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DAIRY MANAGEMENT PRACTICES AND NEW YORK DAIRY FARM INCOMES 1982

C.A. Bratton

Department of Agricultural Economics
Cornell University Agricultural Experiment Station
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York, 14853

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Foreword

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 1982 report is similar to the studies done for the years 1974 through 1981.*

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. Charles Williams, a graduate student in the Department of Animal Science at Cornell, assisted with the statistical work on the 1982 data.

*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; A.E. Res. 81-2; A.E. Res. 82-13; and A.E. Res. 83-2.

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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 practices were examined in relationship to the farm business as a unit. In short, the study aimed to determine how the dairy management practices affect or are related to the incomes of operating dairy farms in New York State.

Methodology

Two sources of management information for individual dairy farm operations 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 1982 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. 83-32.

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 non-dairy purposes divided by the herd size.

Age of all cows is the average age in months of all milk cows in the herd during the year. Heifers 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.

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 1982 is shown in Table 1.

The pounds of milk produced per cow by the 410 farms in the 1982 dairy management practices study averaged 16,000 compared with 12,100 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 14,900 pounds of milk per cow compared with 14,800 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 had the same size herds as the business management group, 82 cows. 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, 1982

Item	Summary Group	
	Business Management	Dairy Practices
Number of farms	572	410
<u>Operators:</u>		
Average age	42	41
Years of education	13	13
Percent in partnerships or corporations	24%	24%
<u>Barn Type:</u>		
Percent with freestalls	32%	33%
<u>Size of Business:</u>		
Worker equivalent	2.83	2.92
Number of cows	82	82
Number of heifers	67	67
Total tillable acres	262	256
Total capital	\$474,438	\$476,525
<u>Rates of Production:</u>		
Pounds milk sold per cow	14,800	14,900
Tons hay crops per acre (H.E.)	2.6	2.6
Tons corn silage per acre	14.0	14.1
<u>Labor Efficiency:</u>		
Cows per worker	29	28
Pounds milk sold per worker	427,700	419,700
<u>Capital Uses:</u>		
Total capital per cow	\$5,517	\$5,606
Farm debt per cow	\$2,261	\$2,343
Total capital per worker	\$167,646	\$163,193
Percent equity	63%	62%
<u>Cost Factors:</u>		
Feed bought per cow	\$482	\$491
Crop expense per cow	\$166	\$168
Percent feed is of milk sales	24%	24%
Machinery cost per cow	\$432	\$433
Labor cost per cow	\$352	\$348
Real estate expense per cow	\$150	\$155
Total farm expense per cow	\$2,247	\$2,269
Cost per cwt. producing milk*	\$14.87	\$14.92
<u>Price:</u>		
Average price per cwt. milk sold	\$13.56	\$13.55
<u>Income:</u>		
Net cash income per farm	\$36,129	\$36,084
Net cash income per cow	\$441	\$440
Labor & management income per operator	\$3,451	\$3,408
Labor & management income per cow	\$42	\$42

*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 1982 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
410 New York Dairy Farms, 1982

Labor and Management Income Per Operator	Operators		Year End Inventory	Net Cash Farm Income	Labor & Mgmt. Income Per Operator
	Avg. Age	Avg. No.			
(Quintiles)					
1 (low)	42	1.16	\$516,337	\$18,626	\$-22,451
2	42	1.37	447,531	26,865	- 4,598
3 (medium)	42	1.29	439,827	32,683	2,241
4	41	1.39	400,981	36,234	9,781
5 (high)	40	1.34	577,952	66,006	28,487

The 410 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 and high income groups were larger farms than the three middle quintiles, as shown by year end inventory and cow number. The low income group, although larger than the three middle groups, had lower net cash farm income. The operators of the two higher income groups were slightly younger than the other groups.

Table 3. Labor and Management Income Per Operator
By Quintiles and Related Business Factors
410 New York Dairy Farms, 1982

Labor and Management Income Per Operator	Number of Cows	Pounds of Milk Sold		Total Farm Expenses Per Cow
		Per Cow	Per Worker	
(Quintiles)				
1 (low)	87	14,300	392,000	\$2,482
2	73	14,600	388,000	2,301
3 (medium)	73	15,100	428,000	2,308
4	70	14,800	402,000	2,124
5 (high)	105	16,000	516,000	2,239

Farms in the quintile with the highest 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 also above average size (87 cows), but 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, a lower first calving age, and a smaller percent of cows leaving the herd than the two low quintiles.

Table 4. Labor and Management Income By Quintiles and
Dairy Management Practices
410 New York Dairy Farms, 1982

Labor & Mgmt. Inc./Oper.	Lbs. Conc. Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
(Quintiles)					
1 (low)	6,400	35%	64	28	31%
2	6,300	35	64	28	30
3 (medium)	6,200	36	61	28	27
4	6,100	37	61	27	27
5 (high)	6,400	41	60	27	29

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 410 dairy practices farms and the 572 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, 1982

Number of Cows	Summary Group			
	Business Management		Dairy Practices	
	No. Farms	% Farms	No. Farms	% Farms
Under 40	76	13%	41	10%
40 to 54	128	22	96	24
55 to 69	107	19	85	21
70 to 84	82	14	63	15
85 to 99	52	9	33	8
100 to 149	69	12	54	13
150 and over	58	11	38	9

For the 410 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. 1982 was a year with relatively low labor and management incomes per operator except for the 150 and over cow herd size. For the herds with 55 to 149 cows, there was no consistent relationship between size and labor income per operator.

Table 6. Herd Size and Labor and Management Income
410 New York Dairy Farms, 1982

Number of Cows	Number of Farms	Net Cash Farm Income		Labor and Management Income	
		Per Farm	Per Cow	Per Operator	Per Cow
Under 40	41	\$14,350	\$422	\$ -26	\$-1
40 to 54	96	19,999	417	632	15
55 to 69	85	31,586	518	3,847	84
70 to 84	63	33,023	440	2,820	50
85 to 99	33	43,066	479	4,785	76
100 to 149	54	52,418	433	3,092	37
150 and over	38	86,010	406	10,239	78

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 more than 55 and less than 100 cows had higher per cow net cash income than the larger or smaller herd size categories (Table 6).

Table 7. Herd Size and Related Business Factors
410 New York Dairy Farms, 1982

Number of Cows	Pounds of Milk Sold		Capital Per Cow	Total Farm Expense Per Cow
	Per Cow	Per Worker		
Under 40	13,500	263,000	\$6,204	\$2,090
40 to 54	14,400	331,000	6,173	2,220
55 to 69	15,600	381,000	6,107	2,291
70 to 84	15,300	430,000	5,903	2,317
85 to 99	14,900	435,000	5,688	2,254
100 to 149	14,700	473,000	5,346	2,282
150 and over	15,400	568,000	4,867	2,343

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. In general, 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 was somewhat lower for herds of over 100 cows, but percent leaving the herd showed little difference by herd size (Table 8).

Table 8. Herd Size and Dairy Management Practices
410 New York Dairy Farms, 1982

Number of Cows	Lbs. Concentrates Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Under 40	5,500	26%	69	28	32%
40 to 54	5,800	31	64	28	28
55 to 69	6,400	36	60	28	28
70 to 84	6,500	41	61	28	28
85 to 99	6,100	42	59	28	27
100 to 149	7,100	42	60	27	30
150 and over	7,000	46	58	26	30

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 in good years, but in years of loss there are more units on which to realize a loss.

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, 1982

Milk Sold Per Cow	Summary Group				
	Business Management		Dairy Practices		% Busi. Mgmt. in Dairy Prac.
	No. Farms	% Farms	No. Farms	% Farms	
Under 11,000	52	9%	24	6%	46%
11,000 to 11,999	27	5	14	3	52
12,000 to 12,999	50	9	30	7	60
13,000 to 13,999	88	15	63	15	72
14,000 to 14,999	109	19	66	16	61
15,000 to 15,999	117	20	100	25	85
16,000 to 16,999	64	11	56	14	88
17,000 to 17,999	43	8	37	9	86
18,000 and over	22	4	20	5	91

Farms in the dairy practices group tended to be from the higher producing herds as indicated by the distribution shown in Table 9. Only nine 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 28 percent sold 16,000 or more pounds compared with 23 percent of the business management group. This is logical since DHI records are a management tool for improving production per cow. Only 46 percent of the business summary farms with less than 11,000 pounds sold per cow had DHI records and were included in the dairy practices summary whereas 91 percent of those selling 18,000 or more pounds were in the practices study.

Table 10. Milk Sold Per Cow and Labor and Management Income
410 New York Dairy Farms, 1982

Milk Sold Per Cow	Net Cash Farm Income		Labor and Management Income	
	Per Farm	Per Cow	Per Operator	Per Cow
Under 11,000	\$ 8,243	\$140	\$- 6,526	\$-143
11,000 to 11,999	19,528	331	- 931	- 19
12,000 to 12,999	23,139	309	- 5,211	- 90
13,000 to 13,999	31,000	388	- 962	- 16
14,000 to 14,999	30,044	345	948	14
15,000 to 15,999	41,882	487	5,135	81
16,000 to 16,999	47,674	548	11,100	174
17,000 to 17,999	46,955	528	5,868	86
18,000 and over	54,863	773	15,970	304

For the 410 farms in this study there was a strong association between milk sold per cow and net cash farm income. The relationship was less clear for labor and management income per operator and per cow. The farms selling 18,000 or more pounds per cow had the highest labor and management incomes per operator and per cow with the 16,000 to 16,999 group being second.

Table 11. Milk Sold Per Cow and Related Business Factors
410 New York Dairy Farms, 1982

Milk Sold Per Cow	Number of Cows	Percent B.F.	Lbs. Milk Sold/Worker	Capital Per Cow	Total Farm Expenses Per Cow
Under 11,000	59	3.97%	272,000	\$4,723	\$1,788
11,000 to 11,999	59	3.84	263,000	5,557	1,912
12,000 to 12,999	75	3.66	379,000	4,982	2,063
13,000 to 13,999	80	3.64	410,000	5,453	2,149
14,000 to 14,999	87	3.63	424,000	5,272	2,301
15,000 to 15,999	86	3.61	455,000	6,023	2,279
16,000 to 16,999	87	3.61	477,000	5,403	2,370
17,000 to 17,999	89	3.58	467,000	6,065	2,674
18,000 and over	71	3.55	474,000	6,745	2,638

Farms selling between 14,000 and 18,000 pounds per cow were above average in size, measured by number of cows. Farms selling below 14,000 and above 18,000 were below average in size.

