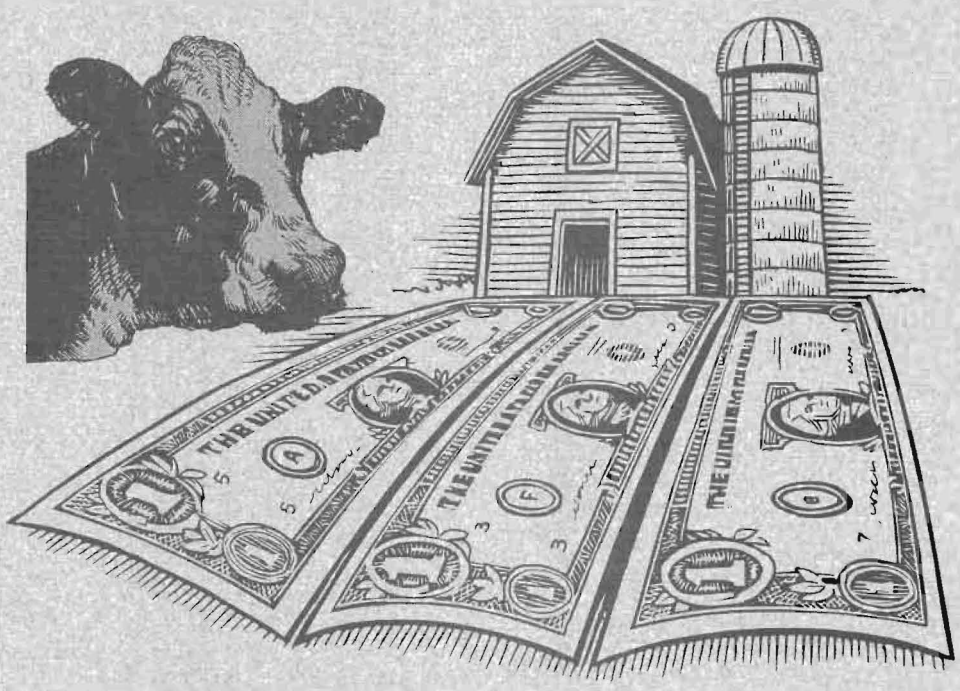
DAIRY FARM MANAGEMENT

SEPTEMBER 1997 R.B. 97-14

BUSINESS SUMMARY NEW YORK STATE 1996



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ABSTRACT

Business and financial records from 300 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 167 cows per farm and 20,117 pounds of milk sold per cow in 1996, 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 $64,821 per farm. The rate of return including appreciation to all capital invested in the farm business averaged 6.3 percent in 1996.

Differences in profitability between farms continues to widen. The top 10 percent of farms average net farm income excluding appreciation was $321,819, while the lowest 10 percent was a negative $35,684. Rates of return on equity with appreciation ranged from 21 percent to negative 46 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.

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 1996, about 350 dairy farms participated. Business records submitted by dairy farmers from 44 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.

Cooperative Extension agents and specialists enroll the cooperators and collect the records. Each cooperator receives a detailed summary and analysis of his or her business. All agents and specialists 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 44 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 300 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). The 300 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 7. 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 10 through 12. The balance sheet is presented with the current portion of intermediate and long term debt identified as a current liability, on pages 13 and 14. The statement of owner equity, which shows the interrelationship between farm profitability, non-farm cash flows and net worth is presented on page 15. A detailed cash flow statement, including budgeting data and debt repayment analysis is presented on pages 16 through 18.

The whole farm method of calculating the cost of producing milk is detailed on pages 25 through 30. 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 54 through 58. Specific studies of the performance of dairy farms using bST, rotational grazing and three times (3X) a day milking are presented on pages 59, 60 and 67.

Acknowledgements

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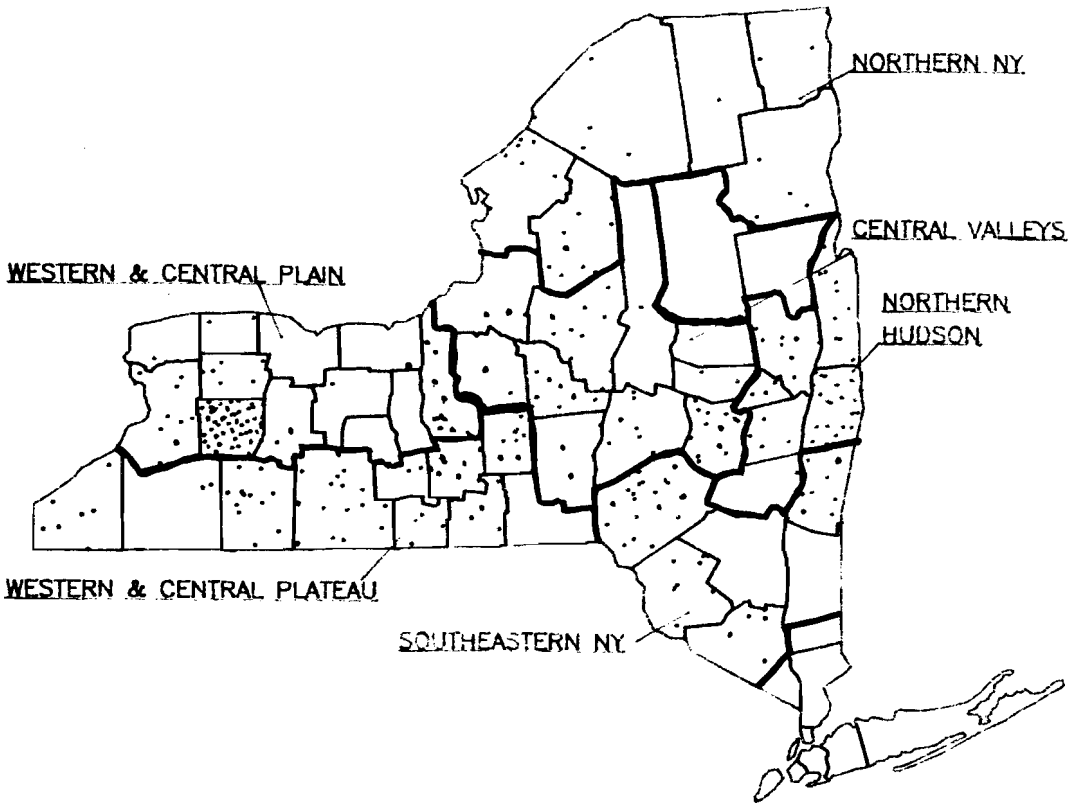
* This report was written by Wayne A. Knoblauch, Professor; and Linda D. Putnam, Extension Support Specialist, in the Department of Agricultural, Resource, and Managerial Economics at Cornell University.

Figure 1.

LOCATION OF THE 300 NEW YORK DAIRY FARMS IN THE 1996 DAIRY FARM BUSINESS SUMMARY



1996 Regional Summary Publications

Region	Publications	Author(s)
Western and Central Plain	E.B. 97-05	Wayne A. Knoblauch, Linda D. Putnam, Jason Karszes, Michael Stratton, Charles Mentis & George Allhusen
Western and Central Plateau	E.B. 97-06	Wayne A. Knoblauch, Linda D. Putnam, Carl A. Crispell, Joan S. Petzen, James W. Grace, Andrew N. Dufresne & Greg Albrecht
Southeastern New York	E.B. 97-07	Wayne A. Knoblauch, Linda D. Putnam, Stephen E. Hadcock, Larry R. Hulle, Mariane Kiraly & Colleen A. McKèon
Northern Hudson	E.B. 97-09	Stuart F. Smith, Linda D. Putnam, Cathy S. Wickswat, Sandra Buxton & David R. Wood
Central Valleys	E.B. 97-11	Eddy L. LaDue, Stuart F. Smith, Doug Bowne, Zaid Kurdieh, Charles Mentis, Thad Wengert, Charles Z. Radick & Linda D. Putnam
Northern New York	E.B. 97-12	Robert A. Milligan, Linda D. Putnam, Patricia Beyer, Anita Deming, Trent Teegerstrom, Craig Trowbridge & George Yarnall

THIRTY YEARS OF NEW YORK STATE DAIRY FARM BUSINESS DATA

Refer to Table 1 on page 4 to see how dairy farming has changed since 1966. Dairy cows per farm increased 255 percent between 1966 and 1996 and more than one-third of that increase occurred in the last 10 years. Milk output per cow increased 69 percent and the largest increase occurred between 1986 and 1996. Labor efficiency is up 42 percent even though there was practically no change from 1966 to 1986. The operating cost of producing milk has increased more than 600 percent with the big jump occurring between 1966 and 1976.

There is a large increase in farm capital invested per farm, up 1,250 percent since 1966. Net farm worth excluding deferred taxes has increased 900 percent over the last 30 years. Net farm income per farm has increased three-fold but return on capital has not improved since 1966. Labor and management income per operator is up only 62 percent in the last 30 years, well below the 210 percent inflation rate.

FOUR YEARS OF TOUGH MANAGEMENT

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 166 farms that have been DFBS cooperators each year since 1993. Chart 1 shows the price received for milk in comparison to the operating cost of producing a hundredweight of milk.

Net farm income without appreciation in 1996 was 45 percent above the 1993 average largely due to the average farm milk price increase of 14 percent. Increased production and effective cost control enabled these dairy farmers to maintain reasonable returns on capital and to increase farm net worth during each of the last 4 years. Returns to labor and management have improved and growth in net worth has been consistently between $30,000 and $50,000.

The last 4 years have been a period requiring critical decision making and tough management on New York dairy farms. However, 1996 has been especially challenging. Yet those farms who controlled costs, especially feed, produced excellent results in 1996. Those farms who did not plan feed acquisitions saw profits deteriorate.

Chart 1.

OPERATING COST OF PRODUCING MILK AND PRICE RECEIVED FOR MILK
New York Dairy Farms, 1993-1996

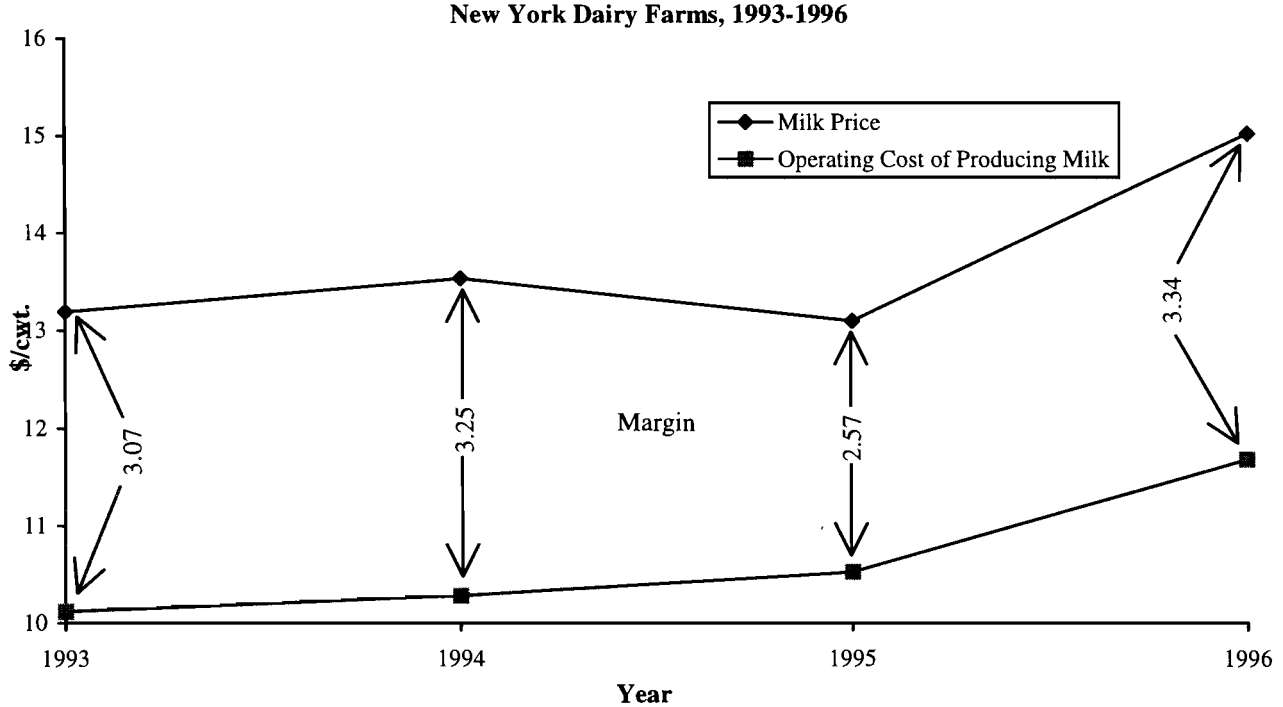


Table 1.

COMPARISON OF FARM BUSINESS SUMMARY DATA
New York Dairy Farms, 1966 - 1996

Selected Factors	1966	1976	1986	1996
Number of farms	731	615	414	300
Size of Business				
Average number of cows	47	71	95	167
Average number of heifers	30	52	77	124
Milk sold, cwt.	5,610	9,506	15,374	33,504
Worker equivalent	1.8	2.5	3.09	4.48***
Total tillable acres	138	209	288	415
Rates of Production				
Milk sold per cow, lbs.	11,900	13,400	16,237	20,113
Hay DM per acre, tons	2.5	2.8	2.8	2.8
Corn silage per acre, tons	14.0	13.1	14.3	15.9
Labor Efficiency				
Cows per worker	26	28	31	37***
Milk sold per worker, lbs.	311,700	380,200	497,555	747,861
Cost Control				
Grain & concentrate purchased as % of milk sales	27%	27%	24%	30%
Dairy feed & crop expense per cwt. milk	$1.68	$3.47	$4.00	$5.46
Operating cost of producing cwt. milk	$1.54	$7.20	$9.48	$12.00
Total cost of producing cwt. milk	$3.55	$10.42	$13.90	$15.23
Milk receipts per cwt. milk	$4.91	$9.90	$12.65	$14.98
Capital Efficiency				
Total farm capital	$76,996	$288,794	$548,477	$1,038,355
Farm capital per cow	$1,710	$4,068	$5,792	$6,218
Machinery & equipment per cow	$375	$694	$1,062	$1,107
Real estate per cow	$796	$1,964	$2,758	$2,701
Livestock investment per cow	$415	$756	$1,176	$1,469
Asset turnover ratio	0.49	0.38	0.40	0.55
Profitability				
Net farm income without appreciation	$16,000	$23,392	$23,853	$64,834
Net farm income with appreciation	$16,788	$28,512	$40,756	$76,335
Labor & management income per operator/manager	$11,510	$7,690	$3,837	$18,651
Rate of return on:				
Equity capital with appreciation	------	7.9%	4.3%	5.5%
All capital with appreciation	9.2%	7.2%	6.0%	6.3%
All capital without appreciation	8.2%	5.4%	2.9%	5.2%
Financial Summary, End Year				
Farm net worth	$64,650**	$178,300	$348,909	$648,186
Change in net worth with appreciation	------	-----	$20,275	$40,797
Debt to asset ratio	0.27**	0.34	0.38	0.39
Farm debt per cow	$520**	$1,366	$2,171	$2,451

*Acres of cropland harvested.

**Average of 145 dairy farms cooperators submitting financial information at beginning of year.

***Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.

Table 2.

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 166 New York Dairy Farms, 1993 - 1996

Selected Factors	1993	1994	1995	1996
Milk receipts per cwt. milk	$ 13.19	$ 13.53	$ 13.09	$ 15.02
Size of Business				
Average number of cows	164	176	189	201
Average number of heifers	124	133	141	148
Milk sold, cwt.	31,813	36,208	39,384	41,557
Worker equivalent	4.42	4.61	4.98*	5.12*
Total tillable acres	409	425	444	470
Rates of Production				
Milk sold per cow, lbs.	19,368	20,597	20,808	20,714
Hay DM per acre, tons	2.7	3.0	2.7	2.8
Corn silage per acre, tons	14	16	14	14
Labor Efficiency				
Cows per worker	37	38	38*	39*
Milk sold per worker, lbs.	720,280	786,044	790,835*	811,664*
Cost Control				
Grain & concentrate purchased as % of milk sales	29%	28%	28%	30%
Dairy feed & crop expense per cwt. milk	$ 4.76	$ 4.73	$ 4.54	$ 5.49
Operating cost of producing cwt. milk	$ 10.12	$ 10.28	$ 10.52	$ 11.68
Total cost of producing cwt. milk	$ 14.67	$ 14.76	$ 14.80	$ 16.12
Hired labor cost per cwt.	$ 1.44	$ 1.42	$ 1.39	$ 1.47
Interest paid per cwt.	$ 0.77	$ 0.76	$ 0.86	$ 0.84
Labor & machinery costs per cow	$ 1,022	$ 1,051	$ 1,031	$ 1,089
Capital Efficiency				
Farm capital per cow	$ 7,090	$ 7,088	$ 6,998	$ 6,979
Machinery & equipment per cow	$ 1,364	$ 1,349	$ 1,343	$ 1,345
Real estate per cow	$ 3,301	$ 3,274	$ 3,214	$ 3,182
Livestock investment per cow	$ 1,533	$ 1,556	$ 1,524	$ 1,505
Asset turnover ratio	0.46	0.48	0.45	0.51
Profitability				
Net farm income without appreciation	$ 57,948	$ 69,961	$ 64,513	$ 84,167
Net farm income with appreciation	$ 72,568	$ 84,620	$ 78,437	$ 96,040
Labor & management income per operator/manager	$ 14,782	$ 21,866	$ 15,726	$ 31,275
Rate return on:				
Equity capital with appreciation	2.0%	3.4%	0.2%	-0.2%
All capital with appreciation	3.9%	4.4%	2.8%	4.7%
All capital without appreciation	2.3%	3.4%	2.2%	3.6%
Financial Summary, End Year				
Farm net worth	$ 663,668	$ 709,363	$ 740,131	$ 790,095
Change in net worth with appreciation	$ 30,606	$ 41,929	$ 32,559	$ 49,647
Debt to asset ratio	0.33	0.33	0.34	0.34
Farm debt per cow	$ 2,135	$ 2,159	$ 2,165	$ 2,171

*Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.

SUMMARY AND ANALYSIS OF THE FARM BUSINESS

Business Characteristics and Resources Used

Recognition of important business characteristics and identification of the farm resources used is necessary for evaluating management performance. The combination of resources used and management practices employed is known as farm organization. Important farm business characteristics, the number of farms reporting these characteristics, and listing of the average labor, land, and dairy cattle resources used in 1996 are presented in the following table.

Table 3.

BUSINESS CHARACTERISTICS AND RESOURCES USED
300 New York Dairy Farms, 1996

Dairy Livestock (number)	Cows	Heifers
Beginning of Year	162	120
End of Year	170	129
Average for Year	167	124

Type of Business	Number	Percent
Sole Proprietorship	192	64
Partnership	88	29
Corporation	20	7

Barn Type	Number	Percent
Stanchion	124	41
Freestall	146	49
Combination	30	10

Milking System	Number	Percent
Bucket & Carry	2	1
Dumping Station	6	2
Pipeline	140	47
Herringbone	110	36
Other Parlor	42	14

Milking Frequency	Number	Percent
2 times per day	225	75
3 times per day	59	20
Other	16	5

Business Records	Number	Percent
Account Book	92	31
Agrifax (mail-in)	31	10
On-Farm Computer	128	43
Other	49	16

Dairy Records	Number	Percent
D.H.I.C.	216	72
Owner Sampler	21	7
Other	26	9
None	37	12

bST Usage	Number	Percent
Used on <25% of herd	38	13
Used on 25-75% of herd	94	31
Used on >75% of herd	10	3
Stopped using in 1996	6	2
Not used in 1996	152	51

Labor Force	Average	Percent
Operators	19.6	37
Family Paid	4.8	9
Family Unpaid	2.9	5
Hired	26.4	49
Total Months	53.7	100

	Average
Operators (total = 468)	1.56
Age	44
Education	13 years
Estimated Value of Labor & Management	$37,498

	Farms Reporting	
Land Used	Number	Average
Total acres:		
Owned	300	388
Rented	267	227
Tillable acres:		
Owned	300	232
Rented	265	207
Total	300	415

There were 468 full-time operator equivalents on the 300 dairy farms for an average of 1.56 operators per farm. The operators averaged 44 years of age and 13 years of formal education. Additional data on the labor force is in Table 40.

All 300 farm businesses included in the regular dairy summary own farm real estate. Dairy farm renters are summarized separately later in this publication. However, 265 of the dairy farm owners rented an average of 207 acres of tillable land in 1996. The 300 farms averaged 415 total tillable acres per farm of which 183 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 income tax.

Cash and accrual farm expenses are summarized below. Total operating accrual expenses for the 300 farms averaged $1,230 per day and 91 percent of total farm accrual expenses.

Table 4.

CASH AND ACCRUAL FARM EXPENSES
300 New York Dairy Farms, 1996

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses	Percent
Hired Labor	$ 63,343		$124 <<		$ 209		$ 63,428	14
Feed								
Dairy grain & concentrate	159,141		5,079		-1,441		152,620	34
Dairy roughage	5,584		35		265		5,814	1
Nondairy livestock	146		-3		0		149	<1
Machinery								
Machinery hire, rent & lease	8,424		-4 <<		45		8,473	2
Machinery repairs & farm vehicle exp.	25,834		149		144		25,829	6
Fuel, oil & grease	10,414		122		14		10,307	2
Livestock								
Replacement livestock	6,444		2 <<		-11		6,430	1
Breeding	5,082		-10		-56		5,036	1
Veterinary & medicine	14,626		527		-130		13,970	3
Milk marketing	19,770		9 <<		-11		19,750	4
Bedding	5,242		193		-12		5,037	1
Milking Supplies	11,959		325		60		11,694	3
Cattle lease & rent	821		0 <<		26		848	<1
Custom boarding	3,350		0 <<		-14		3,336	1
Other livestock expense	12,114		200		-9		11,905	3
Crops								
Fertilizer & lime	11,019		531		189		10,677	2
Seeds & plants	7,375		815		168		6,728	1
Spray & other crop expense	7,395		150		-63		7,181	2
Real Estate								
Land, building & fence repair	7,961		52		-125		7,785	2
Taxes	8,717		42 <<		-60		8,616	2
Rent & lease	8,489		-36 <<		-128		8,397	2
Other								
Insurance	6,088		21 <<		-22		6,045	1
Utilities	12,961		0 <<		-7		12,954	3
Interest paid	30,612		0 <<		-55		30,557	7
Miscellaneous	5,470		38		-146		5,285	1
Total Operating	$ 458,383		$ 8,360		$ -1,171		$ 448,852	100
Expansion livestock	$ 9,257		$ 0 <<		$ 15		$ 9,272	
Machinery depreciation							$ 21,300	
Building depreciation							$ 13,660	
TOTAL ACCRUAL EXPENSES							$ 493,084	

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 $5,079.

Prepaid expenses (noted by « in the table on page 8) are advance payments made for services and noninventory items. For example, advance payments for rent decreased an average of $36 per farm in 1996, and that decrease is added to cash rent to determine the correct 1996 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 $8,360, and total change in accounts payable equals $-1,171.

Income Statement - Receipts

Cash and accrual farm receipts are presented in the following table. Total cash receipts averaged $535,202 per farm. Total accrual receipts averaged $557,918 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 8 head per farm and the homegrown feed inventory per farm increased $4,930. Homegrown feed inventory per cow increased $9 from beginning to end of year.

Table 5.

