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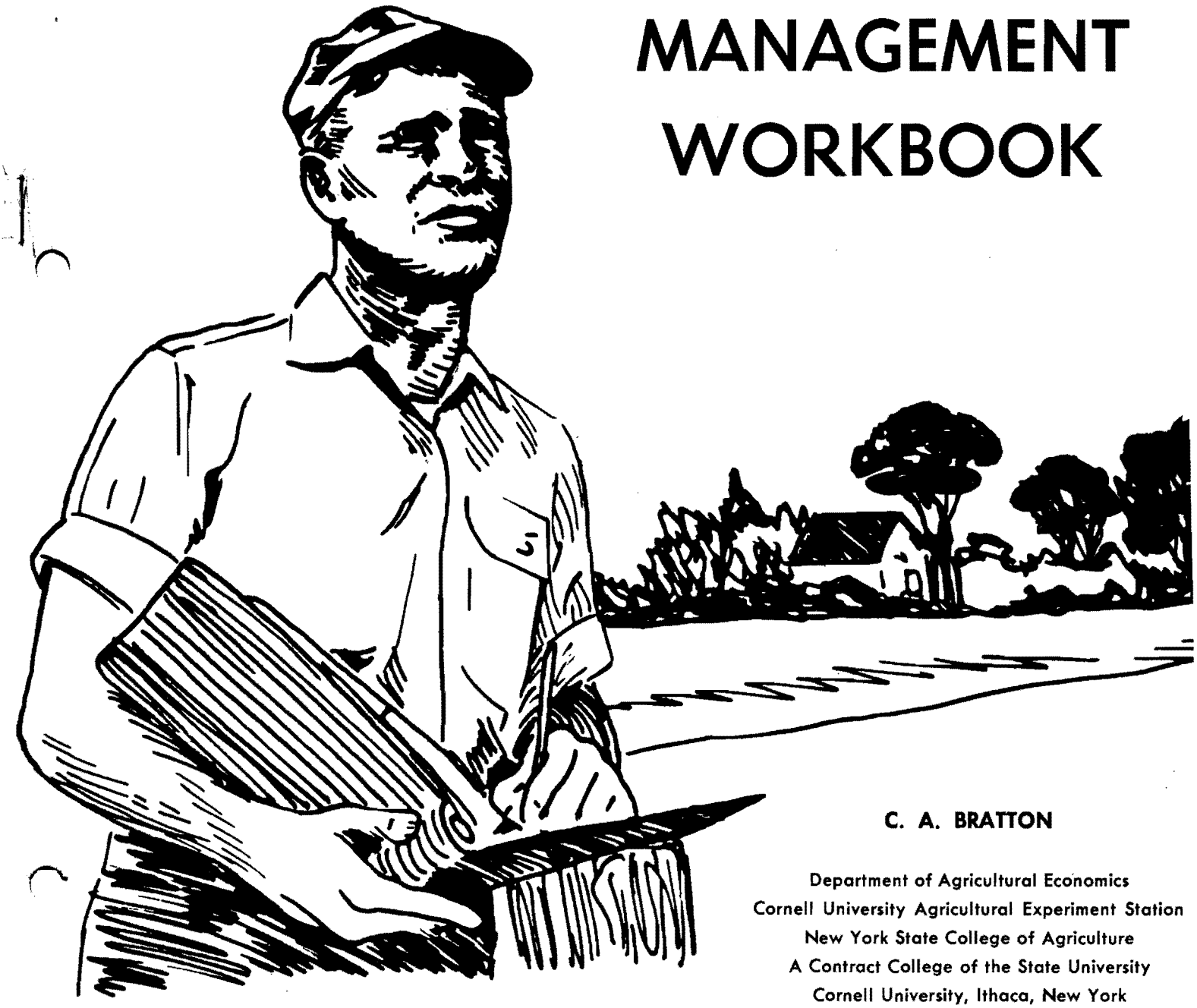
1964 DAIRY FARM MANAGEMENT WORKBOOK



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1964 DAIRY FARM MANAGEMENT WORKBOOK

"It's the MAN in Management that counts." This popular saying is just as true in farming as in any other business. The farmer and his wife are the key figures in the successful operation of a farm business.

Every manager is challenged to find ways to improve his managerial skills. This may mean developing a systematic approach to management problems along with learning about tools which can be used in making management decisions.

The Farm Business Management Projects sponsored by the Extension Service are designed to help farm families develop their managerial skills. The projects are organized by counties and families participate on a voluntary basis.

Financial records are considered to be an essential tool in managing a modern-day farm. Families in the farm business management projects agree to keep a farm inventory, crop records, and income and expense records. At the end of the year, the individual records are summarized and county summary reports are prepared.

In 1964, business management projects were sponsored for dairy farmers, poultrymen, grape growers, potato farmers, and beef cattlemen. In addition, a group of farm families participated in an electronic farm accounting project. Each individual cooperator in these various projects was provided a summary and analysis of his own business and a group summary for comparison purposes. Meetings were held in the counties to discuss the results with the cooperators.

This Dairy Farm Management Workbook is a management tool. The workbook is organized so that it provides a systematic way of summarizing and analyzing a farm business. It can be used by a farm family, extension agent, teacher, or agribusinessman who wishes to study a particular business.

Comparisons are useful in any analysis. In this workbook, a summary of the records of 434 farm business management cooperators, who had dairy as the only major enterprise, has been included for comparative purposes. The records were divided into three herd size groups for summary purposes. In addition, averages have been included for the 10 percent of the farms with the highest labor incomes. In the back is a general summary of all 434 farms.

Cooperators in the farm business management projects represent a cross section of commercial farm operators, but they do not represent the "average" for the State. Averages for the cooperators are somewhat above those of all farmers in the State. For example, the cooperators averaged 40 cows while the State average for all farms is only 32 cows. Likewise, the average pounds of milk sold for the 434 cooperators was 11,260 pounds compared with 8,650 for all farms in the State.

A tool for your kit. Persons working with farmers on management problems may wish to add this workbook to their set of management tools.

PART I - SUMMARY OF THE FARM BUSINESS

The first step in the study of any business is to summarize what has been done. This is done in the first part of this workbook.

