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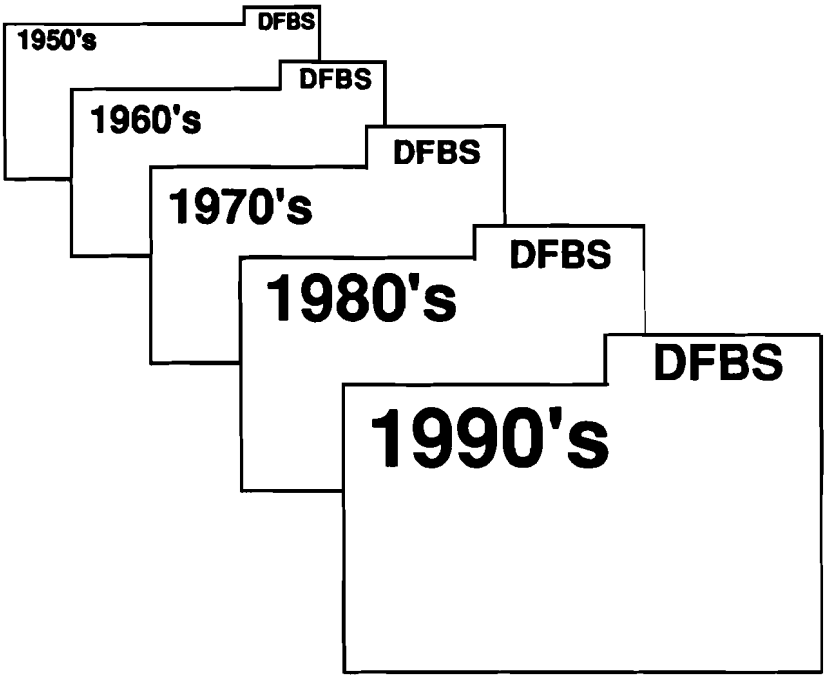
DAIRY FARM MANAGEMENT

BUSINESS SUMMARY NEW YORK STATE 1990



Stuart F. Smith
Wayne A. Knoblauch
Linda D. Putnam

Department of Agricultural Economics
Cornell University Agricultural Experiment Station
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York 14853-7801

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ABSTRACT

This summary and analysis of 395 New York dairy farm businesses demonstrates the use of up to date methods of cash and accrual accounting to measure cash flow, farm profitability, and financial growth. Traditional methods of analyzing dairy farm businesses are combined with new evaluation techniques to show the relationship between good management performance and financial success. These farms averaged 107 cows per farm and 17,720 pounds of milk sold per cow in 1990, 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 $47,020 per farm. The rate of return to all capital with appreciation invested in the farm business averaged 6.0 percent in 1990.

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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 Economics of the New York State College of Agriculture and Life Sciences, and County Extension staff, cooperate in sponsoring DFBS projects. In 1990, about 500 dairy farmers participated. Business records submitted by dairy farmers from 48 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 90 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 48 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 395 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 395 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 accounting 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 6. Four measures of farm profits are calculated on pages 9 through 11. The balance sheet and cash flow statement are featured on pages 12 through 16.

The dairy program analysis includes data on the costs of producing milk (pages 20-24) and separate farm business charts using data from freestall farms versus conventional stall dairy farms (pages 45-48).

Acknowledgements

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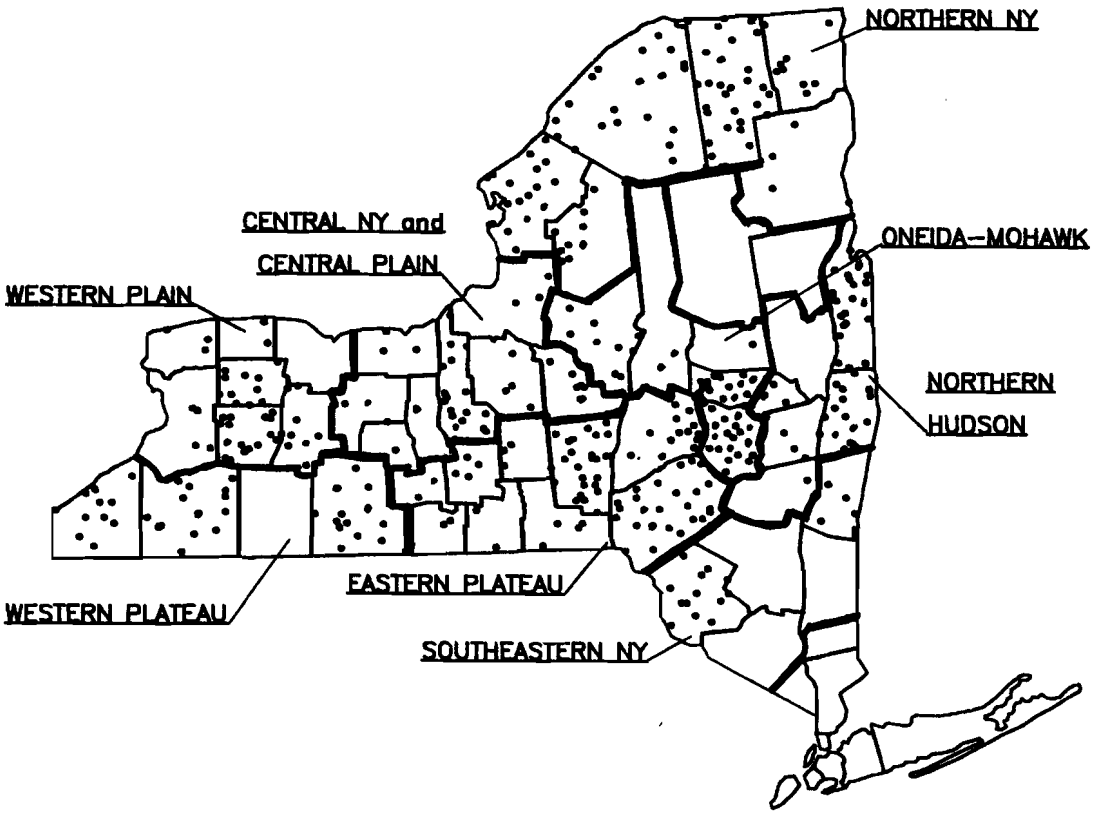
Figure 1. **LOCATION OF THE 395 NEW YORK DAIRY FARMS IN THE 1990 DAIRY FARM BUSINESS SUMMARY**



1990 Regional Summary Publications

Region	Publications	Author(s)
Western Plain Region	A.E. Ext. 91-9	Stuart F. Smith, Linda D. Putnam, George Allhusen, Merville Button, Jonas Kauffman, & David Thorp
Eastern Plateau Region	A.E. Ext. 91-10	Robert A. Milligan, Linda D. Putnam, Carl A. Crispell, Gerald A. LeClar, & A. Edward Staehr
Northern New York	A.E. Ext. 91-11	Stuart F. Smith, Linda D. Putnam, Patricia A. Beyer, J. Russell Coombe, Anita W. Deming, Lou Anne F. King, Gerke H. van der Zwaag, & George O. Yarnall
Central New York & Central Plain	A.E. Ext. 91-13	Wayne A. Knoblauch, Linda D. Putnam, June C. Grabemeyer, James A. Hilson, Ann Peck, & James R. Peck
Western Plateau Region	A.E. Ext. 91-14	George L. Casler, Carl W. Albers, Andrew N. Dufresne, Joan S. Petzen, Linda D. Putnam, & Stuart F. Smith
Oneida-Mohawk Region	A.E. Ext. 91-15	Eddy L. LaDue, Mark E. Anibal & Jacqueline M. Mierek
Northern Hudson Region	A.E. Ext. 91-16	Stuart F. Smith, Linda D. Putnam, Cathy S. Wickswat, John M. Thurgood, & Thomas J. Gallagher
Southeastern New York	A.E. Ext. 91-17	Stuart F. Smith, Linda D. Putnam, Alan S. White, Gerald J. Skoda, Stephen E. Hadcock, & Larry R. Hulle

GROWTH AND PROGRESS ON NEW YORK DAIRY FARMS

Two hundred and six farmers have participated in the dairy farm business summary for each of the years 1987, 1988, 1989, and 1990 (Table 1). Over this four year period, milk sold per farm increased by 338,000 pounds or 19 percent as average herd size increased by 11 cows or 10 percent, and milk output per cow increased 1,232 pounds or seven percent.

Cow numbers, and milk output per farm and per cow, increased at relatively steady rates during this four year period although milk sold increased faster than herd size. The size of the farm labor force grew 10 percent from 1987 to 1990 with one-third the increase occurring in the last year. Milk sold per worker increased eight percent but grew at a decreasing rate over the four year period.

Crop yields were affected by a variety of climatic conditions during this four year period. The most serious were the 1988 drought and poor planting and harvesting conditions in 1989. Much of the 1988 and 1989 increases in feed and crop expenses can be attributed to below normal production of forage crop quantity and quality.

Feed costs increased dramatically in 1988 and held at that level through 1990 even though the price per ton declined in 1990. Feed and crop expenses per hundredweight of milk sold have increased 26 percent in four years and have exceeded $5 for the first time.

The average operating costs of producing milk increased 23 percent from 1987 to 1990. Total costs per hundredweight increased 17 percent over the four year period. The average price received per hundredweight of milk sold increased from $12.84 to $14.95 or 16.4 percent over the total time period. The margin or difference between the total costs of producing milk and the average price received improved from $-0.23 per hundredweight in 1987 to $+0.22 per hundredweight in 1989. In 1990, the return over total costs was $-0.32.

Capital investments per cow have increased by almost 13 percent between 1987 and 1990. Machinery and equipment investments per cow have increased seven percent in 1990 over 1989 and 15 percent over 1987. Real estate investments per cow have steadily increased. Capital turnover at 1.96 years in 1989 was at its lowest and healthiest point during this four year period. In 1990, the capital turnover increased to 2.04 years.

Average net farm income without appreciation increased 24 percent over the four year period with significant improvement occurring in 1989. Net farm income without appreciation decreased 11 percent from 1989 to 1990. Rates of return on farm capital increased in 1989 to exceed the levels achieved in 1987 but dropped below 1988 levels in 1990. The 5.6 percent return on equity capital is the lowest average return since 1986.

Over this period, net worth has exhibited a substantial 28 percent increase from $416,632 in 1987 to $532,199 in 1990. The debt to asset ratio has improved from 0.35 in 1987 to 0.34 in 1990. Farm debt per cow was $2,233 in 1990, up 13 percent from 1989 and 10 percent from 1987.

In 1990, these 206 farms were larger, producing more milk per cow but profitability declined as costs of production increased more than farm receipts. See the Appendix beginning on page 61 for a description of the economic environment facing New York dairy farmers.

Table 1. COMPARISON OF FARM BUSINESS SUMMARIES FOR 1987-1990
Same 206 New York Dairy Farms

Selected Factors	1987	1988	1989	1990
Size of Business				
Average number of cows	108	112	115	119
Average number of heifers	85	90	93	98
Milk sold, cwt.	18,128	19,284	20,509	21,508
Worker equivalent	3.24	3.32	3.44	3.57
Total tillable acres	313	322	329	349
Rates of Production				
Milk sold per cow, pounds	16,845	17,269	17,773	18,077
Hay DM per acre, tons	2.8	2.7	2.7	2.8
Corn silage per acre, tons	16.4	14.0	13.4	14.3
Labor Efficiency				
Cows per worker	33	34	33	33
Milk sold per worker, pounds	559,612	580,294	596,394	602,195
Cost Control				
Grain & concentrate purchased as percent of milk sales	24%	27%	26%	27%
Dairy feed & crop expense per cwt. milk	$4.06	$4.52	$4.85	$5.13
Labor & machinery costs per cow	$821	$836	$899	$1,038
Oper. cost of producing cwt.milk	$8.98	$9.22	$10.27	$11.07
Total cost of producing cwt.milk	$13.07	$13.21	$14.33	$15.27
Milk receipts per cwt. milk	$12.84	$13.06	$14.55	$14.95
Capital Efficiency (avg. for year)				
Farm capital per cow	$5,796	$5,993	$6,239	$6,545
Machinery & equip. per cow	$1,060	$1,084	$1,146	$1,223
Real estate per cow	$2,667	$2,735	$2,796	$2,940
Livestock investment per cow	$1,200	$1,250	$1,322	$1,392
Capital turnover, years	2.10	2.12	1.96	2.04
Profitability				
Net farm income w/o apprec.	$43,641	$47,953	$59,771	$53,921
Net farm income w/apprec.	$67,036	$66,333	$86,073	$63,876
Labor & management income per operator/manager	$16,377	$17,773	$24,504	$17,756
Rate return on:				
equity capital w/apprec.	9.9%	8.6%	11.4%	5.6%
all capital w/apprec.	9.1%	8.4%	10.5%	6.5%
all capital w/o apprec.	5.4%	5.6%	6.8%	5.3%
Financial Summary, End Year				
Farm net worth	$416,632	$451,568	$507,509	$532,199
Change in net worth w/apprec.	$40,430	$35,832	$51,834	$18,683
Debt to asset ratio	0.35	0.35	0.32	0.34
Farm debt per cow	$2,035	$2,101	$1,976	$2,233

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 a listing of the average labor, land, and dairy cattle resources used in 1990 are presented in the following table.

Table 2. BUSINESS CHARACTERISTICS AND RESOURCES USED
395 New York Dairy Farms, 1990

No. Dairy Livestock	Cows	Heifers
Beginning of Year	107	84
End of Year	111	90
Average for Year	107	87

Type of Business	Number	Percent
Sole Proprietorship	273	69
Partnership	100	25
Corporation	22	6

Barn Type	Number	Percent
Stanchion	224	57
Freestall	140	35
Combination	31	8

Milking System	Number	Percent
Bucket & Carry	7	2
Dumping Station	20	5
Pipeline	216	55
Herringbone	139	35
Other Parlor	13	3

Milking Frequency	Number	Percent
2x/day	343	87
3x/day	37	9
Other	15	4

Business Records	Number	Percent
Account Book	177	45
Agrifax (mail-in)	54	14
ELFAC	15	4
On-Farm Computer	73	18
Other	76	19

Dairy Records	Number	Percent
D.H.I.C.	304	77
Owner Sampler	35	9
Other	26	6
None	30	8

Labor Force	Average	Percent
Operators	16.7 mo.	41
Family paid	5.0 mo.	12
Family unpaid	2.8 mo.	7
Hired	16.0 mo.	40
Total Months	40.5 mo.	100

	Average
Operators (total = 549)	1.39
Age	42
Education	13 yrs.
Estimated Value of Labor & Management	$30,613

	Farms Reporting	
Land Used	Number	Average
Total acres:		
Owned	395	357
Rented	336	163
Tillable acres:		
Owned	395	204
Rented	331	144
Total	395	325

There were 549 full-time operator equivalents on the 395 dairy farms for an average of 1.39 operators per farm. The operators averaged 42 years of age and 13 years of formal education. Additional data on the labor force is in Table 37.

All 395 farm businesses included in the regular dairy summary own farm real estate. Dairy farm renters are summarized separately later in this publication. However, 331 of the dairy farm owners rented an average of 144 acres of tillable land in 1990. The 395 farms averaged 325 total tillable acres per farm of which 121 acres were rented. Tables 18 and 24 contain additional information on land use and the dairy herd.

Accounting Procedures

Accrual accounting is used for measuring farm profitability. It expresses value of production and cost of production for the year, regardless of whether cash was received or expended. Accrual is a more accurate method than cash accounting when examining the profitability of a business in a particular year. Cash expenses and cash receipts are used when evaluating the cash flow position of the business.

The accrual accounting system considers 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 accounting is complimented 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, 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 and 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 395 farms averaged $691 per day and 89 percent of total farm accrual expenses.

Table 3. CASH AND ACCRUAL FARM EXPENSES
395 New York Dairy Farms, 1990

Expense Item	Cash Paid +	Change in Inventory or Prepaid Expense +	Change in Accounts Payable =	Accrual Expenses	Percent
Hired Labor	$ 33,540	$-52«	$163	$ 33,651	13
Feed					
Dairy grain & conc.	82,036	-3,502	106	78,640	31
Dairy roughage	2,356	268	-111	2,513	1
Nondairy livestock	268	0	0	268	<1
Machinery					
Mach. hire, rent/lease	3,930	0«	53	3,983	2
Machinery repairs/parts	16,081	-86	98	16,093	6
Auto expense (farm share)	873	5«	4	882	<1
Fuel, oil & grease	7,857	-133	52	7,776	3
Livestock					
Replacement livestock	3,746	0«	47	3,793	2
Breeding	3,660	-10	39	3,689	1
Vet & medicine	6,053	-23	35	6,065	2
Milk marketing	10,010	0«	3	10,013	4
Cattle lease/rent	327	0«	-7	320	<1
Other livestock expense	12,702	-93	33	12,642	5
Crops					
Fertilizer & lime	9,977	-489	-26	9,462	4
Seeds & plants	4,586	-342	9	4,253	2
Spray, other crop exp.	4,327	-138	25	4,214	2
Real Estate					
Land/bldg./fence repair	6,032	27	89	6,148	2
Taxes	6,990	-36«	31	6,985	3
Rent & lease	4,956	-17«	-17	4,922	2
Other					
Insurance	4,546	-6«	13	4,553	2
Telephone (farm share)	696	-5«	-7	684	<1
Electricity (farm share)	6,742	-1«	14	6,755	3
Interest paid	19,895	0«	19	19,914	8
Miscellaneous	3,912	50	-17	3,945	1
Total Operating	$256,098	$-4,583	$648	$252,163	100
Expansion livestock	$4,031	0«	$ 25	4,056	
Machinery depreciation				16,624	
Building depreciation				8,986	
TOTAL ACCRUAL EXPENSES				$281,829	

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). The purchased dairy grain and concentrate inventory increased $3,502.

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 $17 per farm in 1990, and that increase is subtracted from cash rent to determine the correct 1990 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 $321,777 per farm. Total accrual receipts averaged $328,849 per farm. Accrual receipts were greater than cash receipts due to dairy herd growth and increases in crop inventory. Cow numbers increased an average of four head per farm and the homegrown feed inventory increased $46 per cow.

Table 4. CASH AND ACCRUAL FARM RECEIPTS
395 New York Dairy Farms, 1990

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts	Percent
Milk sales	$288,691				$-4,859		$283,832	86
Dairy cattle	18,603		$6,841		7		25,451	8
Dairy calves	4,591				-5		4,586	1
Other livestock	661		123		-14		770	<1
Crops	2,155		4,921		105		7,181	2
Government receipts	2,779		-12*		2		2,769	1
Custom machine work	366				8		374	<1
Gas tax refund	137				0		137	<1
Other	3,794				41		3,835	1
- Nonfarm noncash capital**			(-) 86				(-) 86	
Total	$321,777		$11,787		$-4,715		$328,849	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 government payments received for participating in a future year's program have changed from 1989 to 1990. 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 this December's marketings and the previous January's check, and other delayed payments.

Nonfarm noncash capital are gifts and inheritances of cattle and crops received by the farm owner/operator, and included in inventory or used in the business during the year. They are deducted from growth in inventory and reduce accrual receipts because they came from outside the farm business. Gifts and inheritances of machinery and real estate are accounted for in Table 12.

Profitability Analysis

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

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

Net farm income is computed with and without appreciation. Appreciation represents the change in farm inventory values caused by changes in prices during the year. Appreciation is a major factor contributing to changes in farm net worth and must be included in the profitability analysis.

Table 5. NET FARM INCOME
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms*
Total accrual receipts	$328,849	$1,069,802
+ Appreciation: Livestock	-1,075	13
Machinery	1,794	3,231
Real Estate	8,638	29,422
Other Stock/Cert.	195	865
= Total including appreciation	$338,401	$1,103,333
- Total accrual expenses	281,829	879,747
= Net Farm Income (with appreciation)	$ 56,572	$ 223,586
Net Farm Income (without appreciation)	$ 47,020	$ 190,055

*Average of 40 farms with highest net farm incomes (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
395 New York Dairy Farms, 1990

Item	Average 395 Farms		Average Top 10% Farms	
	With Apprec.	Without Apprec.	With Apprec.	Without Apprec.
Net farm income	$56,572	$47,020	$223,586	$190,055
- Family labor unpaid @ $1,250 per month	3,538	3,538	1,600	1,600
= Return to Operator(s') Labor, Management, & Equity	$53,034	$43,482	$221,986	$188,455

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.

