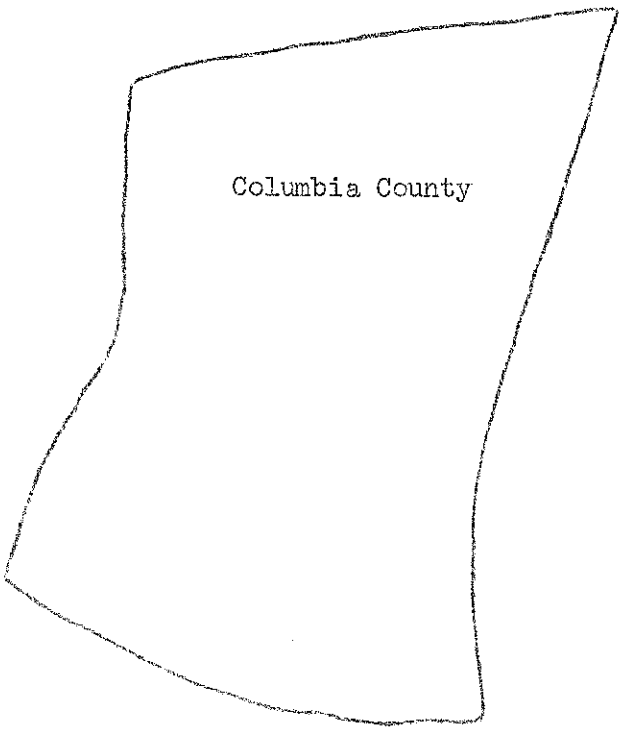
March 1969 A.E. Ext. 534

COLUMBIA COUNTY

1968 DAIRY FARM BUSINESS SUMMARY



Stuart F. Smith
William M. Barry

Department of Agricultural Economics
New York State College of Agriculture
A Statutory College of the State University
Cornell University, Ithaca, New York

COLUMBIA COUNTY FARM BUSINESS SUMMARY - 1968

This report summarizes the records of 21 Columbia County dairy farmers who in 1968 participated in a business management project sponsored by the Cooperative Extension Service and the Department of Agricultural Economics at Cornell University. The data presented here do not represent the average of all dairymen in this county but the average of a group of dairymen interested enough in their farm businesses to keep good records and take the time to study and analyze them. Averages for the group of farms in Columbia County are not to be taken as indicative of the relative profitability of dairy farming in that county.

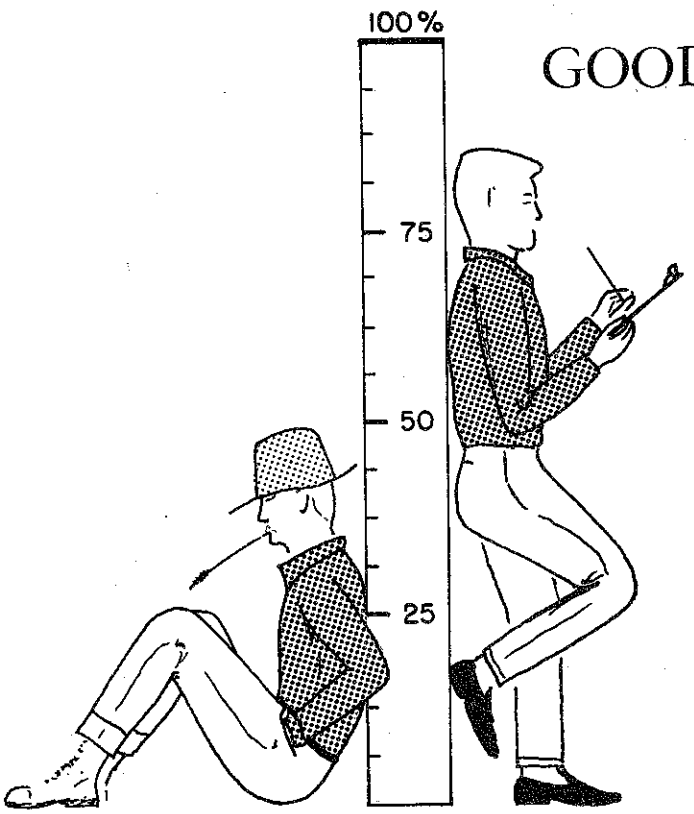
One of the purposes of the business management project is to teach and encourage farmers to keep better records. A more important purpose is to teach farmers to use the records as a basis for sound management decisions. Each farmer has the opportunity to participate for a period of time. He should learn good record keeping and learn how to analyze his business. This should enable him to use more effectively the economic and management information available from many sources, including the general farm management program offered by the Extension Service.

Farmers in many counties of New York State participate in business management projects similar to those in Columbia County. Some of the data included in this booklet is taken from the 1967 records of 548 New York dairy farmers. This gives farmers the opportunity to compare their business with a larger group of their competitors. The larger number of farmers also makes possible the sorting of farms into groups, thereby allowing comparisons that could not be made from the relatively small number of records in any one county.

Changes in farming are taking place at a rapid pace. Research data indicate that the average number of cows per farm in New York increased from 29 in 1960 to 38 in 1967. This change is due both to the dropping out of smaller farms and to the expansion of many of those remaining. Projections based on the same research indicate that the average number of cows per farm in 1975 will be 55. The number of dairy farms in 1960 was 40,200. By 1967 it had dropped to 26,350; in 1975 it will likely be 16,500. In the future some dairymen will expand, others stay at about the same size and still others will quit farming. It is a challenge to each dairyman to decide upon the best course of action for himself and his family. A study of your business records and budgeting of some possible changes for the future will help you to make this decision.

The information in this report should be useful to farmers in the county who are not enrolled in the business management projects. It should also be helpful to persons who work with farmers, such agricultural teachers and credit representatives.

This summary was prepared by Stuart F. Smith, Department of Agricultural Economics, Cornell University. Cooperative Extension Agent William M. Barry supervised the project and assisted with the summarization of the records in Columbia County.



GOOD MANAGEMENT IS BASIC

How do you measure up ?

