Casler

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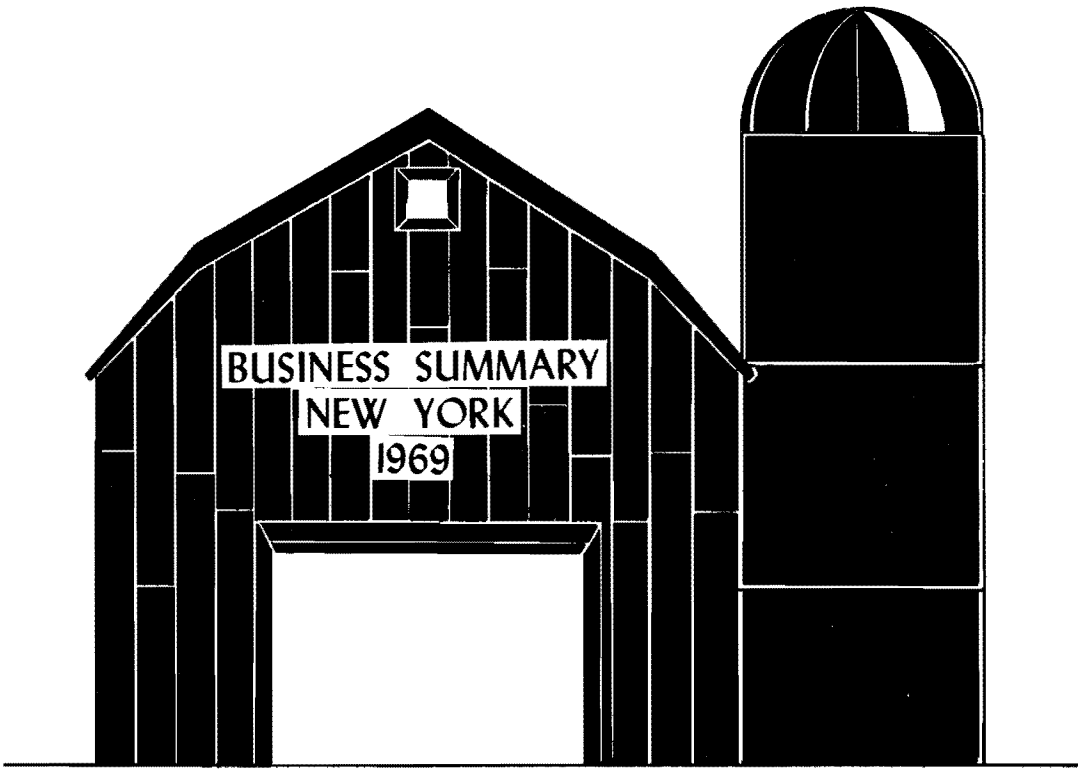
A. E. Res. 322

DAIRY FARM MANAGEMENT



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INTRODUCTION

Each year a group of New York dairymen participate in a college sponsored farm business management project. This project serves a dual purpose. It provides the basis for extension management programs and also data for an applied research project.

Farm business records are kept by each dairyman. Some use farm account books for keeping records while others participate in electronic farm accounting programs. In all cases the information is submitted to the college for summary and analysis.

Extension agents cooperate in the organization of local groups and in collection of the data. Regional reports on the results are prepared for use by the agents in their winter and spring educational meetings with farmers. The aim of these extension activities is to help the dairy cooperators with their current management problems.

The records from all parts of the State are combined and used as the basis for a research project to study factors affecting dairy farm incomes. Two major purposes of this research are to keep abreast of the rapid changes that are taking place in dairy farming and to provide current farm business data for use by dairymen, extension agents, teachers, agribusinessmen, policy-makers, and others concerned with the New York dairy industry.

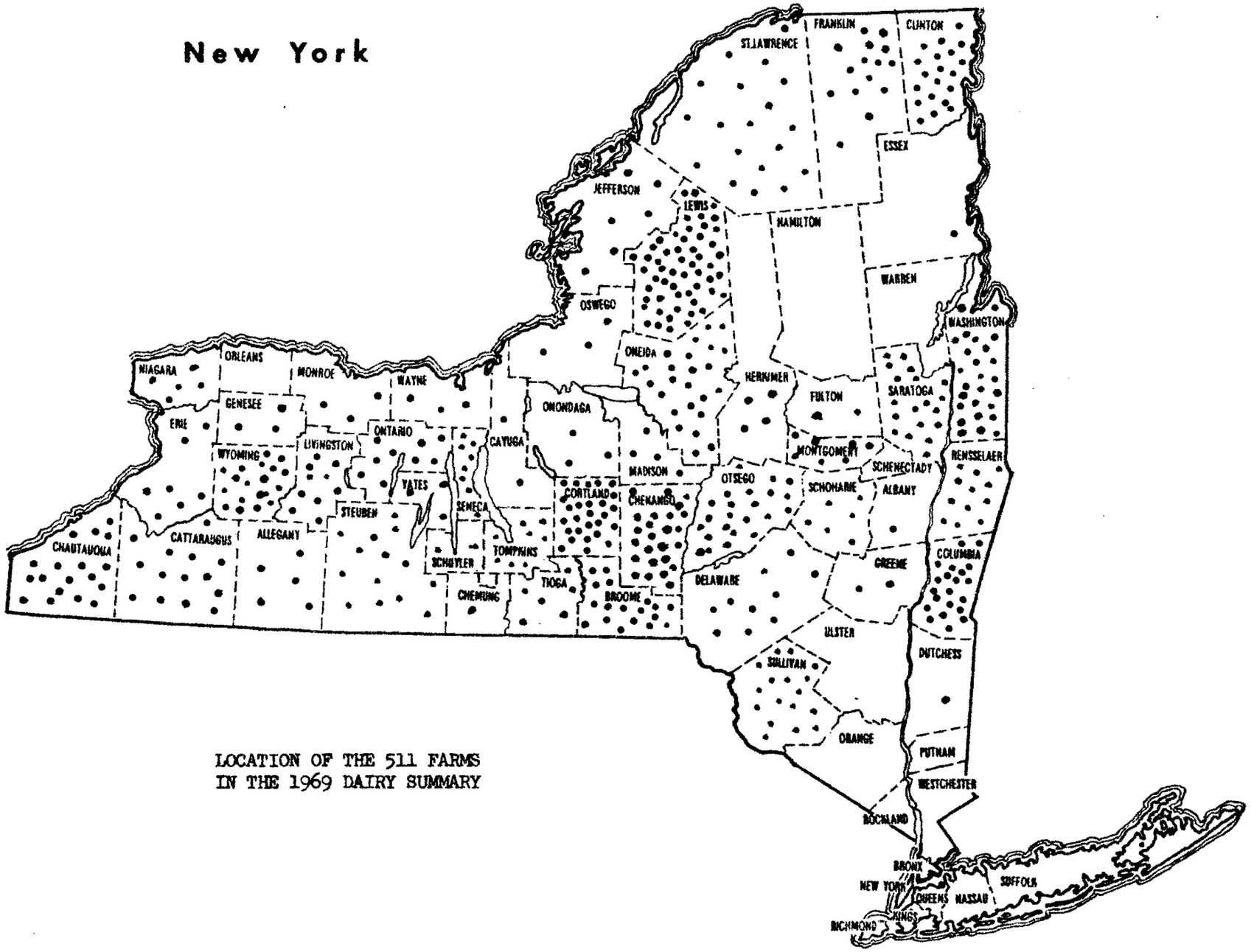
A total of 511 farm business records were included in the dairy summary for 1969. Farms with combinations of dairy and other major enterprises were excluded from the analysis reported in this publication.

The farms included in this study do NOT represent the average of all dairy farms in the State. Participation in the project was on a voluntary basis. Cooperators were located in various parts of the State but not all areas were represented. In general the 511 farms represent a cross section of commercial operators but are better than the average for all dairy farms in the State. For example, the median number of cows for the 511 farms was 51 while the State median was 38 and the milk sold per cow was 12,600 compared with the statewide median of 10,000 pounds.

