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DAIRY MANAGEMENT PRACTICES AND NEW YORK DAIRY FARM INCOMES 1979

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Foreward

This publication is part of a study supported by a special temporary grant to the Agricultural Experiment Station at Cornell University by Agway, Inc., of Syracuse, New York.

Dairy management practices are one area of factors that affect dairy farm incomes. Data available from the New York dairy herd improvement records and the farm business management projects at Cornell have been merged since 1974 and used to study the effects of dairy management practices on farm incomes.

The 1979 report is similar to the studies done for the years 1974 through 1978*. Additional factors examined for 1979 include somatic cell count and age and education of the operators.

The author wishes to acknowledge the encouragement given by Dr. Lewellyn S. Mix of Agway to pursue the investigation and publish the findings related to dairy management practices and the apparent effects on the incomes from New York dairy farm businesses. Andrew Wickham, a student in the College of Agriculture and Life Sciences at Cornell, did the statistical work on the 1979 data.

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* Results from the earlier years are available in Cornell Agricultural Economics Staff Paper 75-27; A.E. Res. 77-20; A.E. Res. 78-19; A.E. Res. 79-5; A.E. Res. 79-14; and A.E. Res. 80-1.

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Introduction

Dairy farm incomes are affected by many things. Farm management studies have identified general factors such as size, rates of production, labor efficiency, capital efficiency, and cost control as being related to farm incomes. In addition there are many practices which affect or determine these "general" management factors. Dairy management practices which affect rates of production and cost control are examples.

Computer technology has added new dimensions to farm management studies. Computer facilities have made it possible to expand the kind and amount of information available to dairy farmers from their dairy herd improvement (DHI) production records. Likewise, farm business management summaries have been expanded since computer programs have been developed to summarize and analyze the data. These changes have brought new management "tools" to dairymen.

A pilot project was initiated in 1974 to merge for analysis purposes the DHI dairy management practice information with the farm management business summary information. The project proved to be workable and the procedure has been repeated each year since.

Purpose of the Study

The purpose of this study was to determine the relationships of dairy management practices to rate of production and dairy farm incomes. Selected dairy practices were examined in relationship to the farm business as an entire unit. In short, the study aimed to determine how the recommended dairy management practices affect or are related to the incomes of operating dairy farms in New York State.

Methodology

Two sources of management information for individual dairy farm operations was merged on computer tapes for analysis purposes. The sources merged were the farm management business records (CAMIS) and the dairy herd improvement (DHI) records.

A computer listing was made of the dairy farm business records summarized by the Department of Agricultural Economics which indicated they had dairy production records. This list was matched with the DHI records available in the Department of Animal Science. Selected information from the DHI records was merged with the business management data for each farm. Computer programs were used to sort the data according to various groupings and average values for all factors in the group were computed. These data are presented in this report in cross tabulation tables.

Definitions of Measures Used

Selected measures used in the farm business summaries and the dairy herd improvement records are defined below.

Labor and management income per operator reflects the dollar return to the farmer-operator for his time, knowledge and skills in operating the farm business unit. For calculation details, see Cornell's A.E. Res. 80-16.

Labor and management income per cow is the total return to the operator(s) of the farm divided by the average number of cows.

Milk sold per cow is the total pounds of milk sold for the year divided by the average number of cows.

Milk sold per man is the total pounds of milk sold for the year divided by the man equivalent for the year.

Average number of cows measures herd size and is the 12-month average of the milk cows reported monthly in the farm business records.

Number of cows per person is calculated by dividing herd size by the person equivalent. This includes all persons working on the farm.

Age of Operator is reported for all operators but for studying the effects of age on the business, only the "individual" operators are included (partnerships and corporations are excluded).

Education of Operator is the years of formal schooling completed.

Milk produced per cow is the total pounds of milk produced by each cow as computed from the twelve monthly dairy herd improvement sample weights. The herd average was used in this study for all dairy management practices.

Butterfat test is the herd average for the twelve monthly dairy herd improvement samples tested.

Concentrates fed is the yearly average pounds of concentrates fed per cow in the herd. The D.H.I. supervisor records the pounds of concentrates fed each month and these are aggregated for the yearly figures.

The percent net energy figures are calculated for concentrates, succulents (silages), dry hay, and pasture. It reflects the relative amount of available therms (calories) the cow gets from each source.

Body weight of all cows is rounded to the nearest ten pounds. This measure indicates the average weights of all cows in the herd during the year. Body weights are obtained by taping the animal.

Body weight at first calving is rounded to the nearest ten pounds. Weight at first calving is likely to be lower for heifers that calve earlier.

Age at first calving is expressed in months and is recorded by the DHI supervisor. The average age for the herd was used in this study.

Projected minimum calving interval is the herd average of the number of months between calves.

Breedings per conception is the number of times a cow is bred.

Days dry is the number of days a cow is not milked per calving interval.

Percent of days in milk is the number of days milked divided by the number of days on test (usually 365).

Percent leaving the herd is the number of cows leaving the herd for non-dairy purposes divided by the herd size.

Age of all cows is the average age in months of all milk cows in the herd during the year. Heifers are not included.

The feeding index equals the reported total net energy fed per cow divided by the "calculated" maintenance and production requirements.

Income over value of feed is the computed value of the milk produced minus the value of all feed fed. Value of feed is calculated by the farmer and DHI supervisor. This measure is based on only one cost variable, namely, feed.

Somatic cell count was developed to indicate Mastitis awareness. The count is obtained for each cow for each test period. The measure used here is the average count for the entire herd.

Farms Studied

Cooperators in the farm business management project participated on a voluntary basis. Consequently, the average of the farms in the project tends to be better than the average of all farms in the State. Similarly, cooperators who have DHI records tend to be operating somewhat better than average farms. A comparison of the farms in the dairy management practice study with all farms in the business management summary for 1979 is shown in Table 1.

The pounds of milk produced per cow by the 337 farms in the 1979 dairy management practices study averaged 15,600 compared with 11,800 pounds per cow reported by the New York Crop Reporting Service for all herds in the State. Similarly, the dairy management practices summary farms sold 14,700 pounds of milk per cow compared with 14,300 for all farms in the business management summaries. In general, the farms included in the dairy management practices summary had considerably better production than the average of all farms in the State and slightly better than all farms in the business summary.

More than half the farms in the business management summary were in the dairy practices summary group. Farms in the dairy practices group were somewhat smaller, 70 cows vs. 75 and 2.5 man equivalents vs. 2.7. In identifying the farms some of the larger ones had two or more DHI reports on different herds which made it impossible to merge them for this study. Differences in other factors existed but were relatively small. In general, it appears that the dairy practices group was a reasonable sample of all farms in the business management summary.

Table 1. Comparison of All Farms In The Business Management Summary With Farms In The Dairy Management Practices Summary New York Dairy Farms, 1979

Item	Summary Group	
	Business Management	Dairy Practices
Number of farms	610	337
Operators:		
Average age	41	40
Years of education	13	13
% in partnerships or corporations	20%	20%
Barn Type:		
% with freestalls	35%	32%
Size of Business:		
Man equivalent	2.7	2.5
Number of cows	75	70
Number of heifers	53	51
Total crop acres	228	217
Total capital	$394,923	$385,370
Rates of Production:		
Pounds milk sold per cow	14,260	14,743
Tons hay crops/acre (H.E.)	2.7	2.7
Tons corn silage/acre	13.6	13.8
Labor Efficiency:		
Cows per man	28	28
Pounds milk sold per man	400,700	412,800
Capital Uses:		
Total capital per cow	$5,100	$5,279
Farm debt per cow	$1,930	$2,112
Total capital per man	$147,900	$154,148
Percent equity	65%	63%
Cost Factors:		
Feed bought per cow	$466	$485
Crop expense per cow	$139	$141
% feed is of milk sales	27%	28%
Machinery cost per cow	$344	$353
Labor cost per cow	$289	$293
Real estate expense per cow	$122	$126
Total farm expense per cow	$1,962	$2,014
Cost per cwt producing milk*	$12.78	$12.68
Price:		
Average price per cwt milk sold	$11.90	$11.87
Income:		
Net cash income per farm	$35,469	$35,568
Labor & management income per operator	$21,962	$20,785
Labor & management income per cow	$362	$367

* Including a management charge.

Analysis of Farm Business Management Variables

The relationship between production practices and financial or business management measures was examined by sorting for each of the various practices and observing the effects. Background material such as percent of farms in each group and average herd size in each group are given to orient the reader. The 1979 data are reported in the tables presented in this publication.

The findings of this study can be used for policy considerations in New York State, for use by individual farmers to compare their performance with that of others, and for showing the basic relationships of dairy management practices to milk sold per cow and to labor and management income per operator.

Labor and Management Income Per Operator

Labor and management income per operator is the most common measure of success used in studying farm businesses. It is also an indication of the "managerial ability" of the operator since it is the result of his skill in combining all elements into a business unit. It measures the operator's ability to "put it all together".

Table 2. Distribution of Labor and Management Income Per Operator
All Business Summary Farms and Dairy Practices Farms
New York Dairy Farms, 1979

Labor and Management Income Per Operator	Summary Group			
	Business Management		Dairy Practices	
	No. Farms	% Farms	No. Farms	% Farms
Minus	72	12%	36	11%
$ 0 to $ 9,999	105	17	58	17
$10,000 to $19,999	137	22	79	24
$20,000 to $29,999	108	18	70	20
$30,000 to $39,999	75	13	39	12
$40,000 and over	113	18	55	16
Average Income all Farms	$21,926/Oper.	$362/Cow	$20,785/Oper.	$367/Cow

The distribution of labor and management incomes per operator were similar for the two summary groups. The percent of farms with $40,000 and over income was less (16 vs. 18) for the dairy practices farms probably because of fewer large farms as indicated above. The average labor and management income per operator for the business summary farms was about $1,000 more than for the dairy practices farms, but the income per cow was slightly higher on the dairy practices farms ($367 vs. $362).

Table 3. Labor and Management Income Per Operator and Related Business Factors 337 New York Dairy Farms, 1979

Labor and Management Income Per Operator	Number of Cows	Pounds of Milk Sold Per Cow	Pounds of Milk Sold Per Man	Total Farm Expense Per Cow
Minus	61	13,900	328,000	$2,307
$ 0 to $ 9,999	61	14,600	382,000	2,122
$10,000 to $14,999	53	14,600	343,000	1,947
$15,000 to $19,999	57	14,400	365,000	1,945
$20,000 to $24,999	66	14,500	382,000	1,962
$25,000 to $29,999	75	15,500	422,000	2,007
$30,000 to $39,999	79	15,000	510,000	1,957
$40,000 and over	100	15,100	506,000	1,970

Farms with the higher labor and management incomes per operator in general had more cows, better rates of production, sold more milk per man, and had about the same total farm expenses per cow. Farms with low incomes were medium size (61 cows) but were low in the efficiency factors (Table 3).

