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

-- 0 --

First Annual Report of the Farm Management Service for Farmers in Soil Erosion Control Demonstration Areas for the year 1935 (April 1935 to March 1936)

-- 0 --

Name: _____

Mimeographed Report No. 78
Division of Agricultural Economics
University Farm
St. Paul, Minnesota
June, 1936

First Annual Report of the Farm Management Service for Farmers in Soil Erosion Control Demonstration Areas

Prepared by W. P. Ranney and G. A. Pond,
Division of Agricultural Economics;
M. H. Cohee, Soil Conservation Service

INDEX

	Page
Introduction	1
Summary of Farm Inventories	5
Summary of Farm Earnings (Cash Statement)	6
Summary of Farm Earnings (Enterprise Statement)	7
Analysis of the Reasons for Differences in Operator's Earnings	8
Effect of Well Balanced Efficiency on Operator's Earnings	11
Measures of Farm Organization and Management Efficiency	12
Thermometer Chart	13
Distribution of Acres in Farm	14
Crop Yields	15
Livestock Summary	16
Distribution of Farm Produce Used in House	17
Distribution of Household and Personal Expenses	17
Summary of Farm Earnings by Areas (Cash Statement)	18
Distribution of Acres in Farm, and Crop Yields, by Areas	19
Measures of Farm Organization and Management	20
Efficiency and Livestock Summary by Areas	20
Soil Conservation and the Farm Organization	21

Introduction

For the past year the Division of Agricultural Economics of the University of Minnesota and the United States Department of Agriculture through the Soil Conservation Service, have made possible supervision, summary, and analysis of farm management records kept by farmers within soil erosion control demonstration areas of Minnesota. For the most part this farm management service has been limited to those farmers who are cooperating with the United States Department of Agriculture in executing erosion control plans for their farms, which plans are jointly made and agreed upon by the farmers and representatives of the federal government. For future record work within the four erosion control demonstration areas of Minnesota (Gilmore, Beaver, Deer-Bear, and Prairie Creek areas) it has been deemed advisable that the farm record service be entirely limited to those farmers who are cooperators in the erosion control program.

For 1935 this service was extended to farmers in two demonstration areas, Gilmore Creek area and Deer-Bear Creek area, with federal government field headquarters at Winona and Spring Valley, Minnesota, respectively. The field work is under the direction of M. H. Cohee, James C. Jensen, and Austin B. Sanford of the Farm Management section in the office of the Soil Conservation Service headquarters. The summary and analysis of the records are under the direction of W. P. Ranney and G. A. Pond. For the past year's program, record books were furnished by the Soil Conservation Service. Future records will be secured by use of books furnished by the Division of Agricultural Extension, University of Minnesota, which is cooperating in this study.

Hearty support has been given during the past year by members of the several sections of the Division of Operations, Soil Conservation Service and the Division of Agricultural Extension, University of Minnesota, as well as county agricultural agents interested in the two areas.

Records Kept

The records kept by the cooperators included inventories at the beginning and end of the year (which were taken on the farm by the farmer and S.C.S. field supervisor), cash receipts and expenses, and crop production records. Twenty-three records included detailed accounts for household statements. In addition to the call at the time of opening and closing the records, each farmer was visited three times during the year by a representative of the Farm Management staff of the Soil Conservation Service. After the closing inventory was secured, the record books were then taken to the central office of the Department of Agriculture, University Farm, where every entry was again checked and omissions were noted. Any discrepancies found were corrected by letter or call to the farmer. This double checking insured a high degree of accuracy and completeness in each individual record.

Topography, Soils, Climate

The Gilmore Creek area, in which 17 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 slopes fall in the Boone Series and soils on the valley floor are mostly included in the Genesee Series. 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 70 per cent occurs between April first and September thirtieth. 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 Deer-Bear Creek area, in which 23 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 Toma, 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 two 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 area a few farmers have both dairy cattle and beef cattle enterprises. Dairy products were sold principally as sour 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 Project

When establishing an erosion control program on a farm, considerable reorganization of past practices is usually advisable. It is highly desirable that the farm operators know the effect of these changes on the earnings of their labor and capital. A farmer will also be able to increase his efficiency of operation by making changes in his organization in accordance with discovered weaknesses pointed out by an analysis of his business and a comparison of his farm with others being operated nearby under similar conditions. It is also very important that federal and state workers have an insight into the results of plans for erosion control which they are recommending. Such public servants may better know how to serve if they can work with farmers and learn how the earnings of the farm are affected by changes in the organization of the whole or of its individual parts designed to control erosion. Much erosion control may well be accomplished by use of approved farm practices; therefore, it is doubly beneficial to both farmers and those interested in formulating erosion control plans, that farm accounts be maintained to measure results.

Analysis of the Farm Business

On pages six and seven are presented financial summaries of the year's business, showing the average results for the 40 farms on which the work was completed for the twelve months' period, April 1935 to March 1936, the average results for the highest one-fourth of the farms in respect to Operator's Labor Earnings, and the average for the lowest one-fourth. 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 8 to 20 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 both of the soil conservation areas.