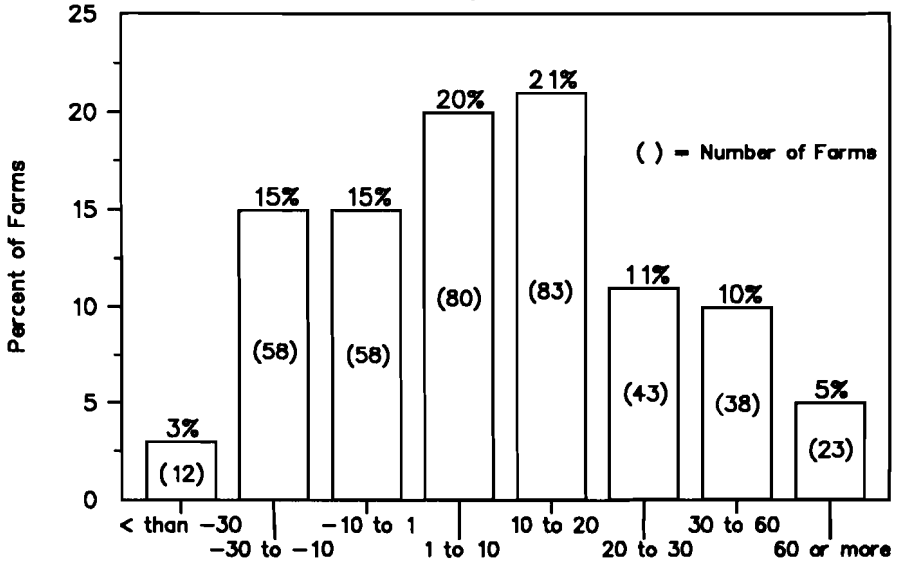
Labor and management income per operator measures the return to one full-time operator's labor and management. A full-time operator provides 12 months of labor and management.

Table 7. LABOR AND MANAGEMENT INCOME
395 New York Dairy Farms, 1990

Item	Average 395 Farms		Average Top 10% Farms
Return to operator(s') labor, management, & equity without appreciation	$43,482		$188,455
- Real interest @ 5% on $471,322 equity capital for average & $1,208,969 for the top 10%	23,566		60,448
= Labor & Management Income (1.39 operators)	$19,916	(1.77)	$128,007
Labor & Management Income per Operator	$14,328		$ 72,320

Labor and management income per operator averaged $14,328 on these 395 dairy farms in 1990. The range in labor and management income per operator was from less than -$105,000 to more than $300,000. Returns to labor and management were negative on 33 percent of the farms. Labor and management income per operator ranged from $0 to $19,999 on 41 percent of the farms while 26 percent showed labor and management incomes of $20,000 or more per operator.

Chart 1. DISTRIBUTION OF LABOR AND MANAGEMENT INCOMES PER OPERATOR
395 New York Dairy Farms, 1990



Return on 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 on total 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 total capital.

Table 8. RETURN ON EQUITY CAPITAL
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms
Return to operators' labor, management, & equity capital with appreciation	$53,034	$221,986
- Value of operators' labor & management	30,613	52,989
= Return on equity capital with appreciation	$22,421	$168,997
+ Interest paid	19,914	54,015
= Return on total capital with appreciation	$42,335	$223,012
Return on equity capital without appreciation	$12,869	$135,466
Return on total capital without appreciation	$32,783	$189,481
Rate of return on average equity capital:		
with appreciation	4.8%	14.0%
without appreciation	2.7%	11.2%
Rate of return on average total capital:		
with appreciation	6.0%	12.1%
without appreciation	4.7%	10.3%

Return to all labor and management input 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
395 New York Dairy Farms, 1990

	Quartile by Return to All Capital w/Apprec.			
Item	Lowest 25%	3rd 25%	2nd 25%	Top 25%
Profitability Analysis				
Net farm income (w/o apprec.)	$9,247	$26,405	$40,124	$112,183
Net farm income (w/apprec.)	$7,823	$31,179	$48,112	$139,042
Labor & mgmt. income	$-13,903	$7,835	$15,769	$69,773
Labor & mgmt. income/operator	$-10,375	$6,027	$11,946	$44,441
Return to all capital (w/apprec.)	$-13,042	$12,791	$32,687	$137,408
Rate of return on all capital w/apprec.	-2.6%	3.0%	5.4%	10.9%
Returns Per Unit of Input				
Total returns to all labor & mgmt.	$7,205	$21,413	$42,212	$157,359
Worker equivalent	2.70	2.31	3.01	5.46
Return per worker equiv.	$2,669	$9,270	$14,024	$28,820
Returns/hour (3,000 hrs./worker/yr.)	$0.89	$3.09	$4.67	$9.61

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 the liabilities, and fill out the balance sheet. The second step is to analyze the completed balance sheet by evaluating the relationships between assets and liabilities and changes made during the year.

Table 10. 1990 FARM BUSINESS AND NONFARM BALANCE SHEET
395 New York Dairy Farms, 1990

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
Current			Current		
Farm cash, checking & savings	$ 7,367	$ 6,275	Accounts payable	$ 5,518	$ 6,175
Accounts rec.	24,281	19,550	Operating debt	8,657	12,001
Prepaid expenses	392	538	Short-term	2,713	4,876
Feed & supplies	53,106	62,499	Advanced Govt. Rec.	22	34
Total	$85,146	$88,862	Total	$16,910	$23,086
Intermediate			Intermediate		
Dairy cows:			Structured debt		
owned	$105,266	$107,897	1-10 years	$ 85,290	$ 97,146
leased	161	43	Financial lease		
Heifers	44,199	47,257	(cattle/mach.)	2,396	1,930
Bulls/other lvstk.	1,283	1,483	FLB & PCA stock	2,643	3,189
Mach./eq. owned	123,423	137,111	Total	$ 90,329	$102,265
Mach./eq. leased	2,235	1,887			
FLB & PCA stock	2,643	3,189	Long-Term		
Other stock & cert.	7,835	8,128	Structured debt		
Total	$287,045	$306,995	≥10 years	$110,269	$120,895
Long-Term			Financial lease		
Land/buildings:			(structures)	357	201
owned	$307,444	$330,904	Total	$110,626	$121,096
leased	357	201			
Total	$307,801	$331,105	Total Farm Liab.	$217,865	$246,447
Total Farm Assets	$679,992	$726,962	FARM NET WORTH	$462,127	$480,515

Nonfarm Assets*	Jan. 1	Dec. 31	Nonfarm Liabilities* & Net Worth	Jan. 1	Dec. 31
Personal cash, chkg. & savings	$ 5,032	$ 7,692	Nonfarm Liab.	$3,195	$3,251
Cash value life ins.	6,473	6,971	NONFARM NET WORTH	$58,177	$60,944
Nonfarm real estate	25,280	23,338			
Auto (personal sh.)	3,679	3,996	FARM & NONFARM*	Jan. 1	Dec. 31
Stocks & bonds	5,262	5,490	Total Assets	$741,364	$791,157
Household furn.	9,248	9,638	Total Liabilities	221,060	249,698
All other	6,398	7,069			
Total Nonfarm	$61,372	$64,195	TOTAL FARM & NON-FARM NET WORTH	$520,304	$541,459

*Average of 249 farms completing the nonfarm balance sheet.

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

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

Table 11. FARM BALANCE SHEET ANALYSIS
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms
Farm Financial Ratios:		
Percent equity	66%	64%
Debt/asset ratio: total	0.34	0.36
long-term	0.37	0.35
inter. & current	0.32	0.36
Change in Net Worth:		
Without appreciation	$8,838	$55,326
With appreciation	$18,390	$88,857
Farm Debt Analysis:		
Accts. payable as % of total debt	3%	1%
Long-term liab. as % of total debt	49%	43%
Current & int. liab. as % of tot. debt	51%	57%

Farm Debt Levels:	Per Cow	Per Tillable Acre Owned	Per Cow	Per Tillable Acre Owned
Total farm debt	$2,220	$1,208	$2,154	$1,442
Long-term debt	1,091	594	918	614
Intermediate & current debt	1,129	614	1,236	827

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

Table 12. FARM INVENTORY BALANCE
395 New York Dairy Farms, 1990

Item	Real Estate		Machinery/Equip.		Livestock
Value beg. of year		$307,444		$123,423	$150,748
Purchases	$33,217*		$29,634		
+ Nonfarm noncash transfer**	165		225		
- Lost capital	6,648				
- Sales	2,009		1,340		
- Depreciation	8,986		16,624		
= Net investment		15,738		11,895	6,963
+ Appreciation		7,721***		1,794	-1,075
Value end of year		$330,904		$137,111	$156,636

*$14,640 land and $18,576 buildings and/or depreciable improvements.
**Gifts and inheritances of property transferred into the farm business from outside.
***Excludes $917 of appreciation on assets sold during the year.

Cash Flow Summary and Analysis

Completing an annual cash flow summary and analysis is important to determine how well the cash generated by the business, plus that brought in from outside, met the annual cash needs of the business and the farm family. 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 compare all the cash inflows with all the cash outflows for the year. Cash inflows include all the cash farm receipts, receipts from the sale of farm assets, additional funds borrowed, cash used in the business from the sale of nonfarm capital, as well as the amount of cash available at the beginning of the year. Cash outflows include all the cash farm expenses, capital purchases, principal payments, money taken out of the business, and the cash balance left at year's end. When all the cash inflows and outflows are correct, the statement will balance. The positive imbalance of $1,020 indicates that on average, farms had more inflows than were accounted for by outflows.

Table 13. ANNUAL CASH FLOW STATEMENT
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms
Cash Inflows		
Beginning farm cash, checking & savings	$ 7,367	$ 19,662
Cash farm receipts	321,777	1,028,967
Sale of assets: Machinery	1,340	3,751
Real estate	2,455	5,768
Other stock & certificates	336	2,275
Money borrowed (intermediate & long-term)	54,356	225,038
Money borrowed (short-term)	4,082	16,364
Increase in operating debt	3,344	14,611
Nonfarm income	4,847	2,565
Cash from nonfarm capital used in business	2,287	574
Money borrowed - nonfarm	610	133
Total	$402,801	$1,319,708
Cash Outflows		
Cash farm expenses	$256,098	$ 810,116
Capital purchases: Expansion livestock	4,031	17,773
Machinery	29,634	89,050
Real estate	33,217	170,518
Other stock & certificates	434	2,030
Principal payments (intermediate & long-term)	31,876	105,888
Principal payments (short-term)	1,919	1,581
Decrease in operating debt	0	0
Personal withdrawals & family expenditures, including nonfarm debt payments	38,299	102,616
Ending farm cash, checking & savings	6,275	17,012
Total	$401,781	$1,316,583
Imbalance (error)	$ 1,020	$ 3,125

Table 14. ANNUAL CASH FLOW BUDGETING DATA
395 New York Dairy Farms, 1990

Item	Average 395 Farms Total	Average 395 Farms Per Cow	Average Top 10% Farms Total	Average Top 10% Farms Per Cow
Average number of cows	107		313	
Accrual Operating Receipts				
Milk	$283,832	$2,645	$ 912,657	$2,916
Dairy cattle	25,451	237	87,716	280
Dairy calves	4,586	43	14,265	46
Other livestock	770	7	349	1
Crops	7,181	67	30,916	99
Miscellaneous receipts	7,116	66	23,900	76
Total	$328,936	$3,065	$1,069,803	$3,418
Accrual Operating Expenses				
Hired labor	$ 33,651	$ 314	$147,941	$ 473
Dairy grain & concentrate	78,640	733	243,963	779
Dairy roughage	2,513	23	10,500	34
Nondairy feed	268	3	252	1
Machinery hire/rent/lease	3,983	37	14,004	45
Machinery repairs/parts & auto	16,975	158	45,366	145
Fuel, oil & grease	7,776	72	20,570	66
Replacement livestock	3,793	35	6,932	22
Breeding	3,689	34	9,786	31
Vet & medicine	6,065	57	22,170	71
Milk marketing	10,013	93	22,709	73
Cattle lease	320	3	988	3
Other livestock expense	12,642	118	38,850	124
Fertilizer & lime	9,462	88	26,927	86
Seeds & plants	4,253	40	13,309	43
Spray/other crop expense	4,214	39	14,999	48
Land, building, fence repair	6,148	57	23,074	74
Taxes	6,985	65	14,774	47
Real estate rent/lease	4,922	46	15,305	49
Insurance	4,553	42	9,854	31
Utilities	7,439	69	17,655	56
Miscellaneous	3,945	37	11,795	38
Total Less Interest Paid	$232,247	$2,164	$731,723	$2,338
Net Accrual Operating Income (without interest paid)	$96,689	$901	$338,080	$1,080
- Change in livestock/crop inv.	11,787	110	54,129	173
- Change in accounts rec.	-4,715	-44	-13,294	-42
+ Change in feed/supply inv.	-4,583	-43	-21,690	-69
+ Change in accounts payable*	629	6	-2,668	-9
NET CASH FLOW	$85,663	$798	$272,887	$872
- Net personal withdrawals & family expenditures	32,842	306	99,918	319
Available for Farm Debt Payments & Investments	$52,821	$492	$172,969	$553
- Farm Debt Payments	52,798	492	159,924	511
Avail. for Farm Investments	$ 23	$ 0	$ 13,045	$ 42
- Capital Purchases: cattle, machinery & improvements	67,315	627	279,371	892
Capital Deficit	$-67,292	$-627	$-266,326	$-850

*Excludes 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 1989 and 1990.

Table 15. FARM DEBT PAYMENTS PLANNED
New York Dairy Farms, 1990

	Same 294 Dairy Farms			Average Top 10% Farms		
	1990 Payments		Planned	1990 Payments		Planned
Debt Payments	Planned	Made	1991	Planned	Made	1991
Long-term	$14,903	$21,660	$18,075	$27,641	$74,870	$51,322
Intermediate-term	26,000	31,669	27,675	71,891	96,908	74,055
Short-term	2,573	2,414	3,685	10,300	3,034	15,390
Operating (net red.)	1,807	0	5,159	9,466	0	33,665
Accts. payable (net reduction)	1,043	0	860	3,655	1,737	3,920
Total	$46,326	$55,743	$55,453	$122,953	$176,549	$178,352
Per cow	$414	$498		$370	$532	
Per cwt. 1990 milk	$2.31	$2.77		$1.90	$2.73	
% of 1990 milk rec.	15%	19%		13%	18%	

The cash flow coverage ratio measures the ability of the farm business to meet its planned debt payments. The ratio shows the percentage of last year's planned payments that could have been made with last year's available cash.

Table 16. CASH FLOW COVERAGE RATIO
New York Dairy Farms, 1990

Item	Same 294 Dairy Farms	Average Top 10% Farms
Cash farm receipts	$340,240	$1,093,368
- Cash farm expenses	269,986	863,204
+ Interest paid	20,396	56,171
- Net personal withdrawals from farm*	35,278	110,772
(A) = Amount Available for Debt Service	$55,372	$175,563
(B) = Debt Payments Planned for 1990	$46,326	$122,953
(A + B) = Cash Flow Coverage Ratio for 1990	1.20	1.43

*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, 22 percent of the farms had a cash flow coverage ratio less than 1.0!

Table 17. DEBT TO ASSET RATIO VS. CASH FLOW COVERAGE
274 New York Dairy Farms, 1990

	Cash Flow Coverage Ratio (Farm & Non-Farm)			
Debt/Asset Ratio	<.5	.5 to .99	1 to 1.49	1.5 & >
	percent of farms			
<40%	8	14	17	21
40 to 70%	3	14	12	8
70% & over	0	1	1	1

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 18. LAND RESOURCES AND CROP PRODUCTION
395 New York Dairy Farms, 1990

Item	Average 395 Farms			Average Top 10% Farms		
Land	Owned	Rented	Total	Owned	Rented	Total
Tillable	204	121	325	487	287	774
Nontillable	50	11	61	40	6	46
Other nontillable	103	7	110	165	9	174
Total	356	139	495	692	302	994

Crop Yields	Farms	Acres	Prod/Acre	Farms	Acres	Prod/Acre
Hay crop	393	166	2.7 tn DM	40	275	3.1 tn DM
Corn silage	355	91	14.4 tn	39	282	14.9 tn
			4.8 tn DM			4.9 tn DM
Other forage	45	24	1.7 tn DM	6	24	2.2 tn DM
Total forage	395	250	3.3 tn DM	40	553	4.0 tn DM
Corn grain	194	79	104.2 bu	29	167	109.1 bu
Oats	61	25	56.3 bu	6	24	62.8 bu
Wheat	34	45	58.9 bu	12	66	58.2 bu
Other crops	55	53		13	135	
Tillable pasture	123	30		10	43	
Idle	150	28		19	46	
Total Tillable Acres	395	325		40	774	

Crop acres and yields compiled for the average represent only the number of farms reporting each crop. All but two of the 395 farms produced hay or hay crop silage in 1990. Ninety percent produced corn silage, 49 percent grew and harvested corn grain, and 15 percent grew oats for grain. 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.

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 19. CROP MANAGEMENT FACTORS
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms
Total tillable acres per cow	3.03	2.47
Total forage acres per cow	2.74	1.77
Harvested forage dry matter, tons per cow	7.79	7.00

In the sixth year of collecting information on individual crop production costs, 164 cooperators allocated direct crop related expenses to hay crop, corn, and other crop production. The data in Table 20 has been compiled to show the average crop related production expenses per acre and per unit for these crops. Note that labor and machinery costs have not been included. Total corn expenses are allocated to corn silage and corn grain based on the proportion of acres in each crop. In Table 20, the total per tillable acre represents all 395 farms and the expenses for individual crops are for the 164 farms which submitted data.

Table 20. CROP RELATED ACCRUAL EXPENSES
New York Dairy Farms, 1990

Expense	Average 395 Farms Total Per Tillable Acre	Average 164 Farms Reporting Individual Crop Costs: Hay Crop Per Acre	Hay Crop Per Ton DM	All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Shell Bu.
Fertilizer & lime	$29.11	$19.91	$ 7.27	$43.15	$ 9.06	$0.41
Seeds & plants	13.09	9.17	3.35	22.94	4.82	0.22
Spray & other crop expense	12.97	5.32	1.94	27.23	5.72	0.26
Total	$55.17	$34.40	$12.56	$93.32	$19.60	$0.89
Average Top 10% Farms:		Average 20 Farms Reporting Individual Crop Costs				
Fertilizer & lime	$34.79	$23.30	$ 6.73	$39.49	$7.75	$0.37
Seeds & plants	17.20	15.35	4.44	24.57	4.83	0.23
Spray & other crop expense	19.38	9.74	2.81	27.14	5.33	0.25
Total	$71.37	$48.39	$13.98	$91.20	$17.91	$0.85

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 21. ACCRUAL MACHINERY EXPENSES
395 New York Dairy Farms, 1990

Machinery Expense Item	Average 395 Farms Total Expenses	Average 395 Farms Per Til. Acre	Average Top 10% Farms Total Expenses	Average Top 10% Farms Per Til. Acre
Fuel, oil & grease	$ 7,775	$ 23.92	$ 20,569	$ 26.57
Machinery repairs & parts	16,093	49.52	44,397	57.36
Machine hire, rent & lease	3,983	12.26	14,004	18.09
Auto expense (farm share)	882	2.71	969	1.25
Interest (5%)	6,513	20.04	15,474	19.99
Depreciation	16,624	51.15	44,763	57.83
Total	$51,870	$159.60	$140,176	$181.11

Table 22. CROP RELATED ACCRUAL EXPENSES BY HAY CROP PRODUCTION PER ACRE
164 New York Dairy Farms, 1990

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	1.6	2.2	2.8	3.2	4.2
Farms reporting crop expense breakdowns	32	36	28	42	26
Average number hay crop acres for farms reporting	181	148	157	150	179
Accrual Crop Expense Per Acre of Hay Crop:					
Fertilizer & lime	$14.48	$17.91	$18.08	$22.41	$27.33
Seeds & plants	6.73	7.35	10.38	10.85	10.87
Spray & other crop expense	1.20	5.17	6.47	7.26	6.89
Total	$22.41	$30.43	$34.93	$40.52	$45.09
Accrual Crop Expense Per Ton DM of Hay Crop:					
Fertilizer & lime	$ 8.61	$ 8.11	$ 6.61	$ 6.97	$ 6.78
Seeds & plants	4.01	3.33	3.79	3.37	2.70
Spray & other crop expense	0.71	2.34	2.37	2.26	1.71
Total	$13.33	$13.78	$12.77	$12.60	$11.19

Table 23. CROP RELATED ACCRUAL EXPENSES BY CORN PRODUCTION PER ACRE
154 New York Dairy Farms, 1990

Item	Tons Corn Silage/Acre			Dry Shell Bushels of Corn Grain Per Acre		
	0-12	13-17	≥18	0-87	88-112	≥113
Corn yield per acre	11.0	15.3	19.0	75.1	99.3	130.3
Farms reporting crop expense breakdowns	43	87	18	29	38	26
Average number corn acres for farms reporting	131	155	157	169	211	184
Accrual Crop Exp./Acre of Corn						
Fertilizer & lime	$40.61	$42.37	$ 53.35	$40.97	$41.89	$45.02
Seeds & plants	24.33	22.07	22.94	22.04	22.37	24.12
Spray & other crop expense	23.63	28.46	28.84	26.64	26.17	27.70
Total	$88.57	$92.90	$105.13	$89.65	$90.43	$96.84
Accrual Crop Expense Per:*	Ton DM of Corn Silage			Dry Shell Bushel of Corn Grain		
Fertilizer & lime	$11.06	$ 8.54	$ 8.49	$0.53	$0.41	$0.34
Seeds & plants	6.62	4.45	3.65	0.28	0.22	0.18
Spray & other crop expense	6.43	5.73	4.59	0.34	0.26	0.21
Total	$24.11	$18.72	$16.73	$1.15	$0.89	$0.73

*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 also increase. For corn silage and corn grain, crop expense per ton of dry matter and per bushel decreased as yield per acre increased. Hay crop expenses per ton of dry matter decrease as yields exceed two tons per acre and decrease substantially at yields greater than 3.5 tons. The lower dry matter costs on this group of 26 farms can be attributed to significantly higher yields with controlled expenses per acre.

