



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

September 1969

A.E.Res. 304

# **DAIRY FARM MANAGEMENT**

## **BUSINESS SUMMARY NEW YORK 1968**

**C.A. Bratton**

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

# TABLE OF CONTENTS

	<u>Page</u>
Introduction . . . . .	1
Good Management is Basic . . . . .	2
Growing Conditions . . . . .	3
Prices . . . . .	4
Summary of the Farm Business . . . . .	6
Labor, Livestock, and Crops Grown . . . . .	6
Capital Investment . . . . .	7
Receipts . . . . .	8
Expenses . . . . .	10
Income . . . . .	12
Analysis of the Farm Business . . . . .	15
Size of Business . . . . .	15
Rates of Production . . . . .	17
Labor Efficiency . . . . .	18
Capital Efficiency . . . . .	19
Cost Control . . . . .	20
Feed Costs . . . . .	20
Power and Machinery Costs . . . . .	22
Labor and Machinery Costs . . . . .	23
Miscellaneous Cost Control Measures . . . . .	24
Combination of Factors . . . . .	25
Farm Business Summary by Herd Size . . . . .	26
Selected Business Factors by Herd Size . . . . .	28
Farm Business Chart . . . . .	30
Worksheet for Considering a Change in the Business . . . . .	31
Supplemental Comparisons . . . . .	32
Cost of Producing Milk . . . . .	33
Selected Summary Factors for 1958, 1963, 1967, and 1968 . . . . .	34
Farm Business Summary, Top 10 Percent of the Farms by Labor Income . .	35
Farm Business Summary, 568 New York Dairy Farms, 1968 . . . . .	36

## INTRODUCTION

Farm business management projects are one of the important features of the farm management extension program in New York. The primary purpose of these projects is to help farmers develop their managerial skills. A secondary use, however, is the research information which comes from a study of the records kept by the farm business management cooperators.

Each cooperator keeps records on his farm business. Some keep their records in the conventional farm account books while others participate in the Cornell Electronic Accounting Program. The individual records are summarized and analyzed. Information from the individual records is combined and presented in area or county A.E. Ext. reports which are used in winter educational meetings with the cooperators.

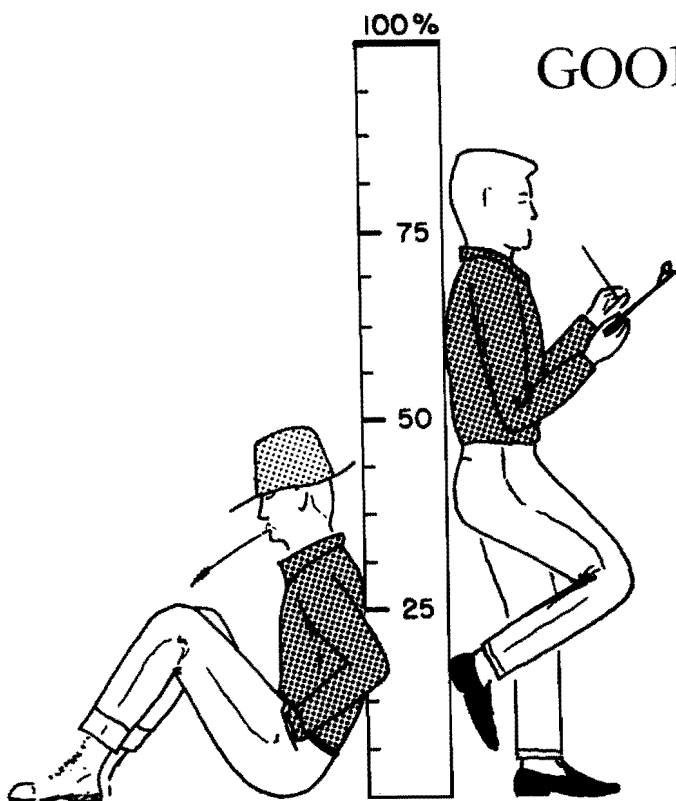
The dairy business summaries from all regions of the State have been put together and used as a basis for this applied research project. For purposes of this study, the farms with major non-dairy sources of income were excluded. There were 568 strictly dairy operations included in the 1968 summary data.

The 568 farms included in this study do NOT represent the average for the State. They were practical farm operators from various parts of the State who voluntarily participated in the farm business management projects. The group appears to be better than average as shown by a median herd size of 50 compared with a State median of 36.

The detailed summary and analysis made of the 568 dairy operations for 1968 is presented in this publication. The report provides up-to-date information on New York dairy farm businesses and a systematic way of summarizing and analyzing a farm business. It can be used by extension workers, teachers of agriculture, agribusinessmen, and other agriculturalists when counseling with individual farmers or in conducting educational programs in farm management.

### Acknowledgements

C. A. Bratton, G. L. Casler, G. J. Conneman, C. W. Loomis, A. C. Lowry, R. S. Smith, and S. F. Smith with the assistance of the Cooperative Extension Agents supervised the farm business management projects and the records which made this summary possible. Summarization and tabulation of the records and all machine operations were completed under the supervision of Myrtle Voorheis and the typing was done by Angie Torchia.



## 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 !

# Growing Conditions

Table 1. TEMPERATURE, GROWING SEASON AND PRECIPITATION  
Selected Stations, 1947-67 and 1968

Station	Average temperature		Precipitation				Length of	
	May through Sept.		May through Sept.		Total annual		growing season*	
	1947-67	1968	1947-67	1968	1947-67	1968	1947-67	1968
	Degrees		Inches				Days	
Alfred	61.8	61.5	16.8	16.9	36.7	36.0	122	151
Auburn	64.7	64.9	13.4	19.6	31.1	38.8	174	189
Batavia	64.4	63.9	14.7	19.1	31.8	36.9	152	176
Canton	63.0	61.3	16.9	16.1	34.9	36.0	127	131
Lowville	62.3	61.7	15.7	17.3	38.0	41.2	120	150
Norwich	61.7	61.1	18.1	21.4	40.1	43.7	118	136
Poughkeepsie	68.2	69.3	16.4	20.0	38.2	40.1	171	151
Salem	62.5	62.3	17.8	15.0	39.0	37.0	118	125
Utica	63.8	64.7	17.7	21.6	39.8	47.0	157	160

\* Days between the last temperature of 32° in the spring and the first in the fall

The weather is a factor to be considered when studying a farm business for a specific year. The growing conditions have a marked effect on the crops for the year. It is for this reason that data are presented on the growing conditions for 1968 and for the period 1947-67.

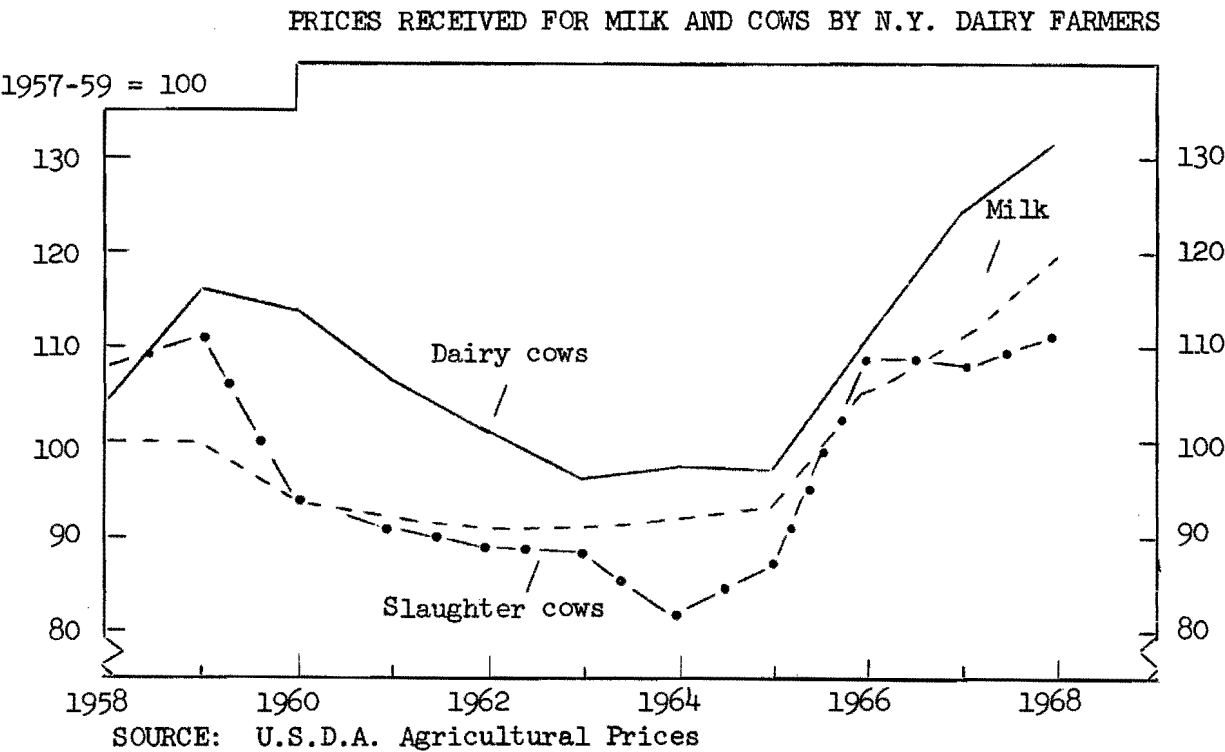
In general, the 1968 growing season can be characterized as having near normal temperatures, a relatively long growing season and more than normal rainfall. Conditions varied from area to area in the State. Data are presented for nine weather stations. The rainfall is reported by months for the growing season. July and August were dry in several areas of the State (table 2).

