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DAIRY FARM MANAGEMENT

AUGUST 1995

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BUSINESS SUMMARY NEW YORK STATE 1994



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ABSTRACT

This summary and analysis of 321 New York dairy farm businesses 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. These farms averaged 151 cows per farm and 20,091 pounds of milk sold per cow in 1994, 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 \$56,084 per farm. The rate of return including appreciation to all capital invested in the farm business averaged 5.5 percent in 1994.

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INTRODUCTION*

Dairy farm business summary (DFBS) projects are an integral part of Cornell Cooperative Extension's agriculture educational program in New York State. The Department of Agricultural, Resource, and Managerial Economics of the New York State College of Agriculture and Life Sciences, and County Extension staff, cooperate in sponsoring DFBS projects. In 1994, about 400 dairy farmers participated. Business records submitted by dairy farmers from 46 counties provide the basis for continuing Extension programs, data for applied studies, and for use in the classroom. Regardless of the use of the data, confidentiality of individual farm data is maintained.

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. More than 95 percent of the 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 with regional averages. The DFBS program helps farmers develop managerial skills and solve business management problems.

Records from the eight regions and 46 counties of the State have been combined and the total data set analyzed as a study of the effects of changes in price, technology, and management on dairy farm incomes (Figure 1, page 2). This study provides current farm business information for use by dairy farmers, Cooperative Extension staff, teachers, and others concerned with the New York dairy industry.

Farms Included

Data from 321 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 321 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 are calculated on pages 10 through 12. The balance sheet, statement of owner equity, and cash flow statement are featured on pages 13 through 17.

Data on the costs of producing milk are included on pages 26-31. Separate farm business charts using data from freestall farms versus conventional stall dairy farms are on pages 55-58.

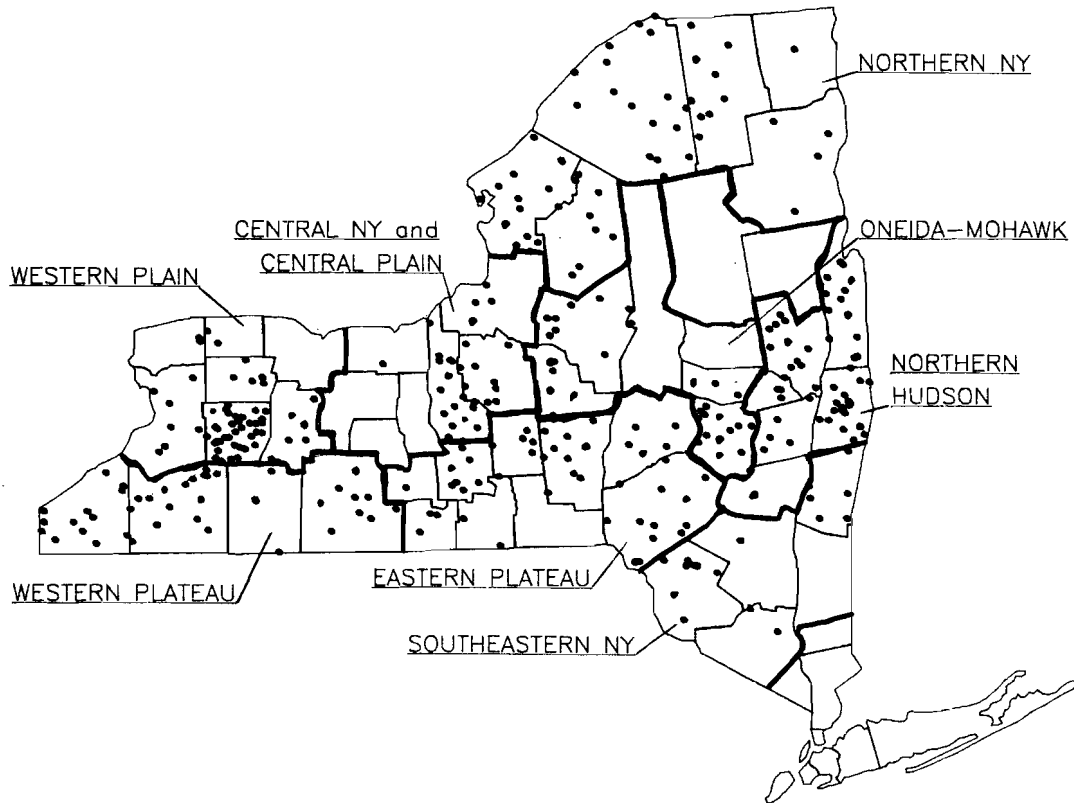
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* This report was written by Stuart F. Smith, Senior Extension Associate; Wayne A. Knoblauch, Professor; and Linda D. Putnam, Extension Support Specialist, in the Department of Agricultural, Resource, and Managerial Economics at Cornell University.

Figure 1.

**LOCATION OF THE 321 NEW YORK DAIRY FARMS
IN THE 1994 DAIRY FARM BUSINESS SUMMARY**



1994 Regional Summary Publications

<u>Region</u>	<u>Publications</u>	<u>Author (s)</u>
Western Plain Region	E.B. 95-09	Stuart F. Smith, Linda D. Putnam, Jason Karszes, Michael Stratton & David Thorp
Northern New York	E.B. 95-10	Stuart F. Smith, Linda D. Putnam, George Allhusen, Patricia A. Beyer, Anita Deming, Richard Spaulding & George O. Yarnall
Western Plateau Region	E.B. 95-12	George L. Casler, Andrew N. Dufresne, Joan S. Petzen, James W. Grace, & Linda D. Putnam
Oneida-Mohawk Region	E.B. 95-14	Eddy L. LaDue, Jacqueline M. Hilts, Charles Z. Radick & Linda D. Putnam
Central New York & Central Plain	E.B. 95-15	Stuart F. Smith, Linda D. Putnam, James A. Hilson, Charles H. Cuykendall & Michael L. Stratton
Southeastern New York	E.B. 95-16	Stuart F. Smith, Linda D. Putnam, Stephen E. Hadcock, Larry R. Hulle, Colleen A. McKeon, and Gerald J. Skoda
Eastern Plateau Region	E.B. 95-17	Robert A. Milligan, Linda D. Putnam, Carl A. Crispell and John S. Carlson
Northern Hudson Region	E.B. 95-18	Stuart F. Smith, Linda D. Putnam, Cathy S. Wickswat, Anita W. Deming, & David R. Wood

A DECADE OF GROWTH AND ADJUSTMENT ON 72 NEW YORK DAIRY FARMS

Seventy-two New York dairy farms have been DFBS cooperators each year since 1985. The data in Table 1 are the averages for the 72 farms which are located in 26 different counties. They were all operated by full-time owner-managers in 1994. There is a brief overview of some changes and adjustments these dairy farmers made to maintain their profitability and to accumulate farm net worth.

Size of Business

The average number of cows on these farms increased by 97 cows or 85 percent in ten years. Total pounds of milk sold increased by 124 percent, resulting from the combination of increased cow numbers and an over 3,000 pound increase in pounds of milk sold per cow. Total tillable acres increased by 136 acres.

Labor Efficiency

Cows per worker increased by nine cows and pounds of milk sold per worker increased by 286,636 pounds in the past ten years. Ten years ago, the top ten percent of all farms participating in the DFBS program did not have milk sales of 838,235 pounds of milk which the 72 farms averaged in 1994.

Cost Control

Grain and concentrate purchases as a percent of milk sales has increased slightly over the past ten years, from 21 to 27 percent. Dairy feed and crop expense has increased, but by only 13 percent. Operating cost of producing milk is up over \$1.00 per hundredweight, but total cost of producing milk is the same in 1994 as it was in 1985, at approximately \$13.30.

Capital Efficiency

Farm capital per cow, machinery & equipment per cow, real estate per cow and livestock investment per cow have all increased, but by relatively small amounts over the past ten years. The asset turnover ratio has increased by 24 percent to 0.52 in 1994.

Farm Profitability

Net farm income and labor and management income per operator/manager is more than twice as large in 1994 as it was in 1985. Rates of return on equity and all capital have been more variable over time, with 1989 being the year with the highest rates of return.

Converting the average net farm income in 1994 to 1985 dollars, using the CPI as a deflator, results in a real net farm income of \$64,352. This is in comparison to the 1985 net farm income of \$39,593. Thus, even deflating the 1994 incomes, profitability has improved, on average for this group of farms.

Financial Performance

While the debt to asset ratio has remained relatively constant and farm debt per cow has increased about \$500, farm net worth has almost doubled to \$847,671 in 1994.

Conclusions

Table 1 shows average changes and adjustments that took place on 72 NY DFBS farms from 1985 to 1994. These averages do not necessarily represent the most progressive or profitable segment of our dairy farms. They are the dairy farmers who were interested and fortunate enough to continue as DFBS cooperators for ten consecutive years. Their use of DFBS and similar data have helped them to improve productivity, cost management and farm profitability.

Table 1.

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 72 New York Dairy Farms, 1985 - 1994

Selected Factors	1985	1986	1987	1988
Milk receipts per cwt. milk	\$12.82	\$12.65	\$12.80	\$13.16
<u>Size of Business</u>				
Average number of cows	114	120	128	135
Average number of heifers	95	99	100	106
Milk sold, cwt.	19,352	20,582	22,285	24,180
Worker equivalent	3.51	3.61	3.65	3.82
Total tillable acres	336	342	345	357
<u>Rates of Production</u>				
Milk sold per cow, lbs.	17,032	17,088	17,416	17,937
Hay DM per acre, tons	3.0	3.0	3.0	2.9
Corn silage per acre, tons	15.6	15.0	16.9	14.2
<u>Labor Efficiency</u>				
Cows per worker	32	33	35	35
Milk sold per worker, lbs.	551,599	570,191	609,862	632,973
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	21%	23%	23%	27%
Dairy feed & crop expense per cwt. milk	\$3.85	\$3.89	\$4.03	\$4.49
Oper. cost of producing cwt. milk	\$9.08	\$9.10	\$8.68	\$9.04
Total cost of producing cwt. milk	\$13.26	\$13.20	\$12.56	\$12.76
Hired labor cost per cwt.	\$1.48	\$1.53	\$1.67	\$1.71
Interest paid per cwt.	\$1.15	\$1.02	\$.92	\$.91
Labor & machinery costs per cow	\$826	\$802	\$828	\$838
<u>Capital Efficiency</u>				
Farm capital per cow	\$5,838	\$5,701	\$5,763	\$5,932
Machinery & equipment per cow	\$1,108	\$1,065	\$1,058	\$1,066
Real estate per cow	\$2,668	\$2,619	\$2,626	\$2,656
Livestock investment per cow	\$1,220	\$1,167	\$1,186	\$1,243
Asset turnover ratio	.42	.46	.50	.50
<u>Profitability</u>				
Net farm income w/o apprec.	\$39,593	\$39,492	\$59,115	\$67,406
Net farm income w/ apprec.	\$35,194	\$55,501	\$88,244	\$86,264
Labor & management income per operator/manager	\$12,126	\$11,408	\$24,896	\$28,821
Rate return on:				
Equity capital w/apprec.	2.0%	6.1%	12.2%	10.4%
All capital w/ apprec.	4.7%	7.0%	10.7%	9.6%
All capital w/o apprec.	5.3%	4.6%	6.8%	7.3%
<u>Financial Summary, End Year</u>				
Farm net worth	\$434,184	\$457,311	\$510,583	\$553,480
Change in net worth w/ apprec.	\$1,508	\$24,898	\$58,052	\$48,319
Debt to asset ratio	0.35	0.35	0.33	0.33
Farm debt per cow	\$1,953	\$2,011	\$1,949	\$1,995

Table 1 (continued)

COMPARISON OF FARM BUSINESS SUMMARY DATA
Same 72 New York Dairy Farms, 1985 - 1994

1989	1990	1991	1992	1993	1994
\$14.56	\$14.95	\$13.03	\$13.57	\$13.17	\$13.41
143	149	157	176	195	211
110	120	130	132	145	160
26,446	27,778	29,614	34,060	37,751	43,432
4.05	4.24	4.46	4.74	5.05	5.18
367	408	421	427	450	472
18,438	18,622	18,883	19,392	19,344	20,631
2.8	3.1	2.9	3.2	3.1	3.3
13.4	14.2	14.4	15.2	16.1	16.5
35	35	35	37	39	41
652,469	655,133	663,422	718,022	748,086	838,235
26%	27%	28%	27%	28%	27%
\$4.69	\$5.03	\$4.67	\$4.46	\$4.41	\$4.34
\$9.81	\$10.75	\$10.23	\$10.20	\$10.12	\$10.15
\$13.53	\$14.64	\$14.09	\$13.67	\$13.49	\$13.32
\$1.97	\$2.21	\$2.25	\$2.29	\$2.33	\$2.20
\$.90	\$.90	\$1.00	\$.80	\$.80	\$.79
\$908	\$1,033	\$1,014	\$1,004	\$1,000	\$1,004
\$6,067	\$6,422	\$6,679	\$6,483	\$6,340	\$6,340
\$1,121	\$1,197	\$1,264	\$1,187	\$1,147	\$1,174
\$2,634	\$2,806	\$2,982	\$2,937	\$2,881	\$2,833
\$1,311	\$1,384	\$1,418	\$1,400	\$1,394	\$1,420
.55	.52	.47	.50	.49	.52
\$91,066	\$78,820	\$40,721	\$73,316	\$68,395	\$88,645
\$123,823	\$94,042	\$64,860	\$97,649	\$84,512	\$109,037
\$43,251	\$30,818	\$2,795	\$23,852	\$17,994	\$30,418
15.1%	8.7%	4.0%	7.9%	5.5%	8.0%
13.1%	8.5%	5.4%	7.4%	5.9%	7.5%
9.3%	6.9%	3.1%	5.3%	4.6%	6.0%
\$634,724	\$664,179	\$683,839	\$753,903	\$790,056	\$847,671
\$79,474	\$27,702	\$9,430	\$53,283	\$30,424	\$51,845
0.30	0.34	0.36	0.36	0.38	0.38
\$1,805	\$2,249	\$2,317	\$2,315	\$2,384	\$2,433

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 1994 are presented in the following table.

Table 2.

**BUSINESS CHARACTERISTICS AND RESOURCES USED
321 New York Dairy Farms, 1994**

<u>No. Dairy Livestock</u>	<u>Cows</u>	<u>Heifers</u>	<u>Dairy Records</u>	<u>Number</u>	<u>Percent</u>
Beginning of Year	147	112	D.H.I.C.	230	72
End of Year	157	119	Owner Sampler	27	8
Average for Year	151	116	Other	32	10
			None	32	10
<u>Type of Business</u>	<u>Number</u>	<u>Percent</u>	<u>bST Usage</u>	<u>Number</u>	<u>Percent</u>
Sole Proprietorship	201	63	Used on <25% of herd	30	9
Partnership	96	30	Used on 25-75% of herd	98	31
Corporation	24	7	Used on >75% of herd	7	2
			Stopped using in 1994	18	6
<u>Barn Type</u>	<u>Number</u>	<u>Percent</u>	Not used in 1994	168	52
Stanchion	140	44	<u>Labor Force</u>	<u>Average</u>	<u>Percent</u>
Freestall	159	49	Operators	17.90	37
Combination	22	7	Family Paid	4.45	9
			Family Unpaid	2.49	5
<u>Milking System</u>	<u>Number</u>	<u>Percent</u>	Hired	23.36	49
Bucket & Carry	2	1	Total Months	48.20	100
Dumping Station	6	2	<u>Average</u>		
Pipeline	151	47	<u>Operators</u> (total = 479)	1.49	
Herringbone	135	42	Age	44	
Other Parlor	27	8	Education	14 years	
			Estimated Value of		
<u>Milking Frequency</u>	<u>Number</u>	<u>Percent</u>	Labor & Management	\$36,047	
2x/day	244	76			
3x/day	61	19	<u>Farms Reporting</u>	<u>Number</u>	<u>Average</u>
Other	16	5	<u>Land Used</u>		
			Total acres:		
<u>Business Records</u>	<u>Number</u>	<u>Percent</u>	Owned	321	392
Account Book	102	32	Rented	302	187
Agrifax (mail-in)	43	13	Tillable acres:		
On-Farm Computer	119	37	Owned	321	233
Other	57	18	Rented	298	171
			Total	321	392

There were 479 full-time operator equivalents on the 321 dairy farms for an average of 1.49 operators per farm. The operators averaged 44 years of age and 14 years of formal education. Additional data on the labor force is in Table 41.

All 321 farm businesses included in the regular dairy summary own farm real estate. Dairy farm renters are summarized separately later in this publication. However, 298 of the dairy farm owners rented an average of 171 acres of tillable land in 1994. The 321 farms averaged 392 total tillable acres per farm of which 159 acres were rented. Tables 20 and 26 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 costs 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

The accrual income statement on the following page begins with an accounting of all farm business expenses. Farm business expenditures are grouped into seven major categories.

Hired labor includes gross wages plus the farm share of social security, worker's compensation insurance, employee health insurance, and other employee benefits paid by the farm employer.

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.

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.

Livestock expenses include the cost of supplies and services directly associated with the care and maintenance of the dairy herd, plus milk marketing costs. The purchase of replacement cattle is considered a herd maintenance expense while expansion livestock is not.

Crop expenses include the costs of fertilizer, lime, seeds, pesticides, and other crop supplies.

Real estate expenses are the direct costs associated with owning and maintaining farmland and buildings.

Other includes insurance, the farm share of utilities, interest paid on all farm indebtedness, and miscellaneous costs. Expansion livestock and machinery and building depreciation are nonoperating costs included in total expenses. Depreciation charges are based on income tax figures.

Cash and accrual farm expenses are summarized below. Total operating accrual expenses for the 321 farms averaged \$1,017 per day and 90 percent of total farm accrual expenses.

Table 3.

CASH AND ACCRUAL FARM EXPENSES
321 New York Dairy Farms, 1994

Expense Item	Cash Paid	+	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses	Percent
<u>Hired Labor</u>	\$ 54,810		\$ -33	<<	\$ -66		\$ 54,711	15
<u>Feed</u>								
Dairy grain & conc.	115,855		-1,245		178		114,788	31
Dairy roughage	3,529		-527		234		3,236	1
Nondairy livestock	60		-2		0		58	<1
<u>Machinery</u>								
Mach. hire, rent/lease	5,919		25	<<	0		5,944	2
Machinery repairs/parts	21,014		-45		212		21,181	6
Auto expense (farm share)	1,024		0	<<	5		1,029	<1
Fuel, oil & grease	9,424		-25		43		9,442	3
<u>Livestock</u>								
Replacement livestock	6,460		0	<<	-15		6,445	2
Breeding	5,055		9		21		5,085	1
Vet & medicine	11,939		-58		183		12,064	3
Milk marketing	20,357		-4	<<	4		20,357	5
Cattle lease/rent	763		0	<<	3		766	<1
Other livestock expense	25,845		-202		65		25,708	7
<u>Crops</u>								
Fertilizer & lime	9,827		-212		279		9,894	3
Seeds & plants	5,944		-294		20		5,670	2
Spray, other crop exp.	6,224		-120		43		6,147	2
<u>Real Estate</u>								
Land/bldg./fence repair	6,228		-9		62		6,281	2
Taxes	8,741		-42		42		8,741	2
Rent & lease	6,658		-4	<<	79		6,733	2
<u>Other</u>								
Insurance	5,503		-2		-2		5,499	1
Telephone (farm share)	790		1	<<	-5		786	<1
Electricity (farm share)	10,691		22	<<	-12		10,701	3
Interest paid	24,235		-5	<<	221		24,451	7
Miscellaneous	<u>5,445</u>		<u>-19</u>	<<	<u>13</u>		<u>5,439</u>	<u>1</u>
Total Operating	\$372,340		\$-2,791		\$1,607		\$371,156	100
Expansion livestock	\$7,833		0	<<	25		7,858	
Machinery depreciation							20,042	
Building depreciation							<u>14,113</u>	
TOTAL ACCRUAL EXPENSES							\$413,169	

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 (negative change), and inputs purchased in a prior year and used this year (positive change). Purchased dairy grain and concentrate inventory increased \$1,245.

Prepaid expenses (noted by < in the above table) are advance payments made for services and noninventory items. For example, advance payments for rent increased an average of \$4 per farm in 1994, and that increase is subtracted from cash rent to determine the correct 1994 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.

Cash and accrual farm receipts are presented in the following table. Total cash receipts averaged \$445,848 per farm. Total accrual receipts averaged \$469,253 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 eight head per farm and the homegrown feed inventory per farm increased \$7,635. Homegrown feed inventory per cow increased \$28 from beginning to end of year.

Table 4.

CASH AND ACCRUAL FARM RECEIPTS
321 New York Dairy Farms, 1994

Receipt Item	Cash Receipts +	Change in Inventory +	Change in Accounts Receivable =	Accrual Receipts	Percent
Milk sales	\$406,388		\$1,350	\$407,738	87
Dairy cattle	21,266	\$13,972	18	35,256	8
Dairy calves	5,850		2	5,852	1
Other livestock	440	297	0	737	<1
Crops	2,759	7,635	47	10,441	2
Government receipts	4,351	2*	119	4,472	1
Custom machine work	610		0	610	<1
Gas tax refund	264		0	264	<1
Other	3,920		6	3,926	1
- Nonfarm noncash capital**		(-) 43		(-) 43	
Total	\$445,848	\$21,863	\$1,542	\$469,253	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 accounted for. Changes in advanced government receipts are the amount of government payments received for participating in a future year's program have changed from 1993 to 1994. An increase requires a negative adjustment to cash receipts and a decrease a positive adjustment. Changes in accounts receivable include the difference between the January milk check for December 1994 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 13.

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.

Table 5.

NET FARM INCOME
321 New York Dairy Farms, 1994

Item	Average		Avg Top 10% Farms*	
	Farms	Per Cow	Total	Per Cow
Total accrual receipts	\$469,253		\$1,200,461	
+ Appreciation: Livestock	385		2,301	
Machinery	2,554		1,577	
Real Estate	9,564		23,419	
Other Stock/Cert.	-237		-73	
= Total including appreciation	\$481,519		\$1,227,685	
- Total accrual expenses	413,169		1,010,258	
= Net Farm Income (with appreciation)	\$68,350	\$453	\$217,427	\$601
Net Farm Income (without appreciation)	\$56,084	\$371	\$190,203	\$525

*Average of 32 farms with highest rates of return to all capital (without appreciation).

Return to operator(s') labor, management, and equity capital measures the total business profits for the farm operators. It is calculated by deducting a charge for unpaid family labor from net farm income. Operator(s') labor is not included in unpaid family labor. Return to operator(s') labor, management, and equity capital has been compiled with and without appreciation. Appreciation is considered an important part of the return to ownership of farm assets.

Table 6.