Dairy Program Analysis

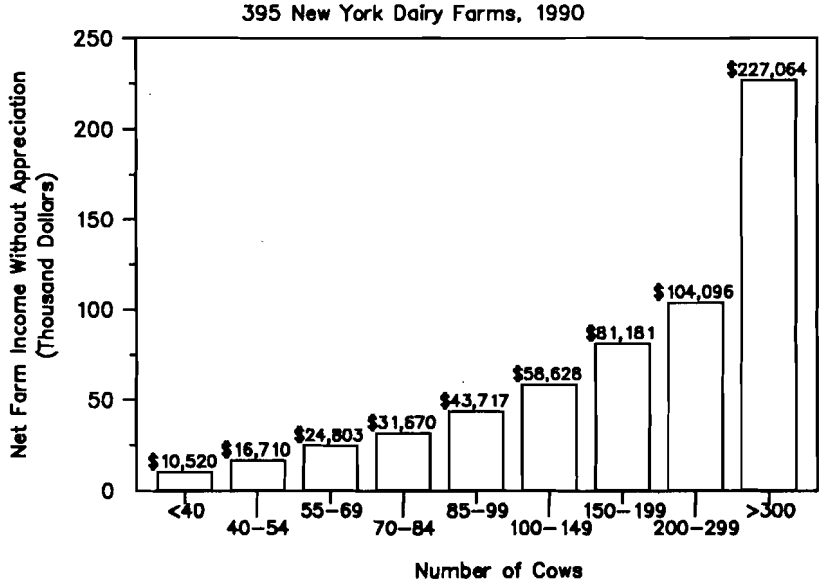
An analysis of the dairy enterprise can be the most important step in evaluating the strengths and weaknesses of the dairy farm business. Changes in dairy herd size and market values are identified in the table below. The change in inventory value without appreciation is attributed to physical changes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

Table 24. DAIRY HERD INVENTORY
395 New York Dairy Farms, 1990

Item	Dairy Cows		Heifers					
			Bred		Open		Calves	
	No.	Value	No.	Value	No.	Value	No.	Value
Beg. year (owned)	107	$105,266	32	$24,566	27	$13,304	25	$6,329
+ Change w/o apprec.		3,600		1,892		919		429
+ Appreciation		-969		-156		-21		-6
End year (owned)	110	$107,897	34	$26,302	29	$14,202	27	$6,752
End incl. leased	111							
Average number	107		87	(all age groups)				
Average Top 10% Farms:								
Beg. year (owned)	312	$282,453	109	$71,710	62	$27,261	63	$15,535
+ Change w/o apprec.		14,047		12,839		649		2,755
+ Appreciation		-634		-76		-8		285
End year (owned)	326	$295,866	131	$84,473	61	$27,902	75	$18,575
End incl. leased	326							
Average number	313		252	(all age groups)				

There is a strong relationship between farm size and farm income on well managed dairy farms. When data is sorted by herd size categories this relationship becomes apparent as shown in Chart 2. Net farm income increased $216,544 while labor and management income per operator jumped $84,691 as herd size increased from less than 40 to over 300 cows per farm.

Chart 2. NET FARM INCOME (WITHOUT APPRECIATION) BY HERD SIZE
395 New York Dairy Farms, 1990



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 25. MILK PRODUCTION
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms
Total milk sold, lbs.	1,900,483	6,077,583
Milk sold per cow, lbs.	17,720	19,419
Average milk plant test, percent butterfat	3.6%	3.4%

Farms with higher rates of production tend to have higher profits. In 1990, the farms that sold more than 18,000 pounds of milk per cow had above average profit margins.

Table 26. MILK SOLD PER COW AND FARM INCOME MEASURES
395 New York Dairy Farms, 1990

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 12,000	17	54	$ 7,835	$145	$-7,755
12,000 to 13,999	40	71	18,961	267	-1,337
14,000 to 14,999	26	78	23,722	304	727
15,000 to 15,999	37	88	37,523	426	15,099
16,000 to 16,999	66	85	28,230	332	3,467
17,000 to 17,999	70	116	42,922	370	12,579
18,000 to 19,999	89	128	65,506	512	20,983
20,000 & over	50	163	99,581	611	40,869

The cost of producing milk has been compiled using the whole farm method in Table 27 on page 22. The following steps are used in the calculations:

1. The cost of expansion livestock is included in total accrual operating expenses to offset any related inventory increase included in accrual receipts.

2. Accrual milk sales are subtracted from total accrual receipts to obtain total accrual non-milk receipts which are used as a representation of total non-milk operating costs.

3. Total accrual non-milk receipts are subtracted from total accrual operating expenses including expansion livestock to calculate the operating costs of producing milk.

4. Machinery depreciation, building depreciation, and the value of family labor unpaid are added to operating costs to determine the total costs of producing milk excluding operator's resources.

5. The opportunity costs of equity capital, operator's labor and operator's management 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 27. COST OF PRODUCING MILK WHOLE FARM METHOD CALCULATIONS
395 New York Dairy Farms and Top 10 Percent of Farms, 1990

Item	Average of 395 New York Dairy Farms		Average of Top 10% Farms	
Total Accrual Oper. Expenses	$252,163		$785,738	
Expansion Livestock, Accrual	+4,056		+17,773	
1. Total Accrual Oper. Expenses, Incl. Expansion Livestock		$256,219		$803,511
Total Accrual Receipts	$328,849		$1,069,802	
Milk Sales, Accrual	-283,832		-912,657	
2. Total Accrual Non-Milk Receipts		-45,017		-157,145
3. Oper. Costs of Producing Milk		$211,202		$646,366
Cwt. of Milk Sold	+19,004.8		+60,775.8	
Operating Costs/Cwt.	=$11.11		=$10.64	
Machinery Depreciation		+16,624		+44,763
Building Depreciation		+8,986		+31,473
Family Labor Unpaid ($1,250/month)		+3,538		+1,600
4. Total Costs of Producing Milk Excl. Operator's Resources		$240,350		$724,202
Cwt. of Milk Sold	+19,004.8		+60,775.8	
Total Costs Excluding Operators Resources/Cwt.	=$12.65		=$11.92	
Real Interest on Equity Cap.		+23,566		+60,448
Value of Oper. Labor & Mgmt.		+30,613		+52,989
5. Total Costs of Producing Milk		$294,529		$837,639
Cwt. Milk Sold	+19,004.8		+60,775.8	
Total Costs/Cwt.	=$15.50		=$13.78	

The three measures of accrual costs of producing milk per cow and per hundredweight are compared with accrual receipts from milk sales in Table 28.

Table 28. ACCRUAL RECEIPTS FROM DAIRY AND COST OF PRODUCING MILK
395 New York Dairy Farms, 1990

Item	Average 395 Farms			Average Top 10% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Accrual Costs of Producing Milk						
Operating costs	$211,202	$1,968	$11.11	$646,366	$2,065	$10.64
Total costs without op(s') labor, mgmt. & capital	$240,350	$2,240	$12.65	$724,202	$2,314	$11.92
Total Costs	$294,529	$2,745	$15.50	$837,639	$2,676	$13.78
Accrual Receipts from Milk	$283,832	$2,645	$14.93	$912,657	$2,916	$15.02

The total cost of producing milk on all 395 dairy farms averaged $15.50 per hundredweight, $0.57 more than the average price received for milk sold from these farms during 1990. 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 averaged $2.85 per hundredweight in 1990. The computed returns averaged $2.29 per hundredweight. See Table 55 on page 53 for detailed costs per hundredweight of milk.

The strong relationship between milk output per cow and the total costs of producing milk are shown in Table 29. Farms selling less than 15,000 pounds of milk per cow had an average total cost of production of $18.60 per hundredweight while those selling 18,000 pounds and over averaged approximately $14.70 for a difference of $3.90 per hundredweight.

Table 29. FARM COST OF PRODUCING MILK BY MILK SOLD PER COW
395 New York Dairy Farms, 1990

Pounds Milk Sold Per Cow	Cost per Hundredweight			Accrual Receipts From Milk Per Cwt.	Return/Cwt. to Opertor's Labor, Mgmt. & Capital
	Operating	Excluding Operator's Labor, Mgmt. & Capital	Total		
Under 12,000	$11.94	$14.72	$20.30	$15.21	$0.49
12,000 - 13,999	11.71	13.52	18.07	15.09	1.57
14,000 - 14,999	11.45	13.13	17.46	14.84	1.71
15,000 - 15,999	10.96	12.41	15.36	14.95	2.54
16,000 - 16,999	11.46	13.13	16.38	14.82	1.69
17,000 - 17,999	11.53	12.94	15.58	14.92	1.98
18,000 - 19,999	10.83	12.43	15.15	14.96	2.53
20,000 & over	10.75	12.10	14.25	14.94	2.84

Data in Table 30 show average operating costs of producing milk somewhat higher on dairy farms with 200 cows and over because more labor is included as an operating expense. 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 30. FARM COST OF PRODUCING MILK BY HERD SIZE
395 New York Dairy Farms, 1990

Number of Cows	Cost per Hundredweight			Accrual Receipts From Milk Per Cwt.	Return/Cwt. to Opertor's Labor, Mgmt. & Capital
	Operating	Excluding Operator's Labor, Mgmt. & Capital	Total		
Under 40	$11.07	$13.07	$18.93	$14.62	$1.55
40 to 54	10.96	13.17	17.67	14.74	1.57
55 to 69	10.74	12.62	16.90	14.80	2.18
70 to 84	10.94	12.76	16.27	14.90	2.14
85 to 99	10.80	12.46	15.81	14.88	2.42
100 to 149	10.89	12.38	15.28	14.95	2.57
150 to 199	11.08	12.45	14.98	14.98	2.53
200 to 299	11.55	12.80	14.98	15.07	2.27
300 & over	11.54	12.75	14.18	15.02	2.27

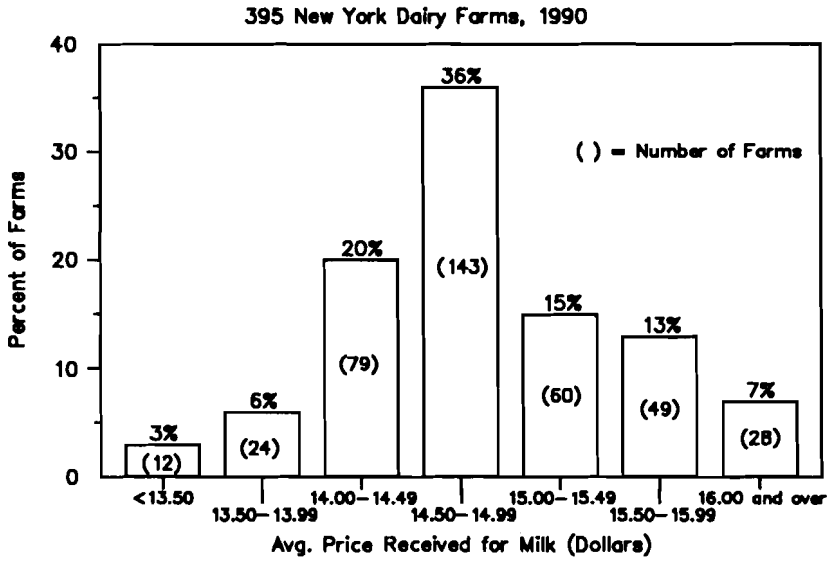
Controlling costs is a very important part of managing a dairy farm business. Farms with lower operating costs are somewhat smaller, but are very similar in milk sold per cow and crop yields to farms with higher costs. The big differences are in hired labor and purchased grain and concentrate expenses per hundredweight of milk. Those two costs are $1.34 per hundredweight lower on the low cost farms than the next higher cost farm category.

Table 31. SELECTED BUSINESS FACTORS BY OPERATING COSTS OF PRODUCING MILK PER HUNDREDWEIGHT
395 New York Dairy Farms, 1990

	Operating Cost of Producing Milk Per Cwt.			
Item	<$9.00	$9.00-11.00	$11.00-13.00	>$13.00
Number of farms	59	138	131	67
Business Size & Production				
Number of cows	77	102	129	103
Milk sold, cwt.	13,699	18,097	23,221	17,304
Milk sold/cow, lbs.	17,914	17,666	18,061	16,868
Hay crop, tons DM/acre	2.9	2.6	2.7	2.5
Corn silage, tons/acre	14.9	14.5	14.4	14.1
Forage DM/cow, tons	8.2	7.7	7.6	8.3
Labor & Capital Efficiency				
Worker equivalent	2.78	3.18	3.85	3.36
Milk sold/worker, lbs.	492,853	569,317	602,609	514,953
Farm capital/cow	$7,211	$6,636	$6,250	$6,731
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.04	$1.68	$1.98	$1.91
Grain & concentrate	$3.16	$3.86	$4.34	$4.90
Purchased roughage	$0.04	$0.11	$0.17	$0.14
Replacements purchased	$0.18	$0.16	$0.20	$0.30
Vet & medicine	$0.28	$0.29	$0.34	$0.35
Milk marketing	$0.47	$0.45	$0.48	$0.85
Other dairy expenses	$0.58	$0.64	$0.71	$0.76
Operating costs/cwt.	$7.65	$10.09	$11.81	$13.90
Total labor costs/cwt.	$3.12	$3.04	$2.99	$3.21
Operator resources/cwt.	$4.15	$3.10	$2.28	$2.91
Total costs/cwt.	$13.77	$14.77	$15.56	$18.12
Average farm price/cwt.	$14.54	$14.74	$14.95	$15.59
Return over total costs/cwt.	$0.77	$-0.03	$-0.61	$-2.53
Related Cost Factors				
Purchased dairy feed/cow	$573	$701	$814	$851
Purchased grain & concentrate as % milk receipts	22%	26%	29%	31%
Machinery costs/cow	$523	$477	$487	$463
Profitability Analysis				
Net farm income (w/o apprec.)	$71,643	$58,492	$43,101	$9,384
Labor & mgmt. income/operator	$28,348	$21,633	$11,591	$-11,527
Rates of return on:				
Equity capital w/apprec.	8.4%	6.8%	4.9%	-3.4%
All capital w/apprec.	8.4%	7.2%	6.5%	1.0%

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 395 farms was $14.93 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 3. VARIATION IN AVERAGE MILK PRICE



Fifty-six percent of the farms received from $14.00 to $14.99 per hundredweight of milk sold. Thirty-five percent of the farms received $15.00 or more per hundredweight and nine percent received less than $14.00 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 32. DAIRY RELATED ACCRUAL EXPENSES
395 New York Dairy Farms, 1990

Item	Average 395 Farms		Average Top 10% Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purc. dairy grain & conc.	$733	$4.14	$779	$4.01
Purchased dairy roughage	23	0.13	34	0.17
Total Purchased Dairy Feed	$756	$4.27	$813	$4.18
Purchased grain & conc. as % of milk receipts	28%		27%	
Purchased feed & crop exp.	$923	$5.21	$989	$5.10
Purchased feed & crop exp. as % of milk receipts	35%		34%	
Breeding	$34	$0.19	$31	$0.16
Veterinary & medicine	$57	$0.32	$71	$0.36
Milk marketing	$93	$0.53	$73	$0.37
Cattle lease	$3	$0.02	$3	$0.02
Other livestock expense	$118	$0.67	$124	$0.64

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 includes the amount spent for calf and heifer feed, it actually represents the feed cost for one cow and 0.81 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 33. PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT OF MILK AND FARM INCOME MEASURES
395 New York Dairy Farms, 1990

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
$6.50 or more	43	113	7.3	16,934	$25,723	$-1,876
6.00 to 6.49	36	120	7.6	17,299	44,942	11,795
5.50 to 5.99	63	121	7.8	17,844	45,952	13,315
5.00 to 5.49	71	112	7.7	17,876	46,629	16,084
4.50 to 4.99	83	92	8.3	17,720	43,635	12,921
4.00 to 4.49	53	108	7.9	17,743	56,527	18,979
3.50 to 3.99	26	100	8.1	19,102	72,117	35,641
Less than 3.50	20	86	7.4	17,589	57,575	21,007

On the average, farms with purchased feed and crop expenses exceeding $6.50 per hundredweight of milk sold reported well below average farm profits. Farms reporting less than $4.50 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 amount of work each worker has accomplished.

Table 34. CAPITAL EFFICIENCY
395 New York Dairy Farms, 1990

Item (Average for Year)	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
Farm capital	$208,528	$6,556	$2,165	$3,448
Real estate		$2,977		$1,566
Machinery & equipment	$39,225	$1,233	$407	
Capital turnover, years		2.08		
Average Top 10% Farms:				
Farm capital	$239,642	$5,871	$2,374	$3,774
Real estate		$2,504		$1,609
Machinery & equipment	$41,174	$1,009	$408	
Capital turnover, years		1.67		

Capital turnover measures the number of years of farm receipts required to equal or "turnover" capital investment. It is computed by dividing the average farm assets by the year's total farm accrual receipts including appreciation. The relationship capital turnover has to farm profitability and other factors is shown in the following table. As a general rule, dairy farmers should aim for a capital turnover rate of 2.5 years or less.

Table 35. CAPITAL TURNOVER AND LABOR AND MANAGEMENT INCOME
395 New York Dairy Farms, 1990

Capital Turnover Rate - Years	No. of Farms	No. of Cows	Farm Capital (average for year) Per Cow	Farm Capital (average for year) Per Worker	Labor & Mgt. Inc. Per Operator	Net Farm Income (w/o apprec.)
Less than 1.5	25	242	$ 4,576	$170,753	$53,747	$117,044
1.5 to 1.99	103	136	5,820	197,389	26,936	66,904
2.0 to 2.49	128	99	6,725	208,644	8,499	38,592
2.5 to 2.99	72	75	8,133	229,693	10,688	39,827
3.0 to 3.49	32	74	8,696	253,459	-6,102	21,039
3.5 & over	35	54	10,148	247,592	-13,016	7,894

The 40 farms with the highest net farm incomes (without appreciation) were considerably above the average of all 395 farms in two measures of labor efficiency. The top 10 percent sold 41 percent more milk per worker than the average of all farms.

Table 36. LABOR EFFICIENCY
395 New York Dairy Farms, 1990

Labor Efficiency	Average 395 Farms Total	Average 395 Farms Per Worker	Average Top 10% Farms Total	Average Top 10% Farms Per Worker
Cows, average number	107	32	313	41
Milk sold, pounds	1,900,483	563,349	6,077,583	792,513
Tillable acres	325	96	774	101

The labor force averaged 3.37 full-time worker equivalents per farm. Forty-one percent of the labor was supplied by the farm operator/managers. There were two operators on 146 farms, three on 41 farms, and nine farms reported four operators.

Labor costs, labor efficiency, and farm profitability are closely related. Farms with high net farm incomes can attribute some of their success to the control of labor and machinery costs. Labor and machinery costs averaged $13 per cow less on the 40 farms in the top decile.

Table 37. LABOR FORCE INVENTORY AND COST ANALYSIS
395 New York Dairy Farms, 1990

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.
Operator number 1	11.71	44	13	$22,131
Operator number 2	3.85	39	13	6,613
Operator number 3	0.96	39	13	1,633
Operator number 4	0.15	29	12	236
Family paid	5.00			Total $30,613
Family unpaid	2.83			
Hired	15.98			
Total	40.48	÷ 12 = 3.37 Worker Equivalent		
		1.39 Operator/Manager Equiv.		
Average Top 10% Farms:				
Total	92.03	÷ 12 = 7.67 Worker Equivalent		
Operators'	21.29	÷ 12 = 1.77 Operator/Manager Equiv.		

	Average 395 Farms			Avg. Top 10% Farms	
Labor Costs	Total	Per Cow	Per Til. Acre	Per Cow	Per Til. Acre
Value op.s' lab.($1,250/mo)	$ 20,838	$ 194	$ 64.12	$ 85	$ 34.38
Family unpd. ($1,250/mo.)	3,538	33	10.88	5	2.07
Hired	33,651	314	103.54	473	191.14
Total Labor	$ 58,206	$ 541	$178.54	$ 563	$227.59
Machinery Cost	51,870	483	159.60	448	181.11
Total Labor & Mach.	$109,896	$1,024	$338.14	$1,011	$408.70

The relationship of labor efficiency to net farm income is very positive on the 395 farms. The higher outputs of milk sold per worker are partially attributable to more and higher producing cows.

Table 38. MILK SOLD PER WORKER AND NET FARM INCOME
395 New York Dairy Farms, 1990

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 300,000	40	46	13,812	$ 8,941	$-6,199
300,000 to 399,999	72	64	15,584	21,150	430
400,000 to 499,999	94	78	16,708	35,053	9,016
500,000 to 599,999	79	91	18,022	47,118	14,874
600,000 to 699,999	54	130	18,032	53,473	16,380
700,000 & over	56	257	19,121	121,230	49,727

Miscellaneous Costs

Costs in addition to feed, machinery, and labor make a sizable impact on total dairy farm expenditures and profits. The "cost conscious" manager checks on all cost items both large and small. Good cost management requires careful planning and priority spending on farm inputs. A number of miscellaneous cost items and cost control measures are reported in the following table to help in a detailed checkup on all farm costs.

