

# ***DAIRY FARM BUSINESS SUMMARY***

*June 2013*



*E.B. 2013-11*

## ***NEW YORK LARGE HERD FARMS, 300 COWS OR LARGER 2012***



*You can't manage what you can't measure  
but if you measure it you can improve it!*

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The Dairy Farm Business Summary and Analysis Project is funded in part by:



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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 .....	19
Cash Flow Statement .....	20
Repayment Analysis .....	22
Cropping Analysis .....	25
Dairy Analysis .....	26
Cost of Producing Milk .....	31
Capital and Labor Efficiency Analysis .....	34
Labor Cost Evaluation .....	35
CONDENSED SUMMARY AND SELECTED BUSINESS FACTORS .....	37
INCOME AND EXPENSE PROFILES BY HERD SIZE .....	39
FARM BUSINESS CHART .....	45
IDENTIFY AND SET GOALS .....	49
GLOSSARY AND LOCATION OF COMMON TERMS .....	51
INDEX .....	55

# **2012 DAIRY FARM BUSINESS SUMMARY AND ANALYSIS**

## **LARGE HERD DAIRY FARMS<sup>1</sup>**

### **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 599 cows, 600 to 899 cows, and 900 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 and Analysis Project, 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. One hundred and two 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 2011 to 2012 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 108 large herd farms that participated in the 2012 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 108 large herd farms that participated in the 2012 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 percent large farms.

The fourth section presents a condensed summary and selected business factors for farms with 300-599 cows, 600-899 cows, and farms with 900 and more cows.

The fifth section contains the income and expense profiles for the 300-599 cow farms, 600-899 cow farms, and 900 and more cow farms on a per cow and per hundredweight of milk basis.

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

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<sup>1</sup> The large herd summary is comprised of farms with 300 or more cows. Albany, Cayuga, Chautauqua, Chenango, Clinton, Cortland, Delaware, Erie, Genesee, Jefferson, Lewis, Livingston, Madison, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Otsego, Rensselaer, Saratoga, Schuyler, St. Lawrence, Tompkins, Washington, Wayne, and Wyoming counties had farms of this size participating in 2012. This report was written by Jason Karszes, Senior Extension Associate, Pro-Dairy and Wayne A. Knoblauch, Professor, Farm Management. Cathryn Dymond was in charge of data and publication preparation. Data were collected by Cornell Cooperative Extension educators across the state. We also acknowledge the cooperation of Farm Credit East Association; and Dehm Associates, for their assistance in data collection.

## PROGRESS OF THE FARM BUSINESS

The 2012 business year for the New York State dairy industry showed decreased earnings from 2011, continuing the trend in variation in earnings from one year to the next. Decreases in milk prices, increases in feed costs, and variable growing conditions continued to provide challenges to the dairy industry. Milk production per cow and herd size continued to grow. With the combination of changes during the year, while profits were down from 2011, 2012 was still a profitable year for the average farm over 300 cows in New York, leading to continued improvements in the financial position of the farm.

For both 2011 and 2012, 102 farms that averaged more than 300 cows in New York participated in the Dairy Farm Business Summary and Analysis Program (DFBS), administered by Cornell Cooperative Extension and Cornell University. The tables on the following two pages show selected factors and receipts and expenses, per cow and per hundredweight from the 102 farms that participated in the DFBS project each of the last two years.

**Milk Income.** Gross milk prices decreased 6.2 percent to \$19.79 per hundredweight, a decrease of \$1.91, but still representing the third highest average milk price over the last 6 years. Milk marketing expenses increased 1 cent to \$0.86 per hundredweight, driven by contributions to the CWT program in 2011. These two changes led to a decrease of 9.1 percent in net milk price received on the farm, averaging \$18.93 per hundredweight. Milk production per cow increased 2.8 percent to 25,736 pounds per cow. Gross milk revenue per cow decreased 6.2 percent from the previous year. Average herd size for the participating farms increased by 3.8 percent to 863 cows. With both milk sold per cow and herd size increasing, total milk pounds shipped per farm increased 6.6 percent. With the challenging growing conditions in 2012, hay yield decreased 14.3 percent and corn silage yield increased slightly from 16.6 to 16.7 tons per acre. While yields decreased, tillable land worked increased by 4.7 percent and crop revenue per cow increased 52 percent to \$180. With all factors combined, total revenue per cow decreased 2.5 percent, falling \$158 per cow to \$5,935.