RETURN TO OPERATOR(S') LABOR, MANAGEMENT, AND EQUITY
321 New York Dairy Farms, 1994

Item	Average 321 Farms		Average Top 10% Farms	
	With Apprec.	Without Apprec.	With Apprec.	Without Apprec.
Net farm income	\$68,350	\$56,084	\$217,427	\$190,203
- Family labor unpaid @ \$1,450 per month	3,611	3,611	2,465	2,465
= Return to Operator(s') Labor, Management, & Equity	\$64,739	\$52,473	\$214,962	\$187,738

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 cost of using equity capital at a real interest rate of five percent, from the return to operator(s') labor, management, and equity capital 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.

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.

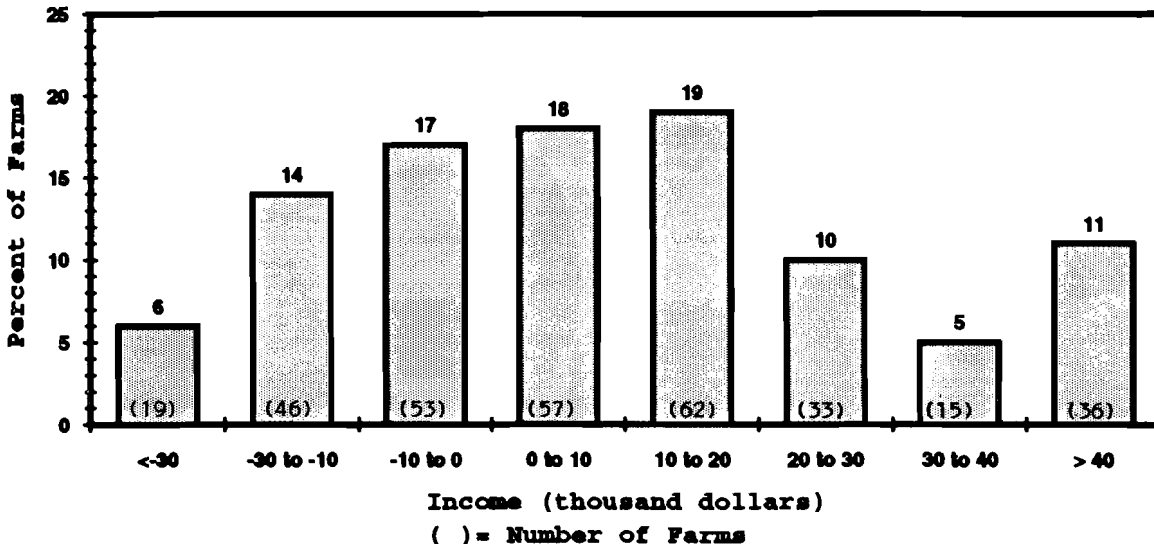
**LABOR AND MANAGEMENT INCOME
321 New York Dairy Farms, 1994**

Item	Average 321 Farms		Average Top 10% Farms
Return to operator(s') labor, management, & equity without appreciation	\$52,473		\$187,738
- Real interest @ 5% on \$608,749 equity capital for average & \$932,864 for the top 10%	<u>30,437</u>		<u>46,643</u>
= Labor & Management Income (1.49 operators)	\$22,036	(1.65)	\$141,095
Labor & Management Income per Operator	\$14,789		\$85,512

Labor and management income per operator averaged \$14,789 on these 321 dairy farms in 1994. The range in labor and management income per operator was from less than -\$150,000 to more than \$720,000. Returns to labor and management were negative on 37% of the farms. Labor and management income per operator ranged from \$0 to \$19,999 on 37% of the farms while 26% showed labor and management incomes of \$20,000 or more per operator.

Chart 1.

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR
321 New York Dairy Farms, 1994**



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
321 New York Dairy Farms, 1994**

Item	Average 321 Farms	Average Top 10% Farms
Return to operators' labor, management, & equity capital with appreciation	\$64,739	\$214,962
- Value of operators' labor & management	<u>36,047</u>	<u>45,875</u>
= Return to equity capital with appreciation	\$28,692	\$169,087
+ Interest paid	<u>24,450</u>	<u>66,980</u>
= Return to all capital with appreciation	\$53,142	\$236,067
Return to equity capital without appreciation	\$16,426	\$141,863
Return to all capital without appreciation	\$40,876	\$208,843
Rate of return on average equity capital:		
with appreciation	4.7%	18.1%
without appreciation	2.7%	15.2%
Rate of return on all capital:		
with appreciation	5.5%	12.6%
without appreciation	4.2%	11.1%

Return to all labor and management is another measure of profitability of a business that can be calculated. 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
321 New York Dairy Farms, 1994**

Item	Quartile by Return to All Capital w/Apprec.			
	Lowest 25%	3rd 25%	2nd 25%	Top 25%
Return to all capital (w/apprec.)	\$-14,313	\$12,716	\$40,006	\$176,065
Rate of return on all capital w/appreciation	-2.5%	2.2%	5.1%	9.1%
Total returns to all labor & management	\$6,414	\$26,813	\$52,026	\$237,468
Worker equivalent	2.75	2.63	3.25	7.45
Return per worker equiv.	\$2,332	\$10,195	\$16,008	\$31,875
Returns/hour (3,000 hours/ worker/year)	\$0.78	\$3.40	\$5.34	\$10.62

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.

1994 FARM BUSINESS AND NONFARM BALANCE SHEET
321 New York Dairy Farms, 1994

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
Current			Current		
Farm cash, checking & savings	\$ 6,434	\$ 7,311	Accounts payable	\$11,712	\$13,345
Accounts rec.	28,628	30,169	Operating debt	12,177	17,440
Prepaid expenses	677	714	Short-term	6,382	5,195
Feed & supplies	<u>74,610</u>	<u>84,995</u>	Advance Govt. Rec.	15	13
Total	\$110,349	\$123,189	Current portion:		
			Intermediate	25,768	28,341
			Long-term	<u>8,376</u>	<u>9,266</u>
			Total	\$64,430	\$73,600
Intermediate			Intermediate		
Dairy Cows:			Structured debt		
owned	\$152,208	\$160,986	1-10 years	\$129,955	\$133,346
leased	862	399	Financial lease		
Heifers	65,306	70,910	(cattle/mach.)	5,516	3,939
Bulls/other lvstk.	1,463	1,734	Farm Credit stock	<u>4,657</u>	<u>5,050</u>
Mach./eq. owned	166,298	172,745	Total	\$140,128	\$142,335
Mach./eq. leased	4,654	3,540			
Farm Credit stock	4,657	5,050	Long-Term		
Other stock & cert.	<u>12,139</u>	<u>12,132</u>	Structured debt		
Total	\$407,587	\$427,496	≥ 10 years	\$144,185	\$146,855
			Financial lease		
Long-Term			(structures)	<u>1,061</u>	<u>2,002</u>
Land/buildings:			Total	\$145,246	\$148,857
owned	\$423,724	\$436,685			
leased	<u>1,061</u>	<u>2,002</u>	Total Farm Liab.	\$349,804	\$364,792
Total	\$424,785	\$438,687			
			FARM NET WORTH	\$592,917	\$624,580
Total Farm Assets	\$942,721	\$989,372			
			Nonfarm Liabilities*		
Nonfarm Assets*	Jan.1	Dec. 31	& Net Worth	Jan. 1	Dec. 31
Personal cash, chkg. & savings	\$ 6,131	\$ 8,087	Nonfarm Liab.	\$ 3,708	\$ 3,541
Cash value life ins.	9,230	9,853	NONFARM NET WORTH	\$67,894	\$74,403
Nonfarm real estate	27,445	28,418			
Auto (personal sh.)	4,362	4,629	FARM & NONFARM**	Jan. 1	Dec. 31
Stocks & bonds	8,031	8,748	Total Assets	\$1,014,323	\$1,067,316
Household furn.	9,200	9,375	Total Liabilities	<u>353,512</u>	<u>368,333</u>
All other	<u>7,203</u>	<u>8,834</u>			
Total Nonfarm	\$71,602	\$77,944	TOTAL FARM & NON-FARM NET WORTH	\$660,811	\$698,983

*Average of 177 farms completing the nonfarm balance sheet.

**Sum of average farm values for 321 farms and nonfarm values for 177 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 following condensed balance sheet, including deferred taxes, contains average data from only those farmers who elected to provide the additional information required to compute deferred taxes. This was the second year this information was collected, therefore this data should not be considered representative of all DFBS farms.

Deferred taxes represent an estimate of the taxes that would be paid if the farm were sold at year end fair market values. Accuracy is dependent on the accuracy of the market values and the tax basis data provided. Any tax liability for assets other than livestock, machinery, land, buildings and nonfarm assets is excluded. It is assumed that all gain on purchased livestock and machinery is ordinary gain and that listed market values are net of selling costs. The effects of investment tax credit carryover and recapture, carryover of operating losses, alternative minimum taxes and other than average exemptions and deductions are excluded because they have only minor influence on the taxes of most farms. However, they could be important in individual situations.

Table 11.

CONDENSED BALANCE SHEET INCLUDING DEFERRED TAXES
December 31, 1994
13 New York Dairy Farms, 1994

ASSETS		LIABILITIES & NET WORTH	
		Current debts & payables	\$ 76,486
		Current deferred taxes	<u>28,029</u>
Total Current Assets	\$102,877	Total Current Liabilities	\$104,515
		Intermediate debts & leases	\$130,669
		Intermediate deferred taxes	<u>101,347</u>
Total Inter. Assets	\$384,759	Total Inter. Liabilities	\$232,016
		Long term debts & leases	\$136,592
		Long term deferred taxes	<u>75,235</u>
Total Long Term Assets	\$418,758	Total Long Term Liab.	\$211,827
TOTAL FARM ASSETS	\$906,394	TOTAL FARM LIABILITIES	\$548,358
		Farm Net Worth	\$358,036
		Percent Equity (Farm)	40%
		Nonfarm debts	\$ 646
		Nonfarm deferred taxes	<u>11,442</u>
Total Nonfarm Assets	\$ 44,390	Total Nonfarm Liabilities	\$ 12,088
TOTAL ASSETS	\$950,784	TOTAL LIABILITIES	\$560,447
		Total Net Worth	390,338
		Percent Equity (Total)	41%

Deferred taxes are listed as current, intermediate and long term farm liabilities and nonfarm liabilities in Table 11. Total farm deferred taxes averaged \$204,611 per farm and 23% of total farm assets on these 13 moderate-sized dairy farms. Total deferred taxes averaged \$216,053 and accounted for 39% of total debt.

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 12.

FARM BALANCE SHEET ANALYSIS
321 New York Dairy Farms, 1994

Item	Average 321 Farms	Average Top 10% Farms		
Farm Financial Ratios:				
Percent equity	63%	51%		
Debt/asset ratio: total	.37	.49		
long-term	.34	.53		
inter. & current	.39	.46		
Farm Debt Analysis:				
Accts. payable as % of total debt	4%	4%		
Long-term liab. as % of total debt	41%	45%		
Current & intermediate liabilities as % of total debt	59%	55%		
Farm Debt Levels:				
	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>
Total farm debt	\$2,324	\$1,566	\$2,559	\$2,499
Long-term debt	948	639	1,150	1,123
Intermediate & long term	1,855	1,249	2,050	2,003
Intermediate & current debt	1,375	927	1,409	1,376

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 13.

FARM INVENTORY BALANCE
321 New York Dairy Farms, 1994

Item	Real Estate	Machinery/Equip.	Livestock
Value beg. of year	\$423,724	\$166,298	\$218,977
Purchases	\$26,220*	\$25,459	
+ nonfarm noncash transfer**	922	429	
- Lost capital	7,594		
- Net sales	2,038	1,954	
- Depreciation	<u>14,113</u>	<u>20,042</u>	
= Net Investment	3,397	3,892	14,269
+ Appreciation	<u>9,564</u>	<u>2,554</u>	<u>385</u>
Value end of year	\$436,685	\$172,745	\$233,631

*\$3,183 land and \$23,037 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 14.

**STATEMENT OF OWNER EQUITY (RECONCILIATION)
321 New York Dairy Farms, 1994**

Item	Average 321 Farms	Average Top 10% Farms
Beginning of year farm net worth	\$592,917	\$870,345
Net farm income w/o appreciation	\$56,084	\$190,203
+ Nonfarm cash income	8,164	7,798
- Personal withdrawals & family expenditures excluding nonfarm borrowings	<u>41,361</u>	<u>71,826</u>
RETAINED EARNINGS	+\$22,887	+\$126,175
Nonfarm noncash transfers to farm	\$1,394	\$4,063
+ Cash used in business from nonfarm capital	3,495	721
- Note/mortgage from farm real estate sold (nonfarm)	<u>262</u>	<u>938</u>
CONTRIBUTED/WITHDRAWN CAPITAL	+ \$4,627	+ \$3,846
Appreciation	\$12,266	\$27,224
- Lost capital	<u>7,594</u>	<u>30,815</u>
CHANGE IN VALUATION EQUITY	+ \$4,672	+ \$-3,591
IMBALANCE/ERROR	- <u>\$516</u>	- <u>\$1,396</u>
End of year farm net worth*	\$624,580	\$995,383
<hr/>		
<u>Change in Net Worth</u>		
Without appreciation	\$19,397	\$97,814
With appreciation	\$31,663	\$125,038

*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 15.

ANNUAL CASH FLOW STATEMENT
321 New York Dairy Farms, 1994

Item	Average	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$445,848	
- Cash farm expenses	<u>372,340</u>	
= Net cash farm income		\$73,507
Nonfarm income	\$8,164	
- Personal withdrawals/family expenses including nonfarm debt payments	<u>41,636</u>	
+ Net cash nonfarm income		<u>\$-33,472</u>
= Net Provided by Operating Activities		\$40,035
<u>Cash Flow From Investing Activities</u>		
Sale of assets: Machinery	\$ 1,954	
+ real estate	1,776	
+ other stock/cert.	<u>531</u>	
= Total asset sales		\$4,261
Capital purchases: expansion livestock	\$ 7,833	
+ machinery	25,459	
+ real estate	26,220	
+ other stock/cert.	<u>761</u>	
- Total invested in farm assets		<u>\$60,273</u>
+ Net Provided by Investment Activities		\$-56,012
<u>Cash Flow From Financing Activities</u>		
Money borrowed (inter. & long-term)	\$56,024	
+ Money borrowed (short-term)	2,251	
+ Increase in operating debt	5,263	
+ Cash from nonfarm cap. used in business	3,495	
+ Money borrowed - nonfarm	<u>275</u>	
= Cash inflow from financing		\$67,308
Principal payments (inter. & long-term)	\$46,500	
+ Principal payments (short-term)	3,438	
+ Decrease in operating debt	<u>0</u>	
- Cash outflow for financing		<u>\$49,938</u>
= Net Provided by Financing Activities		\$17,370
<u>Cash Flow From Reserves</u>		
Beginning farm cash, checking & savings		\$6,434
- Ending farm cash, checking & savings		<u>\$7,311</u>
= Net Provided from Reserves		\$-877
<u>Imbalance (error)</u>		\$516

Table 16.

ANNUAL CASH FLOW BUDGETING DATA
321 New York Dairy Farms, 1994

Item	Average 321 Farms			Average Top 10% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Average no. of cows and cwt. milk		151	30,335		362	77,625
Accrual Operating Receipts						
Milk	\$407,738	\$2,700	\$13.44	\$1,041,021	\$2,876	\$13.41
Dairy cattle	35,256	234	1.16	90,711	251	1.17
Dairy calves	5,852	39	.19	14,216	39	.18
Other livestock	737	5	.03	908	3	.01
Crops	10,441	69	.34	37,253	103	.48
Miscellaneous receipts	<u>9,270</u>	<u>61</u>	<u>.31</u>	<u>16,351</u>	<u>45</u>	<u>.21</u>
Total	\$469,293	\$3,108	\$15.47	\$1,200,460	\$3,316	\$15.46
Accrual Operating Expenses						
Hired labor	\$ 54,711	\$362	\$ 1.80	\$161,134	\$ 445	\$ 2.08
Dairy grain & concentrate	114,788	760	3.78	290,177	802	3.74
Dairy roughage	3,236	21	.11	10,803	30	.14
Nondairy feed	58	0	.00	164	1	.00
Machinery hire/rent/lease	5,944	39	.19	13,264	37	.17
Machinery repairs/parts & auto	22,210	147	.73	39,126	108	.50
Fuel, oil & grease	9,442	63	.31	16,821	46	.22
Replacement livestock	6,445	43	.21	19,958	55	.26
Breeding	5,085	34	.17	9,169	25	.12
Vet & medicine	12,064	80	.40	30,444	84	.39
Milk marketing	20,357	135	.67	38,854	107	.50
Cattle lease	766	5	.03	3,613	10	.05
Other livestock expense	25,708	170	.85	71,003	196	.91
Fertilizer & lime	9,894	66	.33	15,020	41	.19
Seeds & plants	5,670	38	.19	11,719	32	.15
Spray/other crop expense	6,147	41	.20	13,678	38	.18
Land, building, fence repair	6,281	42	.21	13,500	37	.17
Taxes	8,741	58	.29	13,226	37	.17
Real estate rent/lease	6,733	45	.22	16,677	46	.21
Insurance	5,499	36	.18	9,079	25	.12
Utilities	11,487	76	.38	24,440	68	.31
Miscellaneous	<u>5,439</u>	<u>36</u>	<u>.18</u>	<u>14,418</u>	<u>40</u>	<u>.19</u>
Total Less Interest Paid	\$346,704	\$2,296	\$11.43	\$836,286	\$2,310	\$10.77
Net Accrual Operating Income						
(without interest paid)	\$122,589	\$812	\$4.04	\$364,174	\$1,006	\$4.69
- Change in livestock/crop inv.	21,863	145	.72	80,772	223	1.04
- Change in accounts rec.	1,542	10	.05	4,940	14	.06
+ Change in feed/supply inv.	-2,791	-19	-.09	-17,245	-48	-.22
+ Change in accounts payable*	<u>1,386</u>	<u>9</u>	<u>.05</u>	<u>545</u>	<u>2</u>	<u>.01</u>
NET CASH FLOW	\$ 97,779	\$648	\$3.22	\$261,762	\$ 723	\$3.37
- Net personal withdrawals & family expenditures	<u>33,197</u>	<u>220</u>	<u>1.09</u>	<u>64,028</u>	<u>177</u>	<u>.82</u>
Available for Farm Debt						
Payments & Investments	\$ 64,582	\$428	\$2.13	\$197,734	\$ 546	\$2.55
- Farm Debt Payments	<u>73,484</u>	<u>487</u>	<u>2.42</u>	<u>170,569</u>	<u>471</u>	<u>2.20</u>
Cash available for						
Farm Investments	\$ -8,902	\$-59	\$-.29	\$ 27,165	\$ 75	\$.35

*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 1993 and 1994.

Table 17.

FARM DEBT PAYMENTS PLANNED New York Dairy Farms, 1994

Debt Payments	Same 262 Dairy Farms			Average Top 10% Farms		
	1994 Payments		Planned 1995	1994 Payments		Planned 1995
	Planned	Made		Planned	Made	
Long-term	\$20,760	\$25,251	\$22,595	\$ 49,526	\$ 63,254	\$ 63,372
Intermediate-term	36,035	45,110	39,755	74,804	90,382	80,932
Short-term	3,731	3,638	2,928	13,112	16,569	12,190
Operating (net red.)	1,839	0	4,319	6,286	0	4,943
Accts. payable (net reduction)	1,645	0	2,209	653	0	8,992
Total	\$64,009	\$73,999	\$71,805	\$144,382	\$170,205	\$170,430
Per cow	\$427	\$493		\$382	\$450	
Per cwt. 1994 milk	\$2.11	\$2.44		\$1.77	\$2.09	
% of 1994 milk rec.	16%	18%		13%	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 1994 covered debt payments planned for 1994 (as of December 31, 1993).

Table 18.

CASH FLOW COVERAGE RATIO New York Dairy Farms, 1994

Item	Same 262 Dairy Farms	Average Top 10% Farms
Cash farm receipts	\$446,834	\$1,172,010
- Cash farm expenses	373,980	969,722
+ Interest paid	23,930	63,846
- Net personal withdrawals from farm*	<u>32,929</u>	<u>64,805</u>
(A) = Amount Available for Debt Service	\$63,855	\$201,329
(B) = Debt Payments planned for 1994	64,009	144,382
(A ÷ B) = Cash Flow Coverage Ratio for 1994	1.00	1.39

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

Table 19.

DEBT TO ASSET RATIO VS. CASH FLOW COVERAGE 245 New York Dairy Farms, 1994

Debt/Asset Ratio	Cash Flow Coverage Ratio (Farm & Nonfarm)			
	<.5	.5 to .99	1 to 1.49	≥1.5
	percent of farms			
<40%	4.9	18.0	18.4	18.0
40 to 70%	7.3	18.4	8.6	3.2
70% & over	0.4	2.4	0.0	0.4

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 20.

LAND RESOURCES AND CROP PRODUCTION
321 New York Dairy Farms, 1994

Item	Average 321 Farms			Average Top 10% Farms		
	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
<u>Land</u>						
Tillable	233	159	392	385	279	664
Nontillable	47	10	57	38	12	51
Other nontillable	<u>107</u>	<u>7</u>	<u>114</u>	<u>104</u>	<u>13</u>	<u>116</u>
Total	387	176	563	527	304	831
<u>Crop Yields</u>	<u>Farms</u>	<u>Acres</u>	<u>Prod/Acre</u>	<u>Farms</u>	<u>Acres</u>	<u>Prod/Acre</u>
Hay crop	317	197	3.0 tn DM	30	292	3.8 tn DM
Corn silage	297	119	16.4 tn 5.4 tn DM	31	271	17.9 tn 5.8 tn DM
Other forage	39	36	1.7 tn DM	5	59	1.5 tn DM
Total forage	320	310	3.8 tn DM	31	564	4.6 tn DM
Corn grain	157	87	119 bu	15	108	131 bu
Oats	39	37	56 bu	2	29	75 bu
Wheat	21	41	57 bu	2	43	63 bu
Other crops	58	64		11	125	
Tillable pasture	109	31		11	34	
Idle	93	37		4	68	

Crop acres and yields compiled for the average represent only the number of farms reporting each crop. All but four of the 321 farms produced hay or hay crop silage in 1994. Ninety-three percent produced corn silage, 49 percent grew and harvested corn grain, and 12 percent grew oats for grain. Although 109 farms used tillable pasture in 1994, only 39 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 planting, therefore, unharvested acres are reflected in low 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 21.

CROP MANAGEMENT FACTORS
321 New York Dairy Farms, 1994

Item	Average 321 Farms	Average Top 10% Farms
Total tillable acres per cow	2.60	1.83
Total forage acres per cow	2.05	1.51
Harvested forage dry matter, tons per cow	7.85	6.98

In the second year of collecting information on pasture costs, 15 cooperators provided pasture-related expenses. One hundred three cooperators allocated direct crop related expenses to hay crop, corn, and other crop production. The data in Table 22 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 22, the total per tillable acre represents all 321 farms, the expenses for hay and corn crops are for the 103 farms, and the pasture costs are for the 15 farms which submitted data.

Table 22.