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 Wendy Roby and Sara Hall.

New York



LOCATION OF THE 511 FARMS
IN THE 1969 DAIRY SUMMARY

Growing Conditions

Table 1. TEMPERATURE, GROWING SEASON AND PRECIPITATION
Selected Stations, 1947-67 and 1969

Station	Average temperature May through Sept.		Precipitation May through Sept.		Precipitation Total annual		Length of growing season*	
	1947-67	1969	1947-67	1969	1947-67	1969	1947-67	1969
	Degrees		Inches				Days	
Alfred	61.8	61.7	16.8	13.9	36.7	35.2	122	135
Auburn	64.7	64.1	13.4	16.6	31.1	32.5	174	174
Batavia	64.4	64.8	14.7	17.1	31.8	36.1	152	167
Canton	63.0	61.6	16.9	17.8	34.9	33.2	127	114
Lowville	62.3	62.1	15.7	19.6	38.0	39.9	120	115
Norwich	61.7	61.7	18.1	15.0	40.1	37.0	118	115
Poughkeepsie	68.2	66.6	16.4	19.3	38.2	41.5	171	163
Salem	62.5	62.9	17.8	17.8	39.0	39.0	118	115
Utica	63.8	64.0	17.7	18.0	39.8	43.8	157	148

*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 1969 and for the period 1947-67.

In general, the 1969 growing season can be characterized as having near normal temperatures, a slightly shorter growing season and about normal annual 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. May, June, and July were wet in most areas while August and September were dry (Table 2).

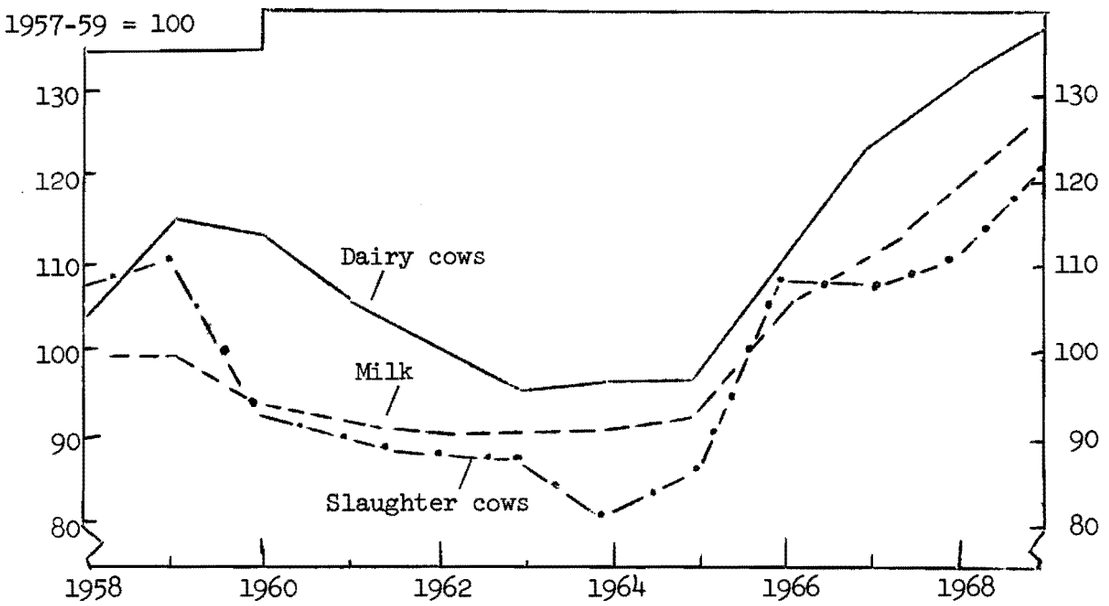
Table 2. GROWING SEASON RAINFALL
Selected Stations, 1947-67 and 1969

Station	May		June		July		August		September	
	1947-67	1969	1947-67	1969	1947-67	1969	1947-67	1969	1947-67	1969
Alfred	3.43	1.60	3.68	5.23	3.51	4.38	3.34	1.65	2.88	1.00
Auburn	2.64	5.41	2.61	5.50	3.25	3.43	2.80	1.01	2.12	1.26
Batavia	3.02	4.12	2.62	4.68	2.85	3.86	3.54	1.81	2.71	2.60
Canton	3.33	3.31	2.88	6.06	3.40	3.42	4.00	2.45	3.25	2.61
Lowville	3.26	5.90	2.77	6.79	3.15	2.92	3.73	1.80	2.82	2.16
Norwich	3.54	2.42	4.16	4.60	4.02	3.86	3.13	2.54	3.24	1.56
Poughkeepsie	3.10	3.27	2.98	4.16	3.23	5.06	3.76	3.60	3.31	3.25
Salem	3.55	3.66	3.40	4.06	3.87	3.85	3.45	3.00	3.35	3.26
Utica	3.40	4.87	3.20	5.27	4.46	1.16	3.60	3.86	3.06	2.86

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

Prices

PRICES RECEIVED BY N.Y. DAIRY FARMERS, 1958-1969



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

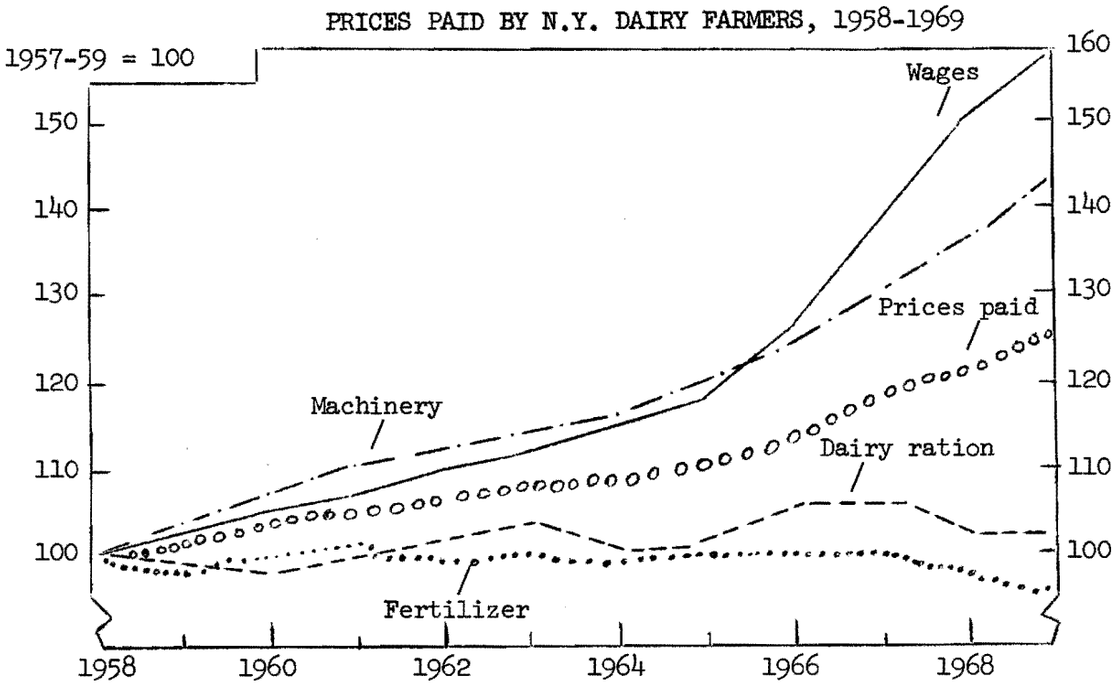
Prices are an important business factor. The relationship of prices received to prices paid determines the general level of incomes. A look at the 1969 price situation for the major items dairymen sell gives some perspective on the price climate for the year of this study.

Milk prices for 1969 averaged $5.66 compared with $5.43 in 1968 and $4.14 in 1962. Both dairy and slaughter cow prices in 1969 were at new highs for recent years. In general, prices received by dairymen in 1969 were good.