Table 2. GROWING SEASON RAINFALL  
Selected Stations, 1947-67 and 1968

Station	May		June		July		August		September	
	1947-67	1968	1947-67	1968	1947-67	1968	1947-67	1968	1947-67	1968
Alfred	3.43	6.06	3.68	4.70	3.51	2.06	3.34	1.97	2.88	2.14
Auburn	2.64	3.13	2.61	4.26	3.25	5.66	2.80	3.35	2.12	3.19
Batavia	3.02	4.32	2.62	4.55	2.85	0.79	3.54	6.19	2.71	3.25
Canton	3.33	3.36	2.88	2.71	3.40	3.61	4.00	2.26	3.25	4.19
Lowville	3.26	4.39	2.77	3.65	3.15	1.90	3.73	2.60	2.82	4.80
Norwich	3.54	5.82	4.16	5.35	4.02	1.91	3.13	4.29	3.24	3.98
Poughkeepsie	3.10	6.64	2.98	6.72	3.23	1.03	3.76	2.41	3.31	3.23
Salem	3.55	4.43	3.40	4.88	3.87	1.33	3.45	1.13	3.35	3.23
Utica	3.40	4.75	3.20	6.47	4.46	2.75	3.60	3.79	3.06	3.82

SOURCE: Climatological Data, New York, Environmental Data Service, ESSA,  
U. S. Department of Commerce

Prices

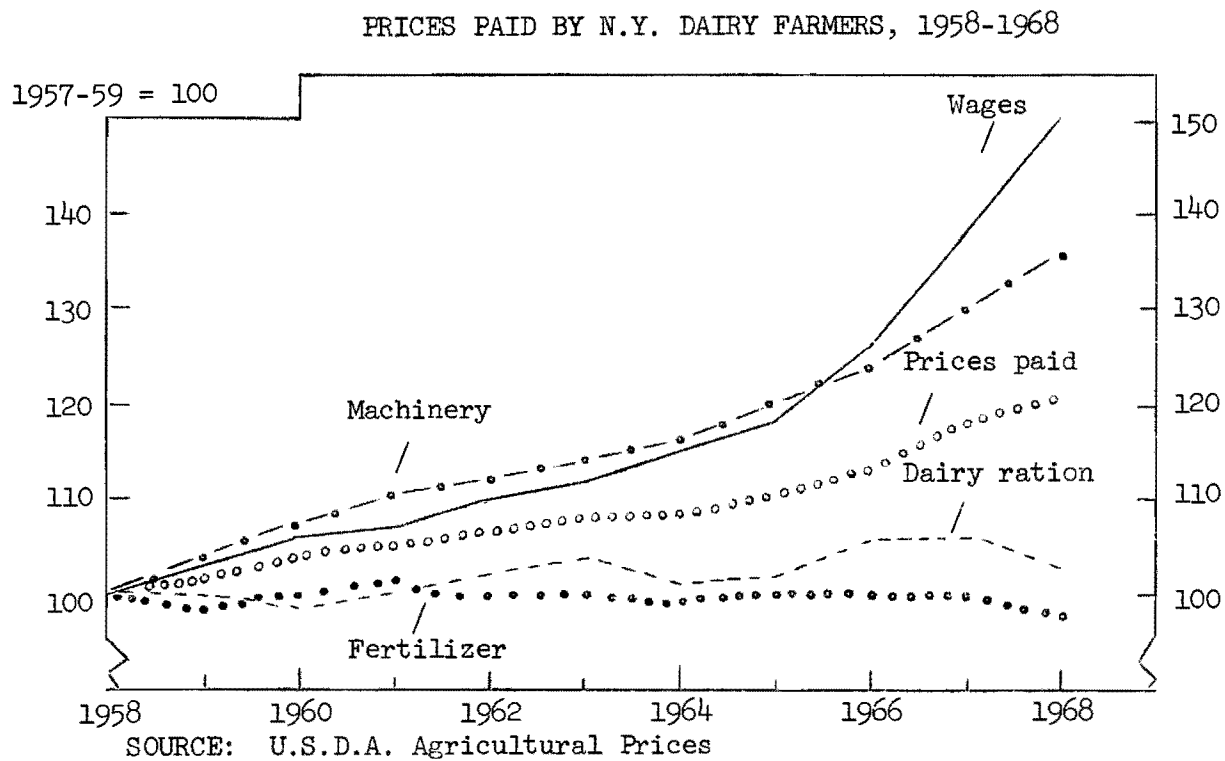


The economic climate for a business is strongly influenced by prices. The relationship of prices received to prices paid determines the general level of incomes. In this analysis of the 1968 dairy businesses, we first need to examine the price situation for the major items dairymen sell.

Milk prices for 1968 averaged \$5.43 compared with \$5.07 in 1967 and \$4.14 in 1962. Dairy cow prices in 1968 were the highest of any year in the past decade and slaughter cow prices were the highest of any year since 1959.

Table 3. PRICES RECEIVED FOR MILK AND COWS BY N.Y. FARMERS, 1958-68

Year	Milk 3.5% B.F. (cwt.)	Slaughter cows (cwt.)	Dairy cows (head)	Monthly farm price per 100 pounds of milk, 1968	
1958	\$4.55	\$17.30	\$255	January	\$5.21
1959	4.58	17.80	284	February	5.21
1960	4.31	15.00	278	March	4.98
1961	4.20	14.60	260	April	4.88
1962	4.14	14.26	245	May	4.81
1963	4.15	14.01	234	June	4.79
1964	4.21	13.17	237	July	5.40
1965	4.27	13.91	238	August	5.87
1966	4.79	17.35	271	September	6.09
1967	5.07	17.32	303	October	6.15
1968	5.43	17.58	319	November	6.00
				December	5.77



Prices paid by New York dairy farmers for all items used in the businesses have been rising generally but some items have increased more rapidly than others. Farm wages have increased the most. Fertilizer prices have changed little during the last ten years and feed prices in 1968 were down slightly from 1967.

The index of prices paid by New York dairy farmers in 1968 were up nearly 3 percent from 1967 and were 21 percent higher than ten years ago.

Table 4. PRICES PAID BY NEW YORK DAIRY FARMERS, 1958-1968

Year	Index 1957-59 = 100				Prices paid by New York dairy farmers	Dairy ration (cwt.)	Wages per month with house
	Feed	Fertilizer	Wages	Machinery			
1958	100	100	100	100	100	\$3.52	\$199
1959	100	99	103	104	102	3.55	204
1960	99	100	106	107	104	3.55	210
1961	100	101	107	110	105	3.61	214
1962	102	100	110	112	106	3.68	218
1963	104	100	112	114	108	3.79	222
1964	101	99	115	116	108	3.72	228
1965	102	100	118	120	110	3.79	236
1966	106	100	126	124	113	4.00	254
1967	106	100	138	130	118	4.00	280
1968	103	98	150	136	121	3.70	304



SUMMARY OF THE FARM BUSINESS

Labor, Livestock, and Crops Grown

Available resources determine what a farmer can do. Limited resources restrict income. In analyzing a farm business, an early step is to look at the people, the livestock, and the land resources that were used. The averages for the labor, livestock, and crops used on the 568 farms are shown in table 5.

Table 5. LABOR FORCE, LIVESTOCK NUMBERS, AND ACRES OF CROPS GROWN  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms	Range	
			High	Low
<u>Labor</u>				
Months of:				
Operators	_____	13.9		
Family unpaid	_____	2.7		
Family paid	_____	1.8		
Hired	_____	6.0		
Other	_____	.3		
Total months	_____	24.7		
Man equivalent (No. men)	_____	2.1	9.2	1.0
<u>Livestock (number)</u>				
Cows	_____	58	295	16
Heifers	_____	40	226	0
<u>Crops (acres grown)* - Data from 560 farms**</u>				
Hay	_____	(557) 86	335	7
Hay crop silage	_____	( 84) 27	130	3
Corn silage	_____	(515) 41	250	4
Corn for grain	_____	(149) 30	211	2
Oats	_____	(275) 25	110	2
Total acres of crops	_____	(560) 155	785	14

\* Average for farms reporting so acres do not add to total. Number of farms growing is in parenthesis.  
\*\* 8 farms omitted all crop information

Partnerships are relatively common on New York dairy farms. Of the 568 farms, 88 had two or more operators with a total of 660 operators. The average man equivalent of 2.1 indicates that these were family type farms. Family members provided 18.4 months of labor compared with 6.3 months hired, or three-fourths was family labor and one-fourth was hired. This is the proportion reported for all farms in the State and is the same as existed a century ago.