There are three general parts to the records kept by the farm business management cooperators. These are: (1) the labor force, livestock numbers, and crop acres, (2) the inventory values, and (3) the receipts and expenses. These three are summarized along with measures of income in Part I.

Blank spaces are provided for the figures from the individual farm to be studied along with the group averages for comparison purposes.

Labor, Livestock, and Crops Grown

The physical resources used most commonly in a farm business are the labor, livestock, and cropland. Below are the average numbers for these three items for the year 1964.

LABOR FORCE, LIVESTOCK NUMBERS, AND ACRES OF CROPS GROWN
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Number of farms	_____	104	243	87	43
Labor					
Months of:					
Operators	_____	12.1	12.9	14.8	12.3
Family paid	_____	.2	1.1	1.3	1.2
Family unpaid	_____	2.1	2.7	2.2	2.5
Hired	_____	.9	2.6	10.2	7.4
Other	_____	--	.2	.4	.3
Total	_____	15.3	19.5	28.9	23.7
Man equivalent (No. men)	_____	1.3	1.6	2.4	2.0
Livestock (Number)					
Cows	_____	24	38	64	55
Heifers	_____	15	23	37	34
Crops (Acres grown)*					
Hay	_____	58	71	101	86
Grass silage	_____	14	18	25	21
Corn silage	_____	11	16	30	25
Corn for grain	_____	8	12	27	16
Oats	_____	12	16	24	22
Total crop acres	_____	75	102	147	140

*Average for farms reporting so acres do not add to total.

Inventory Values

An inventory is a basic part of any financial record for a business. Farm business management cooperators take an inventory of all farm property as of January first each year.

An inventory is a list of the numbers or amounts of items owned along with the value. It is suggested that the current market value be used. This is often defined as what the item might bring at a well-attended farm auction.

The inventory books provide space for listing each individual item with its value. These values are added for summary purposes. There is also a section for liabilities in the inventory books. These have not been summarized for the 434 farms. Families, however, are urged to inventory their liabilities, and calculate their net worth.

Below are the averages for the end of year inventories by major classes of items. This gives a measure of the capital investment for the business.

FARM INVENTORY VALUES, JANUARY 1, 1965
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Machinery and equipment	$_____	$ 7,611	$12,215	$19,596	$16,080
Cattle	_____	8,666	13,855	23,735	21,865
Feed and supplies	_____	2,163	3,451	5,780	5,324
Land and buildings	_____	18,134	25,027	47,326	37,044
TOTAL INVESTMENT	$_____	$36,574	$54,548	$96,437	$80,313

In a growing business, the inventory values usually increase from the beginning to the end of the year. For the 434 dairy farms in 1964, a total of 322 farms showed an increase in inventory while 112 farms showed a decrease. The average net increase (increases minus decreases) was $2,902 per farm. This is a 5 percent increase in inventory during the year.

For the 434 farms, there was an increase of about $1,500 in land and buildings, $1,000 in machinery and equipment, and $500 in livestock. For feed and supplies, there was a decrease of about $100 (see inside back cover).

Receipts

The receipts or gross income of any commercial business is important. Unless there is a sizeable gross income one cannot expect to have a very large net income.

In studying a farm business, it is helpful to compare the figures for that farm with other farms of similar size. In this workbook, we have figures for three herd-size groups. Compare your figures with the averages for other farms of a similar size. You can also make a comparison with the farms with the highest labor incomes.

FARM RECEIPTS
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Milk sales	$_____	$11,309	$18,806	$32,757	$29,381
Livestock sold	_____	1,183	1,835	3,184	3,184
Crop sales	_____	86	123	157	159
Gas tax refund	_____	83	137	192	180
Machine work	_____	61	77	75	96
Machinery sold	_____	20	63	245	215
Work - off farm	_____	95	81	73	108
Government payments	_____	83	191	207	214
Miscellaneous	_____	143	263	632	546
Total Cash Receipts	$_____	$13,063	$21,576	$37,522	$34,083
Increase in inventory	_____	1,579	2,582	5,375	5,832
TOTAL FARM RECEIPTS	$_____	$14,642	$24,158	$42,897	$39,915
Average price per cwt. of 3.7 milk sold	$_____	$4.34	$4.38	$4.45	$4.36

On these farms, milk receipts accounted for 87 percent of the total cash receipts. These are definitely specialized dairy farms.

Farm receipts include all the cash receipts plus increase in inventory. Receipts from work off the farm by the operator are included as a receipt. Off-farm receipts of the farmer's wife or other members of the family are not included.

Increase in inventory is the amount that the end-of-year inventory exceeds the beginning inventory. It is due to expansion and is a common occurrence in "going" farm businesses. It may be due to more cows, more machinery and equipment, additions to the real estate, or a better feed situation.

Increases in inventory are considered as farm receipts. These items could have been sold and turned into cash receipts, but the farmer decided to leave them in his business. The costs of producing or acquiring these items are included in the farm expenses.

The gross milk sales are entered in the receipts in these accounts. Expenses deducted by the milk plant have been entered as a farm expense. This puts the milk receipts from all farms on a comparable basis.

The average price of milk is found by dividing the gross milk receipts for the year by the total cwt. of milk sold during the year. Differences in average price may be due to distance from markets, season produced, etc. Milk price is not a major factor in the success or failure of a particular business. This is borne out by the fact that the high income farmers (top 10 percent by labor income) received an average of nine cents less for their milk than those with 50 cows and over, and two cents less than those with 30-49 cows.

Notice that the prices given are for "Cwt. of 3.7 milk sold." All milk is converted to 3.7% test so that the milk price can be compared with groups of other farms regardless of the butterfat level of the herd.

To convert the milk sold on a particular farm to 3.7% test, one must multiply the total pounds of milk sold by the conversion factor for his average test found in the table below. For example, 300,000 lbs. of 4.0% milk would be converted by (300,000 X 1.046 = 313,800 lbs. 3.7% equivalent).

