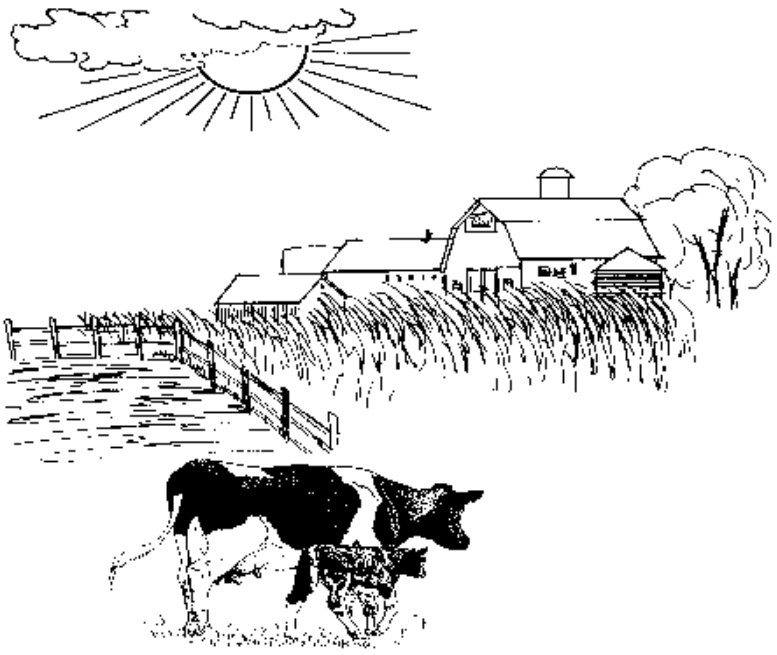
DAIRY FARM MANAGEMENT

OCTOBER 1999 *R.B. 99-11*

BUSINESS SUMMARY NEW YORK STATE 1998



Wayne A. Knoblauch
Linda D. Putnam
Jason Karszes

Department of Agricultural, Resource, and Managerial Economics
Cornell University Agricultural Experiment Station
College of Agriculture and Life Sciences
Cornell University, Ithaca, New York 14853-7801

ABSTRACT

Business and financial records from 305 New York dairy farm businesses are summarized and analyzed. This analysis demonstrates the use of cash accounting and accrual adjustments to measure farm profitability, cash flow, financial performance, and costs of producing milk. Traditional methods of analyzing dairy farm businesses are combined with improved evaluation techniques to show the relationship between good management performance and financial success.

The farms in the project averaged 210 cows per farm and 20,900 pounds of milk sold per cow in 1998, which are above the average size and management level of all 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 $132,705 per farm. The rate of return including appreciation to all capital invested in the farm business averaged 11.5 percent in 1998.

Differences in profitability between farms continue to widen. The top 10 percent of farms average net farm income excluding appreciation was $558,217, while the lowest 10 percent was a negative $2,216. Rates of return on equity with appreciation ranged from 66 percent to negative 11 percent from the highest 10 percent to the lowest 10 percent of farms.

Farms adopting bovine somatotropin (bST) experienced greater increases in milk production, had larger herds and were more profitable than farms not adopting bST. Farms adopting rotational grazing generally produced less milk per cow than non-grazing farms, but had somewhat lower costs of production and higher profitability. However, one should not conclude that adoption of these technologies alone were responsible for differences in performance.

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 were more profitable than herds milking two times per day (2X). Operating cost per cwt. of milk was $0.31/cwt. higher for 3X than 2X milking herds.

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INTRODUCTION*

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 Agricultural, Resource, and Managerial Economics of the College of Agriculture and Life Sciences at Cornell University, and County Extension staff, cooperate in sponsoring DFBS projects. In 1998, nearly 400 dairy farms participated. Business records submitted by dairy farmers from 46 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. Each cooperator receives a detailed summary and analysis of his or her business. All educators are using a microcomputer in their offices and/or on the farm to process and return the individual farm business reports for immediate use. 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 and solve business and financial management problems.

Individual farm records from the 6 regions and 46 counties of the State have been combined and the total data set analyzed to determine the status and study the effects of changes in price, technology, and management on dairy farm incomes (Figure 1, page 2). 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 305 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 equally represented (Figure 1, page 2). Participation averages about 3 percent of the milk cow operations in New York (see Appendix Table A3). The 305 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. Dairy farm renters are summarized separately in the supplemental information section of the publication.

Features

Accrual 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 9. Four measures of farm profits; net farm income, labor and management income, return on equity and all capital, and return to all labor and management are calculated on pages 11 through 14. The balance sheet is presented with the current portion of intermediate and long term debt identified as a current liability, on pages 14 and 15. The statement of owner equity, which shows the interrelationship between farm profitability, non-farm cash flows and net worth is presented on page 17. A detailed cash flow statement, including budgeting data and debt repayment analysis is presented on pages 18 through 20.

The whole farm method of calculating the cost of producing milk is detailed on pages 28 through 33. 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 59 through 63. Specific studies of the performance of dairy farms using bST, rotational grazing and three times (3X) a day milking are presented on pages 66, 69 and 72.

Acknowledgements

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* This report was written by Wayne A. Knoblauch, Professor; Linda D. Putnam, Extension Support Specialist, in the Department of Agricultural, Resource, and Managerial Economics at Cornell University, and Jason Karszes, Senior Extension Associate, Pro-Dairy.

Figure 1.

LOCATION OF THE 305 NEW YORK DAIRY FARMS IN THE 1998 DAIRY FARM BUSINESS SUMMARY

1998 Regional Summary Publications

Region	Publications	Author(s)
Western and Central Plain	E.B. 99-07	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, Steve Richards, John Hanchar Carry Oostveen, Bruce Dehm, George Allhusen and Vinton Smith.
Northern Hudson	E.B. 99-09	George J. Conneman, Linda D. Putnam, Cathy S. Wickswat, Sandra Buxton & Dayton Maxwell
Southeastern New York	E.B. 99-10	Wayne A. Knoblauch, Linda D. Putnam, Michael Dennis, Stephen E. Hadcock, Larry R. Hulle, Mariane Kiraly & Joseph J. Walsh
Western and Central Plateau	E.B. 99-11	Wayne A. Knoblauch, Linda D. Putnam, Carl A. Crispell, James W. Grace, Joan S. Petzen, Andrew N. Dufresne & Greg Albrecht
Central Valleys	E.B. 99-13	Eddy L. LaDue, Wayne Knoblauch, Doug Bowne, Zaid Kurdieh, Carry Oostveen, A. Edward Staehr, Charles Z. Radick, Jason Karszes & Linda D. Putnam
Northern New York	E.B. 99-14	Robert A. Milligan, Linda D. Putnam, George Yarnall, William Van Loo Peggy Murray, & 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 increased 262 percent between 1968 and 1998 and more than one-third of that increase occurred in the last 10 years. Milk output per cow increased 70 percent and the largest increase occurred between 1988 and 1998. Labor efficiency is up 39 percent even though there was practically no change from 1968 to 1978, notwithstanding the change to collecting data on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator in 1998. The operating cost of producing milk has increased more than 590 percent with the big jump occurring between 1968 and 1978.

There is a large increase in farm capital invested per farm, up 1,100 percent since 1968. Net farm worth excluding deferred taxes has increased 1,135 percent over the last 30 years. Net farm income per farm has increased 50 percent (adjusted for 1998 dollars) but return on capital has not improved since 1968. Labor and management income per operator is down 27 percent in the last 30 years (adjusted for 1998 dollars).

FOUR YEARS OF VARIABILITY

Recognition and evaluation of the progress that has occurred on DFBS farms can best be achieved by studying the same farms over a period of time. Table 2 presents average data from 177 farms that have been DFBS cooperators each year since 1995. 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 1998 provided dairy farmers with excellent returns. This comes after 1997, a year when milk prices were soft and margins were less than half those in 1998. Good profit margins did exist in 1996 at about $3.00 per hundredweight.

Net farm income without appreciation in 1998 was 129 percent above the 1995 average largely due to increased milk price. However, two of the three previous years were good years for dairy farm profits with 1996 being an excellent year. Net worth declined by a small amount in 1997, a first in recent history.

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.

OPERATING COST OF PRODUCING MILK AND PRICE RECEIVED FOR MILK
Same 177 New York Dairy Farms, 1995-1998

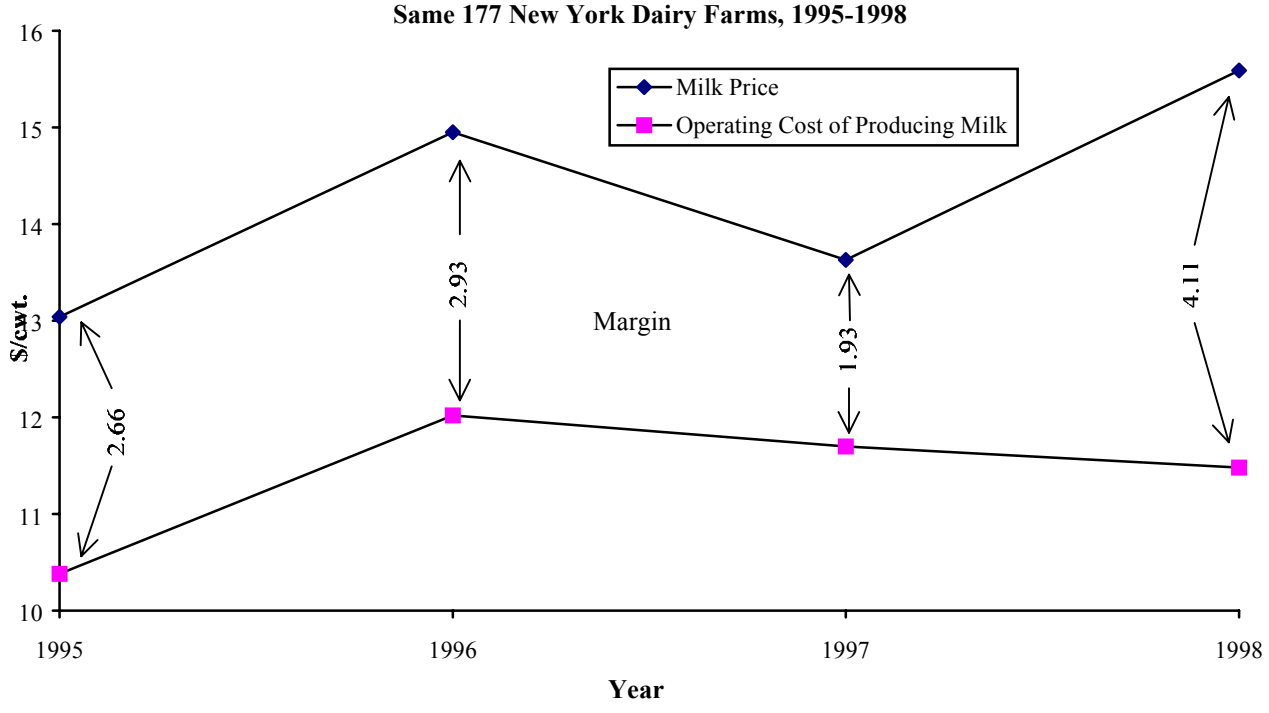


Table 1.

COMPARISON OF FARM BUSINESS SUMMARY DATA
New York Dairy Farms, 1968 - 1998

Selected Factors	1968	1978	1988	1998
Number of farms	568	527	406	305
Size of Business				
Average number of cows	58	71	102	210
Average number of heifers	40	49	82	155
Milk sold, cwt.	7,152	9,795	17,200	43,954
Worker equivalent	2.1	2.4	3.17	5.35***
Total tillable acres	155*	217*	302	497
Rates of Production				
Milk sold per cow, lbs.	12,300	13,800	16,882	20,900
Hay DM per acre, tons	2.8	2.4	2.6	3.1
Corn silage per acre, tons	14	14	14	18
Labor Efficiency				
Cows per worker	28	29	32	39***
Milk sold per worker, lbs.	340,600	404,800	542,708	821,565***
Cost Control				
Grain & concentrate purchased as % of milk sales	24%	28%	28%	26%
Dairy feed & crop expense per cwt. milk	$1.69	$3.81	$4.62	$5.00
Operating cost of producing cwt. milk	$1.65	$7.23	$9.47	$11.50
Total cost of producing cwt. milk	$4.98	$11.34	$13.67	$14.52
Milk receipts per cwt. milk	$5.52	$10.51	$13.03	$15.60
Capital Efficiency				
Total farm capital	$107,854	$302,409	$624,841	$1,293,903
Farm capital per cow	$1,930	$4,500	$6,133	$6,161
Machinery & equipment per cow	$435	$830	$1,083	$1,118
Real estate per cow	$890	$2,280	$2,902	$2,537
Livestock investment per cow	$471	$932	$1,279	$1,477
Asset turnover ratio	0.48	0.46	0.45	0.61
Profitability****				
Net farm income without appreciation	------	$42,913	$53,060	$132,705
Net farm income with appreciation	$105,336	$100,875	$81,009	$157,697
Labor & management income per operator/manager	$76,245	$16,945	$16,412	$55,917
Rate of return on:				
Equity capital with appreciation	------	36.5%	10.1%	14.7%
All capital with appreciation	40.3%	29.0	10.5%	11.5%
All capital without appreciation	------	23.8	5.9%	9.6%
Financial Summary, End Year				
Farm net worth	$64,650**	$211,680	$426,123	$798,297
Change in net worth with appreciation	------	------	$33,105	$110,211
Debt to asset ratio	0.27**	0.37	0.34	0.41
Farm debt per cow	$520**	$1,708	$2,063	$2,550

*Acres of cropland harvested.
**Average of 145 dairy farms cooperators submitting financial information in 1966.
***Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.
****Adjusted for inflation using Consumer Price Index – 1998 dollars.

Table 2.

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 177 New York Dairy Farms, 1995 - 1998

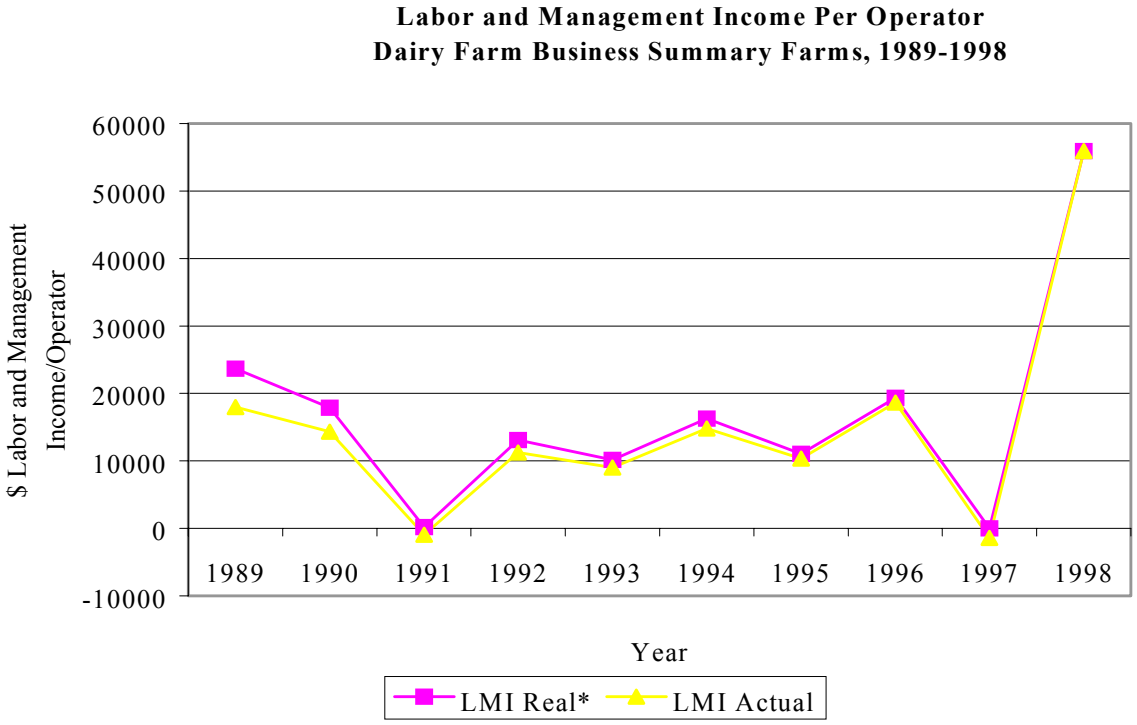
Selected Factors	1995	1996	1997	1998
Milk receipts per cwt. milk	$ 13.04	$ 14.95	$ 13.63	$ 15.59
Size of Business				
Average number of cows	186	200	213	225
Average number of heifers	138	148	157	169
Milk sold, cwt.	38,477	41,427	44,854	47,536
Worker equivalent	4.94	5.13*	5.40*	5.62*
Total tillable acres	452	474	498	515
Rates of Production				
Milk sold per cow, lbs.	20,708	20,681	21,101	21,133
Hay DM per acre, tons	2.9	2.8	2.6	3.2
Corn silage per acre, tons	16	16	16	19
Labor Efficiency				
Cows per worker	38	39*	39*	40*
Milk sold per worker, lbs.	778,877	807,539*	830,623*	845,836*
Cost Control				
Grain & concentrate purchased as % of milk sales	27%	31%	33%	26%
Dairy feed & crop expense per cwt. milk	$ 4.34	$ 5.42	$ 5.33	$ 4.99
Operating cost of producing cwt. milk	$ 10.38	$ 12.02	$ 11.70	$ 11.48
Total cost of producing cwt. milk	$ 13.44	$ 15.00	$ 14.52	$ 14.42
Hired labor cost per cwt.	$ 1.93	$ 2.02	$ 2.02	$ 2.15
Interest paid per cwt.	$ 0.92	$ 0.88	$ 0.89	$ 0.89
Labor & machinery costs per cow	$ 980	$ 1,039	$ 1,022	$ 1,077
Capital Efficiency, Average for Year				
Farm capital per cow	$ 6,226	$ 6,220	$ 6,194	$ 6,290
Machinery & equipment per cow	$ 1,083	$ 1,076	$ 1,083	$ 1,125
Real estate per cow	$ 2,713	$ 2,682	$ 2,647	$ 2,611
Livestock investment per cow	$ 1,482	$ 1,477	$ 1,475	$ 1,493
Asset turnover ratio	0.51	0.56	0.52	0.61
Profitability				
Net farm income without appreciation	$ 63,522	$ 80,080	$ 44,730	$ 145,246
Net farm income with appreciation	$ 76,654	$ 92,988	$ 54,504	$ 170,725
Labor & management income per operator/manager	$ 14,286	$ 22,691	$ 1,426	$ 60,221
Rate return on:				
Equity capital with appreciation	4.7%	6.5%	1.1%	14.9%
All capital with appreciation	5.9%	6.8%	3.7%	11.6%
All capital without appreciation	4.8%	5.8%	2.9%	9.8%
Financial Summary, End Year				
Farm net worth	$ 720,464	$ 771,784	$ 769,756	$ 883,704
Change in net worth with appreciation	$ 33,613	$ 48,565	$ 569	$ 116,265
Debt to asset ratio	0.40	0.40	0.43	0.40
Farm debt per cow	$ 2,413	$ 2,489	$ 2,616	$ 2,565
Debt Coverage Ratio	1.26	1.42	0.92	1.80

*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). Even when prior year's data are adjusted for inflation, labor and management incomes per operator did not exceed $25,000 in comparison to over $55,000 in 1998.

Chart 2.



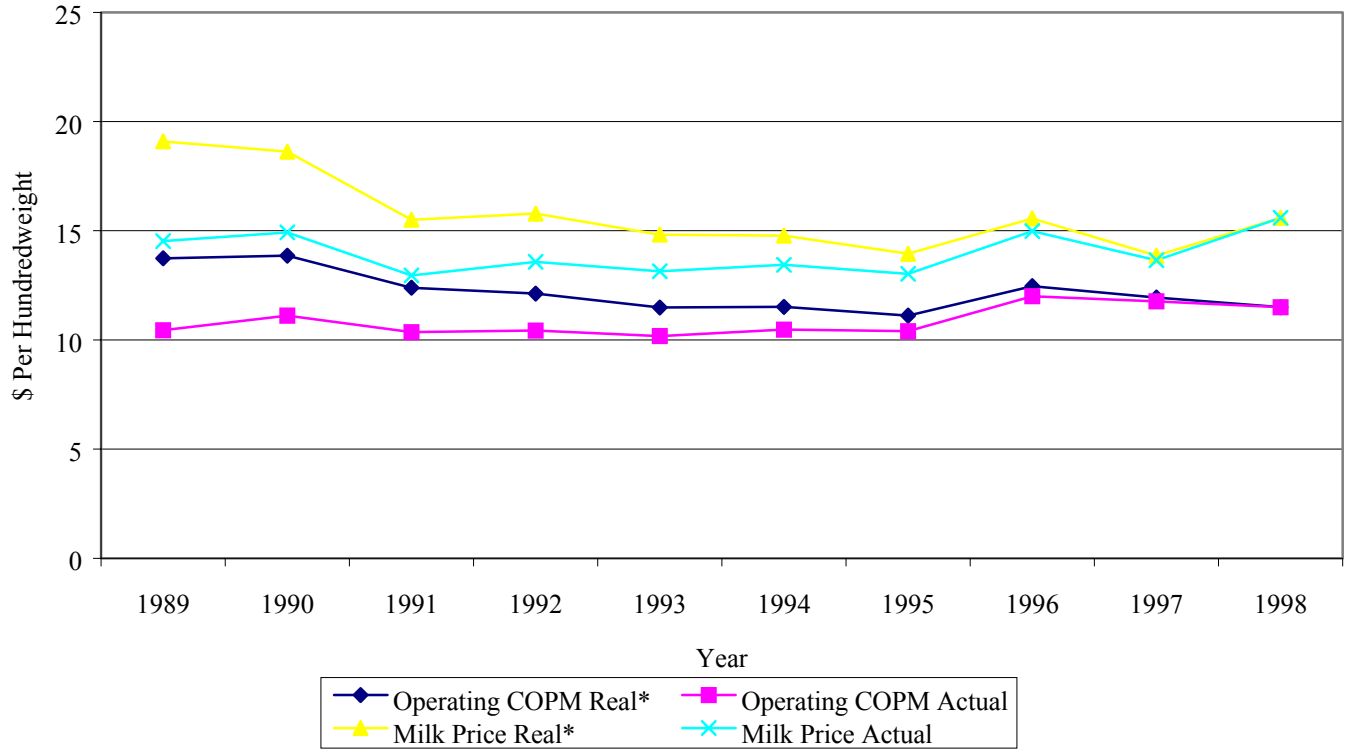
*Adjusted for inflation using the Consumer Price Index–1998 dollars.

The same cannot be said about milk prices. Milk prices in 1998 averaged $15.59/cwt in actual dollars (Chart 3). In 1989, milk prices adjusted for inflation would have been about $19.00/cwt. Milk prices, although high in 1998, were not as high when measured in real dollars.

Operating cost of pricing milk (actual) had been very constant from 1989 through 1995, feed costs increased in 1996 and so did operating costs of producing milk. Operating costs have been somewhat lower in 1997 and 1998, but not reaching prior year levels. Real costs of producing milk has been on a downword trend over this 10 year period.

Chart 3

Operating Cost of Producing Milk and Milk Price
Dairy Farm Business Summary Farms, 1989-1998



*Adjusted for inflation using the Consumer Price Index–1998 dollars.

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, the number of farms reporting these characteristics, and listing of the average labor, land, and dairy cattle resources used in 1998 are presented in the following table.

Table 3.

BUSINESS CHARACTERISTICS AND RESOURCES USED
305 New York Dairy Farms, 1998

Dairy Livestock (number)	Cows	Heifers
Beginning of Year	202	148
End of Year	212	158
Average for Year	210	155

Type of Business	Number	Percent
Sole Proprietorship	175	57
Partnership	104	34
Corporation	26	9

Barn Type	Number	Percent
Stanchion	92	30
Freestall	182	60
Combination	31	10

Milking System	Number	Percent
Bucket & Carry	0	0
Dumping Station	4	1
Pipeline	109	36
Herringbone	131	43
Other Parlor	61	20

Milking Frequency	Number	Percent
2 times per day	220	72
3 times per day	72	24
Other	13	4

Business Records	Number	Percent
Account Book	79	26
Agrifax (mail-in)	40	13
On-Farm Computer	138	45
Other	48	16

Dairy Records	Number	Percent
D.H.I.C.	209	69
Owner Sampler	33	11
Other	26	8
None	37	12

bST Usage	Number	Percent
Used on <25% of herd	37	12
Used on 25-75% of herd	106	35
Used on >75% of herd	22	7
Stopped using in 1998	10	3
Not used in 1998	130	43

Labor Force	Average	Percent
Operators	20.3	31
Family Paid	5.7	9
Family Unpaid	3.1	5
Hired	35.2	55
Total Months	64.2	100

	Average
Operators (total = 494)	1.62
Age	45
Education	13 years
Estimated Value of Labor & Management	$43,416

	Farms Reporting	
Land Used	Number	Average
Total acres:		
Owned	305	420
Rented	278	273
Tillable acres:		
Owned	305	266
Rented	276	256
Total	305	497

There were 494 full-time operator equivalents on the 305 dairy farms for an average of 1.62 operators per farm. The operators averaged 45 years of age and 13 years of formal education. Additional data on the labor force is in Table 41.

All 305 farm businesses included in the regular dairy summary own farm real estate. Dairy farm renters are summarized separately later in this publication. However, 276 of the dairy farm owners rented an average of 256 acres of tillable land in 1998. The 305 farms averaged 497 total tillable acres per farm of which 232 acres were rented. Tables 19 and 25 contain additional information on land use and the dairy herd.

Accounting Procedures

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

The accrual accounting procedures 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 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 are 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 page begins 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 roughage are not included in cash and accrual feed expenses.