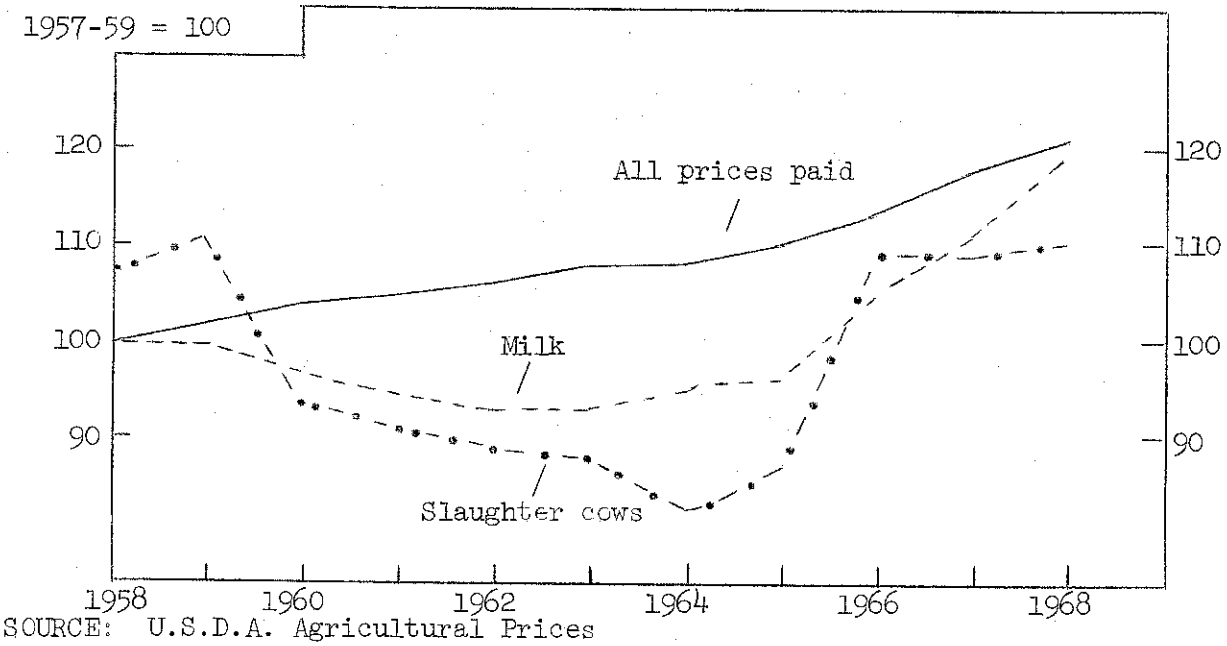
1. Have you developed a systematic approach to management problems?
2. Do you have the facts on your business?
3. Are you improving your managerial skills?

Steps in making a management decision :

1. Locate the trouble spot (problem)
2. What is your objective? (goal)
3. Size up what you have to work with (resources)
4. Look for various ways to solve the problem (alternatives)
5. Consider probable results of each way (consequences)
6. Compare the expected results (evaluate)
7. Select way best suited to your situation (decision)
8. Put the decision into operation (action)

This workbook can help you!

PRICES RECEIVED AND PAID BY N. Y. DAIRY FARMERS



SOURCE: U.S.D.A. Agricultural Prices

Prices are one of the important factors affecting farm incomes. The relationship of prices received and prices paid determines the general level of farm incomes. The blended New York farm price for 3.5% milk in 1968 averaged $5.43 per hundredweight. This was 36 cents higher than the average for 1967 and $1.16 more than 1965. Cull dairy cow prices also were relatively good in 1968. The overall index of prices paid by New York dairy farmers continued to rise in 1968.

In recent years, prices of some farm inputs have risen while others have declined. From 1965 to 1968, farm wages rose 30 percent, dairy cows rose 34 percent, while feed declined 3 percent, and fertilizer prices declined slightly. These differences give rise to management questions concerning substitutions.

AVERAGE YEARLY PRICES RECEIVED AND PAID BY N. Y. FARMERS, 1960-68

Year	Milk (cwt.)	Slaughter cows (cwt.)	Dairy cows (head)	Dairy ration (ton)	Wages per month with house	Prices paid by New York dairymen
1960	$4.31	$15.00	$278	$71	$210	104
1961	4.21	14.60	260	72	213	105
1962	4.14	14.26	245	74	218	106
1963	4.10	14.01	234	76	221	108
1964	4.21	13.17	237	74	227	108
1965	4.27	13.91	238	76	235	110
1966	4.79	17.35	269	80	258	113
1967	5.07	17.33	303	80	291	118
1968*	5.43	17.58	319	74	306	121

* Preliminary

PART I
SUMMARY OF THE FARM BUSINESS

The first part of this booklet is designed to enable you to summarize your business in a systematic, orderly manner. It provides an opportunity to study your physical resources, capital investment, receipts, and expenses. This is the first step to be taken in the study and analysis of your farm business.

PHYSICAL RESOURCES

Knowledge of what resources are employed and how they are combined is fundamental to sound business planning. This includes both the physical and financial resources of the business. Below are listed the physical resources of this group of Columbia County dairy farms.

FARM ORGANIZATION

Item	Average of 548 New York farms, 1967		My farm	21 Columbia County farms, 196 Average		Range Low	Range High
Labor:							
Man equivalent	1.9		_____	3.3		1.4	9.2
Full-time hired men				(9 farms)			
Hired men part of year				(7 farms)			
Family help				(15 farms)			
Partnership				(6 farms)			
Livestock: (Av. Number)							
Cows	51		_____	81		45	295
Heifers	33		_____	46		0	226
Crops: (Acres grown)							
Hay	79	(495)**	_____	104	(21)*	24	335
Hay crop silage***	6	(112)*	_____	7	(5)*	0	52
Corn for silage	27	(452)*	_____	76	(21)*	29	250
Corn for grain	9	(205)*	_____	13	(6)*	0	100
Oats for grain	11	(252)*	_____	9	(7)*	0	62
Other crops	6	--	_____	11	--	--	--
Total crop acres	138		_____	220		77	620

* Number of farmers that reported each crop.
** Crop data from 495 of the 548 New York farms.
*** On some farms, hay crop silage was reported as part of the hay crop.

CAPITAL INVESTMENT

Management of the capital resource of a farm business is becoming increasingly important. To measure the complete financial progress of a dairy farm, year to year changes in the capital structure must be considered.

In this report borrowed as well as owned capital is included and the end-of-year farm inventory is used as the measure of capital investment.

FARM INVENTORY VALUES, end of year

Item	Average of 548 New York farms, 1967	My farm	21 Columbia County farms, 1968	
			Average per farm	Percent of total
Machinery and equipment	$20,250	$_____	$36,551	20
Cattle	22,160	_____	39,834	22
Poultry	--	_____	--	--
Other livestock	--	_____	293	--
Feed and supplies	6,840	_____	10,660	6
Land and buildings	42,560	_____	94,175	52
Total Investment	$91,810	$_____	$181,513	100

In many farm businesses, poor capital efficiency is a major cause of low profits. The following measures of capital efficiency will help you evaluate your overall capital management.

