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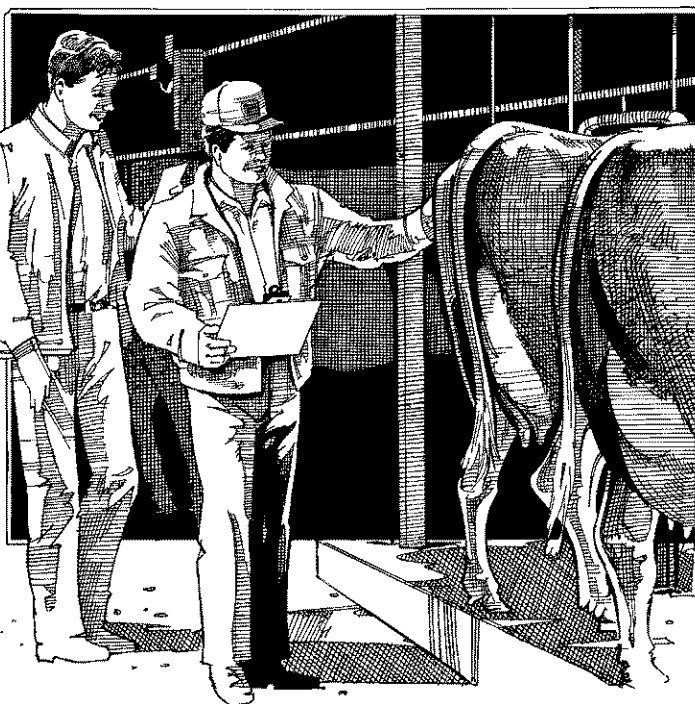
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# DAIRY FARM MANAGEMENT

## *BUSINESS SUMMARY NEW YORK STATE 2003*



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**Dairy Farm Management  
Business Summary New York State 2003**

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## ABSTRACT

Business and financial records for 2003 from 201 New York dairy farm businesses are summarized and analyzed. This analysis demonstrates the use of cash accounting with accrual adjustments to measure farm profitability, financial performance, and costs of producing milk. Traditional methods of analyzing dairy farm businesses are combined with evaluation techniques that show the relationship between good management performance and financial success.

The farms in the project averaged 314 cows per farm and 22,302 pounds of milk sold per cow, which represent above average size and management level for New York dairy farms. Net farm income excluding appreciation, which is the return to the operator's labor, management, capital, and other unpaid family labor, averaged \$37,978 per farm. The rate of return to all capital invested in the farm business including appreciation averaged 3.3 percent.

Differences in profitability between farms continue to widen. Average net farm income excluding appreciation of the top 10 percent of farms was \$250,155, while the lowest 10 percent was a negative \$145,107. Rates of return on equity with appreciation ranged from 36 percent to negative 25 percent for the highest 10 percent and the lowest 10 percent of farms, respectively.

Large freestall farms averaged the highest milk output per cow and per worker, the lowest total cost of production and investment per cow, and the greatest returns to labor, management and capital. Farms milking three times a day (3X) were larger, produced more milk per cow and had higher net incomes than herds milking two times per day (2X). Operating costs per hundredweight of milk were \$0.82 per hundredweight higher for 3X than 2X milking herds, while output per cow was 4,484 pounds higher. In 2003, farms supplementing the herd with bovine somatotropin (bST) attained higher rates of milk production per cow, had larger herds and were more profitable than farms not supplementing with bST for all measures other than labor and management income per operator. Farms adopting rotational grazing generally produced less milk per cow than non-grazing farms but had lower costs of production and higher profitability. One should not conclude that adoption of these technologies alone were responsible for differences in performance.

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## INTRODUCTION<sup>1</sup>

Dairy farm business summary (DFBS) projects are an integral part of Cornell Cooperative Extension's agricultural educational program in New York State. The Department of Applied Economics and Management of the College of Agriculture and Life Sciences at Cornell University, and County Extension staff, cooperate in sponsoring DFBS projects. In 2003, nearly 300 dairy farms participated. Business records submitted by dairy farmers from 43 counties provide the basis for continuing Extension programs, data for applied studies, and for use in the classroom. Regardless of the use of the data, confidentiality of individual farm data is maintained.

Cornell Cooperative Extension educators enroll the cooperators and collect the records. In addition, assistance is provided by individual consultants Bruce Dehm and Charles Radick, and by consultants from Farm Credit of Western New York and First Pioneer Farm Credit. Each cooperator receives a detailed summary and analysis of his or her business. All educators are using a computer in their offices or on the farm to process and return the individual farm business reports for immediate use. The program used to generate the farm business reports can be found at the website <http://dfbs.cornell.edu>. Regional reports are prepared by Cornell faculty and used by DFBS cooperators and other farmers to compare their farm performance with regional averages. The DFBS program helps farmers improve accounting and financial analysis techniques, develop managerial skills, solve business and financial management problems and plan the future of their business.

Individual farm records from the 6 regions and 43 counties of the State (Figure 1, page 2) have been combined and the total data set analyzed to determine the effects of different levels of price, technology, and management on dairy farm incomes. This study provides current dairy farm business information for use by farmers, Cooperative Extension staff, teachers, and others concerned with the New York dairy industry.

### **Farms Included**

Data from 201 specialized dairy farms are included in the main body of this report. These farms do NOT represent the "average" for all dairy farms in the State. Participation was on a voluntary basis, therefore, not all areas or types of operations were proportionately represented (Figure 1, page 2). Participants represent more than 3 percent of the milk cow operations in New York (see Appendix Table A3). The 201 specialized dairy farms represent a cross section of better than average commercial dairy farm owner/operators in the State. Dairy farm renters, dairy-cash crop farmers with crop sales exceeding 10 percent of milk sales, and part-time dairy operators have been excluded from the main body of this report. Data on dairy farm renters are summarized separately in the supplemental information section of the publication.

### **Features**

Accrual adjustment procedures have been used to provide the most accurate accounting of farm receipts and farm expenses for measuring farm profits. An explanation of these procedures is found on page 11. Five measures of farm profitability; net farm income, labor and management income, return on equity, return on all capital, and return to all labor and management are calculated on pages 13 through 16. The balance sheet is presented with the current portion of intermediate and long-term debt identified as a current liability, on pages 16 and 17. The statement of owner equity, which shows the interrelationship between farm profitability, non-farm cash flows and net worth is presented on page 19. A detailed cash flow statement, as well as budgeting data and debt repayment analysis is presented on pages 20 through 22.

The whole farm method of calculating the cost of producing milk is detailed on pages 30 through 35. The operating cost, purchased inputs cost and total cost of producing 100 pounds of milk are developed and analyzed. Farm business charts for farms with conventional and freestall housing are presented on pages 63 through 67. Specific studies of the performance of dairy farms using bST, rotational grazing and three times (3X) a day milking are presented on pages 71, 76 and 77.

### **Acknowledgements**

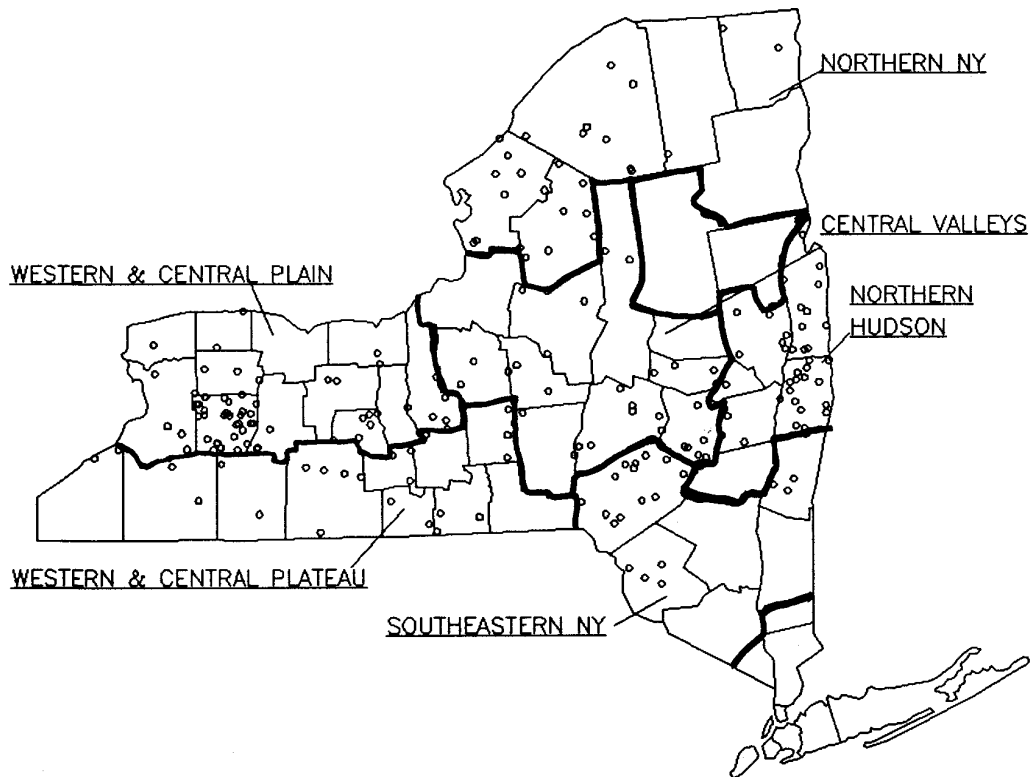
The authors wish to acknowledge extension field staff and cooperating farmers for their invaluable cooperation on this project. In addition, the authors appreciate the comments provided by Eddy LaDue and Loren Tauer.

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<sup>1</sup>This report was written by Wayne A. Knoblauch, Professor; Linda D. Putnam, Extension Support Specialist, in the Dept. of Applied Economics and Management at Cornell University, and Jason Karszes, Senior Extension Associate, Pro-Dairy.

Figure 1.

**LOCATION OF THE 201 NEW YORK DAIRY FARMS  
IN THE 2003 DAIRY FARM BUSINESS SUMMARY**



**2003 Regional Summary Publications**

<u>Region</u>	<u>Publications</u>	<u>Author(s)</u>
Northern Hudson	E.B. 2004-10	George J. Conneman, Linda D. Putnam, Cathy S. Wickswat, Sandra Buxton, & Jason Karszes
Western and Central Plain	E.B. 2004-11	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, John Hanchar, Jason Murphy, & Judith Barry
Central Valleys	E.B. 2004-15	Eddy L. LaDue, David Balbian, Charles Z. Radick, Jason Karszes, A. Edward Staehr, Dayton Maxwell & Linda D. Putnam
Southeastern New York	E.B. 2004-16	Wayne A. Knoblauch, Linda D. Putnam, Mariane Kiraly, Joseph J. Walsh, Stephen E. Hadcock, & Larry R. Hulle
Western and Central Plateau	E.B. 2004-18	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, George Allhusen, James W. Grace, Joan S. Petzen, and Andrew N. Dufresne
Northern New York	E.B. 2004-19	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, Peggy Murray, Frans Vokey, Molly Ames, William Van Loo, Chris Nobles, & Anita Deming

### THIRTY YEARS OF NEW YORK STATE DAIRY FARM BUSINESS DATA

New York dairy farming has changed dramatically over the past 30 years (Table 1, page 4). Dairy cows per farm on cooperating farms increased 355 percent between 1973 and 2003 and more than one-half of that increase occurred in the last 10 years. Milk output per cow increased more than 81 percent and the largest increase occurred between 1983 and 1993. The DFBS sample is not representative of all farms in New York State. State census data indicate the average herd in the state increased in size 112 percent over the 30-year period. Labor efficiency was up 138 percent on DFBS farms, and the operating cost of producing milk increased more than 157 percent with the big jump occurring between 1973 and 1983.

There is a large increase in farm capital invested per farm, up 837 percent since 1973. Farm net worth excluding deferred taxes has increased 709 percent over the last 30 years. Net farm income per farm increased five percent (adjusted for 2003 dollars) and return on equity capital decreased 60 percent since 1973. Labor and management income per operator is down 137 percent from 30 years ago (adjusted for 2003 dollars).

### FOUR YEARS OF VARIABILITY

Recognition and evaluation of the progress that has occurred on farms can best be achieved by studying the same farms over a period of time. Table 2, page 5, presents average data from 134 farms that have been DFBS cooperators each year since 2000. Chart 1 shows the price received for milk in comparison to the operating cost of producing a hundredweight of milk for these farms. The high milk price and lower costs in 2001 provided dairy farmers with excellent returns. The year 2003 saw the lowest operating margin per hundredweight at \$1.84.

Average net farm income without appreciation in 2003 was 28 percent below the 2000 average, and 75 percent below the 2001 average. Net worth showed a small improvement in 2000, increased rapidly in 2001, decreased .4 percent in 2002, and increased slightly in 2003.

The last 4 years have been a period requiring critical decision making and improved management skills on New York dairy farms. Risk management skills, including output price management, are becoming more important to farm business success.

**Chart 1.**

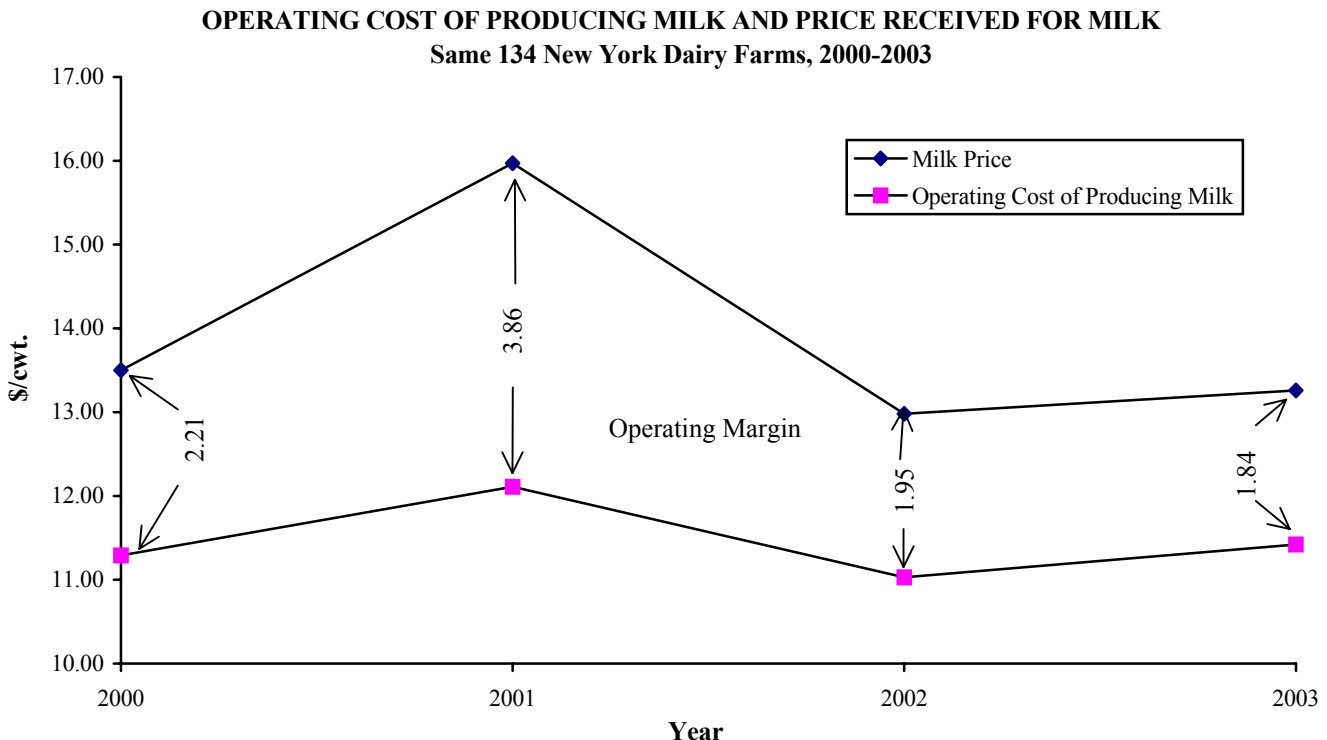


Table 1.

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**New York Dairy Farms, 1973 - 2003**

Selected Factors	1973	1983	1993	2003
Number of farms	609	510	343	201
<u>Size of Business</u>				
Average number of cows	69	88	130	314
Average number of heifers	46	72	100	240
Milk sold, cwt.	8,519	13,432	24,448	70,105
Worker equivalent	2.20	3.00	3.68	7.50 <sup>4</sup>
Total tillable acres	198 <sup>2</sup>	272	351	659
<u>Rates of Production</u>				
Milk sold per cow, lbs.	12,350	15,264	18,858	22,302
Hay DM per acre, tons	2.6	2.5	2.7	3.2
Corn silage per acre, tons	13	14	15	17
<u>Labor Efficiency</u>				
Cows per worker	32	29	35	42 <sup>4</sup>
Milk sold per worker, lbs.	392,580	447,733	664,868	934,733 <sup>4</sup>
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	31%	25%	29%	30%
Dairy feed & crop expense per cwt. milk	\$2.81	\$4.62	\$4.61	\$4.92
Operating cost of producing cwt. milk	\$4.46	\$10.22	\$10.18	\$11.46
Total cost of producing cwt. milk	\$7.69	\$14.75	\$13.97	\$14.49
Milk receipts per cwt. milk	\$7.30	\$13.64	\$13.14	\$13.24
<u>Capital Efficiency</u>				
Total farm capital	\$226,035	\$522,851	\$837,436	\$2,118,814
Farm capital per cow	\$3,276	\$5,941	\$6,462	\$6,748
Machinery & equipment per cow	\$523	\$1,038	\$1,165	\$1,208
Real estate per cow	\$1,548	\$2,668	\$2,932	\$2,722
Livestock investment per cow	\$737	\$1,340	\$1,480	\$1,804
Asset turnover ratio	0.37	0.42	0.59	0.54
<u>Profitability</u>				
Net farm income without appreciation <sup>5</sup>	-----	\$46,134	\$55,946	\$37,971
Net farm income with appreciation <sup>5</sup>	\$91,856	\$42,101	\$71,566	\$95,998
Labor & management income per operator/manager <sup>5</sup>	\$41,825	\$13,442	\$11,460	\$-15,360
Rate of return on:				
Equity capital with appreciation	6.3%	0.1%	3.5%	2.5%
All capital with appreciation	6.2%	3.6%	4.6%	3.3%
All capital without appreciation	-----	4.1%	3.1%	0.6%
<u>Financial Summary, End Year</u>				
Farm net worth	\$149,399 <sup>3</sup>	\$322,001	\$553,370	\$1,207,964
Change in net worth with appreciation	-----	-----	\$22,489	\$40,747
Debt to asset ratio	0.34 <sup>3</sup>	0.38	0.35	0.44
Farm debt per cow	\$1,111 <sup>3</sup>	\$2,207	\$2,254	\$3,075

<sup>2</sup>Acres of cropland harvested.

<sup>3</sup>Average of 547 dairy farm cooperators submitting financial information in 1973.

<sup>4</sup>Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.

<sup>5</sup>Adjusted for inflation using Consumer Price Index – 2003 dollars.

Table 2.

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 134 New York Dairy Farms, 2000 - 2003**

Selected Factors	2000	2001	2002	2003
Milk receipts per cwt. milk	\$13.50	\$15.97	\$12.98	\$13.26
<u>Size of Business</u>				
Average number of cows	297	319	338	357
Average number of heifers	226	241	262	273
Milk sold, cwt.	65,791	70,822	76,760	80,459
Worker equivalent <sup>6</sup>	7.13	7.60	7.94	8.34
Total tillable acres	644	680	721	736
<u>Rates of Production</u>				
Milk sold per cow, lbs.	22,129	22,229	22,732	22,531
Hay DM per acre, tons	3.5	3.0	3.2	2.9
Corn silage per acre, tons	15	16	15	15
<u>Labor Efficiency</u>				
Cows per worker <sup>6</sup>	42	42	43	43
Milk sold per worker, lbs. <sup>6</sup>	922,730	931,866	966,754	964,738
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	27%	25%	30%	31%
Dairy feed & crop expense per cwt. milk	\$4.62	\$5.00	\$4.81	\$5.03
Operating cost of producing cwt. milk	\$11.29	\$12.11	\$11.03	\$11.42
Total cost of producing cwt. milk	\$14.38	\$15.28	\$14.22	\$14.38
Hired labor cost per cwt.	\$2.27	\$2.42	\$2.48	\$2.52
Interest paid per cwt.	\$0.98	\$0.85	\$0.63	\$0.56
Labor & machinery costs per cow	\$1,189	\$1,255	\$1,248	\$1,228
<u>Capital Efficiency, Average for Year</u>				
Farm capital per cow	\$6,553	\$6,685	\$6,818	\$6,699
Machinery & equipment per cow	\$1,243	\$1,238	\$1,257	\$1,212
Real estate per cow	\$2,547	\$2,586	\$2,623	\$2,589
Livestock investment per cow	\$1,620	\$1,744	\$1,833	\$1,822
Asset turnover ratio	0.56	0.65	0.54	0.55
<u>Profitability</u>				
Net farm income without appreciation	\$61,982	\$178,235	\$38,544	\$44,787
Net farm income with appreciation	\$109,052	\$286,128	\$86,661	\$108,564
Labor & management income per operator/manager	\$1,231	\$55,273	\$-16,761	\$-14,716
Rate return on:				
Equity capital with appreciation	4.0%	18.0%	1.4%	3.0%
All capital with appreciation	5.6%	13.0%	2.9%	3.6%
All capital without appreciation	3.1%	8.0%	0.8%	0.9%
<u>Financial Summary, End Year</u>				
Farm net worth	\$1,101,065	\$1,309,156	\$1,300,678	\$1,345,240
Change in net worth with appreciation	\$31,187	\$193,065	\$-5,862	\$40,066
Debt to asset ratio	0.45	0.42	0.45	0.45
Farm debt per cow	\$2,880	\$2,873	\$2,997	\$3,067

<sup>6</sup>Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.

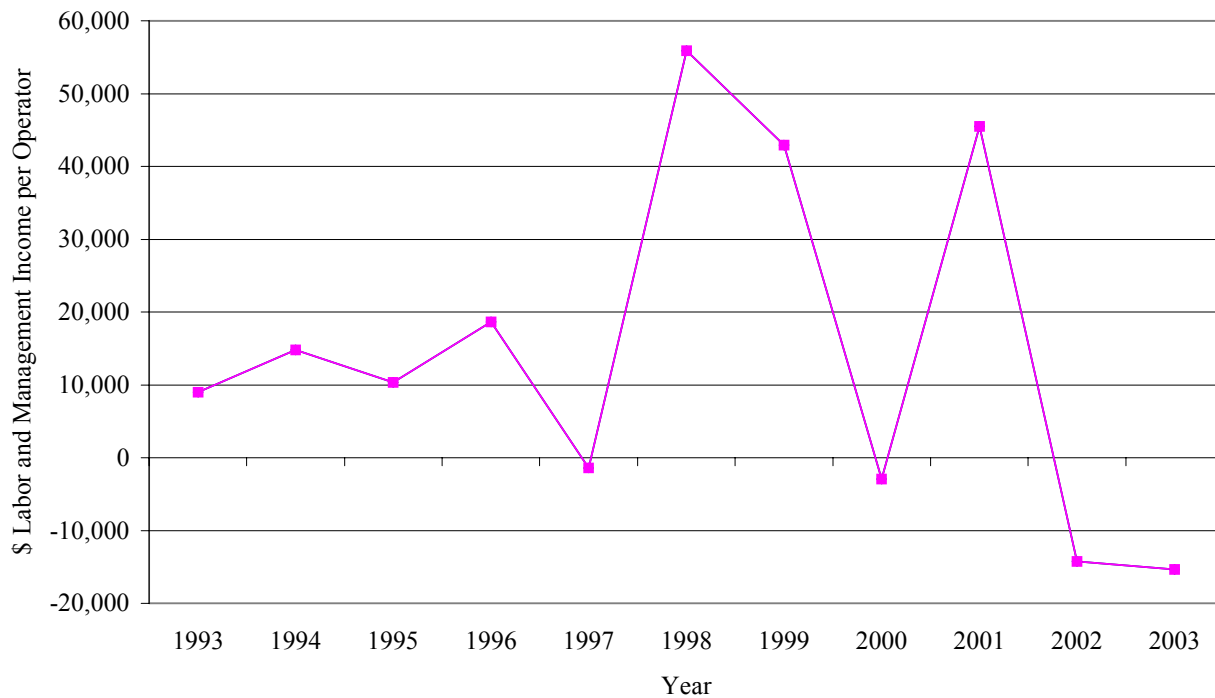
## ADJUSTING PROFIT, PRICE AND COSTS FOR INFLATION

Labor and management income per operator in 1998 was at an all time high when measured in nominal (actual) value (Chart 2). Over the period 1993 to 2003, labor and management incomes per operator did not exceed \$25,000 except for \$55,000 in 1998, nearly \$43,000 in 1999, and over \$45,000 in 2001. The reader is reminded that the average herd size of DFBS participants steadily increased from 130 cows to 314 cows over this period.

**Chart 2.**

### LABOR AND MANAGEMENT INCOME PER OPERATOR

Dairy Farm Business Summary Farms, 1993-2003

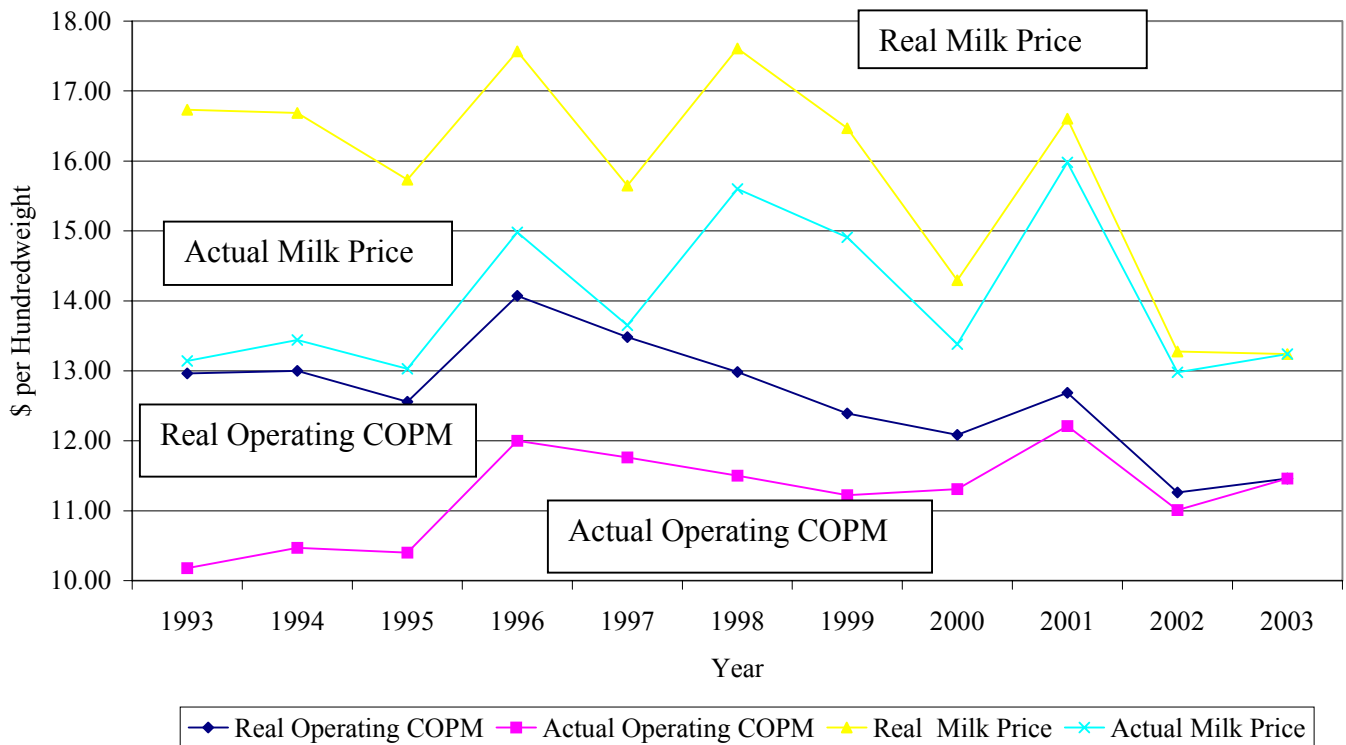


Milk prices in 2003 averaged \$13.24 per hundredweight in actual dollars (Chart 3, page 7). In 1993, milk prices adjusted for inflation, in 2003 dollars, would have been about \$16.70 per hundredweight.

Operating cost of producing milk (actual) had been very constant from 1993 through 1995 (Chart 3, page 7). Feed costs were higher in 1996 and so were operating costs of producing milk. Operating costs were on a downward trend from 1996 through 2000. Operating costs then increased in 2001, fell in 2002, and increase in 2003, but remain higher than the early ninties. Real costs of producing milk per hundredweight have been on a downward trend over this 11-year period.

Chart 3.

**OPERATING COST OF PRODUCING MILK AND MILK PRICE<sup>7</sup>**  
Dairy Farm Business Summary Farms, 1993-2003



<sup>7</sup> Actual operating cost of producing milk and milk price are adjusted for inflation, to obtain real values, using the Consumer Price Index-2003 dollars.

### MILK INCOME AND MARKETING EXPENSE BREAKDOWN

Starting January 1<sup>st</sup>, 2000, the Northeast switched to multiple components pricing, which changed the format of the milk check and how farmers received payment for their milk. To examine the breakdown of the gross milk income and the marketing expenses, 122 farms filled out a detailed form including all the different sources of income for milk sales and the milk marketing expenses on an accrual basis. This information is reported in the following two tables. The tables are divided into six different sections, each representing a different area of income or expenses.

The first section looks at the value of the milk components on a per hundredweight basis. The second section looks at the Producer Price Differential. The third section looks at the premiums a farm receives. Any premiums not specifically noted as quality or volume related are included in market premiums. The fourth section looks at the expenses associated with marketing milk. A new line item in this section is the expenses associated with utilizing forward contracting or hedging programs to market milk, such as commission or broker fees. The fifth section is income from forward contracting or hedging programs. The sixth section is the patronage dividends or refunds from the milk cooperatives. Equity purchased in the milk cooperative utilizing a monthly deduction from the milk check or a percent of the patronage dividend is treated as a capital purchase and is not a milk marketing expense. The cumulative total for these six sections is the net price received on farms. MILC payments are not included as a milk receipt, but as a government payment.

Table 3 on page 8 reports the averages for these different sections. Table 4 on page 9 contains the quintile averages for each of the individual lines of the report. This table is in farm business chart format with each item sorted independently and ranked by fifths. Numbers for the different sections will not add to the totals for that quintile or to the net price received because each item is sorted independently. This table shows the range of income and expenses received by farms for all the different sections. More milk price information is presented on page 40.

Table 3.

**AVERAGE<sup>8</sup> MILK INCOME AND MARKETING REPORT**  
**135 New York Dairy Farms, 2003**

	Pounds	Percent	Price/Pound	Total	\$/Cwt of Milk
<b>BASE FARM PRICE</b>					
Butterfat	280,714.60	3.61%	\$1.222	\$343,002.00	\$4.42
Protein	231,096.70	2.97%	\$2.361	\$545,723.00	\$7.03
Solids	435,160.80	5.60%	\$0.014	\$5,923.22	\$0.08
Total Component Contribution					\$11.53
<b>PPD</b>	7,767,974.00			\$60,861.57	\$0.78
<b>Base Farm Price</b>					\$12.31
Premiums					
Quality				\$13,805.93	\$0.18
Volume				\$22,873.26	\$0.29
Market Premiums				\$25,045.15	\$0.32
<b>Total Premiums</b>					\$0.79
<b>BASE FARM PRICE + PREMIUM</b>					\$13.10
<hr style="border-top: 1px dashed black;"/>					
Deductions					
Promo				\$12,543.91	\$0.16
Hauling + Stop Charges.				\$36,730.88	\$0.47
Market Fees & Coop Dues				\$3,729.09	\$0.05
<b>Total Deductions</b>					\$0.68
<b>BASE FARM PRICE + PREMIUMS – DEDUCTIONS</b>					\$12.42
Marketing Programs					
Futures Contracts, Forward Contracting, Etc.				\$2,302.28	\$0.03
<b>Total Marketing Income</b>					\$0.03
<b>Patronage Dividends</b>				\$9,830.47	\$0.13
<b>NET PRICE RECEIVED ON FARM, ALL SOURCES</b>					\$12.58
<b>PPD – Hauling, per cwt.</b>					\$0.31
<b>PPD – Hauling + Market Premiums, per cwt.</b>					\$0.63
<b>Net Marketing Value, per cwt. (PPD + Total Premiums - Total Deductions)</b>					\$0.89

<sup>8</sup>Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals. However, detail in the “\$/Cwt of Milk” column will result in the totals.

Table 4.

**MILK PRICE INFORMATION BY QUINTILE<sup>9</sup>**  
**(Each Category Sorted Independently)**  
**135 New York Dairy Farms, 2003**

	Lowest Quintile	←—————→			Highest Quintile
Butterfat, %	3.44	3.59	3.67	3.75	3.99
Protein, %	2.88	2.95	2.99	3.03	3.18
Other Solids, %	5.23	5.65	5.69	5.73	5.92
Butterfat, \$ per Cwt.	3.96	4.31	4.43	4.55	5.11
Protein, \$ per Cwt.	6.27	6.94	7.04	7.17	7.65
Other solids, \$ per Cwt.	0.03	0.07	0.07	0.08	0.15
<b>Total Component Value per Cwt.</b>	<b>\$10.71</b>	<b>\$11.36</b>	<b>\$11.55</b>	<b>\$11.75</b>	<b>\$12.46</b>
PPD, \$ per Cwt.	0.49	0.62	0.77	1.02	1.45
<b>Base Farm Price per Cwt.</b>	<b>\$11.37</b>	<b>\$12.13</b>	<b>\$12.42</b>	<b>\$12.79</b>	<b>\$13.49</b>
Quality, \$ per Cwt.	0.01	0.07	0.17	0.23	0.34
Volume, \$ per Cwt.	0.00	0.00	0.11	0.24	0.49
Market premium, \$ per Cwt.	0.00	0.10	0.16	0.31	1.11
Total Premium, \$ per Cwt.	<b>0.16</b>	<b>0.38</b>	<b>0.52</b>	<b>0.74</b>	<b>1.52</b>
<b>Base Farm Price + Premiums per Cwt.</b>	<b>\$12.30</b>	<b>\$12.71</b>	<b>\$13.01</b>	<b>\$13.33</b>	<b>\$14.17</b>
Promotion, \$ per Cwt.	0.13	0.15	0.15	0.16	0.20
Hauling, \$ per Cwt.	0.27	0.41	0.50	0.66	1.06
Market fees & coop dues per Cwt.	0.01	0.03	0.06	0.08	0.12
<b>Total Marketing Expenses per Cwt.</b>	<b>\$0.47</b>	<b>\$0.61</b>	<b>\$0.72</b>	<b>\$0.89</b>	<b>\$1.29</b>
<b>Base + Premiums – Deductions per Cwt.</b>	<b>\$11.56</b>	<b>\$11.99</b>	<b>\$12.25</b>	<b>\$12.53</b>	<b>\$13.21</b>
Futures contract, forward contracting, \$ per Cwt.	-0.01	0.00	0.00	0.00	0.07
<b>Total Marketing Income, \$ per Cwt.</b>	<b>\$-0.01</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.07</b>
<b>Patronage Dividends, \$ per Cwt.</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.01</b>	<b>\$0.16</b>	<b>\$0.66</b>
<b>Net Price Received From All Sources, \$ per Cwt.</b>	<b>\$11.74</b>	<b>\$12.22</b>	<b>\$12.41</b>	<b>\$12.69</b>	<b>\$13.34</b>
PPD - Hauling, \$ per cwt.	-0.01	0.18	0.27	0.39	0.63
PPD - Hauling + Market Premiums, \$ per cwt.	0.15	0.32	0.48	0.67	1.52
<b>Net Marketing Value, \$ per cwt. (PPD + Total Premiums - Total Deductions)</b>	<b>.16</b>	<b>.40</b>	<b>.62</b>	<b>.86</b>	<b>1.66</b>

\*Data for each category are calculated independently of all others. Therefore, summation of individual categories will not equal total categories.

## SUMMARY AND ANALYSIS OF THE FARM BUSINESS

**Business Characteristics and Resources Used**

Recognition of important business characteristics and identification of the farm resources used is necessary for evaluating management performance. The combination of resources used and management practices employed is known as farm organization. Important farm business characteristics and the number of farms reporting these characteristics for 2002 are presented in the following table.