3. Machinery costs represent all the operating costs of using power machinery on the farm. Ownership costs are excluded here but are included in the analysis of machinery costs.

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 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.

Cash and accrual farm expenses are summarized below. Total operating accrual expenses for the 305 farms averaged $1,583 per day and 91 percent of total farm accrual expenses.

Table 4.

CASH AND ACCRUAL FARM EXPENSES
305 New York Dairy Farms, 1998

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses	Percent
Hired Labor	$ 90,404		$146 <<		$ 169		$ 90,427	16
Feed								
Dairy grain & concentrate	192,434		11,996		-5,419		175,019	30
Dairy roughage	9,795		1,025		105		8,876	1
Nondairy livestock	76		2		0		74	<1
Machinery								
Machinery hire, rent & lease	16,116		674 <<		-225		15,216	3
Machinery repairs & farm vehicle exp.	34,737		450		-299		33,989	6
Fuel, oil & grease	11,510		192		-248		11,069	2
Livestock								
Replacement livestock	10,110		0 <<		297		10,407	2
Breeding	7,326		230		-105		6,992	1
Veterinary & medicine	20,226		268		-388		19,570	3
Milk marketing	23,131		13 <<		14		23,131	4
Bedding	8,036		189		-35		7,812	1
Milking Supplies	15,361		529		-85		14,747	3
Cattle lease & rent	1,775		0 <<		-6		1,769	<1
Custom boarding	6,503		72 <<		-58		6,373	1
BST expense	10,492		355 <<		-49		10,088	2
Other livestock expense	6,956		86		-21		6,848	1
Crops								
Fertilizer & lime	17,924		1,832		-684		15,407	3
Seeds & plants	11,590		1,785		-78		9,726	2
Spray & other crop expense	11,373		390		-391		10,593	2
Real Estate								
Land, building & fence repair	11,698		83		64		11,679	2
Taxes	9,812		185 <<		-186		9,442	2
Rent & lease	11,840		130 <<		-208		11,501	2
Other								
Insurance	7,510		56 <<		-7		7,448	1
Utilities	14,107		19 <<		-10		14,078	2
Interest paid	39,422		9 <<		-180		39,234	7
Miscellaneous	7,551		109		-1,015		6,427	1
Total Operating	$ 607,815		$20,826		$ -9,048		$ 577,942	100
Expansion livestock	$ 9,034		$ 0 <<		$ 57		$ 9,091	
Machinery depreciation							$ 26,790	
Building depreciation							$ 20,709	
TOTAL ACCRUAL EXPENSES							$ 634,532	

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.

Change in inventory represents feeds and supplies purchased this year but not used (positive change), and inputs purchased in a prior year and used this year (negative change). For example, purchased dairy grain and concentrate inventory increased $11,996.

Prepaid expenses (noted by « in Table 4) are advance payments made for services and noninventory items. For example, advance payments for rent increased an average of $130 per farm in 1998, and that increase is subtracted from cash rent to determine the correct 1998 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 $20,826, and total change in accounts payable equals $-9,048.

Income Statement - Receipts

Cash and accrual farm receipts are presented in the following table. Total cash receipts averaged $724,972 per farm. Total accrual receipts averaged $767,237 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 10 head per farm and the homegrown feed inventory per farm increased $10,872. Homegrown feed inventory per cow increased $31 from beginning to end of year.

Table 5.

CASH AND ACCRUAL FARM RECEIPTS
305 New York Dairy Farms, 1998

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts	Percent
Milk sales	$ 672,968				$ 12,533		$ 685,501	89
Dairy cattle	23,063		$ 18,791		-18		41,836	5
Dairy calves	4,517				-3		4,514	1
Other livestock	889		-11		-9		869	<1
Crops	4,309		10,872		309		15,490	2
Government receipts	9,454		-79*		182		9,557	1
Custom machine work	1,410				-214		1,196	<1
Gas tax refund	255				-5		250	<1
Other	8,108				-9		8,099	1
- Nonfarm noncash capital**			(-) 75				(-) 75	
Total	$ 724,972		$ 29,498		$ 12,767		$ 767,237	100

*Change in advanced government receipts.
**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 1997 to 1998. 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 1998 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 12.

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 $24,992 per farm in 1998. On the average, farm real estate appreciated $14,021 or less than 3 percent of beginning fair market value. Machinery appreciated approximately 3 percent while dairy cattle prices appreciated 1.5 percent in 1998.

Average data from 30 farms with the highest rates of return to all capital (without appreciation) are compared with the 305 farm average in Table 6 and in many of the following tables. Net farm income with appreciation averaged $321,991 per farm on the top 10 percent farms, 104 percent above the 305 farm average.

Table 6.

NET FARM INCOME
305 New York Dairy Farms, 1998

Item	Average 305 Farms		Average Top 10% Farms*	
	Per Farm	Per Cow	Per Farm	Per Cow
Total accrual receipts	$ 767,237		$ 1,133,525	
+ Appreciation: Livestock	4,538		5,553	
Machinery	5,896		4,150	
Real Estate	14,021		12,438	
Other Stock & Certificates	537		-2,774	
= Total including appreciation	$ 792,229		$ 1,152,892	
- Total accrual expenses	634,532		830,901	
= Net Farm Income (with appreciation)	$ 157,697	$ 751	$ 321,991	$ 1,146
Net Farm Income (without appreciation)	$ 132,705	$ 632	$ 302,624	$ 1,077

*Average of 30 farms with highest rates of return to all capital (without appreciation).

Labor and management income is the share 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 7.

LABOR AND MANAGEMENT INCOME
305 New York Dairy Farms, 1998

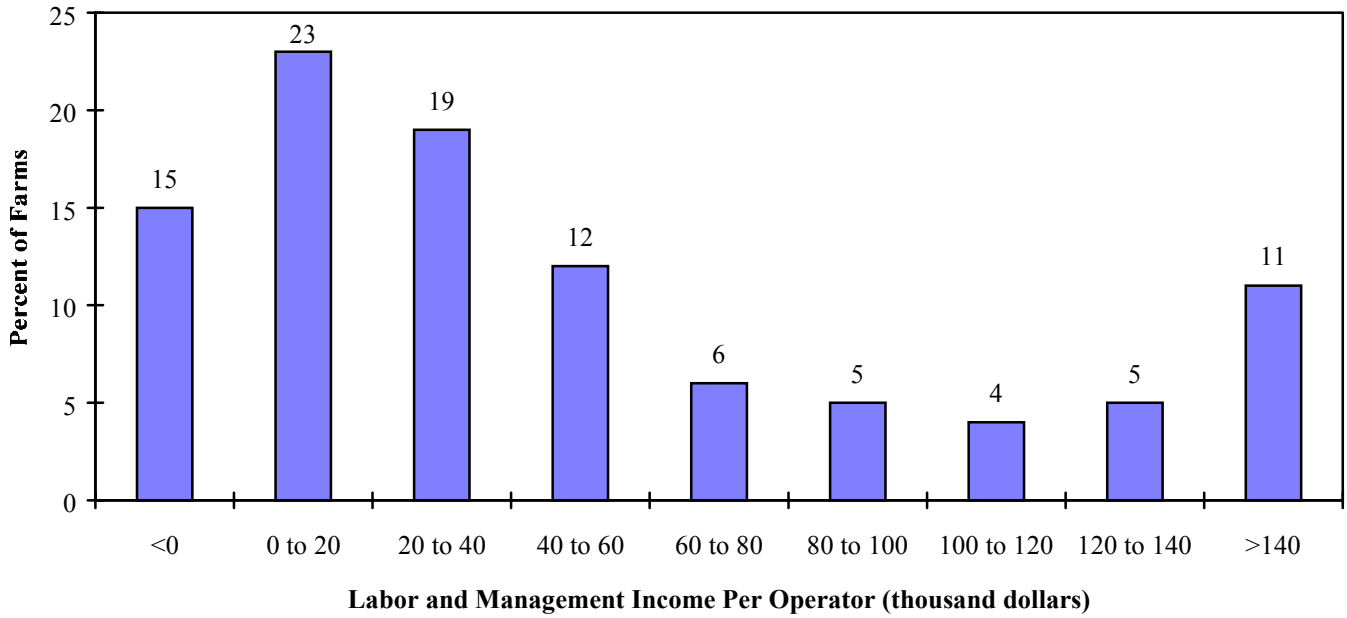
Item	Average 305 Farms		Average Top 10% Farms*
Net farm income without appreciation	$132,705		$ 302,624
- Family labor unpaid @ $1,600 per month	$ 4,960		$ 5,600
- Real interest @ 5% on $743,192 equity capital for average & $923,078 for the top 10%	37,160		46,154
= Labor & Management Income (1.62 operators)	$ 90,585	(1.40 operators)	$ 250,870
Labor & Management Income per Operator	$ 55,917		$ 179,193

*Average of 30 farms with highest rates of return to all capital (without appreciation).

Labor and management income per operator averaged $55,917 on these 305 dairy farms in 1998. The range in labor and management income per operator was from less than $-90,000 to more than $755,000. Returns to labor and management were negative on 15 percent of the farms. Labor and management income per operator ranged from $0 to $99,999 on 65 percent of the farms while 20 percent showed labor and management incomes of $100,000 or more per operator.

Chart 4.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR
305 New York Dairy Farms, 1998



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 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.

Table 8.

RETURN TO CAPITAL
305 New York Dairy Farms, 1998

Item	Average 305 Farms	Average Top 10% Farms*
Net farm income with appreciation	$ 157,697	$ 321,991
- Family labor unpaid at $1,600 per month	4,960	5,600
- Value of operators' labor & management	43,416	41,966
= Return to equity capital with appreciation	$ 109,321	$ 274,425
+ Interest paid	39,234	48,409
= Return to all capital with appreciation	$ 148,555	$ 322,834
Return to equity capital without appreciation	$ 84,329	$ 255,058
Return to all capital without appreciation	$ 123,563	$ 303,467
Rate of return on average equity capital:		
with appreciation	14.7%	29.7%
without appreciation	11.4%	27.6%
Rate of return on all capital:		
with appreciation	11.5%	20.4%
without appreciation	9.6%	19.2%

*Average of 30 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 9 shows that farms with higher return to all capital with appreciation also had significantly higher return per hour to all labor and management.

Table 9.

RETURN TO ALL LABOR AND MANAGEMENT BY RETURN TO ALL CAPITAL WITH APPRECIATION
305 New York Dairy Farms, 1998

	Quartile by Return to All Capital With Appreciation			
Item	Lowest 25%	3rd 25%	2nd 25%	Top 25%
Return to all capital with appreciation	$ 2,709	$ 44,332	$ 117,283	$ 431,965
Rate of return on all capital with appreciation	0.6%	6.8%	10.7%	14.7%
Total returns to all labor & management	$ 19,889	$ 55,865	$ 133,374	$ 536,945
Worker equivalent	2.59	2.93	4.44	11.49
Return per worker equivalent	$ 7,679	$ 19,067	$ 30,039	$ 43,732
Returns/hour (2,760 hours/worker/year)	$ 2.78	$ 6.91	$ 10.88	$ 15.84

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 10.

1998 FARM BUSINESS AND NONFARM BALANCE SHEET
305 New York Dairy Farms, 1998

Farm Assets	Jan. 1	Dec. 31
Current		
Farm cash, checking & savings	$ 8,999	$ 8,573
Accounts receivable	45,394	58,161
Prepaid expenses	1,049	2,354
Feed & supplies	111,185	141,576
Total Current	$ 166,627	$ 210,664
Intermediate		
Dairy Cows:		
owned	$ 205,748	$ 219,971
leased	3,879	2,797
Heifers	87,255	96,402
Bulls & other livestock	2,098	2,046
Mach. & equip. owned	210,961	231,264
Mach. & equip. leased	14,454	13,027
Farm Credit stock	5,202	5,488
Other stock & certificates	20,104	24,278
Total Intermediate	$ 549,701	$ 595,273
Long Term		
Land & buildings:		
owned	$ 520,704	$ 541,880
leased	1,758	1,199
Total Long Term	$ 522,462	$ 543,079
Total Farm Assets	$ 1,238,790	$ 1,349,016

Farm Liabilities & Net Worth	Jan. 1	Dec. 31
Current		
Accounts payable	$ 25,355	$ 16,363
Operating debt	35,543	41,050
Short term	5,620	4,574
Advanced gov't. receipt	153	232
Current portion:		
Intermediate	33,988	41,037
Long term	13,172	15,169
Total Current	$ 113,831	$ 118,427
Intermediate		
Structured debt		
1-10 years	$ 191,098	$ 190,728
Financial lease (cattle & machinery)	18,333	15,824
Farm Credit stock	5,202	5,488
Total Intermediate	$ 214,633	$ 212,040
Long Term		
Structured debt		
≥ 10 years	$ 220,482	$ 219,053
Financial lease (structures)	1,758	1,199
Total Long Term	$ 222,240	$ 220,252
Total Farm Liabilities	$ 550,704	$ 550,719
FARM NET WORTH	$ 688,086	$ 798,297

Nonfarm Assets*	Jan.1	Dec. 31
Personal cash, checking & savings	$ 4,247	$ 6,421
Cash value life insurance	13,217	13,730
Nonfarm real estate	30,365	33,062
Auto (personal share)	4,574	4,705
Stocks & bonds	11,092	13,947
Household furnishings	9,253	9,519
All other	8,582	8,886
Total Nonfarm	$ 81,330	$ 90,270

Nonfarm Liabilities* & Net Worth	Jan. 1	Dec. 31
Nonfarm Liabilities	$ 3,860	$ 4,613
NONFARM NET WORTH	$ 77,470	$ 85,657

FARM & NONFARM**	Jan. 1	Dec. 31
Total Assets	$ 1,320,120	$ 1,439,286
Total Liabilities	554,564	555,332
TOTAL FARM & NON-FARM NET WORTH	$ 765,556	$ 883,954

*Average of 169 farms completing the nonfarm balance sheet.
**Sum of average farm values for 305 farms and nonfarm values for 169 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 production include some old standards that are still useful if used with measures of cash flow and repayment ability.

Table 11.

FARM BALANCE SHEET ANALYSIS
305 New York Dairy Farms, 1998

Item	Average 305 Farms		Average Top 10% Farms*
Farm Financial Ratios:			
Percent equity	59%		60%
Debt/asset ratio: total	0.41		0.40
long term	0.41		0.42
intermediate & current	0.41		0.38
Current Ratio:	1.78		2.11
Working Capital: $92,237 as % of Total Expenses	15%	$176,000	21%
Farm Debt Analysis:			
Accounts payable as % of total debt	3%		2%
Long term liab. as % of total debt	40%		37%
Current & intermediate liabilities as % of total debt	60%		63%

Farm Debt Levels:	Per Cow	Per Tillable Acre Owned	Per Cow	Per Tillable Acre Owned
Total farm debt	$2,550	$2,070	$2,324	$2,240
Long term debt	1,020	828	861	830
Intermediate & long term	2,001	1,625	1,786	1,721
Intermediate & current debt	1,530	1,242	1,463	1,411

*Average of 30 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 12.

FARM INVENTORY BALANCE
305 New York Dairy Farms, 1998

Item	Real Estate		Machinery & Equipment		Livestock
Value beginning of year		$ 520,704		$ 210,961	$ 295,101
Purchases	$ 40,184*		$ 44,160		
+ nonfarm noncash transfer**	1,083		99		
- Lost capital	11,874				
- Net sales	1,530		3,062		
- Depreciation	20,709		26,790		
= Net Investment		7,155		14,407	18,780
+ Appreciation		14,021		5,896	-4,538
Value end of year		$ 541,880		$ 231,264	$ 318,419

*$6,649 land and $33,535 buildings and/or depreciable improvements.
**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 interrelated and 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 was caused by (1) earning from the business, and nonfarm income, in excess of withdrawals being retained in the business (called 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 13.

STATEMENT OF OWNER EQUITY (RECONCILIATION)
305 New York Dairy Farms, 1998

Item	Average 305 Farms		Average Top 10% Farms**	
Beginning of year farm net worth		$ 688,086		$ 800,691
Net farm income without appreciation	$ 132,705		$302,624	
+ Nonfarm cash income	7,372		7,295	
- Personal withdrawals & family expenditures excluding nonfarm borrowings	48,911		67,829	
RETAINED EARNINGS		+ $ 91,166		+ $ 242,090
Nonfarm noncash transfers to farm	$ 1,257		$ 500	
+ Cash used in business from nonfarm capital	5,447		3,440	
- Note or mortgage from farm real estate sold (nonfarm)	0		0	
CONTRIBUTED/WITHDRAWN CAPITAL		+ $ 6,704		+ $ 3,940
Appreciation	$ 24,992		$ 19,367	
- Lost capital	11,874		17,336	
CHANGE IN VALUATION EQUITY		+ $ 13,118		+ $ 2,031
IMBALANCE/ERROR		- $ 777		- $ 3,288
End of year farm net worth*		$ 798,297		$ 1,045,464
Change in Net Worth				
Without appreciation	$85,219		$225,406	
With appreciation	$ 110,211		$244,773	

*May not add due to rounding.
**Average of 30 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. 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 including beginning and end balances 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 14.

ANNUAL CASH FLOW STATEMENT
305 New York Dairy Farms, 1998

Item		Average 305 Farms	
Cash Flow from Operating Activities			
Cash farm receipts	$ 724,972		
- Cash farm expenses	607,815		
= Net cash farm income		$ 117,157	
Personal withdrawals & family expenses including nonfarm debt payments	$ 49,752		
- Nonfarm income	7,372		
- Net cash withdrawals from the farm		$ 42,380	
= Net Provided by Operating Activities			$ 74,777
Cash Flow From Investing Activities			
Sale of assets: machinery	$ 3,062		
+ real estate	1,530		
+ other stock & certificates	1,311		
= Total asset sales		$ 5,903	
Capital purchases: expansion livestock	$ 9,034		
+ machinery	44,160		
+ real estate	40,184		
+ other stock & certificates	4,948		
- Total invested in farm assets		$ 98,326	
+ Net Provided by Investment Activities			$ -92,423
Cash Flow From Financing Activities			
Money borrowed (intermediate & long term)	$ 79,201		
+ Money borrowed (short term)	3,164		
+ Increase in operating debt	5,508		
+ Cash from nonfarm capital used in business	5,447		
+ Money borrowed - nonfarm	841		
= Cash inflow from financing		$ 94,161	
Principal payments (intermediate & long term)	$ 71,957		
+ Principal payments (short term)	4,209		
+ Decrease in operating debt	0		
- Cash outflow for financing		$ 76,166	
= Net Provided by Financing Activities			$ 17,995
Cash Flow From Reserves			
Beginning farm cash, checking & savings		$ 8,999	
- Ending farm cash, checking & savings		$ 8,573	
= Net Provided from Reserves			$ 426
Imbalance (error)			$ 775

Table 15.

ANNUAL CASH FLOW BUDGETING DATA
305 New York Dairy Farms, 1998

Item	Average 305 Farms Total	Per Cow	Per Cwt.	Average Top 10% Farms** Total	Per Cow	Per Cwt.
Average number of cows and cwt. milk		210	43,954		281	61,724
Accrual Operating Receipts						
Milk	$ 685,501	$3,264	$ 15.60	$ 967,233	$ 3,442	$ 15.67
Dairy cattle	41,836	199	0.95	93,907	334	1.52
Dairy calves	4,514	21	0.10	5,543	20	0.09
Other livestock	869	4	0.02	3,426	12	0.06
Crops	15,490	74	0.35	36,691	131	0.59
Miscellaneous receipts	19,027	91	0.43	26,725	95	0.43
Total	$ 767,237	$3,654	$ 17.46	$ 1,133,525	$ 4,034	$ 18.36
Accrual Operating Expenses						
Hired labor	$ 90,427	$431	$ 2.06	$ 117,434	$ 418	$ 1.90
Dairy grain & concentrate	175,019	833	3.98	231,687	825	3.75
Dairy roughage	8,876	42	0.20	16,265	58	0.26
Nondairy feed	74	0	0.00	63	0	0.00
Machinery hire, rent & lease	15,219	72	0.35	19,220	68	0.31
Machinery repairs & vehicle expense	33,989	162	0.77	39,041	139	0.63
Fuel, oil & grease	11,069	53	0.25	13,373	48	0.22
Replacement livestock	10,407	50	0.24	16,262	58	0.26
Breeding	6,992	33	0.16	8,003	28	0.13
Vet & medicine	19,570	93	0.45	27,811	99	0.45
Milk marketing	23,131	110	0.53	32,555	116	0.53
Bedding	7,812	37	0.18	8,289	29	0.13
Milking supplies	14,747	70	0.34	18,302	65	0.30
Cattle lease	1,769	8	0.04	875	3	0.01
Custom boarding	6,373	30	0.14	3,773	13	0.06
bST expense	10,088	48	0.23	15,121	54	0.24
Other livestock expense	6,848	33	0.16	11,037	39	0.18
Fertilizer & lime	15,407	73	0.35	20,411	73	0.33
Seeds & plants	9,726	46	0.22	11,837	42	0.19
Spray/other crop expense	10,593	50	0.24	14,544	52	0.24
Land, building & fence repair	11,679	56	0.27	11,812	42	0.19
Taxes	9,442	45	0.21	9,894	35	0.16
Real estate rent & lease	11,501	55	0.26	15,410	55	0.25
Insurance	7,448	35	0.17	7,173	26	0.12
Utilities	14,078	67	0.32	16,554	59	0.27
Miscellaneous	6,427	31	0.15	7,689	27	0.12
Total Less Interest Paid	$ 538,708	$2,565	$ 12.26	$ 694,434	$ 2,471	$ 11.25
Net Accrual Operating Income (without interest paid)	$ 228,529	$1,088	$ 5.20	$ 439,091	$ 1,563	$ 7.11
- Change in livestock & crop inventory	29,498	140	0.67	89,869	320	1.46
- Change in accounts receivable	12,767	61	0.29	34,485	123	0.56
- Change in feed & supply inventory	20,826	99	0.47	60,067	214	0.97
+ Change in accounts payable*	-8,868	-42	-0.20	-10,767	-38	-0.17
NET CASH FLOW	$ 156,579	$746	$ 3.56	$ 243,904	$ 868	$ 3.95
- Net personal withdrawals & family exp.	41,539	198	0.95	60,534	215	0.98
Available for Farm Debt Payments & Invest.	$ 115,040	$548	$ 2.62	$ 183,370	$ 653	$ 2.97
- Farm debt payments	122,639	584	2.79	152,962	544	2.48
Cash available for Farm Investments	$ -7,599	$-36	$ -0.17	$ 30,408	$ 108	$ 0.49

*Exclude change in interest account payable.
**Average of 30 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 1997 and 1998.

Table 16.

FARM DEBT PAYMENTS PLANNED
New York Dairy Farms, 1998

	Same 236 Dairy Farms			Same 19 Top 10% Farms		
	1998 Payments		Planned	1998 Payments		Planned
Debt Payments	Planned	Made	1999	Planned	Made	1999
Long term	$ 30,781	$ 39,494	$ 31,761	$ 24,999	$ 36,704	$ 28,553
Intermediate term	56,204	75,248	57,973	60,354	96,551	86,911
Short term	3,601	4,055	2,515	11,822	10,511	8,872
Operating (net reduction)	4,210	0	3,710	3,329	0	8,246
Accts. payable (net reduction)	2,679	8,289	799	158	12,311	389
Total	$ 97,475	$127,086	$ 96,758	$ 100,662	$ 156,077	$ 132,971
Per cow	$ 469	$ 611		$ 413	$ 640	
Per cwt. 1998 milk	$ 2.24	$ 2.93		$ 1.90	$ 2.94	
% of 1998 milk receipts	14%	19%		12%	19%	

The cash flow coverage ratio and debt coverage ratio measure the ability of the farm business to meet its planned debt payments. The ratios show the number of times the amount available for debt service in 1998 covered debt payments planned for 1998 (as of December 31, 1997).

Table 17.

COVERAGE RATIOS
Same 236 New York Dairy Farms, 1997 & 1998

Item	Average	Item	Average
Cash Flow Coverage Ratio		Debt Coverage Ratio	
Cash farm receipts	$ 717,290	Net farm income (w/o apprec.)	$130,141
- Cash farm expenses	601,364	+ Depreciation	44,865
+ Interest paid (cash)	38,401	+ Interest paid (accrual)	38,158
- Net personal withdrawals from farm*	41,832	- Net personal withdrawals from farm*	41,832
(A) = Amount Available for Debt Service	$ 112,495	(A') = Repayment Capacity	$171,332
(B) = Debt Payments Planned for 1998 (as of December 31, 1997)	$ 97,475	(B) = Debt Payments Planned for 1998 (as of December 31, 1997)	$ 97,475
(A/ B)= Cash Flow Coverage Ratio for 1998	1.15	(A'/B)= Debt Coverage Ratio for 1998	1.76
Same 19 Top 10% Dairy Farms, 1997 & 1998			
(A) = Amount Available for Debt Service	$ 150,255	(A') = Repayment Capacity	$ 316,428
(B) = Debt Payments Planned for 1998	100,662	(B) = Debt Payments Planned for 1998	100,662
(A/ B)= Cash Flow Coverage Ratio for 1998	1.49	(A'/B)= Debt Coverage Ratio for 1998	3.14

*Personal withdrawals and family expenditures less nonfarm income and nonfarm money borrowed. If excluded, the coverage ratios will be incorrect.

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, 17.4 percent of the farms had a cash flow coverage ratio less than 1.0.

Table 18.

DEBT TO ASSET RATIO VS. CASH FLOW COVERAGE
236 New York Dairy Farms, 1998

Debt/Asset Ratio	Cash Flow Coverage Ratio (Farm & Nonfarm) <.5	.5 to .99	1 to 1.49	≥1.5
		percent of farms		
<40%	3.4	14.0	14.4	24.2
40 to 70%	3.8	16.1	13.1	6.8

70% & over	0.8	0.8	1.7	0.8

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 producing and what it costs to produce them, is required to evaluate alternative cropping and feed purchase choices.