INVESTMENT ANALYSIS

Item	Average of 548 New York farms, 1967	My farm	Average of 21 Columbia County farms, 1968
Machinery and equipment per cow	$ 397	$_____	$ 451
Land and buildings per cow	$ 834	$_____	$ 1,164
Total Investment per cow	$ 1,800	$_____	$ 2,241
Total Investment per man	$48,321	$_____	$55,004
Total Investment per crop acre	$ 665	$_____	$ 825
Real Estate Investment/crop acre	$ 308	$_____	$ 428
Capital turnover*	2.5 years	_____ years	2.6 years

* Calculated by dividing the total year end investment by the total cash receipts for the year.

WHERE THE MONEY CAME FROM

A successful farm business requires a level of gross earnings great enou to pay all costs, both operating and overhead, and leave a margin for the operator's labor. Here we examine the sources of receipts for this group of dairy farms.

FARM RECEIPTS

Item	Average of 548 New York farms, 1967	My farm	21 Columbia County farms, 1968 Average per farm	21 Columbia County farms, 1968 Percent of total
Milk sales	$32,347	$_____	$62,396	88
Livestock sold	3,283	_____	6,233	9
Egg sales	--	_____	--	--
Crop sales	133	_____	294	--
Miscellaneous*	1,032	_____	2,213	3
TOTAL CASH RECEIPTS	$36,795	$_____	$71,136	100
Increase in inventory	7,514	_____	5,919	
TOTAL FARM RECEIPTS	$44,309	$_____	$77,055	

* Includes work off farm, conservation payments, refunds, etc.

Increases in inventory resulting from more cows, more machinery and equipment, additions to buildings or a better feed situation are a normal occurrence in most "going" farm businesses and are considered as farm receipt These items could have been sold and turned into cash receipts, but instead the operator decided to invest this additional capital in his business. The cost of producing or acquiring these items normally is included in the farm expenses.

The increase in inventory on these farms was made up of the following: Equipment - $2,973, Livestock - $1,211, Land and Buildings - $2,993. The Fee and Supply inventory decreased $1,415. For this group of 21 Columbia County dairy farms, the change in inventory ranged from -$7,730 to +$28,800.

SELECTED INCOME FACTORS

	Average of 548 New York farms, 1967	My farm	21 Columbia Cou farms, 1968
Average price per cwt. of milk sold	$ 5.25	$_____	$ 6.40
Milk sales per cow	$ 634	$_____	$ 770
Total cash receipts per man	$19,366	$_____	$21,557

WHERE THE MONEY WENT

Some farmers may be able to increase profits by reducing costs. This requires a complete knowledge of what the business expenses are. With the large amount of cash flowing through a farm business today it is important that the farm operator study his expenses closely. Here is an opportunity for you to see how you're doing.

FARM EXPENSES

Item	Average of 548 New York farms, 1967	My farm	21 Columbia County farms, 1968	
			Average per farm	Percent of total
Hired labor	$ 2,147	$_____	$ 8,396	18
Dairy feed bought	8,440	_____	14,125	31
Other feed bought (includes hay)	200	_____	206	--
Machine hire	179	_____	489	1
Truck, tractor, machinery expense	1,310	_____	2,785	6
Auto expense (farm share)	219	_____	193	--
Gasoline and oil	922	_____	1,278	3
Breeding fees	347	_____	520	1
Veterinary and medicine	529	_____	902	2
Other dairy, livestock expense	1,461	_____	3,807	9
Lime & fertilizer	1,511	_____	3,780	8
Seeds and plants	414	_____	679	1
Spray, other crop expense	364	_____	996	2
Building, fence expense	611	_____	1,227	3
Taxes, insurance	1,431	_____	3,083	7
Electricity, telephone (farm share)	628	_____	1,044	2
Miscellaneous	580	_____	2,192	6
TOTAL CASH OPERATING EXPENSES	$21,293	$_____	$45,702	100
New machinery	5,128	_____	8,962	
New buildings, improvements	2,867	_____	3,359	
Livestock purchased	1,432	_____	1,205	
Unpaid family labor	825	_____	557	
Decrease in inventory	--	_____	--	
TOTAL FARM EXPENSES	$31,545	$_____	$59,785	

FINANCIAL SUMMARY OF THE YEAR'S BUSINESS

There are several ways of measuring the returns from a farm business. These measures have been developed for specific purposes. The measure select at any one time will depend on the purpose for which it is to be used.

Three measures are used here. The first is "Farm Cash Operating Income" The second, "Labor Income", is a measure of the returns to the operator for h labor and management. The last one is "Return on Investment".

FARM CASH OPERATING INCOME

Item	Average of 548 New York farms, 1967	My farm	Average of 21 Columbia Count farms, 1968
Total Cash Receipts	$36,795	$_____	$71,136
Total Cash Operating Expenses	- 21,293	- _____	- 45,702
FARM CASH OPERATING INCOME	$15,502	$_____	$25,434
Less: Family Living Expense*	- 6,011	- _____	- 6,943
Amount available for debt payments and purchase of capital items	$ 9,491	$_____	$18,491

* Estimated cash living expenses @ $5,400 per operator. The 548 New York far averaged 1.1 operators per farm and the 21 Columbia County farms averaged 1 operators per farm.

"Farm Cash Operating Income" is the amount of money available from the farm business for family living, debt payments, and purchases of new capital items such as equipment, real estate, and livestock.

The "cash flow" of a farm business is important to the operator and his family in planning for capital purchases, debt payments and living expenses. However, the above measures are not good indicators of the profitability of your farm business. This is because you may increase the amount of cash avai able during the year by selling off or using up some of your farm property o more likely, you decrease the amount of cash available by investing more doll in your business during the year. Labor Income is a much better measure of w the business did for you during the year.

LABOR INCOME

Item	Average of 548 New York farms, 1967	My farm	Average of 21 Columbia County farms, 1968
Average capital investment	$88,050	$_____	$178,554
TOTAL FARM RECEIPTS	$44,309	$_____	$77,055
TOTAL FARM EXPENSES	- 31,542	- _____	- 59,785
FARM INCOME	$12,764	$_____	$17,270
Interest on capital at 5%	- 4,402	- _____	- 8,928
LABOR INCOME per farm	$ 8,362	$_____	$ 8,342
Number of operators	610	_____	27
LABOR INCOME per operator	$ 7,511	$_____	$ 6,489

"Labor Income" is a measure used to determine the return the farm operator receives for his labor and management. It is the amount left after paying all farm expenses, and deducting charges for unpaid family labor and for interest on all of the capital invested in the farm business. Labor Income is the measure most commonly used when studying or comparing farm businesses.