### Capital Investment

Capital is an important resource in a farm business. The end-of-year inventory is used as the measure of capital investment. The dairymen are encouraged to inventory items at the "fair market value" or what they might bring at a well-attended sale.

Table 6. FARM INVENTORY VALUES, JANUARY 1, 1969  
568 New York Dairy Farms

Item	My farm	Average of 568 farms	% of total
Machinery & equipment	\$ _____	\$ 25,247	23
Livestock	_____	27,317	24
Feed and supplies	_____	7,638	7
Land & buildings	_____	51,733	46
TOTAL INVESTMENT	\$ _____	\$111,935	100

Total investment at the end of year for the 568 farms averaged \$112,000. The range was from \$22,000 to \$597,000. There were 48 farms with an investment of more than \$200,000.

The average investment in machinery and livestock on these farms was about equal to the land and building investment. This indicates that the personal property on a modern dairy farm about equals the real property.

The capital investment for dairy farms in different states is reported in table 7. The total investment per farm, per man, and per cow varies considerably. New York's investment is comparable to that of other dairy areas.

Table 7. CAPITAL INVESTMENT FOR DAIRY FARMS IN SELECTED STATES, 1968

State	Number of farms	Average number cows	Total investment	Investment	
				Per man	Per cow
New York	568	58	\$111,900	\$53,300	\$1,930
Wisconsin	436	42	81,000	45,000	1,930
Michigan	331	54	150,700	60,400	2,790
Indiana	53	44	135,900	71,500	3,090
Virginia*	100	52	84,800	32,600	1,630
Kansas	36	53	147,800	82,100	2,790

\* From 1967 Summary

Receipts

In studying a dairy farm business, an examination of the receipts tells where the money for the business comes from. It is a basic part of any farm business summary.

Table 8. FARM RECEIPTS  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms	Percent of total	
Milk sales	\$ _____	\$39,477	88	
Livestock sold	_____	3,915	9	
Crop sales	_____	393	1	
Government payments	_____	261	1	
Gas tax refund	_____	81	--	
Machine work	_____	106	--	
Machinery sold	_____	168	--	
Work off farm	_____	60	--	
Miscellaneous	_____	625	1	
Total Cash Receipts	\$ _____	\$45,086	100	
Increase in inventory	_____	8,161		
TOTAL FARM RECEIPTS	\$ _____	\$53,247		
			High	Low
Average price per cwt. of milk sold	\$ _____	\$5.52	\$7.61	\$4.23

Milk sales on these 568 farms accounted for 88 percent of the total cash receipts. Livestock sold, the second largest item, accounted for an additional 9 percent. Cash receipts on these farms averaged \$3,750 per month or \$125 per day.

The average increase in inventory on the 568 farms amounted to \$8,161. A total of 497 of the 568 or 88 percent of the farms had an increase in inventory. Inventory increases are included as receipts since this represents the amount that could have been sold but was retained for expansion purposes. The inventory increase accounted for 15 percent of the total farm receipts. Land and buildings had the largest increase with \$2,983. The increases for other items included machinery and equipment \$2,672, livestock \$2,349, and feed and supplies \$157.

The average price per hundredweight of milk sold by the 568 farms in 1968 was \$5.52. The average price is calculated by dividing the gross milk receipts for the year by the total pounds of milk sold. The variation in average price received is shown below:

<u>Average price received for milk</u>	<u>Number of farms</u>	<u>Percent</u>
Below \$5.00	5	1
\$5.00 - \$5.24	66	12
5.25 - 5.49	305	53
5.50 - 5.74	115	20
5.75 - 5.99	33	6
6.00 - 6.24	22	4
Over \$6.25	<u>22</u>	<u>4</u>
	568	100

It is often assumed that there is nothing a dairyman can do about milk prices. This may be true as it pertains to the prices at a particular time. The variation shown above does indicate that the average annual prices received for milk by farmers do vary. Some of this is due to management practices such as seasonality of production and butterfat test.

Gross receipts are sometimes used as a measure of size of business. The census of agriculture uses this measure in classifying farms. The distribution of total farm receipts of the 568 farms in 1968 is shown below:

<u>Total farm receipts</u>	<u>Number of farms</u>	<u>Percent of farms</u>
\$10,000 - \$19,999	22	4
20,000 - 29,999	79	14
30,000 - 39,999	120	21
40,000 - 49,999	113	20
50,000 - 59,999	59	10
60,000 - 79,999	87	15
80,000 - 99,999	41	8
\$100,000 and over	<u>47</u>	<u>8</u>
	568	100

There were no farms among the 568 with total farm receipts of less than \$10,000. One-half the farms had receipts between \$30,000 and \$60,000 and 8 percent had receipts of \$100,000 or more.

Expenses

An important part of the job of a manager is controlling expenditures. The first step in this control is to know what the expenses are and how they compare with others in similar businesses.

Table 9. FARM EXPENSES  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms	Percent of total
Hired labor	\$ _____	\$ 3,006	12
Dairy concentrate	_____	9,459	37
Other feed	_____	259	1
Machine hire	_____	287	1
Machinery repairs	_____	1,605	6
Auto expense (farm share)	_____	247	1
Gas and oil	_____	1,136	4
Breeding fees	_____	401	2
Veterinary and medicine	_____	645	3
Milk hauling	_____	435	2
Other livestock expense	_____	1,310	5
Lime and fertilizer	_____	1,732	7
Seeds and plants	_____	460	2
Bale ties	_____	80	--
Spray, other crop expense	_____	350	1
Land, building, fence repair	_____	775	3
Taxes	_____	1,132	4
Insurance	_____	719	3
Electricity (farm share)	_____	601	2
Telephone (farm share)	_____	140	1
Miscellaneous	_____	818	3
Total Cash Operating Expenses	\$ _____	\$25,597	100
New machinery*	_____	6,178	
Real estate**	_____	3,301	
Livestock purchases**	_____	1,823	
Unpaid labor	_____	818	
Decrease in inventory	_____	--	
TOTAL FARM EXPENSES	\$ _____	\$37,717	

\* Depreciation \$3,338 - see page 22 for calculations

\*\* Number reporting purchase of real estate, 336; livestock, 351

The expense classification used on page 10 is taken from the "Cornell Farm Account Book." Lists of the items included in each category in table 9 are presented on the inside back cover of that account book.

Unpaid family labor refers to work done by members of the family who are not paid cash wages. For the 568 farms, this item was calculated by determining the number of months of unpaid labor performed and charging this to the business at \$300 per month.

Decrease in inventory is the amount that the beginning inventory exceeds the end inventory. Since this indicates a "using up" of capital items, it is considered as a farm expense.

Total farm expenses for the 568 farms averaged \$37,700 or more than \$100 per day. The cash operating expenses averaged \$25,600 or 68 percent of the total. Expenditures for capital items like machinery, buildings, and livestock are often paid for by loans rather than cash. It is for this reason that they are separated in this classification.

The cash operating expenses averaged \$440 per cow. When capital items and unpaid labor were included, the total farm expenses averaged \$650 per cow.

Farm expenses can be classified in various ways. Another way to study expenses is to divide them on the basis of fixed, variable, and capital items. This is shown below:

<u>Capital expenses (investments)</u>		<u>Operating expenses (variable)</u>	
Machinery	\$ 6,178	Labor	\$ 3,824
Real estate	3,301	Feed	9,718
Livestock	1,823	Machinery repairs	1,605
Total Capital	\$11,302	Gas & oil	1,136
		Machine hire	722
<u>Overhead expenses (fixed)</u>		Auto	247
Property taxes	\$ 1,132	Livestock expenses	2,356
Insurance	719	Fertilizer & lime	1,732
Land & building repairs	775	Other crop expenses	890
Electricity	601	Miscellaneous	818
Telephone	140	Total Variable	\$23,048
Total Fixed Overhead	\$ 3,367		

The variable expenses on these farms accounted for 61 percent of the grand total. These are items over which the operator has direct control. The fixed items accounted for only 9 percent of the total and capital items 30 percent. The variable expenses are the ones the dairymen must make decisions on daily.