CROP RELATED ACCRUAL EXPENSES
New York Dairy Farms, 1994

Expenses	Average	Average 103 Farms Reporting Crop Costs					Average	
	321 Farms	Hay Crop			Corn		15 Farms	
	Total Per Tillable Acre	Per Acre	Per Ton DM	All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Shell Bu.	Per Till. Acre	Per Total Acre
Fert. & lime	\$25.24	\$15.24	\$4.84	\$36.85	\$ 6.75	\$.30	\$30.12	\$ 9.34
Seeds & plants	14.46	9.40	2.98	25.23	4.62	.20	4.70	1.46
Spray & other crop exp.	<u>15.68</u>	<u>3.93</u>	<u>1.25</u>	<u>35.30</u>	<u>6.47</u>	<u>.28</u>	<u>2.98</u>	<u>.93</u>
Total	\$55.38	\$28.57	\$9.07	\$97.38	\$17.84	\$.78	\$37.80	\$11.73
<u>Ave. Top 10% Farms:</u>		<u>Average 8 Farms Reporting Crop Costs</u>						
Fert. & lime	\$22.62	\$24.24	\$ 5.19	\$30.20	\$ 4.78	\$.20		
Seeds & plants	17.65	15.38	3.29	28.74	4.54	.19		
Spray & other crop exp.	<u>20.60</u>	<u>12.06</u>	<u>2.58</u>	<u>34.03</u>	<u>5.38</u>	<u>.23</u>		
Total	\$60.87	\$51.68	\$11.06	\$92.97	\$14.70	\$.62		

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 23.

ACCRUAL MACHINERY EXPENSES
321 New York Dairy Farms, 1994

Machinery Expense Item	Average	Farms	Average Top 10% Farms
	Total Expenses	Per Til. Acre	Total Expenses Per Til. Acre
Fuel, oil & grease	\$ 9,442	\$24.09	\$16,821
Machinery repairs & parts	21,181	54.03	37,917
Machine hire, rent & lease	5,994	15.17	13,264
Auto expenses (farm share)	1,029	2.62	1,209
Interest (5%)	8,476	21.62	13,404
Depreciation	<u>20,042</u>	<u>51.13</u>	<u>38,519</u>
Total	\$66,115	\$168.66	\$121,134

Table 24.

CROP RELATED ACCRUAL EXPENSES BY HAY CROP PRODUCTION PER ACRE
103 New York Dairy Farms, 1994

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	2.2	2.8	3.2	4.4
Farms reporting crop expense breakdowns	14	14	24	21	30
Average number hay crop acres for farms reporting	172	198	170	194	204
Accrual Crop Expenses					
Per Acre of Hay Crop:					
Fertilizer & lime	\$10.64	\$14.16	\$11.96	\$16.88	\$18.63
Seeds & plants	9.27	10.86	8.89	6.91	10.77
Spray & other crop expenses	<u>2.47</u>	<u>2.95</u>	<u>3.37</u>	<u>5.04</u>	<u>4.58</u>
Total	\$22.38	\$27.97	\$24.22	\$28.83	\$33.98
Accrual Crop Expense					
Per Ton DM of Hay Crop:					
Fertilizer & lime	\$ 6.76	\$ 6.17	\$4.34	\$5.23	\$4.27
Seeds & plants	5.90	4.73	3.22	2.14	2.47
Spray & other crop expenses	<u>1.57</u>	<u>1.29</u>	<u>1.22</u>	<u>1.56</u>	<u>1.05</u>
Total	\$14.23	\$12.19	\$8.78	\$8.93	\$7.79

Table 25.

CROP RELATED ACCRUAL EXPENSES BY CORN PRODUCTION PER ACRE
99 New York Dairy Farms, 1994

Item	Tons Corn Silage/Acre			Dry Shell Bushels of Corn Grain Per Acre		
	≤12	13-17	≥18	≤87	88-112	≥113
Corn yield per acre	11.1	15.6	20.0	75	103	138
Farms reporting crop expense breakdowns	14	52	33	11	10	39
Average number corn acres for farms reporting	161	177	198	180	206	221
Accrual Crop Exp./Acre of Corn						
Fertilizer & lime	\$24.45	\$ 39.39	\$ 37.65	\$31.91	\$39.50	\$ 41.07
Seeds & plants	21.30	25.44	26.24	23.58	22.28	26.10
Spray & other crop expenses	<u>25.76</u>	<u>36.76</u>	<u>36.74</u>	<u>30.69</u>	<u>33.95</u>	<u>36.90</u>
Total	\$71.51	\$101.59	\$100.63	\$86.18	\$95.73	\$104.07
Accrual Crop Expense Per:*						
	Ton DM of Corn Silage			Dry Shell Bushel of Corn Grain		
Fertilizer & lime	\$ 6.72	\$ 7.51	\$ 5.72	\$.41	\$.38	\$.30
Seeds & plants	5.85	4.85	3.99	.31	.22	.19
Spray & other crop expense	<u>7.08</u>	<u>7.01</u>	<u>5.58</u>	<u>.40</u>	<u>.33</u>	<u>.27</u>
Total	\$19.65	\$19.37	\$15.29	\$1.12	\$.93	\$.76

*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 2.5 tons per acre. The lower dry matter costs on the group of 30 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 with and without appreciation.

Table 26.

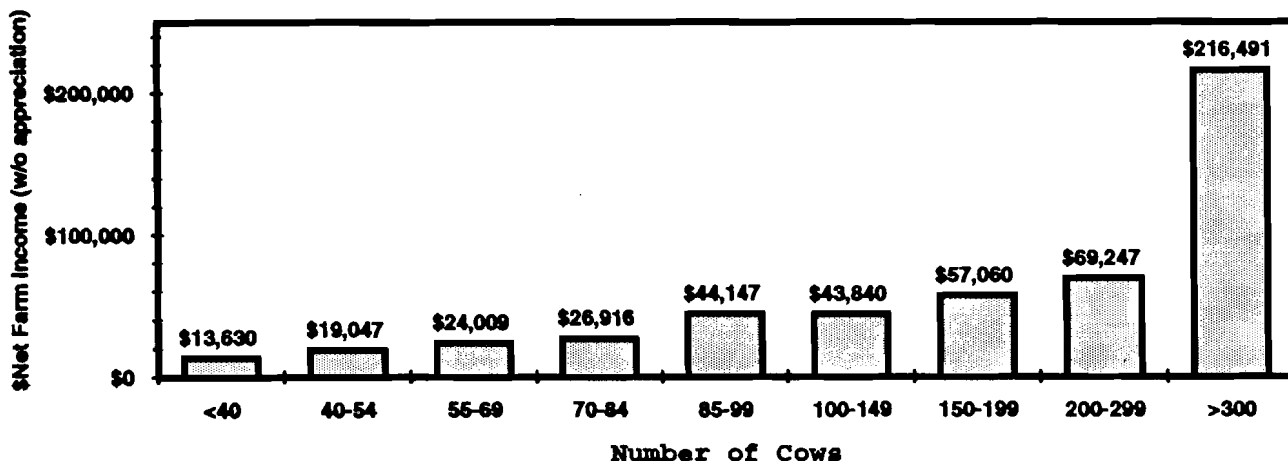
DAIRY HERD INVENTORY 321 New York Dairy Farms, 1994

Item	Dairy Cows		Heifers				Calves	
	No.	Value	Bred		Open		No.	Value
			No.	Value	No.	Value		
Beg. year (owned)	147	\$152,208	40	\$34,905	37	\$20,133	35	\$10,268
+ Change w/o apprec.		8,638		4,227		1,369		-263
+ Appreciation		<u>140</u>		<u>176</u>		<u>76</u>		<u>20</u>
End year (owned)	155	\$160,986	44	\$39,308	40	\$21,578	35	\$10,025
End incl. leased	157							
Average number	151		116	(all age groups)				
Average Top 10% Farms:								
Beg. year (owned)	345	\$337,170	91	\$75,917	75	\$35,912	75	\$22,860
+ Change w/o apprec.		27,750		10,559		8,045		-1,552
+ Appreciation		<u>2,091</u>		<u>187</u>		<u>0</u>		<u>47</u>
End year (owned)	370	\$367,011	103	\$86,663	93	\$43,957	73	\$21,355
End incl. leased	376							
Average number	362		259	(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 2. Net farm income increased \$202,861 while labor and management income per operator jumped \$69,125 as herd size increased from less than 40 to over 300 cows per farm.

Chart 2.

NET FARM INCOME (WITHOUT APPRECIATION) BY HERD SIZE 321 New York Dairy Farms, 1994



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 27.

MILK PRODUCTION
321 New York Dairy Farms, 1994

Item	Average 321 Farms	Average Top 10% Farms
Total milk sold, lbs.	3,033,504	7,762,462
Milk sold per cow, lbs.	20,091	21,441
Average milk plant test, percent butterfat	3.64	3.60

Farms with higher rates of production tend to have higher profits. In 1994, most of the farms that sold more than 20,000 pounds of milk per cow had above average profit margins.

Table 28.

MILK SOLD PER COW AND FARM INCOME MEASURES
321 New York Dairy Farms, 1994

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	16	87	\$24,001	\$276	\$-3,078
14,000 to 15,999	34	85	21,619	254	-796
16,000 to 16,999	30	87	19,188	221	-3,504
17,000 to 17,999	31	91	26,706	293	1,452
18,000 to 18,999	41	101	40,060	397	9,574
19,000 to 19,999	49	125	37,742	302	6,079
20,000 to 20,999	42	221	79,943	362	23,598
21,000 to 21,999	36	246	103,749	422	36,907
22,000 & over	42	247	116,568	472	38,766

The relationship between milk output per cow and net farm income on all dairy farms is shown in Table 28 above and is diagrammed in Charts 3 and 4 on page 25. Each spot on each scatter diagram represents one of the 321 farms.

The relationship between milk output per cow and net farm income per cow is presented in Chart 3 and Table 28. 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. There is a consistent upward trend in net farm income per cow when milk output increases from 18,000 to 23,000 pounds per cow. Five of the seven farms that achieved \$1,000 or more of net farm income per cow sold between 19,000 and 23,000 pounds of milk per cow.

Chart 4 and Table 28 show that as milk sold per cow increased from less than 14,000 pounds to 19,999 pounds, the increase in net farm income was relatively small. As milk output increased from 20,000 pounds to 22,000 pounds per cow and over, the increase and variability in net farm income became larger.

Chart 3.

**NET FARM INCOME/COW & MILK/COW
321 New York Dairy Farms, 1994**

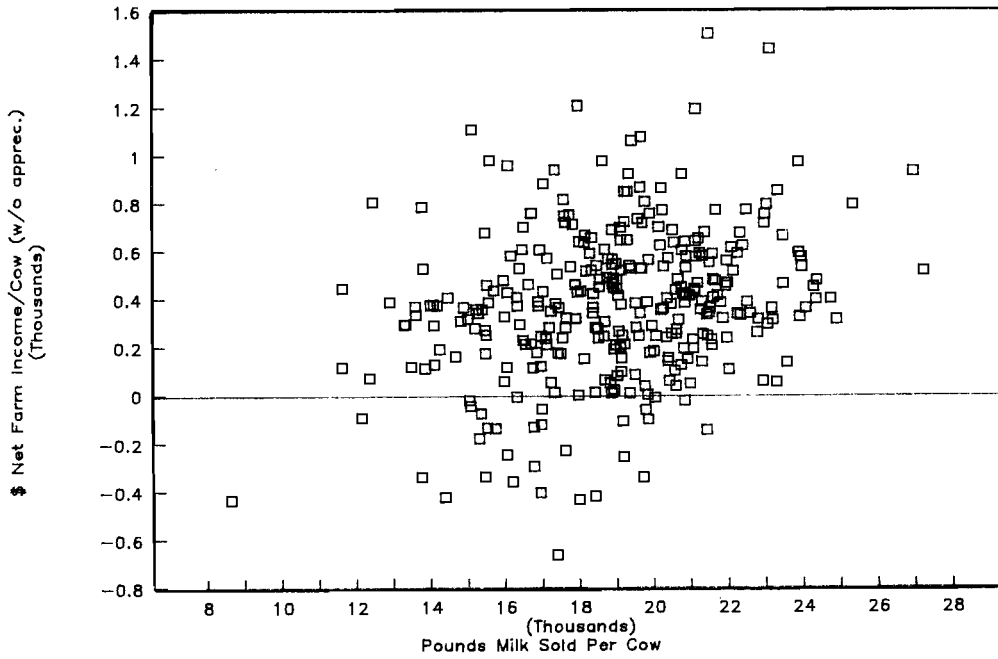
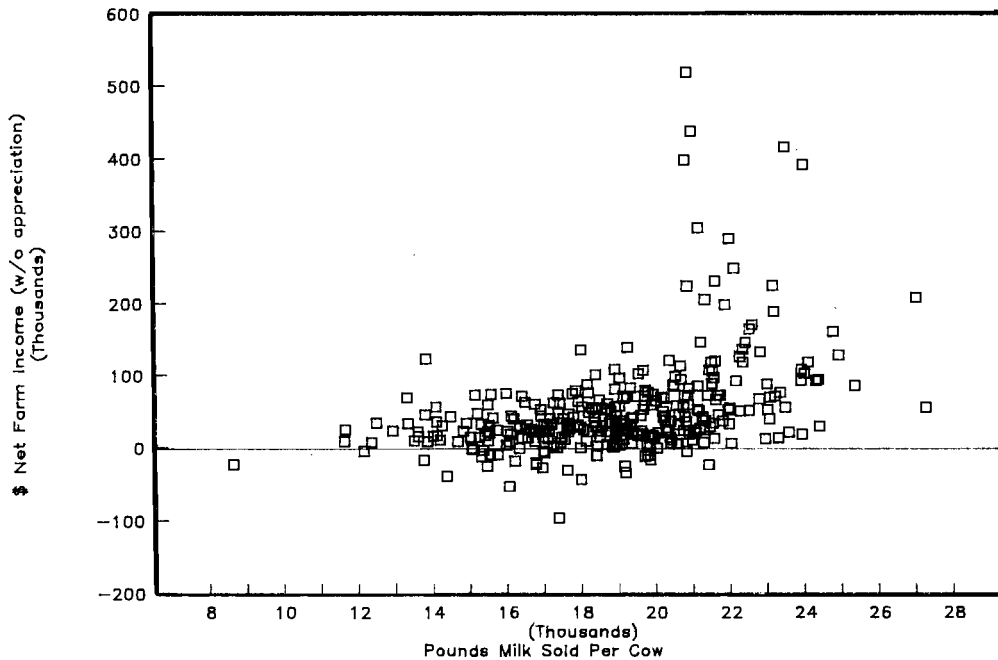


Chart 4.

**NET FARM INCOME & MILK PER COW
321 New York Dairy Farms, 1994***



*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 costs 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 costs 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 costs of producing milk. This cost includes all the operating, depreciation, and imputed costs of producing milk.

Table 29.

COST OF PRODUCING MILK WHOLE FARM METHODS CALCULATIONS
321 New York Dairy Farms, 1994

Item	Average 321 Farms	Average Top 10% Farms
Total Accrual Oper. Expenses	\$371,156	\$903,267
Expansion Livestock, Accrual	<u>7,858</u>	<u>25,444</u>
1. Total Accrual Oper. Expenses, Incl. Expansion Livestock	\$379,014	\$928,711
Total Accrual Receipts	\$469,253	\$1,200,461
Milk Sales, Accrual	<u>-407,738</u>	<u>-1,041,021</u>
2. Total Accrual Nonmilk Receipts	-\$61,515	-\$159,440
3. Oper. Costs of Producing Milk	\$317,499	\$769,271
Cwt. of Milk Sold	+30,335	+77,625
Operating Costs/Cwt.	=\$10.47	= \$9.91
Machinery Depreciation	+\$20,042	+ 38,519
Building Depreciation	+ <u>14,113</u>	+ <u>43,028</u>
4. Purchased Inputs Costs of Producing Milk	\$351,654	\$850,818
Cwt. of Milk Sold	+30,335	+77,625
Purchased Inputs Cost/Cwt.	=\$11.59	=\$10.96
Family Labor Unpaid (\$1,450/month)	+ 3,611	+ 2,465
Real Interest on Equity Cap.	+ 30,437	+ 46,643
Value of Oper. Labor & Mgmt.	+ <u>36,047</u>	+ <u>45,875</u>
5. Total Costs of Producing Milk	\$421,749	\$945,801
Cwt. Milk Sold	+30,335	+77,625
Total Costs/Cwt.	=\$13.90	=\$12.18

Costs of producing milk per hundredweight are presented for eight expenditure categories in Table 30. The whole farm method assumption that accrual nonmilk receipts represent nonmilk operating costs is used in computing net costs. A \$7,635 average increase in crop inventories per farm, (\$.25 per cwt. of milk), is included in crop sales.

Table 30.

**ITEMIZED COSTS OF PRODUCING MILK PER HUNDREDWEIGHT
BASED ON WHOLE FARM DATA
321 New York Dairy Farms, 1994**

Item	Average 321 Farms	Average Top 10% Farms
Dairy grain and concentrate	\$3.78	\$3.74
Total feed expense	\$3.89	\$3.88
Crop expense	.72	.52
- Crop sales and government receipts*	<u>.49</u>	<u>.56</u>
Net Feed and Crop Expense	\$4.12	\$3.84
Hired labor	1.80	2.08
Operator's and family labor	<u>1.31</u>	<u>.62</u>
Total Labor Expense	\$3.11	\$2.70
Machine repairs, fuel and hire	1.23	.89
Machinery depreciation	.66	.50
- Gas tax refunds and custom work	<u>.03</u>	<u>.02</u>
Net Machinery Expense	\$1.86	\$1.37
Replacement and expansion cattle purchases	.47	.58
- Sales and inventory growth	<u>1.38</u>	<u>1.36</u>
Net Cattle Purchases	\$-.91	\$-.78
Milk marketing costs	.67	.50
All other livestock expense excluding purchases	<u>1.44</u>	<u>1.47</u>
Net Livestock Expense	\$2.11	\$1.97
Real estate repairs, rent and taxes	.72	.56
Building depreciation	<u>.47</u>	<u>.55</u>
Total Real Estate Expense	\$1.19	\$1.11
Interest paid	.81	.86
Interest on equity	<u>1.00</u>	<u>.60</u>
Total Interest Expense	\$1.81	\$1.46
Other operating and miscellaneous expenses	.74	.62
- Miscellaneous income	<u>.13</u>	<u>.11</u>
Net Miscellaneous Expenses	\$.61	\$.51
Total Cost of Producing Milk	\$13.90	\$12.18
Purchased Inputs Costs	\$11.59	\$10.96
Total Operating Costs	\$10.47	\$ 9.91

*Non-crop related government payments may produce irregular results.

The three measures of accrual costs of producing milk per cow and per hundredweight are compared with accrual receipts from milk sales in Table 31.

Table 31.

**ACCRUAL RECEIPTS FROM DAIRY, COSTS OF PRODUCING MILK, AND PROFITABILITY
321 New York Dairy Farms, 1994**

Item	Average 321 Farms			Average Top 10% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Accrual Costs of Producing Milk						
Operating Costs	\$317,498	\$2,103	\$10.47	\$769,271	\$2,125	\$ 9.91
Purchased Inputs Cost	351,654	2,329	11.59	850,818	2,350	10.96
Total Costs	421,748	2,793	13.90	945,801	2,613	12.18
Accrual Receipts from Milk						
Net Farm Income w/o Apprec.	\$407,738	\$2,700	\$13.44	\$1,041,021	\$2,876	\$13.41
Net Farm Income with Apprec.	\$56,084	\$371	\$ 1.85	\$190,203	\$525	\$ 2.45
Net Farm Income with Apprec.	\$68,350	\$453	\$ 2.25	\$217,427	\$601	\$ 2.80

Operating costs of producing milk on all 321 dairy farms averaged \$10.47 per hundredweight, leaving \$2.97 to cover depreciation, unpaid labor and operator resources.

The total cost of producing milk on all 321 dairy farms averaged \$13.90 per hundredweight, \$.46 more than the average price received for milk sold from these farms during 1994. 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 \$2.19 per hundredweight in 1994. The computed returns averaged \$1.73 per hundredweight. The 32 most profitable farms held their operating costs to \$9.91 per hundredweight and their total costs of producing milk averaged \$12.18 per hundredweight. This left a profit of \$1.23 per hundredweight of milk sold.

The strong relationship between milk output per cow and the costs of producing milk are shown in Table 32 and Chart 5 on page 29. Farms selling less than 18,000 pounds of milk per cow had average total costs of production of \$15.62 per hundredweight while those selling 18,000 pounds and over average \$13.78 for a difference of \$1.84 per hundredweight.

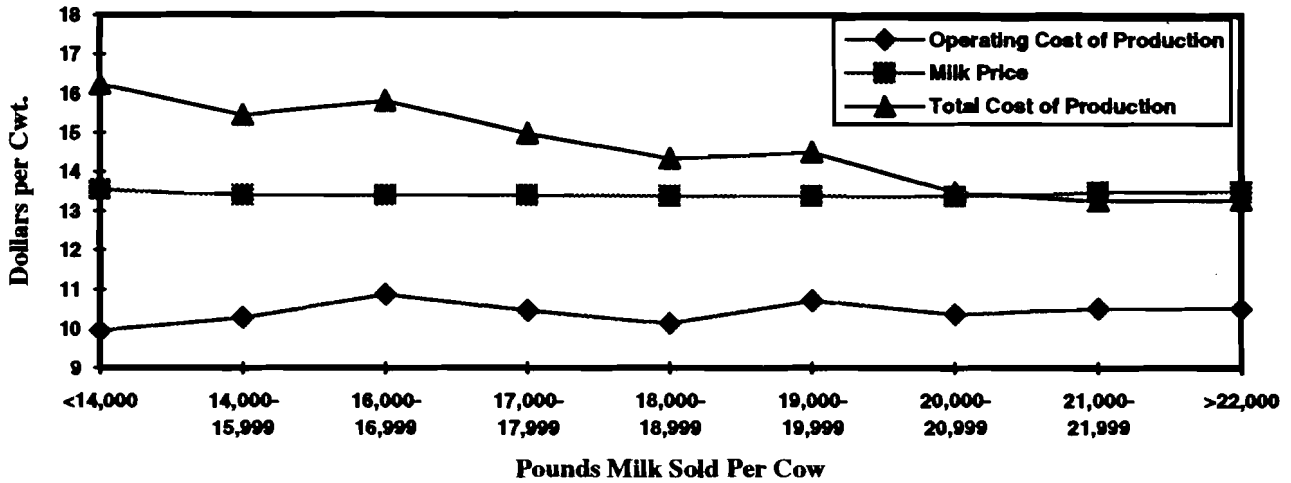
Table 32.