Table 3. PRICES RECEIVED FOR MILK AND COWS BY N.Y. FARMERS, 1958-69

Year	Milk 3.5% B.F. (cwt.)	Slaughter cows (cwt.)	Dairy cows (head)	Monthly farm price per 100 pounds of milk, 1969	
1958	$4.55	$17.30	$255	January	$5.86
1959	4.58	17.80	284	February	5.80
1960	4.31	15.00	278	March	5.57
1961	4.20	14.60	260	April	5.40
1962	4.14	14.26	245	May	5.21
1963	4.15	14.01	234	June	5.18
1964	4.21	13.17	237	July	5.67
1965	4.27	13.91	238	August	6.07
1966	4.79	17.35	271	September	6.32
1967	5.07	17.32	303	October	6.42
1968	5.43	17.72	320	November	6.37
1969	5.66	19.42	336	December	6.08

PRICES PAID BY N.Y. DAIRY FARMERS, 1958-1969



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

While prices paid by New York dairy farmers generally have been rising, some items have changed more than others. Farm wages have increased the most. Fertilizer prices have declined slightly, and feed prices have fluctuated but have changed little. The overall index of prices paid by New York dairy farmers in 1969 was up 5 percent from 1968 and was 22 percent higher than 1959.

Table 4. PRICES PAID BY NEW YORK DAIRY FARMERS, 1958-1969

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	302
1969	103	94	160	144	126	3.70	316

SUMMARY OF THE FARM BUSINESS

Labor, Livestock, and Crops Grown

A farmer must manage on the basis of the resources available to him. An early step in analyzing a dairy farm business 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 511 farms are shown in Table 5.

Table 5. LABOR FORCE, LIVESTOCK NUMBERS, AND ACRES OF CROPS GROWN
511 New York Dairy Farms, 1969

Item	My farm		Average of 511 farms	Range High	Range Low
Labor					
Months of:					
Operators	_____		14.0		
Family unpaid	_____		2.3		
Family paid	_____		2.1		
Hired	_____		6.1		
Other	_____		.2		
Total months	_____		24.7		
Man equivalent (No. men)	_____		2.1	9.2	1.0
Livestock (number)					
Cows	_____		60	278	18
Heifers	_____		40	226	0
Crops (acres grown)* - Data from 502 farms**					
Hay	_____	(492)	84	417	14
Hay crop silage	_____	(76)	30	397	2
Corn silage	_____	(470)	45	250	4
Corn for grain	_____	(170)	30	231	2
Oats	_____	(195)	24	98	2
Total acres of crops	_____	(502)	159	817	12

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

Partnerships are relatively common on New York dairy farms. Eighty-two of the 511 farms had two or more operators with a total of 597 operators. Thus about one-sixth of the farms were partnerships.

The average man equivalent was 2.1 with 9.2 the largest. This 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.

Capital Investment

Capital is a major 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 "fair market value" or what they might bring at a well-attended sale.

Table 6. FARM INVENTORY VALUES, JANUARY 1, 1970
511 New York Dairy Farms

Item	My farm	Average of 511 farms	% of total
Machinery & equipment	$_____	$ 27,110	22
Livestock	_____	28,949	24
Feed and supplies	_____	8,269	7
Land & buildings	_____	56,893	47
TOTAL INVESTMENT	$_____	$121,221	100

Total investment at the end of the year for the 511 farms averaged $121,000. The range was from $26,000 to $616,000. The investment in machinery and livestock on these farms was about equal to the land and building investment. The value of the personal property including feed and supplies on these dairy farms exceeded the value of the real property.

There were 28 farms with investments of less than $50,000 but there were 30 with investments of $250,000 or more. Ten percent of the farms had investments of over $200,000. The distribution of total investment per farm is shown below.

Distribution of Farms by Total Investment

Total investment	Number of farms	Percent of farms
Under $50,000	28	5
$50,000 - 74,999	103	20
75,000 - 99,999	121	24
100,000 - 124,999	80	16
125,000 - 149,999	57	11
150,000 - 199,999	70	14
200,000 - 249,999	22	4
$250,000 or more	30	6
TOTAL	511	100

Receipts

An examination of the receipts tells much about the nature of the business. The receipts are a partial indication of the accomplishments of the operation.

Table 7. FARM RECEIPTS
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms	Percent of total
Milk sales	$_____	$44,143	88
Livestock sold	_____	4,471	9
Crop sales	_____	428	1
Government payments	_____	286	1
Gas tax refund	_____	81	--
Machine work	_____	94	--
Machinery sold	_____	92	--
Work off farm	_____	68	--
Miscellaneous	_____	607	1
Total Cash Receipts	$_____	$50,270	100
Increase in inventory	_____	9,392	
TOTAL FARM RECEIPTS	$_____	$59,662	
		High	Low
Average price per cwt. of milk sold	$_____	$5.80	$7.56 $4.29

Milk sales on these 511 farms accounted for 88 percent of the total cash receipts. Livestock sold, the second largest item, accounted for an additional 9 percent. The cash flow into the business on these farms averaged $50,000. Increase in inventory, which is a non-cash receipt, averaged $9,392 or 16 percent of the total farm receipts. Composition of the increase is shown below.

Composition of Increase In Inventory

Inventory Item	Average Increase	Percent of total
Land and buildings	$3,623	39
Machinery & equipment	2,650	28
Livestock	2,204	23
Feed and supplies	915	10
TOTAL	$9,392	100

The average price per hundredweight of milk sold by the 511 farms in 1969 was $5.80. 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:

Variation in Average Milk Price

Average price received for milk	Number of farms	Percent of farms
Below $5.50	60	12
$5.50 - 5.74	230	45
5.75 - 5.99	149	29
6.00 - 6.24	33	6
6.25 - 6.49	17	3
Over $6.50	22	5
TOTAL	511	100

It is often said that there is nothing a dairyman can do about the price he receives for his milk. This may be true as it pertains to the price at a particular time. The variation shown here does indicate that the average annual prices received for milk by farmers do vary. Some of this is due to management practices. Seasonality of production and butterfat test are two management items that affect the average price for the year.

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 511 farms in 1969 is shown below:

Distribution of Farms by Total Farm Receipts

Total farm receipts	Farms	
	Number	Percent
$ 10,000 - 19,999	12	2
20,000 - 29,999	53	10
30,000 - 39,999	111	22
40,000 - 49,999	91	18
50,000 - 59,999	54	11
60,000 - 79,999	77	15
80,000 - 99,999	44	8
100,000 - 119,999	40	8
$120,000 and over	29	6
TOTAL	511	100

There were no farms among the 511 with total farm receipts of less than $10,000; on the other hand, nearly one-half the farms had receipts of over $50,000 and 6 percent had receipts of $120,000 or more.

Expenses

Dairymen today buy many inputs for their operations. In addition to knowing the total expenses it is helpful to have a breakdown by specific items.

Table 8. FARM EXPENSES
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms	Percent of total
Hired labor	$_____	$ 3,518	12
Dairy concentrate	_____	10,781	37
Other feed	_____	280	1
Machine hire	_____	247	1
Machinery repairs	_____	1,857	6
Auto expense (farm share)	_____	233	1
Gas and oil	_____	1,243	4
Breeding fees	_____	475	2
Veterinary and medicine	_____	733	3
Milk hauling	_____	481	2
Other livestock expense	_____	1,473	5
Lime and fertilizer	_____	1,961	7
Seeds and plants	_____	535	2
Spray, other crop expense	_____	510	2
Land, building, fence repair	_____	952	3
Taxes	_____	1,270	4
Insurance	_____	735	3
Electricity (farm share)	_____	649	2
Telephone (farm share)	_____	144	--
Miscellaneous	_____	922	3
Total Cash Operating Expenses	$_____	$28,999	100
New machinery*	_____	6,367	
Real estate**	_____	3,955	
Livestock purchases**	_____	2,271	
Unpaid labor	_____	701	
Decrease in inventory	_____	--	
TOTAL FARM EXPENSES	$_____	$42,293	

* Depreciation $3,625 - see page 22 for calculations.
** Number reporting purchase of real estate, 271; livestock, 340.