Income

The income from a farm business can be measured in several ways. The measure used depends on the point of view from which the results are to be evaluated. Select the measure that fits the point in question.

Table 10. FARM INCOME AND LABOR INCOME  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms	Percent of receipts
Total farm receipts	\$ _____	\$53,247	100
Total farm expenses	_____	37,717	71
FARM INCOME	\$ _____	\$15,530	29
Interest on average capital at 5%	_____	5,393	10
Labor income per farm	\$ _____	\$10,137	19
Number of operators	_____	660	
LABOR INCOME PER OPERATOR	\$ _____	\$ 8,724	

Farm income measures the return from the business to all capital and the operator's labor and management. Farm income is the difference between total receipts, including increase in inventory, and total expenses, including decrease in inventory but excluding interest payments.

Labor income is the return to the farm operator for his labor and management. This is the measure most commonly used when studying or comparing farm businesses. To get the labor income, a 5 percent interest charge on all capital is subtracted from the farm income. At the present time, the 5 percent interest can be challenged as being too low. The interest charge is intended to reflect in part what could be earned elsewhere with the capital invested.

Distribution of Labor Incomes Per Operator

Labor income per operator	Farms	
	Number	Percent
Minus	20	3
0 - \$ 4,999	126	22
\$ 5,000 - 9,999	239	42
10,000 - 14,999	109	19
15,000 - 19,999	37	7
20,000 - 24,999	26	5
\$25,000 or more	11	2

Table 11. FARM CASH OPERATING INCOME AND REPAYMENT ABILITY  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms
Total cash receipts	\$ _____	\$45,086
Total cash operating expense	_____	25,597
FARM CASH OPERATING INCOME	\$ _____	\$19,489
Family cash living expenses*	_____	6,275
REPAYMENT ABILITY	\$ _____	\$13,214

\* Estimated at \$5,400 per operator per year

Farm cash operating income reflects the cash available from the year's operation of the farm business for family living, interest and debt payments, and new capital purchases or investments. A family may have had additional cash available if some member of the family had a non-farm income, or if money were inherited or borrowed.

Repayment ability is a measure of the amount of cash available for debt payments. It is calculated by deducting family living expenses from the farm cash operating income. It is assumed here that new machinery, real estate, and livestock are purchased with borrowed capital. This measure is useful in planning debt repayment schedules.

Rate of return on investment is calculated by deducting a charge for the operator's labor from the "farm income." This is then divided by the average investment for the year to determine the rate of return on investment. In the above calculation, \$5,400 has been used as the value of the operator's labor. Rate of return really reflects the return to capital and management.

Table 12. RATE OF RETURN ON INVESTMENT  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms
Farm income	\$ _____	\$ 15,530
Value of operators' labor*	_____	6,275
Return on investment	\$ _____	\$ 9,255
Average capital investment	\$ _____	\$107,854
RATE OF RETURN ON INVESTMENT	_____ %	8.6%

\* \$5,400 per operator. Some farms had more than one operator.



Farm income as calculated here is the return from the business for three major input items; (1) the operator's labor input, (2) the operator's management input, and (3) the total capital input.

In calculating operator's labor income, the first two inputs are combined, and in calculating rate of return on investment the last two are combined.

In non-farm businesses another measure is sometimes used, namely, "profit." This can be done where the management inputs are actually hired. In some farm management studies, the management input has been valued at 8 percent of the gross farm receipts, and the operator's labor at the average wage for hired men with houses. Using this method, the farm income can be separated as follows:

Farm Income	\$15,530	Operators' labor @ \$70/week	\$4,230
		Management @ 8% of farm receipts	4,260
		Interest on capital @ 5%	5,393
		Profit	1,647

Income from a business can also be calculated in relation to various input units. For example, since these are family-type farms, the labor and management return can be figured on a per man equivalent basis. This is shown below:

Returns to All Labor	
Labor income per farm	\$10,137
Value hired labor	3,006
Value unpaid labor	818
Total returns to labor	\$13,961
Average man equivalent	2.1
Returns per man equivalent	\$ 6,648

In like manner, returns can be calculated on the basis of production units or on a per cow basis. These are given below:

Returns Per Cow	
Cash Operating Income per cow	\$336
Farm Income per cow	\$268
Operators' Labor Income per cow	\$175

ANALYSIS OF THE FARM BUSINESS

A number of measures have been developed to aid in analyzing farm businesses for strong and weak points. In this section, five business factors are examined. These are: size of business, rates of production, labor efficiency, capital efficiency, and cost control. The 1968 averages for selected measures for each of these factors are reported along with the general relationship of each to labor income.

Many of the measures examined here are interrelated. This means that all of the factors should be examined before arriving at major conclusions. A detailed analysis of the business will not automatically provide suggested improvements, but it should provide a basis for identifying weaknesses and planning future changes.

Size of Business

Size of farm has an effect on other factors such as labor efficiency, cost control, and capital efficiency. The prices received and paid by a farmer are often affected by the volume which is a function of size. Farm management studies have shown that, in general, larger farm businesses make larger labor incomes. Two basic reasons for this are that larger businesses make possible more efficient use of overhead inputs such as labor and machinery, and there are more units of production (milk) on which to make a profit.

Table 13. MEASURES OF SIZE OF BUSINESS  
568 New York Dairy Farms, 1968

Measure	My farm	Average of 568 farms
Number of cows	_____	58
Total acres in crops	_____	155
Man equivalent	_____	2.1
Total work units	_____	692
Pounds of milk sold	_____	715,200
Total farm receipts	\$ _____	\$ 53,250
Total investment	\$ _____	\$111,900

Number of cows is the average number in the herd for the year. Where available, the D.H.I.C. annual average is used.

Total acres in crops includes all acres on which crops were harvested during the 1968 year. It does not include cropland pasture.

Man equivalent is the amount of labor available on the farm during the year in terms of full-time man years. Work by part-time workers and family members is converted to full-time man equivalent.

Total work units represents the number of productive man days that would be required, under average conditions, to care for the acreage of crops grown and the number of livestock handled. A man work unit is the average amount of productive work accomplished in ten hours.

Table 14. COWS PER FARM AND LABOR INCOME  
568 New York Dairy Farms, 1968

Number of cows	Number of farms	Percent of farms	Labor income per operator
Less than 25	13	3	\$ 3,080
25 - 39	126	22	6,080
40 - 54	193	34	7,230
55 - 69	98	17	9,920
70 - 84	52	9	10,400
85 - 99	34	6	11,800
100 - 114	24	4	14,850
115 - 129	16	3	20,410
130 and over	12	2	19,270

The relationship of size of business and labor income was observed for size as measured by number of cows and by man equivalent. The pattern was the same for both measures, the larger the business the higher the labor income per operator up to 130 cows and to a 3.5 man equivalent after which the incomes dropped some. The number of farms in the largest group was relatively small so cannot be used as conclusive evidence.

The 1968 relationship is consistent with that of earlier studies. A well-managed large farm will provide the operator a higher income than a well-managed small one. However, a large farm poorly managed can lose more than a poorly managed small farm.

Table 15. MAN EQUIVALENT PER FARM AND LABOR INCOME  
568 New York Dairy Farms, 1968

Man equivalent	Number of farms	Percent of farms	Labor income per operator
1.0 - 1.4	138	24	\$ 7,040
1.5 - 1.9	138	24	7,800
2.0 - 2.4	164	29	9,020
2.5 - 2.9	54	9	9,840
3.0 - 3.4	36	7	14,680
3.5 and over	38	7	11,407

### Capital Efficiency

The capital investment on modern dairy farms continues to increase. The average end-of-year inventory on the 568 farms was over \$100,000. With an investment of this amount, attention must be given to measures of capital efficiency.

Like all other costs in a business, capital costs can get out of line. This may result from excessive investment in non-productive items such as an elaborate barn or a little used machine, or from not using an investment fully such as a barn that is only half full of cows. When considering major investments, the effects on capital efficiency must be kept in mind.

Table 20. MEASURES OF CAPITAL EFFICIENCY  
568 New York Dairy Farms, 1968

Measure	My farm	Average of 568 farms
Total capital per man	\$ _____	\$53,300
Total capital per cow	_____	1,930
Machinery and equipment per cow	_____	435
Land and building investment per cow	_____	890
Total capital per cwt. milk sold	_____	16

Capital efficiency is often associated with size of herd. For this reason, the 568 farms were sorted on the basis of number of cows in the herd and the capital efficiency measures were calculated. There seemed to be no marked relationship, but the highest total capital investment per cow was for the herd sizes 70-84 and 85-99 cows (table 21).