**Cost Control.** Costs continued to increase on the participating farms. The increase in purchased grain, forages, and fertilizer represents the 90 cent increase in farm operating costs per hundredweight. These increases were driven by both increases in cost per unit and the quantity and quality of forages due to the challenging growing conditions over the last two years. Purchased grain and concentrates increased 11.4 percent, rising \$0.70 to \$6.82 per hundredweight. Fertilizer purchased by the farm increased 13 cents per hundredweight, or 29.5 percent from the previous year.

Worker equivalents increased 5.8 percent, a faster pace than which herd size increased, leading to a decrease in cows per worker of 2.2 percent. The increase in milk sold per worker offset the decrease in cows per worker, leading to an increase of 0.7 percent in milk sold per worker, averaging 1,156,668 pounds for 2012. Hired labor costs per worker equivalent increased 1.3 percent. The increase in cost per hired worker coupled with a small growth in milk sold per worker lead to an increase in hired labor costs per hundredweight, increasing 1.1 percent to \$2.85.

The combination of these changes led to an increase in farm operating costs of \$0.90, or 5.0 percent, to \$18.95 per hundredweight.

**Capital Investment.** The average investment in the farm increased 7.5 percent to \$10,157 per cow. Additional investments in the farm plus increasing value of land were the key factors leading to the increased investment per cow.

**Decrease in Earnings.** Profits fell in 2011, continuing the recent trend of large changes in earnings from year to year. The 6.2 percent decrease in milk price along with the 2.8 percent increase in total farm operating costs per hundredweight were not offset by the increase in herd size or milk production. Net farm income without appreciation fell to \$570,862. Net farm income with appreciation decreased to \$817,225.

- Labor and management income per operator/manager decreased 66.4 percent, from \$339,800 in 2011 to \$114,147 in 2012.
- Rate of return to all capital without appreciation decreased to 5.75 percent, from 12.3 percent in 2011. Rate of return on equity capital without appreciation fell to 6.7 percent.
- Farm net worth increased by 8.3 percent.
- Debt to asset ratio increased from .31 to .32, reflecting the use of borrowed funds to make investments on the farm.

Overall, 2012 was a year of average earnings, a lower level than 2011, but continuing the rebound from 2009 for the 300 cow and larger farms. While, on average, farms showed positive earnings in 2012, the changes on individual farms varied, with some farms actually showing increases from 2011, with changes to operating costs, milk production, and growing conditions offsetting the increase in milk prices.

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. 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. If you would like help in developing and looking at the trends in your business, contact your local extension office and become involved in a financial management education program.

