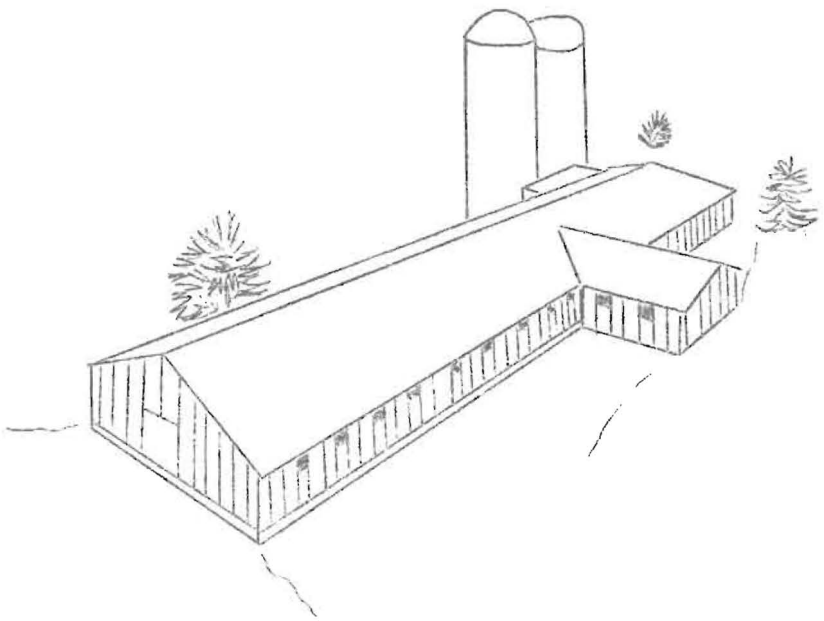
April 1972

A. E. Ext. 72-9

DAIRY FARM BUSINESS SUMMARY

WESTERN PLAINS REGION

1971



Eddy L. LaDue

Department of Agricultural Economics
New York State College of Agriculture
and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York 14850

WESTERN PLAINS REGION
DAIRY FARM BUSINESS SUMMARY
1971

This publication presents a summary of the 1971 farm business records for 30 Wyoming and Livingston County dairy farms. These records were submitted by dairymen participating in the New York State Cooperative Extension Farm Business Management Program.

Each dairyman participating in the program kept physical and financial records on his business throughout the year. At the end of the year Cooperative Extension Agents assisted the farmer in completing and "closing-out" the business records for the year. An initial summary of each business thus developed was sent to Cornell University.

The Department of Agricultural Economics at Cornell University completed the summary of each business with the help of computer facilities. The initial summary data as sent to Cornell was checked and placed on computer cards. The computer made the remaining summary calculations necessary and printed out a completed summary for each farm. These computer "print-outs" of individual farm data replace the hand-written record which has been used in previous years.

This report has been prepared in workbook form to assist users in making a systematic examination of their farm businesses. Western Plains dairymen who did not have their records summarized for inclusion in the publication may also find it useful in analyzing their 1971 farm business records.

A new accounting procedure for handling building and machinery depreciation has been adopted this year. Rather than showing increases in inventory as receipts and including capital purchases as expenses, the difference is calculated and reported as depreciation. Considering depreciation of machinery and buildings as an annual expense should be helpful in planning and budgeting.

This summary publication was prepared by Eddy L. LaDue, Department of Agricultural Economics, New York State College of Agriculture and Life Sciences, in cooperation with William D. Goewey and David L. Thorp, Cooperative Extension Agents.

GOOD MANAGEMENT IS BASIC

HOW DO YOU MEASURE UP

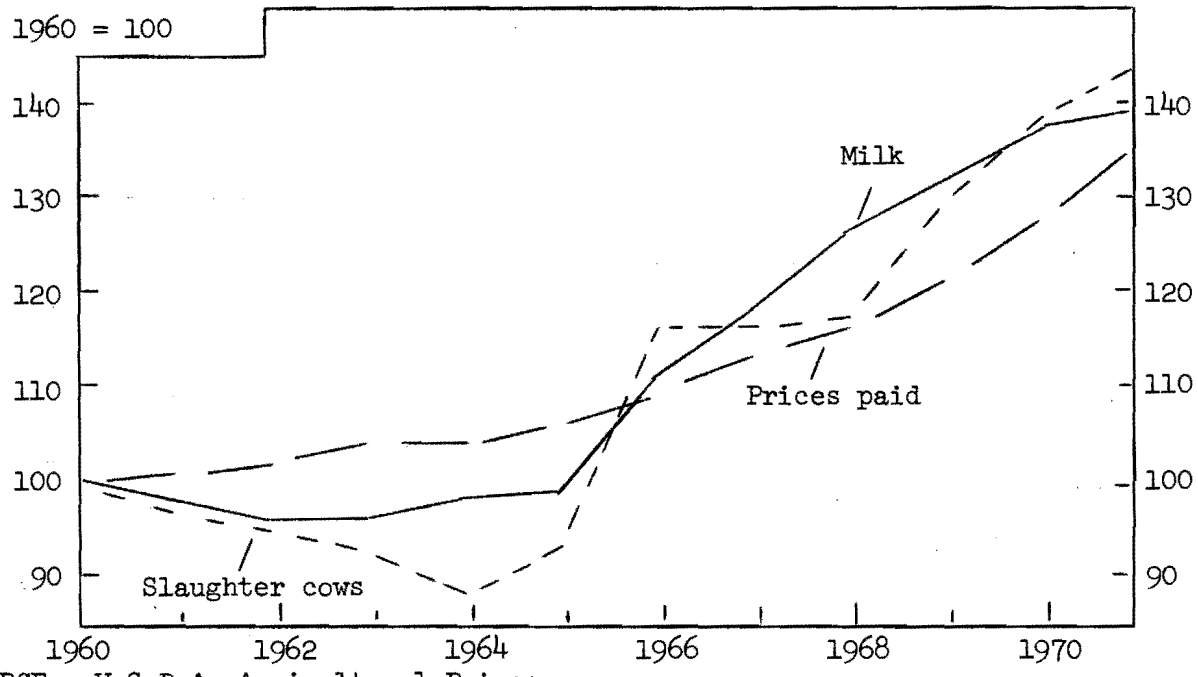
1. **Have you developed a systematic approach to management problems?**
2. **Do you have the facts on your business?**
3. **Are you improving your managerial skills?**

Steps in making a management decision:

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

This workbook can help you!