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 8 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 511 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. Some individual farms had a decrease, but the net inventory change for the 511 farms was an increase.

Total farm expenses for the 511 farms averaged $42,300 or $116 per day. The cash operating expenses averaged $29,000 or 69 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 $480 per cow. When capital items and unpaid labor were included, the total farm expenses averaged $705 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:

Capital expenses (investments)	
Machinery	$ 6,367
Real estate	3,955
Livestock	2,271
Total Capital	$12,593

Overhead expenses (fixed)	
Property taxes	$ 1,270
Insurance	735
Land & building repairs	952
Electricity	649
Telephone	144
Total Fixed Overhead	$ 3,750

Operating expenses (variable)	
Labor	$ 4,219
Feed	11,061
Machinery repairs	1,857
Gas & oil	1,243
Machine hire	247
Auto	233
Livestock expenses	3,162
Fertilizer & lime	1,961
Other crop expenses	1,045
Miscellaneous	922
Total Variable	$25,950

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 nine percent of the total and capital items 30 percent. The variable expenses are the ones the dairymen must make decisions on daily.

Income

Researchers have developed a number of ways to measure the income from a farm business. The measure to be used depends on the point from which the results are being studied. Several common measures are reported here. The user can select the measure that best fits his situation.

Table 9. FARM INCOME AND LABOR INCOME
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms	Percent of receipts
Total farm receipts	$_____	$59,662	100
Total farm expenses	_____	42,293	71
FARM INCOME	$_____	$17,369	29
Interest on average capital at 7%	_____	8,157	14
Labor income per farm	$_____	$ 9,212	15
Number of operators	_____	597	
LABOR INCOME PER OPERATOR	$_____	$ 7,885	

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 7 percent interest charge on all capital is subtracted from the farm income. Prior to 1969, a 5 percent interest charge has been made. In making income comparisons with 1968 and earlier, the difference in interest rate charged must be kept in mind.

Distribution of Labor Incomes Per Operator

Labor income per operator	Farms	
	Number	Percent
Minus	40	8
0 - $ 4,999	128	25
$ 5,000 - 9,999	177	35
10,000 - 14,999	109	21
15,000 - 19,999	30	6
20,000 - 24,999	15	3
$25,000 or more	12	2

Table 10. FARM CASH OPERATING INCOME AND REPAYMENT ABILITY
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms
Total cash receipts	$_____	$50,270
Total cash operating expense	_____	28,999
FARM CASH OPERATING INCOME	$_____	$21,271
Family cash living expenses*	_____	6,310
REPAYMENT ABILITY	$_____	$14,961

* 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 arbitrarily as the value of the operator's labor. This is comparable to what "good" hired men earn. Rate of return really reflects the return to capital and management.

Table 11. RATE OF RETURN ON INVESTMENT
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms
Farm income	$_____	$ 17,369
Value of operator's labor*	_____	6,310
Return on investment	$_____	$ 11,059
Average capital investment	$_____	$116,525
RATE OF RETURN ON INVESTMENT	_____%	9.4%

* $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 cash 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 $17,369	Operator's labor @ $80/week	$4,860
	Management @ 8% of cash receipts	4,022
	Interest on capital @ 7%	8,157
	Profit	330

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 basis. This is shown below:

Returns to All Labor

Labor income per farm	$ 9,212
Value hired labor	3,518
Value unpaid labor	701
Total returns to labor	$13,431
Average man equivalent	2.1
Returns per man equivalent	$ 6,396
Returns per hour (3,000 hrs/yr)	$ 2.13

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	$ 355
Farm income per cow	$ 289
Labor income per cow	$ 154

ANALYSIS OF THE FARM BUSINESS

This part of the report includes a systematic analysis of the farm business to determine strengths and weaknesses. Five business factors are examined. These are: size of business, rates of production, labor efficiency, capital efficiency, and cost control. The 1969 averages for selected measures for each of these factors are reported along with general relationships of each to labor income.

The measures examined here are interrelated. This means that all factors should be examined before arriving at major conclusions.

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 12. MEASURES OF SIZE OF BUSINESS
511 New York Dairy Farms, 1969

Measure	My farm	Average of 511 farms
Number of cows	_____	60
Total acres in crops	_____	159
Man equivalent	_____	2.1
Total work units	_____	692
Pounds of milk sold	_____	761,700
Total farm receipts	_____	$59,660
Total investment	_____	$121,220

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 1969 year. It does not include cropland pasture or uncropped land.

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 13. COWS PER FARM AND LABOR INCOME
511 New York Dairy Farms, 1969

Number of cows	Number of farms	Percent of farms	Labor income per operator
Less than 25	9	2	$ 3,640
25 - 39	102	20	4,920
40 - 54	180	35	6,740
55 - 69	88	17	8,980
70 - 84	49	10	10,230
85 - 99	30	6	10,420
100 - 114	22	4	14,120
115 - 129	14	3	12,360
130 and over	17	3	14,840

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 115 cows and to a 3.0 man equivalent after which the incomes varied. The number of farms in the larger groups were relatively small so cannot be used as conclusive evidence.

The 1969 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.

Man equivalent is often used as a measure of size. It is of interest that 88 percent of the farms had man equivalents of less than 3.0 (Table 14). Half of the farms had less than 2.0 men.

Table 14. MAN EQUIVALENT PER FARM AND LABOR INCOME
511 New York Dairy Farms, 1969

Man equivalent	Number of farms	Percent of farms	Number of cows	Labor income per operator
1.0 - 1.4	133	26	38	$ 6,390
1.5 - 1.9	116	23	47	6,980
2.0 - 2.4	141	28	60	8,610
2.5 - 2.9	56	11	78	10,340
3.0 - 3.4	31	6	91	7,030
3.5 - 3.9	11	2	127	15,430
4.0 and over	23	4	141	10,750

Rates of Production

Rates of production are the result of the production practices used. It is a measure of how well the technology is being utilized. Rates of dairy and crop production are factors to observe on a dairy farm.

Table 15. MEASURES OF RATES OF PRODUCTION
511 New York Dairy Farms, 1969

Measure	My farm	Average of 511 farms
Pounds of milk sold per cow	_____	12,700
Tons hay per acre	_____	2.8
Tons corn silage per acre	_____	16
Bushels of oats per acre	_____	57
Bushels grain corn per acre	_____	76
Bushels of wheat per acre	_____	36

Pounds of milk sold per cow is calculated by dividing the total pounds of milk sold by the average number of cows. The average for the 511 farms was 12,700 pounds per cow with a range from 6,700 pounds to 18,200 pounds. Because some milk is used in the home and fed to calves, D.H.I.C. production levels will usually be somewhat higher than actual pounds of milk sold.

When grouped on the basis of pounds of milk sold per cow, the higher the rate of production the higher the labor income per operator (table 16). The farms with the higher rates of production also had larger herds. The herds with higher rates of production bought more feed per cow but it apparently was a profitable expenditure.

Table 16. MILK SOLD PER COW AND LABOR INCOME
511 New York Dairy Farms, 1969

Pounds of milk sold per cow	Number of farms	Number of cows	Feed bought per cow	Labor income
Under 10,000	44	50	$130	$ 1,740
10,000 - 10,999	53	52	145	4,360
11,000 - 11,999	77	59	160	7,880
12,000 - 12,999	114	64	165	8,020
13,000 - 13,999	111	64	196	9,140
14,000 - 14,999	75	62	217	10,700
15,000 and over	37	61	228	12,030

Labor Efficiency

Accomplishments per worker are used to measure labor efficiency. With wage rates rising more than any other cost item, it is important to keep output in line with wage rates. Labor efficiency is a major factor in any farm business analysis.