Operators of the lower income farms (under $10,000) apparently were not handicapped by size but were not able to manage effectively (put it all together) all aspects of the operation.

The dairy management practices used by the farmers with varying managerial skills as reflected by labor and management income are shown in Table 4. Farms with incomes of $25,000 or more in general were using the recommended dairy practices. These farms fed more concentrates per cow, obtained a higher percent of net energy from succulents, had fewer days dry, heifers freshened at a younger age, and a smaller percent of cows were leaving the herd.

Table 4. Labor and Management Income and Dairy Management Practices 337 New York Dairy Farms, 1979

Labor and Management Income Per Operator	Lbs. Concentrates Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Minus	6,000	30%	61	29	30%
$ 0 to $ 9,999	5,900	32	61	28	30
$10,000 to $14,999	6,000	29	61	29	28
$15,000 to $19,999	5,900	33	62	28	28
$20,000 to $24,999	5,900	32	59	29	28
$25,000 to $29,999	6,600	32	56	28	27
$30,000 to $39,999	6,600	31	59	28	29
$40,000 and over	6,500	36	60	28	26

Herd Size (Number of Cows)

Distribution by size of herd was similar for the 337 dairy practices farms and the 610 business management group with the exception of a smaller percentage of farms with 150 and over cows (5% vs. 7%).

Table 5. Distribution of Farms By Herd Size
All Business Summary Farms and Dairy Practices Farms
New York Dairy Farms, 1979

	Summary Group			
	Business Management		Dairy Practices	
Number of Cows	No. Farms	% Farms	No. Farms	% Farms
Under 40	89	15%	46	14%
40 to 54	168	28	101	30
55 to 69	123	20	75	22
70 to 84	73	12	39	12
85 to 99	30	5	15	4
100 to 149	80	13	44	13
150 and over	47	7	17	5

Net cash farm income which is the difference between the cash receipts and cash expenses increased as the size of herd increased. Similarly the larger the herds the larger the labor and management income per operator except for the 85 to 99 cow herd size. This situation frequently exists in studies by size of herd and reflects a size where the resources tend not to be utilized efficiently. The labor and management income per cow tended to be somewhat less for herds with 85 cows or more but the greater numbers of cows yielded more total income per operator (Table 6).

Table 6. Herd Size and Labor and Management Income
337 New York Dairy Farms, 1979

Number of Cows	Number of Farms	Net Cash Farm Income	Labor and Management Income	
			Per Operator	Per Cow
Under 40	33	$18,166	$12,798	$413
40 to 54	46	24,583	15,106	351
55 to 69	61	31,170	20,046	403
70 to 84	75	32,995	24,223	414
85 to 99	92	44,126	14,348	260
100 to 149	121	63,165	26,908	354
150 and over	186	74,446	44,351	322

Table 7. Herd Size and Related Business Factors
337 New York Dairy Farms, 1979

Number of Cows	Pounds of Milk Sold Per Cow	Pounds of Milk Sold Per Man	Capital Per Cow	Total Farm Expense Per Cow
Under 40	14,100	279,000	$5,595	$1,973
40 to 54	14,700	326,000	6,189	2,082
55 to 69	14,800	373,000	5,223	1,964
70 to 84	15,300	430,000	5,527	2,135
85 to 99	14,800	418,000	5,761	2,167
100 to 149	14,600	482,000	4,724	1,941
150 and over	15,000	595,000	4,665	2,041

Larger herds in general make more efficient use of resources. Labor and capital efficiency as measured by pounds of milk sold per man and average capital per cow were better on the farms with larger herds. Milk sold per cow and total farm expenses per cow showed no definite relationship with size of herd (Table 7).

The dairy management feeding practices varied with the size of herd. The larger herds fed more pounds of concentrates per cow and obtained a higher percentage of the net energy from succulents. Age at first calving and percent leaving the herd showed little differences by herd size (Table 8).

Table 8. Herd Size and Dairy Management Practices
337 New York Dairy Farms, 1979

Number of Cows	Lbs. Concentrates Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Under 40	5,400	23%	63	28	27%
40 to 54	5,900	29	61	28	29
55 to 69	6,200	33	59	28	28
70 to 84	6,600	35	61	28	26
85 to 99	7,000	37	57	28	29
100 to 149	6,700	41	57	28	28
150 and over	6,400	43	60	28	32

Size of herd is a major business factor affecting labor and management income on dairy farms. In general larger herds pay better when well managed. Larger herds make it possible to use more efficiently overhead inputs such as labor and capital. Another advantage of size is that there are more productive units on which to make a profit.

This study suggests that size of herd is also related to dairy management practices. Feeding practices varied with size of herd and the breeding and culling practices were just as efficient in the larger herds as in the smaller ones.

Milk Sold Per Cow

Business management studies have shown consistently that milk sold per cow is one of the important variables affecting labor and management incomes on dairy farms. It is assumed that milk sold per cow is directly affected by most dairy management practices. Consequently, in this study milk sold per cow has been used along with income as a measure to relate to each practice studied. In this section, the factor of milk sold per cow is examined as it relates to business factors and dairy practices.

Table 9. Distribution of Farms by Milk Sold Per Cow
All Business Summary Farms and Dairy Practices Farms
New York Dairy Farms, 1979

	Summary Group			
	Business Management		Dairy Practices	
Milk Sold Per Cow	No. Farms	% Farms	No. Farms	% Farms
Under 10,000	22	4%	3	1%
10,000 to 10,999	32	5	4	1
11,000 to 11,999	45	7	16	5
12,000 to 12,999	72	12	39	11
13,000 to 13,999	106	17	61	18
14,000 to 14,999	128	21	71	21
15,000 to 15,999	115	19	84	25
16,000 or more	90	15	59	18

Farms in the dairy practices group tended to be from the higher producing herds as indicated by the distribution shown in Table 9. Only two percent of the dairy practices farms sold less than 11,000 pounds of milk per cow compared with nine percent for the business management farms. Forty-three percent of the dairy practices farms sold 15,000 or more pounds per cow compared with 34 percent of the business management group. This is logical since the use of DHI records is a management tool for improving production per cow. Only 13 percent of the business summary farms with less than 11,000 pounds sold per cow had DHI records and were included in the dairy practices summary whereas 70 percent of those selling 15,000 or more pounds were in the practices study.

Table 10. Milk Sold Per Cow and Labor and Management Income
337 New York Dairy Farms, 1979

	Net Cash	Labor and Management Income	
Milk Sold Per Cow	Farm Income	Per Operator	Per Cow
Under 10,000	$11,879	$-3,294	$-53
10,000 to 10,999	7,512	2,006	50
11,000 to 11,999	16,980	12,054	216
12,000 to 12,999	23,287	12,269	245
13,000 to 13,999	28,720	17,704	316
14,000 to 14,999	38,278	23,238	418
15,000 to 15,999	39,394	21,366	351
16,000 or more	44,501	28,460	496

For the 337 farms in this study there was a strong association between milk sold per cow and income. This was true for net cash farm income, labor and management income per operator, and labor and management income per cow. The farms selling 16,000 or more pounds per cow had the highest incomes for all three measures (Table 10).

Table 11. Milk Sold Per Cow and Related Business Factors
337 New York Dairy Farms, 1979

Milk Sold Per Cow	Number of Cows	Lbs. Milk Sold/Man	Capital Per Cow	Total Farm Expenses Per Cow
Under 10,000	62	266,000	$5,189	$1,622
10,000 to 10,999	40	203,000	6,198	1,909
11,000 to 11,999	56	326,000	5,410	1,716
12,000 to 12,999	59	326,000	5,355	1,877
13,000 to 13,999	68	384,000	5,121	1,923
14,000 to 14,999	76	431,000	5,160	1,959
15,000 to 15,999	74	428,000	5,260	2,082
16,000 or more	72	463,000	5,676	2,261

In general, the farms selling more milk per cow were those with larger herds. The three groups selling 14,000 or more pounds per cow averaged over 70 cows per farm while the lower groups averaged from 40 to 68 cows.

Pounds of milk sold per man which is an important business management factor was associated with production per cow. Capital per cow showed no definite relationship to milk sold per cow but total farm expenses per cow did. Farms selling more milk per cow tended to have higher expenses per cow (Table 11). The dairy management practices all tended to be associated with milk sold per cow. This suggests that these recommended dairy practices do affect rates of production and in turn the farm incomes.

Table 12. Milk Sold Per Cow and Dairy Management Practices
337 New York Dairy Farms, 1979

Milk Sold Per Cow	Lbs. Concen. Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Under 10,000	3,200	39%	73	31	23%
10,000 to 10,999	3,900	21	65	30	29
11,000 to 11,999	5,400	33	69	30	27
12,000 to 12,999	5,400	29	61	29	32
13,000 to 13,999	5,700	32	60	29	29
14,000 to 14,999	6,400	33	60	28	27
15,000 to 15,999	6,400	32	59	28	28
16,000 or more	7,000	33	57	27	28

Analysis of Feeding Practices

Concentrates fed; percent net energy from concentrates, succulents, and hay; feeding index; average body weight of all cows; and average body weight at first calving are examined in this section.

Concentrates Fed Per Cow

Levels of grain or concentrates feeding are a major concern of dairymen. In general the more concentrates fed the more milk produced and sold (Table 13). For 1979 there appeared to be little increase for those feeding over 8,000 pounds of concentrates. Pounds of milk sold per pound of concentrate fed decreased from 3.4 for the group of low concentrate feeders to 1.7 for the high group.

Table 13. Pounds of Concentrates Fed Per Cow and Production
337 New York Dairy Farms, 1979

Pounds of Concentrates Fed Per Cow	Farms		Pounds Per Cow			Pounds of Milk Sold Per Pound of Concentrate
	Number	Percent	Concentrates	Milk Produced	Milk Sold	
4,000 or less	11	3%	3,300	12,100	11,200	3.4
4,001 to 5,000	49	15	4,600	14,400	14,000	3.0
5,001 to 6,000	99	29	5,500	15,100	14,200	2.6
6,001 to 7,000	102	30	6,400	16,100	15,000	2.3
7,001 to 8,000	50	15	7,500	16,900	15,500	2.1
8,001 and over	26	8	9,100	16,700	15,500	1.7

Farms with higher rates of concentrate feeding, had more cows, greater farm expenses per cow, and larger net cash farm income and labor and management income per operator (Table 14). However, the highest labor and management income per cow was for the 5,001 to 6,000 pounds of concentrates group. As the concentrates fed exceeded 6,000 pounds the income per cow decreased. In general feeding more concentrates paid.