Interest payments and payments on debts are not included in the farm expenses. To make all farms comparable, a five percent interest charge on the average capital investment (average of beginning and end inventories) is deducted in calculating Labor Income.

In addition to Labor Income, the family has "farm privileges" such as the use of a house and farm produced food. These items may amount to $1,000 or more per year.

RETURN ON INVESTMENT

Item	Average of 548 New York farms, 1967	My farm	Average of 21 Columbia County farms, 1968
Farm Income	$12,764	$_____	$17,270
Value of Operator's Labor*	- 6,011	- _____	- 6,943
Return on Investment	$ 6,753	$_____	$10,327
Rate of Return on Capital	7.7%	_____ %	5.8%

* $5,400 per year. There were 27 operators on the 21 Columbia County dairy farms.

"Return on Investment" is calculated by deducting from the "farm income" a charge for the operator's labor. This return is then divided by the average capital investment for the year to arrive at the rate of return on investment.

PART II
ANALYSIS OF THE FARM BUSINESS

A farmer's success depends on the resources available to him and his ab to manage the use of these resources. He must understand and apply basic principles of farm management.

Farm management studies indicate that certain business factors are rela to labor income. Four important factors are size of business, labor efficie rates of production, and cost control. The averages presented here are not intended to represent what is "best". They are to help you see how your far business compares with those of a group of your competitors.

SIZE OF BUSINESS

In general, large farms pay better than small farms. Larger farms make possible to use equipment and other items of production more efficiently. However, some 40 cow farms make larger incomes than others with 100 cows. T can happen when other factors are not in balance with size of business.

MEASURES OF SIZE OF BUSINESS

Item	My farm	Average per farm	
		21 Columbia County farms, 1968	548 New Yor farms, 19
Number of cows	_____	81	51
Pounds of milk sold	_____	975,500	616,600
Man equivalent	_____	3.3	1.9
Total work units	_____	955	594

In the following table, the New York dairy farms have been sorted into size groups. For each size group the average labor income per operator is Sorting the farms in this manner shows the relationship between size of bus and labor income.

COWS PER FARM AND LABOR INCOME
548 New York Dairy Farms, 1967

Number of cows	Number of farms	Labor income per operator
Under 25	22	$ 3,560
25-39	176	5,350
40-54	170	7,380
55-69	104	8,800
70-84	38	11,020
85-99	11	11,790
100 and over	27	13,360

RATES OF PRODUCTION

High rates of production of both animals and crops are very important to the success of a farm business. However, when high crop and animal yields are achieved without regard to costs, net income is reduced. In general, it pays to increase yields up to the point where the last unit of input (such as feed or fertilizer) is just paid for by the increase in output due to this last unit of input.

MEASURES OF RATES OF PRODUCTION

Item	My farm	Average per farm: 21 Columbia County farms, 1968	Average per farm: 548 New York farms, 1967
Pounds of milk sold per cow	_____	12,000	12,100
Tons of hay per acre	_____	2.8	2.6
Tons of corn silage per acre	_____	11	17
Bushels of oats per acre	_____	52	50
Bushels of corn grain per acre	_____	66	80

The relationship of production per cow to labor income on three sizes of farms is shown in the following table for 548 New York dairy farms in 1967.

MILK SOLD PER COW AND LABOR INCOME
548 New York Dairy Farms, 1967

Pounds milk sold per cow	114 farms with less than 35 cows: Percent of farms	114 farms with less than 35 cows: Labor income	252 farms with 35-54 cows: Percent of farms	252 farms with 35-54 cows: Labor income	182 farms with 55 cows and over: Percent of farms	182 farms with 55 cows and over: Labor income
Less than 10,000	15	$2,588	12	$4,325	10	$ 8,818
10,000-10,999	18	4,311	13	5,399	9	6,636
11,000-11,999	25	5,246	23	6,085	23	9,141
12,000-12,999	20	4,773	18	7,285	20	10,831
13,000-13,999	11	5,347	19	7,838	24	11,418
14,000 & over	11	6,687	15	9,814	14	12,375

LABOR EFFICIENCY

Labor is one of the limiting resources on many dairy farms. Efficient of labor tends to add to the profitability of a farm business. The producti of labor can be increased by use of modern equipment and buildings. However one must be careful not to invest in equipment or buildings that add little productivity in relation to their cost.

MEASURES OF LABOR EFFICIENCY

Item	My farm	Average per farm	
		21 Columbia County farms, 1968	548 New York farms, 1967
Number of cows per man	_____	25	27
Pounds of milk sold per man	_____	2,956	324,500
Work units per man	_____	297	313

The relationship between milk sold per man and labor income is illustra in the table below.

MILK SOLD PER MAN AND LABOR INCOME
548 New York Dairy Farms, 1967

Pounds milk sold per man	114 farms with less than 35 cows		252 farms with 35-54 cows		182 farms with 55 cows and over	
	Percent of farms	Labor income	Percent of farms	Labor income	Percent of farms	Labor income
Under 200,000	24	$3,073	5	$3,521	2	$ 4,3
200,000-299,999	49	4,745	37	5,647	16	7,5
300,000-399,999	25	6,235	35	7,291	53	9,3
400,000 & over	2	6,499	23	9,090	29	13,5

COST CONTROL

Obtaining high production at reasonable cost is one of the keys to a profitable farm business. The exact level of production items to be used to obtain the greatest net return is difficult to determine. The averages presented here may help you find some of the weaknesses in the cost structure on your farm.

FEED COSTS

Feed bought is the largest single expense item on most dairy farms. The success of a dairy farm manager depends to a large degree on his ability to provide a good feeding program for his herd at reasonable cost. Because the feeding program includes both purchased and homegrown feed, and both roughage and concentrates, it is not easy to locate the weak spots in efforts to control feed costs. The items on this page all have a bearing on feed costs, and may be helpful in planning a more efficient feeding program.

