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DAIRY MANAGEMENT PRACTICES

AND NEW YORK DAIRY FARM INCOMES

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by

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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 1984 report is similar to the studies done for the years 1974 through 1983.** The section in earlier publications on Analysis of Farm Business Management Variables has been omitted here but the information on these variables is contained in the appendices and in A.E. Res. 85-15.

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.

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**Results from the earlier years are available in Cornell Agricultural Economics Staff Paper 75-27; A.E. Res. 77-20; A.E. Res. 78-19; A.E. Res. 79-5; A.E. Res. 79-14; A.E. Res. 80-1; A.E. Res. 81-2; A.E. Res. 82-13; A.E. Res. 83-2; A.E. Res. 84-6; A.E. Res. 85-3; and A.E. Res. 85-4.

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. There are many practices which affect or determine these "general" management factors. Dairy management practices which affect rates of production and cost control are examples.

Purpose of The Study

The purpose of this study has been 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. Computer programs were used to sort the data according to various groupings and average factors in the group were computed. Correlation analyses were also made for selected factors.

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 1984 data are reported in the tables presented in this publication.

Farms Studied

Cooperators in the farm business management project participate 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 1984 is shown in Table 1.

The pounds of milk produced per cow by the 327 farms in the 1984 dairy management practices study averaged 16,500 compared with 12,300 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 15,700 pounds of milk per cow compared with 15,400 for all farms in the business management summaries. 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.

Seventy-one percent of the farms in the business management summary were in the dairy practices summary group. 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, 1984

Item	Summary Group	
	Business Management	Dairy Practices
Number of farms	458	327
Operators		
Average age	43	42
Years of education	13	14
Percent in partnerships or corporations	26%	28%
Barn Type		
Percent with freestalls	36%	39%
Size of Business		
Worker equivalent	3.08	3.17
Number of cows	89	91
Number of heifers	76	80
Total tillable acres	280	282
Total capital	$507,875	$519,601
Rates of Production		
Pounds milk sold per cow	15,433	15,764
Tons hay crop per acre (H.E.)	2.7	2.7
Tons corn silage per acre	14.0	14.1
Labor Efficiency		
Cows per worker	29	29
Pounds milk sold per worker	445,942	452,524
Capital Uses		
Total capital per cow	$5,520	$5,710
Farm debt per cow	$2,209	$2,312
Total capital per worker	$164,894	$163,912
Percent equity	64%	62%
Cost Factors		
Feed bought per cow	$507	$525
Crop expense per cow	$166	$170
Percent feed is of milk sales	24%	25%
Machinery cost per cow	$433	$433
Labor cost per cow	$366	$367
Real estate expense per cow	$151	$155
Total farm expense per cow	$2,387	$2,423
Cost per cwt. producing milk*	$14.03	$14.09
Price		
Average price per cwt. milk sold	$13.49	$13.48
Income		
Net cash income per farm	$39,418	$39,782
Net cash income per cow	$444	$437
Labor & management income per operator	$2,262	$1,977
Labor & management income per cow	$25	$22

*Including a management charge.

Analysis of Feeding Practices

Pounds of concentrates fed per cow, pounds of succulents and dry roughages or hay fed per cow, and feeding index are examined in this section. Information on concentrates was available for only 320 of the 327 farms in the study.

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 2). Pounds of milk sold per pound of concentrate fed decreased from 5.3 for the group of low concentrate feeders to 1.9 for the high group.

Table 2. Pounds of Concentrates Fed Per Cow and Production, 320 New York Dairy Farms, 1984

Pounds of Concentrates Fed Per Cow	Farms		Pounds Per Cow			Lbs. Milk Sold Per Pound of Concentrate
	Number	Percent	Conc.	Milk Produced	Milk Sold	
4,000 or less	54	16%	2,700	15,400	14,300	5.3
4,001 to 5,000	48	15	4,500	15,700	14,600	3.2
5,001 to 6,000	101	32	5,500	16,500	15,300	2.8
6,001 to 7,000	63	20	6,500	17,300	15,900	2.4
7,001 to 8,000	37	12	7,400	17,500	16,400	2.2
8,001 & over	17	5	9,000	18,000	16,700	1.9

Farms with higher rates of concentrate feeding tended to have more cows, greater farm expenses per cow, and larger net cash farm incomes (Table 3). The highest net cash farm income per cow was for the 7,000 to 8,000 pounds of concentrates group. In general, feeding more concentrates paid. The labor and management incomes per operator for 1984 was highest for the group feeding 5,001 to 6,000 pounds of concentrates per cow. There was very little difference, however, for the three groups of farms feeding between 5,000 and 8,000 pounds per cow.

Table 3. Pounds of Concentrates Fed Per Cow and Income, 320 New York Dairy Farms, 1984

Pounds of Concentrates Fed Per Cow	Number of Cows	Total Farm Expenses/Cow	Net Cash Farm Income Per		Labor & Management Income/Operator
			Farm	Cow	
4,000 or less	114	$2,393	$43,502	$391	$-1,169
4,001 to 5,000	75	2,292	30,322	432	-1,074
5,001 to 6,000	74	2,451	34,481	461	1,791
6,001 to 7,000	89	2,498	39,722	455	1,675
7,001 to 8,000	103	2,541	48,430	491	1,727
8,001 & over	95	2,687	43,136	481	-4,805

The ratio of milk prices to feed prices is a factor affecting levels of concentrate feeding.[1] From 1974 to 1978 the milk-feed price ratio increased from 1.21 to 1.54, then declined to 1.43 in 1981 but peaked at 1.55 in 1982. The pounds of concentrates fed per cow in the dairy practices studies increased from 4,800 in 1974 to 6,300 pounds in 1982 and 1983 (Table 4). This suggests that dairy farmers do respond to changes in the milk-feed price ratio. In 1984, milk prices declined to $13.50 and if the 50¢ tax is deducted this makes a net of $13.00 and a ratio of 1.34. The pounds of concentrates fed in 1984 dropped sharply to 5,400 pounds per cow.

Table 4. Milk-Feed Price Ratios and Concentrates Fed Per Cow, New York Dairy Farms, 1974-1984

Year	Average Milk Price*	Average Cost 16% Ration*	Milk-Feed Price Ratio	Pounds Concentrates** Fed Per Cow
1974	$ 8.38	$6.91	1.21	4,800
1975	8.75	6.60	1.33	5,100
1976	9.83	6.95	1.41	5,400
1977	9.75	6.97	1.40	5,600
1978	10.50	6.83	1.54	6,000
1979	11.90	7.84	1.52	6,200
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
1983	13.70	9.63	1.42	6,300
1984	13.50 (13.00)	9.72	1.39 (1.34)	5,400

*Source: New York Agricultural Statistics, 1984, 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. The pounds of succulents fed per cow decreased as the concentrates increased. Farms feeding more pounds of concentrates per cow in general had fewer days dry and higher percent days in milking (Table 5).

Table 5. Pounds of Concentrates Fed Per Cow and Dairy Management Practices, 320 New York Dairy Farms, 1984

Pounds of Concentrates Fed Per Cow	Pounds of Succ. Fed Per Cow	Percent Net Energy From Conc.	Percent Net Energy From Succ.	Days Dry	Percent Leaving Herd	Percent Days in Milk	Average Age at First Calving
4,000 or less	19,200	50	35	64	34%	86	27.6
4,001 to 5,000	16,300	39	38	61	31	86	28.4
5,001 to 6,000	16,400	45	35	62	32	86	27.9
6,001 to 7,000	16,500	47	39	61	30	86	28.0
7,001 to 8,000	15,200	49	37	60	32	87	26.8
8,001 & over	14,500	58	32	60	35	88	27.4

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

Succulents Fed Per Cow

Greater use of silages or succulents has been recommended for many years. Hay crop put up as silage often means better quality roughage than if made as dry hay. Corn silage production has also been increasing. For the 327 farms in the 1984 study, succulents (silage) accounted for 37 percent of the net energy. Four percent of the farms fed 4,000 or less pounds of succulents per cow while eight percent reported 24,000 and over (Table 6).

Table 6. Pounds of Succulents Fed Per Cow and Related Business Factors, 327 New York Dairy Farms, 1984

Pounds of Succulents Fed Per Cow	Farms		No. of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
4,000 or less	13	4%	49	13,500	$19,747	$395	$-2,031
4,001 to 8,000	18	6	54	15,000	25,744	492	707
8,001 to 12,000	40	12	67	15,000	26,617	417	475
12,001 to 16,000	79	24	79	15,200	33,269	429	-899
16,001 to 20,000	88	27	92	15,800	41,103	464	-1,627
20,001 to 24,000	62	19	123	15,500	55,049	444	6,832
24,001 & over	27	8	133	15,900	54,293	449	-1

In general the farms that fed more pounds of succulents per cow had more cows and higher rates of production per cow. Net cash farm incomes per farm tended to be higher for the farms using more succulents (Table 6). The relationship with labor and management income per operator was variable.

Table 7. Pounds of Succulents Fed Per Cow and Dairy Management Practices, 327 New York Dairy Farms, 1984

Pounds of Succulents Fed Per Cow	Pounds Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Average Age at First Calving
	Conc.	Succ.	Conc.	Succ.			
4,000 or less	6,100	2,200	52	14	68	31%	29.3
4,001 to 8,000	5,800	6,900	46	17	62	28	28.1
8,001 to 12,000	5,600	10,400	48	25	66	32	28.1
12,001 to 16,000	5,500	14,000	47	34	62	32	28.3
16,001 to 20,000	5,400	18,200	47	42	62	32	27.5
20,001 to 24,000	5,000	21,900	47	47	59	32	27.6
24,001 & over	4,600	26,500	47	47	60	37	26.1

Farms that fed more pounds of succulents per cow fed less pounds of concentrates (Table 7). The farms feeding more succulents had fewer days dry and earlier age for first calving which are indications of good herd practices.

