



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

JULY 2003

E.B. 2003-08



**DAIRY FARM  
BUSINESS SUMMARY**

**NEW YORK  
LARGE HERD  
FARMS,  
300 COWS  
OR LARGER,  
2002**

Jason Karszes  
Wayne A. Knoblauch  
Linda D. Putnam

***PARTICIPANT COPY***

Department of Applied Economics and Management  
College of Agriculture and Life Sciences  
Cornell University, Ithaca, New York 14853-7801

**2002 DAIRY FARM BUSINESS SUMMARY**  
**LARGE HERD DAIRY FARMS**  
**300 Cows or Larger**

**Table of Contents**

	<u>Page</u>
INTRODUCTION.....	1
Program Objectives.....	1
Format.....	1
PROGRESS OF THE FARM BUSINESS.....	2
TOP 20 PERCENT COMPARISON TO AVERAGE AND FACTORS CONCERNING DAIRY ENTERPRISE, AND PARLOR EFFICIENCY.....	5
SUPPLEMENTARY INFORMATION.....	8
SUMMARY AND ANALYSIS OF THE FARM BUSINESS.....	11
Business Characteristics.....	11
Income Statement.....	11
Profitability Analysis.....	14
Farm and Family Financial Status.....	16
Statement of Owner Equity.....	20
Cash Flow Statement.....	21
Repayment Analysis.....	23
Cropping Analysis.....	26
Dairy Analysis.....	28
Cost of Producing Milk.....	31
Capital and Labor Efficiency Analysis.....	32
Labor Cost Evaluation.....	33
CONDENSED SUMMARY AND SELECTED BUSINESS FACTORS.....	35
INCOME AND EXPENSE PROFILES BY HERD SIZE.....	37
FARM BUSINESS CHART.....	43
IDENTIFY AND SET GOALS.....	47
GLOSSARY AND LOCATION OF COMMON TERMS.....	49
INDEX.....	53

# 2002 DAIRY FARM BUSINESS SUMMARY LARGE HERD DAIRY FARMS

## INTRODUCTION

Dairy farmers throughout New York state have been participating in Cornell Cooperative Extension Farm Business Summary and Analysis Programs since the early 1950's. Managers of each participating farm business receive a comprehensive summary and analysis of the farm business.

Larger farms employ different technologies and management systems, and thus, achieve different efficiencies than smaller farms. This makes comparisons of a large farm's performance to the average of farms of all sizes not as meaningful as comparing to the average of similar sized farms. This report contains a summary and analysis of dairy farms with 300 or more cows. In addition, farms are sorted into three categories for many comparisons, 300 to 400 cows, 401 to 599 cows, and 600 and more cows per farm.

Farm managers should determine their business performance and then compare it with that of other similar farms. In this manner, strengths and areas for improvement can be identified. A goal that many managers set is to strive to be in the top 20 percent of farms for many of the production and financial benchmarks. Each manager should select and then revise annually the goals which their business strives to achieve.

### **Program Objective**

The primary objective of the Dairy Farm Business Summary, DFBS, is to help farm managers improve the business and financial management of their dairy farm through appropriate use of historical farm data and the application of modern farm business analysis techniques. This information can also be used to track changes within the business, establish goals that will enable the business to better meet its objectives, compare the performance of the farm to other dairy producers, and establish a basis for financial projection of planned changes within the business.

### **Format**

This report is comprised of six sections. The first section charts the progress of the large herd farm business over two years. Fifty-nine of the large herd farms participated in the summary the last two years. The averages of selected business factors are presented for these farms and the changes that occurred from 2001 to 2002 are calculated.

The second section contains charts for additional analysis of large herd farms. The top 20 percent large farms (by rate of return on assets without appreciation) are compared to the average for all 62 large herd farms that participated in the 2002 DFBS program. Also presented is information concerning dairy enterprise efficiency, and milking parlor efficiency.

The summary and analysis section lists the average data for the 62 large herd farms that participated in the 2002 DFBS program. The format follows that of the individual farm DFBS printout and contains a brief explanation of each table and chart with comparisons to the top 20% large farms.

The fourth section presents a condensed summary and selected business factors for farms with 300-400 cows, 401-599 cows, and farms with 600 and more cows.

The fifth section contains the income and expense profiles for the 300-400 cow farms, 401-599 cow farms, and 600 and more cow farms on a per cow and per cwt. of milk basis.

The sixth section contains business charts for key measures of farm performance.

---

<sup>1</sup>The large herd summary is comprised of farms with 300 or more cows. Albany, Cayuga, Chautauqua, Chenango, Clinton, Erie, Genesee, Jefferson, Lewis, Livingston, Madison, Montgomery, Niagara, Oneida, Ontario, Orleans, Otsego, Rensselaer, St. Lawrence, Saratoga, Washington, Wayne and Wyoming counties had farms of this size participating in 2002. This report was written by Jason Karszes, Senior Extension Associate, Pro-Dairy and Wayne A. Knoblauch, Professor, Farm Management. Linda Putnam was in charge of data preparation. Faye Butts prepared the publication. Data were collected by Cornell Cooperative Extension educators across the state. We also acknowledge the cooperation of Western New York and First Pioneer Farm Credit Associations for their assistance in data collection.

## PROGRESS OF THE FARM BUSINESS

The 2002 business year for the New York State dairy industry saw the continuation of the wide fluctuations from year to year. Milk prices decreased significantly from the past year and resulted in the lowest prices in the last ten years. Growing conditions also provided challenges this year, starting out extremely wet and then becoming a drought by the end of the summer. The combination of these factors led to a significant decrease in farm profitability and the average farm in this report saw a decrease in net worth in 2002.

For both 2001 and 2002, 59 farms that averaged more than 300 cows in New York participated in the Dairy Farm Business Summary Program (DFBS), administered by Cornell Cooperative Extension and Cornell University. The table on the following page shows selected factors from the 59 farms that participated in the DFBS project each of the last two years.

Comparing your business' performance with average data from these DFBS dairy farms can help you establish goals for your business. It is equally important to determine the progress your business has made over the past two or three years, to compare this progress to your goals, and to set goals for the future.

**Milk Income.** Gross milk prices decreased 18.7 percent, or \$2.98 per hundredweight. Milk marketing expenses decreased a penny to \$0.57 per hundredweight. These two changes led to a decrease of 19.4 percent in net milk price received on farm, averaging \$12.38 per hundredweight, the lowest in the last ten years. Primarily due to the decent growing conditions in 2001, forage quality was improved from previous years and milk production rebounded, increasing 2.3 percent to 23,223 pounds per cow. With milk production increasing, coupled with the decrease in milk price, gross milk income per cow decreased 14.9 percent to \$3,007. These farms continued to add cows and increased herd size by 42 cows, or a 6.7 percent increase, which led to a 9.3 percent increase in the milk marketed off the farm during the year. The combination of increased herd size and increased milk production was not enough to offset the decrease in milk price and the gross milk sales per farm decreased by \$252,490, a decrease of 11.2 percent. While the wet spring led to increased hay yields of 3.6 tons of dry matter per acre, the drought impacted the corn yield, which fell 7.2 percent to 15.5 tons as fed per acre.

**Cost control.** With the increase in herd size, worker equivalent increased by 5.1 percent. With this increase being lower than the increase in herd size, labor efficiency increased by 3.9 percent, with milk sold per worker equivalent averaging 1,094,761 pounds. While labor efficiency continued to increase, hired labor costs increased at a slower rate. Hired labor costs per worker equivalent increased 2.5 percent and hired labor costs per hundredweight of milk increased 0.8 percent, an increase of \$0.02 per hundredweight. The increase in labor efficiency offset the increase in labor costs per worker, allowing the cost per hundredweight to stay relatively flat.

With milk production increasing, these farms were able to spend less on purchased grain and concentrates. Grain and concentrate expenses per hundredweight decreased 3.8 percent to \$3.84 per hundredweight, a decrease of \$0.15 per hundredweight.

Along with the decrease in purchased feed costs, machinery repairs, machinery hire, and building repairs also decreased, reflecting the tight cash flow caused by milk price. While debt levels increased significantly (\$2,899 to \$3,075, a 6.1 percent increase), with interest rates falling to historical lows, interest paid averaged \$0.61 per hundredweight, a decrease of \$0.13 per hundredweight. All things considered, total farm operating costs per hundredweight decreased 4.3 percent to \$13.21 per hundredweight.

**Large Decrease in Earnings.** While the average farm decreased costs by 60 cents and increased both milk production and herd size, these only soften the blow of the large decrease in milk price, and these farms showed large decreases in earnings on the farm. Net farm income without appreciation decreased 85.1 percent to \$54,642. Net farm income with appreciation decreased 73.3 percent to \$156,603. The appreciation in 2002 is due primarily to the farms maintaining values for buildings and machinery, even though they are a year older.

- Labor and management income per operator/manager decreased 124 percent to \$-26,783.
- Rate of return to all capital without appreciation decreased 88.9 percent to 1.1 percent. Rate of return on equity capital without appreciation decreased 116 percent to 2.1 percent.
- Farm net worth decreased by 2.2 percent from the previous year.
- Debt to asset ratio rose from 0.45 to 0.49.

Overall, 2002 was a challenging year for the 300 cow and larger farms. While, on average, profits decreased significantly from 2001, the changes on individual farms varied, with some farms actually doing better in 2002 than in 2001. The importance of trend analysis is to identify what areas changed, ask why they changed, and look at what you can do differently in the future to influence that change. If you would like help in developing and looking at the trends in your business, contact your local extension service and become involved in a financial management education program.

**PROGRESS OF THE FARM BUSINESS**  
Same 59 Large Herd Dairy Farms, 2001 & 2002

Selected Factors	Average of 59 Farms		Percent Change
	2001	2002	
<u>Size of Business</u>			
Average number of cows	623	665	6.7
Average number of heifers	472	512	8.5
Milk sold, lbs.	14,133,957	15,447,072	9.3
Worker equivalent	13.42	14.11	5.1
Total tillable acres	1,196	1,264	5.7
<u>Rates of Production</u>			
Milk sold per cow, lbs.	22,691	23,223	2.3
Hay DM per acre, tons	3.4	3.6	5.9
Corn silage per acre, tons	16.7	15.5	-7.2
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	46	47	2.2
Milk sold/worker, lbs.	1,053,201	1,094,761	3.9
Hired labor cost/cwt.	\$2.60	\$2.62	0.8
Hired labor cost/worker	\$33,890	\$34,740	2.5
Hired labor cost as % of milk sales	16.3%	20.2%	23.9
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	25%	30%	20.0
Grain & conc. per cwt. milk	\$3.99	\$3.84	-3.8
Dairy feed & crop expense per cwt. milk	\$4.95	\$4.78	-3.4
Labor & mach. costs/cow	\$1,216	\$1,189	-2.2
Total farm operating costs per cwt. sold	\$13.81	\$13.21	-4.3
Interest costs per cwt. milk	\$0.84	\$0.61	-27.4
Milk marketing costs per cwt. milk sold	\$0.58	\$0.57	-1.7
Operating cost of producing cwt. of milk	\$12.00	\$11.16	-7.0
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$6,253	\$6,388	2.2
Mach. & equip. per cow	\$1,103	\$1,113	0.9
Asset turnover ratio	0.72	0.58	-19.4
<u>Income Generation</u>			
Gross milk sales per cow	\$3,615	\$3,007	-14.9
Gross milk sales per cwt.	\$15.93	\$12.95	-18.7
Net milk sales per cwt.	\$15.35	\$12.38	-19.4
Dairy cattle sales per cow	\$283	\$250	-11.7
Dairy calf sales per cow	\$43	\$33	-23.3
<u>Profitability</u>			
Net farm income w/o appreciation	\$367,640	\$54,642	-85.1
Net farm income w/appreciation	\$587,339	\$156,603	-73.3
Labor & mgt. income per operator/manager	\$109,008	\$-26,783	-124.6
Rate of return on equity capital w/o appreciation	12.8%	-2.1%	-116.4
Rate of return on all capital w/o appreciation	9.9%	1.1%	-88.9
<u>Financial Summary</u>			
Farm net worth, end year	\$2,277,154	\$2,227,772	-2.2
Debt to asset ratio	0.45	0.49	8.9
Farm debt per cow	\$2,899	\$3,075	6.1

**RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT**  
Same 59 Large Herd Dairy Farms, 2001 & 2002

Item	2001		2002	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	623		665	
Cwt. of Milk Sold		141,340		154,471
<u>Accrual Operating Receipts</u>				
Milk	\$3,615	\$15.93	\$3,007	\$12.95
Dairy cattle	283	1.25	250	1.08
Dairy calves	43	0.19	33	0.14
Other livestock	7	0.03	6	0.03
Crops	57	0.25	57	0.24
Miscellaneous receipts	<u>115</u>	<u>0.51</u>	<u>190</u>	<u>0.82</u>
Total	\$4,120	\$18.16	\$3,544	\$15.25
<u>Accrual Operating Expenses</u>				
Hired labor	\$590	\$2.60	\$608	\$2.62
Dairy grain & concentrate	906	3.99	891	3.84
Dairy roughage	48	0.21	65	0.28
Nondairy feed	0	0.00	0	0.00
Machine hire, rent & lease	98	0.43	75	0.32
Machine repairs & vehicle expense	147	0.65	132	0.57
Fuel, oil & grease	64	0.28	57	0.24
Replacement livestock	34	0.15	34	0.14
Breeding	45	0.20	48	0.21
Veterinary & medicine	126	0.55	134	0.58
Milk marketing	131	0.58	133	0.57
Bedding	52	0.23	55	0.24
Milking supplies	69	0.30	71	0.31
Cattle lease	9	0.04	8	0.04
Custom boarding	78	0.34	82	0.35
bST expense	67	0.30	67	0.29
Other livestock expense	27	0.12	31	0.13
Fertilizer & lime	72	0.32	53	0.23
Seeds & plants	44	0.19	46	0.20
Spray & other crop expense	53	0.23	55	0.24
Land, building & fence repair	54	0.24	40	0.17
Taxes	35	0.16	36	0.16
Real estate rent/lease	67	0.29	72	0.31
Insurance	25	0.11	31	0.14
Utilities	65	0.29	66	0.28
Interest paid	190	0.84	142	0.61
Miscellaneous	<u>39</u>	<u>0.17</u>	<u>37</u>	<u>0.16</u>
Total Operating Expenses	\$3,134	\$13.81	\$3,069	\$13.21
Expansion livestock	93	0.41	59	0.25
Machinery depreciation	162	0.71	167	0.72
Real Estate depreciation	<u>140</u>	<u>0.62</u>	<u>166</u>	<u>0.71</u>
Total Expenses	\$3,529	\$15.56	\$3,461	\$14.90
Net Farm Income without appreciation	590	2.60	82	0.35

**TOP 20 PERCENT COMPARISON TO AVERAGE AND FACTORS CONCERNING  
DAIRY ENTERPRISE AND PARLOR EFFICIENCY**

In 2002, 25 of the 62 farms with over 300 cows filled out a supplementary data collection form in order to gain information on some additional management concerns of dairy farmers. Reported below are the averages and business charts for these factors. Each category is sorted independently, therefore farms that are the highest or lowest in one column may not necessarily be the highest or lowest in the next column. Please note that this is only descriptive data from 25 farms and only represents these 25 farms. See the Glossary beginning on page 49 for definitions of the factors in the table below.

On the following page selected factors for the top 20 percent of large herd farms as sorted by rate of return on all assets without appreciation are compared to the same factors for the average of all 62 farms over 300 cows that participated in the DFBS project in 2002. It is useful to see what factors are different between the average and the top 20% and to ask questions about where your own business fits into these factors.

Eleven farms that were in the top 20 percent in 2002 were also in the summary in 2001. The table on page 7 shows income and expenses for these farms for both 2001 and 2002. Identifying the changes that occurred on these farms provides insight into what happened on the most profitable farms. How your farm changed in comparison should provide valuable management information.