Total pounds milk sold _____

Conversion factor (see table) X _____

POUNDS OF 3.7% MILK SOLD _____

FACTORS FOR CONVERTING MILK TO 3.7% TEST

Average Test	Conversion Factor	Average Test	Conversion Factor	Average Test	Conversion Factor
3.0	.889	4.0	1.046	5.0	1.203
3.1	.905	4.1	1.062	5.1	1.219
3.2	.920	4.2	1.077	5.2	1.234
3.3	.936	4.3	1.093	5.3	1.250
3.4	.952	4.4	1.109	5.4	1.266
3.5	.968	4.5	1.124	5.5	1.282
3.6	.984	4.6	1.140	5.6	1.297
3.7	1.000	4.7	1.156	5.7	1.313
3.8	1.015	4.8	1.172	5.8	1.329
3.9	1.030	4.9	1.187	5.9	1.344

Expenses

A good manager keeps a close watch on his expenses. A study of the expenses is the first step in cost control. It is well to remember that expense can be too low as well as too high.

FARM EXPENSES
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Hired labor	$_____	$ 213	$ 857	$ 3,189	$ 2,529
Dairy concentrate	_____	3,713	5,825	10,249	8,386
Other feed	_____	193	251	534	282
Machine hire	_____	74	110	123	189
Machinery repairs	_____	456	697	1,279	898
Auto expense (farm share)	_____	127	156	178	136
Gas and oil	_____	452	663	1,069	845
Breeding fees	_____	157	219	346	326
Veterinary, medicine	_____	176	289	495	413
Milk hauling	_____	323	335	438	349
Other livestock expense	_____	346	656	1,091	841
Lime and fertilizer	_____	428	856	1,587	1,325
Seeds and plants	_____	130	231	350	304
Bale ties	_____	72	105	156	143
Spray, other crop expense	_____	49	85	188	151
Land, bldg., fence repair	_____	197	423	674	486
Taxes, insurance	_____	514	833	1,465	1,264
Electricity (farm share)	_____	205	298	555	462
Telephone (farm share)	_____	52	74	106	93
Miscellaneous	_____	130	203	419	302
Total Cash Operating Expenses	$_____	$ 8,007	$13,166	$24,491	$19,724
New machinery	_____	1,307	2,450	4,344	3,297
New real estate	_____	793	1,315	3,402	2,125
Livestock purchases	_____	497	807	1,243	1,243
Unpaid labor	_____	307	405	332	366
Decrease in inventory	_____	--	--	--	--
TOTAL FARM EXPENSES	$_____	$10,911	$18,143	$33,812	$26,755

The expense classification used here is taken from the "Cornell Farm Account Book." In case of question as to where to enter a specific item, see the inside back cover of the farm account book.

Hired labor should include wages to all full-time employees, part-time employees, piece workers, any social security paid by the employer on his employees, the cash cost of board for any hired men boarded by the operator, or items such as fuel for the house of a hired man.

Dairy concentrate refers to any grain purchased for the dairy herd. Feed grinding is included with dairy concentrate. Hay for the dairy and any feed for other livestock are entered in "other feed." On the farms used for comparison, dairy concentrate amounted to about 40 percent of the total cash operating expenses.

Land, building and fence repairs include not only those expenses of maintaining the farm buildings, etc. but also the cost of maintaining the operator's house. Since income for analysis purposes assumes that the operator has free use of a house and privileges, the cost of maintaining the house is included in farm expenses. For income tax returns, however, house repairs must be taken out.

Capital items include new machinery, new real estate, and purchased livestock. These are not considered as part of total cash operating expenses but are included in total farm expenses. Machinery purchases to offset depreciation and the purchase of replacement cows could logically be included in the cash operating expenses. Because of difficulty in dividing up between depreciation and added investment, they are all carried here as capital expense.

Unpaid family labor refers to work done by members of the family who are not paid cash wages. For the 434 farms used for comparison, this item was calculated by determining how many months of unpaid labor was performed on each farm and then this was charged to the business at $150 per month.

Even though the operator does not pay cash for this labor, it is assumed that he would have to hire it if the family were not available. Therefore, in order to measure the success of the business and to compare a business with similar businesses, a charge must be included for unpaid labor.

Decrease in inventory is the result of the end farm inventory being smaller than the beginning inventory. In a farm business, a decrease in inventory may result if feed supplies are short due to a drought year, if the operator fails to buy enough machinery to maintain the machinery inventory or sells livestock without replacing them. Some individual farm businesses have a decrease in inventory but for the total of the 434 farms, the increases were greater than the decreases. For this reason, in the figures for comparison, there is no decrease shown.

Measures of Income

Several ways have been developed to measure the returns from a farm business. The measure selected at any one time will depend on the purpose for which it is to be used. Here three measures are used; labor income, rate of return on investment, and farm cash operating income. Labor income is the measure used most in comparing farm businesses.

LABOR INCOME
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Total farm receipts (p. 4)	$_____	$14,642	$24,158	$42,897	$39,915
Total farm expenses (p. 6)	_____	10,911	18,143	33,812	26,755
Farm Income	$_____	$ 3,731	$ 6,015	$ 9,085	$13,160
Interest on average capital at 5%	_____	1,789	2,663	4,687	3,870
Labor Income per Farm	$_____	$ 1,942	$ 3,352	$ 4,398	$ 9,290
Number of operators	_____	105 (on 104 farms)	261 (on 243 farms)	107 (on 87 farms)	44 (on 43 farms)
LABOR INCOME PER OPERATOR	$_____	$ 1,923	$ 3,121	$ 3,576	$ 9,081

Labor income per operator is the amount left after paying all farm expenses and deducting an interest charge for all capital. Labor income as a measure of the income of the operator is comparable to the wages of a full-time hired man since it is the amount that the operator receives for his labor and management in addition to free use of a house and privileges. (Privileges include meat, milk, vegetables, etc. grown on the farm and the rental value of the house used.)

Interest on capital investment is calculated by multiplying the average capital investment by 5 percent. This is deducted from the farm income. To find "average capital," one must first add the end farm inventory to the beginning farm inventory and then divide this sum by two.

Number of operators refers to the number of full-time operators in each farm business. If the farm being studied is a single operator business, the labor income per operator would be the same as the labor income per farm. If, however, it is a two-man partnership, the labor income per farm would be divided by two.