Table 39. MISCELLANEOUS COST CONTROL MEASURES
395 New York Dairy Farms, 1990

Item	Average 395 Farms	Average Top 10% Farms
Livestock		
Breeding fees per cow	$34	$31
Veterinary & medicine per cow	$57	$71
Other livestock expense per cow	$118	$124
Milk marketing per cow	$93	$73
Milk marketing per hundredweight milk	$0.53	$0.37
Real Estate		
Land, building, & fence repair per cow	$57	$74
Taxes per cow	$65	$47
Taxes per $1,000 year-end real estate value	$21	$17
Rent paid per cow	$46	$49
Rent paid per acre rented	$35	$51
Total real estate expense per cow	$168	$170
Capital Cost		
Interest paid per cow	$186	$173
Interest on equity per cow	$220	$193
Interest paid as percent of average debt	8.6%	8.6%
Machinery depreciation as percent of beginning inventory plus purchases	11%	12%
Total depreciation per cow	$239	$244
Fixed & Variable Costs*		
Total fixed costs per cow	$888	$816
Fixed costs per hundredweight milk sold	$5.01	$4.20
Total variable costs per cow	$1,992	$2,193
Variable costs per hundredweight milk sold	$11.24	$11.30

*Fixed costs include real estate repairs, taxes, insurance, rent, interest paid, depreciation, unpaid family labor, and interest on equity capital. All other costs were classified as variable.

Fixed costs per cow on the top decile farms were eight percent below the 395 farm average. Fixed costs per hundredweight of milk sold on the top decile farms were $0.81 below the 395 farm average. This results from more intensive use and better management of the resources associated with fixed costs. Variable costs were six cents higher per hundredweight of milk sold on the top farms.

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 395 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 top 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 40. FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
395 New York Dairy Farms, 1990

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
8.7	349	6,643,712	21,193	4.5	20	48	870,895
4.7	157	2,871,316	19,629	3.6	18	40	691,021
3.9	118	2,089,248	18,650	3.2	17	35	615,415
3.3	98	1,691,784	17,988	3.0	16	32	561,437
3.0	81	1,417,006	17,422	2.8	15	30	510,328
2.6	70	1,151,117	16,875	2.5	14	28	463,936
2.3	60	968,206	16,322	2.3	13	26	429,166
2.1	53	837,604	15,455	2.0	12	24	387,958
1.8	46	693,783	14,054	1.8	11	22	339,968
1.3	35	507,451	11,686	1.3	8	17	240,302

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
$ 366	15%	$265	$ 692	$ 517	$3.40
476	20	351	823	645	4.13
542	23	390	901	721	4.46
611	25	429	945	781	4.74
667	27	466	999	833	4.97
719	29	496	1,058	891	5.26
770	31	530	1,109	949	5.52
827	32	575	1,173	1,014	5.80
899	35	638	1,273	1,099	6.24
1,058	40	807	1,474	1,279	7.11

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 40 (continued) FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
395 New York Dairy Farms, 1990

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.
$3,201	$16.32	$1,112	$ 7.19	$1,997	$12.78
2,966	15.63	1,425	8.96	2,311	14.06
2,806	15.27	1,547	9.65	2,461	14.77
2,669	14.98	1,668	10.15	2,594	15.32
2,589	14.83	1,791	10.68	2,710	15.80
2,496	14.69	1,922	11.20	2,802	16.29
2,390	14.57	2,036	11.69	2,921	16.99
2,262	14.44	2,151	12.29	3,041	17.69
2,064	14.23	2,281	13.14	3,196	19.04
1,721	13.59	2,593	14.90	3,651	22.69

Profitability

Net Farm Income		Return to Operator's Labor, Management, & Equity Capital		Labor & Management Income	
With Appreciation	Without Appreciation	With Appreciation	Without Appreciation	Per Farm	Per Operator
$231,926	$190,057	$230,419	$188,587	$130,403	$96,579
91,230	81,401	89,849	79,191	47,621	31,927
66,354	56,580	61,893	52,316	29,650	21,508
50,670	44,618	47,120	40,525	20,689	15,542
42,626	34,580	38,335	31,926	14,330	10,878
33,267	28,118	29,721	24,485	7,592	6,034
25,805	20,654	21,927	16,616	1,361	1,060
19,089	13,852	14,945	10,124	-5,365	-4,331
11,588	6,798	6,513	1,732	-15,640	-13,572
-11,058	-9,971	-14,637	-14,241	-34,015	-30,508

Farm Business Charts for farms with freestall barns and 120 cows or less and more than 120 cows, and farms with conventional barns with 60 cows or less and more than 60 cows are discussed in the supplemental section on pages 45-48.

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 41. A FARM FINANCE CHECKLIST
395 New York Dairy Farms, 1990

	Average 395 New York Farms		Average Top 10% Farms*	
How farm assets are being used (average for the year):				
Total assets (capital) per cow	$6,556		$5,871	
Farm assets in livestock	22%		23%	
Farm assets in farm real estate	45%		43%	
Farm assets in machinery	19%		17%	
Measures of debt capacity & debt structure:				
Equity in the business	66%		64%	
Farm debt per cow	$2,220		$2,154	
Long term debt/asset ratio**	0.37		0.35	
Intermediate & current term debt/asset ratio**	0.32		0.36	
Intermediate & current term debt as % of total	51%		57%	
Debt repayment ability:***				
Cash flow coverage ratio	1.20		1.43	
Debt payments made per cow	$498		$532	
Debt payments made as % of milk receipts	19%		18%	
Indicators of annual financial progress:	Amount	Percent	Amount	Percent
Annual change in farm assets	+$46,970	+6.9%	+$235,516	+13.7%
Annual change in farm debts	+$28,582	+13.1%	+146,659	+26.4%
Annual change in farm net worth	+$18,390	+4.0%	+$88,857	+7.6%

*Forty farms with highest net farm incomes (without appreciation).
**Long or intermediate and current term debt divided by long or intermediate and current term assets.
***Average of 294 farms (30 farms for top 10 percent) that participated in Summary Program both in 1989 and 1990.

The most profitable farms carried $66 less debt per cow, had a greater ability to make 1990 debt payments; however, equity in their business was two percent less than that of the average.

Average farm debts grew 6.2 percent faster than assets during 1990. Average net farm worth increased four percent.

The farm financial analysis chart is designed just like the farm business chart on pages 30-31 and may be used to measure the financial health of the farm business. Most of the financial measures are defined on pages 11, 13, 16, and 27 in this publication.

Table 42. FINANCIAL ANALYSIS CHART
395 New York Dairy Farms, 1990

Liquidity (repayment)				
Debt Payments Per Cow	Available for Debt Service Per Cow	Cash Flow Coverage Ratio	Debt Payments as Percent of Milk Sales	Debt Per Cow
$ 59	$932	5.22	4%	$ 119
181	742	2.11	8	680
253	663	1.59	11	1,210
341	582	1.30	14	1,632
400	513	1.15	16	2,025
454	452	1.01	18	2,386
501	395	0.85	20	2,735
560	315	0.69	22	3,178
642	207	0.43	25	3,737
899	-196	-0.23	37	4,726

Solvency				Profitability	
		Debt/Asset Ratio		Percent Rate of Return with appreciation on:	
Leverage Ratio*	Percent Equity	Current & Intermediate	Long Term	Equity	Investment**
0.02	98	0.01	0.00	21%	16%
0.11	90	0.06	0.00	11	10
0.21	82	0.12	0.07	8	8
0.33	75	0.19	0.18	5	6
0.43	69	0.25	0.27	3	5
0.55	64	0.31	0.39	1	4
0.72	58	0.37	0.50	-1	3
0.93	51	0.44	0.61	-3	1
1.22	45	0.53	0.74	-7	-2
2.40	32	0.73	1.00	-23	-7

Efficiency (Capital)				
Capital Turnover (years)	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Farm Assets Per Cow	Change in Net Worth w/Appreciation
1.38	$1,390	$ 596	$ 4,264	$110,353
1.68	1,972	817	5,087	53,680
1.84	2,262	940	5,667	33,094
2.03	2,594	1,050	6,103	22,571
2.18	2,865	1,194	6,482	15,798
2.34	3,125	1,318	6,869	10,557
2.50	3,504	1,472	7,340	3,939
2.70	4,037	1,658	7,990	-3,080
3.08	4,705	1,946	8,937	-11,458
4.27	6,762	2,646	11,419	-47,167

*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.

SUPPLEMENTAL INFORMATION

Introduction

Comparisons of business performance by herd size and housing, milking technology and frequency, and numerous other factors are contained in this section. The tables on the following pages are provided for use as a reference, thus, the discussion of each table is at a minimum.

Herd Size Comparisons: A detailed comparison of profitability, financial situation, and business analysis factors across herd sizes is contained in Tables 43 through 45. As herd size increases, the average profitability also increases (Table 43). Net farm income without appreciation was $227,064 per farm for the 300 or more herd size group and $10,520 per farm for those with less than 40 cows. This relationship generally holds for all measures of profitability including rate of return on capital.

Farm net worth increases rapidly as herd size increases (Table 44), but percent equity and debt/asset ratios do not show a significant variation between size groups. Debt payments per cow were lowest for the moderate size herd groups and they demonstrated a strong ability to make debt payments.

Crop yields generally increased as herd size increased, but fertilizer and lime expenses, and machinery cost per tillable acre also increased (Table 45). Milk sold per cow increased as herd size increased, ranging from 15,372 pounds on the farms with less than 40 cows to 19,199 pounds on farms with 300 or more cows. Farm capital per worker generally increased, and farm capital per cow decreased as herd size increased. Milk sold per worker increased dramatically as herd size increased, ranging from 304,000 pounds at the lowest herd size category up to 872,000 pounds at the largest size category.

Comparisons 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 used have as many of the same physical characteristics as possible as the farm being analyzed. To assist in this endeavor, dairy farms in the summary have been divided into those with freestall and those with conventional housing. Within each group is a further classification by size of the dairy herd.

Table 46 on page 44 shows the average values for the resulting four groups of dairy farms. Within each housing type, the larger herd size generally has the higher crop yields and pounds of milk sold per cow. The total cost of producing milk was lower on the larger farms and labor efficiency greater. Profitability was also greater on the larger farms within each housing type. Note the similarity of resource use and management performance between the large conventional and small freestall farms.

Farm business charts have been computed for each of the four housing and herd size categories and are on pages 45-48. 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: Selected business and cost of milk production factors from farms milking three times per day (3X) in 1989 and 1990 are compared with farms milking twice per day (2X) in Table 51. The number of farmers milking 3X increased 28 percent from 1989 to 1990. They milked 2.7 times more cows and sold 3.2 times more milk than the 2X dairy farmers in 1990. The operating costs of producing milk on the 3X farms were 4 cents per hundredweight lower in 1989, but 14 cents per hundredweight higher in 1990. Total costs per hundredweight were substantially lower on 3X farms because the costs of using the operator's labor, management, and capital were spread out over much larger production. The higher returns and profits achieved by the 3X

dairy farmers cannot all be attributed to milking frequency. Comparisons of herd size, crop production, cows per worker, capital per cow, and machinery costs per cow indicate there are other important management differences contributing to higher profits.

Comparison by Milking System: The majority of farms had a pipeline milker and high capital per cow (Table 52). Farms with herringbone parlors had the highest farm capital per worker and the highest cows per worker. Farms with other parlors had the lowest costs of production.

Growing vs. Buying Corn: Farms producing corn grain averaged more cows per farm and more milk per cow than farms not producing corn grain (Table 53). Cows per worker were not significantly different, but purchased dairy feed per cow and purchased feed and crop expense per hundredweight of milk were lower on farms producing corn grain. Machinery cost per hundredweight of milk was higher with corn grain production, as was profitability.

Ten Year Comparisons; Average Cost of Producing Milk: Selected business factors and average data on the cost of producing milk from all specialized dairy farms included in each annual summary from 1981 through 1990 are presented in Tables 54 and 55.

The whole farm method of calculating the costs of producing milk described on pages 21 and 22 is used in compiling Table 55. The return per hundredweight to operator labor, capital, and management is the average farm price of milk minus the operating cost of milk production, depreciation, and unpaid family labor.

Comparison of Dairy Farm Business Data by Region: Average farm business summary data from four areas or regions of the State are compared in Tables 56 and 57. The largest average farm size, highest average rate of milk production, and highest average farm profits came from the Western Plain and Central Region.

Receipts and Expenses per Hundredweight of Milk and Per Cow: Average itemized accrual receipts and expenses per cow and per hundredweight of milk sold are listed for all 395 dairy farms, 233 dairy farms selling less than 17,720 pounds of milk per cow, and 162 dairy farms selling 17,720 pounds per cow and more in Table 58 on page 56. Total operating expenses averaged 20 percent higher per cow but 55 cents per hundredweight lower on the more productive farms.

Table 59 on page 57 provides the same list of average accrual receipts and expenses for all 395 dairy farms plus a two group herd size comparison. Farms with 100 cows or more had total operating expenses that averaged 14 percent higher per cow and 30 cents more per hundredweight of milk than the farms with less than 100 cows. Total accrual receipts averaged 18 cents higher but total accrual expenses were only nine cents more per hundredweight on the larger farms.

Comparisons by Business Organization: A comparison by business organization is contained in Table 60. Farms organized as a corporation are two times larger than partnership-operated farms and nearly three times larger than proprietorship-operated farms. Profitability is also greater on corporation organized farms, followed by partnerships and then proprietorships.

Other Comparisons: Dairy-renter farms were smaller than the 395 owner-operated farms, and were less profitable than the average specialized dairy farm (Table 61). A.E. Ext. 91-19 contains detailed information on dairy-renters.

Data for the top 10 percent of farms by net farm income without appreciation is presented in Table 62. Summary data for the 395 specialized dairy farms are presented in Table 63.

Table 43. FARM BUSINESS SUMMARY BY HERD SIZE
395 New York Dairy Farms, 1990

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	28	77	71	51	32
ACCRUAL EXPENSES					
Hired labor	$ 3,120	$ 5,369	$ 9,748	$ 16,264	$ 23,399
Dairy grain & concentrate	23,446	31,476	38,596	54,436	63,462
Dairy roughage	963	1,671	1,310	1,478	589
Nondairy feed	78	288	123	100	88
Machine hire/rent/lease	1,149	1,645	2,243	2,268	3,751
Machine repairs/parts	3,765	6,350	8,328	10,198	15,384
Auto expense (farm share)	881	675	692	921	903
Fuel, oil & grease	2,251	2,950	4,664	5,350	7,796
Replacement livestock	3,216	2,361	1,737	2,981	3,082
Breeding	1,200	1,661	2,390	3,010	3,687
Veterinary & medicine	1,475	2,145	2,767	3,943	5,091
Milk marketing	3,349	4,925	6,197	7,888	8,981
Cattle lease/rent	18	20	80	179	451
Other livestock expense	3,035	5,640	6,552	9,222	12,062
Fertilizer & lime	1,954	3,200	5,071	6,525	9,201
Seeds & plants	830	1,396	2,302	2,560	4,067
Spray & other crop expense	672	1,321	2,109	2,590	4,140
Land/building/fence repair	876	2,588	3,189	2,794	4,876
Taxes & rent	3,917	5,484	7,392	8,690	12,487
Telephone & electricity	2,812	3,819	4,951	5,905	6,841
Interest paid	6,726	10,341	12,227	14,724	16,178
Misc. (including insurance)	2,751	4,086	4,846	6,466	7,000
Total Operating Expenses	$68,484	$ 99,411	$127,514	$168,492	$213,516
Expansion livestock	1,110	1,911	894	2,306	4,362
Machinery depreciation	5,027	7,912	10,319	13,567	16,318
Building depreciation	2,287	3,990	5,053	5,914	6,797
Total Accrual Expenses	$76,908	$113,224	$143,780	$190,279	$240,993
ACCRUAL RECEIPTS					
Milk sales	$73,385	$111,659	$146,383	$192,332	$244,077
Dairy cattle	8,098	9,622	12,970	15,855	23,220
Dairy calves	1,689	2,130	2,364	3,434	3,878
Other livestock	144	877	472	775	508
Crops	1,640	2,330	2,984	4,428	8,066
Misc. receipts	2,472	3,316	3,410	5,125	4,961
Total Accrual Receipts	$87,428	$129,934	$168,583	$221,949	$284,710
PROFITABILITY ANALYSIS					
Net farm income (w/o apprec.)	$10,520	$16,710	$24,803	$31,670	$43,717
Net farm income (w/apprec.)	$13,628	$23,728	$33,708	$37,359	$50,916
Labor & mgmt. income	$-933	$286	$5,660	$10,100	$16,887
Number of operators	1.15	1.12	1.34	1.32	1.55
Labor & mgmt. inc./oper.	$-811	$255	$4,224	$7,652	$10,895
Rates of return on:					
Equity capital w/o apprec.	-7.4%	-4.6%	-1.5%	-0.1%	1.6%
Equity capital w/apprec.	-5.6%	-1.6%	1.3%	1.6%	3.2%
All capital w/o apprec.	-2.4%	-0.1%	1.6%	2.7%	3.7%
All capital w/apprec.	-1.2%	1.9%	3.6%	3.8%	4.8%

Table 43 (continued) FARM BUSINESS SUMMARY BY HERD SIZE
395 New York Dairy Farms, 1990

Item Farm Size:	100 to 149 Cows	150 to 199 Cows	200 to 299 Cows	300 or More Cows
Number of farms	73	31	15	17
ACCRUAL EXPENSES				
Hired labor	$ 33,612	$ 66,576	$ 96,698	$ 267,806
Dairy grain & concentrate	85,259	125,871	199,537	430,388
Dairy roughage	1,610	4,382	5,236	18,686
Nondairy feed	667	523	0	0
Machine hire/rent/lease	3,654	5,649	9,712	25,403
Machine repairs/parts	20,071	26,685	38,732	75,593
Auto expense (farm share)	964	1,345	690	1,441
Fuel, oil & grease	9,188	13,983	17,784	32,742
Replacement livestock	3,125	5,306	21,677	7,939
Breeding	4,074	6,432	6,423	15,367
Veterinary & medicine	6,089	9,496	16,127	38,113
Milk marketing	11,283	17,122	24,228	37,326
Cattle lease/rent	343	720	271	2,576
Other livestock expense	14,136	18,282	29,041	65,784
Fertilizer & lime	12,010	17,482	24,334	39,117
Seeds & plants	5,571	7,834	11,052	18,224
Spray & other crop expense	4,521	7,477	11,795	22,984
Land/building/fence repair	6,591	10,841	18,199	34,677
Taxes & rent	13,540	19,830	28,075	45,851
Telephone & electricity	8,808	11,347	15,198	27,738
Interest paid	21,098	30,170	42,058	96,388
Misc. (including insurance)	10,961	13,267	20,575	32,190
Total Operating Expenses	$277,175	$420,620	$637,442	$1,336,333
Expansion livestock	2,951	3,312	10,523	36,909
Machinery depreciation	19,344	28,611	36,679	60,021
Building depreciation	8,705	12,170	19,370	58,638
Total Accrual Expenses	$308,175	$464,713	$704,014	$1,491,901
ACCRUAL RECEIPTS				
Milk sales	$319,356	$468,074	$686,245	$1,490,090
Dairy cattle	27,248	40,205	65,756	140,652
Dairy calves	4,791	7,530	11,287	22,395
Other livestock	167	3,812	307	497
Crops	7,945	14,915	20,864	32,931
Misc. receipts	7,296	11,358	23,651	32,400
Total Accrual Receipts	$366,803	$545,894	$808,110	$1,718,965
PROFITABILITY ANALYSIS				
Net farm income (w/o apprec.)	$58,628	$81,181	$104,096	$227,064
Net farm income (w/apprec.)	$62,770	$85,168	$129,733	$296,628
Labor & mgmt. income	$27,568	$39,804	$53,527	$139,241
Number of operators	1.54	1.64	1.77	1.66
Labor & mgmt. inc./oper.	$17,901	$24,271	$30,241	$83,880
Rate of return on:				
Equity capital w/o apprec.	3.7%	5.0%	5.4%	9.9%
Equity capital w/apprec.	4.5%	5.5%	8.0%	13.9%
All capital w/o apprec.	5.2%	6.1%	6.4%	9.4%
All capital w/apprec.	5.8%	6.5%	8.1%	11.8%

Table 44. FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
395 New York Dairy Farms, 1990

Farms with:	Less than 40 Cows		40 to 54 Cows		55 to 69 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS						
Farm cash/chkg./sav.	$ 3,264	$ 2,669	$ 3,734	$ 4,311	$ 6,221	$ 4,007
Accounts receivable	5,874	4,899	9,399	7,826	13,453	10,351
Prepaid expenses	0	0	182	88	207	439
Feed & supplies	9,624	10,952	18,825	21,061	28,159	31,063
Livestock*	48,941	48,260	68,106	71,189	91,682	93,091
Machinery & equipment*	46,917	47,649	60,707	66,201	92,200	98,915
FLB & PCA stock	299	324	742	857	1,253	1,328
Other stock & cert.	984	1,028	1,601	1,609	3,147	3,146
Land & buildings*	140,189	147,303	180,337	183,986	214,864	222,563
Total Farm Assets	$256,092	$263,084	$343,633	$357,128	$451,186	$464,903
Pers. cash/chkg./sav.	$ 3,680	$ 3,563	$ 4,381	$ 4,189	$ 6,392	$ 8,606
Cash value of life ins.	4,786	4,898	3,015	4,204	3,154	3,528
Nonfarm real estate	33,167	30,278	17,811	13,113	18,729	23,302
Auto (personal share)	2,425	2,792	3,259	4,246	4,453	4,432
Stocks & bonds	4,744	4,578	3,807	3,692	4,009	4,601
Household furnishings	8,528	8,850	11,700	11,973	8,491	8,802
All other	12,888	12,656	1,500	2,577	4,033	4,336
Tot. Nonfarm Assets**	$ 70,218	$ 67,614	$ 45,474	$ 43,994	$ 49,262	$ 57,607
Total Farm & Nonfarm Assets	$326,310	$330,698	$389,107	$401,122	$500,448	$522,510
LIABILITIES						
Accounts payable	$ 2,193	$ 3,393	$ 3,935	$ 4,876	$ 3,293	$ 4,977
Operating debt	1,015	2,028	760	793	2,607	3,081
Short term	870	1,018	837	1,179	1,567	2,555
Advanced gov't. rec.	0	6	0	0	0	0
Intermediate***	23,800	24,465	42,431	46,520	52,734	56,110
Long term*	55,810	55,470	68,651	67,329	75,122	77,308
Total Farm Liab.	$ 83,688	$ 86,380	$116,614	$120,697	$135,323	$144,031
Tot. Nonfarm Liab.**	5,352	5,631	4,983	3,800	4,482	4,450
Total Farm & Nonfarm Liabilities	$ 89,040	$ 92,011	$121,597	$124,497	$139,805	$148,481
Farm Net Worth (Equity Capital)	$172,404	$176,704	$227,019	$236,431	$315,863	$320,872
Farm & Nonfarm Net Worth	$237,270	$238,687	$267,510	$276,625	$360,643	$374,029

FINANCIAL MEASURES	Less than 40 Cows	40 to 54 Cows	55 to 69 Cows
Percent equity	67%	66%	69%
Debt/asset ratio-long term	0.38	0.37	0.35
Debt/asset ratio-inter. & current	0.27	0.31	0.28
Change in net worth with apprec.	$4,300	$9,412	$5,009
Total farm debt per cow	$2,541	$2,515	$2,323
Debt payments made per cow	$543	$551	$504
Debt payments as % of milk sales	22%	23%	21%
Amount avail. for debt service	$15,669	$23,005	$29,422
Cash flow coverage ratio for 1990	1.16	0.97	1.10

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1990.
***Includes FLB/PCA stock and discounted lease payments for cattle and machinery.