Table 17. MEASURES OF LABOR EFFICIENCY
511 New York Dairy Farms, 1969

Measure	My farm	Average of 511 farms
Pounds of milk sold per man	_____	362,700
Number of cows per man	_____	29
Work units per man	_____	330
Crop acres per man	_____	74

Pounds of milk sold per man is determined by dividing the total pounds of milk sold by the man equivalent. This is probably the best measure of labor efficiency for dairy farms. This averaged 362,700 pounds per man on the 511 farms but ranged from a low of 104,000 pounds to a high of 840,000.

Labor accomplishments (efficiency) depends on a number of things. Among these are the amount of mechanization, the field and building layout, the work methods used, and the abilities of the workers. All of these are management items under the control of the operator.

The relationship of labor efficiency to labor income was very definite on the 511 farms. The higher the pounds of milk sold per man, the higher the income. The higher output per man was accomplished in part at least by more and higher producing cows (table 18). It is interesting to observe that 63, or nearly one farm in eight, sold half a million pounds or more of milk per man.

Table 18. MILK SOLD PER MAN AND LABOR INCOME
511 New York Dairy Farms, 1969

Pounds of milk sold per man	Number of farms	Number of cows	Lbs. milk per cow	Labor income per operator
Under 200,000	16	31	9,100	$ -220
200,000 - 299,999	126	48	11,400	4,920
300,000 - 399,999	192	58	12,800	7,130
400,000 - 499,999	114	62	13,100	9,540
500,000 and over	63	97	13,700	16,100

Capital Efficiency

The capital investment on the dairy farms included in these summaries has more than doubled in the last decade. The average end-of-year inventory on the 511 farms was over $120,000. Capital is a key input item so attention must be given to measures of capital efficiency.

Capital is a cost to the business and like other costs it can get out of line. Capital costs are affected by the size of the total investment and the rate paid for borrowed money.

In the analysis here, only the amount of the investment is considered since details on credit costs are not readily available. This does not mean that credit costs are not important.

Table 19. MEASURES OF CAPITAL EFFICIENCY
511 New York Dairy Farms, 1969

Measure	My farm	Average of 511 farms
Total capital per man	$_____	$57,700
Total capital per cow	_____	2,020
Machinery and equipment per cow	_____	450
Land and building investment per cow	_____	950
Land and building investment per crop acre	_____	365
Total capital per cwt. milk sold	_____	16
Capital turnover (capital ÷ receipts)	_____	2.0

Capital efficiency is often associated with size of herd. For this reason, the 511 farms were sorted on the basis of number of cows and the capital efficiency measures were calculated. There seemed to be no consistent relationship between size and capital efficiency.

Table 20. SIZE OF HERD AND CAPITAL EFFICIENCY
511 New York Dairy Farms, 1969

Number of cows	Number of farms	Capital Investment Per Cow		
		Total	Real estate	Machinery
Under 40	111	$2,040	$ 980	$480
40 - 54	180	1,930	880	460
55 - 69	88	2,010	930	470
70 - 84	49	2,120	950	490
85 - 99	30	2,000	940	410
100 and over	53	2,000	1,000	400

Cost Control

Keeping costs under control is a challenge to most businessmen. Dairymen are no exception. With average expenses of $3,500 per month there are many items to watch. In this section of the analysis several important costs are examined.

Feed Costs

Purchased feed is the largest single expense item on most New York dairy farms. For the 511 farms in 1969, dairy concentrate accounted for 37 percent of the cash operating expenses. For this reason, feed is the first item examined in the "cost control" section.

Dairy feed costs are affected by many things. It is difficult to find a satisfactory single measure of feed cost control. Consequently the feed situation generally is looked at in the business analysis of feed costs. Below are some measures related to feed costs on a dairy farm.

Table 21. ITEMS RELATED TO FEED COSTS
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms
Feed expense		
Dairy feed purchased	$_____	$10,781
Feed purchased as % of milk receipts	_____%	24%
Feed purchased per cwt. of milk sold	$_____	$1.42
Feed purchased per cow	$_____	$180
Crop expense per cow	$_____	$50
Total feed and crop expense per cow	$_____	$230
Total feed and crop expense per cwt. of milk sold	$_____	$1.81
Roughage harvested (hay equivalent)		
Hay (tons)	_____	228
Corn silage (tons ÷ 3)	_____	218
Hay crop silage (tons ÷ 2 or 3)*	_____	9
Total tons hay equivalent	_____	455
Tons hay equivalent per cow	_____	7.6
Other considerations		
Acres in crops per cow	_____	2.6
Lime and fertilizer expense per cow	$_____	$33
Lime and fertilizer expense per crop acre	$_____	$13
Number of heifers per 10 cows	_____	6.7

* 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 costs.

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. Milk prices also influence this factor.

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, 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 22. PERCENT PURCHASED FEED IS OF MILK RECEIPTS AND LABOR INCOME
511 New York Dairy Farms, 1969

% Feed is of milk	Number of farms	Number of cows	H.E. per cow	Lbs. milk per cow	Labor income per operator
Over 40%	10	51	6.5	12,700	$2,020
35 - 39	31	53	7.5	12,300	4,050
30 - 34	93	60	7.1	12,600	6,650
25 - 29	140	55	7.7	12,800	7,870
20 - 24	124	63	7.2	12,600	9,500
Under 20%	113	68	8.1	12,100	9,240

In general, the lower the percent of the milk check going for purchased feed the higher the income (table 22). However, when the percent was less than 20, the pounds of milk per cow and the income were down slightly. This may indicate that there is a level below which it is not profitable to go.

Power and Machinery Costs

Mechanization 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 511 farms, net power and machinery costs accounted for 24 percent of the total farm expenses in 1969. Below are the calculations of the power and machinery costs and related factors.

Table 23. POWER AND MACHINERY COST*
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms	Percent of total
Beginning inventory	$_____	$24,460	
New machinery purchased	_____	6,367	
Total (No. 1)	$_____	$30,827	
End inventory	$_____	$27,110	
Machinery sold	_____	92	
Total (No. 2)	$_____	$27,202	
Depreciation (Total No. 1 minus Total No. 2)	$_____	$ 3,625	36
Interest at 7% on av. inventory	_____	1,805	18
Gas and oil	_____	1,243	12
Machinery repairs	_____	1,857	18
Bale ties	_____	68	1
Milk hauling	_____	481	5
Machine hire	_____	247	2
Auto expense (farm share)	_____	233	2
Electricity (farm share)	_____	649	6
Total power and machinery cost	$_____	$10,208	100
Less:			
Gas tax refund $_____		$81	
Income from machine work _____		94	
	_____	$ 175	
NET POWER AND MACHINERY COST	$_____	$10,033	
Net machinery cost:			
per cow	$_____	$ 167	
per crop acre	$_____	$ 64	
per cwt. milk sold	$_____	$ 1.32	
per man	$_____	$ 4,780	

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

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 24. LABOR AND MACHINERY COST
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms
Labor cost:		
Value of operators' labor*	$_____	$ 6,310
Hired labor	_____	3,518
Unpaid family labor	_____	701
Total Labor Cost	$_____	$10,529
Net power and machinery cost (p. 22)	_____	10,033
TOTAL LABOR AND MACHINERY COST	$_____	$20,562
Labor cost:		
per cow	$_____	$ 175
per cwt. milk sold	$_____	$ 1.38
Labor and machinery cost:		
per cow	$_____	$ 342
per cwt. milk sold	$_____	$ 2.70

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

Labor and machinery cost per cow appears to have an effect on labor income (table 25). As the labor and machinery cost per cow decreased the labor income increased. The five percent of the farms with a machinery cost per cow of less than $250 had the highest average labor income.

Table 25. LABOR AND MACHINERY COST PER COW AND LABOR INCOME
511 New York Dairy Farms, 1969

Labor & Machinery cost per cow	Number of farms	Percent of farms	Labor income per operator
$500 and over	13	3	$ 3,520
$450 - $499	32	6	4,960
$400 - $449	67	13	4,950
$350 - $399	128	25	7,230
$300 - $349	154	30	8,630
$250 - $299	91	18	10,240
Less than $250	26	5	14,050

Miscellaneous Cost Control Measures

Cost control applied 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 they can be used for analyzing farms of various sizes. These factors are influenced by a number of things so must be used with that in mind.