**PROGRESS OF THE FARM BUSINESS**  
Same 102 Large Herd Dairy Farms, 2011 & 2012

Selected Factors	Average of 102 Farms		Percent Change
	2011	2012	
<u>Size of Business</u>			
Average number of cows	853	885	3.8
Average number of heifers	742	767	3.4
Milk sold, lbs.	21,369,591	22,774,789	6.6
Worker equivalent	18.61	19.69	5.8
Total tillable acres	1,686	1,765	4.7
<u>Rates of Production</u>			
Milk sold per cow, lbs.	25,043	25,736	2.8
Butterfat per cow, lbs. <sup>2</sup>	919	969	5.4
Protein per cow, lbs. <sup>2</sup>	772	806	4.4
Hay DM per acre, tons	3.5	3.0	-14.3
Corn silage per acre, tons	16.6	16.7	0.6
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	46	45	-2.2
Milk sold per worker, lbs.	1,148,285	1,156,668	0.7
Hired labor cost per cwt.	\$2.82	\$2.85	1.1
Hired labor cost per worker	\$37,525	\$37,994	1.3
Hired labor cost as % of milk sales	13.0%	14.4%	10.8
<u>Cost Control</u>			
Grain & concentrate purchased as % of milk sales	28%	34%	21.4
Grain & concentrate per cwt. milk	\$6.12	\$6.82	11.4
Dairy feed & crop expense per cwt. milk	\$7.58	\$8.53	12.5
Labor & machinery costs per cow	\$1,623	\$1,693	4.3
Total farm operating costs per cwt. sold	\$18.05	\$18.95	5.0
Interest costs per cwt. milk	\$0.48	\$0.45	-6.3
Operating cost of producing cwt. of milk	\$15.47	\$15.85	2.5
Net milk income over purchased feed costs per cow	\$3,684	\$3,115	-15.5
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$9,446	\$10,157	7.5
Machinery & equipment per cow	\$1,544	\$1,667	8.0
Asset turnover ratio	0.67	0.61	-9.0
<u>Income Generation</u>			
Gross milk sales per cow	\$5,431	\$5,094	-6.2
Gross milk sales per cwt.	\$21.69	\$19.79	-8.8
Net milk sales per cwt.	\$20.83	\$18.93	-9.1
Dairy cattle sales per cow	\$342	\$410	19.9
Dairy calf sales per cow	\$32	\$45	40.6
<u>Profitability</u>			
Net farm income without appreciation	\$1,035,184	\$570,862	-44.9
Net farm income with appreciation	\$1,229,831	\$817,225	-33.6
Labor & mgt. income per operator/manager	\$339,800	\$114,147	-66.4
Rate of return on equity capital w/o appreciation	16.50%	6.73%	-59.2
Rate of return on all capital without appreciation	12.29%	5.75%	-53.2
<u>Financial Summary (excluding deferred taxes)</u>			
Farm net worth, end year	\$5,877,380	\$6,365,466	8.3
Debt to asset ratio	0.31	0.32	3.2
Farm debt per cow	\$3,080	\$3,397	10.3

<sup>2</sup> Average of 98 large herd dairy farms that provided this data.

**RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT**

Same 102 Large Herd Dairy Farms, 2011 &amp; 2012

Item	2011		2012	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average number of cows	853		885	
Cwt. of milk sold		213,696		227,748
<b><u>ACCRUAL OPERATING RECEIPTS</u></b>				
Milk	\$5,431.00	\$21.69	\$5,094.00	\$19.79
Dairy cattle	342	1.36	410	1.59
Dairy calves	32	0.13	45	0.18
Other livestock	15	0.06	16	0.06
Crops	118	0.47	180	0.70
Miscellaneous receipts	<u>156</u>	<u>0.62</u>	<u>191</u>	<u>0.74</u>
Total Receipts	\$6,093	\$24.33	\$5,935	\$23.06
<b><u>ACCRUAL OPERATING EXPENSES</u></b>				
Hired labor	\$707.00	\$2.82	\$734.00	\$2.85
Dairy grain & concentrate	1,533	6.12	1,756	6.82
Dairy roughage	93	0.37	112	0.43
Nondairy feed	0	0.00	0	0.00
Professional nutritional services	1	0.01	1	0.00
Machine hire, rent & lease	95	0.38	100	0.39
Machine repair & vehicle expense	232	0.92	243	0.95
Fuel, oil & grease	212	0.85	218	0.85
Replacement livestock	19	0.08	13	0.05
Breeding	54	0.21	53	0.21
Veterinary & medicine	169	0.68	172	0.67
Milk marketing	214	0.85	222	0.86
Bedding	98	0.39	105	0.41
Milking supplies	93	0.37	90	0.35
Cattle lease	4	0.02	6	0.02
Custom boarding	88	0.35	96	0.37
bST expense	56	0.22	50	0.20
Livestock professional fees	15	0.06	16	0.06
Other livestock expense	17	0.07	18	0.07
Fertilizer & lime	110	0.44	146	0.57
Seeds & plants	101	0.40	113	0.44
Spray & other crop expense	54	0.22	62	0.24
Crop professional fees	6	0.02	7	0.03
Land, building, fence repair	96	0.38	95	0.37
Taxes	54	0.21	57	0.22
Real estate rent/lease	75	0.30	71	0.28
Insurance	43	0.17	43	0.17
Utilities	102	0.41	95	0.37
Interest paid	121	0.48	117	0.45
Other professional fees	26	0.10	31	0.12
Miscellaneous	<u>33</u>	<u>0.13</u>	<u>31</u>	<u>0.12</u>
Total Operating Expenses	\$4,520	\$18.05	\$4,878	\$18.95
Expansion livestock	15	0.06	44	0.17
Extraordinary expense	0	0.00	0	0.00
Machinery depreciation	209	0.84	224	0.87
Real estate depreciation	<u>134</u>	<u>0.54</u>	<u>145</u>	<u>0.56</u>
Total Expenses	\$4,878	\$19.49	\$5,291	\$20.55
Net Farm Income Without Appreciation	\$ 1,213	\$ 4.84	\$645	\$ 2.51