Capital Investment in Farm Business

The data on page 5 shows that the average size of the farms in this report was 194 acres. The average farm inventory was $12,762. This does not include the value of the house in which the operator lived. In 1935, 55 per cent of the average farm inventory consisted of land; 19 per cent of permanent improvements; 4 per cent of feeds and supplies; 8 per cent of machinery and equipment; and 14 per cent of livestock, of which about one-third or an average of $547 was the average inventory value of milk cows.

Returns to Operators for Their Labor and Management

(See page 6)

The average cash receipts per farm were $2,737. In addition, farm produce to the value of $311 was consumed by the farm family and there was an average inventory increase of $160 per farm. The total average receipts per farm were the sum of these three items, $3,208. The average total expense per farm, $1,582, includes $1,494 cash expense and an estimated allowance of $88 for board of hired labor. The difference between the total income and total expense figure is $1,626. 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, $638, for the services of capital, there remains $988 for the services of the farmer and his family. The average value of family labor used, if computed at hired man's wages, was $156. The average operator's labor earnings are the family earnings less their allowance of $156, or $832. 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, $311, represents an important item in the farmer's income. This produce is figured at farm prices; if it was purchased at retail prices, 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 17 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. Twenty-three farmers included in this report kept a detailed record of personal and household expenses. The distribution of these expenses is shown on page 17, with averages for the 23 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.

*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 17, 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 person.

Summary of Farm Inventories

Items	Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
Size of farm (acres)	_____	194	267	185
Size of business(days of prod.work) (1)	_____	505	651	458
Average farm inventory (without house)	_____	$12762	$17220	$11913
Land	_____	6999	10535	6580
Farm improvements	_____	2394	2536	2378
Machinery & equipment (total)	_____	985	1071	895
Gen. machinery & equipment	_____	759	878	657
Tractor	_____	101	90	107
Truck	_____	29	3	14
Auto (farm share)	_____	75	88	98
Gas engine (farm share)	_____	20	11	18
Electrical equipment (farm share)	_____	1	1	1
Feeds and seed	_____	$550	$681	$570
Miscellaneous supplies	_____	9	11	4
Horses (total)	_____	456	467	458
Horses	_____	428	423	428
Colts	_____	28	44	30
Productive livestock (total)	_____	$1369	$1919	$1028
Cows	_____	547	756	520
Other cattle	_____	359	396	257
Hogs	_____	200	305	142
Sheep	_____	183	347	45
Poultry	_____	80	115	64

(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 labor data presented in Minnesota Technical Bulletin 44, "A Study of Dairy Farm Organization in Southeastern Minnesota", is listed as follows:

Item	Per	Number of days of prod. work:	Item	Per	Number of days of prod. work
Cows	Cow	16.6	Small grain and flax	Acre	1.0
Other cattle	Animal unit*	7.6	Corn (husked)	"	2.1
Sheep	Animal unit*	2.7	Corn (silage)	"	2.6
Poultry	100 hens	20.1	Corn (fodder)	"	1.8
Hogs	100 lbs. pork produced	.55	Corn (hogged)	"	1.25
			Potatoes	"	6.4
Alfalfa	Acre	1.5			
Tame and wild hay	"	.6			

*Animal unit represents one cow, one bull, two head of young cattle, seven head of sheep, fourteen lambs, 5 hogs, 10 pigs, or 100 hens.

Summary of Farm Earnings

Items	Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
Cash Expenses:				
Auto (new and exp.) (farm share)	$_____	$90	$115	$96
Tractor, truck, & gen. machinery (new)	_____	132	64	107
Tractor, truck, & gen. machinery (exp.)	_____	136	186	93
Bldgs., fences, tiling (new)	_____	152	120	30
Bldgs., fences, tiling (exp.)	_____	28	53	25
Hired labor	_____	162	202	156
Feed for livestock	_____	184	326	72
Other expenses for livestock	_____	21	16	29
Horses bought	_____	41	30	92
Cows bought	_____	38	7	43
Other cattle bought	_____	41	42	16
Hogs bought	_____	31	20	21
Sheep bought	_____	105	37	0
Poultry bought	_____	27	35	33
Crop (seed, twine, spray)	_____	99	121	110
Taxes and insurance	_____	193	259	173
General farm	_____	14	9	11
(1) Total cash expense	$_____	$1494	$1642	$1107
(2) Decrease in farm inventory	_____	-	-	69
(3) Board for hired labor	_____	88	93	128
(4) Total expense (sum of (1),(2)&(3)	_____	1582	1735	1304
Cash Receipts:				
Horses	$_____	$18	$11	$23
Cows	_____	130	169	89
Dairy products	_____	700	1073	562
Other cattle	_____	438	424	188
Hogs	_____	474	877	223
Sheep	_____	247	252	14
Poultry	_____	106	282	51
Eggs	_____	136	168	124
Small grain	_____	149	271	186
Corn	_____	4	0	7
Hay	_____	13	24	22
Root crops	_____	46	11	83
Other crops	_____	38	39	27
Miscellaneous	_____	69	79	25
Income from work off the farm	_____	101	55	48
AAA adjustment payments	_____	68	116	3
(5) Total cash receipts	$_____	$2737	$3851	$1675
(6) Increase in farm inventory	_____	160	407	-
(7) Farm produce used in house	_____	311	378	252
(8) Total receipts (sum of (5),(6)&(7)	_____	3208	4636	1927
Total expenses (4)	_____	1582	1735	1304
(9) Ret. to cap.& fam. labor(8)minus(4)	_____	1626	2901	623
(10) Interest on farm inventory	_____	638	861	596
(11) Family labor earnings(9) minus(10)	_____	988	2040	27
(12) Unpaid family labor	_____	156	140	160
(13) Operator's labor earnings (11) minus(12)	_____	832	1900	-133