PRICES RECEIVED AND PAID BY NEW YORK DAIRY FARMERS



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

The relationship of prices received and prices paid determines the general level of farm incomes. For 1971, the 1960 indices for milk and cull cow prices were 139 and 143 which was slightly above the index of 135 for prices paid. This indicates a relatively favorable price relationship.

The blended New York farm price for 3.5 percent milk in 1971 was $6.00, up 11 cents from 1970. Changes in the cost of input items has varied. From 1960 to 1971, wages rose 70 percent, machinery prices went up 50 percent, dairy cow prices 33 percent, feed 17 percent, and fertilizer two percent. Variation in relative costs raises management questions.

AVERAGE YEARLY PRICES RECEIVED AND PAID BY N.Y. FARMERS, 1960-71

Year	Milk (cwt.)	Slaughter cows (cwt.)	Dairy cows (head)	Dairy ration (ton)	Wages per month with house	Prices paid by New York dairymen
1960	$4.31	$15.00	$278	$71	$210	104
1961	4.21	14.60	260	72	214	105
1962	4.14	14.26	245	74	218	106
1963	4.15	14.01	234	76	222	108
1964	4.21	13.17	237	74	228	108
1965	4.27	13.91	238	76	236	110
1966	4.79	17.35	269	80	248	113
1967	5.07	17.33	303	80	279	118
1968	5.43	17.58	319	74	302	121
1969	5.66	19.42	336	74	325	126
1970	5.89	20.71	353	78	356	132
1971*	6.00	21.47	370	83	369	140

* Preliminary

SUMMARY OF THE FARM BUSINESS

The first step in a farm business summary and analysis is to examine the resources being used. Knowledge of what these resources are and how they are used is fundamental in judging management performance.

LABOR, LIVESTOCK AND LAND USED
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms	Range
Man equivalent	_____	2.6	1.0 - 5.7
Age of operator	_____	39	26 - 56
Number of cows	_____	85	13 - 231
Number of heifers	_____	60	13 - 125
Acres of crops	_____	281	45 - 612

Labor, livestock and land are physical resources used in the business. The averages for these farms were 2.6 men, 85 cows and 281 acres of crops. This may be typical of many commercial operations in the region.

The average age of the operators reporting (6 operators did not report their age) was 39 years. This is considerably below the average reported by the Census. Business management projects tend to attract younger farmers who are in the process of developing their business.

FARM INVENTORY VALUES, JANUARY 1, 1972
30 Western Plains Farms

Item	My farm		Average 30 farms	
	Amount	Per cow	Amount	Per cow
Livestock	$_____	$_____	$ 47,063	$ 554
Feed and supplies	_____	_____	16,781	197
Machinery & equipment	_____	_____	40,046	471
Land and buildings	_____	_____	104,171	1,226
TOTAL INVENTORY	$_____	$_____	$208,061	$2,448

The average end inventory for these farms was $208,061 or $2,448 per cow and $80,023 per man equivalent. Land and buildings were valued at $1,226 per cow and $371 per crop acre. During the year, all inventory categories increased; livestock by $3,389, feed and supplies by $2,057, machinery and equipment by $3,219 and land and buildings by $3,802.

Depreciation Calculation

Capital outlays for machinery and buildings usually involve making a large investment in one year for an item that will be used for many years. Different accounting methods may be used to distribute the cost of each such item over its life and include the costs thus calculated in the expenses. Traditionally, this has been done by including the capital outlay as a farm expense in the year the investment was made and then showing an increase in the end inventory of the amount of the capital outlay minus first year depreciation. Depreciation after the first year was handled as differences between the beginning and end of year inventory values. Net changes in inventory value during the year were then carried as either receipts or expenses. This method tends to inflate both total farm receipts and total farm expenses.

This year a new method has been introduced. Depreciation for machinery and for real estate has been calculated and then entered as an expense item. This eliminates the increases or decreases in inventory for these items and the tendency to overstate receipts by the relatively large amounts of increases in inventory and the expenses by the large purchases of machinery and real estate.

MACHINERY AND LAND AND BUILDING DEPRECIATION
30 Western Plains Farms, 1971

Item	Machinery		Land and buildings	
	My farm	Ave. 30 farms	My farm	Ave. 30 farms
Beginning inventory	$_____	$ 36,827	$_____	$100,369
Purchases	_____	8,489	_____	4,751
Total (1)	$_____	$ 45,316	$_____	$105,120
End inventory	$_____	$ 40,046	$_____	$104,171
Sales	_____	245	_____	250
Total (2)	$_____	$ 40,291	$_____	$104,421
DEPRECIATION (1 minus 2)	$_____	$ 5,025	$_____	$ 699

The average machinery depreciation of $5,025 is 11 percent of the beginning inventory plus purchases. In view of the fact that the beginning inventory items are partially depreciated, this would indicate an average expected life of more than 9 years. One might raise the question of whether the machinery on many of these farms is being depreciated fast enough.

The small building depreciation ($699) indicates that the summary does not reflect much write-off for buildings. This may be a reflection of the fact that rising real estate values (inflation) about offset building depreciation.

As the investments in machinery and buildings on dairy farms increase, it is important that the depreciation costs be reflected in the annual operating statement and the farm business summary.

Receipts

Identification of the sources of income is important in the analysis of any business. This is the first step in separate evaluation of each of the various enterprises or segments of the business. Here we look at sources and amounts of receipts for this group of farms.