Dry Roughages Fed Per Cow

Twenty-seven percent of the 327 farms fed 1,000 pounds or less of dry roughages or hay per cow. These were the larger farms with an average of 143 cows. On the other hand, 22 percent reported feeding 4,000 pounds or more and these were the smaller farms. The farms depending more on hay had lower net cash farm incomes per farm and had negative labor and management per operator (Table 8).

Table 8. Pounds of Dry Roughages Fed Per Cow and Related Business Factors, 327 New York Dairy Farms, 1984

Pounds Dry Roughages Fed Per Cow	Farms		Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
1,000 or less	88	27%	143	15,800	$59,654	$430	$ 3,734
1,001 to 2,000	57	17	94	15,700	43,613	479	2,503
2,001 to 3,000	64	20	77	15,500	30,499	413	-4,400
3,001 to 4,000	47	14	66	15,500	34,262	514	2,877
4,001 to 5,000	31	10	62	14,700	23,610	395	-2,094
5,001 & over	40	12	51	14,300	21,987	426	-1,091

Dairy management practices followed seemed to correspond with the hay feeding practices. Farms depending more on hay fed less pounds of silage and concentrates, had more days dry, and a slightly older age at first calving (Table 9).

As the pounds of dry roughages (hay) increased, that from succulents decreased. For all groups the combined hay and succulents accounted for from 46 to 53 percent of the total net energy. The farms depending more on hay also used more pasture (Table 9).

Table 9. Pounds of Dry Roughages Fed Per Cow and Dairy Management Practices, 327 New York Dairy Farms, 1984

Pounds Dry Roughages Fed Per Cow	Pounds Fed Per Cow		Percent Net Energy From			Days Dry	Percent Leaving Herd	Average Age at First Calving
	Conc.	Succ.	Hay	Succ.	Pasture			
1,000 or less	5,100	20,900	2%	47%	7%	59	33%	27.1
1,001 to 2,000	5,600	18,600	8	40	6	62	33	27.7
2,001 to 3,000	5,400	16,000	11	37	7	61	33	27.9
3,001 to 4,000	5,600	15,200	16	30	8	61	29	28.8
4,001 to 5,000	5,400	12,100	22	24	12	64	28	28.3
5,001 & over	5,200	9,900	29	24	11	67	33	27.7

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. Feed index information was available for only 206 farms.

Table 10. Feeding Index and Related Business Factors, 206 New York Dairy Farms, 1984

Feeding Index	Farms		Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
Less than 95	11	5%	77	14,100	$34,127	$468	$ 2,767
95 to 99	6	3	69	17,200	51,851	760	4,893
100 to 104	15	7	77	15,200	27,271	415	-596
105 to 109	34	17	86	15,700	42,386	489	-4,433
110 to 114	25	12	89	15,700	38,880	442	3,888
115 to 119	35	17	76	15,400	35,846	474	586
120 to 124	32	16	98	16,000	48,614	476	6,411
125 & over	48	23	83	15,000	32,209	391	-3,532

With 68 percent of the farms having feeding indices of 110 or more it suggests that some dairy farmers 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 herd rates of production or income (Table 10).

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 11).

Table 11. Feeding Index and Dairy Management Practices, 206 New York Dairy Farms, 1984

Feeding Index	Pounds Fed Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Average Age at First Calving
	Conc.	Succ.	Conc.	Succ.			
Less than 95	5,100	15,700	52	29	64	31%	28.8
95 to 99	5,200	14,900	42	37	58	29	29.3
100 to 104	5,000	15,300	41	37	66	35	28.7
105 to 109	5,900	16,200	46	36	62	34	27.5
110 to 114	5,900	15,000	44	37	64	29	28.6
115 to 119	6,400	14,400	46	33	61	30	28.2
120 to 124	6,500	17,900	44	44	60	30	27.0
125 & over	6,800	15,900	44	37	62	33	27.6

Analysis of Breeding Practices

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

Age at First Calving

The average age at first calving for the 327 farms in 1984 was 28 months. There was sizable range among the farms. Nine 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, eight percent reported average age at first calving of 33 months or more, which is approaching three years of age (Table 12).

Table 12. Age at First Calving and Related Business Factors, 327 New York Dairy Farms, 1984

Age at First Calving	Farms		No. of Cows	Body Weight at First Calving	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	No.	Percent				Farm	Cow	
Under 25	29	9%	151	1,090	16,700	$70,585	$508	$11,789
25 to 26	99	30	95	1,110	15,700	42,717	477	1,461
27 to 28	89	27	86	1,120	15,300	37,148	430	96
29 to 30	59	18	79	1,120	15,000	30,901	412	-1,304
31 to 32	24	8	80	1,120	14,800	34,178	420	-1,854
33 & over	27	8	68	1,150	14,700	25,321	384	-5,822

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 per cow 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 13). Farms that had the heifers freshening at an early age also were feeding more succulents per cow, had higher percent net energy from succulents, and higher percent leaving herd.

Table 13. Age at First Calving and Dairy Management Practices, 327 New York Dairy Farms, 1984

Age at First Calving	Pounds Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Average Age at First Calving
	Conc.	Succ.	Conc.	Succ.			
Under 25	5,400	18,900	51	41	62	35%	23.7
25 to 26	5,400	17,500	46	39	61	32	25.6
27 to 28	5,500	16,600	49	34	63	32	27.6
29 to 30	5,200	16,100	46	37	61	32	29.4
31 to 32	5,200	14,400	44	36	61	31	31.2
33 & over	5,600	14,600	47	28	62	29	34.0

Projected Minimum Calving Interval

The average minimum calving interval for the 327 farms in 1984 was 12.8 months. Twenty-six percent of the farms reported average minimum calving intervals of less than 12.5 months. The goal is to have the cows calve at regular 12 month intervals but this is difficult to achieve.

Table 14. Projected Minimum Calving Interval and Related Business Factors, 327 New York Dairy Farms, 1984

Projected Minimum Calving Interval (mo.)	Farms		No. of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
Less than 12.5	84	26%	84	15,400	$38,228	$446	$ 3,352
12.5 to 12.9	116	35	88	15,800	40,044	465	380
13.0 to 13.4	84	26	108	15,300	46,609	464	2,646
13.5 to 13.9	32	10	83	14,800	26,609	333	-4,305
14.0 or more	11	3	84	14,000	26,031	368	-17,623

In general, the longer the projected minimum calving interval, the lower the pounds of milk sold per cow (Table 14). This suggests that getting the cows bred back promptly does affect production. There was no consistent relationship between calving interval and herd size.

Farms with longer projected minimum calving interval had less net cash income per farm and per cow, and large losses in labor and management income per operator. It appears that calving interval affects both rates of production and income.

Projected minimum calving interval appears to be related to the days dry but did not show any definite relationship to the feeding practices (Table 15).

Table 15. Projected Minimum Calving Interval and Dairy Management Practices, 327 New York Dairy Farms, 1984

Projected Minimum Calving Interval (mo.)	Pounds Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Average Age at First Calving
	Conc.	Succ.	Conc.	Succ.			
Less than 12.5	5,300	16,900	47%	37%	61	33%	26.9
12.5 to 12.9	5,700	16,300	48	35	63	31	27.9
13.0 to 13.4	5,200	16,600	46	37	62	32	27.9
13.5 to 13.9	4,800	17,000	46	37	60	29	29.3
14.0 or more	5,600	18,600	50	39	58	42	27.6

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 feeding and proper veterinary care, milk per cow and farm income can be maintained with 60 or less days dry.

Table 16. Days Dry and Related Business Factors, 327 New York Dairy Farms, 1984

Average Days Dry	Farms		No. of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
50 or less	26	8%	89	15,500	$40,195	$491	$ -378
51 to 55	55	17	96	15,400	38,754	423	1,958
56 to 60	83	25	85	15,600	38,000	477	343
61 to 65	74	23	99	16,100	43,954	458	1,337
66 to 70	39	12	106	15,000	45,913	446	4,154
over 70	50	15	81	14,200	30,710	364	-3,419

Eight percent of the farms reported an average of 50 or less days dry (Table 16). Fifty 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 higher number of days dry fed about the same pounds of concentrates per cow, but fewer pounds of succulents (Table 17).

Average number of days dry seemed to have no relation to size of herd. The farms with 66 to 70 days dry averaged the largest with 106 cows while the farms with over 70 days dry were the smallest, averaging 81 cows. Farms with over 70 days dry had the lowest production and income.

Table 17. Days Dry and Dairy Management Practices, 327 New York Dairy Farms, 1984

Average Days Dry	Pounds Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Percent Days in Milk
	Conc.	Succ.	Conc.	Succ.			
50 or less	5,500	17,500	52%	33%	51	32%	90%
51 to 55	5,500	17,300	48	39	51	29	88
56 to 60	5,300	17,400	47	38	50	33	87
61 to 65	5,600	17,200	48	37	50	32	86
66 to 70	5,500	15,800	46	37	50	33	85
over 70	4,800	14,400	44	32	53	33	82

Average days dry is related to percent days in milk and more days dry results in a lower percent days in milk. This is seen in Table 17.

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 18).

Table 18. Percent Days in Milk and Related Business Factors, 327 New York Dairy Farms, 1984

Percent Days in Milk	Farms		Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
81 or less	10	3%	47	12,400	$16,834	$308	$-2,972
82 to 83	25	8	80	14,100	26,875	299	-9,918
84 to 85	72	22	91	15,200	38,851	446	3,402
86 to 87	120	37	89	15,400	41,248	472	44
88 to 89	76	23	108	16,200	44,818	454	2,546
90 & over	24	7	82	15,900	38,164	468	2,092

Thirty-seven 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 327 farms in 1984 was 86. As the percent of days in milk increased, the average days dry decreased as would be expected (Table 19).

The farms with the highest percent days in milk fed more pounds of concentrates and succulents per cow. Percent days in milk had no definite relationship with percent leaving the herd or projected minimum calving interval.