Average butterfat test declined as the pounds of milk sold per cow increased. The farms selling under 11,000 pounds of milk per cow had an average butterfat test of 3.97 which suggests that this group included some non-Holstein herds. However, there were only nine non-Holstein herds in this study.

Pounds of milk sold per worker, which is an important business management factor, was associated with production per cow. Capital per cow was higher generally for farms with more than 15,000 pounds of milk sold per cow. Farms selling more milk per cow had higher expenses per cow (Table 11).

Table 12. Milk Sold Per Cow and Dairy Management Practices
410 New York Dairy Farms, 1982

Milk Sold Per Cow	Lbs. Concen. Fed Per Cow	% Net Energy From Succulents	Days Dry	Age First Calving	% Leaving Herd
Under 11,000	4,400	32%	74	28	29%
11,000 to 11,999	5,200	34	69	29	27%
12,000 to 12,999	5,700	28	66	28	30
13,000 to 13,999	6,100	36	62	28	28
14,000 to 14,999	6,200	41	61	28	28
15,000 to 15,999	6,400	37	61	28	28
16,000 to 16,999	6,500	40	60	28	29
17,000 to 17,999	7,400	39	59	26	28
18,000 and over	8,000	35	57	26	32

The dairy management practices 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 had fewer days dry and calved earlier than the lower producing farms. In general, these suggest that the recommended dairy management practices do affect the rates of production.

Value of Crops Produced and Fed

The value of the crops produced on these farms was computed by using the average farm prices for 1982 as determined by the New York Crop Reporting Service. The value of the 1982 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 410 farms are shown below.

Table 13. Calculation of Value of Crops Grown
410 New York Dairy Farms, 1982

Crop	Acres	Quantity	Price	Value	Value Per Acre
Hay (all)	132	340 t.	\$75.00	\$25,500	\$193
Corn silage	63	883 t.	25.00	22,075	350
Other forages	2	3 t.	75.00	225	112
Grain corn	35	3,281 bu.	2.80	9,187	262
Oats	6	317 bu.	1.55	491	82
Wheat	<u>1</u>	22 bu.	3.30	<u>73</u>	<u>73</u>
Total	239*			\$57,551	\$241

*Total tillable acres of 256 (page 4) include pasture and idle acres.

Hay crops of all kinds, including haylage, accounted for 55 percent of the acreage and 44 percent of the value of crops produced on these 410 farms in 1982. Corn silage accounted for 38 percent and grain corn for 16 percent of the total value of crops produced. Corn silage had the highest value per acre with \$350 followed by grain corn with \$262 per acre. The average for all crops was \$241 per acre.

Table 14. Calculation of Value Feeds Fed and Related Factors
410 New York Dairy Farms, 1982

Item	Total Per Farm	Average Per Cow
Value crops grown	\$57,551	\$702
Decrease in feed inventories	<u>0</u>	<u>0</u>
Total Grown Available	\$57,551	\$ 702
Value of crops sold	1,655	20
Increase in feed inventories	<u>426</u>	<u>5</u>
Amount Available Not Used	\$ 2,081	\$ 25
Value of crops grown & fed	\$55,470	\$ 677
Cost of purchased feed	<u>42,070</u>	<u>513</u>
Total Value & Cost of Feeds Fed	\$97,540	\$1,190
Percent of feed fed grown	57%	57%

For the 410 farms the value of crops grown and feed was greater than the cost of purchased feed fed. total feed fed per cow was \$1,190 with \$702 or 57 percent grown (Table 14).

Herd size is a major farm business factor, and so the feeds grown and total cost of feeds fed were examined with the farms sorted by this measure.

Table 15. Total Value and Cost of Feeds Fed By Herd Size
410 New York Dairy Farms, 1982

Herd Size (No. Cows)	Value Crops Grown & Fed	Cost of Purchased Feed	Total Value & Cost of Feed Fed	Percent of Feed Fed Grown
Under 40	\$ 16,321	\$ 19,106	\$ 35,427	46%
40 to 54	29,116	25,734	54,850	53
55 to 69	40,225	30,910	71,135	57
70 to 84	49,713	39,235	88,948	56
85 to 99	65,355	43,713	109,068	60
100 to 149	88,893	57,618	146,511	61
150 and over	152,244	114,258	266,502	57

As expected, values of crops grown and fed and cost of feed purchased both increased with herd size. The percent of feed fed that was grown increased with the size of herd up to 150 cows. In general, the larger herds tended to grow a higher proportion of their feed fed than did the smaller herds.

Table 16. Feed Costs Per Cow by Size of Herd
410 New York Dairy Farms, 1982

Herd Size (No. Cows)	Number of Cows	Heifers as % of Cows	Feed Cost Per Cow			Total Feed Costs	
			Home Grown	Purchased	Total	Per Cwt. Milk	As % of Milk Rec.
Under 40	34	76%	\$480	\$562	\$1,042	\$7.72	57%
40 to 54	48	81	607	536	1,143	7.97	60
55 to 69	61	85	659	507	1,166	7.46	56
70 to 84	75	85	663	523	1,186	7.75	57
85 to 99	90	80	726	486	1,212	8.14	59
100 to 149	121	80	735	476	1,211	8.25	60
150 and over	212	81	718	539	1,257	8.16	60

Value of feed grown and fed per cow increased with herd size to a maximum of \$735 in herds of 100-149 cows. Value of feed grown and fed per cow dropped slightly in the largest herd size group perhaps indicating that on the largest farms more cows are kept than can be supported on home grown feeds. Total feed costs per cow, increased as the size of herd increased. Total feed cost per hundredweight of milk was slightly higher for herds of 85 cows or more. Total feed costs as percent of milk receipts increased slightly as the size of herd increased above 55 cows.

Labor and management income is one indicator of managerial ability. The tables below show what the better managers were doing in relation to home grown feeds.

Table 17. Total Value and Cost of Feeds Fed
By Labor and Management Income Quintiles
410 New York Dairy Farms, 1982

Labor & Management Income Per Operator (Quintiles)	Value Crops Grown and Fed	Cost of Purchased Feed	Total Value and Cost of Feeds Fed	Percent of Feed Fed Grown
1 (low)	\$66,515	\$44,841	\$111,354	60%
2	49,787	35,860	85,647	58
3 (medium)	45,942	38,368	84,310	54
4	48,031	35,608	83,639	57
5 (high)	67,201	55,671	122,872	55

Value of crops grown and fed and cost of purchased feed on a per farm basis showed no direct relationship to labor and management income. These cost measures are more closely related to size of farm, which also showed little direct relationship to labor and management income. However, the percent of feed fed grown showed an inverse relationship to labor and management income with a lower percentage being more profitable. This suggests that home grown feeds may have been more costly than purchased feeds in 1982.

Table 18. Feed Costs Per Cow by
Labor and Management Income Quintiles
410 New York Dairy Farms, 1982

Labor & Management Income/Oper. (Quintiles)	Number of Cows	Heifers as % of Cows	Feed Cost Per Cow			Total Feed Costs	
			Home Grown	Purchased	Total	Per Cwt. Milk	As % of Milk Rec.
1 (low)	87	78	\$765	\$515	\$1,280	\$8.96	66%
2	73	84	682	491	1,173	8.03	60
3 (medium)	73	82	629	526	1,155	7.64	56
4	70	84	686	509	1,195	8.07	60
5 (high)	105	83	640	530	1,170	7.32	54

Although the feed purchased per cow increased slightly with labor and management income, the value of home grown feed per cow and total feed costs per cow showed no definite relationship to profitability. Feed cost per hundredweight of milk sold and feed cost as percent of milk receipts both tended to drop as labor and management incomes rose. This emphasizes the importance of feed "cost control". In 1982 the better managers kept their total feed costs per cow and per hundredweight of milk down.

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 concentrate feeding are a major concern of dairy farmers. In general, the more concentrates fed the more milk produced and sold per cow (Table 19). Pounds of milk sold per pound of concentrate fed decreased from 3.8 for the group of low concentrate feeders to 1.8 for the high group.

Table 19. Pounds of Concentrates Fed Per Cow and Production
410 New York Dairy Farms, 1982

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	25	6%	3,300	13,300	12,600	3.8
4,001 to 5,000	62	15	4,600	14,600	13,800	3.0
5,001 to 6,000	102	25	5,500	15,600	14,700	2.7
6,001 to 7,000	98	24	6,500	16,700	15,400	2.4
7,001 to 8,000	69	17	7,500	16,900	15,400	2.1
8,001 and over	54	13	9,100	17,500	16,000	1.8

Farms with higher rates of concentrate feeding had more cows, greater farm expenses per cow, and larger net cash farm incomes (Table 20). However, the highest net cash farm income per cow was for the 6,001 to 7,000 pounds of concentrates group. In general, feeding more concentrates paid. The labor and management incomes per operator for 1982 was highest for the group feeding 6,001 to 7,000 pounds of concentrates, with incomes declining for those feeding over 7,000 pounds per cow.

Table 20. Pounds of Concentrates Fed Per Cow and Income
410 New York Dairy farms, 1982

Pounds of Concentrates Fed Per Cow	Number of Cows	Total Farm Expenses/Cow	Net Cash Farm Income Per		Labor & Management Income/Oper.
			Farm	Cow	
4,000 or less	69	\$1,948	\$23,203	\$336	\$- 646
4,001 to 5,000	65	2,091	26,957	415	1,578
5,001 to 6,000	74	2,200	32,885	444	5,265
6,001 to 7,000	82	2,290	39,023	476	5,348
7,001 to 8,000	100	2,369	41,680	417	2,012
8,001 and over	98	2,505	46,071	470	1,846

The ratio of milk prices to feed prices is a factor affecting levels of concentrate feeding¹. From 1974 to 1978 the milk-feed price ratio increased from 1.21 to 1.54, then declined some in 1979, 1980, and 1981, but was at a peak of 1.55 in 1982. The pounds of concentrates fed per cow in the dairy practices studies increased from 4,800 to 6,200 pounds in 1979 then dropped to 5,900 in 1980 and 6,100 in 1981 and then it was at a peak level in 1982 with 6,300 pounds (Table 21). It appears that dairyfarmers do respond to changes in the milk-feed price ratio.