Table 21. SIZE OF HERD AND CAPITAL EFFICIENCY  
568 New York Dairy Farms, 1968

Number of cows	Number of farms	Capital Investment Per Cow		
		Total	Real estate	Machinery
Under 40	139	\$1,907	\$ 887	\$456
40 - 54	193	1,918	876	445
55 - 69	98	1,840	803	440
70 - 84	52	2,008	899	478
85 - 99	34	2,024	1,013	415
100 & over	52	1,913	918	378

Cost Control

The purchases made by these 568 dairy farmers averaged \$3,000 per month. Modern farms make use of more and more purchased inputs. As the total expenses increase, cost control becomes more important.

Feed Costs

Dairy concentrate is the largest single expense item on most New York dairy farms. For the 568 farms in 1968, dairy concentrate accounted for 37 percent of the cash operating expenses. Consequently, feed is the first item examined in the "cost control" analysis. Below are some measures used in a feed cost analysis.

Table 22. ITEMS RELATED TO FEED COSTS  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms
<u>Feed Expense</u>		
Dairy feed purchased	\$ _____	\$9,459
Feed purchased as % of milk receipts	_____ %	24%
Feed purchased per cwt. of milk sold	\$ _____	\$1.32
Feed purchased per cow	\$ _____	\$163
Crop expense per cow	\$ _____	\$45
Total feed & crop expense per cow	\$ _____	\$208
Total feed & crop expense per cwt. of milk sold	\$ _____	\$1.69
<u>Roughage Harvested (hay equivalent)</u>		
Hay (tons)	_____	234
Corn silage (tons ÷ 3)	_____	174
Hay crop silage (tons ÷ 2 or 3)*	_____	12
Total tons hay equivalent	_____	420
Tons hay equivalent per cow	_____	7.2
<u>Other Considerations</u>		
Acres in crops per cow		2.7
Lime and fertilizer expense per cow	\$ _____	\$30
Lime and fertilizer expense per crop acre	\$ _____	\$11
Number of heifers per 10 cows	_____	6.9

\* Depending on moisture content of silage

Feed cost is influenced by a number of factors. On the production side, it is affected by the amount of home-grown grains, quality and quantity of the roughage, and the number of youngstock. On the purchasing side, it is influenced by the farmer's ability to purchase concentrates at low cost.

Feed purchased as percent of milk receipts is calculated by dividing feed purchased by milk receipts. This measure can be used to determine whether the feed costs are in line. The amount of home grown grain must be considered as you evaluate this measure.

Feed purchased per cow is calculated by dividing the total expense for dairy concentrate by the average number of cows. Because this also includes the amount spent for calf and heifer feed, it actually represents the feed cost per cow and the replacements being raised.

Total crop expense per cow is calculated by dividing the total money spent for fertilizer and lime, seeds and plants, bale ties, spray, and other crop expense by the average number of cows. This represents the direct cash costs of the dairyman for growing feed.

Total feed and crop expense is determined by adding the purchased feed expense to total crop expense. This indicates the total amount spent by the dairyman to provide the feed requirements of the herd. If the dairyman gets a high amount of nutrients per dollar spent and feeds these nutrients so as to get efficient milk production per unit of nutrient, he will keep his feed and crop expense per hundredweight of milk down.

Number of heifers per ten cows is figured by dividing the number of heifers by the number of cows and multiplying by ten.

Table 23. PERCENT PURCHASED FEED IS OF MILK RECEIPTS AND LABOR INCOME  
568 New York Dairy Farms, 1968

% Feed is of milk	Number of farms	Number of cows	H.E. per ccw	Lbs. milk per ccw	Labor income per operator
Over 40%	8	41	8.1	13,300	\$ 4,076
35 - 39	29	51	6.4	12,100	5,372
30 - 34	108	56	6.9	12,300	7,819
25 - 29	157	57	7.1	12,300	8,828
20 - 24	128	62	7.3	12,400	9,866
Under 20%	138	61	7.6	11,900	9,769

In general, the lower the percent of the milk check going for purchased feed the higher the income (table 23). However, when the percent was less than 20, the pounds of milk per cow and the income was down slightly. This may indicate that there is a level below which it is not profitable to go.

Power and Machinery Costs

The substitution of machinery for labor on dairy farms has been taking place at a relatively rapid pace. This increases the importance of analyzing the power and machinery costs. On the 568 farms, net power and machinery costs accounted for 23 percent of the total farm expenses in 1968. Below are the calculations of the power and machinery costs and related factors.

Table 24.

POWER AND MACHINERY COST\*  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms	Percent of total
Beginning inventory	\$ _____	\$22,575	
New machinery purchased	_____	6,178	
Total (No. 1)	\$ _____	\$28,752	
End inventory	\$ _____	\$25,247	
Machinery sold	_____	168	
Total (No. 2)	\$ _____	\$25,415	
Depreciation (Total No. 1 minus Total No. 2)	\$ _____	\$ 3,338	37
Interest at 5% on av. inventory	_____	1,195	13
Gas and oil	_____	1,136	13
Machinery repairs	_____	1,605	18
Bale ties	_____	80	1
Milk hauling	_____	435	5
Machine hire	_____	287	3
Auto expense (farm share)	_____	247	3
Electricity (farm share)	_____	601	7
Total power & machinery cost	\$ _____	\$ 8,924	100
Less:			
Gas tax refund	\$ _____	\$ 81	
Income from machine work	_____	106	
		187	
NET POWER & MACHINERY COST	\$ _____	\$ 8,737	
<hr/>			
Net machinery cost:			
per cow	\$ _____	\$151	
per crop acre	\$ _____	\$56	
per cwt. milk sold	\$ _____	\$1.22	
per man	\$ _____	\$4,160	

\* Does not include insurance, housing, or value of labor used in operation or repair

The relationship between machinery cost per cow and labor income was somewhat irregular (table 25). As the machinery cost per cow decreased to about \$150 incomes increased. The highest labor income was for the farms with a machinery cost per cow of \$75-\$100.

Table 25. MACHINERY COST PER COW AND LABOR INCOME  
568 New York Dairy Farms, 1968

Machinery cost per cow	Number of farms	Percent of farms	Labor income per operator
\$225 & over	33	6	\$ 4,800
\$200 - \$224	37	6	6,869
175 - 199	78	14	8,467
150 - 174	109	19	9,476
125 - 149	129	23	9,084
100 - 124	125	22	8,897
75 - 99	48	8	11,744
Less than \$75	9	2	8,490

Labor and Machinery Costs

The primary justification given for more mechanization is to reduce labor costs. However, if a machine is added without expanding size or reducing the labor force, costs will be increased. "Labor and machinery cost" provides a measure of the efficiency of the operator's machinery and labor combination.

Table 26. LABOR AND MACHINERY COST  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms
Labor cost:		
Value of operators' labor*	\$ _____	\$ 6,275
Hired labor	_____	3,006
Unpaid family labor	_____	818
Total Labor Cost	\$ _____	\$10,099
Net power and machinery cost (p. 22)	_____	8,737
TOTAL LABOR AND MACHINERY COST	\$ _____	\$18,836
-----		
Labor cost:		
per cow	\$ _____	\$174
per cwt. milk sold	\$ _____	\$1.41
Labor and machinery cost:		
per cow	\$ _____	\$325
per cwt. milk sold	\$ _____	\$2.63

\* Valued at \$5,400 per operator. Some farms had more than one operator.



Miscellaneous Cost Control Measures

Cost control applies to all expenditures both large and small. Reducing various cost items to a per cow or per acre basis provides cost control measures which are easy to understand and use. It also provides measures of cost control which can be used for analyzing farms of various sizes or in projecting the effects on proposed changes.

Table 27.

COST CONTROL MEASURES  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms
<u>Overhead</u>		
Land and building repair per cow	\$ _____	\$ 13
Taxes per cow	_____	20
Insurance per cow	_____	12
Electricity per cow	_____	10
<u>Machinery</u>		
Machinery depreciation per cow	\$ _____	\$ 58
Machinery repair per cow	_____	28
Gas and oil per cow	_____	20
Net machinery cost per cow	_____	151
<u>Dairy</u>		
Veterinary and medicine per cow	\$ _____	\$ 11
Breeding fees per cow	_____	7
Other livestock expense per cow	_____	23
<u>Crop</u>		
Fertilizer and lime per crop acre	\$ _____	\$ 11
Seeds and plants per crop acre	_____	3
Other crop expense per crop acre	_____	3
Gas and oil per crop acre	_____	7
<u>General</u>		
Total labor per cow*	\$ _____	\$174
Total feed and crop expense per cow	_____	208
Total expenses per cow	_____	650
Total expenses per \$100 receipts	_____	71

\* Using \$5,400 per year for operator's labor

### Combination of Factors

Individual factors have been examined in the analysis up to this point. It has been suggested that these factors are interrelated. In this section, the combination of factors is studied. The factors used here are size, rates of production, labor efficiency, and cost control as measured by number of cows, pounds of milk sold per cow, pounds of milk sold per man, and percent purchased feed was of milk receipts.