Table 19. Percent Days in Milk and Dairy Management Practices, 327 New York Dairy Farms, 1984

Percent Days in Milk	Pounds Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Projected Minimum Calving Interval
	Conc.	Succ.	Conc.	Succ.			
81 or less	4,000	12,300	47%	22%	94	38%	12.8
82 to 83	5,400	14,800	46	34	74	29	12.8
84 to 85	5,200	15,500	45	35	66	30	12.7
86 to 87	5,300	17,900	46	40	60	32	12.8
88 to 89	5,700	17,200	52	35	55	32	12.8
90 & over	5,600	15,800	47	35	52	37	13.7

Analysis of Replacement Practices

Replacement practices are an important aspect of herd management. Choosing which cows to keep, which to sell, and when, is a difficult management decision. To examine replacement practices, three measures were used; percent of herd leaving as culls, average age of all cows, and percent of herd entering as first calf heifers.

Percent Leaving as Culls

In 1984 for the 327 farms, the average percent of herd leaving as culls was 32 which was up from 30 percent in 1983 and 29 percent in 1982. This reflects the large number of heifers on farms and the low milk-feed price ratio.

Table 20. Percent of Herd Leaving as Culls and Business Characteristics, 327 New York Dairy Farms, 1984

Percent of Herd Leaving as Culls	Total No. of Farms in Group	Farms Selling Cows for Dairy		Percent Leaving Herd as		No. of Cows	Pounds Milk Sold Per Cow
		No.	% of group	Culls	Dairy		
Under 20	29	14	48%	14%	6%	73	15,700
20 to 24	52	17	33	22	2	85	15,600
25 to 29	62	15	24	27	2	90	15,300
30 to 34	68	20	29	32	1	101	16,200
35 & over	116	33	28	44	2	94	15,600

The farms were grouped on the basis of percent of herd leaving as culls or for slaughter during the year. Twenty-nine farms (nine percent) reported less than 20 percent leaving as culls while 116 farms (35 percent) reported 35 percent or more leaving. In addition, some cows left the herd for dairy purposes. The combined figures show the percent of herd turnover for the year.

Farms with under 20 percent of the herd leaving as culls with an average of 14 percent culled also sold six percent as dairy animals. This gave a total of 20 percent or about one-fifth turnover. At the other extreme the farms with 35 percent and over leaving as culls had an average of 44 percent plus two percent for dairy or 46 percent leaving during the year. This means that one-third of the farms had a turnover of nearly one-half for the year. The larger herds had the higher turnovers. There was no apparent relation of turnover to rate of production.

Table 21. Percent of Herd Leaving as Culls and Replacement Practices, 327 New York Dairy Farms, 1984

Percent of Herd Leaving as Culls	Percent of Herd Entering as			Total Percent Leaving	No. of Cows Increase For Year	Heifers as Percent of Cows
	1st Calf Heifers	Other Cows	Total			
Under 20	26%	1%	27%	20%	4	81%
20 to 24	27	1	28	24	4	84
25 to 29	29	2	31	29	2	87
30 to 34	33	2	35	33	4	85
35 & over	36	3	39	46	-3	90

Herds with a higher percent leaving as culls also had a higher percentage of heifers. This may indicate that farmers with more heifers cull heavier. Replacements are made either by first calf heifers or the purchase of other cows. For the five groups observed purchased cows accounted for from three to eight percent of the total replacements. Herd size as measured by the number at

the beginning and the number at the end increased during 1984 for four of the five groups studied. This is also reflected by the percent entering being larger than the percent leaving.

Table 22. Percent of Herd Leaving as Culls and Farm Income, 327 New York Dairy Farms, 1984

Percent of Herd Leaving as Culls	Receipts From Cattle Sales Per		Net Cash Farm Income Per		Labor & Management Income Per Operator
	Farm	Cow Sold	Farm	Cow	
Under 20	$10,926	$555	$30,963	$424	$3,723
20 to 24	10,156	442	35,459	417	2,998
25 to 29	10,647	329	39,535	439	4,733
30 to 34	14,428	386	43,444	430	3,445
35 & over	15,250	324	41,918	446	-1,259

Receipts per cow leaving the herd from dairy cattle sales ranged from $324 for the 35 and over percent group to $555 for the under 20 percent group. The under 20 group reported six percent leaving for dairy and 14 percent leaving as culls which likely explains the $555 receipts per cow sold. For the low group with $324 receipts per cow, only two percent left for dairy and 44 percent as culls. The highest average labor and management income per operator was for the group with 25 to 29 percent of the herd leaving as culls. The second highest labor and management income was for the group with under 20 percent as culls but with six percent leaving as dairy animals. The one-third of the farms with 35 percent and over leaving as culls had the lowest income per operator with $-1,259 per farm. This suggests that modest culling rates pay better than do high culling rates.

Table 23. Percent of Herd Leaving as Culls and Dairy Practices, 327 New York Dairy Farms, 1984

Percent of Herd Leaving As Culls	Pounds Fed Per Cow		Minimum Calving Interval	Days Dry	Average Age		Somatic Cell Count
	Conc.	Succ.			First Calving	All Cows	
Under 20	5,200	16,000	12.9	61	28	55	256,000
20 to 24	5,500	15,700	12.8	61	28	53	388,000
25 to 29	5,500	16,000	12.8	61	28	52	346,000
30 to 34	5,100	16,700	12.8	61	27	50	352,000
35 & over	5,400	17,600	12.9	62	27	48	377,000

Dairy practices and percent leaving herd as culls showed some positive relationships. Farms with higher culling rates tended to feed more succulents per cow. Minimum calving interval, days dry, and somatic cell count displayed no consistent relationship to culling rate. Average age at first calving was lower for the high culling groups as was the average age of all cows. These are logical since more heifers and/or heifers freshening at younger ages makes it possible to cull heavier. Heavier culling results in younger herds as expressed by average age of all cows (Table 23).

Percent of Herd Entering as First Calf Heifers

Replacements can be raised or purchased. Those purchased can be either bred heifers or milking cows. The DHI information reports the percent first calf heifers are of the total herd number and also the percent other cows are of replacements. In this section the farms have been grouped on the percent of herd entering as first calf heifers. In general, this is a reflection of the source of replacements for the cows culled which was examined above.

Table 24. Percent of Herd Entering as First Calf Heifers and Business Factors, 326* New York Dairy Farms, 1984

Percent of Herd Entering as First Calf Heifers	Farms		No. of Cows	Lbs. Milk Sold Per Cow	Net Cash Farm Income		Labor & Mgmt. Income Per Operator
	No.	Percent			Per Farm	Per Cow	
Under 20	33	10%	67	14,200	$25,608	$382	$-1,147
20 to 24	25	8	85	15,400	33,568	439	-5,199
25 to 29	58	18	88	15,200	36,578	438	-1,385
30 to 34	85	26	82	15,800	36,544	442	-663
35 & over	125	38	107	15,500	47,957	465	4,134

*Information not available for one farm.

Ten percent of the farms reported under 20 percent of the herd as first calf heifers while 38 percent reported 35 percent and over of the herd as first calf heifers. In general, the higher the percent heifers, the larger the herd and higher the rate of production. Farm incomes were larger on farms with a higher proportion of the herd as first calf heifers (Table 24). Adding heifers to the herds appears to have paid in 1984.

Table 25. Percent of Herd Entering as First Calf Heifers and Dairy Practices, 326* New York Dairy Farms, 1984

Percent of Herd Entering as First Calf Heifers	Pounds Fed Per Cow		Percent Net Energy From		Heifers as % Cows	Average Age	
	Conc.	Succ.	Conc.	Succ.		All Cows	At First Calving
Under 20	4,900	14,700	44%	31%	78%	58	30
20 to 24	4,700	16,700	43	37	83	53	27
25 to 29	5,300	16,100	45	38	84	53	28
30 to 34	5,700	17,000	48	37	85	51	28
35 & over	5,400	17,200	49	37	92	47	27

*Information not available for one farm.

The dairy practices were observed for the five groups based on percent of the herd consisting of first calf heifers. Rates of concentrate feeding tended to be higher for farms with more first calf heifers in the herd while the percent net energy from succulents showed no difference. Herds with a higher percent first calf heifers had more heifers per cow, heifers freshened a little younger, and the average age of all cows was younger (47 versus 58 months) (Table 25).

The "best" replacement practices are not readily obvious from the data examined here. It appears likely that there is a "too high" and a "too low" culling rate. The optimum or most profitable level of culling appears to be at the 25 to 29 percent rate. Having more first calf heifers as replacements in the herd seemed to pay in 1984.

Average Age of All Cows

It might logically be expected that 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 327 herds for 1984 and for herds in the earlier years studied.

Table 26. Average Age All Cows and Related Business Factors, 327 New York Dairy Farms, 1984

Average Age All Cows	Farms		Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per		Labor & Mgmt. Income Per Operator
	Number	Percent			Farm	Cow	
Under 45	46	14%	125	15,800	$53,693	$446	$4,453
45 to 47	62	19	98	15,700	46,211	499	3,989
48 to 50	66	20	94	15,500	41,038	465	-20
51 to 53	59	18	90	15,400	39,417	436	4,414
54 to 56	33	10	79	15,000	33,274	412	-3,925
57 to 59	33	10	65	14,900	23,254	390	-4,489
60 & over	28	9	67	14,700	24,098	382	-7,760

Seventy-one percent of the farms had a herd average age of less than 54 months. However, the farms in the 51 to 53 months average age group had about the same labor and management income per operator as the group under 45 months average age (Table 26). The pounds of milk sold per cow was the best for the herd 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 and the poorest incomes.

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 better due to the improved sires being used.

Table 27. Average Age All Cows and Dairy Management Practices, 327 New York Dairy Farms, 1984

Average Age All Cows	Pounds Fed Per Cow		Percent Net Energy From		Days Dry	Percent Leaving Herd	Average Body Weight All Cows
	Conc.	Succ.	Conc.	Succ.			
Under 45	5,300	19,500	49%	38%	62	40%	1,240
45 to 47	5,600	17,500	47	39	60	35	1,250
48 to 50	5,600	16,000	51	34	60	31	1,270
51 to 53	5,200	16,400	46	37	64	31	1,270
54 to 56	5,100	16,100	47	35	64	29	1,290
57 to 59	5,500	14,600	43	34	62	30	1,270
60 & over	5,200	15,500	44	34	63	24	1,260

The dairy management practices appeared to be better for the younger herds (Table 27).