**Table 5.**

**BUSINESS CHARACTERISTICS AND RESOURCES USED  
201 New York Dairy Farms, 2003**

<u>Dairy Livestock (number)</u>	<u>Cows</u>	<u>Heifers</u>	<u>Dairy Records</u>	<u>Number</u>	<u>Percent</u>
Beginning of Year	298	233	Testing Service	153	76
End of Year	314	247	On Farm System	16	8
Average for Year	314	240	Other	3	1
			None	29	15
<u>Type of Business</u>	<u>Number</u>	<u>Percent</u>	<u>bST Usage</u>	<u>Number</u>	<u>Percent</u>
Sole Proprietorship	101	50	Used consistently	88	44
Partnership	55	27	Used inconsistently	20	10
Limited Liability Corp	29	15	Started using in 2003	2	1
Subchapter S Corp.	13	7	Stopped using in 2003	6	3
Subchapter C Corp	3	1	Not used in 2003	87	43
<u>Barn Type</u>	<u>Number</u>	<u>Percent</u>	Average % usage, if used	66%	
Stanchion	65	32	<u>Labor Force</u>	<u>Average</u>	<u>Percent</u>
Freestall	123	61	Operators	23.2	25
Combination	13	7	Family Paid	5.8	6
<u>Milking System</u>	<u>Number</u>	<u>Percent</u>	Family Unpaid	3.3	3
Bucket & Carry	0	0	Hired	55.1	66
Dumping Station	2	1	Total Months	90.1	100
Pipeline	71	35			
Herringbone Conventional	62	31			<u>Average</u>
Herringbone Rapid	11	5	<u>Operators</u> (total = 374)		1.86
Parallel	37	18	Age		51
Parabone	6	3	Education		14 years
Rotary	1	<1	Estimated Value of Labor&Management/farm		\$58,037
Other	11	6			
<u>Milking Frequency</u>	<u>Number</u>	<u>Percent</u>	<u>Land Used</u>	<u>Number</u>	<u>Average</u>
2 times per day	129	64	Total acres:		
3 times per day	65	32	Owned	201	521
Other	7	4	Rented	189	365
			Tillable acres:		
<u>Business Records</u>	<u>Number</u>	<u>Percent</u>	Owned	201	336
Account Book	36	18	Rented	186	349
Accounting Service	36	18	Total	201	659
On-Farm Computer	121	60	<u>Breed of Herd</u>		
Other	8	4	Holstein	91%	
			Jersey	5%	
			Other	4%	

There were 374 full-time operator equivalents on the 201 dairy farms for an average of 1.86 operators per farm. The operators averaged 51 years of age and 14 years of formal education. Additional data on the labor force is in Table 44.

All 201 farm businesses included in this dairy summary own farm real estate. Dairy farm renters are summarized separately later in this publication. However, 186 of the dairy farm owners rented an average of 349 acres of tillable land in 2003. The 201 farms averaged 659 total tillable acres per farm of which 323 acres were rented. Tables 21 and 27 contain additional information on land use and the dairy herd.

## **Accounting Procedures**

Accrual accounting adjustments are made to cash receipts and expenses to accurately measure annual receipts, expenses, and farm profitability. These procedures express the true value and cost of production for the year, regardless of whether cash was received or expended in this year. Cash expenses and cash receipts are used when evaluating the cash flow position of the business.

The accrual accounting adjustments consider changes in accounts payable and receivable, prepaid expenses, and changes in inventory of not only such items as crops and livestock, but also the inventory of production items such as fertilizer, seed and fuel. In this manner, the total cost of production and the total value of production are obtained to provide an accurate representation of profitability in that year.

Accrual adjustments are complemented by accounting procedures used to separate changes in inventory of capital assets into changes caused by price and those caused by quality or quantity changes. Separating price changes (appreciation) from physical changes in the farm inventory are important in determining farm profitability. Appreciation of farm assets is included in the return to farm capital, but excluded from the return to labor and management.

## **Income Statement - Expenses**

The accrual income statement on the following pages begin with an accounting of all farm business expenses. Farm business expenditures are grouped into the following nine major categories:

1. Hired labor includes gross wages plus the farm share of social security, workers' compensation insurance, employee health insurance and other employee benefits paid by the farm employer.
2. Feed expenses are divided into purchased dairy grain and concentrate, purchased dairy roughage and all feed purchased for nondairy livestock to allow more thorough analysis of dairy herd feeding costs. The costs of growing grain and roughage are not included in cash and accrual feed expenses.
3. Machinery costs represent all the operating costs of using machinery on the farm. Ownership costs are excluded here but are included in the analysis of machinery costs presented on page 24.
4. Livestock expenses include the cost of supplies and services directly associated with the care and maintenance of the dairy herd, such as breeding, veterinary, bedding, milking supplies and custom boarding expenses plus milk marketing costs. The purchase of replacement cattle is considered a herd maintenance expense while expansion livestock is not.
5. Crop expenses include the costs of fertilizer, lime, seeds, spray and other crop supplies.
6. Real estate expenses are the direct costs associated with owning and maintaining farmland and buildings.
7. Other includes insurance, the farm share of utilities, interest paid on all farm indebtedness and miscellaneous costs.
8. Expansion livestock is purchased dairy cattle and other livestock that cause an increase in herd size from the beginning to the end of the year. It is a nonoperating cost included in total expenses.
9. Depreciation of machinery and buildings are nonoperating costs included in total expenses. Depreciation charges are based on those reported for income tax purposes.

Cash and accrual farm expenses are summarized below. Total operating accrual expenses for the 201 farms averaged \$2,572 per day and 90 percent of total farm accrual expenses. Cash paid is the actual amount of money paid out during the year and does not necessarily represent the cost of goods and services actually used.

Table 6.

**CASH AND ACCRUAL FARM EXPENSES**  
**201 New York Dairy Farms, 2003**

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses	Per- cent
<u>Hired Labor</u>	\$175,792		\$209 <<		\$231		\$175,814	19
<u>Feed</u>								
Dairy grain & concentrate	265,347		-5,171		8,346		278,864	30
Dairy roughage	21,590		1,222		39		20,407	2
Nondairy livestock	130		1		35		164	<1
Professional nutritional services	1,139		0 <<		1		164	<1
<u>Machinery</u>								
Machinery hire, rent & lease	18,790		0 <<		413		19,203	2
Machinery repairs & farm vehicle exp.	42,797		-461		1,563		44,821	5
Fuel, oil & grease	22,861		70		267		23,058	2
<u>Livestock</u>								
Replacement livestock	10,363		0 <<		19		10,382	1
Breeding	12,619		-250		130		12,999	1
Veterinary & medicine	38,909		0		110		39,019	4
Milk marketing	48,239		0 <<		114		48,353	5
Bedding	16,764		-140		215		17,119	2
Milking Supplies	20,274		-370		350		20,994	2
Cattle lease & rent	652		0 <<		55		707	<1
Custom boarding	24,540		18 <<		148		24,670	3
bST expense	17,484		45 <<		86		17,525	2
Livestock professional fees	1,942		49 <<		17		1,910	<1
Other livestock expense	8,030		20		218		8,228	1
<u>Crops</u>								
Fertilizer & lime	16,626		-886		814		18,326	2
Seeds & plants	13,122		-772		288		14,182	2
Spray & other crop expense	10,958		-501		14		11,473	1
Crop professional fees	1,674		29 <<		93		1,738	<1
<u>Real Estate</u>								
Land, building & fence repair	9,757		-41		171		9,969	1
Taxes	15,062		8 <<		16		15,070	2
Rent & lease	16,835		-139 <<		123		17,097	2
<u>Other</u>								
Insurance	10,691		-63 <<		-105		10,649	1
Utilities	24,066		1 <<		3		24,068	3
Interest paid	39,618		0 <<		-90		39,528	4
Other professional fees	4,974		17 <<		24		4,981	<1
Miscellaneous	6,245		-11		36		6,292	1
Total Operating	\$917,889		\$-7,115		\$13,745		\$938,749	100
Expansion livestock	\$20,284		\$0 <<		\$-36		\$20,248	
Extraordinary expense	228				149		\$377	
Machinery depreciation							\$49,858	
Building depreciation							\$36,487	
<b>TOTAL ACCRUAL EXPENSES</b>							<b>\$1,045,720</b>	

Change in inventory represents feeds and supplies purchased this year but not used (positive change), and similar items purchased in a prior year and used this year (negative change). For example, purchased dairy grain and concentrate inventory decreased \$5,171.

Prepaid expenses (noted by « in Table 6) are advance payments made for services and noninventory items to be used in future years. For example, advance payments for rent decreased an average of \$139 per farm in 2003, and that decrease is subtracted from cash rent to determine the correct 2003 accrual rental expense.

Changes in accounts payable reflect supplies/services used in this year's production but not paid for (positive change), and payments for production inputs used in a prior year (negative change).

Accrual expenses are cash expenses adjusted for changes in inventory, prepaid expenses and accounts payable. They are the total costs of inputs actually used in this year's business. Total change in inventory and prepaid expenses equals \$-7,115 and total change in accounts payable equals \$13,745.

### **Income Statement - Receipts**

Cash and accrual farm receipts are presented in the following table. Total cash receipts averaged \$1,029,674 per farm. Total accrual receipts averaged \$1,083,691 per farm. Accrual receipts were greater than cash receipts due primarily to dairy herd growth and increases in crop inventory. Cow numbers increased an average of 16 head per farm and the homegrown feed inventory per farm increased \$19,170. Homegrown feed inventory per cow increased \$41 from beginning to end of year.

**Table 7.**

#### **CASH AND ACCRUAL FARM RECEIPTS 201 New York Dairy Farms, 2003**

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts	Percent
Milk sales	\$918,004				\$9,965		\$927,969	86
Dairy cattle	45,055		\$23,406		62		68,523	6
Dairy calves	11,080		3,761		-32		14,809	1
Other livestock	1,666		-542		-4		1,120	<1
Crops	7,821		19,170		663		27,654	3
Government receipts	30,092		134 <sup>10</sup>		-2,166		28,060	3
Custom machine work	3,662				168		3,830	<1
Gas tax refund	246				2		248	<1
Other	12,048				-106		11,942	1
- Nonfarm noncash Capital <sup>11</sup>			(-) 464				(-) 464	
<b>Total</b>	<b>\$1,029,674</b>		<b>\$45,465</b>		<b>\$8,552</b>		<b>\$1,083,691</b>	<b>100</b>

<sup>10</sup>Change in advanced government receipts.

<sup>11</sup>Gifts or inheritances of cattle or crops included in inventory.

Cash receipts include the gross value of milk checks received during the year plus all other payments received for the sale of farm products, services and government programs.

Accrual receipts represent the value of all farm commodities produced and services actually provided by the farmer during the year. Increases in livestock inventory caused by herd growth and/or quality, are included. Decreases in inventory caused by herd reduction are deducted. Changes in inventories of crops grown are included. Changes in advanced government receipts are the amount by which government payments received for participating in a future year's program have changed from 2002 to 2003. An increase requires a negative adjustment to cash receipts while a decrease is a positive adjustment. Changes in accounts receivable include the difference between the January milk check for December 2003 marketings and the previous January's check, and other delayed payments.

Nonfarm noncash capital are gifts and inheritances of cattle and crops received by the farm owner/operator, and included in inventory or used in the business during the year. They are deducted from growth in inventory and reduce accrual receipts because they came from outside the farm business. Gifts and inheritances of machinery and real estate are accounted for in Table 14.

## Profitability Analysis

Farm owners/operators contribute labor, management, and capital to their businesses. The best combination of these resources produces optimum profits. Farm profits can be measured as the return to all family resources or as the return to one or more individual resources such as labor and management.

Net farm income is the total combined return to the farm operator(s) and other unpaid family members for their labor, management and equity capital. It is the farm family's net annual return from working, managing, financing and owning the farm business. This is not a measure of cash available from the year's business operation. Cash flow is evaluated later in this report.

Net farm income is computed with and without appreciation. Appreciation represents the change in farm inventory values caused by changes in prices during the year. Appreciation is a major factor contributing to changes in farm net worth and must be included in the profitability analysis. Net appreciation totaled \$57,027 per farm in 2003. On the average, farm real estate appreciated \$36,140 or 4 percent of beginning fair market value. Machinery appreciated 2.8 percent while dairy cattle prices appreciated 1.3 percent in 2003.

Average data from 20 farms with the highest rates of return to all capital (without appreciation) are compared with the 201 farm average in Table 8 and in many of the following tables. Net farm income without appreciation averaged \$166,120 per farm on the top 10 percent farms, 337 percent greater than the 201 farm average.

**Table 8.**

### NET FARM INCOME 201 New York Dairy Farms, 2003

Item	Average 201 Farms		Average Top 10% Farms <sup>12</sup>	
	Per Farm	Per Cow	Per Farm	Per Cow
Total accrual receipts	\$1,083,698		\$1,127,036	
+ Appreciation: Livestock	7,325		8,949	
Machinery	10,386		6,774	
Real Estate	36,140		33,247	
Other Stock & Certificates	<u>3,176</u>		<u>6,417</u>	
= Total including appreciation	\$1,140,725		\$ 1,182,423	
- Total accrual expenses	<u>1,045,720</u>		<u>960,916</u>	
= Net Farm Income (with appreciation)	\$95,005	\$303	\$221,507	\$705
Net Farm Income (without appreciation)	\$37,978	\$121	\$166,120	\$529

<sup>12</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Labor and management income is the part of net farm income without appreciation returned to the operator(s) labor and management. Appreciation is not included as part of the return to labor and management. Labor and management income is determined by deducting the charge for unpaid family labor and the cost of using equity capital at a real interest rate of 5 percent, from net farm income excluding appreciation. The interest charge reflects the long-term average rate of return above inflation that a farmer might expect to earn in comparable risk investments. Operator(s) labor is not included in unpaid family labor.

Labor and management income per operator measures the return to one full-time operator's labor and management. A full-time operator provides 12 months of labor and management.

**Table 9.**

**LABOR AND MANAGEMENT INCOME  
201 New York Dairy Farms, 2003**

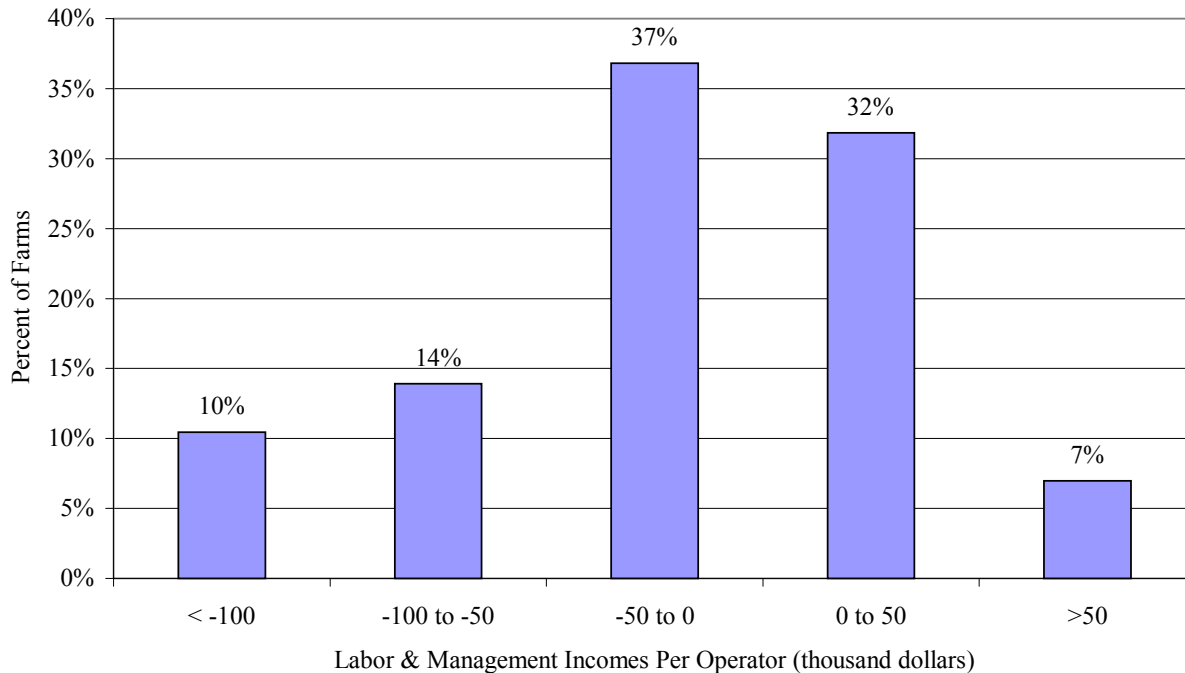
Item	Average 201 Farms		Average Top 10% Farms <sup>13</sup>
Net farm income without appreciation	\$37,978		\$166,120
- Family labor unpaid @ \$2,200 per month	7,160		5,412
- Real interest @ 5% on \$1,187,591 equity capital for average & \$1,302,289 for the top 10% farms	<u>59,380</u>		<u>65,115</u>
= Labor & Management Income (1.86 operators)	\$-28,562	(1.53 operators)	\$95,593
Labor & Management Income per Operator	\$-15,356		\$62,479

<sup>13</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Labor and management income per operator averaged \$-15,356 on these 201 dairy farms in 2003. The range in labor and management income per operator was from less than \$-360,000 to more than \$260,000. Returns to labor and management were negative on 61 percent of the farms. Labor and management income per operator was between \$0 and \$50,000 on 32 percent of the farms while 7 percent showed labor and management incomes of \$50,000 or more per operator.

**Chart 4.**

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR  
201 New York Dairy Farms, 2003**



Return to equity capital measures the net return remaining for the farmer's equity or owned capital after a charge has been made for the owner/operator's labor and management and unpaid family labor. The earnings or amount of net farm income allocated to labor and management is the opportunity cost or value of operator(s) labor and management estimated by the cooperators. Return on equity capital is calculated with and without appreciation. The rate of return on equity capital is determined by dividing the amount returned by the year's average farm net worth or equity capital. Return to all capital is calculated by adding interest paid to the return on equity capital and then dividing by average farm assets to calculate the rate of return on average total capital. Net farm income from operations ratio is net farm income (without appreciation) divided by total accrual receipts.

**Table 10.**

**RETURN TO CAPITAL  
201 New York Dairy Farms, 2003**

Item	Average 201 Farms	Average Top 10% Farms <sup>14</sup>
Net farm income with appreciation	\$95,005	\$221,507
- Family labor unpaid at \$2,200 per month	7,160	5,412
- Value of operators' labor & management	<u>58,037</u>	<u>49,505</u>
= Return to equity capital with appreciation	\$29,808	\$166,590
+ Interest paid	<u>39,528</u>	<u>35,221</u>
= Return to all capital with appreciation	\$69,336	\$201,811
Return to equity capital without appreciation	\$-27,219	\$111,203
Return to all capital without appreciation	\$12,309	\$146,424
Rate of return on average equity capital:		
with appreciation	2.5%	12.8%
without appreciation	-2.3%	8.5%
Rate of return on all capital:		
with appreciation	3.3%	9.5%
without appreciation	0.6%	6.9%
Net farm income from operations ratio	0.04	0.15

<sup>14</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Return to all labor and management is another measure of profitability of a business that can be calculated. It is calculated by adding the charge for unpaid family labor and the hired labor expense to labor and management income. Table 11 shows that farms with higher return to all capital with appreciation also had significantly higher return per hour to all labor and management.

**Table 11.**

**RETURN TO ALL LABOR AND MANAGEMENT BY RETURN  
TO ALL CAPITAL WITH APPRECIATION  
201 New York Dairy Farms, 2003**

Item	Quartile by Return to All Capital With Appreciation			
	Lowest 25%	3rd 25%	2nd 25%	Top 25%
Return to all capital with appreciation	\$-56,137	\$4,726	\$55,018	\$276,246
Rate of return on all capital with appreciation	-5.7%	0.5%	5.3%	7.3%
Total returns to all labor & management	\$34,743	\$47,839	\$112,209	\$425,284
Worker equivalent	5.56	3.88	5.98	14.61
Return per worker equivalent	\$6,249	\$12,330	\$18,764	\$29,109
Returns/hour (2,760 hours/worker/year)	\$2.26	\$4.47	\$6.80	\$10.55

**Farm and Family Financial Status**

Evaluating the financial status of the farm business and the farm family is an important part of business analysis. The first step is to inventory all the assets, determine all liabilities and fill out the balance sheet. The second step is to analyze the complete balance sheet by evaluating the relationships between assets and liabilities and changes made during the year.

**Table 12.**

**2003 FARM BUSINESS AND NONFARM BALANCE SHEET**  
**201 New York Dairy Farms, 2003**

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$12,580	\$13,970	Accounts payable	\$32,822	\$46,680
Accounts receivable	60,461	68,998	Operating debt	67,976	61,943
Prepaid expenses	1,534	1,664	Short term	2,513	5,346
Feed & supplies	<u>180,479</u>	<u>192,404</u>	Advanced gov't. receipt	134	0
Total Current	\$255,054	\$277,036	Current portion:		
			Intermediate	77,827	75,572
			Long term	<u>33,680</u>	<u>30,752</u>
			Total Current	\$214,952	\$220,293
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy Cows:			Structured debt		
owned	\$357,436	\$380,228	1-10 years	\$346,592	\$373,483
leased	670	367	Financial lease		
Heifers	188,305	199,837	(cattle & machinery)	9,680	4,843
Bulls & other livestock	3,259	2,886	Farm Credit stock	<u>5,288</u>	<u>5,435</u>
Mach. & equip. owned	365,800	379,275	Total Intermediate	\$361,560	\$383,761
Mach. & equip. leased	9,010	4,476			
Farm Credit stock	5,288	5,435	<u>Long Term</u>		
Other stock & certificates	<u>42,696</u>	<u>51,328</u>	Structured debt		
Total Intermediate	\$972,464	\$1,023,832	≥ 10 years	\$320,315	\$361,456
			Financial lease		
<u>Long Term</u>			(structures)	<u>108</u>	<u>0</u>
Land & buildings:			Total Long Term	\$320,423	\$361,456
owned	\$836,526	\$872,606			
leased	<u>108</u>	<u>0</u>	Total Farm Liabilities	\$896,935	\$965,510
Total Long Term	\$836,634	\$872,606			
Total Farm Assets	\$2,064,152	\$2,173,474	FARM NET WORTH	\$1,167,217	\$1,207,964
Nonfarm Assets <sup>15</sup>	Jan.1	Dec. 31	Nonfarm Liabilities <sup>15</sup> & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$7,265	\$7,536	Nonfarm Liabilities	\$3,770	\$3,440
Cash value life insurance	19,005	21,883	NONFARM NET WORTH	\$111,849	\$115,927
Nonfarm real estate	33,518	33,797			
Auto (personal share)	5,821	5,710	FARM & NONFARM <sup>16</sup>	Jan. 1	Dec. 31
Stocks & bonds	29,423	32,192	Total Assets	\$2,179,771	\$2,292,841
Household furnishings	8,813	8,918	Total Liabilities	<u>900,705</u>	<u>968,950</u>
All other	<u>11,774</u>	<u>9,331</u>	TOTAL FARM & NON-		
Total Nonfarm	\$115,619	\$119,367	FARM NET WORTH	\$1,279,066	\$1,323,891

<sup>15</sup>Average of 100 farms completing the nonfarm balance sheet.

<sup>16</sup>Sum of average farm values for 201 farms and nonfarm values for 100 farms.

Financial lease obligations are included in the balance sheet. The present values of all future payments are listed as liabilities since the farmer (lessee) is committed to make the payments. The present values are also listed as assets, representing the future value the item has to the business.

The farm balance sheet analysis includes financial and debt ratios and factors measuring levels of debt. Percent equity is calculated by dividing farm net worth by farm assets. Equity increases as the value of assets increase more than liabilities. The debt to asset ratios reflect strength in solvency and the potential capacity to borrow. The debt analysis ratios show how well the debt is structured and managed. Debt levels per unit of productive capacity include some old standards that are still useful if used with measures of cash flow and repayment ability.

**Table 13.**

**FARM BALANCE SHEET ANALYSIS**  
**201 New York Dairy Farms, 2003**

Item	Average 201 Farms		Average Top 10% Farms <sup>17</sup>	
<u>Farm Financial Ratios:</u>				
Percent equity	56%		62%	
Debt/asset ratio: total	0.44		0.38	
long term	0.41		0.27	
intermediate & current	0.46		0.45	
Leverage Ratio:	0.80		0.61	
Current Ratio:	1.26		1.27	
Working Capital: Dollars as % of Total Expenses	\$56,743	5%	\$58,419	6%
<u>Farm Debt Analysis:</u>				
Accounts payable as % of total debt	5%		2%	
Long term liabilities as % of total debt	37%		28%	
Current & intermediate liabilities as % of total debt	63%		72%	
Cost of term debt (weighted average)	4.5%		4.3%	
<u>Farm Debt Levels:</u>				
	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>
Total farm debt	\$3,075	\$2,874	\$2,614	\$2,780
Long term debt	1,151	1,076	740	787
Intermediate & long term	2,273	2,218	1,927	2,049
Intermediate & current debt	1,924	1,798	1,874	1,993

<sup>17</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

The farm inventory balance accounts for the changes in the values of major farm assets from the beginning to the end of the year.

**Table 14.**

**FARM INVENTORY BALANCE**  
**201 New York Dairy Farms, 2003**

Item	Real Estate	Machinery & Equipment	Livestock
Value beginning of year	\$836,526	\$365,800	\$549,000
Purchases	\$55,063 <sup>18</sup>	\$55,967	
+ nonfarm noncash transfer <sup>19</sup>	1,434	19	
- Lost capital	14,296		
- Net sales	5,773	3,039	
- Depreciation	<u>36,487</u>	<u>49,858</u>	
= Net Investment	-59	3,089	26,626
+ Appreciation	<u>36,140</u>	<u>10,386</u>	<u>7,325</u>
Value end of year	\$872,606	\$379,275	\$582,951

<sup>18</sup>\$13,141 land and \$41,922 buildings and/or depreciable improvements.

<sup>19</sup>Gifts and inheritances of property transferred into the farm business from outside.

The Statement of Owner Equity has two purposes. It allows (1) verification that the accrual income statement and market value balance sheet are consistent (in accountants' terms they reconcile) and (2) identification of the causes of change in equity that occurred on the farm during the year. The Statement of Owner Equity allows the farmer to determine to what degree the changes in equity were caused by (1) earning from the business, and nonfarm income, (in excess of withdrawals) being retained in the business (retained earnings), (2) outside capital being invested in the business or farm capital being removed from the business (called contributed/withdrawn capital) and (3) increases or decreases in the value (price) of assets owned by the business (called change in valuation equity).

Retained earnings are an excellent indicator of farm generated financial progress.

**Table 15.**

**STATEMENT OF OWNER EQUITY (RECONCILIATION)  
201 New York Dairy Farms, 2003**

Item	Average 201 Farms	Average Top 10% Farms <sup>21</sup>
Beginning of year farm net worth	\$1,167,217	\$1,233,771
Net farm income without appreciation	\$37,978	\$166,120
+ Nonfarm cash income	6,465	10,479
- Personal withdrawals & family expenditures and income taxes, excluding nonfarm borrowings	<u>56,248</u>	<u>81,211</u>
RETAINED EARNINGS	+ \$-11,805	+ \$95,388
Nonfarm noncash transfers to farm	\$1,453	\$0
+ Cash used in business from nonfarm capital	7,524	8,901
- Note or mortgage from farm real estate sold (nonfarm)	<u>0</u>	<u>0</u>
CONTRIBUTED/WITHDRAWN CAPITAL	+ \$8,977	+ \$8,901
Appreciation	\$57,027	\$ 55,387
- Lost capital	<u>14,296</u>	<u>20,372</u>
CHANGE IN VALUATION EQUITY	+ \$42,731	+ \$35,015
IMBALANCE/ERROR	<u>- \$844</u>	<u>- \$2,270</u>
End of year farm net worth <sup>20</sup>	\$1,207,964	\$1,370,805
<u>Change in Net Worth</u>		
Without appreciation	\$-16,280	\$81,647
With appreciation	\$40,747	\$137,034

<sup>20</sup>May not add due to rounding.

<sup>21</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

### Cash Flow Summary and Analysis

Completing an annual cash flow statement is an important step in understanding and organizing the sources and uses of funds for the business. It is also a means useful in determining accuracy and completeness of the data. Understanding last year's cash flow is the first step toward planning and managing cash flow for the current and future years.

The annual cash flow statement is structured to show net cash provided by operating activities, investing activities, financing activities and from reserves. All cash inflows and outflows are included. Therefore the sum of net cash provided from all four activities should be zero. Any imbalance is the error from incorrect accounting of cash inflows/outflows.

**Table 16.**

#### ANNUAL CASH FLOW STATEMENT 201 New York Dairy Farms, 2003

Item	Average 201 Farms	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$1,029,674	
- Cash farm expenses	917,889	
- Extraordinary expense	228	
= Net cash farm income		\$111,557
Personal withdrawals & family expenses including nonfarm debt payments	\$56,524	
- Nonfarm income	<u>6,465</u>	
- Net cash withdrawals from the farm		<u>\$50,059</u>
= Net Provided by Operating Activities		\$61,498
<u>Cash Flow From Investing Activities</u>		
Sale of assets: machinery	\$3,039	
+ real estate	5,773	
+ other stock & certificates	<u>18</u>	
= Total asset sales		\$8,830
Capital purchases: expansion livestock	\$20,284	
+ machinery	55,967	
+ real estate	55,063	
+ other stock & certificates	<u>6,891</u>	
- Total invested in farm assets		<u>\$138,205</u>
+ Net Provided by Investment Activities		\$-129,375
<u>Cash Flow From Financing Activities</u>		
Money borrowed (intermediate & long term)	\$169,797	
+ Money borrowed (short term)	4,304	
+ Increase in operating debt	0	
+ Cash from nonfarm capital used in business	7,524	
+ Money borrowed - nonfarm	<u>276</u>	
= Cash inflow from financing		\$181,901
Principal payments (intermediate & long term)	\$105,973	
+ Principal payments (short term)	1,472	
+ Decrease in operating debt	<u>6,033</u>	
- Cash outflow for financing		<u>\$113,478</u>
= Net Provided by Financing Activities		\$68,423
<u>Cash Flow From Reserves</u>		
Beginning farm cash, checking & savings		\$12,580
- Ending farm cash, checking & savings		<u>\$13,970</u>
= Net Provided from Reserves		\$-1,390
<u>Imbalance (error)</u>		\$-844

Table 17.

**ANNUAL CASH FLOW DATA**  
**201 New York Dairy Farms, 2003**

Item	Average 201 Farms			Average Top 10% Farms <sup>23</sup>		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Average number of cows and cwt. milk		314	70,105		314	70,929
<u>Accrual Operating Receipts</u>						
Milk	\$927,969	\$2,955	\$13.24	\$958,019	\$3,051	\$13.51
Dairy cattle	68,523	218	0.98	65,632	209	0.93
Dairy calves	14,809	47	0.21	20,978	67	0.30
Other livestock	1,120	4	0.02	1,917	6	0.03
Crops	27,654	88	0.39	37,370	119	0.53
Miscellaneous receipts	43,616	139	0.62	43,122	137	0.61
Total	\$1,083,691	\$3,451	\$15.46	\$1,127,036	\$3,589	\$15.91
<u>Accrual Operating Expenses</u>						
Hired labor	\$175,814	\$560	\$2.51	\$169,327	\$539	\$2.39
Dairy grain & concentrate	278,864	888	3.98	237,276	756	3.35
Dairy roughage	20,407	65	0.29	21,473	68	0.30
Nondairy feed	164	1	0.00	47	0	0.00
Professional nutritional services	1,140	4	0.02	7,905	25	0.11
Machinery hire, rent & lease	19,203	61	0.27	24,438	78	0.34
Machinery repairs & vehicle expense	44,821	143	0.64	40,675	130	0.57
Fuel, oil & grease	23,058	73	0.33	22,965	73	0.32
Replacement livestock	10,382	33	0.15	4,700	15	0.07
Breeding	12,999	41	0.19	12,196	39	0.17
Vet & medicine	39,019	124	0.56	30,705	98	0.43
Milk marketing	48,353	154	0.69	53,288	170	0.75
Bedding	17,119	55	0.24	13,782	44	0.19
Milking supplies	20,994	67	0.30	17,660	56	0.25
Cattle lease	707	2	0.01	1,216	4	0.02
Custom boarding	24,670	79	0.35	14,700	47	0.21
bST expense	17,525	56	0.25	17,712	56	0.25
Livestock professional fees	1,910	6	0.03	2,552	8	0.04
Other livestock expense	8,228	26	0.12	8,372	27	0.12
Fertilizer & lime	18,326	58	0.26	21,864	70	0.31
Seeds & plants	14,182	45	0.20	13,814	44	0.19
Spray/other crop expense	11,473	37	0.16	13,783	44	0.19
Crop professional fees	1,738	5	0.02	3,148	10	0.04
Land, building & fence repair	9,969	32	0.14	11,074	35	0.16
Taxes	15,070	48	0.21	14,177	45	0.20
Real estate rent & lease	17,097	54	0.24	17,159	55	0.24
Insurance	10,649	34	0.15	13,375	43	0.19
Utilities	24,068	77	0.34	21,259	68	0.30
Miscellaneous	11,273	36	0.16	9,639	31	0.14
Total Less Interest Paid	\$899,221	\$2,864	\$12.83	\$840,281	\$2,676	\$11.85
<u>Net Accrual Operating Income</u>						
(without interest paid)	\$184,470	\$587	\$2.63	\$286,755	\$913	\$4.04
- Change in livestock & crop inventory	45,465	145	0.65	62,612	199	0.88
- Change in accounts receivable	8,552	27	0.12	9,309	30	0.13
- Change in feed & supply inventory	-7,115	-23	-0.10	-9,984	-32	-0.14
+ Change in accounts payable <sup>22</sup>	13,745	44	0.20	-7,509	-24	-0.11
NET CASH FLOW	\$151,313	\$482	\$2.16	\$217,309	\$692	\$3.06
- Net personal withdrawals & family exp.	49,783	159	0.71	70,732	225	1.00
Available for Farm Debt Payments & Invest.	\$101,530	\$323	\$1.45	\$146,577	\$467	\$2.07
- Farm debt payments	171,026	545	2.44	156,119	497	2.20
Cash available for Farm Investments	\$-69,496	\$-221	\$-0.99	\$-9,542	\$-30	\$-0.13

<sup>22</sup>Exclude change in interest account payable.

<sup>23</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

## Repayment Analysis

The second step in cash flow planning and management is to compare and evaluate debt payments planned and made last year, and estimate the payments required in the current year. It is helpful to compare and evaluate a farm's repayment position by using debt payments per unit of production and receipt/debt payment ratios. The data below are from farms that completed summaries for both 2002 and 2003.

**Table 18.**

### FARM DEBT PAYMENTS PLANNED Same 163 New York Dairy Farms, 2002 & 2003

Debt Payments	Same 163 Dairy Farms			Same 18 Top 10% Farms		
	2003 Payments		Planned 2004	2003 Payments		Planned 2004
	Planned	Made		Planned	Made	
Long term	\$50,111	\$54,359	\$49,797	\$27,796	\$38,067	\$31,413
Intermediate term	96,887	103,278	104,783	95,528	112,023	125,792
Short term	2,445	1,689	4,161	9,574	907	3,356
Operating (net reduction)	10,680	26,472	4,536	13,722	9,516	4,939
Accts. payable (net reduction)	4,088	4,544	1,651	372	7,605	161
Total	\$164,211	\$190,342	\$164,928	\$146,992	\$168,118	\$165,661
Per cow	\$493	\$572		\$435	\$497	
Per cwt. 2003 milk	\$2.21	\$2.56		\$1.91	\$2.18	
% of 2003 milk receipts	17%	19%		14%	16%	

The cash flow coverage ratio and debt coverage ratio measure the ability of the farm business to meet its planned debt payments. Debt coverage ratio indicates the income generated to make payments while cash flow coverage ratio shows the cash available to make payments.

**Table 19.**

### COVERAGE RATIOS Same 163 New York Dairy Farms, 2002 & 2003

Item	Average	Item	Average
<u>Cash Flow Coverage Ratio</u>		<u>Debt Coverage Ratio</u>	
Cash farm receipts	\$1,090,938	Net farm income (without apprec.)	\$ 39,653
- Cash farm expenses	967,497	+ Depreciation	95,131
+ Interest paid (cash)	42,726	+ Interest paid (accrual)	42,636
- Net personal withdrawals from farm <sup>24</sup>	53,768	- Net personal withdrawals from farm <sup>24</sup>	53,768
(A) = Amount Available for Debt Service	\$112,399	(A') = Repayment Capacity	\$123,652
(B) = Debt Payments Planned for 2003 (as of December 31, 2002)	\$164,211	(B) = Debt Payments Planned for 2003 (as of December 31, 2002)	\$164,211
(A/B)= Cash Flow Coverage Ratio for 2003	0.68	(A'/B)= Debt Coverage Ratio for 2003	0.75
Same 18 Top 10% Dairy Farms, 2002 & 2003			
(A) = Amount Available for Debt Service	\$160,397	(A') = Repayment Capacity	\$226,996
(B) = Debt Payments Planned for 2003	146,992	(B) = Debt Payments Planned for 2003	146,992
(A/B)= Cash Flow Coverage Ratio for 2003	1.09	(A'/B)= Debt Coverage Ratio for 2003	1.54

<sup>24</sup>Personal withdrawals and family expenditures less nonfarm income and nonfarm money borrowed. If excluded, the coverage ratios will represent repayment ability of the farm only.