Table 19.

LAND RESOURCES AND CROP PRODUCTION
305 New York Dairy Farms, 1998

Item	Average 253 Farms			Average Top 10% Farms*		
Land	Owned	Rented	Total	Owned	Rented	Total
Tillable	266	232	498	305	303	608
Nontillable	45	12	57	47	3	50
Other nontillable	110	5	115	119	3	122
Total	421	249	670	471	309	780

Crop Yields	Farms	Acres	Prod/Acre	Farms	Acres	Prod/Acre
Hay crop	295	247	3.1 tn DM	27	315	3.3 tn DM
Corn silage	275	194	18.0 tn	26	267	18.6 tn
			5.8 tn DM			5.7 tn DM
Other forage	28	61	1.8 tn DM	2	55	3.5 tn DM
Total forage	297	430	4.2 tn DM	27	576	4.4 tn DM
Corn grain	108	103	119 bu	12	71	128 bu
Oats	22	37	56 bu	2	25	24 bu
Wheat	24	71	67 bu	2	40	60 bu
Other crops	54	81		5	98	
Tillable pasture	80	48		9	103	
Idle	46	44		7	39	

*Average of 30 farms with highest rates of return to all capital (without appreciation).

Crop acres and yields compiled for the average represent only the number of farms reporting each crop. All but 10 of the 305 farms produced hay or hay crop silage in 1998. Ninety percent produced corn silage, 35 percent grew and harvested corn grain, and 7 percent grew oats for grain. Although 80 farms used tillable pasture in 1998, only 59 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 efficiently the land resource is being used and how well total forage requirements are being met.

Table 20.

CROP MANAGEMENT FACTORS
305 New York Dairy Farms, 1998

Item	Average 305 Farms	Average Top 10% Farms*
Total tillable acres per cow	2.37	2.16
Total forage acres per cow	2.00	1.85

Harvested forage dry matter, tons per cow	8.41	8.12

*Average of 30 farms with highest rates of return to all capital (without appreciation).

In the sixth year of collecting information on pasture costs, 10 cooperators provided pasture-related expenses. Fifty-seven cooperators allocated direct crop related expenses to hay crop, corn and other crop production. The data in Table 21 have been compiled to show the average crop related production expenses per acre and per unit for these crops and for pasture. 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 21, the total per tillable acre represents all 305 farms, the expenses for hay are for 54 farms and corn crops are for the 57 farms. The pasture costs are for the 10 farms which submitted data.

Table 21.

CROP RELATED ACCRUAL EXPENSES
New York Dairy Farms, 1998

		Farms Reporting Crop Costs						
	Average 305 Farms	Average 54 Farms		Average 57 Farms			Average 10 Farms	
							Pasture	
	Total per Tillable	Hay Crop		All Corn	Corn Silage	Corn Grain	Per Till.	Per Total
Espenses	Acre	Per Acre	Per Ton DM	Per Acre	Per Ton DM	Per Dry Shell Bu.	Acre	Acre
Fertilizer & lime	$31.00	$22.06	$6.77	$38.13	$6.78	$0.34	$53.53	$11.69
Seeds & plants	19.57	14.11	4.33	28.56	5.08	0.25	20.42	4.46
Spray & other crop exp.	21.31	7.63	2.34	44.40	7.90	0.40	6.21	1.36
Total	$71.88	$43.80	$13.44	$111.09	$19.76	$0.99	$80.16	$17.51
Ave. Top 10% Farms:*	Average 30 Farms	Average 4 Farms Reporting Crop Costs						
Fertilizer & lime	$33.57	$26.11	$8.59	$26.25	$4.25	$0.23		
Seeds & plants	19.47	11.40	3.75	20.32	3.29	0.18		
Spray & other crop exp.	23.92	8.83	2.91	48.76	7.89	0.42		
Total	$76.96	$46.34	$15.25	$95.33	$15.43	$0.83		

*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 22.

ACCRUAL MACHINERY EXPENSES
305 New York Dairy Farms, 1998

	Average 305 Farms		Average Top 10% Farms*	
Machinery Expense Item	Total Expenses	Per Til. Acre	Total Expenses	Per Til. Acre
Fuel, oil & grease	$11,069	$22.27	$13,373	$22.00
Machinery repairs & vehicle expense	33,989	68.39	39,041	64.21
Machine hire, rent & lease	15,216	30.62	19,220	31.61
Interest (5%)	11,743	23.63	13,807	22.71
Depreciation	26,790	53.90	32,377	53.25
Total	$98,807	$198.81	$117,818	$193.78

*Average of 30 farms with highest rates of return to all capital (without appreciation).

Table 23.

CROP RELATED ACCRUAL EXPENSES BY HAY CROP PRODUCTION PER ACRE
54 New York Dairy Farms, 1998

Item	Tons of Hay Crop Dry Matter Per Acre				
	<2.0	2.0-2.4	2.5-2.9	3.0-3.4	≥3.5
Hay crop, tons DM/acre	1.5	2.3	2.7	3.2	4.6
Farms reporting crop expense breakdowns	4	7	14	11	18
Average number hay crop acres for farms reporting	225	224	194	194	274
Accrual Crop Expenses Per Acre of Hay Crop:					
Fertilizer & lime	$ 7.60	$ 7.91	$ 21.70	$ 27.35	$ 27.15
Seeds & plants	7.60	12.27	14.49	11.09	17.00
Spray & other crop expenses	1.56	5.68	8.16	6.12	9.73
Total	$ 16.76	$ 25.86	$ 44.35	$ 44.56	$ 53.88
Accrual Crop Expense Per Ton DM of Hay Crop:					
Fertilizer & lime	$ 5.52	$ 3.50	$ 6.07	$ 6.91	$ 5.31
Seeds & plants	5.51	5.42	4.06	2.80	3.32
Spray & other crop expenses	1.13	2.51	2.28	1.55	1.90
Total	$ 12.16	$ 11.43	$ 12.41	$ 11.26	$ 10.53

Table 24.

CROP RELATED ACCRUAL EXPENSES BY CORN PRODUCTION PER ACRE
57 New York Dairy Farms, 1998

Item	Tons Corn Silage/Acre			Dry Shell Bushels of Corn Grain Per Acre		
	<13	13-18	≥18	<88	88-113	≥113
Corn yield per acre	10.8	15.7	22.4	78	102	136
Farms reporting crop expense breakdowns	8	31	17	2	11	19
Average number corn acres for farms reporting	149	200	286	493	267	223
Accrual Crop Expense/Acre of Corn						
Fertilizer & lime	$ 35.26	$ 41.34	$ 35.45	$ 37.86	$ 34.79	$ 39.88
Seeds & plants	26.58	29.17	28.42	26.53	23.02	32.87
Spray & other crop expenses	28.16	41.17	53.26	24.22	42.05	48.72
Total	$ 90.00	$ 111.68	$ 117.13	$ 88.61	$ 99.86	$ 121.47
Accrual Crop Expense Per:*	Ton DM of Corn Silage			Dry Shell Bushel of Corn Grain		
Fertilizer & lime	$ 9.45	$ 8.08	$ 5.30	$ 0.46	$ 0.34	$ 0.31
Seeds & plants	7.13	5.71	4.25	0.32	0.22	0.26
Spray & other crop expense	7.55	8.05	7.96	0.29	0.41	0.38
Total	$ 24.13	$ 21.84	$ 17.51	$ 1.07	$ 0.97	$ 0.95

*Total corn expenses are allocated to corn silage and corn grain based on the proportion of acres in each crop.

From the above two tables, it is important to observe that as forage yields per acre increase, crop related expenses per acre generally also increase. For corn silage and corn grain, crop expense per ton of dry matter and per bushel are highest at the low levels of production. Hay crop expenses per ton of dry matter decrease substantially as yields exceed 3.5 tons per acre. The lower dry matter costs on the farms with greater than 3.5 tons per acre can be attributed to significantly higher yields with controlled expenses per acre.

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 increase in inventory is included as an accrual farm receipt when calculating profitability.

Table 25.

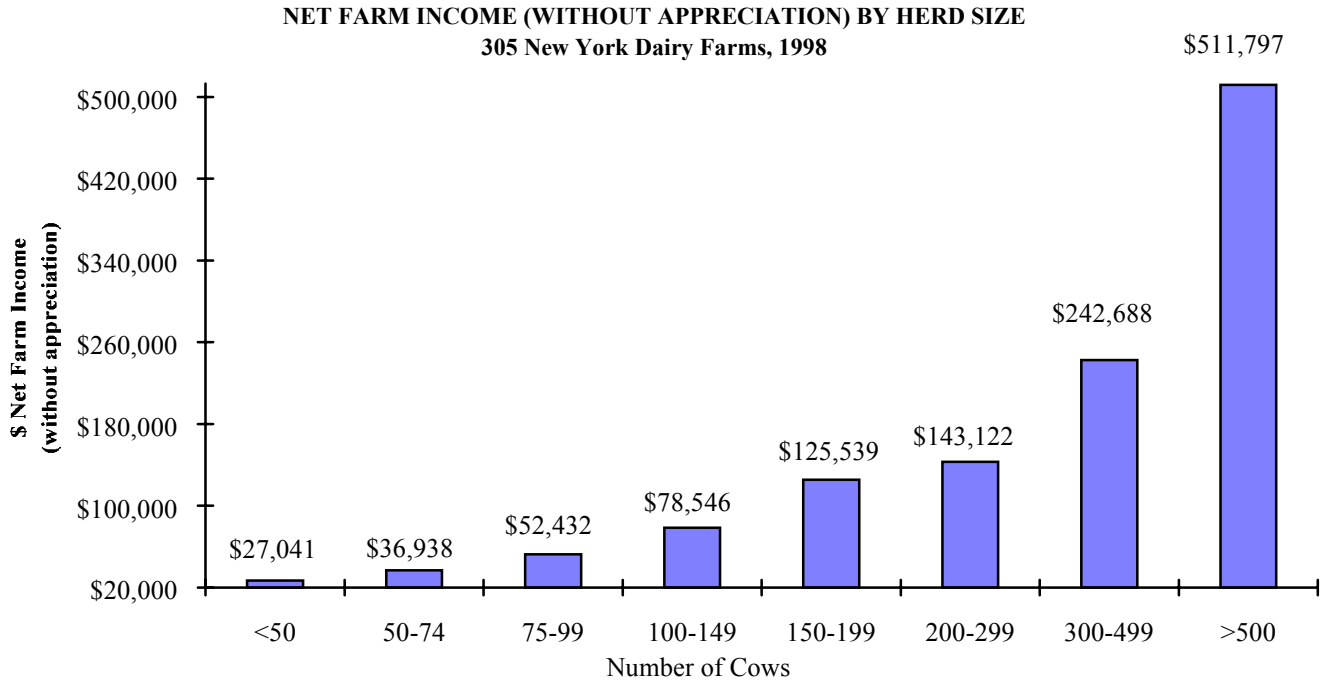
DAIRY HERD INVENTORY
305 New York Dairy Farms, 1998

	Dairy Cows		Heifers					
			Bred		Open		Calves	
Item	No.	Value	No.	Value	No.	Value	No.	Value
Beg. year (owned)	202	$ 205,748	54	$ 47,631	51	$ 27,275	43	$ 12,349
+ Change w/o apprec.		11,292		4,493		3,100		-93
+ Appreciation		2,931		785		416		445
End year (owned)	212	$ 219,971	59	$ 52,909	56	$ 30,791	43	$ 12,701
End including leased	216							
Average number	210		155	(all age groups)				
Average Top 10% Farms:*								
Beg. year (owned)	255	$ 266,107	66	$ 59,750	61	$ 33,474	57	$ 16,235
+ Change w/o apprec.		43,010		8,778		7,665		355
+ Appreciation		3,506		797		832		518
End year (owned)	292	$ 312,623	77	$ 69,325	72	$ 41,971	58	$ 17,108
End including leased	294							
Average number	281		197	(all age groups)				

*Average of 30 farms with highest rates of return to all capital (without appreciation).

There is a strong relationship between farm size and farm income on well managed dairy farms. When data are sorted by herd size categories this relationship becomes apparent as shown in Chart 5. Net farm income increased $484,750 while labor and management income per operator jumped $165,878 as herd size increased from less than 50 to over 500 cows per farm. For more information on herd size comparisons, see pages 46-55.

Chart 5.


NET FARM INCOME (WITHOUT APPRECIATION) BY HERD SIZE
305 New York Dairy Farms, 1998
$ Net Farm Income (without appreciation)
$500,000
$420,000
$340,000
$260,000
$180,000
$100,000
$20,000
$27,041
$36,938
$52,432
$78,546
$125,539
$143,122
$242,688
$511,797
<50
50-74
75-99
100-149
150-199
200-299
300-499
>500
Number of Cows

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 26.

MILK PRODUCTION
305 New York Dairy Farms, 1998

Item	Average 305 Farms	Average Top 10% Farms*
Total milk sold, lbs.	4,395,374	6,172,397
Milk sold per cow, lbs.	20,900	21,966
Average milk plant test, percent butterfat	3.68%	3.62%

*Average of 30 farms with highest rates of return to all capital (without appreciation).

Farms with higher rates of production tend to have higher profits. In 1998, most of the farms that sold more than 21,000 pounds of milk per cow had above average profit margins.

Table 27.

MILK SOLD PER COW AND FARM INCOME MEASURES
305 New York Dairy Farms, 1998

Pounds of Milk Sold Per Cow	Number of Farms	Average Number of Cows	Net Farm Income w/o Apprec.	Net Farm Income Per Cow	Labor & Management Income/Oper.
Under 14,000	24	73	$41,805	$573	$16,152
14,000 to 15,999	35	105	49,724	474	17,051
16,000 to 16,999	23	113	44,670	395	10,304
17,000 to 17,999	26	144	62,254	432	22,734
18,000 to 18,999	33	117	71,860	614	33,883
19,000 to 19,999	27	121	82,592	683	36,264
20,000 to 20,999	34	215	126,075	586	41,327
21,000 to 21,999	39	314	205,248	654	90,607
22,000 & over	64	401	284,261	709	114,981

The relationship between milk output per cow and net farm income on all dairy farms is shown in Table 27 above and is diagrammed in Charts 6 and 7 on page 26. Each spot on each scatter diagram represents one of the 305 farms.

Data in Chart 6 and Table 27 show that as milk sold per cow increased from 8,000 to 18,000 pounds, there was an increase in net farm income and the variation around the trend was relatively small at these production levels. As milk output exceeded 19,000 pounds per cow, average net farm income increased rapidly and net farm income variability exceeded $600,000 at higher levels of milk output.

The relationship between milk output per cow and net farm income per cow is presented in Chart 7 and Table 27. Profitability measured as net farm income per cow rather than per farm removes the influence of herd size and also shows a positive relationship with milk sold per cow. Most of the farms that achieved $1,000 or more of net farm income per cow sold between 20,000 and 27,000 pounds of milk per cow; however, many farms also achieved high levels of profit with lower milk output per cow.

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.

Chart 6.

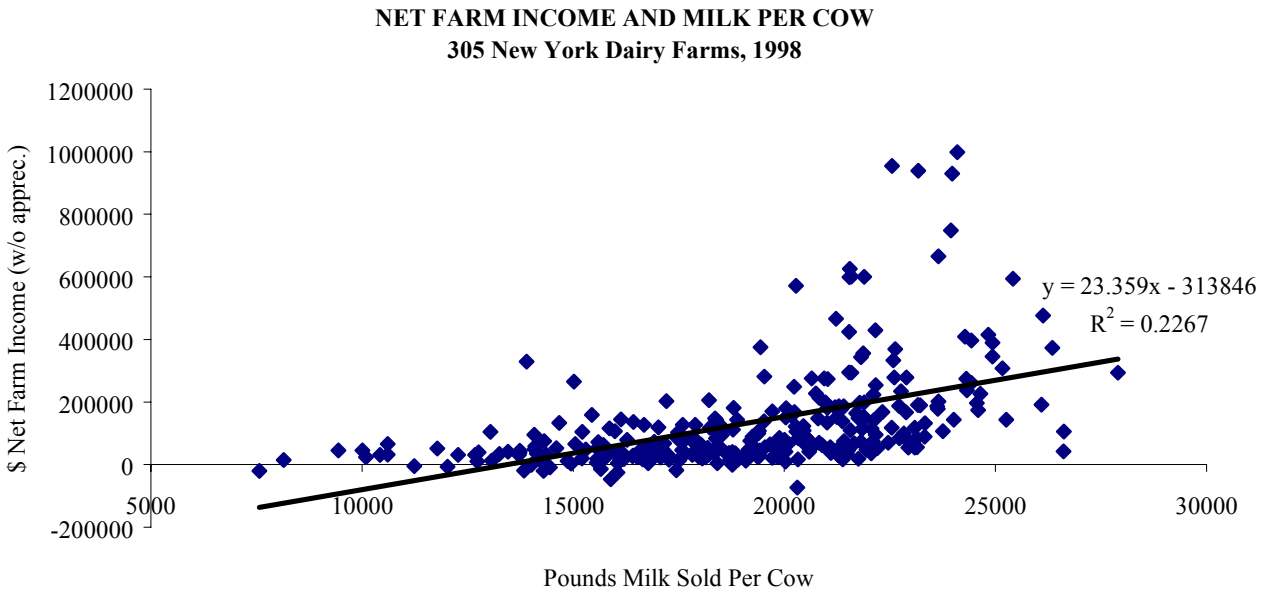
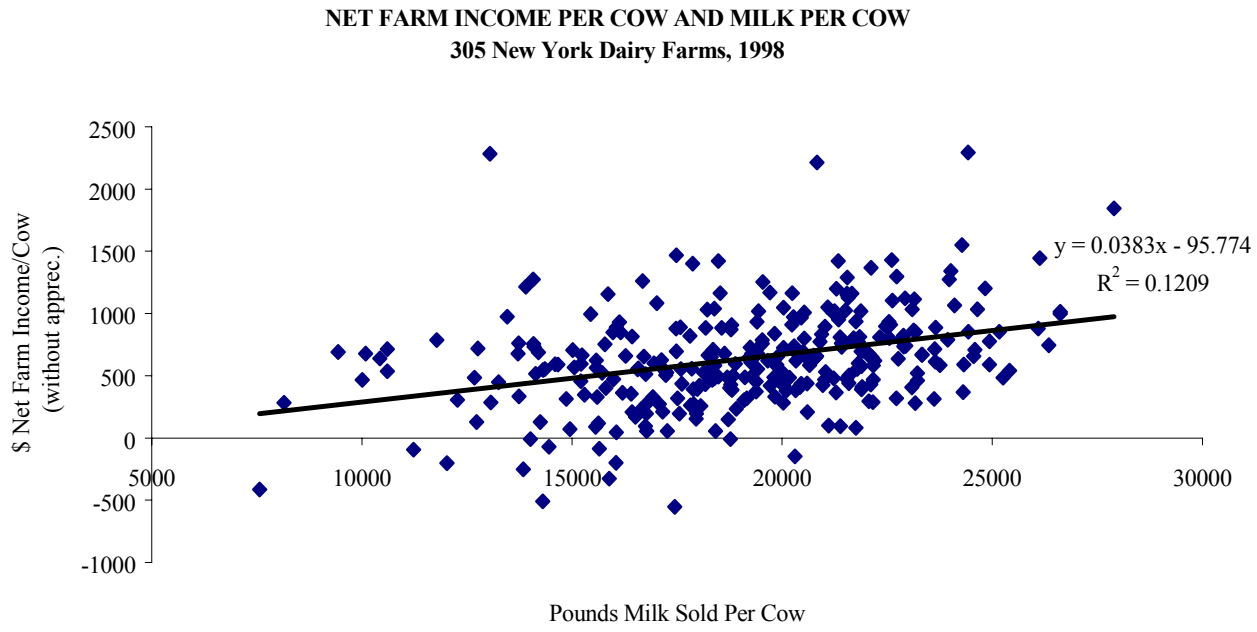


Chart 7.



For the 1998 year, supplementary information concerning culling rates and dairy replacements was collected from 126 participating farms. Charts 8 and 9 look at relationships between cull rates and milk production and net farm income per cow. The business chart (Table 28.) reports the range of reported factors for the different information that was collected. Please refer to the glossary for definitions of the different terms and how the measures were calculated.

Chart 8.

CULL RATE VS MILK SOLD PER COW
123 New York Dairy Farms, 1998

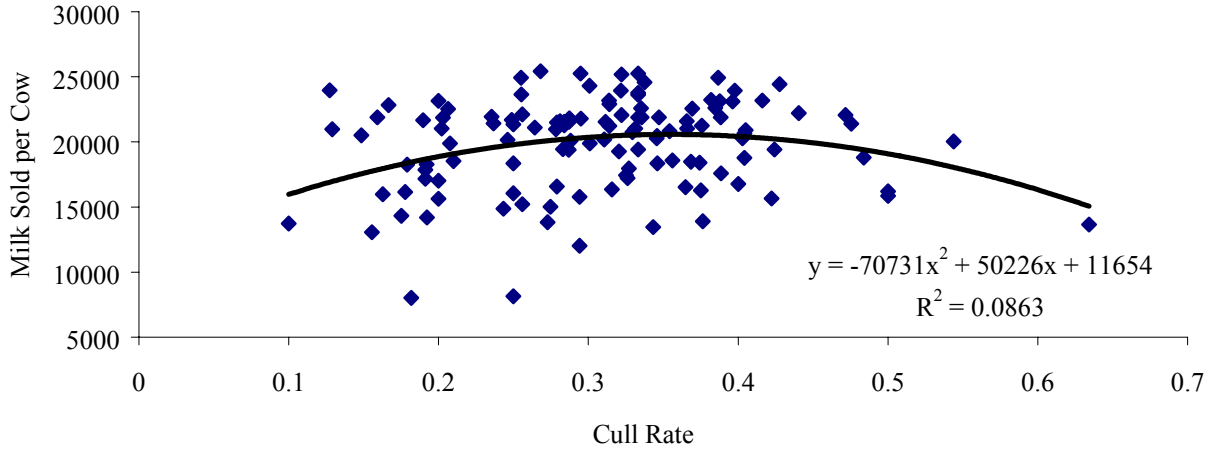


Chart 9

CULL RATE VS NET FARM INCOME PER COW WITHOUT APPRECIATION
123 New York Dairy Farms, 1998

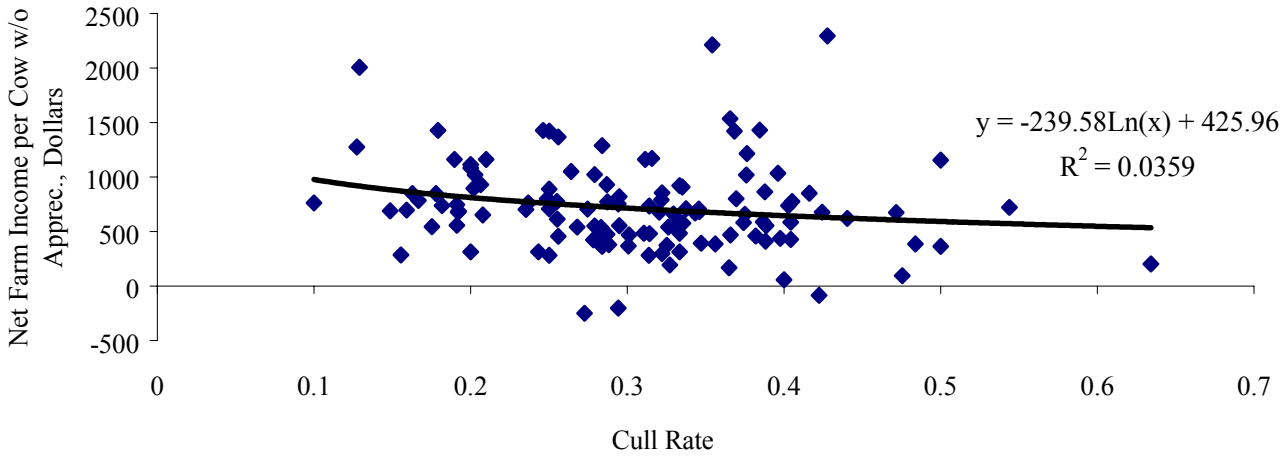


Table 28.

CULLING RATE AND DAIRY REPLACEMENT INFORMATION
New York Dairy Farms, 1998

Sell Rate (123 Farms)	Death Rate (123 Farms)	Cull Rate (123 Farms)	Value of Cows Sold (123 Farms)	Value of Calves Sold (113 Farms)	% of Replacements Purchased (126 Farms)	% of Heifers Being Custom Raised (124 Farms)
12%	0%	16%	$ 146	$ 20	0%	0%
17	01	20	224	29	0	0
20	02	24	263	35	0	0
23	03	27	293	40	0	0
25	03	30	323	44	0	0
27	04	32	348	49	1.5	0
29	05	34	367	53	9	0
32	06	37	388	61	23	3
34	07	40	421	71	53	27
43	14	48	717	167	95	77

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.

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 cost of producing milk.

Table 29.