RETURN ON INVESTMENT
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Farm income	$_____	$ 3,731	$ 6,015	$ 9,085	$13,160
Value of operators' labor*	_____	3,635	3,868	4,427	3,683
Return on investment	$_____	$ 96	$ 2,147	$ 4,658	$ 9,477
Average capital investment	$_____	$35,784	$53,257	$93,750	$77,397
Rate of return on investment	_____%	.3%	4%	5%	12%

*$3,600 per year per operator.

The return on investment is calculated by deducting a charge for the operators' labor from the "farm income." This return is then divided by the average investment for the year to determine the rate of return on investment.

Rate of return on investment is used much more in non-farm businesses than in farm businesses. Farmers have usually thought more in terms of return to their labor. However, it is useful to look at the rate of return on investment.

The operators' labor has been estimated at $3,600 per year. This is about the equivalent of top hired men's wages. Over the years, studies have shown that operators generally receive for their labor and management about the same return as a good hired man.

FARM CASH OPERATING INCOME
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Total Cash Receipts	$_____	$13,063	$21,576	$37,522	$34,083
Total Cash Operating Expenses	_____	8,007	13,166	24,491	19,724
FARM CASH OPERATING INCOME	$_____	$ 5,056	$ 8,410	$13,031	$14,359

"Farm Cash Operating Income" reflects the cash available from the year's operation of the farm business for family living, debts, and new capital purchases or investments. If non-farm income was earned by some member of the family or if money was inherited or borrowed, the actual cash used might be greater than the amount shown here.

PART II - ANALYSIS OF THE FARM BUSINESS

Checking on the financial success of a farm business is one use of records. A more important use, however, is for analyzing the business in an effort to locate the strong and weak points. Determining the strong and weak points is usually the first step in making changes in a business.

The major portion of this section is devoted to a study of five important business factors. These are (1) size of business, (2) rates of production, (3) labor efficiency, (4) capital efficiency, and (5) cost control. Two or more measures are used for each factor. The averages for each measure are given for the three herd-size groups and for the top 10 percent by labor income. These can be used for comparison purposes.

Information is presented that demonstrates the effect of each of the important business factors on labor income. These relationships help in deciding which point should be corrected first if two or more points show a weakness.

In addition to the five factors, there are some data on farm financial situations and family living costs. These are also important in the management of a farm business. A comparison of the figures for an individual business with the figures presented here will provide a basis for planning necessary changes.

Size of Business

This is usually the first factor to be studied because of its far reaching nature. In general, larger businesses make larger incomes. However, some businesses with 25 cows make larger incomes than others with 80 cows. The size of the farm is closely related to the efficient use of machinery and the regular labor force. Therefore, in studying the factor of size, one must keep in mind its relation to other factors.

MEASURES OF SIZE OF BUSINESS
434 New York Dairy Farms, 1964

Measure	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Number of cows	_____	24	38	64	55
Pounds of 3.7 milk sold	_____	260,500	429,400	736,200	674,600
Total acres in crops	_____	75	102	147	140
Man equivalent	_____	1.3	1.6	2.4	2.0
Total work units	_____	323	487	781	693
Total farm receipts	$_____	$14,642	$24,158	$42,897	$39,915
Total investment	$_____	$36,574	$54,548	$96,437	$80,313

Number of cows is the average number for the year. Where available, the D.H.I.A. yearly averages are used. This is the measure used most in studying the effect of size on labor income in dairy businesses.

Pounds of 3.7 milk sold is a measure of size based on output. For a dairy farm this is a useful measure.

Total acres in crops is an important factor to be aware of but is not widely used as a measure of size for dairy farms.

Labor is another measure of size and is especially important when comparing different types of business. Man equivalent is the amount of labor performed on the farm during the year in terms of full-time man equivalent. Part-time workers or boys are converted to a 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 kept on the farm. A list of the work units and a worksheet for calculating total work units is in the back of the "Cornell Farm Account Book."

Total receipts is another measure of output and is sometimes used as an indicator of size.

Total investment measures size in terms of the total capital invested in the business.

COWS PER FARM AND LABOR INCOME
434 New York Dairy Farms, 1964

Number of cows	Number of farms	Labor income per operator
Under 20	11	$ 695
20 - 29	93	$2,080
30 - 39	144	$3,029
40 - 49	99	$3,345
50 - 59	48	$2,857
60 & over	39	$4,801

The table above illustrates how, in general, larger businesses make larger incomes. It is of interest to note that the 50-59 cow group had a lower average income than the 40-49 cow group. This frequently shows in studying size relations. It may well indicate a somewhat inefficient size unit in dairy farms.

Rates of Production

High rates of production are one of the most important ingredients of a successful farm business. Few farmers have reached the point where the additional inputs necessary to raise the rates of production will not pay off.

MEASURES OF RATES OF PRODUCTION
434 New York Dairy Farms, 1964

Measure	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Pounds of 3.7 milk sold per cow	_____	10,850	11,300	11,500	12,300
Milk sales per cow	$_____	$471	$495	$512	$534
Tons hay per acre	_____	1.9	2.0	2.3	2.1
Tons corn silage per acre	_____	11	12	13	14
Bushels of oats per acre	_____	50	49	58	54

Pounds of 3.7 milk sold per cow is the most widely used measure listed above for the dairyman since milk is the primary source of income. Cow production is calculated simply by dividing the total pounds of 3.7 milk sold by the average number of cows. Pounds of milk sold per cow is less than pounds produced which is used by D.H.I.A.

An examination of the rates of production for the different herd-size groups shows that the larger herds also had higher rates of production. The top 10 percent of the farms by labor income, in general, had high rates of production.

The effect of pounds of milk sold per cow on labor income is illustrated below. In each of the three size groups, the farms with high production had an average labor income considerably higher than those with low production.

MILK SOLD PER COW AND LABOR INCOME
434 New York Dairy Farms, 1964

Pounds milk sold per cow	Farms with less than 30 cows: Number of farms	Labor income	Farms with 30-49 cows: Number of farms	Labor income	Farms with 50 cows and over: Number of farms	Labor income
Under 10,000	39	$1,097	56	$1,973	17	$ - 142
10,000-11,999	34	$2,086	92	$2,768	34	$4,013
12,000 & over	31	$2,821	95	$4,235	36	$5,288

Labor Efficiency

Labor efficiency is sometimes claimed to be the most important single factor on farms today. This is brought about by the rapidly rising wage rates relative to machinery prices. If a farmer wants top efficiency from his hired men's time as well as his own, he must keep a close watch on the factors which affect labor efficiency.