Analysis of 150 Farms With Somatic Cell Count Records

Practices related to herd health are an important part of a herdsperson's management. Mastitis has been a major problem in herd health. The challenge has been how to detect and control it. The somatic cell count program was developed by DHI as a way of helping dairy farmers detect mastitis. Of the 327 farms included in the dairy management practices study, 150 or 46 percent had somatic cell count information available. This information has been studied and is reported in this section.

Table 28. Somatic Cell Count and Labor and Management Incomes, 150 New York Dairy Farms, 1984

Average Somatic Cell Count For Herd	Percent of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Cash Farm Income Per Farm	Net Cash Farm Income Per Cow	Labor & Mgmt. Income Per Operator	Labor & Mgmt. Income Per Cow
Under 200,000	11%	94	16,200	$48,621	$517	$7,679	$115
200,000 to 299,999	31	109	16,700	51,225	470	6,422	78
300,000 to 399,999	26	94	15,700	38,477	400	-249	-4
400,000 to 499,999	16	85	14,800	31,338	369	-1,063	-16
500,000 & over	16	82	13,700	20,078	245	-7,674	-106

The average bulk tank somatic cell count for the 150 herds was 357,000. Eleven percent had average counts of under 200,000 while 16 percent were 500,000 or more (Table 28). There was a relationship between the somatic cell count and the pounds of milk sold per cow, net cash farm income per farm and per cow, and labor and management income per operator and per cow. The income dropped as the somatic cell count increased.

Table 29. Somatic Cell Count and Related Business Factors, 150 New York Dairy Farms, 1984

Average Somatic Cell Count for Herd	Vet. Expense Per Cow	Total Farm Expense Per Cow	Pounds Milk Sold Per Worker	Age of Oper.	Educ. of Oper.	Percent of Freestall Barns
Under 200,000	$48	$2,385	495,000	40	14	41%
200,000 to 299,999	53	2,464	532,000	42	13	43
300,000 to 399,999	42	2,455	433,000	42	13	46
400,000 to 499,999	36	2,378	398,000	40	14	42
500,000 & over	34	2,286	385,000	46	14	38

Several farm business factors were observed for the five groups based on somatic cell count with the results shown in Table 29. The dairy management practices in general were not associated with the different levels of somatic cell counts as shown in Table 30.

Table 30. Somatic Cell Count and Dairy Management Practices, 150 New York Dairy Farms, 1984

Average Somatic Cell Count for Herd	Pounds Fed Per Cow Conc.	Pounds Fed Per Cow Succ.	Percent Net Energy From Conc.	Percent Net Energy From Succ.	Days Dry	Age All Cows	Percent With Pipeline Milkers
Under 200,000	5,700	16,500	44%	40%	64	53	59%
200,000 to 299,999	5,600	16,900	45	40	62	49	50
300,000 to 399,999	5,400	17,500	47	37	61	52	46
400,000 to 499,999	5,200	14,900	50	32	60	52	42
500,000 & over	4,800	17,500	48	37	61	52	50

Other Factors Studied

Management information of various kinds was available for each of the 327 farms. This made it possible to study the relationships of other factors to the dairy management practices and the farm business in general. General observations in two areas are reported below.

Type of Barn

The type of barn is a basic feature in a dairy operation which affects management. These 327 farms were grouped according to type of farm and the practices were observed.

Table 31. Type of Barn and Related Business Factors, 327 New York Dairy Farms, 1984

Type of Barn	Percent of Farms	No. of Cows	Pounds Milk Sold Per Cow	Pounds Milk Sold Per Worker	Net Cash Farm Income Per Farm	Net Cash Farm Income Per Cow	Labor & Mgmt. Income Per Operator
Freestall	39%	137	15,900	533,000	$58,115	$424	$5,516
Stanchion	56	63	15,400	388,000	28,244	448	-879
Other	5	63	15,400	417,000	28,793	457	2,907

Thirty-nine percent of the barns were freestall and 56 percent were stanchion or stall type. The freestall barn farms had more than twice as large herds as the stanchion barns as shown in Table 31. Pounds of milk sold per cow and per worker were 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. Net cash farm income per cow was slightly less for the freestall barns.

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, heifers calved earlier, the somatic cell count was slightly lower, while the percentage leaving the herd as culls was a little higher (Table 32).

Table 32. Type of Barn and Dairy Management Practices, 327 New York Dairy Farms, 1984

Type of Barn	Percent Net Energy From Conc.	Percent Net Energy From Succ.	Percent Net Energy From Hay	Days Dry	Age First Calving	Somatic Cell Count	Percent Leaving Herd
Freestall	45%	45%	8%	61	27	352,000	34%
Stanchion	44	33	16	62	28	360,000	31
Other	41	45	10	60	27	371,000	29

It has been stated that labor and management income is an indication of the "managerial ability" of the operator. It is often said that it takes a "good manager" to operate successfully in a freestall barn. These 1984 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 ($5,516 versus $-979). The freestall operators used good business management procedures and recommended dairy practices as shown in Table 32.

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 33. Comparison of Milk Produced and Milk Sold Per Cow By Herd Size, 327 New York Dairy Farms, 1984

Number of Cows	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 40	15,886	14,406	1,480	9.3%
40 to 54	16,065	14,804	1,261	7.8
55 to 69	16,624	15,536	1,088	6.5
70 to 84	16,716	15,542	1,174	7.0
85 to 99	16,698	15,550	1,148	6.9
100 to 149	16,642	15,290	1,352	8.1
150 & over	17,082	16,412	670	3.9

Differences between the milk produced and milk sold in 1984 were computed by herd size and by rates of production and the results are shown in Tables 33 and 34. Differences by herd size ranged from 670 to 1,480 pounds per cow while by rates of production the range was from 514 to 1,662. There was no apparent direct relationship between size and the differences, while there was a steady decrease in percent the difference was of the amount produced for herds selling more than 14,000 pounds per cow.

Table 34. Comparison of Milk Produced and Milk Sold Per Cow By Rates of Production, 327 New York Dairy Farms, 1984

Milk Sold Per Cow	Pounds of Milk Per Cow		Difference	
	Produced	Sold	Pounds	Percent of Produced
Under 12,000	12,404	10,742	1,662	13.4%
12,000 to 12,999	13,655	12,626	1,029	7.5
13,000 to 13,999	14,576	13,464	1,112	7.6
14,000 to 14,999	15,950	14,675	1,275	8.0
15,000 to 15,999	16,789	15,486	1,303	7.8
16,000 to 16,999	17,584	16,617	967	5.5
17,000 to 17,999	18,365	17,417	948	5.2
18,000 & over	19,730	19,216	514	2.6

Combination of Factors

In this section, combinations of factors for the 327 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 average or better for the 327 farms. They were then grouped on the basis of the number of factors that were average or better. The combination of individual factors within the three middle groups varied.

Table 35. Combination of Business Factors* Average or Better and Incomes, 327 New York Dairy Farms, 1984

Number of Business Factors Average or Better	Percent of Farms	No. of Cows	Net Cash Farm Income	Labor & Mgmt. Inc. Per Operator	Labor, Mgmt. & Ownership Inc. Per Operator
4 factors average or better	10%	199	$92,935	$20,685	$45,384
3 factors average or better	15	123	49,351	4,975	32,533
2 factors average or better	28	91	41,569	930	17,873
1 factor average or better	31	64	28,588	-974	15,136
0 factors average or better	16	53	17,104	-7,016	5,436

*Factors were: Size - average 91 cows; pounds milk sold per cow - average 15,700; cows per worker - average 29; and cost control, labor and machinery cost per hundredweight milk sold - $5.08.

The relationship between the number of factors average or better and three measures of income are shown in Table 35. As the number of factors average or better decreased, the net cash farm income, the labor and management income, and the labor, management, and ownership income per operator decreased at a rapid rate. The farms with more factors average or better were 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 36. The farms with average or better 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 posses good managerial skills use them in both the production and business areas.

Table 36. Combination of Business Factors* Average or Better and Dairy Practices, 327 New York Dairy Farms, 1984

Number of Business Factors Average or Better	Income Over Feed Cost	Lbs. Conc. Fed Per Cow	Average Age All Cows	Age First Calving	Days Dry	% With Free-stalls
4 factors avg. or better	$1,509	5,500	47	26 mo.	60	88%
3 factors avg. or better	1,407	5,400	50	27	59	51
2 factors avg. or better	1,385	5,400	51	28	60	41
1 factor avg. or better	1,332	5,700	52	28	62	21
0 factors avg. or better	1,163	4,900	53	28	64	17

*See footnote for Table 35.

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 concentrates fed per cow, pounds succulents fed per cow, average age at first calving, and days open all cows are shown in Table 37.

Table 37. Combination of Dairy Practices* Above Average, Incomes, and Production Costs, 320** New York Dairy Farms, 1984

Number of Factors Above Avg.	Farms		Net Cash Farm Income Per		Income Per Operator		Prod. Cost Per Cwt. Milk
	No.	Percent	Farm	Cow	Labor & Management	Labor, Mgmt. & Ownership	
4	34	11%	$61,103	$519	$5,976	$30,282	$14.39
3	90	28	42,802	467	4,277	22,585	14.94
2	104	32	38,901	453	-2,109	20,504	15.39
1	69	22	30,695	395	-1,762	17,476	15.52
0	23	7	30,454	367	-885	15,407	16.18

*Factors were: pounds concentrates fed per cow - average 5,366; pounds succulents fed per cow - average 16,678; age at first calving - average 27.8 months; days open all cows - average 106.
**Seven farms did not report.

As the number of dairy practices above average decreased, the net cash farm income, per farm and per cow, and labor, management, and ownership income per operator decreased whereas cost of production per hundredweight milk increased. 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 38 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, and a lower capital investment per cow.