**FARM COST OF PRODUCING MILK BY MILK SOLD PER COW
321 New York Dairy Farms, 1994**

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	\$9.96	\$11.44	\$16.24	\$13.56	\$1.59
14,000 - 15,999	10.27	11.70	15.45	13.40	1.47
16,000 - 16,999	10.86	12.08	15.81	13.41	1.12
17,000 - 17,999	10.45	11.73	14.98	13.40	1.39
18,000 - 18,999	10.13	11.25	14.35	13.39	1.89
19,000 - 19,999	10.72	11.84	14.52	13.39	1.45
20,000 - 20,999	10.36	11.63	13.48	13.38	1.67
21,000 - 21,999	10.51	11.51	13.25	13.48	1.89
22,000 & over	10.50	11.50	13.29	13.51	1.97

Chart 5.

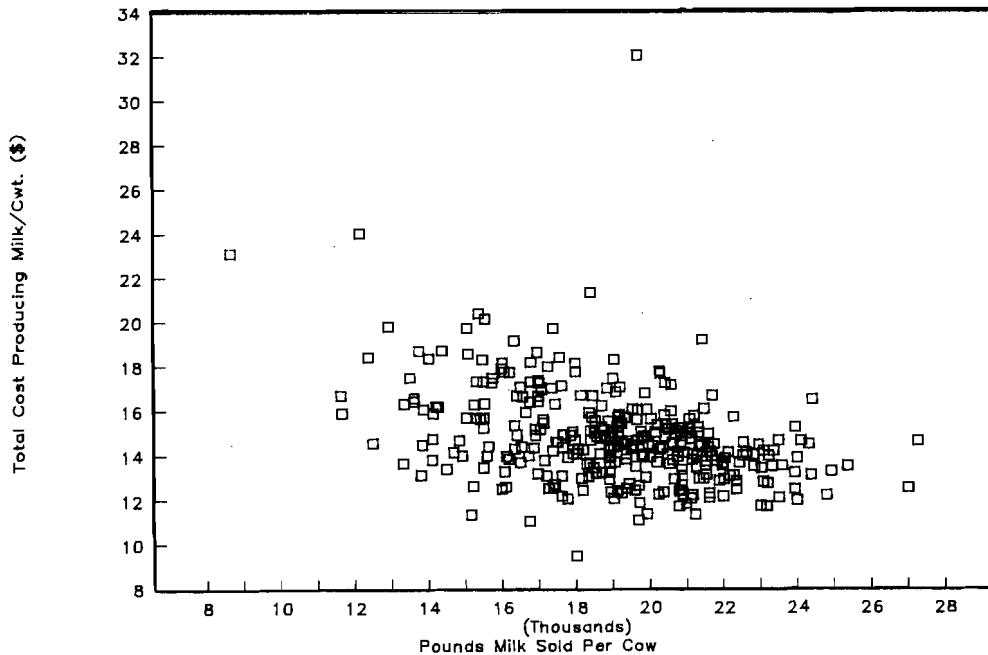
PRODUCTION COST & MILK PRICE BY MILK/COW
321 New York Dairy Farms, 1994



The relationship between total costs of producing milk and milk sold per cow is diagrammed in Chart 6. It shows that as milk sold per cow increases from 13,000 pounds to 23,000 pounds per cow, on the average, total costs of production decrease from nearly \$18 to less than \$13 per hundredweight at a fairly constant rate.

Chart 6.

TOTAL COST OF PRODUCTION & MILK PER COW
321 New York Dairy Farms, 1994



Data in Table 33 and Chart 7 show average operating costs of producing milk somewhat higher on dairy farms with 150 to over 300 cows. More labor is included as an operating expense on large farms because hired labor is a greater proportion of the total labor resources used. Total costs of production generally decline as herd size increases because the costs of operator's resources are spread over more units of production.

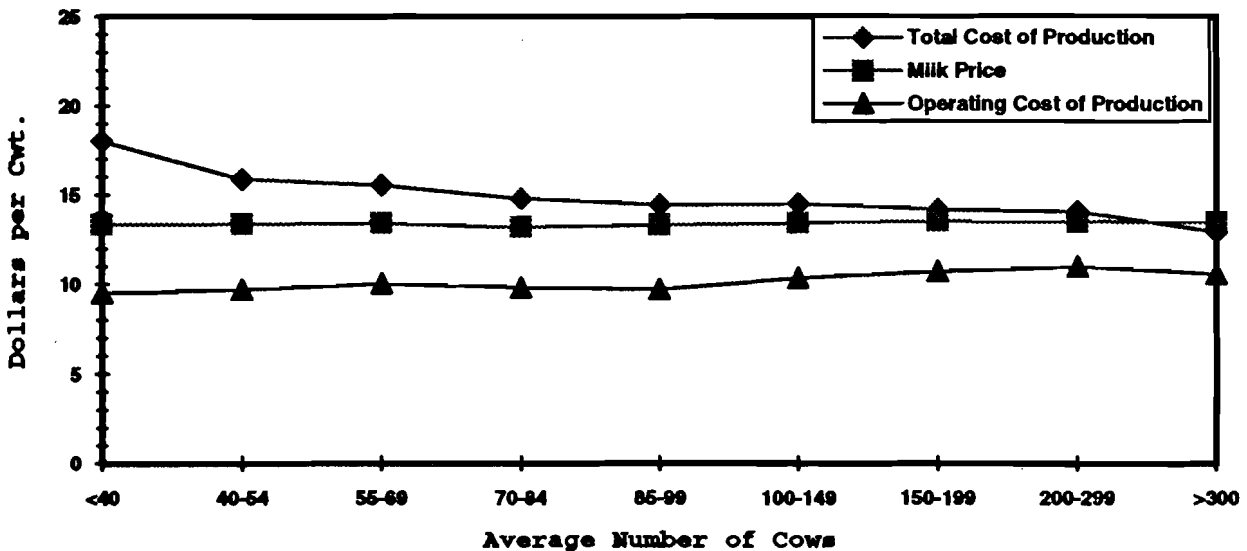
Table 33.

FARM COST OF PRODUCING MILK BY HERD SIZE
321 New York Dairy Farms, 1994

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	\$9.52	\$11.08	\$18.02	\$13.35	\$1.76
40 to 54	9.69	11.00	15.87	13.34	1.72
55 to 69	10.07	11.31	15.54	13.44	1.84
70 to 84	9.79	11.13	14.78	13.16	1.83
85 to 99	9.72	10.86	14.44	13.33	2.20
100 to 149	10.35	11.49	14.51	13.44	1.77
150 to 199	10.75	11.82	14.16	13.52	1.58
200 to 299	10.97	12.03	14.07	13.50	1.42
300 & over	10.58	11.67	12.93	13.46	1.78

Chart 7.

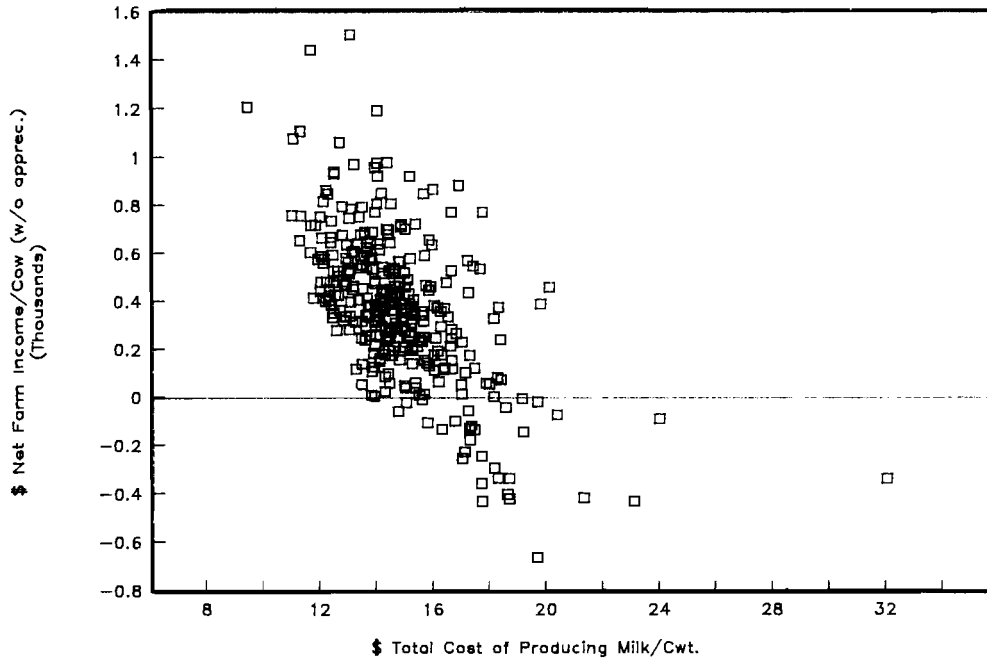
PRODUCTION COST & MILK PRICE BY HERD SIZE
New York Dairy Farms, 1994



The importance of cost control and its impact on farm profitability are illustrated in Chart 8. As total cost of producing milk increased from \$11 to \$20 per hundredweight, net farm income per cow fell from approximately \$1,000 to \$-600. On the average, net farm income per cow was positive until total costs of production exceeded \$16 per hundredweight.

Chart 8.

**NET FARM INCOME/COW & TOTAL COST OF PRODUCING MILK
321 New York Dairy Farms, 1994**



A 10-year comparison of the average costs and returns of producing milk per hundredweight are presented in Table 34 on page 32. 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 1985 through 1994. In 1994 average operating costs of producing milk increased three percent after decreasing two percent from 1992 to 1993. The average return per hundredweight to operator labor, management, and capital rose to \$1.72 in 1994, five percent above 1993.

A 10-year comparison of selected average business factors for all specialized DFBS farms is presented in Table 35 on page 33. Average cow numbers are up 70 percent, tillable acres have increased 40 percent, and milk sold per farm has jumped 117 percent since 1985. Capital investment per cow has increased 10 percent, far less than inflation, over the last 10 years. Labor and management income per operator increased 64 percent in 1994 compared to 1993, and farm net worth continued to grow.

Table 34.

TEN YEAR COMPARISON: AVERAGE COST OF PRODUCING MILK PER HUNDREDWEIGHT
New York Dairy Farms, 1985 to 1994

Item	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Operating Expenses										
Hired labor	\$ 1.38	\$ 1.38	\$ 1.49	\$ 1.46	\$ 1.62	\$ 1.77	\$ 1.74	\$ 1.80	\$ 1.86	\$ 1.80
Purchased feed	3.09	3.15	3.26	3.73	4.02	4.28	3.88	3.92	3.85	3.89
Machinery repairs & rent	.78	.75	.88	.83	.92	1.06	.89	.93	.89	.89
Auto expenses (farm share)	.03	.04	.04	.04	.04	.05	.04	.04	.04	.03
Fuel, oil & grease	.48	.34	.35	.34	.33	.41	.37	.35	.34	.31
Replacement livestock	.10	.13	.13	.11	.17	.20	.15	.21	.17	.21
Breeding fees	.20	.19	.19	.18	.18	.19	.18	.18	.19	.17
Veterinary & medicine	.27	.28	.28	.28	.30	.32	.33	.35	.37	.40
Milk marketing	.80	.84	.74	.52	.49	.53	.58	.63	.64	.67
Other dairy expenses	.53	.52	.53	.56	.60	.68	.65	.70	.72	.88
Lime & fertilizer	.63	.49	.50	.51	.50	.50	.40	.37	.36	.33
Seeds & plants	.23	.21	.21	.21	.22	.22	.20	.21	.20	.19
Spray & other crop expense	.22	.20	.19	.19	.21	.22	.20	.21	.20	.20
Land, building, fence repair	.17	.16	.20	.22	.27	.32	.19	.24	.21	.21
Taxes	.34	.33	.35	.35	.36	.37	.38	.35	.34	.29
Insurance	.22	.22	.22	.23	.23	.24	.23	.22	.20	.18
Telephone & elec. (farm share)	.37	.39	.38	.38	.39	.39	.39	.38	.39	.38
Interest paid	1.25	1.18	1.04	1.02	1.06	1.05	1.07	.88	.80	.81
Misc. (including rent)	.40	.41	.45	.41	.43	.47	.43	.44	.41	.40
Total Operating Expenses	\$11.50	\$11.22	\$11.43	\$11.57	\$12.34	\$13.27	\$12.30	\$12.41	\$12.18	\$12.24
Less: Nonmilk cash receipts	1.58	1.52	1.84	1.86	1.75	1.75	1.73	1.67	1.65	1.30
Increase in feed & supplies*	.05	.01	.16	.16	.02	.26	.04	.23	.13	.25
Increase in livestock	.18	.12	.10	.08	.12	.15	.18	.08	.22	.21
OPERATING COST OF MILK PRODUCTION	\$ 9.69	\$ 9.57	\$ 9.33	\$ 9.47	\$10.45	\$11.11	\$10.35	\$10.43	\$10.18	\$10.47
Overhead Expenses										
Depreciation: mach. & bldgs.	\$ 1.64	\$ 1.54	\$ 1.43	\$ 1.31	\$ 1.31	\$1.35	\$ 1.28	\$ 1.19	\$ 1.17	\$ 1.13
Unpaid labor	.12	.13	.10	.11	.12	.19	.18	.16	.15	.12
Operator(s) labor **	.97	.86	.87	.95	.98	1.10	1.06	.99	1.00	.86
Operator(s) mgmt. (5% of cash rec.)	.72	.71	.74	.74	.81	.85	.73	.76	.74	.73
Interest on farm eq. cap. (5%)	1.16	1.10	1.15	1.19	1.24	1.24	1.20	1.11	1.11	1.00
Total Overhead Expenses	\$ 4.61	\$ 4.34	\$ 4.28	\$ 4.30	\$ 4.46	\$ 4.73	\$ 4.45	\$ 4.21	\$ 4.17	\$ 4.84
TOTAL COST OF MILK PRODUCTION	\$14.30	\$13.91	\$13.61	\$13.77	\$14.91	\$15.84	\$14.80	\$14.64	\$14.35	\$15.31
AVERAGE FARM PRICE OF MILK	\$12.90	\$12.65	\$12.89	\$13.03	\$14.53	\$14.93	\$12.95	\$13.58	\$13.14	\$13.44
Return per cwt. to operator labor, capital, & management	\$ 1.45	\$ 1.41	\$ 2.04	\$ 2.14	\$ 2.65	\$ 2.28	\$ 1.14	\$ 1.80	\$ 1.64	\$1.72
Rate of return on farm eq. cap.	-1.0%	-0.7%	1.9%	1.8%	3.3%	1.3%	-2.7%	0.2%	-0.4%	0.6%

*Increase in grown feeds. **1985 = \$800/month, 1986 = \$850/month, 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, and 1994 = \$1,450/month of operator labor.

Table 35.

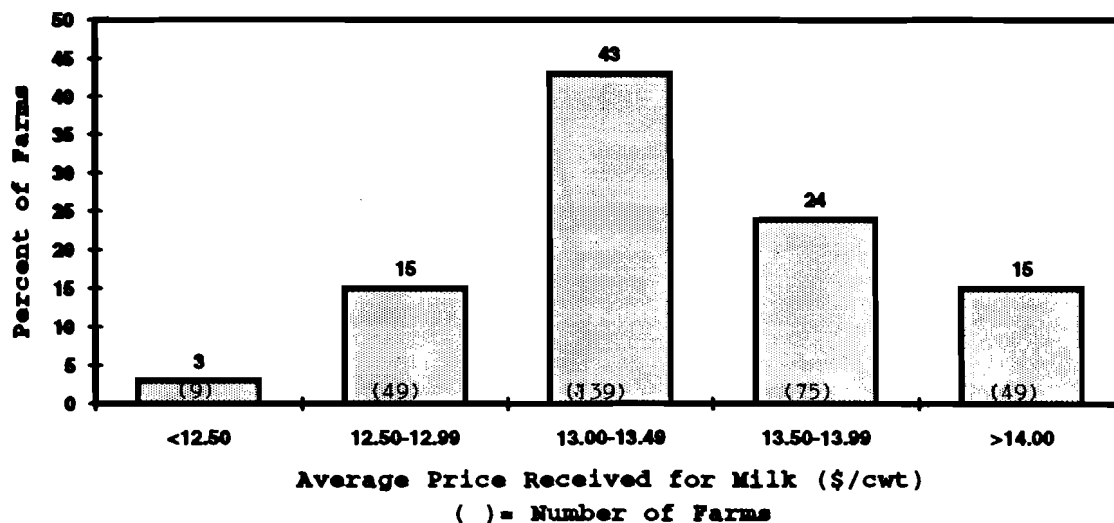
TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS
New York Dairy Farms, 1985 to 1994

Item	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number of farms	404	414	426	406	409	395	407	357	343	321
Cropping Program										
Total tillable acres	280	288	305	302	316	325	330	346	351	392
Tillable acres rented	93	100	105	104	117	121	124	135	135	159
Hay crop acres	142	147	153	156	164	166	169	171	182	195
Corn silage acres	69	67	67	74	81	82	88	98	96	110
Hay crop, tons DM/acre	2.7	2.7	2.7	2.6	2.6	2.7	2.4	2.8	2.7	3.0
Corn silage, tons/acre	14.3	14.3	16.2	14.1	13.4	14.4	13.7	14.5	14.9	16.4
Fert. & lime exp. /tillable acre	\$32	\$26	\$27	\$29	\$29	\$29	\$25	\$25	\$25	\$25
Machinery cost/cow	\$426	\$400	\$413	\$398	\$425	\$483	\$438	\$444	\$430	\$438
Dairy Analysis										
Number of cows	89	95	101	102	104	107	111	123	130	151
Number of heifers	73	77	79	82	83	87	92	96	100	116
Milk sold, cwt.	14,001	15,374	16,498	17,200	17,975	19,005	20,060	23,130	24,448	30,335
Milk sold/cow, lbs.	15,679	16,237	16,351	16,882	17,259	17,720	18,027	18,789	18,858	20,091
Purchased dairy feed/cwt. milk	\$3.04	\$3.10	\$3.21	\$3.71	\$3.99	\$4.27	\$3.87	\$3.91	\$3.85	\$3.89
Purc. grain & conc. as % of milk receipts	23%	24%	24%	28%	27%	28%	29%	28%	29%	28%
Purc. feed & crop exp./cwt. milk	4.13	\$4.00	\$4.11	\$4.62	\$4.92	\$5.21	\$4.67	\$4.70	\$4.61	\$4.61
Capital Efficiency										
Farm capital/cow	\$5,801	\$5,792	\$5,894	\$6,133	\$6,407	\$6,556	\$6,688	\$6,587	\$6,462	\$6,398
Real estate/cow	\$2,726	\$2,758	\$2,805	\$2,902	\$2,977	\$2,977	\$3,063	\$3,015	\$2,932	\$2,859
Mach. invest./cow	\$1,083	\$1,062	\$1,057	\$1,083	\$1,154	\$1,233	\$1,267	\$1,203	\$1,165	\$1,150
Asset turnover ratio	.40	.43	.45	.45	.48	.48	.43	.47	.46	.50
Labor Efficiency										
Worker equivalent	3.17	3.17	3.19	3.17	3.30	3.37	3.38	3.60	3.68	4.02
Operator/manager eq.	1.34	1.33	1.32	1.35	1.39	1.39	1.37	1.41	1.45	1.49
Milk sold/worker, lbs.	442,125	497,555	516,728	542,708	544,598	563,349	593,297	641,893	664,868	755,178
Cows/worker	28	31	32	32	32	32	33	34	35	38
Labor cost/cow	\$387	\$385	\$400	\$426	\$469	\$541	\$538	\$552	\$568	\$558
Profitability & Financial Analysis										
Labor & mgmt. income/oper.	\$2,850	\$3,837	\$11,042	\$11,911	\$18,004	\$14,328	\$-955	\$11,254	\$9,000	\$14,789
Farm net worth	\$325,664	\$348,909	\$398,209	\$426,123	\$468,848	\$471,322	\$480,131	\$515,215	\$542,126	\$608,749
Percent equity	63%	62%	65%	66%	68%	66%	64%	64%	65%	63%

The average or mean price per hundredweight of milk sold is calculated by dividing the gross milk receipts for the year by the total pounds of milk sold. The average price for the 321 farms was \$13.44 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 9.

VARIATION IN AVERAGE MILK PRICE
321 New York Dairy Farms, 1994



Fifty-eight percent of the farms received from \$12.50 to \$13.49 per hundredweight of milk sold. Thirty-nine percent of the farms received \$13.50 or more per hundredweight and 3 percent received less than \$12.50 per hundredweight. Location and organization of markets are factors contributing to the variability of milk prices on these dairy farms. Management practices on farms as well as in milk companies also affect farm milk prices. Seasonality of production and butterfat test are two variables under the direct control of the farm manager.

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 36.

DAIRY RELATED ACCRUAL EXPENSES
321 New York Dairy Farms, 1994

Item	Average 321 Farms		Average Top 10% Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purch. dairy grain & conc.	\$760	\$3.78	\$802	\$3.74
Purchased dairy roughage	21	.11	30	.14
Total Purchased Dairy Feed	\$781	\$3.89	\$832	\$3.88
Purchased grain & conc. as % of milk receipts		28%		28%
Purchased feed & crop exp.	\$925	\$4.61	\$943	\$4.40
Purchased feed & crop exp. as % of milk receipts		34%		33%
Breeding	\$ 34	\$.17	\$ 25	\$.12
Veterinary & medicine	80	.40	84	.39
Milk marketing	135	.67	107	.50
Cattle lease	5	.03	10	.05
Other livestock expense	170	.85	196	.91

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 0.77 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 37.

**PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT
OF MILK AND FARM INCOME MEASURES
321 New York Dairy Farms, 1994**

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
\$6.00 or more	24	98	8.2	17,364	\$25,325	\$-186
5.50 to 5.99	20	149	8.6	19,062	\$29,555	\$-433
5.00 to 5.49	54	113	8.2	19,834	\$34,269	\$3,385
4.50 to 4.99	81	174	7.8	20,353	\$57,279	\$15,836
4.00 to 4.49	78	187	7.5	20,383	\$81,037	\$29,358
3.50 to 3.99	45	147	7.8	20,823	\$65,163	\$17,540
Less than 3.50	19	92	8.5	19,116	\$55,817	\$13,407

On the average, farms with purchased feed and crop expenses exceeding \$5.00 per hundredweight of milk sold reported well below average farm profits. Farms reporting less than \$5.00 per hundredweight showed above average profits. However, reducing feed and crop expenses does not necessarily lead to higher profits particularly when milk output per cow falls below average.

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 38.

CAPITAL EFFICIENCY
321 New York Dairy Farms, 1994

Item (Average for Year)	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
Farm capital	\$240,493	\$6,398	\$2,464	\$4,146
Real estate		\$2,859		\$1,853
Machinery & equipment	\$43,222	\$1,150	\$443	
Asset turnover ratio		.50		
Average Top 10% Farms:				
Farm capital	\$246,048	\$5,187	\$2,828	\$4,877
Real estate		\$2,207		\$2,075
Machinery & equipment	\$35,602	\$750	\$409	
Asset turnover ratio		.65		

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 39.