Table 21. Milk-Feed Price Ratios and Concentrates Fed Per Cow
New York Dairy Farms, 1974-1982

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	13.00	8.98	1.45	5,900
1981	13.80	9.68	1.43	6,100
1982	13.70	8.83	1.55	6,300

* Source: New York Agricultural Statistics 1982, 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 a slight decrease in the percent net energy supplied as the levels of concentrate feeding increased. Farms feeding more pounds of concentrates per cow in general had fewer days dry and larger cows (Table 22). In general, the operators who were feeding more concentrates per cow were using better dairy management practices.

Table 22. Pounds of Concentrates Fed Per Cow and
Dairy Management Practices
410 New York Dairy Farms, 1982

Pounds of Concentrates Fed Per Cow	Percent Net Energy From		Days Dry	Percent Leaving Herd	Body Weight All Cows	Somatic Cell Count
	Conc.	Succulents				
4,000 or less	30%	41%	70	29%	1,270	439,000
4,001 to 5,000	38	38	64	28	1,210	443,000
5,001 to 6,000	44	37	62	29	1,240	346,000
6,001 to 7,000	48	37	61	28	1,270	327,000
7,001 to 8,000	52	37	59	29	1,270	473,000
8,001 and over	57	35	60	31	1,280	347,000

¹Young, 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 23. Percent Net Energy From Concentrates and
Related Business Factors
410 New York Dairy Farms, 1982

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	7%	77	14,500	\$33,937	\$ 3,378
30 to 34	5	88	14,300	34,368	789
35 to 39	10	66	14,600	29,320	5,152
40 to 44	22	75	14,700	34,728	8,468
45 to 49	22	79	15,100	34,509	1,453
50 to 54	18	87	15,600	40,650	4,023
55 to 59	10	102	15,600	43,259	-2,927
60 and over	6	95	14,400	36,784	- 310

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 (Table 23). Farms with higher percent net energy from concentrates in general were using better dairy management practices (Table 24).

Table 24. Percent Net Energy From Concentrates and
Dairy Management Practices
410 New York Dairy Farms, 1982

Percent Net Energy from Concentrates	Pounds Conc. Fed/Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 30	4,600	37%	65	29%	400,000
30 to 34	4,000	47	64	26	398,000
35 to 39	4,800	42	61	28	350,000
40 to 44	5,500	38	62	28	353,000
45 to 49	6,400	34	64	29	428,000
50 to 54	7,300	37	60	29	354,000
55 to 59	8,200	35	60	29	377,000
60 and over	8,700	29	60	31	393,000

Table 25. Percent Net Energy From Succulents and
Related Business Factors
410 New York Dairy Farms, 1982

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	7%	76	14,700	\$32,766	\$ 4,381
1 to 9	2	49	12,200	16,877	-3,993
10 to 19	5	48	14,400	16,944	-2,997
20 to 29	14	58	14,700	26,932	2,208
30 to 39	30	72	15,200	32,847	2,279
40 to 49	31	94	15,100	42,163	3,329
50 and over	11	123	15,300	52,063	10,318

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 410 farms in the 1982 study, succulents (silage) accounted for 37 percent of the net energy. Nine percent of the farms reported less than 10 percent of the net energy from succulents while 11 percent reported over 50 percent (Table 25).

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 and labor and management income per operator tended to be higher for the farms using more succulents (Table 25).

Table 26. Percent Net Energy From Succulents and
Dairy Management Practices
410 New York Dairy Farms, 1982

Percent Net Energy From Succulents	Pounds Concentrates Fed Per Cow	Percent Net Energy From Concentrates	Days Dry	Percent Leaving Herd	Somatic Cell Count
0	5,400	45%	62	31%	423,000
1 to 9	4,900	44	72	26	450,000
10 to 19	6,500	50	69	29	341,000
20 to 29	6,700	49	64	26	366,000
30 to 39	6,500	47	62	29	398,000
40 to 49	6,500	47	60	29	394,000
50 and over	5,300	40	61	30	303,000

Farms with a higher percent of net energy from succulents fed about the same pounds of concentrates per cow and had about the same 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 26).

Table 27. Percent Net Energy From Hay and Related Business Factors
410 New York Dairy Farms, 1982

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	16%	123	15,000	\$51,314	\$2,332
1 to 4	12	112	15,400	52,177	9,887
5 to 9	20	86	15,200	37,934	3,700
10 to 14	22	65	15,200	29,582	1,171
15 to 19	14	64	15,000	31,129	4,756
20 to 24	7	44	14,300	20,429	574
25 and over	9	52	13,400	17,616	553

Sixteen percent of the 410 farms reported no net energy from hay. These were the larger farms with an average of 123 cows. On the other hand, 16 percent reported 20 percent or more net energy from hay and these were the smaller farms. The farms depending more on hay had lower net cash farm incomes per farm (Table 27).

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 28). 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 46 to 50 percent of the total. The farms depending more on hay also used more pasture (Table 28).

Table 28. Percent Net Energy From Hay and Dairy Management Practices
410 New York Dairy Farms, 1982

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	6,900	0%	46%	0%	59	32%	376,000
1 to 4	6,700	2	48	2	61	30	290,000
5 to 9	6,700	7	40	5	60	28	401,000
10 to 14	6,200	12	37	5	60	28	423,000
15 to 19	5,900	17	33	6	65	28	350,000
20 to 24	5,500	21	26	10	67	28	374,000
25 and over	5,200	34	16	9	69	27	420,000

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 29. Feeding Index and Related Business Factors
410 New York Dairy Farms, 1982

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 95	9%	87	14,400	\$37,120	\$3,423
95 to 99	3	74	14,600	35,167	6,977
100 to 104	4	73	14,100	33,567	5,300
105 to 109	11	74	15,100	35,084	3,282
110 to 114	20	71	15,300	35,558	4,358
115 to 119	17	80	15,200	35,126	5,420
120 to 124	16	79	15,400	34,597	2,031
125 and over	20	100	14,800	39,229	1,310

With 73 percent of the farms having feeding indices of 110 or more it suggests that some dairyfarmers were feeding considerably more than that calculated as 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 (Table 29).

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 30).

Table 30. Feeding Index and Dairy Management Practices
410 New York Dairy Farms, 1982

Feeding Index	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Less than 95	5,000	45%	60	29%	371,000
95 to 99	5,100	39	57	28	566,000
100 to 104	5,000	39	68	29	395,000
105 to 109	5,600	35	62	26	341,000
110 to 114	6,000	34	62	29	342,000
115 to 119	6,300	39	63	29	347,000
120 to 124	6,900	37	61	31	400,000
125 and over	7,400	39	62	28	434,000

Average Body Weight All Cows

Body weight of all cows reflects the size of the animals and probably is related to the feeding practices in raising heifers. Body weights are obtained from taping the animals. Average body weight of all cows for the 410 farms was 1,260 pounds. Fifty-nine percent were in the 1,210 to 1,300 pound range (Table 31).

Table 31. Body Weight All Cows and Related Business Factors
410 New York Dairy Farms, 1982

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	6%	54	12,900	\$24,130	\$1,713
1,160 to 1,200	12	68	14,200	25,418	- 532
1,210 to 1,250	30	82	15,100	36,420	935
1,260 to 1,300	29	82	15,200	36,585	5,162
1,310 to 1,350	14	92	15,700	44,419	5,202
1,360 and over	9	96	15,200	41,972	8,354

A strong, positive relationship appears to exist between average body weight and the related business factors. The bigger the cows the larger the herds, the higher the pounds of milk sold per cow and the higher the net cash farm income 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 and had fewer dry days (Table 32).

Table 32. Body Weight All Cows and Dairy Management Practices
410 New York Dairy Farms, 1982

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	5,200	26%	66	29%	470,000
1,160 to 1,200	5,900	35	63	32	444,000
1,210 to 1,250	6,200	37	62	29	370,000
1,260 to 1,300	6,400	39	61	28	369,000
1,310 to 1,350	6,900	39	61	28	338,000
1,360 and over	6,700	39	62	25	406,000

Farms with the lower body weights of all cows likely included the non-Holstein herds. However, there were only nine non-Holstein herds in the study.

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 410 farms was 1,100 pounds. Twenty-seven percent of the farms had average body weights at first calving of 1,150 pounds or more (Table 33).

Table 33. Body Weight at First Calving and Related Business Factors
410 New York Dairy Farms, 1982

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%	60	26	13,800	\$25,203	\$2,065
1,030 to 1,040	6	73	27	15,400	35,951	7,259
1,050 to 1,060	7	75	27	14,500	37,254	4,296
1,070 to 1,080	11	83	28	15,200	35,973	724
1,090 to 1,100	13	92	27	15,000	39,614	4,398
1,110 to 1,120	13	82	27	15,600	38,062	7,709
1,130 to 1,140	12	91	29	14,700	37,000	1,939
1,150 to 1,160	8	96	28	14,900	40,939	3,532
1,170 and over	19	79	28	15,600	35,931	1,369

When grouped by body weight at first calving the relationships to various business and dairy management practices do not stand out distinctly. It appears that the heavier heifers were on farms with larger herd sizes (Table 33). Likewise, the farms with heavier heifers at first calving also fed more concentrates per cow and obtained a higher percent of net energy from succulents (Table 34). This phenomena likely illustrates the interrelatedness of all management practices through the ability or skill of the manager.

Table 34. Body Weight at First Calving and Dairy Management Practices
410 New York Dairy Farms, 1982

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	30%	66	29%	462,000
1,030 to 1,040	6,100	36	63	30	350,000
1,050 to 1,060	6,200	35	61	28	496,000
1,070 to 1,080	6,700	36	61	29	345,000
1,090 to 1,100	6,200	39	61	30	398,000
1,110 to 1,120	6,500	37	60	28	294,000
1,130 to 1,140	6,300	39	61	30	379,000
1,150 to 1,160	6,300	40	63	29	370,000
1,170 and over	6,800	39	62	27	352,000

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 410 farms in 1982 was 28 months. There was sizable range among the farms. Ten percent of the farms had average age at first calving less than 25 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, five percent reported average age at first calving of 33 months or more, which is approaching three years of age (Table 35).