Table 14. Pounds of Concentrates Fed Per Cow and Income
337 New York Dairy Farms, 1979

Pounds of Concentrates Fed Per Cow	Number of Cows	Total Farm Expenses/Cow	Net Cash Farm Income	Labor & Management Income Per	
				Operator	Cow
4,000 or less	55	$1,686	$21,636	$10,707	$230
4,001 to 5,000	58	1,876	29,456	18,400	350
5,001 to 6,000	68	1,913	33,077	20,840	375
6,001 to 7,000	68	2,053	33,195	18,404	345
7,001 to 8,000	85	2,147	40,452	26,271	309
8,001 and over	88	2,163	49,442	25,705	292

The ratio of milk prices to feed prices is a factor affecting levels of concentrate feeding1/. From 1974 to 1979 the milk-feed price ratio increased from 1.21 to 1.52 and the pounds of concentrates fed per cow in the dairy practices studies increased from 4,800 to 6,200 pounds (Table 15). It appears that dairymen do respond to increases in the milk-feed price ratio because it pays (Table 14).

Table 15. Milk-Feed Price Ratios and Concentrates Fed Per Cow New York Dairy Farms, 1974-1979

Year	Average Milk Price*	Average Cost 16% Ration*	Milk-Feed Price Ratio	Pounds Concentrates** Fed Per Cow
1974	$ 8.38	$6.91	1.21	4,800
1975	8.75	6.60	1.33	5,100
1976	9.83	6.95	1.41	5,400
1977	9.75	6.97	1.40	5,600
1978	10.50	6.83	1.54	6,000
1979	11.90	7.84	1.52	6,200

* Source: New York Agricultural Statistics 1979, N.Y. Crop Reporting Service.
** Average reported by farms in dairy practices study.

As more concentrates were fed per cow the higher the percent net energy from concentrates. For the succulents (silages) there was little difference in the percent net energy supplied for the various levels of concentrate feeding. Farms feeding more pounds of concentrates per cow also had fewer days dry, larger cows, lower somatic cell counts, and a higher percent of cows leaving the herd (Table 16). In brief, the operators were using better dairy management practices.

Table 16. Pounds of Concentrates Fed Per Cow and Dairy Management Practices 337 New York Dairy Farms, 1979

Pounds of Concentrates Fed Per Cow	Percent Net Energy From Concentrates	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Body Weight All Cows	Somatic Cell Count
4,000 or less	35%	38%	68	26%	1,180	605,000
4,001 to 5,000	42	32	63	30	1,220	374,000
5,001 to 6,000	47	33	60	27	1,250	348,000
6,001 to 7,000	51	32	59	28	1,260	301,000
7,001 to 8,000	55	32	58	29	1,290	303,000
8,001 and over	63	29	59	31	1,280	269,000

1/ Young, M.L., A.E. Res.80-8, 1980.

Percent Net Energy From Concentrates, Succulents, and Dry Hay

The dairy production records include detailed information on the kinds and amounts of feed fed which in turn provides the energy used by the cow for maintenance and production purposes. A number of measures related to the feeding practices are calculated including the percent of net energy from each of the four kinds of feed used, namely, concentrates, succulents, dry hay, and pasture. The succulents include corn silage, haylage, green chop, and any other of the silage types of feeds. Relationship between variations in the sources of net energy and the production per cow and the labor and management income per operator are reported below. It must be kept in mind that there are many other factors that are interrelated and also have an effect on the production and incomes.

Table 17. Percent Net Energy From Concentrates and Related Business Factors
337 New York Dairy Farms, 1979

Percent Net Energy from Concentrates	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
Under 30	1%	29	11,900	$17,065
30 to 34	1	64	11,300	11,905
35 to 39	5	55	13,400	9,800
40 to 44	15	71	14,600	26,666
45 to 49	30	63	14,700	19,455
50 to 54	24	67	14,900	17,565
55 to 59	15	85	15,200	23,374
60 & over	9	84	15,500	26,159

Percent net energy from concentrates appears to be directly related to pounds of milk sold per cow, and farms with a higher percent net energy from concentrates tended to have higher labor and management incomes (Table 17). Farms with higher percent net energy from concentrates in general were using better dairy management practices (Table 18).

Table 18. Percent Net Energy From Concentrates and Dairy Management Practices
337 New York Dairy Farms, 1979

Percent Net Energy from Concentrates	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 30	2,800	20%	64	17%	---
30 to 34	3,500	47	66	23	570,000
35 to 39	4,400	38	66	31	470,000
40 to 44	5,000	37	60	27	367,000
45 to 49	5,800	33	58	27	323,000
50 to 54	6,400	30	62	28	313,000
55 to 59	7,200	31	58	29	314,000
60 & over	8,600	28	59	30	292,000

Table 19. Percent Net Energy from Succulents and Related Business Factors
337 New York Dairy Farms, 1979

Percent Net Energy from Succulents	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
0	1%	43	13,700	$22,317
1 to 4	1	46	13,400	19,539
5 to 9	1	48	13,200	32,309
10 to 19	12	45	14,500	13,830
20 to 29	24	59	14,900	20,500
30 to 39	33	66	15,100	18,095
40 to 49	22	87	14,700	24,898
50 & over	6	131	14,600	28,755

Greater use of silages has been recommended in recent years. Hay crops put up as silage often mean better quality roughage than if made as dry hay. Corn silage production has also been increasing. For the 337 farms in the 1979 study succulents (silage) accounted for 32 percent of the net energy. Three percent of the farms reported less than 10 percent of the net energy from succulents while 6 percent reported over 50 percent (Table 19).

In general the farms that provided a higher percent of the net energy from succulents had more cows and higher rates of production per cow. Labor and management incomes per operator were higher for the farms using more succulents (Table 19). Farms using more succulents used somewhat less concentrates, had fewer days dry but a slightly higher culling rate and higher somatic cell count (Table 20).

Table 20. Percent Net Energy From Succulents and Dairy Management Practices
337 New York Dairy Farms, 1979

Percent Net Energy from Succulents	Pounds Concentrates Fed Per Cow	Percent Net Energy From Concentrates	Days Dry	Percent Leaving Herd	Somatic Cell Count
0	5,700	51%	66	40%	387,000
1 to 4	5,900	53	62	31	427,000
5 to 9	5,500	50	67	22	410,000
10 to 19	6,200	52	61	27	331,000
20 to 29	6,200	50	62	28	300,000
30 to 39	6,400	50	60	28	315,000
40 to 49	6,100	49	58	29	366,000
50 & over	5,200	43	58	29	424,000

Table 21. Percent Net Energy From Hay and Related Business Factors 337 New York Dairy Farms, 1979

Percent Net Energy From Hay	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
0	11%	125	14,700	$27,238
1 to 4	12	95	15,100	28,839
5 to 9	21	70	15,300	21,438
10 to 14	21	60	14,700	17,772
15 to 19	16	58	14,700	17,354
20 & over	19	45	13,900	15,084

Eleven percent of the 337 farms reported no net energy from hay. These were the larger farms with an average of 125 cows. On the other hand, 19 percent reported 20 percent or more net energy from hay and these were the smaller farms with an average of 45 cows. The farms depending more on hay had lower labor and management incomes (Table 21).

Dairy management practices followed seemed to correspond with the hay feeding practices. Farms depending more on hay feed less pounds of concentrates, had more days dry and a lower culling rate (Table 22). There did not appear to be any relationship with somatic cell count.

As the percent net energy from hay increased, that from succulents decreased. For all groups the combined hay and succulents accounted for 44 or 45 percent of the total. The farms depending more on hay also used more pasture (Table 22).

Table 22. Percent Net Energy From Hay and Dairy Management Practices 337 New York Dairy Farms, 1979

Percent Net Energy From Hay	Pounds Concentrates Fed Per Cow	Percent Net Energy From			Days Dry	Percent Leaving Herd	Somatic Cell Count
		Hay	Succulents	Pasture			
0	7,000	0%	44%	2%	56	30%	425,000
1 to 4	6,900	3	41	3	59	28	226,000
5 to 9	6,400	7	38	4	59	29	312,000
10 to 14	6,000	12	32	7	60	30	374,000
15 to 19	5,900	17	28	7	61	26	297,000
20 & over	5,400	26	18	10	63	27	343,000

Feeding Index

Feeding index is a measure computed and reported to DHI cooperators. The feeding index is the ratio of the reported net energy fed per cow to the "calculated" maintenance and production requirements. This should reflect over or under feeding of the herd.

Table 23. Feeding Index and Related Business Factors
337 New York Dairy Farms, 1979

Feeding Index	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
Less than 100	3%	66	15,100	$15,912
100 to 104	4	71	14,900	22,121
105 to 109	8	65	14,800	19,710
110 to 114	17	67	14,700	22,104
115 to 119	21	61	15,200	21,028
120 to 124	18	68	15,200	24,958
125 & over	29	80	14,400	17,463

With 47 percent of the farms having feeding indices of 120 or more it suggests that dairymen in general were feeding considerably more than was needed for maintenance and production. This raises a question about the efficient use of feed on these farms. There was no apparent relationship between feeding index and size of herd, rates of production or income. The highest income was for the group with a feeding index of 120 to 124 (Table 23).

Farms with high feeding indices were feeding more pounds of concentrates per cow. There was no apparent relationship of feeding index to the other dairy management practices (Table 24).

Table 24. Feeding Index and Dairy Management Practices
337 New York Dairy Farms, 1979

Feeding Index	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Less than 100	4,900	35%	66	24%	227,000
100 to 104	5,500	37	58	28	420,000
105 to 109	5,300	29	63	30	299,000
110 to 114	5,500	32	59	29	336,000
115 to 119	6,300	28	59	26	341,000
120 to 124	6,300	33	60	28	286,000
125 & over	6,900	34	60	29	370,000

Average Body Weight All Cows

Body weight of all cows reflects the size of the animals and probably is related to the feeding practices in raising heifers. Body weights are obtained from taping the animals. Average Body Weight of all cows for the 337 farms was 1,260 pounds. Fifty-seven percent were in the 1,210 to 1,300 pounds range (Table 25).

Table 25. Body Weight All Cows and Related Business Factors
337 New York Dairy Farms, 1979

Average Body Weight All Cows	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
1,150 or less	7%	52	13,200	$18,412
1,160 to 1,200	14	57	14,200	13,720
1,210 to 1,250	32	73	14,700	20,995
1,260 to 1,300	25	77	14,900	21,020
1,310 and over	22	71	15,300	24,588

A strong positive relationship appears to exist between average body weight and the related business factors. The bigger the cows the larger the herds, the higher the pounds of milk sold per cow and the higher the labor and management income per operator.

There also was a positive relationship between average body weight of all cows and the dairy management practices. The dairymen with larger cows were also feeding more concentrates per cow, obtaining a higher percent of net energy from succulents, had fewer days dry, and generally a lower somatic cell count (Table 26).

Table 26. Body Weight All Cows and Dairy Management Practices
337 New York Dairy Farms, 1979

Average Body Weight All Cows	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
1,150 or less	5,000	29%	63	28%	283,000
1,160 to 1,200	5,800	26	62	28	405,000
1,210 to 1,250	6,000	34	60	30	352,000
1,260 to 1,300	6,400	32	59	28	308,000
1,310 and over	6,600	34	59	26	290,000

Body Weight at First Calving

Body weight at first calving is probably related to both feeding and breeding practices. The age at first calving will have some effect on weight. However, since feeding practices affect growth rates the body weight is reported in this section.