ASSET TURNOVER AND PROFITABILITY
321 New York Dairy Farms, 1994

Ratio	No. of Farms	No. of Cows	Farm Capital (average for year)		Labor & Mgt. Inc. Per Operator	Net Farm Income (w/o apprec.)
			Per Cow	Per Worker		
≥ .70	19	296	\$4,141	\$177,569	\$46,631	\$108,353
.60 to .69	33	308	5,488	251,547	66,476	141,266
.50 to .59	64	177	5,955	220,552	16,757	61,140
.40 to .49	87	134	6,827	253,117	9,914	48,021
.30 to .39	83	91	8,166	261,249	1,603	34,063
Less than .30	35	61	10,423	278,989	-13,114	10,420

The 32 farms with the highest rates of return on all capital (without appreciation) were considerably above the average of all 321 farms in two measures of labor efficiency. The top 10 percent sold 35 percent more milk per worker than the average of all farms.

Table 40.

LABOR EFFICIENCY
321 New York Dairy Farms, 1994

Labor Efficiency	Average Farms		Average Top 10% Farms	
	Total	Per Worker	Total	Per Worker
Cows, average number	151	38	362	47
Milk sold, pounds	3,033,504	755,178	7,762,462	1,017,235
Tillable acres	392	98	664	87

The labor force averaged 4.02 full-time worker equivalents per farm (based on 230 hours per month). Thirty-seven percent of the labor was supplied by the farm operator/managers. There were two operators on 136 farms, three on 41 farms, seven farms reported four operators, and two farms reported five 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 \$130 per cow less on the 32 farms in the top decile.

Table 41.

LABOR FORCE INVENTORY AND COST ANALYSIS
321 New York Dairy Farms, 1994

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.	
Operator number 1	11.77	47	13	\$24,070	
Operator number 2	4.56	40	13	8,724	
Operator number 3	1.26	37	14	2,696	
Operator number 4	.25	28	13	481	
Operator number 5	.06	23	12	76	
Family paid	4.45			Total \$36,047	
Family unpaid	2.49				
Hired	<u>23.36</u>				
Total	48.20	÷ 12 = 4.02 Worker Equivalent			
		1.49 Operator/Manager Equivalent			
<u>Average Top 10% Farms:</u>					
Total	91.57	÷ 12 = 7.63 Worker Equivalent			
Operators'	19.82	÷ 12 = 1.65 Operator/Manager Equivalent			

	Average 321 Farms			Avg. Top 10% Farms	
Labor Costs	Total	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value op.s' lab. (\$1,450/mo.)	\$ 25,955	\$172	\$.86	\$ 79	\$.37
Family unpaid (\$1,450/mo.)	3,611	24	.12	7	.03
Hired	<u>54,710</u>	<u>362</u>	<u>1.80</u>	<u>445</u>	<u>2.08</u>
Total Labor	\$ 84,276	\$558	\$2.78	\$531	\$2.48
Machinery Cost	<u>66,115</u>	<u>438</u>	<u>2.18</u>	<u>335</u>	<u>1.56</u>
Total Labor & Machinery	\$150,391	\$996	\$4.96	\$866	\$4.04

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 42.

MILK SOLD PER WORKER AND NET FARM INCOME
321 New York Dairy Farm, 1994

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	28	51	16,058	\$20,078	-\$2,899
400,000 to 499,999	55	66	17,562	20,137	-1,586
500,000 to 599,999	58	99	18,350	35,191	3,515
600,000 to 699,999	61	113	19,709	38,203	5,752
700,000 to 799,999	36	127	18,878	52,167	15,224
800,000 to 899,999	32	206	21,068	70,587	20,049
900,000 & over	51	385	21,452	153,438	54,993

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 321 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 43.

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
321 New York Dairy Farms, 1994

Size of Business			Rates of Production			Labor Efficiency	
Worker Equivalent	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
12.0	560	12,116,804	23,770	5.2	23	56	1,112,817
5.9	222	4,628,175	21,769	4.0	20	46	898,663
4.5	159	3,097,796	20,968	3.6	18	41	805,930
3.7	125	2,407,393	20,229	3.2	18	37	717,932
3.2	109	2,051,070	19,422	3.0	16	34	652,910

2.8	93	1,715,708	18,856	2.8	16	32	603,031
2.5	75	1,352,622	18,020	2.5	15	30	552,825
2.2	63	1,137,044	17,044	2.1	14	27	491,227
1.9	51	888,899	15,864	1.9	13	24	433,739
1.4	40	655,673	13,700	1.4	10	20	335,490

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		
\$390	16%	\$268	\$677	\$557	\$3.27		
525	22	326	814	686	3.86		
577	24	362	878	747	4.12		
646	26	401	938	800	4.35		
700	28	436	998	851	4.53		

740	29	471	1,062	898	4.72		
786	31	508	1,119	955	4.90		
846	32	548	1,192	1,016	5.17		
918	35	618	1,295	1,092	5.46		
1,030	40	762	1,536	1,239	6.35		

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 43. (continued)

**FARM BUSINESS CHART FOR
FARM MANAGEMENT COOPERATORS
321 New York Dairy Farms, 1994**

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.
\$3,237	\$14.37	\$1,157	\$6.99	\$2,036	\$11.93
2,932	14.01	1,490	8.63	2,332	12.83
2,800	13.73	1,658	9.22	2,505	13.49
2,709	13.53	1,777	9.68	2,639	13.96
2,612	13.41	1,878	10.00	2,765	14.33

2,514	13.28	1,999	10.47	2,859	14.71
2,408	13.15	2,123	10.82	2,948	15.18
2,285	13.06	2,233	11.28	3,063	15.84
2,101	12.96	2,414	11.86	3,186	16.85
1,823	12.52	2,676	13.34	3,584	19.32

Profitability						
Net Farm Income Without Appreciation			Return to Operator's Labor, Management, & Equity Capital Without Appreciation		Labor & Management Income	
Total	Per Cow	As % of Total Accrual Receipts			Per Farm	Per Operator
\$239,265	\$933	30.1%	\$238,108		\$161,912	\$117,425
92,824	674	21.6	89,418		52,012	32,058
69,505	562	18.6	65,712		34,836	21,472
53,962	477	16.2	50,667		22,844	15,807
40,913	407	14.0	37,499		14,533	10,440

31,093	351	12.0	27,633		7,210	5,358
23,412	280	9.4	20,570		-687	-562
16,656	198	7.0	11,329		-8,059	-6,460
6,546	74	2.6	2,749		-19,089	-16,158
-19,060	-207	-9.3	-24,771		-49,541	-43,229

Farm Business Charts for farms with freestall barns and 180 cows or less and more than 180 cows, and farms with conventional barns with 60 cows or less and more than 60 cows are discussed in the supplemental section on pages 55-58.

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 44.

A FARM FINANCE CHECKLIST 321 New York Dairy Farms, 1994

	Average 321 New York Farms	Average Top 10% Farms*		
<u>How farm assets are being used (average for the year):</u>				
Total assets (capital) per cow	\$6,398	\$5,187		
Farm assets in livestock	23%	27%		
Farm assets in farm real estate	45%	43%		
Farm assets in machinery	18%	14%		
<u>Measures of debt capacity & debt structure:</u>				
Equity in the business	63%	51%		
Farm debt per cow	\$2,324	\$2,559		
Long term debt/asset ratio**	.34	.53		
Intermediate & current term debt/asset ratio**	.39	.46		
Intermediate & current term debt as % of total	59%	55%		
<u>Debt repayment ability:***</u>				
Cash flow coverage ratio	1.00	1.39		
Debt payments made per cow	\$493	\$450		
Debt payments made as % of milk receipts	18%	16%		
<u>Indicators of annual financial progress:</u>				
	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>
Annual change in farm assets	+\$46,651	+4.9%	+\$159,956	+8.9%
Annual change in farm debts	+\$14,988	+4.3%	+\$34,918	+3.8%
Annual change in farm net worth	+\$31,663	+5.3%	+\$125,038	+14.4%

*Thirty-two 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 262 farms that participated in Summary Program both in 1993 and 1994. Twenty-five of the 32 top 10 percent farms participated both years.

The most profitable farms carried \$235 more debt per cow, the average equity in their businesses was 12 percent lower than that of the average of all 321 farms, but they had a greater ability to make 1994 debt payments.

Average farm assets grew 0.6 percent faster than debts during 1994. Average farm net worth increased 5.3 percent.

The farm financial analysis chart is designed just like the farm business chart on pages 38-39 and may be used to measure the financial health of the farm business. Most of the financial measures are defined on pages 12, 15, 19, and 36 in this publication.

Table 45.

FINANCIAL ANALYSIS CHART
321 New York Dairy Farms, 1994

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	
\$43	\$804	4.63	5%	\$74	
204	615	1.66	9	669	
283	538	1.35	12	1,191	
332	475	1.15	14	1,727	
396	424	1.00	16	2,069	

452	387	0.87	18	2,387	
507	322	0.74	20	2,694	
562	243	0.61	23	3,015	
636	189	0.41	26	3,510	
796	0	-0.08	35	4,398	

Solvency				Profitability	
Leverage Ratio*	Percent Equity	Debt/Asset Ratio		Percent Rate of Return with appreciation on:	
		Current & Intermediate	Long Term	Equity	Investment**
0.01	99%	0.01	0.00	21%	13%
0.10	91	0.10	0.00	10	9
0.22	82	0.17	0.01	8	7
0.34	74	0.24	0.12	5	6
0.45	69	0.30	0.23	3	4

0.58	64	0.37	0.33	1	3
0.74	57	0.43	0.41	0	2
0.92	53	0.49	0.52	-2	0
1.20	45	0.58	0.64	-6	-1
3.54	31	0.81	0.91	-22	-6

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	
.75	\$1,152	\$571	\$4,262	\$182,925	
.60	1,924	751	5,128	63,674	
.55	2,232	902	5,569	41,117	
.50	2,491	1,040	5,948	29,544	
.47	2,764	1,167	6,368	20,624	

.43	3,033	1,290	6,842	14,936	
.39	3,377	1,443	7,447	8,501	
.36	4,026	1,683	8,055	1,168	
.32	4,698	1,969	8,891	-10,157	
.25	6,692	2,703	11,657	-40,417	

*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 321 New York dairy farms have been sorted into nine herd size categories and averages for the farms in each category are presented in Tables 46 through 50. 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 46). Net farm income without appreciation averaged \$13,630 per farm for the less than 40 cow farms and \$216,491 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. Net farm income per cow is higher on farms with less than 100 cows than on farms averaging 100 cows or more. Farms with 85 to 99 cows averaged \$475 net farm income per cow while the 200 to 299 cow dairy farms average only \$302 net farm income per cow. Other factors that affect profitability and their relationship to the size classifications are shown in Table 47.

Table 46.

COWS PER FARM AND FARM FAMILY INCOME MEASURES 321 New York Dairy Farms, 1994

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	9	34	\$13,630	\$401	\$-1,388	3.42%
40 to 54	47	46	19,047	414	477	-.17%
55 to 69	43	62	24,009	387	1,734	.65%
70 to 84	32	76	26,916	354	4,590	1.37%
85 to 99	23	93	44,147	475	10,700	2.46%
100 to 149	78	118	43,840	372	8,150	2.66%
150 to 199	30	170	57,060	336	10,486	3.65%
200 to 299	26	229	69,247	302	13,597	3.78%
300 & over	33	560	216,491	387	67,737	7.90%

As herd size increased from 40 to 299 cows, net farm income per cow generally declines. Net farm income per cow is expected to decline as family farms get larger because purchased inputs increase per cow. Purchased inputs per cow increase because more and more of the total labor and related services required by a growing farm business must be purchased rather than supplied by the family.

In 1994 the dairy farms with 85 to 99 cows did not fit the pattern of declining net farm income per cow as herd size increased. Another substantial increase in net farm income per cow occurred on farms with 300 cows and more. Further analysis of these two size groups on the following page reveals reasons why farms in these size categories produced higher average net farm incomes per cow.

Table 47.

COWS PER FARM AND RELATED FARM FACTORS
321 New York Dairy Farms, 1994

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	34	17,663	3,351	4.19	7.67	\$9,627	\$9.52	\$18.02
40 to 54	46	17,569	4,478	3.35	7.92	7,825	9.69	15.87
55 to 69	62	18,108	4,918	3.32	8.67	7,990	10.07	15.54
70 to 84	76	17,464	5,603	3.50	8.72	6,842	9.79	14.78
85 to 99	93	19,304	5,912	3.18	8.13	6,940	9.72	14.44
100 to 149	118	19,024	6,539	3.07	8.36	6,802	10.35	14.51
150 to 199	170	19,820	7,511	2.83	8.67	6,552	10.75	14.16
200 to 299	229	20,444	8,095	2.47	7.46	6,190	10.97	14.07
300 & over	560	21,647	10,238	1.92	7.22	5,647	10.58	12.93

The dairy farms with 85 to 99 cows averaged 19,304 pounds of milk sold per cow, 1600 pounds more per cow than the average of all the smaller farms in the study. The operating costs of producing milk were \$9.72 per hundredweight on this group of farms, the lowest of all size categories above 54 cows.

The farms with 300 and more cows averaged more milk sold per cow than all size categories with less than 300 cows per farm. With 21,647 pounds of milk sold per cow, farms in the largest herd size group averaged 15 percent more milk output per cow than all other herds in the summary.

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 seven percent of the 154 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 15 percent of the herds milking more often than 2x, the 150-199 cow herds reported 37 percent, 200-299 cow herds reported 62 percent and the 300 cow and larger herds reported 82 percent exceeding the 2x milking frequency.

A new technology, bST, was used on a much larger proportion of the large herd farms. bST was used sometime during 1994 on 24 percent of the herds with less than 100 cows, 71 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 770,000 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 1.92 tillable acres per cow, and farm capital with an average investment of \$5,647 per cow.

The last column in Table 47 may be the most important in explaining why profits were significantly higher on the 300 plus cow farms. The 33 farms with 300 and more cows held their average total costs of producing milk to \$12.95 per hundredweight, \$1.63 below the \$14.58 average for the remaining 288 dairy farms. The lower average costs of production plus a \$.03 per hundredweight higher average milk price gave the managers of the 300 plus cow dairy farms profit margins that averaged \$1.68 per hundredweight above the average of the other 288 DFBS farms.

Table 48.

FARM BUSINESS SUMMARY BY HERD SIZE
321 New York Dairy Farms, 1994

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		9	47	43	32	23
ACCRUAL EXPENSES						
Hired labor		\$5,011	\$5,833	\$14,074	\$14,686	\$21,606
Dairy grain & concentrate		22,027	30,083	44,432	48,841	64,721
Dairy roughage		1,226	1,524	832	1,886	2,747
Nondairy feed		0	125	17	12	239
Machine hire/rent/lease		2,459	1,449	2,351	2,151	2,693
Machine repairs/parts		4,630	6,302	8,693	10,291	16,514
Auto expense (farm share)		971	649	616	1,067	1,116
Fuel, oil & grease		2,839	2,775	4,136	4,717	6,973
Replacement livestock		3,330	1,607	930	1,694	1,873
Breeding		1,422	1,880	2,843	2,798	2,965
Veterinary & medicine		1,905	2,965	3,322	4,557	5,490
Milk marketing		5,291	7,124	9,549	9,047	12,889
Cattle lease/rent		0	0	0	0	252
Other livestock expense		3,174	6,670	8,006	7,447	15,582
Fertilizer & lime		1,624	2,862	3,582	6,356	6,457
Seeds & plants		594	1,509	2,758	2,812	3,683
Spray & other crop expense		997	1,401	2,101	3,255	3,845
Land/building/fence repair		1,619	1,730	2,250	3,237	3,284
Taxes & rent		4,700	5,715	6,955	9,078	9,494
Telephone & electricity		3,213	4,072	5,862	6,620	7,097
Interest paid		4,638	6,585	8,417	10,960	13,203
Misc. (including insurance)		<u>2,205</u>	<u>3,504</u>	<u>4,668</u>	<u>5,307</u>	<u>7,138</u>
Total Operating Expenses		\$73,875	\$96,364	\$136,394	\$156,819	\$209,861
Expansion livestock		0	493	0	1,438	0
Machinery depreciation		5,839	6,917	9,412	12,434	13,438
Building depreciation		<u>3,560</u>	<u>3,690</u>	<u>4,556</u>	<u>5,445</u>	<u>6,846</u>
Total Accrual Expenses		\$83,274	\$107,464	\$150,362	\$176,136	\$230,145
ACCRUAL RECEIPTS						
Milk sales		\$80,408	\$108,542	\$151,504	\$175,160	\$237,962
Dairy cattle		6,566	8,824	9,552	14,066	18,266
Dairy calves		1,621	1,704	2,622	2,568	4,294
Other livestock		152	798	131	424	870
Crops		4,108	2,987	5,370	5,688	5,813
Misc. receipts		<u>4,049</u>	<u>3,656</u>	<u>5,192</u>	<u>5,146</u>	<u>7,087</u>
Total Accrual Receipts		\$96,904	\$126,511	\$174,371	\$203,052	\$274,292
PROFITABILITY ANALYSIS						
Net farm income (w/o apprec.)		\$13,630	\$19,047	\$24,009	\$26,916	\$44,147
Net farm income (w/apprec.)		\$15,505	\$23,063	\$29,738	\$33,739	\$51,414
Labor & mgmt. income		\$-1,693	\$558	\$2,167	\$6,564	\$16,799
Number of operators		1.22	1.17	1.25	1.43	1.57
Labor & mgmt. inc./oper.		\$-1,388	\$477	\$1,734	\$4,590	\$10,700
Rates of return on:						
Equity capital w/o apprec.		-6.5%	-2.7%	-1.4%	-1.1%	0.6%
Equity capital w/apprec.		-5.7%	-1.2%	0.2%	0.8%	2.2%
All capital w/o apprec.		-3.4%	-0.2%	0.7%	1.4%	2.5%
All capital w/apprec.		-2.9%	0.9%	1.8%	2.7%	3.6%

Table 48. (continued)

FARM BUSINESS SUMMARY BY HERD SIZE
321 New York Dairy Farms, 1994

Item	Farm Size:	100 to 149 Cows	150 to 199 Cows	200 to 299 Cows	300 or More Cows
Number of farms		78	30	26	33
ACCRUAL EXPENSES					
Hired labor		\$30,909	\$55,581	\$93,397	\$277,695
Dairy grain & concentrate		82,909	136,642	184,742	451,617
Dairy roughage		2,444	3,960	3,481	12,030
Nondairy feed		64	17	19	0
Machine hire/rent/lease		3,861	7,379	9,136	25,031
Machine repairs/parts		18,256	24,330	36,370	69,052
Auto expense (farm share)		1,139	980	1,364	1,547
Fuel, oil & grease		8,119	11,946	16,001	29,638
Replacement livestock		6,543	9,612	4,859	27,303
Breeding		4,253	4,894	8,256	16,902
Veterinary & medicine		8,496	13,463	18,594	53,067
Milk marketing		16,734	28,031	35,539	63,202
Cattle lease/rent		147	0	1,880	5,444
Other livestock expense		17,446	23,548	41,169	116,108
Fertilizer & lime		8,604	13,258	15,679	31,643
Seeds & plants		4,814	6,587	8,807	19,647
Spray & other crop expense		4,819	6,326	10,777	23,320
Land/building/fence repair		4,916	6,929	9,778	24,214
Taxes & rent		12,987	20,325	26,017	46,938
Telephone & electricity		9,651	12,464	15,746	39,503
Interest paid		18,523	25,710	37,004	100,087
Misc. (including insurance)		9,632	13,983	14,013	38,089
Total Operating Expenses		\$275,266	\$425,965	\$592,628	\$1,472,077
Expansion livestock		4,447	14,335	18,994	35,833
Machinery depreciation		16,462	24,127	30,801	64,708
Building depreciation		9,127	11,960	18,905	67,724
Total Accrual Expenses		\$305,302	\$476,387	\$661,328	\$1,640,342
ACCRUAL RECEIPTS					
Milk sales		\$301,919	\$454,624	\$633,259	\$1,630,683
Dairy cattle		24,917	48,428	60,611	139,097
Dairy calves		4,079	6,485	8,860	22,634
Other livestock		631	77	2,551	1,231
Crops		9,605	14,439	7,818	37,636
Misc. receipts		7,991	9,394	17,476	25,552
Total Accrual Receipts		\$349,142	\$533,447	\$730,575	\$1,856,833
PROFITABILITY ANALYSIS					
Net farm income (w/o apprec.)		\$43,840	\$57,060	\$69,247	\$216,491
Net farm income (w/apprec.)		\$55,006	\$66,518	\$90,757	\$258,494
Labor & mgmt. income		\$12,633	\$16,882	\$23,522	\$129,377
Number of operators		1.55	1.61	1.73	1.91
Labor & mgmt. inc./oper.		\$8,150	\$10,486	\$13,597	\$67,737
Rates of return on:					
Equity capital w/o apprec.		0.5%	2.0%	1.9%	8.7%
Equity capital w/apprec.		2.6%	3.3%	4.4%	11.2%
All capital w/o apprec.		2.7%	3.7%	3.8%	7.9%
All capital w/apprec.		4.1%	4.5%	5.3%	9.2%

Table 49.

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
321 New York Dairy Farms, 1994

Item	Farms with: Less than 40 Cows		40 to 54 Cows		55 to 69 Cows	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS						
Farm cash/chkg./sav.	\$3,074	\$3,264	\$5,497	\$5,511	\$3,281	\$4,067
Accounts receivable	7,044	6,298	8,436	8,120	12,903	12,111
Prepaid expenses	0	0	42	0	5	41
Feed & supplies	18,269	19,226	19,820	21,835	27,768	31,362
Livestock*	53,537	54,275	71,809	73,771	98,718	99,153
Machinery & equipment*	63,039	62,975	72,150	72,436	92,369	93,913
Farm Credit stock	586	532	885	814	896	1,045
Other stock & cert.	555	878	1,710	1,538	4,850	4,634
Land & buildings*	<u>179,944</u>	<u>183,056</u>	<u>177,661</u>	<u>182,573</u>	<u>253,498</u>	<u>254,902</u>
Total Farm Assets	\$326,048	\$330,504	\$358,010	\$366,598	\$494,288	\$501,228
Pers. cash/chkg./sav.	\$595	\$368	\$4,583	\$4,310	\$11,737	\$11,421
Cash value of life ins.	978	1,089	4,500	4,807	7,760	8,154
Nonfarm real estate	21,400	21,400	23,459	23,459	16,111	16,475
Auto (personal share)	2,050	1,750	2,526	2,619	4,734	5,264
Stocks & bonds	46,494	50,908	2,173	2,732	6,434	6,613
Household furnishings	12,200	12,400	10,044	10,221	8,929	8,929
All other	<u>240</u>	<u>240</u>	<u>3,447</u>	<u>4,076</u>	<u>6,898</u>	<u>8,147</u>
Nonfarm Assets**	\$83,956	\$88,154	\$50,731	\$52,224	\$62,603	\$65,002
Farm & Nonfarm Assets	\$410,004	\$418,658	\$408,741	\$418,822	\$556,891	\$566,230
LIABILITIES						
Accounts payable	\$5,167	\$4,581	\$3,765	\$4,367	\$6,347	\$6,904
Operating debt	1,156	1,367	735	1,134	2,093	2,015
Short term	0	0	544	512	2,159	2,672
Advanced gov't rec.	0	0	0	0	10	10
Current Portion:						
Intermediate	4,731	4,114	7,692	7,855	9,361	10,731
Long Term	4,069	3,509	3,680	3,664	4,017	3,839
Intermediate***	27,794	29,194	30,233	29,063	45,293	41,257
Long term*	<u>41,309</u>	<u>39,026</u>	<u>49,101</u>	<u>46,285</u>	<u>59,553</u>	<u>57,259</u>
Total Farm Liab.	\$84,226	\$81,791	\$95,750	\$92,880	\$128,833	\$124,687
Nonfarm Liab.**	<u>4,482</u>	<u>2,319</u>	<u>2,037</u>	<u>1,591</u>	<u>3,280</u>	<u>3,341</u>
Farm & Nonfarm Liab.	\$88,708	\$84,110	\$97,787	\$94,471	\$132,113	\$128,028
Farm Net Worth						
(Equity Capital)	\$241,822	\$248,713	\$262,260	\$273,718	\$365,455	\$376,541
Farm & Nonfarm Net Worth	\$321,296	\$334,548	\$310,954	\$324,351	\$424,778	\$438,202
FINANCIAL MEASURES						
		<u>Less than 40 Cows</u>	<u>40 to 54 Cows</u>	<u>55 to 69 Cows</u>		
Percent Equity		75%	75%	75%		
Debt/asset ratio-long term		.21	.25	.22		
Debt/asset ratio-inter. & current		.29	.25	.27		
Change in net worth with apprec.		\$6,891	\$11,458	\$11,086		
Total farm debt per cow		\$2,272	\$1,976	\$1,979		
Debt payments made per cow		\$411	\$502	\$444		
Debt payments as % of milk sales		18%	21%	18%		
Amount avail. for debt service		\$18,260	\$22,671	\$24,327		
Cash flow coverage ratio for 1994		1.28	1.13	1.05		

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1994.