CASH AND ACCRUAL FARM RECEIPTS
300 New York Dairy Farms, 1996

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts	Percent
Milk sales	$ 499,818				$ 1,957		$ 501,774	90
Dairy cattle	17,056		$ 15,557		2		32,615	6
Dairy calves	2,767				4		2,771	<1
Other livestock	870		-136		21		756	<1
Crops	3,774		4,930		381		9,085	2
Government receipts	6,168		9*		71		6,249	1
Custom machine work	678				48		726	<1
Gas tax refund	249				8		256	<1
Other	3,822				42		3,865	<1
- Nonfarm noncash capital**			(-) 178				(-) 178	
Total	$ 535,202		$ 20,182		$ 2,534		$ 557,918	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 1995 to 1996. 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 1996 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 $11,501 per farm in 1996. On the average, farm real estate appreciated $8,024 or less than 2 percent of beginning fair market value. Machinery appreciated approximately 1 percent while dairy cattle prices appreciated less than 1 percent in 1996.

Average data from 30 farms with the highest rates of return to all capital (without appreciation) is compared with the 300 farm average in Table 6 and in many of the following tables. Net farm income with appreciation averaged $272,178 per farm on the top 10 percent farms, 357 percent above the 300 farm average.

Table 6.

NET FARM INCOME
300 New York Dairy Farms, 1996

Item	Average 300 Farms		Average Top 10% Farms*	
	Per Farm	Per Cow	Per Farm	Per Cow
Total accrual receipts	$ 577,918		$ 1,587,120	
+ Appreciation: Livestock	602		831	
Machinery	2,313		-453	
Real Estate	8,024		14,025	
Other Stock & Certificates	562		2,236	
= Total including appreciation	$ 569,419		$ 1,603,759	
- Total accrual expenses	493,084		1,331,581	
= Net Farm Income (with appreciation)	$ 76,335	$ 457	$ 272,178	$ 612
Net Farm Income (without appreciation)	$ 64,834	$ 388	$ 255,539	$ 574

*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.

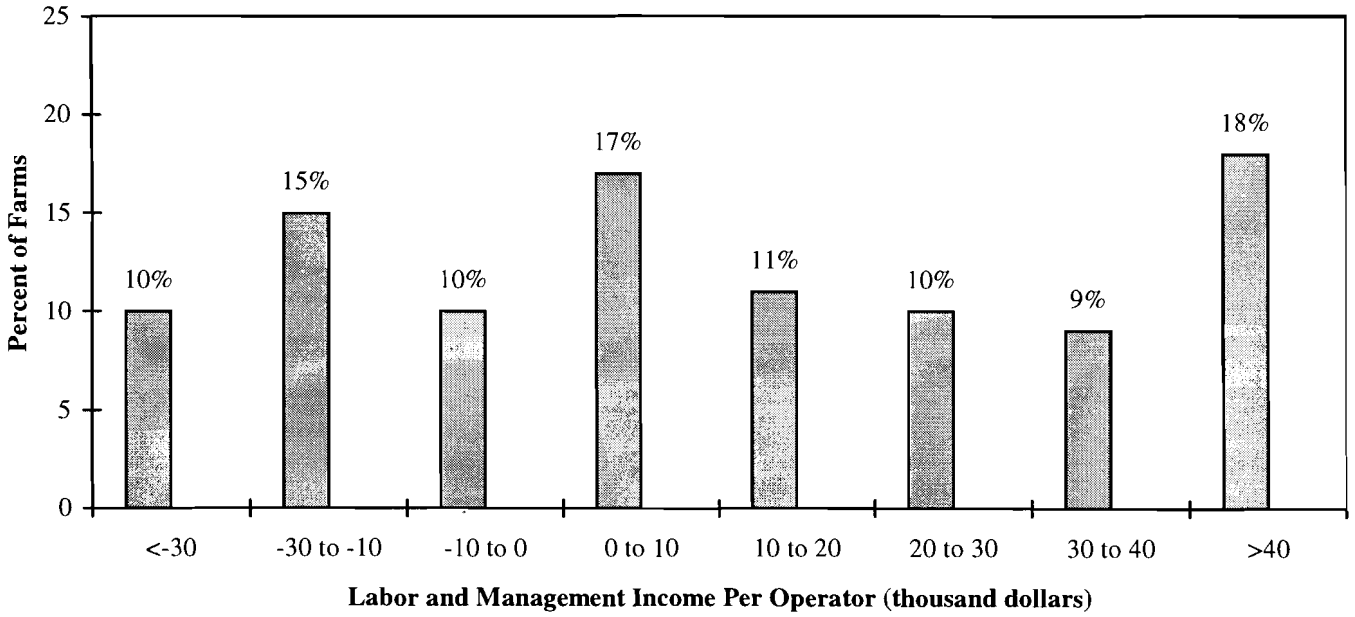
LABOR AND MANAGEMENT INCOME
300 New York Dairy Farms, 1996

Item	Average 300 Farms		Average Top 10% Farms
Net farm income without appreciation	$ 64,834		$ 255,539
- Family labor unpaid @ $1,500 per month	$ 4,350		$ 2,400
- Real interest @ 5% on $627,788 equity capital for average & $1,257,224 for the top 10%	31,389		62,861
= Labor & Management Income (1.56 operators)	$ 29,095	(1.59 operators)	$ 190,278
Labor & Management Income per Operator	$ 18,651		$ 119,672

Labor and management income per operator averaged $18,642 on these 300 dairy farms in 1996. The range in labor and management income per operator was from less than $-150,000 to more than $850,000. Returns to labor and management were negative on 35 percent of the farms. Labor and management income per operator ranged from $0 to $19,999 on 28 percent of the farms while 37 percent showed labor and management incomes of $20,000 or more per operator.

Chart 2.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR
300 New York Dairy Farms, 1996



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. 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
300 New York Dairy Farms, 1996

Item	Average 300 Farms	Average Top 10% Farms
Net farm income with appreciation	$ 76,335	$ 272,178
- Family labor unpaid at $1,500 per month	4,350	2,400
- Value of operators' labor & management	37,591	47,101
= Return to equity capital with appreciation	$ 34,394	$ 222,677
+ Interest paid	30,557	81,167
= Return to all capital with appreciation	$ 64,951	$ 303,844
Return to equity capital without appreciation	$ 22,893	$ 206,038
Return to all capital without appreciation	$ 53,450	$ 287,205
Rate of return on average equity capital:		
with appreciation	5.5%	17.7%
without appreciation	3.7%	16.4%
Rate of return on all capital:		
with appreciation	6.3%	13.2%
without appreciation	5.2%	12.5%

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.

RETURNS TO ALL LABOR AND MANAGEMENT BY RETURN TO ALL CAPITAL WITH APPRECIATION
300 New York Dairy Farms, 1996

	Quartile by Return to All Capital With Appreciation			
Item	Lowest 25%	3rd 25%	2nd 25%	Top 25%
Return to all capital with appreciation	$ -21,900	$ 12,006	$ 49,240	$ 220,443
Rate of return on all capital with appreciation	-3.8%	2.3%	5.9%	10.1%
Total returns to all labor & management	$ -4,209	$ 23,469	$ 62,818	$ 305,412
Worker equivalent	3.04	2.64	3.54	8.53
Return per worker equivalent	$ -1,385	$ 8,890	$ 17,745	$ 35,804
Returns/hour (3,000 hours/worker/year)	$ -0.46	$ 2.96	$ 5.92	$ 11.93

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.

1996 FARM BUSINESS AND NONFARM BALANCE SHEET
300 New York Dairy Farms, 1996

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
Current			Current		
Farm cash, checking & savings	$ 6,396	$ 6,814	Accounts payable	$ 16,865	$ 15,709
Accounts receivable	33,188	35,722	Operating debt	19,437	23,250
Prepaid expenses	1,013	1,170	Short term	5,044	4,904
Feed & supplies	87,402	100,533	Advanced gov't. receipt	110	100
Total Current	$ 127,999	$ 144,239	Current portion:		
			Intermediate	26,615	29,567
			Long term	9,754	11,701
			Total Current	$ 77,825	$ 85,231
Intermediate			Intermediate		
Dairy Cows:			Structured debt		
owned	$ 164,759	$ 174,466	1-10 years	$ 137,315	$ 143,984
leased	1,527	1,511	Financial lease		
Heifers	68,875	75,333	(cattle & machinery)	10,511	9,123
Bulls & other livestock	2,188	2,046	Farm Credit stock	5,119	5,051
Mach. & equip. owned	169,686	183,568	Total Intermediate	$ 152,945	$ 158,158
Mach. & equip. leased	8,984	7,612			
Farm Credit stock	5,119	5,051	Long Term		
Other stock & certificates	14,552	16,945	Structured debt		
Total Intermediate	$ 435,690	$ 466,532	≥ 10 years	$ 166,358	$ 176,451
Long Term			Financial lease		
Land & buildings:			(structures)	2,419	1,748
owned	$ 440,828	$ 457,255	Total Long Term	$ 168,777	$ 178,199
leased	2,419	1,748			
Total Long Term	$ 443,247	$ 459,003	Total Farm Liabilities	$ 399,547	$ 421,588
Total Farm Assets	$ 1,006,936	$ 1,069,774	FARM NET WORTH	$ 607,389	$ 648,186

Nonfarm Assets*	Jan.1	Dec. 31	Nonfarm Liabilities* & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	$ 4,152	$ 4,381	Nonfarm Liabilities	$ 4,939	$ 5,188
Cash value life insurance	8,647	8,838	NONFARM NET WORTH	$ 70,216	$ 71,380
Nonfarm real estate	36,156	35,150			
Auto (personal share)	3,995	4,182	FARM & NONFARM**	Jan. 1	Dec. 31
Stocks & bonds	7,157	8,184	Total Assets	$ 1,082,091	$ 1,146,342
Household furnishings	9,196	9,223	Total Liabilities	404,486	426,776
All other	5,852	6,610			
Total Nonfarm	$ 75,155	$ 76,568	TOTAL FARM & NON-FARM NET WORTH	$ 677,605	$ 719,566

*Average of 175 farms completing the nonfarm balance sheet.
**Sum of average farm values for 300 farms and nonfarm values for 175 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
300 New York Dairy Farms, 1996

Item	Average 300 Farms	Average Top 10% Farms
Farm Financial Ratios:		
Percent equity	61%	56%
Debt/asset ratio: total	.39	.44
long term	.39	.47
intermediate & current	.40	.42
Farm Debt Analysis:		
Accounts payable as % of total debt	4%	2%
Long term liab. as % of total debt	42%	41%
Current & intermediate liabilities as % of total debt	58%	59%

Farm Debt Levels:	Per Cow	Per Tillable Acre Owned	Per Cow	Per Tillable Acre Owned
Total farm debt	$2,451	$1,817	$2,283	$2,440
Long term debt	1,036	768	937	1,002
Intermediate & long term	1,956	1,450	1,805	1,929
Intermediate & current debt	1,415	1,049	1,346	1,438

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
300 New York Dairy Farms, 1996

Item	Real Estate	Machinery & Equipment	Livestock
Value beginning of year	$ 440,828	$ 169,686	$ 235,822
Purchases	$ 30,675*	$ 34,286	
+ nonfarm noncash transfer**	2,120	430	
- Lost capital	8,561		
- Net sales	2,170	1,846	
- Depreciation	13,660	21,300	
= Net Investment	8,403	11,569	15,421
+ Appreciation	8,024	2,313	602
Value end of year	$ 457,255	$ 183,568	$ 251,845

*$5,685 land and $24,990 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)
300 New York Dairy Farms, 1996

Item	Average 300 Farms		Average Top 10% Farms	
Beginning of year farm net worth		$ 607,389		$ 1,172,120
Net farm income without appreciation	$ 64,834		$255,539	
+ Nonfarm cash income	7,382		2,923	
- Personal withdrawals & family expenditures excluding nonfarm borrowings	40,100		81,183	
RETAINED EARNINGS		+ $ 32,116		+ $ 177,279
Nonfarm noncash transfers to farm	$ 2,728		$ 1,000	
+ Cash used in business from nonfarm capital	3,503		2,607	
- Note or mortgage from farm real estate sold (nonfarm)	205		0	
CONTRIBUTED/WITHDRAWN CAPITAL		+ $ 6,026		+ $ 3,607
Appreciation	$ 11,501		$ 16,639	
- Lost capital	8,561		26,149	
CHANGE IN VALUATION EQUITY		+ $ 2,940		+ $ -9,510
IMBALANCE/ERROR		- $ 285		- $ 1,168
End of year farm net worth*		$ 648,186		$ 1,342,328
Change in Net Worth				
Without appreciation		$29,296		$153,569
With appreciation		$40,797		$170,208

*May not add due to rounding.

Cash Flow Summary and Analysis

Completing an annual cash flow statement is an important step in understanding 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
300 New York Dairy Farms, 1996

Item		Average 300 Farms	
Cash Flow from Operating Activities			
Cash farm receipts	$ 535,202		
- Cash farm expenses	458,383		
= Net cash farm income		$ 76,819	
Personal withdrawals & family expenses including nonfarm debt payments	$ 40,958		
- Nonfarm income	7,382		
- Net cash withdrawals from the farm		$ 33,576	
= Net Provided by Operating Activities			$ 43,243
Cash Flow From Investing Activities			
Sale of assets: machinery	$ 1,846		
+ real estate	1,965		
+ other stock & certificates	468		
= Total asset sales		$ 4,279	
Capital purchases: expansion livestock	$ 9,257		
+ machinery	34,286		
+ real estate	30,675		
+ other stock & certificates	2,299		
- Total invested in farm assets		$ 76,517	
+ Net Provided by Investment Activities			$ -72,238
Cash Flow From Financing Activities			
Money borrowed (intermediate & long term)	$ 70,355		
+ Money borrowed (short term)	3,204		
+ Increase in operating debt	3,813		
+ Cash from nonfarm capital used in business	3,503		
+ Money borrowed - nonfarm	858		
= Cash inflow from financing		$ 81,733	
Principal payments (intermediate & long term)	$ 48,695		
+ Principal payments (short term)	3,344		
+ Decrease in operating debt	0		
- Cash outflow for financing		$ 52,039	
= Net Provided by Financing Activities			$ 29,694
Cash Flow From Reserves			
Beginning farm cash, checking & savings		$ 6,396	
- Ending farm cash, checking & savings		$ 6,814	
= Net Provided from Reserves			$ -418
Imbalance (error)			$ 281

Table 15.

ANNUAL CASH FLOW BUDGETING DATA
300 New York Dairy Farms, 1996

Item	Average 300 Farms Total	Per Cow	Per Cwt.	Average Top 10% Farms Total	Per Cow	Per Cwt.
Average number of cows and cwt. milk		167	33,504		445	95,724
Accrual Operating Receipts						
Milk	$ 501,774	$3,005	$ 14.98	$ 1,432,849	$ 3,220	$ 14.97
Dairy cattle	32,615	195	0.97	100,440	226	1.05
Dairy calves	2,771	17	0.08	7,206	16	0.08
Other livestock	756	5	0.02	566	1	0.01
Crops	9,085	54	0.27	24,431	55	0.26
Miscellaneous receipts	10,917	65	0.33	21,630	49	0.23
Total	$ 557,918	$3,341	$ 16.65	$ 1,587,120	$ 3,567	$ 16.58
Accrual Operating Expenses						
Hired labor	$ 63,428	$380	$ 1.89	$ 215,611	$ 485	$ 2.25
Dairy grain & concentrate	152,620	914	4.56	412,034	926	4.30
Dairy roughage	5,814	35	0.17	13,779	31	0.14
Nondairy feed	149	1	0.00	0	0	0.00
Machinery hire, rent & lease	8,473	51	0.25	15,547	35	0.16
Machinery repairs & vehicle expense	25,829	155	0.77	58,938	132	0.62
Fuel, oil & grease	10,307	62	0.31	21,276	48	0.22
Replacement livestock	6,430	39	0.19	16,939	38	0.18
Breeding	5,036	30	0.15	11,300	25	0.12
Vet & medicine	13,970	84	0.42	42,040	94	0.44
Milk marketing	19,750	118	0.59	45,545	102	0.48
Bedding	5,037	30	0.15	19,049	43	0.20
Milking supplies	11,694	70	0.35	32,332	73	0.34
Cattle lease	848	5	0.03	4,371	10	0.05
Custom boarding	3,336	20	0.10	11,557	26	0.12
Other livestock expense	11,905	71	0.36	32,406	73	0.34
Fertilizer & lime	10,677	64	0.32	26,559	60	0.28
Seeds & plants	6,728	40	0.20	15,990	36	0.17
Spray/other crop expense	7,181	43	0.21	15,603	35	0.16
Land, building & fence repair	7,785	47	0.23	24,573	55	0.26
Taxes	8,616	52	0.26	15,494	35	0.16
Real estate rent & lease	8,397	50	0.25	30,734	69	0.32
Insurance	6,045	36	0.18	12,854	29	0.13
Utilities	12,954	78	0.39	30,223	68	0.32
Miscellaneous	5,285	32	0.16	14,382	32	0.15
Total Less Interest Paid	$ 418,295	$2,505	$ 12.48	$ 1,139,137	$ 2,560	$ 11.90
Net Accrual Operating Income (without interest paid)	$ 139,623	$836	$ 4.17	$ 447,983	$ 1,007	$ 4.68
- Change in livestock & crop inventory	20,182	121	0.60	72,440	163	0.76
- Change in accounts receivable	2,534	15	0.08	10,571	24	0.11
- Change in feed & supply inventory	8,360	50	0.25	36,229	81	0.38
+ Change in accounts payable*	-1,116	-7	-0.03	-10,880	-24	-0.11
NET CASH FLOW	$ 107,431	$643	$ 3.21	$ 317,863	$ 714	$ 3.31
- Net personal withdrawals & family exp.	32,718	196	0.98	78,260	176	0.82
Available for Farm Debt Payments & Invest.	$ 74,713	$447	$ 2.24	$ 239,603	$ 538	$ 2.50
- Farm debt payments	82,583	495	2.46	229,691	516	2.40
Cash available for Farm Investments	$ -7,870	$-48	$ -0.23	$ 9,912	$ 22	$ 0.10

*Exclude change in interest account payable.

Repayment Analysis

The second step in cash flow planning 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 for farms that completed summaries for both 1995 and 1996.

Table 16.

FARM DEBT PAYMENTS PLANNED
New York Dairy Farms, 1996

	Same 249 Dairy Farms			Same 28 Top 10% Farms		
	1996 Payments		Planned	1996 Payments		Planned
Debt Payments	Planned	Made	1997	Planned	Made	1997
Long term	$ 25,839	$ 31,125	$ 28,450	$ 67,565	$ 93,516	$ 68,842
Intermediate term	42,639	51,999	45,003	101,272	119,112	107,587
Short term	3,064	3,795	2,611	10,895	8,042	4,979
Operating (net reduction)	4,764	3,822	2,944	16,179	0	4,333
Accts. payable (net reduction)	1,293	5,318	1,388	2,750	13,017	3,058
Total	$ 77,599	$ 96,059	$ 80,396	$ 198,661	$ 233,687	$ 188,799
Per cow	$ 434	$ 537		$ 442	$ 520	
Per cwt. 1996 milk	$ 2.13	$ 2.63		$ 2.05	$ 2.41	
% of 1996 milk receipts	14%	18%		14%	16%	

The cash flow coverage ratio measures the ability of the farm business to meet its planned debt payments. The ratio shows the number of times the amount available for debt service in 1996 covered debt payments planned for 1996 (as of December 31, 1995).

Table 17.

CASH FLOW COVERAGE RATIO
New York Dairy Farms, 1996

Item	Same 249 Dairy Farms	Same 28 Top 10% Farms
Cash farm receipts	$ 581,435	$ 1,525,372
- Cash farm expenses	496,996	1,288,883
+ Interest paid	32,394	82,211
- Net personal withdrawals from farm*	35,871	82,790
(A) = Amount Available for Debt Service	$ 80,962	$ 235,910
(B) = Debt Payments Planned for 1996	77,599	198,661
(A ÷ B) = Cash Flow Coverage Ratio for 1996	1.04	1.19

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

A 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, 25 percent of the farms had a cash flow coverage ratio less than 1.0.

Table 18.

DEBT TO ASSET RATIO VS. CASH FLOW COVERAGE
249 New York Dairy Farms, 1996

	Cash Flow Coverage Ratio (Farm & Nonfarm)			
Debt/Asset Ratio	<.5	.5 to .99	1 to 1.49	≥1.5
	percent of farms			
<40%	10.8	14.1	13.3	17.3
40 to 70%	8.4	14.9	11.2	5.2
70% & over	0.8	1.6	1.2	1.2

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
300 New York Dairy Farms, 1996

Item	Average 300 Farms			Average Top 10% Farms		
Land	Owned	Rented	Total	Owned	Rented	Total
Tillable	232	183	415	435	436	870
Nontillable	46	13	59	42	13	55
Other nontillable	110	6	116	138	6	145
Total	388	202	590	614	456	1,070

Crop Yields	Farms	Acres	Prod/Acre	Farms	Acres	Prod/Acre
Hay crop	292	203	2.8 tn DM	28	352	3.4 tn DM
Corn silage	275	131	15.9 tn	28	327	17.7 tn
			5.3 tn DM			5.7 tn DM
Other forage	35	29	2.4 tn DM	2	35	2.3 tn DM
Total forage	295	326	3.7 tn DM	28	682	4.5 tn DM
Corn grain	141	101	107 bu	20	178	117 bu
Oats	32	31	47 bu	4	14	47 bu
Wheat	24	58	47 bu	4	108	54 bu
Other crops	70	69		11	183	
Tillable pasture	98	44		7	114	
Idle	73	36		5	30	

Crop acres and yields compiled for the average represent only the number of farms reporting each crop. All but 8 of the 300 farms produced hay or hay crop silage in 1996. Ninety-two percent produced corn silage, 47 percent grew and harvested corn grain, and 11 percent grew oats for grain. Although 98 farms used tillable pasture in 1996, only 62 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
300 New York Dairy Farms, 1996

Item	Average 300 Farms	Average Top 10% Farms
Total tillable acres per cow	2.49	1.96
Total forage acres per cow	1.92	1.43
Harvested forage dry matter, tons per cow	7.08	6.40

In the fourth year of collecting information on pasture costs, 15 cooperators provided pasture-related expenses. Eighty-one 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 300 farms, the expenses for hay and corn crops are for the 81 farms, and the pasture costs are for the 15 farms which submitted data.

Table 21.

CROP RELATED ACCRUAL EXPENSES
New York Dairy Farms, 1996

	Average 300 Farms	Average 81 Farms Reporting Crop Costs					Average 15 Farms	
							Pasture	
	Total per Tillable	Hay Crop Per Acre	Hay Crop Per Ton DM	All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Shell Bu.	Per Till. Acre	Per Total Acre
Espenses	Acre							
Fertilizer & lime	$25.73	$15.50	$5.94	$40.19	$7.99	$0.38	$34.17	$15.12
Seeds & plants	16.21	8.92	3.42	25.59	5.09	0.24	5.46	2.42
Spray & other crop exp.	17.30	4.68	1.79	43.06	8.56	0.40	1.56	0.69
Total	$59.24	$29.10	$11.15	$108.84	$21.64	$1.02	$41.19	$18.23
Ave. Top 10% Farms:		Average 9 Farms Reporting Crop Costs						
Fertilizer & lime	$30.53	$19.79	$5.62	$34.20	$6.59	$0.30		
Seeds & plants	18.38	10.97	3.12	28.32	5.45	0.25		
Spray & other crop exp.	17.93	6.31	1.79	45.29	8.72	0.40		
Total	$66.84	$37.07	$10.53	$107.81	$20.76	$0.95		

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
300 New York Dairy Farms, 1996

	Average 300 Farms		Average Top 10% Farms	
Machinery Expense Item	Total Expenses	Per Til. Acre	Total Expenses	Per Til. Acre
Fuel, oil & grease	$10,307	$24.84	$21,276	$24.46
Machinery repairs & vehicle expense	25,829	62.24	58,938	67.74
Machine hire, rent & lease	8,473	20.42	15,547	17.87
Interest (5%)	9,246	22.28	19,137	22.00
Depreciation	21,300	51.33	50,412	57.94
Total	$75,155	$181.10	$165,310	$190.01

Table 23.