**SUPPLEMENTAL FARM BUSINESS CHART  
25 Large Herd Farms, 2002**

Milking System Only			
Quintile	Pounds of Milk Harvested Per Hour of Milking Labor	Total Cows Milked Per Hour of Milking Labor Per Day	Pounds of Milk Harvested per Ma- chine Per Year
Average of Highest Quintile	2,728	50	807,781
↓	2,001	31	581,445
↓	1,613	26	462,801
↓	1,392	22	395,730
Average of Lowest Quintile	1,155	19	266,990
Overall Average	1,778	30	502,950

Dairy Enterprise Only			
Quintile	Worker Equiva- lents	Cows per Worker Equivalent	Pounds Sold per Worker Equivalent
Average of Highest Quintile	10.96	194	4,118,336
↓	6.45	147	3,285,233
↓	4.54	114	2,596,772
↓	3.37	96	2,276,758
Average of Lowest Quintile	2.30	78	1,712,555
Overall Average	5.53	126	2,797,931



**TOP 20 PERCENT VS. AVERAGE**  
62 Large Herd Dairy Farms, 2002

Selected Factors	Average 2002	Top 20% 2002	Percent Difference
<u>Size of Business</u>			
Average number of cows	661	585	-11.5
Average number of heifers	508	467	-8.1
Milk sold, lbs.	15,356,885	13,828,017	-10.0
Worker equivalent	14.08	11.65	-17.3
Total tillable acres	1,247	1,150	-7.8
<u>Rates of Production</u>			
Milk sold per cow, lbs.	23,247	23,628	1.6
Hay DM per acre, tons	3.56	3.53	-0.8
Corn silage per acre, tons	15.57	15.17	-2.6
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	47	50	6.4
Milk sold/worker, lbs.	1,090,688	1,186,954	8.8
Hired labor cost/cwt.	\$2.61	\$2.34	-10.3
Hired labor cost/hired worker	\$34,513	\$33,537	-2.8
Hired labor cost as % of milk sales	20.2%	18.3%	-9.4
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	30%	29%	-3.3
Grain & conc. per cwt. milk	\$3.83	\$3.74	-2.4
Dairy feed & crop expense per cwt. milk	\$4.80	\$4.63	-3.5
Labor & mach. costs/cow	\$1,185	\$1,045	-11.8
Total farm operating costs per cwt. sold	\$13.23	\$12.25	-7.4
Interest costs per cwt. milk	\$0.61	\$0.49	-19.7
Milk marketing costs per cwt. milk sold	\$0.58	\$0.60	3.5
Operating cost of producing cwt. of milk	\$11.18	\$10.11	-9.6
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$6,340	\$5,878	-7.3
Mach. & equip. per cow	\$1,096	\$974	-11.1
Asset turnover ratio	0.58	0.64	10.3
<u>Income Generation</u>			
Gross milk sales per cow	\$3,006	\$3,032	0.9
Gross milk sales per cwt.	\$12.94	\$12.83	-0.9
Net milk sales per cwt.	\$12.36	\$12.23	-1.1
Dairy cattle sales per cow	\$251	\$282	12.4
Dairy calf sales per cow	\$32	\$27	-15.6
<u>Profitability</u>			
Net farm income without appreciation	\$53,087	\$238,864	350.0
Net farm income with appreciation	\$153,807	\$317,701	106.6
Labor & mgt. income per oper./manager	\$-27,128	\$71,925	-365.1
Rate of return on equity capital w/o appreciation	-2.1%	7.8%	-471.4
Rate of return on all capital w/o appreciation	1.1%	6.6%	500.0
<u>Financial Summary</u>			
Farm net worth, end of year	\$2,202,519	\$2,113,370	-4.1
Debt to asset ratio	0.48	0.41	-14.6
Farm debt per cow	\$3,051	\$2,433	-20.3

**RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT**  
Same 11 Top 20% Large Herd Dairy Farms, 2001 & 2002

Item	2001		2002	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	552		602	
Cwt. Of Milk Sold		125,176		143,109
<u>Accrual Operating Receipts</u>				
Milk	\$3,575	\$15.77	\$3,053	\$12.84
Dairy cattle	265	1.17	282	1.19
Dairy calves	41	0.18	28	0.12
Other livestock	-1	0.00	4	0.02
Crops	96	0.42	66	0.28
Miscellaneous receipts	109	0.48	213	0.90
Total	<u>\$4,085</u>	<u>\$18.02</u>	<u>\$3,647</u>	<u>\$15.34</u>
<u>Accrual Operating Expenses</u>				
Hired labor	\$600	\$2.65	\$574	\$2.41
Dairy grain & concentrate	903	3.98	885	3.72
Dairy roughage	40	0.17	44	0.18
Nondairy feed	0	0.00	0	0.00
Machine hire, rent & lease	88	0.39	56	0.24
Machine repairs & vehicle expense	154	0.68	133	0.56
Fuel, oil & grease	58	0.26	55	0.23
Replacement livestock	58	0.26	22	0.09
Breeding	51	0.23	48	0.20
Veterinary & medicine	144	0.64	144	0.61
Milk marketing	122	0.54	142	0.60
Bedding	39	0.17	48	0.20
Milking supplies	64	0.28	66	0.28
Cattle lease	4	0.02	4	0.02
Custom boarding	67	0.30	74	0.31
bST expense	74	0.33	73	0.31
Other livestock expense	34	0.15	33	0.14
Fertilizer & lime	64	0.28	44	0.18
Seeds & plants	44	0.19	44	0.19
Spray & other crop expense	55	0.24	50	0.21
Land, building & fence repair	68	0.30	60	0.25
Taxes	31	0.14	27	0.11
Real estate rent/lease	73	0.32	58	0.24
Insurance	22	0.10	22	0.09
Utilities	56	0.25	57	0.24
Interest paid	141	0.62	110	0.46
Miscellaneous	39	0.17	28	0.12
Total Operating Expenses	<u>\$3,093</u>	<u>\$13.64</u>	<u>\$2,899</u>	<u>\$12.20</u>
Expansion livestock	92	0.41	85	0.36
Machinery depreciation	149	0.66	125	0.53
Real Estate depreciation	93	0.41	113	0.48
Total Expenses	<u>\$3,427</u>	<u>\$15.11</u>	<u>\$3,224</u>	<u>\$13.56</u>
Net Farm Income without appreciation	659	2.90	423	1.78

### **Supplementary Information**

Each year DFBS cooperators volunteer to complete supplementary data collection forms looking at selected management aspects of the business or specific research areas being studied. This is in addition to the normal DFBS data collection form. Two areas that were examined this year were the source of dairy replacements and the breakdown of the milk income and marketing expenses. Following is a summary of this information.

#### **SOURCE OF DAIRY REPLACEMENTS** 25 Large Herd Dairy Farms, 2002

<u>Animals Entering Herd</u>	Average
Number calving in 2002 for first time	230
Animals purchased, % <sup>1</sup>	10.4
Animals raised by farm, % <sup>2</sup>	90.6
 <u>Current Heifer Inventory</u>	
Raised on dairy, %	77
Raised by a custom grower, %	23

<sup>1</sup> Animals purchased are animals purchased from a different farm and were not the farm's genetics.

<sup>2</sup> Animals raised by farm are animals that were born on the farm and entered the herd, which includes animals raised by the farm or custom grower.

On the average farm, 230 animals calved for the first time in 2002. The breakdown on the source of these animals was 10.4 percent purchased and 90.6 percent raised by the farm. Of the current heifer inventory, 77 percent were raised on the dairy and 23 percent were being raised by a custom grower. There is increased interest in evaluating the dairy replacement enterprise.

### **Milk Income and Marketing Expense Breakdown**

Starting January 1<sup>st</sup>, 2000, the northeast switched to multiple components pricing, which changed the format of the milk check and how farmers received payment for their milk. To examine the breakdown of the gross milk income and the marketing expenses, 44 farms filled out a detailed form for all the different sources of income for milk sales and the milk marketing expenses on an accrual basis. This information is reported in the following two tables. The tables are divided into six different areas, each representing a different area of income or expenses.

The first section looks at the value of the milk components on a per cwt. basis. The second area looks at the Producer Price Differential. The third area looks at the premiums a farm receives. Any premiums not specifically noted as quality or volume related are included in market premiums. The fourth area looks at the expenses associated with marketing milk. A new line item in this section is the expenses associated with utilizing forward contracting or hedging programs to market milk, such as commission or broker fees. The fifth area is income from the compact program or from forward contracting or hedging programs. The sixth area is the patronage dividends or refunds from the milk cooperatives. Equity purchased in the milk cooperative utilizing a monthly deduction from the milk check or a percent of the patronage dividend is treated as a capital purchase and is not a milk marketing expense. The cumulative total for these six areas is the net price received on farms. For participating farms, the net farm price can be found on page 10 of the DFBS report.

The table on page 9 reports the averages for these different areas. The table on page 10 contains the range for each of the individual lines of the report. This table is in farm business chart format with each item sorted independently and ranked by fifths. Numbers for the different areas will not add to the totals for that quintile or to the net price received because the highest farms for each item were averaged, not the same farms throughout the six areas. This table shows the range of income and expenses received by farms for all the different areas.

For your individual farm, compare your accrual numbers following this same format to look at how you compare to other farms in your region and to identify possible areas to generate additional revenue.

**AVERAGE<sup>3</sup> MILK INCOME AND MARKETING REPORT**  
44 Large Herd Dairy Farms, 2002

	Pounds	Percent	Price/Pound	Total	\$/Cwt of Milk
<b>BASE FARM PRICE</b>					
Butterfat	592,096.77	3.63%	\$ 1.188	\$ 704,104.14	\$ 4.31
Protein	475,717.57	2.94%	\$ 1.975	\$ 938,124.70	\$ 5.80
Solids	931,491.80	5.72%	\$ 0.060	\$ 55,824.08	\$ 0.34
<b>Total Component Contribution</b>					<b>\$ 10.46</b>
<b>PPD</b>	16,276,770.66		\$ 1.353	\$ 218,581.90	<b>\$ 1.35</b>
<b>Base Farm Price</b>					<b>\$ 11.81</b>
<b>Premiums</b>					
Quality				\$ 30,900.10	\$ 0.19
Volume				\$ 55,409.39	\$ 0.34
Market Premiums				\$ 61,178.72	\$ 0.29
<b>Total Premiums</b>					<b>\$ 0.83</b>
<b>BASE FARM PRICE + PREMIUM</b>					<b>\$ 12.63</b>
<b>Deductions</b>					
Promo				\$ 23,852.14	\$ 0.14
Hauling + Stop Charges.				\$ 63,435.18	\$ 0.42
Market Fees & Coop Dues				\$ 8,256.32	\$ 0.05
Futures/Contract Fees				\$ 0.00	\$ 0.00
<b>Total Deductions</b>					<b>\$ 0.61</b>
<b>BASE FARM PRICE + PREMIUMS - DEDUCTIONS</b>					<b>\$ 12.03</b>
<b>Marketing Programs</b>					
Compact				\$ 0.00	\$ 0.00
Futures Contracts, Forward Contracting, Etc.				\$ 39,173.30	\$ 0.13
<b>Total Marketing Income</b>					<b>\$ 0.13</b>
<b>Patronage Dividends</b>				\$ 12,981.82	<b>\$ 0.11</b>
<b>NET PRICE RECEIVED ON FARM, ALL SOURCES</b>					<b>\$ 12.26</b>
<b>PPD - Hauling, per cwt.</b>					\$ 0.93
<b>PPD - Hauling + Market Premiums, per cwt.</b>					\$ 1.23

<sup>3</sup>Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals. However, detail in the “\$/Cwt of Milk” column will result in the totals.

**MILK PRICE INFORMATION BY QUINTILE<sup>4</sup>**  
 (Each Category Sorted Independently)  
 44 Large Herd Dairy Farms, 2002

	Lowest Quintile	←	→	Highest Quintile	
Butterfat, %	3.48	3.58	3.64	3.68	3.78
Protein, %	2.83	2.91	2.93	2.97	3.05
Other Solids, %	5.65	5.71	5.73	5.75	5.78
Butterfat, \$ per Cwt.	4.11	4.25	4.34	4.39	4.55
Protein, \$ per Cwt.	5.62	5.73	5.79	5.85	6.09
Other solids, \$ per Cwt.	0.32	0.34	0.34	0.35	0.99
<b>Total Component Value per Cwt.</b>	<b>\$ 10.16</b>	<b>\$ 10.36</b>	<b>\$ 10.45</b>	<b>\$ 10.58</b>	<b>\$ 11.52</b>
PPD, \$ per Cwt.	1.19	1.23	1.27	1.38	1.72
<b>Base Farm Price per Cwt.</b>	<b>\$ 11.47</b>	<b>\$ 11.65</b>	<b>\$ 11.77</b>	<b>\$ 11.96</b>	<b>\$ 13.01</b>
Quality, \$ per Cwt.	.04	.13	.20	.25	.35
Volume, \$ per Cwt.	.04	.20	.27	.42	.76
Market premium, \$ per Cwt.	.01	.09	.18	.36	.83
Total Premium, \$ per Cwt.	.38	.68	.87	.99	1.22
<b>Base Farm Price + Premiums per Cwt.</b>	<b>\$ 12.06</b>	<b>\$ 12.37</b>	<b>\$ 12.64</b>	<b>\$ 12.88</b>	<b>\$ 14.04</b>
Promotion, \$ per Cwt.	.12	.15	.15	.15	.16
Hauling, \$ per Cwt.	.25	.35	.38	.43	.67
Market fees & coop dues per Cwt.	.00	.01	.05	.06	.11
Futures/contract fees, \$ per Cwt.	.00	.00	.00	.00	.00
<b>Total Marketing Expenses per Cwt.</b>	<b>\$ .43</b>	<b>\$ .54</b>	<b>\$ .59</b>	<b>\$ .63</b>	<b>\$ .85</b>
<b>Base + Premiums – Deductions per Cwt.</b>	<b>\$ 11.49</b>	<b>\$ 11.84</b>	<b>\$ 12.02</b>	<b>\$ 12.22</b>	<b>\$ 13.39</b>
Compact, \$ per Cwt.	.00	.00	.00	.00	.00
Futures contract, forward contracting, \$ per Cwt.	.00	.00	.00	.00	.63
<b>Total Marketing Income, \$ per Cwt.</b>	<b>\$ .00</b>	<b>\$ .00</b>	<b>\$ .00</b>	<b>\$ .00</b>	<b>\$ .63</b>
<b>Patronage Dividends, \$ per Cwt.</b>	<b>\$ .00</b>	<b>\$ .00</b>	<b>\$ .00</b>	<b>\$ .12</b>	<b>\$ .41</b>
<b>Net Price Received From All Sources, \$ per Cwt.</b>	<b>\$ 11.67</b>	<b>\$ 11.98</b>	<b>\$ 12.12</b>	<b>\$ 12.35</b>	<b>\$ 13.40</b>

<sup>4</sup>Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals.

## SUMMARY AND ANALYSIS OF THE FARM BUSINESS

### **Business Characteristics**

Planning the optimal management strategies is a crucial component of operating a successful farm. Various combinations of farm resources, enterprises, business arrangements, and management techniques are used by the dairy farmers in this region. The following table shows important farm business characteristics and the number of farms with each characteristic.

#### BUSINESS CHARACTERISTICS 62 Large Herd Dairy Farms, 2002

Type of Farm	Number	Type of Barn	Number
Dairy	62	Stanchion/Tie-Stall	0
		Freestall	59
		Combination	3
Type of Ownership	Number	Milking System	Number
Owner	59	Pipeline	0
Renter	3	Herringbone Conventional	20
		Herringbone Rapid Exit	12
		Parallel	24
		Parabone	3
		Rotary	1
		Other	2
Type of Business	Number	Milking Frequency	Number
Single proprietorship	15	2x/day	14
Partnership	14	3x/day	42
Limited Liability Corporation	22	Other	6
Subchapter S Corporation	10		
Subchapter C Corporation	1		
Business Record System	Number	Production Records	Number
Account Book	3	Testing Service	51
Accounting Service	4	On-Farm System	7
On-Farm Computer	55	Other	0
Other	0	None	4
BST Usage	Number		
<25%	5		
25-75%	19		
>75%	30		
Stopped Use in 2002	0		
Not Used	8		

### **Income Statement**

In order for an income statement to accurately measure farm income, it must include cash transactions and accrual adjustments (changes in accounts payable, accounts receivable, inventories, and prepaid expenses).

Cash paid is the actual cash outlay during the year and does not necessarily represent the cost of goods and services actually used in 2002.

Change in inventory: Increases in inventories of supplies and other purchased inputs are subtracted in computing accrual expenses because they represent purchased inputs not actually used during the year. Decreases in purchased inventories are added to expenses because they represent inputs purchased in a prior year and used this year.

**CASH AND ACCRUAL FARM EXPENSES**  
62 Large Herd Dairy Farms, 2002

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 399,834		\$ -1,470 <<		\$ -93		\$ 401,211
<u>Feed</u>							
Dairy grain & concentrate	533,436		-40,214		14,024		587,674
Dairy roughage	45,181		619		2,327		46,889
Nondairy	153		0		0		153
<u>Machinery</u>							
Mach. hire, rent/lease	47,755		-541 <<		1,077		49,373
Mach. rep. & farm veh. exp	86,233		-456		1,088		87,777
Fuel, oil & grease	35,844		-1,195		1,130		38,168
<u>Livestock</u>							
Replacement livestock	22,735		0 <<		-7		22,729
Breeding	29,504		-1,163		777		31,443
Vet & medicine	87,566		-1,227		1,232		90,025
Milk marketing	87,759		0 <<		722		88,481
Bedding	34,007		-1,917		399		36,324
Milk supplies	45,353		-1,497		546		47,397
Cattle lease/rent	5,241		0 <		0		5,241
Custom boarding	50,876		-774 <<		552		52,202
bST expense	42,627		-1,104		473		44,204
Other livestock expense	19,198		-766		705		20,670
<u>Crops</u>							
Fertilizer & lime	32,744		-1,942		1,045		35,731
Seeds & plants	26,006		-4,975		-269		30,712
Spray, other crop exp.	32,095		-3,009		532		35,635
<u>Real Estate</u>							
Land/bldg./fence repair	26,294		73		127		26,348
Taxes	22,860		-142 <<		565		23,567
Rent & lease	44,948		-1,505 <<		171		46,625
<u>Other</u>							
Insurance	19,288		-1,226 <<		387		20,900
Utilities (farm share)	44,643		0 <<		40		44,683
Interest paid	93,700		-59 <<		-94		93,665
Miscellaneous	24,312		-201		-150		24,363
Total Operating Expenses	\$ 1,940,193		\$ -64,691		\$ 27,305		\$ 2,032,189
Expansion livestock	\$ 38,602		\$ 0 <<		\$ -560		\$ 38,042
Machinery depreciation							\$ 109,209
Building depreciation							\$ 107,121
Total Accrual Expenses							\$ 2,286,561

Change in prepaid expenses (noted above by <<) is a net change in non-inventory expenses that have been paid in advance of their use. If 2002 funds used to prepay 2003 leases exceed the amount of 2002 leases prepaid in 2001, the amount of this excess is subtracted to exclude it from 2002 accrual lease expenses. The excess prepaid lease is charged against the future year's business operation. A decrease in prepaid lease is added to accrual expenses because it represents use of resources during this year that were paid for in past years.