For each factor, the farms were divided on the basis of whether they were above or below the average for the 568 farms. They were then grouped on the basis of the number of factors better than average. The combination of factors above and below average within the three middle groups varied.

Table 28. COMBINATION OF FACTORS ABOVE AVERAGE\* AND LABOR INCOME  
568 New York Dairy Farms, 1968

Number of factors above average	Number of farms	Percent of farms	Labor income per operator
4 factors better than average	47	8	\$15,129
3 factors better than average	115	20	13,022
2 factors better than average	164	29	9,112
1 factor better than average	165	29	5,822
0 factors better than average	77	14	4,757

\* Factors were:

Size - number of cows - average 58

Rates of production - pounds of milk sold per cow -  
average 12,300

Labor efficiency - pounds of milk sold per man -  
average 340,600

Cost control - percent purchased feed was of milk receipts -  
average 24 percent

The relationship between the number of factors better than average and labor income is shown in table 28. As the number of factors better than average increased, labor incomes increased at a rapid rate. In order to get a labor income higher than good hired men's wages, it appears that a business must be above average in at least two factors.

It is important in managing a farm business to give attention to all major factors affecting the business. Concentrating on only one factor, such as milk per cow, will not give the kind of income most farmers want.

### Comparison by Herd Size

In making an analysis of an individual farm business, it is helpful to compare it with businesses of approximately the same size. On the following four pages, the business summary and business factors for the 568 farms are shown for six herd size groups. These data also illustrate the effect of size on various business factors.

Table 29.

FARM BUSINESS SUMMARY BY HERD SIZE  
568 New York Dairy Farms, 1968

Item	My farm	Farms with less than 40 cows	40 to 54 cow farms	55 to 69 cow farms
<u>Capital Investment (End of Year)</u>				
Machinery and equipment	\$ _____	\$15,049	\$20,490	\$ 26,851
Livestock	_____	15,016	21,633	28,442
Feed and supplies	_____	3,607	5,835	7,938
Land and buildings	_____	29,274	40,289	49,013
TOTAL INVESTMENT	\$ _____	\$62,946	\$88,247	\$112,244
<u>Receipts</u>				
Milk sales	\$ _____	\$21,733	\$30,939	\$ 40,843
Livestock sold	_____	2,234	3,035	4,241
Crop sales	_____	243	321	356
Miscellaneous receipts	_____	719	1,070	1,272
Total Cash Receipts	\$ _____	\$24,929	\$35,365	\$ 46,712
Increase in inventory	_____	4,189	6,122	8,946
TOTAL FARM RECEIPTS	\$ _____	\$29,118	\$41,487	\$ 55,658
<u>Expenses</u>				
Hired labor	\$ _____	\$ 558	\$ 1,587	\$ 2,916
Dairy feed	_____	5,626	7,578	10,070
Other feed	_____	186	275	141
Machine hire	_____	153	188	328
Machinery repair	_____	829	1,282	1,583
Auto expense (farm share)	_____	184	250	246
Gas and oil	_____	661	941	1,158
Breeding fees	_____	256	335	419
Veterinary and medicine	_____	345	534	693
Other livestock expense	_____	930	1,267	1,729
Lime and fertilizer	_____	713	1,310	1,803
Seeds and plants	_____	231	386	487
Spray and other crop expense	_____	195	337	440
Land, bldg., fence repair	_____	392	621	742
Taxes and insurance	_____	1,047	1,450	1,786
Elec. and tel. (farm share)	_____	457	617	726
Miscellaneous expenses	_____	369	571	768
Total Cash Operating Exp.	\$ _____	\$13,132	\$19,529	\$26,035
New machinery	_____	3,227	4,921	6,683
New real estate	_____	2,007	2,544	2,961
Purchased livestock	_____	1,045	1,344	1,967
Unpaid family labor	_____	831	898	823
TOTAL FARM EXPENSES	\$ _____	\$20,242	\$29,236	\$ 38,469
<u>Financial Summary</u>				
Total Farm Receipts	\$ _____	\$29,118	\$41,487	\$ 55,658
Total Farm Expenses	_____	20,242	29,236	38,469
Farm Income	\$ _____	\$ 8,876	\$12,251	\$ 17,189
Interest on av. capital @ 5%	_____	3,043	4,259	5,389
Labor Income per Farm	\$ _____	\$ 5,833	\$ 7,992	\$ 11,800
Number of operators	_____	141	218	121
LABOR INCOME PER OPERATOR	\$ _____	\$ 5,751	\$ 7,075	\$ 9,557

Table 29. contd. FARM BUSINESS SUMMARY BY HERD SIZE  
568 New York Dairy Farms, 1968

Item	My farm	70 to 84 cow farms	85 to 99 cow farms	Farms with 100 or more cows
<u>Capital Investment (End of Year)</u>				
Machinery and equipment	\$	\$ 36,325	\$ 38,176	\$ 47,617
Livestock		36,180	42,525	60,363
Feed and supplies		11,724	12,322	17,389
Land and buildings		68,346	93,203	115,641
TOTAL INVESTMENT	\$	\$152,575	\$186,226	\$241,010
<u>Receipts</u>				
Milk sales	\$	\$ 53,053	\$ 65,737	\$ 85,278
Livestock sold		4,433	6,466	8,877
Crop sales		339	901	846
Miscellaneous receipts		1,618	1,844	3,092
Total Cash Receipts	\$	\$ 59,443	\$ 74,948	\$ 98,093
Increase in inventory		12,194	10,445	19,346
TOTAL FARM RECEIPTS	\$	\$ 71,637	\$ 85,393	\$117,439
<u>Expenses</u>				
Hired labor	\$	\$ 4,868	\$ 6,626	\$ 10,760
Dairy feed		12,376	14,964	19,020
Other feed		238	380	558
Machine hire		252	463	858
Machinery repair		2,078	2,758	3,697
Auto expense (farm share)		341	318	268
Gas and oil		1,413	1,610	2,497
Breeding fees		537	647	701
Veterinary and medicine		827	1,149	1,260
Other livestock expense		2,241	3,163	4,302
Lime and fertilizer		2,282	3,144	4,603
Seeds and plants		601	733	973
Spray and other crop expense		646	634	1,031
Land, bldg., fence repair		1,109	1,410	1,680
Taxes and insurance		2,527	3,248	4,030
Elec. and tel. (farm share)		988	1,167	1,457
Miscellaneous expenses		1,138	1,678	1,953
Total Cash Operating Exp.	\$	\$ 34,462	\$ 44,092	\$ 59,648
New machinery		9,464	7,850	13,405
New real estate		4,671	6,097	7,017
Purchased livestock		1,779	2,737	4,853
Unpaid family labor		358	644	1,050
TOTAL FARM EXPENSES	\$	\$ 50,734	\$ 61,420	\$ 85,973
<u>Financial Summary</u>				
Total Farm Receipts	\$	\$ 71,637	\$ 85,393	\$117,439
Total Farm Expenses		50,734	61,420	85,973
Farm Income	\$	\$ 20,903	\$ 23,973	\$ 31,466
Interest on av. capital @ 5%		7,324	9,050	11,567
Labor Income per Farm	\$	\$ 13,579	\$ 14,923	\$ 19,899
Number of operators		69	45	66
LABOR INCOME PER OPERATOR	\$	\$ 10,233	\$ 11,275	\$ 15,678

Table 30. SELECTED BUSINESS FACTORS BY HERD SIZE  
568 New York Dairy Farms, 1968

Item	My farm	Farms with less than 40 cows	40 to 54 cow farms	55 to 69 cow farms
Number of farms		139	193	98
<u>Size of Business</u>				
Number of cows		33	46	61
Pounds of milk sold		398,700	563,800	745,500
Crop acres		88	126	156
Man equivalent		1.4	1.8	2.1
Total work units		394	557	724
<u>Rates of Production</u>				
Milk sold per cow		12,100	12,300	12,200
Tons hay per acre		2.5	2.6	2.8
Tons corn silage per acre		14	14	14
Bushels of oats per acre		54	55	63
<u>Labor Efficiency</u>				
Cows per man		24	26	29
Pounds milk sold per man		284,800	313,200	355,000
Work units per man		281	309	345
Crop acres per man		63	70	74
<u>Feed Costs</u>				
Feed purchased per cow	\$	\$170	\$165	\$165
Crop expense per cow	\$	\$35	\$44	\$45
Feed & crop expense per cow	\$	\$205	\$209	\$210
Feed cost per cwt. milk	\$	\$1.41	\$1.34	\$1.35
Feed & crop expense/cwt. milk	\$	\$1.70	\$1.70	\$1.72
% Feed is of milk receipts	%	26%	24%	25%
Hay equivalent per cow		6.6	7.1	7.3
Crop acres per cow		2.7	2.7	2.6
Fertilizer & lime/crop acre	\$	\$8	\$10	\$12
<u>Machinery Costs</u>				
Total machinery costs	\$	\$4,930	\$7,017	\$8,771
Machinery cost per cow	\$	\$149	\$153	\$144
Machinery cost per man	\$	\$3,521	\$3,898	\$4,177
Machinery cost per cwt. milk	\$	\$1.24	\$1.24	\$1.18
Machinery cost per crop acre	\$	\$56	\$56	\$56
<u>Capital Efficiency</u>				
Investment per man	\$	\$44,961	\$49,026	\$53,450
Investment per cow	\$	\$1,907	\$1,918	\$1,840
Investment per cwt. milk sold	\$	\$16	\$16	\$15
Land and buildings per cow	\$	\$887	\$876	\$803
Machinery investment per cow	\$	\$456	\$445	\$440
Return on investment	%	5.6%	7.0%	9.4%
<u>Other</u>				
Price per cwt. milk sold	\$	\$5.45	\$5.49	\$5.48
Acres hay and hay crop silage		60	77	92
Acres corn silage		14	20	37