CROP RELATED ACCRUAL EXPENSES BY HAY CROP PRODUCTION PER ACRE
75 New York Dairy Farms, 1996

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	4.2
Farms reporting crop expense breakdowns	10	15	16	16	18
Average number hay crop acres for farms reporting	192	256	146	249	195
Accrual Crop Expenses Per Acre of Hay Crop:					
Fertilizer & lime	$ 7.71	$ 19.40	$ 11.98	$ 16.90	$ 16.30
Seeds & plants	5.14	9.92	7.47	11.04	8.49
Spray & other crop expenses	0.99	5.60	6.78	4.33	4.68
Total	$ 13.84	$ 34.92	$ 26.23	$ 32.27	$ 29.47
Accrual Crop Expense Per Ton DM of Hay Crop:					
Fertilizer & lime	$ 5.29	$ 9.46	$ 3.73	$ 5.74	$ 3.81
Seeds & plants	3.52	4.84	2.32	3.75	1.98
Spray & other crop expenses	0.68	2.73	2.11	1.47	1.09
Total	$ 9.49	$ 17.03	$ 8.16	$ 10.96	$ 6.88

Table 24.

CROP RELATED ACCRUAL EXPENSES BY CORN PRODUCTION PER ACRE
81 New York Dairy Farms, 1996

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	15.8	19.4	71	101	128
Farms reporting crop expense breakdowns	27	35	18	6	23	23
Average number corn acres for farms reporting	137	240	191	251	252	237
Accrual Crop Expense/Acre of Corn						
Fertilizer & lime	$ 43.63	$ 38.99	$ 40.54	$ 50.55	$ 43.13	$ 35.11
Seeds & plants	27.34	23.62	29.19	26.37	22.42	26.02
Spray & other crop expenses	36.36	46.63	42.37	32.73	44.30	45.29
Total	$ 107.33	$ 109.24	$ 112.10	$ 109.65	$ 109.85	$ 106.42
Accrual Crop Expense Per:*	Ton DM of Corn Silage			Dry Shell Bushel of Corn Grain		
Fertilizer & lime	$ 12.36	$ 7.62	$ 6.18	$ 0.71	$ 0.43	$ 0.27
Seeds & plants	7.74	4.62	4.45	0.37	0.23	0.20
Spray & other crop expense	10.30	9.12	6.46	0.46	0.45	0.35
Total	$ 30.40	$ 21.36	$ 17.09	$ 1.54	$ 1.11	$ 0.82

*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.

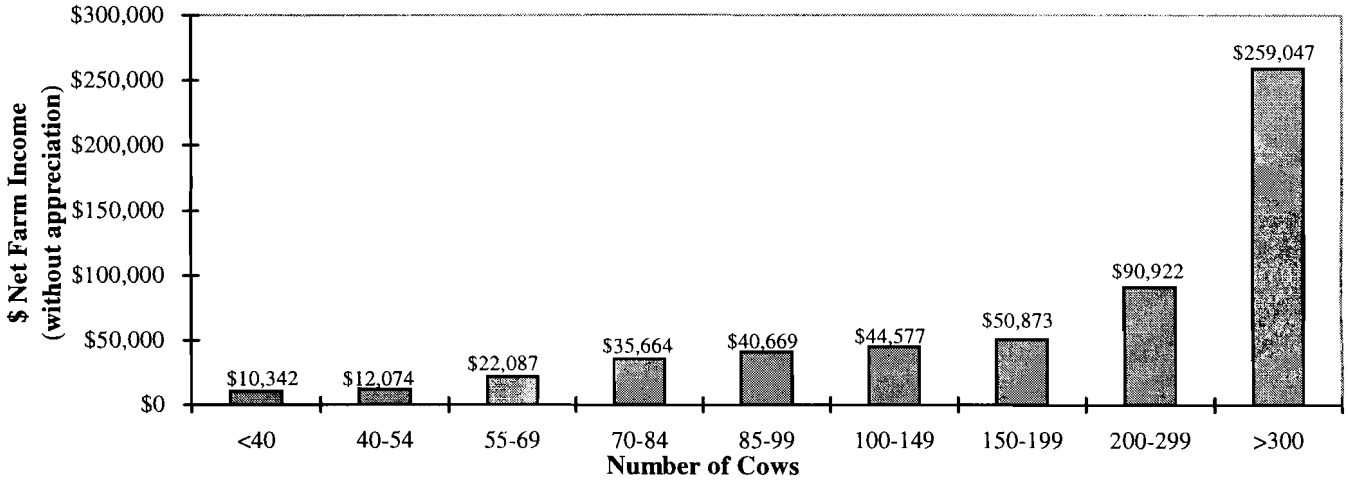
DAIRY HERD INVENTORY
300 New York Dairy Farms, 1996

	Dairy Cows		Heifers					
			Bred		Open		Calves	
Item	No.	Value	No.	Value	No.	Value	No.	Value
Beg. year (owned)	162	$ 164,759	44	$ 38,134	41	$ 21,351	35	$ 9,390
+ Change w/o apprec.		9,235		3,478		2,539		306
+ Appreciation		472		58		37		40
End year (owned)	170	$ 174,466	47	$ 41,670	46	$ 23,927	36	$ 9,736
End including leased	172							
Average number	167		124	(all age groups)				
Average Top 10% Farms:								
Beg. year (owned)	422	$ 406,893	109	$ 86,050	107	$ 46,926	76	$ 18,859
+ Change w/o apprec.		28,966		14,033		11,455		1,343
+ Appreciation		720		-33		173		59
End year (owned)	448	$ 436,579	121	$ 100,050	129	$ 58,554	82	$ 20,261
End including leased	465							
Average number	445		321	(all age groups)				

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 3. Net farm income increased $248,705 while labor and management income per operator jumped $82,392 as herd size increased from less than 40 to over 300 cows per farm. For more information on herd size comparisons, see pages 41-50.

Chart 3.

NET FARM INCOME (WITHOUT APPRECIATION) BY HERD SIZE
300 New York Dairy Farms, 1996



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
300 New York Dairy Farms, 1996

Item	Average 300 Farms	Average Top 10% Farms
Total milk sold, lbs.	3,350,419	9,572,358
Milk sold per cow, lbs.	20,113	21,506
Average milk plant test, percent butterfat	3.70	3.65

Farms with higher rates of production tend to have higher profits. In 1996, most of the farms that sold more than 20,000 pounds of milk per cow had above average profit margins.

Table 27.

MILK SOLD PER COW AND FARM INCOME MEASURES
300 New York Dairy Farms, 1996

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	32	74	$8,836	$119	$-9,768
14,000 to 15,999	33	84	17,906	213	-2,785
16,000 to 16,999	35	88	26,310	299	2,825
17,000 to 17,999	30	110	40,397	367	7,535
18,000 to 18,999	33	117	43,451	371	12,613
19,000 to 19,999	24	182	62,225	342	16,835
20,000 to 20,999	40	203	77,635	382	21,024
21,000 to 21,999	28	304	132,372	435	48,536
22,000 & over	45	303	148,994	492	51,234

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 4 and 5 on page 24. Each spot on each scatter diagram represents one of the 300 farms.

Data in Chart 4 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 was $150,000 or less at each production level. As milk output exceeded 19,000 pounds per cow, average net farm income increased rapidly and net farm income variability exceeded $400,000 at some levels of milk output.

The relationship between milk output per cow and net farm income per cow is presented in Chart 5 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. Six of the ten farms that achieved $1,200 or more of net farm income per cow sold between 20,000 and 27,000 pounds of milk per cow.

Chart 4.

NET FARM INCOME AND MILK PER COW
296 New York Dairy Farms, 1996*

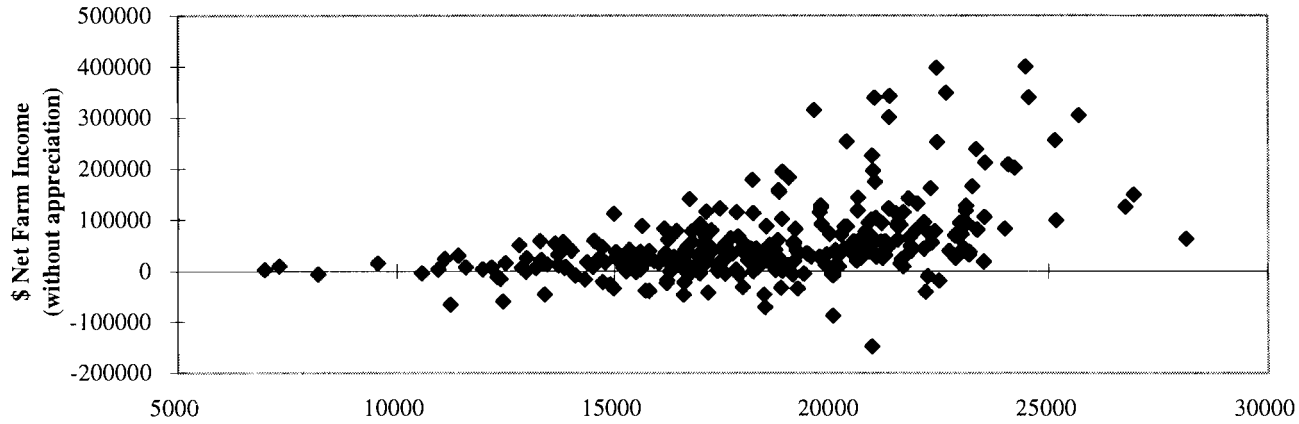
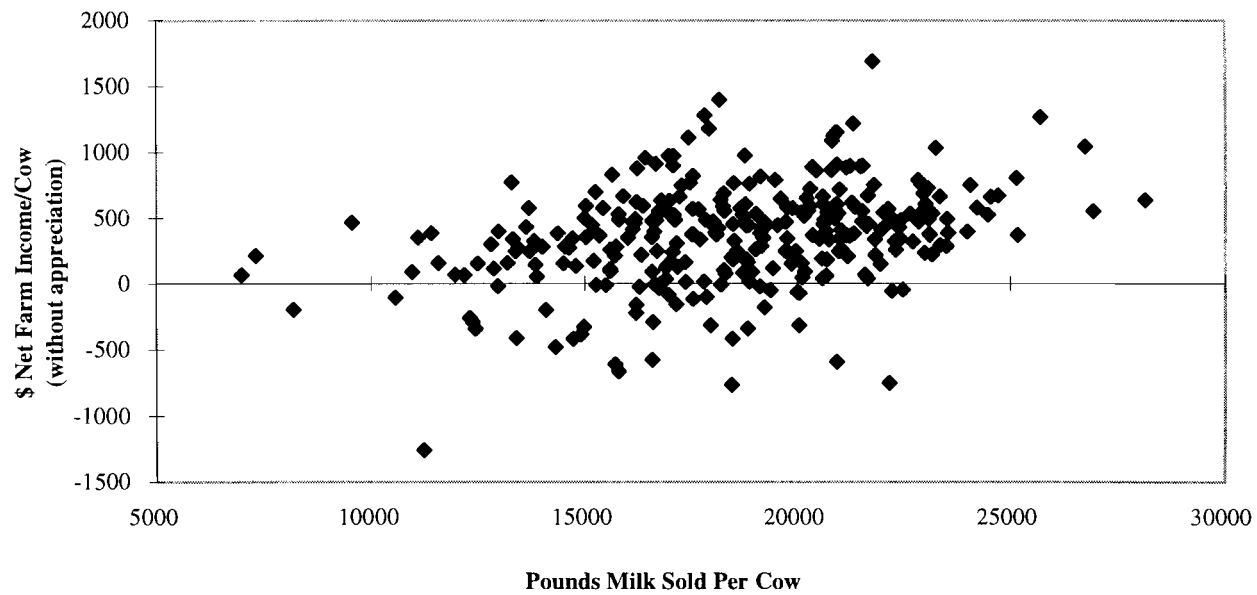


Chart 5.

NET FARM INCOME/COW AND MILK PER COW
300 New York Dairy Farms, 1996



*Farms with net farm incomes exceeding $600,000 have been excluded to avoid disclosure of financial position.

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 28.

COST OF PRODUCING MILK, WHOLE FARM METHOD
300 New York Dairy Farms, 1996

Item	Average 300 Farms		Average Top 10% Farms	
Total Accrual Operating Expenses	$ 448,852		$ 1,220,304	
Expansion Livestock, Accrual	+ 9,272		+ 31,220	
1. Total Accrual Operating Expenses, Including Expansion Livestock		$ 458,124		$1,251,524
Total Accrual Receipts	$ 557,918		$ 1,587,120	
Milk Sales, Accrual	- 501,774		- 1,432,849	
2. Total Accrual Nonmilk Receipts		-$ 56,144		-$154,271
3. Operating Cost of Producing Milk		$ 401,980		$1,097,253
Machinery Depreciation		+$ 21,300		+ 50,412
Building Depreciation		+ 13,660		+ 29,645
4. Purchased Inputs Cost of Producing Milk		$ 436,940		$1,177,310
Family Labor Unpaid ($1,500/month)		+ 4,350		+ 2,400
Real Interest on Equity Capital		+ 31,389		+ 62,861
Value of Operator's Labor & Management		+ 37,591		+ 47,101
5. Total Costs of Producing Milk		$ 510,270		$1,289,672
6. Costs Per Cwt.:				
Cwt. Milk Sold	33,504		95,724	
Operating Cost Per Cwt.	$ 12.00		$ 11.46	
Purchased Inputs Cost Per Cwt.	$ 13.04		$ 12.30	
Total Cost Per Cwt.	$ 15.23		$ 13.47	

Costs of producing milk per hundredweight are presented for eight expenditure categories in Table 29. The whole farm method assumption that accrual nonmilk receipts represent nonmilk operating costs is used in computing net costs. A $4,930 average increase in crop inventories per farm, ($.15 per cwt. of milk), is included in crop sales.

Table 29.

ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT
BASED ON WHOLE FARM DATA
300 New York Dairy Farms, 1996

Item	Average 300 Farms		Average Top 10% Farms	
Dairy grain and concentrate	$4.56		$4.30	
Dairy roughage	0.17		0.14	
Nondairy feed	0.00		0.00	
Total feed expense		$4.73		$4.44
Crop expense		0.73		0.61
- Crop sales and government receipts*		0.46		0.36
Net Feed and Crop Expense		$5.00		$4.69
Hired labor		1.89		2.25
Operator's and family labor		1.25		0.52
Total Labor Expense		$3.14		$2.77
Machine repairs, fuel and hire		1.33		1.00
Machinery depreciation		0.64		0.53
- Gas tax refunds and custom work		0.03		0.03
Net Machinery Expense		$1.94		$1.50
Replacement and expansion cattle purchases		0.47		0.50
- Sales and inventory growth		1.07		1.13
Net Cattle Purchases		$-0.60		$-0.63
Milk marketing costs		0.59		0.48
All other livestock expense excluding purchases		1.55		1.60
Net Livestock Expense		$2.14		$2.08
Real estate repairs, rent and taxes		0.74		0.74
Building depreciation		0.41		0.31
Total Real Estate Expense		$1.15		$1.05
Interest paid		0.91		0.85
Interest on equity		0.94		0.66
Total Interest Expense		$1.85		$1.51
Other operating and miscellaneous expenses		0.72		0.60
- Miscellaneous income		0.11		0.10
Net Miscellaneous Expenses		$ 0.61		$0.50
Total Cost of Producing Milk		$15.23		$13.47
Purchased Inputs Cost		$13.04		$12.30
Total Operating Cost		$12.00		$11.46

*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 30.

Table 30.

COST OF PRODUCING MILK, ACCRUAL RECEIPTS FROM DAIRY, AND PROFITABILITY
300 New York Dairy Farms, 1996

Item	Average 300 Farms			Average Top 10% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Accrual Cost of Producing Milk						
Operating Cost	$401,980	$2,407	$12.00	$1,097,253	$2,466	$11.46
Purchased Inputs Cost	436,940	2,616	13.04	1,177,310	2,646	12.30
Total Cost	510,270	3,056	15.23	1,289,672	2,898	13.47
Accrual Receipts from Milk	$501,774	$3,005	$14.98	$1,432,849	$3,220	$14.97
Profitability						
Net Farm Income without Appreciation	$ 64,834	$ 388	$ 1.94	$255,539	$ 574	$ 2.67
Net Farm Income with Appreciation	$ 76,335	$ 457	$ 2.28	$272,178	$ 612	$ 2.84

The operating cost of producing milk on all 300 dairy farms averaged $12.00 per hundredweight, leaving $2.98 to cover depreciation, unpaid labor and operator resources.

The total cost of producing milk on all 300 dairy farms averaged $15.23 per hundredweight, $0.25 more than the average price received for milk sold from these farms during 1996. This implies dairy farmers are willing to receive returns less than the stated charges on their labor and equity capital to remain in farming. The imputed costs or charge for the operator's labor, management and equity capital average $2.06 per hundredweight in 1996. The computed returns averaged $1.81 per hundredweight. The 30 most profitable farms held their operating costs to $11.46 per hundredweight and their total cost of producing milk averaged $13.47 per hundredweight. This left a profit of $1.50 per hundredweight of milk sold.

The strong relationship between milk output per cow and the cost of producing milk are shown in Table 31 and Chart 6 on page 29. Farms selling less than 18,000 pounds of milk per cow had average total costs of production of $17.39 per hundredweight while those selling 18,000 pounds and over average $15.04 for a difference of $2.35 per hundredweight.

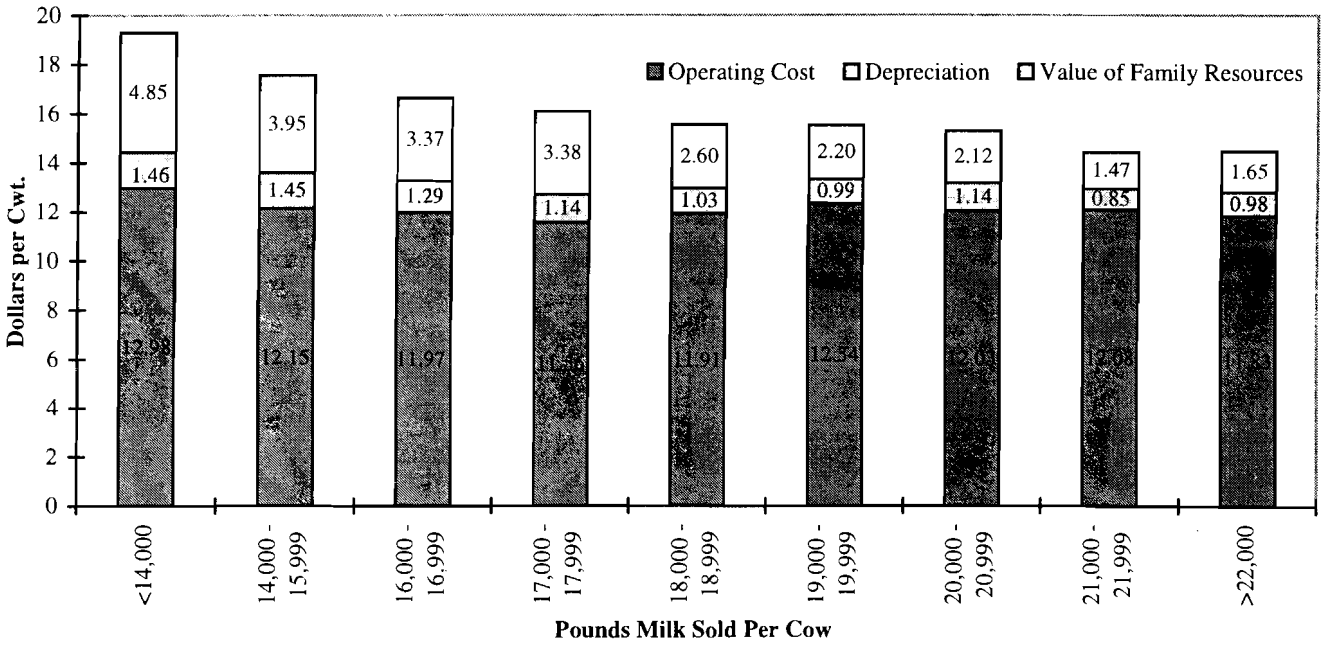
Table 31.

FARM COST OF PRODUCING MILK BY MILK SOLD PER COW
300 New York Dairy Farms, 1996

Pounds Milk Sold Per Cow	Cost per Hundredweight			Accrual Receipts From Milk Per Cwt.	Return/Cwt. to Operator's Labor, Mgmt. & Capital
	Operating	Purchased Inputs	Total		
Under 14,000	$12.98	$14.44	$19.29	$15.40	$0.47
14,000 - 15,999	12.15	13.60	17.55	15.01	1.09
16,000 - 16,999	11.97	13.26	16.63	15.06	1.46
17,000 - 17,999	11.56	12.70	16.08	14.81	1.81
18,000 - 18,999	11.91	12.94	15.54	14.94	1.86
19,000 - 19,999	12.34	13.33	15.53	15.09	1.68
20,000 - 20,999	12.03	13.17	15.29	15.03	1.72
21,000 - 21,999	12.08	12.93	14.40	14.95	1.96
22,000 & over	11.83	12.81	14.46	14.91	2.05

Chart 6.

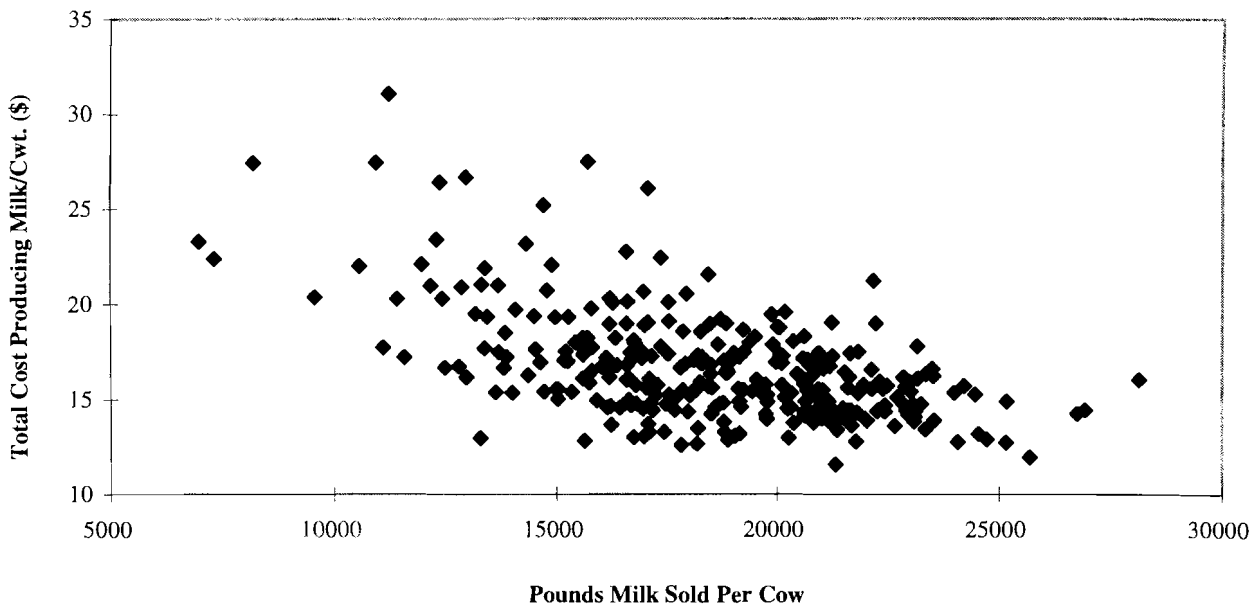
PRODUCTION COST BY MILK PER COW
300 New York Dairy Farms, 1996



The relationship between total cost of producing milk and milk sold per cow is diagrammed in Chart 7. It shows that as milk sold per cow increases on the average, total cost of production decreases, at a fairly constant rate.

Chart 7.

TOTAL COST OF PRODUCTION & MILK PER COW
300 New York Dairy Farms, 1996



Data in Table 32 and Chart 8 show 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.