Change in accounts payable: An increase in accounts payable from beginning to end of year is added when calculating accrual expenses because these expenses were incurred (resources used) in 2002 but not paid for. A decrease is subtracted because the resource was used before 2002.

Accrual expenses are the costs of inputs actually used in this year's production. They are the total of cash paid, as well as changes in inventory, prepaid expenses, and accounts payable.

**CASH AND ACCRUAL FARM RECEIPTS**  
62 Large Herd Dairy Farms, 2002

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$2,007,441				\$ -20,396		\$ 1,987,045
Dairy cattle	84,353		\$ 80,750		784		165,888
Dairy calves	21,507				-27		21,480
Other livestock	5,334		292		13		5,639
Crops	17,540		19,844		-1,572		35,812
Government receipts	75,920		-110 <sup>5</sup>		2,351		78,162
Custom machine work	6,117				-272		5,845
Gas tax refund	401				-8		393
Other	<u>39,229</u>				154		39,383
Less nonfarm noncash cap.			<u>0</u> <sup>6</sup>				<u>0</u>
Total Receipts	\$2,257,843		\$ 100,776		\$ -18,972		\$ 2,339,648

<sup>5</sup> Change in advanced government receipts.

<sup>6</sup> Gifts or inheritances of cattle or crops included in inventory

Cash receipts include the gross value of milk checks received during the year plus all other payments received from the sale of farm products, services, and government programs. Nonfarm income is not included in calculating farm profitability.

Changes in inventory of assets produced by the business are calculated by subtracting beginning of year values from end of year excluding appreciation. Increases in livestock inventory caused by herd growth and/or quality are added, and decreases caused by herd reduction and/or quality are subtracted. Changes in inventories of crops grown are also included. An annual increase in advanced government receipts is subtracted from cash income because it represents income received in 2002 for the 2003 crop year in excess of funds earned for 2002. Likewise, a decrease is added to cash government receipts because it represents funds earned for 2002 but received in 2001.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. The January milk check for this December's marketings compared with the previous January's check is included as a change in accounts receivable.

Accrual receipts represent the value of all farm commodities produced and services actually generated by the farm business during the year.



### Profitability Analysis

Farm operators<sup>7</sup> contribute labor, management, and equity capital to their businesses and the combination of these resources, and the other resources used in the business, determines profitability. Farm profitability 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.

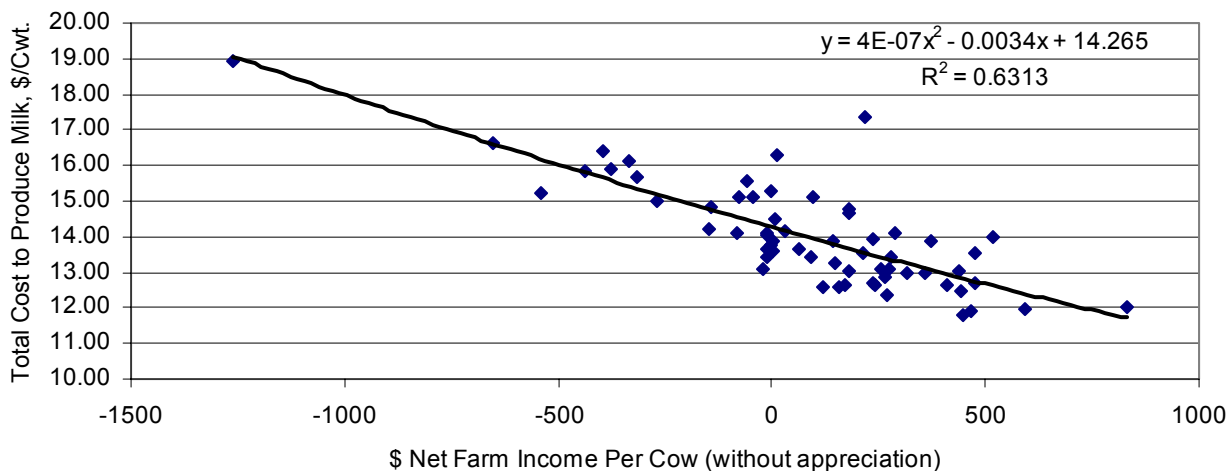
Net farm income is the return to the farm operators and other unpaid family members for their labor, management, and equity capital. It is the farm family's net annual return from working, managing, financing, and owning the farm business. This is not a measure of cash available from the year's business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

Net farm income is computed both with and without appreciation. Appreciation represents the change in values caused by annual changes in prices of livestock, machinery, real estate inventory, and stocks and certificates (other than Farm Credit). Appreciation is a major factor contributing to changes in farm net worth and must be included for a complete profitability analysis.

#### NET FARM INCOME 62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms		Average Top 20% <sup>8</sup> Farms	
	Total	Per Cow	Total	Per Cow
Total accrual receipts	\$ 2,339,648		\$ 2,116,939	
Appreciation: Livestock	-13,326		14,989	
Machinery	14,318		-1,578	
Real Estate	93,552		64,897	
Other Stock/Certificates	6,176		529	
Total Including Appreciation	\$ 2,440,368		\$ 2,195,776	
Total accrual expenses	2,286,561		1,878,075	
Net Farm Income (with appreciation)	\$ 153,807	\$233	\$ 317,701	\$543
Net Farm Income (w/o appreciation)	\$ 53,087	\$80	\$ 238,864	\$408

#### TOTAL COST TO PRODUCE MILK VS. NET FARM INCOME PER COW 62 Large Herd Dairy Farms, 2002



<sup>7</sup>Operators are the individuals who are integrally involved in the operation and management of the farm business. They are not limited to those who own the farm or are formal members of the partnership or corporation.

<sup>8</sup>Top 20% of large herd farms by rate of return on all assets without appreciation.

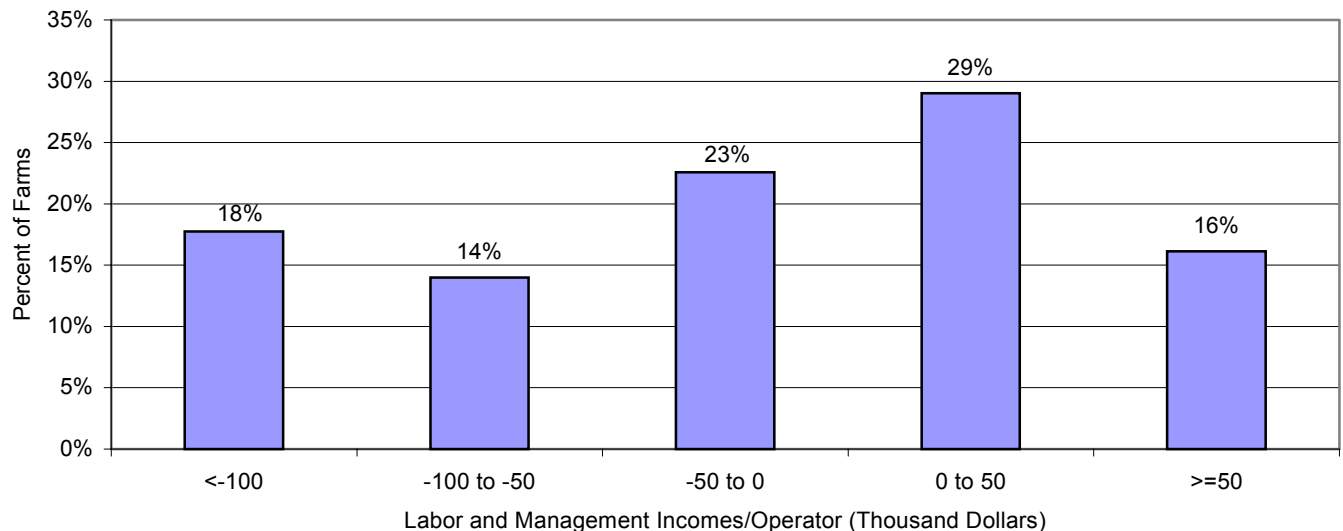
Labor and management income is the return which farm operators receive for their labor and management used in operating the farm business. Appreciation is not included as part of the return to labor and management because it results from ownership of assets rather than management of the farm business. Labor and management income is calculated by deducting a charge for unpaid family labor and the opportunity cost of using equity capital, at a real interest rate of five percent, from net farm income excluding appreciation. The interest charge of five percent 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**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	Average Top 20% Farms
Net farm income without appreciation	\$ 53,087	\$ 238,864
Family labor unpaid @ \$2,100 per month	- 2,730	- 2,730
Interest on \$2,217,049 (\$2,061,436 for top 20%) average equity capital @ 5% real rate	- 110,852	- 103,072
Labor & Management Income per Farm (2.23 operators/farm; 2.18 operators for top 20%)	\$ -60,495	\$ 133,062
Labor & Management Income per Operator/Manager	\$ -27,128	\$ 71,925

Labor and management income per operator averaged \$-27,128 on these 62 farms in 2002. Returns to labor and management were less than \$0 on 55 percent of the farms. Labor and management income per operator ranged from \$0 to \$50,000 on 29 percent of the farms while 16 percent showed labor and management incomes of \$50,000 or more per operator.

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR**  
62 Large Herd Dairy Farms, 2002



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 of operators' 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.

**RETURN ON EQUITY CAPITAL AND RETURN ON TOTAL CAPITAL**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	Average Top 20% Farms
Net farm income with appreciation	\$ 153,807	\$ 317,701
Family labor unpaid @ \$2,100 per month	- 2,730	- 2,730
Value of operators' labor & management	- 97,028	- 75,917
Return on equity capital with appreciation	\$ 54,049	\$ 239,054
Interest paid	+ 93,665	+ 67,421
Return on total capital with appreciation	\$ 147,714	\$ 306,475
Return on equity capital without appreciation	\$ -46,671	\$ 160,217
Return on total capital without appreciation	\$ 46,994	\$ 227,638
Rate of return on average equity capital:		
with appreciation	2.4%	11.6 %
without appreciation	-2.1%	7.8 %
Rate of return on average total capital:		
with appreciation	3.5%	8.9 %
without appreciation	1.1%	6.6 %
Net farm income from operations ratio	0.02	0.11

**Farm and Family Financial Status**

The first step in evaluating the financial position of the farm is to construct a balance sheet which identifies all the assets and liabilities of the business. The second step is to evaluate the relationship between assets, liabilities, and net worth and changes that occurred during the year.

Financial lease obligations are included in the balance sheet. The present value of all future payments is listed as a liability since the farmer is committed to make the payments by signing the lease. The present value is also listed as an asset, representing the future value the item has to the business. For 2002, leases were discounted by 5.75 percent.

Advanced government receipts are included as current liabilities. Government payments received in 2002 that are for participation in the 2003 program are the end year balance and payments received in 2001 for participation in the 2002 program are the beginning year balance.

Current Portion or principal due in the next year for intermediate and long term debt is included as a current liability.

**2002 FARM BUSINESS & NONFARM BALANCE SHEET**

62 Large Herd Dairy Farms, 2002

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 23,902	\$ 25,675	Accounts payable	\$ 40,477	\$ 67,222
Accounts receivable	154,730	135,758	Operating debt	164,601	197,936
Prepaid expenses	8,286	2,569	Short Term	15,316	3,413
Feed & supplies	466,274	427,144	Advanced govt. receipts	116	226
			Current Portion:		
			Intermediate	163,063	168,636
			Long Term	<u>53,037</u>	<u>62,243</u>
Total Current	\$ 653,192	\$ 591,146	Total Current	\$ 436,610	\$ 499,676
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 765,605	\$ 802,546	1-10 years	\$ 708,603	\$ 833,995
leased	8,520	4,658	Financial lease		
Heifers	394,861	425,424	(cattle/machinery)	49,146	32,023
Bulls/other livestock	5,165	5,379	Farm Credit stock	<u>10,842</u>	<u>12,312</u>
Mach./equipment owned	670,153	711,163	Total Intermediate	\$ 768,591	\$ 878,330
Mach./equipment leased	40,626	27,365			
Farm Credit stock	10,842	12,312			
Other stock/certificate	<u>94,389</u>	<u>114,677</u>			
Total Intermediate	\$1,990,161	\$2,103,524			
<u>Long Term</u>			<u>Long Term</u>		
Land/buildings:			Structured debt		
owned	\$1,453,260	\$1,571,031	>10 years	\$ 659,833	\$ 685,176
leased	<u>10,843</u>	<u>8,144</u>	Financial lease		
Total Long Term	\$1,464,103	\$1,579,175	(structures)	<u>10,843</u>	<u>8,144</u>
			Total Long Term	\$ 670,676	\$ 693,320
Total Farm Assets	\$4,107,456	\$4,273,845	Total Farm Liab.	\$1,875,877	\$ 2,071,326
			FARM NET WORTH	\$2,231,579	\$ 2,202,519

## Nonfarm Assets, Liabilities &amp; Net Worth (Average of 29 farms reporting)

Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 5,804	\$ 2,705	Nonfarm Liabilities	\$ 7,745	\$ 12,029
Cash value life insurance	26,020	27,766			
Nonfarm real estate	6,379	6,379			
Auto (personal share)	6,224	6,828			
Stocks & bonds	40,523	39,180			
Household furnishings	7,241	7,345			
All other nonfarm assets	<u>5,926</u>	<u>17,364</u>			
Total Nonfarm Assets	\$ 98,117	\$ 107,567	NONFARM NET WORTH	\$ 90,372	\$ 95,538

Farm & Nonfarm Assets, Liabilities, and Net Worth<sup>9</sup>

	Jan. 1	Dec. 31
Total Assets	\$ 4,205,573	\$ 4,381,412
Total Liabilities	<u>1,883,622</u>	<u>2,083,355</u>
TOTAL FARM & NONFARM NET WORTH	\$ 2,321,951	\$ 2,298,057

<sup>9</sup>Assumes that average nonfarm assets and liabilities for the nonreporting farms were the same as for those reporting.

The following condensed balance sheet, including deferred taxes, contains average data from only those farmers who elected to provide the additional information required to compute deferred taxes. Deferred taxes represent an estimate of the taxes that would be paid if the farm were sold at year end fair market values on the date of the balance sheet. Accuracy is dependent on the accuracy of the market values and the tax basis data provided. Any tax liability for assets other than livestock, machinery, land, buildings and nonfarm assets is excluded. It is assumed that all gain on purchased livestock and machinery is ordinary gain and that listed market values are net of selling costs. The effects of investment tax credit carryover and recapture, carryover of operating losses, alternative minimum taxes and other than average exemptions and deductions are excluded because they have only minor influence on the taxes of most farms. The dramatic impact of including deferred taxes is clear. Total farm liabilities were increased 56 percent on these 49 farms by including deferred taxes.

Deferred taxes on these farms totaled an average of \$342,449, roughly one-third of the pretax net worth. Percent equity for the farm decreased from 65 percent to 44 percent when deferred taxes are included on these farms. When examining net worth, especially as a source of cash for retirement or other purposes, deferred taxes become an important consideration. Deferred taxes in this calculation specify that all assets were sold during one tax year. Therefore, tax management strategies such as making sales in more than one year or installment sales warrant careful consideration to reduce income tax liabilities.

**CONDENSED BALANCE SHEET INCLUDING DEFERRED TAXES**

December 31, 2002

49 New York Dairy Farms, 2002

Assets		Liabilities & Net Worth	
		Current debts & payables	\$ 150,046
		Current deferred taxes	<u>66,417</u>
Total Current Assets	\$ 228,712	Total Current Liabilities	\$ 216,463
		Intermediate debts & leases	\$ 245,327
		Intermediate deferred taxes	<u>174,439</u>
Total Inter. Assets	\$ 760,673	Total Intermediate Liabilities	\$ 419,766
		Long term debts & leases	\$ 174,388
		Long term deferred taxes	<u>101,593</u>
Total Long Term Assets	<u>\$ 640,484</u>	Total Long Term Liabilities	\$ 275,981
TOTAL FARM ASSETS	\$ 1,629,869	TOTAL FARM LIABILITIES	\$ 912,210
		Farm Net Worth	\$ 717,659
		Percent Equity (Farm)	44%
		Nonfarm debts	\$ 2,082
		Nonfarm deferred taxes	<u>8,616</u>
Total Nonfarm Assets	\$ 64,739	Total Nonfarm Liabilities	\$ 10,698
TOTAL ASSETS	\$ 1,694,608	TOTAL LIABILITIES	\$ 922,908
		Total Net Worth	\$ 771,700
		Percent Equity (Total)	46%

Balance sheet analysis involves examination of relative asset and debt levels for the business. Percent equity is calculated by dividing end of year net worth by end of year assets and multiplying by 100. The debt to asset ratio is compiled by dividing liabilities by assets. Low debt to asset ratios reflect business solvency and the potential capacity to borrow. Debt levels per productive unit represent old standards that are still useful if used with measures of cash flow and repayment ability.

