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# **DAIRY MANAGEMENT PRACTICES AND NEW YORK DAIRY FARM INCOMES 1980**

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NEW YORK DAIRY FARM INCOMES, 1980

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Foreward

This publication is part of a study supported by a special 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 and related factors.

The 1980 report is similar to the studies done for the years 1974 through 1979.\* Special factors examined for 1980 include somatic sell count, age and education of the operators, acres of grain corn per cow, and value of crop production.

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. John Kwiatkowski, a student in the College of Agriculture and Life Sciences at Cornell, and Stephen Bills, a student at SUNY at Cobleskill, did the statistical work on the 1980 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; A.E. Res. 80-1; and A.E. Res. 81-2.

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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 and crop 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 dairyfarmers 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 dairyfarmers.

The first project to merge for analysis purposes the DHI dairy management practice information with the farm management business summary information was initiated in 1974. 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 observe the relationships of dairy management practices to rate of production and dairy farm incomes. Selected dairy and crop practices were examined in relationship to the farm business as a unit. In short, the study aimed to determine how the dairy and crop 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 were merged on computer tapes for analysis purposes. The sources merged were the farm management business records (FBR) and the dairy herd improvement (DHI) records.

A computer listing was made of the 1980 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. Highlights from 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. 81-10.

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 worker is the total pounds of milk sold for the year divided by the worker 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 worker is calculated by dividing herd size by the worker 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 year of formal schooling completed.

Milk produced per cow is the total pounds of milk produced by each cow as computed from the 12 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 12 monthly dairy herd improvement samples tested.

Concentrates fed is the yearly average pounds of concentrates fed per cow in the herd. The DHI 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 cows get 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 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 nondairy 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 that have not freshened 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.

Acres of grain corn per cow is the total acres of corn harvested as grain corn divided by the average number of cows in the herd.

Value of crop production is the estimated value of crops harvested using the average New York farm prices reported by the Crop Reporting Service.

### 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 1980 is shown in Table 1.

The pounds of milk produced per cow by the 383 farms in the 1980 dairy management practices study averaged 15,800 compared with 12,000 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 14,800 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.

Nearly two-thirds of the farms in the business management summary were in the dairy practices summary group. Farms in the dairy practices group were somewhat smaller, 71 cows versus 75 and 2.6 worker equivalents versus 2.7. In identifying DHI farms some of the larger ones had two DHI reports on different herds which made it impossible to merge them for this study. In general, 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, 1980

Item	Summary Group	
	Business Management	Dairy Practices
Number of farms	600	383
<u>Operators:</u>		
Average age	41	39
Years of education	13	12
Percent in partnerships or corporations	21%	19%
<u>Barn Type:</u>		
Percent with freestalls	33%	32%
<u>Size of Business:</u>		
Worker equivalent	2.7	2.6
Number of cows	75	71
Number of heifers	56	55
Total crop acres	246	236
Total capital	\$426,470	\$419,040
<u>Rates of Production:</u>		
Pounds milk sold per cow	14,300	14,800
Tons hay crops per acre (H.E.)	2.5	2.5
Tons corn silage per acre	14.5	14.6
<u>Labor Efficiency:</u>		
Cows per worker	28	28
Pounds milk sold per worker	403,000	407,500
<u>Capital Uses:</u>		
Total capital per cow	\$5,500	\$5,740
Farm debt per cow	\$2,048	\$2,167
Total capital per worker	\$159,730	\$162,417
Percent equity	66%	65%
<u>Cost Factors:</u>		
Feed bought per cow	\$497	\$529
Crop expense per cow	\$147	\$148
Percent feed is of milk sales	27%	28%
Machinery cost per cow	\$425	\$439
Labor cost per cow	\$326	\$335
Real estate expense per cow	\$136	\$141
Total farm expense per cow	\$2,191	\$2,260
Cost per cwt. producing milk*	\$14.39	\$14.47
<u>Price:</u>		
Average price per cwt. milk sold	\$12.81	\$12.78
<u>Income:</u>		
Net cash income per farm	\$35,940	\$34,481
Net cash income per cow	\$479	\$486
Labor & management income per operator	\$1,565	\$885
Labor & management income per cow	\$26	\$15

\*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 1980 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 and net cash farm income.

#### 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 or her 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  
              By Quintiles and Selected Characteristics of the Farms  
              383 New York Dairy Farms, 1980

Labor and Management Income Per Operator	Operators		Year End Inventory	Net Cash Farm Income
	Ave. Age	Ave. Number		
(Quintiles)				
1 (low)	41	1.1	\$483,074	\$21,583
2	38	1.2	362,441	24,628
3 (medium)	40	1.3	358,707	31,655
4	39	1.4	384,432	39,705
5 (high)	39	1.3	507,215	55,171

The 383 farms in the study were sorted into five equal groups (quintiles) according to the labor and management income per operator. In Table 2 the characteristics of the five groups are shown. The low income group was larger than the three middle quintiles as shown by year end inventory but had lower net cash farm income. The operators of the low group were slightly older than the other groups.

Table 3. Labor and Management Income Per Operator  
By Quintiles and Related Business Factors  
383 New York Dairy Farms, 1980

Labor and Management Income Per Operator	Number of Cows	Pounds of Milk Sold		Total Farm Expenses Per Cow
(Quintiles)		Per Cow	Per Worker	
1 (low)	77	14,300	391,000	\$2,489
2	60	14,200	366,000	2,242
3 (medium)	60	14,700	380,000	2,228
4	69	14,900	386,000	2,142
5 (high)	91	15,200	490,000	2,143

Farms with the higher labor and management incomes per operator in general had more cows, better rates of production, sold more milk per worker, and had slightly lower total farm expenses per cow. Farms in the low quintile were medium size (77 cows), somewhat below average in efficiency factors, and had higher expenses (Table 3).

Operators of the low income farms (low quintile) apparently were not handicapped by size but were not able to manage effectively all aspects of the operation. They lacked the ability to "put it all together".

The dairy management practices used by the farmers with varying managerial ability as reflected by labor and management income are shown in Table 4. Farms in the high income quintile 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, and a smaller percent of cows were leaving the herd.

Table 4. Labor and Management Income By Quintiles and  
Dairy Management Practices  
383 New York Dairy Farms, 1980

Labor & Mgmt. Inc./Oper.	Lbs. Conc. Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
(Quintiles)					
1 (low)	5,900	34%	61	28	27%
2	5,700	31	61	28	25
3 (medium)	5,600	32	62	28	27
4	5,800	32	62	27	25
5 (high)	6,300	35	59	28	25

The high 20 percent (quintile) of the farms based on income are assumed to be following good practices which in turn are "paying". These might be used as the goal or targets for all managers.

### Herd Size (Number of Cows)

Distribution by size of herd was similar for the 383 dairy practices farms and the 600 business management group with the exception of a smaller percentage of farms in the group with under 40 and with 150 and over cows.

Table 5.                      Distribution of Farms By Herd Size  
All Business Summary Farms and Dairy Practices Farms  
New York Dairy Farms, 1980

Number of Cows	Summary Group			
	Business Management		Dairy Practices	
	No. Farms	% Farms	No. Farms	% Farms
Under 40	94	16%	50	13%
40 to 54	147	25	100	26
55 to 69	128	21	94	24
70 to 84	77	13	52	14
85 to 99	38	6	25	7
100 to 149	69	11	40	10
150 and over	47	8	22	6

For the 383 dairy practices farms the 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 70 to 84 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 also was less for herds with 70 to 84 cows.

Table 6.                      Herd Size and Labor and Management Income  
383 New York Dairy Farms, 1980

Number of Cows	Number of Farms	Net Cash Farm Income		Labor and Management Income	
		Per Farm	Per Cow	Per Operator	Per Cow
Under 40	50	\$16,117	\$488	-\$1,838	-\$62
40 to 54	100	24,659	525	- 523	- 12
55 to 69	94	33,383	538	1,088	23
70 to 84	52	36,463	480	- 2,441	- 39
85 to 99	25	35,283	392	2,092	30
100 to 149	40	55,518	459	4,831	56
150 and over	22	81,696	446	5,639	45

The net cash farm income per farm increased as the number of cows increased but the net cash farm income per cow did not. The highest net cash farm income per cow was for the 55 to 69 cow group and the three groups with less than 70 cows all had higher per cow net cash incomes than the groups with 70 cows or more (Table 6).

Table 7. Herd Size and Related Business Factors  
383 New York Dairy Farms, 1980

Number of Cows	Pounds of Milk Sold		Capital Per Cow	Total Farm Expense Per Cow
	Per Cow	Per Worker		
Under 40	14,200	270,000	\$6,027	\$2,257
40 to 54	14,700	346,000	6,276	2,281
55 to 69	14,900	384,000	6,010	2,261
70 to 84	15,000	381,000	5,826	2,330
85 to 99	14,100	414,000	5,218	2,143
100 to 149	14,700	486,000	5,185	2,242
150 and over	14,900	529,000	5,266	2,243

Larger herds in general make more efficient use of resources. Labor and capital efficiency as measured by pounds of milk sold per worker 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. Average days dry tended to be less for the larger herds. 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  
383 New York Dairy Farms, 1980

Number of Cows	Lbs. Concentrates Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Under 40	5,600	23	67	27	24%
40 to 54	5,600	29	62	28	25
55 to 69	5,900	34	59	28	26
70 to 84	5,800	35	61	28	26
85 to 99	5,700	38	61	29	26
100 to 149	6,500	42	58	28	27
150 and over	6,700	41	58	27	26

Size of herd is a major business factor affecting labor and management incomes 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. Average days dry, which is an indicator of good dairy management, was related to the size of the herd.

### Milk Sold Per Cow

Business management studies show that milk sold per cow is one of the important variables affecting incomes. It is assumed that the physical measure of milk sold per cow is directly affected by most dairy management practices, so in this study milk sold per cow has been used along with income as a measure to relate to each practice studied.

Table 9.                      Distribution of Farms by Milk Sold Per Cow  
All Business Summary Farms and Dairy Practices Farms  
New York Dairy Farms, 1980

Milk Sold Per Cow	Summary Group			
	Business Management		Dairy Practices	
	No. Farms	% Farms	No. Farms	% Farms
Under 12,000	84	14%	32	8%
12,000 to 12,999	68	11	36	9
13,000 to 13,999	91	15	51	14
14,000 to 14,999	137	23	97	25
15,000 to 15,999	102	17	72	19
16,000 to 16,999	118	20	50	13
17,000 or more			45	12

Farms in the dairy practices group tended to be from the higher producing herds as indicated by the distribution shown in Table 9. Only eight percent of the dairy practices farms sold less than 12,000 pounds of milk per cow compared with 14 percent for the business management farms and 25 percent sold 16,000 or more pounds compared with 20 percent of the business management group. This is logical since DHI records are a management tool for improving production per cow. Only 38 percent of the business summary farms with less than 12,000 pounds sold per cow had DHI records and were included in the dairy practices summary whereas 80 percent of those selling 16,000 or more pounds were in the practices study.