The debt to asset ratio is a good measure of the current relationship between assets and liabilities, but not the business' ability to meet cash flow obligations. Even with a debt to asset ratio of less than 40 percent, 28 percent of the farms had a cash flow coverage ratio less than 1.0.

**Table 20.**

### DEBT TO ASSET RATIO VS. CASH FLOW COVERAGE 163 New York Dairy Farms, 2003

Debt/Asset Ratio	Cash Flow Coverage Ratio (Farm & Nonfarm)			
	<.5	.5 to .99	1 to 1.49	>=1.5
	percent of farms			
<40%	12.9	14.7	12.9	14.7
40 to 70%	16.0	17.8	4.3	2.5
70% & over	2.5	1.2	0.6	0.0

### Cropping Program Analysis

The cropping program is an important part of the dairy farm business that sometimes is overlooked and neglected. A complete evaluation of available land resources, how they are being used, how well crops are produced and what it costs to produce them, is required to evaluate alternative cropping and feed purchase choices.

**Table 21.**

#### **LAND RESOURCES AND CROP PRODUCTION 201 New York Dairy Farms, 2003**

Item	Average 201 Farms			Average Top 10% Farms <sup>25</sup>		
	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
<u>Land</u>						
Tillable	336	323	659	300	418	718
Nontillable pasture	49	14	63	31	22	53
Other nontillable	<u>136</u>	<u>7</u>	<u>143</u>	<u>121</u>	<u>21</u>	<u>142</u>
Total	521	344	865	452	461	913
<u>Crop Yields</u>	<u>Farms</u>	<u>Acres</u>	<u>Prod/Acre</u>	<u>Farms</u>	<u>Acres</u>	<u>Prod/Acre</u>
Hay crop	192	336	3.2 tn DM	18	367	3.4 tn DM
Corn silage	178	264	17.2 tn 5.7 tn DM	18	252	16.5 tn 5.6 tn DM
Other forage	17	42	5.5 tn DM	3	30	6.0 tn DM
Total forage	192	584	4.3 tn DM	18	624	4.3 tn DM
Corn grain	72	114	121 bu	9	168	104 bu
Oats	14	37	46 bu	0	0	0 bu
Wheat	23	79	47 bu	3	129	51 bu
Other crops	33	97		0	0	
Tillable pasture	47	58		6	115	
Idle	67	63		6	76	

<sup>25</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Crop acres and yields are the average for the farms reporting each crop. All but 9 of the 201 farms produced hay or hay crop silage in 2003. Eighty-nine percent produced corn silage, 36 percent grew and harvested corn grain, and 7 percent grew oats for grain. Although 47 farms used tillable pasture in 2003, only 27 farms reported using rotational grazing.

Yields of forage crops have been converted to tons of dry matter using dry matter coefficients reported by the farmers. Grain production has been converted to bushels of dry grain equivalent.

Crop acres represent planted acres, therefore, any unharvested acres are reflected in lower yields per acre.

The following measures of crop management indicate how effectively the land resource is being used and how well total forage requirements are being met.

**Table 22.**

#### **CROP MANAGEMENT FACTORS 201 New York Dairy Farms, 2003**

Item	Average 201 Farms	Average Top 10% Farms <sup>26</sup>
Total tillable acres per cow	2.10	2.29
Total forage acres per cow	1.86	1.99
Harvested forage dry matter, tons per cow	7.95	8.49

<sup>26</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Thirty-eight cooperators allocated direct crop related expenses to hay crop and corn. The data in Table 23 have been compiled to show the average crop related production expenses per acre and per unit for these crops. Note that labor and machinery costs have not been included. Total corn expenses are allocated to corn silage and corn grain based on the proportion of acres in each crop. In Table 23, the total per tillable acre represents all 201 farms, the expenses for hay are for 38 farms and corn crops are for 38 farms.

**Table 23.**

**CROP RELATED ACCRUAL EXPENSES**  
**New York Dairy Farms, 2003**

Expenses	Average 201 Farms	Average 38 Farms		Average 38 Farms		
	Total per Tillable Acre	Hay Crop		All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Shell Bu.
		Per Acre	Per Ton DM			
Fertilizer & lime	\$27.81	\$16.55	\$5.60	\$35.79	\$6.47	\$0.42
Seeds & plants	21.52	11.90	3.77	39.88	7.05	0.38
Spray & other crop exp.	<u>20.05</u>	<u>10.90</u>	<u>3.88</u>	<u>34.12</u>	<u>6.08</u>	<u>0.28</u>
Total	\$69.38	\$39.35	\$13.25	\$109.79	\$19.60	\$1.08
Ave. Top 10% Farms: <sup>27</sup>	Average 20 Farms	-----None Reported-----				
Fertilizer & lime	\$30.45	-----None Reported-----				
Seeds & plants	19.24	-----None Reported-----				
Spray & other crop exp.	<u>19.20</u>	-----None Reported-----				
Total	\$68.89	-----None Reported-----				

<sup>27</sup>Average of farms with highest rates of return to all capital (without appreciation).

Most machinery costs are associated with crop production and should be analyzed with the crop enterprise. Total machinery expenses include the major fixed costs (interest and depreciation), as well as the accrual operating costs. Machinery costs have not been allocated to individual crops, but they are calculated per total tillable acre.

**Table 24.**

**ACCRUAL MACHINERY EXPENSES**  
**201 New York Dairy Farms, 2003**

Machinery Expense Item	Average 201 Farms		Average Top 10% Farms <sup>28</sup>	
	Total Expenses	Per Tillable Acre	Total Expenses	Per Tillable Acre
Fuel, oil & grease	\$23,058	\$34.99	\$22,965	\$31.98
Machinery repairs & vehicle expense	44,821	68.01	40,675	56.65
Machine hire, rent & lease	19,203	29.14	24,438	34.04
Interest (5%)	18,964	28.78	17,636	24.56
Depreciation	<u>49,858</u>	<u>75.66</u>	<u>44,816</u>	<u>62.42</u>
Total	\$155,904	\$236.58	\$150,530	\$209.65

<sup>28</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Table 25.

**CROP RELATED ACCRUAL EXPENSES BY HAY CROP PRODUCTION PER ACRE  
38 New York Dairy Farms, 2003**

Item	Tons of Hay Crop Dry Matter Per Acre			
	<2.5	2.5-2.9	3.0-3.4	≥3.5
Hay crop, tons DM/acre	2.0	2.8	3.2	4.3
Farms reporting crop expense breakdowns	9	8	8	13
Average number hay crop acres for farms reporting	289	344	342	344
<u>Accrual Crop Expenses</u>				
<u>Per Acre of Hay Crop:</u>				
Fertilizer & lime	\$12.18	\$16.06	\$19.45	\$18.30
Seeds & plants	6.56	10.63	16.50	14.62
Spray & other crop expenses	9.81	12.63	11.63	10.84
Total	\$28.55	\$39.32	\$47.58	\$43.76
<u>Accrual Crop Expense</u>				
<u>Per Ton DM of Hay Crop:</u>				
Fertilizer & lime	\$6.10	\$5.80	\$6.05	\$4.47
Seeds & plants	3.31	3.87	5.13	3.45
Spray & other crop expenses	5.60	4.58	3.62	2.58
Total	\$15.01	\$14.25	\$14.80	\$10.50

Table 26.

**CROP RELATED ACCRUAL EXPENSES BY CORN PRODUCTION PER ACRE  
38 New York Dairy Farms, 2003**

Item	Tons Corn Silage/Acre			Dry Shelled Bushels of Corn Grain Per Acre		
	<14	14-19	≥19	<100	100-120	≥120
Corn yield per acre	12.7	16.6	21.8	84	110	139
Farms reporting crop expense breakdowns	10	17	11	5	5	4
Average number corn acres for farms reporting	360	279	262	211	205	459
<u>Accrual Crop Expense/Acre of Corn</u>						
Fertilizer & lime	\$33.04	\$36.42	\$35.58	\$55.39	\$33.03	\$37.20
Seeds & plants	35.42	39.09	45.11	36.77	42.94	36.47
Spray & other crop expenses	22.45	42.29	30.93	15.34	35.10	47.30
Total	\$90.91	\$117.80	\$111.62	\$107.50	\$111.07	\$120.97
<u>Accrual Crop Expense Per:<sup>29</sup></u>						
	Ton DM of Corn Silage			Dry Shell Bushel of Corn Grain		
Fertilizer & lime	\$7.79	\$6.53	\$4.95	\$0.68	\$0.29	\$0.27
Seeds & plants	8.25	6.98	6.21	0.45	0.39	0.27
Spray & other crop expense	5.21	7.54	4.49	0.19	0.32	0.35
Total	\$21.25	\$21.05	\$15.65	\$1.32	\$1.00	\$0.89

<sup>29</sup>Total corn expenses are allocated to corn silage and corn grain based on the proportion of acres in each crop.

It is important to observe that as hay crop yields per acre increase, crop related expenses per acre generally increased. Hay crop expenses per ton of dry matter varied as yields increased. However, the highest cost per ton of dry matter is reported for the less than 2.5 tons per dry matter yield. For corn silage, crop expense per ton of dry matter is lowest at the high level of production. Corn grain shows the highest cost per acre for the high yield, with the high yield category producing the lowest cost per bushel. A limited number of cooperators providing data by crop limits the strengths of these conclusions.

### Dairy Program Analysis

An analysis of the dairy enterprise can be the most important step in evaluating the strengths and weaknesses of the dairy farm business. Changes in dairy herd size and market values are identified in the table below. The change in inventory value without appreciation is attributed to physical changes in herd size and quality. This change in inventory is included as an accrual farm receipt when calculating profitability.

**Table 27.**

#### DAIRY HERD INVENTORY 201 New York Dairy Farms, 2003

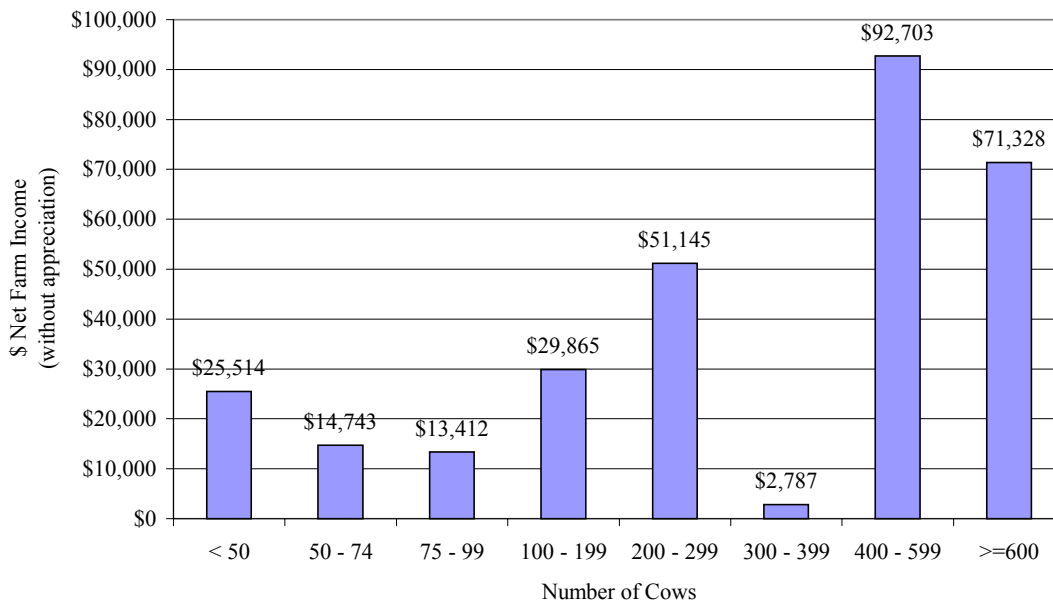
Item	Dairy Cows		Heifers					
	No.	Value	Bred		Open		Calves	
	No.	Value	No.	Value	No.	Value	No.	Value
Beg. year (owned)	298	\$357,436	88	\$102,245	81	\$58,347	64	\$27,713
+ Change w/o apprec.		18,302		1,578		3,526		3,761
+ Appreciation		<u>4,490</u>		<u>676</u>		<u>1,290</u>		<u>700</u>
End year (owned)	314	\$380,228	90	\$104,499	85	\$63,163	71	\$32,174
End including leased	318							
Average number	314		240	(all age groups)				
<u>Average Top 10% Farms.<sup>30</sup></u>								
Beg. year (owned)	300	\$370,896	91	\$104,147	87	\$66,569	63	\$26,591
+ Change w/o apprec.		20,399		1,667		1,993		9,894
+ Appreciation		<u>2,820</u>		<u>2,867</u>		<u>2,207</u>		<u>1,055</u>
End year (owned)	315	\$394,115	94	\$108,681	86	\$70,769	81	\$37,540
End including leased	319							
Average number	314		254	(all age groups)				

<sup>30</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Historically, there has been a strong relationship between farm size and net farm income on well-managed dairy farms. In 2003, however, there was not a consistent increase in net farm incomes as herd size increased (Chart 5). Herds less than 200 cows had net farm incomes between 10 and 30 thousand dollars. Larger farms had larger incomes, except for the 300 to 399 category. This herd size group was unable to control costs to the same extent as the other large herds. For more information on herd size comparisons, see pages 48-57.

**Chart 5.**

#### NET FARM INCOME (WITHOUT APPRECIATION) BY HERD SIZE 201 New York Dairy Farms, 2003



Total milk sold and milk sold per cow are extremely valuable measures of productivity on the dairy farm. These measures of milk output are based on pounds of milk marketed during the year.

**Table 28.**

**MILK PRODUCTION  
201 New York Dairy Farms, 2003**

Item	Average 201 Farms	Average Top 10% Farms <sup>31</sup>
Total milk sold, lbs.	7,010,504	7,092,945
Milk sold per cow, lbs.	22,302	22,625
Average milk plant test, percent butterfat	3.61%	3.67%

<sup>31</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Farms with higher rates of production tend to have higher net farm income. This was due to more cows per farm and not higher net farm income per cow. However, in 2003, even with higher milk production per cow and more cows, labor and management income per operator did not increase.

**Table 29.**

**MILK SOLD PER COW AND FARM INCOME MEASURES  
201 New York Dairy Farms, 2003**

Pounds of Milk Sold Per Cow	Number of Farms	Average Number of Cows	Net Farm Income without Apprec.	Net Farm Income Per Cow	Labor & Management Income/Oper.
Under 16,000	32	112	\$18,452	\$165	\$-16,792
16,000 to 16,999	18	125	31,373	251	-10,132
17,000 to 17,999	10	98	-4,280	-44	-31,016
18,000 to 18,999	11	159	19,698	124	-22,808
19,000 to 19,999	15	189	48,840	259	-1,482
20,000 to 20,999	19	329	47,416	144	-17,989
21,000 to 21,999	19	265	18,596	70	-28,101
22,000 to 22,999	26	383	19,574	51	-39,728
23,000 to 23,999	23	454	45,210	100	-14,113
24,000 & over	28	718	98,896	138	-31,484

The relationship between milk output per cow and net farm income on all dairy farms is shown in Table 29 above and is diagrammed in Charts 6 and 7 on page 28. Each spot on each scatter diagram represents one of the 201 farms.

Historically, net farm income per cow has increased as pounds of milk sold per cow increased. This relationship did not hold in 2003 (see Table 29 and Charts 6 and 7). With lower milk prices, controlling costs became the most important determinant of profitability.

The trend lines on charts on the following pages were completed using regression techniques. The predictive formulas and  $R^2$  are presented for each relationship. An  $R^2$  of 1.00 indicates a perfect relationship between the data and the trend line. An  $R^2$  of .30 for example, is interpreted as the trend line explaining 30% of the variability in the relationship. The higher the  $R^2$ , the better the trend line fits the data. With a low  $R^2$ , other factors, not measured, are important in explaining the relationship. The very low  $R^2$  values for Charts 6 and 7 indicate that there is little statistical relationship in the 2003 data.

Chart 6.

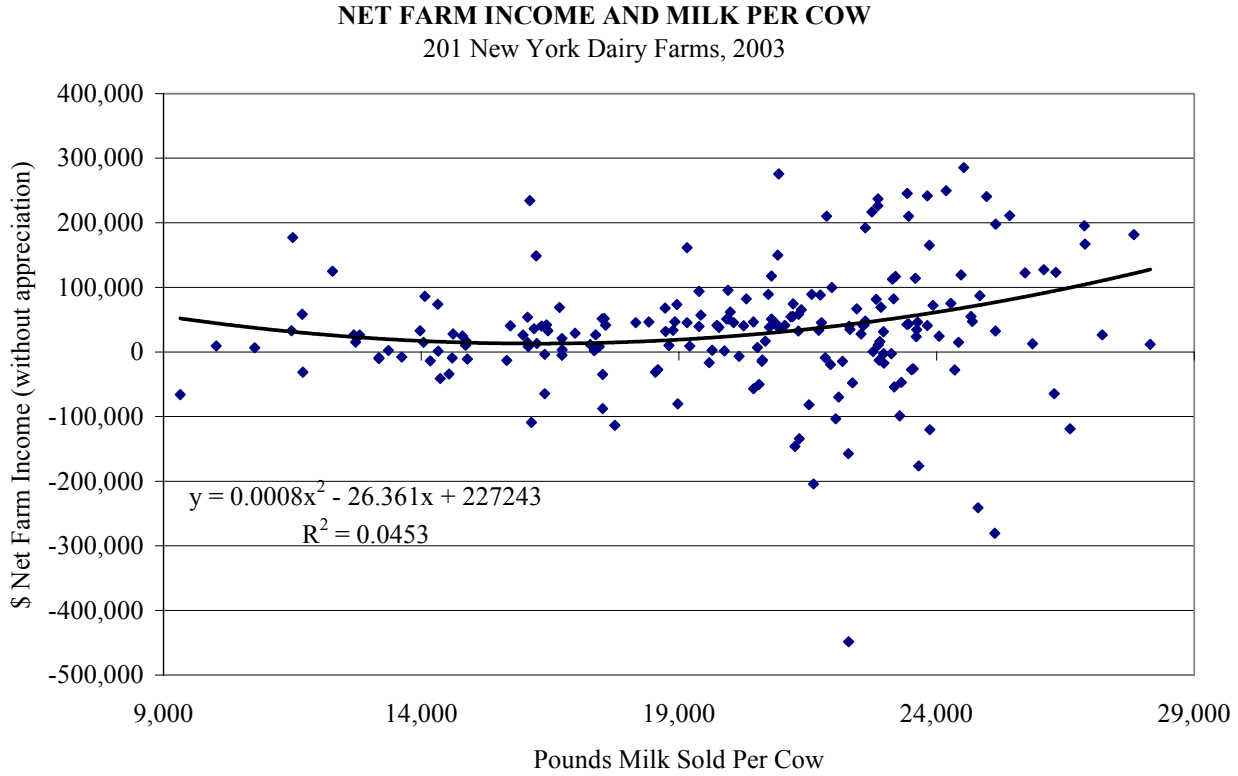
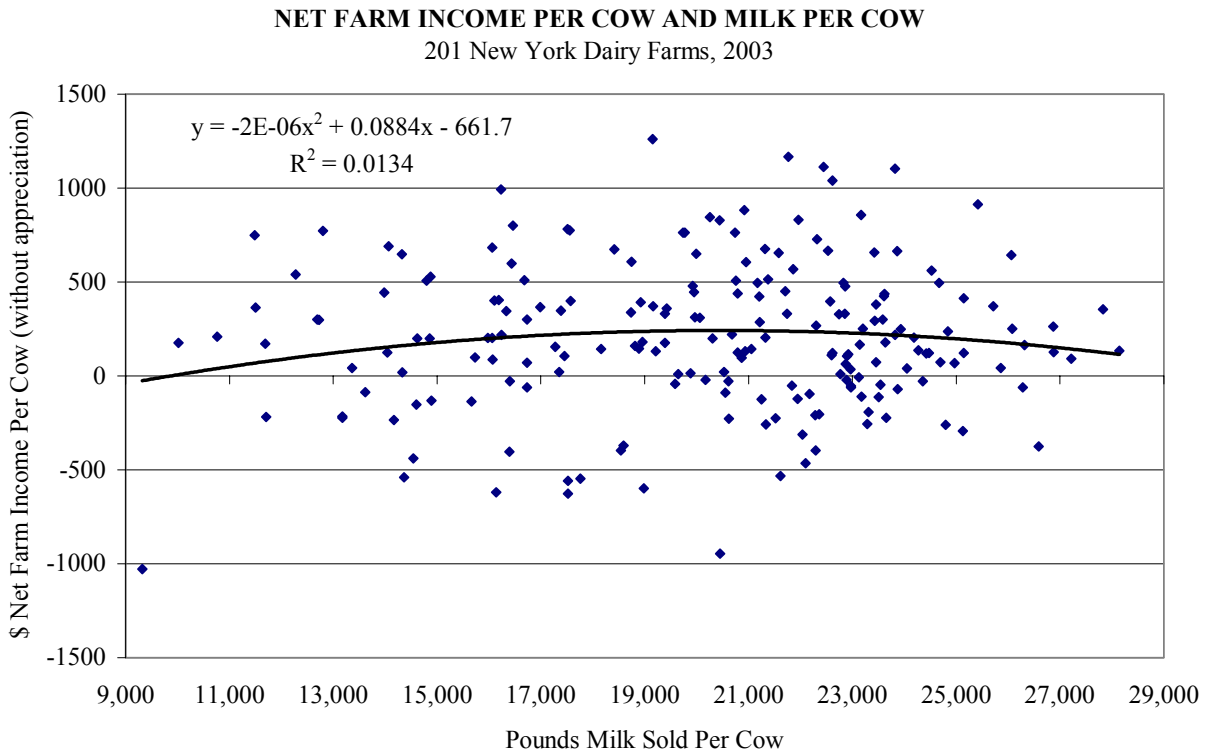


Chart 7.



Charts 8 and 9 look at relationships between cull rates and milk production and net farm income per cow. For the 2003 year, supplementary information concerning dairy replacements was collected from 48 participating farms. The culling chart (Table 30) reports the decile range of reported factors for the different information that was collected. The average culling rate was 31.8 percent, sell rate was 26.7 percent, and death rate was 5.1 percent. The average number of cows sold for beef equaled 79, 2 cows were sold for dairy, and 15 cows died. Please refer to the glossary for definitions of the different terms and how the measures were calculated.

Chart 8.

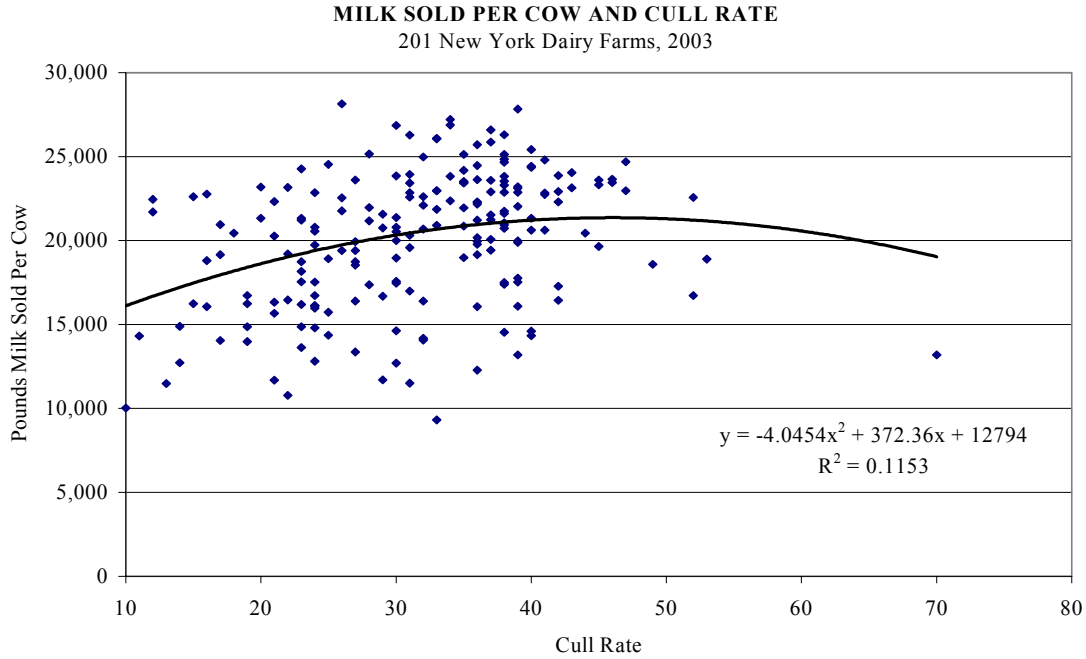


Chart 9.

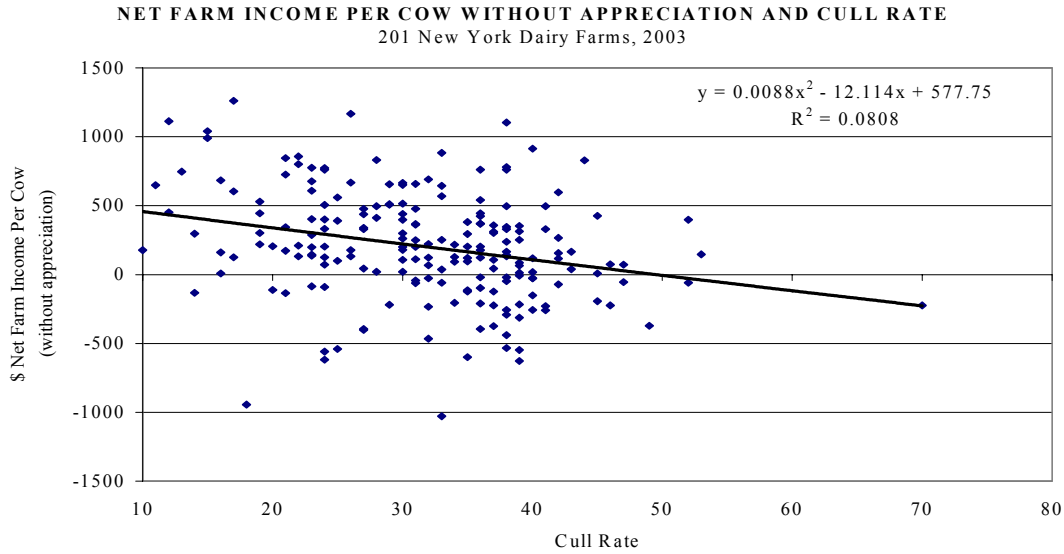


Table 30.

**CULLING RATE AND DAIRY REPLACEMENT INFORMATION**  
**New York Dairy Farms, 2003**

Decile	Sell Rate	Death Rate	Cull Rate	Value of Cows Sold	Value of Animals Purchased	Percent of Replacements	
						Purchased	Being Custom Raised
	-----201 Farms <sup>32</sup> -----				\$/head (64 Farms)	-----49 Farms <sup>32</sup> -----	
1	11%	0%	14%	\$216	\$604	0%	0%
2	18	2	22	356	1,013	0	0
3	21	3	24	409	1,138	0	0
4	23	3	28	439	1,273	0	0
5	25	4	31	467	1,366	0	0
6	27	5	34	502	1,424	0	0
7	30	6	36	536	1,487	2	16
8	31	7	38	582	1,664	6	34
9	34	9	40	695	2,051	13	65
10	40	14	47	1,320	3,948	39	96

<sup>32</sup>All 201 participating farms provided culling information. Forty-nine farms provided supplemental information on heifer acquisitions.

**Cost of Producing Milk**

The cost of producing milk has been compiled below using the whole farm method. The following steps are used in the calculations.

1. The cost of expansion livestock is added to total accrual operating expenses to offset any related inventory increase included in accrual receipts.
2. Accrual milk sales are deducted from total accrual receipts to get total accrual nonmilk receipts, which are used to represent total nonmilk operating costs. This assumes that costs equal revenues for nonmilk costs.
3. Total accrual nonmilk receipts are subtracted from total accrual operating expenses including expansion livestock to calculate the operating cost of producing milk.
4. Machinery depreciation and building depreciation are added to operating costs to determine the purchased inputs cost of producing milk.
5. The opportunity cost of equity capital, operator's labor and operator's management and the value of unpaid family labor are added to all other costs to obtain the total cost of producing milk. This cost includes all the operating, depreciation, and imputed costs of producing milk.

**Table 31.**

**COST OF PRODUCING MILK, WHOLE FARM METHOD  
201 New York Dairy Farms, 2003**

Item	Average 201 Farms	Average Top 10% Farms <sup>33</sup>
Total Accrual Operating Expenses	\$938,749	\$875,502
Expansion Livestock, Accrual	+ <u>20,248</u>	+ <u>3,064</u>
1. Total Accrual Operating Expenses, Including Expansion Livestock	\$958,997	\$878,566
Total Accrual Receipts	\$1,083,691	\$1,127,036
Milk Sales, Accrual	- <u>927,969</u>	- <u>958,019</u>
2. Total Accrual Nonmilk Receipts	- <u>\$155,722</u>	- <u>\$169,017</u>
3. Operating Cost of Producing Milk	\$803,275	\$709,549
Machinery Depreciation	+ 49,858	+ 44,816
Building Depreciation	+ <u>36,487</u>	+ <u>36,790</u>
4. Purchased Inputs Cost of Producing Milk	\$889,620	\$791,155
Family Labor Unpaid (\$2,200/month)	+ 7,160	+ 5,412
Real Interest on Equity Capital	+ 59,380	+ 65,115
Value of Operator's Labor & Management	+ <u>58,037</u>	+ <u>49,505</u>
5. Total Costs of Producing Milk	\$1,014,197	\$911,187
6. Costs Per Cwt.:		
Cwt. Milk Sold	70,105	70,929
Operating Cost Per Cwt.	\$11.46	\$10.00
Purchased Inputs Cost Per Cwt.	\$12.69	\$11.15
Total Cost Per Cwt.	\$14.47	\$12.85

<sup>33</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Costs of producing milk per hundredweight are presented for eight expenditure categories in Table 32. The whole farm method assumption that accrual nonmilk receipts represent nonmilk operating costs is used in computing net costs. A \$19,170 average increase in crop inventories per farm, (\$.27 per hundredweight of milk), is included in crop sales on the 201 farms. The top 10 percent farms had a \$28,945 average increase in crop inventories per farm (\$.41 per hundredweight of milk).

**Table 32.**

**ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT  
BASED ON WHOLE FARM DATA  
201 New York Dairy Farms, 2003**

Item	Average 201 Farms	Average Top 10% Farms <sup>35</sup>
Dairy grain and concentrate	\$3.98	\$3.35
Dairy roughage	0.29	0.30
Nondairy feed	0.00	0.00
Professional nutritional services	<u>0.02</u>	<u>0.11</u>
Total feed expense	\$4.29	\$3.76
Crop expense	0.64	0.73
- Crop sales and government receipts <sup>34</sup>	<u>0.79</u>	<u>0.97</u>
Net Feed and Crop Expense	\$4.14	\$3.52
Hired labor	2.51	2.39
Operator's and family labor	<u>0.93</u>	<u>0.77</u>
Total Labor Expense	\$3.44	\$3.16
Machine repairs, fuel and hire	1.24	1.23
Machinery depreciation	0.71	0.63
- Gas tax refunds and custom work	<u>0.06</u>	<u>0.00</u>
Net Machinery Expense	\$1.89	\$1.86
Replacement and expansion cattle purchases	0.44	0.11
- Sales and inventory growth	<u>1.20</u>	<u>1.26</u>
Net Cattle Purchases	\$-0.76	\$-1.15
Milk marketing costs	0.69	0.75
All other livestock expense excluding purchases	<u>2.04</u>	<u>1.68</u>
Net Livestock Expense	\$2.73	\$2.43
Real estate repairs, rent and taxes	0.60	0.60
Building depreciation	<u>0.52</u>	<u>0.52</u>
Total Real Estate Expense	\$1.12	\$1.12
Interest paid	0.56	0.50
Interest on equity	<u>0.85</u>	<u>0.92</u>
Total Interest Expense	\$1.41	\$1.42
Other operating and miscellaneous expenses	0.66	0.63
- Miscellaneous income	<u>0.16</u>	<u>0.16</u>
Net Miscellaneous Expenses	<u>\$ 0.50</u>	<u>\$0.47</u>
Total Cost of Producing Milk	\$14.47	\$12.85
Purchased Inputs Cost	\$12.69	\$11.15
Total Operating Cost	\$11.46	\$10.00

<sup>34</sup>Non-crop related government payments may bias the results.

<sup>35</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Costs of producing milk per hundredweight are presented in the table below for 163 farms that participated both in 2002 and 2003. Costs of production increased in most categories except net machinery expense, real estate expense, and interest expense when 2003 data are compared to 2002.

**Table 33.**

**ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT  
BASED ON WHOLE FARM DATA  
Same 163 New York Dairy Farms, 2002 & 2003**

Item	2002	2003	Percent Change
Dairy grain and concentrate	\$3.84	\$4.02	4.7%
Dairy roughage	0.26	0.27	3.8
Nondairy feed	<u>0.00</u>	<u>0.02</u>	
Total feed expense	\$4.10	\$4.31	5.1
Crop expense	0.69	0.67	
- Crop sales and government receipts <sup>36</sup>	<u>0.94</u>	<u>0.81</u>	
Net Feed and Crop Expense	\$3.85	\$4.17	8.3%
Hired labor	2.44	2.49	
Operator's and family labor	<u>0.95</u>	<u>0.91</u>	
Total Labor Expense	\$3.39	\$3.40	0.3%
Machine repairs, fuel and hire	1.25	1.26	
Machinery depreciation	0.80	0.73	
- Gas tax refunds and custom work	<u>0.05</u>	<u>0.06</u>	
Net Machinery Expense	\$2.00	\$1.93	-3.5%
Replacement and expansion cattle purchases	0.40	0.40	
- Sales and inventory growth	<u>1.21</u>	<u>1.18</u>	
Net Cattle Purchases	\$-0.81	\$-0.78	3.7%
Milk marketing costs	0.65	0.69	
All other livestock expense excluding purchases	<u>2.00</u>	<u>1.95</u>	
Net Livestock Expense	\$2.65	\$2.64	-0.4%
Real estate repairs, rent and taxes	0.65	0.62	
Building depreciation	<u>0.68</u>	<u>0.55</u>	
Total Real Estate Expense	\$1.33	\$1.17	-12.0%
Interest paid	0.63	0.57	
Interest on equity	<u>0.87</u>	<u>0.85</u>	
Total Interest Expense	\$1.50	\$1.42	-5.3%
Other operating and miscellaneous expenses	0.67	0.65	
- Miscellaneous income	<u>0.24</u>	<u>0.16</u>	
Net Miscellaneous Expenses	<u>\$0.43</u>	<u>\$0.49</u>	14.0%
Total Cost of Producing Milk	\$14.34	\$14.44	0.7%
Purchased Inputs Cost	\$12.52	\$12.68	1.3%
Total Operating Cost	\$11.04	\$11.39	3.2%
Average Price Received for Milk	\$12.94	\$13.21	2.1%

<sup>36</sup>Non-crop related government payments may bias the results.

The three measures of the accrual cost of producing milk calculated on a per cow and per hundredweight basis are compared with accrual receipts from milk sales in Table 34.

**Table 34.**

**COST OF PRODUCING MILK, ACCRUAL RECEIPTS FROM DAIRY, AND PROFITABILITY  
201 New York Dairy Farms, 2003**

Item	Average 201 Farms			Average Top 10% Farms <sup>37</sup>		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
<u>Accrual Cost of Producing Milk</u>						
Operating Cost	\$803,275	\$2,558	\$11.46	\$709,549	\$2,260	\$10.00
Purchased Inputs Cost	889,620	2,833	12.69	791,155	2,520	11.15
Total Cost	1,014,197	3,230	14.47	911,187	2,902	12.85
<u>Accrual Receipts from Milk</u>						
Net Milk Receipts	\$927,969	\$2,955	\$13.24	\$958,019	\$3,051	\$13.51
	879,616	2,801	12.55	904,731	2,881	12.76
<u>Profitability</u>						
Net Farm Income without Appreciation	\$37,971	\$121	\$0.54	\$166,120	\$529	\$2.34
Net Farm Income with Appreciation	\$95,998	\$306	\$1.37	\$221,507	\$705	\$3.12

<sup>37</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

The operating cost of producing milk on all 201 dairy farms averaged \$11.46 per hundredweight, leaving \$1.09 to cover depreciation, unpaid labor and operator resources.