FARM RECEIPTS
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms Amount	Average 30 farms Percent
Milk sales	$_____	$ 67,140	84
Crop sales	_____	1,596	2
Livestock sales	_____	7,025	9
Gas tax refunds	_____	215	--
Government payments	_____	1,056	1
Work off farm	_____	16	--
Custom machine work	_____	158	--
Other	_____	2,843	4
Total Cash Receipts	$_____	$ 80,049	100
Increase in Livestock & Supplies	_____	5,446	
TOTAL FARM RECEIPTS	$_____	$ 85,495	

Most going farm businesses are expanding and therefore have an increase in inventory due to more livestock and crops raised. These increases are included in the farm receipts since the costs of producing or acquiring these assets are in the expenses. The increase for these two items averaged $5,446.

The average price received for milk sold from the 30 farms in 1971 was $6.13 per hundredweight. The New York State average blend price for 1971 was reported as $6.00.

INCOME ANALYSIS
Western Plains Farms, 1971 & 1970

Item	Your farm	Average 30 farms 1971	Ave. 29 farms 1970
Ave. price/cwt. milk sold	$_____	$ 6.13	$ 5.96
Milk sales per cow	$_____	$ 790	$ 783
Total cash receipts/man	$_____	$30,788	$29,321

Expenses

We often wonder where all the money goes! A study of the expenses tell us. A good picture of expenditures is important for a manager.

FARM EXPENSES
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms Amount	Percent
Labor			
Hired labor	$_____	$ 6,008	12
Feed			
Dairy concentrate	_____	13,378	26
Other feed	_____	2,311	5
Machinery			
Machine hire	_____	1,938	4
Machinery repairs	_____	3,739	7
Auto expense (f.s.)	_____	198	--
Gas and oil	_____	2,226	4
Livestock			
Livestock purchased	_____	2,056	4
Breeding fees	_____	750	2
Veterinary and medicine	_____	1,581	3
Other livestock expense	_____	1,958	4
Crops			
Lime and fertilizer	_____	3,879	8
Seeds and plants	_____	1,197	2
Spray, other crop expense	_____	1,391	3
Real Estate			
Land, building, fence repair	_____	1,031	2
Taxes	_____	1,957	4
Insurance	_____	1,278	3
Rent	_____	1,792	4
Other			
Telephone (f.s.)	_____	241	--
Electricity (f.s.)	_____	1,089	2
Miscellaneous	_____	719	1
Total Cash Expenses	$_____	$ 50,717	100
Machinery Depreciation	_____	5,025	
Real Estate Depreciation	_____	699	
Unpaid Labor	_____	990	
Decrease in Inventory	_____	---	
TOTAL FARM EXPENSES	$_____	$ 57,431	

Financial Summary of Year's Business

The net returns for any business can be measured in several different ways. Each measure calculates the net return to a selected resource or group of resources such as labor or capital. Some of the common farm business measures are given below.

FARM AND LABOR INCOME
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms Amount	Percent
Total farm receipts	$_____	$ 85,495	100
Total farm expenses	_____	57,431	67
FARM INCOME	$_____	$ 28,064	
Interest on ave. capital @ 7%	_____	14,127	17
Labor income per farm	$_____	$ 13,937	16
Number of operators	_____	1.40	
LABOR INCOME per operator	$_____	$ 9,955	

Farm income measures the return from the business to all capital and the operator's labor and management.

Labor income is the return to the farm operator for his labor and management. It is the measure most commonly used when comparing farm businesses. A seven percent interest charge on all capital is subtracted from the farm income to get labor income. The average labor income per operator for the 30 farms was $9,955 but the range was from $-8,000 to greater than $30,900.

Profit is a measure used in businesses where management is hired. In some farm management studies, the "management input" has been valued at eight percent of the total cash receipts. This is based on the charge made by commercial "services" which manage farms for landowners. When this is done for operator managed businesses, the operator's labor is valued at the average wage for hired men with houses. Although this technique tends to double-count operator's labor by assuming that the operator would accomplish no more physical labor if he did not have any management duties, it provides a good approximation to profit (particularly when a conservative value is placed on operator's labor). Using this procedure, the average farm income would be allocated as follows:

	Your farm		Ave. 30 farms	
Farm Income		$_____		$28,064
Operator's labor @ $80 per week	$_____		$ 5,824	
Management @ 8% cash receipts	_____		6,404	
Interest on capital @ 7%	_____		14,127	
		$_____		$26,355
PROFIT		$_____		$ 1,709

Farm cash flow reflects the cash available from the year's operation of the farm business for family living, interest and debt payments, and new purchases or investments. A family may have had additional cash available if they had a nonfarm income.

FARM CASH FLOW
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms
Total cash receipts	$_____	$ 80,049
Total cash operating expense	_____	50,717
NET FARM CASH FLOW	$_____	$ 29,332

Return on investment is a common measure for nonfarm businesses. It is calculated by deducting a charge for the operator's labor and management from the farm income. This is then divided by the average investment for the year to determine the rate of return on investment.

RETURN ON INVESTMENT
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms
Farm income	$_____	$ 28,064
Value of operator's labor & management*	_____	12,228
RETURN ON INVESTMENT	$_____	$ 15,836
Average capital investment	$_____	$201,828
RATE OF RETURN ON INVESTMENT	_____%	7.8%

* Value of labor plus value of management, from page 8.

Returns per cow can be calculated by dividing the farm business measures by the number of cows. Comparisons also can be made with the 1970 figures.

	Your farm	Average 30 farms 1971	Ave. 29 farms 1970
Net farm cash flow per cow	$_____	$345	$393
Farm income per cow	$_____	$330	$323
Labor income per cow	$_____	$164	$162

ANALYSIS OF THE FARM BUSINESS

Research has shown that certain basic factors affect farm incomes. In analyzing a farm business, we examine it in terms of these basic factors. This will be done on the pages that follow.