Table 10.                      Milk Sold Per Cow and Labor and Management Income  
383 New York Dairy Farms, 1980

Milk Sold Per Cow	Net Cash Farm Income		Labor and Management Income	
	Per Farm	Per Cow	Per Operator	Per Cow
Under 12,000	\$16,432	\$274	\$- 6,563	\$-125
12,000 to 12,999	19,491	305	-10,189	-191
13,000 to 13,999	28,269	382	- 464	- 7
14,000 to 14,999	37,469	500	2,898	49
15,000 to 15,999	37,988	513	2,920	50
16,000 to 16,999	47,468	601	5,183	87
17,000 or more	39,868	654	2,188	43

For the 383 farms in this study there was a strong association between milk sold per cow and income. This was true for net cash farm income per farm and per cow, and for labor and management income per operator and per cow. The farms selling 17,000 or more pounds per cow had fewer cows and in turn the incomes were lower than for the 16,000 to 17,000 pound group (Table 10).

Table 11. Milk Sold Per Cow and Related Business Factors  
383 New York Dairy Farms, 1980

Milk Sold Per Cow	Number of Cows	Lbs. Milk Sold/Worker	Capital Per Cow	Total Farm Expenses Per Cow
Under 12,000	60	282,000	\$5,143	\$1,870
12,000 to 12,999	64	352,000	5,587	2,042
13,000 to 13,999	74	398,000	5,239	2,052
14,000 to 14,999	75	422,000	5,642	2,207
15,000 to 15,999	74	431,000	5,833	2,331
16,000 to 16,999	79	446,000	5,931	2,451
17,000 and over	61	449,000	6,453	2,661

In general, the farms selling more milk per cow were those with larger herds. The four groups selling 13,000 to 17,000 pounds per cow averaged over 70 cows per farm while the other groups averaged from 60 to 64 cows.

Pounds of milk sold per worker, which is an important business management factor, was associated with production per cow. Capital per cow and total farm expenses showed a relationship to milk sold per cow. Farms selling more milk per cow tended to have higher expenses per cow (Table 11).

Table 12. Milk Sold Per Cow and Dairy Management Practices  
383 New York Dairy Farms, 1980

Milk Sold Per Cow	Lbs. Concen. Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Under 12,000	4,400	29%	66	28	22%
12,000 to 12,999	5,100	30	68	29	25
13,000 to 13,999	5,500	34	61	28	25
14,000 to 14,999	5,700	36	60	28	27
15,000 to 15,999	6,300	31	61	27	27
16,000 to 16,999	6,500	34	57	27	25
17,000 and over	6,900	32	57	27	27

The dairy management practices all were related to the physical measure of pounds of milk sold per cow (Table 12). Pounds of concentrates fed per cow was strongly associated with milk sold per cow as would be expected. Farms selling more milk per cow did cull a little heavier as shown by percent leaving the herd. In general, these suggest that these recommended dairy management practices do affect the rates of production.

### Acres of Grain Corn Per Cow

Growing corn for grain has been increasing on New York dairy farms. In recent years there have been some management studies of this practice.\* A measure that can be used to examine the extent to which corn is being grown is that of "acres of grain corn per cow". This measure is examined in this section for the 383 farms included in this study.

The availability of land suitable for corn growing is a key consideration. First priority in the cropping program is on growing roughages which includes corn silage. Therefore, corn for grain is grown only when there is more land suitable for growing corn than what is needed for silage.

Table 13.                      Acres Grain Corn Per Cow and Land Use  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Total Crop Ac.	Crop Acres Per Cow	Acres Per Cow of			% Crop Ac. in all Corn
			Hay	Corn Sil.	Gr. Corn	
None	183	3.0	1.9	0.8	0	27%
.1 to .3	228	3.4	1.8	0.7	0.2	28
.4 to .6	270	3.2	1.7	0.7	0.5	39
.7 to .9	296	3.4	1.7	0.6	0.8	41
1.0 to 1.2	307	3.8	1.8	0.7	1.1	46
1.3 & over	376	4.8	1.9	0.5	1.7	44

The farms that had more acres of grain corn per cow were those with more total crop acres and more crop acres per cow (Table 13). The acres of hay and of corn silage per cow were about the same for all groups, so it was when additional crop acres were available that grain corn was produced. Another indication of this is the percent of crop acres in corn which ranged from 27 for the group with no grain corn per cow to 46 for those with 1.0 to 1.2 acres of grain corn per cow.

Table 14.                      Acres Grain Corn Per Cow and Crop Yields  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Yield Per Acre Tons Dry Matter			Bu. Gr. Corn	Bu. Oats	Value R.E./ Till. Acre
	Hay	Corn Sil.	All Forages			
None	2.3	14.4	3.1	---	37	\$1,208
.1 to .3	2.4	14.3	3.1	92.5	58	1,249
.4 to .6	2.6	14.8	3.3	94.0	65	1,302
.7 to .9	2.7	15.7	3.6	97.4	66	1,221
1.0 to 1.2	2.9	15.6	3.5	89.8	54	1,320
1.3 & over	2.7	14.7	3.3	91.7	68	1,135

Productivity of the land is another factor related to growing corn for grain on dairy farms. The farms with no grain corn per cow had lower forage yields per acre than those with grain corn (Table 14). The tons of dry matter per acre of hay ranged from 2.3 to 2.9 and tons of corn silage harvested from 14.3 to 15.7 for the groups in this study. Another indication of quality of land is the "value of real estate per tillable acre".

\*A.E. Res. 74-19, 76-3, 81-14.

In general the value per acre of cropland was higher on the farms with grain corn than those with none. In brief, the farms growing corn for grain had both more and better cropland.

Table 15.           Acres of Grain Corn Per Cow and Farm Incomes  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Number Farms	Net Cash Income Per			Labor & Management Income/Oper.	Labor, Mgmt. & Ownership Inc./Oper.
		Farm	Oper.	Cow		
None	172	\$28,817	\$24,014	\$465	\$ 233	\$35,224
.1 to .3	60	34,923	26,864	514	1,553	36,256
.4 to .6	60	40,732	31,332	479	1,172	45,681
.7 to .9	37	44,153	33,964	508	1,264	47,531
1.0 to 1.2	30	39,525	28,232	494	3,504	46,964
1.3 & over	24	37,117	30,931	476	- 5,296	44,685

Of the 383 farms in the study, 172 or 45 percent harvested no corn for grain (Table 15). Fifty-four or 25 percent of the 211 farms with grain corn had one acre or more per cow.

Five measures of income were computed for the farms when grouped by acres grain corn per cow. The income measures tended to increase as the acres of grain corn per cow increased up to the group with .7 to .9 acres per cow. This suggests that there may be an optimal amount of grain corn per cow to give the best income. This would involve the balance between size of herd and the land capabilities.

Table 16.           Acres of Grain Corn Per Cow and Related Factors  
383 New York Dairy farms, 1980

Acres Grain Corn Per Cow	Number Cows	Lbs. Milk Sold Per		Lbs. Conc. Fed/Cow	Feed Pur. Per Cow	% Milk for Feed
		Cow	Person			
None	62	14,300	380,900	5,600	\$585	32%
.1 to .3	68	14,800	392,200	5,700	566	30
.4 to .6	85	14,800	419,800	5,900	508	27
.7 to .9	87	15,400	425,300	6,500	472	24
1.0 to 1.2	80	14,500	423,100	6,600	406	22
1.3 & over	78	15,400	401,700	6,400	393	20

Farms with more acres grain corn per cow tended to be larger as measured by number of cows. The farms with no grain corn averaged 62 cows while those with .4 or more acres per cow averaged from 78 to 87 cows per farm. Pounds of milk sold per cow and per man also tended to be related to the amount of grain corn per cow (Table 16). Feed bought per cow and the percent of milk receipts spent for purchased feed were strongly associated with acres of grain corn per cow. The percent of the milk receipts used for purchased feed ranged from 32 for the group with no grain corn to 20 for those with 1.3 or more acres grain corn per cow.



Table 17. Acres Grain Corn Per Cow and Dairy Feeding Practices  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Feeding Index	Percent Net Energy From			
		Concentrates	Succulents	Hay	Pasture
None	107	46%	30%	16%	8%
.1 to .3	104	48	33	11	7
.4 to .6	106	47	37	11	4
.7 to .9	107	52	36	9	3
1.0 to 1.2	110	52	34	11	4
1.3 & over	106	49	39	9	4

Feeding practices appear to be related to the acres grain corn per cow. The feeding index tended to increase as the acres grain corn per cow increased (Table 17). Similarly the farms with more grain corn per cow also obtained a higher percentage of the net energy from concentrates. The farms with more grain per cow also obtained a higher percent of net energy from succulents and a lower percentage from hay and pasture. Farms with no grain corn obtained 24 percent of net energy from hay and pasture compared with 12 to 15 percent for those with .4 or more of grain corn per cow.

Table 18. Acres Grain Corn Per Cow and Dairy Management Practices  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	% Days in Milk	Days Dry	First Calving		Percent Leaving Herd
			Age	Weight	
None	85%	63	28	1,090	25%
.1 to .3	86	60	27	1,110	25
.4 to .6	86	60	28	1,130	26
.7 to .9	87	58	27	1,100	29
1.0 to 1.2	87	58	29	1,130	27
1.3 & over	87	59	27	1,140	27

Dairy management measures of percent days in milk, average days dry, and percent leaving the herd, appeared to be related to acres grain corn per cow while age and weight at first calving were not (Table 18). There is likely to be some interrelationships here to the extent that the better managers (those with the ability to put it all together) used both good dairy herd management practices and the crop management practice of growing more corn for grain.

The value of crops grown and fed are examined in the next section. These then are observed as they relate to the acres of grain corn grown per cow on the 383 farms in this study.

### Value of Crops Produced and Fed

The value of the crops produced on these farms was computed by using the average farm prices for 1980 as determined by the New York Crop Reporting Service. The value of the 1980 crop production was then adjusted for the amount of crop sales and changes in the beginning and end of year feed and supply inventories to get the value of crops produced and fed. The calculations for the 383 farms are shown below.