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

Table 49. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
321 New York Dairy Farms, 1994

Item	Farms with:		85 to 99 Cows	
	70 to 84 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash/chkg./sav.	\$6,509	\$4,677	\$4,527	\$5,710
Accounts receivable	15,030	14,366	18,366	18,289
Prepaid expenses	0	276	0	100
Feed & supplies	34,269	39,790	47,944	54,530
Livestock*	113,132	116,472	141,771	146,636
Machinery & equipment*	104,160	108,506	137,404	142,930
Farm Credit stock	1,261	1,605	1,627	1,737
Other stock & cert.	3,233	3,036	6,034	5,879
Land & buildings*	<u>234,675</u>	<u>241,771</u>	<u>268,025</u>	<u>282,320</u>
Total Farm Assets	\$512,269	\$530,499	\$625,698	\$658,131
Pers. cash/chkg./sav.	\$5,068	\$3,231	\$6,902	\$7,125
Cash value of life ins.	11,201	11,533	8,886	9,281
Nonfarm real estate	24,164	24,218	35,500	35,479
Auto (personal share)	5,250	5,386	3,950	3,286
Stocks & bonds	7,593	8,639	9,853	11,339
Household furnishings	8,977	8,886	7,879	8,664
All other	<u>1,565</u>	<u>4,116</u>	<u>2,113</u>	<u>2,109</u>
Nonfarm Assets**	\$63,817	\$66,010	\$75,082	\$77,283
Farm & Nonfarm Assets	\$576,086	\$596,509	\$700,780	\$735,414
LIABILITIES				
Accounts payable	\$9,231	\$9,488	\$7,098	\$9,279
Operating debt	3,707	3,206	6,022	8,228
Short term	2,492	2,344	1,856	4,569
Advanced gov't rec.	0	0	0	0
Current Portion:				
Intermediate	16,485	18,193	17,417	17,886
Long Term	5,127	4,140	4,078	4,360
Intermediate***	57,460	65,612	80,798	78,962
Long term*	<u>67,666</u>	<u>68,533</u>	<u>69,436</u>	<u>76,572</u>
Total Farm Liab.	\$162,168	\$171,516	\$186,705	\$199,856
Nonfarm Liab.**	<u>3,218</u>	<u>3,433</u>	<u>992</u>	<u>1,569</u>
Farm & Nonfarm Liab.	\$165,386	\$174,949	\$187,697	\$201,425
Farm Net Worth				
(Equity Capital)	\$350,101	\$358,983	\$438,993	\$458,275
Farm & Nonfarm Net Worth	\$410,700	\$421,560	\$513,083	\$533,989
FINANCIAL MEASURES				
	<u>70 to 84 Cows</u>		<u>85 to 99 Cows</u>	
Percent equity	68%		70%	
Debt/asset ratio-long term	.28		.27	
Debt/asset ratio-inter. & current	.36		.33	
Change in net worth with apprec.	\$8,882		\$19,282	
Total farm debt per cow	\$2,227		\$2,082	
Debt payments made per cow	\$624		\$455	
Debt payments as % of milk sales	27%		18%	
Amount avail. for debt service	\$27,925		\$41,629	
Cash flow coverage ratio for 1994	.73		1.04	

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1994.

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

Table 49. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
321 New York Dairy Farms, 1994

Item	Farms with: 100 to 149 Cows		150 to 199 Cows	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash/chkg./sav.	\$5,002	\$6,746	\$7,968	\$9,289
Accounts receivable	23,466	24,592	37,663	40,100
Prepaid expenses	0	4	233	618
Feed & supplies	62,232	69,886	98,627	112,326
Livestock*	175,510	185,504	246,076	269,674
Machinery & equipment*	155,712	158,101	209,553	216,091
Farm Credit stock	4,217	4,621	4,780	5,760
Other stock & cert.	9,457	9,415	19,037	19,290
Land & buildings*	<u>350,693</u>	<u>361,577</u>	<u>455,009</u>	<u>471,731</u>
Total Farm Assets	\$786,289	\$820,446	\$1,078,946	\$1,144,879
Pers. cash/chkg./sav.	\$6,514	\$17,440	\$7,202	\$8,418
Cash value of life ins.	7,830	8,288	16,980	18,882
Nonfarm real estate	44,386	48,843	32,857	33,214
Auto (personal share)	5,289	5,849	3,577	4,055
Stocks & bonds	8,513	9,010	17,442	18,795
Household furnishings	7,704	7,961	13,750	14,036
All other	<u>13,374</u>	<u>14,633</u>	<u>6,944</u>	<u>6,841</u>
Nonfarm Assets**	\$93,610	\$112,024	\$98,753	\$104,240
Farm & Nonfarm Assets	\$879,899	\$932,470	\$1,177,699	\$1,249,119
LIABILITIES				
Accounts payable	\$9,656	\$8,366	\$18,204	\$23,275
Operating debt	6,853	9,255	11,035	15,293
Short term	5,014	2,238	2,399	5,266
Advanced gov't rec.	0	15	0	0
Current Portion:				
Intermediate	20,329	19,860	30,577	34,127
Long Term	5,824	6,291	7,431	7,103
Intermediate***	92,944	101,589	158,315	180,974
Long term*	<u>117,663</u>	<u>119,579</u>	<u>139,209</u>	<u>138,359</u>
Total Farm Liab.	\$258,283	\$267,193	\$367,170	\$404,397
Nonfarm Liab.**	<u>2,683</u>	<u>2,734</u>	<u>4,049</u>	<u>4,083</u>
Farm & Nonfarm Liab.	\$260,966	\$269,927	\$371,219	\$408,480
Farm Net Worth				
(Equity Capital)	\$528,006	\$553,253	\$711,776	\$740,482
Farm & Nonfarm Net Worth	\$618,933	\$662,543	\$806,480	\$840,639
FINANCIAL MEASURES				
	<u>100 to 149 Cows</u>		<u>150 to 199 Cows</u>	
Percent equity	67%		65%	
Debt/asset ratio-long term	.33		.29	
Debt/asset ratio-inter. & current	.32		.40	
Change in net worth with apprec.	\$25,247		\$28,706	
Total farm debt per cow	\$2,172		\$2,272	
Debt payments made per cow	\$468		\$537	
Debt payments as % of milk sales	18%		20%	
Amount avail. for debt service	\$39,002		\$70,215	
Cash flow coverage ratio for 1994	.78		.99	

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1994.

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

Table 49. (cont'd)

FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
321 New York Dairy Farms, 1994

Item	Farms with:		More than 300 Cows	
	200 to 299 Cows		Jan. 1	Dec. 31
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash/chkg./sav.	\$10,099	\$13,506	\$13,156	\$13,527
Accounts receivable	45,864	47,324	94,507	105,854
Prepaid expenses	948	418	5,559	5,655
Feed & supplies	114,247	118,711	262,948	312,142
Livestock*	358,573	381,726	763,354	827,879
Machinery & equipment*	236,211	255,703	481,160	495,613
Farm Credit stock	7,496	7,851	20,137	21,348
Other stock & cert.	17,094	16,947	48,704	49,360
Land & buildings*	<u>580,570</u>	<u>626,842</u>	<u>1,385,228</u>	<u>1,416,556</u>
Total Farm Assets	\$1,371,102	\$1,469,028	\$3,074,753	\$3,247,934
Pers. cash/chkg./sav.	\$3,283	\$2,693	\$1,353	\$2,410
Cash value of life ins.	8,437	9,338	23,438	25,266
Nonfarm real estate	14,286	14,286	23,636	23,636
Auto (personal share)	3,418	4,121	8,136	8,227
Stocks & bonds	4,978	4,590	1,647	2,198
Household furnishings	10,929	10,929	4,818	5,000
All other	<u>6,180</u>	<u>7,946</u>	<u>\$22,504</u>	<u>\$32,410</u>
Nonfarm Assets**	\$51,510	\$53,901	\$85,534	\$99,148
Farm & Nonfarm Assets	\$1,422,612	\$1,522,929	\$3,160,287	\$3,347,082
LIABILITIES				
Accounts payable	\$19,492	\$26,998	\$30,254	\$35,471
Operating debt	18,009	23,803	66,148	101,663
Short term	2,416	2,316	38,851	28,963
Advanced gov't rec.	166	95	0	0
Current Portion:				
Intermediate	34,535	50,174	94,623	101,781
Long Term	9,529	13,838	34,267	39,674
Intermediate***	233,294	243,182	594,378	566,525
Long term*	<u>205,571</u>	<u>226,907</u>	<u>573,193</u>	<u>589,779</u>
Total Farm Liab.	\$523,012	\$587,313	\$1,431,714	\$1,463,856
Nonfarm Liab.**	<u>10,476</u>	<u>9,304</u>	<u>8,267</u>	<u>7,908</u>
Farm & Nonfarm Liab.	\$533,488	\$596,617	\$1,439,981	\$1,471,764
Farm Net Worth				
(Equity Capital)	\$848,090	\$881,715	\$1,643,039	\$1,784,078
Farm & Nonfarm Net Worth	\$889,124	\$926,312	\$1,720,306	\$1,875,318
FINANCIAL MEASURES				
	<u>200 to 299 Cows</u>		<u>More than 300 Cows</u>	
Percent equity		60%		55%
Debt/asset ratio-long term		.36		.42
Debt/asset ratio-inter. & current		.43		.48
Change in net worth with apprec.	\$33,625		\$141,039	
Total farm debt per cow	\$2,417		\$2,546	
Debt payments made per cow	\$428		\$520	
Debt payments as % of milk sales		15%		18%
Amount avail. for debt service	\$105,826		\$275,846	
Cash flow coverage ratio for 1994		1.08		1.09

*Includes discounted lease payments.

**Average of farms reporting nonfarm assets and liabilities for 1994.

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

Table 50.

SELECTED BUSINESS FACTORS BY HERD SIZE
321 New York Dairy Farms, 1994

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		9	47	43	32	23
<u>Cropping Program Analysis</u>						
Total Tillable acres		143	155	207	267	294
Tillable acres rented*		56	62	58	97	127
Hay crop acres*		108	93	132	149	152
Corn silage acres*		19	26	35	52	60
Hay crop, tons DM/acre		1.8	2.5	2.5	2.8	2.9
Corn silage, tons/acre		14.4	14.9	16.9	14.2	14.6
Oats, bushels/acre		63	84	69	74	53
Forage DM per cow, tons		7.7	7.9	8.7	8.7	8.1
Tillable acres/cow		4.2	3.4	3.3	3.5	3.2
Fert. & lime exp./til. acre		\$11.35	\$18.46	\$17.30	\$23.81	\$21.96
Total machinery costs		\$19,721	\$21,703	\$29,780	\$35,955	\$47,599
Machinery cost/tillable acre		\$138	\$140	\$144	\$135	\$162
<u>Dairy Analysis</u>						
Number of cows		34	46	62	76	93
Number of heifers		26	36	52	62	77
Milk sold, lbs.		602,505	813,799	1,127,319	1,331,077	1,785,166
Milk sold/cow, lbs.		17,663	17,569	18,108	17,464	19,304
Operating cost of prod. milk/cwt.		\$9.52	\$9.69	\$10.07	\$9.79	\$9.72
Total cost of prod. milk/cwt.		\$18.02	\$15.87	\$15.54	\$14.78	\$14.44
Price/cwt. milk sold		\$13.35	\$13.34	\$13.44	\$13.16	\$13.33
Purchased dairy feed/cow		\$682	\$683	\$727	\$666	\$729
Purchased dairy feed/cwt. milk		\$3.86	\$3.88	\$4.02	\$3.81	\$3.78
Purchased grain & conc. as % of milk receipts		27%	28%	29%	28%	27%
Purchased feed & crop expense/cwt. milk		\$4.39	\$4.59	\$4.76	\$4.74	\$4.56
<u>Capital Efficiency</u>						
Farm capital/worker		\$182,563	\$199,340	\$217,141	\$219,472	\$212,598
Farm capital/cow		\$9,627	\$7,825	\$7,990	\$6,842	\$6,940
Farm capital/til. acre owned		\$3,773	\$3,896	\$3,341	\$3,067	\$3,844
Real estate/cow		\$5,323	\$3,890	\$4,080	\$3,126	\$2,975
Machinery investment/cow		\$1,848	\$1,561	\$1,495	\$1,395	\$1,515
Asset turnover ratio		.30	.36	.36	.40	.44
<u>Labor Efficiency</u>						
Worker equivalent		1.80	1.82	2.29	2.38	3.02
Operator/manager equivalent		1.22	1.17	1.25	1.43	1.57
Milk sold/worker, lbs.		335,069	447,753	491,780	560,306	591,235
Cows/worker		19	25	27	32	30
Work units/worker		208	267	290	343	327
Labor cost/cow		\$860	\$674	\$627	\$554	\$582
Labor cost/tillable acre		\$205	\$201	\$189	\$158	\$183

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

Table 50. (cont'd)

SELECTED BUSINESS FACTORS BY HERD SIZE
321 New York Dairy Farms, 1994

Item	Farms with:	100 to 149 Cows	150 to 199 Cows	200 to 299 Cows	300 or More Cows
Number of farms		78	30	26	33
<u>Cropping Program Analysis</u>					
Total Tillable acres		363	480	567	1,077
Tillable acres rented*		146	210	244	453
Hay crop acres*		189	224	275	444
Corn silage acres*		81	134	180	438
Hay crop, tons DM/acre		2.8	3.2	2.8	3.7
Corn silage, tons/acre		16.4	17.6	15.3	17.0
Oats, bushels/acre		68	32	81	40
Forage DM per cow, tons		8.4	8.7	7.5	7.2
Tillable acres/cow		3.1	2.8	2.5	1.9
Fert. & lime exp./til. acre		\$23.70	\$27.62	\$27.65	\$29.38
Total machinery costs		\$55,632	\$79,077	\$105,906	\$213,151
Machinery cost/tillable acre		\$153	\$165	\$187	\$198
<u>Dairy Analysis</u>					
Number of cows		118	170	229	560
Number of heifers		90	129	181	415
Milk sold, lbs.		2,246,807	3,363,404	4,690,308	12,116,804
Milk sold/cow, lbs.		19,024	19,820	20,444	21,647
Operating cost of prod. milk/cwt.		\$10.35	\$10.75	\$10.97	\$10.58
Total cost of prod. milk/cwt.		\$14.51	\$14.16	\$14.07	\$12.93
Price/cwt. milk sold		\$13.44	\$13.52	\$13.50	\$13.46
Purchased dairy feed/cow		\$723	\$829	\$820	\$828
Purchased dairy feed/cwt. milk		\$3.80	\$4.18	\$4.01	\$3.83
Purchased grain & conc. as % of milk receipts		27%	30%	29%	28%
Purchased feed & crop expense/cwt. milk		\$4.61	\$4.96	\$4.76	\$4.44
<u>Capital Efficiency</u>					
Farm capital/worker		\$233,816	\$248,318	\$245,088	\$267,128
Farm capital/cow		\$6,802	\$6,552	\$6,190	\$5,647
Farm capital/til. acre owned		\$3,702	\$4,118	\$4,396	\$5,066
Real estate/cow		\$3,016	\$2,731	\$2,632	\$2,502
Machinery investment/cow		\$1,329	\$1,254	\$1,072	\$872
Asset turnover ratio		.45	.49	.53	.60
<u>Labor Efficiency</u>					
Worker equivalent		3.44	4.48	5.79	11.83
Operator/manager equivalent		1.55	1.61	1.73	1.91
Milk sold/worker, lbs.		653,921	751,133	809,497	1,023,849
Cows/worker		34	38	40	47
Work units/worker		358	388	404	463
Labor cost/cow		\$525	\$516	\$549	\$558
Labor cost/tillable acre		\$171	\$182	\$222	\$290

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

SUPPLEMENTAL INFORMATION

Comparisons of business performance by types of housing and herd size, milking frequency, dairy region and type of business entity 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 are included. One page summaries of the averages of DFBS dairy-renter farms, the top ten percent farms by rate of return to all capital and all 321 dairy farms are also included.

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 51 on page 54 includes the average values for the resulting four groups of dairy farms. The average size of farms in the four groups ranges from 48 cows on the small conventional farms to 397 cows on the large freestall farms.

The large freestall farms averaged the highest milk output per cow and per worker, the lowest total costs of production and investment per cow, and the greatest returns to labor, management and capital. The small freestall farms showed average profits somewhat higher than the large conventional farm businesses.

Farm business charts have been computed for each of the four housing and herd size categories and are on pages 55-58. 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 Milking Frequency

Nineteen percent of the 321 DFBS farms utilized three times per day (3x) milking in 1994, two percent more than in 1993. 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 56.

In 1994, the 3x farms averaged 58 more cows per farm, sold seven percent more milk per cow, cut total costs of producing milk seven cents per hundredweight and showed an average 43 percent increase in net farm income, compared to the 3x farm averages for 1993. The 2x farms increased milk output per cow 4.5 percent, reduced total production costs five cents per hundredweight and increased average net farm income \$4,729 per farm in 1994 compared to 1993.

The 3x farms compared with the 2x farms averaged 16 percent more milk per cow and 44 percent additional milk per worker in 1994, very similar to the differences found in 1993. In 1994 the average total costs of producing milk were nine percent lower on 3x farms than on 2x dairies. In 1993 the 3x farms showed a ten percent cost advantage.

In summary, this data set shows that 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, cows per worker, capital invested per cow and machinery costs indicate there are other important management differences contributing to higher profits.

Receipts and Expenses per Hundredweight of Milk per Cow

Average itemized accrual receipts and expense per cow and per hundredweight of milk sold are listed for all 321 dairy farms, 201 dairy farms selling less than 20,000 pounds of milk per cow, and 120 dairy farms selling 20,000 pounds per cow and more in Table 57 on page 60. Table 58 on page 61 provides the same list of average accrual receipts and expenses for 120 farms averaging less than 80 cows per farm, 134 farms with 80 to 180 cows and 67 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 our four areas or regions of the State are compared in Table 59 and 60. The largest average farm size, highest average rate of milk production, and highest average farm profits came from the Western Plain and Central Region. Dairy farmers in this region have increased milk production 22.3 percent over the last ten years and they produced milk for an average total cost of \$13.22 per hundredweight in 1994, \$1.20 below the average of all the other New York dairy regions. Total milk production has declined 12.2 percent over ten years in the Oneida-Mohawk and Hudson region. This is the region with the highest costs of producing milk and the second lowest returns to labor and management.

Comparisons by Business Organization: A comparison of proprietorships, partnerships, and corporations is in Table 61. Farms organized as a corporation are two times larger than partnership-operated farms and more than three times larger than proprietorship-operated farms. Corporate farm operating expenses were more than double those on partnerships but productivity and labor efficiency were higher on the corporate farms. Total costs of producing milk were 77 cents lower for corporations than for partnerships, and 92 cents lower than the average cost of producing milk on the single proprietorship farms.

Other Comparison: Forty-five dairy renter farms were smaller on the average than the 321 owner-operated farms, but averaged nearly the same returns to labor and management as the average for 321 owned dairy farms (Table 62). However, the dairy renters received a lower average rate of return on equity capital compared to the dairy farm owners. E.B. 95-19 contains detailed information on Eastern New York dairy renters.

Data for the top ten percent of farms by rate of return on all capital without appreciation is presented in Table 63. Using this measure of farm profitability resulted in the selection of the 32 farms that were consistently the highest in all measures of farm profitability. Additional data for the top ten percent of farms is presented in many of the first 41 tables of this publication.

Summary data for the 321 specialized dairy farms are presented in Table 64.

Table 51.