Summary of Farm Earnings (A)

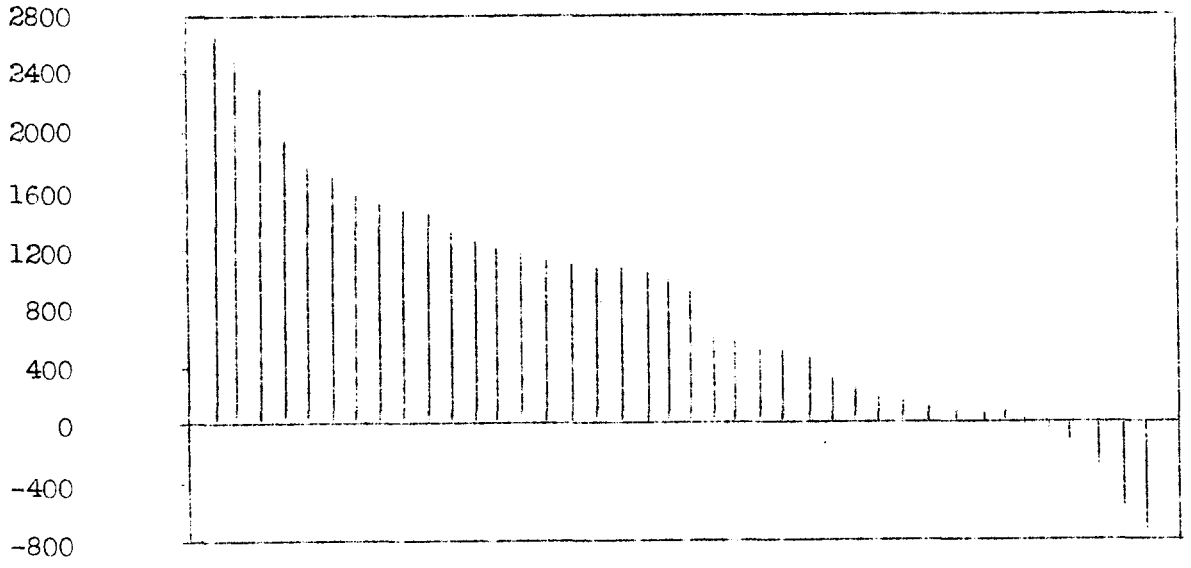
Items	Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
EXPENSES AND NET DECREASES				
Total power machinery & gen. machinery	$_____	$ 272	$ 270	$ 355
Hired	_____	39	47	40
Auto	_____	63	75	99
Horses	_____	-15	-64	43
General machinery & other power	_____	185	212	173
Buildings, fencing, tiling	_____	113	102	110
Productive livestock misc. expense	_____	10	10	16
Crop misc. expense	_____	61	71	67
Real estate taxes	_____	141	192	128
Personal property tax	_____	16	24	14
Insurance	_____	36	43	31
General farm	_____	14	9	11
Hired labor and board and unpaid family labor	_____	407	435	444
Interest on farm inventory	_____	638	861	596
(1) Total	$_____	$1708	$2017	$1772
RETURNS AND NET INCREASES				
All productive livestock	$_____	$2324	$3712	$1435
Cows	_____	874	1302	681
Other cattle	_____	385	549	241
Hogs	_____	550	999	268
Sheep	_____	211	334	26
Chickens	_____	237	258	219
Turkeys	_____	67	270	0
Crops, feed, vegetables & fuel	_____	41	31	143
AAA adjustment payments	_____	68	116	3
Miscellaneous	_____	6	3	10
Income from work off the farm	_____	101	55	48
(2) Total	$_____	$2540	$3917	$1639
Total expenses (1)	_____	1708	2017	1772
(3) Operator's labor earnings (2) minus (1)	_____	832	1900	-133

(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 6.