Table 19. Calculation of Value of Crops Grown  
383 New York Dairy Farms, 1980

Crop	Acres	Quantity	Price	Value	Value/Acre
Hay (all)	128	318 t.	\$59.00	\$18,762	\$147
Corn silage	51	748 t.	20.00	14,960	293
Other forages	3	7 t.	59.00	413	138
Grain corn	31	2,841 bu.	3.50	9,944	321
Oats	6	365 bu.	2.05	748	125
Wheat	1	36 bu.	3.95	142	142
Total	220			\$44,969	\$204

Hay crops of all kinds, including haylage, accounted for 58 percent of the acreage and 42 percent of the value of crops produced on these 383 farms in 1980. Corn silage accounted for 33 percent and grain corn for 22 percent of the total value of crops produced. Grain corn had the highest value per acre with \$321 followed by corn silage with \$293 per acre. The average for all crops was \$204 per acre.

Table 20. Calculation of Value Feeds Fed and Related Factors  
383 New York Dairy Farms, 1980

Item	Total Per Farm	Average Per Cow
Value crops grown	\$44,969	\$633
Decrease in feed inventories	<u>0</u>	<u>0</u>
Total Grown Available	\$44,969	\$ 633
Value of crops sold	1,622	23
Increase in feed inventories	<u>4,565</u>	<u>64</u>
Amount Available Not Used	\$ 6,187	\$ 87
Value of crops grown & fed	\$38,782	\$ 546
Cost of purchased feed	<u>39,037</u>	<u>550</u>
Total Value & Cost of Feeds Fed	\$77,819	\$1,096
Percent of feed fed grown	49.8%	49.8%

The farms included in this study were those with dairy as the principle source of income. Farms with crop sales in excess of 10 percent of the milk receipts were included in a summary for dairy-cash crop farms. Consequently for the 383 farms most of the feeds grown were fed. Crops sold amounted to only 3.6 percent of the value of crops grown. For the 383 farms the value of crops grown and feed was about equal to the cost of purchased feed fed. Total feed fed per cow was \$1,096 with \$546 grown and \$550 purchased (Table 20).

Table 21. Total Value and Cost of Feeds Fed  
By Acres of Grain Corn Per Cow  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Value Crops Grown & Fed	Cost of Purchased Feed	Total Value & Cost of Feeds Fed	Percent of Feed Fed Grown
None	\$26,494	\$37,225	\$64,219	41%
.1 to .3	34,044	40,326	74,370	46
.4 to .6	48,757	44,709	93,466	52
.7 to .9	55,658	41,782	97,440	59
1.0 to 1.2	58,586	33,878	92,464	63
1.3 or more	62,884	33,256	96,140	65
All Farms	\$38,782	\$39,037	\$77,819	50%

The more acres of grain corn grown per cow the larger the percent of total feed costs were supplied by crops grown. This is what one would expect. The percent home grown feeds were of the total ranged from 41 to 65 percent with an average of 50 percent for all 383 farms (Table 21).

Table 22. Feed Costs Per Cow By Acres Grain Corn Per Cow  
383 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Number of Cows	% Heifers are of Cows	Feed Cost Per Cow		Total Feed Costs	
			Home Grown	Total	Per Cwt. Milk	As % of Milk Rec.
None	62	74%	\$427	\$1,036	\$7.23	57%
.1 to .3	68	79	501	1,094	7.35	57
.4 to .6	85	78	574	1,100	7.42	58
.7 to .9	87	83	640	1,120	7.23	57
1.0 to 1.2	80	82	732	1,156	7.95	61
1.3 or more	78	79	806	1,233	7.98	63
All Farms	71	77	542	1,092	7.38	58%

The farms with more acres of grain corn per cow had a higher percentage of the feed cost from home grown feed and also somewhat higher total feed costs per cow (Table 22). This may be a reflection of the relatively high value of home grown corn for 1980. The total feed cost per hundredweight of milk was highest for the farms with 1.0 or more acres of grain corn per cow. The percent that total feed cost was of the milk receipts was the same for all groups except those with 1.0 or more acres of grain corn per cow. This suggests that it is important to have a reasonable balance between acres of corn grown for grain and number of cows.

### 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 dairyfarmers. In general, the more concentrates fed the more milk produced and sold per cow (Table 23). Pounds of milk sold per pound of concentrate fed decreased from 3.8 for the group of low concentrate feeders to 1.7 for the high group.

Table 23. Pounds of Concentrates Fed Per Cow and Production  
383 New York Dairy Farms, 1980

Pounds of Concentrates Fed Per Cow	Farms		Pounds Per Cow			Pounds Milk Sold/Pound of Conc.
	Number	Percent	Conc.	Milk		
				Produced	Sold	
4,000 or less	21	5%	3,300	13,398	12,500	3.8
4,001 to 5,000	80	21	4,500	14,401	13,600	3.0
5,001 to 6,000	129	32	5,500	15,788	14,800	2.7
6,001 to 7,000	92	24	6,400	16,517	15,200	2.4
7,001 to 8,000	36	9	7,400	17,170	15,800	2.1
8,001 and over	30	8	9,000	17,236	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 24). However, the highest net cash farm income per cow was for the 7,001 to 8,000 pounds of concentrates group. In general, feeding more concentrates paid.

Table 24. Pounds of Concentrates Fed Per Cow and Income  
383 New York Dairy farms, 1980

Pounds of Concentrates Fed Per Cow	Number of Cows	Total Farm Exp./Cow	Net Cash Farm Income Per		Labor & Management Income/Oper.
			Farm	Cow	
4,000 or less	68	\$2,013	\$23,401	\$344	\$-1,859
4,001 to 5,000	65	2,095	30,328	467	39
5,001 to 6,000	66	2,245	31,956	484	1,078
6,001 to 7,000	72	2,319	35,364	491	275
7,001 to 8,000	82	2,427	43,655	532	640
8,001 and over	96	2,391	50,032	521	3,503

The ratio of milk prices to feed prices is a factor affecting levels of concentrate feeding<sup>1</sup>. From 1974 to 1980 the milk-feed price ratio increased from 1.21 to 1.54 in 1978 and then declined some in 1979 and 1980. The pounds of concentrates fed per cow in the dairy practices studies increased from 4,800 to 6,200 pounds in 1979 and then decreased to 5,900 in 1980 (Table 25). It appears that dairyfarmers do respond to changes in the milk-feed price ratio.

Table 25. Milk-Feed Price Ratios and Concentrates Fed Per Cow  
New York Dairy Farms, 1974-1980

Year	Average		Milk-Feed Price Ratio	Pounds Concentrates** Fed Per Cow
	Milk Price*	Cost 16% Ration*		
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
1980	12.64	8.98	1.41	5,900

\* Source: New York Agricultural Statistics 1980, New York 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 except at the lowest level. Farms feeding more pounds of concentrates per cow in general had fewer days dry, larger cows, lower somatic cell counts, and a higher percent of cows leaving the herd (Table 26). In brief, the operators who were feeding more concentrates per cow were using better dairy management practices.

Table 26. Pounds of Concentrates Fed Per Cow and  
Dairy Management Practices  
383 New York Dairy Farms, 1980

Pounds of Concentrates Fed Per Cow	Percent Net Energy From Conc.	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Body Weight All Cows	Somatic Cell Count
4,000 or less	34%	42%	61	26%	1,210	367,000
4,001 to 5,000	42	32	64	23	1,230	383,000
5,001 to 6,000	47	34	61	26	1,260	317,000
6,001 to 7,000	51	31	60	27	1,280	307,000
7,001 to 8,000	55	32	58	27	1,270	305,000
8,001 and over	61	32	59	29	1,290	368,000

<sup>1</sup>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, net cash farm income, 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 27.                      Percent Net Energy From Concentrates and  
Related Business Factors  
383 New York Dairy Farms, 1980

Percent Net Energy from Concentrates	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
Under 30	9%	74	14,700	\$37,189	\$- 608
30 to 34	2	73	12,500	23,627	-3,350
35 to 39	8	68	13,700	30,244	1,613
40 to 44	17	68	14,200	33,252	2,281
45 to 49	26	61	14,800	31,300	606
50 to 54	21	74	14,900	32,461	-1,539
55 to 59	10	85	15,400	44,768	4,176
60 and over	7	92	15,100	45,976	1,598

Percent net energy from concentrates appears to be related to pounds of milk sold per cow, and farms with a higher percent net energy from concentrates tended to have higher net cash farm income and labor and management incomes per operator (Table 27). Farms with higher percent net energy from concentrates in general were using better dairy management practices (Table 28).

Table 28.                      Percent Net Energy From Concentrates and  
Dairy Management Practices  
383 New York Dairy Farms, 1980

Percent Net Energy from Concentrates	Pounds Conc. Fed/Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 30	5,200	41%	59	25%	309,000
30 to 34	3,500	41	65	28	383,000
35 to 39	4,300	36	61	23	426,000
40 to 44	5,000	34	63	25	333,000
45 to 49	5,600	33	62	26	301,000
50 to 54	6,400	32	60	26	301,000
55 to 59	7,200	31	59	26	350,000
60 and over	8,500	29	59	30	454,000

Table 29. Percent Net Energy From Succulents and Related Business Factors  
383 New York Dairy Farms, 1980

Percent Net Energy From Succulents	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
0	1%	38	14,500	\$18,018	\$ 820
1 to 4	1	36	11,800	16,943	51
5 to 9	1	51	12,700	12,753	-5,229
10 to 19	9	44	14,500	21,290	- 552
20 to 29	27	61	14,800	32,313	1,689
30 to 39	34	72	14,700	33,729	- 389
40 to 49	20	88	14,600	41,255	1,273
50 and over	7	100	14,600	44,655	6,631

Greater use of silages has been recommended for a number of years. Hay crops put up as silage often means better quality roughage than if made as dry hay. Corn silage production has also been increasing. For the 383 farms in the 1980 study, succulents (silage) accounted for 33 percent of the net energy. Three percent of the farms reported less than 10 percent of the net energy from succulents while 7 percent reported over 50 percent (Table 29).

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. Net cash farm incomes were higher for the farms using more succulents (Table 29).

Table 30. Percent Net Energy From Succulents and Dairy Management Practices  
383 New York Dairy Farms, 1980

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	47%	66	27	477,000
1 to 4	5,000	50	82	22	280,000
5 to 9	5,500	48	63	21	330,000
10 to 19	6,000	49	63	25	324,000
20 to 29	6,000	50	63	25	322,000
30 to 39	6,100	49	60	25	328,000
40 to 49	5,800	47	60	28	288,000
50 and over	4,700	40	60	28	440,000

Farms with a higher percent of net energy from succulents fed fewer pounds of concentrates per cow and had a smaller percent of net energy from concentrates. The higher net energy from succulent farms had fewer days dry which is an indication of good herd practices. The somatic cell count was variable (Table 30).