Table 30. contd. SELECTED BUSINESS FACTORS BY HERD SIZE  
568 New York Dairy Farms, 1968

Item	My farm	70 to 84 cow farms	85 to 99 cow farms	Farms with 100 or more cows
Number of farms		52	34	52
<u>Size of Business</u>				
Number of cows		76	92	126
Pounds of milk sold		966,400	1,177,800	1,513,000
Crop acres		199	236	320
Man equivalent		2.5	2.9	3.7
Total work units		905	1,084	1,459
<u>Rates of Production</u>				
Milk sold per cow		12,700	12,800	12,000
Tons hay per acre		2.8	3.2	2.9
Tons corn silage per acre		14	13	15
Bushels oats per acre		61	62	69
<u>Labor Efficiency</u>				
Cows per man		30	32	34
Pounds milk sold per man		386,600	406,100	408,900
Work units per man		362	374	394
Crop acres per man		80	81	86
<u>Feed Costs</u>				
Feed purchased per cow	\$	\$163	\$163	\$151
Crop expense per cow	\$	\$46	\$49	\$52
Feed & crop expense per cow	\$	\$209	\$212	\$203
Feed cost per cwt. milk	\$	\$1.28	\$1.27	\$1.26
Feed & crop expense/cwt. milk	\$	\$1.65	\$1.65	\$1.69
% Feed is of milk receipts	%	23%	23%	22%
Hay equivalent per cow		7.5	7.0	7.6
Crop acres per cow		2.6	2.6	2.5
Fertilizer & lime/crop acre	\$	\$11	\$13	\$14
<u>Machinery Costs</u>				
Total machinery costs	\$	\$12,215	\$14,034	\$18,290
Machinery costs per cow	\$	\$161	\$153	\$145
Machinery cost per man	\$	\$4,886	\$4,839	\$4,943
Machinery cost per cwt. milk	\$	\$1.26	\$1.19	\$1.21
Machinery cost per crop acre	\$	\$61	\$59	\$57
<u>Capital Efficiency</u>				
Investment per man	\$	\$61,030	\$64,216	\$65,138
Investment per cow	\$	\$2,008	\$2,024	\$1,973
Investment per cwt. milk sold	\$	\$16	\$16	\$16
Land and buildings per cow	\$	\$899	\$1,013	\$918
Machinery investment per cow	\$	\$478	\$415	\$378
Return on investment	%	9.0%	13.4%	10.6%
<u>Other</u>				
Price per cwt. milk sold	\$	\$5.49	\$5.58	\$5.64
Acres hay and hay crop silage		107	120	157
Acres corn silage		58	62	92

### Farm Business Chart

The chart on pages 30 and 31 is a tool for use in analyzing a dairy farm business. It is essentially a series of measuring sticks combined into one tool.

#### FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS 568 New York Dairy Farms,\* 1968

Size of Business			Rates of Production			Labor	Efficiency
Man	No.	Pounds	Pounds	Tons	Tons	Cows	Pounds
equiv-	of	milk	milk sold	hay	corn silage	per	milk sold
alent	cows	sold	per cow	per acre	per acre	man	per man
4.0	124	1,545,800	15,300	4.6	21	44	554,600
2.8	86	1,075,600	14,000	3.6	19	37	464,800
2.4	69	868,800	13,400	3.2	17	34	417,600
2.2	59	736,800	13,000	3.0	16	31	379,300
2.0	53	651,500	12,600	2.8	15	29	346,000
-----							
1.8	48	587,300	12,100	2.6	14	27	322,100
1.6	43	524,100	11,600	2.4	13	24	298,700
1.4	40	472,600	11,100	2.2	12	23	271,500
1.3	36	408,900	10,400	2.0	10	21	245,700
1.1	28	301,500	8,900	1.6	8	18	195,800

\* These farms are considerably above the average for all farms in New York State. For example, the median number of cows for the 568 farms was 50 compared with 36 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 midpoint of the 568 farms for each factor.

The figure at the top of each column is the average of the top 10 percent of the farms for that factor. For example, the figure 4.0 at the top of the column headed "Man equivalent" is the average man equivalent on the 10 percent of the farms with the most men. The other figures in each column are the average for the second 10 percent, third 10 percent, etc. The figure at the bottom of each column (1.1 for Man equivalent) is the average for the 10 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 the top 10 percent for one factor would not necessarily be the same farms which make up the top 10 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 31.

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

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS  
568 New York Dairy Farms, 1968

Cost Control			
Feed bought per cow	% Feed is of milk receipts	Feed and crop expense per cwt. milk	Machinery cost per cow
\$ 69	11%	\$1.01	\$ 87
103	16	1.27	106
125	20	1.44	117
145	22	1.55	129
160	24	1.65	140
-----			
173	26	1.74	150
185	28	1.84	162
201	30	1.93	177
218	31	2.07	195
262	37	2.38	241

Based on the analyzed results shown on the business chart, list below the strong and weak points of the business. Then identify the major problems.

STRONG POINTS:

---

---

---

---

WEAK POINTS:

---

---

---

---

MAJOR PROBLEMS:

---

---

After identifying problems, consider alternative ways of solving each problem. Each alternative should be studied in detail. A budgeting form can be used for projecting the likely results of each alternative.



## SUPPLEMENTAL COMPARISONS

Cost of Producing Milk

The cost of producing milk can be calculated by using the total farm business summary if the operations have dairy as the only principal enterprise. The average cost per hundredweight of producing milk on the 568 farms and comparisons with earlier years is shown on page 33.

Trends

The manager of any business must keep abreast of current trends. This is essential if he is to keep his business in tune with the times. It is also important as one develops plans for the future.

Trends can be measured in different ways. One way is to compare similar business studies to observe changes that have occurred. On page 34, selected farm business summary factors are given for 1958, 1963, 1967, and 1968.

Changes in the businesses of these New York dairymen stand out. The size as measured by numbers of cows, acres in crops, and pounds of milk all increased. The labor force showed the least change. The pounds of milk sold in 1968 was more than double that of 1958. Capital investment and total farm receipts also were more than double.

The price of milk in 1968 was 84 cents per hundredweight more than in 1958. Total farm expenses more than doubled, but the major cost control items changed much less. For example, the percent feed was of milk receipts was less in 1968 than in 1958, and feed bought per hundredweight of milk sold changed little. The machinery cost per hundredweight of milk sold was up only slightly.

Pounds of milk sold per cow in 1968 was up about 30 percent over that of 1958. Crop yields were up with corn silage going from 10 to 14 tons per acre. Labor efficiency showed a marked change in going from 173,000 pounds of milk sold per man in 1958 to 341,000 in 1968 or about double.

Operating Statements

Operating statements are common in business accounting. In farm accounting, business summaries are prepared and business factors calculated. This is essentially an operating statement for the farm business. Operating statements based on the study of the 568 dairy farms for 1968 are presented on pages 35 and 36. Here the highlights of the year's operations are presented on one page.

The statement on page 36 is based on the average for all 568 farms. However, in making comparisons or establishing goals, one is often interested in what the "better" businesses accomplish. For this purpose, the 10 percent of the farms with the highest labor incomes were grouped together and an operating statement prepared (page 35).

COST OF PRODUCING MILK

By adding an estimate of the value of the operator's labor and interest on the capital investment to the total farm expenses, the farm cost of producing milk can be calculated. The value of the operator's time for 1968 was estimated at \$450 per month. Receipts for items other than milk are credited against the total cost. This assumes that these items were produced at cost.