Table 35. Age at First Calving and Related Business Factors
410 New York Dairy Farms, 1982

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 25	10%	89	1,020	15,400	\$46,900	\$13,054
25 to 26	29	95	1,100	15,300	40,905	2,460
27 to 28	30	80	1,120	14,900	36,256	5,152
29 to 30	18	73	1,110	14,900	31,311	1,106
31 to 32	8	67	1,120	13,800	24,271	-4,309
33 and over	5	58	1,140	14,100	22,966	- 913

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 and the highest labor and management income per operator averaged under 25 months at first calving.

Dairy management practices appeared to be related to the age at first calving (Table 36). Farms that had the heifers freshening at an early age also were feeding more concentrates per cow, had fewer days dry, higher percent leaving herd, and lower somatic cell counts.

Table 36. Age at First Calving and Dairy Management Practices
410 New York Dairy Farms, 1982

Age at First Calving	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 25	6,300	37%	61	29%	335,000
25 to 26	6,800	38	61	29	374,000
27 to 28	6,400	36	63	28	376,000
29 to 30	5,600	38	62	30	403,000
31 to 32	6,000	37	63	27	376,000
33 and over	5,700	35	63	26	512,000

Projected Minimum Calving Interval

The average minimum calving interval for the 410 farms in 1982 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 37. Projected Minimum Calving Interval and
Related Business Factors
410 New York Dairy Farms, 1982

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%	65	14,700	\$29,550	\$ 3,111
12.5 to 12.9	34	82	15,400	40,886	5,094
13.0 to 13.4	30	93	15,200	38,146	6,058
13.5 to 13.9	13	80	14,800	32,597	-3,415
14.0 or more	7	70	13,600	26,138	-3,578

The farms with the shortest calving interval had smaller herds (average 65 versus 70 to 93). In general, the longer the projected minimum calving interval, the lower the pounds of milk sold per cow (Table 37). This suggests that getting the cows bred back promptly does affect production.

In general, the longer the projected minimum calving interval, the less the net cash income per farm and the labor and management income per operator. Both measures of income were considerably less for the herds with calving intervals of 13.5 months or more. It appears that calving interval affects both rates of production and income.

Projected minimum calving interval appears to be related to the percent leaving the herd and the somatic cell count but did not show any relationship to the feeding practices (Table 38).

Table 38. Projected Minimum Calving Interval and
Dairy Management Practices
410 New York Dairy Farms, 1982

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	6,300	34%	63	30%	365,000
12.5 to 12.9	6,300	39	61	29	356,000
13.0 to 13.4	6,400	37	62	28	349,000
13.5 to 13.9	6,500	35	63	29	396,000
14.0 or more	5,800	39	62	27	575,000

Breedings Per Conception

The relationship of breedings per conception to net cash farm income as shown in Table 39 is not what one might logically expect. Fewer breedings per conception did not give a higher income. Farms with 1.9 to 2.0 breedings per conception had the highest net cash incomes per farm and labor and management income per operator.

Table 39. Breedings Per Conception and Related business Factors
410 New York Dairy Farms, 1982

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	16%	61	14,200	\$34	\$27,729	\$2,187
1.5 to 1.6	23	76	15,000	40	36,142	4,031
1.7 to 1.8	23	86	15,000	44	38,350	3,885
1.9 to 2.0	16	98	15,100	47	40,960	5,483
2.1 to 2.2	12	81	15,100	47	36,723	2,576
over 2.2	10	95	15,300	51	35,630	170

Sixteen percent of the farms reported an average of less than 1.5 breedings per conception in 1982, while 22 percent of the farms reported an average of over 2.0. The average of all 410 farms was 1.8 breedings per conception. The veterinary expenses per cow increased as the number of breedings increased with the highest of \$51 for the group with over 2.2 breedings per conception (Table 39).

The farms with more than two breedings per conception were larger and had higher rates of production. The group with fewest breedings had the smallest herds averaging 61 cows. The group with the most breedings per conception had the highest production with 15,300 pounds of milk sold per cow (Table 39). This suggests that larger herds and higher producing herds may have more problems in getting the cows bred.

Table 40. Breedings Per Conception and Dairy Management Practices
410 New York Dairy Farms, 1982

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	5,600	34%	63	29%	398,000
1.5 to 1.6	6,400	37	62	30	364,000
1.7 to 1.8	6,300	39	61	27	333,000
1.9 to 2.0	6,500	37	61	29	403,000
2.1 to 2.2	6,700	37	64	28	391,000
over 2.2	6,500	37	60	30	454,000

Breedings per conception showed no definite relationships to the dairy management practices (Table 40).

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 tend to increase with fewer days dry.

Table 41. Days Dry and Related Business Factors
410 New York Dairy Farms, 1982

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	8%	91	15,200	\$44,307	\$ 538
51 to 55	15	81	15,600	41,036	7,430
56 to 60	26	88	15,200	40,367	5,265
61 to 65	22	85	15,300	38,838	5,863
66 to 70	11	87	15,000	34,877	138
over 70	18	61	13,500	19,266	-2,029

Eight percent of the farms reported an average of 50 or less days dry (Table 41). Forty-nine percent or 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 (Table 42).

Average number of days dry seemed to have no relation to size of herd. The farms with 50 or less days dry averaged 91 cows, the largest of any of the groups. On the other hand, the farms with over 70 days dry were the smallest, averaging 61 cows and had the lowest percent leaving the herd and the lowest production and income.

Table 52. Days Dry and Dairy Management Practices
410 New York Dairy Farms, 1982

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	6,300	41%	52	30%	393,000
51 to 55	6,500	39	50	30	411,000
56 to 60	6,700	39	50	28	339,000
61 to 65	6,400	36	52	28	389,000
66 to 70	6,200	35	52	30	377,000
over 70	5,500	32	54	27	406,000

The 1982 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 51 to 55 days dry had the highest production with 15,600 pounds per cow and the best labor and management incomes per operator (Table 41).

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 43).

Table 43. Percent Days in Milk and Related Business Factors
410 New York Dairy Farms, 1982

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
81 or less	5%	50	12,300	\$15,239	\$-3,411
82 to 83	7	76	14,100	20,649	-6,266
84 to 85	20	83	14,600	35,983	5,322
86 to 87	38	85	15,300	38,774	4,283
88 to 89	24	82	15,400	40,207	5,819
90 and over	6	86	15,700	39,148	412

Thirty-eight percent of the farms were in the 86 to 87 percent of days in milk category. The average percent of days in milk for the 410 farms in 1982 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 as would be expected (Table 44).

Percent days in milk and percent leaving the herd appear to be related. The farms with the highest percent days in milk also had the highest culling rate while those with the lowest days in milk had the lowest culling rate. This suggests that culling is used to keep a high proportion of the cows milking.

Table 44. Percent Days in Milk and Dairy Management Practices
410 New York Dairy Farms, 1982

Percent Days in Milk	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
81 or less	4,700	26%	86	25%	371,000
82 to 83	6,000	35	72	28	474,000
84 to 85	6,200	36	67	26	326,000
86 to 87	6,400	38	61	28	404,000
88 to 89	6,600	39	55	31	376,000
90 and over	6,600	36	50	35	378,000

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 net farm 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 1982 for the 410 farms, the average percent leaving the herd was 29 which was up from 28 percent in 1981 and 26 percent in 1980.

Table 45. Percent Leaving the Herd and Related Business Factors
410 New York Dairy Farms, 1982

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	12%	72	14,600	\$27,465	\$ 3,089
20 to 24	21	76	14,700	31,316	4,282
25 to 29	24	94	15,400	42,435	7,831
30 to 34	20	80	15,100	39,269	2,904
35 and over	23	80	15,000	35,425	-1,135

The "best" culling rate is not obvious from the data in Tables 45 and 46. It is likely that there is a "too high" and a "too low" level for culling, with the optimum for rates of production and income wise being in the range of 25 to 35 percent. This would mean keeping the cows an average of less than four lactations. Dairy herd improvement does not recommend 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 his herd. Providing replacements is costly and is affected by meat and milk prices.

Table 46. Percent Leaving Herd and Dairy Management Practices
410 New York Dairy Farms, 1982

Percent Leaving Herd	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Age All Cows	Somatic Cell Count
Under 20	6,000	38%	64	56	395,000
20 to 24	6,100	35	64	53	352,000
25 to 29	6,400	36	61	52	359,000
30 to 34	6,500	40	59	51	444,000
35 and over	6,400	37	62	48	373,000

Average Age of All Cows

It might logically be expected that the herds with a higher average age would have higher incomes since the costs of replacements either in raising heifers or by purchases would be less. However, this was not true for the 410 herds studied for 1982. Similar situations existed in the earlier years studied.

Table 47. Average Age All Cows and Related Business Factors
 410 New York Dairy Farms, 1982

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	11%	107	15,500	\$47,825	\$ 4,097
45 to 47	18	90	15,200	41,026	6,202
48 to 50	21	88	15,100	38,182	4,558
51 to 53	18	80	15,200	36,677	5,383
54 to 56	13	67	15,400	33,087	1,942
57 to 59	10	65	14,000	24,669	-2,688
60 and over	9	63	13,600	23,560	-1,149

Sixty-eight percent of the farms had a herd average age of less than 54 months. However, the farms in the 45 to 47 months average age group had the best labor and management income per operator (Table 47). 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.

Table 48. Average Age All Cows and Dairy Management Practices
 410 New York Dairy Farms, 1982

Average Age All Cows	Pounds Concentrates Fed Per Cow	Percent Net Energy From Succulents	Days Dry	Percent Leaving Herd	Somatic Cell Count
Under 45	7,100	41%	59	34%	375,000
45 to 47	6,700	38	62	32	369,000
48 to 50	6,400	37	61	29	350,000
51 to 53	6,100	41	61	27	350,000
54 to 56	6,100	32	63	28	414,000
57 to 59	6,100	34	62	26	495,000
60 and over	5,400	34	67	25	470,000

The dairy management practices appeared to be better for the younger herds (Table 48). Dairyfarmers with the younger herds were feeding more concentrates per cow, obtaining a higher percentage of net energy from succulents, and had fewer days dry. The culling rate was higher for the farms with younger herds. The Somatic Cell Counts were highest for the farms with older cows.

Analysis of 170 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. The number using this test has grown steadily.