Size of Business

Studies have shown that in general larger farms pay better. 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. However, if a large farm is poorly operated, the losses also will be larger.

MEASURES OF SIZE OF BUSINESS
30 Western Plains Farms, 1971

Measure	My farm	Average 30 farms 1971	Average 509 New York farms 1970
Number of cows	_____	85	65
Pounds of milk sold	_____	1,095,500	822,200
Man equivalent	_____	2.6	2.2
Total work units	_____	990	691
Total acres of crops	_____	281	168

The 29 Western Plains farms summarized last year (1970) averaged 81 cows per farm and 2.6 man equivalent. Number of cows per farm is a very important measure of size for specialized dairy farms. In the table below, the 509 New York farms for 1970 are sorted by number of cows and the labor income is shown for each size group. In general, the large farms paid better.

COWS PER FARM AND LABOR INCOME
509 New York Dairy Farms, 1970

Number of cows	Number of farms	Labor income/operator
Less than 40	98	$ 4,450
40 - 54	150	6,690
55 - 69	91	7,390
70 - 84	63	8,430
85 - 99	32	12,560
100 and more	75	12,030

Rates of Production

Crop yields and rates of animal production have an important influence on farm incomes. In the table below, we examine the crops grown and yields along with the pounds of milk sold per cow.

CROP YIELDS AND MILK SOLD PER COW
30 Western Plains Farms, 1971

Crop	My farm Acres	My farm Yield	Average of 30 farms Farms reporting	Average of 30 farms Acres	Average of 30 farms Yield
Dry hay	_____	_____	29	121*	3.1 t.
Green chop	_____	_____	2	30*	3.3 t.
Hay crop silage	_____	_____	0	0*	0
Corn silage	_____	_____	29	82*	15.8 t.
Grain corn	_____	_____	25	52*	71 bu.
Oats	_____	_____	16	32*	77 bu.
Hay equivalent:					
All hay crops	_____	_____	30	119	3.0 t.
All hay & silage	_____	_____	30	199	3.9 t.
Milk sold per cow	_____	_____			12,888 lbs.

* Average of farms reporting.

The number of farms reporting hay crop silage and green chop is not an accurate assessment of the cropping system on these farms. Some farmers harvesting hay crop silage or green chop convert it to hay equivalent and combine it with dry hay. Tons of hay equivalent of all hay and silage is a measure of the overall rate of roughage production for all the acres used for roughage crops. Corn silage produces more feed per acre than does hay (5.3 to 3.1).

The importance of rates of production is shown in the table below for 509 farms in 1970.

MILK SOLD PER COW AND LABOR INCOME
509 New York Dairy Farms, 1970

Pounds of milk sold per cow	Number of farms	Number of cows	Feed bought per cow	Labor income
Under 10,000	52	53	$ 155	$ 1,940
10,000 - 10,999	51	60	156	4,720
11,000 - 11,999	68	64	186	7,510
12,000 - 12,999	98	68	196	6,560
13,000 - 13,999	107	75	190	11,540
14,000 - 14,999	69	63	207	9,620
15,000 and over	64	60	235	11,460

Labor Efficiency

Increasing wage rates and reduced net return per unit of milk produced makes labor efficiency an important factor in farm production. The labor force and several measures of accomplishment per man or labor efficiency are shown below.

LABOR FORCE AND LABOR EFFICIENCY
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms	Average 509 New York farms, 1970
Labor force - months			
Operator	_____	16.8	14.1
Family paid	_____	1.1	1.9
Family unpaid	_____	3.3	2.6
Hired	_____	10.5	7.3
Total	_____	31.7	26.2
Cows per man	_____	33	30
Lbs. milk sold/man	_____	421,346	373,700
Crop acres per man	_____	108	76
Work units per man	_____	381	314

Cows per man and pounds of milk sold per man are likely the most important labor efficiency measures for specialized dairy farms. These 30 farms fall above last year's State summary average for all four of the labor efficiency measures indicated above.

The relationship of pounds of milk sold per man and labor income for the 509 farms in 1970 is shown in the table below.

MILK SOLD PER MAN AND LABOR INCOME
509 New York Dairy Farms, 1970

Pounds of milk sold per man	Number of farms	Number of cows	Lbs. milk per cow	Labor income per operator
Under 200,000	22	31	9,500	$ 520
200,000 - 299,999	104	51	11,600	4,120
300,000 - 399,999	197	61	12,500	6,840
400,000 - 499,999	119	74	13,400	10,640
500,000 and over	67	92	13,800	15,980

Cost Control

The control of costs is a big factor in the success of modern commercial dairy operations. Feed, machinery and labor costs are major items and are examined in detail. However, it is important to check all cost items both large and small.

Feed Costs

Feed is the largest single cash operating expense item on dairy farms. For the 30 Western Plains farms, purchased feed accounted for 31 percent of the cash expenses. In general, all feed costs account for about half the cost of producing milk. This includes the expenses of growing crops.

Since the feeding program includes both purchased and homegrown feed, both roughage and concentrates, it is not easy to locate weak spots in efforts to control feed costs. The items on this page all have a bearing on feed costs, and may be helpful in planning a more efficient feeding program.

ITEMS RELATED TO FEED COSTS
30 Western Plains Farms, 1971

Item	My farm	Ave. 30 farms 1971	Ave. 509 New York farms, 1970
Feed bought per cow	$_____	$ 157	$ 192
Crop expense per cow	$_____	$ 76	$ 50
Feed bought/cwt. milk	$_____	$1.22	$1.52
Feed & crop expense per hundredweight milk	$_____	$1.81	$1.91
Percent feed is of milk sales	_____%	20%	25%
Hay equivalent per cow	_____	9.1 t.	7.5 t.
Crop acres per cow	_____	3.3	2.6
Lime & fertilizer per crop acre	$_____	$ 14	$ 13
Heifers per ten cows	_____	7.0	6.6

The crop program has an important influence on purchased feed costs. Increasing the amount of roughage and/or grain grown on the farm will reduce the quantity of feed to be purchased. However, this will reduce the total cost of feeding the animals only if the cost of growing feed on the farm is less than the cost of purchased feed. Also, the number of heifers being raised on the farm will affect the total feed cost per cow or hundredweight of milk sold. The overall feed situation must be examined and evaluated as a "system."