Analyzing the Reasons for Differences in Operator's Earnings

The financial statements on the preceding pages show that on the average the farmers included in this study obtained about $70 per month for their labor and management, or a total for the year of $832. The most significant fact in these statements, however, is the wide range in earnings - from $2701 to a loss of $785, or a range of $3486. The following diagram illustrates this fact:

Chart 1. Range of Earnings



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 40 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.

Lbs. butterfat per cow Group	Average	No. of Farms	Average Earnings
Below 160	136	11	$324
160 - 209	189	19	966
210 and above	251	10	1136

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 From Other Productive Livestock to Farm Earnings.

Returns per dollar invested in prod.livestock other than cows Group	Average	No. of Farms	Average Earnings
Below $1.25	$1.10	6	$472
1.25 - 2.74	2.08	28	774
2.75 and above	3.33	6	1462

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. High returns per dollar invested in these animals usually accompanies greater profits from the livestock. This means another addition to the farm earnings.

Table 3. Relation of Amount of Productive Livestock (of high and low returns to Farm Earnings

Productive livestock units per 100 A.	Returns per $1.00 invested in productive livestock: Below average: No. of Farms	Below average: Average Earnings	Above average: No. of Farms	Above average: Average Earnings
Below 11.5	4	$49	4	$500
11.5 to 16.4	13	933	8	1107
16.5 and above	3	270	8	1207

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.

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 40 farms Group	Average	No. of Farms	Average Earnings
Below 80	66	6	$176
80 - 119	103	30	938
120 and above	129	4	1021

High production per acre, up to certain limits, tends to lower the cost per bushel of grain or per ton of hay. The prices of these products are quite low. 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.

Table 5. Relation of Use of Legumes to Farm Earnings.

Per cent of tillable land in legume hay and pasture* Group	Average	No. of Farms	Average Earnings
Below 10.0	5.8	12	$576
10.0 to 17.9	13.6	15	633
18.0 and above	25.0	13	1296

* In calculating this percentage, acreage in alfalfa hay and pasture, and sweet clover pasture were counted in full, but only half of acreage in other legumes were counted; soybeans were not included.

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 productive work) to Farm Earnings.

Days of productive work Group	Average	No. of Farms	Average Earnings
Below 400	284	11	$561
400 to 599	478	17	698
600 and above	748	12	1269

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 Group	Average	No. of Farms	Average Earnings
Below 225	174	8	$409
225 - 349	279	24	778
350 and above	429	8	1415

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 Group	Average	No. of Farms	Average Earnings
$1.00 and above	$1.36	10	$453
.50 to .99	.72	18	784
Below .50	.33	12	1219

* Includes depreciation of horses and miscellaneous horse expense, but does not include value of feed consumed by the horses.

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 more	3	_____	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	$2249
Six	5	_____	xxxxxxxxxxxxxxxxxx	1437
Five	5	_____	xxxxxxxxxxxxx	1034
Four	9	_____	xxxxxxxxxx	754
Three	11	_____	xxxxxxxxx	691
Two or less	7	_____	x	-31