Table 38. Combination of Dairy Practices* Above Average and Business Factors, 320** New York Dairy Farms, 1984

Number of Factors Above Average	Pounds Milk Sold Per Cow	Number of Cows	Pounds Milk Sold Per Worker	Capital Investment Per Cow	Percent Freestall Barns
4	16,800	110	521,800	$5,599	53%
3	16,100	99	447,600	5,781	33
2	15,200	93	434,600	6,096	40
1	14,900	78	408,100	5,767	42
0	13,900	80	408,000	6,233	26

*See footnote for Table 37.
**12 farms did not report.

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.

Correlation Analysis of Business and Dairy Practices

Correlation coefficients for selected business and dairy practices with labor and management income per operator, milk sold per cow, net cash income per cow, total farm expenses per cow, and cows per worker are shown in Table 39.

Size of business may be expressed in terms of number of cows, total pounds of milk sold, total tillable acres, worker equivalents, and total capital invested. These measures of size showed significant positive correlations with operator income and pounds of milk sold per cow, suggesting that the larger farms would tend to have higher operator income and production per cow than smaller farms.

Correlations for net cash income per cow with the size measures were not significant. This indicates that the larger farms are capable of controlling costs to the extent that their net cash income on a per cow basis would tend to equal that of smaller farms.

Total farm expenses per cow showed small positive correlations, and cows per worker larger positive correlations with the size measures. This suggests that the larger farms tended to have a higher labor efficiency and a higher total farm expense per cow than the smaller farms. A higher total farm expense per cow may be a result of higher levels of milk sold per cow on the larger farms (see correlations for milk sold per cow and size measures).

Correlations for the variables studied with production cost per hundredweight milk suggest that farms with high production costs would tend to have a lower operator income, net cash farm income per cow, production per cow, labor efficiency, and a higher total farm expense per cow. Included in the cost of producing milk is feed and crop expenses per hundredweight milk and correlations for this factor with the variables studied were similar to those for production cost per hundredweight milk. In addition, correlations for the variables with total farm expense per cow followed a similar trend except with milk sold per cow (0.541). This is probably due to higher feeding levels in high producing herds. The correlation (0.370) for milk sold per cow with feed and crop expenses per cow is evidence of this.

Total capital, land and buildings, and machinery investment on a per cow basis were positively correlated with total farm expenses per cow and negatively correlated with operator income, which suggests that overcapitalization may be unprofitable. Correlations for these investment variables with cows per worker were negative. This may be a result of the farms with small herd sizes having a high capital investment per cow and low labor efficiency.

Correlations for labor cost and machinery cost on a per cow basis, with total farm expenses per cow, were positive and with operator income and labor efficiency these correlations were negative. The high correlation (-0.557) for labor cost per cow with cows per worker suggests that high labor costs per cow is likely associated with a low labor efficiency.

Generally the correlations for the dairy practices, with operator income and net cash income per cow, were much lower than those for the business practices, but the dairy practices showed higher correlations with milk sold per cow. This may be expected since dairy practices are more directly related to production per cow, which in turn has a direct effect on income.

Correlations with operator income, milk sold per cow, and net cash income per cow suggests that fewer days open, shorter calving intervals, a higher percent days in milk, fewer days dry, higher rates of concentrate feeding, high percent net energy from concentrates and succulents, and a lower percent net energy from hay and pasture would tend to increase production per cow and have positive effects on income.

Table 39. Correlation Coefficients for Selected Business and Dairy Practices with Some Important Business Factors, 327 New York Dairy Farms, 1984

Item	Correlation With: Labor & Mgmt. Income Per Oper.	Lbs. Milk Sold Per Cow	Net Cash Farm Inc. Per Cow	Total Farm Expenses Per Cow	Cows Per Worker
Prod. cost/cwt. milk	-0.652	-0.369	-0.416	0.321	-0.248
Total lbs. milk sold	0.434	0.331	0.002	0.124	0.508
Number of cows	0.381	0.194	-0.059*	0.050*	0.381
Lbs. milk sold/worker	0.333	0.439	0.107	0.123	0.886
Worker equivalents	0.303	0.221	-0.069*	0.107	0.231
Total farm expenses/cow	-0.303	0.541	-0.100*	1.00	-0.127
Machinery cost/cow	-0.287	0.230	0.093*	0.590	-0.113
Land & bldg. invest./cow	-0.270	0.023*	0.034*	0.383	-0.201
Total capital invest./cow	-0.251	0.164	0.155	0.510	-0.186
Total capital inventory	0.245	0.241	0.001*	0.220	0.504
Number of cows/worker	0.243	-0.010*	-0.051*	-0.127	1.00
Pounds milk sold/cow	0.228	1.00	0.363	0.541	-0.010*
Income over value of feed	0.228	0.760	0.332	0.421	0.056*
Machinery invest./cow	-0.215	0.192	0.280	0.393	-0.164
Total tillable acres	0.191	0.153	-0.018*	0.141	0.456
Debt per cow	-0.154	0.245	0.336	0.339	-0.232
Feed & crop exp./cwt. milk	-0.142	-0.210	-0.420	0.121	0.077*
Days open, all cows	-0.118	-0.215	-0.094	0.016*	0.044*
Projected minimum calving interval	-0.118	-0.100*	-0.076*	0.089*	0.032*
Percent of herd leaving as culls	-0.112	-0.030*	0.043*	0.275	-0.029*
Butter fat test	-0.106*	-0.195	0.049*	-0.040*	0.031*
Labor costs/cow	-0.101*	0.229	-0.024*	0.353	-0.557
Yield of corn sil. DM	0.051*	0.214	0.011*	0.182	0.197
Average days dry	-0.041*	-0.243	-0.111	0.011*	-0.124
Average price/cwt. milk	-0.032*	-0.073*	0.046*	0.179	0.127
Percent equity	0.031*	0.211	0.351	0.083*	-0.168
Percent NE from succ.	-0.016*	0.166	0.089	0.143	-0.041*
Avg. body weight all cows	-0.005*	0.432	0.129	0.338	0.015*
Capital invest./worker	-0.023*	0.092*	0.092*	0.243	0.599
Percent days in milk	0.055*	0.323	0.109	0.116	0.112
Heifers as % of cows	-0.009*	0.133	0.028	0.309	-0.074*
Feed & crop exp./cow	-0.004*	0.370	-0.199	0.408	0.079*
% NE from conc.	-0.000*	0.080*	0.078*	-0.000*	-0.069*
% NE from hay	-0.034*	-0.159	-0.018*	-0.194	-0.298
% NE from pasture	-0.002*	-0.178	0.023*	-0.189	-0.246
Lbs. conc. fed/cow	-0.021*	0.265	0.128	0.140	-0.087*

*Not significant at 0.05 level.

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 327 farms for the year 1984. Cross tabulation and correlation analyses were made for the various factors and the results included in this report. These analyses provide additional dimensions for business sumamries and show how these dairy management practices paid on commercial dairy farms in 1984.

Pounds of milk sold per cow, net cash farm income per farm and per cow, and labor and management income per operator were used as indicators of the effects of the dairy management practices. The first measures the physical output, while the other three 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 analyses of the various dairy management practices indicate that the practices do affect rates of production and incomes. Among practices that showed a definite relationship to income were: days open all cows, projected minimum calving interval, percent of herd leaving as culls, percent days in milk, days dry, pounds of concentrates fed per cow, and average age all cows.

"Somatic cell count" is a relatively new management tool provided by DHI. For 1984, 150 of the 327 farms, or 46 percent, used the somatic cell option. In general, farms with lower cell counts had higher production and better incomes.

There is a difference between the pounds of milk <u>produced</u> per cow as reported by DHI and the pounds of milk <u>sold</u> per cow as reported in farm business summaries. There are variations in the difference as a percent of the amount produced. If DHI rates of production are used for budgeting, the figures need to be reduced by five to eight percent to get the likely milk sold.

For the years 1982, 1983, and 1984, information was obtained on several dairy practices not reported in earlier studies. The summarized data on these practices for the three years are included in the appendix.

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.

Appendix Tables

Table 40. Average of Selected Factors For All Farms in Study, New York Dairy Farms, 1974 through 1984

Factor	Average of All Farms			
	1974	1979	1983	1984
Number of farms	413	337	355	327
% farms with DHI records	75%	89%	85%	86%
% farms owner-sampler	25%	11%	15%	14%
% farms freestall barns	32%	32%	36%	39%
Worker equivalent	2.5	2.5	3.0	3.17
Number of cows	74	70	88	91
Number of heifers	54	51	73	80
Total crop acres	217	217	270	282
Total pounds milk sold	954,900	1,032,000	1,372,100	1,434,500
Total cash farm receipts	$91,782	$140,899	$208,233	$218,202
Total end inventory	$240,000	$385,000	$494,542	$508,923
Milk produced per cow	13,700	15,600	16,500	16,500
Milk sold per cow	12,900	14,700	15,600	15,700
Tons hay equivalent per acre	2.7	2.7	2.6	2.7
Tons corn silage per acre	13.6	13.8	13.5	14.1
Cows per worker	30	28	29	29
Milk sold per worker	382,000	413,000	457,000	453,000
Feed purchased per cow	$335	$485	$531	$525
% feed is of milk receipts	30%	28%	25%	25%
Feeding index	119	120	115	118
Rate roughage feeding	2.4	2.3	2.2	2.4
Lbs. concentrates fed per cow	4,800	6,200	6,300	5,400
% net energy-concentrates	43%	50%	47%	44%
% net energy-succulents	33%	32%	37%	37%
% net energy-hay	14%	12%	12%	13%
% net energy-pasture	9%	6%	5%	6%
Projected calving interval (mo.)	13.0	13.0	13.0	12.8
Days dry	64	60	61	61
% days in milk	86%	86%	86%	86%
Breedings per conception	1.7	1.8	1.8	1.8
% leaving herd	23%	28%	30%	32%
Age at first calving (mo.)	29	28	28	28
Age all cows (mo.)	56	53	50	51
Body weight at first calving	1,070	1,100	1,110	1,110
Body weight all cows	1,240	1,260	1,260	1,260
Income over value feed	$681	$1,153	$1,411	$1,347
Average price received for milk	$8.61	$11.87	$13.64	$13.48
Labor & management income per operator	$5,032	$20,785	$6,403	$1,977