The total cost of producing milk on all 201 dairy farms averaged \$14.47 per hundredweight, \$1.23 more than the average price received for milk sold from these farms during 2003. The imputed costs or charge for the operator's labor, management and equity capital average \$1.67 per hundredweight in 2003. But the farmer received \$0.45 per hundredweight for these inputs. The 20 most profitable farms held their operating costs to \$10.00 per hundredweight and their total cost of producing milk averaged \$12.85 per hundredweight. This left a profit of \$0.66 per hundredweight of milk sold.

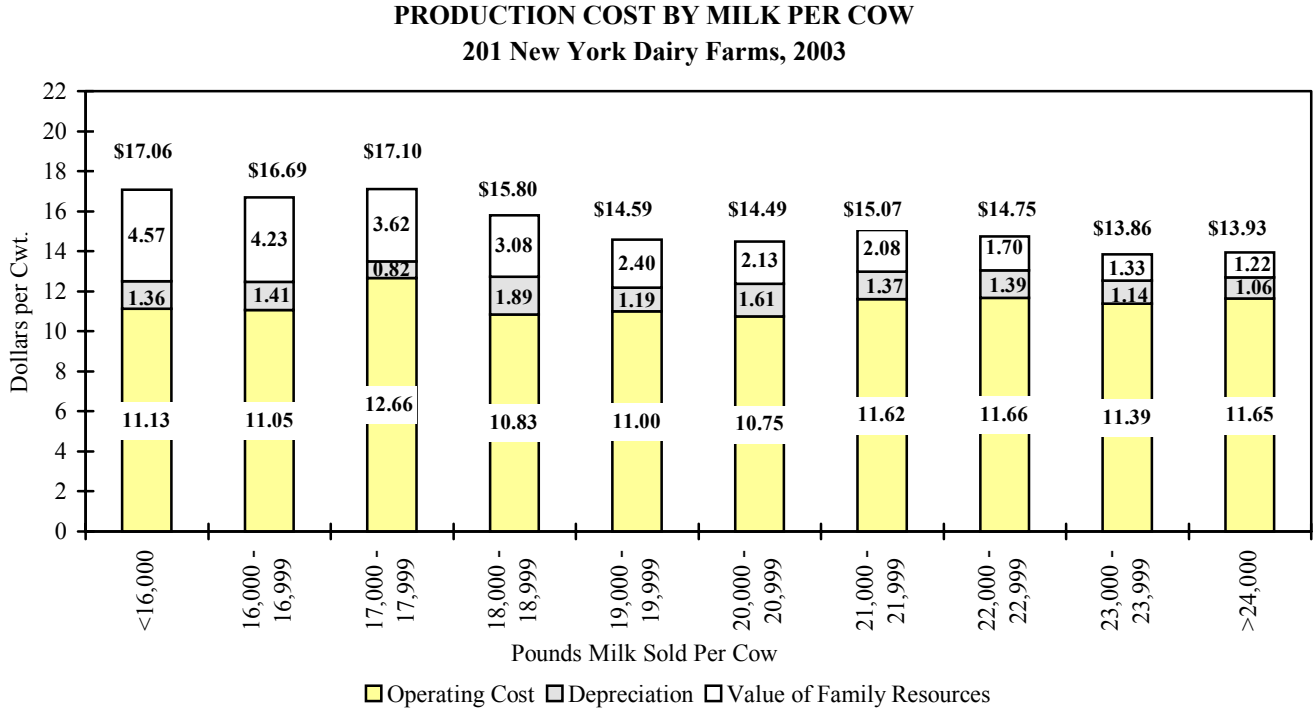
The strong relationship between milk output per cow and the total cost of producing milk are shown in Table 35 and Chart 10 on page 34. Farms selling less than 19,000 pounds of milk per cow had average total costs of production of \$16.66 per hundredweight while those selling 19,000 pounds and over averaged \$14.45 for a difference of \$2.21 per hundredweight.

**Table 35.**

**FARM COST OF PRODUCING MILK BY MILK SOLD PER COW  
201 New York Dairy Farms, 2003**

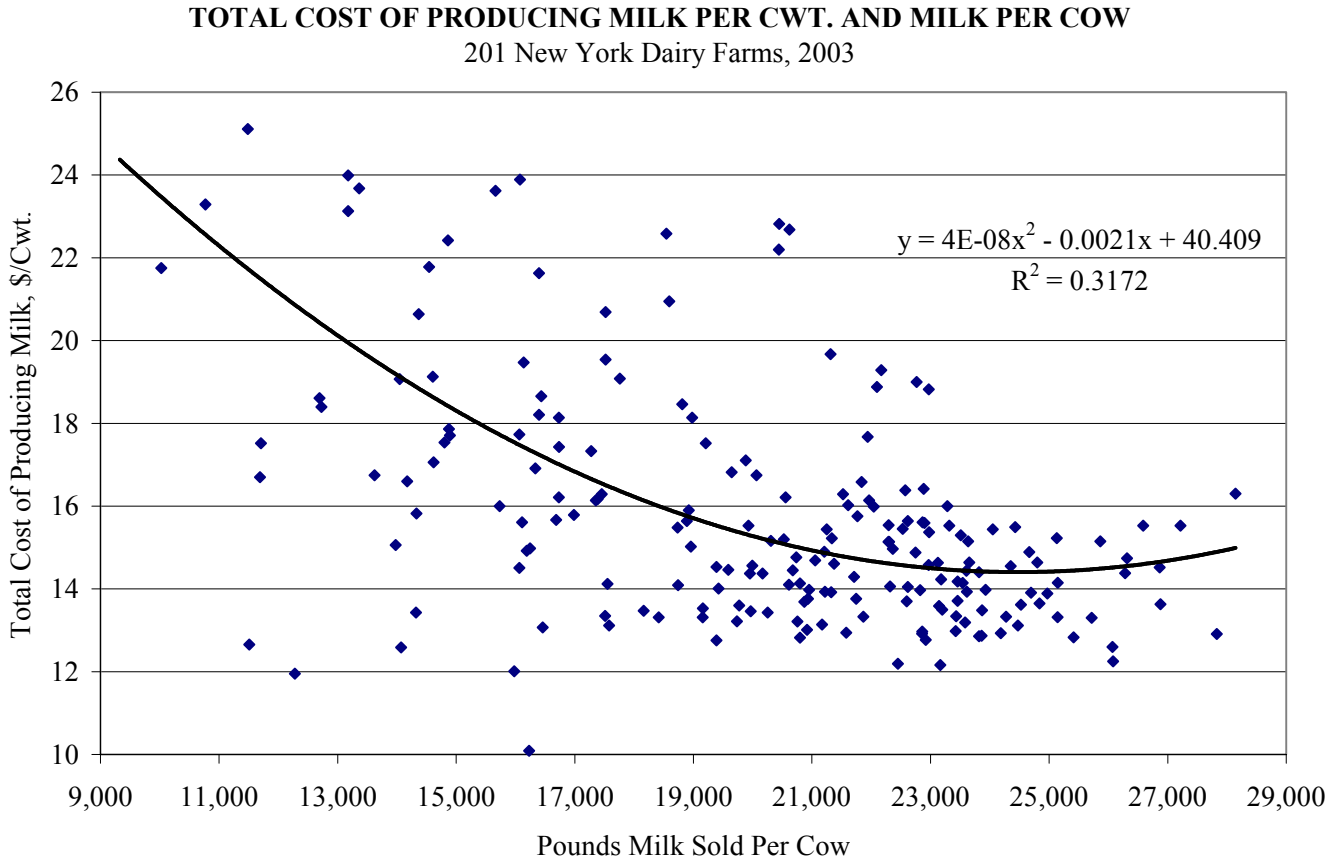
Pounds Milk Sold Per Cow	Costs per Hundredweight					Accrual Receipts From Milk Per Cwt.	Return Per Cwt. To Operator's Labor, Mgmt. & Capital
	Operating Costs		Costs of Producing Milk				
	Hired Labor	Dairy Grain & Conc.	Total Operating	Purchased Inputs	Total		
Under 16,000	\$1.85	\$4.25	\$11.13	\$12.49	\$17.06	\$13.73	\$0.54
16,000-16,999	1.79	4.53	11.05	12.46	16.69	14.00	0.98
17,000-17,999	2.16	4.28	12.66	13.48	17.10	13.23	-0.75
18,000-18,999	1.30	4.64	10.83	12.72	15.80	13.38	0.23
19,000-19,999	2.33	3.82	11.00	12.19	14.59	13.52	1.25
20,000-20,999	2.40	3.51	10.75	12.36	14.49	13.05	0.53
21,000-21,999	2.20	4.37	11.62	12.99	15.07	13.31	0.22
22,000-22,999	2.55	4.17	11.66	13.05	14.75	13.28	0.19
23,000-23,999	2.42	3.96	11.39	12.53	13.86	12.95	0.39
24,000 & over	2.85	3.84	11.65	12.71	13.93	13.25	0.51

Chart 10.



The relationship between total cost of producing milk and milk sold per cow is diagrammed in Chart 11. It shows that as milk sold per cow increases, on the average, total cost of production generally decreases.

Chart 11.



Data in Table 36 and Chart 12 show that the average total cost of production generally declines as herd size increases. This is attributable to spreading fixed costs over more units of output.

Total operating costs are lowest at the smallest herd size and increase for each of the next two herd size categories. Beyond 100 cows, the operating costs increase except for the 400-599 herd size category. Hired labor cost increases with herd size, while purchased dairy grain and concentrate are not related to herd size.

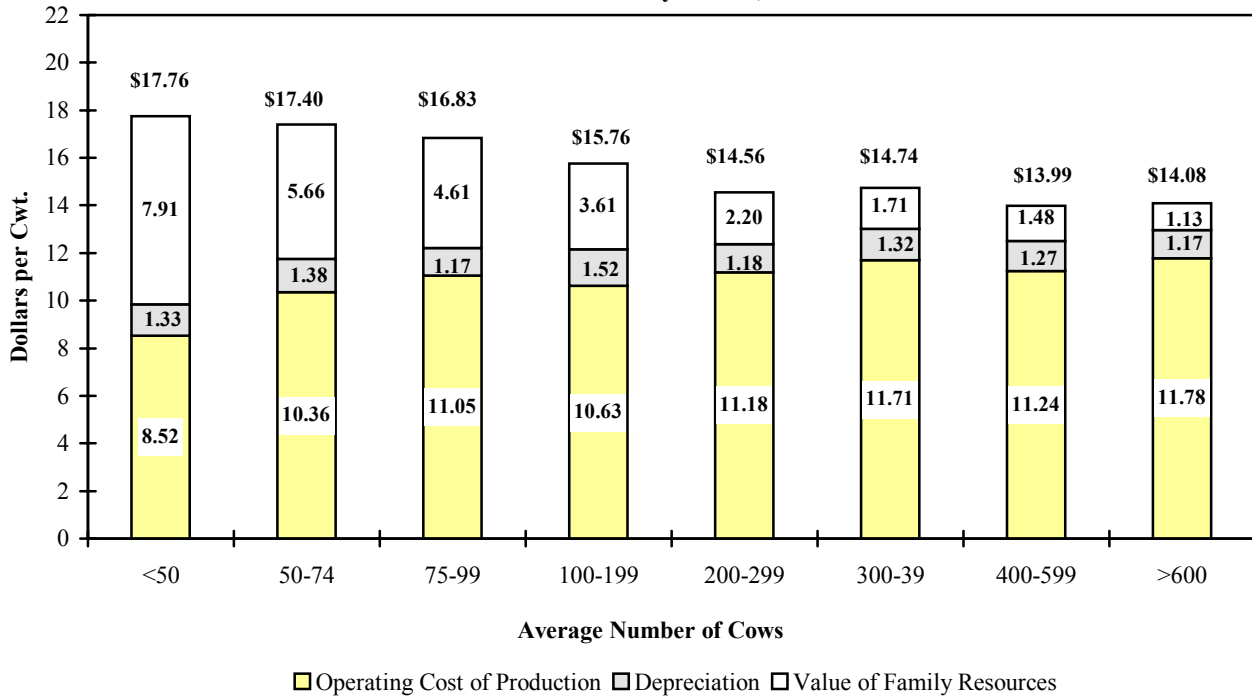
**Table 36.**

**FARM COST OF PRODUCING MILK BY HERD SIZE  
201 New York Dairy Farms, 2003**

Number of Cows	Costs per Hundredweight					Accrual Receipts From Milk	Return Per Cwt. To Operator's Labor, Mgmt. & Capital
	Operating Costs		Costs of Producing Milk				
	Hired Labor	Dairy Grain & Conc.	Total Operating	Purchased Inputs	Total		
Under 50	\$0.44	\$3.80	\$8.52	\$9.85	\$17.76	\$13.27	\$1.62
50 to 74	0.83	4.10	10.36	11.74	17.40	13.08	0.33
75 to 99	1.33	4.20	11.05	12.22	16.83	13.11	0.00
100 to 199	2.06	4.01	10.63	12.15	15.76	13.28	0.91
200 to 299	2.21	4.00	11.18	12.36	14.56	13.29	0.87
300 to 399	2.44	4.19	11.71	13.03	14.74	13.07	0.01
400 to 599	2.43	3.62	11.24	12.51	13.99	13.36	0.81
600 and over	5.38	4.05	11.78	12.95	14.08	13.22	0.26

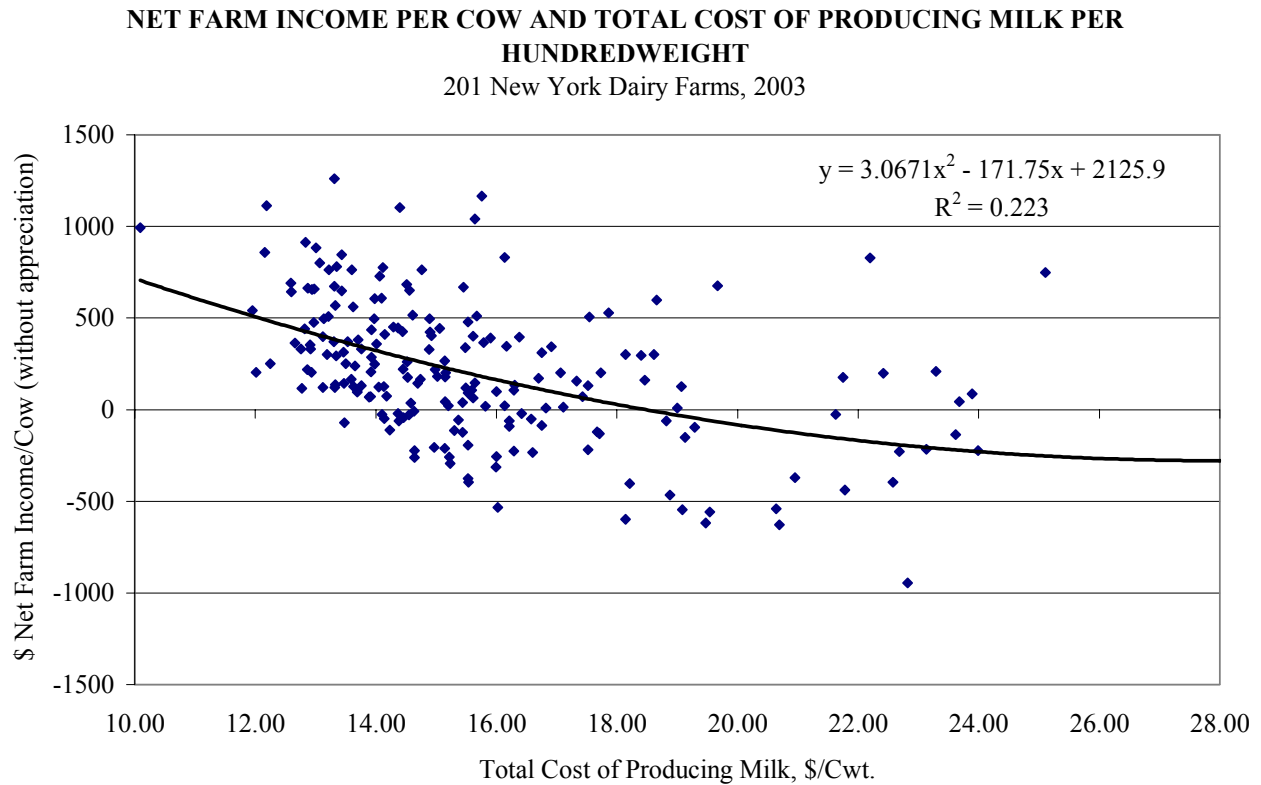
**Chart 12.**

**PRODUCTION COST BY HERD SIZE  
201 New York Dairy Farms, 2003**



The importance of cost control and its impact on farm profitability are illustrated in Chart 13. As the total cost of producing milk per hundredweight increased, net farm income per cow fell. All farms had a positive net farm income per cow until the total cost of producing milk exceeded \$13.50 per hundredweight. The majority of the farms with costs greater than \$20 per hundredweight experienced negative net farm incomes per cow.

Chart 13.



### **Cost of Producing Milk (continued)**

A 10-year comparison of the average costs and returns of producing milk per hundredweight are presented in Table 37 on page 38. Average individual operating and overhead expenses per hundredweight of milk sold are reported on all specialized dairy farms included in the New York State Summary from 1994 through 2003. In 2003 the average operating cost of producing milk increased 4 percent after decreasing 7 percent from 2001 to 2002. The average return per hundredweight to operator labor, management, and capital was \$.05 lower in 2003, 11 percent below 2002. In only two years during the last ten years has milk price exceeded the total cost of producing milk. The years were 1998 and 2001.

Hired labor expense per hundredweight has increased consistently from 1994 to 2003. Hired labor expense was \$1.80 in 1994 and has risen to \$2.51 in 2003. Thus, even as pounds of milk sold per worker have increased from 755,178 in 1994 to 934,733 in 2003; labor expense per worker has increased even more rapidly. Some of this effect is due to increasing farm size where a larger portion of the labor force is comprised of hired workers. Purchased feed expense per hundredweight of milk can fluctuate greatly, as much as \$1.00 per hundredweight. At \$3.89 in 1994, it decreased to a low of \$3.71 in 1995, before reaching its high a year later at \$4.73. In 2003, purchased feed expense was \$0.40 higher than in 1994.

Interest paid on debt per hundredweight of milk sold has fluctuated over this period. In 1994, interest expense was \$0.81 per hundredweight. In 2003, interest expense was at a ten-year low of \$0.56 per hundredweight. Property taxes per hundredweight of milk have decreased by 28 percent during this ten-year period. Property taxes were \$0.29 per hundredweight in 1994, but were only \$0.21 in 2003. This is due to productivity increases and more of the land resources being rented, rather than owned, and fewer acres per cow.

A ten-year comparison of selected average business factors for all specialized DFBS farms is presented in Table 38 on page 39. The reader is reminded that the same farms are not in the survey each year. Average cow numbers are up 108 percent, tillable acres have increased 68 percent, and milk sold per farm has jumped 131 percent since 1994. Capital investment per cow has increased 5.5 percent, far less than inflation, over the last ten years. Labor and management income per operator decreased 8 percent in 2003 compared to 2002, farm net worth increased 2.9 percent, and percent equity decreased slightly in 2003 compared to 2002.

Hay crop yields were 3.0 tons dry matter per acre in 1994 and 3.2 tons dry matter per acre in 2003. Corn silage yields, as fed, have varied more widely and were 17.2 tons per acre in 2003. As yields increased, fertilizer and lime expense increased \$3.00 per tillable acre, from \$25 to \$28 per acre. Pounds of milk sold per cow increased by 11 percent, from 20,091 pounds in 1994 to 22,302 pounds in 2003.

Average number of workers per farm increased by 3.48 and operators/managers per farm increased by 0.37. Cows per worker equivalent increased from 38 in 1994 to 42 in 2003, but labor cost per cow increased from \$558 to \$738 over the same time period.

The asset turnover ratio ranged from 0.50 to 0.63. Total accrual receipts as a proportion of total farm assets equals asset turnover ratio. Percent equity has deteriorated. It was 63 percent in 1994, but was down to 56 percent in 2003 partially due to more large (higher leveraged) farms in the sample.

Table 37.

**TEN YEAR COMPARISON: AVERAGE COST OF PRODUCING MILK PER HUNDREDWEIGHT**  
**New York Dairy Farms, 1994 to 2003**

Item	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<u>Operating Expenses</u>										
Hired labor	\$1.80	\$1.78	\$1.89	\$1.97	\$2.06	\$2.14	\$2.25	\$2.41	\$2.44	\$2.51
Purchased feed	3.89	3.71	4.73	4.63	4.18	3.96	3.91	4.25	4.10	4.29
Machinery repair, vehicle expense & rent	.92	.85	1.02	.94	1.12	1.18	1.06	1.21	1.01	.91
Fuel, oil & grease	.31	.27	.31	.28	.25	.24	.34	.32	.28	.33
Replacement livestock	.21	.15	.19	.18	.24	.24	.23	.20	.16	.15
Breeding fees	.17	.15	.15	.15	.16	.17	.17	.19	.21	.19
Veterinary & medicine	.40	.39	.42	.41	.45	.47	.51	.54	.56	.56
Milk marketing	.67	.70	.59	.52	.53	.49	.69	.63	.65	.69
Other dairy expenses	.88	.92	.99	1.05	1.09	1.13	1.16	1.26	1.25	1.30
Lime & fertilizer	.33	.31	.32	.33	.35	.35	.29	.33	.27	.26
Seeds & plants	.19	.19	.20	.21	.22	.20	.19	.20	.20	.20
Spray & other crop expense	.20	.20	.21	.23	.24	.24	.22	.25	.22	.19
Land, building & fence repair	.21	.16	.23	.19	.27	.27	.21	.26	.19	.14
Taxes	.29	.27	.26	.23	.21	.21	.20	.21	.20	.21
Insurance	.18	.17	.18	.16	.17	.16	.16	.14	.16	.15
Utilities (farm share)	.38	.38	.39	.35	.32	.31	.32	.33	.34	.34
Interest paid	.81	.94	.91	.90	.89	.83	.95	.82	.61	.56
Misc. (including rent)	.40	.40	.41	.38	.41	.44	.45	.42	.44	.40
Total Operating Expenses	\$12.24	\$11.94	\$13.40	\$13.12	\$13.15	\$13.02	\$13.31	\$13.98	\$13.27	\$13.39
Less: Nonmilk cash receipts	1.30	1.15	1.07	1.14	1.18	1.44	1.83	1.49	1.91	1.57
Increase in grown feed & supplies	.25	.14	.15	.07	.25	.25	0.11	0.10	0.12	0.27
Increase in livestock	.21	.25	.18	.15	.22	.11	0.06	0.52	0.23	0.09
OPERATING COST OF MILK PRODUCTION	\$10.47	\$10.40	\$12.00	\$11.76	\$11.50	\$11.22	\$11.31	\$11.87	\$11.01	\$11.46
<u>Overhead Expenses</u>										
Depreciation: machinery & buildings	\$1.13	\$1.07	\$1.04	\$0.95	\$1.08	\$1.14	\$1.20	\$1.30	\$1.39	\$1.23
Unpaid labor	.12	.12	.13	.13	.11	.11	.10	.10	.08	.10
Operator(s) labor <sup>38</sup>	.86	.92	.88	.79	.74	.80	.79	.74	.74	.70
Operator(s) management (5% of cash receipts)	.73	.70	.80	.73	.82	.83	.76	.87	.75	.73
Interest on farm equity capital (5%)	1.00	.94	.94	.87	.85	.86	.88	.91	.89	.85
Total Overhead Expenses	\$3.84	\$3.75	\$3.79	\$3.47	\$3.60	\$3.74	\$3.73	\$3.92	\$3.85	\$3.61
TOTAL COST OF MILK PRODUCTION	\$14.31	\$14.15	\$15.79	\$15.23	\$15.10	\$14.96	\$15.04	\$15.79	\$14.86	\$15.07
AVERAGE FARM PRICE OF MILK	\$13.44	\$13.03	\$14.98	\$13.65	\$15.60	\$14.91	\$13.38	\$15.98	\$12.98	\$13.24
Return per cwt. to operator labor, capital & mgmt.	\$1.72	\$1.44	\$1.81	\$0.81	\$2.91	\$2.44	\$0.77	\$2.71	\$0.50	\$0.45
Rate of return on farm equity capital	0.6%	-1.0%	0.7%	-4.1%	8.0%	4.7%	-4.4%	6.0%	-5.6%	-5.7%

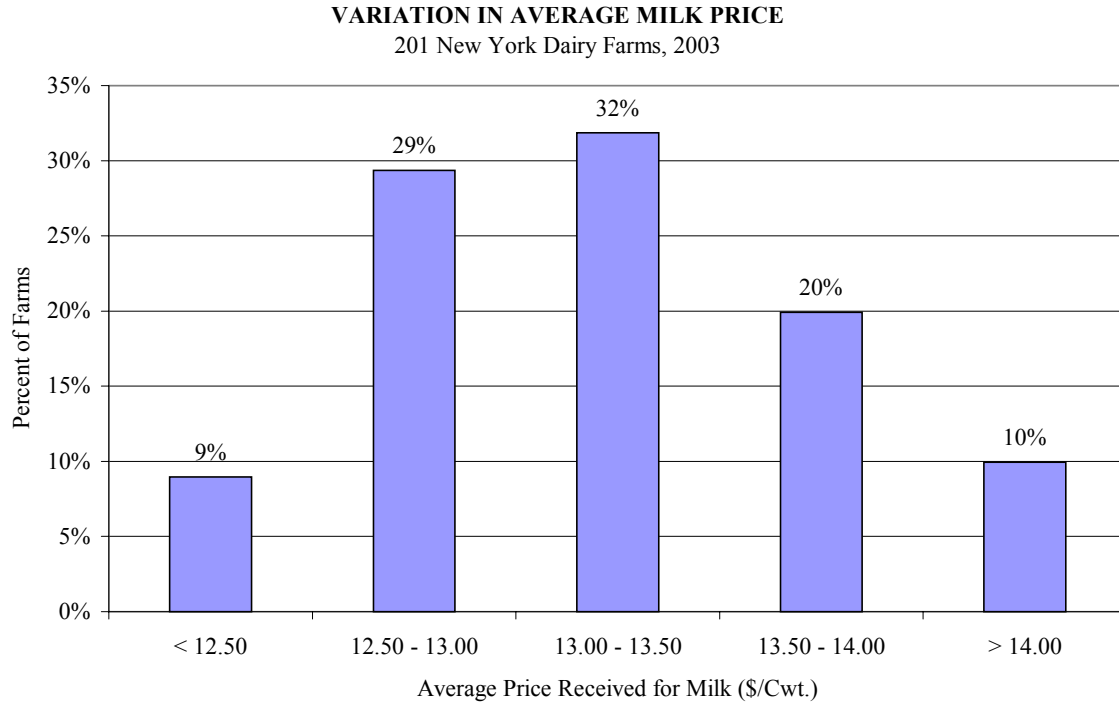
<sup>38</sup>1994 and 1995 = \$1,450/month, 1996 = \$1,500/month, 1997 = \$1,550/month, 1998 = \$1,600/month, 1999 = \$1,800/month, 2000 = \$1,900/month, 2001 = \$2,000/month, 2002 = \$2,100/month, and 2003 = \$2,200/month of operator labor.

Table 38.

**TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS**  
**New York Dairy Farms, 1994 to 2003**

Item	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of farms	321	321	300	253	305	314	294	228	219	201
<u>Cropping Program</u>										
Total tillable acres	392	399	415	462	497	516	566	618	660	659
Tillable acres rented	159	166	183	207	232	234	262	290	337	323
Hay crop acres	195	197	198	219	239	248	274	302	323	321
Corn silage acres	110	117	120	156	175	186	192	210	232	233
Hay crop, tons DM/acre	3.0	2.8	2.8	2.5	3.1	2.9	3.3	2.8	3.1	3.2
Corn silage, tons/acre	16.4	15.6	15.9	16.1	18.0	16.3	15.1	16.5	15.4	17.2
Fert. & lime exp./tillable acre	\$25	\$25	\$26	\$28	\$31	\$32	\$27	\$32	\$27	\$28
Machinery cost/cow	\$438	\$402	\$450	\$429	\$471	\$502	\$513	\$554	\$520	\$497
<u>Dairy Analysis</u>										
Number of cows	151	160	167	190	210	224	246	277	297	314
Number of heifers	116	121	124	139	155	164	186	207	226	240
Milk sold, cwt.	30,335	32,362	33,504	39,309	43,954	47,932	52,871	60,290	66,177	70,105
Milk sold/cow, lbs.	20,091	20,269	20,113	20,651	20,900	21,439	21,516	21,762	22,312	22,302
Purchased dairy feed/cwt. milk	\$3.89	\$3.70	\$4.73	\$4.63	\$4.18	\$3.96	\$3.91	\$4.25	\$4.10	\$4.27
Purchased grain & concentrate as % of milk receipts	28%	27%	30%	33%	26%	25%	27%	25%	30%	30%
Purchased feed & crop exp/cwt.milk	\$4.61	\$4.39	\$5.46	\$5.39	\$5.00	\$4.75	\$4.61	\$5.03	\$4.79	\$4.92
<u>Capital Efficiency</u>										
Farm capital/cow	\$6,398	\$6,264	\$6,218	\$6,196	\$6,161	\$6,368	\$6,535	\$6,755	\$6,794	\$6,748
Real estate/cow	\$2,859	\$2,763	\$2,701	\$2,650	\$2,537	\$2,562	\$2,615	\$2,713	\$2,612	\$2,722
Mach. invest./cow	\$1,150	\$1,098	\$1,107	\$1,108	\$1,118	\$1,163	\$1,225	\$1,222	\$1,261	\$1,208
Asset turnover ratio	0.50	0.49	0.55	0.52	0.61	0.59	0.54	0.63	0.53	0.54
<u>Labor Efficiency</u>										
Worker equivalent	4.02	4.40	4.48	5.01	5.35	5.71	6.11	6.72	7.21	7.50
Operator/manager equivalent	1.49	1.56	1.56	1.60	1.62	1.76	1.83	1.94	1.82	1.86
Milk sold/worker, lbs.	755,178	736,269	747,861	784,604	821,565	839,432	865,325	897,167	917,854	934,733
Cows/worker	38	36	37	38	39	39	40	41	41	42
Labor cost/cow	\$558	\$570	\$582	\$598	\$609	\$653	\$674	\$706	\$725	\$738
<u>Profitability &amp; Financial Analysis</u>										
Labor & mgmt. income/operator	\$14,789	\$10,346	\$18,651	\$-1,424	\$55,917	\$42,942	\$-2,908	\$45,479	\$-14,243	\$-15,360
Farm net worth, end year	\$608,749	\$624,261	\$648,186	\$685,665	\$798,297	\$865,626	\$942,881	\$1,181,055	\$1,173,836	\$1,207,964
Percent equity	63%	61%	61%	57%	59%	58%	57%	60%	57%	56%

The average or mean price per hundredweight of milk sold is calculated by dividing gross milk receipts by total pounds of milk sold. The average price for the 201 farms was \$13.24 but there was considerable variation among the individual farms. The variation in average price received and the distribution of farms around the mean is shown below.

**Chart 14.**

Sixty-one percent of the farms received from \$12.50 to \$13.50 per hundredweight of milk sold. Thirty percent of the farms received \$13.50 or more and nine percent received less than \$12.50 per hundredweight. Location and organization of markets are factors contributing to the difference in average milk prices on these dairy farms. Management practices on farms as well as in milk companies also affect farm milk prices. Seasonality of production and butterfat content are two variables that affect milk price. More milk price analysis by component can be found on pages 8 and 9.

The accrual operating expenses most commonly associated with the dairy enterprise are listed in the table below. Evaluating these costs per unit of production enables the comparison of different size dairy farms for strengths and areas for improvement.

**Table 39.**

**DAIRY RELATED ACCRUAL EXPENSES**  
201 New York Dairy Farms, 2003

Item	Average 201 Farms		Average Top 10% Farms <sup>39</sup>	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$888	\$3.98	\$756	\$3.35
Purchased dairy roughage	65	.29	68	.30
Total Purchased Dairy Feed	\$953	\$4.27	\$824	\$3.65
Purchased grain & concentrate as % of milk receipts		30%		25%
Purchased feed & crop expense	\$1,098	\$4.91	\$992	\$4.38
Purchased feed & crop expense as % of milk receipts		37%		33%
Breeding	\$41	\$.19	\$39	\$.17
Veterinary & medicine	124	.56	98	.43
Milk marketing	154	.69	170	.75
Bedding	55	.24	44	.19
Milking Supplies	67	.30	56	.25
Cattle lease	2	.01	4	.02
Custom boarding	79	.35	47	.21
bST expense	56	.25	56	.25
Other livestock expense	26	.12	27	.12

<sup>39</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Feed costs per cow and per hundredweight of milk sold are influenced by a number of factors. These cost measures are affected by the amount of homegrown grains fed, quality and quantity of the roughage harvested, and the number of youngstock. Feed costs are also influenced by the farmer's ability to purchase grains and concentrates at reasonable prices and to balance nutrients fed with energy and protein requirements.

Purchased dairy grain and concentrates per cow is calculated by dividing the total accrual expenses for dairy grains and concentrates purchased by the average number of cows. Because this also included the amount spent for calf and heifer feed, it actually represents feed cost for one cow and associated replacements being raised (averaged 0.76 animals in 2003).

Purchased feed and crop expense per hundredweight of milk is one of the most useful feed cost measures because it accounts for some of the variations in feeding and cropping programs, and milk production between herds. It includes all purchased feeds used on the farm, and it includes crop expenses that are associated with feed production. It does not represent total feed costs because machinery, labor and other costs of producing feed crops are excluded.

Purchased grain and concentrates as percent of milk sales is calculated by dividing feed purchased by milk receipts. This is another useful measure of feed efficiency although variations in homegrown grains fed, heifers fed, and milk prices can have an impact. Purchased feed and crop expense as percent of milk sales removes much of the variation caused by the feeding of home grown grains.

Cost control has an important affect on farm profitability. The relationship between purchased feed and crop expense per hundredweight of milk and farm profitability is shown below. On average, farms with feed and crop expenses exceeding \$5.00 per hundredweight of milk reported well below average profits. Net milk income over purchased concentrate per cow shows a similar relationship when compared to rate of return on assets without appreciation (Chart 15).

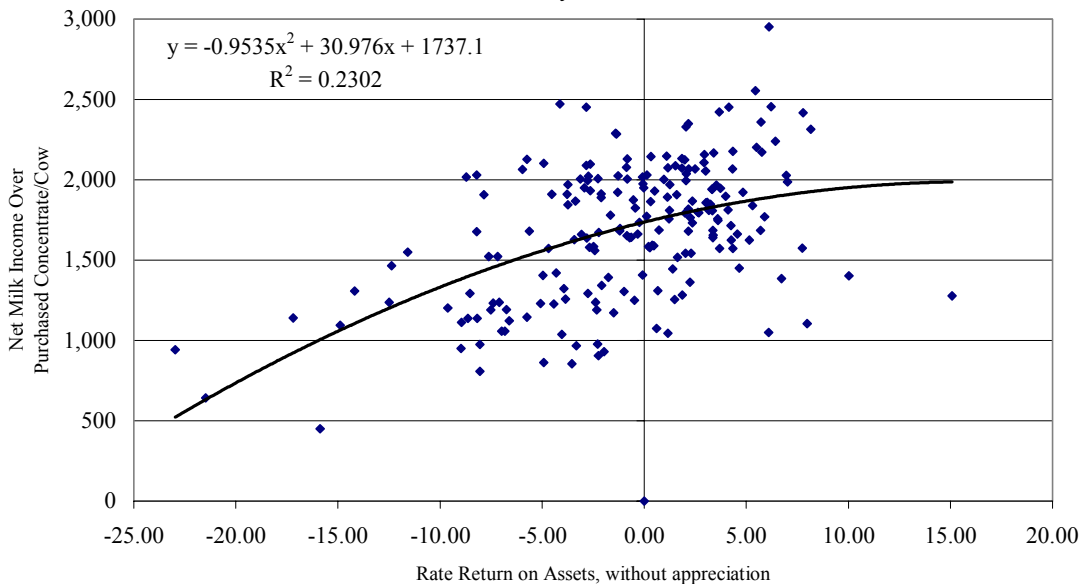
**Table 40.**

**PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT  
OF MILK AND FARM INCOME MEASURES  
201 New York Dairy Farms, 2003**

Feed & Crop Exp. Per Cwt. of Milk	Number of Farms	Number of Cows	Forage Dry Matter Harvested Per Cow	Pounds Milk Per Cow	Net Farm Income Without Appreciation	Labor & Management Income Per Operator	Labor & Management Per Operator Per Cow
\$6.00 or more	34	226	6.4	17,895	\$-486	\$-35,353	\$-157
5.50 to 5.99	26	263	8.5	19,537	16,599	-31,151	-118
5.00 to 5.49	30	405	7.5	20,884	18,127	-43,907	-108
4.50 to 4.99	44	384	7.8	21,545	55,322	-12,293	-32
4.00 to 4.49	39	343	8.3	21,136	58,464	-15,278	-45
3.50 to 3.99	16	221	9.2	17,395	45,824	-6,596	-30
Less than 3.50	12	224	8.5	20,848	102,285	12,800	57

**Chart 15.**

**NET MILK INCOME OVER PURCHASED CONCENTRATE PER COW  
VERSUS RETURN ON ASSETS  
201 New York Dairy Farms, 2003**



### Capital and Labor Efficiency Analysis

Capital efficiency factors show how intensively capital is being used in the farm business. Capital efficiency can be measured as investment per worker and per cow. It can also be measured in terms of the relationship to farm receipts.