COST OF PRODUCING MILK, WHOLE FARM METHOD
305 New York Dairy Farms, 1998

Item	Average 305 Farms		Average Top 10% Farms	
Total Accrual Operating Expenses	$ 577,942		$ 742,843	
Expansion Livestock, Accrual	+ 9,091		+ 27,635	
1. Total Accrual Operating Expenses, Including Expansion Livestock		$ 587,033		$770,478
Total Accrual Receipts	$ 767,237		$ 1,133,525	
Milk Sales, Accrual	- 685,501		- 967,233	
2. Total Accrual Nonmilk Receipts		-$ 81,736		-$166,292
3. Operating Cost of Producing Milk		$ 505,297		$604,186
Machinery Depreciation		+$ 26,790		+ 32,377
Building Depreciation		+ 20,709		+ 28,046
4. Purchased Inputs Cost of Producing Milk		$ 552,796		$664,609
Family Labor Unpaid ($1,600/month)		+ 4,960		+ 5,600
Real Interest on Equity Capital		+ 37,160		+ 46,154
Value of Operator's Labor & Management		+ 43,416		+ 41,966
5. Total Costs of Producing Milk		$ 638,332		$758,329
6. Costs Per Cwt.:				
Cwt. Milk Sold	43,954		61,724	
Operating Cost Per Cwt.	$ 11.50		$ 9.79	
Purchased Inputs Cost Per Cwt.	$ 12.58		$ 10.77	
Total Cost Per Cwt.	$ 14.52		$ 12.29	

Costs of producing milk per hundredweight are presented for eight expenditure categories in Table 30. The whole farm method assumption that accrual nonmilk receipts represent nonmilk operating costs is used in computing net costs. A $10,872 average increase in crop inventories per farm, ($.25 per cwt. of milk), is included in crop sales.

Table 30.

ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT
BASED ON WHOLE FARM DATA
305 New York Dairy Farms, 1998

Item	Average 305 Farms		Average Top 10% Farms**	
Dairy grain and concentrate	$3.98		$3.75	
Dairy roughage	0.20		0.26	
Nondairy feed	0.00		0.00	
Total feed expense		$4.18		$4.01
Crop expense		0.81		0.76
- Crop sales and government receipts*		0.57		0.81
Net Feed and Crop Expense		$4.42		$3.96
Hired labor		2.06		1.90
Operator's and family labor		1.10		0.77
Total Labor Expense		$3.16		$2.67
Machine repairs, fuel and hire		1.37		1.16
Machinery depreciation		0.61		0.52
- Gas tax refunds and custom work		0.03		0.01
Net Machinery Expense		$1.95		$1.67
Replacement and expansion cattle purchases		0.44		0.71
- Sales and inventory growth		1.07		1.67
Net Cattle Purchases		$-0.63		$-0.96
Milk marketing costs		0.53		0.53
All other livestock expense excluding purchases		1.70		1.51
Net Livestock Expense		$2.23		$2.04
Real estate repairs, rent and taxes		0.74		0.60
Building depreciation		0.47		0.45
Total Real Estate Expense		$1.21		$1.05
Interest paid		0.89		0.79
Interest on equity		0.85		0.75
Total Interest Expense		$1.74		$1.54
Other operating and miscellaneous expenses		0.63		0.51
- Miscellaneous income		0.18		0.20
Net Miscellaneous Expenses		$ 0.45		$0.31
Total Cost of Producing Milk		$14.52		$12.29
Purchased Inputs Cost		$12.58		$10.77
Total Operating Cost		$11.50		$9.79

*Non-crop related government payments may bias the results.
**Average of 30 farms with highest rates of return to all capital (without appreciation).

Costs of producing milk per hundredweight are presented in the table below for 236 farms that participated both in 1997 and 1998. Costs of production increased in all expense categories except feed and miscellaneous expenses when 1998 data are compared to 1997.

Table 31.

ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT
BASED ON WHOLE FARM DATA
Same 236 New York Dairy Farms, 1997-1998

Item	1997		1998		Percent Change
Dairy grain and concentrate	$4.46		$3.98		-10.8%
Dairy roughage	0.14		0.19		35.7
Nondairy feed	0.01		0.00		
Total feed expense		$4.60		$4.17	-9.3
Crop expense		0.76		0.83	
- Crop sales and government receipts*		0.29		0.59	
Net Feed and Crop Expense		$5.07		$4.41	-13.0%
Hired labor		2.00		2.12	
Operator's and family labor		1.12		1.08	
Total Labor Expense		$3.12		$3.20	2.6%
Machine repairs, fuel and hire		1.23		1.35	
Machinery depreciation		0.59		0.58	
- Gas tax refunds and custom work		0.06		0.03	
Net Machinery Expense		$1.76		$1.90	8.0%
Replacement and expansion cattle purchases		0.49		0.43	
- Sales and inventory growth		1.15		1.07	
Net Cattle Purchases		$-0.66		$-0.64	3.0%
Milk marketing costs		0.52		0.53	
All other livestock expense excluding purchases		1.62		1.73	
Net Livestock Expense		$2.14		$2.26	5.6%
Real estate repairs, rent and taxes		0.66		0.74	
Building depreciation		0.36		0.46	
Total Real Estate Expense		$1.02		$1.20	17.6%
Interest paid		0.88		0.88	
Interest on equity		0.88		0.88	
Total Interest Expense		$1.76		$1.76	0%
Other operating and miscellaneous expenses		0.65		0.64	
- Miscellaneous income		0.13		0.17	
Net Miscellaneous Expenses		$ 0.52		$0.47	-9.6%
Total Cost of Producing Milk		$14.73		$14.55	-1.2%
Purchased Inputs Cost		$12.73		$12.59	-1.1%
Total Operating Cost		$11.78		$11.56	-1.9%
Average Price Received for Milk		$13.66		$15.59	14.1%

*Non-crop related government payments may bias the results.

The three measures of the accrual cost of producing milk per cow and per hundredweight are compared with accrual receipts from milk sales in Table 32.

Table 32.

COST OF PRODUCING MILK, ACCRUAL RECEIPTS FROM DAIRY, AND PROFITABILITY
305 New York Dairy Farms, 1998

Item	Average 305 Farms			Average Top 10% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Accrual Cost of Producing Milk						
Operating Cost	$ 505,297	$2,406	$11.50	$604,186	$2,150	$9.79
Purchased Inputs Cost	552,796	2,632	12.58	664,609	2,365	10.77
Total Cost	638,332	3,040	14.52	758,329	2,699	12.29
Accrual Receipts from Milk	$685,501	$3,264	$15.60	$967,233	$3,442	$15.67
Net Milk Receipts	662,370	3,154	15.07	934,678	3,326	15.14
Profitability						
Net Farm Income without Appreciation	$ 132,705	$ 632	$ 3.02	$302,624	$ 1,077	$ 4.90
Net Farm Income with Appreciation	$ 157,697	$ 751	$ 3.59	$321,991	$ 1,146	$ 5.22

The operating cost of producing milk on all 305 dairy farms averaged $11.50 per hundredweight, leaving $4.10 to cover depreciation, unpaid labor and operator resources.

The total cost of producing milk on all 305 dairy farms averaged $14.52 per hundredweight, $1.08 less than the average price received for milk sold from these farms during 1998. The imputed costs or charge for the operator's labor, management and equity capital average $1.83 per hundredweight in 1998. The computed returns averaged $2.91 per hundredweight. The 30 most profitable farms held their operating costs to $9.79 per hundredweight and their total cost of producing milk averaged $12.29 per hundredweight. This left a profit of $3.38 per hundredweight of milk sold.

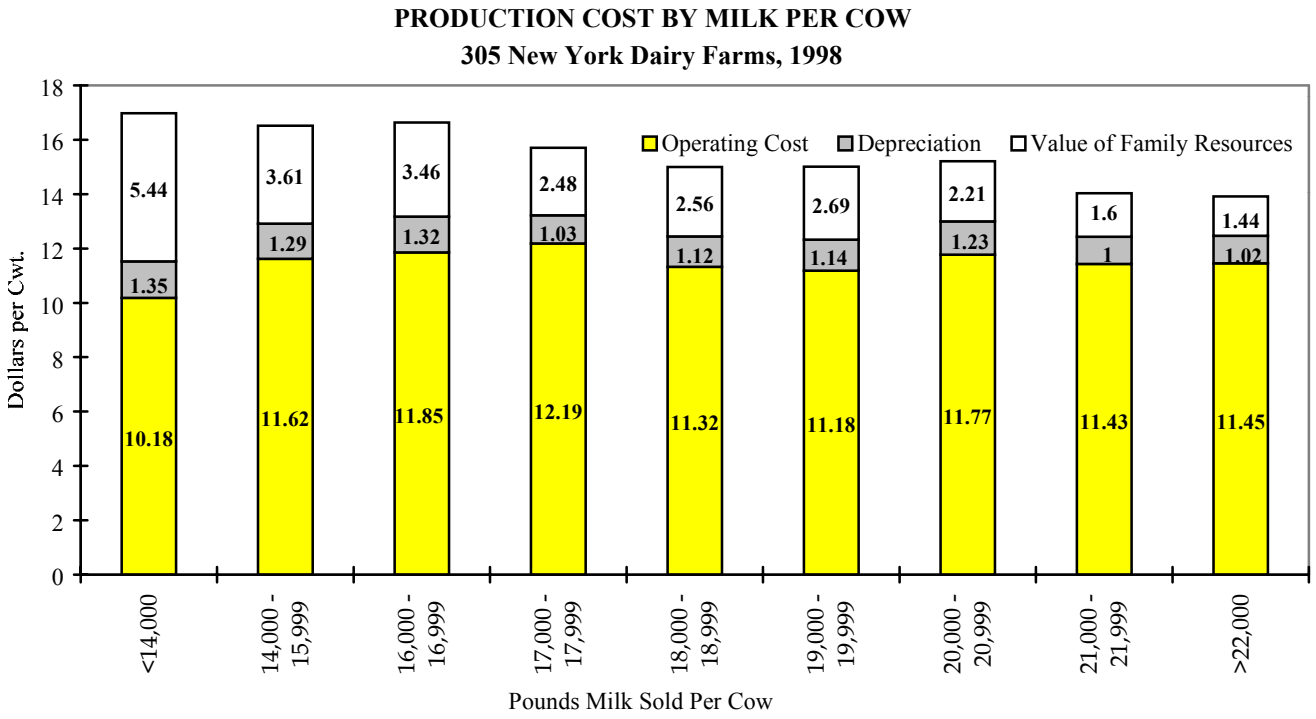
The strong relationship between milk output per cow and the cost of producing milk are shown in Table 33 and Chart 10 on page 32. Farms selling less than 18,000 pounds of milk per cow had average total costs of production of $16.46 per hundredweight while those selling 18,000 pounds and over averaged $14.63 for a difference of $1.83 per hundredweight.

Table 33.

FARM COST OF PRODUCING MILK BY MILK SOLD PER COW
305 New York Dairy Farms, 1998

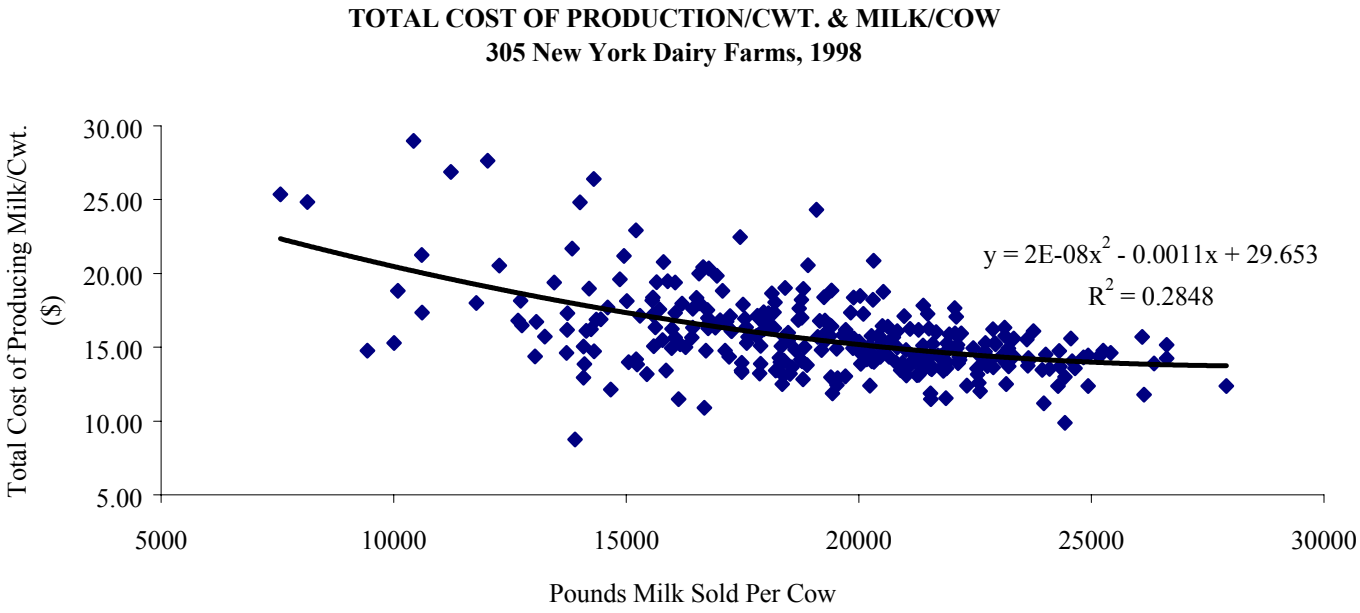
Pounds Milk Sold Per Cow	Cost per Hundredweight					Accrual Receipts From Milk Per Cwt.	Return Per Cwt. To Operator's Labor, Mgmt. & Capital
	Operating Costs						
	Hired Labor	Dairy Grain & Conc.	Total Operating	Purchased Inputs	Total		
Under 14,000	$1.12	$ 3.81	$ 10.18	$ 11.53	$ 16.97	$ 16.24	$ 3.94
14,000-15,999	1.20	4.38	11.62	12.91	16.52	16.03	2.69
16,000-16,999	1.26	4.33	11.85	13.17	16.63	15.55	2.02
17,000-17,999	1.83	4.04	12.19	13.22	15.70	15.68	2.30
18,000-18,999	1.34	3.98	11.32	12.44	15.00	15.76	3.17
19,000-19,999	1.61	4.03	11.18	12.32	15.01	15.82	3.32
20,000-20,999	1.88	4.10	11.77	13.00	15.21	15.87	2.74
21,000-21,999	2.12	3.87	11.43	12.43	14.03	15.46	2.98
22,000 & over	2.40	3.93	11.45	12.47	13.91	15.48	2.97

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 decreases, at a fairly constant rate.

Chart 11.



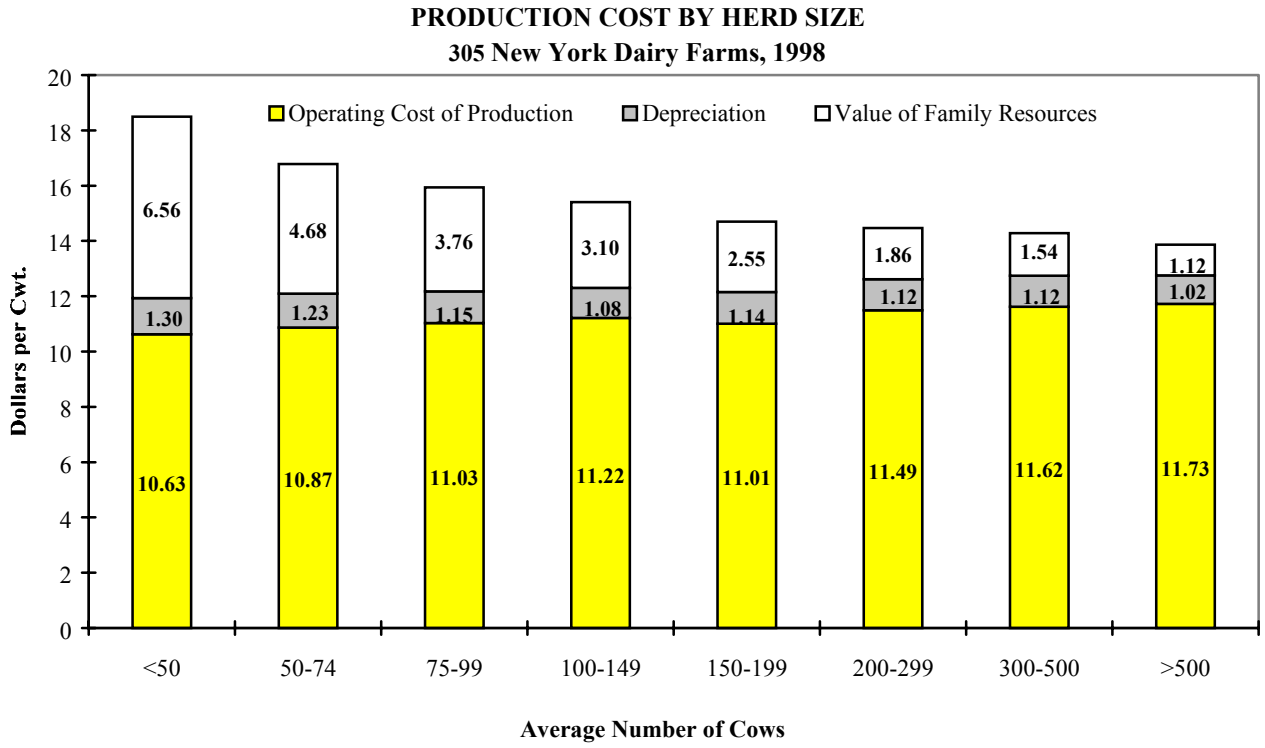
Data in Table 34 and Chart 12 show that the total cost of production generally declines as herd size increases because the cost of operator's resources are spread over more units of production.

Table 34.

FARM COST OF PRODUCING MILK BY HERD SIZE
305 New York Dairy Farms, 1998

	Cost per Hundredweight						
	Operating Costs						
Number of Cows	Hired Labor	Dairy Grain & Conc.	Total Operating	Purchased Inputs	Total	Accrual Receipts From Milk	Return Per Cwt. To Operator's Labor, Mgmt. & Capital
Under 50	$0.64	$ 3.91	$ 10.63	$ 11.93	$ 18.49	$ 15.88	$ 3.11
50 to 74	0.88	4.00	10.87	12.10	16.78	15.58	2.85
75 to 99	1.15	3.85	11.03	12.18	15.94	15.71	3.21
100 to 149	1.54	3.65	11.22	12.30	15.40	15.72	3.13
150 to 199	1.73	3.83	11.01	12.15	14.70	15.85	3.58
200 to 299	1.63	4.08	11.49	12.61	14.47	15.62	2.97
300 to 500	2.23	3.96	11.62	12.74	14.28	15.79	3.00
500 and over	2.57	4.08	11.73	12.75	13.87	15.40	2.64

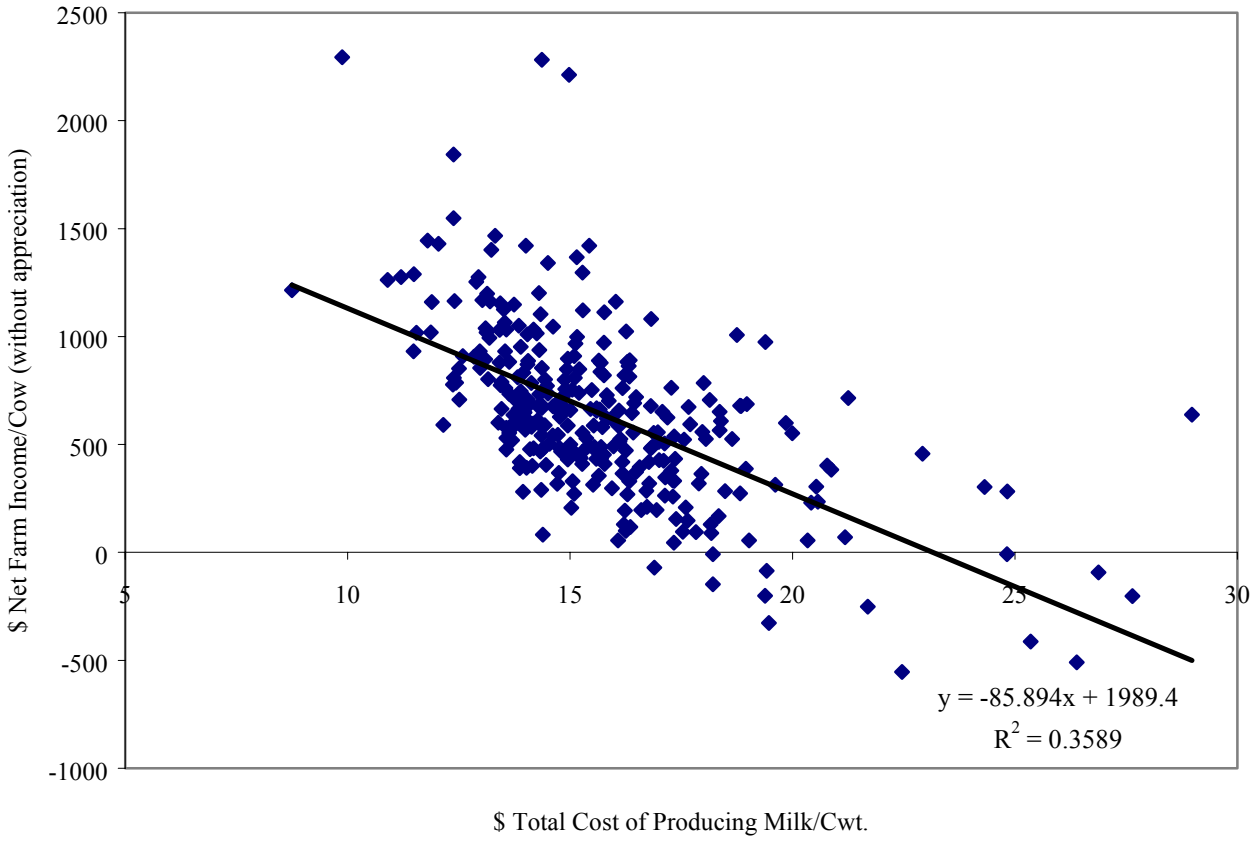
Chart 12.



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 $16 per hundredweight. The majority of the farms with costs greater than $21 per hundredweight experienced negative net farm incomes per cow.

Chart 13.

NET FARM INCOME PER COW &
TOTAL COST OF PRODUCING MILK PER HUNDREDWEIGHT
305 New York Dairy Farms, 1998



A 10-year comparison of the average costs and returns of producing milk per hundredweight are presented in Table 35 on page 36. 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 1989 through 1998. In 1998 the average operating cost of producing milk decreased 2 percent after decreasing 2 percent from 1996 to 1997. The average return per hundredweight to operator labor, management, and capital rose to $2.91 in 1998, 259 percent above 1997.

Hired labor expense per hundredweight has increased consistently from 1989 to 1998. Hired labor expense was $1.62 in 1989 and has risen to $2.06 in 1998. Thus, even as pounds of milk sold per worker has increased from 544,598 in 1989 to 821,565 in 1998; labor expense per worker has increased even more rapidly. Some of this effect may also be 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 has been remarkably stable. At $4.02 in 1989 it decreased to a low of $3.71 in 1995, before reaching its high a year later at $4.73. In 1998, purchased feed expense was only $0.16 higher than in 1989.

Interest paid on debt per hundredweight of milk sold has decreased over this period. In 1989, interest expense was $1.06 per cwt. While it reached a low of $0.80 in 1993, interest expense was at $0.89 in 1998. Property taxes per hundredweight of milk have decreased by over 40 percent during this ten-year period. Property taxes were $0.36 per hundredweight in 1989, but were only $0.21 in 1998. This is due to productivity increases and more of the land resources being rented, rather than owned.

A 10-year comparison of selected average business factors for all specialized DFBS farms is presented in Table 36 on page 37. Average cow numbers are up 102 percent, tillable acres have increased 57 percent, and milk sold per farm has jumped 145 percent since 1989. Capital investment per cow has decreased 4 percent, far less than inflation, over the last 10 years. Labor and management income per operator increased 211 percent in 1998 compared to 1997 and farm net worth continued to grow.

After being stable for many years, crop yields increased over the past ten years. Hay crop yields, tons of dry matter per acre increased from 2.6 to 3.1 tons per acre. Corn silage yields, as fed, increased from 13.4 to 18 tons per acre. As yields increased, fertilizer and lime expense increased only $2.00 per tillable acre, from $29 to 31 per acre. Pounds of milk sold per cow increased by 21 percent, from 17,259 pounds in 1989 to 20,900 pounds in 1998.

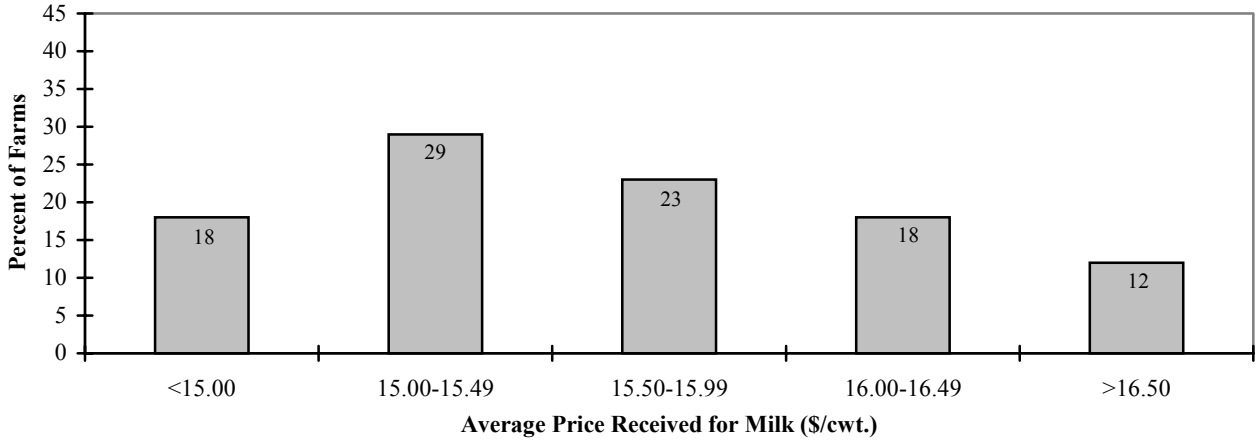
Average number of workers per farm increased by two and operators/managers per farm increased by less than 0.3 . Cows per worker equivalent increased from 32 in 1989 to 39 in 1998, but labor cost per cow increased from $469 to $609 over the same time period.