Table 44 (cont'd) FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
395 New York Dairy Farms, 1990

Farms with:	70 to 84 Cows		85 to 99 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash/chkg./savings	$ 5,802	$ 3,959	$ 6,307	$ 8,013
Accounts receivable	17,549	13,704	21,157	17,911
Prepaid expenses	39	86	49	90
Feed & supplies	34,092	38,786	52,533	58,789
Livestock*	112,896	116,216	134,966	143,711
Machinery & equipment*	96,074	107,291	127,237	144,486
FLB & PCA stock	1,807	1,869	1,938	2,087
Other stock & cert.	4,117	4,444	4,966	5,561
Land & buildings*	242,050	260,115	273,717	285,314
Total Farm Assets	$514,426	$546,470	$622,870	$665,962
Pers. cash/chkg./savings	$ 4,708	$ 5,289	$ 2,604	$ 2,770
Cash value of life ins.	6,768	7,681	6,164	6,560
Nonfarm real estate	22,432	18,789	17,048	17,357
Auto (personal share)	3,300	3,724	3,833	3,407
Stocks & bonds	3,077	3,476	5,391	5,788
Household furnishings	10,124	10,587	9,262	10,738
All other	3,626	2,113	6,619	7,286
Total Nonfarm Assets**	$ 54,034	$ 51,659	$ 50,921	$ 53,906
Total Farm & Nonfarm Assets	$568,460	$598,129	$673,791	$719,868
LIABILITIES				
Accounts payable	$ 4,495	$ 4,394	$ 6,945	$ 6,939
Operating debt	1,517	2,557	3,432	5,769
Short term	2,772	3,391	659	1,582
Advanced gov't. rec.	0	0	0	0
Intermediate***	70,259	78,137	64,488	87,585
Long term*	91,998	102,079	97,253	100,504
Total Farm Liab.	$171,041	$190,558	$172,777	$202,379
Total Nonfarm Liab.**	588	334	1,686	3,012
Total Farm & Nonfarm Liabilities	$171,629	$190,892	$174,463	$205,391
Farm Net Worth (Equity Capital)	$343,385	$355,912	$450,093	$463,583
Farm & Nonfarm Net Worth	$396,831	$407,237	$499,328	$514,477

FINANCIAL MEASURES	70 to 84 Cows	85 to 99 Cows
Percent equity	65%	70%
Debt/asset ratio-long term	0.39	0.35
Debt/asset ratio-inter. & current	0.31	0.27
Change in net worth with apprec.	$12,527	$13,490
Total farm debt per cow	$2,412	$2,130
Debt payments made per cow	$448	$452
Debt payments as % of milk sales	18%	17%
Amount avail. for debt service	$38,971	$44,913
Cash flow coverage ratio for 1990	1.19	1.28

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1990.
***Includes FLB/PCA stock and discounted lease payments for cattle and machinery.

Table 44 (cont'd) FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
395 New York Dairy Farms, 1990

Farms with:	100 to 149 Cows		150 to 199 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash/chkg./savings	$ 12,836	$ 9,963	$ 5,480	$ 7,679
Accounts receivable	28,382	23,411	42,013	33,248
Prepaid expenses	9	120	119	419
Feed & supplies	60,844	72,380	94,160	111,089
Livestock*	174,842	178,328	260,441	262,815
Machinery & equipment*	157,426	171,129	205,484	233,785
FLB & PCA stock	2,581	2,444	5,537	5,942
Other stock & cert.	7,702	8,116	10,759	11,798
Land & buildings*	328,877	342,258	468,194	495,215
Total Farm Assets	$773,499	$808,149	$1,092,187	$1,161,990
Pers. cash/chkg./savings	$ 7,096	$ 19,466	$ 6,305	$ 7,127
Cash value of life ins.	7,173	6,133	18,785	20,432
Nonfarm real estate	39,688	36,075	38,714	32,000
Auto (personal share)	3,336	3,532	4,571	4,500
Stocks & bonds	6,297	6,210	5,055	6,153
Household furnishings	8,563	8,763	7,238	7,310
All other	6,497	6,312	10,319	11,652
Total Nonfarm Assets**	$ 78,649	$ 86,490	$ 90,988	$ 89,174
Total Farm & Nonfarm Assets	$852,148	$894,639	$1,183,175	$1,251,164
LIABILITIES				
Accounts payable	$ 5,461	$ 7,130	$ 8,533	4,954
Operating debt	7,915	9,347	20,255	30,138
Short term	2,870	4,415	1,465	2,474
Advanced gov't. rec.	0	0	158	111
Intermediate***	93,765	103,252	132,461	151,281
Long term*	126,182	127,450	161,679	172,596
Total Farm Liab.	$236,193	$251,594	$ 324,551	$ 361,554
Total Nonfarm Liab.**	1,689	2,847	4,596	4,981
Total Farm & Nonfarm Liabilities	$237,882	$254,441	$ 329,147	$ 366,535
Farm Net Worth (Equity Capital)	$537,306	$556,555	$ 767,636	$ 800,436
Farm & Nonfarm Net Worth	$614,266	$640,198	$ 854,028	$ 884,629

FINANCIAL MEASURES	100 to 149 Cows	150 to 199 Cows
Percent equity	69%	69%
Debt/asset ratio-long term	0.37	0.35
Debt/asset ratio-inter. & current	0.27	0.28
Change in net worth with apprec.	$19,249	$32,800
Total farm debt per cow	$2,045	$2,031
Debt payments made per cow	$457	$471
Debt payments as % of milk sales	17%	17%
Amount avail. for debt service	$62,230	$86,606
Cash flow coverage ratio for 1990	1.24	1.29

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1990.
***Includes FLB/PCA stock and discounted lease payments for cattle and machinery.

Table 44 (cont'd) FARM FAMILY FINANCIAL SITUATION BY HERD SIZE
395 New York Dairy Farms, 1990

Farms with:	200 to 299 Cows		More than 300 Cows	
Item	Jan. 1	Dec. 31	Jan. 1	Dec. 31
ASSETS				
Farm cash/chkg./savings	$ 7,949	$ 8,113	$ 21,498	$ 14,237
Accounts receivable	56,574	43,324	114,859	93,304
Prepaid expenses	0	487	6,961	8,120
Feed & supplies	124,436	150,454	271,286	335,852
Livestock*	315,861	331,542	637,257	693,065
Machinery & equipment*	249,012	285,838	384,242	430,995
FLB & PCA stock	8,872	9,184	14,254	25,174
Other stock & cert.	25,623	26,635	63,041	63,069
Land & buildings*	654,109	712,953	1,122,226	1,368,613
Total Farm Assets	$1,442,436	$1,568,530	$2,635,624	$3,032,429
Pers. cash/chkg./savings	$ 1,200	$ 5,843	$ 1,457	$ 2,245
Cash value of life ins.	17,516	18,400	5,527	5,525
Nonfarm real estate	19,282	20,286	27,500	31,167
Auto (personal share)	5,929	6,357	3,750	4,500
Stocks & bonds	21,046	21,346	17,874	16,872
Household furnishings	3,286	3,429	8,383	9,033
All other	43,605	60,821	6,902	7,429
Total Nonfarm Assets**	$ 111,863	$ 136,481	$ 71,393	$ 76,771
Total Farm & Nonfarm Assets	$1,554,299	$1,705,011	$2,707,017	$3,109,200
LIABILITIES				
Accounts payable	$ 7,784	$ 11,085	$ 20,585	$ 19,341
Operating debt	15,573	31,994	89,469	117,189
Short term	21,714	23,028	7,568	38,671
Advanced gov't. rec.	0	657	218	0
Intermediate***	216,798	235,541	479,591	564,494
Long term*	212,680	241,335	370,425	524,111
Total Farm Liab.	$ 474,549	$ 543,640	$ 967,856	$1,263,806
Total Nonfarm Liab.**	0	0	1,958	2,000
Total Farm & Nonfarm Liabilities	$ 474,549	$ 543,640	$ 969,814	$1,265,806
Farm Net Worth (Equity Capital)	$ 967,887	$1,024,890	$1,667,768	$1,768,623
Farm & Nonfarm Net Worth	$1,079,750	$1,161,371	$1,737,203	$1,843,394

FINANCIAL MEASURES	200 to 299 Cows	More than 300 Cows
Percent equity	65%	58%
Debt/asset ratio-long term	0.34	0.38
Debt/asset ratio-inter. & current	0.35	0.44
Change in net worth with apprec.	$57,003	$100,855
Total farm debt per cow	$2,157	$2,340
Debt payments made per cow	$549	$565
Debt payments as % of milk sales	20%	19%
Amount avail. for debt service	$129,436	$250,653
Cash flow coverage ratio for 1990	1.12	1.26

*Includes discounted lease payments.
**Average of farms reporting nonfarm assets and liabilities for 1990.
***Includes FLB/PCA stock and discounted lease payments for cattle and machinery.

Table 45. SELECTED BUSINESS FACTORS BY HERD SIZE
395 New York Dairy Farms, 1990

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	28	77	71	51	32
Cropping Program Analysis					
Total Tillable acres	116	169	218	244	336
Tillable acres rented*	37	52	68	88	157
Hay crop acres*	78	108	136	151	164
Corn silage acres*	16	30	39	51	71
Hay crop, tons DM/acre	2.1	2.3	2.4	2.6	2.5
Corn silage, tons/acre	13.2	13.6	12.7	13.9	15.1
Oats, bushels/acre	52.8	51.1	55.9	72.5	56.1
Forage DM per cow, tons	7.3	8.3	8.0	8.2	8.3
Tillable acres/cow	3.6	3.6	3.6	3.2	3.6
Fert. & lime exp./til. acre	$16.85	$18.94	$23.26	$26.74	$27.38
Total machinery costs	$15,390	$22,666	$30,918	$37,349	$50,897
Machinery cost/tillable acre	$133	$134	$142	$153	$151
Dairy Analysis					
Number of cows	33	47	61	77	93
Number of heifers	25	38	51	62	79
Milk sold, lbs.	501,792	757,410	989,033	1,290,800	1,640,612
Milk sold/cow, lbs.	15,372	16,106	16,128	16,759	17,683
Operating cost of prod. milk/cwt.	$11.07	$10.96	$10.74	$10.94	$10.80
Total cost of prod. milk/cwt.	$18.93	$17.67	$16.90	$16.27	$15.81
Price/cwt. milk sold	$14.62	$14.74	$14.80	$14.90	$14.88
Purchased dairy feed/cow	$749	$705	$651	$726	$690
Purchased dairy feed/cwt. milk	$4.86	$4.38	$4.03	$4.33	$3.90
Purchased grain & conc. as % of milk receipts	32%	28%	26%	28%	26%
Purchased feed & crop expense/cwt. milk	$5.55	$5.16	$4.99	$5.24	$4.97
Capital Efficiency					
Farm capital/worker	$157,382	$174,883	$192,397	$195,573	$189,615
Farm capital/cow	$7,963	$7,455	$7,472	$6,889	$6,944
Farm capital/til. acre owned	$3,245	$2,995	$3,054	$3,379	$3,600
Real estate/cow	$4,409	$3,876	$3,568	$3,261	$3,012
Machinery investment/cow	$1,450	$1,350	$1,559	$1,321	$1,464
Capital turnover, years	2.87	2.56	2.58	2.33	2.21
Labor Efficiency					
Worker equivalent	1.65	2.00	2.38	2.71	3.40
Operator/manager equivalent	1.15	1.12	1.34	1.32	1.55
Milk sold/worker, lbs.	304,225	378,040	415,434	475,910	482,740
Cows/worker	20	23	26	28	27
Work units/worker	210	252	278	301	297
Labor cost/cow	$708	$576	$540	$521	$546
Labor cost/tillable acre	$199	$160	$152	$164	$151

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

Table 45 (continued) SELECTED BUSINESS FACTORS BY HERD SIZE
395 New York Dairy Farms, 1990

Item — Farms with:	100 to 149 Cows	150 to 199 Cows	200 to 299 Cows	300 or More Cows
Number of farms	73	31	15	17
Cropping Program Analysis				
Total tillable acres	374	567	620	1,120
Tillable acres rented*	145	266	196	387
Hay crop acres*	191	275	238	369
Corn silage acres*	82	140	240	478
Hay crop, tons DM/acre	2.9	2.8	2.7	3.2
Corn silage, tons/acre	15.3	14.2	14.6	14.7
Oats, bushels/acre	55.3	59.8	48.6	**
Forage DM per cow, tons	8.3	8.2	7.1	6.8
Tillable acres/cow	3.1	3.3	2.5	2.2
Fert. & lime exp./til. acre	$32.03	$30.83	$39.25	$34.93
Total machinery costs	$61,319	$87,098	$116,616	$215,185
Machinery cost/tillable acre	$164	$154	$188	$192
Dairy Analysis				
Number of cows	120	173	244	517
Number of heifers	100	145	184	413
Milk sold, lbs.	2,136,811	3,124,797	4,553,912	9,917,878
Milk sold/cow, lbs.	17,788	18,046	18,669	19,199
Operating cost of prod. milk/cwt.	$10.89	$11.08	$11.55	$11.54
Total cost of prod. milk/cwt.	$15.28	$14.98	$14.98	$14.18
Price/cwt. milk sold	$14.95	$14.98	$15.07	$15.02
Purchased dairy feed/cow	$723	$752	$840	$869
Purchased dairy feed/cwt. milk	$4.07	$4.17	$4.50	$4.53
Purchased grain & conc. as % of milk receipts	27%	27%	29%	29%
Purchased feed & crop expense/cwt. milk	$5.10	$5.22	$5.53	$5.34
Capital Efficiency				
Farm capital/worker	$211,706	$224,078	$240,003	$249,206
Farm capital/cow	$6,585	$6,507	$6,173	$5,486
Farm capital/til. acre owned	$3,438	$3,732	$3,551	$3,866
Real estate/cow	$2,794	$2,781	$2,803	$2,411
Machinery investment/cow	$1,368	$1,268	$1,096	$789
Capital turnover, years	2.13	2.05	1.81	1.58
Labor Efficiency				
Worker equivalent	3.74	5.03	6.27	11.37
Operator/manager equivalent	1.54	1.64	1.77	1.66
Milk sold/worker, lbs.	572,031	621,245	725,980	872,115
Cows/worker	32	34	39	45
Work units/worker	341	373	397	455
Labor cost/cow	$503	$539	$509	$570
Labor cost/tillable acre	$161	$165	$200	$263

*Average of all farms, not only those reporting data. **None reported.

Table 46. SELECTED BUSINESS FACTORS BY TYPE OF BARN AND HERD SIZE
364 New York Dairy Farms, 1990

Farms with:	Conventional		Freestall	
Item	≤60 Cows	>60 Cows	≤120 Cows	>120 Cows
Number of farms	127	97	60	80
Cropping Program Analysis				
Total Tillable acres	162	287	287	647
Tillable acres rented*	50	105	115	249
Hay crop acres*	105	168	156	258
Corn silage acres*	28	57	65	213
Hay crop, tons DM/acre	2.3	2.6	2.5	2.9
Corn silage, tons/acre	13.2	14.2	15.3	14.5
Oats, bushels/acre	55.8	58.1	61.4	57.2
Forage DM per cow, tons	7.9	8.2	8.6	7.3
Tillable acres/cow	3.5	3.3	3.4	2.7
Fert. & lime exp./til. acre	$19.38	$27.87	$25.81	$33.56
Total machinery costs	$22,362	$42,595	$44,486	$113,711
Machinery cost/tillable acre	$138	$148	$155	$176
Dairy Analysis				
Number of cows	47	87	85	243
Number of heifers	37	73	69	196
Milk sold, lbs.	741,903	1,461,585	1,451,384	4,558,311
Milk sold/cow, lbs.	15,959	16,860	17,015	18,739
Operating cost of prod. milk/cwt.	$10.62	$11.12	$11.04	$11.22
Total cost of prod. milk/cwt.	$17.45	$16.12	$16.13	$14.56
Price/cwt. milk sold	$14.70	$14.90	$14.95	$15.00
Purchased dairy feed/cow	$693	$719	$695	$813
Purchased dairy feed/cwt. milk	$4.34	$4.27	$4.09	$4.34
Purc. grain & conc. as % milk rec.	28%	28%	26%	28%
Purc. feed & crop exp./cwt. milk	$5.13	$5.22	$5.08	$5.28
Capital Efficiency				
Farm capital/worker	$172,643	$199,664	$204,685	$234,105
Farm capital/cow	$7,444	$6,914	$6,834	$6,066
Farm capital/til. acre owned	$3,090	$3,294	$3,389	$3,706
Real estate/cow	$3,790	$3,195	$3,016	$2,660
Machinery investment/cow	$1,444	$1,346	$1,463	$1,053
Capital turnover, years	2.58	2.33	2.29	1.81
Labor Efficiency				
Worker equivalent	2.00	3.00	2.85	6.30
Operator/manager equivalent	1.21	1.38	1.37	1.63
Milk sold/worker, lbs.	370,048	486,820	509,605	723,398
Cows/worker	23	29	30	39
Work units/worker	248	309	321	400
Labor cost/cow	$589	$512	$510	$550
Labor cost/tillable acre	$169	$155	$152	$207
Profitability & Balance Sheet Analysis				
Net farm income (w/o apprec.)	$18,620	$35,416	$35,472	$115,054
Labor & mgmt. income/operator	$2,279	$8,017	$8,594	$39,642
Farm debt/cow	$2,426	$2,093	$2,194	$2,231
Percent equity	67%	70%	68%	64%

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

Table 47. FARM BUSINESS CHART FOR SMALL CONVENTIONAL STALL DAIRY FARMS
127 Conventional Stall Dairy Farms with 60 or Less Cows, New York, 1990

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
3.2	59	1,063,570	19,694	3.9	20	38	601,872
2.6	57	956,623	18,135	3.2	17	30	514,801
2.4	54	886,369	17,515	3.0	16	28	465,011
2.1	51	821,538	17,016	2.7	15	26	431,581
2.0	49	757,836	16,617	2.5	13	25	394,554
1.9	45	707,062	16,066	2.3	12	23	368,897
1.7	42	658,951	15,340	2.0	12	22	341,474
1.5	40	608,772	14,202	1.8	10	20	298,433
1.3	36	536,080	13,081	1.6	10	18	260,744
1.1	28	367,339	10,584	1.0	7	14	196,088