**Table 41.**

#### CAPITAL EFFICIENCY 201 New York Dairy Farms, 2003

Item (Average for Year)	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
Farm capital	\$282,509	\$6,748	\$3,215	\$6,306
Real estate		\$2,722		\$2,544
Machinery & equipment	\$50,571	\$1,208	\$576	
<u>Ratios</u>				
Asset turnover	Operating Expense	Interest Expense		Depreciation Expense
0.54	0.85	0.04		0.08
<u>Average Top 10% Farms:<sup>40</sup></u>				
Farm capital	\$297,484	\$6,783	\$2,967	\$7,100
Real estate		\$2,670		\$2,795
Machinery & equipment	\$49,262	\$1,123	\$491	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense		Depreciation Expense
0.56	0.75	0.03		0.07

<sup>40</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

Asset turnover ratio measures the relationship between capital investment and farm receipts. It is computed by dividing the year's total farm accrual receipts including appreciation by the average farm assets. The relationship the asset turnover ratio has to farm profitability and other factors is shown in the following table. As a general rule, dairy farmers should aim for an asset turnover ratio of 0.6 or higher. The operational ratios reflect the relationship of expense categories to total farm receipts. The sum of the operating, interest, and depreciation expense ratios expresses total farm expenses per dollar of total farm receipts.

**Table 42.**

#### ASSET TURNOVER AND PROFITABILITY 201 New York Dairy Farms, 2003

Ratio	No. of Farms	No. of Cows	Farm Capital (average for year)		Labor & Mgt. Inc. Per Operator	Net Farm Income (w/o apprec.)
			Per Cow	Per Worker		
≥ .70	18	814	\$4,831	\$236,070	\$-23,725	\$45,891
.60 to .69	17	426	5,884	248,904	-15,446	34,445
.50 to .59	51	428	6,727	285,112	-8,206	77,061
.40 to .49	51	247	7,655	316,913	-27,898	27,723
.30 to .39	40	127	9,232	323,035	-23,414	18,435
Less than .30	24	75	12,484	310,981	-39,595	5,864

Measures of labor efficiency are key indicators of the work accomplished by an average worker. The 20 farms with the highest rates of return on all capital (without appreciation) were above the average of all 201 farms in all measures of labor efficiency. The top 10 percent averaged 2 more cows per worker and sold 6 percent more milk per worker than the average of all farms.

**Table 43.**

#### LABOR EFFICIENCY 201 New York Dairy Farms, 2003

Labor Efficiency	Average	Farms	Average Top 10% Farms <sup>42</sup>	
	Total	Per Worker <sup>41</sup>	Total	Per Worker <sup>41</sup>
Cows, average number	314	42	314	44
Milk sold, pounds	7,010,504	934,733	7,092,945	990,635
Tillable acres	659	88	718	100

<sup>41</sup>The method used to calculate worker equivalent incorporates the number of hours actually worked by the owner/operators, instead of using a standard 12 months for each full-time owner/operator of the business. A full-time month is specified to be 230 hours of labor per month.

<sup>42</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

The labor force averaged 7.50 full-time worker equivalents per farm (based on 230 hours per month). Twenty-five percent of the labor was supplied by the farm operator/managers. There were two operators on 106 farms, three on 34 farms, and 9 farms reported four or more operators.

Labor costs, labor efficiency, and farm profitability are closely related. Farms with high rates of return can attribute some of their success to the control of labor and machinery costs. Labor and machinery costs average \$1,163 per cow and \$5.16 per hundredweight on the 20 farms in the top decile.

**Table 44.**

**LABOR FORCE INVENTORY AND COST ANALYSIS  
201 New York Dairy Farms, 2003**

Labor Force	Months <sup>43</sup>	Age	Years of Education	Value of Labor & Management	
Operator number 1	13.4	50	14	\$35,267	
Operator number 2	6.4	47	13	16,517	
Operator number 3	1.9	45	13	5,271	
Operator number 4	0.4	48	14	<u>982</u>	
Family paid	5.3			Total \$58,037	
Family unpaid	3.2				
Hired	<u>59.3</u>				
Total	89.9	÷ 12 =	7.50 Worker Equivalent	1.86 Operator/Manager Equivalent	
<u>Average Top 10% Farms:</u> <sup>44</sup>					
Total	85.9	÷ 12 =	7.16 Worker Equivalent	1.53 Operator/Manager Equivalent	
<hr/>					
	Average 201 Farms			Avg. Top 10% Farms <sup>44</sup>	
Labor Costs	Total	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value operators' labor (\$2,200/mo.)	\$48,620	\$155	\$.69	\$128	\$.57
Family unpaid (\$2,200/mo.)	7,040	22	.10	17	.08
Hired	<u>175,814</u>	<u>560</u>	<u>2.51</u>	<u>539</u>	<u>2.39</u>
Total Labor	\$231,474	\$737	\$3.30	\$684	\$3.04
Machinery Cost	<u>155,904</u>	<u>497</u>	<u>2.23</u>	<u>479</u>	<u>2.12</u>
Total Labor & Machinery	\$387,378	\$1,234	\$5.53	\$1,163	\$5.16
Hired labor exp. per hired worker equiv.	\$32,659			\$31,181	
Hired labor exp. as % of milk sales	18.9%			17.7%	

<sup>43</sup>See footnote for Table 43.

<sup>44</sup>Average of 20 farms with highest rates of return to all capital (without appreciation).

The relationship of labor efficiency to net farm income is positive over the range in efficiency levels. The higher outputs of milk sold per worker are partially attributable to higher producing cows. However, in 2003, increased labor efficiency did not result in larger labor and management incomes per operator.

**Table 45.**

**MILK SOLD PER WORKER AND NET FARM INCOME  
201 New York Dairy Farm, 2003**

Pounds of Milk Sold Per Worker	No. of Farms	No. of Cows	Pounds Milk Per Cow	Net Farm Income (without apprec.)	Labor & Mgmt. Income Per Operator
Under 400,000	23	65	15,903	\$12,394	\$-38,993
400,000 to 499,999	21	88	16,792	8,978	-21,253
500,000 to 599,999	32	105	18,603	17,665	-16,488
600,000 to 699,999	18	208	20,962	37,566	-6,153
700,000 to 799,999	23	195	21,813	34,075	-14,421
800,000 to 899,999	20	273	21,079	51,618	-12,292
900,000 to 999,999	17	456	22,330	80,894	-7,616
1,000,000 to 1,099,999	15	451	22,383	20,261	-38,451
1,100,000 & over	32	884	23,901	75,733	-36,016

### Farm Business Charts

The Farm Business Chart is a tool which can be used in analyzing a business by drawing a line through the figure in each column which represents the current level of management performance. The figure at the top of each column is the average of the top 10 percent of the 201 farms for that factor. The other figures in each column are the average for the second 10 percent, third 10 percent, etc. **Each column of the chart is independent of the others.** The farms which are in the top 10 percent for one factor would not necessarily be the same farms which make up the 10 percent for any other factor.

The cost control factors are ranked from low to high, but the lowest cost is not necessarily the most profitable. In some cases, the "best" management position is somewhere near the middle or average. Many things affect the level of costs, and must be taken into account when analyzing the factors.

**Table 46.**

#### **FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS 201 New York Dairy Farms, 2003**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
25.0	1,230	29,621,550	25,936	4.8	24	63	1,318,484
13.6	575	13,326,860	23,910	4.0	20	50	1,098,081
9.9	407	8,649,121	23,088	3.7	19	45	977,732
6.8	291	6,294,352	22,320	3.3	18	41	859,182
5.2	187	3,752,374	21,283	3.0	17	37	766,221
-----							
4.1	132	2,520,975	20,323	2.8	16	34	678,657
3.3	98	1,764,687	19,022	2.5	15	30	583,854
2.7	74	1,300,287	17,040	2.3	14	28	521,424
2.0	59	1,066,952	15,419	2.0	13	25	433,011
1.6	43	677,333	12,546	1.3	9	19	290,550
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$383	18%	\$285	\$819	\$550	\$3.42		
566	24	385	1,015	737	4.02		
654	26	429	1,125	842	4.34		
744	28	466	1,224	914	4.54		
802	30	501	1,288	998	4.75		
-----							
858	31	543	1,379	1,056	5.01		
901	32	588	1,461	1,108	5.33		
956	34	637	1,544	1,170	5.60		
1,028	37	725	1,697	1,244	6.05		
1,161	45	1,032	2,273	1,391	7.19		

The profitability section shows the variation in farm income by decile and enables a dairy farmer to determine where he or she ranks by using several measures of farm profitability. Remember that each column is independently established and the farms making up the top decile in the first column will not necessarily be on the top of any other column. The dairy farmer who ranks at or near the top of most of these columns is in a very enviable position.

**Table 46. (continued)**

**FARM BUSINESS CHART FOR  
FARM MANAGEMENT COOPERATORS  
201 New York Dairy Farms, 2003**

Milk Receipts Per Cow	Milk Receipts Per Cwt.	Operating Cost Milk Production Per Cow	Operating Cost Milk Production Per Cwt.	Total Cost Milk Production Per Cow	Total Cost Milk Production Per Cwt.	
\$3,463	\$14.52	\$1,091	\$6.98	\$2,080	\$12.50	
3,133	13.78	1,576	8.49	2,562	13.25	
3,013	13.56	1,775	9.54	2,774	13.71	
2,934	13.40	1,920	10.20	2,924	14.20	
2,813	13.22	2,078	10.64	3,066	14.70	
-----						
2,680	13.08	2,334	11.12	3,193	15.30	
2,518	12.96	2,480	11.75	3,348	15.84	
2,284	12.82	2,631	12.28	3,470	16.83	
2,059	12.66	2,799	12.79	3,638	18.59	
1,653	12.28	3,131	14.68	4,189	23.89	
-----						
Net Farm Income Without Appreciation			Profitability Net Farm Income With Appreciation		Labor & Management Income	
Total	Per Cow	Operations Ratio	Total	Per Cow	Per Farm	Per Operator
\$250,155	\$892	0.27	\$440,526	\$1,286	\$122,035	\$75,039
113,434	617	0.19	204,354	847	42,519	26,487
67,691	446	0.14	123,989	623	20,099	12,896
47,327	337	0.11	83,175	498	4,975	4,430
38,324	228	0.07	61,522	420	-7,327	-4,784
-----						
26,926	147	0.05	46,056	317	-18,178	-11,346
10,601	79	0.02	32,938	235	-36,786	-22,928
-5,999	-30	-0.01	18,882	141	-61,125	-48,264
-34,173	-176	-0.06	-2,852	-21	-111,381	-77,244
-145,107	-498	-0.21	-75,812	-314	-247,974	-178,965

Farm Business Charts for farms with freestall barns and 150 cows or less, 150 to 300 cows, and more than 300 cows, and farms with conventional barns with 60 cows or less and more than 60 cows are discussed in the supplemental section on pages 66-70.

## Financial Analysis and Management

Analysis and astute management of farm financial affairs must receive high priority if the farm business is to be successful and if the farm family is to achieve a reasonable living standard.

The farm finance checklist and the financial analysis chart are provided to serve as guidelines. Dairy farmers can determine how their financial management measures up by comparing with average data from other farms.

**Table 47.**

### **A FARM FINANCE CHECKLIST 201 New York Dairy Farms, 2003**

	Average 201 Farms		Average Top 10% Farms <sup>45</sup>	
<u>How farm assets are being used (average for the year):</u>				
Total assets (capital) per cow	\$6,748		\$6,783	
Farm assets in livestock	26%		28%	
Farm assets in farm real estate	39%		39%	
Farm assets in machinery	17%		17%	
<u>Measures of debt capacity &amp; debt structure:</u>				
Equity in the business	56%		62%	
Farm debt per cow	\$3,075		\$2,614	
Long term debt/asset ratio <sup>46</sup>	0.41		0.27	
Intermediate & current term debt/asset ratio <sup>46</sup>	0.46		0.45	
Intermediate & current term debt as % of total	63%		72%	
<u>Debt repayment ability:</u> <sup>47</sup>				
Cash flow coverage ratio	0.68		1.09	
Debt coverage ratio	0.75		1.54	
Debt payments made per cow	\$572		\$497	
Debt payments made as % of milk receipts	19%		16%	
<u>Indicators of annual financial progress:</u>				
	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>
Annual change in farm assets	+\$109,322	+5.3%	+\$149,472	+7.3%
Annual change in farm debt	+\$68,575	+7.6%	+\$12,435	+1.5%
Annual change in farm net worth	+\$40,747	+3.5%	+\$137,034	+11.1%

<sup>45</sup>Twenty farms with highest rates of return on all capital (without appreciation).

<sup>46</sup>Long or intermediate and current term debt divided by long or intermediate and current term assets.

<sup>47</sup>Average of 163 farms that participated in DFBS both in 2002 and 2003. Eighteen of the 20 top 10 percent farms participated both years.

The most profitable farms carried \$461 less debt per cow, the average equity in their businesses was 6 percent higher than that of the average of all 201 farms, and they had a greater ability to make 2003 debt payments. Because, with higher income they were able to pay down debt, it does not mean that lower debt farms are more profitable.

Average farm debt grew 2.3 percentage points faster than assets during 2003 on the 201 dairy farms. Average farm net worth increased 3.5 percent.

The farm financial analysis chart is designed just like the farm business chart on pages 44-45 and may be used to measure the financial health of the farm business. Most of the financial measures are defined on pages 16, 18, 22, and 42 in this publication.

**Table 48.**

**FINANCIAL ANALYSIS CHART**  
**201 New York Dairy Farms, 2003**

Liquidity/Repayment							
Planned Debt Payments Per Cow	Available for Debt Service Per Cow	Cash Flow Coverage Ratio	Debt Coverage Ratio	Debt Payments as Percent of Milk Sales	Debt Per Cow	Working Capital as % of Total Expenses	Current Ratio
\$127	\$764	2.76	3.09	5%	\$322	45%	15.88
235	586	1.34	1.66	8	1,165	27	3.32
319	491	1.10	1.28	12	1,739	20	2.44
383	408	0.97	1.02	15	2,193	15	1.97
452	358	0.85	0.81	17	2,592	12	1.59
-----							
492	306	0.68	0.67	18	2,920	7	1.33
536	248	0.52	0.47	20	3,194	3	1.11
598	170	0.39	0.25	23	3,525	-1	0.94
666	29	0.11	-0.02	26	4,097	-7	0.75
834	-281	-0.98	-0.99	36	5,493	-22	0.40
Solvency				Operational Ratios			
Leverage Ratio <sup>48</sup>	Percent Equity	Debt/Asset Ratio		Operating Expense Ratio	Interest Expense Ratio	Depreciation Expense Ratio	
		Current & Intermediate	Long Term				
0.03	97%	0.03	0.00	0.62	0.00	0.02	
0.16	85	0.13	0.00	0.68	0.01	0.04	
0.27	78	0.23	0.03	0.74	0.02	0.05	
0.40	71	0.30	0.15	0.78	0.03	0.06	
0.54	64	0.36	0.26	0.81	0.03	0.07	
-----							
0.67	59	0.42	0.36	0.84	0.04	0.08	
0.87	53	0.47	0.45	0.86	0.04	0.09	
1.15	46	0.55	0.60	0.89	0.05	0.10	
1.56	38	0.65	0.73	0.93	0.07	0.12	
3.60	24	0.91	1.07	1.06	0.09	0.18	
Efficiency (Capital)				Profitability			
Asset Turnover (ratio)	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Farm Assets Per Cow	Change in Net Worth With Appreciation	Percent Rate of Return with Appreciation on:		
					Equity	Investment <sup>49</sup>	
.76	\$1,401	\$532	\$4,654	\$325,104	36%	12%	
.61	1,963	838	5,604	126,563	10	8	
.57	2,200	1,024	6,163	64,780	6	5	
.52	2,439	1,170	6,562	41,577	4	4	
.48	2,743	1,341	6,936	24,558	1	2	
-----							
.45	3,033	1,528	7,479	12,738	0	1	
.41	3,576	1,731	8,244	2,783	-2	0	
.36	4,081	1,899	8,989	-9,267	-5	-2	
.31	4,716	2,256	9,979	-33,514	-11	-4	
.22	8,048	3,371	13,770	-162,076	-43	-10	

<sup>48</sup>Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.

<sup>49</sup>Return on all farm capital (no deduction for interest paid) divided by total farm assets.

### Herd Size Comparisons

The 201 New York dairy farms have been sorted into eight herd size categories and averages for the farms in each category are presented in Tables 49 through 53. Note that after the less than 50 cow category, the herd size categories increase by 25 cows up to 100 cows, by 100 cows up to 400 cows, and by 200 cows up to 600 cows.

As herd size increases, the net farm income generally increases (Table 49). Net farm income without appreciation averaged \$25,514 per farm for the less than 50 cow farms and \$71,328 per farm for those with more than 600 cows. However, net farm income per cow decreases as herd size increases. No significant relationship to herd size exists with the other more comprehensive measures of profitability.

It is more than size of herd that determines profitability on dairy farms. Farms with 600 and more cows averaged \$65 net farm income per cow while the less than 50 cow dairy farms average \$622 net farm income per cow. The 50 to 74 herd size category had the second highest net farm income per cow at \$238. Other factors that affect profitability and their relationship to the size classifications are shown in Table 50.

**Table 49.**

**COWS PER FARM AND FARM FAMILY INCOME MEASURES  
201 New York Dairy Farms, 2003**

Number of Cows	Number of Farms	Average Number of Cows	Net Farm Income Without Appreciation	Net Farm Income Per Cow	Labor & Management Income Per Operator	Return to All Capital Without Appreciation
Under 50	17	41	\$25,514	\$622	-\$2,869	-3.3%
50 to 74	33	62	14,743	238	-10,452	-4.0%
75 to 99	22	85	13,412	158	-18,308	-2.8%
100 to 199	40	136	29,865	220	-10,144	-0.7%
200 to 299	20	253	51,145	202	-2,657	0.9%
300 to 399	18	347	2,787	8	-34,091	-0.8%
400 to 599	24	502	92,703	185	4,895	2.6%
600 & over	27	1,102	71,328	65	-43,496	1.2%

This year, net farm income per cow did not exhibit the usual increase as herd size increased. Most herd size categories saw an increase in operating cost of producing milk from a year earlier (Table 30). Net farm income per cow will increase as farms become larger if the costs of increased purchased inputs are offset by greater and more efficient output.

The farms with more than 600 cows averaged more milk sold per cow than any other size category (Table 50). With 23,991 pounds of milk sold per cow, farms in the largest herd size group averaged 15 percent more milk output per cow than the average of all herds in the summary with less than 600 cows.

Many dairy farmers who have been willing and able to employ and manage the labor required to milk 3X have been successful. Only three percent of the 72 DFBS farms with less than 100 cows used a milking frequency greater than 2X. As herd size increased, the percent of herds using a higher milking frequency increased. Farms with 100 to 200 cows reported 13 percent of the herds milking more often than 2X, the 200-299 cow herds reported 55 percent, 300-399 cow herds reported 67 percent, 400-599 cow herds reported 71 percent, and the 600 cow and larger herds reported 93 percent exceeding the 2X milking frequency.

**Table 50.**

**COWS PER FARM AND RELATED FARM FACTORS  
201 New York Dairy Farms, 2003**

Number of Cows	Avg. No. of Cows	Milk Sold Per Cow (lbs.)	Milk Sold Per Worker (cwt.)	Tillable Acres Per Cow	Forage DM Per Cow (tons)	Farm Capital Per Cow	Cost of Producing Milk/Cwt.	
							Operating	Total
Under 50	41	18,070	3,694	3.9	8.5	\$9,871	\$8.52	\$17.76
50 to 74	62	17,755	4,946	3.4	7.1	8,741	10.36	17.40
75 to 99	85	17,722	5,193	3.2	8.2	8,662	11.05	16.83
100 to 199	136	19,399	6,031	3.3	8.8	5,414	10.63	15.76
200 to 299	253	21,734	8,828	2.4	8.8	7,087	11.18	14.56
300 to 399	347	21,962	8,834	1.9	7.0	6,636	11.71	14.74
400 to 599	502	21,591	9,415	1.9	6.7	6,030	11.24	13.99
600 & over	1,102	23,991	11,813	1.7	7.6	6,294	11.78	14.08

Bovine somatotropin (bST), was used to a greater extent on the large herd farms. bST was used consistently during 2003 on 17 percent of the herds with less than 100 cows, 47 percent of the farms with 100 to 299 cows and on 70 percent of the farms with 300 cows and more.

Milk output per worker has always shown a strong correlation with net farm income. However, in recent years this relationship has not held when labor and management income is the profit measure compared. The farms with 100 cows or more averaged over 898,000 pounds of milk sold per worker while the farms with less than 100 cows averaged less than 462,000 pounds per worker.

In achieving the highest productivity per cow and per worker, the largest farms had the fewest crop acres per cow and below average forage dry matter harvested per cow. However, the large farms purchased more roughage per cow. The farms with 100 to 199 cows had the most efficient use of farm capital with an average investment of \$5,414 per cow.

The 24 farms with 400 to 599 cows held their average total costs of producing milk to \$13.99 per hundredweight, \$1.89 below the \$15.88 average for the remaining 177 dairy farms. The lower average costs of production plus a similar milk price gave the managers of the 400 to 599 cow dairy farms profit margins (milk price less total cost of producing milk) that averaged \$2.32 per hundredweight above the average of the other 177 DFBS farms.

Tables 51 through 53 show progress of the farm businesses that have participated in DFBS in each of the last five years for three herd size groups.

A detailed list of accrual expenses, receipts and a profitability analysis is presented in Table 54, on pages 53 and 54 for the eight herd size categories. Purchased feed is the largest expense on all farms, regardless of size. However, larger farms find hired labor expense as the second largest expense category.

Assets, liabilities and financial measures are presented in Table 55 on pages 55-58. All herd size categories saw an increase in net worth during 2003. The largest herd size category experienced an increase in net worth of nearly \$101,000. However, percent equity went down as assets increased. The largest herds had the lowest percent equity; while the smaller herds averaged 78 percent.

Selected business factors by herd size group are presented in Table 56 on pages 59 and 60. George Warren, father of farm business management at Cornell, said in his 1918 farm management text that larger farms are, on average, more profitable; but no farm is large enough to guarantee a profit. For a more detailed analysis of large herd farms, see Dairy Farm Business Summary, New York Large Herd Farms, 300 Cows or Larger, 2003. For analysis of smaller herds, see Dairy Farm Business Summary, New York Small Herd Farms, 80 Cows or Fewer, 2003. Both publications are available from the Cornell Cooperative Extension Resource Center, P. O. Box 3884, Ithaca, NY 14852-3884 or order copies via e-mail ([resctr@cornell.edu](mailto:resctr@cornell.edu)) or the website: <http://www.cce.cornell.edu/store>

**Table 51.**

**PROGRESS OF FARM BUSINESSES WITH LESS THAN 100 COWS**  
Same 37 New York Dairy Farms, 1999 - 2003

Selected Factors	1999	2000	2001	2002	2003
Milk receipts per cwt. milk	\$15.01	\$13.45	\$16.11	\$12.84	\$12.96
<u>Size of Business</u>					
Average number of cows	61	63	62	62	63
Average number of heifers	47	46	47	47	45
Milk sold, cwt.	11,081	11,370	10,978	11,211	11,123
Worker equivalent	2.35	2.33	2.34	2.37	2.30
Total tillable acres	192	198	199	211	208
<u>Rates of Production</u>					
Milk sold per cow, lbs.	18,077	18,157	17,738	18,162	17,679
Hay DM per acre, tons	2.0	2.3	1.9	2.0	2.1
Corn silage per acre, tons	13	13	16	12	11
<u>Labor Efficiency</u>					
Cows per worker	26	27	26	26	27
Milk sold per worker, lbs.	471,530	487,988	469,160	473,059	483,593
<u>Cost Control</u>					
Grain & concn. purchased as % of milk sales	24%	26%	25%	30%	33%
Dairy feed & crop expense per cwt. milk	\$4.93	\$4.56	\$5.19	\$4.98	\$5.30
Operating cost of producing cwt. milk	\$10.85	\$9.83	\$11.47	\$9.71	\$10.45
Total cost of producing cwt. milk	\$16.34	\$15.18	\$17.68	\$15.78	\$16.60
Hired labor cost per cwt.	\$0.82	\$0.93	\$0.95	\$0.89	\$0.89
Interest paid per cwt.	\$0.77	\$0.78	\$0.75	\$0.62	\$0.56
Labor & machinery costs per cow	\$1,292	\$1,293	\$1,451	\$1,461	\$1,466
Replacement livestock expense	\$4,460	\$2,766	\$2,809	\$2,328	\$2,724
Expansion livestock expense	\$625	\$162	\$0	\$1,059	\$0
<u>Capital Efficiency</u>					
Farm capital per cow	\$7,147	\$7,255	\$7,840	\$8,051	\$8,108
Machinery & equipment per cow	\$1,450	\$1,537	\$1,677	\$1,716	\$1,684
Real estate per cow	\$3,237	\$3,223	\$3,470	\$3,557	\$3,685
Livestock investment per cow	\$1,581	\$1,618	\$1,767	\$1,842	\$1,811
Asset turnover ratio	0.45	0.42	0.45	0.36	0.37
<u>Profitability</u>					
Net farm income without appreciation	\$34,266	\$30,237	\$35,731	\$20,785	\$16,283
Net farm income with appreciation	\$42,860	\$38,991	\$53,435	\$20,529	\$29,100
Labor & management income per operator/manager	\$9,173	\$5,174	\$6,981	-\$4,597	-\$8,992
Rate return on:					
Equity capital with appreciation	3.0%	1.6%	5.1%	-4.3%	-2.6%
All capital with appreciation	4.0%	3.1%	5.3%	-1.7%	-0.6%
All capital without appreciation	2.0%	1.4%	1.7%	-1.6%	-3.1%
<u>Financial Summary, End Year</u>					
Farm net worth	\$313,032	\$327,618	\$363,599	\$354,475	\$371,191
Change in net worth with appreciation	\$20,302	\$16,061	\$34,937	-\$2,914	\$11,061
Debt to asset ratio	0.30	0.30	0.28	0.29	0.28
Farm debt per cow	\$2,123	\$2,215	\$2,243	\$2,281	\$2,286

**Table 52.**

**PROGRESS OF FARM BUSINESSES WITH 100-499 COWS**  
Same 54 New York Dairy Farms, 1999 - 2003

Selected Factors	1999	2000	2001	2002	2003
Milk receipts per cwt. milk	\$15.05	\$13.51	\$16.04	\$12.82	\$13.22
<u>Size of Business</u>					
Average number of cows	210	217	227	241	247
Average number of heifers	155	162	170	180	190
Milk sold, cwt.	44,555	46,299	48,925	53,020	52,672
Worker equivalent	5.65	5.62	6.13	6.45	6.59
Total tillable acres	534	548	577	595	603
<u>Rates of Production</u>					
Milk sold per cow, lbs.	21,185	21,359	21,551	21,990	21,345
Hay DM per acre, tons	2.8	3.1	2.9	3.0	3.2
Corn silage per acre, tons	16	15	16	15	16
<u>Labor Efficiency</u>					
Cows per worker	37	39	37	37	38
Milk sold per worker, lbs.	788,584	823,819	798,123	822,013	799,265
<u>Cost Control</u>					
Grain & concn. purchased as % of milk sales	24%	26%	24%	30%	31%
Dairy feed & crop expense per cwt. milk	\$4.67	\$4.54	\$5.03	\$4.81	\$5.02
Operating cost of producing cwt. milk	\$11.00	\$10.92	\$12.13	\$10.76	\$11.21
Total cost of producing cwt. milk	\$14.53	\$14.56	\$15.87	\$14.38	\$14.79
Hired labor cost per cwt.	\$1.84	\$1.97	\$2.17	\$2.27	\$2.29
Interest paid per cwt.	\$0.79	\$0.92	\$0.78	\$0.57	\$0.54
Labor & machinery costs per cow	\$1,177	\$1,210	\$1,322	\$1,301	\$1,286
Replacement livestock expense	\$13,137	\$13,829	\$13,078	\$9,732	\$9,986
Expansion livestock expense	\$9,255	\$7,016	\$16,186	\$10,634	\$1,322
<u>Capital Efficiency</u>					
Farm capital per cow	\$6,851	\$7,001	\$7,111	\$7,121	\$7,154
Machinery & equipment per cow	\$1,366	\$1,431	\$1,452	\$1,471	\$1,484
Real estate per cow	\$2,669	\$2,727	\$2,713	\$2,701	\$2,716
Livestock investment per cow	\$1,554	\$1,619	\$1,742	\$1,794	\$1,814
Asset turnover ratio	0.55	0.51	0.60	0.50	0.49
<u>Profitability</u>					
Net farm income without appreciation	\$128,663	\$60,531	\$124,015	\$36,031	\$36,867
Net farm income with appreciation	\$159,643	\$98,656	\$192,232	\$69,204	\$79,098
Labor & management income per operator/manager	\$37,575	\$4,120	\$34,405	\$-11,521	\$-11,188
Rate return on:					
Equity capital with appreciation	10.9%	4.0%	12.3%	0.5%	1.4%
All capital with appreciation	9.4%	5.3%	10.3%	2.1%	2.5%
All capital without appreciation	7.3%	2.8%	6.1%	0.2%	0.1%
<u>Financial Summary, End Year</u>					
Farm net worth	\$962,667	\$990,858	\$1,094,484	\$1,097,953	\$1,124,848
Change in net worth with appreciation	\$85,000	\$31,162	\$113,262	\$1,000	\$21,801
Debt to asset ratio	0.36	0.36	0.35	0.37	0.37
Farm debt per cow	\$2,486	\$2,502	\$2,551	\$2,578	\$2,709

**Table 53.**

**PROGRESS OF FARM BUSINESSES WITH MORE THAN 500 COWS**  
Same 31 New York Dairy Farms, 1999 - 2003

Selected Factors	1999	2000	2001	2002	2003
Milk receipts per cwt. milk	\$15.01	\$13.50	\$15.91	\$13.00	\$13.24
<u>Size of Business</u>					
Average number of cows	632	681	744	797	862
Average number of heifers	489	529	567	631	655
Milk sold, cwt.	146,004	157,039	171,564	188,326	203,167
Worker equivalent	14.00	14.89	16.00	16.93	18.30
Total tillable acres	1,249	1,287	1,360	1,463	1,551
<u>Rates of Production</u>					
Milk sold per cow, lbs.	23,110	23,060	23,067	23,637	23,582
Hay DM per acre, tons	3.7	4.2	3.4	3.7	3.4
Corn silage per acre, tons	17	16	17	15	17
<u>Labor Efficiency</u>					
Cows per worker	45	46	47	47	47
Milk sold per worker, lbs.	1,042,882	1,054,659	1,072,273	1,112,381	1,110,202
<u>Cost Control</u>					
Grain & concn. purchased as % of milk sales	25%	28%	26%	30%	31%
Dairy feed & crop expense per cwt. milk	\$4.80	\$4.72	\$5.04	\$4.81	\$5.07
Operating cost of producing cwt. milk	\$11.23	\$11.53	\$12.27	\$11.27	\$11.64
Total cost of producing cwt. milk	\$13.78	\$14.07	\$14.88	\$13.96	\$14.11
Hired labor cost per cwt.	\$2.52	\$2.58	\$2.70	\$2.72	\$2.76
Interest paid per cwt.	\$0.80	\$0.98	\$0.87	\$0.64	\$0.56
Labor & machinery costs per cow	\$1,160	\$1,185	\$1,228	\$1,228	\$1,196
Replacement livestock expense	\$25,395	\$21,478	\$13,363	\$17,497	\$28,531
Expansion livestock expense	\$53,717	\$74,077	\$74,187	\$58,849	\$81,852
<u>Capital Efficiency</u>					
Farm capital per cow	\$6,134	\$6,245	\$6,379	\$6,515	\$6,332
Machinery & equipment per cow	\$1,069	\$1,095	\$1,084	\$1,112	\$1,041
Real estate per cow	\$2,312	\$2,339	\$2,444	\$2,484	\$2,447
Livestock investment per cow	\$1,573	\$1,612	\$1,714	\$1,812	\$1,797
Asset turnover ratio	0.66	0.61	0.70	0.58	0.60
<u>Profitability</u>					
Net farm income without appreciation	\$377,559	\$118,571	\$405,069	\$58,610	\$69,092
Net farm income with appreciation	\$446,409	\$214,498	\$656,234	\$197,308	\$230,932
Labor & management income per operator/manager	\$125,350	\$2,584	\$119,089	\$-36,139	\$-33,476
Rate return on:					
Equity capital with appreciation	17.4%	5.3%	22.3%	3.4%	4.5%
All capital with appreciation	12.1%	6.3%	14.8%	4.1%	4.4%
All capital without appreciation	10.3%	4.0%	9.5%	1.4%	1.4%
<u>Financial Summary, End Year</u>					
Farm net worth	\$2,142,817	\$2,175,960	\$2,712,253	\$2,709,676	\$2,823,191
Change in net worth with appreciation	\$243,687	\$44,810	\$456,827	\$-5,834	\$92,677
Debt to asset ratio	0.48	0.50	0.46	0.49	0.50
Farm debt per cow	\$3,011	\$3,049	\$3,043	\$3,140	\$3,207

Table 54.