The average body weight at first calving for all 337 farms was 1,100 pounds. Thirty percent of the farms had average body weights at first calving of 1,150 pounds or more (Table 27).

Table 27. Body Weight at First Calving and Related Business Factors
337 New York Dairy Farms, 1979

Body Weight at First Calving	Percent of Farms	Number of Cows	Age at First Calving	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
1,020 or less	14%	57	27	13,800	$19,507
1,030 to 1,040	6	65	28	14,800	13,972
1,050 to 1,060	8	57	28	14,300	17,498
1,070 to 1,080	12	61	28	14,600	20,553
1,090 to 1,100	9	89	28	14,700	22,519
1,110 to 1,120	12	92	28	15,100	27,148
1,130 to 1,140	9	73	29	14,700	17,103
1,150 and over	30	68	29	15,200	21,098

When grouped by body weight at first calving the relationships to various business and dairy management practices do not stand out distinctly. Age at first calving tended to increase with the average body weight at first calving. It appears that the heavier heifers were on larger farms, with higher rates of production, and better incomes (Table 27). Likewise, the farms with heavier heifers at first calving also fed more concentrates per cow, obtained a higher percent of net energy from succulents and had fewer days dry (Table 28). This phenomena likely illustrates the interrelatedness of all management practices through the ability or skill of the manager.

Table 28. Body Weight at First Calving and Dairy Management Practices
337 New York Dairy Farms, 1979

Body Weight at First Calving	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
1,020 or less	5,700	27%	60	28%	379,000
1,030 to 1,040	6,000	30	62	29	418,000
1,050 to 1,060	5,800	29	63	27	430,000
1,070 to 1,080	6,000	29	61	27	299,000
1,090 to 1,100	5,900	36	59	30	284,000
1,110 to 1,120	6,500	36	57	29	360,000
1,130 to 1,140	6,100	36	58	28	309,000
1,150 and over	6,500	33	60	28	284,000

Analysis of Breeding Practices

The dairy management practices included in this section are: age at first calving, projected minimum calving interval, breedings per conception, average number of days dry, and percent of days in milk.

Age at First Calving

The average age at first calving for the 337 farms in 1979 was 28 months. There was sizable range among the farms. Twenty-seven percent or one-fourth had average age at first calving of less than 27 months. These are in line with the recommendations of aiming to have heifers calve at two years of age. At the other end of the range, 9 percent reported average age at first calving of 33 months or more which is approaching three years of age (Table 29).

Table 29. Age at First Calving and Related Business Factors
337 New York Dairy Farms, 1979

Age at First Calving	Percent of Farms	Number of Cows	Body Weight at First Calving	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
Under 27	27%	67	1,090	15,200	$20,883
27 to 28	32	73	1,100	15,000	20,827
29 to 30	20	72	1,110	14,700	23,232
31 to 32	12	68	1,120	14,200	17,362
33 & over	9	64	1,130	13,800	17,475

The farms with the younger calving age for heifers tended to have the larger herd size and the higher production per cow. The group with the largest labor and management income per operator averaged 29 to 30 months at first calving. The average body weight at first calving increased with the age at first calving.

Dairy management practices appeared to be related to the age at first calving (Table 30). Farms that had the heifers freshening at an early age also were feeding more concentrates per cow, had fewer days dry, and lower somatic cell counts. Percent leaving the herd did not show any relationship with age at first calving.

Table 30. Age at First Calving and Dairy Management Practices
337 New York Dairy Farms, 1979

Age at First Calving	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 27	6,400	31%	60	29%	287,000
27 to 28	6,300	32	59	26	320,000
29 to 30	6,000	32	62	30	376,000
31 to 32	6,000	34	61	29	353,000
33 & over	5,400	33	60	28	412,000

Projected Minimum Calving Interval

The average minimum calving interval for the 337 farms in 1979 was 13.0 months. However, 15 percent of the farms reported average minimum calving intervals of less than 12.5 months. The goal is to have the cows calve at regular 12 month intervals but this is difficult to achieve.

Table 31. Projected Minimum Calving Interval and Related Business Factors 337 New York Dairy Farms, 1979

Projected Minimum Calving Interval (Mo.)	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
Less than 12.5	15%	52	14,600	$19,728
12.5 to 12.9	37	73	15,000	21,949
13.0 to 13.4	29	73	14,700	20,648
13.5 to 13.9	12	76	14,200	18,325
14.0 or more	7	71	14,400	18,291

The farms with the shortest calving interval had smaller herds (average 52 vs. 71 to 76) and in turn somewhat lower labor and management incomes per operator. This is likely an example of the size factor counteracting the effects of the calving interval. For the other groups, the longer the projected minimum calving interval, the lower the pounds of milk sold per cow and the lower the labor and management income (Table 31). This suggests that getting the cows bred back promptly does affect income.

Projected minimum calving interval did not show any relationships with other dairy management practices (Table 32).

Table 32. Projected Minimum Calving Interval and Dairy Management Practices 337 New York Dairy Farms, 1979

Projected Minimum Calving Interval (Mo.)	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Less than 12.5	5,900	27%	61	27%	399,000
12.5 to 12.9	6,100	33	59	29	282,000
13.0 to 13.4	6,300	32	61	27	316,000
13.5 to 13.9	6,300	32	59	31	441,000
14.0 or more	6,000	35	60	28	413,000

Breedings Per Conception

The relationship of breedings per conception to labor and management income as shown in Tables 33 and 34 is not what one might logically expect. Fewer breedings per conception did not give a higher income per operator. The pounds of milk sold per cow showed no relationship to the number of breedings per conception. This may be due to the fact that higher producing cows tend to be harder to settle.

Table 33. Breedings per Conception and Related Business Factors
337 New York Dairy Farms, 1979

Breedings Per Conception	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Veterinary Expenses Per Cow	Labor and Management Income/Operator
1.4 or less	19%	63	14,100	$28	$20,416
1.5 to 1.6	23	63	15,200	31	18,456
1.7 to 1.8	22	76	14,700	30	21,304
1.9 to 2.0	15	70	14,500	34	21,199
over 2.0	21	78	14,900	39	21,969

Nineteen percent of the farms reported an average of less than 1.5 breedings per conception in 1979. Twenty-one percent or one out of about five reported an average of over 2.0. The average of all 337 farms was 1.8 breedings per conception. The veterinary expenses per cow increased as the number of breedings increased with the highest of $39 for the group with more than 2.0 breedings per conception (Table 33).

Table 34. Breedings per Conception and Dairy Management Practices
337 New York Dairy Farms, 1979

Breedings Per Conception	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
1.4 or less	5,800	32%	61	28%	343,000
1.5 to 1.6	6,100	31	60	28	334,000
1.7 to 1.8	6,300	33	58	29	310,000
1.9 to 2.0	6,400	31	59	28	322,000
over 2.0	6,200	34	61	28	362,000

Breedings per conception showed a relationship to pounds of concentrates fed per cow with those feeding more concentrates requiring more breedings per conception (Table 34). This may suggest that cows fed more concentrates are more difficult to settle. For the other dairy management practices no apparent relationships were shown by these data.

Average Number of Days Dry

Once it was thought that a longer resting period between lactations allowed the cow to build up energy reserves which would be returned later in the form of more milk per cow. Recently, however, it has been shown that with higher levels of concentrate feeding and proper veterinary care, milk per cow and labor and management income per operator increase with fewer days dry.

Table 35. Days Dry and Related Business Factors
337 New York Dairy Farms, 1979

Average Days Dry	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
50 or less	12%	66	14,900	$20,496
51 to 55	21	78	14,900	20,402
56 to 60	23	70	15,000	19,947
61 to 65	19	74	14,700	22,448
66 to 70	12	64	14,700	23,359
over 70	13	61	13,800	16,419

Twelve percent of the farms reported an average of 50 or less days dry (Table 35). Fifty-six percent or more than one-half of the farms reported 60 days or less, which is less than two months time out of production. It is of interest to observe that the farms with the lower number of days dry also fed more pounds of concentrates per cow, and provided a higher percent of net energy from succulents, and had younger cows (Table 36).

Table 36. Days Dry and Dairy Management Practices
337 New York Dairy Farms, 1979

Average Days Dry	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Age All Cows	Percent Leaving Herd	Somatic Cell Count
50 or less	6,100	35%	54	26%	412,000
51 to 55	6,500	35	52	30	307,000
56 to 60	6,300	33	52	30	316,000
61 to 65	6,000	32	54	27	360,000
66 to 70	6,100	28	56	25	323,000
over 70	5,700	29	54	29	293,000

The 1979 data in this study does not fully substantiate earlier research that has shown the fewer number of days dry the higher the production per cow and in turn the higher the operator's income. Farms in this study with an average of less than 60 days dry did sell more pounds of milk per cow but those with 61 to 70 days dry had the best labor and management incomes per operator (Table 35). It may be that the dry period can be "too short" as well as "too long".

Percent of Days in Milk

The percent of days in milk is an aggregate measure of calving interval, days dry, and days open. In general, the higher percent of days in milk, the more milk per cow and the more labor and management income per operator (Table 37).

Table 37. Percent Days in Milk and Related Business Factors
337 New York Dairy Farms, 1979

Percent Days in Milk	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
80 or less	2%	58	13,200	$14,389
81 to 83	9	66	13,600	17,727
84 to 86	37	66	15,000	21,527
87 to 89	45	74	14,800	20,274
90 and over	7	75	14,900	23,397

Eighty-two percent of the farms were in the 84 to 89 percent of days in milk categories. The average percent of days in milk for the 337 farms in 1979 was 86. Farms with the higher percent of days in milk tended to be larger as measured by number of cows. As the percent of days in milk increased, the average days dry decreased. The somatic cell count tended to increase as the percent of days in milk increased (Table 38).

Table 38. Percent Days in Milk and Dairy Management Practices
337 New York Dairy Farms, 1979

Percent Days in Milk	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
80 or less	5,600	23%	81	28%	275,000
81 to 83	5,500	31	72	29	321,000
84 to 86	6,100	32	64	27	322,000
87 to 89	6,400	33	55	29	349,000
90 and over	6,100	35	49	30	305,000

The herd average of "percent days in milk" as included in the DHI reports to the dairy farmers appears to be an indicator of good breeding management practices which in turn affect the pounds of milk sold per cow and the operators labor and management income.

Analysis of Culling Practices

Choosing which cows to keep, which to sell, and when, is an important but difficult management decision. To examine culling practices, two measures were used; percent of cows leaving the herd for purposes other than dairy (slaughter), and average age of all cows.