The asset turnover ratio has improved in recent years. Total accrual receipts as a proportion of total farm assets (asset turnover ratio) has increased from 0.48 in 1989 to 0.61 in 1998. Percent equity has deteriorated. It was 68 percent in 1989, but was down to 59 percent in 1998.

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 305 farms was $15.60 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.

VARIATION IN AVERAGE MILK PRICE
305 New York Dairy Farms, 1998



Fifty-two percent of the farms received from $15.00 to $15.99 per hundredweight of milk sold. Thirty percent of the farms received $16.00 or more and 18 percent received less than $15.00 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. Butterfat content, which ranges from an average 3.5 percent to 3.9 percent as the milk price increases from less than $15.00 per cwt. to more than $16.50, explains a small portion of the difference in milk price on these farms.

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 37.

DAIRY RELATED ACCRUAL EXPENSES
305 New York Dairy Farms, 1998

	Average 305 Farms		Average Top 10% Farms*	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	$833	$3.98	$825	$3.75
Purchased dairy roughage	42	.20	58	.26
Total Purchased Dairy Feed	$875	$4.18	$883	$4.01
Purchased grain & concentrate as % of milk receipts	26%		24%	
Purchased feed & crop expense	$1,046	$5.00	$1,049	$4.78
Purchased feed & crop expense as % of milk receipts	32%		30%	
Breeding	$ 33	$.16	$ 28	$.13
Veterinary & medicine	93	.45	99	.45
Milk marketing	110	.53	116	.53
Bedding	37	.18	29	.13
Milking Supplies	70	.34	65	.30
Cattle lease	8	.04	3	.01
Custom boarding	30	.14	13	.06
bST expense	48	.23	54	.24
Other livestock expense	33	.16	39	.18

*Average of 30 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 the feed cost for one cow and 0.74 replacement being raised.

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

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 and milk prices can have an adverse effect. 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 purchased feed and crop expense per hundredweight of milk has with farm profitability is shown in the following table.

Table 38.

PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT OF MILK AND FARM INCOME MEASURES
305 New York Dairy Farms, 1998

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 Apprec.	Labor & Management Income Per Operator	Labor & Management Per Operator Per Cow
$6.50 or more	25	99	7.1	16,842	$38,237	$10,814	$109
6.00 to 6.49	21	129	10.2	18,368	$59,635	$20,321	158
5.50 to 5.99	44	207	7.8	20,586	$114,662	$42,395	205
5.00 to 5.49	66	270	9.1	21,242	$154,334	$58,827	218
4.50 to 4.99	70	256	7.9	21,365	$164,720	$72,209	282
4.00 to 4.49	44	212	8.5	21,679	$177,564	$84,763	400
Less than 4.00	35	137	8.6	20,497	$105,500	$46,143	337

On average, farms with feed and crop expenses exceeding $5.50 per hundredweight of milk reported well below average profits. This is especially striking when the profit measure of labor and management income per operator is presented on a per cow basis. Farms reporting purchased feed and crop expense between $4.00 and $4.49 per hundredweight of milk, reported the highest labor and management income per operator per cow. Farms in this range had the highest pounds of milk sold per cow.

Capital and Labor Efficiency Analysis

Capital efficiency factors measure how intensively capital is being used in the farm business. Measures of labor efficiency are key indicators of the work accomplished by each worker.

Table 39.

CAPITAL EFFICIENCY
305 New York Dairy Farms, 1998

Item (Average for Year)	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
Farm capital	$241,851	$6,161	$2,603	$4,864
Real estate		$2,537		$2,003
Machinery & equipment	$43,898	$1,118	$473	
Ratios				
Asset turnover	Operating Expense	Interest Expense		Depreciation Expense
0.61	0.71	0.05		0.06
Average Top 10% Farms:*				
Farm capital	$239,798	$5,624	$2,599	$5,181
Real estate		$2,074		$1,911
Machinery & equipment	$41,904	$983	$454	
Ratios				
Asset turnover ratio	Operating Expense	Interest Expense		Depreciation Expense
0.73	0.64	0.04		0.05

*Average of 30 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 40.

ASSET TURNOVER AND PROFITABILITY
305 New York Dairy Farms, 1998

Ratio	No. of Farms	No. of Cows	Farm Capital (average for year) Per Cow	Farm Capital (average for year) Per Worker	Labor & Mgt. Inc. Per Operator	Net Farm Income (w/o apprec.)
≥ .80	23	416	$4,422	$191,626	$129,370	$255,518
.70 to .79	38	428	5,365	229,393	104,904	257,601
.60 to .69	56	239	5,842	248,898	79,143	178,428
.50 to .59	62	208	6,872	267,677	52,991	134,959
.40 to .49	71	111	7,684	251,589	19,778	65,396
.30 to .39	36	87	8,483	257,145	4,457	37,777
Less than .30	19	54	10,851	261,596	-3,752	23,508

The 30 farms with the highest rates of return on all capital (without appreciation) were above the average of all 305 farms in 2 measures of labor efficiency. The top 10 percent averaged 4 more cows per worker and sold 14 percent more milk per worker than the average of all farms.

Table 41.

LABOR EFFICIENCY
305 New York Dairy Farms, 1998

Labor Efficiency	Average Farms Total	Average Farms Per Worker*	Average Top 10% Farms Total	Average Top 10% Farms Per Worker*
Cows, average number	210	39	281	43
Milk sold, pounds	4,395,374	821,565	6,172,397	936,631
Tillable acres	497	93	608	92

*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.

The labor force averaged 5.35 full-time worker equivalents per farm (based on 230 hours per month). Thirty-two percent of the labor was supplied by the farm operator/managers. There were two operators on 130 farms, three on 34 farms, and 7 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 $119 per cow less on the 30 farms in the top decile.

Table 42.

LABOR FORCE INVENTORY AND COST ANALYSIS
305 New York Dairy Farms, 1998

Labor Force	Months*	Age	Years of Education	Value of Labor & Management
Operator number 1	13.6	47	13	$28,648
Operator number 2	5.1	43	13	11,036
Operator number 3	1.3	38	13	3,083
Operator number 4	0.3	32	14	649
Family paid	3.1			Total $43,416
Family unpaid	35.2			
Hired	31.8			
Total	64.2	÷ 12 =	5.35 Worker Equivalent	
			1.62 Operator/Manager Equivalent	
Average Top 10% Farms:**				
Total	79.1	÷ 12 =	6.59 Worker Equivalent	
Operators'			1.40 Operator/Manager Equivalent	

	Average 305 Farms			Avg. Top 10% Farms**	
Labor Costs	Total	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value operators' labor ($1,600/mo.)	$ 32,480	$ 155	$ .74	$ 103	$ .47
Family unpaid ($1,600/mo.)	4,960	24	.11	20	.09
Hired	90,427	430	2.06	418	1.90
Total Labor	$ 127,867	$ 609	$ 2.91	$ 541	$ 2.46
Machinery Cost	98,807	470	2.25	419	1.91
Total Labor & Machinery	$ 226,674	$ 1,079	$ 5.16	$ 960	$ 4.37

*See footnote for Table 41.
**Average of 30 farms with highest rates of return to all capital (without appreciation).

The relationship of labor efficiency to net farm income is positive on the farms. The higher outputs of milk sold per worker are partially attributable to more and higher producing cows.

Table 43.

MILK SOLD PER WORKER AND NET FARM INCOME
305 New York Dairy Farm, 1998

Pounds of Milk Sold Per Worker	No. of Farms	No. of Cows	Pounds Milk Per Cow	Net Farm Income (w/o apprec.)	Labor & Mgmt. Income Per Operator
Under 400,000	44	58	15,174	$32,257	$5,891
400,000 to 499,999	36	82	17,209	42,403	11,994
500,000 to 599,999	42	100	17,800	67,051	22,936
600,000 to 699,999	39	136	19,561	94,713	38,699
700,000 to 799,999	39	203	21,161	137,991	59,798
800,000 to 899,999	37	218	20,909	127,237	49,547
900,000 to 999,999	26	336	21,673	191,330	66,315
1,000,000 & over	42	583	22,393	379,889	170,093

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 305 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 44.

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
305 New York Dairy Farms, 1998

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
17.7	818	18,659,239	24,782	5.6	25	60	1,213,375
9.0	365	7,984,872	22,729	4.0	20	49	982,534
6.3	249	5,091,408	21,731	3.5	19	43	873,970
4.9	186	3,588,651	20,901	3.2	18	39	794,942
4.1	141	2,697,927	20,005	2.9	17	36	723,687
3.4	114	2,120,238	18,963	2.6	15	33	634,010
2.9	87	1,569,921	18,013	2.4	15	31	571,211
2.4	70	1,208,198	16,811	2.0	13	28	497,995
2.0	55	945,508	15,346	1.7	12	24	406,116
1.5	41	605,365	12,354	1.2	9	19	286,759

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
$372	15%	$240	$677	$527	$3.31
531	19	333	854	709	4.15
602	21	391	946	821	4.49
667	23	430	1,015	902	4.75
736	24	461	1,084	963	4.92
786	26	489	1,139	1,021	5.14
858	27	538	1,216	1,069	5.35
910	29	589	1,280	1,117	5.67
965	30	650	1,396	1,189	6.06
1,086	36	814	1,636	1,345	6.95

The next section of the Farm Business Chart provides for comparative analysis of the value and costs of dairy production.

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 44. (continued)

FARM BUSINESS CHART FOR
FARM MANAGEMENT COOPERATORS
305 New York Dairy Farms, 1998

Milk Receipts Per Cow	Milk Receipts Per Cwt.	Oper. Cost Milk Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cow	Total Cost Production Per Cwt.
$3,923	$17.67	$1,145	$7.54	$1,989	$12.16
3,542	16.44	1,620	9.21	2,433	13.53
3,375	16.14	1,840	10.11	2,648	14.03
3,262	15.91	2,007	10.78	2,837	14.48
3,118	15.68	2,152	11.21	2,953	15.01
2,989	15.49	2,266	11.58	3,063	15.58
2,834	15.33	2,357	11.94	3,158	16.16
2,642	15.15	2,483	12.36	3,292	16.92
2,403	14.94	2,638	13.10	3,468	18.02
1,955	14.46	2,970	14.67	3,804	21.84

Profitability

Net Farm Income Without Appreciation			Net Farm Income With Appreciation		Labor & Management Income	
Total	Per Cow	As % of Total Accrual Receipts	Total	Per Cow	Per Farm	Per Operator
$558,217	$1,400	36.2%	$637,385	$1,600	$445,672	$279,033
239,284	1,008	28.8	286,419	1,163	183,141	123,641
163,816	847	24.3	192,008	1,011	117,794	81,298
120,708	736	21.4	138,655	886	78,588	53,310
89,022	664	19.6	111,202	778	52,535	37,531
65,933	587	17.2	81,693	695	36,739	25,362
48,395	503	14.8	60,860	616	22,436	18,606
35,925	417	12.6	45,218	519	13,801	10,644
24,337	288	8.9	32,533	408	613	585
-2,216	-29	-2.3	9,630	81	-31,139	-25,856

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 59-63.

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 45.

A FARM FINANCE CHECKLIST
305 New York Dairy Farms, 1998

	Average 305 Farms		Average Top 10% Farms*	
How farm assets are being used (average for the year):				
Total assets (capital) per cow	$6,161		$5,624	
Farm assets in livestock	24%		26%	
Farm assets in farm real estate	40%		35%	
Farm assets in machinery	18%		17%	
Measures of debt capacity & debt structure:				
Equity in the business	59%		60%	
Farm debt per cow	$2,550		$2,324	
Long term debt/asset ratio**	0.41		0.42	
Intermediate & current term debt/asset ratio**	0.41		0.38	
Intermediate & current term debt as % of total	60%		63%	
Debt repayment ability:***				
Cash flow coverage ratio	1.15		1.49	
Debt coverage ratio	1.76		3.14	
Debt payments made per cow	$611		$640	
Debt payments made as % of milk receipts	19%		19%	
Indicators of annual financial progress:	Amount	Percent	Amount	Percent
Annual change in farm assets	+$110,226	+8.9%	+$296,943	+20.7%
Annual change in farm debts	+$15	+0.0%	+$52,170	+8.3%
Annual change in farm net worth	+$110,211	+16.0%	+$244,773	+30.6%

*Thirty farms with highest rates of return on all capital (without appreciation).
**Long or intermediate and current term debt divided by long or intermediate and current term assets.
***Average of 236 farms that participated in DFBS both in 1997 and 1998. Nineteen of the 30 top 10 percent farms participated both years.

The most profitable farms carried $226 less debt per cow, the average equity in their businesses was 1 percent higher than that of the average of all 305 farms, but they had a greater ability to make 1998 debt payments.

Average farm assets grew 8.9 percentage points faster than debt during 1998 on the 305 dairy farms. Average farm net worth increased 16 percent.

The farm financial analysis chart is designed just like the farm business chart on pages 42-43 and may be used to measure the financial health of the farm business. Most of the financial measures are defined on pages 12, 14, 16, 20, and 40 in this publication.

Table 46.

FINANCIAL ANALYSIS CHART
305 New York Dairy Farms, 1998

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
$153	$1,029	4.05	5.71	5%	$ 245	57%	21.41
257	786	2.17	3.34	8	996	35	4.68
332	699	1.64	2.58	10	1,455	28	3.33
376	620	1.33	2.05	12	1,878	23	2.55
428	551	1.17	1.74	14	2,234	18	2.20
466	501	1.05	1.54	16	2,552	15	1.83
521	434	0.93	1.37	17	2,846	11	1.53
592	363	0.82	1.18	20	3,232	7	1.23
672	286	0.65	0.96	24	3,720	-1	0.89
916	121	0.31	0.45	34	4,872	-19	0.37

Solvency				Profitability	
		Debt/Asset Ratio		Percent Rate of Return with appreciation on:	
Leverage Ratio*	Percent Equity	Current & Intermediate	Long Term	Equity	Investment**
0.03	97%	0.03	0.00	66%	22%
0.15	88	0.12	0.00	25	16
0.26	80	0.21	0.05	19	14
0.39	73	0.27	0.20	15	12
0.50	67	0.34	0.31	12	10
0.66	60	0.39	0.40	8	8
0.86	54	0.44	0.50	6	6
1.05	49	0.52	0.59	4	5
1.46	40	0.64	0.74	0	2
5.11	22	0.89	1.06	-11	-3

Efficiency (Capital)					
Asset Turnover (ratio)	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Farm Assets Per Cow	Change in Net Worth w/Appreciation	Farm Net Worth, End Year
.88	$1,168	$468	$4,082	$478,029	$2,785,709
.73	1,799	735	4,883	219,066	1,321,601
.67	2,046	920	5,485	141,745	976,350
.61	2,338	1,053	5,884	96,333	778,003
.57	2,552	1,166	6,276	69,352	603,968
.52	2,883	1,284	6,684	51,363	495,813
.47	3,368	1,451	7,292	34,092	419,736
.42	3,719	1,668	7,893	21,295	333,496
.38	4,437	1,972	8,959	12,506	239,027
.28	6,703	2,685	11,552	-7,015	109,101

*Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.
**Return on all farm capital (no deduction for interest paid) divided by total farm assets.

Herd Size Comparisons

The 305 New York dairy farms have been sorted into eight herd size categories and averages for the farms in each category are presented in Tables 47 through 51. Note that after the less than 50 cow category, the herd size categories increase by 25 cows up to 100 cows, by 50 cows up to 200 cows, by 100 cows up to 300 cows, and by 200 cows up to 500 cows. The 500 or more cow category contains the greatest herd size range with one herd exceeding 2000 cows.

As herd size increases, the average profitability generally increases (Table 47). Net farm income without appreciation averaged $27,041 per farm for the less than 50 cow farms and $511,797 per farm for those with 500 cows and over. This relationship generally holds for all measures of profitability including rate of return on capital.

It is more than size of herd that determines profitability on dairy farms. If size were the only factor, net farm income per cow would be constant throughout all size categories. Farms with 150 to 199 cows averaged $734 net farm income per cow while the 200 to 299 cow dairy farms average only $604 net farm income per cow. The under 50 herd size category had the second highest net farm income per cow at $660. Other factors that affect profitability and their relationship to the size classifications are shown in Table 48.

Table 47.

COWS PER FARM AND FARM FAMILY INCOME MEASURES
305 New York Dairy Farms, 1998

Number of Cows	Number of Farms	Ave. No. of Cows	Net Farm Income Without Apprec.	Net Farm Income Per Cow	Labor & Management Inc./Oper.	Return to all Capital Without Apprec.
Under 50	31	41	$27,041	$660	$6,696	0.3%
50 to 74	55	61	36,938	606	11,115	2.7%
75 to 99	35	83	52,432	632	19,128	4.9%
100 to 149	57	123	78,546	639	29,040	6.6%
150 to 199	28	171	125,539	734	44,568	9.4%
200 to 299	38	237	143,122	604	56,205	9.9%
300 to 500	33	371	242,688	654	95,485	11.6%
500 & over	28	842	511,797	608	172,574	12.2%

As herd size increased to 150 to 199 cows, net farm income per cow generally increased. Net farm income per cow increased as economies were attained while utilizing family labor. Farms with over 200 cows saw purchased inputs increase per cow before economies of size again appeared.

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 500 and more cows averaged more milk sold per cow than any other size category. With 22,883 pounds of milk sold per cow, farms in the largest herd size group averaged 16 percent more milk output per cow than the average of all herds in the summary with less than 500 cows.

The ability to reach high levels of milk output per cow with large herds is a major key to high profitability. Three times a day milking (3X) is a herd management practice commonly used to increase milk output per cow in large herds. Many dairy farmers who have been willing and able to employ and manage the labor required to milk 3X have been successful. Only 3 percent of the 121 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 149 cows reported 9 percent of the herds milking more often than 2X, the 150-199 cow herds reported 32 percent, 200-299 cow herds reported 37 percent, 300 – 500 cow herds reported 82 percent, and the 500 cow and larger herds reported 93 percent exceeding the 2X milking frequency.

Table 48.

COWS PER FARM AND RELATED FARM FACTORS
305 New York Dairy Farms, 1998

Number of Cows	Avg. No. of Cows	Milk Sold Per Cow (lbs.)	Milk Sold Per Worker (cwt.)	Till-able Acres Per Cow	Forage DM Per Cow (tons)	Farm Capital Per Cow	Cost of Producing Milk/Cwt.	
							Oper.	Total
Under 50	41	16,488	3,578	3.8	6.8	$8,521	$10.63	$18.49
50 to 74	61	17,574	4,626	3.5	7.7	7,725	10.87	16.78
75 to 99	83	17,819	5,564	3.2	8.1	7,385	11.03	15.94
100 to 149	123	18,735	6,306	2.9	8.6	6,684	11.22	15.40
150 to 199	171	19,829	6,796	2.9	7.8	6,834	11.01	14.70
200 to 299	237	20,059	8,667	2.5	9.0	5,812	11.49	14.47
300 to 500	371	21,457	8,837	2.2	8.3	5,999	11.62	14.28
500 & over	842	22,883	10,773	1.8	8.5	5,560	11.73	13.87

Bovine somatotropin (bST), was used to a greater extent on the large herd farms. bST was used sometime during 1998 on 31 percent of the herds with less than 100 cows, 66 percent of the farms with 100 to 299 cows and on 93 percent of the farms with 300 cows and more.

Milk output per worker has always shown a strong correlation with farm profitability. The farms with 100 cows or more averaged over 760,000 pounds of milk sold per worker while the farms with less than 100 cows averaged less than 460,000 pounds per worker.

In addition to achieving the highest productivity per cow and per worker, the largest farms practiced the most efficient use of cropland with 1.8 tillable acres per cow, and the most efficient use of farm capital with an average investment of $5,560 per cow.

The last column in Table 48 may be the most important in explaining why profits were significantly higher on the 500 plus cow farms. The 28 farms with 500 and more cows held their average total costs of producing milk to $13.87 per hundredweight, $1.09 below the $14.96 average for the remaining 277 dairy farms. The lower average costs of production plus a similar milk price gave the managers of the 500 plus cow dairy farms profit margins (milk price less total cost of producing milk) that averaged $0.76 per hundredweight above the average of the other 277 DFBS farms.

A detailed list of accrual expenses, receipts and a profitability analysis is presented in Table 49, on pages 48 and 49 for the eight herd size categories. Purchased feed is the largest expense on all farms, regardless of size. However, large farms find hired labor expense as the second largest expense category.

Assets, liabilities and financial measures are presented in Table 50 on pages 50-53. All herd size categories saw an increase in net worth during 1998. The largest herd size category experienced an increase in net worth of over $400,000. However, percent equity went down as herd size increased. The largest herds had 54% equity; while the smaller herds averaged 69%.

Selected business factors by herd size group are presented in Table 51 on pages 54 and 55.

For a more detailed analysis of large herd farms, see E.B. 99-08, Dairy Farm Business Summary, New York Large Herd Farms, 300 Cows or Larger, 1998. For analysis of smaller herds, see E.B. 99-12, Dairy Farm Business Summary, New York Small Herd Farms, 65 Cows or Fewer, 1998.

Table 49.

FARM BUSINESS SUMMARY BY HERD SIZE
305 New York Dairy Farms, 1998

Item	Farm Size:	Less than 50 Cows	50 to 74 Cows	75 to 99 Cows	100 to 149 Cows
Number of farms		31	55	35	57
ACCRUAL EXPENSES					
Hired labor		$4,370	$9,411	$17,120	$35,245
Dairy grain & concentrate		26,748	42,536	57,258	83,755
Dairy roughage		3,338	3,351	1,407	5,897
Nondairy feed		18	109	0	27
Machine hire, rent & lease		1,590	2,804	4,244	8,456
Machine repairs & farm vehicle expense		7,671	10,632	12,481	23,393
Fuel, oil & grease		2,031	3,790	4,674	7,232
Replacement livestock		1,803	2,390	4,575	4,440
Breeding		1,469	2,185	3,192	4,312
Veterinary & medicine		1,907	3,695	5,631	9,880
Milk marketing		5,148	6,611	11,133	13,205
Bedding		484	969	1,021	2,674
Milking supplies		3,323	4,393	5,458	8,743
Cattle lease & rent		0	14	180	245
Custom boarding		245	77	203	1,224
bST expense		439	857	1,418	3,347
Other livestock expense		1,301	2,719	3,138	6,093
Fertilizer & lime		2,914	3,875	6,018	11,934
Seeds & plants		1,003	2,195	3,648	6,609
Spray & other crop expense		1,288	2,114	4,197	6,182
Land, building & fence repair		1,792	2,838	4,825	6,602
Taxes & rent		4,759	7,445	10,605	12,244
Utilities		3,676	5,871	6,968	9,808
Interest paid		6,270	8,519	12,967	19,752
Misc. (including insurance)		3,833	5,368	6,937	9,387
Total Operating Expenses		$87,419	$134,770	$189,296	$300,685
Expansion livestock		131	450	1,116	3,651
Machinery depreciation		6,564	8,840	11,362	16,457
Building depreciation		2,319	4,332	5,681	8,294
Total Accrual Expenses		$96,433	$148,392	$207,455	$329,087
ACCRUAL RECEIPTS					
Milk sales		$108,563	$165,719	$233,385	$360,821
Dairy cattle		6,012	9,050	11,478	21,557
Dairy calves		823	1,294	1,509	2,397
Other livestock		604	260	198	245
Crops		1,689	3,354	6,575	12,222
Misc. receipts		5,783	5,653	6,742	10,391
Total Accrual Receipts		$123,474	$185,330	$259,887	$407,633
PROFITABILITY ANALYSIS					
Net farm income (without appreciation)		$27,041	$36,938	$52,432	$78,546
Net farm income (with appreciation)		$38,057	$45,181	$62,668	$95,639
Labor & management income		$8,705	$13,116	$26,970	$44,772
Number of operators		1.30	1.18	1.41	1.54
Labor & management income/operator		$6,696	$11,115	$19,128	$29,040
Rates of return on:					
Equity capital without appreciation		-2.1%	1.3%	4.2%	6.4%
Equity capital with appreciation		2.3%	3.7%	6.6%	9.5%
All capital without appreciation		0.3%	2.7%	4.9%	6.6%
All capital with appreciation		3.5%	4.5%	6.6%	8.7%

Table 49. (continued)

FARM BUSINESS SUMMARY BY HERD SIZE
305 New York Dairy Farms, 1998

Item	Farm Size:	150 to 199 Cows	200 to 299 Cows	300 to 399 Cows	500 or More Cows
Number of farms		28	38	33	28
ACCRUAL EXPENSES					
Hired labor		$58,625	$77,394	$177,305	$495,904
Dairy grain & concentrate		130,275	193,997	314,767	786,681
Dairy roughage		8,088	8,817	14,667	35,303
Nondairy feed		24	356	1	6
Machine hire, rent & lease		7,983	18,586	20,175	78,977
Machine repairs & farm vehicle expense		32,464	38,346	62,339	119,662
Fuel, oil & grease		10,103	12,316	18,880	41,250
Replacement livestock		8,156	15,932	26,876	30,458
Breeding		5,532	6,613	13,098	27,527
Veterinary & medicine		12,743	22,696	37,601	88,794
Milk marketing		21,719	28,526	46,092	77,724
Bedding		4,451	7,796	15,350	42,813
Milking supplies		11,678	15,352	25,397	61,266
Cattle lease & rent		301	286	836	16,846
Custom boarding		1,585	8,719	8,001	43,409
bST expense		5,023	10,417	18,994	57,580
Other livestock expense		4,332	7,583	17,547	16,189
Fertilizer & lime		13,858	19,256	25,345	55,310
Seeds & plants		8,861	12,203	18,075	35,786
Spray & other crop expense		9,107	9,866	23,996	41,200
Land, building & fence repair		9,014	12,220	21,384	49,387
Taxes & rent		19,687	25,003	30,352	80,667
Utilities		12,754	15,328	22,639	48,839
Interest paid		32,791	46,568	79,713	157,335
Misc. (including insurance)		10,975	17,640	22,404	47,241
Total Operating Expenses		$440,129	$631,817	$1,061,835	$2,536,153
Expansion livestock		12,329	9,382	27,687	31,484
Machinery depreciation		26,713	29,342	50,907	92,948
Building depreciation		12,024	23,652	37,618	102,055
Total Accrual Expenses		$491,195	$694,193	$1,178,047	$2,762,640
ACCRUAL RECEIPTS					
Milk sales		$538,467	$743,005	$1,255,588	$2,968,461
Dairy cattle		38,241	47,994	88,612	165,241
Dairy calves		3,140	5,039	9,065	18,288
Other livestock		306	2,546	2,137	1,261
Crops		15,466	20,479	31,090	47,273
Misc. receipts		21,114	18,252	34,243	73,913
Total Accrual Receipts		$616,734	$837,315	$1,420,735	$3,274,437
PROFITABILITY ANALYSIS					
Net farm income (without appreciation)		$125,539	$143,122	$242,688	$511,797
Net farm income (with appreciation)		$137,326	$160,120	$296,296	$610,028
Labor & management income		$83,3420	$105,103	$179,512	$390,018
Number of operators		1.87	1.87	1.88	2.26
Labor & management income/operator		$44,568	$56,205	$95,485	$172,574
Rates of return on:					
Equity capital without appreciation		10.1%	12.6%	15.1%	17.3%
Equity capital with appreciation		11.7%	14.9%	19.6%	21.4%
All capital without appreciation		9.4%	9.9%	11.6%	12.2%
All capital with appreciation		10.4%	11.2%	14.0%	14.3%

Table 50.