**FARM BUSINESS SUMMARY BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farm Size:	Less than 50 Cows	50 to 74 Cows	75 to 99 Cows	100 to 199 Cows
Number of farms		17	33	22	40
<u>ACCRUAL EXPENSES</u>					
Hired labor		\$3,316	\$9,181	\$19,942	\$54,610
Dairy grain & concentrate		28,392	45,275	63,051	106,093
Dairy roughage		1,530	3,829	4,525	2,705
Nondairy feed		0	13	0	20
Professional nutritional services		0	22	106	110
Machine hire, rent & lease		1,867	2,198	6,601	9,324
Machine repairs & farm vehicle expense		7,012	11,723	15,759	26,842
Fuel, oil & grease		2,935	5,395	7,067	13,111
Replacement livestock		2,667	3,983	1,586	2,166
Breeding		1,937	2,938	3,372	5,267
Veterinary & medicine		3,186	5,114	7,062	13,489
Milk marketing		7,693	9,690	12,654	21,917
Bedding		947	1,406	2,175	4,292
Milking supplies		1,948	3,931	6,544	8,817
Cattle lease & rent		0	3	0	213
Custom boarding		0	1,875	442	6,643
bST expense		717	850	715	4,688
Livestock professional fees		663	851	1,020	1,225
Other livestock expense		2,096	3,358	3,241	4,816
Fertilizer & lime		1,775	3,829	6,948	10,042
Seeds & plants		897	1,686	3,714	7,147
Spray & other crop expense		1,133	1,816	2,658	5,333
Crop professional fees		0	52	84	513
Land, building & fence repair		2,674	2,322	3,323	5,742
Taxes & rent		4,716	8,355	10,497	16,990
Utilities		3,692	6,864	8,241	12,697
Interest paid		4,272	7,228	8,973	14,468
Other professional fees		501	394	854	1,337
Misc. (including insurance)		2,511	4,777	6,625	10,256
Total Operating Expenses		\$89,077	\$148,958	\$207,780	\$370,873
Expansion livestock		0	722	518	1,378
Extraordinary expense		0	0	0	177
Machinery depreciation		7,672	11,355	13,618	28,078
Building depreciation		2,265	3,924	3,821	12,131
Total Accrual Expenses		\$99,014	\$164,958	\$225,737	\$412,637
<u>ACCRUAL RECEIPTS</u>					
Milk sales		\$99,033	\$144,251	\$196,750	\$351,566
Dairy cattle		10,449	8,960	5,446	20,475
Dairy calves		2,386	3,512	2,500	3,506
Other livestock		235	152	395	211
Crops		1,267	2,430	4,544	18,721
Misc. receipts		11,158	20,396	29,514	48,023
Total Accrual Receipts		\$124,528	\$179,701	\$239,149	\$422,502
<u>PROFITABILITY ANALYSIS</u>					
Net farm income (without appreciation)		\$25,514	\$14,743	\$13,412	\$29,865
Net farm income (with appreciation)		\$39,677	\$23,246	\$33,415	\$57,890
Labor & management income		\$-3,816	\$-15,051	\$-26,181	\$-19,070
Number of operators		1.33	1.44	1.43	1.88
Labor & management income/operator		\$-2,869	\$-10,452	\$-18,308	\$-10,144
Rates of return on: Equity capital w/o apprec.		-5.6%	-7.7%	-5.7%	-2.6%
Equity capital with appreciation		-1.1%	-5.5%	-1.8%	0.6%
All capital without appreciation		-3.3%	-4.0%	-2.8%	-0.7%
All capital with appreciation		0.2%	-2.4%	-0.1%	1.7%

Table 54. (continued)

**FARM BUSINESS SUMMARY BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farm Size:	200 to 299 Cows	300 to 399 Cows	400 to 599 Cows	600 or More Cows
Number of farms		20	18	24	27
<u>ACCRUAL EXPENSES</u>					
Hired labor		\$121,675	\$185,908	\$263,793	\$749,821
Dairy grain & concentrate		219,816	319,727	391,890	1,069,904
Dairy roughage		12,820	30,427	46,069	67,847
Nondairy feed		0	49	1,258	23
Professional nutritional services		158	359	7,263	1,401
Machine hire, rent & lease		18,492	23,137	34,689	59,943
Machine repairs & farm vehicle expense		35,052	48,457	69,555	142,216
Fuel, oil & grease		21,724	28,687	33,322	73,196
Replacement livestock		10,399	11,419	27,133	26,804
Breeding		9,274	15,323	17,686	48,398
Veterinary & medicine		25,527	41,569	58,891	157,515
Milk marketing		47,046	51,111	75,900	164,107
Bedding		13,042	16,837	22,928	75,725
Milking supplies		16,553	22,173	29,861	78,279
Cattle lease & rent		35	3,499	896	1,788
Custom boarding		17,912	18,200	34,301	115,268
bST expense		10,813	18,874	18,231	84,654
Livestock professional services		1,722	3,168	2,709	4,317
Other livestock expense		6,324	8,406	11,951	25,147
Fertilizer & lime		18,990	15,807	29,975	58,846
Seeds & plants		12,967	12,798	18,923	54,379
Spray & other crop expense		8,664	13,424	18,591	40,520
Crop professional fees		909	1,440	3,423	7,368
Land, building & fence repair		5,487	12,369	13,633	34,049
Taxes & rent		32,071	28,670	48,282	106,778
Utilities		21,216	28,410	35,793	76,460
Interest paid		31,445	47,039	69,423	137,633
Other professional fees		4,074	3,125	5,869	23,289
Misc. (including insurance)		12,385	16,845	20,449	59,520
Total Operating Expenses		\$736,864	\$1,027,255	\$1,412,690	\$3,545,196
Expansion livestock		918	5,604	12,512	131,854
Extraordinary expense		202	0	1,546	1,018
Machinery depreciation		42,747	55,358	76,192	163,467
Building depreciation		21,695	45,766	59,241	145,077
Total Accrual Expenses		\$802,426	\$1,133,983	\$1,562,181	\$3,986,613
<u>ACCRUAL RECEIPTS</u>					
Milk sales		\$730,745	\$996,295	\$1,447,894	\$3,495,888
Dairy cattle		49,559	55,055	82,454	311,155
Dairy calves		7,193	10,518	30,488	57,781
Other livestock		1,303	3,457	3,504	988
Crops		21,575	22,147	41,966	102,615
Misc. receipts		43,196	49,298	48,578	89,515
Total Accrual Receipts		\$853,571	\$1,136,770	\$1,654,884	\$4,057,941
<u>PROFITABILITY ANALYSIS</u>					
Net farm income (without appreciation)		\$51,145	\$2,787	\$92,703	\$71,328
Net farm income (with appreciation)		\$106,465	\$54,589	\$181,692	\$264,119
Labor & management income		\$-5,739	\$-61,364	\$11,161	\$-107,000
Number of operators		2.16	1.80	2.28	2.46
Labor & management income/operator		\$-2,657	\$-34,091	\$4,895	\$-43,496
Rates of return on: Equity capital w/o apprec.		-1.5%	-5.2%	0.6%	-1.5%
Equity capital with appreciation		3.7%	-1.0%	6.4%	4.0%
All capital without appreciation		0.9%	-0.8%	2.6%	1.2%
All capital with appreciation		3.9%	1.5%	5.5%	4.0%

Table 55.

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farms with:		50 to 74 Cows	
	Less than 50 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
<b>ASSETS</b>				
Farm cash, checking & savings	\$5,486	\$4,953	\$6,246	\$5,232
Accounts receivable	5,583	6,679	10,986	12,249
Prepaid expenses	202	197	121	0
Feed & supplies	20,347	20,732	34,813	37,243
Livestock <sup>50</sup>	72,660	77,018	116,147	117,716
Machinery & equipment <sup>50</sup>	81,466	84,051	121,515	119,373
Farm Credit stock	1,212	1,308	1,032	953
Other stock & certificates	1,501	981	3,645	4,405
Land & buildings <sup>50</sup>	200,118	224,941	245,301	246,961
Total Farm Assets	\$388,576	\$420,860	\$539,806	\$544,132
Personal cash, checking & savings	\$8,825	\$12,526	\$2,982	\$4,075
Cash value of life insurance	8,046	8,271	10,439	11,956
Nonfarm real estate	9,290	23,125	11,025	11,573
Auto (personal share)	5,563	7,563	5,500	4,775
Stocks & bonds	14,401	20,446	29,998	28,853
Household furnishings	9,625	12,750	11,325	10,550
All other	932	929	11,950	8,200
Nonfarm Assets <sup>51</sup>	\$56,682	\$85,609	\$83,219	\$79,982
Farm & Nonfarm Assets	\$445,258	\$506,469	\$623,025	\$624,114
<b>LIABILITIES</b>				
Accounts payable	\$1,556	\$2,287	\$5,142	\$8,372
Operating debt	3,544	3,057	8,235	7,631
Short term	0	118	179	485
Advanced government receipt	0	0	91	0
Current Portion:				
Intermediate	8,136	8,287	14,270	14,505
Long Term	3,809	3,283	4,195	4,359
Intermediate <sup>52</sup>	24,896	25,202	64,029	60,653
Long term <sup>50</sup>	41,960	48,464	73,538	70,476
Total Farm Liabilities	\$78,801	\$90,698	\$169,679	\$149,993
Nonfarm Liabilities <sup>51</sup>	274	0	1,605	1,187
Farm & Nonfarm Liabilities	\$79,075	\$90,698	\$171,284	\$151,180
Farm Net Worth (Equity Capital)	\$309,775	\$330,162	\$370,127	\$394,139
Farm & Nonfarm Net Worth	\$366,183	\$415,771	\$451,741	\$472,934
<b>FINANCIAL MEASURES</b>				
	<u>Less than 50 Cows</u>		<u>50 to 74 Cows</u>	
Percent Equity	78%		72%	
Debt/asset ratio-long term	0.22		0.29	
Debt/asset ratio-intermediate & current	0.22		0.27	
Change in net worth with appreciation	\$20,387		\$24,012	
Total farm debt per cow	\$2,159		\$2,419	
Debt payments made per cow	\$469		\$511	
Debt payments as % of milk sales	19%		22%	
Amount available for debt service	\$15,088		\$16,229	
Cash flow coverage ratio for 2003	0.84		0.77	
Debt coverage ratio for 2003	1.07		0.74	

<sup>50</sup>Includes discounted lease payments.<sup>51</sup>Average of farms reporting nonfarm assets and liabilities for 2003.<sup>52</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 55. (cont'd)

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farms with:		100 to 199 Cows	
	75 to 99 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
<b>ASSETS</b>				
Farm cash, checking & savings	\$3,274	\$4,221	\$7,153	\$8,538
Accounts receivable	16,193	17,317	34,177	36,783
Prepaid expenses	0	267	288	339
Feed & supplies	45,498	47,260	88,765	96,664
Livestock <sup>53</sup>	154,040	157,855	254,546	259,654
Machinery & equipment <sup>53</sup>	135,838	137,084	254,063	258,214
Farm Credit stock	1,680	1,907	2,034	2,098
Other stock & certificates	10,907	11,597	22,921	24,224
Land & buildings <sup>53</sup>	<u>354,400</u>	<u>370,504</u>	<u>515,551</u>	<u>518,622</u>
Total Farm Assets	\$721,830	\$748,012	\$1,179,498	\$1,205,136
Personal cash, checking & savings	\$2,308	\$1,420	\$19,796	\$20,395
Cash value of life insurance	13,878	14,094	14,356	20,087
Nonfarm real estate	64,875	70,292	76,611	67,278
Auto (personal share)	5,333	5,167	7,495	7,972
Stocks & bonds	6,309	5,929	31,893	36,342
Household furnishings	8,667	8,750	9,792	9,792
All other	<u>20,698</u>	<u>22,084</u>	<u>4,881</u>	<u>3,278</u>
Nonfarm Assets <sup>54</sup>	\$122,068	\$127,736	\$164,824	\$165,144
Farm & Nonfarm Assets	\$843,898	\$875,748	\$1,344,322	\$1,370,280
<b>LIABILITIES</b>				
Accounts payable	\$11,484	\$15,968	\$18,533	\$19,641
Operating debt	7,697	13,272	19,198	20,015
Short term	1,381	2,122	1,285	1,946
Advanced government receipt	0	0	250	0
Current Portion:				
Intermediate	15,520	16,126	29,486	29,406
Long Term	5,614	5,472	9,932	9,294
Intermediate <sup>55</sup>	104,386	97,828	129,560	129,318
Long term <sup>53</sup>	<u>63,071</u>	<u>66,605</u>	<u>119,766</u>	<u>118,696</u>
Total Farm Liabilities	\$209,153	\$217,393	\$328,010	\$328,316
Nonfarm Liabilities <sup>54</sup>	<u>1,105</u>	<u>546</u>	<u>5,474</u>	<u>5,825</u>
Farm & Nonfarm Liabilities	\$210,258	\$217,939	\$333,484	\$334,141
Farm Net Worth (Equity Capital)	\$512,677	\$530,619	\$851,488	\$876,820
Farm & Nonfarm Net Worth	\$633,640	\$657,809	\$1,010,838	\$1,036,139
<b>FINANCIAL MEASURES</b>				
	<u>75 to 99 Cows</u>		<u>100 to 149 Cows</u>	
Percent equity	71%		73%	
Debt/asset ratio-long term	0.18		0.23	
Debt/asset ratio-intermediate & current	0.40		0.31	
Change in net worth with appreciation	\$17,942		\$25,332	
Total farm debt per cow	\$2,558		\$2,362	
Debt payments made per cow	\$407		\$537	
Debt payments as % of milk sales	18%		21%	
Amount available for debt service	\$27,315		\$42,265	
Cash flow coverage ratio for 2003	0.82		0.74	
Debt coverage ratio for 2003	0.64		0.87	

<sup>53</sup>Includes discounted lease payments.<sup>54</sup>Average of farms reporting nonfarm assets and liabilities for 2003.<sup>55</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 55. (cont'd)

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farms with:		300 to 399 Cows	
	200 to 299 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
<b>ASSETS</b>				
Farm cash, checking & savings	\$7,346	\$6,998	\$10,352	\$17,666
Accounts receivable	6,844	71,068	82,606	87,713
Prepaid expenses	627	1,541	61	83
Feed & supplies	149,617	157,413	187,504	205,136
Livestock <sup>56</sup>	439,365	464,553	617,860	620,219
Machinery & equipment <sup>56</sup>	355,782	376,477	445,826	458,127
Farm Credit stock	4,549	3,530	5,579	5,706
Other stock & certificates	33,127	37,570	37,185	42,403
Land & buildings <sup>56</sup>	<u>679,044</u>	<u>728,719</u>	<u>869,106</u>	<u>910,566</u>
Total Farm Assets	\$1,676,301	\$1,847,869	\$2,256,079	\$2,347,619
Personal cash, checking & savings	\$1,964	\$3,866	\$13,918	\$9,156
Cash value of life insurance	35,069	35,342	10,127	9,712
Nonfarm real estate	37,909	37,909	22,222	22,222
Auto (personal share)	5,564	5,364	10,111	8,611
Stocks & bonds	36,688	42,991	33,460	37,916
Household furnishings	4,727	4,727	8,722	8,722
All other	<u>2,148</u>	<u>1,733</u>	<u>19,477</u>	<u>25,842</u>
Nonfarm Assets <sup>57</sup>	\$124,069	\$131,932	\$118,037	\$122,181
Farm & Nonfarm Assets	\$1,800,370	\$1,979,801	\$2,374,116	\$2,469,800
<b>LIABILITIES</b>				
Accounts payable	\$32,498	\$37,246	\$29,171	\$46,693
Operating debt	44,123	39,644	82,277	92,760
Short term	2,699	2,135	389	433
Advanced government receipt	0	0	0	0
Current Portion:				
Intermediate	66,354	63,135	91,041	86,646
Long Term	21,796	20,190	27,771	26,883
Intermediate <sup>58</sup>	285,721	332,840	416,112	477,083
Long term <sup>56</sup>	<u>238,362</u>	<u>254,068</u>	<u>363,441</u>	<u>365,875</u>
Total Farm Liabilities	\$691,553	\$749,258	\$1,010,202	\$1,096,373
Nonfarm Liabilities <sup>57</sup>	<u>2,795</u>	<u>2,045</u>	<u>13,384</u>	<u>12,212</u>
Farm & Nonfarm Liabilities	\$694,348	\$751,303	\$1,023,586	\$1,108,585
Farm Net Worth (Equity Capital)	\$984,748	\$1,098,611	\$1,245,877	\$1,251,246
Farm & Nonfarm Net Worth	\$1,106,022	\$1,228,498	\$1,350,530	\$1,361,215
<b>FINANCIAL MEASURES</b>				
	<u>200 to 299 Cows</u>		<u>300 to 399 Cows</u>	
Percent equity	59%		53%	
Debt/asset ratio-long term	0.35		0.40	
Debt/asset ratio-intermediate & current	0.44		0.51	
Change in net worth with appreciation	\$113,863		\$5,369	
Total farm debt per cow	\$2,961		\$3,132	
Debt payments made per cow	\$567		\$497	
Debt payments as % of milk sales	20%		17%	
Amount available for debt service	\$56,822		\$97,999	
Cash flow coverage ratio for 2003	0.45		0.62	
Debt coverage ratio for 2003	0.61		0.66	

<sup>56</sup>Includes discounted lease payments.<sup>57</sup>Average of farms reporting nonfarm assets and liabilities for 2003.<sup>58</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 55. (cont'd)

**FARM FAMILY FINANCIAL SITUATION BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farms with:		More than 600 Cows	
	400 to 599 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
<b>ASSETS</b>				
Farm cash, checking & savings	\$25,983	\$30,378	\$33,862	\$34,437
Accounts receivable	94,709	112,853	179,373	214,440
Prepaid expenses	981	565	9,341	9,846
Feed & supplies	275,715	295,917	638,719	675,655
Livestock <sup>59</sup>	833,787	880,076	1,923,156	2,096,933
Machinery & equipment <sup>59</sup>	550,207	551,274	1,051,755	1,087,782
Farm Credit stock	8,660	9,081	18,173	19,321
Other stock & certificates	64,872	73,768	162,613	209,103
Land & buildings <sup>59</sup>	<u>1,105,291</u>	<u>1,140,210</u>	<u>2,685,035</u>	<u>2,822,018</u>
Total Farm Assets	\$2,960,205	\$3,094,122	\$6,702,027	\$7,169,535
Personal cash, checking & savings	\$3,439	\$3,278	\$3,106	\$2,968
Cash value of life insurance	10,819	11,054	54,192	66,592
Nonfarm real estate	14,375	15,531	7,083	7,083
Auto (personal share)	5,375	5,750	3,083	2,667
Stocks & bonds	34,964	40,332	45,954	47,915
Household furnishings	4,375	4,375	7,333	7,333
All other	<u>246</u>	<u>246</u>	<u>32,903</u>	<u>15,422</u>
Nonfarm Assets <sup>60</sup>	\$73,593	\$80,566	\$153,654	\$149,980
Farm & Nonfarm Assets	\$3,033,798	\$3,174,688	\$6,855,681	\$7,319,515
<b>LIABILITIES</b>				
Accounts payable	\$49,747	\$65,590	\$112,525	\$176,709
Operating debt	102,628	98,023	280,278	231,076
Short term	9,174	11,346	5,046	22,559
Advanced government receipts	0	0	0	0
Current Portion:				
Intermediate	147,758	146,588	253,750	248,112
Long Term	41,406	40,176	146,454	134,724
Intermediate <sup>61</sup>	<u>572,659</u>	<u>608,736</u>	<u>1,328,545</u>	<u>1,389,889</u>
Long term <sup>59</sup>	<u>552,157</u>	<u>545,975</u>	<u>1,136,582</u>	<u>1,426,645</u>
Total Farm Liabilities	\$1,475,529	\$1,516,434	\$3,263,180	\$3,629,714
Nonfarm Liabilities <sup>60</sup>	<u>11,350</u>	<u>9,258</u>	<u>0</u>	<u>0</u>
Farm & Nonfarm Liabilities	\$1,486,879	\$1,525,692	\$3,263,180	\$3,629,714
Farm Net Worth (Equity Capital)	1,484,676	1,577,688	3,438,847	3,539,821
Farm & Nonfarm Net Worth	\$1,546,919	\$1,648,996	\$3,592,501	\$3,689,801
<b>FINANCIAL MEASURES</b>				
	<u>400 to 599 Cows</u>		<u>More than 600 Cows</u>	
Percent equity	51%		49%	
Debt/asset ratio-long term	.48		.51	
Debt/asset ratio-intermediate & current	.50		.51	
Change in net worth with appreciation	\$93,012		\$100,974	
Total farm debt per cow	\$2,997		\$3,235	
Debt payments made per cow	\$509		\$580	
Debt payments as % of milk sales	18%		18%	
Amount available for debt service	\$195,334		\$361,245	
Cash flow coverage ratio for 2003	0.73		0.70	
Debt coverage ratio for 2003	0.85		0.77	

<sup>59</sup>Includes discounted lease payments.<sup>60</sup>Average of farms reporting nonfarm assets and liabilities for 2003.<sup>61</sup>Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 56.

**SELECTED BUSINESS FACTORS BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farms with:	Less than 50 Cows	50 to 74 Cows	75 to 99 Cows	100 to 199 Cows
Number of farms		17	33	22	40
<u>Cropping Program Analysis</u>					
Total Tillable acres		159	211	275	454
Tillable acres rented <sup>62</sup>		58	94	124	209
Hay crop acres <sup>62</sup>		99	132	167	245
Corn silage acres <sup>62</sup>		24	30	65	99
Hay crop, tons DM/acre		2.2	2.3	2.2	2.9
Corn silage, tons/acre		9.2	10.8	14.5	15.8
Oats, bushels/acre		0	5	0	0
Forage DM per cow, tons		8.5	7.1	8.2	8.8
Tillable acres/cow		3.9	3.4	3.2	3.3
Fertilizer & lime expense/tillable acre		\$11.16	\$18.15	\$25.27	\$22.12
Total machinery costs		\$23,623	\$36,693	\$49,919	\$90,161
Machinery cost/tillable acre		\$149	\$174	\$182	\$199
<u>Dairy Analysis</u>					
Number of cows		41	62	85	136
Number of heifers		31	46	64	109
Milk sold, lbs.		746,196	1,102,944	1,500,717	2,647,488
Milk sold/cow, lbs.		18,070	17,755	17,722	19,399
Operating cost of producing milk/cwt.		\$8.52	\$10.36	\$11.05	\$10.63
Total cost of producing milk/cwt.		\$17.76	\$17.40	\$16.83	\$15.76
Price/cwt. milk sold		\$13.27	\$13.08	\$13.11	\$13.28
Purchased dairy feed/cow		\$730	\$792	\$795	\$800
Purchased dairy feed/cwt. milk		\$4.01	\$4.45	\$4.50	\$4.11
Purchased grain & concentrate as % of milk receipts		29%	31%	32%	30%
Purchased feed & crop expense/cwt. milk		\$4.52	\$5.12	\$5.40	\$4.98
Cull rate		26.6%	26.5%	29.1%	31.0%
<u>Capital Efficiency</u>					
Farm capital/worker		\$200,355	\$243,035	\$254,768	\$271,598
Farm capital/cow		\$9,871	\$8,741	\$8,662	\$8,767
Farm capital/tillable acre owned		\$4,007	\$4,593	\$4,909	\$4,866
Real estate/cow		\$5,184	\$3,970	\$4,264	\$3,802
Machinery investment/cow		\$2,019	\$1,943	\$1,605	\$1,883
Asset turnover ratio		0.34	0.35	0.35	0.39
<u>Labor Efficiency</u>					
Worker equivalent		2.02	2.23	2.89	4.39
Operator/manager equivalent		1.33	1.44	1.43	1.88
Milk sold/worker, lbs.		369,404	494,594	519,279	603,072
Cows/worker		20	28	29	31
Labor cost/cow		\$1,264	\$939	\$838	\$803
Labor cost/tillable acre		\$326	\$276	\$259	\$241

<sup>62</sup>Average of all farms, not only those reporting data.

Table 56. (cont'd)

**SELECTED BUSINESS FACTORS BY HERD SIZE**  
**201 New York Dairy Farms, 2003**

Item	Farms with:	200 to 299 Cows	300 to 399 Cows	400 to 599 Cows	600 or More Cows
Number of farms		20	18	24	27
<u>Cropping Program Analysis</u>					
Total Tillable acres		617	656	949	1,914
Tillable acres rented <sup>63</sup>		339	271	546	923
Hay crop acres <sup>63</sup>		315	293	420	863
Corn silage acres <sup>63</sup>		183	230	348	888
Hay crop, tons DM/acre		3.3	3.7	3.1	3.5
Corn silage, tons/acre		16.0	18.6	14.8	18.0
Oats, bushels/acre		33	0	57	0
Forage DM per cow, tons		8.8	7.0	6.7	7.6
Tillable acres/cow		2.4	1.9	1.9	1.7
Fertilizer & lime exp./tillable acre		\$30.78	\$24.10	\$31.59	\$30.75
Total machinery costs		\$136,322	\$178,238	\$241,295	\$492,311
Machinery cost/tillable acre		\$244	\$272	\$254	\$257
<u>Dairy Analysis</u>					
Number of cows		253	347	502	1,102
Number of heifers		202	267	356	853
Milk sold, lbs.		5,499,868	7,623,396	10,837,090	26,437,220
Milk sold/cow, lbs.		21,734	21,962	21,591	23,991
Operating cost of producing milk/cwt.		\$11.18	\$11.71	\$11.24	\$11.78
Total cost of producing milk/cwt.		\$14.56	\$14.74	\$13.99	\$14.08
Price/cwt. milk sold		\$13.29	\$13.07	\$13.36	\$13.22
Purchased dairy feed/cow		\$920	\$1,009	\$872	\$1,032
Purchased dairy feed/cwt. milk		\$4.23	\$4.59	\$4.04	\$4.30
Purchased grain & concentrate as % of milk receipts		30%	32%	27%	31%
Purchased feed & crop expense/cwt. milk		\$4.98	\$5.16	\$4.70	\$4.91
Cull rate		35.3%	34.9%	31.9%	36.8%
<u>Capital Efficiency</u>					
Farm capital/worker		\$287,783	\$266,833	\$263,003	\$309,910
Farm capital/cow		\$7,087	\$6,636	\$6,030	\$6,294
Farm capital/tillable acre owned		\$6,449	\$5,966	\$7,493	\$7,006
Real estate/cow		\$2,782	\$2,564	\$2,237	\$2,499
Machinery investment/cow		\$1,447	\$1,303	\$1,097	\$971
Asset turnover ratio		0.51	0.51	0.58	0.61
<u>Labor Efficiency</u>					
Worker equivalent		6.23	8.63	11.51	22.38
Operator/manager equivalent		2.16	1.80	2.28	2.46
Milk sold/worker, lbs.		882,804	883,360	941,537	1,181,288
Cows/worker		41	40	44	49
Labor cost/cow		\$718	\$678	\$654	\$743
Labor cost/tillable acre		\$294	\$359	\$346	\$428

<sup>63</sup>Average of all farms, not only those reporting data.

## SUPPLEMENTAL INFORMATION

Comparisons of business performance by farms buying or growing forages, types of housing and herd size, bST usage, rotational grazers, milking frequency, same farms over 10 years, and dairy region are presented in this section. Farm receipts and expenses per cow and per hundredweight of milk sold for different levels of milk output and herd size groups, plus additional data, are included.

A word of caution to the reader on the interpretation of these data: It is the combination of resources and practices, and implementation of business management strategies by farmers that determine business performance. Examining one factor, while not holding all others constant, can lead to erroneous conclusions of cause and effect relationships. As an example, farms using bST have higher pounds of milk sold per cow. Is it exclusively bST or is it that farms using bST would have higher milk production per cow without bST? Keep this distinction in mind when reviewing the following data.

### **Comparison for Farms That Buy All Feed Versus Farms That Grow Forages**

Farms specializing in only milk production are a growing trend in New York. In 2003, 13 participating farms, including owners and renters, purchased the majority of their feed, including all forages. Less than 10 acres of crops were harvested by the average farm. Table 57 highlights the income and expenses for these 13 farms compared to the income and expenses for 213 farms of similar size that grew their forages. Table 58 compares selected business factors for the two groups of farms. In 2003, the 13 farms buying forages were, on average, lower than the similar size farms growing forages for all measures of profitability. While receipts per cow were similar, operating costs were \$0.84 per hundredweight higher.

### **Comparison by Type of Barn and Herd Size**

When analyzing a dairy farm business by comparing it to a group of farms, it is important that the group of farms have as many of the same physical characteristics as possible as the farm being analyzed. To assist in this endeavor, dairy farms in the summary have been divided into those with freestall and those with conventional housing. Conventional housing includes stanchion and tiestall barns. Within each group, is a further classification by size of the dairy herd. Table 59 on page 65 includes the average values for the resulting five groups of dairy farms. The average size in the five groups ranges from 46 cows on the small conventional farms to 705 cows on the largest freestall farms. The largest freestall farms averaged the highest milk output per cow and per worker, the lowest total cost of production and investment per cow, and the greatest returns to labor, management and capital. However, labor and management income per operator was the lowest for the large freestall farms.

Farm business charts have been computed for each of the five housing and herd size categories and are on pages 66-70. By comparing the farm's performance on the most appropriate business chart, a farm manager will be better able to evaluate his or her business performance.

### **Comparison of Farms by bST Usage**

Farms adopting bovine somatotropin (bST) sold more milk per cow and had larger herds (Table 65). Farms using bST were also more profitable by all measures except labor and management income per operator. However, they had higher operating costs of producing milk per hundredweight than farms not using bST.

Farms not using bST showed a 0.3 percent increase in pounds of milk sold per cow, from 18,400 pounds in 1999 to 18,461 pounds in 2003. Farms using bST increased milk sold per cow 3.6 percent, from 22,626 pounds per cow in 1999 to 23,445 pounds per cow in 2003. Farms that used bST in 1999 through 2003 were larger, and increased in size more rapidly than did farms not supplementing with bST. Farms not using bST increased by 17 cows, from an average of 113 cows in 1999 to 130 in 2003. Farms adopting bST increased by 105 cows, up to 461 cows in 2003. Farms not using bST saw a decrease in net farm income in 2003 but both groups saw an increase in net worth. Debt to asset ratio and debt per cow changed very little over the study period. The reader is again reminded that bST is not solely responsible for the total changes, size and other factors are also significant.

### **Comparison of Data, Same Farms, 1994 - 2003**

Follow ten years of growth, change and progress made by 69 New York DFBS farms in Table 66, pages 72 and 73. Milk receipts per hundredweight are lower by \$0.25 and profitability is significantly lower in 2003 when compared to 1994. Care should be exercised in using these data to indicate change in the dairy industry since the composition of the sample of farms is different from the state as a whole, and there is considerable year-to-year variability in milk prices.

### **Receipts and Expenses per Hundredweight of Milk and Per Cow**

Average accrual receipts and expenses per cow and per hundredweight of milk sold are listed for 60 dairy farms selling less than 18,000 pounds of milk per cow, 64 farms with 18,000 to 22,000 pounds milk sold per cow, and 77 dairy farms selling 22,000 pounds and more in Table 67 on page 74. Table 68 on page 75 provides the same list of average accrual receipts and expenses for 61 farms averaging less than 80 cows per farm, 51 farms with 80 to 180 cows and 89 farms with 180 cows or more.

These data are very useful for forward planning or budgeting when a farmer or planner does not have complete and accurate data from his or her own farm business. It is important to use the costs and returns per unit of output that most closely fit the level of production and herd size that is included in the plan. For example, an expansion budget for a 20,000 pound herd should include higher feed costs per cow than a budget for an 18,000 pound herd. Herds with more than 180 cows must budget higher labor costs per cow than smaller herds. These data should also be adjusted to the operating characteristics of the farm being budgeted. Most farms are not average. It is always better to have data on the specific farm being budgeted.

### **Intensive Grazing Farms vs. Non-Grazing Farms**

In 2003, 27 of the DFBS cooperators practiced intensive grazing. Intensive grazing means the dairy herd was on pasture for three months or more and was moved to a new paddock every third day or less and at least 30 percent of the forage was from pasture. The farms using intensive grazing are compared with a control group of non-grazing farms in Table 69. The control group is a selection of non-grazing dairy farms of similar size. In 2003, average profitability was higher on intensive grazing farms. Operating cost of producing milk was \$1.24 per hundredweight lower while total costs were 55 cents per hundredweight lower than the costs of production on the control farms. Table 69 also includes a comparison of 10 profitable grazing farms to 16 profitable non-grazing farms. A publication containing detailed information on New York farms using intensive grazing is available from the Cornell Cooperative Extension Resource Center, P. O. Box 3884, Ithaca, NY 14852-2884 or order copies via the website <http://www.cce.cornell.edu/store>

### **Comparison of Farms by Milking Frequency**

Thirty-four percent of the 201 DFBS farms utilized three times per day (3X) milking in 2003. Most of the remaining farms milked twice per day (2X). Two years of selected average business and cost of milk production factors from the two milking frequency groups are compared in Table 70.

In 2003, the 3X farms averaged 66 more cows per farm, sold 0.2 percent less milk per cow, increased the total cost of producing milk by 2.0 percent, and showed an average \$8,469 decrease in net farm income, compared to the 3X farm averages for 2002. The 2X farms decreased milk output per cow 3.8 percent, increased total production costs \$0.14 per hundredweight but increased average net farm income \$3,844 per farm in 2003 compared to 2002.

The 3X farms averaged 23 percent more milk per cow and 57 percent additional milk per worker in 2003 compared with the 2X farms. Similar differences were found in 2002. In 2003, the average total cost of producing milk was 7 percent lower on 3X farms than on 2X dairies, similar to 2002. On the average, farmers milking 3X sold more milk per cow and per worker, produced milk at lower costs per hundredweight and received higher returns for their labor, management and capital than the average dairy farmer milking 2X. However, milking frequency was not the only, and probably not the most important, factor that contributed to financial success on these dairy farms. Comparison of herd size, crop yields, labor and capital efficiency indicates there are other important management differences contributing to higher profits.

### **Comparison of Dairy Farm Business Data by Region**

Average farm business summary data from five regions of the State are compared in Tables 71 and 72. The Northern New York Region averaged the highest profitability. The largest average farm size and highest average rate of milk production came from the Western and Central Plain Region. Dairy farmers in this region have increased milk production 31 percent from 1993-2003, and they produced milk for an average total cost of \$14.25 per hundredweight in 2003. Total milk production has declined 9.7 percent from 1993-2003 in the Central Valleys Region (Figure 2). However, this is the region with the second highest return per hundredweight to labor, management and capital.

### **Other Comparisons**

Thirty-one dairy renter farms were smaller, on average, but averaged higher labor and management incomes than the average for 201 owned dairy farms (Table 73). A forthcoming publication contains detailed information on New York dairy renters (see <http://www.cce.cornell.edu/store>). Data for the top 10 percent of farms by rate of return on all capital without appreciation is presented in Table 74. Additional data for the top 10 percent of farms is presented in many of the first 46 tables of this publication. Summary data for the 201 specialized dairy farms are presented in Table 75.

Table 57.

## INCOME &amp; EXPENSE COMPARISON FOR

## FARMS BUYING MAJORITY OF FORAGES VERSUS SIMILAR SIZE FARMS GROWING FORAGES, 2003

Item	13 Farms Buying Majority of Forages		213 Similar Size Farms Growing Forages	
Number of cows per farm	283		276	
Pounds of Milk Sold	6,410,476		6,076,432	
<u>Income</u>	<u>Per Cow</u>	<u>Per Cwt.</u>	<u>Per Cow</u>	<u>Per Cwt.</u>
Milk sold	\$2,949	\$13.02	\$2,921	\$13.27
Dairy cattle	175	0.77	216	0.98
Dairy calves	71	0.32	46	0.21
Other livestock	1	0.01	5	0.02
Crops	-36	-0.16	101	0.46
Miscellaneous	<u>86</u>	<u>0.38</u>	<u>151</u>	<u>0.68</u>
Total Accrual Receipts	\$3,248	\$14.34	\$3,440	\$15.62
<u>Expenses</u>				
Hired labor	\$385	\$1.70	\$543	\$2.46
Dairy grain & concentrate	893	3.94	888	4.04
Dairy roughage	503	2.22	45	0.20
Nondairy	0	0.00	1	0.00
Professional nutritional services	0	0.00	4	0.02
Machinery hire, rent/lease	80	0.35	64	0.29
Machinery repairs/vehicle expense.	81	0.36	148	0.67
Fuel, oil & grease	49	0.22	75	0.34
Replacement livestock	100	0.44	30	0.14
Breeding	27	0.12	42	0.19
Veterinary & medicine	98	0.43	121	0.55
Milk marketing	148	0.65	155	0.70
Bedding	61	0.27	52	0.24
Milking supplies	57	0.25	67	0.30
Cattle lease/rent	0	0.00	2	0.01
Custom boarding	68	0.30	59	0.27
bST expense	20	0.09	54	0.25
Livestock professional fees	5	0.02	7	0.03
Other livestock expenses	29	0.13	27	0.12
Fertilizer & lime	2	0.01	62	0.28
Seeds & plants	7	0.03	46	0.21
Spray, other crop expenses	0	0.00	38	0.17
Crop professional fees	1	0.00	6	0.03
Land/bldg/fence repair	23	0.10	33	0.15
Taxes	18	0.08	48	0.22
Rent & lease	60	0.27	61	0.28
Insurance	23	0.10	35	0.16
Utilities	77	0.34	78	0.35
Interest paid	151	0.67	126	0.57
Other professional fees	15	0.07	13	0.06
Miscellaneous	<u>11</u>	<u>0.05</u>	<u>21</u>	<u>0.09</u>
Total Operating Expenses	\$2,995	\$13.22	\$2,949	\$13.39
Expansion livestock	\$61	\$0.27	\$64	\$0.29
Extraordinary expense	0	0.00	1	0.01
Machinery depreciation	99	0.43	166	0.75
Building depreciation	<u>97</u>	<u>0.43</u>	<u>116</u>	<u>0.53</u>
Total Accrual Expenses	\$3,252	\$14.36	\$3,296	\$14.97
Net Farm Income (without appreciation)	\$-4	\$-0.02	\$144	\$0.65

Table 58.