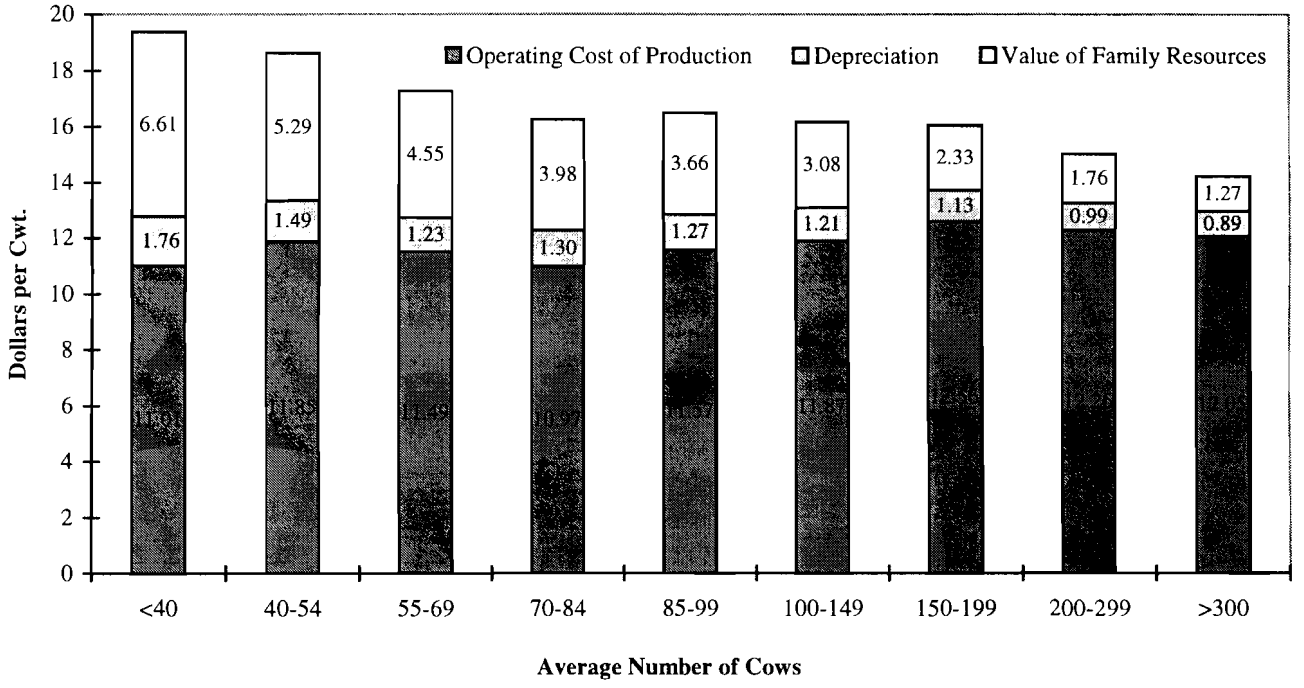
Table 32.

FARM COST OF PRODUCING MILK BY HERD SIZE
300 New York Dairy Farms, 1996

Number of Cows	Cost per Hundredweight			Accrual Receipts From Milk Per Cwt.	Return/Cwt. to Operator's Labor, Mgmt. & Capital
	Operating	Purchased Inputs	Total		
Under 40	$11.01	$12.77	$19.38	$14.83	$1.40
40 to 54	11.85	13.34	18.63	14.93	0.94
55 to 69	11.49	12.72	17.27	14.74	1.43
70 to 84	10.97	12.27	16.25	14.93	2.39
85 to 99	11.57	12.84	16.50	15.03	1.54
100 to 149	11.87	13.08	16.16	15.07	1.82
150 to 199	12.56	13.69	16.02	15.50	1.43
200 to 299	12.26	13.25	15.01	15.04	1.71
300 & over	12.05	12.94	14.21	14.91	1.96

Chart 8.

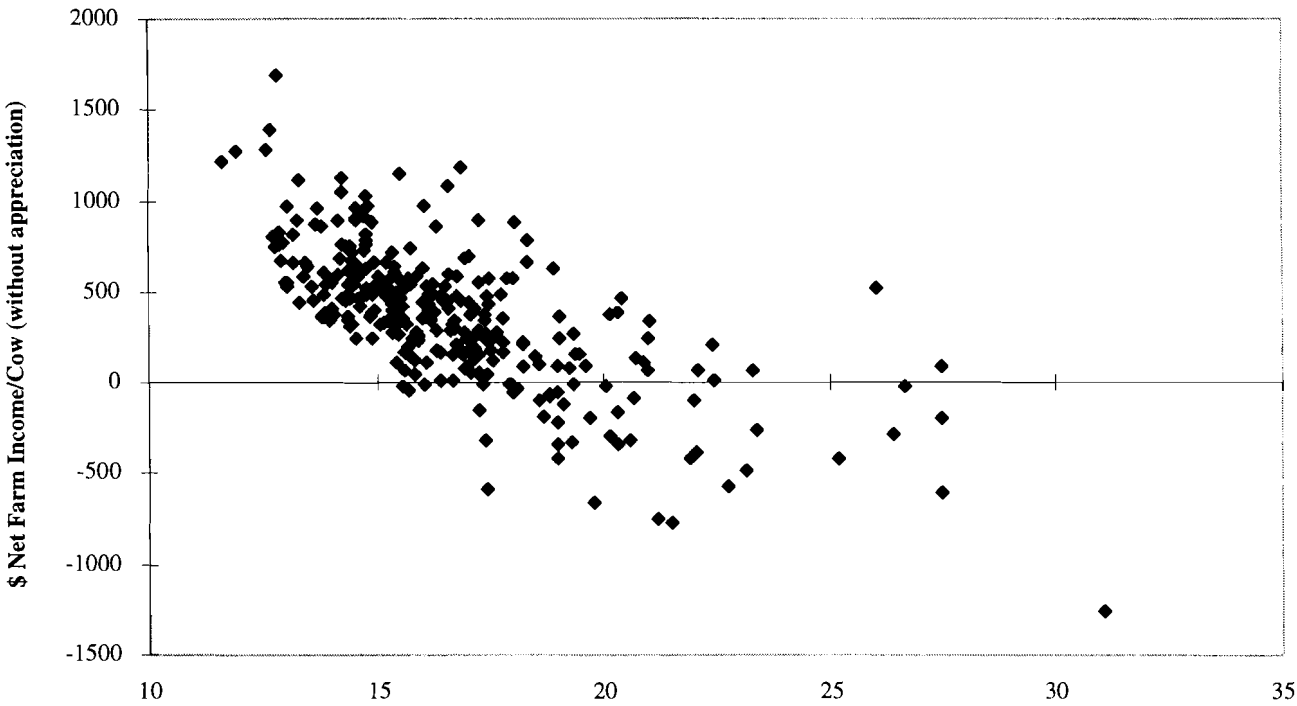
PRODUCTION COST BY HERD SIZE
300 New York Dairy Farms, 1996



The importance of cost control and its impact on farm profitability are illustrated in Chart 9. 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 $15 per hundredweight. The majority of the farms with costs greater than $19 per hundredweight experienced negative net farm incomes per cow.

Chart 9.

NET FARM INCOME PER COW &
TOTAL COST OF PRODUCING MILK PER HUNDREDWEIGHT
300 New York Dairy Farms, 1996



A 10-year comparison of the average costs and returns of producing milk per hundredweight are presented in Table 33 on page 31. 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 1987 through 1996. In 1996 the average operating cost of producing milk increased 5 percent after decreasing 1 percent from 1994 to 1995. The average return per hundredweight to operator labor, management, and capital rose to $1.81 in 1996, 26 percent above 1995.

A 10-year comparison of selected average business factors for all specialized DFBS farms is presented in Table 34 on page 32. Average cow numbers are up 65 percent, tillable acres have increased 36 percent, and milk sold per farm has jumped 103 percent since 1987. Capital investment per cow has increased 5 percent, far less than inflation, over the last 10 years. Labor and management income per operator increased 80 percent in 1996 compared to 1995, and farm net worth continued to grow.

Table 33.

TEN YEAR COMPARISON: AVERAGE COST OF PRODUCING MILK PER HUNDREDWEIGHT
New York Dairy Farms, 1987 to 1996

Item	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Operating Expenses										
Hired labor	$ 1.49	$ 1.46	$ 1.62	$ 1.77	$ 1.74	$ 1.80	$ 1.86	$ 1.80	$1.78	$1.89
Purchased feed	3.26	3.73	4.02	4.28	3.88	3.92	3.85	3.89	3.71	4.73
Machinery repair, vehicle expense & rent	.92	.87	.96	1.11	.93	.97	.93	.92	.85	1.02
Fuel, oil & grease	.35	.34	.33	.41	.37	.35	.34	.31	.27	.31
Replacement livestock	.13	.11	.17	.20	.15	.21	.17	.21	.15	.19
Breeding fees	.19	.18	.18	.19	.18	.18	.19	.17	.15	.15
Veterinary & medicine	.28	.28	.30	.32	.33	.35	.37	.40	.39	.42
Milk marketing	.74	.52	.49	.53	.58	.63	.64	.67	.70	.59
Other dairy expenses	.53	.56	.60	.68	.65	.70	.72	.88	.92	.99
Lime & fertilizer	.50	.51	.50	.50	.40	.37	.36	.33	.31	.32
Seeds & plants	.21	.21	.22	.22	.20	.21	.20	.19	.19	.20
Spray & other crop expense	.19	.19	.21	.22	.20	.21	.20	.20	.20	.21
Land, building & fence repair	.20	.22	.27	.32	.19	.24	.21	.21	.16	.23
Taxes	.35	.35	.36	.37	.38	.35	.34	.29	.27	.26
Insurance	.22	.23	.23	.24	.23	.22	.20	.18	.17	.18
Utilities (farm share)	.38	.38	.39	.39	.39	.38	.39	.38	.38	.39
Interest paid	1.04	1.02	1.06	1.05	1.07	.88	.80	.81	.94	.91
Misc. (including rent)	.45	.41	.43	.47	.43	.44	.41	.40	.40	.41
Total Operating Expenses	$11.43	$11.57	$12.34	$13.27	$12.30	$12.41	$12.18	$12.24	$11.94	$13.40
Less: Nonmilk cash receipts	1.84	1.86	1.75	1.75	1.73	1.67	1.65	1.30	1.15	1.07
Increase in grown feed & supplies	.16	.16	.02	.26	.04	.23	.13	.25	.14	.15
Increase in livestock	.10	.08	.12	.15	.18	.08	.22	.21	.25	.18
OPERATING COST OF MILK PRODUCTION	$ 9.33	$ 9.47	$10.45	$11.11	$10.35	$10.43	$10.18	$10.47	$10.40	$12.00
Overhead Expenses										
Depreciation: machinery & buildings	$ 1.43	$ 1.31	$ 1.31	$1.35	$ 1.28	$ 1.19	$ 1.17	$ 1.13	$1.07	$1.04
Unpaid labor	.10	.11	.12	.19	.18	.16	.15	.12	.12	.13
Operator(s) labor *	.87	.95	.98	1.10	1.06	.99	1.00	.86	.92	.88
Operator(s) management (5% of cash receipts)	.74	.74	.81	.85	.73	.76	.74	.73	.70	.80
Interest on farm equity capital (5%)	1.15	1.19	1.24	1.24	1.20	1.11	1.11	1.00	.94	.94
Total Overhead Expenses	$ 4.28	$ 4.30	$ 4.46	$ 4.73	$ 4.45	$ 4.21	$ 4.17	$ 3.84	$ 3.75	$3.79
TOTAL COST OF MILK PRODUCTION	$13.61	$13.77	$14.91	$15.84	$14.80	$14.64	$14.35	$14.31	$14.15	$15.79
AVERAGE FARM PRICE OF MILK	$12.89	$13.03	$14.53	$14.93	$12.95	$13.58	$13.14	$13.44	$13.03	$14.98
Return per cwt. to operator labor, capital & mgmt.	$ 2.04	$ 2.14	$ 2.65	$ 2.28	$ 1.14	$ 1.80	$ 1.64	$ 1.72	$ 1.44	$ 1.81
Rate of return on farm equity capital	1.9%	1.8%	3.3%	1.3%	-2.7%	0.2%	-0.4%	0.6%	-1.0%	0.7%

*1987 = $900/month, 1988 = $1,000/month, 1989 = $1,050/month, 1990 = $1,250/month,1991 = $1,300/month, 1992 = $1,350/month, 1993 = $1,400/month, 1994 and 1995 = $1,450/month, and 1996 = $1,500/month of operator labor.

Table 34.

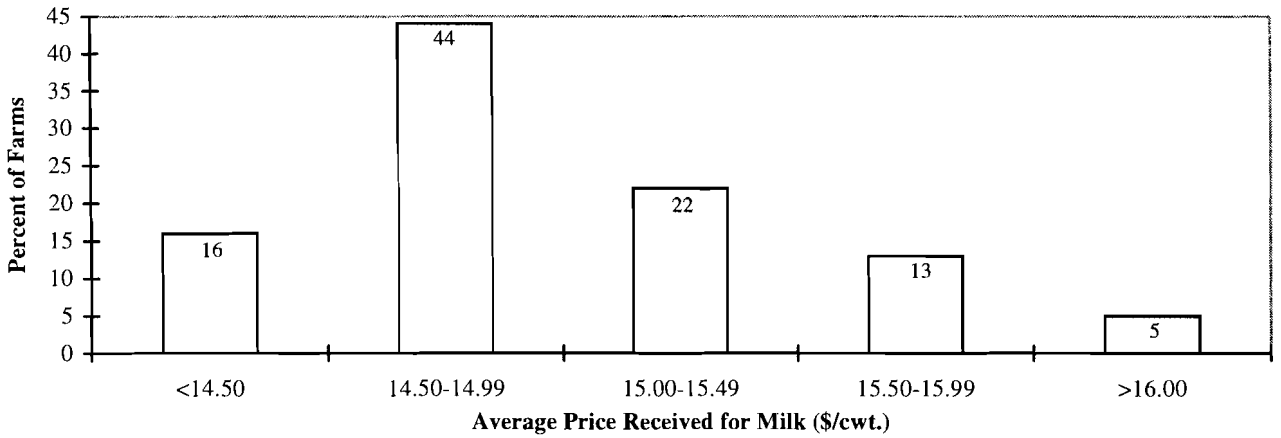
TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS
New York Dairy Farms, 1987 to 1996

Item	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Number of farms	426	406	409	395	407	357	343	321	321	300
Cropping Program										
Total tillable acres	305	302	316	325	330	346	351	392	399	415
Tillable acres rented	105	104	117	121	124	135	135	159	166	183
Hay crop acres	153	156	164	166	169	171	182	195	197	198
Corn silage acres	67	74	81	82	88	98	96	110	117	120
Hay crop, tons DM/acre	2.7	2.6	2.6	2.7	2.4	2.8	2.7	3.0	2.8	2.8
Corn silage, tons/acre	16.2	14.1	13.4	14.4	13.7	14.5	14.9	16.4	15.6	15.9
Fert. & lime exp./tillable acre	$27	$29	$29	$29	$25	$25	$25	$25	$25	$26
Machinery cost/cow	$413	$398	$425	$483	$438	$444	$430	$438	$402	$450
Dairy Analysis										
Number of cows	101	102	104	107	111	123	130	151	160	167
Number of heifers	79	82	83	87	92	96	100	116	121	124
Milk sold, cwt.	16,498	17,200	17,975	19,005	20,060	23,130	24,448	30,335	32,362	33,504
Milk sold/cow, lbs.	16,351	16,882	17,259	17,720	18,027	18,789	18,858	20,091	20,269	20,113
Purchased dairy feed/cwt. milk	$3.21	$3.71	$3.99	$4.27	$3.87	$3.91	$3.85	$3.89	$3.70	$4.73
Purc. grain & conc. as % of milk receipts	24%	28%	27%	28%	29%	28%	29%	28%	27%	30%
Purc. feed & crop exp/cwt. milk	$4.11	$4.62	$4.92	$5.21	$4.67	$4.70	$4.61	$4.61	$4.39	$5.46
Capital Efficiency										
Farm capital/cow	$5,894	$6,133	$6,407	$6,556	$6,688	$6,587	$6,462	$6,398	$6,264	$6,218
Real estate/cow	$2,805	$2,902	$2,977	$2,977	$3,063	$3,015	$2,932	$2,859	$2,763	$2,701
Mach. invest./cow	$1,057	$1,083	$1,154	$1,233	$1,267	$1,203	$1,165	$1,150	$1,098	$1,107
Asset turnover ratio	.45	.45	.48	.48	.43	.47	.46	.50	.49	.55
Labor Efficiency										
Worker equivalent	3.19	3.17	3.30	3.37	3.38	3.60	3.68	4.02	4.40	4.48
Operator/manager equivalent	1.32	1.35	1.39	1.39	1.37	1.41	1.45	1.49	1.56	1.56
Milk sold/worker, lbs.	516,728	542,708	544,598	563,349	593,297	641,893	664,868	755,178	736,269	747,861
Cows/worker	32	32	32	32	33	34	35	38	36	37
Labor cost/cow	$400	$426	$469	$541	$538	$552	$568	$558	$570	$582
Profitability & Financial Analysis										
Labor & mgmt. income/operator	$11,042	$11,911	$18,004	$14,328	$-955	$11,254	$9,000	$14,789	$10,346	$18,651
Farm net worth, end year	$398,209	$426,123	$468,848	$471,322	$480,131	$515,215	$542,126	$608,749	$624,261	$648,186
Percent equity	65%	66%	68%	66%	64%	64%	65%	63%	61%	61%

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 300 farms was $14.98 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 10.

VARIATION IN AVERAGE MILK PRICE
300 New York Dairy Farms, 1996



Sixty-six percent of the farms received from $14.50 to $15.49 per hundredweight of milk sold. Eighteen percent of the farms received $15.50 or more and 16 percent received less than $14.50 per hundredweight. Location and organization of markets are factors contributing to the difference in average milk prices on these dairy farms. Management practices on farms as well as in milk companies also affect farm milk prices. Seasonally of production and butterfat content are two variables that affect milk price. Butterfat content, which ranges from an average 3.7 percent to 4.0 percent as the milk price increases from less than $14.50 per cwt. to more than $16.00, 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 35.

DAIRY RELATED ACCRUAL EXPENSES
300 New York Dairy Farms, 1996

	Average 300 Farms		Average Top 10% Farms	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	$914	$4.56	$926	$4.30
Purchased dairy roughage	35	.17	31	.14
Total Purchased Dairy Feed	$949	$4.73	$957	$4.44
Purchased grain & concentrate as % of milk receipts	30%		29%	
Purchased feed & crop expense	$1,096	$5.46	$1,088	$5.06
Purchased feed & crop expense as % of milk receipts	36%		34%	
Breeding	$ 30	$.15	$ 25	$.12
Veterinary & medicine	84	.42	94	.44
Milk marketing	118	.59	102	.48
Bedding	30	.15	43	.20
Milking Supplies	70	.35	73	.34
Cattle lease	5	.03	10	.05
Custom boarding	20	.10	26	.12
Other livestock expense	71	.36	73	.34

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 36.

PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT OF MILK AND FARM INCOME MEASURES
300 New York Dairy Farms, 1996

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
$7.00 or more	39	128	5.8	17,364	$13,850	$-5,927	$-46.30
6.50 to 6.99	19	113	6.8	18,227	$26,933	$2,120	18.76
6.00 to 6.49	42	119	7.3	18,867	$28,996	$654	5.50
5.50 to 5.99	47	243	7.5	20,382	$81,577	$23,901	98.36
5.00 to 5.49	59	136	8.0	20,052	$56,908	$14,985	110.18
4.50 to 4.99	53	253	6.5	21,526	$129,192	$52,833	209.02
Less than 4.50	41	122	7.6	20,610	$76,627	$26,338	215.89

On average, farms with feed and crop expenses exceeding $6.00 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 below $4.50 per hundredweight of milk, the lowest cost category, reported the highest labor and management income per operator per cow. Farms in the lowest cost category had the next to 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 37.

CAPITAL EFFICIENCY
300 New York Dairy Farms, 1996

Item (Average for Year)		Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
Farm capital		$233,864	$6,218	$2,502	$4,476
Real estate			$2,701		$1,945
Machinery & equipment		$41,650	$1,107	$446	
Asset turnover ratio	.55				
Average Top 10% Farms:					
Farm capital		$255,127	$5,177	$2,648	$5,296
Real estate			$2,042		$2,089
Machinery & equipment		$42,385	$860	$440	
Asset turnover ratio	.70				

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 0.5 or higher.

Table 38.

ASSET TURNOVER AND PROFITABILITY
300 New York Dairy Farms, 1996

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.)
≥ .70	28	316	$4,405	$203,807	$59,564	$128,846
.60 to .69	42	330	5,443	229,413	51,463	136,513
.50 to .59	73	178	6,505	253,936	25,988	83,852
.40 to .49	77	110	7,236	225,494	426	31,261
.30 to .39	54	82	8,317	238,451	-1,091	28,669
Less than .30	26	51	10,888	279,042	-20,689	1,257

The 30 farms with the highest rates of return on all capital (without appreciation) were considerably above the average of all 300 farms in 2 measures of labor efficiency. The top 10 percent averaged 10 more cows per worker and sold 36 percent more milk per worker than the average of all farms.

Table 39.

LABOR EFFICIENCY
300 New York Dairy Farms, 1996

Labor Efficiency	Average Farms Total	Average Farms Per Worker*	Average Top 10% Farms Total	Average Top 10% Farms Per Worker*
Cows, average number	167	37	445	47
Milk sold, pounds	3,350,419	747,861	9,572,358	1,016,174
Tillable acres	415	93	870	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 4.48 full-time worker equivalents per farm (based on 230 hours per month). Thirty-six percent of the labor was supplied by the farm operator/managers. There were two operators on 108 farms, three on 34 farms, and 11 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 $102 per cow less on the 30 farms in the top decile.

Table 40.

LABOR FORCE INVENTORY AND COST ANALYSIS
300 New York Dairy Farms, 1996

Labor Force	Months*	Age	Years of Education	Value of Labor & Management
Operator number 1	13.5	47	13	$25,850
Operator number 2	4.4	43	14	8,124
Operator number 3	1.3	42	14	2,871
Operator number 4	0.4	32	14	746
Family paid	4.8			Total $37,591
Family unpaid	2.9			
Hired	26.4			
Total	53.7	÷ 12 =	4.48 Worker Equivalent	
			1.56 Operator/Manager Equivalent	
Average Top 10% Farms:				
Total	113.1	÷ 12 =	9.42 Worker Equivalent	
Operators'	19.1	÷ 12 =	1.59 Operator/Manager Equivalent	

	Average 300 Farms			Avg. Top 10% Farms	
Labor Costs	Total	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value operators' labor ($1,500/mo.)	$ 29,400	$ 176	$ .88	$ 69	$ .32
Family unpaid ($1,500/mo.)	4,350	26	.13	5	.03
Hired	63,428	380	1.89	485	2.25
Total Labor	$ 97,178	$ 582	$ 2.90	$ 559	$ 2.60
Machinery Cost	75,155	450	2.24	371	1.73
Total Labor & Machinery	$ 172,333	$ 1,032	$ 5.14	$ 930	$ 4.33

*See footnote for Table 39.

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 41.

MILK SOLD PER WORKER AND NET FARM INCOME
300 New York Dairy Farm, 1996

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	45	55	14,451	$9,415	$-10,349
400,000 to 499,999	58	79	17,413	26,896	376
500,000 to 599,999	50	101	18,007	34,222	4,881
600,000 to 699,999	49	128	19,705	52,150	12,194
700,000 to 799,999	26	203	20,392	76,285	22,044
800,000 to 899,999	25	199	20,882	68,547	25,174
900,000 & over	47	453	21,729	202,195	70,585

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 300 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 42.