Percent Leaving the Herd

In 1979 for the 337 farms, the average percent leaving the herd was 28 which was down from the 30 percent for 1978.

Table 39. Percent Leaving the Herd and Related Business Factors
337 New York Dairy Farms, 1979

Percent Leaving Herd	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
Under 20	16%	63	14,700	$22,219
20 to 24	19	62	14,900	20,043
25 to 29	27	73	14,700	23,031
30 to 34	19	77	14,900	21,871
35 & over	19	72	14,600	15,465

A specific culling rate is not obvious from the data in Tables 39 and 40. It is likely that there is a "too high" and a "too low" level for culling, with the optimum incomewise in the range of twenty-five to twenty-nine percent. This would mean keeping the cows an average of less than four lactations. Dairy herd improvement recommends not keeping a cow that does not perform well on her first lactation in the hopes the second will be better. Some animals are culled during or at the end of the first lactation. To counter balance these early culls, some cows are kept much longer than the average of four lactations. The averages used here give an overall indication of what is happening to the herd as a whole due to the culling practices. Each dairyman must cull according to the conditions in his herd. Providing replacements is costly but when meat and milk prices are favorable this cost may be a minor consideration.

Table 40. Percent Leaving Herd and Dairy Management Practices
337 New York Dairy Farms, 1979

Percent Leaving Herd	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age All Cows	Somatic Cell Count
Under 20	6,000	29%	59	57	357,000
20 to 24	6,100	35	60	54	307,000
25 to 29	6,100	32	60	53	275,000
30 to 34	6,300	33	61	53	349,000
35 & over	6,300	33	59	51	406,000

Average Age of All Cows

It might logically be expected that the herds with a higher average age would have a higher labor and management income per operator since the costs of replacements either in raising heifers or by purchases would be less. However, this was not true for the 337 herds studied for 1979. Similar situations existed in the earlier years studied.

Table 41. Average Age All Cows and Related Business Factors
337 New York Dairy Farms, 1979

Average Age All Cows	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income/Operator
Under 45	5%	113	15,500	$23,026
45 to 49	20	74	15,000	23,518
50 to 54	33	71	14,800	19,262
55 to 59	28	65	14,700	21,083
60 & over	14	54	14,000	18,527

More than half of the farms had a herd average age of less than 55 months. However, the farms in the 45 to 49 months average age group had the best labor and management income per operator (Table 41). The pounds of milk sold per cow was inverse to the average age of the herd. The farms with an average age of cows in the herd of over 60 months had the lowest rate of production and labor income.

A possible explanation of younger herds producing more than older herds, could be an adherence to the DHI recommendation of culling cows whose production is not up to expectations in the first year. Also, each year the genetic potential of the new cows should be somewhat better due to the improved sires being used by artificial inseminators. The dairy management practices appeared to be better for the younger herds (Table 42).

Table 42. Average Age All Cows and Dairy Management Practices
337 New York Dairy Farms, 1979

Average Age All Cows	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 45	6,400	39%	55	30%	208,000
45 to 49	6,500	34	59	31	318,000
50 to 54	6,300	33	60	29	329,000
55 to 59	5,900	31	61	27	338,000
60 & over	5,800	27	62	25	393,000

The 1979 data suggests that it paid to cull moderately heavy (30 percent) and to maintain a relatively young herd.

Analysis of 125 Farms With Somatic Cell Count Records

Practices related to herd health are an important part of a herdsman's management. Mastitis has been a major problem in herd health. The challenge has been how to detect and control it. Early detection has been offered as a key factor in controlling mastitis in dairy herds.

The Somatic Cell Count program was developed by DHI as a way of helping dairymen detect mastitis. New technology now makes it possible to determine cell counts in the individual milk samples processed in the DHI Laboratory. The Somatic Cell Count program was made available to New York dairymen on an optional basis early in 1978. This added another tool for use in herd health management. This new tool or service has been accepted by dairymen at a rather rapid rate.

Table 43. Somatic Cell Count Cooperators by Size of Herd
337 New York Dairy Farms, 1979

Number of Cows	Number of Farms	Number Somatic Cell Cooperators	Percent Using Somatic Cell
Under 40	46	19	41%
40 to 54	101	38	38
55 to 69	75	22	29
70 to 84	39	19	49
85 to 99	15	3	20
100 to 149	44	20	45
150 & over	17	4	24
All farms	337	125	37

Of the 337 farms included in the dairy management practices study 125 or 37 percent had Somatic Cell Count information available. This information has been studied and is reported in this section. There seemed to be no relation to size of herd in the rate of acceptance of this tool as shown in Table 43. Herds with 100 to 149 cows had the highest percent of farms (45%) with Somatic Cell Count information.

Table 44. Somatic Cell Count and Labor and Management Incomes
125 New York Dairy Farms, 1979

Average Somatic Cell Count for Herd	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Labor and Management Income per Operator	Labor and Management Income per Cow
Under 200,000	18%	63	15,700	$27,996	$525
200,000 to 299,999	29	72	15,400	22,735	368
300,000 to 399,999	26	63	14,700	25,207	463
400,000 to 499,999	14	64	14,500	17,907	342
500,000 and over	13	86	13,300	6,632	91

The average somatic cell count for the herd was the factor available for use here. The average count for the 125 herds was 333,000. Eighteen percent of the herds had average counts of under 200,000 while 13 percent were 500,000 or more (Table 44). Fifty-five percent were in the 200,000 to 400,000 range.

There appeared to be no relationship between the somatic cell count and the size of the herd. In contrast, the higher the count the lower the pounds of milk sold per cow. The labor and management income per operator and per cow also appeared to be related to the average somatic cell count for the herd (Table 44). The operator's income on the farms with a high count (500,000 or more) was only one-fourth that of those with a count of under 200,000 even though the average herd size was larger (86 vs. 63). This suggests that the control of mastitis does have an effect on dairy farm incomes.

Table 45. Somatic Cell Count and Related Business Factors
125 New York Dairy Farms, 1979

Average Somatic Cell Count for Herd	Veterinary Expense Per Cow	Total Farm Expense Per Cow	Pounds Milk Sold Per Man	Age of Oper.	Education of Oper.	Percent of Freestall Barns
Under 200,000	$39	$2,046	409,000	41	14	36%
200,000 to 299,999	35	2,116	430,000	41	13	29
300,000 to 399,999	34	1,945	370,000	40	13	25
400,000 to 499,999	25	1,982	371,000	42	13	17
500,000 and over	29	1,821	415,000	39	13	35

Several farm business factors were observed for the five groups based on somatic cell count with the results shown in Table 45. Farms with the lower somatic cell counts had larger veterinary expenses per cow. It might be assumed that the greater expense was of a preventative nature and resulted in less mastitis. It was of interest to observe that the percent of farms with freestall barns was the same for the low and high count groups of farms. This suggests that type of barn was not the cause of mastitis problems.

Some dairy management practices were associated with the different levels of somatic cell counts. The farms with a lower count were feeding more pounds of concentrates per cow, had younger cows, and had a higher proportion of pipeline milking systems (Table 46). The percent net energy from succulents and days dry did not appear to be related to the somatic cell counts.

Table 46. Somatic Cell Count and Dairy Management Practices
125 New York Dairy Farms, 1979

Average Somatic Cell Count for Herd	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age All Cows	% With Pipeline Milkers
Under 200,000	6,600	30%	60	52	55%
200,000 to 299,999	6,300	32	62	53	53
300,000 to 399,999	5,900	30	60	55	50
400,000 to 499,999	6,200	30	62	55	50
500,000 and over	5,600	32	59	56	41

Other Factors Studied

Management information of various kinds was available for each of the 337 farms. This made it possible to study possible relationships of various factors to the dairy management practices and the farm business in general. General observations in six areas are reported below. These may be helpful in trying to understand why and how certain dairy practices are used on New York farms.

Age and Education of Individual Farm Operators

The age and education of the farm operator is obtained in the farm business management records. This makes it possible to observe how different age operators manage. Since partnerships and corporations often have operators in different age groups they have been excluded from the age and education sorts. Consequently, only the "Individual Operator" type of business is included in the age and education study section of the 337 farms, 271 were individual operators and 66 were partnerships or corporations. Of the 271 individual operators 25 did not report the years of education so only 246 farms are included in the sorts by years of education.

Table 47. Age of Individual Operator and Related Characteristics
271 New York Dairy Farms, 1979

Age of Individual Operator	Percent of Farms	Average Age of Oper.	Years of Education	Total Farm Assets	Farm Net Worth	Debt Per Cow
Under 30	11%	26	14	$283,000	$127,000	$2,846
30 to 34	17	32	14	366,000	195,000	2,636
35 to 39	24	37	13	356,000	215,000	2,137
40 to 44	16	42	13	375,000	233,000	2,008
45 to 49	14	47	13	400,000	266,000	1,947
50 & over	18	54	12	374,000	285,000	1,369

Thirty-one or 11 percent of the operators in this study were under 30 years of age. Fifty-two percent of the individual operators were under 40 years of age. The average age of all operators on the 337 farms was 40 years. For the partnerships and corporations the average age of the second operators was 33 and on the 14 farms with three operators the average age of the third operator was 27. This suggests that some young persons are getting started in dairy farming in New York State.

For the 271 individual operators the younger operators had more years of education. The average for those under 35 was 14 years or the equivalent of a college associate degree where as those 50 and over had an average of 12 years of education or the equivalent of a high school diploma. Similar studies from other years also have indicated that the younger farmers have more years of formal education than the older farmers.

Total farm assets for the 337 farms in 1979 averaged $401,000 or about $5,300 per cow. The average debt per cow was $2,100. The average farm net worth was $247,000. The assets and net worth for the individual operators was somewhat less than that for all farms including partnerships and corporations.

Table 48. Age of Individual Operator and Related Business Factors
271 New York Dairy Farms, 1979

Age of Individual Operator	Number of Cows	Lbs. Milk Sold		Total Farm Expense/Cow	Labor and Management Income/Operator
		Per Cow	Per Man		
Under 30	54	14,600	409,000	$1,860	$23,164
30 to 34	62	14,300	427,000	1,971	24,049
35 to 39	62	15,200	434,000	2,046	25,353
40 to 44	66	14,400	393,000	1,998	19,071
45 to 49	67	14,700	394,000	2,059	20,111
50 & over	63	14,800	373,000	2,113	15,603

Individual operators under 30 years of age had fewer cows and less total farm assets than the other age groups. This likely is due to their limited resources and being in the "build-up" stage of organizing the business. The operators under 30 had average net worths of $127,000 or a 45 percent equity (Table 47). Inflation with resulting increases in cattle, real estate, and machinery prices has been a substantial factor in helping young persons to gain net worth once they get control of a business.

Total farm assets and number of cows varied relatively little for the age groups over 30 (Table 47 and 48). The farm net worth, however, increased steadily by the different age groups with those over 50 having an average equity of 85 percent. The debt per cow decreased from an average of $2,850 per cow for the group under 30 to $1,370 per cow or less than half for the group over 50. Debt per cow serves as an indicator of the financial pressure on the business because of indebtedness.