SELECTED FACTORS RELATED TO FEED COSTS

Item	My farm	Average per farm: 21 Columbia Co. farms, 1968	Average per farm: 548 New York farms, 1967
Purchased Feed			
Dairy feed bought	$_____	$14,125	$ 8,440
Feed bought per cow	$_____	$ 177	$ 165
Feed bought as % of milk receipts	_____%	23%	26%
Feed bought per cwt. of milk sold	$_____	$ 1.45	$ 1.37
Roughage Harvested (hay equivalent)			
Hay (tons)	_____	266 tons	182 tons
Hay crop silage (____ tons ÷ 3)	_____	12 tons	13 tons
Corn silage (____ tons ÷ 3)	_____	266 tons	136 tons
Total tons hay equivalent	_____	544 tons	331 tons
Tons hay equivalent per cow	_____	6.7 tons	6.5 tons
Other Considerations			
Total acres in crops per cow	_____	2.7 acres	2.5 acres
Lime & fertilizer expense/cow	$_____	$ 47	$ 30
Lime & fertilizer expense/crop acre	$_____	$ 17	$ 12
Heifer number as % of cow numbers	_____%	57%	65%

The above measures of harvested roughage consider only the quantity. Quality is also significant and has a bearing on purchased feed and milk production.

FARM POWER AND MACHINERY COSTS

On today's dairy farms, power and machinery costs account for a large part of the total costs. For this group of farms, power and machinery costs were 23 percent of the total farm expenses.

POWER AND MACHINERY COSTS*

Item	My farm	Average per farm 21 Columbia Co. farms, 1968	Average per farm 548 New Y farms, 1
Beginning inventory	$_____	$33,578	$17,808
New machinery bought	_____	8,962	5,128
Total	$_____	$42,540	$2
End inventory	$_____	$36,551	$20,251
Machinery sold	_____	862	131
Total	$_____	$37,413	$2
Depreciation	$_____	$ 5,727	$
Depreciation	$_____	$ 5,727	$
Interest at 5% av. inventory	_____	1,753	
Gas and oil	_____	1,278	
Machinery and repairs	_____	2,785	
Bale ties	_____	82	
Milk hauling	_____	1,759	
Other machine hire	_____	489	
Auto expense (farm share)	_____	193	
Electricity (farm share)	_____	846	
TOTAL MACHINERY COSTS	$_____	$14,312	$
Gas tax refunds	$_____	$ 70	$ 93
Income from machine work	_____	30	97
Total	- _____	- 100	-
NET MACHINERY COST	$_____	$14,212	$
Net machinery cost per cow	$_____	$ 175	$
Net machinery cost per crop acre	$_____	$ 65	$
Net machinery cost per man	$_____	$43,066	$
Net machinery cost/cwt. milk sold	$_____	$ 1.46	$

* Does not include insurance, housing, or farm labor in repairs

LABOR AND MACHINERY COSTS

Most farm operators justify major machinery purchases as a way to save labor and increase productivity. How well labor and machinery are combined has an important bearing on farm profits.

LABOR AND POWER AND MACHINERY COSTS

Item	My farm	Average per farm: 21 Columbia Co. farms, 1968	Average per farm: 548 New York farms, 1967
Value of operator's labor	$_____	$ 6,943	$ 6,011
Hired labor	_____	8,396	2,147
Unpaid family labor	_____	557	825
TOTAL LABOR COSTS	$_____	$15,896	$ 8,983
Net power and machinery cost	_____	14,212	6,964
TOTAL LABOR & MACHINERY COST	$_____	$30,108	$15,947
Total per cow	$_____	$ 372	$ 313
Total per crop acre	$_____	$ 137	$ 116
Total per man	$_____	$ 9,124	$ 8,393
Total per cwt. milk sold	$_____	$ 3.09	$ 2.59

The following table shows the relationship of machinery costs to labor income on the 548 dairy farms in 1967.

MACHINERY COST PER COW AND LABOR INCOME
548 New York Dairy Farms, 1967

Machinery cost per cow	Percent of farms	Labor income
$225 & over	1	$2,430
$200 - $224	7	5,276
$175 - $199	10	5,871
$150 - $174	17	7,370
$125 - $149	24	7,524
$100 - $124	26	8,406
$75 - $99	13	8,690
Less than $75	2	8,672

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
548 New York Dairy Farms,* 1967

Size of Business		Rates of Production			Labor Efficiency	
No. of cows	Pounds milk sold	Pounds milk sold per cow	Tons hay per acre	Tons corn silage per acre	Cows per man	Pounds milk so per ma
105	1,269,200	15,300	4.1	25	43	531,70
70	900,700	14,000	3.3	21	35	428,90
59	739,600	13,300	3.0	20	32	385,60
54	653,300	12,900	2.8	18	29	357,80
48	582,400	12,500	2.5	17	27	334,40
44	530,400	11,900	2.3	16	26	313,40
40	467,600	11,500	2.1	15	24	288,20
36	421,500	11,000	1.9	14	22	260,10
32	361,900	10,200	1.4	12	20	228,40
25	262,600	8,500	.8	9	17	179,50

* These farms are considerably above the average for all farms in New York State. F example, the average number of cows for the 548 farms was 46 compared with 38 for all farms in the State.

The Farm Business Chart is a tool which can be used in analyzing a business to determine the strong and weak points. The chart shows how far the individual farm is above or below the average of the 548 farms for each factor.

The figure at the top of each column is the average of the top ten percent of the farms for that factor. For example, the figure 105 at the top of the column headed "No. of Cows" is the average number of cows on the ten percent of the farms with the most cows. The other figures in each column are the average for the second ten perc third ten percent, etc. The figure at the bottom of each column (25 for No. of Cows is the average for the ten percent of the farms which ranked lowest in that factor.

Each column of the chart is independent of the others. The farms which are in th top ten percent for one factor would not necessarily be the same farms which make up the top ten percent for any other factor.

This chart is used in analyzing a particular dairy business by drawing a line through the figure in each column which shows where the farm being analyzed stands for that factor. This helps identify the strengths and weaknesses. Summarize these and list them at the bottom of page 17.

COST CONTROL FACTORS

The cost control factors are ranked from low to high. For cost control factors, e lowest cost is not necessarily the most profitable. In some cases, the "best" ght be somewhere near the average. Many things affect the level of these costs, d these items must be taken into account when analyzing the factors.

Cost Control			
Feed bought per cow	% Feed is of milk receipts	Feed and crop expense per cwt. milk	Machinery cost per cow
$ 75	13%	$1.07	$ 82
110	18	1.32	98
128	21	1.46	109
143	23	1.58	118
157	25	1.68	129
173	27	1.79	141
187	29	1.90	150
204	32	1.99	162
225	34	2.12	180
260	39	2.37	217

ctors Affecting Feed Cost:

- tons hay equivalent per cow
- quality of forage
- ratio of cows to heifers
- lbs. milk sold per cow
- quantity of home grown grain
- average price of milk

Factors Related to Machinery Costs:

- amount of machinery
- use made of machinery
- substitution of machinery for labor
- new vs. old machinery
- mechanical skill of operator

STRONG AND WEAK POINTS

After analyzing the business and determining changes to be considered, each ssible change should be studied in detail. The work sheet or budgeting form nd on pages 22 and 23 can be used for projecting the likely results of each ernative.