Table 49. Somatic Cell Count Cooperators by Size of Herd
410 New York Dairy Farms, 1982

Number of Cows	Number of Farms	Number of Somatic Cell Cooperators	Percent Using Somatic Cell
Under 40	41	18	44%
40 to 54	96	47	49
55 to 69	85	28	33
70 to 84	63	25	40
85 to 99	33	10	30
100 to 149	54	27	50
150 and over	38	15	39
All farms	410	170	41

Of the 410 farms included in the dairy management practices study 170, or 41 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 49. Herds with 100 to 149 cows had the highest percent of farms (50 percent) with somatic cell count information.

Table 50. Somatic Cell Count and Labor and Management Incomes
170 New York Dairy Farms, 1982

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	13%	72	16,000	\$38,837	\$ 5,612	\$ 96
200,000 to 299,999	24	79	15,600	33,203	2,798	43
300,000 to 399,999	24	85	15,300	35,355	1,692	28
400,000 to 499,999	19	87	14,500	35,043	141	2
500,000 and over	20	80	14,100	23,451	-6,695	-100

The average bulk tank somatic cell count for the herd was the factor available for use here. The average count for the 170 herds was 383,000. Thirteen percent of the herds had average counts of under 200,000 while 20 percent were 500,000 or more (Table 50). Forty-eight percent were in the 200,000 to 400,000 range.

There appeared to be a relationship between the somatic cell count and the size of the herd, the pounds of milk sold per cow, net cash farm income, and labor and management income per operator and per cow (Table 50). The labor and management income per operator and per cow dropped as the Somatic Cell Count increased.

Table 51. Somatic Cell Count and Related Business Factors
170 New York Dairy Farms, 1982

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	\$48	\$2,404	447,000	37	14	23%
200,000 to 299,999	44	2,391	437,000	40	14	30
300,000 to 399,999	50	2,320	433,000	41	13	35
400,000 to 499,999	40	2,194	431,000	40	14	36
500,000 and over	43	2,334	386,000	43	13	31

Several farm business factors were observed for the five groups based on somatic cell count with the results shown in Table 51. Farms with the higher somatic cell counts had lower veterinary expenses per cow. It might be assumed that veterinary expense is of a preventative nature and results in less mastitis. The percent of farms with freestall barns was somewhat higher for the higher count groups 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 tended to have younger cows, and a higher proportion of pipeline milking systems (Table 52). 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 52. Somatic Cell Count and Dairy Management Practices
170 New York Dairy Farms, 1982

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	6,600	37%	62	50	64%
200,000 to 299,999	6,700	38	64	49	60
300,000 to 399,999	6,600	36	59	50	48
400,000 to 499,999	5,700	35	65	52	27
500,000 and over	6,400	37	62	53	49

Other Factors Studied

Management information of various kinds was available for each of the 410 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 410 farms, 311 were individual operators and 99 were partnerships or corporations. Of the 311 individual operators, 16 did not report the years of education so only 295 farms are included in the sorts by years of education.

Table 53. Age of Individual Operator and Related Characteristics
311 New York Dairy Farms, 1982

Age of Individual Operator	Number of Farms	Average Age of Operator	Years of Education	Total Farm Assets	Farm Net Worth	Debt Per Cow
Under 30	35	27	13	\$372,000	\$199,000	\$2,961
30 to 34	44	32	14	383,000	198,000	3,189
35 to 39	60	37	14	424,000	225,000	2,874
40 to 44	57	42	13	437,000	273,000	2,396
45 to 49	49	46	13	413,000	266,000	2,441
50 to 54	38	51	13	483,000	363,000	1,679
55 and over	28	58	12	503,000	386,000	1,658

Thirty-five or 11 percent of the operators in this study were under 30 years of age. Forty-five percent of the individual operators were under 40 years of age. The average age of all operators on the 311 farms was 41 years. For the partnerships and corporations the average age of the second operator was 37, and on the 19 farms with three operators the average age of the third operator was 32. This suggests that some young persons are getting started in dairy farming in New York State.

For the 311 individual operators the younger operators had more years of education. The average for those 30 to 39 was 14 years or the equivalent of a college associate degree whereas those 55 and over had an average of 12 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 410 farms in 1982 averaged \$504,000 or about \$6,150 per cow. The average debt per cow was \$2,343. The average farm net worth was \$305,000. The assets and net worth for the individual operators was somewhat less than that for all farms including partnerships and corporations.

Table 54. Age of Individual Operator and Related Business Factors
311 New York Dairy Farms, 1982

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	61	14,500	380,000	\$2,274	\$21,186	\$ 5,276
30 to 34	62	15,500	428,000	2,319	27,832	1,698
35 to 39	75	14,600	424,000	2,255	28,389	-2,181
40 to 44	75	14,700	427,000	2,293	30,473	1,327
45 to 49	70	14,800	377,000	2,270	30,961	- 234
50 to 54	86	14,800	424,000	2,236	35,004	1,432
55 and over	84	15,100	391,000	2,373	29,812	-5,059

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 \$199,000 or a 53 percent equity (Table 53). 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. This was a big factor until the last couple of years.

Total farm assets and net worth tended to increase with age of the operators (Table 53). For those over 55, the average equity was highest with 77 percent. The debt per cow decreased from an average of \$3,189 per cow for the group 35 to 39 to \$1,658 per cow for the group over 55. 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 highest net cash farm income was for the 50 to 54 age group. The 30 to 34 age group had the highest pounds of milk sold per cow (Table 54). The two groups under 35 both had better labor incomes than those over 35 but their net cash farm incomes were lower which likely was due to higher interest payments on debts.

Table 55. Age of Individual Operator and Dairy Management Practices
311 New York Dairy Farms, 1982

Age of Individual Operator	Pounds Concentrates Fed Per Cow	Percent Net Energy From		Days Dry	Age First Calving	Percent Leaving Herd
		Succulents	Hay			
Under 30	6,000	33%	15%	66	28	28%
30 to 34	6,100	36	13	63	28	29
35 to 39	6,100	36	13	63	27	27
40 to 44	6,500	39	9	59	28	29
45 to 49	6,100	33	15	62	28	30
50 to 54	6,300	36	10	60	28	26
55 and over	6,200	38	11	61	29	28

The dairy management practices appear to be somewhat better on the farms with operators over 40 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 56. Education of Individual Operator and
Related Business Factors
295 New York Dairy Farms, 1982

Years of Education	Number of Farms	Age of Oper.	Number of Cows	Pounds Milk Sold		Net Cash Farm Income Per Farm	Labor & Mgt. Income Per Operator
				Per Cow	Per Worker		
Under 12	21	46	59	15,300	349,000	\$23,620	\$-2,833
12	144	42	67	14,500	376,000	26,560	- 359
13 to 14	62	39	81	14,700	434,000	31,491	361
15 to 16	53	39	89	15,200	452,000	34,322	1,600
17 and over	15	40	57	15,300	375,000	25,092	1,500

Forty-nine percent of the 295 individual operators reported 12 years of education. Only seven 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 42 for those with 12 years (Table 56).

Two groups might be compared here, the 49 percent with 12 years of education and the 39 percent with 13 to 16 years of education. These might be thought of as the high school graduates and those with some college education. The college education groups were larger with 81 and 89 cows compared with 67 for the high school group. The pounds of milk sold per cow was higher for the college groups as was the milk sold per worker. The net cash farm incomes and the labor and management incomes per operator were better for the college group than the high school group.

Table 57. Education of Individual Operator and
Dairy Management Practices
295 New York Dairy Farms, 1982

Years of Education	Pounds Concentrates Fed Per Cow	Percent Net Energy From		Days Dry	Age First Calving	Percent Leaving Herd
		Succulents	Hay			
Under 12	6,400	33%	13%	65	28	30%
12	5,900	35	15	62	28	28
13 to 14	6,200	36	10	62	28	29
15 to 16	6,900	39	9	59	27	30
17 and over	6,400	33	15	66	27	26

With the dairy management practices the college group fed more concentrates per cow than the high school group. For the other practices the differences were small but the college group tended to be a little better (Table 57).

These data suggest that the dairy operators with a college education used somewhat better dairy practices and had higher incomes in 1982 than those with only a high school education.

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

Table 58. Type of Barn and Related Business Factors
410 New York Dairy Farms, 1982

Type of Barn	Percent of Farms	Number of Cows	Pounds Milk Sold		Net Cash Farm Income Per Farm	Labor & Mgmt. Income Per Operator
			Per Cow	Per Worker		
Freestall	33%	126	15,000	493,000	\$52,237	\$5,240
Stanchion	60	61	14,900	389,000	28,108	2,057
Other	7	55	15,500	341,000	28,677	5,041

One-third of the barns were freestall and two-thirds were the stanchion or stall type. The freestall barn farms had more than twice as large herds as the stanchion barns as shown in Table 58. 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 slightly higher somatic cell count but the same percentage leaving the herd (Table 59).

Table 59. Type of Barn and Dairy Management Practices
410 New York Dairy Farms, 1982

Type of Barn	Pounds Concentrates Fed Per Cow	Percent Net Energy From		Days Dry	Somatic Cell Count	Percent Leaving Herd
		Succulents	Hay			
Freestall	6,900	43%	5%	59	396,000	29%
Stanchion	6,000	35	14	63	383,000	29
Other	6,100	29	18	64	290,000	27

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 1982 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 (\$5,240 versus \$2,057). The freestall operators used good business management procedures as shown by larger herds, higher production per cow, and better labor efficiency (Table 58) 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 59).

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 60. Type of Milking System and Related Business Factors
410 New York Dairy Farms, 1982

Type of Milking System	Percent of Farms	Number of Cows	Pounds Milk Sold		Net Cash	Labor & Mgmt.
			Per Cow	Per Worker	Farm Income Per Farm	Income Per Operator
Bucket & Carry	2%	47	12,100	262,000	\$ 6,406	\$-4,820
Dumping Station	13	47	13,400	290,000	16,932	-1,049
Pipeline	50	63	15,200	396,000	30,561	3,179
Herringbone Parlor	31	126	15,000	505,000	52,517	5,101
Other Parlor	4	109	15,700	448,000	55,669	8,258

Pipeline milking systems accounted for half the farms followed by 31 percent with herringbone parlor systems (Table 60). These systems tend to be associated with the type of barn as reported on the previous page. The pipelines tend to be used in the larger stanchion barns as shown by an average of 63 cows compared with 47 cows for the dumping station systems.