Labor and management income per operator was highest for the group 35 to 39. The 35 to 39 group also had the highest pounds of milk sold per cow and per man (Table 48). The three groups under 40 all had better labor incomes than those over 40. The dairy management practices showed no apparent relationship to age of operator.

Table 49. Age of Individual Operator and Dairy Management Practices
271 New York Dairy Farms, 1979

Age of Individual Operator	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age First Calving	Percent Leaving Herd
Under 30	5,800	25%	62	28	28%
30 to 34	5,800	30	63	29	31
35 to 39	6,300	33	58	28	28
40 to 44	6,200	33	61	29	30
45 to 49	6,300	32	56	28	28
50 & over	5,900	29	60	29	26

Table 50. Education of Individual Operator and Related Business Factors 246 New York Dairy Farms, 1979

Years of Education	Percent of Farms	Age of Oper.	Number of Cows	Lbs. Milk Sold Per Cow	Lbs. Milk Sold Per Man	Labor and Management Income/Operator
Under 12	7%	45	63	15,300	373,000	$20,968
12	50	41	58	14,300	369,000	19,037
13 to 14	20	38	65	14,500	420,000	18,145
15 & over	23	37	67	14,700	406,000	25,806

One half of the 246 individual operators reported 12 years of education. Only 18 or 7 percent had less than 12 years (with an average of 10) while 23 percent had 15 years or more. The average age of those with less than 12 years of education was 45 compared with 41 for those with 12 years (Table 50).

In general, excluding those with less than 12 years of education the business management factors improved with the amount of education. Those with 15 years or more of education had the highest average labor and management income per operator of the four groups. For the dairy practices the feeding seemed to improve with education while the others did not (Table 51).

Table 51. Education of Individual Operator and Dairy Management Practices 246 New York Dairy Farms, 1979

Years of Education	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age First Calving	Percent Leaving Herd
Under 12	6,200	30%	63	28	27%
12	5,900	30	59	28	28
13 to 14	6,100	31	60	28	29
15 & over	6,200	32	61	28	30

For more details on age and education see Appendix Tables 66 and 67.

Type of Barn and Milking System

The type of barn and the kind of milking system are two basic features of any dairy operation which tend to affect management. These 337 farms were grouped according to these two important features and the practices were observed.

Table 52. Type of Barn and Related Business Factors
337 New York Dairy Farms, 1979

Type of Barn	Percent of Farms	Number of Cows	Lbs. Milk Sold		Labor and Management Income	
			Per Cow	Per Man	Per Operator	Per Cow
Freestall	32%	104	14,800	487,000	$25,944	$249
Stanchion	64	53	14,700	345,000	17,494	330
Other	4	70	14,600	383,000	18,588	266

One-third of the barns were freestall and two-thirds were the stanchion or stall type. The freestall barn farms had about twice as large herds as the stanchion barns as shown in Table 52. Pounds of milk sold per cow and per man were higher in the freestall systems. The labor and management income per cow was higher in the stanchion barn but, the income per operator was considerably better in the freestall operations.

The dairy management practices generally were better in the freestall operations. They fed more pounds of concentrates per cow, obtained a higher percent of the net energy from succulents, had fewer days dry, and lower somatic cell counts (Table 53).

Table 53. Type of Barn and Dairy Management Practices
337 New York Dairy Farms, 1979

Type of Barn	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Somatic Cell Count	Percent Leaving Herd
Freestall	6,700	39%	58	321,000	29%
Stanchion	5,900	29	61	337,000	28
Other	6,300	32	64	341,000	28

On page 5 it was stated that labor and management income is an indication of the "managerial ability" of the operator. The analysis by type of barn seems to substantiate this concept. It is often said that it takes a "good manager" to operate successfully in a freestall barn. These 1979 data appear to support this. Labor and management incomes (managerial ability) for the freestall operations were considerably higher than for the stanchion barn operations ($25,944 vs $17,494). The freestall operators used good business management procedures as shown by larger herds, higher production per cow, and better labor efficiency (Table 52) and recommended dairy practices as shown by feeding more concentrates per cow, obtaining more net energy from silages, having fewer days dry, lower somatic cell counts, and culling at a moderate rate (Table 53).

In the farm business records the operator designates the kind of milking system used. Definitions of systems may sometimes be a problem. As few freestall barns have reported "pipeline" milking systems which may be the use of a section of the old stanchion barn with a pipeline used instead of a parlor.

Table 54. Type of Milking System and Related Business Factors
337 New York Dairy Farms, 1979

Type of Milking System	Percent of Farms	Number of Cows	Lbs. Milk Sold		Labor and Management Income	
			Per Cow	Per Man	Per Operator	Per Cow
Bucket & Carry	2%	45	13,800	320,000	$17,515	$389
Dumping Station	21	43	14,800	315,000	14,244	331
Pipeline	48	59	15,900	391,000	18,907	320
Herringbone Parlor	23	115	15,700	498,000	27,681	241
Other Parlor	6	85	15,700	451,000	25,090	295

Herringbone parlor milking systems were used with the largest herds (average 115 cows) while the dumping station or transfer system was used by the smallest herds (average 43 cows) as shown in Table 54. Pounds of milk sold per cow was about the same for the pipeline and the parlor systems but milk sold per man was considerably higher in the parlor systems. The herringbone parlor system had the highest labor and management income per operator but the lowest per cow.

Dairy management practices seemed to vary with the milking systems. The herringbone system fed the most concentrates per cow, obtained the highest proportion of net energy from succulents and had the lowest days dry, but the highest culling rate. The somatic cell count was highest for the dumping station systems (Table 55).

Table 55. Type of Milking System and Dairy Management Practices
337 New York Dairy Farms, 1979

Type of Milking System	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Somatic Cell Count	Percent Leaving Herd
Bucket & Carry	4,900	33%	59	290,000	26%
Dumping Station	5,600	22	64	373,000	28
Pipeline	6,100	32	60	327,000	28
Herringbone Parlor	6,800	40	58	325,000	30
Other Parlor	6,300	39	60	279,000	27

Milk Produced and Milk Sold Per Cow

DHI records report milk produced per cow based on the samples taken each month and then composited for the year. The farm business records report the pounds of milk sold per cow based on the total amount marketed for the year. These two measures differ by the amounts used by farm workers, fed to calves, and lost milk due to such things as spillage or milk unfit for use for some reason.

Table 56. Comparison of Milk Produced and Milk Sold Per Cow by Herd Size 337 New York Dairy Farms, 1979

Number of Cows	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 40	14,800	14,100	700	4.7%
40 to 54	15,700	14,700	1,000	6.3
55 to 69	15,700	14,800	900	5.7
70 to 84	16,100	15,300	800	5.0
85 to 99	15,600	14,800	800	5.1
100 to 149	15,600	14,600	1,000	6.4
150 & over	15,900	15,000	900	5.7

For the 337 farms the DHI records showed an average production per cow of 15,602 while the farm business records showed an average of 14,743 pounds of milk sold per cow. This is an average difference of 859 pounds per cow. Past studies have shown differences of a similar nature.

Differences between the milk produced and milk sold were computed by herd size and by rates of production and the results are shown in Tables 56 and 57. Differences by herd size ranged from 700 to 1,000 pounds per cow while by rates of production the range was from 600 to 1,700. There was no apparent direct relationship between either size or rates of production and the differences. The average difference for all 337 farms was 5.5 percent of the milk produced as shown by the DHI records.

Table 57. Comparison of Milk Produced and Milk Sold Per Cow by Rates of Production 337 New York Dairy Farms, 1979

Milk Sold Per Cow	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 10,000	10,000	8,300	1,700	17.0%
10,000 to 10,999	11,100	10,500	600	5.4
11,000 to 11,999	13,000	11,700	1,300	10.0
12,000 to 12,999	13,800	12,900	900	6.5
13,000 to 13,999	14,600	13,700	900	6.2
14,000 to 14,999	15,700	14,600	1,100	7.0
15,000 to 15,999	16,500	15,300	1,200	7.3
16,000 & over	17,800	17,200	600	3.4

Income Over Feed Cost

DHI records report an economic measure called "Income Over Feed Cost". This is the difference between the value of the milk produced at current prices and the computed cost of the feed fed. This amount must cover all of the farm expenses or costs other than feed. This measure is used frequently in the dairy management record system. Here the measure of "Income Over Feed Costs" is examined in relation to various business factors and dairy practices.

Table 58. Income Over Feed Cost and Farm Business Income
337 New York Dairy Farms, 1979

Income Over Feed Cost	Percent of Farms	Price Received For Milk	Net Farm Cash Income	Labor and Management Income	
				Per Operator	Per Cow
Less than $900	9%	$11.78	$19,459	$ 9,596	$197
900 to 999	13	11.82	32,530	18,921	310
1,000 to 1,099	18	11.72	27,636	15,405	282
1,100 to 1,199	19	11.87	32,057	21,712	363
1,200 to 1,299	17	11.88	43,990	27,114	484
1,300 to 1,399	14	11.88	40,424	23,027	426
1,400 to 1,499	5	11.92	33,745	17,616	396
1,500 & over	5	12.31	58,740	31,445	435

A general relationship appears to exist between income over feed cost and the farm business measures of income but with numerous variations existing (Table 58). This is undoubtedly due to the great differences in the various costs other than feed.

Table 59. Differences Between Income Over Feed Cost and Business Income Measures
337 New York Dairy Farms, 1979

Income Over Feed Cost	Average Income Over Feed Cost	Net Farm Cash Income/Cow	Difference	Labor and Management Income/Cow	Difference
Less than $900	$ 805	$336	$ 469	$197	$ 608
900 to 999	958	434	514	310	648
1,000 to 1,099	1,045	419	626	282	763
1,100 to 1,199	1,141	465	676	363	778
1,200 to 1,299	1,245	603	642	484	761
1,300 to 1,399	1,345	586	759	426	919
1,400 to 1,499	1,448	614	834	396	1,052
1,500 & over	1,665	554	1,111	435	1,230

Differences between the income over feed costs per cow and the net farm cash income per cow and the labor and management income per cow were computed. The differences would cover all non-feed costs and the return for the operator's labor and management. The differences were directly related to amount of income over feed cost (Table 59).

Table 60. Income Over Feed Cost and Related Business Factors
337 New York Dairy Farms, 1979

Income Over Feed Cost	Number of Cows	Milk Sales Per Cow	Feed and Crop Expenses/Cow	Pounds Milk Sold	
				Per Cow	Per Man
Less than $900	58	$1,468	$554	12,500	321,000
900 to 999	75	1,601	580	13,600	394,000
1,000 to 1,099	66	1,681	630	14,300	406,000
1,100 to 1,199	69	1,736	655	14,600	417,000
1,200 to 1,299	73	1,832	632	15,400	450,000
1,300 to 1,399	69	1,886	638	15,900	410,000
1,400 to 1,499	55	1,960	676	16,400	339,000
1,500 & over	106	2,051	659	16,700	505,000

Income over feed cost did not appear to be related to the number of cows or size but was directly related to milk sales per cow, feed bought and crop expense per cow, and milk sold per cow (Table 60). These three items would directly affect the income and the feed costs components of the DHI measure "Income Over Feed Cost".