Table 31. Percent Net Energy From Hay and  
Related Business Factors  
383 New York Dairy Farms, 1980

Percent Net Energy From Hay	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
0	9%	124	14,600	\$59,540	\$5,266
1 to 4	12	88	14,900	45,956	2,354
5 to 9	20	76	14,900	35,347	- 311
10 to 14	20	63	14,800	30,010	538
15 to 19	18	59	14,700	30,121	1,704
20 and over	21	52	14,100	22,562	-1,288

Nine percent of the 383 farms reported no net energy from hay. These were the larger farms with an average of 124 cows. On the other hand, 21 percent reported 20 percent or more net energy from hay and these were the smaller farms with an average of 52 cows. The farms depending more on hay had lower labor and management incomes per operator and net cash farm incomes per farm (Table 31).

Dairy management practices followed seemed to correspond with the hay feeding practices. Farms depending more on hay fed less pounds of concentrates, had more days dry and a lower culling rate (Table 32). 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 from 43 to 48 percent of the total. The farms depending more on hay also used more pasture (Table 32).

Table 32. Percent Net Energy From Hay and  
Dairy Management Practices  
383 New York Dairy Farms, 1980

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	7,100	0%	43%	2%	60	29%	362,000
1 to 4	6,300	3	40	6	60	26	348,000
5 to 9	6,200	8	38	5	60	27	320,000
10 to 14	5,600	12	35	7	61	25	385,000
15 to 19	5,700	17	29	7	62	25	278,000
20 and over	5,300	27	21	8	63	24	320,000



### 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 33. Feeding Index and Related Business Factors  
383 New York Dairy Farms, 1980

Feeding Index	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
Less than 100	24%	70	14,700	\$34,182	\$ 1,045
100 to 104	19	71	14,500	34,993	2,007
105 to 109	21	61	14,800	30,628	1,221
110 to 114	21	73	14,500	32,264	-1,202
115 to 119	5	70	15,000	31,007	-1,736
120 to 124	3	72	15,700	36,277	7,715
125 and over	7	95	14,600	45,649	3,027

With 36 percent of the farms having feeding indices of 110 or more it suggests that some dairyfarmers 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 33).

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 34).

Table 34. Feeding Index and Dairy Management Practices  
383 New York Dairy Farms, 1980

Feeding Index	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Less than 100	5,000	35%	61	27%	305,000
100 to 104	5,600	31	62	24	288,000
105 to 109	5,800	32	60	25	349,000
110 to 114	6,200	33	62	27	353,000
115 to 119	6,300	31	52	25	294,000
120 to 124	6,800	36	58	25	414,000
125 and over	8,200	32	59	26	441,000

Some adjustments were made in the computation of the feeding index in 1980. The 1980 indices are considerably lower than for the earlier years.

### 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 383 farms was 1,260 pounds. Fifty-eight percent were in the 1,210 to 1,300 pound range (Table 35).

Table 35.           Body Weight All Cows and Related Business Factors  
                          383 New York Dairy Farms, 1980

Average Body Weight All Cows	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
1,150 or less	5%	57	12,100	\$16,262	\$-4,959
1,160 to 1,200	11	57	13,500	27,898	789
1,210 to 1,250	33	66	14,600	30,298	775
1,260 to 1,300	25	82	15,000	43,555	4,421
1,310 and over	26	76	15,400	37,614	-1,889

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, the higher the net cash farm income per farm and 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 dairyfarmers with larger cows were also feeding more concentrates per cow, obtaining a higher percent of net energy from succulents, had fewer dry days, and generally a lower somatic cell count (Table 36).

Table 36.           Body Weight All Cows and Dairy Management Practices  
                          383 New York Dairy Farms, 1980

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%	62	24%	410,000
1,160 to 1,200	5,400	30	64	29	369,000
1,210 to 1,250	5,800	32	62	26	328,000
1,260 to 1,300	6,000	35	60	26	334,000
1,310 and over	6,200	34	59	24	300,000

### 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 383 farms was 1,110 pounds. Twenty-nine percent of the farms had average body weights at first calving of 1,150 pounds or more (Table 37).

Table 37. Body Weight at First Calving and Related Business Factors  
383 New York Dairy Farms, 1980

Body Weight at First Calving	Percent of Farms	Number of Cows	Age at First Calving	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
1,020 or less	11%	61	27	13,400	\$23,975	\$-1,849
1,030 to 1,040	6	61	26	14,000	30,601	3,193
1,500 to 1,060	7	68	28	14,400	33,819	2,098
1,070 to 1,080	8	63	28	14,000	27,671	-1,783
1,090 to 1,100	14	81	28	14,900	42,020	2,453
1,110 to 1,120	13	78	28	14,900	38,753	3,811
1,130 to 1,140	12	70	28	15,200	35,265	-2,589
1,150 and over	29	73	28	15,100	35,414	641

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 somewhat better incomes (Table 37). 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 38). This phenomena likely illustrates the interrelatedness of all management practices through the ability or skill of the manager.

Table 38. Body Weight at First Calving and Dairy Management Practices  
383 New York Dairy Farms, 1980

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	5,300	29%	63	25%	448,000
1,030 to 1,040	5,400	26	63	23	258,000
1,050 to 1,060	5,800	33	63	25	432,000
1,070 to 1,080	5,500	30	65	27	338,000
1,090 to 1,100	6,200	33	59	27	292,000
1,110 to 1,120	5,900	36	59	27	343,000
1,130 to 1,140	6,000	36	60	26	281,000
1,150 and over	6,000	34	61	25	306,000

### 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 383 farms in 1980 was 28 months. There was sizable range among the farms. Thirty-four percent, or one-third, had average age at first calving or 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, six percent reported average age at first calving of 33 months or more which is approaching three years of age (Table 39).

Table 39. Age at First Calving and Related Business Factors  
383 New York Dairy Farms, 1980

Age at First Calving	Percent of Farms	Number of Cows	Body Weight at First Calving	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
Under 27	34%	66	1,020	14,800	\$33,083	\$ 1,802
27 to 28	33	81	1,110	14,900	38,674	1,201
29 to 30	19	70	1,170	14,700	32,806	-1,242
31 to 32	8	64	1,110	14,100	30,959	3,520
33 and over	6	64	1,120	13,200	28,880	-4,835

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 net cash income per farm averaged 27 to 28 months at first calving.

Dairy management practices appeared to be related to the age at first calving (Table 40). 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 40. Age at First Calving and Dairy Management Practices  
383 New York Dairy Farms, 1980

Age at First Calving	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 27	6,000	31%	61	26%	304,000
27 to 28	5,900	35	60	25	348,000
29 to 30	6,000	34	61	27	338,000
31 to 32	5,500	30	61	26	365,000
33 and over	4,900	35	63	23	460,000

### Projected Minimum Calving Interval

The average minimum calving interval for the 383 farms in 1980 was 13.0 months. However, 16 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 months intervals but this is difficult to achieve.

Table 41. Projected Minimum Calving Interval and  
Related Business Factors  
383 New York Dairy Farms, 1980

Projected Minimum Calving Interval (mo.)	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
Less than 12.5	16%	63	14,500	\$35,229	\$ 3,119
12.5 to 12.9	38	69	15,000	34,598	1,988
13.0 to 13.4	25	75	14,600	33,904	- 249
13.5 to 13.9	13	77	14,400	35,264	347
14.0 or more	8	79	14,300	33,061	-4,680

The farms with the shortest calving interval had smaller herds (average 63 versus 75 to 79) but higher labor and management incomes per operator. In general, the longer the projected minimum calving interval, the lower the pounds of milk sold per cow (Table 41). This suggests that getting the cows bred back promptly does affect production and, in turn, the income.

Projected minimum calving interval was related to the somatic cell count but did not show any relationships with the other dairy management practices (Table 42).

Table 42. Projected Minimum Calving Interval and  
Dairy Management Practices  
383 New York Dairy Farms, 1980

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	5,600	31%	63	26%	298,000
12.5 to 12.9	5,900	33	60	27	307,000
13.0 to 13.4	5,800	33	62	26	341,000
13.5 to 13.9	6,200	32	60	24	361,000
14.0 or more	5,500	38	60	25	421,000

### Breedings Per Conception

The relationship of breedings per conception to labor and management income as shown in Tables 43 and 44 is not what one might logically expect. Fewer breedings per conception did not give a higher income per operator or per farm. 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 43. Breedings Per Conception and Related business Factors  
383 New York Dairy Farms, 1980

Breedings Per Conception	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Veterinary Expenses Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
1.4 or less	17%	61	14,400	\$35	\$30,010	\$1,077
1.5 to 1.6	23	70	14,500	33	34,587	20
1.7 to 1.8	20	77	15,100	38	42,920	2,846
1.9 to 2.0	14	74	14,600	37	31,256	1,226
over 2.0	26	72	15,000	43	32,361	- 693

Seventeen percent of the farms reported an average of less than 1.5 breedings per conception in 1980. Twenty-six percent or one quarter of the farms reported an average of over 2.0. The average of all 383 farms was 1.8 breedings per conception. The veterinary expenses per cow increased as the number of breedings increased with the highest of \$43 for the group with more than 2.0 breedings per conception (Table 43).

Table 44. Breedings Per Conception and Dairy Management Practices  
383 New York Dairy Farms, 1980

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	5,500	30%	62	26%	347,000
1.5 to 1.6	5,900	31	62	25	317,000
1.7 to 1.8	5,900	35	60	25	290,000
1.9 to 2.0	5,800	33	62	25	324,000
over 2.0	6,100	34	59	27	381,000

Breedings per conception showed no relationship to the dairy management practices (Table 44).

### 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, net cash farm income, and labor and management income per operator increase with fewer days dry.

Table 45. Days Dry and Related Business Factors  
383 New York Dairy Farms, 1980

Average Days Dry	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
50 or less	10%	79	15,600	\$42,145	\$1,084
51 to 55	16	76	15,000	36,740	1,132
56 to 60	23	72	14,900	37,679	2,120
61 to 65	20	74	14,800	34,575	- 500
66 to 70	17	66	14,400	31,796	668
over 70	14	59	13,700	23,753	- 493

Ten percent of the farms reported an average of 50 or less days dry (Table 45). Forty-nine percent or about one-half of the farms reported 60 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 46).