Herringbone parlor milking systems were used with the largest herds (average 126 cows) while the bucket and carry and dumping station, or transfer systems, were used by the smallest herds (average 47 cows each) as shown in Table 60. Pounds of milk sold per cow was higher 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, those with 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 bucket and carry systems (Table 61).

Table 61. Type of Milking System and Dairy Management Practices
410 New York Dairy Farms, 1982

Type of Milking System	Pounds Concentrates Fed Per Cow	Percent Net Energy From		Days Dry	Somatic Cell Count	Percent Leaving Herd
		Succulents	Hay			
Bucket & Carry	4,300	34%	18%	75	413,000	22%
Dumping Station	5,200	26	21	69	407,000	29
Pipeline	6,200	36	13	62	364,000	29
Herringbone Parlor	7,000	43	6	59	400,000	30
Other Parlor	6,800	40	8	61	370,000	27

Milk Produced and Milk Sold Per Cow

DHI records report milk produced per cow based on the samples taken each month and then composited for the year. The farm business records report the pounds of milk sold per cow based on the total amount marketed for the year. These two measures differ by the amounts used by calf feeding, the farm family and the workers, milk loss from spillage, and milk unfit for use.

Table 62. Comparison of Milk Produced and Milk Sold Per Cow By
Herd Size
410 New York Dairy Farms, 1982

Number of Cows	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 40	14,695	13,526	1,169	8.0%
40 to 54	15,690	14,350	1,340	8.5
55 to 69	16,521	15,628	893	5.4
70 to 84	16,608	15,297	1,311	7.9
85 to 99	16,123	14,887	1,236	7.7
100 to 149	15,936	14,668	1,268	7.9
150 and over	16,323	15,400	923	5.7

Differences between the milk produced and milk sold in 1982 were computed by herd size and by rates of production and the results are shown in Tables 62 and 63. Differences by herd size ranged from 893 to 1,340 pounds per cow while by rates of production the range was from 998 to 1,537. There was no apparent direct relationship between either size or rates of production and the differences.

Table 63. Comparison of Milk Produced and Milk Sold Per Cow By
Rates of Production
410 New York Dairy Farms, 1982

Milk Sold Per Cow	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 11,000	11,309	10,012	1,297	11.5%
11,000 to 11,999	13,054	11,517	1,537	11.8%
12,000 to 12,999	13,818	12,648	1,170	8.5
13,000 to 13,999	14,865	13,679	1,186	8.0
14,000 to 14,999	15,717	14,613	1,104	7.0
15,000 to 15,999	16,624	15,456	1,168	7.0
16,000 to 16,999	17,599	16,454	1,145	6.5
17,000 to 17,999	18,458	17,460	998	5.4
18,000 and over	19,942	18,899	1,043	5.2

The average differences for all 410 farms was 1,086 pounds per cow or 6.8 percent of the milk produced as shown by the DHI records. When examined by pounds of milk sold per cow (Table 63), the greater the production per cow the smaller the difference was of the amount produced, decreasing from 11.8 percent to 5.2 percent.

Table 64. Difference in Milk Produced and Sold Per Cow by Years
New York Dairy Farms, 1974-1982

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
1981	15,890	14,800	1,090	6.9
1982	16,030	14,944	1,086	6.8

Pounds of milk per cow for both the DHI and the FBR increased each year from 1974 through 1982. The rate of increase tended to slow up in 1980, 1981, and 1982. The difference between the pounds produced per cow and the pounds sold per cow ranged from 724 in 1977 to 1,090 in 1981. There seemed to be a bimodal upward trend in the differences.

Table 65. Differences in Milk Produced and Sold Per Cow By
Registered versus Grade Herds
410 New York Dairy Farms, 1982

Kind of Herd	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Registered	134	16,321	15,215	1,106	6.8%
Grade	276	15,888	14,811	1,077	6.8

The difference between pounds produced per cow and pounds sold was slightly less for the grade than for the registered herds (Table 65).

The operators with the most managerial ability (high quintile) produced and sold the most milk per cow and had the largest herds, while difference between the pounds produced as shown by the DHI records and the pounds sold as shown by the farm business records was average (Table 66).

Table 66. Differences in Milk Produced and Sold Per Cow By
Labor and Management Income Quintiles
410 New York Dairy Farms, 1982

Managerial Ability (Income Quintile)	Number Cows	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
1 (low)	87	15,215	14,282	938	6.1%
2	73	15,494	14,608	886	5.7
3 (medium)	73	16,454	15,114	1,340	8.1
4	70	15,916	14,811	1,105	6.9
5 (high)	105	17,070	15,982	1,088	6.4

Table 67. Differences in Milk Produced and Sold Per Cow By
Type of Barn
410 New York Dairy Farms, 1982

Type of Barn	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Freestall	135	16,003	14,973	1,030	6.4%
Stanchion	247	15,997	14,851	1,146	7.2
Other	28	16,451	15,553	898	5.5

The difference between the pounds produced and sold per cow was 116 pounds less for the freestall barns than the stanchion barns. The percent that the difference was of the pounds produced was 6.4 percent for the freestall barns and 7.7 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 68. Differences in Milk Produced and Sold Per Cow By
Milking System
410 New York Dairy Farms, 1982

Milking System	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Bucket and carry	6	12,782	12,074	708	5.5%
Dumping station	55	14,211	13,372	839	5.9
Pipeline	207	16,519	15,202	1,317	8.0
Herringbone parlor	127	16,075	15,029	1,046	6.5
Other parlors	15	16,672	15,744	928	5.6

Farms with pipeline milking systems had the largest difference between pounds of milk produced and sold per cow with 1,317 pounds or 8.0 percent of the amount produced. Herringbone parlors were second largest with 1,046 pounds and 6.5 percent. This suggests that type of milking system may have an effect on the differences in pounds produced and sold due to losses in cleaning systems.

Table 69. Differences in Milk Produced and Sold Per Cow By
Somatic Cell Count
170 New York Dairy Farms, 1982

Somatic Cell Count	Number of Farms	Average Pounds Milk			Difference as Percent Produced
		Produced	Sold	Difference	
Under 200,000	22	16,813	16,024	789	4.7%
200,000 to 299,999	40	16,640	15,648	992	6.0
300,000 to 399,999	40	16,299	15,278	1,021	6.3
400,000 to 499,999	33	14,742	14,460	282	1.9
500,000 and over	35	15,013	14,071	942	6.3

Farms with 300,000 to 399,999 somatic cell count showed the largest difference between pounds produced and pounds sold per cow (Table 69). Farms with 500,000 and over somatic cell count had a difference of 6.3 percent of the milk produced which was the same as the highest group. One would expect farms with high rates of mastitis to have to discard more milk and, therefore, have a greater difference between the amounts produced and sold.

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. Income over feed cost must cover all 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 70. Income Over Feed Cost and Farm Business Income
406* New York Dairy Farms, 1982

Income Over Feed Cost	Percent of Farms	Price Received For Milk	Net Farm Cash Income	Labor & Mgmt. Income	
				Per Oper.	Per Cow
Less than \$1,100	12%	\$13.75	\$17,156	\$-4,719	\$- 93
\$1,100 to 1,199	8	13.46	26,088	-1,460	- 25
1,200 to 1,299	11	13.47	25,464	-2,836	- 51
1,300 to 1,399	16	13.54	37,140	3,539	54
1,400 to 1,499	16	13.26	38,062	8,506	127
1,500 to 1,599	12	13.46	41,068	4,452	71
1,600 to 1,699	10	13.58	38,680	2,056	33
1,700 and over	15	13.86	53,297	9,764	148

*Four farms did not report concentrate data.

A general relationship appears to exist between income over feed cost and the farm business measures of income but with some variations existing (Table 70). This is undoubtedly due to the great differences in the various farm expenses other than feed.

Table 71. Differences Between Income Over Feed Cost and
Business Income Measures
406* New York Dairy Farms, 1982

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 \$1,100	\$ 939	\$264	\$ 675	\$- 93	\$1,032
\$1,100 to 1,199	1,155	348	807	- 25	1,180
1,200 to 1,299	1,255	349	906	- 51	1,306
1,300 to 1,399	1,356	391	965	54	1,302
1,400 to 1,499	1,457	453	1,004	127	1,330
1,500 to 1,599	1,544	483	1,061	71	1,473
1,600 to 1,699	1,639	516	1,123	33	1,606
1,700 and over	1,834	613	1,221	148	1,686

*Four farms did not report concentrate data.

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 71).

Table 72. Income Over Feed Cost and Related Business Factors
406* New York Dairy Farms, 1982

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 \$1,100	65	\$1,628	\$593	11,800	318,000
\$1,100 to 1,199	75	1,805	647	13,400	377,000
1,200 to 1,299	73	1,834	634	13,600	398,000
1,300 to 1,399	95	2,009	739	14,800	458,000
1,400 to 1,499	84	2,048	692	15,400	444,000
1,500 to 1,599	85	2,113	733	15,700	457,000
1,600 to 1,699	75	2,192	648	16,100	440,000
1,700 and over	87	2,363	707	17,000	481,000

*Four farms did not report concentrate data.

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 72). 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 73. Income Over Feed Cost and Dairy Management Practices
406* New York Dairy Farms, 1982

Income Over Feed Cost	Pounds Concentrates Fed Per Cow	Percent Net Energy From Hay	Percent Days in Milk	Age First Calving	Age All Cows
Less than \$1,100	5,800	18%	84%	28	54
1,100 to 1,199	5,700	17	86	28	52
1,200 to 1,299	6,100	12	86	29	51
1,300 to 1,399	6,500	10	86	27	51
1,400 to 1,499	6,000	11	86	28	51
1,500 to 1,599	6,200	11	86	28	51
1,600 to 1,699	6,500	9	87	28	52
1,700 and over	7,300	8	87	27	50

*Four farms did not report concentrate data.

Income over feed cost appeared to be associated with the use of recommended dairy practices as shown in Table 73. 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 preceding 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.

Combination of Factors

Individual factors have been examined so far. In this section, combinations of factors for the 410 farms are studied. First, combinations of four business factors are observed and then combinations of four dairy management practices.