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
300 New York Dairy Farms, 1996

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
14.1	651	14,248,916	24,025	4.9	21	57	1,138,608
6.8	266	5,607,051	22,037	3.8	19	45	912,193
5.3	186	3,650,914	21,015	3.4	18	40	793,393
4.2	138	2,594,240	20,222	3.1	17	37	679,606
3.5	112	2,027,310	19,078	2.8	16	34	620,615
3.0	89	1,632,345	18,150	2.5	15	31	558,524
2.6	73	1,311,881	17,149	2.3	14	28	505,026
2.2	62	1,075,438	16,328	2.1	13	26	463,816
1.8	50	808,021	14,947	1.8	11	23	388,967
1.4	40	548,071	11,967	1.4	8	19	274,100

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
$434	17%	$229	$683	$601	$3.68
608	24	322	827	787	4.50
685	26	374	904	853	4.83
746	28	411	971	915	5.14
804	30	447	1,036	991	5.38
872	32	479	1,088	1,062	5.66
939	33	520	1,154	1,123	5.96
1,005	36	571	1,251	1,184	6.29
1,083	38	642	1,354	1,280	6.83
1,211	43	801	1,610	1,475	7.80

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 42. (continued)

FARM BUSINESS CHART FOR
FARM MANAGEMENT COOPERATORS
300 New York Dairy Farms, 1996

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.
$3,619	$16.22	$1,247	$8.22	$2,152	$13.09
3,313	15.60	1,619	9.87	2,478	14.18
3,158	15.30	1,825	10.57	2,666	14.66
3,008	15.09	1,985	11.15	2,829	15.28
2,868	14.93	2,118	11.53	2,972	15.76
2,709	14.80	2,259	11.96	3,084	16.43
2,564	14.70	2,415	12.42	3,209	17.08
2,431	14.60	2,556	12.96	3,365	17.74
2,226	14.48	2,738	13.91	3,550	19.20
1,796	14.08	3,048	15.79	3,922	23.08

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
$321,819	$1,028	30.4%	$347,786	$1,157	$224,564	$162,869
115,924	711	22.1	134,601	843	76,776	52,013
79,222	579	18.2	94,669	688	43,729	32,464
56,906	504	15.7	65,624	580	25,394	21,026
41,652	430	13.4	52,280	512	16,055	12,477
31,778	354	11.3	41,047	426	8,594	6,199
23,448	259	8.5	29,141	330	-50	-55
12,232	146	5.2	18,606	231	-12,439	-10,090
1,044	14	0.5	6,389	78	-25,888	-21,207
-35,684	-377	-15.6	-26,815	-277	-65,783	-52,531

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 54-58.

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 43.

A FARM FINANCE CHECKLIST
300 New York Dairy Farms, 1996

	Average 300 Farms		Average Top 10% Farms*	
How farm assets are being used (average for the year):				
Total assets (capital) per cow	$6,218		$5,177	
Farm assets in livestock	24%		26%	
Farm assets in farm real estate	43%		39%	
Farm assets in machinery	18%		17%	
Measures of debt capacity & debt structure:				
Equity in the business	61%		56%	
Farm debt per cow	$2,451		$2,283	
Long term debt/asset ratio**	0.39		0.47	
Intermediate & current term debt/asset ratio**	0.40		0.42	
Intermediate & current term debt as % of total	58%		59%	
Debt repayment ability:***				
Cash flow coverage ratio	1.04		1.26	
Debt payments made per cow	$537		$520	
Debt payments made as % of milk receipts	18%		16%	
Indicators of annual financial progress:	Amount	Percent	Amount	Percent
Annual change in farm assets	+$62,838	+6.2%	+$200,210	+9.1%
Annual change in farm debts	+$22,041	+5.5%	+$30,002	+2.9%
Annual change in farm net worth	+$40,797	+6.7%	+$170,208	+14.5%

*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 249 farms that participated in DFBS both in 1995 and 1996. Twenty-eight of the 30 top 10 percent farms participated both years.

The most profitable farms carried $168 less debt per cow, the average equity in their businesses was 5 percent lower than that of the average of all 300 farms, but they had a greater ability to make 1996 debt payments.

Average farm assets grew 0.7 percentage points faster than debt during 1996 on the 300 dairy farms. Average farm net worth increased 6.7 percent.

The farm financial analysis chart is designed just like the farm business chart on pages 37-38 and may be used to measure the financial health of the farm business. Most of the financial measures are defined on pages 12, 14, 18, and 35 in this publication.

Table 44.

FINANCIAL ANALYSIS CHART
300 New York Dairy Farms, 1996

Liquidity (repayment)				
Planned Debt Payments Per Cow	Available for Debt Service Per Cow	Cash Flow Coverage Ratio	Debt Payments as Percent of Milk Sales	Debt Per Cow
$55	$873	3.10	2%	$179
195	672	1.87	7	795
306	575	1.47	10	1,411
363	512	1.21	12	1,808
403	463	1.05	14	2,134
445	406	0.90	16	2,509
490	346	0.77	17	2,809
544	254	0.62	20	3,140
630	158	0.27	24	3,541
863	-239	-0.63	40	4,640

Solvency				Profitability	
		Debt/Asset Ratio		Percent Rate of Return with appreciation on:	
Leverage Ratio*	Percent Equity	Current & Intermediate	Long Term	Equity	Investment**
-0.62	97%	0.03	0.00	21%	13%
0.12	89	0.11	0.00	12	9
0.25	80	0.17	0.07	9	7
0.37	73	0.24	0.20	6	5
0.51	66	0.31	0.28	4	4
0.64	61	0.38	0.38	2	2
0.79	56	0.43	0.46	-1	1
0.98	50	0.51	0.57	-4	-1
1.31	43	0.60	0.70	-9	-3
3.50	27	0.86	1.07	-46	-10

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
.82	$1,235	$524	$4,083	$243,775
.66	1,886	753	5,051	87,972
.59	2,168	895	5,528	58,367
.54	2,423	1,022	5,954	37,579
.50	2,685	1,144	6,387	25,888
.47	3,016	1,323	6,773	17,129
.44	3,479	1,472	7,285	9,226
.39	3,897	1,649	7,873	1,735
.34	4,502	1,896	8,752	-8,219
.25	6,861	2,618	11,530	-65,498

*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 300 New York dairy farms have been sorted into nine herd size categories and averages for the farms in each category are presented in Tables 45 through 49. Note that after the less than 40 cow category, the herd size categories increase by 15 cows up to 100 cows, then by 50 cows up to 200 cows and by 100 cows up to 300 cows. The 300 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 45). Net farm income without appreciation averaged $10,342 per farm for the less than 40 cow farms and $259,047 per farm for those with 300 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 70 to 84 cows averaged $476 net farm income per cow while the 150 to 199 cow dairy farms average only $289 net farm income per cow. The 85 to 99 herd size category had the second highest net farm income per cow at $437. Other factors that affect profitability and their relationship to the size classifications are shown in Table 46.

Table 45.

COWS PER FARM AND FARM FAMILY INCOME MEASURES
300 New York Dairy Farms, 1996

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 40	13	35	$10,342	$295	$-1,495	-2.5%
40 to 54	43	47	12,074	257	-4,641	-2.3%
55 to 69	37	62	22,087	356	-1,625	0.1%
70 to 84	38	75	35,664	476	476	2.5%
85 to 99	16	93	40,669	437	2,909	1.6%
100 to 149	60	122	44,577	365	7,663	3.0%
150 to 199	26	176	50,873	289	7,608	3.6%
200 to 299	32	246	90,922	370	27,809	6.3%
300 & over	35	604	259,047	429	80,897	8.8%

As herd size increased to 70 to 84 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 84 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.

Table 46.

COWS PER FARM AND RELATED FARM FACTORS
300 New York Dairy Farms, 1996

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 40	35	14,249	3,138	3.77	6.26	$7,657	$11.01	$19.38
40 to 54	47	16,116	3,981	3.57	7.68	7,569	11.85	18.63
55 to 69	62	17,775	4,840	3.00	6.81	7,777	11.49	17.27
70 to 84	75	17,815	5,091	3.53	8.33	7,608	10.97	16.25
85 to 99	93	20,067	5,299	3.00	7.83	7,254	11.57	16.50
100 to 149	122	18,397	6,140	3.00	7.57	6,811	11.87	16.16
150 to 199	176	19,188	6,657	2.85	7.58	6,497	12.56	16.02
200 to 299	246	20,676	8,563	2.30	6.67	5,669	12.26	15.04
300 & over	604	21,774	10,001	1.94	6.75	5,591	12.05	14.21

The dairy farms with 70 to 84 cows averaged 17,815 pounds of milk sold per cow, 1,768 pounds more per cow than the average of all the smaller farms in the study. The operating costs of producing milk were $10.97 per hundredweight on this group of farms, the lowest of all size categories.

The farms with 300 and more cows averaged more milk sold per cow than any other size category. With 21,774 pounds of milk sold per cow, farms in the largest herd size group averaged 15 percent more milk output per cow than the average of all herds in the summary with less than 300 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 5 percent of the 147 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 13 percent of the herds milking more often than 2X, the 150-199 cow herds reported 15 percent, 200-299 cow herds reported 38 percent and the 300 cow and larger herds reported 80 percent exceeding the 2X milking frequency.

A new technology, bovine somatotropin (bST), was used on a much larger proportion of the large herd farms. bST was used sometime during 1996 on 32 percent of the herds with less than 100 cows, 58 percent of the farms with 100 to 299 cows and on 91 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 790,000 pounds of milk sold per worker while the farms with less than 100 cows averaged less than 500,000 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 1.94 tillable acres per cow, and the most efficient use of farm capital with an average investment of $5,591 per cow.

The last column in Table 46 may be the most important in explaining why profits were significantly higher on the 300 plus cow farms. The 35 farms with 300 and more cows held their average total costs of producing milk to $14.21 per hundredweight, $1.88 below the $16.09 average for the remaining 265 dairy farms. The lower average costs of production plus a similar milk price gave the managers of the 300 plus cow dairy farms profit margins (milk price less total cost of producing milk) that averaged $1.76 per hundredweight above the average of the other 265 DFBS farms.

Table 47.

FARM BUSINESS SUMMARY BY HERD SIZE
300 New York Dairy Farms, 1996

Item	Farm Size:	Less than 40 Cows	40 to 54 Cows	55 to 69 Cows	70 to 84 Cows	85 to 99 Cows
Number of farms		13	43	37	38	16
ACCRUAL EXPENSES						
Hired labor		$1,585	$5,922	$10,227	$14,617	$21,349
Dairy grain & concentrate		22,348	34,066	50,516	60,000	84,469
Dairy roughage		3,153	1,389	2,101	3,424	805
Nondairy feed		0	340	90	62	83
Machine hire, rent & lease		1,747	2,285	2,247	3,089	2,038
Machine repairs & farm vehicle expense		3,830	7,931	9,176	12,078	17,211
Fuel, oil & grease		1,802	2,994	3,684	5,133	7,417
Replacement livestock		2,685	2,448	2,377	1,730	2,993
Breeding		874	1,616	2,273	3,156	4,292
Veterinary & medicine		1,016	2,604	3,629	4,753	5,856
Milk marketing		4,027	6,374	7,513	8,177	14,350
Bedding		152	439	726	962	2,249
Milking supplies		1,658	3,728	3,943	4,600	7,838
Cattle lease & rent		0	14	162	16	0
Custom boarding		0	98	554	358	114
Other livestock expense		1,828	1,816	4,703	4,776	5,875
Fertilizer & lime		1,887	2,904	3,305	5,027	7,814
Seeds & plants		397	1,546	2,046	3,229	4,343
Spray & other crop expense		805	1,924	1,592	2,761	4,944
Land, building & fence repair		1,612	2,123	2,521	4,039	5,298
Taxes & rent		3,167	5,515	6,946	8,637	10,338
Utilities		2,883	4,694	5,916	7,034	9,021
Interest paid		7,430	6,799	10,354	12,098	13,293
Misc. (including insurance)		2,387	3,899	5,365	5,525	8,814
Total Operating Expenses		$67,271	$103,469	$141,967	$175,281	$240,804
Expansion livestock		391	3,572	403	1,936	1,648
Machinery depreciation		4,552	7,427	8,607	11,715	15,886
Building depreciation		4,276	3,786	4,877	5,746	7,835
Total Accrual Expenses		$76,490	$118,254	$155,854	$194,678	$266,173
ACCRUAL RECEIPTS						
Milk sales		$74,456	$112,941	$161,269	$200,609	$279,503
Dairy cattle		5,158	9,153	6,952	16,178	15,722
Dairy calves		612	885	1,184	1,012	2,258
Other livestock		865	468	253	211	-744
Crops		1,553	2,175	2,421	6,329	3,939
Misc. receipts		4,188	4,706	5,862	6,004	6,165
Total Accrual Receipts		$86,832	$130,328	$177,941	$230,342	$306,842
PROFITABILITY ANALYSIS						
Net farm income (without appreciation)		$10,342	$12,074	$22,087	$35,664	$40,669
Net farm income (with appreciation)		$16,019	$18,402	$28,000	$42,998	$50,355
Labor & management income		$-1,615	$-5,708	$-1,917	$11,874	$3,694
Number of operators		1.08	1.23	1.18	1.36	1.27
Labor & management income/operator		$-1,495	$-4,641	$-1,625	$8,731	$2,909
Rates of return on:						
Equity capital without appreciation		-8.2%	-5.9%	-2.9%	0.6%	-0.5%
Equity capital with appreciation		-4.9%	-3.4%	-1.2%	2.4%	1.4%
All capital without appreciation		-2.5%	-2.3%	0.1%	2.5%	1.6%
All capital with appreciation		-0.4%	-0.6%	1.3%	3.8%	3.0%

Table 47. (continued)

FARM BUSINESS SUMMARY BY HERD SIZE
300 New York Dairy Farms, 1996

Item	Farm Size:	100 to 149 Cows	150 to 199 Cows	200 to 299 Cows	300 or More Cows
Number of farms		60	26	32	35
ACCRUAL EXPENSES					
Hired labor		$30,654	$58,185	$93,917	$317,724
Dairy grain & concentrate		97,562	157,641	245,741	591,829
Dairy roughage		5,066	11,578	16,297	8,470
Nondairy feed		223	2	83	201
Machine hire, rent & lease		5,172	5,919	12,472	37,845
Machine repairs & farm vehicle expense		21,400	30,198	38,446	85,271
Fuel, oil & grease		8,775	12,251	16,746	31,685
Replacement livestock		5,890	8,548	11,806	18,111
Breeding		3,817	5,016	6,545	16,809
Veterinary & medicine		8,868	14,680	20,582	59,563
Milk marketing		14,534	21,213	32,189	66,478
Bedding		2,309	3,947	5,965	27,396
Milking supplies		7,672	14,272	17,085	42,921
Cattle lease & rent		134	0	906	6,000
Custom boarding		1,679	2,202	5,528	17,882
Other livestock expense		7,710	10,261	17,049	49,862
Fertilizer & lime		9,301	12,561	15,711	35,088
Seeds & plants		5,742	8,327	10,097	22,709
Spray & other crop expense		5,279	7,738	11,151	26,953
Land, building & fence repair		5,457	7,087	10,465	29,860
Taxes & rent		12,343	23,209	24,172	55,918
Utilities		10,420	13,391	18,424	41,527
Interest paid		21,839	33,403	50,981	111,863
Misc. (including insurance)		9,443	12,286	16,307	35,515
Total Operating Expenses		$301,290	$473,916	$698,575	$1,737,481
Expansion livestock		4,992	12,995	23,568	31,904
Machinery depreciation		17,790	26,493	29,077	65,914
Building depreciation		9,318	11,441	21,893	52,022
Total Accrual Expenses		$333,390	$524,845	$772,412	$1,887,321
ACCRUAL RECEIPTS					
Milk sales		$337,610	$511,859	$764,897	$1,960,116
Dairy cattle		20,000	40,919	53,081	121,082
Dairy calves		1,935	3,218	4,589	9,151
Other livestock		231	-66	2,384	2,898
Crops		6,142	6,894	24,263	25,558
Misc. receipts		12,049	12,893	14,122	27,563
Total Accrual Receipts		$377,967	$575,718	$863,334	$2,146,368
PROFITABILITY ANALYSIS					
Net farm income (without appreciation)		$44,577	$50,873	$90,922	$259,047
Net farm income (with appreciation)		$54,759	$61,254	$110,229	$286,259
Labor & managment income		$13,103	$13,010	$51,446	$165,029
Number of operators		1.71	1.71	1.85	2.04
Labor & management income/operator		$7,663	$7,608	$27,809	$80,897
Rates of return on:					
Equity capital without appreciation		0.6%	1.1%	5.2%	10.0%
Equity capital with appreciation		2.4%	2.6%	7.9%	11.5%
All capital without appreciation		3.0%	3.6%	6.3%	8.8%
All capital with appreciation		4.2%	4.5%	7.7%	9.6%

Table 48.

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
300 New York Dairy Farms, 1996

Farms with:	Less than 40 Cows		40 to 54 Cows		55 to 69 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS						
Farm cash, checking & savings	$3,448	$3,095	$2,139	$2,696	$4,630	$3,852
Accounts receivable	5,054	5,462	8,202	8,465	12,233	12,188
Prepaid expenses	0	0	12	20	134	127
Feed & supplies	10,010	11,187	18,972	21,482	30,106	31,412
Livestock*	44,279	47,631	66,473	69,650	89,500	91,480
Machinery & equipment*	47,918	48,384	72,694	76,906	87,670	92,836
Farm Credit stock	1,166	968	993	967	1,291	1,251
Other stock & certificates	331	331	1,230	1,202	4,501	5,025
Land & buildings*	152,069	155,654	174,820	184,578	243,003	253,116
Total Farm Assets	$263,275	$272,712	$345,535	$365,966	$473,068	$491,287
Personal cash, checking & savings	$273	$109	$2,156	$1,973	$1,725	$1,122
Cash value of life insurance	3,991	4,002	6,108	4,797	6,213	5,836
Nonfarm real estate	5,727	5,727	29,087	29,237	19,177	20,081
Auto (personal share)	2,605	2,386	1,847	1,669	5,003	4,549
Stocks & bonds	0	709	2,928	3,015	10,884	11,331
Household furnishings	8,727	8,773	11,097	11,910	8,581	7,613
All other	1,009	882	2,020	2,920	971	1,572
Nonfarm Assets**	$22,332	$22,588	$55,243	$55,521	$52,554	$52,104
Farm & Nonfarm Assets	$285,607	$295,300	$400,778	$421,487	$525,622	$543,391
LIABILITIES						
Accounts payable	$6,922	$8,515	$5,313	$3,853	$4,914	$3,525
Operating debt	1,059	1,588	2,495	3,233	4,940	7,167
Short term	0	126	758	695	412	295
Advanced government receipt	0	0	80	18	0	0
Current Portion:						
Intermediate	5,444	6,080	6,532	7,944	8,670	9,359
Long Term	2,098	2,496	3,211	4,036	3,132	4,329
Intermediate***	37,336	38,674	29,340	30,091	36,764	33,538
Long term*	41,570	37,813	49,096	51,546	67,702	77,454
Total Farm Liabilities	$94,428	$95,293	$96,825	$101,416	$126,534	$135,667
Nonfarm Liabilities**	9,282	8,725	2,873	1,141	2,059	627
Farm & Nonfarm Liabilities	$103,710	$104,018	$99,698	$102,557	$128,593	$136,294
Farm Net Worth (Equity Capital)	$168,847	$177,419	$248,710	$264,550	$346,534	$355,620
Farm & Nonfarm Net Worth	$181,897	$191,282	$301,080	$318,930	$397,029	$407,097

FINANCIAL MEASURES	Less than 40 Cows	40 to 54 Cows	55 to 69 Cows
Percent Equity	65%	72%	72%
Debt/asset ratio-long term	0.24	0.28	0.31
Debt/asset ratio-intermediate & current	0.49	0.27	0.24
Change in net worth with appreciation	$8,572	$15,840	$9,086
Total farm debt per cow	$2,575	$2,113	$2,188
Debt payments made per cow	$615	$517	$447
Debt payments as % of milk sales	28%	21%	17%
Amount available for debt service	$15,964	$13,974	$24,219
Cash flow coverage ratio for 1996	0.91	0.67	1.01

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1996.

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

Table 48. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
300 New York Dairy Farms, 1996

Farms with:	70 to 84 Cows		85 to 99 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$3,487	$4,328	$7,236	$6,315
Accounts receivable	15,347	16,556	21,089	21,073
Prepaid expenses	51	124	0	44
Feed & supplies	37,108	41,945	51,686	57,157
Livestock*	109,608	119,348	145,265	149,204
Machinery & equipment*	108,290	115,434	158,003	168,608
Farm Credit stock	2,121	2,071	3,100	3,411
Other stock & certificates	5,226	5,713	8,434	9,773
Land & buildings*	276,358	278,153	266,283	272,608
Total Farm Assets	$557,596	$583,672	$661,096	$688,193
Personal cash, checking & savings	$1,292	$1,329	$18,373	$13,184
Cash value of life insurance	7,730	7,752	21,514	23,488
Nonfarm real estate	66,654	58,404	15,000	15,000
Auto (personal share)	3,917	3,567	5,240	6,900
Stocks & bonds	6,774	8,647	0	0
Household furnishings	9,729	10,229	9,100	7,700
All other	9,958	10,208	19,130	20,146
Nonfarm Assets**	$106,054	$100,136	$88,357	$86,418
Farm & Nonfarm Assets	$663,650	$683,808	$749,453	$774,611
LIABILITIES				
Accounts payable	$8,549	$8,730	$16,921	$9,567
Operating debt	7,795	7,518	4,818	2,489
Short term	375	600	1,665	0
Advanced government receipt	0	0	0	207
Current Portion:				
Intermediate	12,508	13,971	14,075	16,071
Long Term	4,548	4,621	4,857	6,025
Intermediate***	57,055	58,279	56,221	64,244
Long term*	75,295	73,824	78,053	81,088
Total Farm Liabilities	$166,125	$167,543	$176,609	$179,691
Nonfarm Liabilities**	3,912	4,445	6,100	7,031
Farm & Nonfarm Liabilities	$170,037	$171,988	$182,709	$186,722
Farm Net Worth (Equity Capital)	$391,471	$416,129	$484,487	$508,502
Farm & Nonfarm Net Worth	$493,613	$511,820	$566,744	$587,889

FINANCIAL MEASURES	70 to 84 Cows	85 to 99 Cows
Percent equity	71%	74%
Debt/asset ratio-long term	0.27	0.30
Debt/asset ratio-intermeidate & current	0.31	0.24
Change in net worth with appreciation	$24,658	$24,015
Total farm debt per cow	$2,1,48	$1,834
Debt payments made per cow	$468	$681
Debt payments as % of milk sales	17%	22%
Amount available for debt service	$35,710	$33,178
Cash flow coverage ratio for 1996	1.08	1.01

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1996.