Table 61. Income Over Feed Cost and Dairy Management Practices
337 New York Dairy Farms, 1979

Income Over Feed Cost	Pounds Concentrates Fed Per Cow	Percent Net Energy From Hay	Percent Days in Milk	Age First Calving	Age All Cows
Less than $900	5,700	17%	86%	29	55
900 to 999	6,000	12	86	29	55
1,000 to 1,099	5,800	16	86	29	53
1,100 to 1,199	6,200	11	87	28	53
1,200 to 1,299	6,200	10	87	28	54
1,300 to 1,399	6,500	11	87	28	52
1,400 to 1,499	6,500	13	87	28	52
1,500 & over	7,400	5	87	28	52

Income over feed cost appeared to be associated with the use of recommended dairy practices as shown in Table 61. The larger the income over feed cost the more pounds of concentrates fed per cow, the less percent of net energy from hay, the higher percent days in milk, the younger the heifers at first calving, and the younger the average age of the herd. These dairy practices all were related to the business income measures as discussed in preceeding sections.

It appears that income over feed cost is not nesessarily an indication of a successful business operation but it does indicate the results of using good dairy management practices.

Summary and Conclusions

The purpose of this project was to study the relation of selected dairy management practices to farm business management factors. Data on selected dairy practices were merged with farm business summary data for 337 farms for the year 1979. Cross tabulation analyses were made for the various factors and the results included in this report. These analyses can provide additional dimensions for business summaries and show how these dairy management practices paid on commercial dairy farms in 1979.

Pounds of milk sold per cow and labor and management income per operator were used as indicators of the effects of the dairy management practices. The first measures the physical output and the second the financial returns from the farm business. Effects of the dairy practices were more apparent on the pounds of milk sold per cow than on the labor and management income per operator. This is logical since the first effect of the use of a dairy practice is on the milk production of the cow, which in turn will affect the income. Labor income is the bottom line measure of the combined effects of all components of the business. Cost control has far reaching effects on not only the dairy practices but crop practices and the use of machinery, labor and capital. A practice may increase production but possibly reduce the income if the added costs exceed the added returns.

The cross tabulations for the various dairy management practices indicate that the practices do affect rates of production and the operator's income. The practices that showed the greatest relationship to labor and management income were: pounds of concentrate fed per cow, percent of net energy from succulents, percent days in milk, and average age of all cows.

Somatic cell counts are a new management tool provided by DHI and is designed to help detect and control mastitis. For 1979, 125 of the 337 farms or 37 percent used the somatic cell option. Farms with lower cell counts had better production and higher incomes.

The relationship of age and education of the individual operators was observed. Farmers in the 35 to 39 age bracket and those with 15 years or more of education had the highest labor and management incomes. In general, the farmers under age 40 followed better practices and earned better incomes than those over 40 and with less than 15 years education.

There is a difference between the pounds of milk produced per cow as reported by DHI and the pounds of milk sold per cow as reported in farm business summaries. For the 337 farms this difference averaged 859 pounds per cow or 5.5 percent of the amount produced. If one uses DHI rates of production for farm budgeting the figures need to be adjusted to milk sold equivalent to account for this 5.5 percent difference.

The measure "income over feed cost" was studied and found to be related to the farm business measures of returns. However, the difference between this measure and net farm cash income at various levels ranged from less than $500 to $1,100 indicating that it is not suited for direct use in cash flow budgeting or planning.

In summary, the selected dairy management practices reported in the DHI records did have an effect on the labor and management incomes of the dairy farm operators. Some practices appeared to have greater effects than others. In analyzing a dairy farm business it is suggested that both the dairy practices and the business procedures be examined.

Appendix Tables

Table 62. AVERAGE OF SELECTED FACTORS FOR ALL FARMS IN STUDY
New York Dairy Farms, 1974 through 1979

Factor	Average of All Farms					
	1974	1975	1976	1977	1978	1979
Number of farms	413	380	337	363	370	337
% farms with DHI records	76%	76%	81%	84%	88%	89%
% farms owner-sampler	24%	23%	19%	16%	12%	11%
% farms freestall barns	32%	35%	32%	35%	32%	32%
Man equivalent	2.5	2.5	2.5	2.4	2.4	2.5
Number of cows	74	74	70	69	68	70
Number of heifers	54	58	54	51	49	51
Total crop acres	217	220	206	211	213	217
Total lbs. milk sold	954,900	995,800	958,600	971,700	979,300	1,032,000
Total cash farm receipts	$91,782	$95,230	$104,571	$105,102	$119,119	$140,899
Total end inventory	$240,000	$259,000	$265,000	$283,000	$313,000	$385,000
Milk produced per cow	13,700	14,200	14,500	14,800	15,200	15,600
Milk sold per cow	12,900	13,500	13,700	14,100	14,400	14,700
Tons hay equivalent/acre	2.7	2.7	2.9	2.4	2.5	2.7
Tons corn silage/acre	13.6	14.2	13.2	14.3	14.1	13.8
Cows per person	30	30	28	29	28	28
Milk sold per person	382,000	398,000	383,000	402,000	405,000	413,000
Feed purchased per cow	$335	$329	$381	$402	$422	$485
% feed is of milk receipts	30%	28%	28%	29%	28%	28%
Feeding index	119	119	120	119	120	120
Rate roughage feeding	2.4	2.4	2.4	2.3	2.3	2.3
Lbs. concentrates fed/cow	4,800	5,100	5,400	5,600	6,000	6,200
% net energy-concentrates	43%	45%	47%	48%	49%	50%
% net energy-succulents	33%	34%	32%	32%	32%	32%
% net energy-hay	14%	12%	12%	13%	12%	12%
% net energy-pasture	9%	9%	9%	8%	7%	6%
Projected calving interval (mo.)	13.0	13.0	12.9	12.9	12.9	13.0
Days dry	64	64	61	62	61	60
% days in milk	86%	86%	86%	86%	86%	86%
Breedings per conception	1.7	1.7	1.7	1.7	1.7	1.8
% leaving herd	23%	27%	28%	29%	30%	28%
Age at first calving (mo.)	29	29	29	29	29	28
Age all cows (mo.)	56	55	55	54	54	53
Body weight at first calving	1,070	1,070	1,070	1,080	1,100	1,100
Body weight all cows	1,240	1,240	1,240	1,240	1,250	1,260
Income over value feed	$681	$698	$874	$843	$972	$1,153
Average price received for milk	$8.61	$8.65	$9.91	$9.75	$10.48	$11.87
Labor & mgt. income/operator	$5,032	$3,946	$8,080	$3,178	$20,980	$20,785

Table 63. SELECTED BUSINESS FACTORS BY SIZE OF LABOR AND MANAGEMENT INCOME PER OPERATOR
337 New York Dairy Farms, 1979

Factor	Labor and Management Income Per Operator							
	Less Than 0	0 to $ 9,999	10,000 to $ 14,999	15,000 to $ 19,999	20,000 to $ 24,999	25,000 to $ 29,999	30,000 to $ 39,999	More Than $ 40,000
Number of farms	36	58	39	40	41	29	39	55
% of farms	11%	17%	12%	12%	12%	9%	12%	16%
Labor & Mgt. Income/Oper.	$-9,891	$5,473	$12,564	$17,118	$22,064	$27,641	$34,133	$54,267
Barn Type								
% with freestalls	33%	22%	21%	22%	29%	45%	36%	49%
Size of Business								
Man equivalent	2.6	2.3	2.3	2.3	2.5	2.8	2.3	3.0
Total crop acres	196	204	168	171	223	239	242	276
Number of cows	61	61	53	57	66	75	79	100
Total capital	$442,127	$337,527	$278,570	$314,144	$349,434	$424,616	$412,942	$525,841
Rates of Production								
Lbs. milk sold/cow	13,874	14,592	14,562	14,425	14,486	15,468	15,029	15,194
Tons hay crops/ac. (H.E.)	2.6	2.7	2.6	2.7	2.5	2.9	2.4	2.9
Tons corn silage/ac.	14.1	12.7	13.2	13.8	13.3	12.6	14.2	14.8
Labor Efficiency								
Lbs. milk sold/man	328,023	382,017	342,022	365,422	382,440	421,855	509,571	506,467
Cows/man	24	26	24	25	26	27	34	33
Feeding Practices								
Feed bought/cow	$480	$511	$466	$436	$480	$473	$522	$488
Lbs. concentrate fed	6,016	5,886	6,018	5,902	5,943	6,595	6,606	6,486
Feeding index	123	120	118	119	120	118	122	121
Rate of roughage feeding	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3
% NE from concentrates	49%	48%	50%	49%	49%	52%	51%	50%
% NE from succulents	30%	32%	29%	33%	32%	32%	31%	36%
% NE from dry hay	14%	13%	13%	12%	13%	10%	11%	9%
Breeding practices								
% days in milk	86%	86%	86%	86%	87%	87%	87%	86%
Proj. calving interval (mo.)	13.3	12.9	13.0	13.0	12.9	12.9	13.0	13.0
Average days dry	61	61	61	62	59	56	59	60
Breedings per conception	1.8	1.7	1.9	1.7	1.8	1.8	1.8	1.8
Av. age at first calving	29	28	29	28	29	28	28	28
Av. age all cows	53	53	55	54	56	51	53	53
Av. weight first calving	1,100	1,090	1,100	1,100	1,090	1,100	1,110	1,120
Av. weight all cows	1,240	1,250	1,250	1,250	1,240	1,260	1,280	1,280
% leaving herd	30%	30%	28%	28%	28%	27%	29%	26%
Somatic cell count	160,000	130,000	110,000	130,000	130,000	100,000	70,000	140,000

Table 64. SELECTED BUSINESS FACTORS BY POUNDS MILK SOLD PER COW
337 New York State Dairy Farms, 1979