**BALANCE SHEET ANALYSIS**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	Average Top 20% Farms
<u>Financial Ratios - Farm:</u>		
Percent equity	52%	59%
Debt/asset ratio: total	0.48	0.41
long-term	0.44	0.46
intermediate/current	0.51	0.39
Leverage Ratio	0.94	0.70
Current Ratio	1.18	1.49
Working Capital: \$91,470	as % of Total Expenses: 4%	\$190,562 10%
<u>Farm Debt Analysis:</u>		
Accounts payable as % of total debt	3%	2%
Long-term liabilities as a % of total debt	33%	38%
Current & intermediate liabilities as a % of total debt	67%	62%
Cost of term debt (weighted average)	4.6%	4.8%
	<u>Average 62 Farms</u>	<u>Average Top 20% Farms</u>
	Per Cow	Per Tillable
<u>Farm Debt Levels:</u>	<u>Per Cow</u>	<u>Per Cow</u>
Total farm debt	\$ 3,051	\$ 2,433
Long-term debt	1,021	922
Long-term & intermediate	2,315	1,802
Intermediate & current debt	2,029	1,511
	Acre Owned	Per Tillable
	Acre Owned	Acre Owned
	\$ 3,481	\$ 3,255
	1,165	1,234
	2,641	2,410
	2,316	2,021

Farm inventory balance is an accounting of the value of assets used on the balance sheet and the changes that occur from the beginning to end of year. Changes in the livestock inventory are included in the dairy analysis. Net investment indicates whether the capital stock is being expanded (positive) or depleted (negative).

**FARM INVENTORY BALANCE**  
62 Large Herd Dairy Farms, 2002

Item	Average of 62 Farms	
	<u>Real Estate</u>	<u>Machinery &amp; Equipment</u>
Value beginning of year	\$ 1,453,260	\$ 670,153
Purchases	\$ 200,913 <sup>10</sup>	\$ 141,315
Gift/inheritance	+ 0	+ 694
Lost capital	- 66,118	
Sales	- 3,455	- 6,108
Depreciation	- <u>107,121</u>	- <u>109,209</u>
Net investment	= 24,219	= 26,692
Appreciation	+ <u>93,552</u>	+ <u>14,318</u>
Value end of year	\$ 1,571,031	\$ 711,163

<sup>10</sup> \$36,807 land and \$164,106 buildings and/or depreciable improvements.

**Statement of Owner Equity**

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

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

**STATEMENT OF OWNER EQUITY (RECONCILIATION)**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	Average Top 20% Farms
Beginning of year farm net worth	\$ 2,231,579	\$2,009,502
Net farm income w/o appreciation	\$ 53,087	\$ 238,864
+ Nonfarm cash income	+ 4,133	+ 5,785
- Personal withdrawals & family expenditures excluding nonfarm borrowings	- 136,452	- \$ 151,373
Retained Earnings	+\$ -79,232	+ \$ 93,276
Nonfarm noncash transfers to farm	\$ 694	\$ 0
+ Cash used in business from nonfarm capital	+ 13,920	+ 3,606
- Note/mortgage from farm real estate sold (nonfarm)	- 222	- 0
Contributed/Withdrawn Capital	=\$ 14,392	+ \$ 3,606
Appreciation	\$ 100,720	\$ 78,837
- Lost capital	- 66,118	- 67,485
Change in Valuation Equity	+\$ 34,602	+ \$ 11,352
Imbalance/Error	- 1,178	- 4,366
End of year farm net worth <sup>11</sup>	=\$ 2,202,519	= \$2,113,370
Change in net worth w/apprec.	\$ -29,060	\$ 103,868
<hr/>		
<u>Change in Net Worth</u>		
Without appreciation	\$ -129,780	\$ 25,031
With appreciation	\$ -29,060	\$ 103,868

<sup>11</sup>May not add due to rounding.

**Cash Flow Statement**

Completing an annual cash flow statement is an important step in understanding the sources and uses of funds for the business. Understanding last year's cash flow is the first step toward planning and managing cash flow for the current and future years.

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

**ANNUAL CASH FLOW STATEMENT**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	
<b><u>Cash Flow from Operating Activities</u></b>		
Cash farm receipts	\$ 2,257,843	
- Cash farm expenses	<u>1,940,193</u>	
= Net cash farm income		\$ 317,650
Personal withdrawals/family expenses including nonfarm debt payments	\$ 138,735	
- Nonfarm income	<u>4,133</u>	
- Net cash withdrawals from the farm		<u>\$ 134,602</u>
= Net Provided by Operating Activities		\$ 183,048
<b><u>Cash Flow From Investing Activities</u></b>		
Sale of Assets: Machinery	\$ 6,108	
+ real estate	3,233	
+ other stock/cert.	<u>3,147</u>	
= Total asset sales		\$ 12,488
Capital purchases: expansion livestock	\$ 38,602	
+ machinery	141,315	
+ real estate	200,913	
+ other stock/cert.	<u>17,259</u>	
- Total invested in farm assets		<u>\$ 398,089</u>
= Net Provided by Investment Activities		\$ -385,601
<b><u>Cash Flow From Financing Activities</u></b>		
Money borrowed (inter. & long term)	\$ 359,578	
+ Money borrowed (short-term)	-4,557	
+ Increase in operating debt	33,335	
+ Cash from nonfarm cap. used in business	13,920	
+ Money borrowed - nonfarm	<u>2,284</u>	
= Cash inflow from financing		\$ 404,560
Principal payments (inter. & long-term)	\$ 194,064	
+ Principal payments (short-term)	7,347	
+ Decrease in operating debt	<u>0</u>	
- Cash outflow for financing		<u>\$ 201,411</u>
= Net Provided by Financing Activities		\$ 203,149
<b><u>Cash Flow From Business</u></b>		
Beginning farm cash, checking & savings		\$ 23,902
- Ending farm cash, checking & savings		<u>25,675</u>
= Net Provided from Reserves		\$ -1,773
<b>Imbalance (error)</b>		<u>\$ -1,177</u>



**ANNUAL CASH FLOW STATEMENT**  
12 Top 20% Large Herd Dairy Farms, 2002

Item	Average Top 20% Farms	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$ 1,995,994	
- Cash farm expenses	<u>1,647,733</u>	
= Net cash farm income		\$ 348,261
Personal withdrawals/family expenses including nonfarm debt payments	\$ 161,923	
- Nonfarm income	<u>5,785</u>	
- Net cash withdrawals from the farm		<u>\$ 156,138</u>
= Net Provided by Operating Activities		\$ 192,123
<u>Cash Flow From Investing Activities</u>		
Sale of Assets: Machinery	\$ 1,407	
+ real estate	0	
+ other stock/cert.	<u>686</u>	
= Total asset sales		\$ 2,093
Capital purchases: expansion livestock	\$ 47,161	
+ machinery	85,048	
+ real estate	245,184	
+ other stock/cert.	<u>12,517</u>	
- Total invested in farm assets		<u>\$ 389,910</u>
= Net Provided by Investment Activities		\$ -387,817
<u>Cash Flow From Financing Activities</u>		
Money borrowed (inter. & long term)	\$ 301,674	
+ Money borrowed (short-term)	0	
+ Increase in operating debt	11,598	
+ Cash from nonfarm cap. used in business	3,606	
+ Money borrowed - nonfarm	<u>10,550</u>	
= Cash inflow from financing		\$ 327,428
Principal payments (inter. & long-term)	\$ 125,530	
+ Principal payments (short-term)	30	
+ Decrease in operating debt	<u>0</u>	
- Cash outflow for financing		<u>\$ 125,560</u>
= Net Provided by Financing Activities		\$ 201,868
<u>Cash Flow From Business</u>		
Beginning farm cash, checking & savings		\$ 25,419
- Ending farm cash, checking & savings		<u>27,227</u>
= Net Provided from Reserves		\$ -1,808
<u>Imbalance (error)</u>		\$ 4,366

## Repayment Analysis

A valuable use of cash flow analysis is to compare the debt payments planned for the last year with the amount actually paid. The measures listed below provide a number of different perspectives on the repayment performance of the business. However, the critical question to many farmers and lenders is whether planned payments can be made in 2002. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 2003 debt payments shown below.

### FARM DEBT PAYMENTS PLANNED

Large Herd Dairy Farms, 2001 & 2002

Debt Payments	Same 59 Dairy Farms			Same 11 Top 20% Farms		
	2002 Payments		Planned 2003	2002 Payments		Planned 2003
	Planned	Made		Planned	Made	
Long-term	\$ 97,739	\$ 106,719	\$ 101,905	\$ 52,686	\$ 62,310	\$ 61,501
Intermediate-term	219,437	179,308	215,449	149,983	126,117	158,853
Short-term	8,849	7,601	3,510	682	33	649
Operating (net reduction)	9,937	0	32,659	8,805	0	74,414
Accounts payable (net reduction)	<u>254</u>	<u>0</u>	<u>4,589</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$ 336,216	\$ 293,628	\$ 358,112	\$ 212,156	\$ 188,460	\$ 295,417
Per cow	\$ 506	\$ 442		\$ 352	\$ 313	
Per cwt. 2002 milk	\$ 2.18	\$ 1.90		\$ 1.48	\$ 1.32	
Percent of total 2002 receipts	14%	12%		10%	9%	
Percent of 2002 milk receipts	17%	15%		12%	10%	

The cash flow coverage ratio and debt coverage ratio measure the ability of the farm business to meet its planned debt payments schedule. The ratios show the percentage of payments planned for 2002 (as of December 31, 2001) that could have been made with the amount available for debt service in 2002. Farmers who did not participate in DFBS in 2001 have their 2002 cash flow coverage ratio based on planned debt payments for 2003.

### COVERAGE RATIOS

Same 59 Large Herd Dairy Farms, 2001 & 2002

Item	Average	Item	Average
<u>Cash Flow Coverage Ratio</u>		<u>Debt Coverage Ratio</u>	
Cash farm receipts	\$ 2,275,566	Net farm income (w/o apprec.)	\$ 54,642
- Cash farm expenses	1,950,534	+ Depreciation	221,663
+ Interest paid (cash)	94,553	+ Interest paid (accrual)	94,483
- Net personal withdrawals from farm <sup>12</sup>	136,012	- Net personal withdrawals from farm <sup>12</sup>	136,012
(A) = Amount Available for Debt Service	\$ 283,573	(A') = Repayment Capacity	\$ 234,776
(B) = Debt Payments Planned for 2002 (as of December 31, 2001)	\$ 336,216	(B) = Debt Payments Planned for 2002 (as of December 31, 2001)	\$ 336,213
(A/B)= Cash Flow Coverage Ratio for 2002	0.84	(A'/B)= Debt Coverage Ratio for 2002	0.70

Same 11 Top 20% Dairy Farms, 2001 & 2002

(A) = Amount Available for Debt Service	\$ 279,677	(A') = Repayment Capacity	\$ 307,606
(B) = Debt Payments Planned for 2002	212,156	(B) = Debt Payments Planned for 2002	212,156
(A/B)= Cash Flow Coverage Ratio for 2002	1.32	(A'/B)= Debt Coverage Ratio for 2002	1.45

<sup>12</sup>Personal withdrawals and family expenditures less nonfarm income and nonfarm money borrowed. If family withdrawals are excluded, or inaccurately included, the cash flow coverage ratio will be incorrect.

**ANNUAL CASH FLOW WORKSHEET**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms		Total
	Per Cow	Per Cwt.	
Number cows and cwt. milk	661	153,569	
<u>Accrual Operating Receipts</u>			
Milk	\$ 3,006	\$ 12.94	\$ 1,987,045
Dairy cattle	251	1.08	165,888
Dairy calves	32	0.14	21,480
Other livestock	9	0.04	5,639
Crops	54	0.23	35,812
Misc. receipts	187	0.81	123,783
Total	\$ 3,540	\$ 15.24	\$ 2,339,648
<u>Accrual Operating Expenses</u>			
Hired labor	\$ 607	\$ 2.61	\$ 401,211
Dairy grain & concentrate	889	3.83	587,674
Dairy roughage	71	0.31	46,889
Nondairy feed	0	0.00	153
Mach. hire/rent/lease	75	0.32	49,373
Mach. repair & farm vehicle expense	133	0.57	87,777
Fuel, oil & grease	58	0.25	38,168
Replacement livestock	34	0.15	22,729
Breeding	48	0.20	31,443
Vet & medicine	136	0.59	90,025
Milk marketing	134	0.58	88,481
Bedding	55	0.24	36,324
Milking supplies	72	0.31	47,397
Cattle lease	8	0.03	5,241
Custom boarding	79	0.34	52,202
bST expense	67	0.29	44,204
Other livestock expense	31	0.13	20,670
Fertilizer & lime	54	0.23	35,731
Seeds & plants	46	0.20	30,712
Spray/other crop expenses	54	0.23	35,635
Land, building, fence repair	40	0.17	26,348
Taxes	36	0.15	23,567
Real estate rent/lease	71	0.30	46,625
Insurance	32	0.14	20,900
Utilities	68	0.29	44,683
Miscellaneous	37	0.16	24,363
Total Less Interest Paid	\$ 2,933	\$ 12.62	\$ 1,938,524
<u>Net Accrual Operating Income</u>			
(without interest paid)	\$ 607	\$ 2.61	\$ 401,124
- Change in livestock/crop inventory <sup>13</sup>	152	0.66	100,776
- Change in accounts receivable	-29	-0.12	-18,972
- Change in feed/supply inventory <sup>14</sup>	-98	-0.42	-64,691
+ Change in accounts payable <sup>15</sup>	41	0.18	27,399
NET CASH FLOW	\$ 622	\$ 2.68	\$ 411,350
- Net personal withdrawals from farm (see footnote on p. 23)	\$ 200	\$ 0.86	\$ 132,318
Available for Farm Debt Payments & Investments	\$ 422	\$ 1.82	\$ 279,032
- Farm debt payments	440	1.89	290,923
Available for Farm Investment	\$ -18	\$ -0.08	\$ -11,891
- Capital purchases: cattle, machinery & improvements	\$ 602	\$ 2.59	\$ 398,089

<sup>13</sup>Includes change in advance government receipts.

<sup>14</sup>Includes change in prepaid expenses.

<sup>15</sup>Excludes change in interest account payable.

**ANNUAL CASH FLOW WORKSHEET**  
12 Top 20% Large Herd Dairy Farms, 2002

Item	Average Top 20% Farms		
	Per Cow	Per Cwt.	Total
No. cows or cwt. milk	585	138,280	
<u>Accrual Operating Receipts</u>			
Milk	\$ 3,032	\$ 12.83	\$ 1,773,822
Dairy cattle	282	1.19	164,710
Dairy calves	27	0.12	16,026
Other livestock	4	0.02	2,524
Crops	63	0.27	36,666
Misc. receipts	211	0.89	123,192
Total	\$ 3,619	\$ 15.31	\$ 2,116,939
<u>Accrual Operating Expenses</u>			
Hired labor	\$ 554	\$ 2.34	\$ 324,190
Dairy grain & concentrate	883	3.74	516,835
Dairy roughage	80	0.34	46,673
Nondairy feed	0	0.00	72
Mach. hire/rent/lease	53	0.23	31,121
Mach. repair & farm vehicle expense	129	0.55	75,553
Fuel, oil & grease	54	0.23	31,550
Replacement livestock	34	0.14	19,679
Breeding	47	0.20	27,325
Vet & medicine	140	0.59	81,987
Milk marketing	141	0.60	82,491
Bedding	47	0.20	27,527
Milking supplies	69	0.29	40,496
Cattle lease	4	0.02	2,275
Custom boarding	70	0.29	40,786
bST expense	71	0.30	41,483
Other livestock expense	31	0.13	18,242
Fertilizer & lime	41	0.18	24,240
Seeds & plants	42	0.18	24,425
Spray/other crop expenses	47	0.20	27,786
Land, building, fence repair	58	0.25	33,908
Taxes	26	0.11	15,184
Real estate rent/lease	55	0.23	32,104
Insurance	21	0.09	12,410
Utilities	57	0.24	33,291
Miscellaneous	26	0.11	15,387
Total Less Interest Paid	\$ 2,781	\$ 11.77	\$ 1,627,016
<u>Net Accrual Operating Income</u>			
(without interest paid)	\$ 837	\$ 3.54	\$ 489,923
- Change in livestock/crop inventory <sup>16</sup>	201	0.85	117,769
- Change in accounts receivable	5	0.02	3,175
- Change in feed/supply inventory <sup>17</sup>	-45	-0.19	-26,540
+ Change in accounts payable <sup>18</sup>	34	0.14	19,692
NET CASH FLOW	\$ 710	\$ 3.00	\$ 415,209
- Net personal withdrawals from farm(see footnote p.23)	\$ 249	\$ 1.05	\$ 145,588
Available for Farm Debt Payments & Investments	\$ 461	\$ 1.95	\$ 269,621
- Farm debt payments	326	1.38	190,452
Available for Farm Investment	\$ 135	\$ 0.57	\$ 79,169
- Capital purchases: cattle, machinery & improvements	\$ 667	\$ 2.82	\$ 389,910

<sup>16</sup>Includes change in advance government receipts.

<sup>17</sup>Includes change in prepaid expenses.

<sup>18</sup>Excludes change in interest account payable.

**Cropping Analysis**

The cropping program is an important part of the dairy farm business and often represents opportunities for improved productivity and profitability. A complete evaluation of what the available land resources are, how they are being used, how well crops are producing, and what it costs to produce them is important to evaluating alternative cropping and feed purchasing alternatives.