RONG POINTS:

K POINTS:

FARM BUSINESS SUMMARY BY HERD SIZE
548 New York Dairy Farms, 1967

Item	My farm	Farms with less than 25 cows	25 to 39 cow farms	40 to 54 cow farms
Capital Investment (end of year)				
Machinery and equipment	$_____	$ 7,043	$13,981	$18,627
Livestock	_____	8,141	14,234	19,749
Feed and supplies	_____	2,560	4,178	5,964
Land and buildings	_____	20,075	25,878	36,695
TOTAL INVESTMENT	$_____	$37,819	$58,271	$81,035
Receipts				
Milk sales	$_____	$12,511	$20,464	$28,963
Livestock sold	_____	1,283	2,154	2,932
Crop sales	_____	67	117	155
Miscellaneous receipts	_____	413	756	840
Total Cash Receipts	$_____	$14,274	$23,491	$32,890
Increase in inventory	_____	1,912	4,012	6,004
TOTAL RECEIPTS	$_____	$16,186	$27,503	$38,894
Expenses				
Hired labor	$_____	$ 189	$ 572	$ 1,397
Dairy feed	_____	3,352	5,593	7,558
Other feed	_____	65	159	189
Machine hire	_____	98	115	189
Machinery repair	_____	426	847	1,130
Auto expense (farm share)	_____	165	177	236
Gas and oil	_____	469	691	828
Breeding fees	_____	156	245	312
Veterinary and medicine	_____	243	338	484
Other livestock expense	_____	482	870	1,181
Lime and fertilizer	_____	451	855	1,316
Seeds and plants	_____	134	245	385
Spray and other crop expense	_____	95	227	313
Land, bldg., fence repair	_____	178	428	484
Taxes and insurance	_____	663	931	1,288
Elec. and tel. (farm share)	_____	293	450	558
Miscellaneous expenses	_____	151	345	551
Total Cash Operating Exp.	$_____	$ 7,610	$13,088	$18,399
New machinery	_____	1,908	3,491	4,379
New real estate	_____	210	1,105	2,282
Purchased livestock	_____	380	802	1,207
Unpaid family labor	_____	675	836	888
TOTAL FARM EXPENSES	$_____	$10,783	$19,322	$27,155
Financial Summary				
Total Farm Receipts	$_____	$16,186	$27,503	$38,894
Total Farm Expenses	_____	10,783	19,322	27,155
Farm Income	$_____	$ 5,403	$ 8,181	$11,739
Interest on av. capital @ 5%	_____	1,843	2,813	3,902
Labor Income per Farm	$_____	$ 3,560	$ 5,368	$ 7,837
Number of operators	_____	20	169	194
LABOR INCOME PER OPERATOR	$_____	$ 3,560	$ 5,337	$ 7,191

FARM BUSINESS SUMMARY BY HERD SIZE
548 New York Dairy Farms, 1967

Item	My farm	55 to 69 cow farms	70 to 84 cow farms	Farms with 85 or more cows
Capital Investment (end of year)				
Machinery and equipment	$_____	$ 24,315	$ 28,152	$ 41,815
Livestock	_____	26,994	34,251	48,451
Feed and supplies	_____	7,973	10,922	16,886
Land and buildings	_____	49,347	66,075	108,048
TOTAL INVESTMENT	$_____	$108,629	$139,400	$215,200
Receipts				
Milk sales	$_____	$ 38,862	$ 51,004	$ 71,452
Livestock sold	_____	3,625	4,574	8,334
Crop sales	_____	152	153	60
Miscellaneous receipts	_____	1,369	1,400	2,098
Total Cash Receipts	$_____	$ 44,008	$ 57,131	$ 81,944
Increase in inventory	_____	10,167	11,066	21,171
TOTAL RECEIPTS	$_____	$ 54,175	$ 68,197	$103,115
Expenses				
Hired labor	$_____	$ 2,661	$ 5,422	$ 8,421
Dairy feed	_____	9,971	13,218	18,058
Other feed	_____	251	149	404
Machine hire	_____	231	261	222
Machinery repair	_____	1,464	2,040	3,342
Auto expense (farm share)	_____	210	255	328
Gas and oil	_____	1,033	1,365	1,798
Breeding fees	_____	438	526	619
Veterinary and medicine	_____	618	918	1,063
Other livestock expense	_____	1,809	2,417	3,811
Lime and fertilizer	_____	1,808	2,261	4,110
Seeds and plants	_____	511	532	1,018
Spray and other crop expense	_____	493	575	762
Land, bldg., fence repair	_____	824	893	1,325
Taxes and insurance	_____	1,603	2,251	3,263
Elec. and tel. (farm share)	_____	733	952	1,251
Miscellaneous expenses	_____	624	1,175	1,199
Total Cash Operating Exp.	$_____	$ 25,282	$ 35,210	$ 50,994
New machinery	_____	6,911	6,593	10,827
New real estate	_____	4,054	4,205	9,693
Purchased livestock	_____	1,676	1,947	4,398
Unpaid family labor	_____	847	608	731
TOTAL FARM EXPENSES	$_____	$ 38,770	$ 48,563	$ 76,643
Financial Summary				
Total Farm Receipts	$_____	$ 54,175	$ 68,197	$103,115
Total Farm Expenses	_____	38,770	48,563	76,643
Farm Income	$_____	$ 15,405	$ 19,634	$ 26,472
Interest on av. capital @ 5%	_____	5,177	6,693	10,231
Labor Income per Farm	$_____	$ 10,228	$ 12,941	$ 16,241
Number of operators	_____	123	49	55
LABOR INCOME PER OPERATOR	$_____	$ 8,481	$ 10,300	$ 12,107