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
305 New York Dairy Farms, 1998

Farms with:	Less than 50 Cows		50 to 74 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$2,010	$3,179	$5,803	$7,623
Accounts receivable	7,784	9,996	12,238	15,488
Prepaid expenses	29	89	13	37
Feed & supplies	18,114	20,304	28,372	32,790
Livestock*	59,214	63,667	88,891	94,158
Machinery & equipment*	64,987	69,790	94,269	100,895
Farm Credit stock	940	876	919	950
Other stock & certificates	1,410	951	2,275	2,564
Land & buildings*	180,555	194,824	226,457	228,665
Total Farm Assets	$335,043	$363,676	$459,237	$483,170
Personal cash, checking & savings	$2,557	$3,659	$1,452	$1,376
Cash value of life insurance	7,136	7,339	9,327	9,427
Nonfarm real estate	12,817	12,817	23,429	23,071
Auto (personal share)	3,370	4,250	2,932	3,010
Stocks & bonds	4,252	5,540	10,234	12,255
Household furnishings	11,571	11,900	10,048	10,352
All other	12,692	14,383	1,371	30
Nonfarm Assets**	$54,395	$59,888	$58,793	$59,521
Farm & Nonfarm Assets	$389,438	$423,564	$518,030	$542,691
LIABILITIES				
Accounts payable	$3,829	$3,141	$6,481	$4,614
Operating debt	3,110	2,853	4,426	4,589
Short term	822	406	1,028	1,385
Advanced government receipt	22	17	220	40
Current Portion:				
Intermediate	6,644	7,738	8,438	9,877
Long Term	2,384	3,217	3,209	3,306
Intermediate***	33,750	32,327	45,432	47,770
Long term*	49,785	45,650	59,988	57,513
Total Farm Liabilities	$100,346	$95,349	$129,221	$129,094
Nonfarm Liabilities**	7,008	7,548	1,273	2,867
Farm & Nonfarm Liabilities	$107,354	$102,897	$130,494	$131,961
Farm Net Worth (Equity Capital)	$234,697	$268,327	$330,016	$354,076
Farm & Nonfarm Net Worth	$282,084	$320,667	$387,536	$410,730

FINANCIAL MEASURES	Less than 50 Cows	50 to 74 Cows
Percent Equity	74%	73%
Debt/asset ratio-long term	0.23	0.25
Debt/asset ratio-intermediate & current	0.29	0.28
Change in net worth with appreciation	$33,630	$24,060
Total farm debt per cow	$2,270	$2,116
Debt payments made per cow	$500	$451
Debt payments as % of milk sales	18%	16%
Amount available for debt service	$21,832	$26,217
Cash flow coverage ratio for 1998	1.17	1.13

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1998.
***Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 50. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
305 New York Dairy Farms, 1998

Farms with:	75 to 99 Cows		100 to 149 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$4,002	$5,838	$5,915	$8,300
Accounts receivable	16,781	19,648	25,923	33,523
Prepaid expenses	187	766	40	245
Feed & supplies	41,183	49,489	61,539	79,115
Livestock*	118,118	126,254	172,650	188,700
Machinery & equipment*	115,019	122,902	161,908	179,046
Farm Credit stock	2,161	2,133	2,866	2,923
Other stock & certificates	5,551	5,404	8,614	9,670
Land & buildings*	291,850	298,664	347,093	356,226
Total Farm Assets	$594,852	$631,098	$783,548	$857,748
Personal cash, checking & savings	$2,746	$3,342	$5,180	$9,431
Cash value of life insurance	13,892	14,217	9,448	9,210
Nonfarm real estate	37,300	49,725	29,483	30,862
Auto (personal share)	4,478	5,201	6,190	5,690
Stocks & bonds	7,611	8,363	10,359	17,090
Household furnishings	5,792	5,201	8,224	8,483
All other	2,954	3,876	12,188	16,691
Nonfarm Assets**	$74,773	$89,925	$81,072	$97,457
Farm & Nonfarm Assets	$669,625	$721,023	$867,620	$955,205
LIABILITIES				
Accounts payable	$11,196	$8,212	$20,958	$17,006
Operating debt	6,808	7,313	12,440	15,358
Short term	1,036	699	3,514	1,689
Advanced government receipt	78	246	127	43
Current Portion:				
Intermediate	13,800	16,207	22,406	24,107
Long Term	3,200	4,391	6,401	8,453
Intermediate***	67,145	69,582	94,861	105,358
Long term*	98,860	90,686	117,240	110,188
Total Farm Liabilities	$202,123	$197,336	$277,947	$282,202
Nonfarm Liabilities**	4,990	4,609	3,233	3,285
Farm & Nonfarm Liabilities	$207,113	$201,945	$281,180	$285,487
Farm Net Worth (Equity Capital)	$392,729	$433,762	$508,601	$575,546
Farm & Nonfarm Net Worth	$462,512	$519,078	$586,440	$669,718

FINANCIAL MEASURES	75 to 99 Cows	100 to 149 Cows
Percent equity	69%	67%
Debt/asset ratio-long term	0.30	0.31
Debt/asset ratio-intermediate & current	0.32	0.34
Change in net worth with appreciation	$41,033	$66,945
Total farm debt per cow	$2,349	$2,240
Debt payments made per cow	$542	$553
Debt payments as % of milk sales	19%	19%
Amount available for debt service	$43,992	$60,796
Cash flow coverage ratio for 1998	1.24	1.04

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1998.
***Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 50. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
305 New York Dairy Farms, 1998

Farms with:	150 to 199 Cows		200 o 299 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$14,897	$13,000	$8,111	$7,458
Accounts receivable	44,681	57,421	57,922	71,411
Prepaid expenses	54	308	230	679
Feed & supplies	107,572	129,620	116,113	152,404
Livestock*	286,675	264,009	345,408	366,591
Machinery & equipment*	217,832	234,134	229,408	255,340
Farm Credit stock	4,395	4,496	6,857	6,748
Other stock & certificates	21,007	22,172	23,294	27,277
Land & buildings*	474,921	487,884	528,546	550,890
Total Farm Assets	$1,124,034	$1,213,884	$1,315,889	$1,4384798
Personal cash, checking & savings	$8,900	$16,192	$10,773	$17,359
Cash value of life insurance	25,273	25,968	23,651	25,239
Nonfarm real estate	104,364	104,364	20,522	23,943
Auto (personal share)	8,082	6,925	4,389	3,979
Stocks & bonds	4,425	4,794	30,279	36,221
Household furnishings	15,364	15,818	8,500	8,816
All other	34,344	23,962	15,056	16,556
Nonfarm Assets**	$200,752	$198,023	$113,170	$132,113
Farm & Nonfarm Assets	$1,324,786	$1,411,067	$1,429,059	$1,570,911
LIABILITIES				
Accounts payable	$15,629	$13,837	$46,122	$29,543
Operating debt	15,096	17,283	19,287	26,343
Short term	6,072	3,167	12,961	9,655
Advanced government receipt	0	1,202	252	0
Current Portion:				
Intermediate	32,295	34,694	43,261	57,381
Long Term	6,590	8,910	11,675	15,255
Intermediate***	174,927	178,639	261,572	266,967
Long term*	157,172	150,069	253,019	263,838
Total Farm Liabilities	$407,781	$407,801	$648,149	$668,981
Nonfarm Liabilities**	2,833	2,053	1,926	1,258
Farm & Nonfarm Liabilities	$410,614	$409,854	$650,075	$670,239
Farm Net Worth (Equity Capital)	$716,253	$805,243	$667,740	$769,817
Farm & Nonfarm Net Worth	$914,172	$1,001,213	$778,984	$900,672

FINANCIAL MEASURES	150 to 199 Cows	200 to 299 Cows
Percent equity	66%	54%
Debt/asset ratio-long term	0.31	0.48
Debt/asset ratio-intermediate & current	0.36	0.46
Change in net worth with appreciation	$88,990	$102,077
Total farm debt per cow	$2,278	$2,753
Debt payments made per cow	$477	$659
Debt payments as % of milk sales	15%	21%
Amount available for debt service	$108,820	$124,736
Cash flow coverage ratio for 1998	1.41	1.16

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1998.
***Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 50. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
305 New York Dairy Farms, 1998

Farms with:	300 to 499 Cows		More than 500 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$6,192	$ 5,750	$34,149	$20,804
Accounts receivable	85,603	121,268	163,889	201,986
Prepaid expenses	0	1,396	10,691	21,135
Feed & supplies	176,751	240,027	485,112	613,019
Livestock*	521,896	575,360	1,194,930	1,261,935
Machinery & equipment*	370,480	411,943	759,110	801,293
Farm Credit stock	7,438	7,304	22,814	26,066
Other stock & certificates	48,241	57,951	79,007	104,440
Land & buildings*	883,200	930,538	1,741,834	1,820,091
Total Farm Assets	$2,099,801	$2,351,537	$4,491,536	$4,870,769
Personal cash, checking & savings	$ 4,925	$ 5,408	$2,200	$1,629
Cash value of life insurance	8,603	8,875	29,093	33,544
Nonfarm real estate	24,333	24,333	32,500	40,938
Auto (personal share)	8,058	8,925	1,625	2,250
Stocks & bonds	2,250	4,050	26,066	27,943
Household furnishings	6,500	6,500	9,750	12,250
All other	0	0	0	0
Nonfarm Assets**	$ 54,669	$ 58,091	$101,234	$118,554
Farm & Nonfarm Assets	$2,154,470	$2,409,628	$4,592,770	$4,989,323
LIABILITIES				
Accounts payable	$53,662	$28,153	$61,086	$33,708
Operating debt	41,376	49,628	251,164	283,053
Short term	7,296	9,213	17,578	15,210
Advanced government receipts	274	541	185	193
Current Portion:				
Intermediate	68,145	84,745	112,116	137,263
Long Term	24,511	23,753	66,189	74,877
Intermediate***	411,676	438,913	919,198	820,409
Long term*	420,165	422,236	889,892	892,216
Total Farm Liabilities	$1,027,104	$1,075,985	$2,317,408	$2,256,928
Nonfarm Liabilities**	12,447	18,803	0	0
Farm & Nonfarm Liabilities	$1,039,551	$1,075,985	$2,317,408	$2,256,928
Farm Net Worth (Equity Capital)	$1,072,697	$1,294,355	$2,174,128	$2,613,841
Farm & Nonfarm Net Worth	$1,114,919	$1,333,643	$2,275,362	$2,732,395

FINANCIAL MEASURES	300 to 500 Cows	More than 500 Cows
Percent equity	55%	54%
Debt/asset ratio-long term	.45	.49
Debt/asset ratio-intermediate & current	.45	.45
Change in net worth with appreciation	$221,658	$439,713
Total farm debt per cow	$2,732	$2,640
Debt payments made per cow	$679	$594
Debt payments as % of milk sales	20%	17%
Amount available for debt service	$213,897	$478,419
Cash flow coverage ratio for 1998	1.12	1.24

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1998.
***Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 51.

SELECTED BUSINESS FACTORS BY HERD SIZE
305 New York Dairy Farms, 1998

Item / Farms with:	Less than 50 Cows	50 to 74 Cows	75 to 99 Cows	100 to 149 Cows
Number of farms	31	55	35	57
Cropping Program Analysis				
Total Tillable acres	156	212	262	360
Tillable acres rented*	57	76	112	156
Hay crop acres*	103	134	156	183
Corn silage acres*	18	41	64	103
Hay crop, tons DM/acre	1.9	2.2	2.4	2.7
Corn silage, tons/acre	12.1	13.6	14.4	16.4
Oats, bushels/acre	58	58	49	49
Forage DM per cow, tons	6.8	7.7	8.1	8.6
Tillable acres/cow	3.8	3.5	3.2	2.9
Fert. & lime expense/tillable acre	$18.68	$18.28	$22.97	$33.15
Total machinery costs	$21,225	$30,945	$38,709	$64,062
Machinery cost/tillable acre	$136	$146	$148	$178
Dairy Analysis				
Number of cows	41	61	83	123
Number of heifers	33	47	62	91
Milk sold, lbs.	683,471	1,064,048	1,485,591	2,295,239
Milk sold/cow, lbs.	16,488	17,574	17,819	18,735
Operating cost of prod. milk/cwt.	$10.63	$10.87	$11.03	$11.22
Total cost of prod. milk/cwt.	$18.49	$16.78	$15.94	$15.40
Price/cwt. milk sold	$15.88	$15.58	$15.71	$15.72
Purchased dairy feed/cow	$734	$752	$707	$729
Purchased dairy feed/cwt. milk	$4.40	$4.31	$3.95	$3.91
Purchased grain & concentrate as % of milk receipts	25%	26%	25%	23%
Purchased feed & crop expense/cwt. milk	$5.16	$5.08	$4.88	$4.98
Capital Efficiency				
Farm capital/worker	$182,911	$204,871	$229,579	$225,865
Farm capital/cow	$8,521	$7,725	$7,385	$6,684
Farm capital/tillable acre owned	$3,529	$3,490	$4,087	$4,030
Real estate/cow	$4,578	$3,731	$3,557	$2,859
Machinery investment/cow	$1,644	$1,600	$1,433	$1,386
Asset turnover ratio	0.38	0.41	0.44	0.52
Labor Efficiency				
Worker equivalent	1.91	2.30	2.67	3.64
Operator/manager equivalent	1.30	1.18	1.41	1.54
Milk sold/worker, lbs.	357,838	462,630	556,401	630,560
Cows/worker	21	27	31	34
Work units/worker	230	282	325	350
Labor cost/cow	$891	$679	$609	$587
Labor cost/tillable acre	$234	$195	$193	$201

*Average of all farms, not only those reporting data.

Table 51. (cont'd)

SELECTED BUSINESS FACTORS BY HERD SIZE
305 New York Dairy Farms, 1998

Item (Farms with:)	150 to 199 Cows	200 to 299 Cows	300 to 499 Cows	500 or More Cows
Number of farms	28	38	33	28
Cropping Program Analysis				
Total Tillable acres	500	580	806	1,531
Tillable acres rented*	233	306	364	774
Hay crop acres*	260	286	338	610
Corn silage acres*	137	209	334	698
Hay crop, tons DM/acre	2.4	3.5	3.3	4.1
Corn silage, tons/acre	15.5	16.6	18.3	20.6
Oats, bushels/acre	60	0	81	55
Forage DM per cow, tons	7.8	9.0	8.3	8.5
Tillable acres/cow	2.9	2.5	2.2	1.6
Fert. & lime expense/tillable acre	$27.72	$33.20	$31.45	$36.72
Total machinery costs	$88,562	$110,709	$171,862	$371,847
Machinery cost/tillable acre	$177	$191	$213	$243
Dairy Analysis				
Number of cows	171	237	371	842
Number of heifers	123	163	257	650
Milk sold, lbs.	3,397,861	4,758,215	7,953,220	19,273,073
Milk sold/cow, lbs.	19,829	20,059	21,457	22,883
Operating cost of prod. milk/cwt.	$11.01	$11.49	$11.62	$11.73
Total cost of prod. milk/cwt.	$14.70	$14.47	$14.28	$13.87
Price/cwt. milk sold	$15.85	$15.62	$15.79	$15.40
Purchased dairy feed/cow	$809	$856	$888	$976
Purchased dairy feed/cwt. milk	$4.07	$4.26	$4.14	$4.26
Purchased grain & concentrate as % of milk receipts	24%	26%	25%	27%
Purchased feed & crop expense/cwt. milk	$5.01	$5.13	$4.99	$4.95
Capital Efficiency				
Farm capital/worker	$233,708	$250,882	$247,297	$261,663
Farm capital/cow	$6,834	$5,812	$5,999	$5,560
Farm capital/tillable acre owned	$4,377	$5,027	$5,047	$6,184
Real estate/cow	$2,815	$2,277	$2,444	$2,115
Machinery investment/cow	$1,322	$1,023	$1,054	$927
Asset turnover ratio	0.54	0.62	0.66	0.72
Labor Efficiency				
Worker equivalent	5.00	5.49	9.00	17.89
Operator/manager equivalent	1.87	1.87	1.88	2.26
Milk sold/worker, lbs.	679,572	866,706	883,691	1,077,310
Cows/worker	34	43	41	47
Work units/worker	353	430	406	462
Labor cost/cow	$583	$491	$590	$645
Labor cost/tillable acre	$199	$201	$272	$355

*Average of all farms, not only those reporting data.

SUPPLEMENTAL INFORMATION

Comparisons of business performance by 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 on DHIA have higher pounds of milk sold per cow. Is it DHIA or is it that DHIA cooperators value production data and would acquire the data by other means and even without DHIA would have higher milk production than non-cooperators? Keep this distinction in mind when reviewing the following data.

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 used as many of the same physical characteristics as possible for 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 52 on page 58 includes the average values for the resulting five groups of dairy farms. The average size in the five groups ranges from 47 cows on the small conventional farms to 591 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. The small freestall farms showed average profits somewhat higher than the large conventional farm businesses.

Farm business charts have been computed for each of the five housing and herd size categories and are on pages 59-63. 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 Data, Same Farms, 1989 - 1998

Follow ten years of growth, change and progress made by 72 New York DFBS farms in Table 58, pages 64 and 65. Although milk receipts per cwt. increased less than eight percent, net farm income without appreciation increased 118 percent from 1989 to 1998.

Comparison of Farms by bST Usage

Farms adopting bovine somatotropin (bST) experienced greater increases in milk production, had larger herds and were more profitable than farms not adopting bST (Table 59). Forty farms used bST in each year 1994, 1995, 1996, 1997 and 1998. In comparison, 42 farms did not use bST in 1994 through 1998.

Farms not using bST showed a slight increase in pounds of milk sold per cow, from 17,302 pounds in 1994 to 17,489 pounds in 1998. Farms using bST increased milk sold per cow three percent, from 20,048 pounds per cow in 1994 to 22,695 pounds per cow in 1998. Farms that used bST in 1994 through 1998 were larger, and increased in size more rapidly than did farms not supplementing with bST. Farms not using bST increased by 9 cows, from an average of 89 cows in 1994 to 98 in 1998. Farms adopting bST increased by 129 cows, up to 476 cows in 1998. Both groups saw an increase in rate of return on all capital and net farm income in 1998. Both groups saw an increase in net worth, with the bST group increasing more rapidly. Debt to asset ratio and debt per cow changed very little over the study period.

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 all 305 dairy farms, 168dairy farms selling less than 20,000 pounds of milk per cow, and 137 dairy farms selling 20,000 pounds and more in Table 60 on page 67. Table 61 on page 68 provides the same list of average accrual receipts and expenses for 101 farms averaging less than 80 cows per farm, 97 farms with 80 to 180 cows and 107 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.

Intensive Grazing Farms vs. Non-Grazing Farms

In 1998, 59 of the 305 DFBS cooperators practiced intensive grazing. This 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 62. The control group is a selection of non-grazing dairy farms of similar size. In 1998 average net farm income was somewhat higher on intensive grazing farms. Operating cost of producing milk was 90 cents per cwt. lower and total costs were $1.09 per cwt. below the costs of production on the control farms. Table 62 also includes a comparison of 17 profitable grazing farms to 40 profitable non-grazing farms. E.B. 99-17 contains detailed information on New York farms using intensive grazing.

Comparison of Dairy Farm Business Data by Region

Average farm business summary data from five regions of the State are compared in Tables 63 and 64. The largest average farm size, highest average rate of milk production, and highest average farm profits came from the Western and Central Plain Region. Dairy farmers in this region have increased milk production 37.2 percent over the last 10 years and they produced milk for an average total cost of $14.08 per hundredweight in 1998. Total milk production has declined 13.9 percent over 10 years in the Northern Hudson and Southeastern New York Region. This is the region with the highest costs of producing milk and the third lowest returns to labor and management.

Comparison of Farms by Milking Frequency

Twenty-four percent of the 305 DFBS farms utilized three times per day (3X) milking in 1998. 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 65.

In 1998, the 3X farms averaged 48 more cows per farm, sold 1 percent more milk per cow, held constant the total cost of producing milk but showed an average 225 percent increase in net farm income, compared to the 3X farm averages for 1997. The 2X farms increased milk output per cow 1.2 percent, decreased total production costs $0.43 per hundredweight and increased average net farm income $52,207 per farm in 1998 compared to 1997.

The 3X farms compared with the 2X farms averaged 24 percent more milk per cow and 56 percent additional milk per worker in 1998, very similar to the differences found in 1997. In 1998 the average total cost of producing milk was 10 percent lower on 3X farms than on 2X dairies. In 1997 the 3X farms showed a 14 percent cost advantage. 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 indicate there are other important management differences contributing to higher profits.

Other Comparisons

Forty-one dairy renter farms were smaller, on average, than the 305 owner-operated farms, but averaged higher returns to equity capital than the average for 305 owned dairy farms (Table 66). E.B. 99-16 contains detailed information on Eastern New York dairy renters. Data for the top 10 percent of farms by rate of return on all capital without appreciation is presented in Table 67. Additional data for the top 10 percent of farms is presented in many of the first 44 tables of this publication. Summary data for the 305 specialized dairy farms are presented in Table 68.

Table 52.

SELECTED BUSINESS FACTORS BY TYPE OF BARN AND HERD SIZE
222 New York Dairy Farms, 1998

Item	Conventional		Freestall		
Farms with:	<= 60 Cows	>60 Cows	<=150 Cows	151-300 Cows	≥300 Cows
Number of farms	53	39	66	56	60
Cropping Program Analysis					
Total Tillable acres	165	263	326	543	1,146
Tillable acres rented*	69	100	138	271	555
Hay crop acres*	112	160	172	270	465
Corn silage acres*	24	63	89	180	505
Hay crop, tons DM/acre	2.0	2.3	2.5	3.0	3.8
Corn silage, tons/acre	13.3	14.9	16.1	16.3	19.8
Oats, bushels/acre	75	56	52	47	66
Forage DM per cow, tons	7.2	8.1	8.6	8.3	8.5
Tillable acres/cow	3.5	3.1	3.1	2.6	1.9
Fert. & lime exp./tillable acre	$17.95	$26.24	$28.43	$32.29	$34.34
Total machinery costs	$22,864	$41,223	$55,148	$103,065	$264,568
Machinery cost/tillable acre	$139	$157	$169	$190	$231
Dairy Analysis					
Number of cows	47	84	105	213	591
Number of heifers	37	66	79	147	441
Milk sold, lbs.	791,111	1,477,898	1,965,704	4,296,849	13,224,652
Milk sold/cow, lbs.	16,705	17,514	18,794	20,166	22,361
Operating cost of prod. milk/cwt.	$10.68	$10.97	$11.38	$11.32	$11.73
Total cost of prod. milk/cwt.	$17.71	$15.59	$15.87	$14.49	$14.03
Price/cwt. milk sold	$15.65	$15.69	$15.72	$15.66	$15.52
Purchased dairy feed/cow	$762	$686	$748	$848	$948
Purchased dairy feed/cwt. milk	$4.53	$3.90	$3.99	$4.21	$4.24
Purchased grain & conc. as % milk rec.	26%	24%	24%	25%	26%
Purchased feed & crop exp./cwt. milk	$5.25	$4.81	$5.07	$5.10	$4.97
Capital Efficiency					
Farm capital/worker	$191,199	$195,535	$242,573	$245,829	$255,970
Farm capital/cow	$8,217	$6,774	$7,277	$6,117	$5,708
Farm capital/tillable acre owned	$3,982	$3,491	$4,064	$4,790	$5,708
Real estate/cow	$4,190	$3,171	$3,363	$2,407	$2,228
Machinery investment/cow	$1,657	$1,231	$1,483	$1,122	$966
Asset turnover ratio	0.38	0.48	0.47	0.60	0.70
Labor Efficiency					
Worker equivalent	2.02	2.91	3.15	5.30	13.18
Operator/manager equivalent	1.28	1.41	1.48	1.83	2.11
Milk sold/worker, lbs.	391,639	507,869	624,033	810,726	1,003,388
Cows/worker	23	29	33	40	45
Labor cost/cow	$806	$621	$586	$525	$628
Labor cost/tillable acre	$230	$198	$189	$206	$324
Profitability & Balance Sheet Analysis					
Net farm income (without appreciation)	$30,102	$54,203	$62,018	$138,638	$364,377
Labor & management income/operator	$ 6,741	$20,304	$21,661	$54,175	$129,894
Rate return on all capital with appreciation	3.4%	7.5%	7.2%	11.0%	14.2%
Farm debt/cow	$2,082	$2,048	$2,495	$2,590	$2,672
Percent equity	75%	70%	66%	58%	54%

*Average of all farms, not only those reporting data.