Table 26. COST CONTROL MEASURES
511 New York Dairy Farms, 1969

Item	My farm	Average of 511 farms
Overhead		
Land and building repair per cow	$_____	$ 16
Taxes per cow	_____	21
Insurance per cow	_____	12
Electricity per cow	_____	11
Machinery		
Machinery depreciation per cow	$_____	$ 60
Machinery repair per cow	_____	31
Gas and oil per cow	_____	21
Net machinery cost per cow	_____	167
Dairy		
Veterinary and medicine per cow	$_____	$ 12
Breeding fees per cow	_____	8
Other livestock expense per cow	_____	25
Crop		
Fertilizer and lime per crop acre	$_____	$ 13
Seeds and plants per crop acre	_____	3
Other crop expense per crop acre	_____	3
Gas and oil per crop acre	_____	8
General		
Total labor per cow*	$_____	$175
Total feed and crop expense per cow	_____	234
Total expenses per cow	_____	705
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 511 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 27. COMBINATION OF FACTORS ABOVE AVERAGE* AND LABOR INCOME
511 New York Dairy Farms, 1969

Number of factors above average	Number of farms	Percent of farms	Labor income per operator
4 factors better than average	43	8	$15,470
3 factors better than average	106	21	11,170
2 factors better than average	121	24	8,090
1 factor better than average	165	32	5,830
0 factors better than average	76	15	3,180

* Factors were:

Size - number of cows - average 60
Rates of production - pounds of milk sold per cow - average 12,700
Labor efficiency - pounds of milk sold per man - average 362,700
Cost control - percent purchased feed was of milk receipts - average 24%

The relationship between the number of factors better than average and labor income is shown in table 27. As the number of factors better than average decreased, labor incomes decreased 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 or two factors, and neglecting the others, will not give the kind of net 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 511 farms are shown for six herd size groups. These data also illustrate the effect of size on various business factors.

Table 28. FARM BUSINESS SUMMARY BY HERD SIZE
511 New York Dairy Farms, 1969

Item	My farm	Farms with less than 40 cows	40 to 54 cow farms	55 to 69 cow farms
Capital Investment (End of Year)				
Machinery and equipment	$_____	$15,746	$21,044	$ 29,285
Livestock	_____	15,123	21,839	29,570
Feed and supplies	_____	3,988	5,524	8,187
Land and buildings	_____	32,459	40,270	57,586
TOTAL INVESTMENT	$_____	$67,316	$88,677	$124,628
Receipts				
Milk sales	$_____	$22,853	$32,529	$ 45,406
Livestock sold	_____	2,333	3,288	4,941
Crop sales	_____	199	304	399
Miscellaneous receipts	_____	738	991	993
Total Cash Receipts	$_____	$26,123	$37,112	$ 51,739
Increase in inventory	_____	5,097	5,935	11,793
TOTAL FARM RECEIPTS	$_____	$31,220	$43,047	$ 63,532
Expenses				
Hired labor	$_____	$ 620	$ 1,660	$ 3,216
Dairy feed	_____	5,920	8,263	11,242
Other feed	_____	268	167	233
Machine hire	_____	164	186	219
Machinery repair	_____	860	1,344	1,729
Auto expense (farm share)	_____	189	228	246
Gas and oil	_____	736	991	1,185
Breeding fees	_____	265	360	526
Veterinary and medicine	_____	333	564	766
Other livestock expense	_____	991	1,357	1,815
Lime and fertilizer	_____	809	1,263	1,854
Seeds and plants	_____	238	389	554
Spray and other crop expense	_____	216	362	504
Land, bldg., fence repair	_____	480	783	863
Taxes and insurance	_____	1,126	1,493	1,944
Elec. and tel. (farm share)	_____	483	633	775
Miscellaneous expenses	_____	381	613	832
Total Cash Operating Exp.	$_____	$14,079	$20,656	$ 28,503
New machinery	_____	3,664	4,794	7,422
New real estate	_____	2,114	2,305	5,365
Purchased livestock	_____	1,109	1,406	2,084
Unpaid family labor	_____	857	703	716
TOTAL FARM EXPENSES	$_____	$21,823	$29,864	$ 44,090
Financial Summary				
Total Farm Receipts	$_____	$31,220	$43,047	$ 63,532
Total Farm Expenses	_____	21,823	29,864	44,090
Farm Income	$_____	$ 9,397	$13,183	$ 19,442
Interest on av. capital at 7%	_____	4,534	6,000	8,311
Labor Income per Farm	$_____	$ 4,863	$ 7,183	$ 11,131
Number of operators	_____	112	195	118
LABOR INCOME PER OPERATOR	$_____	$ 4,819	$ 6,631	$ 8,301

Table 28 Contd. FARM BUSINESS SUMMARY BY HERD SIZE
511 New York Dairy Farms, 1969

Item	My farm	70 to 84 cow farms	85 to 99 cow farms	Farms with 100 or more cows
Capital Investment (End of Year)				
Machinery and equipment	$_____	$ 37,166	$ 37,605	$ 52,665
Livestock	_____	39,007	45,462	62,377
Feed and supplies	_____	13,014	14,020	19,053
Land and buildings	_____	72,324	86,472	132,358
TOTAL INVESTMENT	$_____	$161,511	$183,559	$266,453
Receipts				
Milk sales	$_____	$ 55,712	$ 70,436	$100,501
Livestock sold	_____	5,687	8,540	8,759
Crop sales	_____	562	864	1,002
Miscellaneous receipts	_____	1,524	1,784	2,858
Total Cash Receipts	$_____	$ 63,485	$ 81,624	$113,120
Increase in inventory	_____	14,513	17,243	16,965
TOTAL FARM RECEIPTS	$_____	$ 77,998	$ 98,867	$130,085
Expenses				
Hired labor	$_____	$ 5,061	$ 7,774	$ 12,572
Dairy feed	_____	13,588	17,144	22,561
Other feed	_____	230	657	598
Machine hire	_____	330	324	556
Machinery repair	_____	2,146	2,890	5,057
Auto expense (farm share)	_____	272	298	247
Gas and oil	_____	1,499	1,757	2,741
Breeding fees	_____	593	849	897
Veterinary and medicine	_____	957	1,418	1,501
Other livestock expense	_____	2,526	3,413	4,867
Lime and fertilizer	_____	2,685	3,803	5,204
Seeds and plants	_____	691	922	1,252
Spray and other crop expense	_____	679	999	1,199
Land, bldg., fence repair	_____	1,181	1,528	2,127
Taxes and insurance	_____	2,784	3,032	4,393
Elec. and tel. (farm share)	_____	903	1,230	1,667
Miscellaneous expenses	_____	1,194	1,691	2,536
Total Cash Operating Exp.	$_____	$ 37,319	$ 49,729	$ 69,975
New machinery	_____	7,661	8,786	13,055
New real estate	_____	6,134	9,070	6,169
Purchased livestock	_____	2,990	5,181	5,638
Unpaid family labor	_____	637	480	526
TOTAL FARM EXPENSES	$_____	$ 54,741	$ 73,246	$ 95,363
Financial Summary				
Total Farm Receipts	$_____	$ 77,998	$ 98,867	$130,085
Total Farm Expenses	_____	54,741	73,246	95,363
Farm Income	$_____	$ 23,257	$ 25,621	$ 34,722
Interest on av. capital at 7%	_____	10,798	12,246	18,058
Labor Income per Farm	$_____	$ 12,459	$ 13,375	$ 16,664
Number of operators	_____	60	42	70
LABOR INCOME PER OPERATOR	$_____	$ 10,175	$ 9,554	$ 12,617