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
$ 360	16%	$221	$ 683	$ 475	$3.42
476	22	317	829	608	4.11
527	24	359	917	684	4.45
577	26	391	962	722	4.71
632	28	455	1,022	762	4.92
698	29	490	1,077	817	5.17
737	31	516	1,138	873	5.38
781	33	556	1,219	934	5.72
827	37	619	1,320	1,013	6.19
1,007	41	848	1,596	1,247	7.23

Value and Cost of Production			Profitability			
			Net Farm Income			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	With Apprec.	Without Apprec.	Labor &. Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$2,982	$ 6.69	$13.63	$72,739	$48,969	$25,562	$42,873
2,729	8.42	14.78	44,695	35,933	17,760	22,785
2,604	9.10	15.38	36,555	29,744	13,303	16,110
2,490	9.60	16.04	29,556	25,100	8,783	12,312
2,408	10.10	16.81	25,909	19,976	4,369	6,962
2,337	10.77	17.50	21,881	15,365	339	3,309
2,224	11.45	18.18	17,294	10,762	-2,731	247
2,073	11.98	19.28	12,480	6,635	-7,250	-4,426
1,877	12.74	20.39	5,188	2,872	-16,427	-11,086
1,522	15.51	26.07	-14,724	-12,754	-32,617	-36,059

Table 48. FARM BUSINESS CHART FOR LARGE CONVENTIONAL STALL DAIRY FARMS
97 Conventional Stall Dairy Farms with More Than 60 Cows, New York, 1990

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
5.1	149	2,584,859	20,718	4.3	20	44	760,541
4.0	106	1,875,410	19,377	3.5	18	37	637,992
3.4	96	1,629,899	18,581	3.1	17	33	576,615
3.1	86	1,517,394	18,068	2.9	16	31	541,546
2.9	80	1,403,263	17,315	2.6	15	30	486,292
2.6	76	1,328,227	16,794	2.4	14	28	456,646
2.5	71	1,219,172	16,108	2.2	12	26	426,507
2.4	68	1,101,764	14,940	2.1	12	25	404,925
2.1	66	988,499	13,591	1.8	11	23	375,631
1.7	63	819,905	11,401	1.5	8	19	297,511

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
$ 373	16%	$298	$ 720	$ 493	$3.38
442	19	368	812	598	4.08
506	23	393	864	695	4.39
579	24	421	913	759	4.69
649	26	456	954	826	4.89
700	28	485	994	886	5.24
774	31	531	1,079	936	5.43
842	33	585	1,137	1,011	5.72
919	35	640	1,216	1,087	6.14
1,086	40	742	1,362	1,279	7.14

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income With Apprec.	Net Farm Income Without Apprec.	Labor &. Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$3,162	$ 7.30	$13.04	$106,960	$91,167	$46,704	$77,975
2,902	9.22	14.11	72,165	61,082	27,104	39,645
2,744	9.91	14.94	54,447	49,457	19,419	29,725
2,651	10.20	15.55	48,672	43,537	13,118	23,556
2,576	10.59	15.93	43,293	34,340	9,424	17,338
2,478	11.13	16.38	36,204	27,752	4,553	12,420
2,362	11.69	16.82	25,594	21,420	380	5,334
2,205	12.34	17.30	18,611	14,713	-5,082	-2,665
2,025	13.24	18.04	12,273	9,758	-13,809	-11,179
1,730	14.19	20.13	-4,728	-5,646	-23,429	-47,564

Table 49. FARM BUSINESS CHART FOR SMALL FREESTALL DAIRY FARMS
60 Freestall Barn Dairy Farms with 120 or Less Cows, New York, 1990

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
4.3	116	2,158,034	20,788	4.6	21	48	828,578
3.8	109	1,944,413	19,249	3.6	19	40	676,371
3.5	103	1,846,013	18,571	3.3	17	36	605,256
3.1	97	1,696,622	17,923	3.0	16	33	578,887
2.9	90	1,536,651	17,237	2.8	15	31	547,092
2.7	80	1,343,093	16,615	2.5	15	29	501,972
2.5	77	1,213,815	16,147	2.1	14	27	456,111
2.2	67	1,049,918	15,476	1.9	14	25	410,748
1.9	56	881,600	13,672	1.6	13	23	354,502
1.4	46	632,120	12,126	1.0	9	18	253,915

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
$ 286	11%	$270	$ 653	$ 512	$3.01
426	18	331	802	620	3.77
520	21	393	885	665	4.40
606	25	440	933	767	4.76
666	27	464	970	838	5.12
704	28	496	1,046	921	5.52
764	31	567	1,092	969	5.65
840	33	614	1,153	1,041	5.85
906	34	686	1,267	1,091	6.34
1,006	39	877	1,481	1,219	7.12

Value and Cost of Production			Profitability			
			Net Farm Income			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	With Apprec.	Without Apprec.	Labor &. Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$1,854	$ 7.95	$12.98	$101,819	$96,206	$44,877	$75,638
2,012	9.22	14.11	79,708	70,840	27,364	48,824
2,295	9.65	14.91	69,020	56,741	19,085	33,368
2,435	10.09	15.41	59,252	48,026	13,408	23,325
2,509	10.72	15.85	41,880	36,075	10,018	15,763
2,588	11.21	16.19	31,702	27,444	6,031	10,534
2,667	11.78	16.95	23,015	15,348	433	1,011
2,759	12.71	17.81	16,564	10,333	-9,174	-7,476
2,898	13.84	19.65	5,105	-2,985	-18,460	-19,705
3,100	15.22	22.15	-18,572	-12,043	-26,264	-77,443

Table 50. FARM BUSINESS CHART FOR LARGE FREESTALL DAIRY FARMS
80 Freestall Barn Dairy Farms with More Than 120 Cows, New York, 1990

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
14.7	665	12,936,108	21,844	4.7	19	57	1,002,686
7.9	338	6,399,112	20,930	4.0	18	44	866,986
7.0	257	4,683,440	20,025	3.5	17	42	793,600
6.0	205	3,760,735	19,243	3.2	16	40	734,560
5.5	181	3,413,110	18,723	3.0	16	38	694,646
5.1	169	3,070,859	18,168	2.8	15	36	659,232
4.5	156	2,884,946	17,731	2.6	14	34	627,685
4.0	142	2,714,383	17,106	2.3	13	32	587,006
3.8	130	2,432,639	16,404	2.1	12	30	530,645
3.1	122	1,908,456	14,467	1.5	9	25	428,608

Cost Control					
Grain Bought Per Cow	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk
$ 416	15%	$287	$ 670	$ 655	$3.48
550	19	368	839	785	4.17
632	23	405	919	829	4.50
689	25	441	975	888	4.84
738	26	480	1,025	941	5.10
783	29	506	1,054	979	5.44
826	30	535	1,089	1,019	5.64
857	32	555	1,162	1,085	6.01
926	34	609	1,217	1,160	6.32
1,078	40	748	1,354	1,293	7.01

Value and Cost of Production			Profitability			
			Net Farm Income			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	With Apprec.	Without Apprec.	Labor &. Mgmt. Inc. Per Oper.	Change in Net Worth w/Apprec.
$3,303	$ 6.85	$11.75	$420,314	$341,186	$207,822	$187,516
3,107	9.20	13.08	237,008	196,670	89,608	102,826
3,016	10.18	13.77	165,693	153,705	61,282	80,200
2,927	10.75	14.20	127,779	111,389	42,376	65,041
2,843	11.14	14.82	104,366	92,999	31,694	46,573
2,713	11.44	15.22	85,705	74,817	20,966	35,148
2,644	11.90	15.61	71,032	58,137	15,068	21,132
2,548	12.42	15.94	50,070	43,367	7,425	1,876
2,443	13.04	16.51	35,473	31,356	-5,216	-14,390
2,169	14.07	17.72	-1,111	9,388	-35,772	-58,492

Table 51. SELECTED BUSINESS FACTORS BY MILKING FREQUENCY
New York State Dairy Farms, 1989 & 1990

Item	2x/Day Milking 1989	2x/Day Milking 1990	3x/Day Milking 1989	3x/Day Milking 1990
Number of farms	375	343	29	37
Business Size & Production				
Number of cows	91	90	285	242
Number of heifers	73	73	220	193
Milk sold, lbs.	1,506,933	1,521,148	5,629,524	4,834,005
Milk sold/cow, lbs.	16,634	16,996	19,743	19,957
Milk plant test, % BF	3.67%	3.64%	3.67%	3.41%
Tillable acres, total	293	284	628	617
Hay crop, tons DM/acre	2.6	2.7	3.0	2.8
Corn silage, tons/acre	13.5	14.4	13.1	14.3
Forage DM/cow, tons	8.0	8.0	6.5	7.3
Labor & Capital Efficiency				
Worker equivalent	2.99	2.95	7.53	6.49
Milk sold/worker, lbs.	504,456	515,370	747,504	744,912
Cows/worker	30	30	38	37
Farm capital/worker	$199,248	$204,725	$217,109	$224,672
Farm capital/cow	$6,570	$6,752	$5,735	$6,020
Farm capital/cwt. milk	$39.50	$39.72	$29.05	$30.16
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.40	$1.48	$2.37	$2.53
Grain & concentrate	$3.87	$4.12	$3.80	$4.25
Purchased roughage	$0.14	$0.12	$0.11	$0.18
Replacements purchased	$0.18	$0.24	$0.11	$0.13
Vet & medicine	$0.29	$0.31	$0.35	$0.35
Milk marketing	$0.53	$0.58	$0.33	$0.39
Other dairy expenses	$0.59	$0.68	$0.52	$0.62
Operating costs/cwt.	$10.47	$11.06	$10.43	$11.20
Total labor costs/cwt.	$2.71	$3.07	$2.77	$3.02
Operator resources/cwt.	$3.20	$3.30	$1.62	$1.76
Total costs/cwt.	$15.18	$15.98	$13.22	$14.26
Average farm price/cwt.	$14.52	$14.90	$14.57	$15.03
Return over total costs/cwt.	$-0.66	$-1.08	$1.35	$0.77
Related Cost Factors				
Hired labor/cow	$234	$252	$468	$505
Total labor/cow	$451	$522	$542	$603
Purchased dairy feed/cow	$667	$721	$771	$883
Purchased grain & concentrate as % milk receipts	27%	28%	26%	28%
Vet & medicine/cow	$48	$52	$70	$69
Machinery costs/cow	$434	$492	$387	$455
Profitability Analysis				
Net farm income (w/o apprec.)	$40,526	$37,452	$168,787	$124,477
Labor & mgmt. income/operator	$12,807	$9,277	$76,839	$55,437
Rates of return on:				
Equity capital w/apprec.	8.25%	2.86%	18.51%	12.43%
All capital w/apprec.	8.32%	4.58%	14.51%	10.81%

Table 52. SELECTED BUSINESS FACTORS BY MILKING SYSTEMS
388 New York Dairy Farms, 1990*

Item	Dumping Station	Pipeline	Herringbone Parlor	Other Parlors
Number of farms	20	216	139	13
Percent of farms	5%	56%	36%	3%
Cropping Program Analysis				
Total Tillable acres	170	241	482	376
Tillable acres rented**	36	88	183	153
Hay crop acres**	108	142	213	187
Corn silage acres**	23	46	149	88
Hay crop, tons DM/acre	1.8	2.6	2.8	2.8
Corn silage, tons/acre	13.4	14.0	14.7	14.5
Forage DM per cow, tons	7.1	8.4	7.6	6.4
Tillable acres/cow	3.9	3.4	2.8	2.6
Fert. & lime exp./tillable acre	$11.55	$26.12	$32.93	$25.48
Total machinery costs	$18,774	$34,958	$83,567	$66,247
Machinery cost/tillable acre	$110	$145	$173	$176
Dairy Analysis				
Number of cows	43	70	174	146
Number of heifers	34	58	141	114
Milk sold, lbs.	609,562	1,186,697	3,197,498	2,643,045
Milk sold/cow, lbs.	14,061	16,874	18,396	18,132
Oper. cost of prod. milk/cwt.	$10.65	$10.93	$11.28	$10.53
Total cost of prod. milk/cwt.	$17.98	$16.42	$14.96	$14.45
Price/cwt. milk sold	$14.49	$14.78	$15.05	$14.79
Purchased dairy feed/cow	$648	$699	$799	$747
Purchased dairy feed/cwt. milk	$4.62	$4.14	$4.34	$4.12
Purc. grain & conc. as % milk receipts	30%	27%	28%	27%
Purc. feed & crop expense/cwt. milk	$5.19	$5.11	$5.30	$4.84
Capital Efficiency				
Farm capital/worker	$150,968	$189,897	$228,916	$200,449
Farm capital/cow	$6,725	$7,100	$6,252	$5,974
Farm capital/tillable acre owned	$2,178	$3,262	$3,634	$3,906
Real estate/cow	$3,687	$3,348	$2,724	$2,785
Machinery investment/cow	$1,171	$1,391	$1,157	$984
Capital turnover, years	2.63	2.39	1.89	1.88
Labor Efficiency				
Worker equivalent	1.93	2.63	4.75	4.35
Operator/manager equivalent	1.19	1.34	1.50	1.51
Milk sold/worker, lbs.	315,291	451,517	673,631	608,251
Cows/worker	22	27	37	34
Work units/worker	238	288	382	341
Labor cost/cow	$621	$539	$534	$610
Labor cost/tillable acre	$158	$157	$193	$236
Profitability & Balance Sheet Analysis				
Net farm income (w/o apprec.)	$13,597	$28,845	$78,864	$78,085
Labor & mgmt. income/operator	$296	$5,937	$26,711	$29,250
Farm debt/cow	$2,706	$2,309	$2,195	$2,021
Percent equity	60%	68%	65%	67%

*Seven farms reported bucket and carry milking systems.
**Average of all farms, not only those reporting data.

Table 53. SELECTED BUSINESS FACTORS ON FARMS PRODUCING AND NOT PRODUCING CORN FOR GRAIN
395 New York Dairy Farms, 1990

Item	194 Farms Producing Corn Grain	201 Farms Not Producing Corn Grain
Business Size & Production		
Number of cows	128	87
Number of heifers	107	68
Milk sold, lbs.	2,321,667	1,493,968
Milk sold/cow, lbs.	18,156	17,104
Tillable acres, total	411	241
Corn grain, acres	79	--
Corn grain, bu./acre	104.8	--
Hay crop, tons DM/acre	2.8	2.5
Corn silage, tons/acre	14.7	14.0
Forage DM/cow, tons	7.8	7.8
Labor & Capital Efficiency		
Worker equivalent	3.96	2.81
Milk sold/worker, lbs.	586,688	531,474
Cows/worker	32	31
Farm capital/worker	$216,781	$197,253
Farm capital/cow	$6,707	$6,351
Farm capital/tillable acre	$2,087	$2,301
Machinery invest./cow	$1,307	$1,131
Machinery invest./tillable acre	$407	$410
Selected Costs & Returns		
Selected costs/tillable acre:		
Fuel, oil & grease	$ 24	$ 23
Machinery repairs & parts	52	46
Machine hire, rent & lease	12	13
Auto expense (farm share)	2	3
Interest on investment (5%)	20	20
Machinery depreciation	51	52
Total machinery costs	$161	$157
Machinery costs/cwt	$2.86	$2.54
Purchased feed & crop exp./cwt.	$5.05	$5.46
Operating cost of milk prod. /cwt.	$11.01	$11.27
Total labor cost/cwt.	$3.02	$3.10
Operator resources/cwt.	$2.79	$2.94
Total cost of milk prod./cwt.	$15.29	$15.81
Average farm price/cwt.	$14.97	$14.88
Return over total costs/cwt.	$-0.32	$-0.93
Related Cost Factors		
Hired labor/cow	$346	$268
Total labor/cow	$549	$531
Total labor/tillable acre	$171	$192
Purchased dairy feed/cow	$716	$814
Profitability Analysis		
Net farm income (w/o apprec.)	$60,224	$34,286
Labor & mgmt. income/operator	$18,210	$9,675
Rates of return on:		
Equity capital w/apprec.	5.6%	3.4%
All capital w/apprec.	6.6%	5.2%

Table 54. TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS
New York Dairy Farms, 1981 to 1990

Item	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Number of farms	553	572	510	458	404	414	426	406	409	395
Cropping Program										
Total tillable acres	257	262	272	280	280	288	305	302	316	325
Tillable acres rented	83	83	91	94	93	100	105	104	117	121
Hay crop acres	131	135	139	143	142	147	153	156	164	166
Corn silage acres	59	70	72	76	69	67	67	74	81	82
Hay crop, tons DM/acre	2.5	2.6	2.5	2.7	2.7	2.7	2.7	2.6	2.6	2.7
Corn silage, tons/acre	14.9	14.0	13.5	14.0	14.3	14.3	16.2	14.1	13.4	14.4
Fert. & lime exp. /tillable acre	$32	$33	$31	$32	$32	$26	$27	$29	$29	$29
Machinery cost/cow	$465	$432	$413	$433	$426	$400	$413	$398	$425	$483
Dairy Analysis										
Number of cows	79	82	88	89	89	95	101	102	104	107
Number of heifers	59	67	72	76	73	77	79	82	83	87
Milk sold, cwt.	11,420	12,105	13,432	13,735	14,001	15,374	16,498	17,200	17,975	19,005
Milk sold/cow, lbs.	14,456	14,762	15,264	15,433	15,679	16,237	16,351	16,882	17,259	17,720
Purchased dairy feed/cwt. milk	$3.51	$3.27	$3.44	$3.28	$3.04	$3.10	$3.21	$3.71	$3.99	$4.27
Purc. grain & conc. as % milk receipts	26%	24%	25%	24%	23%	24%	24%	28%	27%	28%
Purc. feed & crop exp./cwt. milk	$4.67	$4.53	$4.62	$4.53	$4.13	$4.00	$4.11	$4.62	$4.92	$5.21
Capital Efficiency										
Farm capital/cow	$5,676	$5,517	$5,421	$5,520	$5,801	$5,792	$5,894	$6,133	$6,407	$6,556
Real estate/cow	$2,693	$2,664	$2,668	$2,731	$2,726	$2,758	$2,805	$2,902	$2,977	$2,977
Mach. invest./cow	$1,078	$1,047	$1,038	$1,057	$1,083	$1,062	$1,057	$1,083	$1,154	$1,233
Capital turnover,yrs.	2.4	2.5	2.4	2.3	2.5	2.3	2.2	2.2	2.1	2.1
Labor Efficiency										
Worker equivalent	2.75	2.83	3.00	3.08	3.17	3.17	3.19	3.17	3.30	3.37
Operator/manager eq.	1.25	1.30	1.32	1.31	1.34	1.33	1.32	1.35	1.39	1.39
Milk sold/worker, lbs.	415,273	427,739	447,733	445,942	442,125	497,555	516,728	542,708	544,598	563,349
Cows/worker	29	29	29	29	28	31	32	32	32	32
Labor cost/cow	$335	$352	$344	$366	$387	$385	$400	$426	$469	$541
Profitability & Financial Analysis										
Labor & mgmt. income/oper.	$-4,261	$3,451	$5,514	$2,262	$2,850	$3,837	$11,042	$11,911	$18,004	$14,328
Farm net worth	$301,975	$306,589	$322,001	$336,210	$325,664	$348,909	$398,209	$426,123	$468,848	$471,322
Percent equity	64%	63%	63%	64%	63%	62%	65%	66%	68%	66%

Table 55. TEN YEAR COMPARISON: AVERAGE COST OF PRODUCING MILK PER HUNDREDWEIGHT
New York Dairy Farms, 1981 to 1990