SELECTED BUSINESS FACTORS BY TYPE OF BARN AND HERD SIZE
299 New York Dairy Farms, 1994

Item	Farms with:		Freestall	
	<= 60 Cows	>60 Cows	<=180 Cows	>180 Cows
Number of farms	69	71	96	63
Cropping Program Analysis				
Total Tillable acres	168	279	368	816
Tillable acres rented*	63	105	149	347
Hay crop acres*	109	156	185	350
Corn silage acres*	26	56	87	309
Hay crop, tons DM/acre	2.3	2.8	2.8	3.5
Corn silage, tons/acre	15.3	15.9	16.2	16.6
Oats, bushels/acre	93	63	44	74
Forage DM per cow, tons	8.1	8.6	8.5	7.3
Tillable acres/cow	3.5	3.2	3.1	2.1
Fert. & lime exp./til. acre	\$17.07	\$23.51	\$23.47	\$29.43
Total machinery costs	\$22,500	\$40,129	\$57,579	\$158,497
Machinery cost/tillable acre	\$134	\$144	\$156	\$194
Dairy Analysis				
Number of cows	48	87	117	397
Number of heifers	38	69	94	296
Milk sold, lbs.	830,876	1,574,371	2,248,212	8,485,502
Milk sold/cow, lbs.	17,389	18,208	19,173	21,367
Operating cost of prod. milk/cwt.	\$9.79	\$10.26	\$10.40	\$10.67
Total cost of prod. milk/cwt.	\$15.99	\$14.91	\$14.58	\$13.19
Price/cwt. milk sold	\$13.33	\$13.39	\$13.43	\$13.48
Purchased dairy feed/cow	\$682	\$704	\$746	\$824
Purchased dairy feed/cwt. milk	\$3.92	\$3.87	\$3.89	\$3.86
Purc. grain & conc. as % milk rec.	28%	28%	28%	28%
Purc. feed & crop exp./cwt. milk	\$4.64	\$4.69	\$4.72	\$4.51
Capital Efficiency				
Farm capital/worker	\$200,704	\$213,506	\$246,293	\$260,060
Farm capital/cow	\$7,801	\$6,977	\$7,050	\$5,774
Farm capital/til. acre owned	\$3,518	\$3,449	\$3,776	\$4,889
Real estate/cow	\$3,937	\$3,229	\$3,144	\$2,533
Machinery investment/cow	\$1,517	\$1,359	\$1,411	\$916
Asset turnover ratio	0.35	0.41	0.44	0.58
Labor Efficiency				
Worker equivalent	1.86	2.83	3.36	8.82
Operator/manager equivalent	1.19	1.39	1.53	1.74
Milk sold/worker, lbs.	447,198	556,953	669,602	962,391
Cows/worker	26	30	35	45
Labor cost/cow	\$663	\$553	\$536	\$556
Labor cost/tillable acre	\$189	\$171	\$171	\$271
Profitability & Balance Sheet Analysis				
Net farm income (w/o apprec.)	\$18,839	\$31,295	\$41,444	\$146,748
Labor & mgmt. income/operator	\$574	\$4,422	\$6,083	\$46,382
Rate Return on all capital				
with apprec.	0.4%	2.6%	3.8%	8.3%
Farm debt/cow	\$2,025	\$1,952	\$2,286	\$2,502
Percent equity	74%	72%	67%	56%

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

Table 52.

FARM BUSINESS CHART FOR SMALL CONVENTIONAL STALL DAIRY FARMS
69 Conventional Stall Dairy Farms with 60 or Less Cows, New York, 1994

Size of Business			Rates of Production			Labor Efficiency	
Worker Equivalent	No. of Cows	Pounds of 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
2.87	60	1,207,610	21,897	4.3	23	43	722,584
2.45	57	1,041,959	20,349	3.6	20	35	626,587
2.08	54	956,111	19,576	3.2	18	31	568,551
2.00	51	878,296	18,797	2.8	18	29	494,509
1.97	49	842,902	17,788	2.4	16	27	460,752

1.73	46	786,474	17,019	2.1	15	25	445,006
1.52	44	724,587	16,251	2.0	14	23	416,992
1.43	42	682,846	15,493	1.9	13	22	376,560
1.30	40	629,613	14,166	1.6	11	20	321,752
1.12	33	512,941	11,923	1.2	8	16	250,079

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		
\$371	16%	\$278	\$715	\$506	\$3.17		
472	21	318	853	618	3.74		
526	24	366	935	667	3.96		
558	25	414	1,025	701	4.14		
594	27	443	1,082	747	4.36		

649	28	475	1,132	792	4.60		
707	30	505	1,200	837	4.94		
756	33	539	1,298	900	5.30		
840	36	591	1,401	1,021	5.57		
977	42	831	1,817	1,214	6.50		

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.		Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
			Total	Per Cow			
\$2,925	\$5.82	\$12.53	\$48,399	\$1,005	\$25,239	\$43,090	
2,714	7.67	13.97	37,980	790	14,750	26,488	
2,610	8.60	14.47	28,428	623	10,716	19,929	
2,522	9.14	14.89	23,201	480	5,469	16,186	
2,390	9.43	15.36	20,798	413	1,841	12,027	

2,246	9.84	15.86	16,706	363	-1,561	8,102	
2,141	10.65	16.51	13,819	296	-4,656	2,548	
2,056	11.13	17.33	8,453	166	-8,365	-93	
1,895	11.63	18.26	52	1	-18,289	-7,737	
1,594	13.63	23.01	-14,172	-335	-31,199	-13,856	

Table 53.

FARM BUSINESS CHART FOR LARGE CONVENTIONAL STALL DAIRY FARMS
71 Conventional Stall Dairy Farms with More Than 60 Cows, New York, 1994

Size of Business			Rates of Production			Labor Efficiency	
Worker Equiv- alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
4.69	133	2,488,241	22,189	5.1	24	48	916,052
3.57	108	2,024,167	20,323	3.9	20	39	693,816
3.10	97	1,858,587	19,731	3.5	18	36	651,968
2.84	91	1,640,996	19,070	3.1	17	33	615,426
2.65	81	1,514,509	18,843	2.9	16	32	582,121

2.53	77	1,367,445	18,327	2.7	15	30	532,500
2.48	72	1,283,594	17,406	2.4	15	28	500,895
2.28	68	1,234,765	16,563	2.2	13	26	455,380
2.08	66	1,155,076	15,388	2.0	12	24	424,899
1.78	63	1,045,775	13,835	1.5	9	21	375,069

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		
\$301	14%	\$272	\$725	\$467	\$2.89		
462	19	331	831	651	3.66		
546	22	367	877	713	4.01		
624	26	397	945	762	4.32		
672	28	425	978	819	4.55		

734	30	459	1,031	876	4.78		
760	32	494	1,077	925	4.99		
824	33	539	1,142	978	5.20		
907	36	624	1,264	1,077	5.52		
1,028	41	710	1,386	1,224	6.59		

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	Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
\$3,018	\$6.59	\$12.25	\$79,785	\$963	\$28,947	\$70,776	
2,742	8.57	13.35	56,214	662	20,229	33,799	
2,643	8.99	13.79	45,816	538	16,010	21,384	
2,563	9.61	14.19	37,113	469	12,516	16,067	
2,517	10.09	14.64	31,998	401	7,265	12,983	

2,445	10.55	15.00	27,327	341	3,312	7,707	
2,350	10.89	15.37	23,653	247	-3,056	3,124	
2,210	11.22	15.92	20,396	203	-10,172	-5,502	
2,016	11.76	16.80	6,705	91	-16,348	-16,437	
1,816	13.36	18.03	-22,986	-271	-40,921	-39,771	

Table 54.

FARM BUSINESS CHART FOR SMALL FREESTALL DAIRY FARMS
96 Freestall Barn Dairy Farms with 180 or Less Cows, New York, 1994

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
5.37	174	3,614,047	23,575	5.5	24	55	1,012,453
4.44	157	3,072,976	21,582	3.8	20	49	857,659
4.01	138	2,638,806	20,823	3.5	18	42	803,445
3.58	125	2,446,302	19,939	3.1	17	38	738,212
3.38	119	2,258,914	19,272	2.9	16	35	680,046

3.11	112	2,092,444	18,731	2.8	15	33	624,360
2.90	105	1,936,985	17,842	2.5	15	31	592,821
2.51	96	1,767,311	17,144	2.1	14	29	561,754
2.23	78	1,390,495	16,391	1.8	13	27	513,673
1.63	55	971,149	14,507	1.4	11	22	405,611

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		
\$409	16%	\$277	\$673	\$610	\$3.25		
535	21	335	771	718	3.83		
565	23	374	855	762	4.12		
633	26	415	908	799	4.35		
681	28	456	969	830	4.55		

708	29	485	1,052	870	4.73		
761	31	528	1,139	933	4.95		
828	32	592	1,196	1,011	5.20		
931	35	670	1,299	1,090	5.42		
1,036	39	799	1,521	1,212	6.21		

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	Labor & Mgmt. Inc. Per Oper. Per Cow	Change in Net Worth w/Apprec.		
\$3,179	\$7.55	\$11.98	\$106,326	\$891	\$51,358	\$82,133	
2,893	8.72	12.70	75,881	674	30,690	60,699	
2,777	9.29	13.30	67,616	586	22,390	46,520	
2,695	9.69	13.69	55,575	512	16,320	37,968	
2,589	9.86	14.10	47,285	410	9,432	28,369	

2,478	10.21	14.58	34,062	303	2,313	19,485	
2,388	10.55	15.18	24,908	228	-3,360	11,255	
2,321	11.24	15.91	14,979	134	-11,679	1,005	
2,201	11.94	16.77	1,574	15	-19,757	-17,501	
1,927	13.53	18.49	-29,062	-226	-55,063	-53,185	

Table 55.

FARM BUSINESS CHART FOR LARGE FREESTALL DAIRY FARMS
63 Freestall Barn Dairy Farms with More than 180 Cows, New York, 1994

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
20.63	1,088	23,351,762	24,801	5.5	22	65	1,306,713
11.96	539	11,657,338	23,472	4.4	20	53	1,093,175
10.13	420	9,575,213	22,655	4.1	19	47	1,011,822
8.52	365	7,921,542	21,928	3.7	18	46	964,401
7.38	311	6,515,416	21,395	3.5	16	44	933,249

6.76	243	5,612,972	20,967	3.2	15	42	901,922
6.03	234	4,922,221	20,780	3.1	15	40	850,753
5.39	225	4,551,060	20,134	2.8	15	37	813,336
4.88	213	4,167,979	18,893	2.4	14	35	717,586
3.79	192	3,391,553	15,710	1.6	12	30	616,668

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		
\$535	21%	\$233	\$606	\$706	\$3.84		
688	24	295	755	871	4.05		
728	25	330	858	895	4.24		
750	27	357	895	917	4.40		
782	27	386	943	954	4.51		

804	28	426	982	986	4.65		
847	29	468	1,039	1,019	4.74		
881	31	514	1,110	1,053	4.85		
928	32	547	1,158	1,102	5.12		
1,012	35	614	1,324	1,208	5.62		

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	Per Cow	Labor & Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.	
\$3,443	\$8.83	\$11.90	\$507,138	\$668	\$289,802	\$432,825	
3,188	9.72	12.25	230,200	548	99,946	135,938	
3,073	10.00	12.51	159,773	448	68,360	103,969	
2,969	10.33	12.91	126,018	405	44,867	73,654	
2,889	10.66	13.38	112,980	373	28,779	59,734	

2,831	10.84	13.84	98,201	335	19,135	37,055	
2,760	11.10	14.02	82,247	312	13,143	23,094	
2,676	11.58	14.30	65,473	236	4,724	10,247	
2,529	11.96	14.62	21,692	90	-8,715	-13,935	
2,109	12.82	15.69	-12,379	-58	-50,954	-49,453	

Table 56.

SELECTED BUSINESS FACTORS BY MILKING FREQUENCY
New York State Dairy Farms, 1993 & 1994

Item	2x/Day Milking		3x/Day Milking	
	1993	1994	1993	1994
Number of farms	268	244	59	61
<u>Business Size & Production</u>				
Number of cows	93	102	265	323
Number of heifers	74	81	195	238
Milk sold, lbs.	1,649,682	1,907,516	5,370,281	6,987,895
Milk sold/cow, lbs.	17,816	18,620	20,259	21,654
Milk plant test, % BF	3.68%	3.64%	3.64%	3.64%
Tillable acres, total	283	311	606	672
Hay crop, tons DM/acre	2.6	2.7	2.9	3.3
Corn silage, tons/acre	14.1	15.6	15.4	17.2
Forage DM/cow, tons	7.8	8.2	7.0	7.3
<u>Labor & Capital Efficiency</u>				
Worker equivalent	2.86	3.00	6.71	7.61
Milk sold/worker, lbs.	577,328	635,526	799,919	917,723
Cows/worker	33	34	39	42
Farm capital/worker	\$233,507	\$235,295	\$288,726	\$248,552
Farm capital/cow	\$6,897	\$6,897	\$5,792	\$5,865
Farm capital/cwt. milk	\$38.71	\$37.02	\$28.59	\$27.08
<u>Milk Production Costs & Returns</u>				
Selected costs/cwt.:				
Hired labor	\$1.42	\$1.43	\$2.31	\$2.19
Grain & concentrate	\$3.75	\$3.77	\$3.77	\$3.81
Purchased roughage	\$0.09	\$0.09	\$0.10	\$0.12
Replacements purchased	\$0.19	\$0.23	\$0.14	\$0.21
Vet & medicine	\$0.33	\$0.37	\$0.42	\$0.42
Milk marketing	\$0.72	\$0.74	\$0.55	\$0.61
Other dairy expenses	\$0.66	\$0.76	\$0.80	\$0.99
Operating costs/cwt.	\$9.93	\$10.26	\$10.49	\$10.69
Total labor costs/cwt.	\$3.11	\$2.92	\$2.86	\$2.66
Operator resources/cwt.	\$3.22	\$2.94	\$1.56	\$1.46
Total costs/cwt.	\$14.63	\$14.58	\$13.21	\$13.28
Average farm price/cwt.	\$13.12	\$13.38	\$13.15	\$13.49
Return over total costs/cwt.	\$-1.51	\$-1.20	\$-0.06	\$0.21
<u>Related Cost Factors</u>				
Hired labor/cow	\$252	\$266	\$468	\$474
Total labor/cow	\$554	\$544	\$580	\$577
Purchased dairy feed/cow	\$683	\$719	\$785	\$850
Purchased grain & concentrate as % of milk receipts	29%	28%	29%	28%
Vet & medicine/cow	\$58	\$69	\$84	\$92
Machinery costs/cow	\$452	\$464	\$402	\$408
<u>Profitability Analysis</u>				
Net farm income (w/o apprec.)	\$32,173	\$36,902	\$83,849	\$120,027
Labor & mgmt. income/operator	\$3,987	\$6,268	\$24,253	\$37,465
Rates of return on:				
Equity capital w/apprec.	1.5%	2.1%	7.5%	8.7%
All capital w/apprec.	3.0%	3.6%	7.1%	7.9%

Table 57.

**FARM RECEIPTS AND EXPENSES PER COW AND PER
HUNDREDWEIGHT FOR TWO LEVELS OF MILK PRODUCTION
321 New York Dairy Farms, 1994**

Item	321 Dairy Farms		201 Dairy Farms Milk/Cow <20,000#		120 Dairy Farms Milk/Cow ≥20,000#	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	\$2,700	\$13.44	\$2,350	\$13.40	\$2,945	\$13.46
Dairy cattle	234	1.16	208	1.19	251	1.15
Dairy calves	39	.19	36	.20	41	.19
Other livestock	5	.03	7	.04	4	.02
Crops	69	.34	61	.35	75	.34
Government receipts	30	.15	43	.24	20	.09
All other	<u>31</u>	<u>.16</u>	<u>30</u>	<u>.17</u>	<u>33</u>	<u>.15</u>
TOTAL ACCRUAL RECEIPTS	\$3,108	\$15.47	\$2,735	\$15.59	\$3,369	\$15.40
ACCRUAL EXPENSES						
Labor: Hired	\$362	\$1.80	\$248	\$1.41	\$443	\$2.02
Feed: Dairy grain & conc.	760	3.78	682	3.89	814	3.72
Dairy roughage	22	.11	18	.10	24	.11
Nondairy	0	.00	0	.00	0	.00
Machinery: Machine hire/ rent/lease	39	.19	41	.23	38	.18
Mach. repairs/parts	140	.70	144	.82	137	.63
Auto expense (farm share)	7	.03	9	.05	5	.02
Fuel, oil, grease	63	.31	67	.38	60	.27
Livestock: Replacement						.23
livestock	43	.21	33	.19	50	
Breeding	34	.17	32	.19	34	.16
Vet & medicine	80	.40	61	.35	93	.43
Milk marketing	135	.67	131	.75	137	.63
Cattle lease/rent	5	.03	1	.00	8	.04
Other livestock expense	170	.85	125	.72	202	.92
Crops: Fertilizer & lime	66	.33	66	.38	65	.30
Seeds & plants	38	.19	37	.21	38	.17
Spray & other crop expense	41	.20	36	.20	44	.20
Real Estate: Land/ building/fence repair	42	.21	39	.22	44	.20
Taxes	58	.29	71	.41	49	.22
Rent & lease	45	.22	41	.23	47	.22
Other: Insurance	36	.18	40	.23	34	.15
Telephone (farm share)	5	.03	6	.03	5	.02
Electricity (farm share)	71	.35	72	.41	70	.32
Interest paid	162	.81	146	.83	173	.79
Miscellaneous	<u>36</u>	<u>.18</u>	<u>31</u>	<u>.18</u>	<u>40</u>	<u>.18</u>
TOTAL OPERATING EXPENSES	\$2,458	\$12.24	\$2,177	\$12.42	\$2,654	\$12.13
Expansion livestock	52	.26	43	.24	58	.27
Machinery depreciation	133	.66	139	.79	129	.59
Building depreciation	<u>93</u>	<u>.46</u>	<u>74</u>	<u>.42</u>	<u>107</u>	<u>.49</u>
TOTAL ACCRUAL EXPENSES	\$2,736	\$13.62	\$2,433	\$13.87	\$2,948	\$13.48

Table 58.

**FARM RECEIPTS AND EXPENSES PER COW AND PER
HUNDREDWEIGHT FOR THREE HERD SIZE CATEGORIES
321 New York Dairy Farms, 1994**

Item	120 Dairy Farms with <80 Cows		134 Dairy Farms with 80-180 Cows		67 Dairy Farms with ≥ 180 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	\$2,372	\$13.34	\$2,556	\$13.41	\$2,874	\$13.48
Dairy cattle	169	.95	230	1.21	253	1.18
Dairy calves	38	.22	36	.19	41	.19
Other livestock	8	.05	5	.02	4	.02
Crops	76	.43	79	.41	62	.29
Government receipts	49	.27	39	.20	19	.09
All other	<u>36</u>	<u>.20</u>	<u>28</u>	<u>.14</u>	<u>33</u>	<u>.15</u>
TOTAL ACCRUAL RECEIPTS	\$2,748	\$15.46	\$2,971	\$15.58	\$3,286	\$15.40
ACCRUAL EXPENSES						
Labor: Hired	\$182	\$1.02	\$259	\$1.36	\$472	\$2.21
Feed: Dairy grain & conc.	664	3.73	730	3.83	804	3.77
Dairy roughage	23	.13	20	.10	22	.10
Nondairy	1	.01	0	.00	0	.00
Machinery: Machine hire/ rent/lease	34	.19	34	.18	44	.21
Mach. repairs/parts	140	.79	155	.81	132	.62
Auto expense (farm share)	13	.07	10	.05	3	.02
Fuel, oil, grease	64	.36	71	.37	57	.27
Livestock: Replacement livestock	29	.16	45	.24	45	.21
Breeding	43	.24	34	.18	31	.15
Vet & medicine	60	.34	71	.37	91	.42
Milk marketing	147	.83	142	.74	127	.60
Cattle lease/rent	0	.00	1	.01	9	.04
Other livestock expense	126	.71	143	.75	198	.93
Crops: Fertilizer & lime	64	.36	74	.39	61	.28
Seeds & plants	38	.21	40	.21	36	.17
Spray & other crop expense	36	.20	40	.21	43	.20
Real Estate: Land/ building/fence repair	40	.23	42	.22	42	.19
Taxes	87	.49	67	.35	44	.21
Rent & lease	34	.19	42	.22	49	.23
Other: Insurance	47	.26	47	.25	27	.13
Telephone (farm share)	9	.05	6	.03	4	.02
Electricity (farm share)	85	.48	72	.38	66	.31
Interest paid	138	.78	151	.79	175	.82
Miscellaneous	<u>29</u>	<u>.16</u>	<u>35</u>	<u>.19</u>	<u>38</u>	<u>.18</u>
TOTAL OPERATING EXPENSES	\$2,133	\$11.99	\$2,331	\$12.23	\$2,620	\$12.29
Expansion livestock	4	.02	42	.22	70	.33
Machinery depreciation	150	.84	146	.77	120	.56
Building depreciation	<u>77</u>	<u>.43</u>	<u>75</u>	<u>.39</u>	<u>109</u>	<u>.51</u>
TOTAL ACCRUAL EXPENSES	\$2,364	\$13.28	\$2,594	\$13.61	\$2,919	\$13.69

Table 59.