Table 29. SELECTED BUSINESS FACTORS BY HERD SIZE
511 New York Dairy Farms, 1969

Item	My farm	Farms with less than 40 cows	40 to 54 cow farms	55 to 69 cow farms
Number of farms		111	180	88
Size of Business				
Number of cows	_____	33	46	62
Pounds of milk sold	_____	397,000	568,400	791,000
Crop acres	_____	91	124	152
Man equivalent	_____	1.4	1.7	2.2
Total work units	_____	387	533	687
Rates of Production				
Milk sold per cow	_____	12,000	12,400	12,800
Tons hay per acre	_____	2.5	2.7	2.9
Tons corn silage per acre	_____	14	15	15
Bushels of oats per acre	_____	58	53	57
Labor Efficiency				
Cows per man	_____	24	27	28
Pounds milk sold per man	_____	283,600	334,400	359,500
Work units per man	_____	276	314	312
Crop acres per man	_____	65	73	69
Feed Costs				
Feed purchased per cow	$_____	$ 179	$ 180	$ 181
Crop expense per cow	$_____	$ 38	$ 44	$ 47
Feed and crop expense per cow	$_____	$ 217	$ 222	$ 228
Feed cost per cwt. milk	$_____	$ 1.49	$ 1.45	$ 1.42
Feed and crop exp./cwt. milk	$_____	$ 1.81	$ 1.81	$ 1.79
% Feed is of milk receipts	_____%	26%	25%	25%
Hay equivalent per cow	_____	7.1	7.6	7.4
Crop acres per cow	_____	2.8	2.7	2.5
Fertilizer and lime/crop acre	$_____	$ 9	$ 10	$ 12
Machinery Costs				
Total machinery costs	$_____	$ 5,672	$ 7,625	$ 10,284
Machinery cost per cow	$_____	$ 172	$ 166	$ 166
Machinery cost per man	$_____	$ 4,051	$ 4,485	$ 4,675
Machinery cost per cwt. milk	$_____	$ 1.43	$ 1.34	$ 1.30
Machinery cost per crop acre	$_____	$ 62	$ 61	$ 68
Capital Efficiency				
Investment per man	$_____	$ 48,083	$ 52,163	$ 56,649
Investment per cow	$_____	$ 2,040	$ 1,928	$ 2,010
Investment per cwt. milk sold	$_____	$ 17	$ 16	$ 16
Land and buildings per cow	$_____	$ 984	$ 875	$ 929
Machinery investment per cow	$_____	$ 477	$ 457	$ 472
Return on investment	_____%	6.1%	8.6%	10.3%
Other				
Price per cwt. milk sold	$_____	$ 5.76	$ 5.72	$ 5.74
Acres hay and hay crop silage	_____	59	75	88
Acres corn silage	_____	17	30	40

Table 29 Contd. SELECTED BUSINESS FACTORS BY HERD SIZE
511 New York Dairy Farms, 1969

Item	My farm	70 to 84 cow farms	85 to 99 cow farms	Farms with 100 or more cows
Number of farms		49	30	53
Size of business				
Number of cows	_____	76	92	133
Pounds of milk sold	_____	969,800	1,198,900	1,693,300
Crop acres	_____	204	236	322
Man equivalent	_____	2.3	3.0	3.7
Total work units	_____	889	1,086	1,480
Rates of production				
Milk sold per cow	_____	12,800	13,000	12,700
Tons hay per acre	_____	3.0	3.1	2.9
Tons corn silage per acre	_____	17	16	16
Bushels oats per acre	_____	65	54	57
Labor efficiency				
Cows per man	_____	33	31	36
Pounds milk sold per man	_____	421,700	399,600	457,600
Work units per man	_____	387	362	400
Crop acres per man	_____	89	79	87
Feed costs				
Feed purchased per cow	$_____	$ 179	$ 186	$ 170
Crop expense per cow	$_____	$ 53	$ 62	$ 58
Feed & crop expense per cow	$_____	$ 232	$ 248	$ 228
Feed cost per cwt. milk	$_____	$ 1.40	$ 1.43	$ 1.33
Feed & crop cost exp./cwt. milk	$_____	$ 1.82	$ 1.91	$ 1.78
% Feed is of milk receipts	---_____%	24%	24%	22%
Hay equivalent per cow	_____	8.4	7.7	7.3
Crop acres per cow	_____	2.7	2.6	2.4
Fertilizer & lime/crop acre	$_____	$ 13	$ 16	$ 16
Machinery Costs				
Total machinery costs	$_____	$ 12,245	$ 14,772	$ 22,205
Machinery costs per cow	$_____	$ 161	$ 161	$ 167
Machinery cost per man	$_____	$ 5,324	$ 4,924	$ 6,001
Machinery cost per cwt. milk	$_____	$ 1.26	$ 1.23	$ 1.31
Machinery cost per crop acre	$_____	$ 60	$ 51	$ 69
Capital efficiency				
Investment per man	$_____	$ 70,222	$ 61,186	$ 72,014
Investment per cow	$_____	$ 2,125	$ 1,995	$ 2,003
Investment per cwt. milk sold	$_____	$ 17	$ 15	$ 16
Land and building per cow	$_____	$ 952	$ 940	$ 995
Machinery investment per cow	$_____	$ 489	$ 409	$ 396
Return on investment	_____%	10.8%	10.3%	10.7%
Other				
Price per cwt. milk sold	$_____	$ 5.74	$ 5.88	$ 5.94
Acres hay and hay crop silage	_____	108	110	142
Acres corn silage	_____	58	73	104

Farm Business Chart

The chart on the next two pages 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
511 New York Dairy Farms,* 1969

Size of Business			Rates of Production			Labor Efficiency	
Man equivalent	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 sold per man
4.1	134	1,724,400	15,500	4.7	22	45	582,000
2.8	88	1,158,900	14,300	3.8	19	37	485,300
2.4	71	914,600	13,800	3.3	18	34	440,400
2.2	61	785,500	13,300	3.0	17	31	398,900
2.0	54	676,800	12,900	2.8	15	29	365,500
1.8	48	608,200	12,400	2.5	15	28	340,900
1.6	44	547,700	12,000	2.4	14	26	315,600
1.4	40	484,400	11,400	2.1	12	24	291,800
1.2	36	416,400	10,600	1.9	10	22	257,800
1.1	29	309,000	9,000	1.3	8	18	202,200

* These farms are considerably above the average for all farms in New York State. For example, the median number of cows for the 511 farms was 51 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 midpoint of the 511 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 4.1 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 the next page.

Farm Business Chart cont'd.

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
511 New York Dairy Farms, 1969

Cost Control			
Feed bought per cow	% Feed is of milk receipts	Machinery cost per cow	Labor & machinery cost per cow
$ 79	12%	$ 99	$246
119	17	123	280
142	20	137	304
154	22	146	322
170	24	156	337
187	26	166	352
201	28	178	367
218	30	193	390
239	32	215	424
288	38	262	485

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 511 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 1959, 1964, 1968, and 1969.

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 1969 was more than double that of 1959. Capital investment and total farm receipts also were more than double.

The price of milk in 1969 was $1.07 cents per hundredweight more than in 1959. Total farm expenses more than doubled, but the major cost control measures changed much less. For example, the percent feed was of milk receipts was less in 1969 than in 1959, 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 1969 was up about 35 percent over that of 1959. Crop yields were up with corn silage going from 11 to 16 tons per acre. Labor efficiency showed a marked change in going from 182,000 pounds of milk sold per man in 1959 to 363,000 in 1969 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 511 dairy farms for 1969 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 511 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 1969 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 30. AVERAGE FARM COST OF PRODUCING MILK
511 New York Dairy Farms, 1969

Item	My Farm	Average of 511 Farms
Total farm expenses	$_____	$42,293
Interest at 7% on average capital	_____	8,157
Value of operator's labor	_____	6,310*
Total Costs	$_____	$56,760
Total farm receipts	$_____	$59,662
Less milk sales	_____	44,143
Other Income	$_____	$15,519
Cost of producing milk (total costs less other income)	$_____	$41,241
Hundredweights of milk sold	_____	7,617
Cost per cwt. of milk sold	$_____	$5.41
Average price received	$_____	$5.80

* Figured at $5,400 per operator (there were 597 operators on 511 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
1959	$3,600	3,274	$4.76	$4.73
1964	3,600	4,504	4.55	4.40
1967	5,400	6,166	4.86	5.25
1968	5,400	7,152	4.98	5.52
1969	5,400	7,617	5.41*	5.80

* Used 7% interest charge. In previous years 5% was used.

