per Bu.	Yield: Ton	Cost: per Bu.
Low	11.3	.92	8.1	1.16	15.3	.76	1.2	8.68	0.8	13.18	1.2	6.88
Aver.	20.5	.57	16.8	.70	26.2	.53	3.1	3.62	1.9	6.07	2.1	5.16
High	36.0	.36	35.0	.40	44.6	.32	6.1	2.30	5.4	2.35	3.4	3.30

It has been found that there are certain factors which tend to make possible high crop yields. These factors are:

1. The use of a crop rotation which includes a legume.
2. The application of all available manure with the least possible mechanical loss.
3. The use of clean seed of high vitality and of improved varieties adapted to your farm.
4. Careful preparation of the seedbed and timely seeding of all crops.

On farms such as these where soil erosion is a definite menace, the problem of holding the soil in place is of even more importance than that of maintaining yields. If the soil itself is lost, its yielding power is gone.

Fortunately, those practices which increase crop yields are also effective in controlling erosion. The use of a good rotation including an ample acreage of deep-rooted legumes serves to add organic matter as well as to hold the soil in place. These soil-conserving legumes will provide more and better feed per acre than will the soil-depleting crops they displace.

The livestock maintained to provide a profitable market for these legumes also serve to provide manure. This, in turn, supplies both humus and plant food to the soil. Organic matter lightens heavy soils and has a binding effect on light soils. It also increases the water holding capacity of the soil.

In general, erosion control is just a part of good farm management. Many of those practices which help to control erosion in this area would be profitable practices even if no erosion problem existed. A careful study of this report will bring out the factors that contribute to increased earnings and at the same time to erosion control in the three Soil Conservation Demonstration Areas of Southeastern Minnesota.

\*Mimeographed reports Nos. 71, 81 and 95, Division of Agricultural Economics, University Farm, St. Paul.