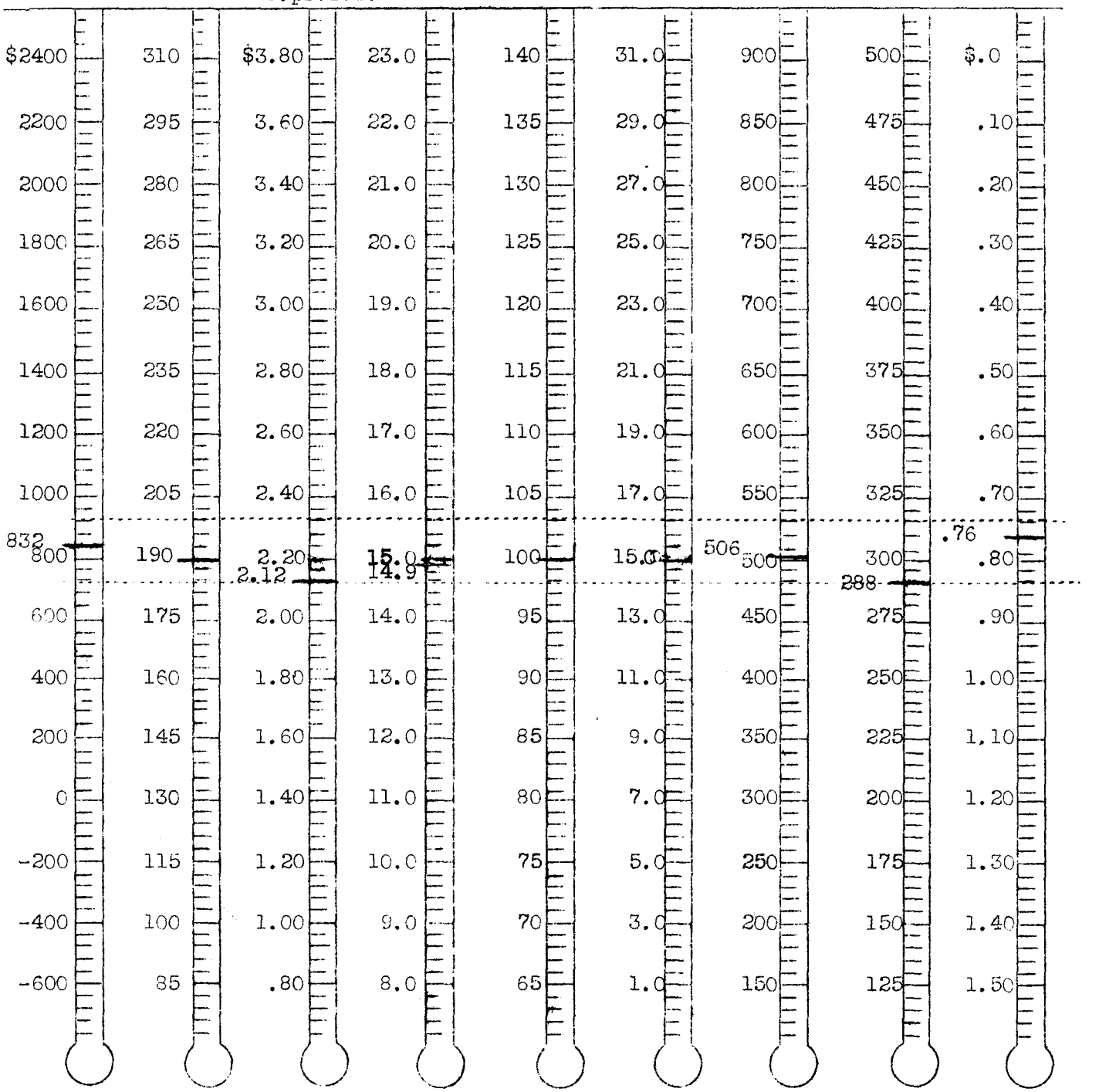
The array in Table 9 indicates that it will be worth while for each cooperator to study carefully his ranking on pages 12 and 13, and learn his standing in respect to each of the above factors and the elements of strength and weakness in his farm business.

Measures of Farm Organization and Management Efficiency		Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
Operator's labor earnings	$		$ 832	$1900	$-133
Pounds of butterfat per cow			190	192	166
Returns per $1.00 investment(productive livestock other than cows)	$		$ 2.12	$ 2.46	$ 2.09
Productive livestock units per 100 A.			14.9	14.8	13.6
Crop yields			100	105	91
Per cent of tillable land in legumes			15.0	17.1	10.5
Size of business - days of productive work			506	651	458
Days of productive work per worker			288	374	249
Power, machinery and building expense per day of productive work	$		$ .76	$ .56	$ .98

The above eight factors are those that show a high relation with earnings, and are used on the opposite page, in finding the weak links in the farm business. Below are additional factors that help to explain some of the eight factors shown above.

Returns per $1.00 investment in cows	$		$1.55	$1.67	$1.34
Returns per $1.00 investment in other cattle			1.33	1.45	1.32
Returns per $1.00 investment in hogs			3.13	3.14	3.34
Returns per $1.00 investment in poultry			4.98	9.85	3.60
Returns per $1.00 investment in sheep			1.27	.99	.58
Total days of productive work on crops			147	191	142
Total days of productive work on productive livestock			325	441	300
Days of other productive work			34	18	16
Total number of workers			1.8	1.8	1.9
Number of family workers			1.3	1.3	1.3
Number of hired workers			.5	.5	.6
Power, machinery, and equipment expense per day of productive work	$		$ .53	$ .41	$ .74
Buildings and fencing expense per day of productive work			.23	.15	.24
Eggs per hen			95	123	83
Pigs per litter			6.3	6.4	5.4
Price rec'd.per lb.of B.F. sold:					
As manufacturing cream (cents)			30.3	30.4	29.0
As milk & retail cream (cents)			56.1	67.9	45.6
Price rec'd.per doz.eggs sold (cents)			21.4	20.1	21.8

Using your figures from page 12, locate your standing with respect to the various measures of farm organization and management efficiency. The averages for 40 farms included in this summary are located between the two dotted lines across the center of this page.