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

Table 48. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
300 New York Dairy Farms, 1996

Farms with:	100 to 149 Cows		150 to 199 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$5,785	$6,929	$10,893	$8,739
Accounts receivable	26,948	29,437	40,128	45,286
Prepaid expenses	1,424	1,424	660	562
Feed & supplies	64,466	70,396	109,500	116,735
Livestock*	176,287	187,076	256,057	275,123
Machinery & equipment*	158,637	167,523	206,098	223,789
Farm Credit stock	4,537	4,266	4,741	4,734
Other stock & certificates	11,564	12,842	17,534	18,894
Land & buildings*	360,318	371,939	466,891	480,437
Total Farm Assets	$809,966	$851,832	$1,112,502	$1,174,299
Personal cash, checking & savings	$7,325	$8,454	$11,075	$14,051
Cash value of life insurance	6,974	6,963	12,312	14,417
Nonfarm real estate	68,221	68,368	25,077	23,885
Auto (personal share)	4,718	5,698	4,150	6,838
Stocks & bonds	8,550	10,102	5,291	6,424
Household furnishings	8,363	8,271	8,231	8,615
All other	8,801	6,552	10,125	9,945
Nonfarm Assets**	$112,952	$114,408	$76,261	$84,175
Farm & Nonfarm Assets	$922,918	$966,240	$1,188,763	$1,258,474
LIABILITIES				
Accounts payable	$13,069	$13,556	$27,252	$24,451
Operating debt	8,020	10,592	15,748	19,893
Short term	1,812	2,977	4,479	3,388
Advanced government receipt	0	0	0	750
Current Portion:				
Intermediate	19,005	22,530	30,289	40,378
Long Term	7,420	7,826	8,679	10,209
Intermediate***	92,418	98,518	159,777	173,950
Long term*	130,409	130,702	170,739	184,300
Total Farm Liabilities	$272,153	$286,699	$416,964	$457,319
Nonfarm Liabilities**	8,928	9,217	6,457	9,715
Farm & Nonfarm Liabilities	$281,081	$295,916	$423,421	$467,034
Farm Net Worth (Equity Capital)	$537,813	$565,133	$695,538	$716,980
Farm & Nonfarm Net Worth	$641,837	$670,324	$765,342	$791,440

FINANCIAL MEASURES	100 to 149 Cows	150 to 199 Cows
Percent equity	66%	61%
Debt/asset ratio-long term	0.35	0.38
Debt/asset ratio-intermeidate & current	0.33	0.39
Change in net worth with appreciation	$27,320	$21,442
Total farm debt per cow	$2,257	$2,459
Debt payments made per cow	$483	$506
Debt payments as % of milk sales	17%	17%
Amount available for debt service	$46,915	$72,752
Cash flow coverage ratio for 1996	1.02	0.94

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1996.

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

Table 48. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
300 New York Dairy Farms, 1996

Farms with:	200 to 299 Cows		More than 300 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash, checking & savings	$7,861	$9,697	$13,732	$15,047
Accounts receivable	49,104	54,677	112,382	119,170
Prepaid expenses	0	0	5,536	6,854
Feed & supplies	119,093	144,116	325,646	387,126
Livestock*	353,552	379,409	840,617	901,902
Machinery & equipment*	225,860	241,986	510,318	551,016
Farm Credit stock	8,601	7,845	17,974	18,613
Other stock & certificates	19,515	20,864	58,121	72,530
Land & buildings*	557,939	588,864	1,375,067	1,422,641
Total Farm Assets	$1,341,525	$1,447,458	$3,259,393	$3,494,899
Personal cash, checking & savings	$1,503	$2,220	$5,002	$5,335
Cash value of life insurance	12,366	12,095	17,316	20,921
Nonfarm real estate	16,692	16,692	18,571	18,571
Auto (personal share)	3,723	3,215	5,500	5,000
Stocks & bonds	19,362	22,111	3,816	4,333
Household furnishings	8,231	8,231	9,786	10,000
All other	7,900	7,605	3,857	15,293
Nonfarm Assets**	$69,777	$72,169	$63,848	$79,453
Farm & Nonfarm Assets	$1,411,302	$1,519,627	$3,323,241	$3,574,352
LIABILITIES				
Accounts payable	$37,068	$38,507	$36,708	$32,567
Operating debt	17,772	19,034	105,564	127,510
Short term	7,245	7,609	27,645	25,593
Advanced government receipts	0	203	842	0
Current Portion:				
Intermediate	44,820	48,438	92,846	96,100
Long Term	11,705	13,319	38,542	48,885
Intermediate***	293,363	317,994	589,184	587,362
Long term*	248,792	260,085	604,045	652,187
Total Farm Liabilities	$660,766	$705,189	$1,495,376	$1,570,204
Nonfarm Liabilities**	74	0	7,095	12,621
Farm & Nonfarm Liabilities	$660,840	$705,189	$1,502,471	$1,582,825
Farm Net Worth (Equity Capital)	$680,759	$742,269	$1,764,017	$1,924,695
Farm & Nonfarm Net Worth	$750,462	$814,438	$1,820,770	$1,991,527

FINANCIAL MEASURES	200 to 299 Cows	More than 300 Cows
Percent equity	51%	55%
Debt/asset ratio-long term	.44	.46
Debt/asset ratio-intermeidate & current	.52	.44
Change in net worth with appreciation	$61,510	$160,678
Total farm debt per cow	$2,702	$2,553
Debt payments made per cow	$594	$462
Debt payments as % of milk sales	19%	14%
Amount available for debt service	$115,882	$298,151
Cash flow coverage ratio for 1996	1.06	1.12

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1996.
***Includes Farm Credit stock & discounted lease payments for cattle & machinery.

Table 49.

SELECTED BUSINESS FACTORS BY HERD SIZE
300 New York Dairy Farms, 1996

Item — Farms with:	Less than 40 Cows	40 to 54 Cows	55 to 69 Cows	70 to 84 Cows	85 to 99 Cows
Number of farms	13	43	37	38	16
Cropping Program Analysis					
Total Tillable acres	132	168	186	265	279
Tillable acres rented*	26	72	65	95	113
Hay crop acres*	85	111	110	157	146
Corn silage acres*	13	28	34	50	71
Hay crop, tons DM/acre	1.9	2.0	2.4	2.5	2.6
Corn silage, tons/acre	12.6	13.8	14.3	13.9	14.7
Oats, bushels/acre	54	49	38	59	36
Forage DM per cow, tons	6.3	7.7	6.8	8.3	7.8
Tillable acres/cow	3.8	3.6	3.0	3.5	3.0
Fert. & lime expense/tillable acre	$14.30	$17.29	$17.77	$18.97	$28.01
Total machinery costs	$14,339	$24,377	$28,227	$37,608	$50,717
Machinery cost/tillable acre	$109	$145	$152	$142	$182
Dairy Analysis					
Number of cows	35	47	62	75	93
Number of heifers	21	35	45	64	73
Milk sold, lbs.	502,013	756,347	1,093,853	1,344,091	1,859,963
Milk sold/cow, lbs.	14,249	16,116	17,775	17,815	20,067
Operating cost of prod. milk/cwt.	$11.01	$11.85	$11.49	$10.97	$11.57
Total cost of prod. milk/cwt.	$19.38	$18.63	$17.27	$16.25	$16.50
Price/cwt. milk sold	$14.83	$14.93	$14.74	$14.93	$15.03
Purchased dairy feed/cow	$729	$754	$849	$846	$917
Purchased dairy feed/cwt. milk	$5.08	$4.69	$4.81	$4.72	$4.58
Purchased grain & concentrate as % of milk receipts	30%	30%	31%	30%	30%
Purchased feed & crop expense/cwt. milk	$5.70	$5.53	$5.44	$5.54	$5.50
Capital Efficiency					
Farm capital/worker	$167,496	$187,237	$213,353	$216,149	$192,207
Farm capital/cow	$7,657	$7,569	$7,777	$7,608	$7,254
Farm capital/tillable acre owned	$2,528	$3,745	$3,985	$3,357	$4,064
Real estate/cow	$4,382	$3,823	$4,001	$3,697	$2,897
Machinery investment/cow	$1,376	$1,591	$1,456	$1,491	$1,756
Asset turnover ratio	0.35	0.38	0.38	0.42	0.47
Labor Efficiency					
Worker equivalent	1.60	1.90	2.26	2.64	3.51
Operator/manager equivalent	1.08	1.23	1.18	1.36	1.27
Milk sold/worker, lbs.	313,758	398,077	484,006	509,125	529,904
Cows/worker	22	25	27	28	26
Work units/worker	222	264	281	308	277
Labor cost/cow	$800	$713	$651	$591	$649
Labor cost/tillable acre	$212	$200	$217	$167	$216

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

Table 49. (cont'd)

SELECTED BUSINESS FACTORS BY HERD SIZE
300 New York Dairy Farms, 1996

Item — Farms with:	100 to 149 Cows	150 to 199 Cows	200 to 299 Cows	300 or More Cows
Number of farms	60	26	32	35
Cropping Program Analysis				
Total Tillable acres	366	502	567	1,174
Tillable acres rented*	146	229	306	546
Hay crop acres*	183	246	244	452
Corn silage acres*	81	130	181	465
Hay crop, tons DM/acre	2.8	2.6	2.9	3.2
Corn silage, tons/acre	14.6	15.8	15.7	17.1
Oats, bushels/acre	49	41	0	48
Forage DM per cow, tons	7.6	7.6	6.7	6.8
Tillable acres/cow	3.0	2.9	2.3	1.9
Fert. & lime expense/tillable acre	$25.41	$25.02	$27.71	$29.89
Total machinery costs	$61,291	$85,608	$108,437	$247,248
Machinery cost/tillable acre	$167	$171	$191	$211
Dairy Analysis				
Number of cows	122	176	246	604
Number of heifers	93	142	171	444
Milk sold, lbs.	2,241,030	3,368,203	5,086,314	13,142,057
Milk sold/cow, lbs.	18,397	19,188	20,676	21,774
Operating cost of prod. milk/cwt.	$11.87	$12.56	$12.26	$12.05
Total cost of prod. milk/cwt.	$16.16	$16.02	$15.01	$14.21
Price/cwt. milk sold	$15.07	$15.20	$15.04	$14.91
Purchased dairy feed/cow	$841	$961	$1,065	$994
Purchased dairy feed/cwt. milk	$4.58	$5.02	$5.15	$4.57
Purchased grain & concentrate as % of milk receipts	29%	31	32%	30%
Purchased feed & crop expense/cwt. milk	$5.49	$5.87	$5.88	$5.21
Capital Efficiency				
Farm capital/worker	$227,644	$225,969	$234,763	$257,013
Farm capital/cow	$6,811	$6,497	$5,669	$5,591
Farm capital/tillable acre owned	$3,777	$4,188	$5,343	$5,378
Real estate/cow	$3,001	$2,691	$2,331	$2,316
Machinery investment/cow	$1,337	$1,221	$951	$879
Asset turnover ratio	0.47	0.51	0.63	0.64
Labor Efficiency				
Worker equivalent	3.65	5.06	5.94	13.14
Operator/manager equivalent	1.71	1.71	1.85	2.04
Milk sold/worker, lbs.	613,981	665,653	856,282	1,000,157
Cows/worker	33	35	41	46
Work units/worker	346	362	409	449
Labor cost/cow	$549	$533	$535	$594
Labor cost/tillable acre	$183	$187	$232	$306

*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 50 on page 53 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 604 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 large conventional farms showed average profits somewhat higher than the small freestall farm businesses.

Farm business charts have been computed for each of the five housing and herd size categories and are on pages 54-58. By comparing the farm's performance on the most appropriate business chart, a farm manager will be better able to evaluate his or her business performance.

Comparison of Farms by bST Usage

Farms adopting bovine somatotropin (bST) experienced greater increases in milk production, had larger herds and were more profitable than farms not adopting bST (Table 56). Forty-six farms used bST in both 1994, 1995, and 1996 and were also participants in the summary in 1993. In comparison, sixty farms did not use bST in 1994, 1995, and 1996, but were also participants in 1993.

Farms not using bST showed a decrease in pounds of milk sold per cow, from 17,810 pounds in 1993 to 17,258 pounds in 1996. Farms using bST increased milk sold per cow over 10 percent, from 20,077 pounds per cow in 1993 to 22,276 pounds per cow in 1996. Farms that used bST in 1994, 1995, and 1996 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 86 cows in 1993 to 95 in 1996. Farms adopting bST increased by 85 cows, up to 392 cows in 1996. Net farm income was steady to slightly higher on farms not adopting bST. Farms adopting bST saw net farm income increase by over $60,000 from 1993 to 1996. However, both groups saw a decrease in rate of return on equity capital over the time period studied. 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.

Comparison of Data, Same Farms, 1987 - 1996

Follow ten years of growth, change and progress made by 68 New York DFBS in Table 57, pages 60 and 61. Although milk receipts per cwt. increased less than 20 percent, net farm income without appreciation nearly doubled from 1987 to 1996.

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 300 dairy farms, 187 dairy farms selling less than 20,000 pounds of milk per cow, and 113 dairy farms selling 20,000 pounds and more in Table 58 on page 62. Table 59 on page 63 provides the same list of average accrual receipts and expenses for 122 farms averaging less than 80 cows per farm, 102 farms with 80 to 180 cows and 76 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.

Comparison of Dairy Farm Business Data by Region

Average farm business summary data from five regions of the State are compared in Tables 60 and 61. 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 30.4 percent over the last 10 years and they produced milk for an average total cost of $14.51 per hundredweight in 1996, $1.40 below the average of all the other New York dairy regions. Total milk production has declined 22.6 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 lowest returns to labor and management.

Intensive Grazing Farms vs. Non-Grazing Farms

In 1996, 59 of the 300 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 and production per cow and from the same and adjacent counties. In 1996 average net farm income was somewhat higher on intensive grazing farms. Operating cost of producing milk was 55 cents per cwt. lower and total costs were 72 cents per cwt. below the costs of production on the control farms. Table 62 also includes a comparison of 21 profitable grazing farms to 52 profitable non-grazing farms.

Comparison of Farms by Milking Frequency

Twenty percent of the 300 DFBS farms utilized three times per day (3X) milking in 1996, the same percent as in 1995. 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 63.

In 1996, the 3X farms averaged 54 more cows per farm, sold 1 percent more milk per cow, increased the total cost of producing milk 31 cents per hundredweight but showed an average 54 percent increase in net farm income, compared to the 3X farm averages for 1995. The 2X farms decreased milk output per cow 2.3 percent, increased total production costs $1.60 per hundredweight and increased average net farm income $8,865 per farm in 1996 compared to 1995.

The 3X farms compared with the 2X farms averaged 22 percent more milk per cow and 64 percent additional milk per worker in 1996, very similar to the differences found in 1995. In 1996 the average total cost of producing milk was 11 percent lower on 3X farms than on 2X dairies. In 1995 the 3X farms showed a 10 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-four dairy renter farms were smaller, on average, than the 300 owner-operated farms, but averaged nearly the same returns to labor and management as the average for 300 owned dairy farms (Table 64). E.B. 97-15 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 65. Additional data for the top 10 percent of farms is presented in many of the first 43 tables of this publication. Summary data for the 300 specialized dairy farms are presented in Table 66.

Table 50.

SELECTED BUSINESS FACTORS BY TYPE OF BARN AND HERD SIZE
270 New York Dairy Farms, 1996

Item	Conventional		Freestall		
Farms with:	<= 60 Cows	>60 Cows	<=150 Cows	151-300 Cows	≥300 Cows
Number of farms	69	55	63	48	35
Cropping Program Analysis					
Total Tillable acres	155	282	315	567	1,174
Tillable acres rented*	56	112	121	285	546
Hay crop acres*	102	160	167	254	452
Corn silage acres*	24	57	73	166	465
Hay crop, tons DM/acre	2.1	2.6	2.5	2.7	3.2
Corn silage, tons/acre	13.6	14.4	14.3	15.5	17.1
Oats, bushels/acre	48	55	33	42	48
Forage DM per cow, tons	7.1	8.1	7.3	6.9	6.8
Tillable acres/cow	3.3	3.3	3.0	2.6	1.9
Fert. & lime exp./tillable acre	$16.46	$24.64	$23.00	$26.67	$29.89
Total machinery costs	$22,250	$41,761	$53,443	$101,702	$247,248
Machinery cost/tillable acre	$144	$148	$170	$179	$211
Dairy Analysis					
Number of cows	47	86	105	222	604
Number of heifers	35	69	78	164	444
Milk sold, lbs.	758,356	1,510,688	1,967,450	4,491,591	13,142,057
Milk sold/cow, lbs.	16,061	17,562	18,789	20,213	21,774
Operating cost of prod. milk/cwt.	$11.52	$11.10	$12.21	$12.28	$12.05
Total cost of prod. milk/cwt.	$18.39	$15.94	$16.73	$15.28	$14.21
Price/cwt. milk sold	$14.85	$15.00	$15.04	$15.07	$14.91
Purchased dairy feed/cow	$792	$791	$881	$1,044	$994
Purchased dairy feed/cwt. milk	$4.91	$4.50	$4.70	$5.16	$4.57
Purchased grain & conc. as % milk rec.	31%	29%	30%	32%	30%
Purchased feed & crop exp./cwt. milk	$5.62	$5.40	$5.57	$5.94	$5.21
Capital Efficiency					
Farm capital/worker	$189,979	$203,875	$233,684	$237,054	$263,840
Farm capital/cow	$7,599	$7,136	$7,166	$5,958	$5,591
Farm capital/tillable acre owned	$3,608	$3,631	$3,879	$4,691	$5,378
Real estate/cow	$3,974	$3,269	$3,279	$2,476	$2,316
Machinery investment/cow	$1,486	$1,486	$1,427	$1,030	$879
Asset turnover ratio	0.38	0.43	0.45	0.59	0.64
Labor Efficiency					
Worker equivalent	1.88	3.01	3.22	5.58	12.80
Operator/manager equivalent	1.24	1.42	1.56	1.90	2.04
Milk sold/worker, lbs.	403,381	501,890	611,009	804,945	1,026,723
Cows/worker	25	29	33	40	47
Labor cost/cow	$706	$587	$572	$532	$594
Labor cost/tillable acre	$214	$179	$191	$208	$306
Profitability & Balance Sheet Analysis					
Net farm income (without appreciation)	$14,070	$41,852	$30,343	$78,707	$259,047
Labor & management income/operator	$-3,360	$9,116	$972	$20,575	$80,897
Rate Return on all capital with appreciation	-0.1%	4.1%	3.1%	6.6%	9.6%
Farm debt/cow	$2,175	$1,817	$2,424	$2,587	$2,553
Percent equity	71%	74%	66%	56%	55%

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

Table 51.

FARM BUSINESS CHART FOR SMALL CONVENTIONAL STALL DAIRY FARMS
69 Conventional Stall Dairy Farms with 60 or Less Cows, New York, 1996

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
2.97	60	1,203,435	21,572	3.7	21	50	799,962
2.51	57	1,013,799	19,519	3.1	18	36	579,006
2.13	54	938,605	18,174	2.7	17	30	500,345
2.00	51	828,545	17,275	2.4	16	28	480,813
1.96	48	766,044	16,753	2.2	15	26	437,443
1.77	46	715,358	16,026	2.1	14	24	384,217
1.58	44	660,636	15,128	1.9	12	22	352,174
1.50	42	604,158	13,790	1.6	11	21	320,834
1.42	39	550,236	12,459	1.5	9	20	271,110
1.07	33	366,328	9,254	1.0	6	17	205,488

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
$340	18%	$153	$680	$431	$3.48
525	23	298	902	666	4.38
619	26	353	1,017	791	4.95
664	29	392	1,084	830	5.28
708	30	432	1,137	859	5.45
741	32	464	1,197	909	5.86
783	34	498	1,264	978	6.18
849	36	574	1,342	1,055	6.42
945	39	679	1,467	1,143	6.96
1,172	47	903	1,819	1,308	7.82

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.
$3,227	$8.08	$14.39	$47,874	$1,027	$26,356	$88,439
2,915	8.91	15.53	37,039	750	17,242	30,717
2,731	9.79	16.46	28,499	593	10,327	19,252
2,573	10.61	17.03	23,329	524	4,918	15,786
2,481	11.33	17.65	18,072	406	2,053	10,484
2,380	11.66	18.44	12,298	248	-2,090	6,180
2,220	12.40	19.46	7,513	160	-6,685	1,006
2,066	12.97	20.82	3,382	75	-14,211	-3,150
1,830	14.00	22.97	-2,821	-75	-22,342	-8,142
1,370	16.62	27.50	-29,650	-562	-49,645	-22,857

Table 52.

FARM BUSINESS CHART FOR LARGE CONVENTIONAL STALL DAIRY FARMS

55 Conventional Stall Dairy Farms with More Than 60 Cows, New York, 1996

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
5.29	142	2,417,978	22,410	5.3	21	48	816,762
4.11	111	2,016,357	20,557	3.7	18	39	666,640
3.39	101	1,863,454	19,202	3.5	17	36	614,542
3.15	92	1,617,046	18,293	3.2	16	33	579,071
3.00	82	1,526,996	18,043	2.8	15	31	544,006
2.87	76	1,389,911	17,627	2.5	15	30	524,015
2.59	74	1,309,439	17,007	2.4	14	27	489,153
2.50	70	1,219,710	16,479	2.1	12	25	443,699
2.14	66	1,153,288	15,248	1.9	11	22	395,763
1.74	64	907,431	13,017	1.4	5	18	286,535

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
$416	15%	$280	$771	$612	$3.51
554	22	342	849	704	4.19
634	24	399	890	787	4.60
669	27	440	966	848	4.93
726	30	470	1,039	883	5.19
799	32	507	1,111	945	5.62
880	33	539	1,221	1,070	5.89
951	34	568	1,312	1,146	6.11
1,066	38	645	1,385	1,234	6.80
1,145	44	781	1,607	1,317	7.64

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.
$3,347	$7.25	$12.60	$126,115	$1,196	$64,873	$90,224
3,081	8.67	13.68	76,332	905	38,043	64,355
2,865	9.90	14.61	58,470	798	29,481	39,264
2,755	10.53	15.27	50,403	626	19,651	31,945
2,677	11.17	15.73	44,176	540	16,879	26,831
2,626	11.44	16.40	39,967	452	12,437	22,572
2,521	11.83	16.89	31,455	370	6,386	11,896
2,410	12.42	17.28	25,322	327	-1,715	6,776
2,309	13.50	18.29	17,743	173	-20,528	225
1,985	15.64	22.38	-24,090	-317	-45,435	-28,152

Table 53.

FARM BUSINESS CHART FOR SMALL FREESTALL DAIRY FARMS

63 Freestall Barn Dairy Farms with 150 or Less Cows, New York, 1996

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
5.12	145	3,165,908	24,516	4.3	19	59	1,036,200
4.44	140	2,809,190	22,148	3.6	18	43	836,779
3.94	131	2,462,621	20,888	3.2	17	38	727,081
3.63	122	2,231,843	20,001	3.0	16	35	656,951
3.35	114	2,097,629	19,221	2.8	15	34	630,173
3.16	106	1,896,454	18,516	2.7	15	33	598,483
2.91	96	1,722,674	17,205	2.5	14	31	545,410
2.50	81	1,522,757	16,352	2.2	13	28	498,264
2.19	72	1,250,795	15,632	1.8	12	25	466,291
1.55	57	888,080	13,516	1.3	10	22	390,808

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	18%	$260	$681	$710	$3.85
629	24	380	891	845	4.68
734	26	425	951	915	5.16
788	29	462	1,011	972	5.32
836	30	493	1,055	999	5.42
882	32	548	1,100	1,072	5.71
943	35	577	1,156	1,130	6.19
989	37	615	1,233	1,189	6.48
1,084	38	646	1,318	1,282	6.93
1,208	41	790	1,582	1,446	7.59

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.
$3,740	$9.76	$14.32	$97,857	$872	$45,473	$85,446
3,316	10.35	15.01	69,667	619	25,567	60,647
3,090	10.85	15.57	51,429	511	18,664	40,918
2,984	11.52	16.11	39,709	446	11,608	27,830
2,880	12.04	16.64	35,698	364	7,908	20,346
2,766	12.39	17.21	28,862	274	1,195	15,396
2,588	12.83	17.64	21,470	193	-5,943	8,719
2,488	13.70	18.46	10,039	96	-13,657	910
2,317	14.80	19.46	-3,808	-35	-24,434	-9,794
2,049	16.12	21.51	-28,596	-380	-47,468	-43,680

Table 54.