Item	1981	1982	1983	1984	1985*	1986*	1987*	1988*	1989*	1990*
Cash Operating Expenses										
Hired labor	$ 1.20	$ 1.29	$ 1.25	$ 1.39	$ 1.38	$ 1.38	$ 1.49	$ 1.46	$1.62	$ 1.77
Purchased feed	3.62	3.40	3.59	3.46	3.09	3.15	3.26	3.73	4.02	4.28
Machinery repairs & rent	.81	.81	.77	.80	.78	.75	.88	.83	.92	1.06
Auto expenses (farm share)	.04	.04	.04	.03	.03	.04	.04	.04	.04	.05
Fuel, oil & grease	.62	.59	.49	.50	.48	.34	.35	.34	.33	.41
Replacement livestock	.23	.19	.16	.10	.10	.13	.13	.11	.17	.20
Breeding fees	.18	.19	.19	.20	.20	.19	.19	.18	.18	.19
Veterinary & medicine	.28	.29	.28	.29	.27	.28	.28	.28	.30	.32
Milk marketing	.40	.50	.93	1.03	.80	.84	.74	.52	.49	.53
Other dairy expenses	.49	.52	.54	.55	.53	.52	.53	.56	.60	.68
Lime & fertilizer	.72	.71	.63	.66	.63	.49	.50	.51	.50	.50
Seeds & plants	.23	.23	.21	.22	.23	.21	.21	.21	.22	.22
Spray & other crop expense	.21	.18	.19	.20	.22	.20	.19	.19	.21	.22
Land, building, fence repair	.22	.21	.18	.18	.17	.16	.20	.22	.27	.32
Taxes	.35	.34	.34	.33	.34	.33	.35	.35	.36	.37
Insurance	.23	.23	.21	.20	.22	.22	.22	.23	.23	.24
Telephone & elec. (farm share)	.32	.35	.36	.36	.37	.39	.38	.38	.39	.39
Interest paid	1.43	1.54	1.40	1.40	1.25	1.18	1.04	1.02	1.06	1.05
Misc. (including rent)	.41	.43	.44	.44	.40	.41	.45	.41	.43	.47
Total Operating Expenses	$11.99	$12.04	$12.20	$12.34	$11.50	$11.22	$11.43	$11.57	$12.34	$13.27
Less: Nonmilk cash receipts	1.58	1.47	1.49	1.74	1.58	1.52	1.84	1.86	1.75	1.75
Increase in feed & supplies**	.11	.03	.26	.18	.05	.01	.16	.16	.02	.26
Increase in livestock	.25	.35	.24	.16	.18	.12	.10	.08	.12	.15
OPERATING COST OF MILK PRODUCTION	$10.05	$10.19	$10.21	$10.26	$ 9.69	$ 9.57	$ 9.33	$ 9.47	$10.45	$11.11
Overhead Expenses										
Depreciation: mach. & bldgs.	$ 1.56	$ 1.60	$ 1.56	$ 1.65	$ 1.64	$ 1.54	$ 1.43	$ 1.31	$ 1.31	$ 1.35
Unpaid labor	.14	.14	.12	.12	.12	.13	.10	.11	.12	.19
Operator(s) labor***	.99	.93	.89	.87	.97	.86	.87	.95	.98	1.10
Operator(s) mgmt. (5% of cash rec.)	.76	.75	.76	.76	.72	.71	.74	.74	.81	.85
Interest on farm eq. cap. (5%)	1.32	1.27	1.20	1.22	1.16	1.10	1.15	1.19	1.24	1.24
Total Overhead Expenses	$ 4.77	$ 4.69	$ 4.53	$ 4.62	$ 4.61	$ 4.34	$ 4.28	$ 4.30	$ 4.46	$ 4.73
TOTAL COST OF MILK PRODUCTION	$14.82	$14.88	$14.74	$14.88	$14.30	$13.91	$13.61	$13.77	$14.91	$15.84
AVERAGE FARM PRICE OF MILK	$13.66	$13.56	$13.64	$13.49	$12.90	$12.65	$12.89	$13.03	$14.53	$14.93
Return per cwt. to operator labor, capital, & management	$1.91	$1.63	$1.75	$1.46	$1.45	$1.41	$2.04	$2.14	$2.65	$2.28
Rate of return on farm eq. cap.	0.6%	-0.2%	0.4%	-0.7%	-1.0%	-0.7%	1.9%	1.8%	3.3%	1.3%

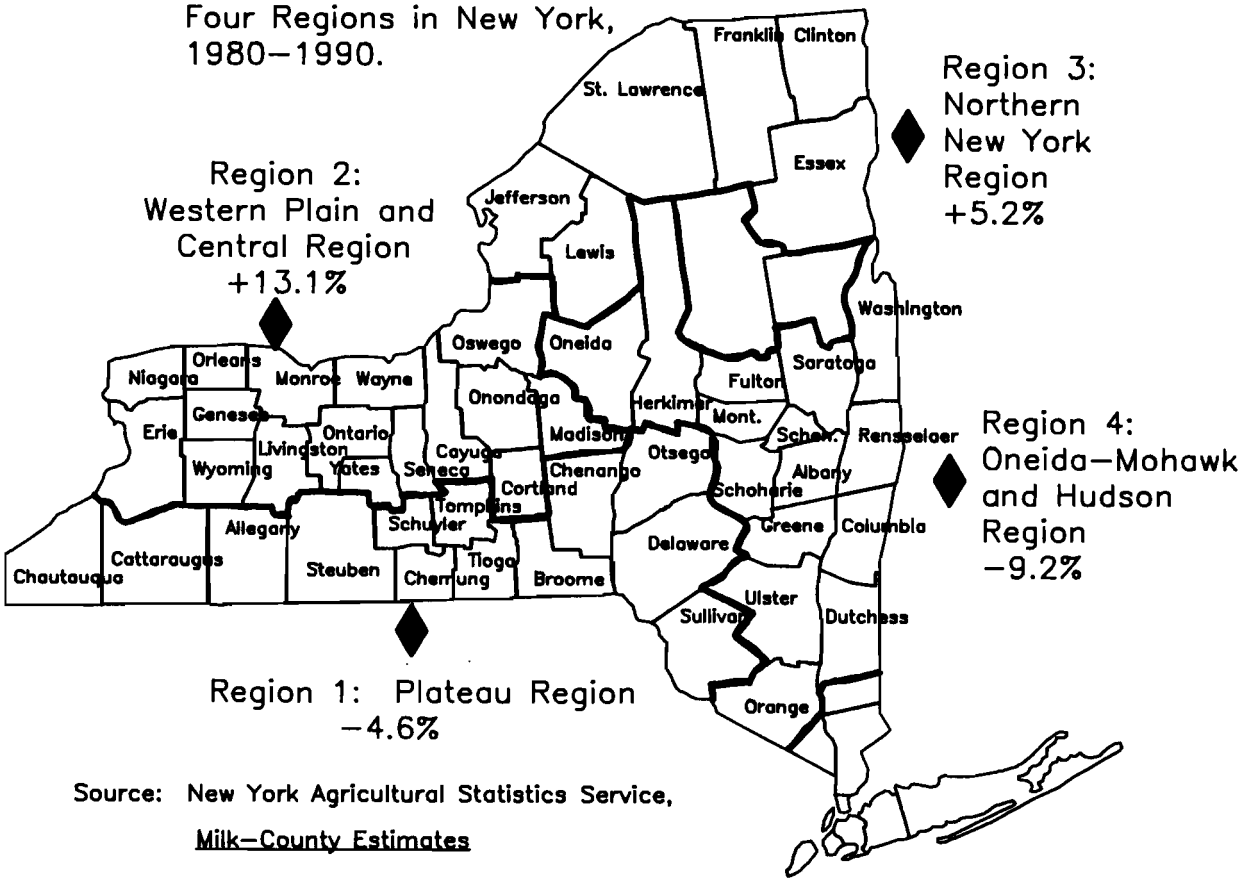
*Accrual receipts and expenses. **Increase in grown feeds, 1985-1989. ***1980-1984 = $750/month, 1985 = $800/month, 1986 = $850/month, 1987 = $900/month, 1988 = $1,000/month, 1989 = $1,050/month , 1990 = $1,250/month of operator labor.

Table 56. COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION
395 New York Dairy Farms, 1990

Item	Plateau Region	W. Plain & Cent. Region	Northern New York	Oneida-Mohawk Hudson Reg.
Number of farms	127	87	87	94
ACCRUAL EXPENSES				
Hired labor	$ 20,457	$ 78,076	$ 19,607	$ 23,357
Feed	65,305	143,476	57,591	67,814
Machinery	21,097	50,771	20,134	26,608
Livestock	28,309	60,579	23,557	37,352
Crops	13,303	34,312	10,991	15,431
Real estate	14,618	31,658	12,130	15,594
Other	28,235	57,400	30,427	31,220
Total Operating	$191,324	$456,272	$174,437	$217,376
Expansion livestock	1,852	10,381	2,617	2,513
Machinery depreciation	13,619	27,674	14,486	12,435
Building depreciation	6,478	18,836	4,905	7,034
Total Accrual Expenses	$213,273	$513,163	$196,445	$239,358
ACCRUAL RECEIPTS				
Milk sales	$216,911	$513,852	$201,449	$237,603
Livestock	23,637	60,269	20,235	23,013
Crops	3,796	17,244	4,002	5,381
All other	5,911	14,073	3,898	4,922
Total Accrual Receipts	$250,255	$605,438	$229,584	$270,919
PROFITABILITY ANALYSIS				
Net farm income (w/o appreciation)	$36,982	$92,275	$33,139	$31,561
Net farm income (w/appreciation)	$43,023	$113,784	$37,583	$39,519
Labor & management income	$12,217	$53,318	$12,697	$6,101
Number of operators	1.38	1.59	1.25	1.34
Labor & management income/operator	$8,853	$33,533	$10,158	$4,553
BUSINESS FACTORS				
Worker equivalent	2.84	5.11	2.85	2.97
Number of cows	86	184	81	89
Number of heifers	67	153	69	70
Acres of hay crops*	147	194	161	170
Acres of corn silage*	54	152	61	75
Total tillable acres	250	525	264	296
Pounds of milk sold	1,450,253	3,486,603	1,368,511	1,533,127
Pounds of milk sold/cow	16,902	18,943	16,864	17,169
Tons hay crop dry matter/acre	2.6	3.0	2.6	2.5
Tons corn silage/acre	14.7	14.4	14.7	14.0
Cows/worker	30	36	28	30
Pounds of milk sold/worker	510,885	682,001	480,699	515,383
% grain & concentrate of milk receipts	29%	27%	28%	28%
Feed & crop expense/cwt. milk	$5.40	$5.08	$5.00	$5.42
Fertilizer & lime/crop acre	$30.04	$33.36	$20.20	$28.60
Machinery cost/tillable acre	$162	$169	$151	$150

*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, 1980–1990.



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

Table 57. MILK PRODUCTION AND AVERAGE COST OF PRODUCING MILK FOUR REGIONS OF NEW YORK, 1990

Item	Region* 1	2	3	4
MILK PRODUCTION**		(million pounds)		
1980	3,075.3	3,223.4	1,990.2	2,662.0
1990	2,933.3	3,645.0	2,094.6	2,416.7
Percent change	-4.6%	+13.1%	+5.2%	-9.2%
COST OF PRODUCING MILK		($ per hundredweight milk)		
Operating cost	$11.02	$10.76	$10.88	$12.17
Total cost	16.01	14.38	15.78	16.96
Average price received	14.96	14.74	14.72	15.50
Return per cwt. to operator labor, mgmt. & capital	2.32	2.58	2.08	1.82

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

Table 58. FARM RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT FOR TWO LEVELS OF MILK PRODUCTION
395 New York Dairy Farms, 1990

Item	395 Dairy Farms Per Cow	395 Dairy Farms Per Cwt.	233 Dairy Farms Milk/Cow <17,720# Per Cow	233 Dairy Farms Milk/Cow <17,720# Per Cwt.	162 Dairy Farms Milk/Cow ≥17,720# Per Cow	162 Dairy Farms Milk/Cow ≥17,720# Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	$2,645	$14.93	$2,329	$14.90	$2,920	$14.96
Dairy cattle	237	1.34	199	1.27	271	1.39
Dairy calves	43	0.24	41	0.26	44	0.23
Other livestock	7	0.04	7	0.04	7	0.04
Crops	67	0.38	44	0.28	87	0.44
Government receipts	26	0.15	27	0.17	25	0.13
All other	40	0.22	38	0.24	41	0.21
TOTAL ACCRUAL RECEIPTS	$3,065	$17.30	$2,685	$17.16	$3,395	$17.40
ACCRUAL EXPENSES						
Labor: Hired	$ 314	$ 1.77	$ 225	$ 1.44	$ 390	$ 2.00
Feed: Dairy grain & conc.	733	4.14	670	4.29	787	4.03
Dairy roughage	23	0.13	24	0.15	23	0.12
Nondairy	3	0.01	2	0.01	3	0.01
Machinery:Machine hire/ rent/ lease	37	0.21	36	0.23	38	0.20
Mach. repairs/parts	150	0.85	141	0.90	158	0.81
Auto expense (farm share)	8	0.05	8	0.05	8	0.04
Fuel, oil, grease	72	0.41	72	0.46	73	0.38
Livestock: Replacement livestock	35	0.20	51	0.33	22	0.11
Breeding	34	0.19	31	0.20	38	0.19
Vet & medicine	57	0.32	46	0.29	66	0.34
Milk marketing	93	0.53	91	0.58	95	0.49
Cattle lease/rent	3	0.02	3	0.02	3	0.01
Other livestock expense	118	0.67	101	0.65	132	0.68
Crops: Fertilizer & lime	88	0.50	82	0.52	94	0.48
Seeds & plants	40	0.22	35	0.22	44	0.22
Spray & other crop expense	39	0.22	28	0.18	49	0.25
Real Estate: Land/ building/fence repair	57	0.32	45	0.29	68	0.35
Taxes	65	0.37	70	0.45	61	0.31
Rent & lease	46	0.26	39	0.25	52	0.27
Other: Insurance	42	0.24	43	0.28	42	0.21
Telephone (farm share)	6	0.04	8	0.05	5	0.03
Electricity (farm share)	63	0.36	64	0.41	62	0.32
Interest paid	186	1.05	178	1.14	193	0.99
Miscellaneous	37	0.21	32	0.21	41	0.21
TOTAL OPERATING EXPENSES	$2,350	$13.29	$2,125	$13.60	$2,547	$13.05
Expansion livestock	38	0.21	23	0.15	51	0.26
Machinery depreciation	155	0.87	142	0.91	166	0.85
Building depreciation	84	0.47	69	0.44	97	0.50
TOTAL ACCRUAL EXPENSES	$2,627	$14.84	$2,359	$15.10	$2,861	$14.66

Table 59. FARM RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT FOR TWO HERD SIZE CATEGORIES
395 New York Dairy Farms, 1990

Item	395 Dairy Farms		259 Dairy Farms with <100 Cows		136 Dairy Farms with ≥100 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
ACCRUAL RECEIPTS						
Milk sales	$2,645	$14.93	$2,451	$14.82	$2,764	$15.00
Dairy cattle	237	1.34	218	1.32	249	1.35
Dairy calves	43	0.24	43	0.26	43	0.23
Other livestock	7	0.04	10	0.06	5	0.03
Crops	67	0.38	58	0.35	72	0.39
Government receipts	26	0.15	26	0.16	26	0.14
All other	40	0.22	36	0.22	42	0.23
TOTAL ACCRUAL RECEIPTS	$3,065	$17.30	$2,842	$17.19	$3,201	$17.37
ACCRUAL EXPENSES						
Labor: Hired	$ 314	$ 1.77	$ 176	$ 1.06	$ 396	$ 2.15
Feed: Dairy grain & conc.	733	4.14	674	4.07	769	4.17
Dairy roughage	23	0.13	22	0.13	24	0.13
Nondairy	3	0.01	3	0.02	2	0.01
Machinery:Machine hire/ rent/ lease	37	0.21	35	0.21	38	0.21
Mach. repairs/parts	150	0.85	139	0.84	156	0.85
Auto expense (farm share)	8	0.05	13	0.08	6	0.03
Fuel, oil, grease	72	0.41	73	0.44	73	0.39
Livestock: Replacement livestock	35	0.20	41	0.25	32	0.17
Breeding	34	0.19	38	0.23	32	0.17
Vet & medicine	57	0.32	49	0.29	61	0.33
Milk marketing	93	0.53	102	0.61	89	0.48
Cattle lease/rent	3	0.02	2	0.01	4	0.02
Other livestock expense	118	0.67	117	0.71	119	0.64
Crops: Fertilizer & lime	88	0.50	82	0.49	92	0.50
Seeds & plants	40	0.22	35	0.21	42	0.23
Spray & other crop expense	39	0.22	34	0.21	43	0.23
Real Estate: Land/ building/fence repair	57	0.32	47	0.29	63	0.34
Taxes	65	0.37	76	0.46	59	0.32
Rent & lease	46	0.26	44	0.27	47	0.25
Other: Insurance	42	0.24	48	0.29	39	0.21
Telephone (farm share)	6	0.04	10	0.06	4	0.02
Electricity (farm share)	63	0.36	69	0.42	60	0.32
Interest paid	186	1.05	198	1.20	179	0.97
Miscellaneous	37	0.21	34	0.20	39	0.21
TOTAL OPERATING EXPENSES	$2,350	$13.29	$2,161	$13.05	$2,468	$13.35
Expansion livestock	38	0.21	32	0.19	42	0.23
Machinery depreciation	155	0.87	171	1.03	146	0.79
Building depreciation	84	0.47	79	0.48	87	0.47
TOTAL ACCRUAL EXPENSES	$2,627	$14.84	$2,443	$14.75	$2,743	$14.84

Table 60. FARM BUSINESS SUMMARIES FOR SINGLE PROPRIETORSHIPS, PARTNERSHIPS, AND CORPORATIONS
395 New York Dairy Farms, 1990

Item	273 Single Prop.	100 Partnerships	22 Corporations
ACCRUAL EXPENSES			
Hired labor	$ 27,418	$ 32,812	$114,795
Feed	66,732	94,124	205,967
Machinery	22,966	35,056	71,531
Livestock	29,880	42,564	91,476
Crops	13,301	23,666	49,247
Real estate	14,066	21,481	51,981
Other	31,113	41,646	68,300
Total Operating Expenses	$205,476	$291,349	$653,297
Expansion livestock	3,001	5,142	12,221
Machinery depreciation	14,039	19,285	36,594
Building depreciation	7,032	10,467	26,491
Total Accrual Expenses	$229,548	$326,243	$728,603
ACCRUAL RECEIPTS			
Milk sales	$228,934	$334,233	$735,971
Livestock	25,070	35,728	79,637
Crops	4,684	11,452	18,752
All other	4,839	9,684	22,165
Total Accrual Receipts	$263,527	$391,097	$856,525
PROFITABILITY ANALYSIS			
Net farm income (without appreciation)	$33,979	$64,854	$127,922
Net farm income (with appreciation)	$42,228	$74,006	$155,455
Labor & management income	$11,096	$33,637	$67,195
Number of operators	1.07	2.13	2.04
Labor & management income per operator	$10,370	$15,792	$32,939
FINANCIAL MEASURES			
Percent equity	64%	67%	73%
Debt/asset ratio - long-term	0.41	0.36	0.16
Debt/asset ratio - inter. & current	0.31	0.31	0.35
Farm net worth, end year	$384,013	$582,901	$1,212,613
Change in net worth w/appreciation	$16,245	$18,120	$46,159
Total farm debt per cow	$2,341	$2,268	$1,661
Debt payments made per cow	$485	$584	$321
Amount available for debt service	$48,175	$64,360	$95,465
Cash flow coverage ratio for 1990	1.14	1.33	1.14
BUSINESS FACTORS			
Worker equivalent	2.89	4.01	6.48
Number of cows	89	124	260
Pounds of milk sold per cow	17,296	17,967	18,982
Total tillable acres	267	397	714
Tons hay crop dry matter per acre	2.6	2.8	3.0
Tons corn silage per acre	14.4	14.6	14.3
Cows per worker	31	31	40
Pounds of milk sold per worker	531,610	555,983	760,371
Purc. grain & conc. as % of milk receipts	28%	27%	27%
Average price per cwt. milk	$14.91	$14.98	$14.93
Total cost of producing milk	$15.73	$15.47	$14.67

Table 61. FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
51 New York Dairy-Renter Farms,* 1990

ACCRUAL EXPENSES	
Labor: Hired	$ 13,666
Feed: Dairy grain & conc.	47,992
Dairy roughage	4,422
Nondairy	206
Machinery:Mach. hire/rent/lease	2,079
Mach. repairs/parts	9,557
Auto expense (farm share)	716
Fuel, oil, grease	4,866
Livestock: Replacement lvstk.	4,915
Breeding	2,683
Vet & medicine	3,621
Milk marketing	8,116
Cattle lease/rent	135
Other livestock expense	8,770
Crops: Fertilizer & lime	5,295
Seeds & plants	2,556
Spray & other crop expense	1,810
Real Estate: Land/building/ fence repair	3,967
Taxes	2,319
Rent & lease	13,154
Other:	
Insurance	2,675
Telephone (farm share)	594
Electricity (farm share)	4,664
Interest paid	6,718
Miscellaneous	2,452
TOTAL OPERATING EXPENSES	$157,948
Expansion livestock	3,991
Machinery depreciation	10,711
Building depreciation	638
TOTAL ACCRUAL EXPENSES	$173,288

ACCRUAL RECEIPTS	
Milk sales	$178,088
Dairy cattle	16,120
Dairy calves	3,008
Other livestock	324
Crops	7,458
Government receipts	1,239
Custom machine work	185
Gas tax refund	109
Other	1,141
TOTAL ACCRUAL RECEIPTS	$207,672

PROFITABILITY ANALYSIS	
Net farm inc. (w/o apprec.)	$34,384
Net farm inc. (w/apprec.)	$36,802
Labor & mgt. income/farm	$22,030
Number of operators	1.32
Labor & mgt. income/oper.	$16,689
Rate of return on equity capital including apprec.	3.6%

BUSINESS FACTORS	
Number of cows	69
Number of heifers	51
Worker equivalent	2.42
Total tillable acres	205
Milk sold per cow, lbs.	17,221
Hay DM per acre, tons	2.6
Corn silage per acre, tons	13.9
Milk sold per worker, lbs.	491,541
Grain/conc. as % milk sales	27%
Feed & crop exp./cwt. milk	$5.22
Labor & mach. costs/cow	$1,005
Average price/cwt. milk	$14.98

ASSETS	Jan. 1	Dec. 31
Farm cash/chkg./sav.	$ 4,588	$ 4,557
Accounts receivable	15,902	12,619
Prepaid expenses	31	28
Feed & supplies	27,665	35,423
Dairy cows**	69,544	71,057
Heifers	25,212	27,884
Bulls & other lvstk.	239	381
Machinery & equip**	70,242	82,278
FLB & PCA stock	842	700
Other stock & cert.	3,896	3,158
Land & buildings**	9,347	12,733
Total Farm Assets	$227,508	$250,818
Nonfarm Assets****	42,512	47,475
Total Farm & Nonfarm Assets	$270,020	$298,293

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$ 3,189	$ 3,913
Operating debt	1,913	2,344
Short-term	1,788	1,618
Advanced gov't. rec.	0	6
Intermediate***	57,336	62,296
Long-term**	9,505	10,769
Total Farm Liab.	$ 73,731	$ 80,946
Nonfarm Liab.****	4,794	4,078
Total Farm & Nonfarm Liabilities	$ 78,525	$ 85,024
Farm Net Worth	$153,777	$169,872
Farm & Nonfarm Net Worth	$191,495	$213,269

*A renter owns no farm real estate at the end of year or no tillable land. **Includes discounted lease payments. ***Includes FLB/PCA stock and discounted lease payments for cattle and machinery. ****Average of 33 farms reporting.