Table 41. Selected Business Factors By Size of Labor and Management Income Per Operator, 327 New York Dairy Farms, 1984

Factor	Labor and Management Income Per Operator — Quintiles 1	2	3	4	5
Number of farms	66	66	65	65	65
Labor & management income per operator	$-25,601	$-6,824	$1,245	$8,309	$26,390
Labor, management & ownership income per operator	$-1,094	$12,584	$15,890	$21,122	$48,626
Barn Type					
Percent with freestalls	36%	35%	31%	32%	58%
Size of Business					
Worker equivalent	3.25	2.92	2.58	2.67	4.17
Total crop acres	300	236	245	250	376
Number of cows	88	88	71	77	141
Total capital	$553,023	$468,112	$409,304	$428,602	$739,237
Rates of Production					
Pounds milk sold per cow	14,900	15,100	15,200	15,200	16,900
Tons hay crop per acre (H.E.)	2.7	2.8	2.6	2.4	3.1
Tons corn silage per acre	13.6	13.7	13.0	13.3	15.8
Labor Efficiency					
Pounds of milk sold per worker	403,000	424,000	420,000	438,000	570,000
Cows per worker	27	28	28	29	34
Feeding Practices					
Feed bought per cow	$493	$528	$524	$475	$557
Pounds concentrate fed	5,041	5,570	5,536	5,253	5,789
Feeding index	119	117	119	114	120
Rate of roughage feeding	2.4	2.3	2.5	2.3	2.5
Percent NE from concentrates	44%	45%	43%	44%	45%
Percent NE from succulents	40%	34%	37%	36%	40%
Percent NE from dry hay	12%	15%	13%	13%	10%
Breeding Practices					
Percent days in milk	86%	87%	86%	86%	87%
Projected calving interval (mo.)	13.0	12.9	12.8	12.7	12.8
Average days dry	62	60	62	61	61
Breedings per conception	1.8	1.8	1.8	1.7	1.8
Average age at first calving (mo.)	28	28	29	28	27
Average age all cows (mo.)	52	50	51	50	49
Average weight first calving (lbs.)	1,110	1,110	1,120	1,110	1,120
Average weight all cows (lbs.)	1,260	1,260	1,250	1,260	1,270
Percent leaving herd	33%	34%	33%	30%	30%
Somatic cell count	424,000	373,000	368,000	326,000	286,000

Table 42. Selected Business Factors By Pounds of Milk Sold Per Cow, 327 New York Dairy Farms, 1984

Factor	Pounds of Milk Sold Per Cow							
	Less Than 12,000	12,000 to 12,999	13,000 to 13,999	14,000 to 14,999	15,000 to 15,999	16,000 to 16,999	17,000 to 17,999	18,000 & Over
Number of farms	19	22	32	65	66	54	36	33
Percent of farms	6%	7%	10%	20%	20%	17%	11%	10%
Labor & mgmt. income per operator	$-4,097	$-3,347	$-4,304	$-69	$-830	$5,608	$4,004	$13,561
Labor, mgmt. & ownership income/oper.	$12,382	$4,907	$15,068	$17,660	$18,345	$23,405	$24,180	$35,962
Barn Type								
Percent freestalls	32%	41%	38%	45%	35%	39%	36%	39%
Size of Business								
Worker equivalent	2.08	2.83	3.08	2.92	3.08	3.33	3.33	3.83
Total crop acres	172	262	282	289	287	266	291	347
Number of cows	62	74	88	92	88	95	96	118
Total capital	$345,753	$373,552	$472,557	$512,964	$514,892	$524,519	$563,365	$729,373
Rates of Production								
Lbs. milk sold/cow	10,700	12,600	13,500	14,700	15,500	16,600	17,400	19,200
Tons hay crop per acre (H.E.)	2.3	2.1	2.8	2.7	2.6	2.8	2.8	3.3
Tons corn silage per acre	11.9	11.3	14.0	13.8	14.3	14.8	14.7	15.5
Labor Efficiency								
Pounds milk sold per worker	320,000	330,000	385,000	462,000	442,000	474,000	502,000	592,000
Cows per worker	30	26	29	32	29	29	29	31
Feeding Practices								
Feed bought per cow	$442	$450	$447	$481	$501	$572	$558	$634
*Pounds conc. fed	3,726	4,442	5,165	5,351	5,671	5,876	5,853	5,885
*Feeding index	114	118	121	122	117	117	113	116
*Rate roughage feeding	2.2	2.3	2.3	2.4	2.4	2.5	2.4	2.6
*Percent net energy from concentrates	41%	41%	44%	44%	45%	44%	45%	45%
*Percent net energy from succulents	32%	29%	35%	38%	35%	40%	40%	47%
*Percent net energy from dry hay	19%	19%	12%	12%	15%	10%	12%	7%
Breeding Practices								
Percent days in milk	84%	85%	86%	86%	87%	87%	87%	88%
Projected calving interval (mo.)	12.9	12.9	12.8	13.0	12.8	12.7	12.7	12.8
Average days dry	70	64	63	60	60	61	60	58
Breedings/conception	1.6	1.8	1.7	1.8	1.7	1.8	1.9	1.8
Age at first calving (mo.)	28	30	28	28	28	27	27	26
Age all cows (mo.)	51	51	53	51	51	50	50	49
Weight first calving (lbs.)	1,010	1,100	1,090	1,110	1,120	1,130	1,150	1,140
Weight all cows (lbs.)	1,140	1,230	1,240	1,260	1,260	1,270	1,300	1,300
Percent leaving herd	35%	33%	34%	30%	31%	32%	32%	34%
Som. cell count	538,000	498,000	413,000	360,000	368,000	293,000	219,000	321,000

*219 farm reporting net energy.

Table 43. Selected Business Factors By Size of Herd, 327 New York Dairy Farms, 1984

Factor	Number of Cows in Herd						
	Under 40	40-54	55-69	70-84	85-99	100-149	150 & Over
Number of farms	23	64	77	45	33	45	40
Percent of farms	7%	20%	23%	14%	10%	14%	12%
Labor & management income per operator	$-5,151	$567	$-436	$-330	$-1,960	$3,483	$13,584
Net cash income per farm	$13,960	$22,681	$28,169	$36,870	$35,777	$50,465	$98,926
Barn Type							
Percent freestalls	4%	6%	21%	36%	48%	82%	90%
Size of Business							
Worker equivalent	1.58	2.00	2.50	2.83	3.17	4.00	6.08
Total crop acres	109	159	210	265	286	393	605
Number of cows	33	48	61	77	90	126	233
Total capital	$224,068	$282,007	$384,682	$458,193	$521,261	$710,467	$1,182,386
Rates of Production							
Pounds milk sold per cow	14,400	14,800	15,500	15,500	15,600	15,300	16,400
Tons hay crops per acre (H.E.)	2.3	2.3	2.5	2.7	2.6	2.8	3.3
Tons corn silage per acre	15.2	13.1	12.9	13.6	13.7	13.7	15.4
Labor Efficiency							
Pounds milk sold per worker	301,000	355,000	379,000	423,000	441,000	482,000	629,000
Cows per worker	21	24	24	27	28	32	38
Feeding Practices							
Feed bought per cow	$572	$527	$519	$506	$551	$484	$537
*Pounds concentrate fed	4,937	5,403	5,687	5,526	5,370	5,465	5,155
*Feeding index	114	117	119	114	116	122	119
*Rate of roughage feeding	2.4	2.4	2.4	2.3	2.4	2.4	2.4
*Percent NE from concentrates	42%	42%	44%	46%	45%	47%	46%
*Percent NE from succulents	25%	31%	35%	38%	44%	44%	49%
*Percent NE from dry hay	21%	18%	15%	12%	7%	7%	4%
Breeding Practices							
Percent days in milk	85%	86%	86%	87%	86%	87%	87%
Projected calving interval (mo.)	12.8	12.8	12.8	12.8	12.8	12.9	13.0
Average days dry	68	61	63	59	61	59	61
Breedings per conception	1.6	1.7	1.8	1.7	1.8	1.9	2.0
Average age at first calving (mo.)	28	29	28	28	28	28	26
Average age all cows (mo.)	50	53	52	50	51	49	48
Average weight first calving (lbs.)	1,110	1,090	1,120	1,130	1,110	1,120	1,120
Average weight all cows (lbs.)	1,240	1,240	1,270	1,260	1,250	1,270	1,280
Percent leaving herd	36%	31%	32%	32%	30%	33%	32%
Somatic cell count	338,000	363,000	361,000	340,000	391,000	363,000	333,000

*219 farms reporting net energy.

When the project of merging DHI and farm business record data was started a number of commonly used dairy management practices were selected from the DHI information for use in the merged study. These have been included in each of the annual summary reports and have been included in the data for 1984 on the preceding pages.

Interest had been expressed in examining some additional DHI factors, so a number of additional factors were selected and merged for the years 1982, 1983, and 1984. The information on these factors are reported in Tables 44 through 55. These can be used to supplement the information on dairy management practices included in this report and in the publications for 1982 and 1983 (A.E. Res. 84-6 and A.E. Res. 85-4).