MEASURES OF LABOR EFFICIENCY
434 New York Dairy Farms, 1964

Measure	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Number of cows per man	_____	18	24	27	28
Pounds of 3.7 milk sold per man	_____	200,400	268,400	306,800	337,300
Work units per man	_____	248	304	325	346
Crop acres per man	_____	58	64	61	70

Cows per man and pounds of milk sold per man are the most commonly used measures of labor efficiency on dairy farms. Man equivalent is used in calculating the "per man" measures.

In general, the larger farms had higher rates of labor efficiency. The farms with 50 cows and over averaged nine more cows per man and over 100,000 more pounds milk per man than the farms with less than 30 cows.

POUNDS OF MILK SOLD PER MAN AND LABOR INCOME
434 New York Dairy Farms, 1964

Pounds milk sold per man	Farms with less than 30 cows: Number of farms	Labor income	Farms with 30-49 cows: Number of farms	Labor income	Farms with 50 cows and over: Number of farms	Labor income
Under 250,000	77	$1,391	94	$2,024	21	$2,132
250,000-349,999	27	$3,482	109	$3,400	44	$3,378
350,000 & over	0	--	40	$5,165	22	$5,953

When labor efficiency is related to labor income as in the table above, two factors become obvious. One is that the more pounds of milk sold per man the higher the labor income per operator. This is illustrated in all three size groups. The other factor is that a much higher percentage of the large farms have high labor efficiency. One-fourth of the farms with 50 cows or over sold 350,000 pounds or more milk per man, while none of the small-size group accomplished this.

Cost Control

Feed Costs

As farmers buy more inputs, cost control grows in importance. On New York dairy farms where expenditures take about 75 percent of the farm receipts, cost control is a real challenge to the operator. Two areas are examined here: (1) feed costs, and (2) machinery and labor costs.

ITEMS RELATED TO FEED COSTS
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% of labor income
Purchased feed					
Dairy feed bought	$_____	$3,713	$5,825	$10,249	$8,386
Feed bought per cow	$_____	$155	$153	$160	$152
Feed bought as % of milk receipts	_____%	33%	31%	31%	29%
Feed bought per cwt. of milk sold	$_____	$1.43	$1.36	$1.39	$1.24
Total crop expense per cow	$_____	$28	$34	$36	$35
Total feed bought and crop expense per cow	$_____	$183	$187	$196	$187
Roughage harvested (hay equivalent)					
Hay (tons)	_____	108	139	216	180
Corn silage (tons ÷ 3)	_____	29	57	113	112
Other silage (tons ÷ 3)	_____	3	6	11	9
Total tons hay equivalent	_____	140	202	340	301
Tons hay equivalent per cow	_____	5.8	5.3	5.3	5.5
Other considerations					
Total acres in crops per cow	_____	3.1	2.7	2.3	2.5
Lime & fertilizer expense per cow	_____	$18	$23	$25	$24
Lime & fertilizer expense per crop acre	_____	$5.71	$8.39	$10.80	$9.46
Number of heifers per 10 cows	_____	6.2	6.1	5.8	6.2

Cost control is more difficult to measure than the other factors. This is due in part to the number of expenses in a farm business and their interrelationship. For example, labor costs are dependent on the amount of machinery and in turn machinery costs. Another reason why cost control is difficult to evaluate is that costs can be too low as well as too high. It is possible to cut costs to the point that they reduce efficiency.

Even though cost control is difficult to measure, it is important to use the best guides available since costs are often the weakest point in the business. Proceed with your cost control analysis with care.

Feed cost is the largest single expense on most dairy farms. It is influenced by many things such as, the amount of home-grown grain, quantity and quality of roughage, and number of young stock. Measures of selected items related to feed costs are given on page 14.

Feed bought as percent of milk receipts is one of the better measures for looking at feed cost. It is calculated by dividing dairy feed bought by milk receipts. This measure is most useful in locating farms with high feed costs. If your analysis shows the percentage of milk receipts going for feed to be above 30 percent, it probably suggests that you might well take a close look at your feed program.

PERCENT PURCHASED FEED IS OF MILK RECEIPTS
434 New York Dairy Farms, 1964

Feed bought as percent of milk receipts	Farms with less than 30 cows		Farms with 30-49 cows		Farms with 50 cows and over	
	Number of farms	Labor income	Number of farms	Labor income	Number of farms	Labor income
Under 25%	22	$3,132	53	$4,488	11	$3,673
25 - 34%	36	$2,214	119	$3,362	51	$4,134
35 - 44%	36	$1,182	52	$2,325	22	$3,596
45% & over	10	$996	19	$451	3	$-2,001

The table above illustrates generally how percent purchased feed is of milk receipts relates to labor income. In general, as the percent of the milk check going for feed went up, the labor income went down. The highest income on the large farms was in the 25-34 percent range. In analyzing an individual farm, one must also look at the other related items.

Power and Machinery Costs

POWER AND MACHINERY COST*
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Beginning inventory	$_____	$ 7,200	$11,275	$17,752	$14,667
New machinery bought	_____	1,307	2,450	4,344	3,297
Total (No. 1)	$_____	$ 8,507	$13,725	$22,096	$17,964
End inventory	$_____	$ 7,611	$12,215	$19,596	$16,080
Machinery sold	_____	20	63	245	215
Total (No. 2)	$_____	$ 7,631	$12,278	$19,841	$16,295
Depreciation (Total No. 1 minus Total No. 2)	$_____	$ 876	$ 1,447	$ 2,255	$ 1,669
Interest at 5% average inventory	_____	370	587	934	768
Gas and oil	_____	452	663	1,069	845
Machinery repairs	_____	456	697	1,279	898
Bale ties	_____	72	105	156	143
Milk hauling	_____	323	335	438	349
Machine hire	_____	74	110	123	189
Auto expense (farm share)	_____	127	156	178	136
Electricity (farm share)	_____	205	298	555	462
Total power and machinery cost	$_____	$ 2,955	$ 4,398	$ 6,987	$ 5,459
Less:					
Gas tax refund $_____		$83	$137	$192	$180
Income from machine work _____		61	77	75	96
	_____	144	214	267	276
NET POWER AND MACHINERY COST	$_____	$ 2,811	$ 4,184	$ 6,720	$ 5,183
Net machinery cost per cow	$_____	$117	$110	$105	$94
Net machinery cost per crop acre	$_____	$37	$41	$46	$37
Net machinery cost per cwt. milk sold	$_____	$1.08	$.97	$.91	$.77

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

Rates of Production

The aim of most dairymen is to produce at the optimum rates of production. However, it appears that few ever reach the point where the additional inputs necessary to raise rates of production will not pay off. Most of them operate considerably below the optimum rates.