For each factor, the farms were divided on the basis of whether they were above or below the average for the 410 farms. They were then grouped on the basis of the number of factors better than average. The combination of individual factors above average within the three middle groups varied.

Table 74. Combination of Business Factors* Above Average and Incomes
410 New York Dairy Farms, 1982

Number of Business Factors Above Average	Percent or Farms	Number of Cows	Net Cash Farm Income	Labor and Management Income per Operator	Labor, Mgmt. & Ownership Inc. per Operator
4 factors above average	8%	134	\$79,360	\$10,609	\$34,014
3 factors above average	20	122	58,779	11,387	29,180
2 factors above average	27	81	31,828	263	15,866
1 factor above average	27	60	24,709	113	12,002
0 factors above average	18	49	16,183	- 669	6,837

*Factors were: Size - average 82 cows; pounds milk sold per cow - average 14,900; pounds milk sold per worker - average 420,000; and cost control, percent purchased feed was of milk receipts - average 24 percent.

The relationship between the number of factors better than average and three measures of income are shown in Table 74. As the number of factors above average decreased the net cash farm income and the labor, management, and ownership income per operator decreased at a rapid rate. The relationship with labor and management income was reversed for the groups with three and four factors above average. Farms with more factors above average were the larger farms.

Management factors are all interrelated. This includes both the business factors and the dairy practice factors. The dairy practices of the five groups of farms sorted on business factors were observed and are reported in Table 75. The farms with better than average business factors also were using good dairy practices as shown by the items observed. This is an indication of "managerial abilities" and how individuals who possess good managerial skills use them in both the production and business areas.

Table 75. Combination of Business Factors* Above Average
and Dairy Practices
410 New York Dairy Farms, 1982

Number of Business Factors Above Average	Pounds Concentrates Fed per Cow	Percent Net Energy Succulents	Age First Calving	Days Dry	Percent with Freestalls
4 factors above average	7,400	43%	27 mo.	58	65%
3 factors above average	6,800	44	27	60	51
2 factors above average	6,600	37	28	61	34
1 factor above average	6,000	36	28	62	25
0 factors above average	5,300	28	28	68	10

*See footnote for Table 74.

Dairy practices are interrelated the same as are business factors. The effects of individual dairy practices on incomes and production have already been observed in this study. The effects of combinations of the four dairy practices of pounds of concentrates fed per cow, percent net energy from succulents, age at first calving, and number of days dry, are shown in Table 76.

Table 76. Combination of Dairy Practices* Above Average and Incomes
378** New York Dairy Farms, 1982

Number of Dairy Practice Factors Above Average	Percent of Farms	Net Cash Farm Income	Labor and Management Income per Operator	Labor, Mgmt. & Ownership Inc. per Operator
4 factors above average	9%	\$55,014	\$ 4,196	\$22,933
3 factors above average	29	44,653	4,084	20,610
2 factors above average	33	34,288	3,830	18,206
1 factor above average	21	24,221	1,483	12,170
0 factors above average	8	18,597	- 642	8,127

*Factors were: Pounds concentrates per cow - average 6,300; percent net energy from succulents - average 37 percent; age first calving - average 28 months; days dry - average 62.

**Net energy information was not reported by 32 of the 410 farms.

As the number of dairy practices above average decreased the net cash farm income, the labor and management income per operator, and the labor, management, and ownership income per operator also decreased. In general, it is important to use a combination of good dairy practices if one hopes to obtain a good income.

Dairy practices tend to first affect milk production which, in turn, has an effect on farm income. In Table 77 the effect of the combination of dairy practices on production are shown to be strong. The interrelatedness with farm business factors is shown by the fact that the farms with more dairy practices above average also were larger, had better labor efficiency, better cost control, and a higher percent had freestall barns.

Table 77. Combination of Dairy Practices* Above Average and Business Factors
378 New York Dairy Farms, 1982

Number of Dairy Practice Factors Above Average	Pounds Milk Sold per Cow	Average Number of Cows	Pounds Milk Sold per Worker	Labor & Mach. Expense per Cwt. Milk	Percent Freestall Barns
4 factors above average	15,500	119	515,300	\$4.98	68%
3 factors above average	15,600	92	466,500	5.23	46
2 factors above average	15,000	81	442,400	5.10	31
1 factor above average	13,900	62	345,200	5.67	10
0 factors above average	13,300	51	300,400	5.46	10

*See footnote for Table 76.

This section on combination of factors points out the importance of a manager being able "to put it all together". In order to achieve high production one must use a combination of recommended dairy practices and to obtain a high farm income the operator must use a combination of good production and business 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 410 farms for the year 1982. 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 1982.

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, percent days in milk, and average age of all cows.

"Somatic cell count" is a relatively new management tool provided by DHI. For 1982, 170 of the 410 farms, or 41 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 to 16 years of education had the highest labor and management incomes. In general, the farmers age 40 to 54 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 410 farms this difference averaged 1,086 pounds per cow or 6.8 percent of the amount produced. If DHI rates of production are used for budgeting the figures need to be reduced by 6.8 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 \$700 to over \$1,200 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 dairy practices and business procedures should be examined. Data from this study can be used in analyzing farm businesses, in making comparisons, or for reference purposes.

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Table 78. AVERAGE OF SELECTED FACTORS FOR ALL FARMS IN STUDY
New York Dairy Farms, 1978 through 1982

Factor	Average of All Farms				
	1978	1979	1980	1981	1982
Number of farms	370	337	383	362	410
% farms with DHI records	88%	89%	89%	87%	86%
% farms owner-sampler	12%	11%	11%	13%	14%
% farms freestall barns	32%	32%	32%	32%	33%
Worker equivalent	2.4	2.5	2.6	2.7	2.92
Number of cows	68	70	71	78	82
Number of heifers	49	51	55	60	67
Total crop acres	213	217	236	249	256
Total pounds milk sold	979,300	1,032,000	1,051,400	1,152,600	1,225,400
Total cash farm receipts	\$119,119	\$140,899	\$151,951	\$175,700	\$184,100
Total end inventory	\$313,000	\$385,000	\$419,000	\$460,000	\$477,000
Milk produced per cow	15,200	15,600	15,800	15,900	16,000
Milk sold per cow	14,400	14,700	14,800	14,800	14,900
Tons hay equivalent per acre	2.5	2.7	2.5	2.6	2.6
Tons corn silage per acre	14.1	13.8	14.6	15.0	14.1
Cows per worker	28	28	28	28	28
Milk sold per worker	405,000	413,000	408,000	419,000	420,000
Feed purchased per cow	\$422	\$485	\$529	\$525	\$491
% feed is of milk receipts	28%	28%	28%	26%	24%
Feeding index	120	120	106	118	117
Rate roughage feeding	2.3	2.3	2.0	2.3	2.2
Lbs. concentrates fed per cow	6,000	6,200	5,900	6,100	6,300
% net energy-concentrates	49%	50%	48%	45%	46%
% net energy-succulents	32%	32%	33%	37%	37%
% net energy-hay	12%	12%	13%	13%	12%
% net energy-pasture	7%	6%	6%	6%	5%
Projected calving interval(mo.)	12.9	13.0	13.0	13.0	13.0
Days dry	61	60	61	62	62
% days in milk	86%	86%	86%	86%	86%
Breedings per conception	1.7	1.8	1.8	1.7	1.8
% leaving herd	30%	28%	26%	28%	29%
Age at first calving (mo.)	29	28	28	27	28
Age all cows (mo.)	54	53	53	52	51
Body weight at first calving	1,100	1,100	1,100	1,110	1,100
Body weight all cows	1,250	1,260	1,260	1,260	1,260
Income over value feed	\$972	\$1,153	\$1,271	\$1,385	\$1,421
Average price rec. for milk	\$10.48	\$11.87	\$12.78	\$13.66	\$13.55
Labor & management income per operator	\$20,980	\$20,785	\$885	\$-3,374	\$3,408

Table 79. SELECTED BUSINESS FACTORS BY SIZE OF LABOR AND MANAGEMENT INCOME PER OPERATOR

410 New York Dairy Farms, 1982

Factor	Labor and Management Income Per Operator				
	1	2	3	4	5
Number of farms	82	82	82	82	82
Labor & management income per operator	\$-22,451	\$-4,598	\$2,241	\$9,781	\$28,487
Labor, management & ownership income per operator	\$-4,883	\$7,857	\$15,282	\$22,152	\$46,084
Barn Type					
Percent with freestalls	39%	26%	26%	29%	45%
Size of Business					
Worker equivalent	3.17	2.75	2.58	2.58	3.25
Total crop acres	301	239	224	229	290
Number of cows	87	73	73	70	105
Total capital	\$516,337	\$447,531	\$439,827	\$400,981	\$577,952
Rates of Production					
Pounds milk sold per cow	14,282	14,608	15,114	14,811	15,982
Tons hay crops per acre (H.E.)	2.5	2.5	2.5	2.6	2.8
Tons corn silage per acre	13.1	14.1	13.8	14.0	15.0
Labor Efficiency					
Pounds milk sold per worker	392,000	388,000	428,000	402,000	516,000
Cows per worker	27	27	28	27	32
Feeding Practices					
Feed bought per cow	\$486	\$479	\$506	\$491	\$503
Pounds concentrate fed	6,400	6,300	6,200	6,100	6,400
Feeding index	121	119	116	116	116
Rate of roughage feeding	2.2	2.2	2.3	2.2	2.3
Percent NE from concentrates	48%	47%	46%	46%	46%
Percent NE from succulents	35%	35%	36%	37%	41%
Percent NE from dry hay	12%	12%	13%	12%	9%
Breeding Practices					
Percent days in milk	86%	86%	86%	86%	87%
Projected calving interval (mo.)	13.2	13.0	13.0	13.0	13.0
Average days dry	64	64	61	61	60
Breedings per conception	1.8	1.8	1.7	1.8	1.8
Average age at first calving (mo.)	28	28	28	27	27
Average age all cows (mo.)	52	52	52	52	49
Average weight first calving (lbs.)	1,100	1,100	1,110	1,090	1,100
Average weight all cows (lbs.)	1,250	1,250	1,270	1,240	1,260
Percent leaving herd	31%	30%	27%	27%	29%
Somatic cell count	463,000	369,000	357,000	370,000	315,000

Table 80.