SELECTED BUSINESS FACTORS BY HERD SIZE
548 New York Dairy Farms, 1967

Item	My farm	Farms with less than 25 cows	25 to 39 cow farms	40 to 54 cow farms
Number of farms		20	168	178
Size of Business				
Number of cows	_____	21	33	46
Pounds of milk sold	_____	241,700	395,600	558,800
Crop acres	_____	57	92	121
Man equivalent	_____	1.2	1.4	1.7
Total work units	_____	245	401	544
Rates of Production				
Milk sold per cow	_____	11,500	12,000	12,100
Tons hay per acre	_____	2.4	2.3	2.5
Tons corn silage per acre	_____	15	16	14
Bushels of oats per acre	_____	54	45	49
Labor Efficiency				
Cows per man	_____	18	24	27
Pounds milk sold per man	_____	201,400	282,600	328,700
Work units per man	_____	204	286	320
Crop acres per man	_____	48	66	71
Feed Costs				
Feed purchased per cow	$_____	$ 160	$ 169	$ 164
Crop expense per cow	$_____	$ 32	$ 40	$ 44
Feed & crop expense per cow	$_____	$ 192	$ 209	$ 208
Feed cost per cwt. milk	$_____	$ 1.39	$ 1.41	$ 1.35
Feed & crop expense/cwt. milk	$_____	$ 1.67	$ 1.75	$ 1.71
% Feed is of milk receipts	_____ %	29%	27%	26%
Hay equivalent per cow	_____	6.3	6.5	6.7
Crop acres per cow	_____	2.7	2.8	2.6
Fertilizer & lime/crop acre	$_____	$ 8	$ 9	$ 11
Machinery Costs				
Total machinery costs	$_____	$ 2,905	$ 4,861	$ 6,133
Machinery cost per cow	$_____	$ 138	$ 147	$ 133
Machinery cost per man	$_____	$ 2,421	$ 3,472	$ 3,608
Machinery cost per cwt. milk	$_____	$ 1.20	$ 1.23	$ 1.10
Machinery cost per crop acre	$_____	$ 51	$ 53	$ 51
Capital Efficiency				
Investment per man	$_____	$31,516	$41,622	$47,668
Investment per cow	$_____	$ 1,801	$ 1,766	$ 1,762
Investment per cwt. milk sold	$_____	$ 16	$ 15	$ 15
Land and buildings per cow	$_____	$ 956	$ 784	$ 798
Machinery investment per cow	$_____	$ 335	$ 424	$ 405
Return on investment	_____ %	--	4.7%	7.2%
Other				
Price per cwt. milk sold	$_____	$ 5.18	$ 5.17	$ 5.18
Acres hay and hay crop silage	_____	43	62	73
Acres corn silage	_____	6	14	23

SELECTED BUSINESS FACTORS BY HERD SIZE
548 New York Dairy Farms, 1967

Item	My farm	55 to 69 cow farms	70 to 84 cow farms	Farms with 85 or more cows
Number of farms		102	39	41
Size of Business				
Number of cows	_____	60	77	112
Pounds of milk sold	_____	743,200	949,600	1,323,700
Crop acres	_____	134	197	220
Man equivalent	_____	2.1	2.7	3.4
Total work units	_____	689	903	1,244
Rates of Production				
Milk sold per cow	_____	12,400	12,300	11,800
Tons hay per acre	_____	2.8	2.6	3.0
Tons corn silage per acre	_____	17	16	18
Bushels oats per acre	_____	55	52	49
Labor Efficiency				
Cows per man	_____	29	29	33
Pounds milk sold per man	_____	353,900	351,700	389,300
Work units per man	_____	328	335	366
Crop acres per man	_____	64	73	65
Feed Costs				
Feed purchased per cow	$_____	$ 166	$ 172	$ 161
Crop expense per cow	$_____	$ 47	$ 44	$ 53
Feed & crop expense per cow	$_____	$ 213	$ 216	$ 214
Feed cost per cwt. milk	$_____	$ 1.34	$ 1.39	$ 1.36
Feed & crop expense/cwt. milk	$_____	$ 1.72	$ 1.75	$ 1.81
% Feed is of milk receipts	_____%	26%	26%	25%
Hay equivalent per cow	_____	6.3	7.0	6.1
Crop acres per cow	_____	2.2	2.6	2.9
Fertilizer & lime/crop acre	$_____	$ 13	$ 11	$ 19
Machinery Costs				
Total machinery costs	$_____	$ 8,244	$10,790	$14,377
Machinery costs per cow	$_____	$ 137	$ 140	$ 128
Machinery cost per man	$_____	$ 3,926	$ 3,996	$ 4,229
Machinery cost per cwt. milk	$_____	$ 1.11	$ 1.14	$ 1.09
Machinery cost per crop acre	$_____	$ 62	$ 55	$ 65
Capital Efficiency				
Investment per man	$_____	$51,728	$51,630	$63,294
Investment per cow	$_____	$ 1,810	$ 1,810	$ 1,921
Investment per cwt. milk sold	$_____	$ 15	$ 15	$ 16
Land and buildings per cow	$_____	$ 822	$ 858	$ 965
Machinery investment per cow	$_____	$ 405	$ 366	$ 373
Return on investment	_____%	8.2%	9.2%	8.9%
Other				
Price per cwt. milk sold	$_____	$ 5.23	$ 5.37	$ 5.40
Acres hay and hay crop silage	_____	79	109	125
Acres corn silage	_____	28	47	55

Considering a Change in the Dairy Business

Describe change: _____

List possible alternative changes : (use additional worksheets to analyze these alternatives) _____

I. Basic nature of proposed change

	Present	Change	Future with change
Number of cows	_____	_____	_____
Number of youngstock	_____	_____	_____
Production per cow	_____	_____	_____
Labor force (man equiv.)	_____	_____	_____

II. Estimated forage requirements and production:

No. of cows _____ x _____ tons hay equivalent = _____ tons

No. of youngstock _____ x _____ tons hay equiv./head = _____ tons

total hay equiv. requirement _____ tons

Allocate total hay equivalent requirement to hay and silage production:

Total hay equiv. required _____ = _____ hay tons + _____ tons hay equiv. as silage

Tons hay equiv. as silage _____ x 3 = _____ tons silage

Estimate needed crop acres and changes from present:

Future crop	Proposed Production	Estimated Yield	Acres Needed	Change in acres (list as plus or minus)
Hay	_____	_____	_____	_____
Hay crop silage	_____	_____	_____	_____
Corn silage	_____	_____	_____	_____
Other forage	_____	_____	_____	_____
Grain	_____	_____	_____	_____

III. Additional forward planning steps and pointers

1. List new capital items associated with the change including land, buildings, machinery and cattle. Estimate their cost.
2. Estimate changes in receipts and expenses (Part IV) considering all input and production items that are affected by the change under consideration. Adjust present figures if anticipated price changes are used in the budget.
3. When analyzing the effects of the proposed change, fulfillment of non-monetary goals may be considered.
4. More than one alternative change should be considered.