Table 46. Days Dry and Dairy Management Practices  
383 New York Dairy Farms, 1980

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	34%	51	25%	290,000
51 to 55	6,100	36	52	26	372,000
56 to 60	6,000	33	53	28	363,000
61 to 65	5,700	35	53	26	293,000
66 to 70	5,900	30	53	25	306,000
over 70	5,400	29	55	24	326,000

The 1980 data in this study substantiates earlier research that has shown the fewer number of days dry the higher the production per cow. Farms in this study with an average of 56 to 60 days dry had the best labor and management incomes per operator (Table 46). 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 net cash farm income, and labor and management income per operator (Table 47).

Table 47. Percent Days in Milk and Related Business Factors  
383 New York Dairy Farms, 1980

Percent Days in Milk	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
80 or less	3%	48	12,000	\$ 9,425	-\$2,820
81 to 83	14	64	14,200	27,070	729
84 to 86	39	71	14,500	34,771	154
87 to 89	37	76	15,100	38,888	1,544
90 and over	7	70	15,400	34,181	1,978

Seventy-six 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 383 farms in 1980 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 decrease as the percent of days in milk increased (Table 48).

Table 48. Percent Days in Milk and Dairy Management Practices  
383 New York Dairy Farms, 1980

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	4,800	27%	83	23%	227,000
81 to 83	5,500	28	72	22	344,000
84 to 86	5,800	33	63	26	344,000
87 to 89	6,100	35	56	27	327,000
90 and over	6,000	34	49	27	319,000

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 1980 for the 383 farms, the average percent leaving the herd was 26 which was down from the 28 percent in 1979 and 30 percent for 1978.

Table 49.      Percent Leaving the Herd and Related Business Factors  
383 New York Dairy Farms, 1980

Percent Leaving Herd	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
Under 20	21%	69	14,300	\$30,179	-\$ 652
20 to 24	22	72	15,000	38,681	5,070
25 to 29	27	70	14,900	33,219	- 89
30 to 34	17	76	14,600	35,422	502
35 and over	13	69	14,900	35,878	- 1,549

The "best" culling rate is not obvious from the data in Tables 49 and 50. It is likely that there is a "too high" and a "too low" level for culling, with the optimum incomewise in the range of 20 to 25 percent. This would mean keeping the cows an average of about 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 dairyfarmer must cull according to the conditions in the herd. Providing replacements is costly but when meat and milk prices are favorable this cost may be a minor consideration.

Table 50.      Percent Leaving Herd and Dairy Management Practices  
383 New York Dairy Farms, 1980

Percent Leaving Herd	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age All Cows	Somatic Cell Count
Under 20	5,500	30%	63	55	328,000
20 to 24	6,100	32	60	55	356,000
25 to 29	5,700	33	62	53	292,000
30 to 34	6,000	36	58	50	353,000
35 and over	6,200	33	61	49	367,000

### 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 383 herds studied for 1980. Similar situations existed in the earlier years studied.

Table 51.           Average Age All Cows and Related Business Factors  
                          383 New York Dairy Farms, 1980

Average Age All Cows	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
Under 45	8%	74	15,200	\$34,658	\$-4,015
45 to 49	20	78	15,000	39,253	3,259
50 to 54	35	71	14,600	30,733	-2,684
55 to 59	24	66	15,100	35,900	6,216
60 and over	13	70	13,300	34,268	-1,074

Sixty-three percent of the farms had a herd average age of less than 55 months. However, the farms in the 55 to 59 months average age group had the best labor and management income per operator (Table 51). The pounds of milk sold per cow was the best for the herds with the lowest average age of all cows. The farms with an average age of cows in the herd of over 60 months had the lowest rate of production.

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 52).

Table 52.           Average Age All Cows and Dairy Management Practices  
                          383 New York Dairy Farms, 1980

Average Age All Cows	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 45	6,100	35%	59	30%	241,000
45 to 49	6,100	36	59	29	344,000
50 to 54	6,000	32	61	26	321,000
55 to 59	5,800	32	61	23	362,000
60 and over	5,000	31	65	22	361,000

### Analysis of 145 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 dairyfarmers 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 dairyfarmers 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 dairyfarmers at a rather rapid rate.

Table 53. Somatic Cell Count Cooperators by Size of Herd  
383 New York Dairy Farms, 1980

Number of Cows	Number of Farms	Number of Somatic Cell Cooperators	Percent Using Somatic Cell
Under 40	50	21	42%
40 to 54	100	36	36
55 to 69	94	33	35
70 to 84	52	18	35
85 to 99	25	14	56
100 to 149	40	14	35
150 and over	22	9	41
All farms	383	145	38

Of the 383 farms included in the dairy management practices study 145, or 38 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 53. Herds with 85 to 99 cows had the highest percent of farms (56%) with Somatic Cell Count information.

Table 54. Somatic Cell Count and Labor and Management Incomes  
145 New York Dairy Farms, 1980

Average Somatic Cell Count for Herd	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Oper. Cow	
Under 200,000	17%	64	15,100	\$35,969	\$-1,481	\$-27
200,000 to 299,999	31	74	15,600	32,292	-2,893	-48
300,000 to 399,999	26	73	14,600	33,079	2,881	51
400,000 to 499,999	9	61	14,600	30,858	2,780	58
500,000 and over	17	80	13,800	27,694	3,458	51

The average somatic cell count for the herd was the factor available for use here. The average count for the 145 herds was 333,000. Seventeen percent of the herds had average counts of under 200,000 while 17 percent were 500,000 or more (Table 54). Fifty-seven 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 did not appear to be related to the average somatic cell count for the herd but the net cash income did (Table 55).

Table 55. Somatic Cell Count and Related Business Factors  
145 New York Dairy Farms, 1980

Average Somatic Cell Count for Herd	Veterinary Expense Per Cow	Total Farm Expense Per Cow	Pounds Milk Sold Per Worker Oper.	Age of Oper.	Educa- tion of Oper.	Percent of Freestall Barns
Under 200,000	\$49	\$2,446	387,000	35	12	28%
200,000 to 299,999	44	2,453	408,000	38	12	29
300,000 to 399,999	34	2,132	401,000	38	12	34
400,000 to 499,999	26	2,202	346,000	42	12	38
500,000 and over	34	2,125	402,000	38	12	42

Several farm business factors were observed for the five groups based on somatic cell count with the results shown in Table 55. 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. The percent of farms with freestall barns was the highest for the high count group of farms. This suggests that type of barn may have some effect on mastitis problems.

The dairy management practices in general were not associated with the different levels of somatic cell counts. The farms with a lower count did have younger cows, and a higher proportion of pipeline milking systems (Table 56). The pounds of concentrates fed per cow, the percent net energy from succulents, and days dry did not appear to be related to the somatic cell counts.

Table 56. Somatic Cell Count and Dairy Management Practices  
145 New York Dairy Farms, 1980

Average Somatic Cell Count for Herd	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age All Cows	Percent With Pipeline Milkers
Under 200,000	5,700	33%	61	51	56%
200,000 to 299,999	6,300	31	60	51	56
300,000 to 399,999	5,500	34	60	54	47
400,000 to 499,999	5,700	31	62	54	46
500,000 and over	5,900	32	58	55	50

### Other Factors Studied

Management information of various kinds was available for each of the 383 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 have two or more operators who often are 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 383 farms, 309 were individual operators and 74 were partnerships or corporations. Of the 309 individual operators, 26 did not report the years of education so only 283 farms are included in the sorts by years of education.

Table 57. Age of Individual Operator and Related Characteristics  
309 New York Dairy Farms, 1980

Age of Individual Operator	Percent of Farms	Average Age of Operator	Years of Education	Total Farm Assets	Farm Net Worth	Debt Per Cow
Under 30	12%	23	11	\$348,000	\$170,000	\$3,020
30 to 34	14	32	14	377,000	194,000	2,908
35 to 39	23	37	13	396,000	225,000	2,633
40 to 44	16	41	13	446,000	272,000	2,140
45 to 49	14	45	11	455,000	310,000	1,878
50 and over	21	53	10	449,000	339,000	1,456

Twelve percent of the operators in this study were under 30 years of age. Forty-nine percent of the individual operators were under 40 years of age. The average age of all operators on the 383 farms was 42 years. For the partnerships and corporations the average age of the second operator was 33 and on the 17 farms with three operators the average age of the third operator was 24. This suggests that some young persons are getting started in dairy farming in New York State.

For the 309 individual operators the younger operators had more years of education. The average for those 30 to 34 was 14 years or the equivalent of a college associate degree whereas those 50 and over had an average of 10 years of education. 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 383 farms in 1980 averaged \$419,000 or about \$5,900 per cow. The average debt per cow was \$2,170. The average farm net worth was \$279,000. The assets and net worth for the individual operators was somewhat less than that for all farms including partnerships and corporations.

Table 58. Age of Individual Operator and Related Business Factors  
309 New York Dairy Farms, 1980

Age of Individual Operator	Number of Cows	Lbs. Milk Sold		Total Farm Exp./Cow	Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
		Per Cow	Per Worker			
Under 30	57	14,400	367,000	\$2,252	\$22,575	\$3,940
30 to 34	61	14,400	423,000	2,215	28,662	2,510
35 to 39	62	14,600	403,000	2,267	25,626	-1,569
40 to 44	79	14,500	446,000	2,195	34,198	548
45 to 49	75	14,900	407,000	2,299	37,269	- 119
50 and over	72	14,800	366,000	2,332	34,878	-6,206

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 "starting-up" stage of the business. The operators under 30 had average net worths of \$170,000 or a 49 percent equity (Table 57). 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 increased with age of the operators up to 50 (Tables 57 and 58). The farm net worth, however, increased steadily by the different age groups with those over 50 having the largest and an average equity of 76 percent. The debt per cow decreased from an average of \$3,020 per cow for the group under 30 to \$1,456 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 under 30 followed by those 30 to 34. The 45 to 49 group had the highest pounds of milk sold per cow (Table 58). The three groups under 40 all had better labor incomes than those over 40 but their net cash farm incomes were lower which likely was due to higher interest payments on debts.

Table 59. Age of Individual Operator and Dairy Management Practices  
309 New York Dairy Farms, 1980

Age of Individual Operator	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age First Calving	Percent Leaving Herd
Under 30	5,500	28%	64	27	25%
30 to 34	5,600	35	62	27	29
35 to 39	5,700	33	62	27	26
40 to 44	6,100	36	61	28	26
45 to 49	6,000	32	59	28	25
50 and over	5,900	31	61	28	25

The dairy management practices appear to be somewhat better on the farms with operators 40 to 49 years of age. This may reflect the time required to get practices organized and in place. It takes time to "put together" a good business.