Table 62. FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Top 10 Percent of the Farms by Net Farm Income (without appreciation)
40 New York Dairy Farms, 1990

ACCRUAL EXPENSES	
Labor: Hired	$147,941
Feed: Dairy grain & conc.	243,963
Dairy roughage	10,500
Nondairy	252
Machinery:Mach.hire/rent/lease	14,004
Mach. repairs/parts	44,396
Auto expense (farm share)	970
Fuel, oil, grease	20,570
Livestock: Replacement lvstk.	6,932
Breeding	9,786
Vet & medicine	22,170
Milk marketing	22,709
Cattle lease/rent	988
Other livestock expense	38,850
Crops: Fertilizer & lime	26,927
Seeds & plants	13,309
Spray & other crop expense	14,999
Real Estate: Land/building/ fence repair	23,074
Taxes	14,774
Rent & lease	15,305
Other:	
Insurance	9,854
Telephone (farm share)	1,030
Electricity (farm share)	16,625
Interest paid	54,015
Miscellaneous	11,795
TOTAL OPERATING EXPENSES	$785,738
Expansion livestock	$ 17,773
Machinery depreciation	44,763
Building depreciation	31,473
TOTAL ACCRUAL EXPENSES	$879,747

ACCRUAL RECEIPTS	
Milk sales	$ 912,657
Dairy cattle	87,716
Dairy calves	14,265
Other livestock	349
Crops	30,916
Government receipts	7,521
Custom machine work	600
Gas tax refund	246
Other	15,532
TOTAL ACCRUAL RECEIPTS	$1,069,802

PROFITABILITY ANALYSIS	
Net farm inc. (w/o apprec.)	$190,055
Net farm inc. (w/apprec.)	$223,586
Labor & mgt. income/farm	$128,007
Number of operators	1.77
Labor & mgt. income/oper.	$72,320
Rate of return on equity capital including apprec.	14.0%

BUSINESS FACTORS	
Number of cows	313
Number of heifers	252
Worker equivalent	7.67
Total tillable acres	774
Milk sold per cow, lbs.	19,419
Hay DM per acre, tons	3.1
Corn silage per acre, tons	15.0
Milk sold per worker, lbs.	792,513
Grain/conc. as % milk sales	27%
Feed & crop exp./cwt. milk	$5.10
Labor & mach. costs/cow	$1,011
Average price/cwt. milk	$15.02

ASSETS	Jan. 1	Dec. 31
Farm cash/chkg./sav.$	19,662 $	17,012
Accounts receivable	71,659	58,199
Prepaid expenses	3,052	3,619
Feed & supplies	170,066	215,073
Dairy cows*	282,586	295,936
Heifers	114,507	130,949
Bulls & other lvstk.	2,189	2,747
Machinery & equip*	295,613	335,899
FLB & PCA stock	8,625	13,171
Other stock & cert.	33,359	33,979
Land & buildings*	718,682	848,932
Total Farm Assets	$1,720,000	$1,955,516
Nonfarm Assets***	69,014	77,179
Total Farm & Nonfarm Assets	$1,789,014	$2,032,695

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$ 12,497	$ 9,642
Operating debt	48,171	62,782
Short-term	6,533	21,316
Advanced gov't. rec.	93	246
Intermediate**	270,579	308,972
Long-term*	217,587	299,161
Total Farm Liab.	$555,460	$702,119
Nonfarm Liab.***	1,525	1,635
Total Farm & Nonfarm Liabilities	$556,985	$703,754
Farm Net Worth	$1,164,540	$1,253,397
Farm & Nonfarm Net Worth	$1,232,029	$1,328,941

*Includes discounted lease payments. **Includes FLB/PCA stock and discounted lease payments for cattle and machinery. ***Average of 17 farms reporting.

Table 63. FARM BUSINESS SUMMARY AND FARM FAMILY FINANCIAL SITUATION
Average of 395 New York Dairy Farms, 1990

ACCRUAL EXPENSES	
Labor: Hired	$ 33,651
Feed: Dairy grain & conc.	78,640
Dairy roughage	2,513
Nondairy	268
Machinery:Mach. hire/rent/lease	3,983
Mach. repairs/parts	16,093
Auto expense (farm share)	882
Fuel, oil, grease	7,776
Livestock: Replacement lvstk.	3,793
Breeding	3,689
Vet & medicine	6,065
Milk marketing	10,013
Cattle lease/rent	320
Other livestock expense	12,642
Crops: Fertilizer & lime	9,462
Seeds & plants	4,253
Spray & other crop expense	4,214
Real Estate: Land/building/ fence repair	6,148
Taxes	6,985
Rent & lease	4,922
Other:	
Insurance	4,553
Telephone (farm share)	684
Electricity (farm share)	6,755
Interest paid	19,914
Miscellaneous	3,945
TOTAL OPERATING EXPENSES	$252,163
Expansion livestock	4,056
Machinery depreciation	16,624
Building depreciation	8,986
TOTAL ACCRUAL EXPENSES	$281,829

ACCRUAL RECEIPTS	
Milk sales	$283,832
Dairy cattle	25,451
Dairy calves	4,586
Other livestock	770
Crops	7,181
Government receipts	2,769
Custom machine work	374
Gas tax refund	137
Other	3,835
- Non-cash capital transfer	(-) 86
TOTAL ACCRUAL RECEIPTS	$328,849
PROFITABILITY ANALYSIS	
Net farm inc. (w/o apprec.)	$47,020
Net farm inc. (w/apprec.)	$56,572
Labor & mgt. income/farm	$19,916
Number of operators	1.39
Labor & mgt. income/oper.	$14,328
Rate of return on equity capital including apprec.	4.8%
BUSINESS FACTORS	
Number of cows	107
Number of heifers	87
Worker equivalent	3.37
Total tillable acres	325
Milk sold per cow, lbs.	17,720
Hay DM per acre, tons	2.7
Corn silage per acre, tons	14.4
Milk sold per worker, lbs.	563,349
Grain/conc. as % milk sales	28%
Feed & crop exp./cwt. milk	$5.21
Labor & mach. costs/cow	$1,024
Average price/cwt. milk	$14.93

ASSETS	Jan. 1	Dec. 31
Farm cash/chkg./sav.	$ 7,367	$ 6,275
Accounts receivable	24,281	19,550
Prepaid expenses	392	538
Feed & supplies	53,106	62,499
Dairy cows*	105,427	107,940
Heifers	44,199	47,257
Bulls & other lvstk.	1,283	1,483
Machinery & equip.*	125,658	138,998
FLB & PCA stock	2,643	3,189
Other stock & cert.	7,835	8,128
Land & buildings*	307,801	331,105
Total Farm Assets	$679,992	$726,962
Nonfarm Assets***	61,372	64,195
Total Farm & Nonfarm Assets	$741,364	$791,157

LIABILITIES	Jan. 1	Dec. 31
Accounts payable	$ 5,518	$ 6,175
Operating debt	8,657	12,001
Short-term	2,713	4,876
Advanced gov't. rec.	22	34
Intermediate**	90,329	102,265
Long-term*	110,626	121,096
Total Farm Liab.	$217,865	$246,447
Nonfarm Liab.***	3,195	3,251
Total Farm & Nonfarm Liabilities	$221,060	$249,698
Farm Net Worth	$462,127	$480,515
Farm & Nonfarm Net Worth	$520,304	$541,459

*Includes discounted lease payments. **Includes FLB/PCA stock and discounted lease payments for cattle and machinery. ***Average of 249 farms reporting.

NOTES

APPENDIX

THE ECONOMIC ENVIRONMENT FACING NEW YORK DAIRY FARMERS

The prices dairy farmers receive for milk and slaughter cows have a major impact on dairy farm profits. Milk prices generally increased from 1975 to 1981. Annual milk prices declined from 1981 to 1986, increased slightly in 1987, declined in 1988, and increased significantly in 1989. The 1990 milk price averaged $0.40 per hundredweight higher than in 1989. The average monthly farm price exceeded 1989 levels during the first three quarters of 1990. The December 1990 milk price received of $12.20 is the lowest price received since mid-1988. Slaughter cow prices hit a six-year low in 1975, peaked in 1979, declined through the early 1980's, and increased in 1987-1990. The 1990 slaughter cow price averaged $3.20 per hundredweight higher than in 1989.

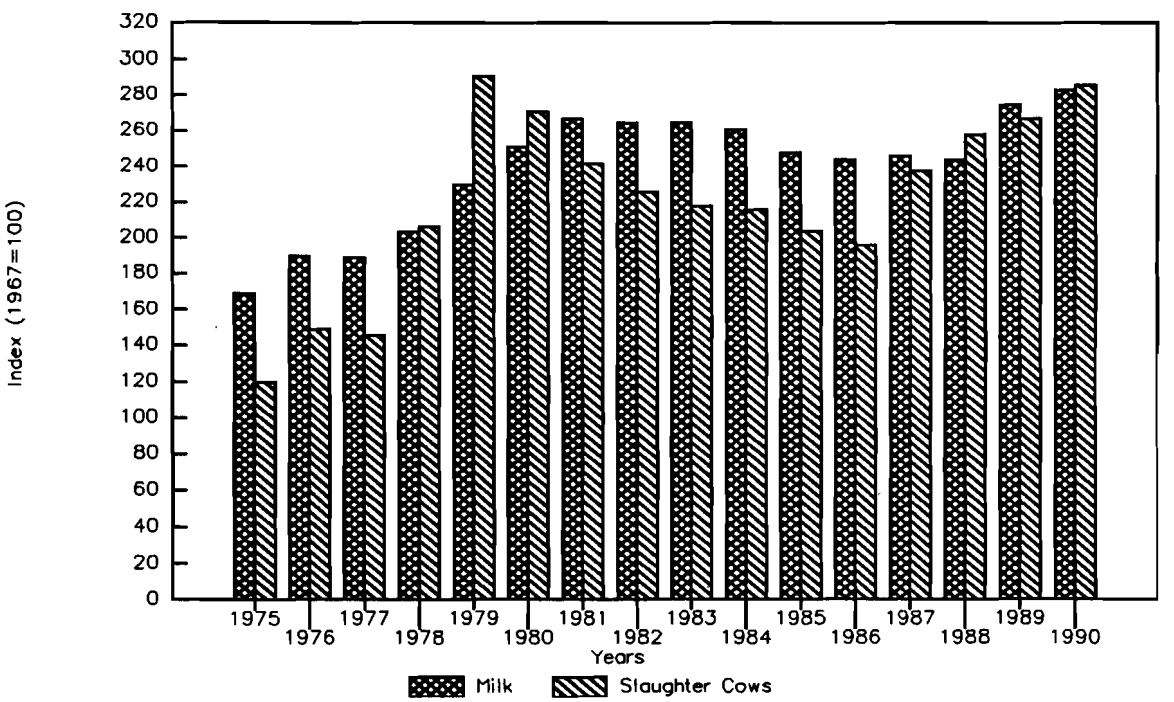
Table A1. PRICES RECEIVED BY NEW YORK DAIRY FARMERS, 1975-1990

Year	All Milk ($/cwt)	Slaughter Cows ($/cwt)
1975	8.75	20.60
1976	9.83	25.40
1977	9.75	25.00
1978	10.50	35.30
1979	11.90	49.80
1980	13.00	46.30
1981	13.80	41.30
1982	13.70	38.60
1983	13.70	37.20
1984	13.50	36.90
1985	12.80	34.90
1986	12.60	33.60
1987	12.70	40.70
1988	12.60	44.10
1989	14.20	45.70
1990	14.60	48.90

Monthly Farm Price of Milk	($/cwt)	
	1989	1990
January	14.30	16.60
February	13.90	15.60
March	13.30	14.60
April	12.80	13.90
May	12.60	13.90
June	12.60	14.30
July	13.30	15.10
August	14.10	15.50
September	15.10	15.50
October	16.00	14.20
November	16.70	13.50
December	16.90	12.20

SOURCE: NYCRS, New York Crop and Livestock Report.

Chart A1. Prices Received by New York Dairy Farmers, 1975-1990



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.

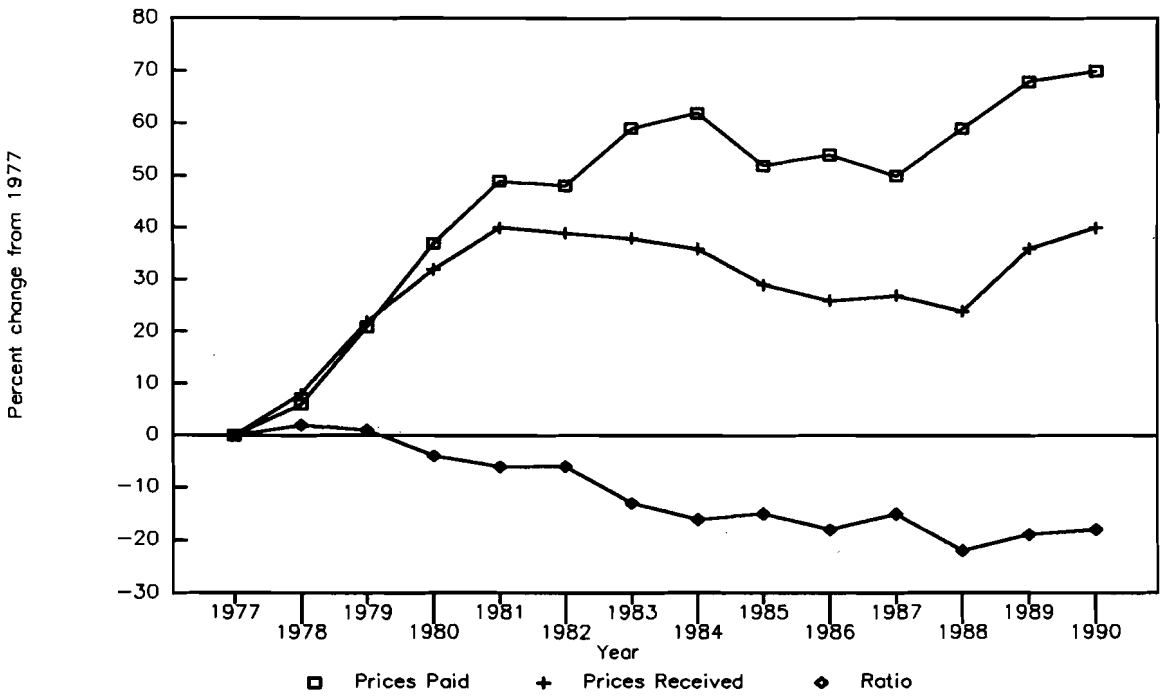
Table A2. PRICES PAID BY NEW YORK FARMERS FOR SELECTED ITEMS, 1980-1990

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)
1980	179.60	259	52.50	1.030	13,400	3.12
1981	193.70	275	60.00	1.310	14,900	3.26
1982	176.60	278	63.70	1.240	16,000	3.26
1983	192.60	249	64.60	1.140	17,200	3.52
1984	194.30	250	70.20	1.140	17,400	3.60
1985	164.20	238	67.30	1.080	16,800	4.01***
1986	162.90	200**	65.60	0.840**	16,600	4.41***
1987	152.80**	190**	64.90	0.765**	16,700	4.60***
1988	180.80**	208**	64.20	0.810**	17,150	5.02***
1989	188.50**	227**	71.40	0.828**	17,350	5.25***
1990	176.75**	215**	69.90	1.080**	17,950	5.52***

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

The table above shows average prices of selected goods and services used on New York dairy farms. Chart A2 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, and 1990.

Chart A2. Ratio of Prices Received for Milk and Prices Paid by New York Dairy Farmers, 1977-1990



SOURCE: NYCRS, New York Agricultural Statistics.

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 February (April for 1982-85), and an index of the real estate prices.

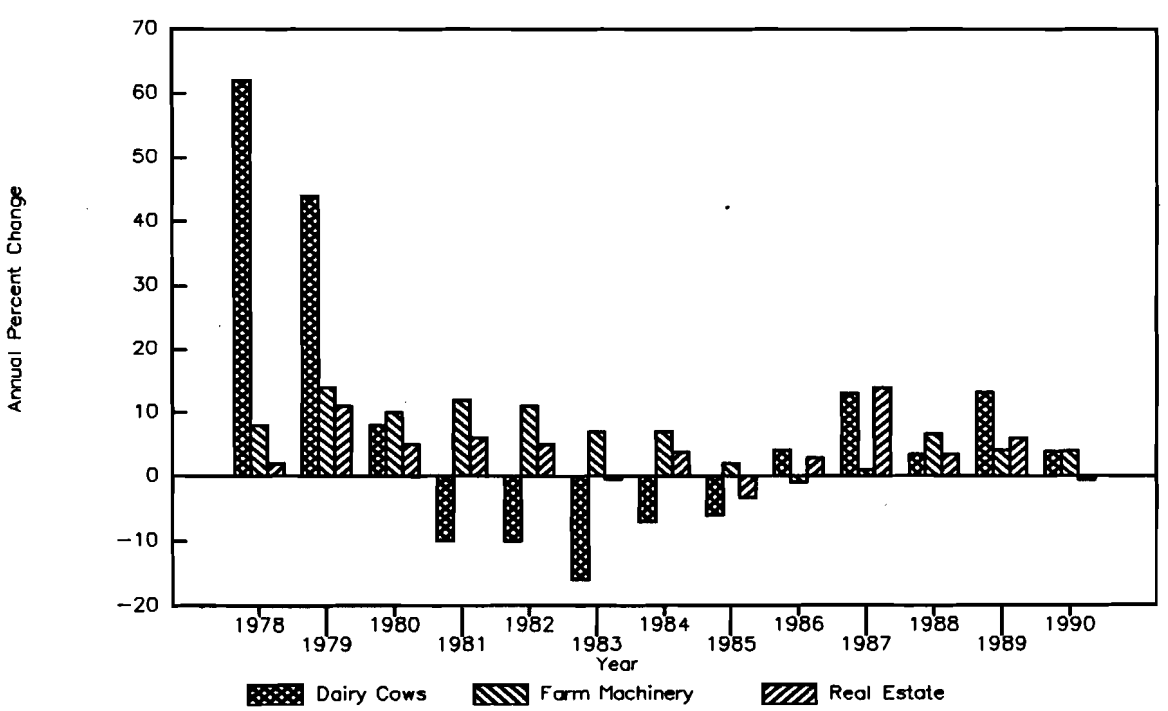
Table A3. VALUES OF NEW YORK DAIRY FARM INVENTORY ITEMS, 1977-1990

	Dairy Cows		Machinery*	Farm Real Estate	
Year	Value/Head	1977=100	1977=100	Value/Acre	1977=100
1977	$ 495	100	100	$587	100
1978	800	162	109	600	102
1979	1,150	232	121	670	114
1980	1,240	251	134	720	123
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	179	843	144
1987	870	176	181	960	164
1988	900	182	193	993	169
1989	1,020	206	201	1,053	179
1990	1,060	214	209	1,042	178

SOURCE: NYCRS, New York Agricultural Statistics. USDA, ASB, Agricultural Prices. USDA, ERS, Farm Real Estate Market Developments Outlook and Situation. *United States average.

Dairy cow prices turned up in 1986 after declining for five consecutive years. The December 1990 value per head averaged $40 higher than in December 1989. New machinery prices have increased since 1977 with a slight decline in 1986. The 1990 machinery prices increased 4.0 percent over the 1989 level. Farm real estate values declined slightly in 1990.

Chart A3. Annual Changes in Dairy Cow, Farm Machinery, and Farm Real Estate Values, New York Dairy Farms, 1977-1990



Other Agricultural Economics Research Publications

No. 90-10	Organic Field Crop Production, A Review of the Economic Literature	Wayne A. Knoblauch Rebecca Brown Martin Braster
No. 90-11	Dairy Farm Management Business Summary, New York, 1989	Stuart F. Smith Wayne A. Knoblauch Linda D. Putnam
No. 90-12	Strategic Directions in Supermarket Deli/Prepared Foods	John W. Allen Edward W. McLaughlin Thomas R. Pierson
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