Distribution of Acres in Farm

Crop	No. of farms growing this crop	Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
Wheat	22	_____	5.5	3.6	8.4
Oats	31	_____	21.4	36.2	15.1
Barley	28	_____	17.3	27.6	23.2
Rye	5	_____	.7	1.2	.6
Flax	3	_____	.8	2.0	.0
Oats and wheat	6	_____	5.2	4.1	4.8
Oats and barley	3	_____	2.4	.0	.0
Miscellaneous	8	_____	2.7	1.2	1.8
Total grain		_____	56.0	75.9	53.9
Corn, grain	37	_____	13.0	16.2	9.8
Corn, silage	32	_____	9.1	11.6	8.9
Corn, fodder	11	_____	1.6	4.1	1.2
Potatoes	35	_____	1.7	.9	3.1
Truck crops	13	_____	1.0	.6	1.0
Total cultivated crops		_____	26.4	33.4	24.0
Alfalfa	36	_____	9.4	15.8	5.1
Clover	8	_____	1.4	1.5	1.3
Other legume mixtures	24	_____	7.6	8.1	8.5
Timothy	9	_____	1.2	1.6	1.4
Annual hay	4	_____	.5	.0	.9
Timothy seed	9	_____	3.7	8.9	3.1
Total hay and seed		_____	23.8	35.9	20.3
Total crop acreage		_____	106.2	145.2	98.2
Sweet clover pasture	2	_____	1.6	2.7	.0
Alfalfa pasture	2	_____	.3	.2	.0
Red clover or rape pasture	2	_____	.1	.3	.0
Miscellaneous legume pasture	13	_____	5.9	8.5	1.8
Other tillable pasture	15	_____	7.9	8.0	6.3
Non-tillable pasture	34	_____	37.3	52.5	48.8
Total pasture		_____	53.1	72.2	56.9
Tillable land not cropped	6	_____	2.0	.4	1.2
Timber and brush (not pastured)	27	_____	22.6	34.7	20.4
Roads and waste		_____	5.0	7.5	4.1
Farmstead		_____	5.0	6.7	4.0
Total acres in farm		_____	193.9	266.7	184.8
Per cent of land tillable		_____	67.5	67.1	62.2

Yield of Crops

Crop	Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
Wheat, bu.	_____	15.6	13.4	14.1
Oats, bu.	_____	33.2	34.1	29.2
Barley, bu.	_____	20.8	19.2	14.8
Rye, bu.	_____	18.5	19.0	16.7
Flax, bu.	_____	9.5	9.1	-
Oats and wheat, bu.	_____	31.5	36.3	33.8
Oats and barley, bu.	_____	30.0	-	-
Oats, wheat and barley, bu.	_____	30.4	-	12.8
Soybeans, bu.	_____	11.8	7.5	-
Corn, grain, bu.	_____	39.1	44.7	33.5
Corn, silage, tons	_____	7.3	7.2	5.5
Corn, fodder, tons	_____	2.6	2.1	3.4
Potatoes, bu.	_____	82.9	86.3	84.2
Alfalfa, tons	_____	3.3	3.0	3.2
Red clover, tons	_____	2.5	2.7	2.3
Clover and timothy, tons	_____	2.1	2.1	2.1
Soybeans, tons	_____	2.3	1.6	-
Oat hay, tons	_____	.6	-	1.0
Timothy, tons	_____	1.5	1.1	2.4
Timothy seed, bu.	_____	5.4	4.7	8.4
Miscellaneous crops	_____	_____		
	_____	_____		

Livestock Summary

	Your farm	Average of 40 farms	10 most profitable farms	10 least profitable farms
No. of cows	_____	12.7	17.3	12.3
No. of cows per worker	_____	6.9	8.0	6.9
Head of other cattle	_____	13.8	18.5	12.4
Litters of pigs raised	_____	3.7	6.1	1.8
Head of sheep	_____	26.0	40.0	5.6
No. of hens	_____	102.5	93.0	112.6
Total number of productive livestock animal units	_____	26.9	37.6	22.6
% of total productive livestock units that are cows	_____	50.7	49.0	61.6
% of total productive livestock units that are other cattle	_____	25.7	25.6	24.3
% of total productive livestock units that are hogs	_____	8.8	10.5	7.1
% of total productive livestock units that are sheep	_____	9.8	10.9	1.2
% of total productive livestock units that are hens	_____	4.7	2.7	5.8
% of total productive livestock units that are turkeys	_____	.3	1.3	.0

Farms Without Tractors

	Your farm	Average of 18 farms	5 most profitable farms	5 least profitable farms
No. of horses	_____	4.2	4.8	3.7
No. of colts	_____	.3	.4	.2
Crop acres per horse	_____	19.8	23.0	15.1

Farms With Tractors

	Your farm	Average of 22 farms*	5 most profitable farms	5 least profitable farms
No. of horses	_____	4.6	4.7	5.1
No. of colts	_____	.8	1.6	.7
Crop acres per horse	_____	26.8	31.4	25.7

*Two of these farms have two tractors each.