Table 16. MEASURES OF RATES OF PRODUCTION
568 New York Dairy Farms, 1968

Measure	My farm	Average of 568 farms
Pounds of milk sold per cow	_____	12,300
Tons hay per acre	_____	2.8
Tons corn silage per acre	_____	14
Bushels of oats per acre	_____	61
Bushels grain corn per acre	_____	71
Bushels of wheat per acre	_____	42

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 568 farms was 12,300 pounds per cow with a range from 6,900 pounds to 17,000 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.

In general, the more pounds of milk sold per cow, the higher the labor income per operator (table 17). The farms with the higher rates of production also had somewhat larger herds. As one would logically expect, the herds with higher rates of production bought more feed per cow.

Table 17. MILK SOLD PER COW AND LABOR INCOME
568 New York Dairy Farms, 1968

Pounds of milk sold per cow	Number of farms	Number of cows	Feed bought per cow	Labor income
Under 10,000	58	55	$124	$ 4,250
10,000 - 10,999	66	56	130	6,990
11,000 - 11,999	112	56	150	7,880
12,000 - 12,999	133	60	169	9,670
13,000 - 13,999	112	62	173	10,240
14,000 and over	87	58	198	11,560

Labor and Machinery Cost

LABOR AND MACHINERY COST
434 New York Dairy Farms, 1964

Item	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Net power & machinery cost (p. 16)	$_____	$2,811	$4,184	$ 6,720	$ 5,183
Value of operator's labor*	_____	3,635	3,868	4,427	3,683
Hired labor (p. 6)	_____	213	857	3,189	2,529
Unpaid family labor (p. 6)	_____	307	405	332	366
TOTAL LABOR AND MACHINERY COST	$_____	$6,966	$9,314	$14,668	$11,761
Labor and machinery cost per cow	$_____	$290	$245	$229	$214
Labor and machinery cost per crop acre	$_____	$93	$91	$100	$84
Labor and machinery cost per man	$_____	$5,358	$5,821	$6,112	$5,881
Labor and machinery cost per cwt. milk sold	$_____	$2.67	$2.17	$1.99	$1.74

* $3,600 per year. Multiply this by the number of operators on your farm.

Since the only economic justification for machinery, generally, is to save labor, the measure of labor and machinery cost is a good one to use in sizing up a farm's machinery situation. If an operator adds an expensive machine to his business without expanding size or reducing the labor force, the result is inefficiency.

When labor and machinery cost per cow is related to labor income (see table below), it is obvious that as this cost increases labor income decreases. On the larger farms, a much higher proportion of the farms were in the low labor and machinery cost per cow group.

LABOR AND MACHINERY COST PER COW AND LABOR INCOME
434 New York Dairy Farms, 1964

Cost per cow	Farms with less than 30 cows: Number of farms	Labor income	Farms with 30-49 cows: Number of farms	Labor income	Farms with 50 cows and over: Number of farms	Labor income
Under $250	26	$2,537	144	$3,836	61	$4,455
$250 - $349	60	$2,260	90	$2,173	26	$2,025
$350 & over	18	$-23	9	$2,170	0	--

Capital Efficiency

Capital efficiency is a far more important factor on farms today than many people realize. This is because dairy farming requires an ever increasing amount of capital. However, capital like all other costs to the business can get out of line. This may result from too much money tied up in non-productive items such as, an expensive house, or an unncessarily elaborate barn; or from not using the investment fully such as, a barn that is only half full of cows.

The end inventory figures were used in calculating the various measures of capital efficiency in the table below.

MEASURES OF CAPITAL EFFICIENCY
434 New York Dairy Farms, 1964

Measure	My farm	Average of farms with: Less than 30 cows	30-49 cows	50 cows and over	Average of top 10% by labor income
Total capital per man	$_____	$28,134	$34,092	$40,182	$40,156
Total capital per cow	$_____	$1,524	$1,435	$1,507	$1,460
Total capital per cwt. of milk sold	$_____	$14	$13	$13	$12
Total machinery and equipment per cow	$_____	$317	$321	$306	$292
Total land and building investment per cow	$_____	$756	$659	$739	$674

When capital per cow is related to labor income, there are differences in the relationship for each size group. It is not possible to point out any definite relationships from these data.

CAPITAL PER COW AND LABOR INCOME
434 New York Dairy Farms, 1964

Total capital per cow	Farms with less than 30 cows: Number of farms	Labor income	Farms with 30-49 cows: Number of farms	Labor income	Farms with 50 cows and over: Number of farms	Labor income
Under $1,200	22	$1,735	73	$3,281	20	$3,057
$1,200 - $1,599	47	$2,421	101	$3,192	39	$3,700
$1,600 & over	35	$1,405	69	$2,978	28	$4,248

Farm Business Chart

The chart on this page is a tool for use in analyzing a farm business. It is essentially a series of measuring sticks combined into one tool.