**LAND RESOURCES AND CROP PRODUCTION**

62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms			Average Top 20% Farms		
	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
Land						
Tillable	595	652	1,247	456	694	1,150
Nontillable	37	15	52	28	17	45
Other nontillable	196	9	205	274	4	278
Total	827	677	1,504	759	714	1,473
<b>Crop Yields</b>	<b>Farms</b>	<b>Acres<sup>19</sup></b>	<b>Prod/Acre</b>	<b>Farms</b>	<b>Acres</b>	<b>Prod/Acre</b>
Hay crop	60	575	3.56 tn DM	11	650	3.53 tn DM
Corn silage	57	554	15.56 tn	11	528	15.16 tn
Other forage	3	84	2.85 tn DM	0	0	0.00 tn DM
Total forage	60	1,105	4.31 tn DM	11	1,178	4.18 tn DM
Corn grain	16	280	111 bu	2	204	121 bu
Oats	2	33	58 bu	0	0	0 bu
Wheat	13	92	61 bu	1	102	59 bu
Other crops	9	113		0	0	
Tillable pasture	8	175		1	5	
Idle tillable	21	133		5	64	
Total Tillable Acres	62	1,247		12	1,473	

<sup>19</sup>This column represents the average acreage for the farms producing that crop. Average acreages including those farms not producing were corn grain 72, oats 1, wheat 19, tillable pasture 23 and idle 45.

Average crop acres and yields compiled for the region are for the farms reporting each crop. 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 based on dry matter information provided.

The following crop/dairy ratios indicate the relationship between forage production, forage production resources, and the dairy herd.

**CROP/DAIRY RATIOS**

62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	Average Top 20% Farms
Total tillable acres per cow	1.89	1.97
Total forage acres per cow	1.62	1.85
Harvested forage dry matter, tons per cow	6.98	7.71

**Cropping Analysis** (continued)

A number of cooperators have allocated crop expenses among the hay crop, corn, and other crops produced. Fertilizer and lime, seeds and plants, and spray and other crop expenses have been computed per acre and per production unit for hay and corn. Additional expense items such as fuels, labor, and machinery repairs are not included. Rotational grazing was used on two farms.

**CROP RELATED ACCRUAL EXPENSES**

Large Herd Dairy Farms Reporting, 2002

Item	Total	All	Corn Silage	Corn Grain	Hay Crop	
	Per Till. Acre	Corn Per Acre	Per Ton DM	Per Dry Sh. Bu.	Per Acre	Per Ton DM
No. of farms reporting	62	8			8	
Ave. number of acres	1,247	582			536	
Fertilizer/lime	\$ 28.65	\$ 34.57	\$ 6.06	\$ 0.25	\$ 27.63	\$ 7.47
Seed/plants	24.63	33.66	5.89	0.24	14.75	3.99
Spray/other crop exp.	<u>28.58</u>	<u>43.88</u>	<u>7.69</u>	<u>0.31</u>	<u>9.08</u>	<u>2.46</u>
TOTAL	\$ 81.86	\$ 112.11	\$ 19.64	\$ 0.80	\$ 51.46	\$ 13.92
<u>Average Top 20% Farms:</u>						
No. of farms reporting	12					
Ave. number of acres	1,150					
Fertilizer/lime	\$ 21.08					
Seeds/plants	21.24					
Spray/other crop exp.	<u>24.16</u>					
TOTAL	\$ 66.48					

Most machinery costs are associated with crop production 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. Although machinery costs have not been allocated to individual crops, they are shown below per total tillable acre.

**ACCRUAL MACHINERY EXPENSES**

62 Large Herd Dairy Farms, 2002

Machinery Expense Item	Average 62 Farms		Average Top 20% Farms	
	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre
Fuel, oil & grease	\$ 38,168	\$ 30.61	\$ 31,550	\$ 27.43
Mach. repairs & farm veh. exp.	87,777	70.39	75,553	65.70
Machine hire, rent & lease	49,373	39.59	31,121	27.06
Interest (5%)	36,233	29.06	28,485	24.77
Depreciation	<u>109,209</u>	<u>87.58</u>	<u>69,977</u>	<u>60.85</u>
Total	\$ 320,760	\$ 257.23	\$ 236,686	\$ 205.81

**Dairy Analysis**

Analysis of the dairy enterprise can reveal a great deal about the strengths and weaknesses of the dairy farm business. Information on this page should be used in conjunction with DHI and other dairy production information. Changes in dairy herd size and market values that occur during the year are identified in the table below. The change in inventory value without appreciation is attributed to physical changes in herd size and quality. Any change in inventory is included as an accrual farm receipt when calculating all of the profitability measures on pages 9 and 10.

**DAIRY HERD INVENTORY**  
62 Large Herd Dairy Farms, 2002

Item	Dairy Cows		Bred		Heifers		Calves	
	No.	Value	No.	Value	No.	Value	No.	Value
<u>Average 62 Farms:</u>								
Beginning year (owned)	627	\$ 765,605	175	\$ 209,078	165	\$123,002	145	\$ 62,782
+ Change w/o apprec.		42,827		29,269		7,580		1,074
+ Appreciation		<u>-5,886</u>		<u>-5,250</u>		<u>-1,050</u>		<u>-1,061</u>
End year (owned)	661	\$ 802,546	197	\$ 233,097	176	\$129,532	144	\$ 62,795
End including leased	679							
Average number	661		508 (all age groups)					
<u>Average Top 20% Farms:</u>								
Beginning year (owned)	554	\$ 672,137	155	\$ 182,708	140	\$101,529	146	\$ 60,403
+ Change w/o apprec.		58,963		19,692		7,721		-647
+ Appreciation		<u>10,369</u>		<u>-2,808</u>		<u>3,633</u>		<u>3,795</u>
End of year (owned)	598	\$ 741,469	172	\$ 199,592	150	\$112,883	141	\$ 63,551
End including leased	610							
Average number	585		467 (all age groups)					

Total milk sold and milk sold per cow are extremely valuable measures of size and productivity, respectively, on the dairy farm. These measures of milk output are based on pounds of milk marketed during the year. Farm managers on DHI should compare milk sold per cow with their rolling herd average on the test date nearest December 31 to see how close the DHI estimate of milk produced is to actual milk sales.

**MILK PRODUCTION**  
62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms	Average Top 20% Farms
Total milk sold, lbs.	15,356,885	13,828,017
Milk sold per cow, lbs.	23,247	23,628
Average milk plant test, percent butterfat	3.64 %	3.63 %

**ANIMALS LEAVING THE HERD**  
62 Large Herd Dairy Farms, 2002

	Average 62 Farms		Average Top 20% Farms	
	Number	Percent <sup>20</sup>	Number	Percent <sup>21</sup>
Cows sold for beef	182	27.5	153	26.2
Cows sold for dairy	3	0.5	1	0.2
Cows died	33	5.0	32	5.5
Culling rate <sup>18</sup>	---	32.5	---	31.6

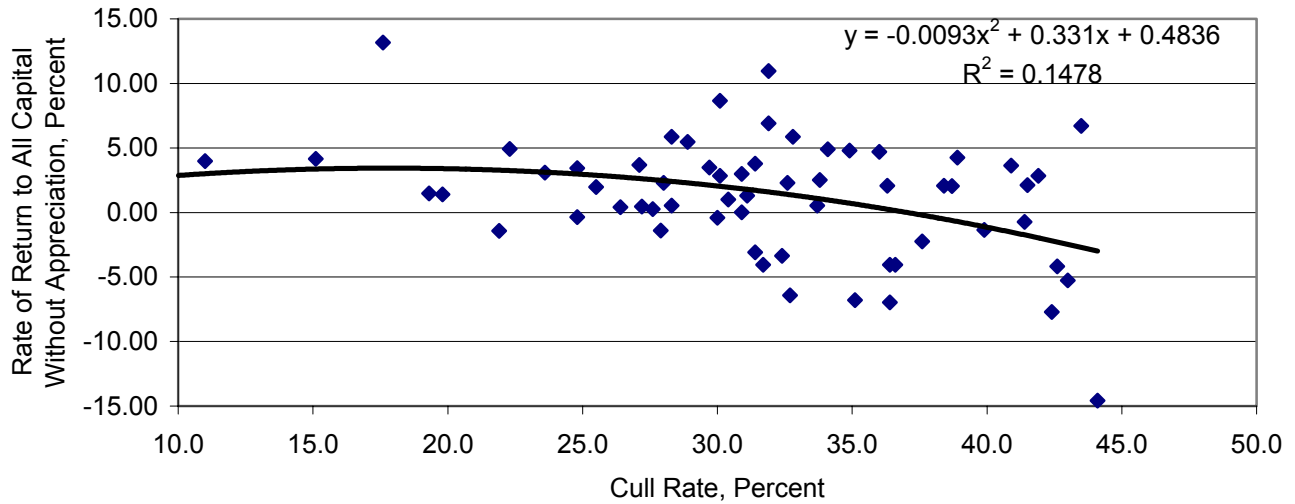
<sup>20</sup>Percent of average number of cows in the herd.

<sup>21</sup>Cows sold for beef plus cows died.

Cull rate measures the turnover of cows within the dairy herd and is comprised of both animals that die on the farm and animals that are sold as beef. Cull rates are impacted by the herd management skills of the farm owners and where the business is in terms of growth cycles and cow life cycles. The following two charts look at the relationship between percent cull rates, milk production and profit levels. While there is no significant relationship between cull rate and these two measures, it is interesting to note that the relationship is curvilinear.

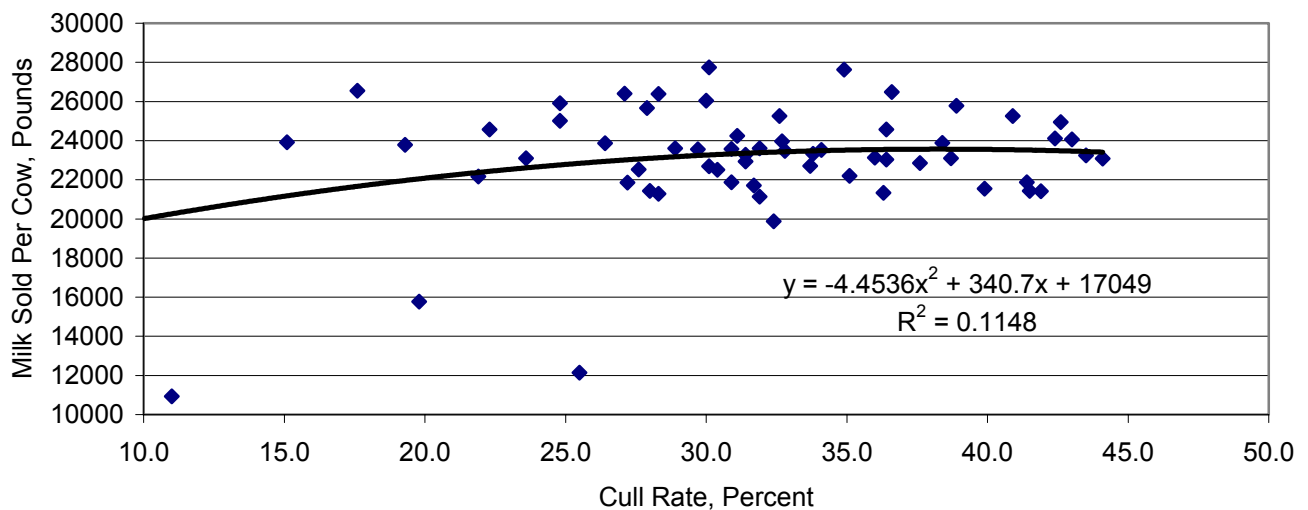
### RETURN TO ALL CAPITAL WITHOUT APPRECIATION VERSUS CULL RATE

62 Large Herd Dairy Farms, 2002



### MILK SOLD PER COW VERSUS CULL RATE

62 Large Herd Dairy Farms, 2002





The cost of producing milk has been compiled using the whole farm method and is featured in the following table. Accrual receipts from milk sales can be compared with the accrual costs of producing milk per cow and per hundredweight of milk. Using the whole farm method, operating costs of producing milk are estimated by deducting nonmilk accrual receipts from total accrual operating expenses including expansion livestock purchased. Purchased inputs cost of producing milk are the operating costs plus depreciation. Total costs of producing milk include the operating costs of producing milk plus depreciation on machinery and buildings, the value of unpaid family labor, the value of operators' labor and management, and the interest charge for using equity capital.

### ACCRUAL RECEIPTS FROM DAIRY AND COST OF PRODUCING MILK

62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms			Average Top 20% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
<u>Accrual Costs of Producing Milk</u>						
Operating costs	\$ 1,717,628	\$ 2,599	\$11.18	\$ 1,398,481	\$ 2,391	\$ 10.11
Purchased inputs costs	\$ 1,933,958	\$ 2,926	\$12.59	\$ 1,534,958	\$ 2,624	\$ 11.10
Total Costs	\$ 2,144,568	\$ 3,244	\$13.96	\$ 1,716,677	\$ 2,934	\$ 12.41
<u>Accrual Receipts From Milk</u>						
Net Milk Receipts	\$ 1,987,045	\$ 3,006	\$12.94	\$ 1,773,822	\$ 3,032	\$ 12.83
Net Farm Income	\$ 1,898,564	\$ 2,872	\$12.36	\$ 1,691,331	\$ 2,891	\$ 12.23
Net Farm Income w/o appreciation	\$ 53,087	\$ 80	\$0.35	\$ 238,864	\$ 408	\$ 1.73
Net Farm Income with appreciation	\$ 153,807	\$ 233	\$1.00	\$ 317,701	\$ 543	\$ 2.30

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 an evaluation of the dairy enterprise.

### DAIRY RELATED ACCRUAL EXPENSES

62 Large Herd Dairy Farms, 2002

Item	Average 62 Farms		Average Top 20% Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 889	\$3.83	\$ 883	\$ 3.74
Purchased dairy roughage	71	0.31	80	0.34
Total Purchased Dairy Feed	\$ 960	\$4.13	\$ 963	\$ 4.08
Purchased grain & concentrate as % of milk receipts		30%		29%
Purchased feed & crop expense	\$ 1,114	\$4.80	\$ 1,094	\$ 4.63
Purchased feed & crop expense as % of milk receipts		37%		36%
Breeding	\$ 48	\$0.20	\$ 47	\$ 0.20
Veterinary & medicine	136	0.59	140	0.59
Milk marketing	134	0.58	141	0.60
Bedding	55	0.24	47	0.20
Milking supplies	72	0.31	69	0.29
Cattle lease	8	0.03	4	0.02
Custom boarding	79	0.34	70	0.29
bST expense	67	0.29	71	0.30
Other livestock expenses	31	0.13	31	0.13

**Cost of Producing Milk**

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

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

**COST OF PRODUCING MILK WHOLE FARM METHOD CALCULATIONS**

Item	62 Large Herd Dairy Farms, 2002		Average Top 20% Farms	
	Average 62 Farms		Average Top 20% Farms	
Total Accrual Operating Expenses	\$	2,032,189	\$	1,694,437
Expansion Livestock, Accrual	+	<u>38,042</u>	+	<u>47,161</u>
1. Total Accrual Operating Expenses, Including Expansion Livestock		\$ 2,070,231		\$ 1,741,598
Total Accrual Receipts	\$	2,339,648	\$	2,116,939
Milk Sales, Accrual	-	<u>1,987,045</u>	-	<u>1,773,822</u>
2. Total Accrual Nonmilk Receipts		- 352,603		- 343,117
3. Operating Costs of Producing Milk		\$ 1,717,628		\$ 1,398,481
Cwt. of Milk Sold	÷	153,569	÷	138,280
Operating Costs/Cwt.	=	\$11.18	=	\$10.11
Machinery Depreciation	+	109,209	+	69,977
Building Depreciation	+	<u>107,121</u>	+	<u>66,500</u>
4. Purchased Inputs Cost of Producing Milk		\$ 1,933,958		\$ 1,534,958
Cwt. of Milk Sold	÷	153,569	÷	138,280
Purchased Inputs Cost/Cwt.	=	\$12.59	=	\$11.10
Family Labor Unpaid (\$2,000/month)		+ 2,730		+ 2,730
Real Interest on Equity Cap.	+	110,852	+	103,072
Value of Operators' Labor & Management	+	<u>97,028</u>	+	<u>75,917</u>
5. Total Costs of Producing Milk		\$ 2,144,568		\$ 1,716,677
Cwt. Milk Sold	÷	153,569	÷	138,280
Total Costs/Cwt.	=	\$13.96	=	\$12.41

**Capital and Labor Efficiency Analysis**

Capital efficiency factors measure how intensively the capital is being used in the farm business. Measures of labor efficiency are key indicators of management's success in generating products per unit of labor input.