FARM BUSINESS CHART FOR MEDIUM FREESTALL DAIRY FARMS

48 Freestall Barn Dairy Farms with 151-300 Cows, New York, 1996

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
7.88	283	6,803,006	25,468	4.3	23	68	1,299,135
7.12	270	5,867,677	23,534	3.9	20	54	1,086,749
6.56	259	5,404,483	22,532	3.8	19	49	990,062
6.19	248	5,030,295	21,375	3.5	18	45	897,337
6.01	237	4,690,388	20,783	3.3	17	41	828,328
5.42	219	4,194,819	20,184	3.0	15	39	796,346
5.20	201	3,941,415	19,165	2.5	15	36	770,387
4.75	187	3,582,997	18,366	2.3	14	35	693,874
4.16	176	3,383,605	16,961	2.0	13	31	613,575
3.27	163	2,754,728	14,384	1.2	9	27	486,569

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
$637	21%	$258	$657	$822	$4.17
747	26	302	745	964	4.71
832	27	351	798	1,036	5.02
898	30	408	846	1,085	5.40
971	32	443	944	1,147	5.75
1,008	33	494	1,013	1,194	6.18
1,044	36	526	1,083	1,269	6.50
1,092	37	570	1,179	1,389	7.03
1,199	41	643	1,364	1,443	7.59
1,291	45	728	1,527	1,719	8.68

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.
$3,824	$9.74	$12.80	$233,259	$991	$110,437	$184,695
3,636	10.64	13.88	154,020	649	82,859	137,445
3,413	11.12	14.28	124,422	566	73,344	104,559
3,259	11.52	14.50	109,516	487	50,964	80,265
3,124	11.89	15.02	95,367	450	38,058	64,476
2,991	12.42	15.53	82,390	379	30,202	50,655
2,902	12.85	16.18	63,806	315	12,729	28,330
2,733	13.91	16.97	45,286	216	-153	9,867
2,518	14.49	17.48	-857	-5	-25,875	-18,458
2,200	16.03	18.97	-74,163	-317	-79,530	-91,546

Table 55.

FARM BUSINESS CHART FOR LARGE FREESTALL DAIRY FARMS

35 Freestall Barn Dairy Farms with 300 or More Cows, New York, 1996

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
32.14	1,697	37,033,757	24,803	5.7	20	61	1,378,113
17.15	955	21,804,174	24,077	4.7	20	53	1,137,106
15.36	703	15,227,082	23,149	3.8	20	50	1,084,070
14.27	597	13,003,869	22,525	3.6	18	47	1,029,827
12.86	525	12,027,844	22,250	3.3	18	46	996,098
10.92	493	10,351,685	21,744	3.1	18	45	943,313
10.17	406	8,809,368	21,091	2.6	16	41	922,957
9.30	366	7,925,753	20,653	2.5	15	39	883,987
8.62	346	7,172,671	19,853	2.3	14	39	773,624
7.16	313	6,410,978	18,614	2.2	12	33	684,809

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
$711	23%	$243	$723	$901	$4.39
800	25	310	884	1,006	4.64
877	28	373	922	1,072	4.89
979	29	398	953	1,107	5.08
1,005	31	411	1,003	1,140	5.42
1,023	32	446	1,036	1,189	5.64
1,068	34	474	1,061	1,266	5.76
1,131	35	485	1,110	1,293	5.87
1,167	36	541	1,208	1,336	5.93
1,232	39	662	1,408	1,396	6.45

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.
$3,715	$10.54	$12.90	845,578	$730	$591,699	$527,102
3,567	11.34	13.31	470,286	655	227,950	349,326
3,394	11.59	13.70	343,687	572	168,299	286,678
3,351	11.90	13.92	318,634	535	115,496	256,533
3,314	12.13	14.32	253,916	512	83,964	201,351
3,257	12.31	14.83	212,235	422	66,114	139,175
3,200	12.47	15.27	168,430	368	51,618	97,918
3,101	12.75	15.52	121,635	318	33,784	63,594
2,989	13.15	15.75	72,892	189	12,134	37,437
2,712	13.98	16.26	17,407	42	-29,249	-147,916

Table 56.

bST NON-USERS VS. USERS
Same 106 Farms, 1993 - 1996

Selected Factors	60 Farms Not Using bST in 1994, 1995, & 1996				46 Farms Using bST in 1994, 1995, & 1996			
	1993	1994	1995	1996	1993	1994	1995	1996
Size of Business								
Average number of cows	86	90	92	95	307	334	367	392
Average number of heifers	69	70	72	74	225	252	272	288
Milk sold, lbs.	1,539,947	1,576,752	1,620,514	1,637,819	6,161,933	7,356,066	8,208,923	8,730,730
Worker equivalent	2.77	2.75	2.91	2.82	7.32	7.89	8.56	9.08
Total tillable acres	264	268	271	274	650	680	726	792
Rates of Production								
Milk sold per cow, lbs.	17,810	17,617	17,685	17,258	20,007	22,051	22,386	22,276
Hay DM per acre, tons	2.3	2.8	2.4	2.6	3.2	3.5	3.4	3.1
Corn silage per acre, tons	13	16	13	13	16	17	17	16
Labor Efficiency								
Cows per worker	31	32	32	34	42	42	43	43
Milk sold per worker, lbs.	555,938	573,364	556,878	580,787	841,794	932,328	958,986	961,534
Cost Control								
Grain & conc. purchased as % of milk sales	31%	29%	30%	32%	29%	28%	27%	29%
Dairy feed & crop expense per cwt. milk	$4.81	$4.78	$4.59	$5.57	$4.79	$4.67	$4.34	$5.27
Labor and machinery costs per cow	$1,031	$1,072	$1,058	$1,081	$1,025	$1,064	$1,044	$1,133
Operating cost of producing milk per cwt.	$10.05	$9.95	$10.53	$11.42	$10.26	$10.46	$10.37	$12.01
Capital Efficiency (average for year)								
Farm capital per cow	$7,542	$7,411	$7,412	$7,328	$6,655	$6,724	$6,522	$6,586
Machinery and equipment per cow	$1,530	$1,501	$1,520	$1,495	$1,155	$1,155	$1,152	$1,187
Asset turnover ratio	0.39	0.40	0.36	0.42	0.52	0.55	0.55	0.60
Profitability								
Net farm income without appreciation	$31,100	$33,325	$27,957	$37,807	$104,453	$141,611	$139,059	$169,776
Net farm income with appreciation	$40,220	$40,579	$33,482	$45,802	$129,352	$168,201	$173,680	$185,663
Labor & management income per op/mgr	$2,149	$3,480	$-4,313	$5,130	$34,612	$59,439	$53,926	$76,349
Rate return on equity capital w/appreciation	1.0%	1.3%	-2.8%	0.5%	5.0%	4.5%	8.0%	-3.5%
Rate return on all capital w/appreciation	2.4%	2.6%	-0.1%	2.4%	5.4%	6.4%	6.1%	6.9%
Financial Summary (end of year)								
Farm net worth	$450,879	$461,757	$470,375	$493,863	$1,111,254	$1,213,940	$1,295,487	$1,399,072
Debt to asset ratio	0.25	0.24	0.24	0.24	0.38	0.38	0.38	0.40
Farm debt per cow	$1,815	$1,779	$1,751	$1,687	$2,336	$2,421	$2,383	$2,540

Table 57.

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 68 New York Dairy Farms, 1987 - 1996

Selected Factors	1987	1988	1989	1990
Milk receipts per cwt. milk	$12.83	$13.08	$14.53	$15.02
Size of Business				
Average number of cows	123	130	140	145
Average number of heifers	96	102	107	119
Milk sold, cwt.	21,467	23,096	25,565	26,860
Worker equivalent	3.55	3.74	3.91	4.07
Total tillable acres	343	353	360	402
Rates of Production				
Milk sold per cow, lbs.	17,417	17,780	18,311	18,489
Hay DM per acre, tons	2.7	2.7	2.5	2.8
Corn silage per acre, tons	15	13	13	14
Labor Efficiency				
Cows per worker	35	35	36	36
Milk sold per worker, lbs.	604,701	617,545	653,841	659,959
Cost Control				
Grain & concen. purchased as % of milk sales	23%	27%	27%	27%
Dairy feed & crop expense per cwt. milk	$3.99	$4.54	$4.98	$5.09
Operating cost of producing cwt. milk	$8.63	$8.84	$9.80	$10.67
Total cost of producing cwt. milk	$13.50	$13.75	$14.89	$15.88
Hired labor cost per cwt.	$1.13	$1.15	$1.29	$1.45
Interest paid per cwt.	$0.86	$0.81	$0.87	$0.84
Labor & machinery costs per cow	$832	$858	$926	$1,051
Capital Efficiency				
Farm capital per cow	$6,120	$6,368	$6,742	$7,046
Machinery & equipment per cow	$1,200	$1,223	$1,331	$1,441
Real estate per cow	$2,901	$2,975	$3,072	$3,161
Livestock investment per cow	$1,198	$1,278	$1,378	$1,476
Asset turnover ratio	0.49	0.48	0.53	0.50
Profitability				
Net farm income without appreciation	$59,322	$66,247	$86,445	$74,229
Net farm income with appreciation	$85,745	$84,864	$118,556	$89,546
Labor & management income per operator/manager	$27,604	$32,046	$44,001	$27,435
Rate return on:				
Equity capital with appreciation	8.9%	7.6%	11.0%	4.3%
All capital with appreciation	8.7%	7.2%	10.0%	5.4%
All capital without appreciation	4.8%	4.2%	5.8%	4.0%
Financial Summary, End Year				
Farm net worth	$497,094	$533,784	$612,501	$637,177
Change in net worth with appreciation	$54,454	$43,220	$77,961	$21,841
Debt to asset ratio	0.30	0.30	0.28	0.30
Farm debt per cow	$1,780	$1,846	$1,834	$2,084

Table 57. (continued)

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 68 New York Dairy Farms, 1987 - 1996

1991	1992	1993	1994	1995	1996
$12.95	$13.56	$13.21	$13.50	$13.07	$15.03
156	176	196	211	224	236
130	132	146	160	167	174
29,217	34,013	37,799	43,914	47,157	50,140
4.35	4.70	5.04	5.18	5.42	5.66
409	414	438	460	480	516
18,877	19,295	19,296	20,833	21,014	21,214
2.5	2.8	2.7	3.0	2.7	2.7
13	14	14	16	14	15
36	37	39	41	41	42
671,652	723,691	749,986	847,763	870,060	886,420
29%	28%	28%	27%	27%	29%
$4.75	$4.73	$4.63	$4.52	$4.38	$5.29
$9.92	$9.92	$9.89	$9.87	$10.22	$11.20
$15.00	$14.76	$14.72	$14.68	$14.88	$16.03
$1.45	$1.45	$1.53	$1.47	$1.40	$1.44
$0.90	$0.75	$0.73	$0.69	$0.79	$0.77
$1,032	$1,031	$1,060	$1,085	$1,042	$1,115
$7,169	$7,239	$7,410	$7,375	$7,280	$7,261
$1,492	$1,476	$1,519	$1,545	$1,520	$1,528
$3,241	$3,344	$3,441	$3,368	$3,309	$3,275
$1,492	$1,486	$1,512	$1,531	$1,509	$1,481
0.45	0.47	0.44	0.47	0.44	0.50
$41,332	$79,770	$71,490	$93,682	$78,424	$116,049
$67,383	$104,941	$89,603	$114,632	$101,361	$132,423
$2,974	$34,548	$20,551	$38,376	$22,663	$52,847
1.3%	5.4%	2.9%	4.3%	0.4%	4.6%
3.5%	5.5%	3.9%	4.7%	2.8%	5.5%
1.0%	3.2%	2.2%	3.3%	1.9%	4.1%
$656,833	$727,276	$767,849	$830,411	$874,224	$953,627
$11,357	$53,598	$36,790	$55,740	$44,055	$73,041
0.32	0.31	0.31	0.30	0.31	0.30
$2,114	$2,056	$2,042	$2,035	$2,017	$1,967

Table 58.

FARM RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT FOR TWO LEVELS OF MILK PRODUCTION
300 New York Dairy Farms, 1996

Item	300 Dairy Farms		187 Dairy Farms Milk/Cow <20,000#		113 Dairy Farms Milk/Cow ≥20,000#	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	$3,005	$14.98	$2,551	$15.02	$3,301	$14.95
Dairy cattle	195	0.97	173	1.02	210	0.95
Dairy calves	17	0.08	16	0.09	17	0.08
Other livestock	5	0.02	8	0.05	2	0.01
Crops	54	0.27	60	0.35	51	0.23
Government receipts	37	0.19	49	0.29	30	0.14
All other	28	0.14	32	0.19	25	0.11
TOTAL ACCRUAL RECEIPTS	$3,341	$16.65	$2,888	$17.01	$3,636	$16.47
ACCRUAL EXPENSES						
Labor: Hired	$380	$1.89	$230	$1.36	$478	$2.16
Feed: Dairy grain & concentrate	914	4.56	827	4.87	970	4.40
Dairy roughage	35	0.17	40	0.23	32	0.14
Nondairy	1	0.00	2	0.01	0	0.00
Machinery:Machine hire, rent & lease	51	0.25	39	0.23	58	0.26
Machinery repairs & vehicle expense	155	0.77	151	0.89	157	0.71
Fuel, oil & grease	62	0.31	65	0.39	59	0.27
Livestock: Replacement livestock	39	0.19	44	0.26	35	0.16
Breeding	30	0.15	28	0.16	32	0.14
Vet & medicine	84	0.42	63	0.37	97	0.44
Milk marketing	118	0.59	112	0.66	123	0.56
Bedding	30	0.15	14	0.08	41	0.18
Milking supplies	70	0.35	67	0.39	72	0.33
Cattle lease & rent	5	0.03	2	0.01	7	0.03
Custom boarding	20	0.10	5	0.03	30	0.14
Other livestock expense	71	0.36	44	0.26	89	0.40
Crops: Fertilizer & lime	64	0.32	67	0.39	62	0.28
Seeds & plants	40	0.20	42	0.25	39	0.18
Spray & other crop expense	43	0.21	34	0.20	49	0.22
Real Estate: Land, building & fence repair	47	0.23	37	0.22	53	0.24
Taxes	52	0.26	62	0.36	45	0.20
Rent & lease	50	0.25	42	0.25	55	0.25
Other: Insurance	36	0.18	43	0.25	32	0.15
Utilities (farm share)	78	0.39	78	0.46	77	0.35
Interest paid	183	0.91	177	1.05	187	0.85
Miscellaneous	32	0.16	30	0.17	33	0.15
TOTAL OPERATING EXPENSES	$2,688	$13.40	$2,344	$13.81	$2,912	$13.19
Expansion livestock	56	0.28	47	0.27	61	0.28
Machinery depreciation	128	0.63	127	0.75	128	0.58
Building depreciation	82	0.41	71	0.42	89	0.40
TOTAL ACCRUAL EXPENSES	$2,954	$14.72	$2,589	$15.25	$3,190	$14.45

Table 59.

FARM RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT FOR THREE HERD SIZE CATEGORIES
300 New York Dairy Farms, 1996

Item	122 Dairy Farms with <80 Cows		102 Dairy Farms with 80-180 Cows		76 Dairy Farms with ≥ 180 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	$2,537	$14.85	$2,838	$15.12	$3,197	$14.95
Dairy cattle	169	0.99	183	0.98	208	0.97
Dairy calves	17	0.10	18	0.09	16	0.08
Other livestock	6	0.04	0	0.00	6	0.03
Crops	46	0.27	54	0.29	57	0.27
Government receipts	60	0.35	52	0.28	27	0.12
All other	37	0.21	34	0.18	24	0.10
TOTAL ACCRUAL RECEIPTS	$2,872	$16.80	$3,179	$16.94	$3,535	$16.52
ACCRUAL EXPENSES						
Labor: Hired	$151	$0.88	$270	$1.44	$478	$2.23
Feed: Dairy grain & concentrate	779	4.56	834	4.44	983	4.60
Dairy roughage	44	0.26	36	0.19	32	0.15
Nondairy	3	0.02	1	0.01	0	0.00
Machinery:Machine hire, rent & lease	40	0.24	39	0.21	58	0.27
Mach. repairs & vehicle expense	155	0.91	179	0.95	146	0.68
Fuel, oil & grease	63	0.37	73	0.39	57	0.27
Livestock: Replacement livestock	43	0.25	40	0.21	37	0.17
Breeding	37	0.22	34	0.18	27	0.13
Vet & medicine	58	0.34	74	0.40	94	0.44
Milk marketing	122	0.71	123	0.66	116	0.54
Bedding	10	0.06	21	0.11	38	0.18
Milking supplies	69	0.40	70	0.37	71	0.33
Cattle lease & rent	1	0.01	1	0.00	8	0.04
Custom boarding	6	0.03	13	0.07	26	0.12
Other livestock expense	57	0.33	63	0.34	78	0.37
Crops: Fertilizer & lime	62	0.36	74	0.40	61	0.28
Seeds & plants	34	0.20	47	0.25	40	0.18
Spray & other crop expense	31	0.18	47	0.25	44	0.21
Real Estate: Land, building & fence repair	45	0.27	49	0.26	46	0.22
Taxes	84	0.49	68	0.36	38	0.18
Rent & lease	29	0.17	36	0.19	61	0.29
Other: Insurance	47	0.28	50	0.27	28	0.13
Utilities (farm share)	95	0.56	86	0.46	71	0.33
Interest paid	168	0.98	170	0.91	193	0.90
Miscellaneous	31	0.18	30	0.16	33	0.15
TOTAL OPERATING EXPENSES	$2,265	$13.25	$2,530	$13.48	$2,865	$13.39
Expansion livestock	32	0.19	37	0.20	69	0.32
Machinery depreciation	149	0.87	152	0.81	114	0.53
Building depreciation	81	0.47	74	0.40	86	0.40
TOTAL ACCRUAL EXPENSES	$2,527	$14.78	$2,793	$14.89	$3,133	$14.65

Table 60.

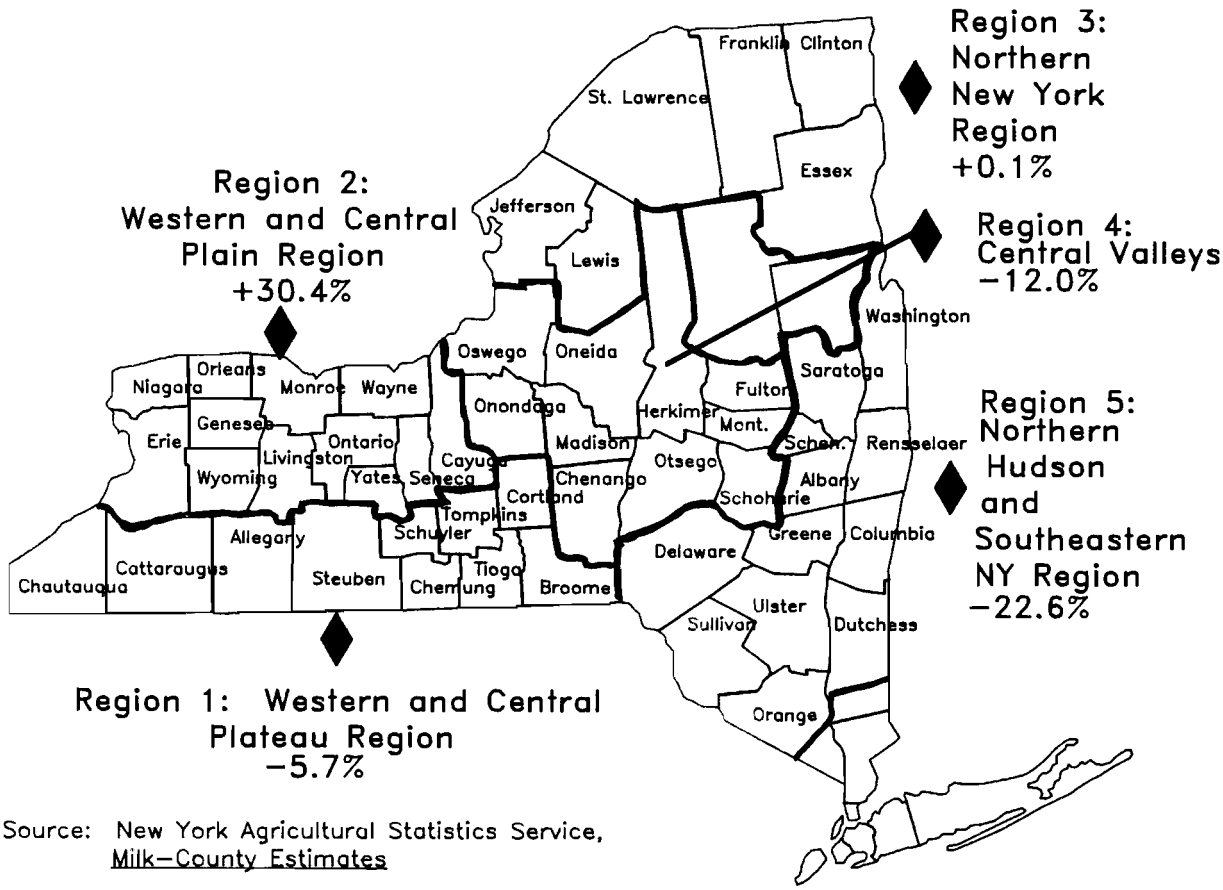
COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION
300 New York Dairy Farms, 1996

Item	West. & Cent. Plateau Region	West. & Cent. Plain Region	Northern New York	Central Valleys	No. Hudson & Southeastern NY
Number of farms	61	79	30	47	83
ACCRUAL EXPENSES					
Hired labor	$30,886	$152,642	$28,401	$23,799	$37,531
Feed	100,486	320,724	78,954	88,788	115,261
Machinery	28,918	80,900	28,781	27,993	36,728
Livestock	39,519	163,739	39,160	42,304	58,950
Crops	14,702	43,398	19,171	16,769	20,333
Real estate	18,574	42,922	16,930	18,774	18,371
Other	35,650	106,300	32,216	37,223	38,120
Total Operating Expenses	$268,735	$910,625	$243,611	$255,651	$325,293
Expansion livestock	1,384	27,228	4,924	2,491	3,391
Machinery depreciation	13,113	37,562	18,965	17,026	15,104
Building depreciation	10,702	27,215	9,278	7,082	8,241
Total Accrual Expenses	$293,934	$1,002,630	$276,778	$282,250	$352,029
ACCRUAL RECEIPTS					
Milk sales	$294,373	$1,023,383	$290,458	$293,894	$351,825
Livestock	19,796	79,079	23,575	17,741	22,249
Crops	10,776	9,101	3,197	10,723	9,029
All other	8,951	17,218	7,973	7,259	9,502
Total Accrual Receipts	$333,895	$1,128,780	$325,204	$329,617	$392,603
PROFITABILITY ANALYSIS					
Net farm income (w/o appreciation)	$39,961	$126,150	$48,426	$47,367	$40,574
Net farm income (w/ appreciation)	$51,190	$144,785	$59,287	$52,861	$49,108
Labor & management income	$12,947	$73,371	$20,342	$23,069	$5,389
Number of operators	1.47	1.73	1.38	1.66	1.50
Labor & mgmt. income/operator	$8,807	$42,411	$14,741	$13,897	$3,593
BUSINESS FACTORS					
Worker equivalent	3.29	7.57	3.15	3.15	3.63
Number of cows	108	321	101	105	121
Number of heifers	88	225	83	78	96
Acres of hay crops*	169	249	173	161	199
Acres of corn silage*	72	232	76	68	94
Total tillable acres	318	651	322	313	354
Pounds of milk sold	2,007,089	6,889,412	1,954,695	1,934,493	2,275,514
Pounds of milk sold/cow	18,649	21,432	19,302	18,383	18,832
Tons hay crop dry matter/acre	2.5	3.2	2.8	3.0	2.2
Tons corn silage/acre	16.4	16.9	13.6	15.9	14.1
Cows/worker	33	42	32	33	33
Pounds of milk sold/worker	610,057	910,094	620,538	614,125	626,863
% grain & conc. of milk receipts	33%	30%	27%	29%	32%
Feed & crop expense/cwt. milk	$5.72	$5.28	$5.02	$5.45	$5.95
Fertilizer & lime/crop acre	$18.35	$27.75	$20.04	$27.19	$28.13
Machinery cost/tillable acre	$150	$206	$172	$167	$168

*Average of all farms in the region, not only those producing the crop.