Table 60. Education of Individual Operator and  
Related Business Factors  
283 New York Dairy Farms, 1980

Years of Education	Percent of Farms	Age of Oper.	Number of Cows	Lbs. Milk Sold Per Cow	Lbs. Milk Sold Per Worker	Net Cash Farm Income Per Farm	Labor & Mgt. Income Per Operator
Under 12	8%	46	60	15,500	400,000	\$32,733	\$-3,128
12	50	41	62	14,400	385,000	34,054	- 876
13 to 14	19	39	73	14,200	430,000	35,134	-1,086
15 and over	23	37	78	14,700	430,000	35,888	1,604

One half of the 283 individual operators reported 12 years of education. Only eight 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 46 compared with 41 for those with 12 years (Table 60).

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 net cash farm income and average labor and management income per operator of the four groups. For the dairy practices the percent net energy from succulents seemed to improve with education while the others did not (Table 61).

Table 61. Education of Individual Operator and  
Dairy Management Practices  
283 New York Dairy Farms, 1980

Years of Education	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age First Calving	Percent Leaving Herd
Under 12	6,500	26%	64	28	26%
12	5,700	31	61	28	25
13 to 14	5,700	34	61	28	26
15 and over	6,000	36	62	27	29

For more details on age and education, see Appendix Tables 81 and 82.

### 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 383 farms were grouped according to these two important features and the practices were observed.

Table 62. Type of Barn and Related Business Factors  
383 New York Dairy Farms, 1980

Type of Barn	Percent of Farms	Number of Cows	Lbs. Milk Sold		Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
			Per Cow	Per Worker		
Freestall	32%	104	14,600	459,000	\$48,077	\$3,282
Stanchion	64	56	14,800	369,000	28,077	- 706
Other	4	49	14,600	359,000	26,127	1,567

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 62. Pounds of milk sold per worker was higher in the freestall systems. The net cash farm income per farm and the labor and management income per operator were considerably better for 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, but a somewhat higher somatic cell count and higher percentage leaving the herd (Table 63).

Table 63. Type of Barn and Dairy Management Practices  
383 New York Dairy Farms, 1980

Type of Barn	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Somatic Cell Count	Percent Leaving Herd
Freestall	6,100	39%	58	358,000	27%
Stanchion	5,700	30	62	325,000	25
Other	5,800	27	67	260,000	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 1980 data appear to support this. Labor and management incomes per operator (managerial ability) for the freestall operations were considerably higher than for the stanchion barn operations (\$3,582 versus \$-706). The freestall operators used good business management procedures as shown by larger herds, higher production per cow, and better labor efficiency (Table 62) and recommended dairy practices as shown by feeding more concentrates per cow, obtaining more net energy from silages, having fewer days dry, and culling at a moderate rate (Table 63).



In the farm business records the operator designates the kind of milking system used. Definitions of systems may sometimes be a problem. A 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 64. Type of Milking System and Related Business Factors  
383 New York Dairy Farms, 1980

Type of Milking System	Percent of Farms	Number of Cows	Lbs. Milk Sold		Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
			Per Cow	Per Worker		
Bucket & Carry	1%	43	15,100	338,000	\$29,109	\$3,800
Dumping Station	19	46	13,500	313,000	19,359	-1,078
Pipeline	51	60	15,200	406,000	31,719	36
Herringbone Parlor	25	113	14,500	481,000	50,458	2,906
Other Parlor	4	77	15,100	424,000	41,761	8,348

Herringbone parlor milking systems were used with the largest herds (average 113 cows) while the bucket and carry and dumping station, or transfer systems, were used by the smallest herds (average 43 and 46 cows) as shown in Table 64. Pounds of milk sold per cow was highest for the pipeline systems but milk sold per worker was considerably higher in the parlor systems. The herringbone parlor system had higher net cash farm incomes and labor and management income per operator than the dumping stations or pipeline systems.

Dairy management practices seemed to vary with the milking systems. Of the three primary systems, the herringbone parlors fed the most concentrates per cow, obtained the highest proportion of net energy from succulents and had the lowest days dry, but had the highest culling rate. The somatic cell count was highest for the parlor systems (Table 65).

Table 65. Type of Milking System and Dairy Management Practices  
383 New York Dairy Farms, 1980

Type of Milking System	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Somatic Cell Count	Percent Leaving Herd
Bucket & Carry	5,900	25%	60	220,000	31%
Dumping Station	5,300	26	66	324,000	24
Pipeline	5,900	32	60	328,000	26
Herringbone Parlor	6,100	39	58	349,000	27
Other Parlor	6,700	37	60	364,000	23

### 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 calf feeding, the farm family and the workers, milk loss from spillage, and milk unfit for use.

Table 66. Comparison of Milk Produced and Milk Sold Per Cow By  
Herd Size  
383 New York Dairy Farms, 1980

Number of Cows	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 40	15,172	14,200	972	6.4%
40 to 54	15,692	14,700	992	6.3
55 to 69	15,990	14,900	1,090	6.8
70 to 84	16,286	15,000	1,286	7.9
85 to 99	15,442	14,100	1,342	8.7
100 to 149	15,665	14,700	965	6.2
150 and over	16,138	14,900	1,238	7.7

Differences between the milk produced and milk sold in 1980 were computed by herd size and by rates of production and the results are shown in Tables 66 and 67. Differences by herd size ranged from 965 to 1,286 pounds per cow while by rates of production the range was from 833 to 1,335. There was no apparent direct relationship between either size or rates of production and the differences. The average difference for all 383 farms was 6.2 percent of the milk produced as shown by the DHI records.

Table 67. Comparison of Milk Produced and Milk Sold Per Cow By  
Rates of Production  
383 New York Dairy Farms, 1980

Milk Sold Per Cow	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 12,000	12,186	10,900	1,286	10.6%
12,000 to 12,999	13,566	12,300	1,266	9.3
13,000 to 13,999	14,439	13,400	1,039	7.2
14,000 to 14,999	15,835	14,500	1,335	8.4
15,000 to 15,999	16,499	15,500	999	6.1
16,000 to 16,999	17,355	16,400	955	5.5
17,000 and over	18,633	17,800	833	4.5

Table 68. Difference in Milk Produced and Sold Per Cow by Years  
New York Dairy Farms, 1974-1980

Year	Pounds Milk Per Cow			Difference as Percent
	DHI	FBR	Difference	
1974	14,197	13,438	759	5.3%
1975	14,224	13,457	767	5.4
1976	14,515	13,694	821	5.7
1977	14,807	14,083	724	4.9
1978	15,227	14,401	826	5.4
1979	15,602	14,743	859	5.5
1980	15,783	14,800	983	6.2

Pounds of milk per cow for both the DHI and the FBR increased each year from 1974 through 1980. The rate of increase was about the same. The difference between the pounds produced per cow and the pounds sold per cow ranged from 724 in 1977 to 983 in 1980. There seemed to be a bimodal upward trend in the differences.

Table 69. Differences in Milk Produced and Sold Per Cow By  
Registered versus Grade Herds  
383 New York Dairy Farms, 1980

Kind of Herd	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Registered	127	16,254	15,200	1,054	6.5%
Grade	256	15,549	14,400	1,149	7.4

The difference between pounds produced per cow and pounds sold was less for the registered than for the grade herds (Table 69).

Table 70. Differences in Milk Produced and Sold Per Cow By  
Labor and Management Income Quintiles  
383 New York Dairy Farms, 1980

Managerial Ability (Income Quintile)	Number Cows	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
1 (low)	77	15,678	14,300	1,378	8.8%
2	60	15,171	14,200	971	6.4
3 (medium)	60	15,626	14,700	926	5.9
4	69	15,914	14,900	1,014	6.4
5 (high)	91	16,538	15,200	1,338	8.1

The operators with the most managerial ability (high quintile) produced and sold the most milk per cow and had the largest herds. With the exception of the two low quintile groups, there was some indication that the difference between the pounds produced and sold per cow increased slightly as the managerial capacity increased.

Table 71. Differences in Milk Produced and Sold Per Cow By  
Type of Barn  
383 New York Dairy Farms, 1980

Type of Barn	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Freestall	124	15,610	14,600	1,010	6.5%
Stanchion	245	15,878	14,800	1,078	6.8
Other	14	15,651	14,600	1,051	6.7

The difference between the pounds produced and sold per cow was about 70 pounds less for the freestall barns than the stanchion barns. The percent that the difference was of the pounds produced was 6.5 percent for the freestall barns and 6.8 percent for the stanchion barns. This suggests that the freestall barns might be a factor affecting the amounts produced and the difference between amount produced and sold.

Table 72. Differences in Milk Produced and Sold Per Cow By  
Somatic Cell Count  
145 New York Dairy Farms, 1980

Somatic Cell Count	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Under 200,000	25	16,222	15,100	1,122	6.9%
200,000 to 299,999	45	16,428	15,600	828	5.0
300,000 to 399,999	38	15,541	14,600	941	6.1
400,000 to 499,999	13	15,403	14,600	803	5.2
500,000 and over	24	14,812	13,800	1,012	6.8

There was no relationship between somatic cell count and the difference between the pounds of milk produced and sold per cow on these 145 farms. The pounds per cow did tend to decrease per cow as the somatic cell count went up.

### 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 73. Income Over Feed Cost and Farm Business Income  
383 New York Dairy Farms, 1980

Income Over Feed Cost	Percent of Farms	Price Received For Milk	Net Farm Cash Income	Labor & Mgmt. Income	
				Per Oper.	Per Cow
Less than \$900	7%	\$12.82	\$14,125	\$-4,231	\$-86
900 to 999	7	12.60	20,964	-4,752	-99
1,000 to 1,099	10	12.82	28,829	-2,410	-40
1,100 to 1,199	13	12.89	31,406	- 126	- 2
1,200 to 1,299	16	12.72	34,480	1,447	25
1,300 to 1,399	18	12.75	39,287	4,697	82
1,400 to 1,499	14	12.65	43,752	3,266	51
1,500 and over	15	12.96	42,233	831	15

A general relationship appears to exist between income over feed cost and the farm business measures of income but with numerous variations existing (Table 73). This is undoubtedly due to the great differences in the various farm expenses other than feed.