Machinery Costs

Successful farm managers have substituted power and machinery for labor to a large degree. As this process continues, it is vitally important to retain control of the costs associated with owning and operating farm equipment.

In 1971, the average machinery inventory for the 30 Western Plains farms was $38,400. On many farms the investment in machinery and equipment has nearly tripled in the last ten years. The opportunity cost of tieing-up this much capital in machinery is one of the costs (interest), included in the table below.

MACHINERY COSTS
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms	Percent
Depreciation (from page 5)	$_____	$ 5,025	32
Interest @ 7% on average inventory	_____	2,691	17
Machine hire	_____	1,938	12
Machinery repairs	_____	3,739	24
Auto expense (farm share)	_____	198	1
Gas and oil	_____	2,226	14
Total Machinery Costs	$_____	$15,817	100
Machinery costs:			
Per cow	$_____	$ 186	
Per cwt. milk sold	$_____	$ 1.44	

Total machinery costs averaged $15,817 or $186 per cow. With the average price of milk $6.13 it would take 3,034 pounds of milk per cow to cover the machinery costs. With the machinery costs per hundredweight of milk sold at $1.44, it would take 23 percent of the milk to pay machinery costs.

Average machinery cost on the 509 New York farms summarized last year were $157 per cow and $1.25 per hundredweight of milk sold when the cost items shown above were summarized.

Machinery is essential for efficient operation but it is costly. Machinery cost control involves selecting the appropriate kinds and sizes of machine for the business being operated, and then making efficient use of the machine selected.

Are your machinery costs under control?

Labor Costs

Labor and machinery operate as a "team" on a modern farm. The challenge is to get an efficient combination that will give a reasonable cost per unit of output.

LABOR COSTS
30 Western Plains Farms, 1971

Item	My farm	Average 30 farms 1971	Ave. 509 N. Y. farms, 1970
Labor costs:			
Value of operator's labor*	$_____	$ 7,560	$ 6,355
Hired labor	_____	6,008	4,388
Unpaid family labor	_____	990	775
Total Labor Cost	$_____	$14,558	$11,518
Labor costs:			
Per cow	$_____	$ 171	$ 177
Per cwt. milk sold	$_____	$ 1.33	$ 1.40
Labor and machinery costs:			
Per cow	$_____	$ 357	$ 334
Per cwt. milk sold	$_____	$ 2.77	$ 2.52

* Valued at $5,400 per operator.

The labor cost was slightly lower than the machinery cost. The combined labor and machinery costs averaged $2.77 per hundredweight milk sold.

MISCELLANEOUS COST CONTROL MEASURES

Item	My farm	Ave. 30 Western Plains farms, 1971	Ave. 509 New York farms, 1970
Breeding fees per cow	$_____	$ 9	$ 9
Veterinary & medicine/cow	_____	19	13
Land & building repair/cow	_____	12	17
Taxes per cow	_____	23	22
Insurance per cow	_____	15	13
Electricity per cow	_____	13	12

The financial situation is an important part of the analysis of a farm business. This indicates the condition of the operation as it relates to present financing and future expansion possibilities. In the 509 records for 1970, a total of 159 included a financial situation statement. These were summarized and the results are reported below.

FARM FAMILY FINANCIAL SITUATION
159 New York Dairy Farms, January 1, 1971

Item	My farm	Farms Reporting Number	Farms Reporting Percent	Average 159 Farms Amount	Average 159 Farms Percent
Assets					
Farm land and buildings	$_____	159	100	$ 60,587	43
Livestock	_____	159	100	29,052	21
Machinery	_____	159	100	27,279	19
Feed and supplies	_____	159	100	8,663	6
Co-op investment	_____	112	70	1,735	1
Accounts receivable	_____	90	57	2,548	2
Cash and checking accounts	_____	136	86	1,313	1
Savings accounts	_____	81	51	1,863	1
Cash value life insurance	_____	104	65	2,614	2
Stocks and bonds	_____	70	44	1,951	1
Nonfarm real estate	_____	23	14	1,901	1
Auto (personal share)	_____	125	79	894	1
All other	_____			1,463	1
TOTAL ASSETS	$_____			$141,863	100
Liabilities					
Real estate mortgage	$_____	115	72	$ 18,826	46
Liens on cattle & equipt.	_____	86	54	13,033	31
Installment contracts	_____	45	28	1,928	5
Secured notes	_____	45	28	3,757	9
Unsecured notes	_____	39	25	1,958	5
Store accounts	_____	112	70	1,281	3
Personal debt and other	_____	37	23	539	1
TOTAL LIABILITIES	$_____	143	90	$ 41,322	100
NET WORTH	$_____			$100,541	

The farm inventory accounted for 89 percent of the total family assets reported. The cash value of life insurance and accounts receivable each accounted for two percent. Real estate mortgages were the largest liability and accounted for 46 percent of all debts.

DEBT COMMITMENTS AND FINANCIAL MEASURES
159 New York Dairy Farms, 1970

	My farm	Average 159 farms
Annual Debt Commitments:		
Real estate mortgage	$_____	$2,420
Cattle & equipment liens	_____	3,010
Notes	_____	1,360
Installment contracts	_____	330
All other	_____	1,150
Total debt payments	$_____	$8,270
Financial Measures:		
Number of cows	_____	59
Annual debt payment/cow	$_____	$140
Debt payment as % milk check	_____%	18%
Percent equity	_____%	71%
Percent debt on real estate	_____%	46%
Debt per cow	$_____	$700

The annual debt commitments for interest and principle averaged $8,270. The largest amount committed was for cattle and equipment liens. These commitments averaged nearly $700 per month and $140 per cow per year.