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
434 New York Dairy Farms*, 1964

Size				Rates of Production		
No. of cows	Total work units	Man equiva-lent	Pounds 3.7 milk sold	Pounds 3.7 milk sold per cow	Tons hay per acre	Tons corn silage per acre
75	930	3.0	902,200	14,300	3.7	21
53	669	2.2	617,500	13,200	2.9	17
46	580	2.0	528,600	12,500	2.5	15
42	528	1.9	480,000	12,000	2.3	14
38	488	1.6	431,900	11,400	2.1	12
35	452	1.5	395,600	10,900	1.8	11
33	420	1.3	357,600	10,400	1.6	10
30	381	1.2	313,100	9,800	1.4	9
26	336	1.2	266,800	9,100	1.1	7
21	265	1.1	194,200	7,800	.7	4

Labor Efficiency		Cost Control			
Cows per man	Pounds 3.7 milk sold per man	Feed bought per cow	% Feed is of milk receipts	Net machinery cost per cow	Labor and machinery cost per cow
36	441,600	$ 63	16%	$ 63	$180
30	347,700	95	23	80	202
28	315,100	115	26	88	216
26	287,600	131	28	94	227
24	269,700	145	30	101	238
23	250,900	158	32	110	251
21	233,800	173	34	119	263
20	212,000	187	36	128	279
18	185,400	207	40	142	305
15	143,600	249	47	184	372

* These farms are considerably above the average for all farms in the State. For example, the median number of cows for the 434 farms was 36.5 compared with 31.5 for all farms in the State.

The Farm Business Chart on page 20 is an important tool in determining the strength or weakness of various business factors. It not only lets one compare a particular factor with the average but also shows how far above or below average each factor falls.

The top figure in each column is the average of the top 10 percent of the farms for that factor. The other figures in the column are "the next best 10 percent," etc. For example, when sorted on milk per cow, the 10 percent of farms with the highest production per cow averaged 14,300 pounds of 3.7 percent milk sold per cow. The 10 percent with the lowest production per cow averaged 7,800 pounds.

In using this chart, keep in mind that each column is independent of the others. The farms in the top 10 percent for one factor would not be the same farms in the top 10 percent for the factor in the next column.

Take a pencil and draw a line through each column which will show where the particular farm being analyzed stands. Then list below the factors that are particularly strong and those that are particularly weak. With these important factors listed plus a consideration of the financial situation and goals and objectives, the manager is in a good position to start considering what changes should be made in the business.

STRONG POINTS:

_____

_____

_____

_____

WEAK POINTS:

_____

_____

_____

_____

Financial Situation

The financial summary for 126 dairy farms in Cayuga, Delaware, Ontario, and Otsego Counties is presented for comparison purposes. These farms were included in a credit study made in 1962 and repeated in 1964. The information shows some of the financial changes which occurred on these 126 farms in the two-year period.

FARM FAMILY ASSETS

	My Farm	126 Dairy Farms 1962	1964	Change
Farm Assets				
Machinery and equipment	$_____	$12,561	$13,835	$1,274
Cattle	_____	15,157	16,057	900
Other livestock	_____	71	112	41
Feed and supplies	_____	4,369	4,591	222
Land and buildings	_____	27,343	31,931	4,588
All Farm Assets	$_____	$59,501	$66,526	$7,025
Non-Farm Assets				
Other real estate	$_____	$ 609	$ 839	$ 230
Cash on hand and in checking account	_____	677	968	291
Stocks, bonds	_____	1,923	2,335	412
Household goods, personal auto	_____	3,025	3,204	179
Cash value life insurance	_____	1,980	2,604	624
Accounts receivable	_____	2,398	1,973	- 425
Other	_____	1,196	1,825	629
All Non-Farm Assets	$_____	$11,808	$13,748	$1,940
TOTAL FINANCIAL ASSETS	$_____	$71,309	$80,274	$8,965

Sound financial management has always been an important factor in successful farm operation. As the amount of capital invested in the farm business increases, and the relative importance of credit in relation to total capital becomes greater, increasing skill is required in managing finances.

It is difficult or impossible to make sound decisions relative to borrowing and investing capital without a good working knowledge of business and family finances.

Most commercial farmers find it impossible to operate an efficient and profitable business without using credit. When used in reasonable amounts and under reasonable terms, credit is an extremely valuable asset to successful management.

FARM FAMILY DEBTS

	My Farm	126 Dairy Farms 1962	1964	Change
Debts				
Real estate debt	$_____	$11,499	$13,585	$2,086
Chattle mortgages on cattle and equipment	_____	7,337	7,463	126
Unsecured notes	_____	1,801	2,231	430
Installment contracts	_____	400	691	291
Feed account	_____	658	634	- 24
Other debts	_____	780	830	50
Total Debts	$_____	$22,475	$25,434	$2,959
Total Assets	$_____	$71,309	$80,274	$8,965
Total Debts	_____	22,475	25,434	2,959
Net Worth	$_____	$48,834	$54,840	$6,006
% Equity	_____%	68%	68%	--
Ratio of Debt to Farm Assets	_____	1- 2.6	1- 2.6	--
Number of cows	_____	40	42	2
Debt per cow	$_____	$562	$605	$43

Financial institutions serving farmers are usually reluctant to lend over 50-60 percent of the value of farm assets. It is also true that most farm businesses are not profitable enough to carry a debt load of over 50-60 percent and meet all other family and business financial obligations.

Any farmer can obtain a general picture of his financial status relative to other farmers by using the figures presented here for comparison. In appraising one's financial position, it is important to keep two points in mind; first, the ability to carry debt varies greatly from one business and one family to another; and second, unreasonable repayment terms cause trouble more often than too much credit.

Family Living Expenditures

Family living expenses have first claim on farm income. In any financial planning for changes, it is important to include the family living expenses. Living expenses are not summarized for the farm business management cooperators so figures are not available from this source. Many families enrolled in ELFAC (Electronic Farm Accounts) keep a detailed record of family living expenditures. Below are listed the family living expenditures of 58 New York farm families for 1964. Although there was a wide range in both the total expenditures and each item of expense, the data gives an indication of what a farm family might require for family living. Total family expenditures varied from $3,087 to $15,343.

FARM FAMILY LIVING EXPENDITURES
58 New York Farm Families, 1964

Expenditure	My family	Average of 58 families	Percent of total
Food	$_____	$1,391	30
Clothing	_____	402	9
Medical and dental	_____	334	7
Household operation	_____	833	18
Personal auto	_____	245	5
Recreation	_____	272	6
Education	_____	360	8
Non-tax deductible gifts	_____	228	5
Tax deductible gifts	_____	170	4
Personal care	_____	73	2
Domestic help	_____	53	1
Utilities	_____	199	4
All other	_____	48	1
TOTAL LIVING EXPENSES	$_____	$4,608	100
Insurance premiums	_____	836	
Investments, etc.	_____	534	
Taxes	_____	435	
TOTAL FAMILY EXPENDITURES	$_____	$6,413	

The various living expense items will be affected considerably by the number of family members, their ages, health and interests, and the educational requirements of the children. Each family should consider these factors when evaluating their own expenditures.