**CAPITAL EFFICIENCY**  
62 Large Herd Dairy Farms, 2002

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>Average 62 Farms:</u>				
Farm capital	\$ 297,631	\$ 6,340	\$ 3,361	\$ 7,043
Real estate		2,302		2,557
Machinery & equipment	51,467	1,096	581	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense	Depreciation Expense	
0.58	0.84	0.04	0.09	
<u>Average Top 20% Farms:</u>				
Farm capital	\$ 295,171	\$ 5,878	\$ 2,990	\$ 7,541
Real estate		1,931		2,477
Machinery & equipment	48,902	974	495	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense	Depreciation Expense	
0.64	0.79	0.03	0.06	

**LABOR FORCE INVENTORY AND ANALYSIS**

62 Large Herd Dairy Farms, 2002

Labor Force	Months	Age	Years of Education	Value of Labor & Mgmt.
Operator number 1	14.1	45	14	\$ 48,849
Operator number 2	9.3	40	13	31,622
Operator number 3	3.5	41	13	12,516
Operator number 4	1.0	46	14	4,041
Family paid	5.8			
Family unpaid	1.3			
Hired	<u>133.7</u>			
Total	168.9	/ 12 = 14.08 Worker Equivalent 2.23 Operator/Manager Equivalent		

Average Top 20% Farms:

Total 139.8 / 12 = 11.65 Worker Equivalent

Operator's 1.85 Operator/Manager Equivalent

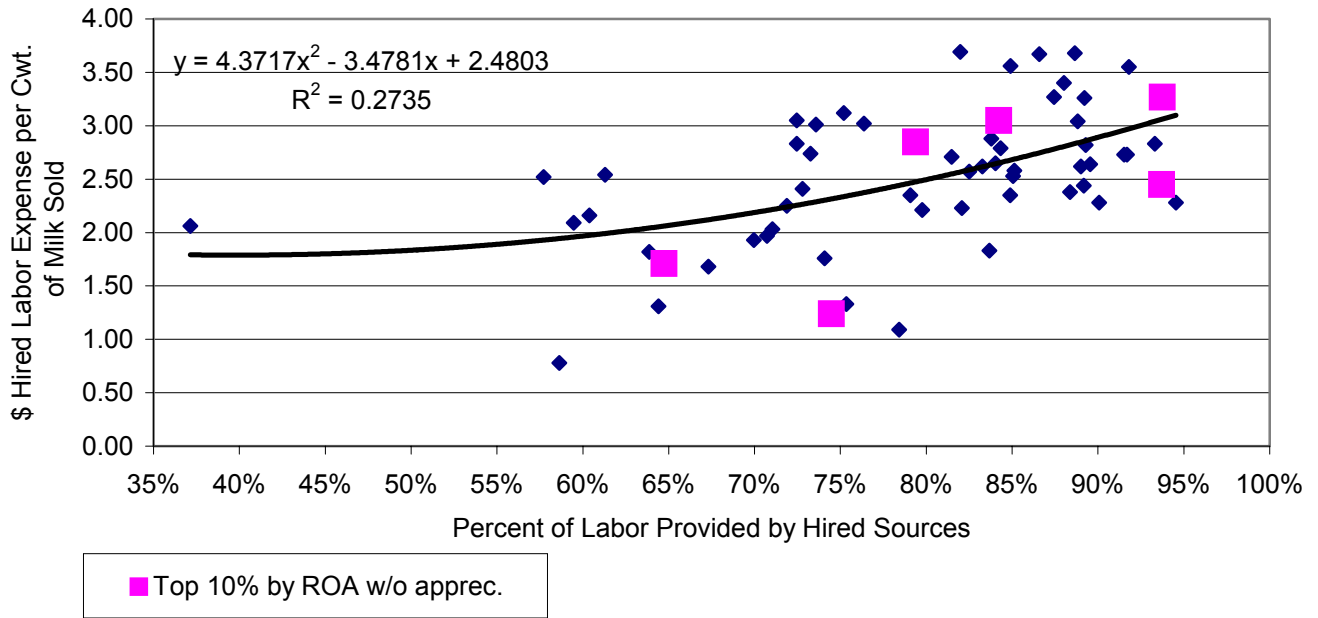
Labor Efficiency	Average 62 Farms		Average Top 20% Farms	
	Total	Per Worker	Total	Per Worker
Cows, average number	661	47	585	50
Milk sold, pounds	15,356,885	1,090,688	13,828,017	1,186,954
Tillable acres	1,247	89	1,150	99
Work units	6,459	459	5,806	498

Labor Costs	Average 62 Farms			Average Top 20% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Value of operator(s) labor (\$2,100/mo.)	\$ 58,590	\$ 89	\$0.38	\$ 47,460	\$ 81	\$ 0.34
Family unpaid (\$2,100/mo.)	2,730	4	0.02	2,730	5	0.02
Hired	<u>401,211</u>	<u>607</u>	<u>2.61</u>	<u>324,190</u>	<u>554</u>	<u>2.34</u>
Total Labor	\$ 462,531	\$ 700	\$3.01	\$ 374,380	\$ 640	\$ 2.71
Machinery Cost	<u>320,760</u>	<u>485</u>	<u>2.09</u>	<u>236,686</u>	<u>405</u>	<u>1.71</u>
Total Labor & Machinery	\$ 783,291	\$ 1,185	\$5.10	\$ 611,066	\$ 1,045	\$ 4.42
Hired labor expense per hired worker equiv.		\$ 34,513		\$ 33,537		
Hired labor expense as % of milk sales		20.2%		18.3%		

**Labor Cost Evaluation**

Labor costs have been the first or second largest expense on large dairy farms in New York the last four years. A key factor to track on these farms is hired labor expense per cwt. milk sold. The chart below shows the relationship between hired labor expenses per cwt. and percent of labor provided by hired labor sources and can be used to see how your farms' expense compares to other farms. To calculate percent of labor provided by hired sources use the worksheet below.

**HIRED LABOR EXPENSE PER CWT OF MILK SOLD VERSUS PERCENT OF LABOR PROVIDED BY HIRED SOURCES**  
62 Large Herd Dairy Farms, 2002



**Worksheet for Determining Percent of Labor From Hired Sources**

Divide total hired and family paid months of labor by the total months of labor provided from all sources. These values can be found on page 11 of your farm's Dairy Farm Business Summary report.

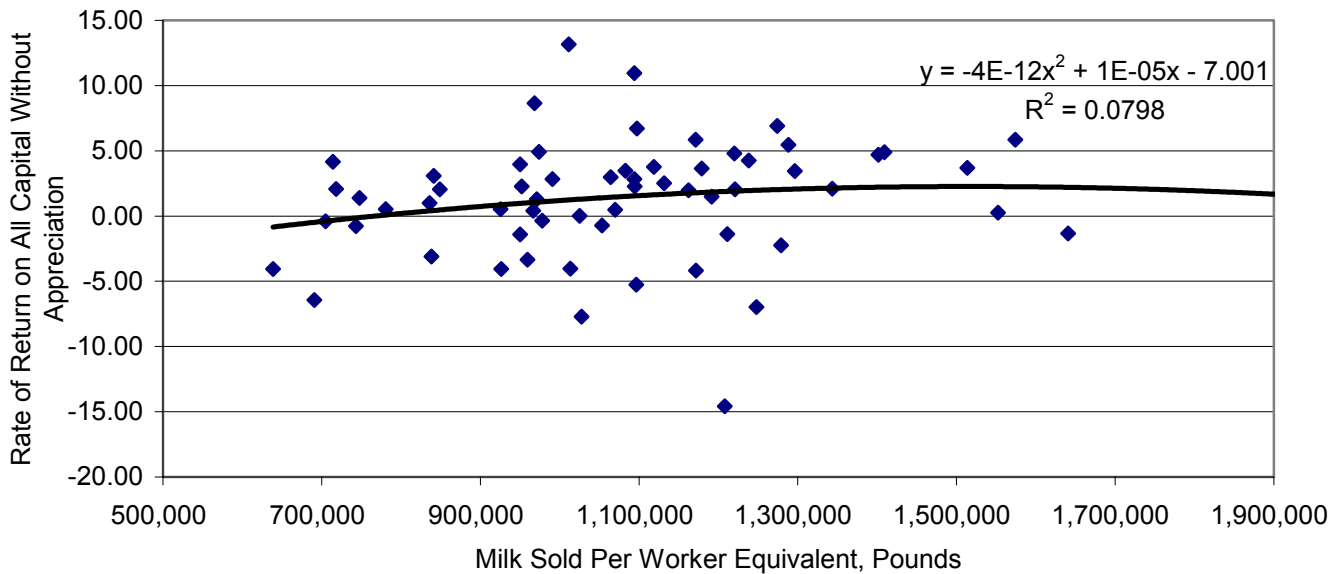
Months of hired labor		_____	
Months of family paid labor	+	_____	
Total hired labor	=	_____	
Total Labor Months	÷	_____	
Percent of labor from hired sources	x 100 =	_____	%

The table below is the business chart for labor costs on a per worker and per hour basis and shows the range of costs for these farms. Hired Labor expenses are all expenses that are associated with labor, and are not just payroll. The chart below shows the relationship between labor efficiency and return on all capital without appreciation. Labor efficiency improvements are one method that is used to allow the business to reward their employees while maintaining their labor costs per cwt. of milk produced. A second area is improved cost control of day to day activities, which is one reason why some farms can generate higher than average profits while having some of the higher labor costs per cwt. of milk sold.

**Hired Labor Expense Business Charts**  
62 Large Herd Dairy Farms, 2002

Decile	Hired Labor Expense per Cwt	Hired Labor Expense as % of Milk Sales	Hired Labor Expense per Hired Worker Equivalent	Hired Labor Expense per Hour
Average of Lowest Decile	\$ 1.31	10%	\$ 19,627	\$ 7.11
	1.91	15	25,338	9.18
	2.20	17	28,631	10.37
	2.37	18	30,641	11.10
	2.53	19	33,555	12.16
	2.66	20	34,734	12.58
	2.79	22	35,834	12.98
	2.94	23	37,722	13.67
	3.17	25	41,018	14.86
Average of Highest Decile	3.59	28	49,671	18.00

**RATE OF RETURN ON ALL CAPITAL WITHOUT APPRECIATION VERSUS MILK SOLD PER WORKER EQUIVALENT**  
62 Large Herd Dairy Farms, 2002



## CONDENSED SUMMARY &amp; SELECTED BUSINESS FACTORS

## CONDENSED FARM BUSINESS SUMMARY FOR THREE LARGE HERD GROUPS

62 Large Herd Dairy Farms, 2002

Item	19 Farms with 300-400 Cows		18 Farms with 401-599 Cows		25 Farms with ≥600 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<b>ACCRUAL EXPENSES</b>						
Hired labor	\$506	\$2.26	\$547	\$2.43	\$656	\$2.76
Dairy grain & concentrate	890	3.98	781	3.47	929	3.91
Dairy roughage	79	0.35	72	0.32	68	0.29
Nondairy feed	0	0.00	0	0.00	0	0.00
Machine hire, rent & lease	72	0.32	71	0.32	77	0.32
Machine repairs & farm vehicle expense	163	0.73	124	0.55	128	0.54
Fuel, oil & grease	73	0.33	55	0.24	55	0.23
Replacement livestock	79	0.35	5	0.02	33	0.14
Breeding	44	0.20	45	0.20	49	0.21
Veterinary & medicine	119	0.53	133	0.59	142	0.60
Milk marketing	146	0.65	150	0.67	125	0.53
Bedding	45	0.20	46	0.20	61	0.26
Milking supplies	67	0.30	69	0.31	74	0.31
Cattle lease & rent	3	0.02	1	0.00	12	0.05
Custom boarding	74	0.33	101	0.45	72	0.30
bST expense	53	0.24	46	0.21	78	0.33
Other livestock expense	44	0.20	30	0.13	28	0.12
Fertilizer & lime	59	0.26	60	0.27	51	0.21
Seeds & plants	40	0.18	42	0.19	50	0.21
Spray & other crop expense	44	0.20	44	0.19	60	0.25
Land, building & fence repair	33	0.15	42	0.18	41	0.17
Taxes & rent	82	0.37	97	0.43	116	0.49
Utilities	81	0.36	68	0.30	64	0.27
Interest paid	146	0.65	136	0.60	143	0.60
Misc. (including insurance)	79	0.36	68	0.30	66	0.28
Total Operating Expenses	\$3,022	\$13.51	\$2,834	\$12.60	\$3,178	\$13.38
Expansion livestock	32	0.15	53	0.23	66	0.28
Machinery depreciation	168	0.75	159	0.71	167	0.70
Building depreciation	165	0.74	134	0.60	172	0.72
Total Accrual Expenses	\$3,388	\$15.14	\$3,180	\$14.13	\$3,582	\$15.08
<b>ACCRUAL RECEIPTS</b>						
Milk sales	\$2,824	\$12.62	\$2,916	\$12.96	\$3,090	\$13.01
Dairy cattle	198	0.88	226	1.00	274	1.15
Dairy calves	40	0.18	30	0.14	31	0.13
Other livestock	24	0.11	10	0.04	4	0.02
Crops	25	0.11	18	0.08	75	0.32
Miscellaneous receipts	243	1.09	212	0.94	164	0.69
Total Accrual Receipts	\$3,354	\$14.99	\$3,413	\$15.17	\$3,638	\$15.32
<b>PROFITABILITY ANALYSIS (Total)</b>						
Net farm income (without appreciation)		\$-11,862		\$117,660		\$55,958
Net farm income (with appreciation)		\$51,080		140,904		\$241,169
Labor & management income		\$-74,370		33,669		\$-117,965
Number of operators		1.88		2.12		2.48
Labor & management income/operator		\$-39,559		\$15,882		\$-47,567
Rates of return on: Equity capital w/o apprec.		-6.8%		1.7%		-2.1%
Equity capital w/ apprec.		-1.7%		3.2%		3.3%
All capital w/o apprec.		-1.4%		3.2%		1.1%
All capital w/ apprec.		1.4%		4.0%		3.9%

**SELECTED BUSINESS FACTORS FOR THREE LARGE HERD GROUPS**

62 Large Herd Dairy Farms, 2002

Item	19 Farms with 300-400 Cows	18 Farms with 401-599 Cows	25 Farms with ≥ 600 Cows
<u>Cropping Program Analysis</u>			
Total Tillable acres	628	1,024	1,878
Tillable acres rented <sup>22</sup>	308	586	961
Hay crop acres <sup>22</sup>	306	458	818
Corn silage acres <sup>22</sup>	262	354	808
Hay crop, tons DM/acre	3.5	3.3	3.7
Corn silage, tons/acre	16.0	15.0	15.7
Forage DM per cow, tons	7.1	6.5	7.1
Tillable acres/cow	1.8	2.0	1.9
Fertilizer & lime expense/tillable acre	\$32.57	\$29.44	\$27.35
Machinery cost/tillable acre	\$301	\$229	\$257
<u>Dairy Analysis</u>			
Number of cows	349	504	1,010
Number of heifers	246	390	793
Milk sold, lbs.	7,809,122	11,337,786	23,986,936
Milk sold/cow, lbs.	22,379	22,496	23,745
Operating cost of prod. milk/cwt.	\$11.28	\$10.62	\$11.35
Total cost of prod. milk/cwt.	\$14.47	\$13.43	\$14.02
Price/cwt. milk sold	\$12.62	\$12.96	\$13.01
Purchased dairy feed/cow	\$969	\$853	\$997
Purchased dairy feed/cwt. milk	\$4.33	\$3.79	\$4.20
Purchased grain & concentrate as % of milk receipts	32%	27%	30%
Purchased feed & crop expense/cwt. milk	\$4.97	\$4.44	\$4.88
<u>Capital Efficiency</u>			
Farm capital/worker	\$278,867	\$252,043	\$322,519
Farm capital/cow	\$6,512	\$5,891	\$6,463
Real estate/cow	\$2,351	\$1,952	\$2,418
Machinery investment/cow	\$1,285	\$1,152	\$1,028
Asset turnover ratio	0.54	0.59	0.59
<u>Labor Efficiency</u>			
Worker equivalent	8.15	11.78	20.24
Operator/manager equivalent	1.88	2.12	2.48
Milk sold/worker, lbs.	958,174	962,461	1,185,125
Cows/worker	43	43	50
Labor cost/cow	\$658	\$670	\$723
<u>Financial Measures</u>			
Percent equity	53%	52%	51%
Debt/asset ratio - long term	0.49	0.36	0.45
Debt/asset ratio - intermediate & current	0.46	0.54	0.52
Change in net worth with appreciation	\$-27,293	\$-18,829	\$-37,772
Total farm debt per cow	\$3,064	\$2,763	\$3,153
Debt payments made per cow	\$390	\$584	\$403
Debt payments as % of milk sales	14%	20%	13%
Amount available for debt service	\$157,735	\$237,748	\$407,078
Debt coverage ratio for 2002	0.50	0.74	0.74

<sup>22</sup>Average of all farms, not only those reporting data.

### INCOME AND EXPENSE PROFILES BY HERD SIZE

Use two of the following six tables to make an income and expense profile for your dairy farm business. The first two tables represent farms with 300 to 400 cows. The second two tables are of farms with 401-599 cows. The third set of tables are of farms with 600 or more cows. The figures in the quintile columns represent the average of the top 20 percent to the bottom 20 percent for each receipt and expenditure category. Each line is computed independently. The farms that comprise the top 20 percent in milk sales do not necessarily make up the top 20 percent of any other category. On each line circle the income and cost measures closest to the one for your farm. Then draw a vertical line connecting your circles on each table. The strongest profile will be a relatively straight line on the left side of the table.