Debts on the 159 farms reporting amounted to 29 percent of the total assets. This gives an average equity of 71 percent. The range in percent equity was from 8 to 100. The debt per cow ranged from $50 to $2,200.

The percent equity was highest for the herds with under 40 cows and lowest for those with 85 or more cows. Debt per cow on the other hand was highest for the large herds and lowest for the herds with under 40 cows.

Table 23. FINANCIAL SITUATION BY SIZE OF HERD
159 New York Dairy Farms, 1970

Herd size (Cows)	Number of Farms	Number of Cows	Total assets	Total liabilities	Net worth	Percent equity	Debt per cow
Under 40	40	32	$ 92,298	$18,094	$74,204	80	$558
40 - 54	47	46	110,447	31,078	79,369	72	676
55 - 69	28	60	136,127	44,488	91,639	67	741
70 - 84	20	75	168,516	48,512	120,004	71	647
85 & over	24	116	270,472	90,409	180,063	67	779

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
509 New York Dairy Farms*, 1970

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
4.8	142	1,773,400	15,800	4.7	22	48	612,400
3.8	98	1,298,800	14,700	3.8	19	38	488,400
2.6	79	1,014,600	14,000	3.4	18	35	439,800
2.3	67	857,600	13,600	3.0	16	32	404,300
2.1	59	739,300	13,100	2.7	15	30	378,400
2.0	52	656,800	12,700	2.5	15	28	351,400
1.7	47	590,200	12,100	2.4	14	26	323,300
1.5	42	515,700	11,300	2.1	12	24	298,000
1.3	36	424,700	10,400	1.8	10	22	266,200
1.1	29	240,800	8,400	1.3	6	18	196,800

* These farms are considerably above the average for all farms in New York State. For example, the median number of cows for the 509 farms was 55 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 509 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 4.8 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 contd.

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
509 New York Dairy Farms, 1970
Cost Control

Feed bought per cow	% Feed is of milk receipts	Machinery cost per cow	Labor and machinery cost per cow	Feed and crop expense per cwt. milk
$ 83	12%	$107	$248	$1.13
125	17	129	285	1.47
148	20	142	307	1.62
169	22	152	326	1.74
185	24	164	342	1.84
202	26	179	362	1.95
218	28	192	385	2.07
233	31	208	411	2.20
254	33	230	445	2.34
306	38	294	527	2.74

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.

FARM BUSINESS SUMMARY BY HERD SIZE
509 New York Dairy Farms, 1970

Item	My farm	Farms with: Less than 40 cows	40 to 54 cows	55 to 69 cows
Capital Investment (end of year)				
Machinery and equipment	$_____	$16,381	$22,816	$ 28,714
Livestock	_____	16,116	23,298	30,099
Feed and supplies	_____	3,952	5,756	8,340
Land and buildings	_____	38,755	47,535	60,808
TOTAL INVESTMENT	$_____	$75,204	$99,405	$127,961
Receipts				
Milk sales	$_____	$23,747	$34,995	$ 46,419
Livestock sold	_____	2,376	3,675	4,454
Crop sales	_____	203	337	233
Miscellaneous receipts	_____	862	993	1,493
Total Cash Receipts	$_____	$27,188	$40,000	$ 52,599
Increase in inventory	_____	3,894	8,213	7,706
TOTAL FARM RECEIPTS	$_____	$31,082	$48,213	$ 60,305
Expenses				
Hired labor	$_____	$ 778	$ 1,903	$ 3,206
Dairy feed	_____	6,050	9,022	11,797
Other feed	_____	337	239	441
Machine hire	_____	129	213	329
Machinery repair	_____	973	1,480	1,896
Auto expense (farm share)	_____	220	254	235
Gas and oil	_____	738	987	1,291
Breeding fees	_____	278	431	590
Veterinary and medicine	_____	374	595	770
Other livestock expense	_____	1,097	1,506	2,383
Lime and fertilizer	_____	774	1,234	1,941
Seeds and plants	_____	260	374	571
Spray and other crop expense	_____	202	413	534
Land, bldg., fence repair	_____	615	828	1,033
Taxes and insurance	_____	1,235	1,646	1,934
Electricity & phone (farm share)	_____	539	704	878
Miscellaneous expenses	_____	494	790	1,049
Total Cash Operating Expenses	$_____	$15,093	$22,619	$ 30,878
New machinery	_____	3,542	5,302	6,367
New real estate	_____	1,213	3,724	3,212
Purchased livestock	_____	832	1,680	1,562
Unpaid family labor	_____	688	860	752
TOTAL FARM EXPENSES	$_____	$21,368	$34,185	$ 42,771
Financial Summary				
Total Farm Receipts	$_____	$31,082	$48,213	$ 60,305
Total Farm Expenses	_____	21,368	34,185	42,771
Farm Income	$_____	$ 9,714	$14,028	$ 17,534
Interest on av. capital at 7%	_____	5,128	6,671	8,688
Labor Income per Farm	$_____	$ 4,586	$ 7,357	$ 8,846
Number of operators	_____	101	165	109
LABOR INCOME PER OPERATOR	$_____	$ 4,449	$ 6,688	$ 7,386