Table 74. Differences Between Income Over Feed Cost and  
Business Income Measures  
383 New York Dairy Farms, 1980

Income Over Feed Cost	Average Income Over Feed Cost	Net Farm Cash Inc. Per Cow	Difference	Labor and Mgmt. Income	
				Per Cow	Difference
Less than \$900	\$ 824	\$277	\$ 547	\$-86	\$ 910
900 to 999	951	328	623	-99	1,050
1,000 to 1,099	1,060	400	660	-40	1,100
1,100 to 1,199	1,153	449	704	- 2	1,155
1,200 to 1,299	1,254	460	794	25	1,229
1,300 to 1,399	1,350	546	804	82	1,268
1,400 to 1,499	1,444	554	890	51	1,393
1,500 and over	1,641	595	1,046	15	1,626

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 nonfeed costs and the return for the operator's labor and management. The differences were directly related to amount of income over feed cost (Table 74).

Table 75. Income Over Feed Cost and Related Business Factors  
383 New York Dairy Farms, 1980

Income Over Feed Cost	Number of Cows	Milk Sales Per Cow	Feed & Crop Expenses Per Cow	Pounds of Milk Sold	
				Per Cow	Per Worker
Less than \$900	51	\$1,502	\$561	11,700	299,000
900 to 999	64	1,607	614	12,700	350,000
1,000 to 1,099	72	1,774	692	13,800	399,000
1,100 to 1,199	70	1,783	657	13,800	400,000
1,200 to 1,299	75	1,875	709	14,700	414,000
1,300 to 1,399	72	1,947	691	15,200	426,000
1,400 to 1,499	79	2,012	674	15,900	430,000
15,000 and over	71	2,129	687	16,400	424,000

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 75). These three items would directly affect the income and the feed costs components of the DHI measure "Income Over Feed Cost".

There was a direct relationship between pounds of milk sold per cow and per worker and the amount of income over feed cost. This again is a reflection of the method of computing "Income Over Feed Costs" which is based on the production per cow times price.

Table 76. Income Over Feed Cost and Dairy Management Practices  
383 New York Dairy Farms, 1980

Income Over Feed Cost	Pounds Concentrates Fed Per Cow	Percent Net Energy From Hay	Percent Days in Milk	Age Frist Calving	Age All Cows
Less than \$900	4,900	23%	84%	28	56
900 to 999	5,400	14	84	29	56
1,000 to 1,099	5,600	14	86	27	52
1,100 to 1,199	5,800	12	85	28	54
1,200 to 1,299	5,700	13	86	28	52
1,300 to 1,399	6,100	11	87	28	54
1,400 to 1,499	6,100	11	86	27	50
1,500 and over	6,300	11	87	27	52

Income over feed cost appeared to be associated with the use of recommended dairy practices as shown in Table 76. 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 necessarily 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 was merged with farm business summary data for 383 farms for the year 1980. Cross tabulation analyses were made for the various factors and the results included in this report. These analyses provide additional dimensions for business summaries and show how these dairy management practices paid on commercial dairy farms in 1980.

Pounds of milk sold per cow, net cash farm income per farm, 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, while the second and third measure financial returns. Effects of the dairy practices were more apparent on pounds of milk sold per cow than on income measures. This is logical since the first effect of a dairy practice is on milk production of the cow, which in turn affects income. Labor income is the bottom line measure of the combined effects of all components of the business. Cost control affects not only the dairy and crop practices but also the use of machinery, labor, and capital. A practice may increase production but reduce the income if added costs exceed added returns.

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

"Somatic cell count" is a new management tool provided by DHI. For 1980, 145 of the 383 farms, or 38 percent, used the somatic cell option. In general, farms with lower cell counts had higher production and better incomes.

The relationship of age and education of the individual operators was observed. Farmers in the under 30 age bracket and those with 15 years or more of education had the highest labor and management incomes. In general, the farmers age 40 to 49 were using better practices and earned higher cash incomes.

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 383 farms this difference averaged 983 pounds per cow or 6.2 percent of the amount produced. If DHI rates of production are used for farm budgeting the figures need to be reduced by 6.2 percent to get the likely milk sold.

The measure "income over feed cost" was 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 \$1,000 indicating that it is not suited for use in cash flow budgeting.

In summary, the selected dairy management practices reported in the DHI records did have an effect on dairy farm incomes. Some practices have greater effects than others. In analyzing a dairy farm business, both the dairy practices and the business procedures should be examined.

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Table 77. AVERAGE OF SELECTED FACTORS FOR ALL FARMS IN STUDY  
New York Dairy Farms, 1976 through 1980

Factor	Average of All Farms				
	1976	1977	1978	1979	1980
Number of farms	337	363	370	337	383
% farms with DHI records	81%	84%	88%	89%	89%
% farms owner-sampler	19%	16%	12%	11%	11%
% farms freestall barns	32%	35%	32%	32%	32%
Worker equivalent	2.5	2.4	2.4	2.5	2.6
Number of cows	70	69	68	70	71
Number of heifers	54	51	49	51	55
Total crop acres	206	211	213	217	236
Total pounds milk sold	958,600	971,700	979,300	1,032,000	1,051,400
Total cash farm receipts	\$104,571	\$105,102	\$119,119	\$140,899	\$151,951
Total end inventory	\$265,000	\$283,000	\$313,000	\$385,000	\$419,000
Milk produced per cow	14,500	14,800	15,200	15,600	15,800
Milk sold per cow	13,700	14,100	14,400	14,700	14,800
Tons hay equivalent per acre	2.9	2.4	2.5	2.7	2.5
Tons corn silage per acre	13.2	14.3	14.1	13.8	14.6
Cows per worker	28	29	28	28	28
Milk sold per worker	383,000	402,000	405,000	413,000	408,000
Feed purchased per cow	\$381	\$402	\$422	\$485	\$529
% feed is of milk receipts	28%	29%	28%	28%	28%
Feeding index	120	119	120	120	106
Rate roughage feeding	2.4	2.3	2.3	2.3	2.0
Lbs. concentrates fed per cow	5,400	5,600	6,000	6,200	5,900
% net energy-concentrates	47%	48%	49%	50%	48%
% net energy-succulents	32%	32%	32%	32%	33%
% net energy-hay	12%	13%	12%	12%	13%
% net energy-pasture	9%	8%	7%	6%	6%
Projected calving interval(mo.)	12.9	12.9	12.9	13.0	13.0
Days dry	61	62	61	60	61
% days in milk	86%	86%	86%	86%	86%
Breedings per conception	1.7	1.7	1.7	1.8	1.8
% leaving herd	28%	29%	30%	28%	26%
Age at first calving (mo.)	29	29	29	28	28
Age all cows (mo.)	55	54	54	53	53
Body weight at first calving	1,070	1,080	1,100	1,100	1,100
Body weight all cows	1,240	1,240	1,250	1,260	1,260
Income over value feed	\$874	\$843	\$972	\$1,153	\$1,271
Average price rec. for milk	\$9.91	\$9.75	\$10.48	\$11.87	\$12.78
Labor & management income per operator	\$8,080	\$3,178	\$20,980	\$20,785	\$885

Table 78. SELECTED BUSINESS FACTORS BY SIZE OF LABOR AND MANAGEMENT INCOME PER OPERATOR  
383 New York Dairy Farms, 1980

Factor	Labor and Management Income Per Operator				
	1	2	3	4	5
Number of farms	77	77	77	76	76
Percent of farms	20%	20%	20%	20%	20%
Labor & mgmt. income per oper.	\$-24,024	\$-6,584	\$927	\$8,643	\$21,046
Barn Type					
Percent with freestalls	36%	19%	30%	30%	46%
Size of Business					
Worker equivalent	2.8	2.3	2.3	2.7	2.8
Total crop acres	262	198	210	233	279
Number of cows	77	60	60	69	91
Total capital	\$482,074	\$362,441	\$358,707	\$384,432	\$507,215
Rates of Production					
Pounds milk sold per cow	14,300	14,200	14,700	14,900	15,200
Tons hay crops per acre (H.E.)	2.4	2.5	2.3	2.5	2.7
Tons corn silage per acre	14.8	14.1	14.8	14.2	15.2
Labor Efficiency					
Pounds milk sold per worker	391,000	366,000	380,000	386,000	490,000
Cows per worker	27	26	26	26	32
Feeding Practices					
Feed bought per cow	\$547	\$537	\$540	\$505	\$507
Pounds concentrate fed	5,900	5,700	5,600	5,800	6,300
Feeding index	106	110	103	105	108
Rate of roughage feeding	1.9	2.1	1.9	2.0	2.0
Percent NE from concentrates	49%	46%	48%	48%	49%
Percent NE from succulents	34%	31%	32%	32%	35%
Percent NE from dry hay	13%	15%	14%	14%	10%
Breeding Practices					
Percent days in milk	86%	86%	86%	86%	86%
Proj. calving interval (mo.)	13.2	13.0	12.9	13.0	12.9
Average days dry	61	61	62	62	59
Breedings per conception	1.9	1.9	1.8	1.8	1.8
Average age at first calving	28	28	28	27	28
Average age all cows	52	54	53	53	53
Average weight first calving	1,110	1,099	1,099	1,114	1,122
Average weight all cows	1,261	1,249	1,247	1,264	1,273
Percent leaving herd	27%	25%	27%	25%	25%
Somatic cell count	321,000	342,000	326,000	317,000	357,000

Table 79.