Table 44. Averages For Selected Dairy Management Factors For All Farms, New York Dairy Farms, 1982, 1983, and 1984

	Average of All Farms		
Factor	1982	1983	1984
Number of farms	410	355	327
Percent of farms with DHI records	86%	85%	86%
Percent of farms owner-sampler	14%	15%	14%
Percent of farms with freestall barns	33%	36%	39%
Fat test	3.64	3.62	3.65
Pounds fat produced per cow	585	597	603
Protein test	3.19	3.21	3.23
Pounds protein produced per cow	514	531	534
Value of concentrates fed per cow	$469	$505	$503
Percent value of concentrates is of total feed value per cow	61%	62%	61%
Value of feed per cwt. milk	$4.77	$4.91	$5.01
Pounds succulents fed per cow	16,024	16,343	16,678
Pounds dry roughages fed per cow	2,624	2,634	2,733
Percent of cows not bred after 100 days	4%	4%	4%
Days open cows not bred	89	86	86
Days open all cows	108	107	106
Percent first calf cows entering herd	31	33	32
Percent other cows entering herd	2	2	2
Percent dairy cows leaving herd	2	2	2
Cow days in milk 3 times	2,893	4,532	4,821
Number of cows milked 3 times	107	137	182

Table 45. Selected Dairy Management Factors By Income Quintiles, 327 New York Dairy Farms, 1984

Factor	Labor and Management Income Per Operator — Quintiles				
	1	2	3	4	5
Number of farms	66	66	65	65	65
Labor & management income per operator	$-25,601	$-6,824	$1,245	$8,309	$26,390
Net cash income per farm	$21,257	$30,584	$33,400	$41,635	$70,319
Fat test	3.65	3.67	3.67	3.67	3.61
Pounds fat produced per cow	593	588	603	598	630
Protein test	3.23	3.23	3.25	3.23	3.23
Pounds protein produced per cow	528	521	533	526	563
Value of concentrates fed per cow	$488	$506	$519	$478	$526
Percent value of concentrates is of total feed value per cow	59%	61%	61%	60%	62%
Value of feed per cwt. milk	$5.03	$5.15	$5.18	$4.89	$4.83
Pounds succulents fed per cow	17,461	15,961	15,471	15,885	18,487
Pounds dry roughages fed per cow	2,448	2,978	3,108	2,741	2,315
Percent cows not bred after 100 days	4%	4%	2%	5%	3%
Days open cows not bred	90	90	79	88	86
Days open all cows	109	109	103	105	105
Percent first calf cows entering herd	31%	31%	32%	31%	33%
Percent other cows entering herd	3%	2%	2%	2%	2%
Percent dairy cows leaving herd	2%	3%	3%	1%	2%
Cow days in milk 3 times	4,809	1,717	504	3,562	6,851
Number of cows milked 3 times	144	73	66	104	242

Table 46. Selected Dairy Management Factors By Pounds of Milk Sold Per Cow, 327 New York Dairy Farms, 1984

Factor	Pounds of Milk Sold Per Cow								
	Less than 11,000	11,000 to 11,999	12,000 to 12,999	13,000 to 13,999	14,000 to 14,999	15,000 to 15,999	16,000 to 16,999	17,000 to 17,999	18,000 & Over
Number of farms	8	11	22	32	65	66	54	36	33
Percent of farms	2%	3%	7%	10%	20%	20%	17%	11%	10%
Labor & mgmt. income per operator	N.A.	N.A.	$-3,347	$-4,304	$-69	$-830	$5,608	$4,004	$13,561
Net cash income per farm	$20,863	$22,961	$14,340	$29,626	$37,085	$37,848	$38,962	$50,579	$72,512
Fat test	3.94	3.75	3.69	3.59	3.68	3.65	3.66	3.61	3.59
Pounds fat produced per cow	458	481	503	524	585	612	642	662	709
Protein test	3.31	3.19	3.19	3.20	3.24	3.22	3.24	3.24	3.24
Pounds protein produced per cow	391	411	437	468	516	541	568	595	639
Value of concentrates fed/cow	$401	$380	$450	$482	$495	$498	$513	$550	$591
Percent value of concentrates is of total feed value per cow	59%	54%	58%	60%	61%	60%	60%	63%	65%
Value of feed per cwt. milk	$5.86	$5.37	$5.68	$5.42	$5.05	$4.96	$4.76	$4.75	$4.54
Pounds succulents fed per cow	13,338	15,791	16,229	14,940	16,784	15,703	17,889	17,313	18,687
Pounds dry roughages fed per cow	4,250	3,270	3,155	2,945	2,531	2,844	2,600	2,420	2,355
Percent cows not bred after 100 days	15%	2%	6%	4%	4%	3%	4%	3%	2%
Days open cows not bred	123	89	106	88	88	85	81	81	75
Days open all cows	127	104	112	104	112	106	102	102	102
Percent first calf cows entering herd	33%	28%	28%	30%	31%	32%	33%	34%	33%
Percent other cows entering herd	6%	3%	4%	2%	1%	2%	1%	1%	4%
Percent dairy cows leaving herd	1%	4%	4%	1%	3%	2%	2%	2%	3%
Cow days in milk 3 times	--	--	--	--	2,268	2,676	2,975	7,099	7,618
Number of cows milked 3 times	--	--	--	--	82	107	177	231	246

Table 47. Selected Dairy Management Factors by Size of Herd, 327 New York Dairy Herds, 1984

Factor	Number of Cows in Herd						
	Under 40	40-54	55-69	70-84	85-99	100-149	150 & Over
Number of farms	23	64	77	45	33	45	40
Percent of farms	7%	20%	23%	14%	10%	14%	12%
Labor & management income per operator	$-5,151	$567	$-436	$-330	$-1,960	$3,483	$13,584
Net cash income per farm	$13,961	$22,681	$28,168	$36,869	$35,778	$50,461	$96,426
Fat test	3.61	3.65	3.66	3.63	3.72	3.70	3.60
Pounds fat produced per cow	575	586	605	606	619	614	611
Protein test	3.18	3.20	3.23	3.23	3.26	3.27	3.25
Pounds protein produced per cow	505	517	535	539	543	545	553
Value of concentrates fed per cow	$462	$498	$503	$488	$509	$525	$527
Percent value of concentrates is of total feed value per cow	57%	60%	60%	59%	61%	62%	64%
Value of feed per cwt. milk	$4.99	$5.18	$4.98	$5.00	$4.95	$5.09	$4.78
Pounds succulents fed per cow	11,879	13,946	16,208	16,215	18,286	19,597	20,156
Pounds dry roughages fed per cow	4,280	3,608	3,097	2,608	2,065	1,589	995
Percent cows not bred after 100 days	5%	4%	3%	4%	3%	4%	2%
Days open cows not bred	95	84	87	90	84	88	81
Days open all cows	106	105	105	107	105	108	110
Percent first calf cows entering herd	32%	28%	31%	32%	33%	33%	33%
Percent other cows entering herd	2%	2%	3%	2%	2%	1%	1%
Percent dairy cows leaving herd	4%	2%	3%	2%	3%	1%	1%
Cow days in milk 3 times	--	799	959	--	--	3,640	6,542
Number of cows milked 3 times	--	39	66	--	--	116	249

Table 48. Selected Dairy Management Factors By Income Quintiles, 410 New York Dairy Farms, 1982

Factor	Labor and Management Income Per Operator ---------- Quintiles ---------- 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
Net cash income per farm	$18,623	$24,915	$32,914	$36,100	$66,006
Fat test	3.64	3.68	3.66	3.61	3.63
Pounds fat produced per cow	556	566	601	578	620
Protein test	3.20	3.20	3.18	3.17	3.19
Pounds protein produced per cow	490	496	527	509	547
Value of concentrates fed per cow	$473	$466	$451	$475	$480
Percent value of concentrates is of total feed value per cow	62%	62%	59%	61%	62%
Value of feed per cwt. milk	$4.96	$4.85	$4.68	$4.80	$4.54
Pounds succulents fed per cow	15,651	15,179	15,598	15,961	17,653
Pounds roughages fed per cow	2,696	2,711	3,047	2,611	2,075
Percent cows not bred after 100 days	5%	4%	4%	4%	4%
Days open cows not bred	91	87	87	94	87
Days open all cows	113	107	105	107	106
Percent first calf cows entering herd	32%	31%	29%	31%	33%
Percent other cows entering herd	4%	2%	2%	1%	2%
Percent dairy cows leaving herd	2%	2%	3%	2%	2%
Cow days in milk 3 times	2,752	2,373	1,571	2,078	4,400
Number of cows milked 3 times	95	91	50	85	169

Table 49. Selected Dairy Management Factors By Pounds of Milk Sold Per Cow, 410 New York Dairy Farms, 1982

Factor	Pounds of Milk Sold Per Cow								
	Less than 11,000	11,000 to 12,000	12,000 to 12,999	13,000 to 13,999	14,000 to 14,999	15,000 to 15,999	16,000 to 16,999	17,000 to 17,999	18,000 & Over
Number of farms	24	14	30	63	66	100	56	37	20
Percent of farms	6%	3%	7%	15%	16%	25%	14%	9%	5%
Labor & mgmt. income per operator	$-6,526	$-931	$-5,211	$-962	$948	$5,135	$11,100	$5,868	$15,970
Net cash income per farm	$8,245	$17,400	$23,135	$31,003	$29,566	$41,882	$46,036	$46,956	$54,864
Fat test	3.97	3.76	3.66	3.64	3.64	3.61	3.61	3.58	3.55
Pounds fat produced per cow	447	493	509	545	576	601	639	662	709
Protein test	3.28	3.18	3.17	3.17	3.18	3.19	3.18	3.19	3.17
Pounds protein produced per cow	371	419	439	476	505	533	563	589	635
Value of concentrates fed/cow	$391	$390	$428	$445	$466	$455	$503	$548	$592
Percent value of concentrates is of total feed value per cow	58%	58%	61%	59%	61%	60%	63%	65%	68%
Value of feed per cwt. milk	$5.92	$4.98	$5.05	$5.09	$4.76	$4.50	$4.48	$4.53	$4.31
Pounds succulents fed per cow	12,854	12,723	12,983	15,508	17,627	16,226	16,709	17,528	16,440
Pounds dry roughages fed per cow	3,681	3,220	3,770	2,865	2,069	2,578	2,312	2,146	2,298
Percent cows not bred after 100 days	8%	4%	7%	4%	3%	4%	4%	3%	3%
Days open cows not bred	101	90	101	91	85	85	90	89	87
Days open all cows	118	112	113	106	106	108	104	105	105
Percent first calf cows entering herd	23%	28%	33%	30%	33%	30%	32%	32%	34%
Percent other cows entering herd	5%	4%	2%	2%	1%	2%	1%	3%	1%
Percent dairy cows leaving herd	2%	1%	2%	1%	1%	2%	1%	5%	2%
Cow days in milk 3 times	--	2,674	1,058	2,673	2,954	4,569	2,362	2,799	2,523
Number of cows milked 3 times	--	89	34	93	114	178	94	105	85