Distribution of Farm Produce Used in House

	Quantities		Values	
	Your farm	Average 40 farms	Your farm	Average 40 farms
Whole milk	____qts.	1214 qts.	$____	$ 34.86
Skimmilk	____qts.	1 qts.	____	.02
Cream	____pts.	424 pts.	____	32.96
Farm-made butter	____lbs.	15 lbs.	____	4.52
Eggs	____doz.	215 doz.	____	47.26
Poultry	____head	38 head	____	17.16
Cattle	____lbs.	266 lbs.	____	14.39
Hogs	____lbs.	519 lbs.	____	46.84
Sheep	____lbs.	6 lbs.	____	.35
Potatoes	____bu.	21 bu.	____	7.36
Vegetables and fruit		-	____	79.37
Farm fuel		-	____	26.78
Total			$____	$311.87

	Your farm	Average 40 farms
Average value of farm dwelling	$____	$1892
Interest and depreciation on farm dwelling	____	134

Distribution of Household and Personal Expenses for Those Farms Which Kept Complete Accounts of These Expenses 1935

	Your farm	Average 23 farms	8 most profitable	8 least profitable
Number of persons,) Family	____	3.5	3.6	3.8
adult equivalent) Other*	____	.4	.5	.2
Food	$____	$190.98	$236.58	$141.27
Operating and supplies	____	32.97	33.66	14.92
Furnishings and equipment	____	46.81	51.36	23.60
Clothing and materials	____	86.11	107.19	61.36
Health	____	66.96	42.94	93.97
Development and recreation	____	54.37	61.22	38.98
Personal	____	30.19	51.73	9.62
Life insurance and savings	____	32.22	35.83	24.61
Personal share of auto expense	____	44.07	51.57	25.00
Housing	____	2.84	7.75	.0
Total Household and Personal Cash Exp.	$____	$587.52	$679.83	$433.33
Food furnished by the farm	$____	$278.46	$359.62	$223.73
Fuel furnished by the farm	____	24.48	31.88	21.75
Interest and deprec. on farm dwelling	____	131.14	102.47	154.33
Interest and deprec. on misc. items**	____	20.96	8.49	6.48
Total Household and Personal Expense	$____	$1042.56	$1182.29	$839.62

* Hired help or others boarded.

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

Summary of Farm Earnings

	Deer-Bear Creek Area	Gilmore Creek Area
Number of farms	23	17
CASH EXPENSES		
Auto (new & exp.) (farm share)	$ 97	$ 80
Tractor, truck and general machinery (new)	150	108
Tractor, truck and general machinery (exp.)	165	97
Buildings, fencing, tiling (new)	201	86
Buildings, fencing, tiling (exp.)	37	16
Hired labor	190	123
Feed for livestock	194	171
Other expense for livestock	24	18
Horses bought	30	55
Cows bought	15	69
Other cattle bought	63	10
Hogs bought	39	21
Sheep bought	182	0
Poultry bought	22	34
Crop (seed, twine, spray)	120	71
Taxes and insurance	216	163
General farm	12	16
Total cash expenses	$1757	$1138
Decrease in farm inventory	-	-
Board for hired labor	87	90
Total expenses	1844	1228
CASH RECEIPTS		
Horses	$ 21	$ 13
Cows	112	156
Dairy products	587	853
Other cattle	674	119
Hogs	719	142
Sheep	429	0
Poultry	48	184
Eggs	145	124
Small grain	132	172
Corn	0	10
Hay	13	11
Root crops	3	105
Other crops	39	37
Miscellaneous	105	20
Work off farm	152	31
AAA adjustment payments	112	9
Total cash receipts	$3291	$1986
Increase in farm inventory	232	64
Farm produce used in house	354	254
Total receipts	3877	2304
Total expenses	1844	1228
Returns to cap. & family labor	2033	1076
Interest on farm inventory	690	569
Family labor earnings	1343	507
Unpaid family labor	147	169
Operator's labor earnings	1196	338

Distribution of Acres in Farm and Average Yields per Acre

	Distribution of Acres		Crop Yields	
	Deer-Bear Creek Area	Gilmore Creek Area	Deer-Bear Creek Area	Gilmore Creek Area
Wheat	3.8 A.	8.6 A.	18.5 bu.	13.2 bu.
Oats	21.2	21.7	35.1 bu.	31.5 bu.
Barley	16.2	18.7	23.0 bu.	17.9 bu.
Rye	1.0	.4	19.0 bu.	16.7 bu.
Flax	1.4	.0	9.5 bu.	-
Oats and wheat	9.1	.0	31.5 bu.	-
Oats and barley	4.3	.0	30.0 bu.	-
Miscellaneous	3.8	.2	-	-
Total grain	60.8	49.6		
Corn, grain	18.2	6.0	41.0 bu.	36.1 bu.
Corn, silage	10.0	7.7	7.4 tons	7.1 tons
Corn, fodder	2.1	.8	2.1 tons	3.4 tons
Potatoes	.5	3.4	85.2 tons	80.1 bu.
Truck crops	.9	1.1		
Total cultivated crops	31.7	19.0		
Alfalfa	13.2	4.2	3.1 tons	3.7 tons
Clover	1.8	.9	1.8 tons	3.7 tons
Other legumes and mixtures	7.0	8.4	-	-
Timothy	1.9	.2	1.2 tons	2.5 tons
Annual hay	.0	1.2	-	-
Timothy seed	6.2	.4	4.6 bu.	12.5 bu.
Total hay and seed	30.1	15.3		
Total crop acreage	122.6	83.9		
Sweet clover pasture	2.6	.0		
Alfalfa pasture	.5	.0		
Red clover or rape pasture	.2	.0		
Miscellaneous legume pasture	9.1	1.6		
Other tillable pasture	12.6	1.6		
Non-tillable pasture	30.2	46.9		
Total pasture	55.2	50.1		
Tillable land not cropped	2.8	1.0		
Timber & brush (not pastured)	7.9	42.4		
Roads and waste	6.4	3.2		
Farmstead	6.7	2.9		
Total acres in farm	201.6	183.5		
Per cent of land tillable	79.0	62.0		