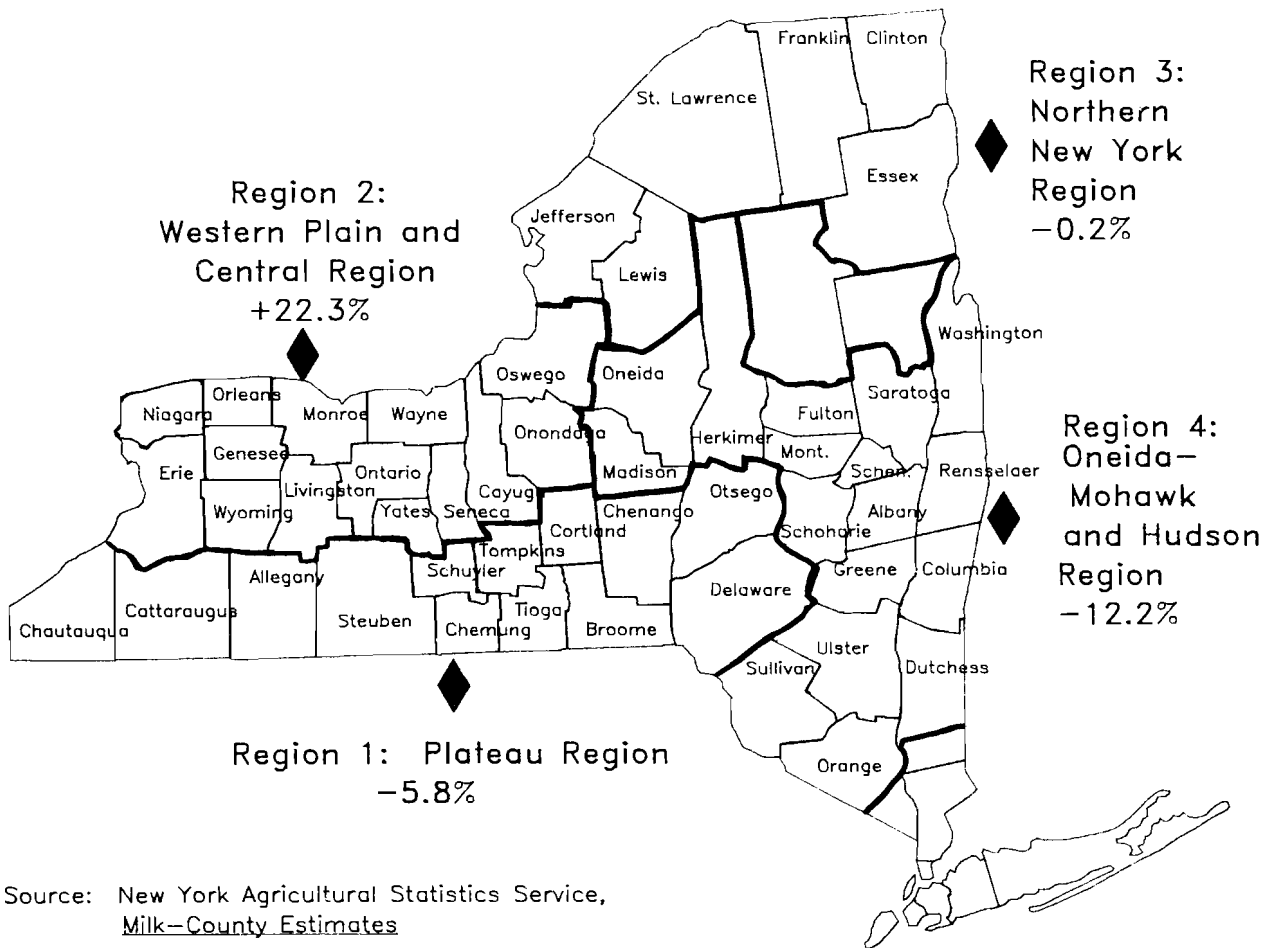
COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION
321 New York Dairy Farms, 1994

Item	Plateau Region	W. Plain & Central Region	Northern New York	Oneida- Mohawk & Hudson Reg.
Number of farms	86	86	52	97
<u>ACCRUAL EXPENSES</u>				
Hired labor	\$30,708	\$113,002	\$35,110	\$34,815
Feed	77,794	209,412	89,882	87,948
Machinery	27,132	57,994	29,415	33,175
Livestock	42,405	129,618	42,233	57,896
Crops	14,431	35,371	14,924	19,693
Real estate	16,676	32,360	16,691	19,568
Other	<u>30,106</u>	<u>82,733</u>	<u>35,521</u>	<u>36,039</u>
Total Operating Expenses	\$239,252	\$660,490	\$263,776	\$289,134
Expansion livestock	5,056	17,828	1,883	4,706
Machinery depreciation	16,391	31,446	16,220	15,216
Building depreciation	<u>9,233</u>	<u>27,571</u>	<u>11,002</u>	<u>8,175</u>
Total Accrual Expenses	\$269,932	\$737,335	\$292,881	\$317,231
<u>ACCRUAL RECEIPTS</u>				
Milk sales	\$263,155	\$726,287	\$301,297	\$310,559
Livestock	29,167	76,449	29,519	29,008
Crops	7,377	18,134	4,971	9,270
All other	<u>5,798</u>	<u>13,506</u>	<u>6,717</u>	<u>9,820</u>
Total Accrual Receipts	\$305,497	\$834,376	\$342,504	\$358,657
<u>PROFITABILITY ANALYSIS</u>				
Net farm income (w/o apprec.)	\$35,565	\$97,041	\$49,623	\$41,426
Net farm income (w/ apprec.)	\$46,317	\$117,334	\$62,551	\$47,563
Labor & mgmt. income	\$8,096	51,840	\$23,560	\$7,133
Number of operators	1.39	1.62	1.42	1.50
Labor & mgmt. income/operator	\$5,824	\$32,000	\$16,592	\$4,755
<u>BUSINESS FACTORS</u>				
Worker equivalent	3.15	6.04	3.23	3.41
Number of cows	103	259	118	116
Number of heifers	82	190	97	90
Acres of hay crops*	161	222	209	193
Acres of corn silage*	64	193	85	92
Total tillable acres	288	558	352	357
Pounds of milk sold	1,961,679	5,449,912	2,282,247	2,244,134
Pounds of milk sold/cow	19,095	21,072	19,395	19,313
Tons hay crop dry matter/acre	2.8	3.7	2.5	2.7
Tons corn silage/acre	15.9	16.7	16.7	16.0
Cows/worker	33	43	36	34
Pounds of milk sold/worker	622,556	902,992	705,731	657,270
% grain & conc. of milk receipts	29%	28%	29%	28%
Feed & crop expense/cwt. milk	\$4.70	\$4.49	\$4.59	\$4.80
Fertilizer & lime/crop acre	\$25.27	\$26.14	\$16.90	\$28.48
Machinery cost/tillable acre	\$174	\$182	\$151	\$157

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

Figure 2.

**Percent Increase in Milk Production, Four Regions in New York,
1984-1994**



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

Table 60.

**MILK PRODUCTION & AVERAGE COST OF PRODUCING MILK
Four Regions of New York, 1994**

Item	Region*			
	1	2	3	4
Milk Production**	(million pounds)			
1984	3,376.1	2,668.2	2,127.4	3,243.9
1994	3,180.9	3,262.5	2,124.0	2,846.7
Percent change	-5.8%	+22.3%	-0.2%	-12.2%
Cost of Producing Milk	(\$ per hundredweight milk)			
Operating cost	\$10.30	\$10.46	\$9.83	\$10.95
Total cost	14.59	13.22	13.75	14.92
Average price received	13.41	13.33	13.20	13.84
Return per cwt. to operator labor, mgmt. & capital	\$1.60	\$1.73	\$2.02	\$1.68

*See Figure 2 for region descriptions.

**Source: New York Agricultural Statistics Service, Milk-County Estimates.

Table 61.

**FARM BUSINESS SUMMARIES FOR SINGLE PROPRIETORSHIPS
PARTNERSHIPS, AND CORPORATIONS
321 New York Dairy Farms, 1994**

Item	201 Single Prop.	96 Partnership	24 Corporations
<u>ACCRUAL EXPENSES</u>			
Hired labor	\$42,950	\$50,397	\$170,456
Feed	90,614	128,294	307,287
Machinery	29,620	42,715	83,911
Livestock	52,761	72,867	208,584
Crops	16,578	23,425	57,839
Real estate	16,615	22,787	60,668
Other	<u>37,299</u>	<u>48,870</u>	<u>119,109</u>
Total Operating Expenses	\$286,437	\$389,355	\$1,007,854
Expansion livestock	6,037	7,239	25,579
Machinery depreciation	15,507	22,893	46,616
Building depreciation	<u>10,222</u>	<u>13,230</u>	<u>50,233</u>
Total Accrual Expenses	\$318,203	\$432,717	\$1,130,282
<u>ACCRUAL RECEIPTS</u>			
Milk sales	\$307,472	\$438,423	\$1,124,722
Livestock	33,831	41,174	111,638
Crops	6,752	12,936	31,361
All other	<u>7,333</u>	<u>10,650</u>	<u>19,404</u>
Total Accrual Receipts	\$355,388	\$503,183	\$1,287,125
<u>PROFITABILITY ANALYSIS</u>			
Net farm income (without appreciation)	\$37,185	\$70,466	\$156,843
Net farm income (with apprec.)	48,020	85,266	170,959
Labor & management income	8,835	34,130	84,248
Number of operators	1.10	2.16	2.14
Labor & management income per operator	\$8,032	\$15,801	\$39,368
Return on all capital w/apprec.	5.0%	5.4%	7.2%
<u>FINANCIAL MEASURES</u>			
Percent equity	62%	65%	61%
Debt/asset ratio - long-term	0.35	0.33	0.32
Debt/asset ratio - inter. & current	0.40	0.36	0.45
Farm net worth, end year	\$489,448	\$699,208	\$1,457,805
Change in net worth w/appreciation	\$26,472	\$36,620	\$55,325
Total farm debt per cow	\$2,421	\$2,197	\$2,358
Debt payments made per cow	\$523	\$416	\$542
Cash flow coverage ratio for 1994	0.84	1.14	1.26
<u>BUSINESS FACTORS</u>			
Worker equivalent	3.33	4.35	8.42
Number of cows	117	164	380
Pounds of milk sold per cow	19,540	19,828	21,972
Total tillable acres	315	446	823
Tons hay crop dry matter per acre	2.9	3.0	3.7
Tons corn silage per acre	16.4	16.1	16.9
Cows per worker	35	38	45
Pounds of milk sold per worker	688,089	749,052	991,208
Purch. grain & conc. as % of milk rec.	28%	29%	26%
Average price per cwt. milk	\$13.41	\$13.46	\$13.48
Total cost of producing milk	\$14.14	\$13.99	\$13.22

Table 63.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 32 Top Ten Percent Farms by Rate of Return on All Capital
(without appreciation), 1994

<u>ACCRUAL EXPENSES</u>		<u>ACCRUAL RECEIPTS</u>		
Labor: Hired	\$161,134	Milk sales	\$1,041,021	
Feed: Dairy grain & conc.	290,177	Dairy cattle	90,711	
Dairy roughage	10,803	Dairy calves	14,216	
Nondairy	164	Other livestock	908	
Machinery: Mach. hire/rent/lease	13,264	Crops	37,253	
Mach. repairs/parts	37,917	Government receipts	6,003	
Auto expense (farm share)	1,209	Custom machine work	1,147	
Fuel, oil, grease	16,821	Gas tax refund	435	
Livestock: Replacement Lvstk.	19,958	Other	<u>8,767</u>	
Breeding	9,169	TOTAL ACCRUAL RECEIPTS	\$1,200,461	
Vet & medicine	30,444			
Milk marketing	38,854	<u>PROFITABILITY ANALYSIS</u>		
Cattle lease/rent	3,613	Net farm inc. (w/o apprec.)	\$190,203	
Other livestock expense	71,003	Net farm inc. (w/apprec.)	\$217,427	
Crops; Fertilizer & lime	15,020	Labor & mgmt. income/oper.	\$85,512	
Seeds & plants	11,719	Rate of return on equity		
Spray & other crop expense	13,678	capital w/o apprec.	15.2%	
Real estate: Land/building/ fence repair	13,500	Rate of return on all capital w/o apprec.	11.1%	
Taxes	13,226			
Rent & lease	16,677	<u>BUSINESS FACTORS</u>		
Other:		Number of cows	362	
Insurance	9,079	Number of heifers	259	
Telephone (farm share)	1,053	Worker equivalent	7.63	
Electricity (farm share)	23,387	Total tillable acres	664	
Interest paid	66,980	Milk sold per cow, lbs.	21,441	
Miscellaneous	<u>14,418</u>	Hay DM per acre, tons	3.8	
TOTAL OPERATING EXPENSES	\$903,267	Corn silage per acre, tons	17.9	
Expansion livestock	25,444	Milk sold per worker, lbs.	1,017,235	
Machinery depreciation	38,519	Grain/conc. as % milk sales	28%	
Building depreciation	<u>43,028</u>	Feed & crop exp./cwt. milk	\$4.40	
TOTAL ACCRUAL EXPENSES	\$1,010,258	Labor & mach. costs/cow	\$866	
		Average price/cwt. milk	\$13.41	
<u>ASSETS</u>		<u>LIABILITIES</u>		
	Jan. 1	Dec. 31	Jan. 1	
Farm cash/chkg./sav.	\$9,068	\$14,063	Accounts payable	\$32,342
Accounts receivable	60,777	65,717	Operating debt	41,004
Prepaid expenses	4,313	3,739	Short-term	39,377
Feed & supplies	155,073	208,382	Advanced gov't rec.	135
Dairy cows*	340,712	368,216	Current Portion:	
Heifers	134,688	151,975	Intermediate	50,070
Bulls & other lvstk.	2,086	2,409	Long Term	18,580
Machinery & equip*	263,884	279,470	Intermediate**	354,057
Farm Credit stock	12,701	13,568	Long-term*	<u>391,692</u>
Other stock & cert.	32,845	33,487	Total Farm Liab.	\$927,257
Land & buildings*	<u>781,455</u>	<u>816,532</u>	Nonfarm Liab.***	<u>5,664</u>
Total Farm Assets	\$1,797,602	\$1,957,558	Farm & Nonfarm Liab.	\$932,921
Nonfarm Assets***	<u>48,197</u>	<u>57,281</u>	Farm Net Worth	\$870,345
Farm & Nonfarm Assets	\$1,845,799	\$2,014,839	Farm & Nonfarm Net Worth	\$912,878
				\$1,047,023

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

Table 64.

FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 321 New York Dairy Farms, 1994

<u>ACCRUAL EXPENSES</u>		<u>ACCRUAL RECEIPTS</u>			
Labor: Hired	\$54,711	Milk sales	\$407,738		
Feed: Dairy grain & conc.	114,788	Dairy cattle	35,256		
Dairy roughage	3,236	Dairy calves	5,852		
Nondairy	58	Other livestock	737		
Machinery: Mach. hire/rent/lease	5,944	Crops	10,441		
Mach. repairs/parts	21,181	Government receipts	4,472		
Auto expense (farm share)	1,029	Custom machine work	610		
Fuel, oil, grease	9,442	Gas tax refund	264		
Livestock: Replacement Lvstk.	6,445	Other	3,926		
Breeding	5,085	- Non-cash capital transfer	<u>43</u>		
Vet & medicine	12,064	TOTAL ACCRUAL RECEIPTS	\$469,253		
Milk marketing	20,357	<u>PROFITABILITY ANALYSIS</u>			
Cattle lease/rent	766	Net farm inc. (w/o apprec.)	\$56,084		
Other livestock expense	25,708	Net farm inc. (w/apprec.)	\$68,350		
Crops; Fertilizer & lime	9,894	Labor & mgmt. income/farm	\$22,036		
Seeds & plants	5,670	Number of operators	1.49		
Spray & other crop expense	6,147	Labor & mgmt. income/oper.	\$14,789		
Real estate: Land/building/ fence repair	6,281	Rate of return on equity capital including apprec.	4.7%		
Taxes	8,741	<u>BUSINESS FACTORS</u>			
Rent & lease	6,733	Number of cows	151		
Other:		Number of heifers	116		
Insurance	5,499	Worker equivalent	4.02		
Telephone (farm share)	786	Total tillable acres	392		
Electricity (farm share)	10,701	Milk sold per cow, lbs.	20,091		
Interest paid	24,451	Hay DM per acre, tons	3.0		
Miscellaneous	<u>5,439</u>	Corn silage per acre, tons	16.4		
TOTAL OPERATING EXPENSES	\$371,156	Milk sold per worker, lbs.	755,178		
Expansion livestock	\$7,858	Grain/conc. as % milk sales	28%		
Machinery depreciation	20,042	Feed & crop exp./cwt. milk	\$4.61		
Building depreciation	<u>14,113</u>	Labor & mach. costs/cow	\$996		
TOTAL ACCRUAL EXPENSES	\$413,169	Average price/cwt. milk	\$13.44		
<hr/>					
<u>ASSETS</u>	<u>Jan. 1</u>	<u>Dec. 31</u>	<u>LIABILITIES</u>	<u>Jan. 1</u>	<u>Dec. 31</u>
Farm cash/chkg./sav.	\$6,434	\$7,311	Accounts payable	\$11,712	\$13,345
Accounts receivable	28,628	30,169	Operating debt	12,177	17,440
Prepaid expenses	677	714	Short-term	6,382	5,195
Feed & supplies	74,610	84,995	Advanced gov't rec.	15	13
Dairy cows*	153,070	161,385	Current Portion:		
Heifers	65,306	70,910	Intermediate	25,768	28,341
Bulls & other lvstk.	1,463	1,734	Long Term	8,376	9,266
Machinery & equip*	170,952	176,285	Intermediate**	140,128	142,335
Farm Credit stock	4,657	5,050	Long-term*	<u>145,246</u>	<u>148,857</u>
Other stock & cert.	12,139	12,132	Total Farm Liab.	\$349,804	\$364,792
Land & buildings*	<u>424,785</u>	<u>438,687</u>	Nonfarm Liab.***	<u>3,708</u>	<u>3,541</u>
Total Farm Assets	\$942,721	\$989,372	Farm & Nonfarm Liab.	\$353,512	\$368,333
Nonfarm Assets***	<u>71,602</u>	<u>77,944</u>	Farm Net Worth	\$592,917	\$624,580
Farm & Nonfarm			Farm & Nonfarm		
Assets	\$1,014,323	\$1,067,316	Net Worth	\$660,811	\$698,983

*Includes discounted lease payments. **Includes Farm Credit stock and discounted lease payments for cattle and machinery. ***Average of 177 farm reporting.

NOTES

APPENDIX

**THE ECONOMIC ENVIRONMENT FACING
NEW YORK DAIRY FARMERS**

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

Table A1.

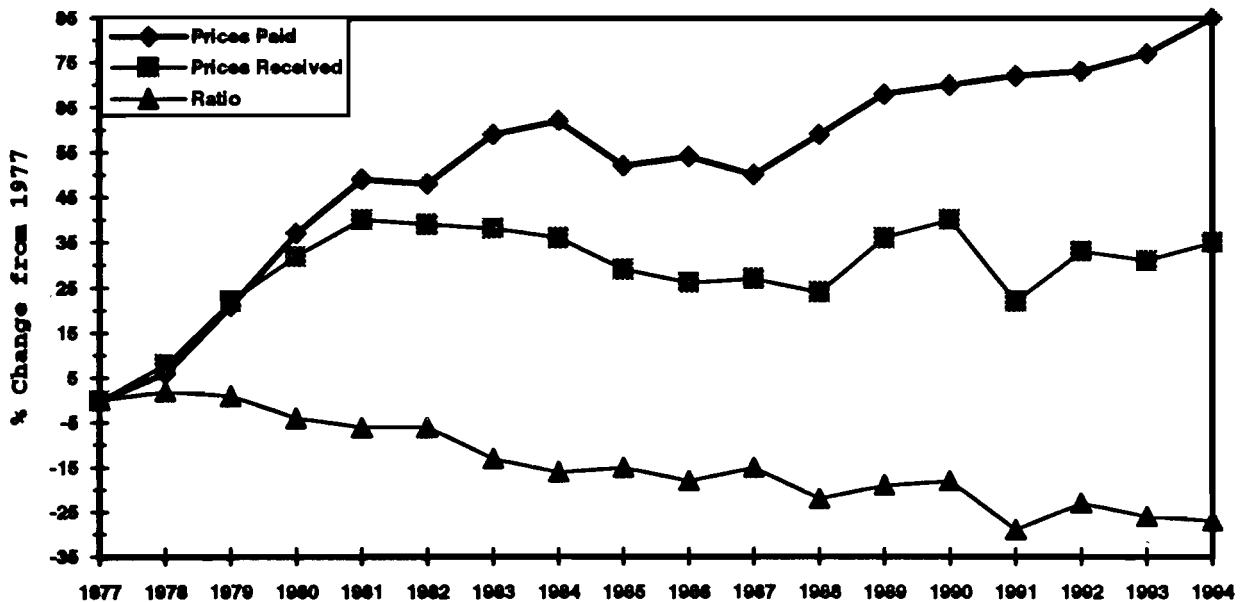
PRICES PAID BY NEW YORK FARMERS FOR SELECTED ITEMS, 1984-1994

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)
1984	194.3	250	70.20	1.140	17,400	3.60
1985	164.2	238	67.30	1.080	16,800	4.01***
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	6.20
1994	180.8**	233**	73.40	0.853**	19,800	6.64

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

The table above shows average prices of selected goods and services used on New York dairy farms. Chart A1 shows the ratio of prices received for milk and prices paid by New York dairy farmers as a percent change from 1977. The ratio has been on a downward trend since 1978 except for slight increases in 1985, 1987, 1989, 1990 and 1992.

Chart A1. Ratio of Prices Received for Milk and Prices Paid by New York Dairy Farmers, 1977-1994



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, 1981-1994

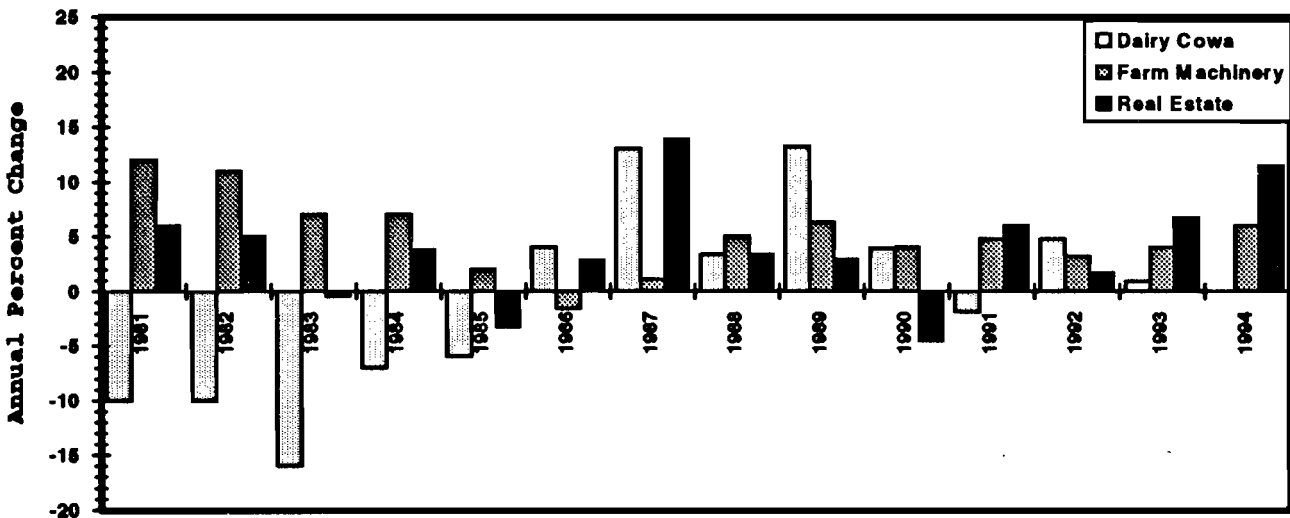
Year	Dairy Cows		Machinery*	Farm Real Estate	
	Value/Head	1977=100	1977=100	Value/Acre	1977=100
1981	\$1,120	226	149	\$773	132
1982	1,010	204	163	821	140
1983	850	172	173	817	139
1984	790	160	181	848	144
1985	740	149	181	820	140
1986	770	156	178	843	144
1987	870	176	180	960	164
1988	900	182	189	993	169
1989	1,020	206	201	1,024	174
1990	1,060	214	209	974	166
1991	1,040	210	219	1,031	176
1992	1,090	220	226	1,051	179
1993	1,100	222	235	1,119	191
1994	1,100	222	249	1,251	213

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

*United States average

Dairy cow prices remained constant in 1994. The December 1994 value per head averaged the same as in December 1993. New machinery prices have increased since 1977 with a slight decline in 1986. The 1994 machinery prices increased six percent over the 1993 level. Farm real estate values increased 12 percent in 1994.

Chart A2. Annual Changes in Dairy Cow, Farm Machinery, and Farm Real Estate Values, New York Dairy Farms, 1981-1994



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 17).
- Appreciation:** (defined on page 10).
- Asset Turnover Ratio:** (defined on page 36).
- 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 32 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 since February of 1994.
- Business Records:** Account Book: any organized farm record book or ledger. Agrifax (mail-in); Farm Credit's recordkeeping service. ELFAC: ELFAC II mail in record 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 36).
- 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 17).
- Cash Flow Coverage Ratio:** (defined on page 19).
- 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 26).

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 15).

Deferred Taxes: (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 38).

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 19 and 41.

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 41.

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.

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 36 and 37).

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 milk 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).
- Nonillable 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 26).
- 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 8).

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 26).

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).

Return to Operators' Labor, Management, and Equity Capital: (defined on page 10).

Rotational Grazing: The dairy herd is on pasture at least three months of the year, changing paddock at least every three days.

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 16).

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 26).

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.

OTHER A.R.M.E. RESEARCH BULLETINS

- No. 94-02 Milk Hauling Cost Analysis Version 2.0 J. Pratt
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S. Trerise
- No. 94-03 The Geographic Structure of Milk Hauling Cost and Efficiencies in New York State Eric Erba
James Pratt
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