Table 50. Selected Dairy Management Factors by Size of Herd, 410 New York Dairy Herds, 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 per 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
Fat test	3.66	3.65	3.62	3.64	3.70	3.66	3.59
Pounds fat produced per cow	539	572	597	607	601	586	588
Protein test	3.11	3.17	3.19	3.20	3.23	3.21	3.23
Pounds protein produced per cow	460	497	529	535	527	516	535
Value of concentrates fed per cow	$443	$464	$463	$483	$445	$480	$507
Percent value of concentrates is of total feed value per cow	59%	62%	61%	63%	59%	60%	64%
Value of feed per cwt. milk	$5.12	$4.76	$4.56	$4.62	$4.64	$5.02	$4.84
Pounds succulents fed per cow	11,556	13,484	15,472	16,817	17,983	19,438	20,534
Pounds dry roughages fed per cow	4,395	3,320	2,448	2,009	2,120	1,790	915
Percent cows not bred after 100 days	2%	4%	4%	4%	6%	4%	6%
Days open cows not bred	83	87	88	93	90	92	94
Days open all cows	105	109	106	107	108	108	112
Percent first calf cows entering herd	30%	30%	31%	31%	28%	34%	36%
Percent other cows entering herd	2%	3%	2%	2%	3%	2%	1%
Percent dairy cows leaving herd	2%	3%	2%	2%	2%	1%	2%
Cow days in milk 3 times	511	1,088	890	1,621	2,284	3,334	5,614
Number of cows milked 3 times	16	39	48	59	78	120	193

Table 51. Selected Dairy Management Factors For Registered and Grade Herds, 410 New York Dairy Herds, 1982

Factor	Registered	Grade
Number of farms	134	276
Percent of farms	33%	67%
Labor & management income per operator	$5,229	$1,363
Net cash income per farm	$38,005	$34,647
Fat test	3.69	3.62
Pounds fat produced per cow	602	577
Protein test	3.21	3.17
Pounds protein produced per cow	527	507
Value of concentrates fed per cow	$469	$469
Percent value of concentrates is of total feed value per cow	61%	61%
Value of feed per cwt. milk	$4.73	$4.78
Pounds succulents fed per cow	15,408	16,313
Pounds dry roughages fed per cow	2,633	2,620
Percent cows not bred after 100 days	3%	4%
Days open cows not bred	83	93
Days open all cows	108	107
Percent first calf cows entering herd	31%	31%
Percent other cows entering herd	2%	2%
Percent dairy cows leaving herd	3%	2%
Cow days in milk 3 times	3,233	2,759
Number of cows milked 3 times	123	101

Table 52. Selected Dairy Management Factors By Income Quintiles, 355 New York Dairy Farms, 1983

Factor	Labor and Management Income Per Operator — Quintiles				
	1	2	3	4	5
Number of farms	71	71	71	71	71
Labor & management income per operator	$-24,122	$-3,635	$4,579	$12,780	$36,323
Net cash income per farm	$18,722	$26,300	$39,362	$43,799	$73,215
Fat test	3.60	3.64	3.62	3.62	3.62
Pounds fat produced per cow	569	577	606	616	619
Protein test	3.21	3.21	3.21	3.20	3.21
Pounds protein produced per cow	508	510	540	548	549
Value of concentrates fed per cow	$511	$513	$497	$505	$497
Percent value of concentrates is of total feed value per cow	62%	64%	63%	62%	62%
Value of feed per cwt. milk	$5.27	$5.07	$4.78	$4.80	$4.63
Pounds succulents fed per cow	16,558	14,923	15,598	16,698	18,025
Pounds dry roughages fed per cow	2,741	2,970	2,480	2,854	2,041
Percent cows not bred after 100 days	4%	5%	4%	4%	4%
Days open cows not bred	89	84	83	86	87
Days open all cows	113	107	104	105	105
Percent first calf cows entering herd	32%	32%	34%	33%	32%
Percent other cows entering herd	2%	3%	1%	2%	1%
Percent dairy cows leaving herd	3%	3%	2%	3%	1%
Cow days in milk 3 times	1,634	1,565	3,394	5,030	7,226
Number of cows milked 3 times	50	48	101	162	210

Table 53. Selected Dairy Management Factors By Pounds of Milk Sold Per Cow, 355 New York Dairy Farms, 1983

Factor	Pounds of Milk Sold Per Cow								
	Less than 11,000	11,000 to 12,000	12,000 to 12,999	13,000 to 13,999	14,000 to 14,999	15,000 to 15,999	16,000 to 16,999	17,000 to 17,999	18,000 & Over
Number of farms	7	14	24	38	59	70	66	45	32
Percent of farms	2%	4%	7%	11%	17%	20%	19%	13%	9%
Labor & management income per operator	$-11,918	$-3,681	$-2,093	$-3,195	$6,652	$3,298	$14,023	$13,316	$10,851
Net cash income per farm	$7,908	$14,939	$19,091	$23,077	$40,618	$40,213	$53,078	$48,694	$56,054
Fat test	3.96	3.78	3.58	3.62	3.62	3.63	3.61	3.59	3.55
Pounds fat produced per cow	428	480	509	541	571	602	634	655	698
Protein test	3.33	3.21	3.15	3.21	3.23	3.22	3.20	3.18	3.21
Pounds protein produced per cow	360	421	448	475	505	534	563	581	630
Value of concentrates fed per cow	$367	$477	$473	$491	$487	$493	$504	$544	$592
Percent value of concentrates is of total feed value per cow	53%	62%	64%	61%	61%	61%	62%	64%	67%
Value of feed per cwt. milk	$6.13	$5.85	$5.15	$5.44	$4.99	$4.81	$4.62	$4.63	$4.49
Pounds succulents fed per cow	12,691	13,517	12,592	16,093	15,532	17,294	16,688	17,308	18,603
Pounds dry roughages fed per cow	4,054	3,525	3,606	2,996	2,672	2,349	2,291	2,663	1,883
Percent cows not bred after 100 days	6%	5%	4%	8%	5%	3%	3%	3%	4%
Days open cows not bred	104	94	92	97	90	83	79	80	82
Days open all cows	119	112	106	111	109	106	106	105	100
Percent first calf cows entering herd	26%	31%	31%	33%	33%	32%	32%	34%	35%
Percent other cows entering herd	8%	3%	2%	3%	2%	2%	1%	3%	1%
Percent dairy cows leaving herd	1%	1%	2%	2%	2%	2%	2%	4%	4%
Cow days in milk 3 times	--	802	--	4,729	1,702	3,455	4,135	7,468	3,216
Number of cows milked 3 times	--	24	--	160	56	108	130	207	110

Table 54. Selected Dairy Management Factors By Size of Herd, 355 New York Dairy Herds, 1983

Factor	Number of Cows in Herd						
	Under 40	40-54	55-69	70-84	85-99	100-149	150 & Over
Number of farms	29	73	70	55	40	43	45
Percent of farms	8%	21%	20%	15%	11%	12%	13%
Labor & management income per operator	$-3,114	$8,029	$6,559	$28	$8,595	$9,207	$17,366
Net cash income per farm	$11,919	$20,922	$33,786	$34,277	$43,752	$56,870	$88,451
Fat test	3.58	3.60	3.65	3.60	3.68	3.65	3.61
Pounds fat produced per cow	547	593	604	604	613	597	605
Protein test	3.12	3.18	3.21	3.22	3.24	3.24	3.23
Pounds protein produced per cow	478	525	537	540	540	533	544
Value of concentrates fed per cow	$470	$524	$496	$511	$499	$482	$530
Percent value of concentrates is of total feed value per cow	61%	63%	63%	64%	60%	61%	63%
Value of feed per cwt. milk	$5.10	$5.08	$4.78	$4.76	$4.96	$4.84	$4.91
Pounds succulents fed per cow	12,019	14,424	15,203	16,234	18,130	18,967	20,349
Pounds dry roughages fed per cow	4,366	3,396	2,742	2,241	2,307	1,435	1,154
Percent cows not bred after 100 days	5%	4%	4%	4%	4%	5%	3%
Days open cows not bred	80	86	82	94	83	94	83
Days open all cows	107	101	108	108	110	109	109
Percent first calf cows entering herd	32%	32%	33%	32%	31%	34%	33%
Percent other cows entering herd	4%	3%	2%	2%	1%	1%	1%
Percent dairy cows leaving herd	4%	3%	2%	3%	2%	1%	2%
Cow days in milk 3 times	--	1,001	32	1,584	1,535	4,412	6,373
Number of cows milked 3 times	--	34	1	56	44	138	190

Table 55. Selected Dairy Management Factors For Registered and Grade Herds, 355 New York Dairy Herds, 1983

Factor	Registered	Grade
Number of farms	125	230
Percent of farms	35%	65%
Labor & management income per operator	$5,345	$6,939
Net cash income per farm	$39,658	$40,615
Fat test	3.65	3.60
Pounds fat produced per cow	615	587
Protein test	3.23	3.19
Pounds protein produced per cow	545	522
Value of concentrates fed per cow	$514	$500
Percent value of concentrates is of of total feed value per cow	63%	62%
Value of feed per cwt. milk	$4.88	$4.92
Pounds succulents fed per cow	15,869	16,596
Pounds dry roughages fed per cow	2,793	2,551
Percent cows not bred after 100 days	3%	5%
Days open cows not bred	82	88
Days open all cows	107	107
Percent first calf cows entering herd	33%	33%
Percent other cows entering herd	2%	2%
Percent dairy cows leaving herd	3%	2%
Cow days in milk 3 times	4,999	4,284
Number of cows milked 3 times	155	127