Measures of Farm Organization and Management Efficiency	Deer-Bear Creek Area	Gilmore Creek Area
Operator's labor earnings	$1196	$338
Pounds of butterfat per cow	210	163
Returns per $1.00 investment (prod.livestock other than cows)	$ 1.94	$ 2.36
Productive livestock units per 100 acres	16.5	12.9
Crop yields	104	95
Per cent of tillable land in legumes	16.3	13.2
Size of business - days of productive work	552	443
Days of productive work per worker	314	252
Power, machinery and building expense per day of productive work	$ .68	$ .87
Returns per $1.00 investment in cows	$1.50	$1.61
Returns per $1.00 investment in other cattle	1.26	1.42
Returns per $1.00 investment in hogs	2.98	3.37
Returns per $1.00 investment in poultry	3.38	7.15
Returns per $1.00 investment in sheep	1.27	-
Total days of productive work on crops	164	125
Total days of prod.work on productive livestock	337	308
Days of other productive work	51	10
Total number of workers	1.8	1.8
Number of family workers	1.3	1.3
Number of hired workers	.5	.5
Power, machinery and equip.exp.per day of prod.work	$ .47	$ .62
Buildings and fencing expense per day of prod. work	.21	.25
Eggs per hen	100	90
Pigs per litter	6.3	6.3
Price rec'd. per lb. of butterfat sold:		
As manufacturing cream (cents)	30.7	29.4
As milk and retail cream (cents)	61.7	52.9
Price rec'd. per doz. eggs sold (cents)	21.0	22.0
Amount of Livestock		
No. of horses	4.8	4.0
No. of colts	.5	.7
No. of cows	11.6	14.1
No. of cows per worker	6.1	8.0
Head of other cattle	17.3	8.9
Litters of pigs raised	4.8	2.1
Head of sheep	45.2	-
No. of hens	108.0	95.1
Total no. of productive livestock animal units	31.4	21.4
% of total prod.livestock units that were cows	40.7	64.1
% of total prod.livestock units that were other cattle	26.8	24.0
% of total prod.livestock units that were hogs	11.0	5.9
% of total prod.livestock units that were sheep	17.1	.0
% of total prod.livestock units that were hens	4.4	5.2
% of total prod.livestock units that were turkeys	.0	.8

Soil Conservation and the Farm Organization

It is usually held that livestock farming results in improving the fertility of the farm because most of the crops which are raised on the farm are returned to the fields in the form of manure. However, unless a farmer uses considerable amounts of purchased feeds in addition to those raised on the farm, he will usually have a total aggregate loss of about 15 to 25 per cent of the phosphoric acid and potash removed by the crops he grows on his farm. The extent of such losses will vary according to the type of farming carried on and the different practices carried out.

In addition to the losses of fertility through the feeding of crops and the handling of manure, there are, through erosion, equal or even more serious losses, not only of soil fertility but of the soil itself. Generalization of a careful study of the two areas included in this report can be made to the extent that from 2 to 6 inches of the top soil has been lost by erosion since the fields were first broken. In some instances the entire top soil has actually been removed by erosion and the crops are being grown on the much less productive sub-soil. This loss is much more serious than the loss of fertility alone, because fertility can be replaced within a relatively few years by proper cropping systems and the addition of some of the more important plant food elements which have been removed by the growth of crops. But when we lose the surface soil, we lose not only the fertility but also the organic matter, which affects the water holding capacity and the tilth. When these are lost they must be replaced before the fertility of the soils can be restored.

It has been estimated that with a loss of the first 4 inches of the top soil of Clinton silt loam (and at least one-half of the soils in the areas studied are Clinton silt loam) there has been an accompanying loss of one-fourth to one-half of the original amount of phosphorus of the top soil. Also a considerable portion of the potash and most of the humus and organic matter of the land are lost when the upper 4 inches of the top soil are washed away. When humus and organic matter are washed away, there is a serious loss of nitrogen and a general lowering of yields of most crops.

Consideration of these serious losses draws attention to the necessity of better farm management practices and erosion control measures to combat and reduce such serious losses. Introduction of erosion control practices and devices into any farm organization will necessitate careful consideration on the part of the farmer who owns and operates the land and on the part of any cooperating agency that helps to inaugurate such plans. Careful review of the data contained in this report will give some insight as to those farm organizations and as to those farm practices proving most profitable in the two areas represented.