**SELECTED BUSINESS FACTORS FOR FARMS BUYING MAJORITY OF FORAGES  
VERSUS SIMILAR SIZE FARMS GROWING FORAGES, 2003**

Selected Factors	13 Farms Buying Majority of Forages	213 Similar Size Farms Growing Forages
<u>Size of Business</u>		
Average number of cows	283	276
Average number of heifers	201	210
Milk sold, lbs.	6,410,476	6,076,432
Worker equivalent	5.38	6.77
Total tillable acres	86	620
Tillable acres harvested	77	586
<u>Rates of Production</u>		
Milk sold per cow, lbs.	22,670	22,016
Hay DM per acre, tons	0.2	2.9
Corn silage per acre, tons	0.0	14.9
<u>Labor Efficiency &amp; Costs</u>		
Cows per worker	53	41
Milk sold/worker, lbs.	1,191,538	897,553
Hired labor cost/cwt.	\$1.70	\$2.46
Hired labor cost/worker	\$32,551	\$32,085
Hired labor cost as % of milk sales	13.0%	18.6%
<u>Cost Control</u>		
Grain & concentrate purchased as % of milk sales	30%	30%
Grain & concentrate per cwt. milk	\$3.94	\$4.04
Dairy feed & crop expense per cwt. milk	\$6.20	\$4.93
Labor & machinery costs/cow	\$919	\$1,259
Total farm operating costs per cwt. sold	\$13.22	\$13.39
Interest costs per cwt. milk	\$0.67	\$0.57
Milk marketing costs per cwt. milk sold	\$0.65	\$0.70
Operating cost of producing cwt. of milk	\$12.17	\$11.33
<u>Capital Efficiency(average for the year)</u>		
Farm capital per cow	\$5,179	\$6,835
Machinery & equipment per cow	\$715	\$1,271
Asset turnover ratio	0.65	0.53
<u>Income Generation</u>		
Gross milk sales per cow	\$2,949	\$2,921
Gross milk sales per cwt.	\$13.02	\$13.27
Net milk sales per cwt.	\$12.37	\$12.57
Dairy cattle sales per cow	\$175	\$216
Dairy calf sales per cow	\$71	\$46
<u>Profitability</u>		
Net farm income without appreciation	\$-1,067	\$39,761
Net farm income with appreciation	\$26,556	\$91,882
Labor & management income per operator/manager	\$-18,718	\$11,691
Rate of return on equity capital without appreciation	-13.9%	-2.2%
Rate of return on all capital without appreciation	-1.5%	0.6%
<u>Cash flow</u>		
Principal & interest payments per cow, 2003	\$482	\$555
Net cash flow	\$144,700	\$139,626
<u>Financial Summary</u>		
Farm net worth, end year	\$446,854	\$1,100,759
Farm net worth change from last year, %	-8.5%	3.8%
Debt to asset ratio	0.70	0.43
Farm debt per cow	\$3,616	\$3,000

Table 59.

**SELECTED BUSINESS FACTORS BY TYPE OF BARN AND HERD SIZE**  
**188 New York Dairy Farms, 2003**

Item	Farms with:	Conventional		Freestall		
		<= 60 Cows	>60 Cows	<=150 Cows	151-300 Cows	≥300 Cows
Number of farms		26	39	27	30	66
<u>Cropping Program Analysis</u>						
Total Tillable acres		170	277	325	570	1,257
Tillable acres rented <sup>64</sup>		61	127	163	285	632
Hay crop acres <sup>64</sup>		110	169	186	288	561
Corn silage acres <sup>64</sup>		27	49	80	161	538
Hay crop, tons DM/acre		2.3	2.4	2.5	3.1	3.3
Corn silage, tons/acre		11.8	12.5	13.1	16.6	16.3
Oats, bushels/acre		48	59	0	27	62
Forage DM per cow, tons		8.4	7.7	8.1	8.5	7.3
Tillable acres/cow		3.7	3.3	3.1	2.6	1.8
Fertilizer & lime expense/tillable acre		\$12.89	\$24.61	\$20.68	\$29.93	\$30.61
Total machinery costs		\$26,855	\$56,825	\$64,268	\$121,857	\$324,672
Machinery cost/tillable acre		\$158	\$205	\$198	\$214	\$258
<u>Dairy Analysis</u>						
Number of cows		46	84	104	218	705
Number of heifers		35	65	83	172	536
Milk sold, lbs.		810,510	1,543,699	1,884,952	4,754,403	16,385,330
Milk sold/cow, lbs.		17,694	18,456	18,131	21,763	23,243
Operating cost of producing milk/cwt.		\$9.04	\$10.25	\$10.87	\$11.40	\$11.62
Total cost of producing milk/cwt.		\$18.00	\$16.28	\$16.62	\$15.01	\$14.08
Price/cwt. milk sold		\$13.11	\$13.05	\$13.48	\$13.24	\$13.21
Purchased dairy feed/cow		\$722	\$800	\$817	\$924	\$993
Purchased dairy feed/cwt. milk		\$4.10	\$4.36	\$4.51	\$4.24	\$4.27
Purchased grain & concentrate as % of milk receipts		30%	31%	32%	30%	30%
Purchased feed & crop expense/cwt milk		\$4.70	\$5.19	\$5.31	\$5.03	\$4.89
<u>Capital Efficiency</u>						
Farm capital/worker		\$218,878	\$260,889	\$281,215	\$283,223	\$290,369
Farm capital/cow		\$10,325	\$8,510	\$8,707	\$7,665	\$6,256
Farm capital/tillable acre owned		\$4,398	\$4,734	\$5,590	\$5,863	\$7,057
Real estate/cow		\$5,428	\$3,665	\$4,071	\$3,135	\$2,429
Machinery investment/cow		\$2,165	\$1,953	\$1,799	\$1,531	\$1,035
Asset turnover ratio		0.31	0.38	0.37	0.47	0.59
<u>Labor Efficiency</u>						
Worker equivalent		2.17	2.74	3.22	5.90	15.19
Operator/manager equivalent		1.41	1.47	1.75	1.96	2.24
Milk sold/worker, lbs.		373,507	563,394	585,389	805,831	1,078,692
Cows/worker		21	31	32	37	46
Labor cost/cow		\$1,199	\$803	\$836	\$751	\$714
Labor cost/tillable acre		\$325	\$243	\$268	\$287	\$401
<u>Profitability &amp; Balance Sheet Analysis</u>						
Net farm income (without appreciation)		\$22,587	\$20,158	\$22,586	\$30,303	\$63,716
Labor & management income/operator		\$ -6,937	\$ -11,161	\$ -10,318	\$ -13,207	\$ -22,822
Rate return on all capital with appreciation		-0.8%	0.1%	0.4%	0.7%	4.1%
Farm debt/cow		\$2,169	\$2,187	\$2,707	\$2,897	\$3,195
Percent equity		79%	74%	69%	63%	50%

<sup>64</sup>Average of all farms, not only those reporting data.

Table 60.

**FARM BUSINESS CHART FOR SMALL CONVENTIONAL STALL DAIRY FARMS**  
**26 Conventional Stall Dairy Farms with 60 or Less Cows, New York, 2003**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
3.67	56	1,109,882	23,136	3.7	24	33	667,243
2.86	53	1,043,120	22,206	3.0	20	27	560,048
2.30	51	978,532	20,794	2.8	17	26	508,185
2.02	49	915,550	19,922	2.5	14	25	442,702
1.96	47	824,668	18,211	2.3	12	23	357,871
-----							
1.87	43	734,172	15,399	2.1	11	20	325,700
1.83	41	668,343	14,083	1.9	9	19	302,022
1.71	38	573,247	13,178	1.8	7	18	268,606
1.45	35	496,154	12,767	1.3	7	17	255,769
1.17	32	390,003	10,395	0.9	6	12	160,271
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$273	16%	\$325	\$1,115	\$397	\$3.18		
391	22	360	1,410	485	3.66		
490	24	391	1,458	569	3.74		
560	25	433	1,507	705	3.92		
618	26	488	1,593	801	4.17		
-----							
699	27	596	1,731	856	4.32		
755	29	617	1,792	901	4.67		
780	33	716	1,891	959	5.08		
894	35	753	2,211	1,045	6.15		
1,061	52	900	2,834	1,188	7.10		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Operating Cost Producing Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Appreciation		Labor & Mgmt. Income Per Operator	Change in Net Worth w/Appreciation	
			Total	Per Cow			
\$3,037	\$5.97	\$13.15	\$46,599	\$1,177	\$25,697	\$55,379	
2,910	6.96	13.37	42,440	905	13,350	45,719	
2,752	7.45	13.83	37,848	778	8,739	27,900	
2,655	7.98	14.25	32,302	722	3,426	14,234	
2,393	8.16	15.62	26,349	602	-2,976	5,441	
-----							
2,030	8.54	17.61	14,136	337	-10,582	2,376	
1,846	8.81	18.96	8,029	188	-15,409	358	
1,740	10.01	22.12	3,027	57	-30,697	-2,605	
1,576	11.36	23.03	-5,656	-139	-58,431	-17,431	
1,342	13.01	28.23	-11,279	-226	-75,237	-22,077	

Table 61.

**FARM BUSINESS CHART FOR LARGE CONVENTIONAL STALL DAIRY FARMS**  
**39 Conventional Stall Dairy Farms with More Than 60 Cows, New York, 2003**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
4.33	128	2,480,488	24,587	3.8	22	46	913,187
4.02	113	2,064,677	22,223	3.3	17	42	767,520
3.26	95	1,792,182	20,781	3.0	16	37	716,061
3.03	84	1,592,234	19,762	2.8	16	34	649,028
2.80	77	1,495,290	18,590	2.6	15	32	572,800
-----							
2.33	75	1,342,008	17,444	2.2	15	30	543,307
2.19	71	1,247,751	16,558	2.1	14	29	504,377
2.02	67	1,183,972	16,090	1.8	13	27	459,061
1.72	61	1,121,068	14,621	1.4	12	24	408,766
1.39	60	975,197	13,998	1.1	9	19	353,789
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$337	15%	\$187	\$725	\$601	\$3.46		
534	24	397	1,048	706	4.01		
616	27	438	1,183	809	4.32		
689	30	491	1,280	859	4.59		
753	31	529	1,366	941	4.98		
-----							
797	31	560	1,421	1,013	5.37		
851	33	619	1,490	1,054	5.74		
897	35	751	1,584	1,102	5.94		
957	42	877	1,870	1,144	6.28		
1,118	49	1,601	2,602	1,362	7.74		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Operating Cost Producing Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Appreciation		Labor & Mgmt. Income Per Operator	Change in Net Worth w/Appreciation	
			Total	Per Cow			
\$3,154	\$6.25	\$12.12	\$84,474	\$895	\$36,504	\$104,513	
2,909	7.93	13.07	50,631	686	16,000	52,381	
2,731	8.70	13.89	40,089	541	7,151	33,627	
2,566	9.43	14.69	33,048	365	1,357	26,091	
2,406	9.86	16.07	22,734	236	-4,643	14,081	
-----							
2,306	10.36	16.54	13,722	174	-11,036	7,149	
2,205	10.95	17.51	7,341	91	-19,119	1,584	
2,116	12.32	18.57	-2,702	-30	-33,528	-4,119	
1,932	13.16	19.60	-19,704	-263	-54,936	-16,837	
1,768	15.23	22.56	-44,131	-681	-110,876	-47,078	

Table 62.

**FARM BUSINESS CHART FOR SMALL FREESTALL DAIRY FARMS**  
**27 Freestall Barn Dairy Farms with 150 or Less Cows, New York, 2003**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
4.73	145	3,110,143	23,536	4.8	24	54	895,796
4.14	133	2,671,575	21,628	3.5	19	39	797,982
4.02	127	2,368,929	20,373	3.0	17	36	709,995
3.72	120	2,249,915	18,492	2.7	17	35	618,377
3.23	109	1,895,226	17,509	2.5	16	32	586,826
-----							
2.94	96	1,499,022	16,690	2.3	15	30	545,695
2.56	79	1,311,013	15,422	2.0	14	29	490,715
2.16	76	1,155,130	14,195	1.9	13	28	436,366
1.92	66	1,081,992	13,336	1.7	13	25	396,636
1.45	50	551,000	10,404	0.9	10	21	218,126
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$361	19%	\$322	\$902	\$465	\$3.21		
420	23	350	989	542	3.67		
489	25	436	1,231	674	3.99		
567	26	472	1,284	706	4.43		
641	29	499	1,360	871	4.82		
-----							
816	30	525	1,459	1,015	5.39		
861	33	606	1,517	1,087	5.57		
902	35	680	1,547	1,161	6.01		
980	38	760	1,656	1,221	6.88		
1,110	45	1,057	2,118	1,288	8.17		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Operating Cost Producing Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Appreciation		Labor & Mgmt. Income Per Operator	Change in Net Worth w/Appreciation	
			Total	Per Cow			
\$3,177	\$6.02	\$12.86	\$76,318	\$738	\$36,962	\$103,998	
2,914	7.94	13.29	58,309	615	16,124	63,980	
2,701	8.43	14.28	50,960	483	6,362	38,808	
2,480	8.92	14.67	42,603	415	2,334	23,216	
2,334	10.15	15.23	35,178	385	-2,419	14,387	
-----							
2,218	10.67	15.79	26,487	293	-6,943	4,265	
2,056	11.24	16.47	8,296	80	-15,163	-7,359	
2,011	12.02	17.95	-8,263	-82	-42,352	-28,375	
1,853	12.80	21.37	-50,018	-519	-102,907	-29,024	
1,396	17.40	28.93	-84,038	-828	-139,277	-56,975	

Table 63.

**FARM BUSINESS CHART FOR MEDIUM FREESTALL DAIRY FARMS**  
**30 Freestall Barn Dairy Farms with 151-300 Cows, New York, 2003**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
8.99	293	7,180,933	25,924	4.8	24	54	1,177,351
7.25	281	6,102,208	23,808	4.5	21	46	995,532
6.54	265	5,895,258	23,241	4.0	19	43	944,900
6.11	251	5,743,313	22,686	3.8	18	41	902,975
6.00	236	5,434,222	22,071	3.4	17	40	857,952
-----							
5.63	218	4,158,601	21,635	2.9	17	40	829,656
5.35	172	3,746,069	21,023	2.5	16	35	747,407
5.05	163	3,431,341	19,855	2.3	14	31	637,721
4.21	157	3,219,276	18,690	2.1	13	28	547,672
3.86	150	2,632,809	16,255	1.4	11	25	513,789
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$574	19%	\$358	\$922	\$793	\$3.64		
699	25	422	1,030	880	4.16		
771	28	462	1,134	930	4.42		
809	29	507	1,205	975	4.58		
826	30	556	1,266	1,030	4.74		
-----							
879	31	578	1,285	1,090	5.15		
908	33	603	1,355	1,149	5.53		
961	36	624	1,473	1,223	5.73		
1,072	37	703	1,655	1,304	6.05		
1,189	42	864	1,902	1,437	6.65		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Operating Cost Producing Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Appreciation		Labor & Mgmt. Income Per Operator	Change in Net Worth w/Appreciation	
			Total	Per Cow			
\$3,386	\$8.08	\$11.91	\$175,042	\$857	\$73,658	\$312,856	
3,111	9.86	13.22	100,535	460	31,961	125,906	
3,052	10.29	13.87	76,142	334	14,850	60,892	
2,987	10.86	13.99	55,487	247	5,455	28,321	
2,937	11.26	14.68	40,322	156	-5,366	23,835	
-----							
2,921	11.58	15.33	25,071	106	-22,585	12,905	
2,782	12.09	15.58	1,516	7	-42,634	1,447	
2,667	12.22	16.35	-20,509	-111	-65,518	-21,899	
2,494	12.91	18.25	-53,100	-267	-82,302	-64,426	
2,167	15.53	19.28	-97,478	-544	-123,972	-143,748	

Table 64.

**FARM BUSINESS CHART FOR LARGE FREESTALL DAIRY FARMS**  
**66 Freestall Barn Dairy Farms with 300 or More Cows, New York, 2003**

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- Ament	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
33.75	1,828	44,093,850	26,691	5.0	23	69	1,464,712
22.65	1,053	25,109,680	25,390	4.3	20	55	1,276,723
18.53	809	19,661,130	24,473	4.1	19	52	1,189,686
14.73	641	15,086,950	23,711	3.8	18	50	1,127,441
12.89	545	12,921,890	23,260	3.4	18	47	1,071,720
-----							
11.81	497	10,805,160	22,849	3.1	17	43	1,000,171
10.56	433	8,912,230	22,116	2.9	16	41	951,196
9.11	386	8,323,082	21,118	2.7	15	37	850,497
7.99	351	7,596,224	20,099	2.3	14	35	725,394
6.05	316	6,448,700	16,604	1.7	12	28	649,540
-----							
Cost Control							
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk		
\$503	19%	\$257	\$781	\$767	\$3.59		
718	26	368	946	885	4.32		
785	27	390	1,022	991	4.49		
838	28	424	1,079	1,031	4.65		
876	30	455	1,123	1,082	4.75		
-----							
925	30	488	1,199	1,128	4.90		
971	32	520	1,265	1,180	5.11		
1,013	33	558	1,341	1,243	5.28		
1,094	36	608	1,435	1,294	5.52		
1,189	38	701	1,549	1,451	6.13		
-----							
Value and Cost of Production			Profitability				
Milk Receipts Per Cow	Operating Cost Producing Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Appreciation		Labor & Mgmt. Income Per Operator	Change in Net Worth w/Appreciation	
			Total	Per Cow			
\$3,626	\$9.58	\$12.68	\$347,189	\$492	\$114,393	\$510,949	
3,357	10.30	13.07	218,955	346	44,915	225,029	
3,206	10.52	13.41	171,828	246	25,104	162,642	
3,106	10.82	13.62	114,721	167	-5,500	112,556	
3,024	11.21	13.87	69,326	122	-13,847	51,904	
-----							
2,955	11.56	14.23	38,897	70	-28,499	25,247	
2,888	12.08	14.56	-3,410	-4	-50,616	-12,799	
2,758	12.41	14.96	-45,167	-65	-75,580	-44,352	
2,645	12.73	15.35	-120,296	-216	-156,252	-93,968	
2,310	13.30	15.92	-251,318	-362	-271,681	-311,217	

Table 65.

**bST NON-USERS VS. USERS**  
**Same 87 Farms, 1999 - 2003**

Selected Factors	37 Farms Not Using bST in 1999 - 2003					50 Farms Using bST in 1999 - 2003				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
<b>Size of Business</b>										
Average number of cows	113	121	124	128	130	356	376	403	430	461
Average number of heifers	83	89	92	91	92	278	287	312	338	356
Milk sold, cwt.	20,881	21,876	22,875	24,646	23,939	80,473	85,532	93,044	101,422	108,058
Worker equivalent	3.30	3.45	3.55	3.67	3.61	8.61	8.91	9.66	10.18	10.92
Total tillable acres	299	307	315	323	323	764	786	837	893	925
<b>Rates of Production</b>										
Milk sold per cow, lbs.	18,400	18,148	18,440	19,234	18,461	22,626	22,778	23,089	23,613	23,445
Hay DM per acre, tons	2.3	2.6	2.2	2.3	2.3	3.2	3.6	3.3	3.4	3.3
Corn silage per acre, tons	11	10	11	9	12	17	16	16	15	17
<b>Labor Efficiency</b>										
Cows per worker	34	35	35	35	36	41	42	42	42	42
Milk sold per worker, lbs.	633,284	633,847	644,376	670,666	663,130	934,542	960,067	962,907	995,989	989,544
<b>Cost Control</b>										
Grain & concentrate purchased as percent of milk sales	25%	27%	24%	31%	33%	24%	27%	24%	29%	30%
Dairy feed and crop expense per cwt. milk	\$5.08	\$4.78	\$5.19	\$5.09	\$5.40	\$4.55	\$4.55	\$4.81	\$4.62	\$4.83
Labor and mach. costs per cow	\$1,270	\$1,285	\$1,419	\$1,463	\$1,462	\$1,200	\$1,241	\$1,322	\$1,317	\$1,301
Operating cost of producing milk per cwt.	\$10.72	\$9.70	\$11.41	\$9.89	\$10.94	\$11.28	\$11.16	\$11.99	\$10.87	\$11.36
<b>Capital Efficiency (avg. for year)</b>										
Farm capital per cow	\$6,945	\$7,086	\$7,483	\$7,802	\$7,962	\$6,754	\$6,961	\$7,025	\$7,054	\$7,074
Machinery and equip. per cow	\$1,414	\$1,516	\$1,599	\$1,686	\$1,675	\$1,265	\$1,323	\$1,347	\$1,379	\$1,384
Asset turnover ratio	0.51	0.47	0.49	0.40	0.40	0.63	0.57	0.67	0.55	0.55
<b>Profitability</b>										
Net farm income without apprec.	\$62,714	\$45,370	\$74,420	\$32,984	\$27,459	\$211,485	\$94,157	\$232,982	\$49,504	\$56,672
Net farm income with apprec.	\$77,954	\$59,017	\$106,918	\$41,906	\$53,530	\$258,829	\$151,485	\$350,561	\$101,021	\$131,316
Labor & management income per operator/manager	\$19,871	\$6,040	\$23,616	\$-3,623	\$-8,043	\$76,047	\$863	\$84,350	\$-30,379	\$-30,145
Rate return on equity capital with appreciation	-6.2%	2.2%	8.4%	-4.0%	-1.6%	13.2%	5.0%	16.4%	0.7%	2.3%
Rate return on all capital with appreciation	6.0%	4.5%	7.3%	-0.3%	0.3%	10.1%	5.9%	12.1%	2.5%	3.1%
<b>Financial Summary (end of year)</b>										
Farm net worth	\$513,740	\$535,557	\$610,878	\$614,828	\$643,807	\$1,439,622	\$1,477,076	\$1,697,855	\$1,668,176	\$1,707,567
Debt to asset ratio	0.31	0.30	0.28	0.29	0.28	0.38	0.40	0.38	0.40	0.41
Farm debt per cow	\$1,971	\$1,979	\$2,005	\$2,092	\$2,122	\$2,456	\$2,624	\$2,593	\$2,641	\$2,822

Table 66.

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 69 New York Dairy Farms, 1994 - 2003**

Selected Factors	1994	1995	1996	1997
Milk receipts per cwt. milk	\$13.48	\$13.10	\$15.03	\$13.71
<u>Size of Business</u>				
Average number of cows	199	221	240	257
Average number of heifers	154	166	174	191
Milk sold, cwt.	41,723	46,870	50,756	56,097
Worker equivalent	5.36	5.91	6.13	6.52
Total tillable acres	489	523	555	589
<u>Rates of Production</u>				
Milk sold per cow, lbs.	21,014	21,182	21,150	21,792
Hay DM per acre, tons	3.4	3.1	3.0	2.7
Corn silage per acre, tons	16	16	16	16
<u>Labor Efficiency</u>				
Cows per worker	37	37	39	39
Milk sold per worker, lbs.	778,408	793,069	827,994	860,386
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	28%	26%	30%	32%
Dairy feed & crop expense per cwt. milk	\$4.64	\$4.26	\$5.37	\$5.33
Operating cost of producing cwt. milk	\$10.45	\$10.36	\$12.01	\$11.63
Total cost of producing cwt. milk	\$11.43	\$13.25	\$14.87	\$14.26
Hired labor cost per cwt.	\$2.05	\$2.03	\$2.16	\$2.09
Interest paid per cwt.	\$0.78	\$0.88	\$0.86	\$0.89
Labor & machinery costs per cow	\$999	\$990	\$1,064	\$1,033
Replacement livestock expense	\$7,825	\$6,610	\$9,047	\$10,671
Expansion livestock expense	\$18,529	\$15,244	\$19,728	\$15,138
<u>Capital Efficiency</u>				
Farm capital per cow	\$6,306	\$6,137	\$6,147	\$6,183
Machinery & equipment per cow	\$1,105	\$1,072	\$1,078	\$1,104
Real estate per cow	\$2,708	\$2,619	\$2,604	\$2,555
Livestock investment per cow	\$1,547	\$1,512	\$1,498	\$1,508
Asset turnover ratio	0.54	0.53	0.59	0.55
<u>Profitability</u>				
Net farm income without appreciation	\$85,395	\$82,874	\$101,015	\$64,744
Net farm income with appreciation	\$100,377	\$96,905	\$114,128	\$71,284
Labor & management income per operator/manager	\$24,610	\$21,083	\$29,816	\$8,660
Rate return on:				
Equity capital with appreciation	7.0%	5.9%	7.4%	2.3%
All capital with appreciation	7.0%	6.6%	7.4%	4.5%
All capital without appreciation	5.8%	5.6%	6.5%	4.1%
<u>Financial Summary, End Year</u>				
Farm net worth	\$803,558	\$844,438	\$911,618	\$923,186
Change in net worth with appreciation	\$46,877	\$45,333	\$61,487	\$10,897
Debt to asset ratio	0.38	0.40	0.41	0.43
Farm debt per cow	\$2,361	\$2,380	\$2,489	\$2,638

Table 66. (continued)

**COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 69 New York Dairy Farms, 1994 - 2003**

1998	1999	2000	2001	2002	2003
\$15.66	\$15.06	\$13.36	\$15.88	\$12.88	\$13.23
275	289	304	326	342	360
210	218	230	247	265	274
59,376	64,491	68,270	72,715	78,599	81,838
6.79	7.14	7.34	7.86	8.19	8.59
612	641	658	686	715	738
21,630	22,298	22,473	22,292	22,981	22,753
3.3	3.2	3.5	3.2	3.4	3.0
21	16	15	17	15	16
41	40	41	41	42	42
874,466	903,232	930,106	925,128	959,700	952,712
25%	24%	27%	25%	29%	30%
\$4.97	\$4.70	\$4.54	\$4.92	\$4.74	\$5.00
\$11.43	\$11.15	\$11.25	\$12.36	\$11.10	\$11.56
\$14.33	\$14.10	\$14.22	\$15.42	\$14.11	\$14.35
\$2.21	\$2.32	\$2.37	\$2.55	\$2.63	\$2.65
\$0.88	\$0.77	\$0.91	\$0.81	\$0.59	\$0.54
\$1,109	\$1,198	\$1,214	\$1,287	\$1,301	\$1,259
\$11,834	\$15,155	\$16,888	\$14,768	\$12,220	\$15,917
\$15,884	\$15,452	\$25,976	\$29,106	\$13,592	\$13,105
\$6,262	\$6,511	\$6,651	\$6,694	\$6,807	\$6,672
\$1,159	\$1,231	\$1,284	\$1,275	\$1,294	\$1,256
\$2,485	\$2,511	\$2,510	\$2,532	\$2,559	\$2,515
\$1,512	\$1,549	\$1,608	\$1,694	\$1,785	\$1,781
0.63	0.61	0.56	0.64	0.54	0.55
\$183,801	\$176,834	\$61,805	\$160,820	\$33,523	\$38,712
\$223,266	\$217,558	\$112,363	\$251,346	\$79,081	\$100,464
\$69,092	\$60,454	\$-1,226	\$49,197	\$-21,035	\$-17,943
16.9%	14.2%	4.4%	14.6%	1.3%	2.8%
12.8%	11.1%	5.7%	11.3%	2.7%	3.4%
10.5%	8.9%	3.2%	7.2%	0.8%	0.9%
\$1,075,618	\$1,185,447	\$1,204,600	\$1,370,001	\$1,354,464	\$1,390,243
\$154,908	\$120,391	\$20,098	\$159,492	\$-20,565	\$32,581
0.40	0.40	0.41	0.40	0.42	0.37
\$2,580	\$2,650	\$2,700	\$2,745	\$2,859	\$2,624

Table 67.

**FARM RECEIPTS AND EXPENSES PER COW AND PER  
HUNDREDWEIGHT FOR THREE LEVELS OF MILK PRODUCTION  
201 New York Dairy Farms, 2003**

Item	60 Dairy Farms Milk/Cow <18,000#		64 Dairy Farms Milk/Cow 18,000-21,999#		77 Dairy Farms Milk/Cow ≥22,000#	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<u>ACCRUAL RECEIPTS</u>						
Milk sales	\$2,060	\$13.74	\$2,718	\$13.25	\$3,916	\$13.18
Dairy cattle	122	0.82	157	0.76	258	1.07
Dairy calves	55	0.36	44	0.22	47	0.19
Other livestock	3	0.02	5	0.02	3	0.01
Crops	55	0.37	77	0.38	98	0.40
Government receipts	201	1.34	127	0.62	56	0.23
All other	<u>72</u>	<u>0.48</u>	<u>40</u>	<u>0.19</u>	<u>50</u>	<u>0.20</u>
TOTAL ACCRUAL RECEIPTS	\$2,567	\$17.12	\$3,167	\$15.44	\$3,707	\$15.29
<u>ACCRUAL EXPENSES</u>						
<u>Labor</u> : Hired	\$282	\$1.88	\$453	\$2.21	\$648	\$2.67
<u>Feed</u> : Dairy grain & concentrate	653	4.36	813	3.96	956	3.94
Dairy roughage	44	0.30	37	0.18	79	0.33
Nondairy	4	0.03	0	0.00	0	0.00
Professional nutritional services	0	0.00	2	0.01	5	0.02
<u>Machinery</u> : Mach. hire, rent & lease	59	0.39	57	0.28	63	0.26
Machinery repairs & vehicle expense	163	1.09	134	0.65	143	0.59
Fuel, oil & grease	73	0.48	76	0.37	72	0.30
<u>Livestock</u> : Replacement livestock	36	0.24	30	0.15	34	0.14
Breeding	26	0.17	38	0.19	45	0.19
Vet & medicine	66	0.44	109	0.53	140	0.58
Milk marketing	132	0.88	139	0.68	163	0.67
Bedding	22	0.14	40	0.20	66	0.27
Milking supplies	55	0.36	61	0.30	71	0.29
Cattle lease & rent	2	0.02	3	0.01	2	0.01
Custom boarding	29	0.19	88	0.43	83	0.34
bST expense	15	0.10	25	0.12	75	0.31
Livestock professional fees	6	0.04	6	0.03	6	0.03
Other livestock expense	26	0.17	26	0.13	26	0.11
<u>Crops</u> : Fertilizer & lime	67	0.45	58	0.28	57	0.24
Seeds & plants	31	0.21	51	0.24	45	0.19
Spray & other crop expense	24	0.16	30	0.15	41	0.17
Crop professional fees	3	0.02	5	0.02	6	0.03
<u>Real Estate</u> : Land, building & fence repair	27	0.18	29	0.14	34	0.14
Taxes	65	0.43	57	0.28	42	0.17
Rent & lease	37	0.25	59	0.29	56	0.23
<u>Other</u> : Insurance	41	0.27	34	0.16	33	0.14
Utilities (farm share)	74	0.49	75	0.37	78	0.32
Interest paid	110	0.74	136	0.67	124	0.51
Other professional fees	7	0.05	14	0.07	18	0.07
Miscellaneous	<u>19</u>	<u>0.12</u>	<u>15</u>	<u>0.07</u>	<u>22</u>	<u>0.09</u>
TOTAL OPERATING EXPENSES	\$2,198	\$14.66	\$2,700	\$13.17	\$3,233	\$13.33
Expansion livestock	12	0.08	24	0.12	89	0.37
Extraordinary expense	4	0.03	0	0.00	1	0.01
Machinery depreciation	138	0.92	178	0.87	154	0.64
Building depreciation	<u>51</u>	<u>0.34</u>	<u>126</u>	<u>0.61</u>	<u>123</u>	<u>0.51</u>
TOTAL ACCRUAL EXPENSES	\$2,403	\$16.03	\$3,029	\$14.77	\$3,601	\$14.85

Table 68.

**FARM RECEIPTS AND EXPENSES PER COW AND PER  
HUNDREDWEIGHT FOR THREE HERD SIZE CATEGORIES  
201 New York Dairy Farms, 2003**

Item	61 Dairy Farms with <80 Cows		51 Dairy Farms with 80-180 Cows		89 Dairy Farms with ≥ 180 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<u>ACCRUAL RECEIPTS</u>						
Milk sales	\$2,336	\$13.10	\$2,537	\$13.27	\$3,043	\$13.24
Dairy cattle	127	0.71	148	0.77	233	1.01
Dairy calves	51	0.29	26	0.14	49	0.21
Other livestock	6	0.03	1	0.01	4	0.02
Crops	37	0.21	126	0.66	87	0.38
Government receipts	270	1.51	271	1.42	55	0.24
All other	<u>48</u>	<u>0.27</u>	<u>82</u>	<u>0.43</u>	<u>46</u>	<u>0.20</u>
TOTAL ACCRUAL RECEIPTS	\$2,873	\$16.12	\$3,191	\$16.69	\$3,516	\$15.30
<u>ACCRUAL EXPENSES</u>						
<u>Labor</u> : Hired	\$139	\$0.78	\$383	\$2.01	\$609	\$2.65
<u>Feed</u> : Dairy grain & concentrate	736	4.13	766	4.00	912	3.97
Dairy roughage	64	0.36	20	0.10	70	0.31
Nondairy	0	0.00	0	0.00	1	0.00
Professional nutritional services	1	0.01	1	0.00	4	0.02
<u>Machinery</u> : Mach. hire, rent & lease	48	0.27	70	0.36	61	0.27
Mach. repairs & vehicle expense	179	1.00	198	1.04	133	0.58
Fuel, oil & grease	82	0.46	94	0.49	70	0.31
<u>Livestock</u> : Replacement livestock	54	0.30	16	0.08	34	0.15
Breeding	46	0.26	38	0.20	41	0.18
Vet & medicine	81	0.45	97	0.51	130	0.57
Milk marketing	159	0.89	159	0.83	153	0.66
Bedding	23	0.13	31	0.16	59	0.26
Milking supplies	63	0.35	67	0.35	67	0.29
Cattle lease & rent	0	0.00	1	0.01	3	0.01
Custom boarding	19	0.11	42	0.22	87	0.38
bST expense	13	0.07	30	0.16	62	0.27
Livestock professional fees	13	0.07	10	0.05	5	0.02
Other livestock expense	50	0.28	35	0.19	23	0.10
<u>Crops</u> : Fertilizer & lime	63	0.35	75	0.39	56	0.24
Seeds & plants	29	0.16	52	0.27	45	0.20
Spray & other crop expense	29	0.16	38	0.20	37	0.16
Crop professional fees	1	0.01	3	0.02	6	0.03
<u>Real Estate</u> : Land, building & fence repair	44	0.25	41	0.22	30	0.13
Taxes	91	0.51	74	0.39	42	0.18
Rent & lease	39	0.22	50	0.26	56	0.24
<u>Other</u> : Insurance	48	0.27	54	0.28	30	0.13
Utilities (farm share)	102	0.57	94	0.49	73	0.32
Interest paid	109	0.61	107	0.56	129	0.56
Other professional fees	8	0.05	10	0.05	17	0.07
Miscellaneous	<u>25</u>	<u>0.14</u>	<u>22</u>	<u>0.12</u>	<u>19</u>	<u>0.08</u>
TOTAL OPERATING EXPENSES	\$2,358	\$13.23	\$2,679	\$14.01	\$3,065	\$13.34
Expansion livestock	7	0.04	10	0.05	75	0.33
Extraordinary expense	0	0.00	1	0.01	1	0.01
Machinery depreciation	165	0.93	206	1.08	152	0.66
Building depreciation	<u>59</u>	<u>0.33</u>	<u>81</u>	<u>0.42</u>	<u>124</u>	<u>0.54</u>
TOTAL ACCRUAL EXPENSES	\$2,589	\$14.52	\$2,977	\$15.57	\$3,418	\$14.87

Table 69.

**INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS**  
**New York State Dairy Farms, 2003**

Item	All Intensive Grazing Farms <sup>65</sup>	Non-Grazing Farms <sup>66</sup>	Profitable Grazing Farms <sup>67</sup>	Profitable Non- Grazing Farms <sup>68</sup>
Number of farms	27	76	10	16
<b><u>Business Size &amp; Production</u></b>				
Number of cows	98	99	66	57
Number of heifers	71	75	47	37
Milk sold, lbs.	1,536,133	1,954,323	1,234,196	1,108,671
Milk sold/cow, lbs.	15,728	19,741	18,728	19,471
Milk plant test, % butterfat	3.78%	3.50%	3.75%	3.66%
Cull rate	25.6%	30.9%	27.3%	25.4%
Tillable acres, total	256	322	195	170
Hay crop, tons DM/acre	2.3	2.5	2.2	2.4
Corn silage, tons/acre	9.7	14.6	15.7	13.8
Forage DM/cow, tons	5.7	8.2	6.1	7.1
<b><u>Labor &amp; Capital Efficiency</u></b>				
Worker equivalent	2.64	3.32	2.54	2.15
Milk sold/worker, lbs.	581,869	588,652	485,904	515,661
Cows/worker	37	30	26	27
Farm capital/worker	\$233,569	\$250,388	\$199,922	\$185,983
Farm capital/cow	\$6,292	\$8,397	\$7,694	\$7,015
Farm capital/cwt. milk	\$40	\$43	\$41	\$36
Machinery & equipment per cow	\$1,515	\$1,862	\$1,523	\$1,807
<b><u>Milk Production Costs &amp; Returns</u></b>				
Selected costs/cwt.:				
Hired labor	\$1.07	\$1.32	\$1.33	\$0.39
Grain & concentrate	\$4.21	\$4.03	\$3.65	\$3.69
Purchased roughage	\$0.56	\$0.29	\$0.40	\$0.43
Replacements purchased	\$0.14	\$0.24	\$0.16	\$0.13
Vet & medicine	\$0.38	\$0.49	\$0.32	\$0.41
Milk marketing	\$0.94	\$0.86	\$1.05	\$0.79
Other dairy expenses	\$1.01	\$1.28	\$1.08	\$1.25
Operating cost of producing milk/cwt.	\$9.25	\$10.49	\$8.40	\$7.83
Total labor cost/cwt.	\$5.29	\$4.91	\$4.82	\$5.27
Operator resources/cwt.	\$3.45	\$3.53	\$4.39	\$4.70
Total cost of producing milk/cwt.	\$15.94	\$16.49	\$14.48	\$14.52
Average farm price/cwt.	\$13.51	\$13.16	\$13.55	\$12.96
<b><u>Related Cost Factors</u></b>				
Hired labor/cow	\$185	\$261	\$249	\$74
Total labor/cow	\$882	\$916	\$901	\$998
Purchased dairy feed/cow	\$799	\$831	\$757	\$802
Purchased grain & concentrate as % of milk receipts	31%	31%	27%	28%
Vet & medicine/cow	\$65	\$98	\$60	\$79
Machinery costs/cow	\$510	\$599	\$495	\$526
Feed & crop exp./cwt.	\$5.26	\$5.12	\$4.61	\$4.66
<b><u>Profitability Analysis</u></b>				
Net farm income (with appreciation)	\$62,249	\$38,727	\$63,645	\$50,124
Net farm income (without apprec.)	\$44,046	\$19,143	\$50,092	\$45,318
Net farm income per cow (w/o apprec.)	\$449	\$193	\$759	\$795
Net farm income per cwt. (w/o apprec.)	\$2.87	\$0.98	\$4.06	\$4.09
Labor & management income/operator	\$9,744	\$-14,952	\$16,702	\$13,040
Labor & mgmt. income/oper./cow	\$99	\$-151	\$253	\$229
Rates of return on:				
Equity capital with appreciation	4.6%	-1.4%	5.5%	1.8%
All capital with appreciation	4.7%	0.2%	5.3%	2.3%

<sup>65</sup>Farms grazing at least three months of year, changing paddock at least every three days, forage from pasture at least 30 percent, and no organic farms.