Item	My farm	Farms with: 70 to 84 cows	85 to 99 cows	100 or more cows
Capital Investment (end of year)				
Machinery and equipment	$_____	$ 33,633	$ 39,120	$ 50,445
Livestock	_____	38,911	47,907	61,144
Feed and supplies	_____	10,432	14,663	21,301
Land and buildings	_____	79,060	88,669	128,902
TOTAL INVESTMENT	$_____	$162,036	$190,359	$261,792
Receipts				
Milk sales	$_____	$ 58,609	$ 74,784	$101,896
Livestock sold	_____	6,545	8,379	9,859
Crop sales	_____	612	595	944
Miscellaneous receipts	_____	1,504	1,704	2,241
Total Cash Receipts	$_____	$ 67,270	$ 85,462	$114,940
Increase in inventory	_____	10,524	13,208	18,497
TOTAL FARM RECEIPTS	$_____	$ 77,794	$ 98,670	$133,437
Expenses				
Hired labor	$_____	$ 5,321	$ 8,971	$ 12,772
Dairy feed	_____	15,378	18,269	23,605
Other feed	_____	370	408	461
Machine hire	_____	276	304	611
Machinery repair	_____	2,643	3,484	5,180
Auto expense (farm share)	_____	222	287	263
Gas and oil	_____	1,555	1,768	2,805
Breeding fees	_____	694	949	1,025
Veterinary and medicine	_____	963	1,253	1,686
Other livestock expense	_____	2,748	3,863	5,232
Lime and fertilizer	_____	2,428	3,288	5,095
Seeds and plants	_____	674	826	1,163
Spray and other crop expense	_____	729	751	1,135
Land, bldg., fence repair	_____	1,090	1,330	2,215
Taxes and insurance	_____	2,895	3,227	4,593
Electricity & phone (farm share)	_____	1,141	1,312	1,748
Miscellaneous expenses	_____	1,305	1,639	2,898
Total Cash Operating Expenses	$_____	$ 40,432	$ 51,929	$ 72,487
New machinery	_____	7,632	8,179	11,120
New real estate	_____	4,574	6,027	9,456
Purchased livestock	_____	2,667	3,546	5,200
Unpaid family labor	_____	676	816	816
TOTAL FARM EXPENSES	$_____	$ 55,981	$ 70,497	$ 99,079
Financial Summary				
Total Farm Receipts	$_____	$ 77,794	$ 98,670	$133,437
Total Farm Expenses	_____	55,981	70,497	99,079
Farm Income	$_____	$ 21,813	$ 28,173	$ 34,358
Interest on av. capital at 7%	_____	10,974	12,863	17,678
Labor Income per Farm	$_____	$ 10,839	$ 15,310	$ 16,680
Number of operators	_____	81	39	104
LABOR INCOME PER OPERATOR	$_____	$ 8,430	$ 12,562	$ 12,029

SELECTED BUSINESS FACTORS BY HERD SIZE
509 New York Dairy Farms, 1970

Item	My farm	Farms with: Less than 40 cows	40 to 54 cows	55 to 69 cows
Number of farms		98	150	91
Size of Business				
Number of cows	_____	32	46	61
Pounds of milk sold	_____	394,300	581,100	767,300
Crop acres	_____	87	125	154
Man equivalent	_____	1.4	1.7	2.1
Total work units	_____	350	501	644
Rates of Production				
Milk sold per cow	_____	12,300	12,600	12,600
Tons hay per acre	_____	2.5	2.6	2.9
Tons corn silage per acre	_____	14	15	15
Bushels of oats per acre	_____	64	64	62
Labor Efficiency				
Cows per man	_____	23	27	29
Pounds milk sold per man	_____	281,600	341,800	365,400
Work units per man	_____	250	295	307
Crop acres per man	_____	62	74	73
Feed Costs				
Feed purchased per cow	$_____	$189	$196	$193
Crop expense per cow	$_____	$39	$44	$50
Feed and crop expense per cow	$_____	$228	$240	$243
Feed cost per cwt. milk	$_____	$1.53	$1.55	$1.54
Feed and crop exp./cwt. milk	$_____	$1.84	$2.40	$1.93
% Feed is of milk receipts	_____%	25%	26%	25%
Hay equivalent per cow	_____	7.2	7.5	7.6
Crop acres per cow	_____	2.7	2.7	2.5
Fertilizer and lime/crop acre	$_____	$9	$10	$13
Machinery Costs				
Total machinery costs	$_____	$6,020	$8,237	$10,927
Machinery cost per cow	$_____	$188	$179	$171
Machinery cost per man	$_____	$4,300	$4,845	$5,203
Machinery cost per cwt. milk	$_____	$1.53	$1.42	$1.42
Machinery cost per crop acre	$_____	$69	$66	$71
Capital Efficiency				
Investment per man	$_____	$53,717	$58,474	$60,934
Investment per cow	$_____	$2,350	$2,161	$2,098
Investment per cwt. milk sold	$_____	$19	$17	$17
Land and buildings per cow	$_____	$1,211	$1,033	$997
Machinery investment per cow	$_____	$512	$496	$471
Return on investment	_____%	5.7%	8.5%	8.9%
Other				
Price per cwt. milk sold	$_____	$6.02	$6.02	$6.05
Acres hay and hay crop silage	_____	60	78	88
Acres corn silage	_____	16	28	41