Table 31. AVERAGE FARM COST OF PRODUCING MILK  
568 New York Dairy Farms, 1968

Item	My farm	Average of 568 farms
Total farm expenses	\$ _____	\$37,717
Interest at 5% on average capital	_____	5,393
Value of operators' labor	_____	6,275*
Total Costs	\$ _____	\$49,385
Total farm receipts	\$ _____	\$53,247
Less milk sales	_____	39,477
Other Income	\$ _____	\$13,770
Cost of producing milk (total costs less other income)	\$ _____	\$35,615
Hundredweights of milk sold	_____	7,152
Cost per cwt. of milk sold	\$ _____	\$4.98
Average price received	\$ _____	\$5.52

\* Figured at \$5,400 per operator (there were 660 operators on 568 farms)

The average cost of producing milk using the whole farm figures has been calculated for selected years and is shown below. The average price received is also reported.

Cost of Producing Milk and Prices Received				
Year	Operator's labor	Cwt. milk sold	Cost per cwt.	Av. price received
1958	\$3,600	3,109	\$4.60	\$4.68
1963	3,600	4,270	4.34	4.31
1966	5,000	5,610	4.42	4.91
1967	5,400	6,166	4.86	5.25
1968	5,400	7,152	4.98	5.52

Table 32.

SELECTED FARM BUSINESS SUMMARY FACTORS  
New York Dairy Farms, Selected Years, 1958-1968

Item	Year			
	1958	1963	1967	1968
Number of farms	559	468	548	568
<u>Financial Summary</u>				
Average capital invested	\$45,062	\$55,304	\$88,050	\$107,854
Total farm receipts	\$21,512	\$23,891	\$44,309	\$53,247
Total farm expenses	\$15,012	\$17,278	\$31,545	\$37,717
Labor income per operator	\$3,817	\$3,492	\$7,511	\$8,724
<u>Size of Business</u>				
Number of cows	33	39	51	58
Pounds of milk sold	310,900	427,000	616,600	715,200
Crop acres	104	105	138	155
Man equivalent	1.8	1.7	1.9	2.1
Total work units	523	527	594	692
<u>Rates of Production</u>				
Milk sold per cow	9,420	10,950	12,100	12,300
Tons hay per acre	2.3	2.3	2.6	2.8
Tons corn silage per acre	10	12	17	14
<u>Labor Efficiency</u>				
Cows per man	18	23	27	28
Pounds milk sold per man	172,700	251,200	324,500	340,600
Work units per man	291	310	313	330
<u>Cost Control Factors</u>				
Machinery cost per cow	\$109	\$108	\$137	\$151
Machinery cost per cwt. milk	\$1.16	\$ .99	\$1.13	\$1.22
Feed bought per cow	\$109	\$150	\$165	\$163
Feed bought per cwt. milk	\$1.29	\$1.37	\$1.37	\$1.32
Feed & crop expense/cwt. milk	\$1.69	\$1.64	\$1.74	\$1.69
% Feed is of milk receipts	28%	32%	26%	24%
<u>Capital Efficiency</u>				
Total investment per man	\$25,839	\$33,258	\$48,300	\$53,302
Total investment per cow	\$1,409	\$1,450	\$1,800	\$1,930
Machinery investment per cow	\$292	\$304	\$397	\$435
Total investment/cwt. milk	\$15	\$13	\$15	\$16
<u>Other</u>				
Price per cwt. milk sold	\$4.68	\$4.31	\$5.25	\$5.52
Acres hay and hay crop silage	76	73	76	90
Acres corn silage	14	14	24	41
Total acres in crops per cow	3.2	2.7	2.7	2.7
Lime and fertilizer expense per crop acre	\$7	\$8	\$12	\$11
Farm income per cow	\$197	\$170	\$250	\$268
Labor income per cow	\$129	\$99	\$147	\$175

SOURCE: A.E. Res. 25, A.E. Res. 148, and A.E. Res. 269

Table 33.

FARM BUSINESS SUMMARY  
Top 10 Percent of the Farms by Labor Income  
568 New York Dairy Farms, 1968

<u>CAPITAL INVESTMENT</u>			<u>RECEIPTS</u>	
	<u>1/1/68</u>	<u>1/1/69</u>		
Machinery & equipment	\$ 36,687	\$ 41,874	Milk sales	\$70,023
Livestock	40,686	46,883	Livestock	6,506
Feed & supplies	12,376	13,279	Crop sales	817
Land & buildings	76,941	82,684	Government payments	621
TOTAL INVESTMENT	\$166,690	\$184,720	Gas tax refund	107
			Machine work	296
			Machinery sold	325
			Work off farm	33
			Miscellaneous	1,570
<u>EXPENSES</u>			Total Cash Receipts	\$80,298
Labor			Increase in inventory	18,030
Hired		\$ 7,271	TOTAL FARM RECEIPTS	\$98,328
Unpaid		853		
Feed				
Dairy concentrate		15,331		
Hay and other		658		
Power and Machinery			<u>FINANCIAL SUMMARY</u>	
Machine hire		514	Total Farm Receipts	\$98,328
Machinery repair		2,665	Total Farm Expenses	66,127
Auto expense		378	Farm Income	\$32,201
Gas and oil		1,791	Interest on av. capital @ 5%	8,785
Electricity		905	Farm Labor Income	\$23,416
Milk hauling		811	Number of operators	57
Livestock			LABOR INCOME/OPERATOR	\$23,416
Breeding fees		608		
Veterinary, medicine		1,107		
Other livestock expense		2,369		
Crop			<u>BUSINESS FACTORS</u>	
Fertilizer and lime		3,070	Man equivalent	2.7
Seeds and plants		806	Number of cows	97
Bale ties		109	Number of heifers	68
Spray and other		632	Acres of hay	116
Real Estate			Acres of corn silage	67
Land, building, fence repair		1,225	Acres of other crops	56
Taxes		1,715	Lbs. of milk sold	1,259,700
Insurance		1,141	Lbs. milk sold/cow	13,000
Rent		884	Tons hay/acre	2.9
Capital Items			Tons corn silage/acre	15
New machinery		10,902	Lbs. of milk sold/man	466,600
Purchased livestock		3,380	Cows per man	36
New real estate		6,096	% Feed is of milk receipts	22%
Other			Feed & crop expense/cwt. milk	\$1.58
Telephone		184	Lime & fertilizer/crop acre	\$13
Miscellaneous		722	Machinery cost/cow	\$146
TOTAL FARM EXPENSES		\$66,127	Av. price/cwt. milk	\$5.56

Table 34.

FARM BUSINESS SUMMARY  
Average of 568 New York Dairy Farms, 1968

<u>CAPITAL INVESTMENT</u>			<u>RECEIPTS</u>	
	1/1/68	1/1/69		
Machinery & equipment	\$ 22,575	\$ 25,247	Milk sales	\$39,477
Livestock	24,968	27,317	Livestock sold	3,915
Feed & supplies	7,481	7,638	Crop sales	393
Land & buildings	48,750	51,733	Government payments	261
TOTAL INVESTMENT	\$103,774	\$111,935	Gas tax refund	81
			Machine work	106
			Machinery sold	168
			Work off farm	60
			Miscellaneous	625
<u>EXPENSES</u>			Total Cash Receipts	\$45,086
Labor			Increase in inventory	8,161
Hired		\$ 3,006	TOTAL FARM RECEIPTS	\$53,247
Unpaid		818		
Feed				
Dairy concentrate		9,459		
Hay and other		259		
Power and Machinery			<u>FINANCIAL SUMMARY</u>	
Machine hire		287	Total Farm Receipts	\$53,247
Machinery repair		1,605	Total Farm Expenses	37,717
Auto expense		247	Farm Income	\$15,530
Gas and oil		1,136	Interest on av. capital @ 5%	5,393
Electricity		601	Farm Labor Income	\$10,137
Milk hauling		435	Number of operators	660
Livestock			LABOR INCOME/OPERATOR	\$8,724
Breeding fees		401		
Veterinary, medicine		645		
Other livestock expense		1,310		
Crop			<u>BUSINESS FACTORS</u>	
Fertilizer and lime		1,732	Man equivalent	2.1
Seeds and plants		460	Number of cows	58
Bale ties		80	Number of heifers	40
Spray and other		350	Acres of hay	86
Real Estate			Acres of corn silage	41
Land, building, fence repair		775	Total acres of crops	155
Taxes		1,132	Lbs. of milk sold	715,200
Insurance		719	Lbs. milk sold/cow	12,300
Rent		348	Tons hay/acre	2.8
Capital Items			Tons corn silage/acre	14
New machinery		6,178	Lbs. of milk sold/man	340,600
Purchased livestock		1,823	Cows per man	28
New real estate		3,301	% Feed is of milk receipts	24%
Other			Feed & crop expense/cwt. milk	\$1.73
Telephone		140	Lime & fertilizer/crop acre	\$11
Miscellaneous		470	Machinery cost/cow	\$151
TOTAL FARM EXPENSES		\$37,717	Av. price/cwt. milk	\$5.52