<sup>66</sup>Farms with similar herd size, as the 27 rotational grazing farms.

<sup>67</sup>Farms with net farm income per cow greater than \$600, had been grazing at least two years, and forage from pasture at least 40 percent.

<sup>68</sup>Farms with similar herd size as the 10 profitable grazing farms and net farm income per cow greater than \$600.

**Table 70.**

**SELECTED BUSINESS FACTORS BY MILKING FREQUENCY**  
**New York State Dairy Farms, 2002 & 2003**

Item	2x/Day Milking		3x/Day Milking	
	2002	2003	2002	2003
Number of farms	140	129	69	65
<u>Business Size &amp; Production</u>				
Number of cows	150	147	550	616
Number of heifers	115	113	433	476
Milk sold, lbs.	2,995,248	2,823,215	13,076,279	14,598,610
Milk sold/cow, lbs.	19,988	19,220	23,756	23,704
Milk plant test, % butterfat	3.75%	3.72%	3.63%	3.56%
Tillable acres, total	432	403	1,056	1,106
Hay crop, tons DM/acre	2.6	2.6	3.7	3.2
Corn silage, tons/acre	13.6	13.8	16.6	15.8
Forage DM/cow, tons	7.7	8.0	7.6	7.4
<u>Labor &amp; Capital Efficiency</u>				
Worker equivalent	4.34	4.10	12.38	13.51
Milk sold/worker, lbs.	690,149	688,589	1,056,242	1,080,578
Cows/worker	35	36	44	46
Farm capital/worker	\$263,497	\$265,431	\$292,849	\$290,971
Farm capital/cow	\$7,624	\$7,403	\$6,592	\$6,382
Farm capital/cwt. milk	\$38.18	\$38.55	\$27.73	\$26.93
<u>Milk Production Costs &amp; Returns</u>				
Selected costs/cwt.:				
Hired labor	\$2.16	\$2.07	\$2.55	\$2.64
Grain & concentrate	\$3.98	\$4.14	\$3.77	\$3.92
Purchased roughage	\$0.19	\$0.18	\$0.30	\$0.34
Replacements purchased	\$0.17	\$0.16	\$0.15	\$0.13
Veterinary & medicine	\$0.51	\$0.49	\$0.58	\$0.58
Milk marketing	\$0.77	\$0.79	\$0.61	\$0.66
Other dairy expenses	\$1.24	\$1.29	\$1.49	\$1.57
Operating costs/cwt.	\$10.83	\$10.85	\$11.05	\$11.67
Total labor costs/cwt.	\$3.84	\$3.98	\$3.03	\$3.06
Operator resources/cwt.	\$2.74	\$2.82	\$1.41	\$1.28
Total costs/cwt.	\$15.17	\$15.31	\$13.91	\$14.19
Average farm price/cwt.	\$13.27	\$13.40	\$12.87	\$13.19
Return over total costs/cwt.	\$-1.90	\$-1.91	\$-1.04	\$-1.00
<u>Related Cost Factors</u>				
Hired labor/cow	\$431	\$397	\$607	\$626
Total labor/cow	\$767	\$764	\$721	\$724
Purchased dairy feed/cow	\$832	\$830	\$967	\$1,011
Purchased grain & concentrate as % of milk receipts	30%	31%	29%	30%
Veterinary & medicine/cow	\$101	\$95	\$138	\$137
Machinery costs/cow	\$565	\$526	\$508	\$484
<u>Profitability Analysis</u>				
Net farm income (without appreciation)	\$31,125	\$34,969	\$53,129	\$44,660
Labor & management income/operator	\$-8,240	\$-5,821	\$-21,168	\$-28,439
Rates of return on:				
Equity capital with appreciation	0.3%	1.0%	2.8%	3.5%
All capital with appreciation	1.8%	2.2%	3.7%	3.8%

Table 71.

**COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION**  
**222 New York Dairy Farms, 2003**

Item	West. & Cent. Plateau Region	West. & Cent. Plain Region	Northern New York	Central Valleys	No. Hudson & Southeastern NY
Number of farms	27	56	29	34	76
<b><u>ACCRUAL EXPENSES</u></b>					
Hired labor	\$70,457	\$346,819	\$146,999	\$102,917	\$62,060
Feed	143,450	562,438	301,100	179,726	125,402
Machinery	54,078	141,642	81,471	71,904	44,071
Livestock	77,544	372,656	178,867	144,303	83,903
Crops	21,650	79,609	41,377	33,167	22,176
Real estate	22,329	71,875	38,115	33,849	24,221
Other	40,104	149,943	83,331	63,384	34,634
Total Operating Expenses	\$429,612	\$1,724,982	\$871,260	\$629,250	\$396,467
Expansion livestock	509	41,034	15,976	12,027	846
Extraordinary expense	353	0	888	0	296
Machinery depreciation	26,554	81,097	54,567	48,037	17,762
Building depreciation	17,747	62,422	45,359	31,996	7,463
Total Accrual Expenses	\$474,775	\$1,909,535	\$988,050	\$721,310	\$422,834
<b><u>ACCRUAL RECEIPTS</u></b>					
Milk sales	\$431,955	\$1,683,774	\$896,713	\$654,920	\$380,493
Livestock	27,392	163,702	87,427	47,635	26,781
Crops	10,181	37,324	29,456	27,317	15,607
Government Receipts	21,660	32,347	24,779	30,541	26,363
All other	5,653	24,300	13,962	15,340	6,394
Total Accrual Receipts	\$496,841	\$1,941,447	\$1,052,337	\$775,753	\$455,638
<b><u>PROFITABILITY ANALYSIS</u></b>					
Net farm income (w/o appreciation)	\$22,066	\$31,912	\$64,287	\$54,443	\$32,804
Net farm income (w/ appreciation)	\$39,495	\$119,139	\$126,086	\$117,191	\$52,037
Labor & management income	\$-19,360	\$-55,610	\$2,463	\$773	\$-12,428
Number of operators	1.59	1.98	1.75	1.83	1.76
Labor & mgmt. income/operator	\$-12,176	\$-28,086	\$1,407	\$422	\$-7,061
<b><u>BUSINESS FACTORS</u></b>					
Worker equivalent	4.28	12.10	6.98	5.20	4.34
Number of cows	149	557	306	237	135
Number of heifers	119	423	242	179	108
Acres of hay crops <sup>69</sup>	226	465	385	272	224
Acres of corn silage <sup>69</sup>	110	444	305	199	102
Total tillable acres	419	957	709	561	377
Pounds of milk sold	3,217,896	12,751,169	6,941,540	4,859,546	2,813,697
Pounds of milk sold/cow	21,618	22,912	22,690	20,509	20,807
Tons hay crop dry matter/acre	2.4	3.6	3.5	3.2	2.5
Tons corn silage/acre	18.5	17.4	16.5	16.3	17.0
Cows/worker	35	46	44	46	31
Pounds of milk sold/worker	751,845	1,053,817	994,490	934,528	648,317
% grain & conc. of milk receipts	32%	30%	32%	27%	32%
Feed & crop expense/cwt. milk	\$5.13	\$5.03	\$4.91	\$4.38	\$5.24
Fertilizer & lime/crop acre	\$20.42	\$29.29	\$20.44	\$21.51	\$28.06
Machinery cost/tillable acre	\$219	\$263	\$219	\$241	\$191

<sup>69</sup>Average of all farms in the region, not only those producing the crop.

Figure 2.

**Percent Change in Milk Production, Five Regions in New York,  
1993-2003**

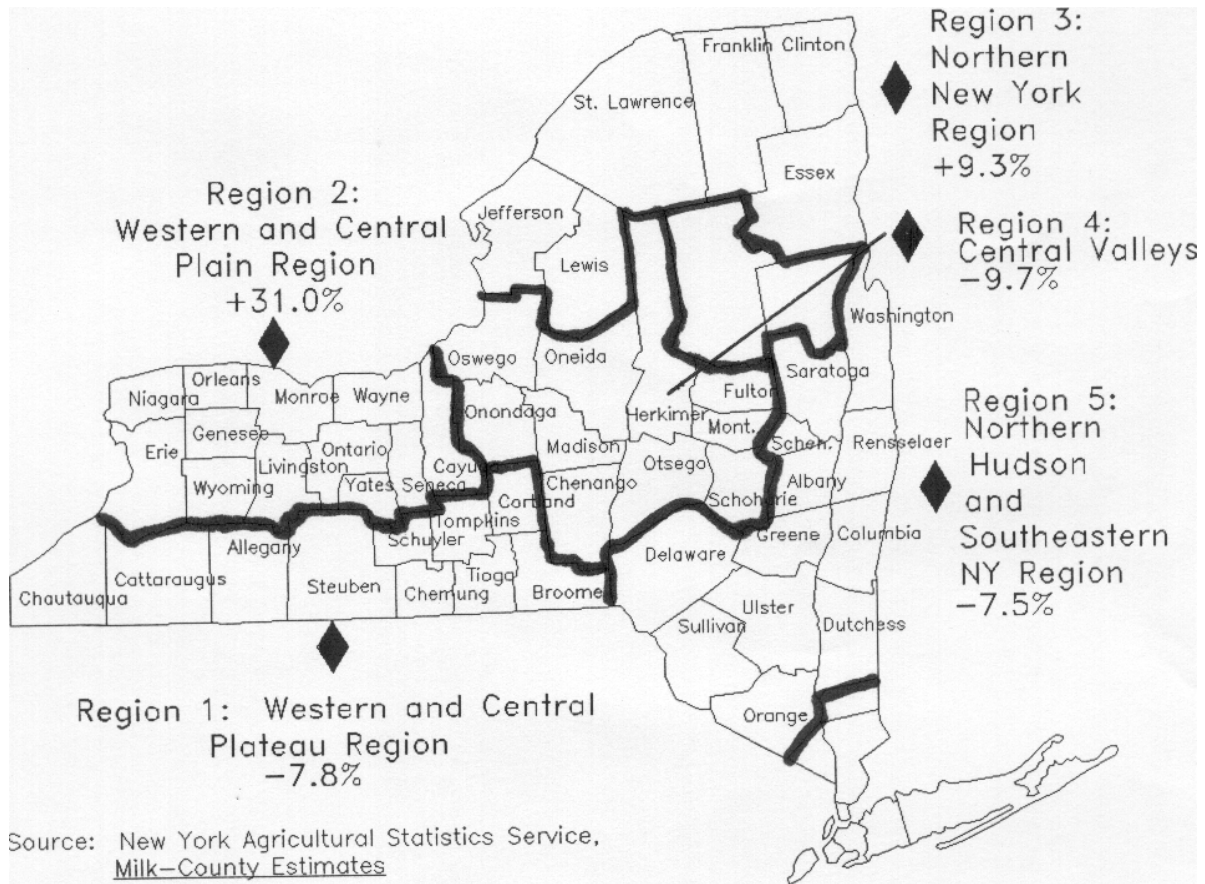


Table 72.

**MILK PRODUCTION & AVERAGE COST OF PRODUCING MILK  
Five Regions of New York**

Item	Region <sup>70</sup>				
	1	2	3	4	5
<u>Milk Production</u> <sup>71</sup>	(million pounds)				
1993	2,145.9	2,872.3	2,124.0	2,813.3	1,458.6
2003	1,978.5	3,763.5	2,321.5	2,540.0	1,348.5
Percent change	-7.8%	+31.0%	+9.3%	-9.7%	-7.5%
<u>2003 Cost of Producing Milk</u> <sup>72</sup>	(\$ per hundredweight milk)				
Operating cost	\$11.35	\$11.83	\$10.54	\$10.71	\$11.45
Total cost	15.33	14.25	13.73	14.65	15.40
Average price received	13.42	13.20	12.92	13.48	13.52
Return per cwt. to operator labor, management & capital	\$0.68	\$0.25	\$0.93	\$1.12	\$1.16

<sup>70</sup>See Figure 2 for region descriptions.

<sup>71</sup>Source: New York Agricultural Statistics Service, Milk-County Estimates.

<sup>72</sup>From Dairy Farm Business Summary data.

Table 73.

**FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION**  
**31 New York Dairy-Renter Farms,<sup>73</sup> 2003**

<u>ACCRUAL EXPENSES</u>		<u>ACCRUAL RECEIPTS</u>			
<u>Labor:</u> Hired	\$36,577	Milk sales	\$347,131		
<u>Feed:</u> Dairy grain & concentrate	113,344	Dairy cattle	30,995		
Dairy roughage	25,640	Dairy calves	8,587		
Nondairy	65	Other livestock	1,337		
Professional nutritional services	153	Crops	9,317		
<u>Machinery:</u> Machinery hire, rent & lease	7,500	Government receipts	20,816		
Machinery repairs & farm vehicle expense	16,782	Custom machine work	2,397		
Fuel, oil, grease	9,430	Gas tax refund	213		
<u>Livestock:</u> Replacement livestock	2,861	Other	<u>2,564</u>		
Breeding	5,118	TOTAL ACCRUAL RECEIPTS	\$423,357		
Veterinary & medicine	11,410				
Milk marketing	16,930				
Bedding	5,601	<u>PROFITABILITY ANALYSIS</u>			
Milking supplies	8,857	Net farm income (without appreciation)	\$48,709		
Cattle lease & rent	540	Net farm income (with appreciation)	\$87,784		
Custom boarding	2,967	Labor & management income/farm	\$22,918		
bST expense	4,238	Number of operators	1.69		
Livestock professional fees	1,431	Labor & management income/operator	\$13,561		
Other livestock expense	3,611	Rate of return on equity			
<u>Crops:</u> Fertilizer & lime	6,117	capital including appreciation	8.5%		
Seeds & plants	3,766				
Spray & other crop expense	2,319				
Crop professional fees	127				
<u>Real estate:</u> Land, building & fence repair	4,169	<u>BUSINESS FACTORS</u>			
Taxes	2,739	Number of cows	128		
Rent & lease	17,185	Number of heifers	97		
<u>Other:</u>		Worker equivalent	3.36		
Insurance	5,104	Total tillable acres	188		
Utilities (farm share)	11,098	Milk sold per cow, lbs.	20,635		
Interest paid	7,561	Hay DM per acre, tons	2.0		
Miscellaneous	<u>2,424</u>	Corn silage per acre, tons	8.8		
TOTAL OPERATING EXPENSES	\$335,663	Milk sold per worker, lbs.	784,115		
		Grain & concentrate as % milk sales	33%		
Expansion livestock	\$13,275	Feed & crop expense/cwt. milk	\$5.74		
Extraordinary expense	0	Labor & machinery costs/cow	\$1,132		
Machinery depreciation	16,154	Average price/cwt. milk	\$13.18		
Building depreciation	<u>9,556</u>				
TOTAL ACCRUAL EXPENSES	\$374,648				
<u>ASSETS</u>	<u>Jan. 1</u>	<u>Dec. 31</u>	<u>LIABILITIES</u>	<u>Jan. 1</u>	<u>Dec. 31</u>
Farm cash, checking & savings	\$6,057	\$10,442	Current	\$54,393	\$67,010
Accounts receivable	25,616	29,226	Intermediate <sup>75</sup>	101,573	145,647
Prepaid expenses	0	0	Long term <sup>74</sup>	<u>18,919</u>	<u>25,363</u>
Feed & supplies	65,298	67,095	Total Farm Liabilities	\$174,885	\$238,020
Livestock <sup>74</sup>	229,092	259,844	Nonfarm Liabilities <sup>76</sup>	<u>9,116</u>	<u>7,845</u>
Machinery & equipment <sup>74</sup>	115,613	129,922	Farm & Nonfarm Liabilities	\$184,001	\$245,865
Farm Credit stock	415	533	Farm Net Worth	\$325,695	\$374,781
Other stock & certificates	3,594	5,025			
Land & buildings <sup>74</sup>	<u>54,895</u>	<u>110,713</u>	Farm & Nonfarm Net Worth	\$386,444	\$459,138
Total Farm Assets	\$500,580	\$612,801			
Nonfarm Assets <sup>76</sup>	<u>69,865</u>	<u>92,202</u>			
Farm & Nonfarm Assets	\$570,445	\$705,003			

<sup>73</sup>A renter owns no farm real estate or tillable land at the end of year.

<sup>74</sup>Includes discounted lease payments.

<sup>75</sup>Includes Farm Credit stock and discounted lease payments for cattle and machinery.

<sup>76</sup>Average of 14 farms reporting.





**APPENDIX**

**PRICES, COSTS AND TRENDS  
IN THE NEW YORK DAIRY INDUSTRY**

The prices dairy farmers pay for a given quantity of goods and services has a major influence on farm production costs. The astute manager will keep close watch on unit costs and utilize the most economical goods and services.

**Table A1.****PRICES PAID BY NEW YORK FARMERS FOR SELECTED ITEMS, 1993-2003**

Year	Mixed Dairy Feed 16% Protein <sup>83</sup> (\$/ton)	Fertilizer, Urea 45-46%N <sup>83</sup> (\$/ton)	Seed Corn, Hybrid <sup>84</sup> (\$/80,000 kernels)	Diesel Fuel <sup>83</sup> (\$/gal)	Tractor 50-59 PTO <sup>84</sup> (\$)	Wage Rate All Hired Farm Workers <sup>85</sup> (\$/hr)
1993	171	226	72.70	0.900	19,200	6.76
1994	181	233	73.40	0.853	19,800	6.96
1995	175	316	77.10	0.850	20,100	6.92
1996	226	328	77.70	1.020	20,600	7.19
1997	216	287	83.50	0.960	21,200	7.63
1998	199	221	86.90	0.810	21,800	7.63
1999	175	180	88.10	0.750	21,900	8.12
2000	174	201	87.50	1.270	21,800	8.74
2001	176	270	92.20	1.260	22,000	8.72
2002	178	232	92.00	1.028	21,900	9.26
2003	194	283	102.00	1.516	21,300	9.93

SOURCE: NYASS, New York Agricultural Statistics. USDA, ASB, Agricultural Prices.

<sup>83</sup>Northeast region average. <sup>84</sup>United States average. <sup>85</sup>New York and New England combined.

Inflation, farm profitability, supply and demand all have a direct impact on the inventory values on New York dairy farms. The table below shows year-end (December) prices paid for dairy cows (replacements), an index of these cow prices, an index of new machinery prices (U.S. average), the average per acre value of farmland and buildings reported in January (February for 1986-89), and an index of the real estate prices.

**Table A2.****VALUES AND INDICES OF NEW YORK DAIRY FARM INVENTORY ITEMS, 1989-2003**

Year	Dairy Cows		Machinery <sup>86</sup>	Farm Real Estate	
	Value/Head	1977=100	1977=100	Value/Acre	1977=100
1989	1,020	206	201	1,045	178
1990	1,060	214	209	1,014	173
1991	1,040	210	219	1,095	187
1992	1,090	220	226	1,139	194
1993	1,100	222	235	1,237	211
1994	1,100	222	249	1,260	215
1995	1,010	204	258	1,280	218
1996	1,030	208	268	1,260	215
1997	980	198	276	1,250	213
1998	1,050	212	286	1,280	218
1999	1,250	253	294	1,340	228
2000	1,250	253	301	1,410	240
2001	1,600	323	312	1,500	256
2002	1,400	283	320	1,600	273
2003	1,300	263	325	1,650	281

SOURCE: NYASS, New York Agricultural Statistics and New York Crop and Livestock Report. USDA, ASB, Agricultural Prices.

<sup>86</sup>United States average; 1995 - 2003 are estimated due to discontinuation of 1977=100 series.

**Table A3.**

**NUMBER OF DAIRY FARMS AND MILK COWS BY SIZE OF HERD**  
**New York State, 2003**<sup>87, 88</sup>

Size of Herd (Number of Cows)	Farms		Milk Cows	
	(Number)	(Percent of Total)	(Number)	(Percent of Total)
1 - 29	1,400	19.7%	13,000	2.0%
30-49	1,300	18.3%	50,000	7.5%
50-99	2,700	38.0%	185,000	27.5%
100-199	1,100	15.5%	148,000	22.0%
200-399	375	5.3%	102,000	15.2%
400-699	145	2.0%	78,000	11.6%
700-999	40	0.6%	34,000	5.1%
1000 or more	40	0.6%	61,000	9.1%
Total	7,100	100.0%	671,000	100.0%

<sup>87</sup>This information on number of farms and number of cows by size of herd is derived from several sources:

- Dairy Statistics as published by the New York Agricultural Statistics Services for 2003.
- CAFO (Concentrated Animal Feeding Operations) permit data as of July 1, 2004. About 70 small CAFO farms (farms with 200 to 700 milk cows have not applied for a permit). Estimates for these farms were made so as to reflect the total number of dairy farms in New York State

<sup>88</sup>The author of this page wishes to thank everyone who provided some data as well as providing valuable advice and perspectives: Lee Telega, Peter Wright, Wayne Knoblauch, Jason Karszes and B. F. Stanton. However, any errors, omissions or misstatements are solely the responsibility of the author, Professor George Conneman, e-mail [gjc4@cornell.edu](mailto:gjc4@cornell.edu).

In 2003, there were 7,100 dairy farms in New York State, and 671,000 milk cows as reported by the NYASS. The table above was prepared based on the NYASS data plus the CAFO permit filing for additional herd size categories.

Ninety percent of the farms (less than 200 cows per farm) had 60 percent of the milk cows. The remaining ten percent of the farms had 40 percent of the cows. About one percent of the farms (those with 700 or more cows) had 14 percent of the cows. Farms with over 200 cows represented nearly 9 percent of total herds and had 40 percent of the total cows. Farms with less than 50 cows represent 38 percent of all farms.

The size and distribution of dairy farms in New York State has changed rapidly in the past 10 years. In 1994, there were 10,700 farms; two-thirds of the farms had less than 50 cows; only 400 farms, or less than 4 percent, had 200 or more cows and represented 18 percent of the total number of cows.

## GLOSSARY AND LOCATION OF COMMON TERMS

**Accounts Payable:** Open accounts or bills owed to feed and supply firms, cattle dealers, veterinarians and other providers of farm services and supplies.

**Accounts Receivable:** Outstanding receipts from items sold or sales proceeds not yet received such as the payment for December milk sales received in January.

**Accrual Accounting:** (defined on page 11).

**Accrual Expenses:** (defined on page 13).

**Accrual Receipts:** (defined on page 13).

**Annual Cash Flow Statement:** (defined on page 20).

**Appreciation:** (defined on page 14).

**Asset Turnover Ratio:** (defined on page 42).

**Available for Debt Service per Cow:** Net cash available for debt service after deducting net personal withdrawals for family expenditures, divided by the average number of cows.

**Average Top 10% Farms:** Average of 20 farms with highest rate of return on all capital (without appreciation).

**Balance Sheet:** A "snapshot" of the business financial position at a given point in time, usually December 31. The balance sheet equates the value of assets to liabilities plus net worth.

**Barn Types:** Stanchion: cows are confined in a stall by a stanchion or neck chain. Freestall: cows move at will between open stalls and feeding areas. Combination: both stanchion and freestall barns used.

**bST Usage:** An estimate of percentage of herd that was injected with bovine somatotropin during the year.

**Business Records:** Account Book: any organized farm record book or ledger. Agrifax (mail-in): Farm Credit's recordkeeping service. On-Farm Computer: computerized business and financial records entered and kept on the farm. Other: accountant, recordkeeping association or no organized recordkeeping system.

**Capital Efficiency:** The amount of capital invested per production unit. Relatively high investments per worker with low to moderate investments per cow imply efficient use of capital. (See analysis, page 42).

**Capital Investment:** Commonly used as substitute term for farm capital or total farm assets.

**Cash Flow:** The movement of money in and out of the business over a given period of time, e.g. one year. (See Annual Cash Flow Statement, page 20).

**Cash Flow Coverage Ratio:** (defined on page 22).

**Cash From Nonfarm Capital Used in the Business:** Transfers of money from nonfarm savings or investments to the to the farm business where it is used to pay operating expenses, make debt payments and/or capital purchases.

**Cash Paid:** (defined on page 12).

**Cash Receipts:** (defined on page 13).

**Change in Accounts Payable:** (defined on page 13).

**Change in Accounts Receivable:** (defined under Accrual Receipts on page 13).

**Change in Advanced Government Receipts:** (defined under Accrual Receipts page 13).

**Change in Inventory:** (defined on page 12).

**Corporation:** Business is organized under state corporation law. Corporation is owned, operated, and managed by members of one or more farm families and owner/operators are corporate employees. Corporate accounts are modified to exclude operator wages' and other compensation from operating expenses for DFBS use.

**Cost of Producing Milk, Whole Farm Method:** A procedure used to calculate costs of producing milk on dairy farms without using enterprise cost accounts. All non-milk receipts are assigned a cost equal to their sale value and deducted from total farm expenses to determine the costs of producing milk. (see page 30).

**Cost of Term Debt:** A weighted average of the cost of borrowed intermediate and long term capital used on the farm. Calculate by multiplying end of year principal of each loan that is borrowed by the interest rate for each loan at that time. Add up each amount that is calculated for each loan and then divide by total amount of borrowed funds. Do not include accounts payable, operating debt or advanced government receipts. This information is found on pages 8 & 9 of the data entry form.

**Culling Rate:** Culling rate is calculated by dividing the number of animals that left the herd for culling purposes and that died, by the average number of milking and dry cows for the year

**Current** (assets and liabilities): Farm inventories and operating capital that usually turnover annually, and the debt expected to be repaid within 12 months.

**Current Portion:** Principal due in the next year for intermediate and long term debt.

**Current Ratio:** Measures the extent to which current farm assets, if liquidated, would cover current farm liabilities. Calculated as current farm assets at end year divided by current farm liabilities at end year.

**Dairy Cash-Crop (farm):** Operating and managing this farm is the full-time occupation of one or more people, cropland is owned but crop sales exceed ten percent of accrual milk receipts.

**Dairy Farm Renter:** (dairy-renter) - Farm business owner/operator owns no tillable land and commonly rents all other farm real estate.

**Dairy Grain and Concentrate:** All grains, protein supplements, milk substitutes, minerals and vitamins purchased and fed to the dairy herd.

**Dairy Records:** DHIC: Dairy Herd Improvement Cooperative official milk production records. Owner Sampler: weights and samples are taken by farmer but tested by DHIC. Other: all other methods used to obtain periodic production data on individual cows. None: no milk production records on individual cows.

**Dairy Roughage:** All hay, silage or other fodder purchased and fed to the dairy herd.

**Death Rate:** The percentage of the average number of milking and dry cows that died during the year.

**Debt Coverage Ratio:** (defined on page 22)

**Debt Per Cow:** Total end-of-year debt divided by end-of-year number of cows.

**Debt to Asset Ratios:** (defined on page 18).

**Depreciation Expense Ratio:** The percentage of total accrual receipts that is charged to depreciation expense (machinery and building).

**Dry Matter:** The amount or proportion of dry material that remains after all water is removed. Commonly used to measure dry matter percent and tons of dry matter in feed.

**Equity Capital:** The farm operator/manager's owned capital or farm net worth.

**Expansion Livestock:** (defined on page 11).

**Farm Business Chart**: (see definition and application on page 44).

**Farm Debt Payments as Percent of Milk Sales**: Amount of milk income committed to debt repayment, calculated by dividing planned debt payments by total milk receipts. A reliable measure of repayment ability, see pages 22 and 47.

**Farm Debt Payments Per Cow**: Planned or scheduled debt payments per cow represent the repayment plan scheduled at the beginning of the year divided by the average number of cows for the year. This measure of repayment ability is used in the Financial Analysis Chart on page 47.

**Financial Lease**: A long-term non-cancelable contract giving the lessee use of an asset in exchange for a series of lease payments. The term of a financial lease usually covers a major portion of the economic life of the asset. The lease is a substitute for purchase. The lessor retains ownership of the asset.

**Hay Crop**: All hay land, including new seedings, harvested once or more as hay or hay crop silage.

**Hay Dry Matter**: see Dry Matter.

**Heifers**: Female dairy replacements of all ages.

**Hired Labor** (expenses): All wages, non-wage compensation, payroll taxes, benefits, and perquisites paid employees.

**Hired Labor Expense as % of Milk Sales**: The percentage of the gross milk receipts that is used for labor expense. Divide accrual hired labor expense by accrual milk sales.

**Hired Labor Expense per Hired Worker Equivalent**: The total cost to the farm per hired worker equivalent. Divide accrual hired labor expense by number of hired plus family paid worker equivalents.

**Income Statement**: A complete and accurate account of accrual adjusted farm business receipts and expenses used to measure net income over a period of time such as one year or one month.

**Intensive Grazing**: The dairy herd is on pasture at least three months of the year, changing paddock at least every three days and percent of forage from pasture is at least 30 percent.

**Interest Expense Ratio**: The percentage of total accrual receipts that is used for interest expense

**Intermediate** (assets and liabilities): Farm business property and associated debt that is turned over from one to ten years.

**Labor and Management Income**: (defined on page 15).

**Labor and Management Income Per Operator**: (defined on page 15).

**Labor Efficiency**: Production capacity and output per worker. (See analysis on pages 42 and 43).

**Labor Force**: Operator(s): Person or persons that run the farm and make the management decisions. An operator does not have to be a farm owner. Family Paid: all family members, excluding operators, that are paid for working on the farm. Family Unpaid: all family members, excluding the operators, that are not paid for farm work performed.

**Liquidity**: Ability of business to generate cash to make debt payments or to convert assets to cash.

**Long-Term** (assets and liabilities): Farm real estate and associated debt with typical life of ten or more years.

**Milk Marketing** (expenses): Milk hauling fees and charges, co-op dues, milk advertising and promotion expenses.

**Milking Frequency**: 2X/day: all cows were milked two times per day for the entire year. 3X/day: all cows were milked three times per day for the entire year. Other: any combination of 2X, 3X, and more frequent milking.

**Milking Systems:** Bucket and Carry: milk is transferred manually from milking unit to pail to tank. Dumping Station: milk is dumped from milking unit into transfer station and then pumped to tank. Pipeline: milking units are connected directly to milk transfer lines. Herringbone: milking parlor designed to move and milk cows in groups. Other Parlor: parlors in which cows move and are milked individually.

**Net Farm Income:** (defined on page 14).

**Net Farm Income from Operations Ratio:** (defined on page 16)

**Net Milk Receipts:** The mail box price received by farmers before any farmer authorized assignment or deductions.

**Net Worth:** The value of assets less liabilities equal net worth. It is the equity the owner has in owned assets.

**Nondairy Feed:** All grain, concentrates, and roughage purchased and fed to nondairy livestock.

**Nonfarm Noncash Capital:** (defined on page 13).

**Nontillable Pasture:** Permanent or semi-permanent pasture land that could not be included in a regular cropping sequence or rotation.

**Operating Costs of Producing Milk:** (defined on page 33).

**Operating Expense Ratio:** The percentage of total accrual receipts that is used for operating expenses, excluding interest and depreciation.

**Opportunity Cost:** The cost or charge made for using a resource based on its value in its most likely alternative use. The opportunity cost of a farmer's labor and management is the value he/she would receive if employed in his/her most qualified alternative position.

**Other Forage:** All forage crops harvested but not included as hay crops or corn silage, e.g. oats, barley, and sudan grass harvested as roughage.

**Other Livestock Expenses:** All other dairy herd and livestock expenses not included in more specific categories. Other livestock expenses include; bedding, DHIC, milk house and parlor supplies, livestock board, registration fees and transfers.

**Part-Time Dairy (farm):** Dairy farming is the primary enterprise, cropland is owned but operating and managing this farm is not a full-time occupation for one or more people.

**Partnership:** Business is owned by two or more individuals who share profits according to their contribution of labor, management, and capital.

**Percent of Heifer Inventory Custom Inventory:** The percent of current heifer inventory owned by the farm that is being custom raised off the farm.

**Percent of Replacements Purchased:** The percent of replacements that calved in the herd for replacement purposes (not expansion cattle) that were different genetic background than your herd and were purchased.

**Personal Withdrawals and Family Expenditures Including Nonfarm Debt Payments:** All the money removed from the farm business for personal or nonfarm use including family living expenses, health and life insurance, income taxes, nonfarm debt payments, and investments.

**Premium:** In milk marketing this typically refers to the amount paid for milk in addition to the minimum regulated price. Premiums may be paid to the producer or cooperative supplier of milk by a buyer depending on a variety of criteria such as milk quality, composition, quantity supplied, or services provided. They may also represent market supply/demand conditions not adequately accounted for in the regulated price.

**Prepaid Expenses:** (defined on page 13).

**Producer Price Differential:** Under Federal Order markets with multiple component pricing, it is the residual value (per hundredweight) of the pool after deducting component payments (protein, butterfat, and other solids) to producers. This residual value will vary between market orders and from month-to-month based on the utilization of the various classes and class price. It is possible that the PPD can even be negative at times if, for example, the class III price exceeds the class I price.

**Profitability:** The return or net income the owner/manager receives for using one or more of his or her resources in the farm business. True "economic profit" is what remains after deducting all costs including the opportunity costs of the owner/manager's labor, management, and equity capital.

**Purchased Inputs Costs of Producing Milk:** (defined on page 33).

**Repayment Analysis:** An evaluation of the business' ability to make planned debt payments.

**Replacement Livestock:** Dairy cattle and other livestock purchased to replace those that were culled or sold from the herd during the year.

**Return on Equity Capital:** (defined on page 16).

**Return to all Capital:** (defined on page 16).

**Sell Rate:** The percentage of the average number of milking and dry cows that were sold for culling reasons. Animals that were sold as replacement stock to other dairy farms is not included in this number.

**Sole Proprietorship:** Business is owned by one individual but there may be more than one operator.

**Solvency:** The extent or ability of assets to cover or pay liabilities. Debt/asset and leverage ratios are common measures of solvency.

**Specialized Dairy Farm:** A farm business where dairy farming is the primary enterprise, operating and managing this farm is a full-time occupation for one or more people and cropland is owned.

**Statement of Owner Equity (reconciliation):** (defined on page 19).

**Taxes** (expenses): Real estate taxes (school, town, and county). Payroll taxes are included as a hired labor expense. Income and self-employment taxes are a personal expense for all noncorporate taxpayers.

**Tillable Acres:** All acres that are normally cropped including hayland that is pastured. Acres that are doubled cropped are counted once.

**Tillable Pasture:** Hay crop acreage currently used for grazing that could be tilled in a regular cropping sequence.

**Total Costs of Producing Milk:** (defined on page 33).

**Value of Calf Sold:** The average value received for bull and heifer calves sold as calves during the year.

**Value of Cow Sold:** The average value received for animals that were sold for culling reasons.

**Whole Farm Method:** A procedure used to calculate costs of producing milk on dairy farms without using enterprise cost accounts. All non-milk receipts are assigned a cost equal to their sale value and deducted from total farm expenses to determine the costs of producing milk.

**Worker Equivalent:** The number of full-time workers equivalent to all the full and part-time people working throughout the year. Operator and family labor is included. Worker equivalents are determined by converting all work to full-time months (based on a 230 hours per month) and dividing by 12.

**Working Capital:** A theoretical measure of the amount of funds available to purchase inputs and inventory items after the sale of current farm assets and payment of all current farm liabilities. Calculated as current farm assets at end year less current farm liabilities at end year.

**OTHER A.E.M. RESEARCH BULLETINS**

<b>RB No</b>	<b>Title</b>	<b>Fee (if applicable)</b>	<b>Author(s)</b>
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