Budgeting

When a farm manager considers making a change in his business, there are usually two or three alternative solutions to the problem. The outline below is a guide to help the farmer compare these alternatives. If the change is to be a major one, the farm manager may wish to consult with his county agricultural agent since he is experienced in the techniques of budgeting and has in his possession considerable reference material that is helpful when comparing alternatives.

	My business in 1964	Proposed Change #1	Proposed Change #2
I. Farm Receipts			
Milk sales, gross	$	$	$
Livestock sales			
Egg sales			
Crop sales			
Miscellaneous receipts			
Total Cash Receipts			
Increase in inventory			
Total Farm Receipts	$	$	$
II. Farm Expenses			
Hired labor	$	$	$
Dairy feed bought			
_____ feed bought			
Machine hire			
Truck, tractor, machinery			
Auto expense (farm share)			
Gasoline and oil			
Breeding fees			
Veterinary and medicine			
Other livestock, poultry exp.			
Lime and fertilizer			
Seeds and plants			
Spray, other crop expense			
Land, building, fence expense			
Taxes, insurance			
Electricity, telephone (f.s.)			
Miscellaneous			
Total Cash Operating Expenses			
New machinery			
New real estate			
Livestock purchases			
Unpaid family labor			
Decrease in inventory			
Total Farm Expenses	$	$	$
III. Farm Financial Summary			
Capital Investment	$	$	$
Total Farm Receipts	$	$	$
Total Farm Expenses			
Farm Income	$	$	$
Interest on Capital			
LABOR INCOME	$	$	$

SELECTED FARM BUSINESS SUMMARY FACTORS
New York Dairy Farms, 1961-1964

Item	1961	1962	1963	1964
Number of farms	490	503	468	434
Financial Summary				
Average capital	$53,722	$53,541	$55,304	$57,187
Total farm receipts	$22,505	$21,351	$23,891	$25,634
Total farm expenses	$16,125	$16,406	$17,278	$19,551
LABOR INCOME per operator	$3,352	$2,019	$3,492	$2,958
Size				
Number of cows	38	38	39	40
Total crop acres	99	101	105	104
Man equivalent	1.8	1.8	1.7	1.7
Total work units	516	524	527	507
Lbs. of milk sold	378,700	394,900	427,000	450,400
Rates of Production				
Lbs. milk sold per cow	9,970	10,390	10,950	11,260
Tons hay per acre	2.6	1.8	2.3	2.0
Tons corn silage per acre*	12	12	12	12
Bu. oats per acre*	50	50	57	51
Labor Efficiency				
Number of cows per man	21	21	23	24
Work units per man	287	291	310	298
Lbs. of milk sold per man	210,400	219,400	251,200	264,900
Cost Control Factors				
% Feed is of milk receipts	28%	33%	32%	31%
Labor & machinery cost per cow	$256	$253	$249	$246
Prices				
Av. price per cwt. milk	$4.47	$4.33	$4.31	$4.40

* Average of number having.

The manager of a farm business should not base major decisions on one year's record alone unless there is no other choice. If possible, he should have at least three years' records so as to determine a more accurate "normal figure" and to get some indication of the trends on his farm.

The purpose of the table above is to illustrate the importance of using more than one year's record for analysis and decision making. Notice hay yields were down in 1962 and "% feed is of milk receipts" was up. This was due to the drought conditions in that year.

FARM BUSINESS SUMMARY
Average of 434 New York Dairy Farms, 1964

CAPITAL INVESTMENT

	1/1/64	1/1/65
Machinery & equipment	$11,597	$12,591
Livestock	14,028	14,592
Feed & supplies	3,738	3,610
Land & buildings	26,373	27,845
TOTAL INVESTMENT	$55,736	$58,638

EXPENSES

Feed		
Dairy concentrate		$ 6,206
Hay and other		293
Labor		
Hired		1,170
Unpaid		367
Power and Machinery		
Gas and oil		694
Machinery repairs		756
Bale ties		107
Milk hauling		352
Machine hire		104
Auto expense (farm share)		153
Electricity (farm share)		327
Livestock		
Breeding fees		230
Veterinary, medicine		303
Other livestock expense		670
Crop		
Fertilizer and lime		900
Seeds and plants		231
Spray and other		98
Real Estate		
Land, building, fence repair		420
Taxes		574
Insurance		309
Rent		121
Other		
Telephone		75
Miscellaneous		108
Total Operating Expenses		$14,568
Capital		
New machinery		2,556
Purchased livestock		819
New real estate		1,608
TOTAL FARM EXPENSES		$19,551

RECEIPTS

Milk sales	$19,806
Livestock sold	1,949
Crop sales	121
Gas tax refund	135
Machine work	73
Machinery sold	89
Work - off farm	83
Miscellaneous	476
Total Cash Receipts	$22,732
Increase in Inventory	2,902
TOTAL FARM RECEIPTS	$25,634

FINANCIAL SUMMARY

Total Farm Receipts	$25,634
Total Farm Expenses	19,551
Farm Income	$ 6,083
Interest on average capital at 5%	2,859
Farm Labor Income	$ 3,224
Number of operators on 434 farms	473
LABOR INCOME/OPERATOR	$ 2,958

BUSINESS FACTORS

Man equivalent	1.7
Number of cows	40
Number of heifers	24
Acres of hay	71
Acres of other crops	33
Lbs. of 3.7 milk sold	450,400
Lbs. of 3.7 milk sold/cow	11,260
Tons hay/acre	2.0
Tons corn silage/acre	12
Lbs. of 3.7 milk sold/man	264,900
Cows per man	24
% Feed is of milk receipts	31%
Lime & fertilizer/crop acre	$8.65
Machinery cost/cow	$109
Av. price/cwt. milk	$4.40