SELECTED BUSINESS FACTORS BY POUNDS MILK SOLD PER COW  
383 New York State Dairy Farms, 1980

Factor	Pounds Milk Sold Per Cow						
	Less Than 12,000	12,000 to 13,000	13,000 to 14,000	14,000 to 15,000	15,000 to 16,000	16,000 to 17,000	More Than 17,000
Number of farms	32	36	51	97	72	50	45
Percent of farms	8%	9%	13%	25%	19%	13%	12%
Labor & mgmt. income per oper. Barn Type	\$-6,563	\$-10,189	\$-464	\$2,898	\$2,920	\$5,183	\$2,188
Percent with freestalls	31%	28%	37%	38%	26%	36%	24%
Size of Business							
Worker equivalent	2.3	2.3	2.5	2.6	2.7	2.9	2.4
Total crop acres	183	226	245	294	256	265	193
Number of cows	60	64	74	75	74	79	61
Total capital	\$308,561	\$363,159	\$403,432	\$434,427	\$443,337	\$492,302	\$406,509
Rates of Production							
Pounds milk sold per cow	10,900	12,300	13,400	14,500	15,500	16,400	17,800
Tons hay crops per acre (H.E.)	2.2	2.0	2.5	2.5	1.6	2.7	2.6
Tons corn silage per acre	13.0	14.4	13.9	15.1	14.7	15.6	14.9
Labor Efficiency							
Pounds milk sold per worker	282,000	352,000	398,000	422,000	431,000	446,000	449,000
Cows per worker	26	28	30	29	28	27	25
Feeding Practices							
Feed bought per cow	\$449	\$488	\$481	\$506	\$557	\$540	\$651
Pounds concentrate fed	4,400	5,100	5,500	5,700	6,300	6,500	6,900
Feeding index	106	106	107	106	107	107	106
Rate of roughage feeding	2.0	1.9	1.9	2.0	1.9	2.0	2.0
Percent NE from concentrates	43%	47%	48%	47%	50%	50%	51%
Percent NE from succulents	29%	30%	34%	36%	31%	34%	32%
Percent NE from dry hay	17%	17%	12%	12%	13%	11%	11%
Breeding Practices							
Percent days in milk	84%	84%	86%	86%	86%	87%	87%
Proj. calving interval (mo.)	13.3	13.1	12.9	13.0	13.0	12.9	13.0
Average days dry	66	68	61	60	61	57	57
Breedings per conception	1.8	1.8	1.8	1.8	1.9	1.7	2.0
Average age at first calving	28	29	28	28	27	27	27
Average age all cows	58	55	53	52	53	52	51
Average weight first calving	1,019	1,081	1,098	1,122	1,125	1,120	1,139
Average weight all cows	1,156	1,228	1,290	1,272	1,273	1,290	1,293
Percent leaving herd	22%	25%	25%	27%	27%	25%	27%
Somatic cell count	425,000	383,000	407,000	11,000	334,000	280,000	261,000

Table 80.

SELECTED BUSINESS FACTORS BY SIZE OF HERD  
383 New York State Dairy Farms, 1980

Factor	Number of Cows in Herd						
	Under 40	40-54	55-69	70-84	85-99	100-149	Over 150
Number of farms	50	100	94	52	25	40	22
Percent of farms	13%	26%	25%	14%	7%	10%	6%
Labor & mgmt. income per oper.	\$-1,838	\$-523	\$1,088	\$-2,441	\$2,092	\$4,831	\$5,639
Barn Type							
Percent with freestalls	1%	10%	24%	35%	64%	88%	95%
Size of Business							
Worker equivalent	1.8	2.0	2.4	3.0	3.1	3.7	5.2
Total crop acres	119	172	209	256	311	365	541
Number of cows	33	47	62	76	90	121	183
Total capital	\$210,943	\$301,268	\$384,616	\$460,248	\$480,083	\$642,924	\$1,000,482
Rates of Production							
Pounds milk sold per cow	14,200	14,700	14,900	15,000	14,100	14,700	14,900
Tons hay crops per acre (H.E.)	2.0	2.2	2.5	2.6	2.6	2.6	2.9
Tons corn silage per acre	14.0	14.1	13.9	14.0	15.3	15.2	16.2
Labor Efficiency							
Pounds milk sold per worker	270,000	346,000	384,000	381,000	414,000	486,000	529,000
Cows per worker	19	24	26	25	29	33	35
Feeding Practices							
Feed bought per cow	\$579	\$544	\$537	\$511	\$519	\$509	\$517
Pounds concentrate fed	5,600	5,600	5,900	5,800	5,700	6,500	6,700
Feeding index	107	105	106	104	105	112	110
Rate of roughage feeding	2.0	2.0	2.0	2.0	1.9	1.9	1.8
Percent NE from concentrates	47%	47%	48%	48%	47%	51%	53%
Percent NE from succulents	23%	29%	34%	35%	38%	42%	41%
Percent NE from dry hay	14%	16%	12%	13%	11%	5%	4%
Breeding Practices							
Percent days in milk	85%	86%	86%	86%	86%	87%	87%
Proj. calving interval (mo.)	12.9	13.0	12.9	13.1	13.3	13.2	13.1
Average days dry	67	62	59	61	61	58	58
Breedings per conception	1.8	1.8	1.8	1.8	1.8	1.9	1.9
Average age at first calving	27	28	28	28	29	28	27
Average age all cows	53	53	53	53	55	52	50
Average weight first calving	1,092	1,100	1,114	1,118	1,132	1,115	1,108
Average weight all cows	1,231	1,257	1,262	1,255	1,269	1,279	1,277
Percent leaving herd	24%	25%	26%	26%	26%	27%	26%
Somatic cell count	235,000	338,000	357,000	334,000	384,000	395,000	276,000

Table 81. SELECTED BUSINESS FACTORS BY AGE OF INDIVIDUAL OPERATORS\*  
309 New York Dairy Farms, 1980

Factor	Age of Individual Operators					
	Under 30	30-34	35-39	40-44	45-49	50 & Over
Number of farms	36	43	71	50	43	66
% farms with DHI records	94%	91%	89%	94%	93%	82%
% farms owner-sampler	6%	9%	11%	6%	7%	18%
% farms freestall barns	14%	19%	28%	46%	37%	35%
Worker equivalent	2.3	2.1	2.3	2.6	2.8	2.9
Number of cows	57	61	62	79	75	72
Number of heifers	43	45	48	62	58	54
Total crop acres	201	218	204	246	243	238
Total lbs. milk sold	826,000	880,000	906,000	1,151,000	1,120,000	1,069,000
Total cash farm rec.	\$120,651	\$128,330	\$129,231	\$164,967	\$163,419	\$154,321
Total end inventory	\$333,340	\$362,210	\$381,219	\$425,094	\$431,659	\$428,774
Milk produced per cow	15,545	15,565	15,600	15,650	15,943	15,995
Milk sold per cow	14,400	14,400	14,600	14,500	14,900	14,800
Tons hay equiv./acre	2.2	2.2	2.3	2.5	2.6	2.7
Tons corn silage/acre	14.7	14.5	15.1	14.0	14.7	14.3
Cows per worker	25	29	28	31	27	25
Milk sold per worker	367,000	423,000	403,000	446,000	407,000	366,000
Feeding index	105	105	106	108	107	107
Rate roughage feeding	2.0	2.0	2.0	1.9	1.9	2.0
Lbs. concentrated fed/cow	5,500	5,600	5,700	6,100	6,000	5,900
% net energy-concentrates	47%	46%	48%	49%	49%	48%
% net energy-succulents	28%	35%	33%	36%	32%	31%
% net energy-hay	17%	12%	14%	10%	13%	15%
% net energy-pasture	7%	7%	6%	5%	7%	7%
Projected calving interval (mo.)	12.9	12.8	12.9	13.2	13.0	13.2
Days dry	64	62	62	61	59	61
% days in milk	85%	85%	86%	86%	87%	86%
Breedings per conception	1.8	1.8	1.8	1.9	1.8	1.8
% leaving herd	25%	29%	26%	26%	25%	25%
Age of first calving (mo.)	27	27	27	28	28	28
Age all cows (mo.)	54	52	53	53	53	53
Body weight at first calv.	1,105	1,090	1,087	1,111	1,124	1,126
Body weight all cows	1,245	1,243	1,244	1,254	1,269	1,277
Income over value feed	\$1,230	\$1,261	\$1,256	\$1,243	\$1,334	\$1,279
Feed purchased/cow	\$521	\$501	\$543	\$576	\$479	\$548
% feed is of milk rec.	28%	27%	29%	31%	25%	29%
Ave. price received milk	\$12.76	\$12.91	\$12.65	\$12.87	\$12.84	\$12.79
Labor & mgt. inc./oper.	\$3,940	\$2,510	\$-1,569	\$548	\$-119	\$-6,206
Net cash income	\$22,575	\$28,662	\$25,626	\$34,198	\$37,269	\$34,878
Labor, mgt. & owner-ship income	\$35,164	\$42,086	\$39,961	\$50,578	\$46,141	\$47,177
Percent equity	50%	53%	58%	63%	70%	77%

\*Does not include partnerships or corporations.

Table 82. SELECTED BUSINESS FACTORS BY EDUCATION OF INDIVIDUAL OPERATORS\*  
283 New York Dairy Farms, 1980\*\*

Factor	Years of Education Completed			
	Less than 12	12	13-14	15 & Over
Number of farms	22	142	55	64
% farms with DHI records	86%	85%	93%	97%
% farms owner-sampler	14%	15%	7%	3%
% farms freestall barns	32%	21%	47%	38%
Worker equivalent	2.3	2.3	2.4	2.7
Number of cows	60	62	72	78
Number of heifers	45	47	56	61
Total crop acres	219	212	232	248
Total lbs. milk sold	931,100	898,000	1,040,000	1,148,000
Total cash farm rec.	\$132,928	\$129,157	\$150,752	\$165,468
Total end inventory	\$389,635	\$375,100	\$403,785	\$441,773
Milk produced per cow	16,678	15,469	15,340	16,010
Milk sold per cow	15,500	14,400	14,200	14,700
Tons hay equiv./acre	2.5	2.5	2.2	2.6
Tons corn silage/acre	13.2	14.4	14.5	14.9
Cows per worker	26	27	30	29
Milk sold per worker	400,000	385,000	430,000	430,000
Feeding index	106	107	104	107
Rate roughage feeding	1.8	2.0	1.9	2.0
Lbs. concentrated fed/cow	6,500	5,700	5,700	6,000
% net energy-concentrates	52%	47%	48%	48%
% net energy-succulents	26%	31%	34%	36%
% net energy-hay	15%	15%	12%	11%
% net energy-pasture	7%	7%	5%	5%
Projected calving interval (mo.)	13.1	13.0	13.1	13.0
Days dry	64	61	61	62
% days in milk	85%	86%	86%	86%
Breedings per conception	1.8	1.8	1.9	1.8
% leaving herd	26%	25%	26%	29%
Age of first calving (mo.)	28	28	28	27
Age all cows (mo.)	53	53	53	52
Body weight at first calv.	1,147	1,111	1,076	1,107
Body weight all cows	1,280	1,255	1,244	1,253
Income over value feed	\$1,341	\$1,225	\$1,218	\$1,303
Feed purchased/cow	\$585	\$527	\$535	\$511
% feed is of milk rec.	30%	29%	29%	27%
Ave. price received milk	\$12.71	\$12.76	\$12.81	\$12.76
Labor & mgt. inc./oper.	\$-3,128	\$-876	\$-1,086	\$1,604
Net cash income	\$32,792	\$30,301	\$28,459	\$31,315
Labor, mgt. & owner-ship income	\$44,288	\$42,215	\$45,391	\$50,725
Ave. age of operator	46	41	39	37

\* Does not include partnerships or corporations.

\*\* Years of education not reported by 25 operators.