#### RECEIPTS AND EXPENSES PER COW 19 Large Herd Dairy Farms with 300 – 400 Cows, 2002

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$3,294	\$3,017	\$2,873	\$2,746	\$2,316
Dairy cattle	385	269	184	125	86
Dairy calves	105	43	32	21	16
Other livestock	160	4	0	0	-1
Crops	120	81	31	5	-100
Misc. receipts	384	275	230	193	168
Total Operating Receipts	\$3,962	\$3,593	\$3,406	\$3,218	\$2,759
<u>Accrual Operating Expenses</u>					
Hired labor	\$235	\$432	\$511	\$618	\$821
Dairy grain & concentrate	629	789	908	1,039	1,135
Dairy roughage	0	3	14	47	391
Nondairy feed	0	0	0	0	0
Mach. hire/rent/lease	2	28	75	108	176
Mach. repair & farm veh. exp.	74	132	177	203	259
Fuel, oil & grease	37	56	73	93	119
Replacement livestock	0	0	7	65	386
Breeding	20	27	39	63	84
Vet & medicine	56	84	106	151	231
Milk marketing	111	123	137	164	218
Bedding	8	32	49	59	85
Milking supplies	24	45	64	93	126
Cattle lease	0	0	0	0	22
Custom boarding	0	0	39	135	247
bST expense	0	20	71	90	97
Other livestock expense	9	17	27	53	138
Fertilizer & lime	16	36	61	85	114
Seeds & plants	8	26	41	59	77
Spray/other crop expenses	1	31	49	64	88
Land, building, fence repair	4	18	32	46	73
Taxes	9	25	43	54	68
Real estate rent/lease	4	21	39	56	127
Insurance	13	22	35	48	69
Utilities	52	70	75	89	136
Interest	71	104	144	177	249
Miscellaneous	14	28	36	51	115
Total Operating Expenses	\$2,378	\$2,851	\$3,074	\$3,293	\$3,674
Expansion Livestock	0	0	0	28	177
Machinery Depreciation	49	136	164	223	300
Building Depreciation	45	102	135	195	392
Net Farm Income w/o Apprec.	\$379	\$232	\$68	\$-62	\$-656



**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
19 Large Herd Dairy Farms With 300 – 400 Cows, 2002

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$13.55	\$12.90	\$12.66	\$12.40	\$12.08
Dairy cattle	2.01	1.21	.79	.54	.40
Dairy calves	.48	.19	.15	.10	.07
Other livestock	.76	.03	.00	.00	-.01
Crops	.71	.35	.13	.02	-.41
Misc. receipts	1.86	1.24	1.04	.86	.76
<b>Total Operating Receipts</b>	<b>\$17.72</b>	<b>\$15.80</b>	<b>\$14.99</b>	<b>\$14.39</b>	<b>\$13.53</b>
<u>Accrual Operating Expenses</u>					
Hired labor	\$1.25	\$1.96	\$2.29	\$2.67	\$3.38
Dairy grain & concentrate	3.20	3.69	3.94	4.27	4.93
Dairy roughage	.00	.01	.06	.19	1.95
Nondairy feed	.00	.00	.00	.00	.00
Mach. hire/rent/lease	.01	.12	.33	.56	.87
Mach. repair & farm veh. exp.	.36	.58	.75	.88	1.16
Fuel, oil & grease	.19	.24	.32	.41	.52
Replacement livestock	.00	.00	.03	.30	1.74
Breeding	.08	.13	.20	.26	.37
Vet & medicine	.28	.36	.48	.65	1.02
Milk marketing	.50	.57	.61	.73	1.03
Bedding	.04	.14	.21	.27	.40
Milking supplies	.13	.20	.26	.40	.59
Cattle lease	.00	.00	.00	.00	.11
Custom boarding	.00	.00	.19	.64	1.16
bST expense	.00	.10	.31	.36	.41
Other livestock expense	.04	.09	.11	.24	.61
Fertilizer & lime	.07	.15	.25	.40	.68
Seeds & plants	.03	.13	.18	.25	.34
Spray/other crop expenses	.00	.14	.22	.28	.39
Land, building, fence repair	.02	.08	.14	.20	.32
Taxes	.04	.11	.19	.25	.33
Real estate rent/lease	.02	.10	.17	.26	.56
Insurance	.06	.11	.16	.21	.32
Utilities	.27	.31	.34	.38	.54
Interest	.30	.45	.69	.88	1.10
Miscellaneous	.06	.13	.17	.24	.50
<b>Total Operating Expenses</b>	<b>\$12.08</b>	<b>\$12.79</b>	<b>\$13.22</b>	<b>\$14.42</b>	<b>\$16.01</b>
Expansion Livestock	.00	.00	.00	.13	.84
Machinery Depreciation	.27	.61	.73	.95	1.34
Building Depreciation	.20	.51	.63	.83	1.73
<b>Net Farm Income w/o Apprec.</b>	<b>\$2.09</b>	<b>\$0.98</b>	<b>\$0.30</b>	<b>\$-0.29</b>	<b>\$-2.86</b>

**RECEIPTS AND EXPENSES PER COW**  
18 Large Herd Dairy Farms With 401 – 599 Cows, 2002

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$3,512	\$3,096	\$2,930	\$2,872	\$2,374
Dairy cattle	403	262	228	178	97
Dairy calves	53	42	32	22	11
Other livestock	64	5	1	0	-1
Crops	152	85	21	-21	-90
Misc. receipts	289	250	223	181	156
<b>Total Operating Receipts</b>	<b>\$4,077</b>	<b>\$3,736</b>	<b>\$3,466</b>	<b>\$3,287</b>	<b>\$2,761</b>
<u>Accrual Operating Expenses</u>					
Hired labor	\$292	\$464	\$612	\$654	\$825
Dairy grain & concentrate	578	716	791	898	1,025
Dairy roughage	0	4	42	87	265
Nondairy feed	0	0	0	0	2
Mach. hire/rent/lease	2	41	61	96	189
Mach. repair & farm veh. exp.	68	97	128	157	193
Fuel, oil & grease	35	48	55	64	83
Replacement livestock	0	0	0	4	26
Breeding	13	37	45	62	87
Vet & medicine	74	123	144	159	185
Milk marketing	95	137	142	157	245
Bedding	8	33	44	66	93
Milking supplies	30	50	65	77	143
Cattle lease	0	0	0	0	7
Custom boarding	0	0	17	174	397
bST expense	0	12	53	82	108
Other livestock expense	9	17	29	43	62
Fertilizer & lime	26	46	59	69	117
Seeds & plants	19	38	45	56	62
Spray/other crop expenses	4	34	52	65	87
Land, building, fence repair	8	19	32	54	119
Taxes	12	26	36	48	61
Real estate rent/lease	23	33	57	102	124
Insurance	16	23	28	33	64
Utilities	35	60	76	83	97
Interest	74	118	137	166	208
Miscellaneous	7	19	28	52	91
<b>Total Operating Expenses</b>	<b>\$2,280</b>	<b>\$2,685</b>	<b>\$2,881</b>	<b>\$3,085</b>	<b>\$3,449</b>
Expansion Livestock	0	0	1	36	260
Machinery Depreciation	56	132	176	198	270
Building Depreciation	50	104	141	172	233
<b>Net Farm Income w/o Apprec.</b>	<b>\$647</b>	<b>\$415</b>	<b>\$275</b>	<b>\$109</b>	<b>-\$90</b>

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
 18 Large Herd Dairy Farms With 401 – 599 Cows, 2002

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$14.58	\$13.38	\$12.80	\$12.58	\$12.19
Dairy cattle	1.88	1.24	1.00	0.77	0.45
Dairy calves	.29	.17	.14	.10	.05
Other livestock	.31	.02	.00	.00	-.01
Crops	.67	.36	.09	-.08	-.50
Misc. receipts	1.21	1.09	1.00	.88	.71
Total Operating Receipts	\$17.30	\$15.89	\$15.02	\$14.52	\$14.14
<u>Accrual Operating Expenses</u>					
Hired labor	\$1.49	\$2.10	\$2.59	\$2.90	\$3.46
Dairy grain & concentrate	2.67	3.29	3.65	4.00	4.27
Dairy roughage	.00	.02	.20	.45	1.20
Nondairy feed	.00	.00	.00	.00	.01
Mach. hire/rent/lease	.01	.18	.30	.49	.81
Mach. repair & farm veh. exp.	.34	.42	.58	.70	.80
Fuel, oil & grease	.17	.20	.24	.29	.36
Replacement livestock	.00	.00	.00	.02	.11
Breeding	.06	.16	.20	.27	.38
Vet & medicine	.36	.56	.64	.68	.76
Milk marketing	.46	.61	.64	.71	1.01
Bedding	.04	.15	.20	.29	.40
Milking supplies	.14	.22	.27	.35	.61
Cattle lease	.00	.00	.00	.00	.03
Custom boarding	.00	.00	.07	.78	1.70
bST expense	.00	.06	.25	.34	.42
Other livestock expense	.04	.08	.14	.21	.25
Fertilizer & lime	.12	.21	.26	.29	.69
Seeds & plants	.09	.17	.21	.25	.26
Spray/other crop expenses	.02	.14	.22	.30	.40
Land, building, fence repair	.04	.08	.15	.23	.47
Taxes	.05	.11	.16	.25	.29
Real estate rent/lease	.10	.17	.26	.41	.55
Insurance	.07	.11	.13	.15	.27
Utilities	.19	.27	.31	.37	.40
Interest	.31	.49	.58	.81	1.17
Miscellaneous	.03	.08	.14	.26	.38
Total Operating Expenses	\$11.26	\$12.15	\$12.86	\$13.15	\$14.40
Expansion Livestock	.00	.00	.00	.14	1.11
Machinery Depreciation	.28	.62	.77	.88	1.23
Building Depreciation	.22	.49	.67	.79	.96
Net Farm Income w/o Apprec.	\$2.63	\$1.82	\$1.30	\$0.48	\$-0.35

**RECEIPTS AND EXPENSES PER COW**  
25 Large Herd Dairy Farms With 600 or More Cows, 2002

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$3,439	\$3,187	\$3,071	\$2,988	\$2,866
Dairy cattle	429	312	273	220	159
Dairy calves	41	37	33	26	21
Other livestock	17	3	1	0	-4
Crops	217	124	72	9	-27
Misc. receipts	287	204	152	128	83
Total Operating Receipts	\$4,133	\$3,744	\$3,616	\$3,531	\$3,342
<u>Accrual Operating Expenses</u>					
Hired labor	\$513	\$605	\$663	\$709	\$847
Dairy grain & concentrate	766	880	935	1,021	1,123
Dairy roughage	2	13	32	80	204
Nondairy feed	0	0	0	0	2
Mach. hire/rent/lease	6	22	58	96	198
Mach. repair & farm veh. exp.	65	106	137	152	196
Fuel, oil & grease	40	47	51	58	86
Replacement livestock	0	0	0	6	126
Breeding	21	37	52	65	81
Vet & medicine	100	119	145	160	185
Milk marketing	77	118	130	139	204
Bedding	29	45	57	74	107
Milking supplies	41	55	73	84	127
Cattle lease	0	0	0	2	56
Custom boarding	0	1	18	67	191
bST expense	34	76	89	92	96
Other livestock expense	5	19	28	39	62
Fertilizer & lime	9	37	50	68	98
Seeds & plants	17	37	45	53	82
Spray/other crop expenses	12	51	58	70	108
Land, building, fence repair	9	24	43	57	71
Taxes	14	26	34	48	60
Real estate rent/lease	20	46	64	92	164
Insurance	14	20	26	32	61
Utilities	31	53	63	81	107
Interest	51	110	141	166	278
Miscellaneous	13	25	37	47	67
Total Operating Expenses	\$2,870	\$3,007	\$3,123	\$3,367	\$3,664
Expansion Livestock	0	2	31	74	241
Machinery Depreciation	63	123	159	206	312
Building Depreciation	64	114	148	191	312
Net Farm Income w/o Apprec.	\$411	\$197	\$82	\$-27	\$-367

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
25 Large Herd Dairy Farms With 600 or More Cows, 2002

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$13.94	\$13.15	\$12.91	\$12.64	\$12.33
Dairy cattle	1.77	1.28	1.10	.97	.68
Dairy calves	.18	.15	.14	.11	.08
Other livestock	.07	.01	.00	.00	-.02
Crops	.91	.52	.31	.04	-.11
Misc. receipts	1.17	.84	.64	.53	.36
Total Operating Receipts	\$16.58	\$15.94	\$15.26	\$14.86	\$14.09
<u>Accrual Operating Expenses</u>					
Hired labor	\$2.25	\$2.53	\$2.76	\$2.96	\$3.40
Dairy grain & concentrate	3.33	3.74	3.87	4.15	4.66
Dairy roughage	.01	.05	.14	.34	.85
Nondairy feed	.00	.00	.00	.00	.01
Mach. hire/rent/lease	.02	.10	.24	.40	.83
Mach. repair & farm veh. exp.	.29	.45	.56	.63	.79
Fuel, oil & grease	.17	.20	.22	.25	.35
Replacement livestock	.00	.00	.00	.02	.55
Breeding	.09	.15	.21	.27	.35
Vet & medicine	.43	.52	.59	.66	.75
Milk marketing	.32	.51	.55	.59	.80
Bedding	.13	.19	.24	.30	.44
Milking supplies	.16	.23	.31	.37	.52
Cattle lease	.00	.00	.00	.01	.24
Custom boarding	.00	.00	.08	.28	.85
bST expense	.15	.31	.35	.39	.41
Other livestock expense	.02	.08	.12	.16	.25
Fertilizer & lime	.04	.15	.21	.29	.39
Seeds & plants	.07	.16	.18	.22	.35
Spray/other crop expenses	.05	.21	.25	.28	.44
Land, building, fence repair	.04	.10	.18	.24	.29
Taxes	.06	.11	.15	.19	.26
Real estate rent/lease	.09	.19	.25	.38	.73
Insurance	.06	.09	.10	.13	.24
Utilities	.13	.22	.26	.34	.43
Interest	.21	.45	.59	.70	1.17
Miscellaneous	.05	.10	.15	.19	.27
Total Operating Expenses	\$12.14	\$12.74	\$13.29	\$13.92	\$14.87
Expansion Livestock	.00	.01	.13	.30	.99
Machinery Depreciation	.27	.49	.65	.91	1.28
Building Depreciation	.27	.48	.61	.83	1.31
Net Farm Income w/o Apprec.	\$1.75	\$.77	\$.36	\$-.12	\$-1.52

## FARM BUSINESS CHART

The Farm Business chart is a tool which can be used in analyzing your business. Compare your business by drawing a line through or near the figure in each column which represents your current level of performance. The ten figures in each column represent the average of each 10 percent or decile of farms included in this summary. Each column of the chart is independent of the others. The farms which are in the top 10 percent for one factor would not necessarily be the same farms which make up the 10 percent for any other factor. Use this information to identify business areas where more challenging goals are needed.

### FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS

62 Large Herd Dairy Farms, 2002

Size of Business			Rates of Production			Labor Efficiency	
Worker Equivalent	Number of Cows	Pounds of Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
(11) <sup>23</sup>	(11)	(11)	(10)	(9)	(9)	(11)	(11)
27.1	1,478	34,118,888	26,865	5.6	22	78	1,515,321
23.8	1,090	25,996,700	25,656	4.5	19	58	1,289,405
18.4	866	21,266,517	24,576	4.2	18	52	1,224,467
14.9	674	16,296,015	23,913	4.0	17	50	1,167,903
13.4	576	13,592,817	23,560	3.8	17	48	1,099,084
11.7	513	11,831,636	23,200	3.2	15	46	1,053,743
10.6	454	10,022,444	22,884	3.1	15	43	989,655
9.4	395	8,526,056	22,187	3.0	14	40	957,632
8.0	355	8,093,064	21,533	2.8	13	37	856,637
5.9	314	6,509,857	17,298	2.1	11	31	708,174

### 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
(10)	(10)	(11)	(11)	(10)	(10)
\$570	22%	\$261	\$712	\$788	\$3.63
725	26	376	992	932	4.20
773	27	420	1,069	974	4.39
831	28	454	1,149	1,032	4.59
883	29	499	1,216	1,089	4.72
913	30	532	1,246	1,120	4.82
946	31	567	1,308	1,178	5.04
1,019	33	599	1,348	1,235	5.22
1,067	35	638	1,454	1,299	5.41
1,159	39	705	1,581	1,444	6.38

<sup>23</sup> ( ) = page number of the participant's DFBS where factor is located.

CALC=Need to calculate for each farm; refer to the Glossary for definition.