Table 31. SELECTED FARM BUSINESS SUMMARY FACTORS
New York Dairy Farms, Selected Years, 1959-1969

Item	Year			
	1959	1964	1968	1969
Number of farms	542	434	568	511
Financial Summary				
Average capital invested	$47,840	$57,187	$107,854	$116,525
Total farm receipts	$22,548	$25,634	$ 53,247	$ 59,662
Total farm expenses	$16,255	$19,551	$ 37,717	$ 42,293
Labor income per operator	$ 3,489	$ 2,958	$ 8,724 ($6,868)*	$ 9,879 ($7,885)*
Size of Business				
Number of cows	35	40	58	60
Pounds of milk sold	327,400	450,400	715,200	761,700
Crop acres	104	104	155	156
Man equivalent	1.8	1.7	2.1	2.1
Total work units	557	507	692	692
Rates of Production				
Milk sold per cow	9,360	11,260	12,300	12,700
Tons hay per acre	2.0	2.0	2.8	2.8
Tons corn silage per acre	11	12	14	16
Labor Efficiency				
Cows per man	19	24	28	29
Pounds milk sold per man	181,900	264,900	340,600	362,700
Work units per man	309	298	330	330
Cost Control Factors				
Machinery cost per cow	$ 111	$ 109	$ 151	$ 167
Machinery cost/cwt. milk	$ 1.18	$ .97	$ 1.22	$ 1.32
Feed bought per cow	$ 113	$ 155	$ 163	$ 180
Feed bought/cwt. milk	$ 1.32	$ 1.38	$ 1.32	$ 1.42
Feed & crop expense/cwt. milk	$ 1.73	$ 1.65	$ 1.69	$ 1.68
% Feed is of milk receipts	26%	31%	24%	24%
Capital Efficiency				
Total investment per man	$27,387	$34,493	$ 53,302	$ 57,724
Total investment per cow	$ 1,408	$ 1,466	$ 1,930	$ 2,020
Machinery investment/cow	$ 295	$ 315	$ 435	$ 452
Total investment/cwt. milk	$ 15	$ 13	$ 16	$ 16
Other				
Price per cwt. milk sold	$ 4.73	$ 4.40	$ 5.52	$ 5.80
Acres hay & hay crop silage	62	90	90	85
Acres corn silage	15	19	41	42
Total acres in crops/cow	3.0	2.6	2.7	2.6
Lime & fertilizer expense per crop acre	$ 7	$ 9	$ 11	$ 13
Farm income per cow	$ 180	$ 152	$ 268	$ 290
Labor income per cow	$ 111	$ 81	$ 175	$ 154

SOURCE: A.E. Res. 92, A.E. Res. 175, and A.E. Res. 304

* Labor income using a 7% interest charge on all capital.

Table 32. FARM BUSINESS SUMMARY
Top 10 Percent of the Farms by Labor Income
511 New York Dairy Farms, 1969

CAPITAL INVESTMENT	1/1/69	1/1/70
Machinery & equipment	$ 38,521	$ 42,890
Livestock	43,210	47,689
Feed & supplies	12,742	15,289
Land & buildings	84,429	90,387
TOTAL INVESTMENT	$178,902	$196,255

EXPENSES	
Labor	
Hired	$ 8,360
Unpaid	340
Feed	
Dairy concentrate	17,531
Hay and other	361
Power and Machinery	
Machine hire	213
Machinery repair	3,071
Auto expense	234
Gas and oil	1,848
Electricity	942
Milk hauling	1,137
Livestock	
Breeding fees	735
Veterinary, medicine	1,264
Other livestock expense	2,322
Crop	
Fertilizer and lime	3,556
Seeds and plants	918
Bale ties	81
Spray and other	674
Real Estate	
Land, building, fence repair	1,644
Taxes	1,966
Insurance	1,030
Rent	845
Capital Items	
New machinery	10,176
Purchased livestock	3,256
New real estate	6,492
Other	
Telephone	188
Miscellaneous	729
TOTAL FARM EXPENSES	$ 69,913

RECEIPTS	
Milk sales	$77,943
Livestock	7,191
Crop sales	794
Government payments	622
Gas tax refund	66
Machine work	179
Machinery sold	192
Work off farm	26
Miscellaneous	1,160
Total Cash Receipts	$88,173
Increase in inventory	17,352
TOTAL FARM RECEIPTS	$105,525

FINANCIAL SUMMARY	
Total Farm Receipts	$105,525
Total Farm Expenses	69,913
Farm Income	$ 35,612
Interest on av. capital at 7%	13,130
Farm Labor Income	$ 22,482
Number of operators	53
LABOR INCOME/OPERATOR	$ 21,633

BUSINESS FACTORS	
Man equivalent	2.6
Number of cows	98
Number of heifers	61
Acres of hay	97
Acres of corn silage	75
Acres of other crops	63
Lbs. of milk sold	1,340,000
Lbs. milk sold/cow	13,700
Tons hay/acre	3.3
Tons corn silage/acre	16
Lbs. of milk sold/man	515,400
Cows per man	38
% Feed is of milk receipts	22%
Feed & crop expense/cwt. milk	$1.70
Lime & fertilizer/crop acre	$15
Machinery cost/cow	$161
Av. price/cwt. milk	$5.82

Table 33. FARM BUSINESS SUMMARY
Average of 511 New York Dairy Farms, 1969

CAPITAL INVESTMENT	1/1/69	1/1/70
Machinery & equipment	$ 24,460	$ 27,110
Livestock	26,745	28,949
Feed & supplies	7,354	8,269
Land & buildings	53,270	56,893
TOTAL INVESTMENT	$111,829	$121,221

EXPENSES	
Labor	
Hired	$ 3,518
Unpaid	701
Feed	
Dairy concentrate	10,781
Hay and other	280
Power and Machinery	
Machine hire	247
Machinery repair	1,857
Auto expense	233
Gas and oil	1,243
Electricity	649
Milk hauling	481
Livestock	
Breeding fees	475
Veterinary, medicine	733
Other livestock expense	1,473
Crop	
Fertilizer and lime	1,961
Seeds and plants	535
Bale ties	68
Spray and other	442
Real Estate	
Land, building, fence repair	952
Taxes	1,270
Insurance	735
Rent	453
Capital Items	
New machinery	6,367
Purchased livestock	2,271
New real estate	3,955
Other	
Telephone	144
Miscellaneous	469
TOTAL FARM EXPENSES	$ 42,293

RECEIPTS	
Milk sales	$44,143
Livestock sold	4,471
Crop sales	428
Government payments	286
Gas tax refund	81
Machine work	94
Machinery sold	92
Work off farm	68
Miscellaneous	607
Total Cash Receipts	$50,270
Increase in inventory	9,392
TOTAL FARM RECEIPTS	$59,662

FINANCIAL SUMMARY	
Total Farm Receipts	$59,662
Total Farm Expenses	42,293
Farm Income	$17,370
Interest on av. capital at 7%	8,157
Farm Labor Income	$ 9,213
Number of operators	597
LABOR INCOME/OPERATOR	$ 7,885

BUSINESS FACTORS	
Man equivalent	2.1
Number of cows	60
Number of heifers	40
Acres of hay	81
Acres of corn silage	42
Total acres of crops	159
Lbs. of milk sold	761,700
Lbs. milk sold/cow	12,700
Tons hay/acre	2.8
Tons corn silage/acre	16
Lbs. of milk sold/man	362,700
Cows per man	29
% Feed is of milk receipts	24%
Feed & crop expense/cwt. milk	$1.68
Lime & fertilizer/crop acre	$13
Machinery cost/cow	$167
Av. price/cwt. milk	$5.80