Figure 2.

Percent Increase in Milk Production, Five Regions in New York, 1986-1996



Source: New York Agricultural Statistics Service, Milk–County Estimates

Table 61.

MILK PRODUCTION & AVERAGE COST OF PRODUCING MILK
Five Regions of New York, 1996

Item	Region* 1	2	3	4	5
Milk Production**			(million pounds)		
1986	2,230.9	2,402.0	2,177.2	3,056.9	1,829.4
1996	2,104.2	3,133.1	2,179.7	2,691.0	1,416.5
Percent change	-5.7%	+30.4%	+0.1%	-12.0%	-22.6%
Cost of Producing Milk			($ per hundredweight milk)		
Operating cost	$11.49	$12.08	$10.94	$11.50	$12.65
Total cost	15.79	14.51	15.50	15.76	16.59
Average price received	14.67	14.85	14.86	15.19	15.46
Return per cwt. to operator labor, management & capital	$1.76	$1.77	$2.20	$2.35	$1.54

*See Figure 2 for region descriptions.
**Source: New York Agricultural Statistics Service, Milk-County Estimates.

Table 62.

INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS
New York State Dairy Farms, 1996

Item	All Intensive Grazing Farms	Non-Grazing Farms*	Profitable Grazing Farms**	Profitable Non-Grazing Farms***
Number of farms	59	97	21	52
Business Size & Production				
Number of cows	78	75	79	75
Number of heifers	60	58	63	60
Milk sold, lbs.	1,349,129	1,323,630	1,446,729	1,370,251
Milk sold/cow, lbs.	17,270	17,547	18,402	18,364
Milk plant test, % butterfat	3.66%	3.72%	3.67%	3.72%
Tillable acres, total	255	240	239	250
Hay crop, tons DM/acre	2.5	2.4	2.8	2.6
Corn silage, tons/acre	13.9	14.0	15.9	14.5
Forage DM/cow, tons	6.6	8.0	6.0	8.2
Labor & Capital Efficiency				
Worker equivalent	2.70	2.53	2.59	2.43
Milk sold/worker, lbs.	499,677	523,174	558,583	563,889
Cows/worker	29	30	31	31
Farm capital/worker	$197,042	$217,660	$201,080	$224,573
Farm capital/cow	$6,821	$7,342	$6,592	$7,276
Farm capital/cwt. milk	$39	$42	$36	$40
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.39	$0.94	$1.18	$0.76
Grain & concentrate	$4.41	$4.75	$4.12	$4.24
Purchased roughage	$0.21	$0.24	$0.21	$0.09
Replacements purchased	$0.15	$0.25	$0.08	$0.08
Vet & medicine	$0.32	$0.35	$0.33	$0.33
Milk marketing	$0.58	$0.73	$0.55	$0.70
Other dairy expenses	$0.95	$1.06	$0.88	$0.95
Operating cost/cwt.	$11.29	$11.84	$9.74	$9.95
Total labor cost/cwt.	$3.73	$3.30	$3.34	$3.06
Operator resources/cwt.	$3.51	$3.47	$3.35	$3.61
Total cost/cwt.	$16.33	$17.05	$14.51	$15.24
Average farm price/cwt.	$14.78	$15.02	$14.75	$15.02
Return over total costs/cwt.	$-1.55	$-2.03	$0.24	$-0.22
Related Cost Factors				
Hired labor/cow	$240	$166	$217	$140
Total labor/cow	$646	$582	$612	$560
Purchased dairy feed/cow	$798	$880	$792	$791
Purchased grain & concentrate as % of milk receipts	30%	32%	28%	28%
Vet & medicine/cow	$56	$62	$60	$60
Machinery costs/cow	$432	$497	$424	$507
Feed & crop exp./cwt.	$5.48	$5.82	$5.11	$5.26
Profitability Analysis				
Net farm income (without appreciation)	$31,876	$24,607	$57,583	$51,900
Net farm income per cow (w/o apprec.)	$409	$328	$729	$692
Labor & management income/operator	$6,551	$-53	$28,316	$19,119
Rates of return on:				
Equity capital with appreciation	1.2%	-0.2%	8.1%	5.9%
All capital with appreciation	3.3%	2.2%	8.0%	6.3%

*Farms with similar herd size, production per cow, and location as the 59 rotational grazing farms.

**Farms with net farm income/cow without appreciation greater than the preliminary state average of $390, had been grazing at least two years, and forage from pasture at least 40 percent.

***Farms with similar herd size and production per cow as the 21 profitable grazing farms and net farm income/cow without appreciation greater than $390.

Table 63.

SELECTED BUSINESS FACTORS BY MILKING FREQUENCY
New York State Dairy Farms, 1995 & 1996

Item	2x/Day Milking		3x/Day Milking	
	1995	1996	1995	1996
Number of farms	239	225	63	59
Business Size & Production				
Number of cows	103	104	341	395
Number of heifers	81	83	253	278
Milk sold, lbs.	1,898,410	1,890,634	7,470,752	8,718,450
Milk sold/cow, lbs.	18,517	18,093	21,898	22,058
Milk plant test, % butterfat	3.67%	3.72%	3.61%	3.63%
Tillable acres, total	304	311	715	787
Hay crop, tons DM/acre	2.5	2.5	3.1	3.2
Corn silage, tons/acre	14.1	15.2	16.4	16.9
Forage DM/cow, tons	7.6	7.6	7.0	6.6
Labor & Capital Efficiency				
Worker equivalent	3.23	3.18	8.16	8.92
Milk sold/worker, lbs.	587,980	594,539	915,617	977,405
Cows/worker	32	33	42	44
Farm capital/worker	$212,503	$221,359	$243,419	$253,935
Farm capital/cow	$6,694	$6,768	$5,821	$5,734
Farm capital/cwt. milk	$36.14	$37.23	$26.59	$25.98
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.34	$1.37	$2.15	$2.30
Grain & concentrate	$3.63	$4.64	$3.49	$4.50
Purchased roughage	$0.09	$0.19	$0.16	$0.16
Replacements purchased	$0.16	$0.19	$0.14	$0.18
Vet & medicine	$0.36	$0.37	$0.42	$0.45
Milk marketing	$0.77	$0.67	$0.65	$0.52
Other dairy expenses	$0.80	$1.00	$1.03	$1.22
Operating costs/cwt.	$10.42	$11.80	$10.50	$12.11
Total labor costs/cwt.	$3.05	$3.12	$2.64	$2.72
Operator resources/cwt.	$2.87	$2.91	$1.48	$1.37
Total costs/cwt.	$14.62	$16.22	$13.09	$14.40
Average farm price/cwt.	$13.02	$15.02	$13.04	$14.93
Return over total costs/cwt.	$-1.60	$-1.20	$-0.05	$0.53
Related Cost Factors				
Hired labor/cow	$247	$248	$471	$508
Total labor/cow	$565	$567	$579	$600
Purchased dairy feed/cow	$690	$878	$800	$1,028
Purchased grain & concentrate as % of milk receipts	28%	31%	27%	30%
Vet & medicine/cow	$67	$68	$91	$99
Machinery costs/cow	$429	$482	$382	$419
Profitability Analysis				
Net farm income (without appreciation)	$28,429	$37,294	$109,531	$168,879
Labor & management income/operator	$1,018	$6,454	$27,298	$56,827
Rates of return on:				
Equity capital with appreciation	-0.2%	2.1%	7.1%	10.2%
All capital with appreciation	2.5%	4.0%	7.5%	9.0%

Table 64.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
44 New York Dairy-Renter Farms,* 1996

ACCRUAL EXPENSES	
Labor: Hired	$19,421
Feed: Dairy grain & concentrate	85,149
Dairy roughage	10,559
Nondairy	32
Machinery: Mach. hire, rent & lease	3,819
Mach. repairs & farm vehicle expense	14,629
Fuel, oil, grease	5,671
Livestock: Replacement livestock	6,579
Breeding	3,617
Veterinary & medicine	7,173
Milk marketing	13,297
Bedding	1,851
Milking supplies	5,923
Cattle lease & rent	186
Custom boarding	579
Other livestock expense	7,061
Crops; Fertilizer & lime	5,463
Seeds & plants	2,557
Spray & other crop expense	3,504
Real estate: Land, building & fence repair	3,456
Taxes	959
Rent & lease	18,267
Other:	
Insurance	2,838
Utilities (farm share)	8,449
Interest paid	9,650
Miscellaneous	2,719
TOTAL OPERATING EXPENSES	$243,408
Expansion livestock	$10,327
Machinery depreciation	9,680
Building depreciation	2,519
TOTAL ACCRUAL EXPENSES	$265,934

ACCRUAL RECEIPTS	
Milk sales	$273,790
Dairy cattle	24,860
Dairy calves	2,137
Other livestock	221
Crops	3,218
Government receipts	3,491
Custom machine work	989
Gas tax refund	83
Other	2,003
TOTAL ACCRUAL RECEIPTS	$310,791
PROFITABILITY ANALYSIS	
Net farm income (without appreciation)	$44,857
Net farm income (with appreciation)	$48,545
Labor & managment income/farm	$29,670
Number of operators	1.58
Labor & management income/operator	$18,778
Rate of return on equity capital including appreciation	5.4%
BUSINESS FACTORS	
Number of cows	98
Number of heifers	61
Worker equivalent	2.91
Total tillable acres	226
Milk sold per cow, lbs.	18,593
Hay DM per acre, tons	2.4
Corn silage per acre, tons	14.0
Milk sold per worker, lbs.	625,727
Grain/conc. as % milk sales	31%
Feed & crop expense/cwt. milk	$5.94
Labor & machinery costs/cow	$949
Average price/cwt. milk	$15.21

ASSETS	Jan. 1	Dec. 31
Farm cash, checking & savings	$8,479	$7,699
Accounts receivable	20,641	24,723
Prepaid expenses	172	456
Feed & supplies	41,130	45,251
Dairy cows**	98,517	109,661
Heifers	32,171	35,899
Bulls & other livestock	635	691
Machinery & equipment**	79,466	92,043
Farm Credit stock	1,650	2,154
Other stock & certificates	3,670	4,751
Land & buildings**	30,552	38,275
Total Farm Assets	$317,083	$361,604
Nonfarm Assets****	52,894	61,839
Farm & Nonfarm Assets	$369,977	$423,443

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$7,715	$5,901
Operating debt	4,888	7,469
Short-term	3,277	4,177
Advanced gov't receipts	27	0
Current Portion:		
Intermediate	13,678	19,457
Long Term	661	1,125
Intermediate***	69,117	79,412
Long term**	29,242	29,049
Total Farm Liabilities	$128,605	$146,591
Nonfarm Liabilities****	5,455	7,286
Farm & Nonfarm Liabilities	$134,060	$153,877
Farm Net Worth	$188,478	$215,013
Farm & Nonfarm Net Worth	$235,917	$269,566

*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 20 farms reporting.

Table 65.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 30 Top Ten Percent Farms by Rate of Return on All Capital (without appreciation), 1996

ACCRUAL EXPENSES	
Labor: Hired	$215,611
Feed: Dairy grain & concentrate	412,034
Dairy roughage	13,779
Nondairy	0
Machinery: Mach. hire, rent & lease	15,547
Mach. repairs & farm vehicle expense	58,938
Fuel, oil, grease	21,276
Livestock: Replacement livestock	16,939
Breeding	11,300
Vet & medicine	42,040
Milk marketing	45,545
Bedding	19,049
Milking supplies	32,332
Cattle lease & rent	4,371
Custom boarding	11,557
Other livestock expense	32,406
Crops; Fertilizer & lime	26,559
Seeds & plants	15,990
Spray & other crop expense	15,603
Real estate: Land, building & fence repair	24,573
Taxes	15,494
Rent & lease	30,734
Other:	
Insurance	12,854
Utilities (farm share)	30,223
Interest paid	81,167
Miscellaneous	14,382
TOTAL OPERATING EXPENSES	$1,220,304
Expansion livestock	$31,220
Machinery depreciation	50,412
Building depreciation	29,645
TOTAL ACCRUAL EXPENSES	$1,331,581

ACCRUAL RECEIPTS	
Milk sales	$1,432,849
Dairy cattle	100,440
Dairy calves	7,206
Other livestock	566
Crops	24,431
Government receipts	9,609
Custom machine work	2,199
Gas tax refund	700
Other	9,122
TOTAL ACCRUAL RECEIPTS	$1,587,120
PROFITABILITY ANALYSIS	
Net farm income (without appreciation)	$255,539
Net farm income (with appreciation)	272,178
Labor & management income/operator	119,672
Rate of return on equity capital without appreciation	16.4%
Rate of return on all capital without appreciation	12.5%
BUSINESS FACTORS	
Number of cows	445
Number of heifers	321
Worker equivalent	9.42
Total tillable acres	870
Milk sold per cow, lbs.	21,506
Hay DM per acre, tons	3.4
Corn silage per acre, tons	17.7
Milk sold per worker, lbs.	1,016,174
Grain/conc. as % milk sales	29%
Feed & crop exp./cwt. milk	$5.06
Labor & mach. costs/cow	$930
Average price/cwt. milk	$14.97

ASSETS	Jan. 1	Dec. 31
Farm cash, checking & savings	$10,397	$12,395
Accounts receivable	80,721	91,291
Prepaid expenses	1,825	4,886
Feed & supplies	233,235	281,753
Dairy cows*	418,362	450,290
Heifers	151,835	178,865
Bulls & other livestock	3,138	3,361
Machinery & equipment*	364,740	400,741
Farm Credit stock	13,405	11,650
Other stock & certificates	36,403	40,702
Land & buildings*	889,629	927,966
Total Farm Assets	$2,203,690	$2,403,900
Nonfarm Assets***	85,789	91,431
Farm & Nonfarm Assets	$2,289,479	$2,495,331

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$32,882	$21,233
Operating debt	63,986	75,956
Short-term	22,431	20,290
Advanced gov't receipts	982	0
Current Portion:		
Intermediate	66,463	74,386
Long Term	27,219	30,494
Intermediate**	386,496	403,346
Long-term*	431,110	435,867
Total Farm Liabilities	$1,031,570	$1,061,572
Nonfarm Liabilities***	16,483	16,824
Farm & Nonfarm Liabilities	$1,048,053	$1,078,396
Farm Net Worth	$1,172,120	$1,342,328
Farm & Nonfarm Net Worth	$1,241,426	$1,416,935

*Includes discounted lease payments.

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

***Average of 15 farms reporting.

Table 66.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 300 New York Dairy Farms, 1996

ACCRUAL EXPENSES		ACCRUAL RECEIPTS	
Labor: Hired	$63,428	Milk sales	$501,774
Feed: Dairy grain & concentrate	152,620	Dairy cattle	32,615
Dairy roughage	5,814	Dairy calves	2,771
Nondairy	149	Other livestock	756
Machinery: Mach. hire, rent & lease	8,473	Crops	9,085
Mach. repairs & farm vehicle expense	25,829	Government receipts	6,249
Fuel, oil, grease	10,307	Custom machine work	726
Livestock: Replacement livestock	6,430	Gas tax refund	256
Breeding	5,036	Other	3,865
Vet & medicine	13,970	- Non-cash capital transfer	178
Milk marketing	19,750	TOTAL ACCRUAL RECEIPTS	$557,918
Bedding	5,037	PROFITABILITY ANALYSIS	
Milking supplies	11,694	Net farm income (without appreciation)	$64,834
Cattle lease & rent	848	Net farm income (with appreciation)	76,335
Custom boarding	3,336	Labor & management income/farm	29,095
Other livestock expense	11,905	Number of operators	1.56
Crops; Fertilizer & lime	10,677	Labor & management income/operator	$18,651
Seeds & plants	6,728	Rate of return on equity	
Spray & other crop expense	7,181	capital including appreciation	5.5%
Real estate: Land, building & fence repair	7,785		
Taxes	8,616	BUSINESS FACTORS	
Rent & lease	8,397	Number of cows	167
Other:		Number of heifers	124
Insurance	6,045	Worker equivalent	4.48
Utilities (farm share)	12,954	Total tillable acres	415
Interest paid	30,557	Milk sold per cow, lbs.	20,113
Miscellaneous	5,285	Hay DM per acre, tons	2.8
TOTAL OPERATING EXPENSES	$448,852	Corn silage per acre, tons	15.9
		Milk sold per worker, lbs.	747,861
Expansion livestock	$9,272	Grain/conc. as % milk sales	30%
Machinery depreciation	21,300	Feed & crop exp./cwt. milk	$5.46
Building depreciation	13,660	Labor & mach. costs/cow	$1,032
TOTAL ACCRUAL EXPENSES	$493,084	Average price/cwt. milk	$14.98

ASSETS	Jan. 1	Dec. 31	LIABILITIES	Jan. 1	Dec. 31
Farm cash, checking & savings	$6,396	$6,814	Accounts payable	$16,865	$15,709
Accounts receivable	33,188	35,722	Operating debt	19,437	23,250
Prepaid expenses	1,013	1,170	Short-term	5,044	4,904
Feed & supplies	87,402	100,533	Advanced gov't rec.	110	100
Dairy cows*	166,286	175,977	Current Portion:		
Heifers	68,875	75,333	Intermediate	26,615	29,567
Bulls & other livestock	2,188	2,046	Long Term	9,754	11,701
Machinery & equipment*	178,670	191,180	Intermediate***	152,945	158,158
Farm Credit stock	5,119	5,051	Long-term**	168,777	178,199
Other stock & certificates	14,552	16,945	Total Farm Liabilities	$399,547	$421,588
Land & buildings*	443,247	459,003	Nonfarm Liabilities****	4,939	5,188
Total Farm Assets	$1,006,936	$1,069,774	Farm & Nonfarm Liabilities	$404,486	$426,776
Nonfarm Assets***	75,155	76,568	Farm Net Worth	$607,389	$648,186
Farm & Nonfarm Assets	$1,082,091	$1,146,342	Farm & Nonfarm Net Worth	$677,605	$719,566

*Includes discounted lease payments.

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

***Average of 175 farms reporting.

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, 1986-1996

Year	Mixed Dairy Feed 16% Protein ($/ton)	Fertilizer, Urea 45-46%N ($/ton)	Seed Corn, Hybrid* ($/80,000 kernels)	Diesel Fuel ($/gal)	Tractor 50-59 PTO* ($)	Wage Rate All Hired Farm Workers ($/hr)
1986	162.9	200**	65.60	0.840**	16,550	4.41***
1987	152.8**	190**	64.90	0.765**	16,650	4.60***
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	5.76
1993	171.3**	226**	72.70	0.900**	19,200	6.16
1994	180.8**	233**	73.40	0.853**	19,800	6.61
1995	175.0**	316**	77.10	0.850**	20,100	6.54
1996	226.0**	328**	77.70	1.020**	20,600	6.95

SOURCE: NYASS, New York Agricultural Statistics. USDA, ASB, Agricultural Prices. *United States average. **Northeast region average. ***New York and New England combined, 1985-1991.

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, 1981-1996

	Dairy Cows		Machinery*	Farm Real Estate	
Year	Value/Head	1977=100	1977=100	Value/Acre	1977=100
1981	$1,120	226	149	$773	132
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	1,383	236
1995	1,010	204	250	1,380	235
1996	1,030	208	269	1,333	227

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

*United States average; 1995 and 1996 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 5,300 less milk cow operations in 1996 than there were in 1987. The average number of milk cows per operation has increased by 20 cows, or 36 percent over the same period. On January 1, 1997, 36 percent of the total milk cows were in herds with 50-99 head, 49 percent were in herds with over 100 milk cows, and 15 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, 1986-1996

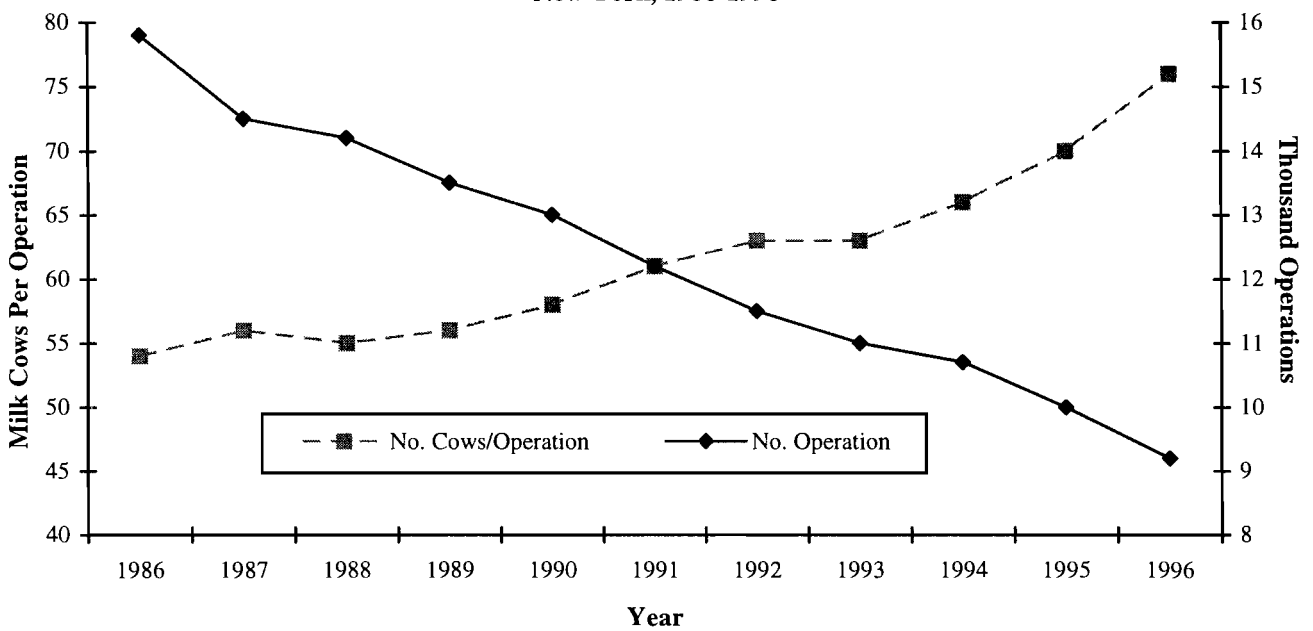


Table A3.

MILK COW OPERATIONS AND MILK COW INVENTORY
by Herd Size, 1987 to 1997

	MILK COW OPERATIONS BY HERD SIZE & TOTAL, 1987-1996 (Number of Milk Cows in Herd)							MILK COWS ON FARMS, JAN. 1 BY HERD SIZE & TOTAL, 1988-1997 (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	27	97	300	306		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	196	147	700
1996	1,800	2,000	3,700	1,300	400	9,200	1997	20	85	250	195	150	700

[a]100 plus category prior to 1993.
Source: NYASS, New York Agricultural Statistics, 1996-1997.

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 7).

Accrual Expenses: (defined on page 9).

Accrual Receipts: (defined on page 9).

Annual Cash Flow Statement: (defined on page 16).

Appreciation: (defined on page 10).

Asset Turnover Ratio: (defined on page 35).

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 35).

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 16).

Cash Flow Coverage Ratio: (defined on page 18).

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 8).

Cash Receipts: (defined on page 9).

Change in Accounts Payable: (defined on page 9).

Change in Accounts Receivable: (defined under Accrual Receipts on page 9).

Change in Advanced Government Receipts: (defined under Accrual Receipts page 9).

Change in Inventory: (defined on page 8).

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 25).

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 14).

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 37).

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 18 and 40.

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 40.

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.

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 11).

Labor and Management Income Per Operator: (defined on page 11).

Labor Efficiency: Production capacity and output per worker. (See analysis on pages 35 and 36).

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 10).

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 9).

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 25).

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.

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 9).

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 25).

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 12).

Return to all Capital: (defined on page 12).

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 15).

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 25).

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.

NOTES

OTHER A.R.M.E. RESEARCH BULLETINS

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