Cost Control (con't)					
Hired Labor Expense			Expenses Per Cwt.		
Per Cwt.	Per Hired Worker Equiv.	As % of Milk Sales	Milk Marketing	Veterinary & Medicine	Other Livestock
(11)	(11)	(11)	(10)	(10)	(10)
\$1.31	\$19,627	10%	\$0.34	\$0.30	\$0.02
1.91	25,338	15	0.50	0.39	0.05
2.20	28,631	17	0.54	0.45	0.07
2.37	30,641	18	0.56	0.52	0.09
2.53	33,555	19	0.58	0.57	0.10
2.66	34,734	20	0.61	0.61	0.13
2.79	35,834	22	0.64	0.65	0.16
2.94	37,722	23	0.68	0.68	0.20
3.17	41,018	25	0.78	0.72	0.24
3.59	49,671	28	1.07	0.92	0.47

Cost of Producing Milk					
Machinery & Crop Expense		Operating Cost		Total Cost	
Per Tillable Acre	Per Ton Dry Matter	Per Cow	Per Cwt.	Per Cow	Per Cwt.
(CALC)	(CALC)	(10)	(10)	(10)	(10)
\$175	\$41	\$1,783	\$9.19	\$2,415	\$12.15
258	67	2,214	9.93	2,895	12.69
285	76	2,357	10.19	2,993	13.03
319	83	2,426	10.60	3,078	13.36
335	92	2,502	10.89	3,187	13.68
349	97	2,622	11.24	3,285	13.97
369	105	2,764	11.65	3,384	14.29
399	113	2,919	12.02	3,502	14.99
447	121	3,014	12.52	3,700	15.59
916	344	3,179	13.34	3,957	16.97

bST Expense Per Cow	bST Expense Per Cwt.	Percent Herd On bST	Culling Rate	Expense Ratios		
				Operating	Depreciation	Interest
(10)	(10)	(CALC)	(10)	(11)	(11)	(11)
\$ 5	\$0.02	3%	15	74%	3%	2%
32	0.15	23	25	78	6	2
58	0.26	42	28	80	7	3
75	0.31	55	30	81	8	3
80	0.32	59	31	82	9	4
88	0.35	64	32	84	10	4
91	0.37	66	35	86	11	5
93	0.39	68	37	90	11	5
95	0.40	70	40	92	13	7
105	0.44	77	43	99	18	8

Income Generation				
Milk Receipts Per Cwt.	Net Milk Receipts Per Cwt.	Milk Receipts Per Cow	Dairy Cattle Sales Per Cow	Dairy Calf Sales Per Cow
(10)	(10)	(10)	(10)	(10)
\$14.49	\$13.78	\$3,536	\$466	\$79
13.53	12.81	3,303	348	44
13.15	12.58	3,154	294	40
12.97	12.35	3,057	271	37
12.86	12.13	3,000	253	34
12.70	12.09	2,960	229	30
12.62	12.04	2,905	186	26
12.51	11.94	2,851	165	23
12.32	11.80	2,777	135	20
12.10	11.48	2,277	82	11
Debt Management				
Farm Debt Per Cow		Cost of	Planned Debt Payments	
Total	Intermediate & Long Term	Borrowed Capital	Per Cow	Per Cwt.
(5)	(5)	(5)	(8)	(8)
\$1,157	\$614	2.9%	\$73	\$0.32
1,947	1,308	3.6	293	1.24
2,369	1,739	3.8	382	1.61
2,711	1,989	4.1	441	1.99
2,901	2,251	4.3	480	2.23
3,178	2,442	4.6	523	2.46
3,492	2,692	4.9	597	2.69
3,799	2,928	5.3	665	2.90
4,087	3,387	6.0	748	3.23
4,994	4,102	6.9	871	3.67
Cash Flow Analysis				
Amount Available for Family Living, Debt Service & Investment		Personal Withdrawals & Family Expenditures		Cash Flow Coverage Ratio
Per Cow	Per Cwt.	Per Cow	Per Cwt.	
(Optional Page 12)		(CALC)	(CALC)	(8)
\$997	\$4.53	\$587	\$2.57	2.22
838	3.60	297	1.37	1.65
808	3.40	236	1.07	1.35
753	3.25	201	0.91	1.07
687	3.03	181	0.79	0.95
637	2.87	160	0.69	0.80
588	2.63	143	0.62	0.71
530	2.37	120	0.49	0.65
441	1.98	95	0.41	0.55
251	1.04	63	0.27	-0.80
Capital Efficiency				
Farm Capital Per Cow	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Labor Cost Per Worker Equivalent	Asset Turnover Ratio
(11)	(11)	(11)	(CALC)	(11)
\$3,883	\$682	\$441	\$21,261	0.92
5,157	1,471	746	25,376	0.73
5,785	1,891	879	27,775	0.67
6,100	2,027	980	29,512	0.63
6,351	2,229	1,090	32,027	0.59
6,536	2,369	1,193	32,936	0.56
6,749	2,673	1,301	33,821	0.54
7,246	2,877	1,468	35,609	0.50
7,783	3,231	1,646	37,705	0.47
8,860	3,845	2,075	44,174	0.40



## Solvency

Percent Equity	Leverage Ratio	Debt to Asset Ratios		
		Total	Current/Intermediate	Long Term
(5)	(5)	(5)	(5)	(5)
82%	0.25	0.20	0.19	0.00
69	0.46	0.32	0.31	0.12
65	0.60	0.37	0.39	0.22
57	0.81	0.45	0.47	0.28
52	0.96	0.49	0.53	0.35
48	1.18	0.54	0.57	0.48
44	1.37	0.58	0.60	0.61
40	1.64	0.62	0.65	0.70
36	1.86	0.65	0.70	0.83
26	3.10	0.75	0.81	1.05

## Profitability

Labor and Mgmt. Income Per Operator	Rate Return to Equity Capital		Rate Return to All Capital	
	Without Appreciation	With Appreciation	Without Appreciation	With Appreciation
(3)	(3)	(3)	(3)	(3)
\$121,609	13.7%	24.8%	8.7%	12.3%
58,457	5.2	9.7	5.1	7.3
36,278	3.2	6.9	3.9	6.1
15,427	1.8	5.3	3.1	4.9
1,370	0.2	2.8	2.2	4.0
-26,354	-2.2	1.2	1.5	3.1
-43,214	-3.9	-0.5	0.4	2.1
-61,048	-7.5	-4.0	-0.8	1.0
-97,947	-11.2	-8.8	-3.2	-1.4
-358,708	-28.0	-19.2	-7.4	-4.5

## Profitability, Continued

Net Farm Income Without Appreciation		Net Farm Income From Operations	Net Income Efficiency
Per Cow	Per Cwt.	Ratio	Ratio
(10)	(10)	(3)	(CALC)
\$560	\$2.45	15%	13%
411	1.81	12	9
282	1.34	9	8
234	0.96	6	6
170	0.72	5	5
92	0.42	3	4
4	0.02	0	3
-19	-0.08	0	2
-156	-0.66	-4	0
-571	-2.44	-17	-11

## IDENTIFY AND SET GOALS

If businesses are to be successful, they must have direction. Written goals help provide businesses with an identifiable direction over both the long and short term. Goal setting is as important on a dairy farm as it is in other businesses. Written goals are a tool which farm operators can use to ensure that the business continues to move in the proper direction. Goals should be SMART:

1. Goals should be Specific.
2. Goals should be Measurable.
3. Goals should be Achievable but challenging.
4. Goals should be Rewarding.
5. Goals should designate a Time when each goal will be achieved.

Goal setting on a dairy farm does not have to be a complex process. In many cases it provides a process for writing down and agreeing on goals that you have already given some thought to. It is also important to remember that once you write out your goals they are not cast in concrete. If a change takes place which has a major impact on the farm business, the goals should be reworked to accommodate that change. Refer to your goals as often as necessary to keep the farm business progressing.

It is important to identify both objectives (long-range) and goals (short-range) when looking at the future of your farm business.

A suggested format for writing out your goals is as follows:

- a. Begin with a mission statement which describes why the business exists based on the preferences and values of the owners.
- b. Identify 4-6 objectives.
- c. Identify SMART goals.

### Worksheet for Setting Goals

#### I. Mission and Objectives

---



---



---



---



---



---



---



---



## GLOSSARY AND LOCATION OF COMMON TERMS

Some of the following definitions include formulas for calculating the factor being described. Page references to the individual Dairy Farm Business Summary are provided in parentheses for ease of calculation for your farm.

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

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

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

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

**Annual Cash Flow Statement** - (defined on page 21).

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

**Asset Turnover Ratio** - The ratio of total farm income to total farm assets, calculated by dividing total accrual operating receipts plus appreciation by average total farm assets.

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

**Capital Efficiency** - The amount of capital invested per production unit. Relatively high investments per worker with low to moderate investments per cow imply efficient use of capital.

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

**Cash Flow Coverage Ratio** - (defined on page 23).

**Cash Paid** - (defined on page 11).

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

**Change in Accounts Payable** - (defined on page 11).

**Change in Accounts Receivable** - (defined on page 11).

**Change in Inventory** - (defined on page 11).

**Cost of Borrowed Capital** - A weighted average of the cost of borrowed capital to the farm. Calculate by multiplying end of year principal of each loan that is borrowed by the interest rate for each loan at that time. Add up each amount that is calculated for each loan and then divide by total amount of borrowed funds. Do not include accounts payable. This information is found on pages 8 & 9 of the data entry form.

**Cows per Worker Equivalent for the Dairy Enterprise** - Determined by dividing the average number of milking and dry cows by the number of worker equivalents in the dairy enterprise.

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

**Current Portion** - (defined on page 16).

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

**Debt Coverage Ratio** – (defined on page 23).

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

**Debt to Asset Ratios** - (defined on page 19).

**Deferred Taxes** - (defined on page 18).

**Depreciation Expense Ratio** - The percentage of Total Accrual Receipts that is charged to depreciation expense. Machinery Depreciation (DFBS p. 2) plus Building Depreciation (p. 2) divided by Total Accrual Receipts (p. 3) times 100.

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

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

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

**Farm Debt Payments as Percent of Milk Sales** - Amount of milk income committed to debt repayment, calculated by dividing planned debt payments by total milk receipts. A reliable measure of repayment ability, see page 18.

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

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

**Hired Labor Expense per Hired Worker Equivalent** - The total cost to the farm per hired worker equivalent. Divide accrual hired labor expense (p. 2) by number of hired plus family paid worker equivalents (p. 11).

**Hired Labor Expense as % of Milk Sales** - The percentage of the gross milk receipts that is used for labor expense. Divide accrual hired labor expense (p. 2) by accrual milk sales (p. 3).

**Income Statement** - A complete and accurate account of farm business receipts and expenses used to measure profitability over a period of time such as one year or one month.

**Interest Expense Ratio** - The percentage of Total Accrual Receipts that is used for interest expense. Total Accrual Interest (p. 2) divided by Total Accrual Receipts (p. 3) times 100.

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

**Labor and Management Income Per Operator** - The return to the owner/manager's labor and management per full-time operator.

**Labor Efficiency** - Production capacity and output per worker.

**Leverage Ratio** - Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.

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

**Machinery & Crop Expenses per Tillable Acre** - A measure of the cost to produce crops on a tillable acre basis. Add total crop expenses (p. 2) and total machinery expenses (p. 9), then divide by number of tillable acres, owned & rented (p. 9).

**Machinery & Crop Expense per Ton Dry Matter** - A measure of the cost per ton of DM to produce a crop. It is not a measure of total costs to produce feed. Add total crop expenses (p. 2) and total machinery expenses (p. 9), then divide by total forage, production, tons DM (p. 9).

**Milk Sold per Worker Equivalent for the Dairy Enterprise** – Determined by dividing the total amount of milk produced in the year by the number of worker equivalents in the dairy enterprise

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

**Net Farm Income from Operations Ratio** - The percentage of each gross dollar that is generated that is net farm income. Net Farm Income without Appreciation (p. 3) divided by Total Accrual Receipts (p. 3) times 100.

**Net Farm Income without Appreciation per Cwt.** - The amount of net farm income, without appreciation, per cwt., that the farm generated. Divide net farm income without appreciation (p. 3) by number of cwt. of milk sold, which is total milk sold (p. 10) divided by 100.

**Net Farm Income without Appreciation per Cow** - The amount of net farm income, without appreciation, per cow that the farm generated. Divide net farm income without appreciation (p. 3) by average number of cows for the year (p. 10).

**Net Income Efficiency Ratio** - A measure of how efficiently the business is in generating net income, taking into account the differences in number of operators, debt levels, and amount of unpaid family labor being used on a farm. Net farm income without appreciation minus unpaid family labor charge (p. 3), plus Accrual Interest Paid (p. 2), divided by number of operators (p. 3), divided by Total Accrual Receipts (p. 3) times 100.

**Net Milk Receipts per Cwt.** - The mail box price received by farmers before any farmer authorized assignments or deductions. Accrual Receipts from milk, per cwt. (p. 10) minus accrual milk marketing expense per cwt. (p. 10).

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

**Operating Costs of Producing Milk** - (defined on page 30).

**Operating Expense Ratio** - The percentage of Total Accrual Receipts that is used for operating expenses, excluding interest & depreciation. Total Accrual Expenses (p. 2) minus Machinery Depreciation (p. 2), minus Building Depreciation (p. 2), minus Accrual Interest Expense (p. 2), divided by Total Accrual Receipts (p. 3) times 100.

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

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

**Percent Herd on bST** – Calculated by taking the accrual bST expense for the year and dividing by an average price of \$5.25 per dose, then dividing by 26, then dividing by the average number of milking and dry cows in the herd.

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

**Personal Withdrawals & Family Expenditures per Cwt.** - The amount of money on a per cwt. basis that the family uses for family living and personal expenses. This is the total amount, per cwt., used by the family, including farm and nonfarm income. Personal withdrawals/family expense, including nonfarm debt payments (p. 7) divided by pounds milk sold (p. 10) divided by 100.

**Personal Withdrawals & Family Expenditures per Cow** - The amount of money on a per cow basis that the family used for family living and personal expenses. This is the total amount, per cow, used by the family, including farm and nonfarm income. Personal withdrawals/family expense, including nonfarm debt payments (p. 7) divided by average number of cows (p. 10).

**Pounds of Milk Harvested per Hour of Milking Labor** – Calculated by dividing the total pounds milk produced by the total number of labor hours used to operate the milking center for 1 year. The total number of labor hours is estimated by multiplying the number of hours to operate the milking center for one day, which was provided by the participating dairies, by 365. Operating the milking center includes setting up, milking, and washing down the milking center, but doesn't include time spent to bring cows to and from the milking center.

**Pounds of Milk Harvested per Machine Per Year** – Calculated by dividing the total pounds of milk produced for the year by the number of milking machines in the milking center.

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

**Purchased Inputs Cost of Producing Milk** - (defined on page 30).

**Repayment Analysis** - an evaluation of the business' ability to make planned debt payments.

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

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

**Return on Total Capital** - (defined on page 16).

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

**Total Costs of Producing Milk** - (defined on page 30).

**Total Cows Milked Per Hour of Milking Labor Per Day** – Determined by dividing the average number of milking and dry cows by the labor hours required to operate the milking center for a one day period.

**Total Labor Costs per Worker Equivalent, All Labor** - The average cost per worker equivalent when considering all labor (hired, paid family, family non-paid, and operators) used on the farm and total costs for this labor. Total Labor Cost (p. 11) divided by number of worker equivalents (p. 11).

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

**Worker Equivalents for the Dairy Enterprise** – Determined by the farmer estimating how many of hours of labor are spent in the milking center and dairy complex performing all routine tasks. Labor spent in the field or in the dairy replacement enterprise is excluded. The daily labor estimate is multiplied by 365 days and then divided by 2,760 hours to get the number of worker equivalents.

## INDEX

	Page(s)		Page(s)
Accounts Payable .....	13, 17	Financial Lease .....	17
Accounts Receivable .....	13, 17	Income Statement.....	11
Accrual Expenses .....	12, 13	Inflows .....	21
Accrual Receipts.....	13	Labor & Mgmt. Income .....	15
Acreage.....	26	Labor & Mgmt. Income Per Oper.....	15
Advanced Government Receipts .....	16, 17	Labor Efficiency .....	32
Age .....	32	Land Resources .....	26
Amount Available for Debt Service .....	23	Liquidity.....	19
Annual Cash Flow Statement .....	21	Lost Capital.....	19
Appreciation .....	14, 20, 28	Machinery Expenses .....	12, 27
Asset Turnover Ratio.....	31	Marketing.....	9
Balance Sheet .....	17	Milk Price .....	9,10
Barn Type .....	11	Milk Production .....	28
Business Type.....	11	Milking Frequency.....	11
Capital Efficiency .....	32	Milking System.....	11
Cash From Nonfarm Capital Used in Business.....	21	Money Borrowed.....	21
Cash Flow Coverage Ratio .....	23	Net Farm Income .....	14
Cash Paid .....	11	Net Investment .....	19
Cash Receipts .....	13, 21	Net Worth .....	17
Change in Accounts Payable .....	13	Number of Cows.....	28
Change in Accounts Receivable.....	13	Operating Costs of Producing Milk .....	30, 31
Change in Inventory .....	12, 13	Opportunity Cost.....	16
Change in Net Worth.....	20	Other Livestock Expenses.....	12
Crop Expenses .....	12, 27	Outflows.....	21
Crop/Dairy Ratios.....	26	Percent Equity .....	18, 19
Current Portion .....	16, 17	Personal Withdrawals and Family Expenditures Including Nonfarm Debt Payment.....	21
Dairy (farm).....	11	Principal Payments.....	21
Dairy Cash-Crop (farm) .....	11	Profitability .....	14
Dairy Replacements.....	8	Purchased Inputs Cost.....	30, 31
Debt Coverage Ratio .....	23	Receipts.....	13
Debt per Cow.....	19	Record System .....	11
Debt to Asset Ratios .....	19	Repayment Analysis .....	23
Deferred Taxes .....	18	Replacement Livestock .....	12
Depreciation .....	12, 19	Retained Earnings.....	20
Dry Matter .....	26	Return on Equity Capital .....	16
Education.....	32	Return on Total Capital.....	16
Equity Capital.....	16	Solvency.....	19
Expansion Livestock .....	12, 21	Total Costs of Producing Milk.....	30, 31
Expenses.....	12	Whole Farm Method .....	30, 31
Farm Business Chart.....	43, 44, 45, 46	Worker Equivalent.....	32
Farm Debt Payments as Percent of Milk Sales.....	23	Yields Per Acre .....	26
Farm Debt Payments Per Cow.....	23		