SELECTED BUSINESS FACTORS BY POUNDS MILK SOLD PER COW
410 New York State Dairy Farms, 1982

Factor	Pounds of Milk Sold Per Cow									
	Less Than 11,000	11,000 to 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	17,000 to 18,000	18,000 and Over	
Number of farms	24	14	30	63	100	56	37	20		
Percent of farms	6%	3%	7%	15%	16%	14%	9%	5%		
Labor & mgt. inc./oper.	\$-6,526	\$-931	\$-5,211	\$-962	\$948	\$5,135	\$5,868	\$15,970		
Labor, mgt., & ownership income per operator	\$-1,704	\$6,148	\$8,725	\$10,533	\$16,608	\$19,933	\$25,725	\$38,136		
Barn Type										
% with freestalls	25%	14%	30%	38%	41%	36%	27%	20%		
Size of Business										
Worker equivalent	2.17	2.58	2.50	2.67	3.00	3.00	3.33	2.83		
Total crop acres	188	191	223	262	271	269	276	206		
Number of cows	59	59	75	80	87	87	89	71		
Total capital	\$283,404	\$333,411	\$388,625	\$458,033	\$490,279	\$491,681	\$557,993	\$492,417		
Rates of Production										
Lbs. milk sold/cow	10,000	11,500	12,600	13,700	14,500	16,500	17,500	18,900		
Tons hay crop/acre (HE)	2.0	2.5	2.1	2.7	2.6	2.6	2.8	2.8		
Tons corn sil./acre	11.0	12.9	12.1	13.5	14.4	14.9	14.4	15.8		
Labor Efficiency										
Lbs. milk sold/worker	272,000	263,000	379,000	410,000	424,000	477,000	467,000	474,000		
Cows per worker	27	23	30	30	29	29	27	25		
Feeding Practices										
Feed bought per cow	\$419	\$439	\$469	\$442	\$507	\$547	\$458	\$544		
Pounds concentrate fed	4,400	5,200	5,700	6,100	6,200	6,500	7,400	8,000		
Feeding index	116	119	118	120	119	115	120	116		
Rate roughage feeding	2.2	2.3	2.1	2.2	2.3	2.3	2.3	2.2		
% NE from concentrates	41%	42%	46%	46%	46%	46%	49%	52%		
% NE from succulents	32%	34%	28%	36%	41%	40%	39%	35%		
% NE from dry hay	19%	16%	17%	12%	9%	10%	8%	8%		
Breeding Practices										
Percent days in milk	83%	85%	85%	86%	86%	87%	87%	88%		
Proj. calv. interval	13.3	13.0	13.2	13.0	13.0	12.9	12.9	12.9		
Average days dry	74	69	66	62	61	60	59	57		
Breedings/conception	1.7	1.8	1.7	1.7	1.8	1.8	1.8	1.8		
Age at first calv. (mo.)	28	29	28	28	28	28	26	26		
Age all cows (mo.)	57	55	51	52	51	51	49	48		
Weight first calv. (lbs.)	1,000	1,040	1,080	1,100	1,110	1,120	1,120	1,120		
Weight all cows (lbs.)	1,170	1,180	1,240	1,240	1,260	1,270	1,280	1,280		
Percent leaving herd	29%	27%	30%	28%	28%	29%	28%	32%		
Somatic cell count	495,000	507,000	375,000	427,000	432,000	341,000	289,000	215,000		

Table 81.

SELECTED BUSINESS FACTORS BY SIZE OF HERD
410 New York Dairy Farms, 1982

Factor	Number of Cows in Herd						
	Under 40	40-54	55-69	70-84	85-99	100-149	150 & over
Number of farms	41	96	85	63	33	54	38
Percent of farms	10%	24%	21%	15%	8%	13%	9%
Labor & management income/operator	\$-26	\$632	\$3,847	\$2,820	\$4,785	\$3,092	\$10,239
Net cash income per farm	\$14,350	\$19,999	\$31,586	\$33,023	\$43,066	\$52,418	\$86,010
Barn Type							
Percent with freestalls	0%	3%	25%	30%	45%	78%	92%
Size of Business							
Worker equivalent	1.75	2.08	2.50	2.67	3.08	3.75	5.75
Total crop acres	112	168	216	246	286	361	570
Number of cows	34	48	61	75	90	121	212
Total capital	\$210,921	\$302,447	\$390,856	\$460,413	\$523,298	\$684,239	\$1,085,358
Rates of Production							
Pounds milk sold per cow	13,500	14,400	15,600	15,300	14,900	14,700	15,400
Tons hay crops per acre (H.E.)	2.1	2.3	2.4	2.5	2.9	2.8	2.9
Tons corn silage per acre	12.3	13.0	13.5	13.2	14.2	14.0	15.4
Labor Efficiency							
Pounds milk sold per worker	263,000	331,000	381,000	430,000	35,000	473,000	568,000
Cows per worker	19	23	24	28	29	32	37
Feeding Practices							
Feed bought per cow	\$544	\$508	\$484	\$508	\$475	\$442	\$523
Pounds concentrate fed	5,500	5,800	6,400	6,500	6,100	7,100	7,000
Feeding index	118	115	117	116	114	124	121
Rate of roughage feeding	2.4	2.2	2.3	2.2	2.3	2.2	2.1
Percent NE from concentrates	42%	45%	47%	47%	46%	49%	51%
Percent NE from succulents	26%	31%	36%	41%	42%	42%	46%
Percent NE from dry hay	22%	16%	11%	8%	10%	6%	2%
Breeding Practices							
Percent days in milk	85%	86%	86%	86%	87%	87%	87%
Projected calving interval (mo.)	13.0	13.1	13.0	13.0	13.1	13.1	13.1
Average days dry	69	64	60	61	59	60	58
Breedings per conception	1.7	1.8	1.8	1.7	1.7	1.8	1.9
Average age at first calving (mo.)	28	28	28	28	28	27	26
Average age all cows (mo.)	52	53	51	52	53	50	47
Average weight first calving (lbs.)	1,070	1,100	1,100	1,110	1,100	1,120	1,120
Average weight all cows (lbs.)	1,220	1,250	1,260	1,270	1,250	1,270	1,280
Percent leaving herd	32%	28%	28%	28%	27%	30%	30%
Somatic cell count	353,000	372,000	389,000	356,000	381,000	437,000	393,000

Table 82. SELECTED BUSINESS FACTORS FOR REGISTERED AND GRADE HERDS
410 New York Dairy Farms, 1982

Factor	Registered	Grade
Number of farms	134	276
Percent farms with DHI records	99%	79%
Percent farms owner-sampler	1%	21%
Percent farms freestall barns	23%	38%
Worker equivalent	2.83	2.92
Number of cows	78	84
Number of heifers	68	67
Total crop acres	231	269
Total pounds milk sold	1,186,800	1,244,100
Total cash farm receipts	\$181,167	\$185,519
Total end inventory	\$488,900	\$470,518
Milk produced per cow	16,321	15,888
Milk sold per cow	15,215	14,811
Tons hay equivalent per acre	2.6	2.6
Tons corn silage per acre	14.8	13.8
Cows per worker	28	29
Milk sold per worker	419,364	426,062
Feed purchased per cow	\$499	\$488
Percent feed is of milk receipts	24%	24%
Feeding index	117	118
Rate roughage feeding	2.3	2.2
Pounds concentrates fed per cow	6,400	6,300
Percent net energy-concentrates	46%	47%
Percent net energy-succulents	36%	38%
Percent net energy-hay	12%	11%
Percent net energy-pasture	6%	4%
Projected calving interval (months)	13.1	13.0
Days dry	62	62
Percent days in milk	86%	86%
Breedings per conception	1.8	1.8
Percent leaving herd	27%	30%
Age at first calving (months)	28	28
Age all cows (months)	52	51
Body weight at first calving	1,110	1,100
Body weight all cows	1,270	1,250
Income over value feed	\$1,458	\$1,403
Average price received for milk	\$13.59	\$13.53
Net cash farm income	\$38,076	\$35,115
Labor & management income per operator	\$5,541	\$2,370
Labor, management, and ownership income per operator	\$21,292	\$16,279

Table 83. FARM BUSINESS SUMMARY FOR REGISTERED AND GRADE HERDS
410 New York Dairy Farms, 1982

Item	Registered		Grade	
	1/1/82	1/1/83	1/1/82	1/1/83
<u>Capital Investment</u>				
Livestock	\$133,250	\$135,498	\$118,626	\$118,096
Feed & supplies	30,367	32,107	34,503	34,291
Machinery & equipment	84,614	88,439	87,727	90,461
Land & buildings	<u>225,571</u>	<u>232,856</u>	<u>217,239</u>	<u>227,670</u>
TOTAL INVESTMENT	\$473,802	\$488,900	\$458,095	\$470,518
<u>Receipts</u>				
Milk sales	\$161,298		\$168,357	
Dairy cattle sold	12,772		10,249	
Livestock sales	2,594		2,392	
Other	<u>4,503</u>		<u>4,521</u>	
TOTAL CASH RECEIPTS	\$181,167		\$185,519	
Increase in livestock	7,898		5,102	
Increase in feed & supplies	7,140		0	
Appreciation	<u>3,753</u>		<u>3,774</u>	
TOTAL FARM RECEIPTS	\$194,558		\$194,395	
<u>Expenses</u>				
Labor	\$ 14,653		\$ 15,618	
Feed	40,830		42,671	
Machinery	17,174		17,630	
Livestock				
Replacement livestock	1,040		2,645	
Breeding fees	2,992		2,171	
Veterinary, medicine	3,699		3,502	
Milk marketing	6,331		6,207	
Other livestock expense	7,172		6,256	
Crops	12,632		14,339	
Real estate	12,544		12,759	
Telephone (farm share)	642		607	
Electricity (farm share)	3,768		3,590	
Interest paid	16,809		20,180	
Miscellaneous	<u>2,805</u>		<u>2,229</u>	
TOTAL CASH EXPENSES	\$143,091		\$150,404	
Decrease in feed & supplies	---		212	
Expansion livestock	2,181		1,586	
Machinery depreciation	13,524		13,689	
Building depreciation	6,096		5,743	
Unpaid labor	1,774		1,436	
Interest on farm equity @ 5%	<u>16,880</u>		<u>14,446</u>	
TOTAL FARM EXPENSES	\$183,541		\$187,516	