Table 53.

FARM BUSINESS CHART FOR SMALL CONVENTIONAL STALL DAIRY FARMS
53 Conventional Stall Dairy Farms with 60 or Less Cows, New York, 1998

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
3.47	60	1,213,974	22,414	3.6	20	43	804,775
2.59	56	1,115,950	20,984	3.0	17	33	584,622
2.30	53	969,147	19,704	2.7	17	31	526,572
2.18	52	910,457	18,688	2.5	15	28	480,534
2.00	50	841,239	17,718	2.2	14	25	422,827
1.93	47	734,546	16,635	1.9	13	23	383,398
1.77	44	691,731	15,499	1.7	12	22	330,871
1.64	43	615,265	14,244	1.5	11	21	313,102
1.49	40	551,769	13,010	1.3	10	19	271,059
1.15	34	423,579	9,678	1.0	7	15	208,163

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
$330	15%	$198	$768	$459	$3.38
455	20	279	984	628	4.10
554	21	366	1,133	717	4.45
591	23	412	1,218	772	4.78
627	24	442	1,251	813	4.99
675	26	475	1,341	866	5.30
729	27	546	1,416	986	5.78
813	31	620	1,483	1,070	6.37
913	36	692	1,557	1,207	6.96
1,146	41	889	1,902	1,423	7.96

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec. Total	Net Farm Income Without Apprec. Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$3,463	$6.99	$13.73	$72,327	$1,545	$46,972	$118,868
3,283	8.72	14.95	55,042	1,076	26,726	41,671
3,033	9.36	15.79	46,872	929	19,210	31,493
2,857	9.89	16.25	38,282	812	16,632	25,222
2,737	10.30	16.70	34,460	712	13,361	20,378
2,604	11.08	17.88	30,197	654	9,532	17,774
2,497	11.45	18.88	25,617	542	6,832	15,511
2,285	12.20	20.55	17,308	382	-2,126	10,875
2,057	13.60	23.87	8,173	203	-18,059	5,850
1,583	16.68	27.05	-11,910	-297	-37,361	-15,976

Table 54.

FARM BUSINESS CHART FOR LARGE CONVENTIONAL STALL DAIRY FARMS
39 Conventional Stall Dairy Farms with More Than 60 Cows, New York, 1998

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
5.24	161	2,763,364	22,863	3.8	21	53	1,009,752
4.07	110	2,105,279	21,758	3.5	20	40	722,044
3.45	96	1,798,060	19,506	2.9	17	35	621,670
3.28	80	1,590,816	18,464	2.7	17	33	598,191
3.02	77	1,443,208	17,877	2.5	15	31	534,641
2.63	75	1,253,686	17,241	2.3	15	29	495,293
2.41	70	1,225,162	16,557	2.2	14	28	448,695
2.21	67	1,133,080	15,475	1.7	13	25	384,068
1.89	65	1,011,210	14,142	1.4	12	22	360,156
1.51	63	776,485	11,787	0.7	8	19	308,412

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
$285	11%	$250	$791	$429	$2.65
476	18	322	886	599	3.67
500	21	387	958	654	4.09
564	21	442	990	678	4.38
609	24	464	1,054	818	4.70
671	26	508	1,160	918	4.87
722	27	571	1,226	981	5.12
855	29	616	1,294	1,025	5.53
928	31	642	1,376	1,100	6.11
1,009	36	703	1,550	1,172	7.00

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec. Total	Net Farm Income Without Apprec. Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$3,480	$6.64	$12.63	$122,059	$1,342	$68,860	$108,358
3,232	8.60	13.75	86,039	1,069	46,336	80,096
3,049	9.26	14.58	74,714	844	33,436	58,341
2,934	10.34	15.04	66,359	749	27,831	50,994
2,870	10.89	15.48	53,196	685	24,685	40,508
2,806	11.26	15.84	46,370	570	21,464	26,551
2,581	11.92	16.40	39,278	481	16,204	20,234
2,441	12.48	16.98	33,241	425	9,226	13,951
2,185	13.08	17.45	27,708	368	4,516	9,220
1,867	14.25	19.76	10,031	133	- 8,879	-21,168

Table 55.

FARM BUSINESS CHART FOR SMALL FREESTALL DAIRY FARMS
66 Freestall Barn Dairy Farms with 150 or Less Cows, New York, 1998

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
5.10	148	3,022,008	24,375	4.6	23	54	922,566
4.39	139	2,755,435	21,643	3.6	20	44	840,692
3.84	130	2,480,659	20,587	3.3	19	40	774,720
3.55	122	2,320,572	20,054	3.0	18	38	732,078
3.28	115	2,194,493	19,527	2.8	16	36	669,259
3.03	105	2,034,812	18,885	2.5	15	34	620,044
2.74	95	1,721,770	17,977	2.4	14	31	590,586
2.44	81	1,373,931	16,704	2.1	13	30	542,373
2.16	75	1,205,972	15,924	1.7	12	27	479,718
1.55	54	935,370	13,103	1.3	10	20	355,838

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
$375	15%	$282	$736	$523	$3.29
530	19	382	856	732	4.16
588	21	413	964	839	4.61
625	23	433	1,023	913	4.84
695	24	470	1,093	954	5.02
762	26	520	1,126	992	5.26
820	28	592	1,200	1,054	5.50
866	28	662	1,280	1,116	5.80
925	29	751	1,435	1,192	6.24
1,057	33	908	1,717	1,318	6.76

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec. Total	Net Farm Income Without Apprec. Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$3,811	$8.14	$13.21	$143,267	$1,185	$82,638	$143,114
3,418	9.66	13.89	113,680	984	57,567	98,824
3,264	10.41	14.72	99,513	864	46,121	74,390
3,140	10.98	15.29	81,271	717	34,808	64,537
3,049	11.28	15.66	69,185	660	26,152	57,695
2,976	11.72	16.33	53,091	604	20,091	46,031
2,837	12.17	17.16	44,009	504	12,757	30,054
2,611	12.79	17.90	29,792	354	2,361	20,709
2,470	13.57	18.89	20,840	225	- 3,570	11,752
2,097	15.07	20.45	- 7,376	- 47	-26,169	- 6,400

Table 56.

FARM BUSINESS CHART FOR MEDIUM FREESTALL DAIRY FARMS
56 Freestall Barn Dairy Farms with 151-300 Cows, New York, 1998

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
8.13	292	6,532,483	25,653	5.6	23	65	1,213,985
6.88	271	5,598,579	23,617	4.2	20	55	1,018,820
6.32	248	5,044,177	22,423	3.8	19	51	951,638
6.00	225	4,688,017	21,700	3.6	18	47	893,710
5.45	217	4,439,303	21,118	3.2	17	42	845,898
5.12	206	4,142,588	20,198	2.8	16	39	808,481
4.77	197	3,755,631	18,687	2.6	15	38	767,984
4.30	181	3,568,861	18,048	2.3	14	36	718,579
3.94	167	3,314,841	16,766	1.9	13	32	667,619
3.12	156	2,663,320	15,299	1.5	9	28	566,753

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
$490	15%	$272	$578	$757	$3.66
653	20	357	751	865	4.39
736	23	407	843	915	4.70
763	24	451	908	977	4.89
785	25	484	1,006	1,026	5.14
838	27	507	1,071	1,061	5.27
893	28	545	1,131	1,126	5.42
941	31	588	1,226	1,161	5.87
977	34	622	1,354	1,205	6.26
1,042	37	691	1,432	1,296	6.70

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec. Total	Net Farm Income Without Apprec. Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$4,149	$7.32	$11.15	$341,347	$1,666	$209,684	$246,469
3,736	9.92	12.86	203,583	1,034	132,108	182,123
3,527	10.63	13.65	179,668	904	111,231	163,131
3,380	10.95	14.05	162,268	790	94,399	129,695
3,270	11.42	14.34	145,676	697	77,556	106,461
3,163	11.75	14.78	136,060	633	59,579	91,000
2,998	12.05	15.44	110,936	511	45,628	69,755
2,758	12.74	16.08	91,080	417	27,444	51,204
2,619	13.18	16.45	56,316	265	13,856	35,700
2,340	13.85	17.89	14,837	66	- 18,420	-2,513

Table 57.

FARM BUSINESS CHART FOR LARGE FREESTALL DAIRY FARMS
60 Freestall Barn Dairy Farms with 300 or More Cows, New York, 1998

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
29.83	1,452	33,395,024	25,269	6.3	37	63	1,390,233
18.93	910	20,754,019	24,284	5.2	21	53	1,193,569
15.19	672	15,445,196	23,549	4.4	20	51	1,137,150
13.19	559	12,815,034	22,890	4.0	20	48	1,058,409
11.36	499	10,886,923	22,272	3.7	19	45	988,292
10.52	427	9,430,184	21,858	3.5	18	43	929,229
9.77	372	8,374,441	21,558	3.2	17	42	898,178
8.95	363	7,732,838	21,003	3.0	16	39	836,297
7.82	343	7,280,279	20,341	2.6	15	35	760,260
6.26	317	6,132,583	17,706	2.1	12	31	671,227

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
$609	31%	$258	$720	$851	$4.06
711	30	329	891	946	4.39
785	29	377	963	1,003	4.67
864	28	427	1,008	1,050	4.81
899	27	451	1,064	1,074	4.93
924	27	468	1,101	1,098	5.04
958	25	494	1,140	1,133	5.23
983	23	528	1,200	1,193	5.40
1,036	22	559	1,252	1,272	5.60
1,156	19	681	1,373	1,420	5.91

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income Without Apprec. Total	Net Farm Income Without Apprec. Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$4,035	$9.41	$11.73	$991,282	$1,196	$500,690	$818,582
3,774	10.29	12.84	614,522	959	275,008	538,782
3,635	10.77	13.56	449,374	820	204,745	402,371
3,547	11.32	13.73	360,540	722	167,503	317,488
3,473	11.78	13.95	298,190	614	146,306	283,695
3,393	11.93	14.25	270,575	555	120,610	248,214
3,316	12.22	14.38	229,656	488	99,758	216,459
3,269	12.44	14.75	197,331	431	80,329	187,837
3,123	13.04	15.39	174,167	347	43,633	137,199
2,871	13.92	17.06	58,138	157	-4,106	50,173

Table 58.

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 72 New York Dairy Farms, 1989 - 1998

Selected Factors	1989	1990	1991	1992
Milk receipts per cwt. milk	$14.59	$14.94	$12.92	$13.54
Size of Business				
Average number of cows	131	136	144	163
Average number of heifers	105	114	122	124
Milk sold, cwt.	23,858	24,963	27,018	31,574
Worker equivalent	3.81	3.99	4.20	4.49
Total tillable acres	359	349	406	422
Rates of Production				
Milk sold per cow, lbs.	18,239	18,379	18,737	19,387
Hay DM per acre, tons	2.6	2.8	2.5	2.8
Corn silage per acre, tons	13	14	13	14
Labor Efficiency				
Cows per worker	34	34	34	36
Milk sold per worker, lbs.	626,999	625,702	642,880	703,453
Cost Control				
Grain & concen. purchased as % of milk sales	27%	27%	29%	28%
Dairy feed & crop expense per cwt. milk	$5.07	$5.20	$4.78	$4.86
Operating cost of producing cwt. milk	$9.98	$10.75	$ 9.84	$10.06
Total cost of producing cwt. milk	$15.29	$16.41	$15.14	$15.23
Hired labor cost per cwt.	$1.27	$1.50	$1.36	$1.37
Interest paid per cwt.	$0.88	$0.87	$0.90	$0.74
Labor & machinery costs per cow	$952	$1,068	$1,038	$1,070
Replacement livestock expense	$2,487	$4,044	$2,789	$4,764
Expansion livestock expense	$7,171	$7,517	$15,546	$19,527
Capital Efficiency				
Farm capital per cow	$6,929	$7,235	$7,335	$7,446
Machinery & equipment per cow	$1,327	$1,403	$1,461	$1,476
Real estate per cow	$3,190	$3,327	$3,396	$3,501
Livestock investment per cow	$1,417	$1,505	$1,515	$1,511
Asset turnover ratio	0.51	0.49	0.44	0.46
Profitability				
Net farm income without appreciation	$77,213	$68,783	$37,988	$67,141
Net farm income with appreciation	$109,185	$83,038	$57,931	$87,067
Labor & management income per operator/manager	$36,777	$24,259	$306	$24,332
Rate return on:				
Equity capital with appreciation	10.3%	4.7%	0.4%	2.5%
All capital with appreciation	9.2%	5.4%	2.8%	3.7%
All capital without appreciation	5.0%	4.1%	0.7%	1.9%
Financial Summary, End Year				
Farm net worth	$583,285	$614,221	$622,643	$707,533
Change in net worth with appreciation	$71,439	$29,785	$4,484	$44,384
Debt to asset ratio	0.28	0.30	0.31	0.29
Farm debt per cow	$1,878	$2,132	$2,153	$2,077

Table 58. (continued)

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 72 New York Dairy Farms, 1989 - 1998

1993	1994	1995	1996	1997	1998
$13.21	$13.52	$13.07	$15.04	$13.74	$15.69
180	192	207	220	226	237
136	148	159	168	177	190
34,926	40,142	43,507	46,777	49,524	51,469
4.67	5.01	5.33	5.58	5.72	6.03
442	464	486	514	533	548
19,451	20,898	20,996	21,215	21,880	21,763
2.8	3.1	2.6	2.7	2.4	3.0
15	17	14	15	14	15
38	38	39	40	40	39
747,159	801,326	815,871	838,297	865,575	854,046
28%	27%	27%	29%	31%	24%
$4.69	$4.52	$4.36	$5.30	$5.25	$4.89
$9.80	$9.88	$10.03	$11.27	$11.33	$10.63
$14.81	$14.85	$14.79	$16.25	$16.12	$15.46
$1.43	$1.40	$1.42	$1.48	$1.47	$1.49
$0.73	$0.70	$0.77	$0.76	$0.76	$0.72
$1,077	$1,112	$1,084	$1,161	$1,152	$1,190
$6,231	$8,194	$4,409	$5,273	$6,482	$11,502
$11,539	$10,897	$11,900	$6,824	$6,755	$10,109
$7,497	$7,432	$7,330	$7,374	$7,397	$7,471
$1,499	$1,492	$1,462	$1,469	$1,498	$1,535
$3,500	$3,402	$3,366	$3,376	$3,373	$3,362
$1,523	$1,559	$1,540	$1,537	$1,528	$1,540
0.45	0.47	0.44	0.49	0.44	0.53
$68,911	$84,921	$78,473	$107,393	$58,555	$168,177
$89,191	$104,179	$91,616	$122,344	$66,814	$196,206
$19,113	$28,981	$22,677	$42,806	$5	$68,599
2.9%	3.5%	0.8%	4.2%	-2.3%	12.3%
3.9%	4.2%	2.9%	4.9%	0.7%	9.8%
1.9%	2.8%	2.0%	3.6%	0.1%	7.2%
$749,898	$796,800	$834,292	$915,334	$913,374	$1,040,129
$37,769	$50,166	$40,169	$74,204	$-1,579	$123,139
0.30	0.30	0.30	0.28	0.29	0.27
$2,066	$2,067	$2,000	$1,969	$2,005	$1,908

Table 60.

FARM RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT FOR TWO LEVELS OF MILK PRODUCTION
305 New York Dairy Farms, 1998

Item	305 Dairy Farms		168 Dairy Farms Milk/Cow <20,000#		137 Dairy Farms Milk/Cow ≥20,000#	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	$3,264	$15.60	$2,675	$15.81	$3,502	$15.53
Dairy cattle	199	0.95	182	1.08	206	0.91
Dairy calves	21	0.10	18	0.11	23	0.10
Other livestock	4	0.02	6	0.04	3	0.01
Crops	74	0.35	77	0.45	72	0.32
Government receipts	46	0.22	51	0.30	43	0.19
All other	45	0.22	41	0.24	47	0.21
TOTAL ACCRUAL RECEIPTS	$3,654	$17.46	$3,050	$18.02	$3,895	$17.28
ACCRUAL EXPENSES						
Labor: Hired	$431	$2.06	$245	$1.45	$507	$2.25
Feed: Dairy grain & concentrate	833	3.98	695	4.11	889	3.94
Dairy roughage	42	0.20	42	0.25	42	0.19
Nondairy	0	0.00	1	0.01	0	0.00
Machinery:Machine hire, rent & lease	72	0.35	56	0.33	79	0.35
Machinery repairs & vehicle expense	162	0.77	154	0.91	165	0.73
Fuel, oil & grease	53	0.25	52	0.31	53	0.23
Livestock: Replacement livestock	50	0.24	61	0.36	45	0.20
Breeding	33	0.16	27	0.16	36	0.16
Vet & medicine	93	0.45	63	0.37	105	0.47
Milk marketing	110	0.53	107	0.63	111	0.49
Bedding	37	0.18	19	0.11	45	0.20
Milking supplies	70	0.34	69	0.41	70	0.31
Cattle lease & rent	8	0.04	1	0.01	11	0.05
Custom boarding	30	0.14	8	0.05	39	0.18
bST expense	48	0.23	18	0.11	60	0.27
Other livestock expense	33	0.16	30	0.18	33	0.15
Crops: Fertilizer & lime	73	0.35	75	0.44	72	0.32
Seeds & plants	46	0.22	40	0.23	49	0.22
Spray & other crop expense	50	0.24	41	0.24	54	0.24
Real Estate: Land, building & fence repair	56	0.27	42	0.25	61	0.27
Taxes	45	0.21	59	0.35	39	0.17
Rent & lease	55	0.26	48	0.28	57	0.25
Other: Insurance	35	0.17	43	0.26	32	0.14
Utilities (farm share)	67	0.32	74	0.44	64	0.28
Interest paid	187	0.89	186	1.10	186	0.83
Miscellaneous	31	0.15	27	0.16	32	0.14
TOTAL OPERATING EXPENSES	$2,752	$13.15	$2,286	$13.51	$2,939	$13.04
Expansion livestock	43	0.21	38	0.23	45	0.20
Machinery depreciation	128	0.61	128	0.76	127	0.56
Building depreciation	99	0.47	71	0.42	110	0.49
TOTAL ACCRUAL EXPENSES	$3,022	$14.44	$2,523	$14.91	$3,221	$14.29

Table 61.

FARM RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT FOR THREE HERD SIZE CATEGORIES
305 New York Dairy Farms, 1998

Item	101 Dairy Farms with <80 Cows		97 Dairy Farms with 80-180 Cows		107Dairy Farms with ≥ 180 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	$2,694	$15.64	$2,973	$15.75	$3,406	$15.56
Dairy cattle	140	0.81	180	0.95	211	0.96
Dairy calves	20	0.11	19	0.10	22	0.10
Other livestock	7	0.04	2	0.01	4	0.02
Crops	49	0.28	90	0.48	72	0.33
Government receipts	54	0.31	57	0.30	42	0.19
All other	49	0.29	38	0.20	46	0.21
TOTAL ACCRUAL RECEIPTS	$3,012	$17.49	$3,359	$17.80	$3,804	$17.38
ACCRUAL EXPENSES						
Labor: Hired	$156	$0.91	$278	$1.47	$504	$2.30
Feed: Dairy grain & concentrate	682	3.96	700	3.71	886	4.05
Dairy roughage	54	0.31	44	0.24	40	0.18
Nondairy	1	0.01	0	0.00	0	0.00
Machinery:Machine hire, rent & lease	50	0.29	57	0.30	79	0.36
Mach. repairs & vehicle expense	170	0.99	184	0.98	155	0.71
Fuel, oil & grease	58	0.34	58	0.31	51	0.23
Livestock: Replacement livestock	42	0.25	40	0.21	53	0.24
Breeding	35	0.20	35	0.19	32	0.15
Vet & medicine	56	0.32	77	0.41	102	0.47
Milk marketing	119	0.69	116	0.61	107	0.49
Bedding	14	0.08	21	0.11	44	0.20
Milking supplies	72	0.42	69	0.37	70	0.32
Cattle lease & rent	0	0.00	2	0.01	11	0.05
Custom boarding	2	0.01	10	0.05	39	0.18
bST expense	15	0.09	24	0.13	58	0.27
Other livestock expense	40	0.23	43	0.23	29	0.13
Crops: Fertilizer & lime	65	0.38	88	0.47	70	0.32
Seeds & plants	34	0.20	52	0.27	46	0.21
Spray & other crop expense	37	0.22	49	0.26	52	0.24
Real Estate: Land, building & fence repair	46	0.27	56	0.29	57	0.26
Taxes	86	0.50	62	0.33	35	0.16
Rent & lease	37	0.21	46	0.24	59	0.27
Other: Insurance	51	0.30	47	0.25	30	0.14
Utilities (farm share)	93	0.54	80	0.42	60	0.28
Interest paid	146	0.85	166	0.88	197	0.90
Miscellaneous	37	0.21	27	0.15	31	0.14
TOTAL OPERATING EXPENSES	$2,198	$12.76	$2,431	$12.88	$2,900	$13.25
Expansion livestock	5	0.03	35	0.19	50	0.23
Machinery depreciation	143	0.83	140	0.74	122	0.56
Building depreciation	71	0.41	67	0.36	110	0.50
TOTAL ACCRUAL EXPENSES	$2,417	$14.03	$2,673	$14.17	$3,183	$14.54

Table 62.

INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS
New York State Dairy Farms, 1998

Item	All Intensive Grazing Farms	Non-Grazing Farms*	Profitable Grazing Farms**	Profitable Non-Grazing Farms***
Number of farms	59	110	17	40
Business Size & Production				
Number of cows	83	79	80	77
Number of heifers	62	60	62	58
Milk sold, lbs.	1,465,226	1,426,679	1,487,206	1,551,333
Milk sold/cow, lbs.	17,653	18,132	18,508	20,115
Milk plant test, % butterfat	3.71%	3.70%	3.64%	3.67%
Tillable acres, total	247	253	241	230
Hay crop, tons DM/acre	2.4	2.4	2.6	2.8
Corn silage, tons/acre	14.8	15.1	16.6	15.3
Forage DM/cow, tons	6.4	8.8	6.0	8.7
Labor & Capital Efficiency				
Worker equivalent	2.75	2.67	2.46	2.77
Milk sold/worker, lbs.	532,809	534,337	604,555	560,048
Cows/worker	30	30	33	28
Farm capital/worker	$194,307	$226,250	$227,625	$200,849
Farm capital/cow	$6,438	$7,647	$6,999	$7,225
Farm capital/cwt. milk	$36	$42	$38	$36
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.39	$1.06	$1.22	$0.79
Grain & concentrate	$3.74	$3.89	$3.49	$3.61
Purchased roughage	$0.24	$0.24	$0.24	$0.19
Replacements purchased	$0.21	$0.23	$0.34	$0.14
Vet & medicine	$0.31	$0.41	$0.36	$0.35
Milk marketing	$0.55	$0.70	$0.46	$0.68
Other dairy expenses	$1.11	$1.07	$0.90	$1.06
Operating cost/cwt.	$10.53	$11.26	$8.75	$9.17
Total labor cost/cwt.	$3.64	$3.48	$3.30	$3.35
Operator resources/cwt.	$3.32	$3.48	$3.67	$3.50
Total cost/cwt.	$15.35	$16.44	$13.79	$14.42
Average farm price/cwt.	$15.57	$15.69	$15.73	$15.65
Return over total costs/cwt.	$ 0.22	$-0.75	$1.94	$1.23
Related Cost Factors				
Hired labor/cow	$245	$192	$227	$160
Total labor/cow	$642	$629	$613	$675
Purchased dairy feed/cow	$702	$745	$694	$765
Purchased grain & concentrate as % of milk receipts	24%	25%	22%	23%
Vet & medicine/cow	$55	$75	$68	$70
Machinery costs/cow	$448	$529	$490	$559
Feed & crop exp./cwt.	$4.81	$5.10	$4.64	$4.72
Profitability Analysis				
Net farm income (without appreciation)	$58,373	$45,390	$88,328	$82,226
Net farm income per cow (w/o apprec.)	$703	$575	$1,104	$1,068
Labor & management income/operator	$26,364	$13,383	$50,180	$34,438
Rates of return on:				
Equity capital with appreciation	9.0 %	5.2 %	14.2%	11.7%
All capital with appreciation	8.5%	5.6 %	12.3%	10.7%

*Farms with similar herd size, as the 59 rotational grazing farms.
**Farms with net farm income/cow without appreciation greater than $750, had been grazing at least two years, and forage from pasture at least 40 percent.
***Farms with similar herd size as the 17 profitable grazing farms and net farm income/cow without appreciation greater than $750.

Table 63.

COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION
305 New York Dairy Farms, 1998

Item	West. & Cent. Plateau Region	West. & Cent. Plain Region	Northern New York	Central Valleys	No. Hudson & Southeastern NY
Number of farms	53	90	40	27	95
ACCRUAL EXPENSES					
Hired labor	$47,280	$196,803	$56,267	$43,769	$41,364
Feed	101,980	348,020	142,850	111,398	112,230
Machinery	36,526	102,032	49,373	42,716	43,545
Livestock	51,264	212,180	68,815	64,079	69,096
Crops	20,891	59,114	29,386	27,680	26,801
Real estate	23,360	54,588	27,209	29,212	20,228
Other	45,807	124,277	51,495	41,376	38,972
Total Operating Expenses	327,109	$1,097,013	$425,395	$360,231	$352,234
Expansion livestock	2,239	19,755	7,063	4,138	5,074
Machinery depreciation	20,912	43,439	26,606	26,298	14,512
Building depreciation	13,791	39,976	16,675	13,466	10,071
Total Accrual Expenses	$364,051	$1,200,183	$475,739	$404,133	$381,891
ACCRUAL RECEIPTS					
Milk sales	$389,822	$1,278,329	$538,436	$454,389	$416,439
Livestock	19,414	88,218	46,062	28,763	29,624
Crops	9,286	27,171	12,210	13,931	9,709
All other	12,111	36,203	12,152	11,701	11,586
Total Accrual Receipts	$430,633	$1,429,921	$608,860	$505,783	$467,358
PROFITABILITY ANALYSIS					
Net farm income (w/o appreciation)	$66,582	$229,738	$133,123	$104,650	$85,467
Net farm income (w/ appreciation)	$88,246	$277,044	$154,266	$121,699	$95,058
Labor & management income	$34,513	$169,853	$98,653	$71,133	$49,191
Number of operators	1.41	1.68	1.56	1.68	1.65
Labor & mgmt. income/operator	$24,477	$101,103	$63,239	$42,341	$29,813
BUSINESS FACTORS					
Worker equivalent	3.89	8.57	4.37	3.81	3.98
Number of cows	131	382	167	139	131
Number of heifers	109	269	124	112	98
Acres of hay crops*	202	292	238	211	217
Acres of corn silage*	100	313	155	106	113
Total tillable acres	370	744	451	435	372
Pounds of milk sold	2,525,828	8,279,773	3,468,250	2,817,012	2,597,383
Pounds of milk sold/cow	19,306	21,696	20,725	20,229	19,886
Tons hay crop dry matter/acre	2.7	3.7	2.7	3.5	2.6
Tons corn silage/acre	17.2	20.2	15.6	16.5	14.6
Cows/worker	34	45	38	36	33
Pounds of milk sold/worker	649,313	966,135	793,650	739,373	652,609
% grain & conc. of milk receipts	25%	26%	25%	24%	26%
Feed & crop expense/cwt. milk	$4.85	$4.92	$4.97	$4.94	$5.35
Fertilizer & lime/crop acre	$23.77	$31.97	$25.35	$26.24	$37.55
Machinery cost/tillable acre	$178	$221	$192	$179	$178

*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, 1988-1998

Table 64.

MILK PRODUCTION & AVERAGE COST OF PRODUCING MILK
Five Regions of New York, 1998

Item	Region* 1	2	3	4	5
Milk Production**			(million pounds)		
1988	2,157.0	2,434.4	2,199.9	2,989.1	1,650.8
1998	2,078.7	3,339.6	2,253.3	2,643.0	1,420.8
Percent change	-3.6%	+37.2%	+2.4%	-11.6%	-13.9%
Cost of Producing Milk***			($ per hundredweight milk)		
Operating cost	$11.42	$11.66	$10.44	$11.00	$11.80
Total cost	15.48	14.08	13.89	15.05	15.53
Average price received	15.43	15.44	15.52	16.13	16.03
Return per cwt. to operator labor, management & capital	$2.47	$2.73	$3.63	$3.60	$3.08

*See Figure 2 for region descriptions.
**Source: New York Agricultural Statistics Service, Milk-County Estimates.
***From Dairy Farm Business Summary data.

Table 65.

SELECTED BUSINESS FACTORS BY MILKING FREQUENCY
New York State Dairy Farms, 1997 & 1998

Item	2x/Day Milking		3x/Day Milking	
	1997	1998	1997	1998
Number of farms	180	220	56	72
Business Size & Production				
Number of cows	108	120	424	472
Number of heifers	81	88	277	348
Milk sold, lbs.	1,963,345	2,203,206	9,569,929	10,761,712
Milk sold/cow, lbs.	18,209	18,422	22,558	22,812
Milk plant test, % butterfat	3.72%	3.71%	3.62%	3.56%
Tillable acres, total	327	344	835	943
Hay crop, tons DM/acre	2.2	2.6	2.9	3.7
Corn silage, tons/acre	14.9	16.0	16.9	19.7
Forage DM/cow, tons	7.4	8.2	6.6	8.5
Labor & Capital Efficiency				
Worker equivalent	3.28	3.45	9.86	10.83
Milk sold/worker, lbs.	598,581	638,610	970,581	993,695
Cows/worker	33	35	43	44
Farm capital/worker	$226,718	$230,942	$251,166	$255,161
Farm capital/cow	$6,886	$6,640	$5,841	$5,855
Farm capital/cwt. milk	$37.88	$36.16	$25.88	$25.68
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.49	$1.55	$2.27	$2.35
Grain & concentrate	$4.35	$3.88	$4.49	$4.04
Purchased roughage	$0.17	$0.20	$0.13	$0.19
Replacements purchased	$0.19	$0.25	$0.17	$0.24
Vet & medicine	$0.39	$0.41	$0.42	$0.47
Milk marketing	$0.64	$0.63	$0.46	$0.46
Other dairy expenses	$1.02	$1.14	$1.33	$1.32
Operating costs/cwt.	$11.64	$11.27	$11.73	$11.58
Total labor costs/cwt.	$3.26	$3.16	$2.67	$2.74
Operator resources/cwt.	$2.86	$2.77	$1.33	$1.28
Total costs/cwt.	$15.90	$15.47	$13.93	$13.93
Average farm price/cwt.	$13.82	$15.77	$13.57	$15.49
Return over total costs/cwt.	$-2.08	$0.30	$-0.36	$1.56
Related Cost Factors				
Hired labor/cow	$271	$284	$513	$536
Total labor/cow	$594	$581	$603	$624
Purchased dairy feed/cow	$821	$749	$1,044	$964
Purchased grain & concentrate as % of milk receipts	31%	25%	33%	26%
Vet & medicine/cow	$72	$76	$96	$108
Machinery costs/cow	$456	$483	$410	$454
Profitability Analysis				
Net farm income (without appreciation)	$20,831	$73,038	$95,252	$309,697
Labor & management income/operator	$-6,142	$27,607	$14,513	$119,021
Rates of return on:				
Equity capital with appreciation	-1.9%	9.2%	3.8%	20.3%
All capital with appreciation	1.2%	8.4%	5.4%	14.1%

Table 66.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
41 New York Dairy-Renter Farms,* 1998

ACCRUAL EXPENSES	
Labor: Hired	$22,840
Feed: Dairy grain & concentrate	82,287
Dairy roughage	17,753
Nondairy	12
Machinery: Mach. hire, rent & lease	6,558
Mach. repairs & farm vehicle expense	13,993
Fuel, oil, grease	4,510
Livestock: Replacement livestock	10,179
Breeding	3,661
Veterinary & medicine	8,106
Milk marketing	12,968
Bedding	2,825
Milking supplies	8,673
Cattle lease & rent	404
Custom boarding	1,033
bST expense	3,836
Other livestock expense	3,933
Crops; Fertilizer & lime	4,713
Seeds & plants	2,698
Spray & other crop expense	3,476
Real estate: Land, building & fence repair	3,753
Taxes	1,364
Rent & lease	14,280
Other:	
Insurance	3,393
Utilities (farm share)	7,972
Interest paid	12,920
Miscellaneous	3,525
TOTAL OPERATING EXPENSES	$261,666
Expansion livestock	$2,347
Machinery depreciation	9,918
Building depreciation	3,128
TOTAL ACCRUAL EXPENSES	$277,059

ACCRUAL RECEIPTS	
Milk sales	$312,514
Dairy cattle	13,991
Dairy calves	3,162
Other livestock	194
Crops	3,295
Government receipts	2,872
Custom machine work	2,980
Gas tax refund	117
Other	2,440
TOTAL ACCRUAL RECEIPTS	$341,566

PROFITABILITY ANALYSIS	
Net farm income (without appreciation)	$64,507
Net farm income (with appreciation)	$73,342
Labor & management income/farm	$48,737
Number of operators	1.51
Labor & management income/operator	$32,276
Rate of return on equity capital including appreciation	17.6%

BUSINESS FACTORS	
Number of cows	107
Number of heifers	57
Worker equivalent	3.09
Total tillable acres	199
Milk sold per cow, lbs.	18,572
Hay DM per acre, tons	2.4
Corn silage per acre, tons	14.5
Milk sold per worker, lbs.	643,983
Grain/conc. as % milk sales	26%
Feed & crop expense/cwt. milk	$5.57
Labor & machinery costs/cow	$935
Average price/cwt. milk	$15.71

ASSETS	Jan. 1	Dec. 31
Farm cash, checking & savings	$4,100	$ 7,741
Accounts receivable	23,841	28,279
Prepaid expenses	336	928
Feed & supplies	42,486	54,577
Dairy cows**	112,364	116,277
Heifers	34,250	36,912
Bulls & other livestock	752	871
Machinery & equipment**	87,298	103,931
Farm Credit stock	2,120	2,355
Other stock & certificates	4,175	6,399
Land & buildings**	43,509	48,113
Total Farm Assets	$355,231	$406,383
Nonfarm Assets****	68,664	67,538
Farm & Nonfarm Assets	$423,895	$473,921

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$18,741	$17,538
Operating debt	8,586	9,362
Short-term	1,921	1,063
Advanced gov't receipts	0	0
Current Portion:		
Intermediate	20,463	25,818
Long Term	1,704	2,703
Intermediate***	98,463	103,783
Long term**	34,108	36,164
Total Farm Liabilities	$183,987	$196,431
Nonfarm Liabilities****	5,578	4,980
Farm & Nonfarm Liabilities	$189,565	$201,411
Farm Net Worth	171,244	209,952
Farm & Nonfarm Net Worth	$234,330	$272,510

*A renter owns no farm real estate or tillable land at the end of year.

**Includes discounted lease payments.

***Includes Farm Credit stock and discounted lease payments for cattle and machinery.

****Average of 24 farms reporting.

Table 67.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 30 Top Ten Percent Farms by Rate of Return on All Capital (without appreciation), 1998

ACCRUAL EXPENSES	
Labor: Hired	$117,434
Feed: Dairy grain & concentrate	231,687
Dairy roughage	16,265
Nondairy	63
Machinery: Mach. hire, rent & lease	19,220
Mach. repairs & farm vehicle expense	39,041
Fuel, oil, grease	13,373
Livestock: Replacement livestock	16,262
Breeding	8,003
Vet & medicine	27,811
Milk marketing	32,555
Bedding	8,289
Milking supplies	18,302
Cattle lease & rent	875
Custom boarding	3,773
bST expense	15,121
Other livestock expense	11,037
Crops; Fertilizer & lime	20,411
Seeds & plants	11,837
Spray & other crop expense	14,544
Real estate: Land, building & fence repair	11,812
Taxes	9,894
Rent & lease	15,410
Other:	
Insurance	7,173
Utilities (farm share)	16,554
Interest paid	48,409
Miscellaneous	7,689
TOTAL OPERATING EXPENSES	$742,843
Expansion livestock	$27,635
Machinery depreciation	32,377
Building depreciation	28,046
TOTAL ACCRUAL EXPENSES	$830,901

ACCRUAL RECEIPTS	
Milk sales	$ 967,233
Dairy cattle	93,907
Dairy calves	5,543
Other livestock	3,426
Crops	36,691
Government receipts	13,602
Custom machine work	821
Gas tax refund	132
Other	12,170
TOTAL ACCRUAL RECEIPTS	$1,133,525
PROFITABILITY ANALYSIS	
Net farm income (without appreciation)	$302,624
Net farm income (with appreciation)	321,991
Labor & management income/operator	179,193
Rate of return on equity capital without appreciation	27.6%
Rate of return on all capital without appreciation	19.2%
BUSINESS FACTORS	
Number of cows	281
Number of heifers	197
Worker equivalent	6.59
Total tillable acres	608
Milk sold per cow, lbs.	21,966
Hay DM per acre, tons	3.3
Corn silage per acre, tons	18.6
Milk sold per worker, lbs.	936,631
Grain/conc. as % milk sales	24%
Feed & crop exp./cwt. milk	$4.78
Labor & mach. costs/cow	$960
Average price/cwt. milk	$15.67

ASSETS	Jan. 1	Dec. 31
Farm cash, checking & savings	$10,882	$14,090
Accounts receivable	58,295	92,779
Prepaid expenses	133	1,027
Feed & supplies	138,428	226,374
Dairy cows*	267,583	313,397
Heifers	109,458	128,404
Bulls & other livestock	3,410	4,474
Machinery & equipment*	252,213	300,079
Farm Credit stock	4,908	4,572
Other stock & certificates	29,279	35,090
Land & buildings*	557,205	608,451
Total Farm Assets	$1,431,794	$1,728,737
Nonfarm Assets***	68,449	84,264
Farm & Nonfarm Assets	$1,500,243	$1,813,001

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$23,330	$11,991
Operating debt	45,656	57,883
Short-term	10,309	7,324
Advanced gov't receipts	121	0
Current Portion:		
Intermediate	43,028	65,510
Long Term	13,212	15,562
Intermediate**	239,963	271,954
Long-term*	255,485	253,049
Total Farm Liabilities	$ 631,103	$ 683,273
Nonfarm Liabilities***	3,810	3,023
Farm & Nonfarm Liabilities	$634,913	$686,296
Farm Net Worth	$800,691	$1,045,464
Farm & Nonfarm Net Worth	$865,330	$1,126,705

*Includes discounted lease payments.
**Includes Farm Credit Stock and discounted lease payments for cattle and machinery.
***Average of 15 farms reporting.

Table 68.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 305 New York Dairy Farms, 1998

ACCRUAL EXPENSES	
Labor: Hired	$90,427
Feed: Dairy grain & concentrate	175,019
Dairy roughage	8,876
Nondairy	74
Machinery: Mach. hire, rent & lease	15,216
Mach. repairs & farm vehicle expense	33,989
Fuel, oil, grease	11,069
Livestock: Replacement livestock	10,407
Breeding	6,992
Vet & medicine	19,570
Milk marketing	23,131
Bedding	7,812
Milking supplies	14,747
Cattle lease & rent	1,769
Custom boarding	6,373
bST expense	10,088
Other livestock expense	6,848
Crops; Fertilizer & lime	15,407
Seeds & plants	9,726
Spray & other crop expense	10,593
Real estate: Land, building & fence repair	11,679
Taxes	9,442
Rent & lease	11,501
Other:	
Insurance	7,448
Utilities (farm share)	14,078
Interest paid	39,234
Miscellaneous	6,427
TOTAL OPERATING EXPENSES	$577,942
Expansion livestock	$9,091
Machinery depreciation	26,790
Building depreciation	20,709
TOTAL ACCRUAL EXPENSES	$634,532

ACCRUAL RECEIPTS	
Milk sales	$685,501
Dairy cattle	41,836
Dairy calves	4,514
Other livestock	869
Crops	15,490
Government receipts	9,557
Custom machine work	1,196
Gas tax refund	250
Other	8,099
- Non-cash capital transfer	75
TOTAL ACCRUAL RECEIPTS	$767,237
PROFITABILITY ANALYSIS	
Net farm income (without appreciation)	$132,705
Net farm income (with appreciation)	157,697
Labor & management income/farm	90,585
Number of operators	1.62
Labor & management income/operator	$55,917
Rate of return on equity capital including appreciation	11.4%
BUSINESS FACTORS	
Number of cows	210
Number of heifers	155
Worker equivalent	5.35
Total tillable acres	497
Milk sold per cow, lbs.	20,900
Hay DM per acre, tons	3.1
Corn silage per acre, tons	18.0
Milk sold per worker, lbs.	821,565
Grain/conc. as % milk sales	26%
Feed & crop exp./cwt. milk	$5.00
Labor & mach. costs/cow	$1,079
Average price/cwt. milk	$15.60

ASSETS	Jan. 1	Dec. 31
Farm cash, checking & savings	$8,999	$8,573
Accounts receivable	45,394	58,161
Prepaid expenses	1,049	2,354
Feed & supplies	111,185	141,576
Dairy cows*	209,627	222,768
Heifers	87,255	96,402
Bulls & other livestock	2,098	2,046
Machinery & equipment*	225,415	244,291
Farm Credit stock	5,202	5,488
Other stock & certificates	20,104	24,278
Land & buildings*	522,462	543,079
Total Farm Assets	$1,238,790	$1,349,016
Nonfarm Assets***	81,330	90,270
Farm & Nonfarm Assets	$1,320,120	$1,439,286

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$25,355	$16,363
Operating debt	35,543	41,050
Short-term	5,620	4,574
Advanced gov't rec.	153	232
Current Portion:		
Intermediate	33,988	41,037
Long Term	13,172	15,169
Intermediate***	214,633	212,040
Long-term**	222,240	220,252
Total Farm Liabilities	$550,704	$550,719
Nonfarm Liabilities****	3,860	4,613
Farm & Nonfarm Liabilities	$554,564	$555,332
Farm Net Worth	688,086	798,297
Farm & Nonfarm Net Worth	$765,556	$883,954

*Includes discounted lease payments.
**Includes Farm Credit stock and discounted lease payments for cattle and machinery.
***Average of 169 farms reporting.

NOTES

APPENDIX

THE ECONOMIC ENVIRONMENT FACING NEW YORK DAIRY FARMERS

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, 1988-1998

Year	Mixed Dairy Feed 16% Protein*	Fertilizer, Urea 45-46%N*	Seed Corn, Hybrid**	Diesel Fuel*	Tractor 50-59 PTO**	Wage Rate All Hired Farm Workers***
	($/ton)	($/ton)	($/80,000 kernels)	($/gal)	($)	($/hr)
1988	180.8	208	64.20	0.810	17,150	5.02
1989	188.5	227	71.40	0.828	17,350	5.25
1990	176.8	215	69.90	1.080	17,950	5.51
1991	171.8	243	70.20	0.995	18,650	6.06
1992	173.8	221	71.80	0.910	18,850	6.42
1993	171.3	226	72.70	0.900	19,200	6.76
1994	180.8	233	73.40	0.853	19,800	6.96
1995	175.0	316	77.10	0.850	20,100	6.92
1996	226.0	328	77.70	1.020	20,600	7.19
1997	216.0	287	83.50	0.960	21,200	7.63
1998	199.0	221	86.90	0.810	21,800	7.63

SOURCE: NYASS, New York Agricultural Statistics. USDA, ASB, Agricultural Prices. *Northeast region average. **United States average. ***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 April for 1982-85), and an index of the real estate prices.

Table A2.

VALUES OF NEW YORK DAIRY FARM INVENTORY ITEMS, 1982-1998

	Dairy Cows		Machinery*	Farm Real Estate	
Year	Value/Head	1977=100	1977=100	Value/Acre	1977=100
1982	1,010	204	163	821	140
1983	850	172	173	817	139
1984	790	160	181	848	144
1985	740	149	181	820	140
1986	770	156	178	843	144
1987	870	176	180	960	164
1988	900	182	189	993	169
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

SOURCE: NYASS, New York Agricultural Statistics and New York Crop and Livestock Report. USDA, ASB, Agricultural Prices.*United States average; 1995 - 1998 are estimated due to discontinuation of 1977=100 series.

As the number of milk cow operations decreases, the average number of milk cows per operation increases as shown by Chart A1. There were 5,500 less milk cow operations in 1998 than there were in 1988. The average number of milk cows per operation has increased by 26 cows, or 47 percent over the same period. On January 1, 1999, 35 percent of the total milk cows were in herds with 50-99 head, 52 percent were in herds with over 100 milk cows, and 13 percent were in herds with less than 50 head.

Chart A1.

NUMBER OF OPERATIONS WITH MILK COWS AND AVERAGE NUMBER OF MILK COWS PER OPERATION
New York, 1986-1998

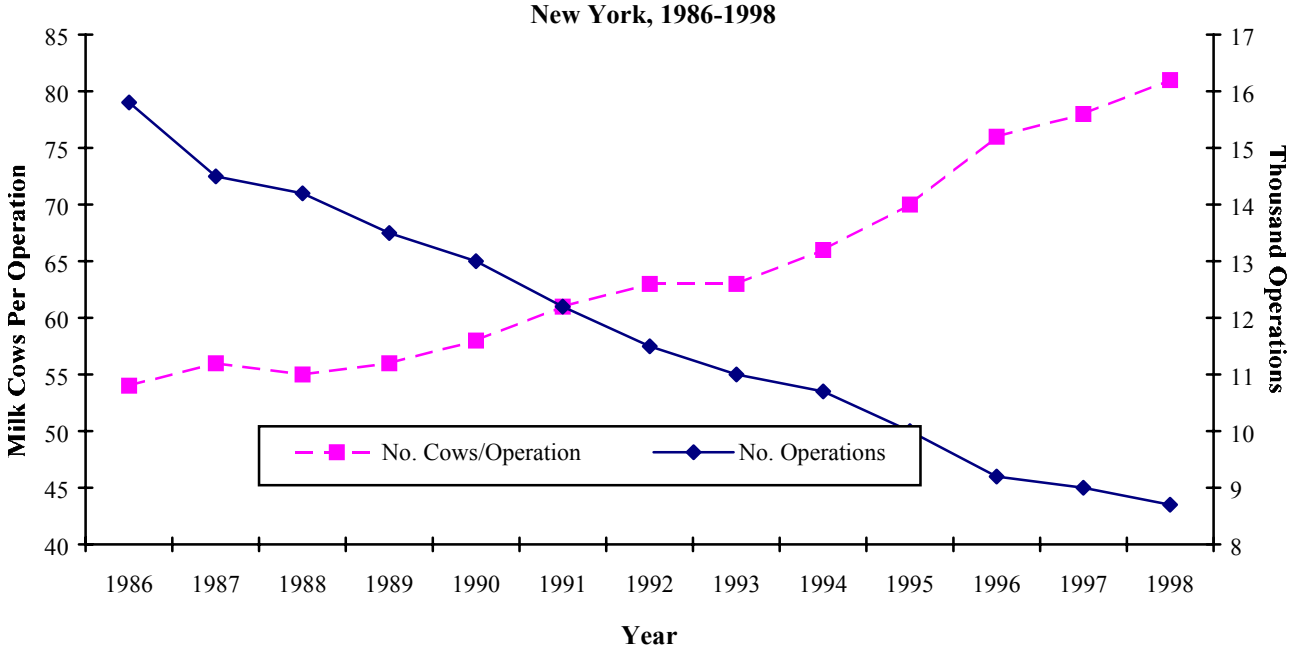


Table A3.

MILK COW OPERATIONS AND MILK COW INVENTORY
by Herd Size, 1987 to 1998

	MILK COW OPERATIONS BY HERD SIZE & TOTAL, 1987-1998 (Number of Milk Cows in Herd)							MILK COWS ON FARMS, JAN. 1 BY HERD SIZE & TOTAL, 1988-1999 (Number of Milk Cows in Herd)						
Year	1-29	30-49	50-99	100-199[a]	200 plus	Total	Year	1-29	30-49	50-99	100-199[a]	200 plus	Total
	(Number of Operations)							(Thousand Head)					
1987	3,300	4,300	5,000	1,900		14,500	1988	32	171	332	281		816
1988	3,200	3,850	5,300	1,850		14,200	1989	30	144	335	271		780
1989	2,700	3,400	5,400	2,000		13,500	1990	29	121	321	289		760
1990	2,650	3,150	5,300	1,900		13,000	1991	27	116	319	288		750
1991	2,500	2,900	5,000	1,800		12,200	1992	24	111	314	291		740
1992	2,600	2,600	4,400	1,900		11,500	1993	22	102	285	190	131	730
1993	2,400	2,500	4,200	1,500	400	11,000	1994	22	87	297	189	130	725
1994	2,400	2,200	4,200	1,500	400	10,700	1995	21	92	277	178	142	710
1995	2,100	2,200	4,000	1,300	400	10,000	1996	19	79	259	189	154	700
1996	1,800	2,000	3,700	1,300	400	9,200	1997	18	73	245	189	175	700
1997	1,700	1,900	3,600	1,300	500	9,000	1998	18	73	245	189	175	700
1998	1,600	1,800	3,500	1,300	500	8,700	1999	18	73	245	190	176	702

[a]100 plus category prior to 1993.
Source: NYASS, New York Agricultural Statistics, 1998-1999

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 9).

Accrual Expenses: (defined on page 11).

Accrual Receipts: (defined on page 11).

Annual Cash Flow Statement: (defined on page 18).

Appreciation: (defined on page 12).

Asset Turnover Ratio: (defined on page 40).

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 30 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 40).

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 18).

Cash Flow Coverage Ratio: (defined on page 20).

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 10).

Cash Receipts: (defined on page 11).

Change in Accounts Payable: (defined on page 11).

Change in Accounts Receivable: (defined under Accrual Receipts on page 11).

Change in Advanced Government Receipts: (defined under Accrual Receipts page 11).

Change in Inventory: (defined on page 10).

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 28).

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 associated with their growth and maintenance.

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

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.

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

Debt to Asset Ratios: (defined on page 16).

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: Purchased dairy cattle and other livestock that cause an increase in herd size from the beginning to the end of the year.

Farm Business Chart: (see definition and application on page 42).

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 20 and 45.

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 45.

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 hayland, 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, nonwage compensation, payroll taxes, benefits, and perquisites paid employees.

Income Statement: A complete and accurate account of farm business receipts and expenses used to measure profitability 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 13).

Labor and Management Income Per Operator: (defined on page 13).

Labor Efficiency: Production capacity and output per worker. (See analysis on pages 40 and 41).

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 12).

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 11).

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 31).

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

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) in 1998 that were different genetic background than your herd and were purchased.

Percent 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.

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.

Prepaid Expenses: (defined on page 11).

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 31).

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 14).

Return to all Capital: (defined on page 14).

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 17).

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 31).

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.

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.