Factor	Pounds Milk Sold Per Cow							
	Less Than 10,000	10,000 to 10,999	11,000 to 11,999	12,000 to 12,999	13,000 to 13,999	14,000 to 14,999	15,000 to 15,999	More Than 16,000
Number of farms	3	4	16	39	61	71	84	59
% of farms	1%	1%	5%	11%	18%	21%	25%	18%
Labor & Mgt. Income/Oper.	$-3,294	$2,006	$12,054	$12,269	$17,704	$23,238	$21,366	$28,460
Barn Type								
% with freestalls	67%	0%	25%	23%	34%	31%	33%	37%
Size of Business								
Man equivalent	1.9	2.1	2.0	2.3	2.4	2.6	2.7	2.7
Total crop acres	127	151	179	188	217	247	222	209
Number of cows (FBS)	62	40	56	59	68	76	74	72
Total capital	$321,700	$247,928	$313,753	$315,949	$368,735	$407,622	$404,992	$425,724
Rates of Production								
Lbs. milk sold/cow	8,250	10,540	11,652	12,856	13,675	14,628	15,439	17,169
Tons hay crops/acre (H.E.)	2.7	1.9	2.6	2.5	2.7	2.6	2.7	2.9
Tons corn silage/acre	12.2	11.6	13.5	13.0	13.4	13.6	13.8	14.7
Labor Efficiency								
Lbs. milk sold/man	266,406	202,692	326,250	325,536	384,256	430,891	427,903	462,996
Cows/man	32	19	28	25	28	29	28	27
Feeding Practices								
Feed bought/cow	$341	$363	$331	$404	$451	$486	$518	$561
Lbs. concentrate fed	3,190	3,890	5,395	5,379	5,728	6,394	6,422	7,008
Feeding index	110	121	127	121	122	122	119	117
Rate of roughage feeding	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3
% NE from concentrates	39%	40%	47%	47%	48%	51%	50%	53%
% NE from succulents	39%	21%	33%	29%	32%	33%	32%	33%
% NE from dry hay	19%	25%	13%	16%	13%	11%	12%	9%
Breeding Practices								
% days in milk	84%	85%	85%	86%	86%	86%	87%	87%
Projected calving interval (mo.)	13.2	13.3	13.2	13.0	13.0	13.1	12.9	12.9
Average days dry	73	65	69	61	60	60	59	57
Breedings per conception	1.6	1.8	1.8	1.7	1.7	1.9	1.8	1.8
Av. age at first calving	31	30	30	29	29	28	28	27
Av. age all cows	58	58	57	55	53	54	53	51
Av. weight first calving	910	1,020	1,100	1,080	1,090	1,100	1,120	1,130
Av. weight all cows	1,020	1,120	1,230	1,220	1,240	1,260	1,280	1,280
% leaving herd	23%	36%	27%	32%	29%	27%	28%	28%
Somatic cell count	NA	360,000	210,000	180,000	120,000	110,000	100,000	100,000

Table 65.

SELECTED BUSINESS FACTORS BY SIZE OF HERD
337 New York State Dairy Farms, 1979

Factor	Number of Cows in Herd						
	Under 40	40-54	55-69	70-84	85-99	100-149	Over 150
Number of farms	46	101	75	39	15	44	17
% of farms	14%	30%	22%	12%	4%	13%	5%
Labor & Mgt. Income/Oper.	$12,798	$15,106	$20,046	$24,223	$14,348	$26,908	$44,351
Barn Type							
% with freestalls	2%	11%	21%	41%	66%	86%	94%
Size of Business							
Man equivalent	1.7	2.1	2.4	2.7	3.3	3.7	4.7
Total crop acres	108	158	187	252	305	350	482
Number of cows	33	46	61	75	92	121	186
Total capital	$195,842	$290,899	$334,265	$431,129	$547,285	$599,947	$881,715
Rates of Production							
Lbs. milk sold/cow	14,127	14,733	14,790	15,291	14,757	14,628	14,951
Tons hay crops/acre (H.E.)	2.3	2.4	2.6	2.8	3.1	2.9	3.0
Tons corn silage/acre	12.3	13.0	12.9	14.2	14.5	14.0	15.2
Labor Efficiency							
Lbs. milk sold/man	279,162	325,817	372,810	429,513	417,723	482,289	595,482
Cows/man	20	22	25	28	28	33	40
Feeding Practices							
Feed bought/cow	$492	$504	$480	$480	$493	$468	$501
Lbs. concentrate fed	5,403	5,943	6,178	6,583	6,978	6,713	6,415
Feeding index	117	119	120	120	128	123	120
Rate of roughage feeding	2.3	2.4	2.3	2.2	2.3	2.3	2.3
% NE from concentrates	47%	48%	50%	52%	53%	52%	51%
% NE from succulents	23%	29%	33%	35%	37%	41%	43%
% NE from dry hay	20%	15%	12%	9%	6%	5%	4%
Breeding Practices							
% days in milk	86%	86%	87%	86%	87%	87%	87%
Projected calving interval (mo.)	12.9	13.0	12.9	13.0	13.1	13.1	13.2
Average days dry	63	61	59	61	57	57	60
Breedings per conception	1.7	1.8	1.8	1.7	1.8	1.8	2.0
Av. age at first calving	28	28	28	28	28	28	28
Av. age all cows	55	55	54	53	51	52	49
Av. weight first calving	1,080	1,110	1,110	1,100	1,130	1,110	1,110
Av. weight all cows	1,230	1,260	1,250	1,250	1,260	1,280	1,260
% leaving herd	27%	29%	28%	26%	29%	28%	32%
Somatic cell count	110,000	140,000	100,000	150,000	90,000	160,000	90,000

Table 66. SELECTED BUSINESS FACTORS BY AGE OF INDIVIDUAL OPERATORS*
271 New York Dairy Farms, 1979

Factor	Age of Individual Operators					
	Under 30	30-34	35-39	40-44	45-49	50 & Over
Number of farms	31	46	66	43	37	48
% farms with DHI records	93%	91%	94%	81%	92%	81%
% farms owner-sampler	7%	9%	6%	19%	8%	19%
% farms freestall barns	0%	28%	24%	33%	46%	27%
Man equivalent	1.9	2.1	2.2	2.4	2.5	2.5
Number of cows	54	62	62	66	67	63
Number of heifers	35	44	47	51	46	44
Total crop acres	162	210	180	213	220	183
Total lbs. milk sold	786,000	888,700	941,200	952,000	984,000	932,400
Total cash farm receipts	$104,061	$121,409	$126,639	$132,230	$134,024	$126,528
Total end inventory	$271,737	$353,466	$343,017	$359,066	$385,251	$359,170
Milk produced per cow	15,400	15,000	16,000	14,900	15,800	15,600
Milk sold per cow	14,600	14,000	15,200	14,400	14,700	14,800
Tons hay equivalent/acre	2.2	2.5	2.7	2.7	2.6	2.8
Tons corn silage/acre	13.1	12.7	13.6	13.2	14.7	13.7
Cows per person	28	30	29	27	27	25
Milk sold per person	409,000	427,000	434,000	393,000	394,000	373,000
Feeding index	119	120	120	121	120	118
Rate roughage feeding	2.3	2.3	2.4	2.2	2.3	2.3
Lbs. concentrates fed/cow	5,800	5,800	6,300	6,200	6,300	5,900
% net energy-concentrates	49%	49%	50%	51%	50%	48%
% net energy-succulents	25%	30%	33%	33%	32%	29%
% net energy-hay	18%	14%	11%	10%	11%	16%
% net energy-pasture	9%	7%	6%	5%	7%	7%
Projected calving interval (mo.)	12.9	12.9	12.9	13.0	12.9	13.1
Days dry	62	63	58	61	56	60
% days in milk	86%	86%	87%	86%	87%	86%
Breedings per conception	1.8	1.9	1.7	1.7	1.8	1.8
% leaving herd	28%	31%	28%	30%	28%	26%
Age of first calving (mo.)	28	29	28	29	28	29
Age all cows (mo.)	55	54	54	52	54	54
Body weight at first calving	1,074	1,093	1,109	1,088	1,112	1,111
Body weight all cows	1,253	1,247	1,260	1,231	1,268	1,269
Income over value feed	$1,104	$1,103	$1,186	$1,098	$1,215	$1,148
Feed purchased per cow	$513	$482	$510	$479	$445	$533
% feed is of milk receipts	30%	28%	28%	28%	25%	30%
Average price received for milk	$11.63	$11.85	$11.81	$11.99	$11.90	$11.89
Labor & Mgt. income/operator	$23,164	$24,049	$25,353	$19,071	$20,111	$15,603
Net cash income	$24,260	$27,834	$31,218	$33,283	$32,281	$29,328
Labor, Mgt., & ownership income	$41,885	$51,571	$54,614	$47,201	$53,556	$52,013
Percent equity	46%	55%	62%	64%	68%	77%

* Does not include partnerships or corporations.

Table 67. SELECTED BUSINESS FACTORS BY EDUCATION OF INDIVIDUAL OPERATORS*
246 New York Dairy Farms, 1979**

Factor	Years of Education Completed			
	Less than 12	12	13-14	15 & Over
Number of farms	18	123	48	57
% farms with DHI records	89%	85%	90%	95%
% farms owner-sampler	11%	15%	10%	5%
% farms freestall barns	33%	16%	33%	39%
Man equivalent	2.6	2.3	2.3	2.4
Number of cows	63	58	65	67
Number of heifers	42	41	47	53
Total crop acres	202	184	197	204
Total lbs. of milk sold	961,900	831,200	944,400	983,600
Total cash farm receipts	$125,554	$112,251	$128,290	$135,963
Total end inventory	$346,104	$326,675	$358,383	$366,621
Milk produced per cow	15,900	15,300	15,500	15,600
Milk sold per cow	15,300	14,300	14,500	14,700
Tons hay equivalent/acre	2.1	2.7	2.6	2.6
Tons corn silage/acre	13.2	13.5	13.8	13.6
Cows per person	24	26	29	28
Milk sold per person	373,000	369,000	420,000	406,000
Feeding index	118	119	120	121
Rate roughage feeding	2.3	2.3	2.3	2.3
Lbs. concentrates fed/cow	6,200	5,900	6,100	6,200
% net energy-concentrates	49%	49%	50%	50%
% net energy-succulents	30%	30%	31%	32%
% net energy-hay	14%	14%	12%	12%
% net energy-pasture	7%	7%	7%	6%
Projected calving interval (mo.)	13.0	13.0	12.9	13.1
Days dry	63	59	60	61
% days in milk	86%	86%	86%	87%
Breedings per conception	1.8	1.8	1.7	1.8
% leaving herd	27%	28%	29%	30%
Age of first calving (mo.)	28	28	28	28
Age all cows (mo.)	55	54	52	54
Body weight at first calving	1,117	1,093	1,094	1,106
Body weight all cows	1,271	1,245	1,248	1,257
Income over value feed	$1,145	$1,128	$1,112	$1,142
Feed purchased per cow	$482	$478	$519	$491
% feed is of milk receipts	27%	28%	30%	28%
Average price received for milk	$11.58	$11.77	$11.87	$11.93
Labor & Mgt. income/operator	$20,968	$19,037	$18,145	$25,806
Net cash income	$30,750	$27,811	$28,184	$32,164
Labor, Mgt., & ownership income	$49,838	$47,211	$48,868	$56,403
Average age of operator	45	41	38	37

* Does not include partnerships or corporations.
** Years of education not reported by 25 operators.