IV. Estimating changes in receipts and expenses

	Present	Net change (plus or minus)	Future with change
A. Receipts			
Milk sales, gross	$	$	$
Livestock sales			
Crop sales			
Miscellaneous receipts			
Total Cash Receipts	$	$	$
Increase in inventory			
Total Farm Receipts	$	$	$
B. Expenses			
Hired labor	$	$	$
Feed bought			
Machine hire			
Machinery repairs			
Auto expense (farm share)			
Gasoline and oil			
Breeding fees			
Veterinary and medicine			
Other livestock expense			
Lime and fertilizer			
Seeds and plants			
Spray, other crop expense			
Land, building, fence expense			
Taxes, insurance			
Electricity, telephone (farm share)			
Miscellaneous			
Total Cash Operating Exp.	$	$	$
New machinery and real estate			
Livestock purchases			
Unpaid family labor			
Decrease in inventory			
Total Farm Expenses	$	$	$
C. Financial Summary			
Capital Investment	$		$
Total Farm Receipts	$		$
Total Farm Expenses			
Farm Income	$		$
Interest on Capital			
LABOR INCOME	$		$

Selected Competitive Dairy Areas

A good manager aims to know how his business stands in relation to his competition both at home and in other dairy areas. The table below presents data from four states. These data were taken from reports on farm business management projects similar to the ones in New York. Some measures have been adjusted so that they are comparable for the four states.

1967 DAIRY FARM BUSINESS SUMMARY DATA

Selected Factors	New York	Southern Michigan	Vermont	Connecticut
Number of farms	548	290	127	25
Crop acres	138	259	NA	NA
Man equivalent	1.9	2.2	2.0	2.1
Number of heifers	33	NA	35	40
Number of cows	51	54	53	66
Lbs. milk sold/ farm	616,600	657,640	608,560	811,460
Lbs. milk sold/ man	324,500	298,930	304,300	386,400
Lbs. milk sold/ cow	12,100	12,180	11,480	12,290
Milk sales/ cow	$635	$670	$635	$736
Av. price/ cwt. milk	$5.25	$5.50	$5.53	$5.99
Purchased feed/ cow	$165	$96	$190	$228
Taxes/ cow	$17	$17	NA	NA
Capital Investment				
Land & buildings	$42,560	$87,000	$46,540	$66,360
Machinery & equipment	$20,250	$23,400	$13,440	$17,760
Livestock	$22,160	$21,400	$20,020	$26,770
Feed & supplies	$ 6,840	$11,000	$ 5,890	$ 8,420
Investment/ man	$48,320	$64,910	$42,940	$56,820
Investment/ cow	$ 1,800	$ 2,640	$ 1,620	$ 1,810
Financial Summary				
Total farm receipts	$44,309	$45,002	$42,810	$51,494
Total farm expenses	$31,545	$31,112	$32,322	$37,712
Farm income	$12,764	$13,890	$10,488	$13,782
Interest at 5%	$ 4,402	$ 7,140	$ 4,294	$ 5,966
Labor income/ farm	$ 8,362	$ 6,750	$ 6,194	$ 7,816
Labor income/ operator	$ 7,511	$ 6,193	$ 5,631	$ 6,513

ARRAY OF FARM BUSINESS FACTORS
21 Columbia County Farms, 1968

Size of Business		Labor Efficiency		Production	Cost Control	
Number of cows	Pounds milk sold per farm	Cows per man	Pounds milk sold per man	Pounds milk sold per cow	Feed bought per cow	Labor and mach. cost per cow
295	2,186,500	36	452,600	16,500	$100	$221
122	1,718,400	34	379,300	15,900	108	264
109	1,504,600	34	367,700	15,800	114	271
98	1,438,200	32	358,200	14,100	134	273
97	1,312,400	29	357,000	14,100	159	274
91	1,283,600	28	355,300	13,800	160	281
91	1,066,000	26	348,300	13,700	166	301
78	1,044,900	26	330,500	13,700	172	356
77	1,022,200	25	318,700	13,400	173	362
75	911,000	25	307,500	13,200	174	372
66	834,400	24	306,600	13,100	176	396
66	810,100	23	292,400	12,600	183	396
58	714,000	23	287,600	12,400	184	405
55	701,200	22	270,000	12,300	199	414
52	676,600	22	267,400	12,300	200	429
52	654,400	22	264,900	11,200	211	440
51	588,300	21	263,700	11,100	212	465
51	584,800	19	255,600	10,500	213	485
50	582,700	19	242,400	9,000	216	490
47	429,200	17	237,700	8,600	232	565
45	421,900	16	227,800	7,400	236	586

Return on Owned Capital

Return on owned or invested capital is a measure of business profitability commonly used outside of farming. Return on capital shown on page 9 in this publication is the return on all the capital invested in farm inventory items. To calculate your return on owned or invested capital use the following procedur

Calculation of Return on Owned Capital

Average Capital Investment	$_____	Farm Income	$_____
Operating Capital on Hand	+ _____	Value of Operators Labor and management	- _____
Accounts Receivable	+ _____		$_____
Total Business Assets	$_____	Interest Paid on Debt	- _____
Average Total Debt	- _____	Net Return	$_____
Average Equity	$_____		

Net return $____ ÷ Average equity $____ = ____% rate of return on owned capit

We can estimate the average rate of return on owned capital on the 21 Columbia County farms by using the following assumptions: Operating Capital on hand = $500, Accounts receivable (one months milk receipts) = $5,200, Percent equity = 70%, Average interest on debt = 6%. The net return of $2,587 divided by an average equity of $129,000 would yield 2% return on owned capital Applying the same assumptions to the average of 548 New York farms in 1967 woul yield 8.4% return on owned capital. Listed below are the rates of return on owned capital for some non-farm business and industries.

Return on Owned Capital - Some Non-Farm Businesses - 1967

The Five Highest Industries

	Sales Rank	% Return
Avon Products	180	37.3
Gillette	199	30.3
Searle (G.D.)	499	28.5
Norris Industries	375	27.7

The Five Biggest Industries

	Sales Rank	% Return
General Motors	1	17.6
Standard Oil (N.J.)	2	13.0
Ford Motor	3	1.8
General Electric	4	15.4
Chrysler	5	10.9

The Industry Medians

	% Return on Owned Capital
Pharmaceuticals	18.0
Mining	16.4
Office machinery	14.2
Apparel	12.3
Farm & industrial machinery	12.3
Appliances, electronics	11.6
Food & beverage	10.7
Chemicals	10.0
Paper & wood products	9.0
Glass, cement, gypsum, concrete	8.3
Textiles	7.2

Income used in calculating return on owned capital by these businesses is net income after taxes. They also use invested capital at the end of the year rather than an average for the year.