SELECTED BUSINESS FACTORS BY HERD SIZE
509 New York Dairy Farms, 1970

Item	My farm	Farms with: 70 to 84 cows	85 to 99 cows	100 or more cows
Number of farms		63	32	75
Size of Business				
Number of cows	_____	76	92	129
Pounds of milk sold	_____	962,100	1,235,800	1,636,100
Crop acres	_____	195	228	311
Man equivalent	_____	2.5	3.0	3.6
Total work units	_____	821	970	1,348
Rates of Production				
Milk sold per cow	_____	12,700	13,400	12,700
Tons hay per acre	_____	2.8	2.7	2.7
Tons corn silage per acre	_____	16	16	15
Bushels oats per acre	_____	59	65	69
Labor Efficiency				
Cows per man	_____	30	31	36
Pounds milk sold per man	_____	384,800	411,900	454,500
Work units per man	_____	328	323	374
Crop acres per man	_____	78	76	86
Feed Costs				
Feed purchased per cow	$_____	$202	$199	$183
Crop expense per cow	$_____	$50	$55	$57
Feed & crop expense per cow	$_____	$252	$254	$240
Feed cost per cwt. milk	$_____	$1.60	$1.48	$1.44
Feed & crop cost exp./cwt. milk	$_____	$2.00	$1.89	$1.89
% Feed is of milk receipts	_____%	26%	24%	23%
Hay equivalent per cow	_____	8.1	7.4	6.9
Crop acres per cow	_____	2.6	2.5	2.4
Fertilizer & lime/crop acre	$_____	$12	$14	$16
Machinery Costs				
Total machinery costs	$_____	$12,929	$15,673	$21,958
Machinery costs per cow	$_____	$170	$170	$170
Machinery cost per man	$_____	$5,172	$5,224	$5,999
Machinery cost per cwt. milk	$_____	$1.34	$1.27	$1.32
Machinery cost per crop acre	$_____	$66	$69	$71
Capital Efficiency				
Investment per man	$_____	$64,814	$63,453	$72,720
Investment per cow	$_____	$2,132	$2,069	$2,029
Investment per cwt. milk sold	$_____	$17	$15	$16
Land and building per cow	$_____	$1,040	$964	$999
Machinery investment per cow	$_____	$442	$425	$391
Return on investment	_____%	9.4%	11.8%	10.6%
Other				
Price per cwt. milk sold	$_____	$6.09	$6.05	$6.23
Acres hay and hay crop silage	_____	106	124	145
Acres corn silage	_____	58	62	101

Considering a Change in the Dairy Business

Describe change: _____

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

I. Basic nature of proposed change

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

II. Estimated forage requirements and production:

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

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

total hay equiv. requirement _____ tons

Allocate total hay equivalent requirement to hay and silage production:

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

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

Estimate needed crop acres and changes from present:

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

III. Additional forward planning steps and pointers

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

IV. Estimating changes in receipts and expenses

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

Selected Competitive Dairy Areas

A dairy farmer's competition comes from both nearby and from other dairy areas. Therefore, it is good to know how your business compares with other areas. Data from four states are presented below. These data were taken from reports on farm business management projects similar to the ones in New York.

1970 DAIRY FARM BUSINESS SUMMARY DATA

Item	New York	Vermont	Pennsylvania	Wisconsin
Number of farms	509	159	642	751
Size of Business				
Number of cows	65	59	54	43
Number of heifers	43	41	36	NA
Total crop acres	168	173	164	164
Pounds of milk sold	822,200	742,300	636,500	522,000
Man equivalent	2.2	2.1	2.1	1.7
Rates of Production				
Milk sold per cow	12,600	12,400	11,800	12,200
Tons hay per acre	2.7	2.2	3.4	3.7
Tons corn silage per acre	15	17	18	12
Labor Efficiency				
Cows per man	30	27	26	25
Pounds milk sold per man	373,700	332,500	303,100	304,300
Cost Control Factors				
Feed bought per cow	$192	$218	$182	$120
% Feed is of milk receipts	25%	28%	25%	19%
Fertilizer & lime per cow	$33	$32	$50	$26
Taxes per cow	$22	$26	$16	$30
Veterinary per cow	$13	$11	$13	NA
Capital Efficiency				
Average capital investment	$132,545	$122,103	$123,759	$81,410
Total investment per cow	$2,112	$2,049	$2,292	$1,893
Machinery investment/cow	$447	$333	$386	$391
Prices				
Price/cwt. 3.5% milk sold	$6.10	$6.23	$6.21	$5.29
Financial Summary				
Total farm receipts	$66,467	$59,866	$52,850	$39,721
Total farm expenses*	$47,795	$46,133	$40,173	$27,828
Labor income per operator	$7,983	$7,907	$8,035	$8,131

SOURCE: Vermont NEC67 - 1970 Elfac Dairy Farm Business Analysis
F.M. 46 - 1970 Pennsylvania Dairy Farm Business Analysis
University Wisconsin Report of 1970 Farm Record Summaries

* New York does not include interest paid, other three states do

Family Living Expenditures

For business financial planning, the family living expenses must be considered along with the farm expenses. Some families keep a record of the living expenditures. Below is a summary of the living expenditures for families in Minnesota who recorded their living expenses as part of their farm business management project.

FAMILY LIVING EXPENDITURES
110 Minnesota Farm Families, 1970

Item	My family	Average of 110 Families Amount	Percent
Number in family	_____	4.8	
Living Expenses			
Food and meals bought*	$_____	$1,573	24
Medical and hospital insurance	_____	496	13
Clothing and clothing materials	_____	558	10
Furnishings and equipment	_____	665	8
Operating and supplies	_____	265	8
Upkeep on dwelling	_____	376	2
Personal share of auto expense	_____	283	6
Church and welfare	_____	286	8
Gifts and special events	_____	818	4
Education	_____	502	6
Recreation	_____	380	4
Personal care and spending	_____	139	4
Electricity & telephone (home share)	_____	175	3
TOTAL LIVING EXPENSES	$_____	$6,516	100
Taxes	_____	1,300	
Life insurance	_____	898	
Dwelling improvements	_____	845	
Home share of new autos	_____	253	
Other savings and investments	_____	1,516	
TOTAL FAMILY EXPENDITURES	$_____	$11,328	
Sources of Family Income			
Farm return to family	$_____	$12,897	
Income from outside investments	_____	463	
Other personal income	_____	684	

SOURCE: Minnesota Econ. Info. Reports R71-2 and R71-3
* In addition, the family used farm produce valued at $376

Family living expenses have been rising. The average living expenses for 113 Minnesota families in 1969 was $6,029 or about $500 less than the 1970 average. Likewise, total family expenditures in 1969 were $9,127 compared with $11,328 in 1970. Taxes, dwelling improvements, and other savings accounted for the increase in 1970.

Many factors affect the expenditures of an individual family. The number in the family, ages of children, health problems, and special interests are examples. When comparing a family with the averages, these factors should be taken into consideration.