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

In 2012, 15 farms across all herd sizes filled out a supplementary data collection form in order to gain information on additional performance factors for dairy farms. 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 15 farms and only represents these 15 farms. See the Glossary beginning on page 51 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 108 farms over 300 cows that participated in the DFBS project in 2012. 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.

Twenty farms that were in the top 20 percent in 2012 were also in the summary in 2011. The table on page 7 shows income and expenses for these farms for both 2011 and 2012. 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

15 New York Dairy Farms, 2012

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	3,081	45	1,144,697
	1,979	27	722,307
	1,601	23	583,761
	1,231	19	519,633
Average of Lowest Quintile	956	15	294,748
Overall Average	1,770	26	653,029
Dairy Enterprise Only			
Quintile	Worker Equivalents	Cows per Worker Equivalent	Pounds Sold per Worker Equivalent
Average of Highest Quintile	10.6	180	4,651,818
	6.7	134	3,399,481
	4.4	98	2,546,924
	2.2	83	2,011,251
Average of Lowest Quintile	1.6	65	1,603,463
Overall Average	5.1	112	2,842,587



**TOP 20 PERCENT VERSUS AVERAGE**  
108 Large Herd Dairy Farms, 2012

Selected Factors	Average 108 Farms	Average Top 20% Farms	Percent Difference
<u>Size of Business</u>			
Average number of cows	879	1,032	17.4
Average number of heifers	759	868	14.4
Milk sold, lbs.	22,634,262	27,178,901	20.1
Worker equivalent	19.43	20.99	8.0
Total tillable acres	1,728	1,804	4.4
<u>Rates of Production</u>			
Milk sold per cow, lbs.	25,758	26,335	2.2
Butterfat per cow, lbs. <sup>3</sup>	968	971	0.3
Protein per cow, lbs. <sup>3</sup>	807	812	0.6
Hay DM per acre, tons	3.0	3.3	10.0
Corn silage per acre, tons	16.7	17.3	3.6
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	45	49	8.9
Milk sold/worker, lbs.	1,164,763	1,294,644	11.2
Hired labor cost/cwt.	\$2.82	\$2.59	-8.2
Hired labor cost/hired worker	\$37,850	\$38,101	0.7
Hired labor cost as % of milk sales	14.3%	13.0%	-9.1
<u>Cost Control</u>			
Grain & concentrate purchased as % of milk sales	34%	31%	-8.8
Grain & concentrate per cwt. milk	\$6.80	\$6.26	-7.9
Dairy feed & crop expense per cwt. milk	\$8.53	\$8.01	-6.1
Labor & machinery costs/cow	\$1,678	\$1,567	-6.6
Total farm operating costs per cwt. sold	\$18.86	\$17.29	-8.3
Interest costs per cwt. milk	\$0.45	\$0.34	-24.4
Milk marketing costs per cwt. milk sold	\$0.86	\$0.79	-8.1
Operating cost of producing cwt. of milk	\$15.77	\$14.15	-10.3
Net milk income over purchased feed costs per cow	\$3,121	\$3,387	8.5
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$10,122	\$9,710	-4.1
Machinery & equipment per cow	\$1,648	\$1,503	-8.8
Asset turnover ratio	0.61	0.65	6.6
<u>Income Generation</u>			
Gross milk sales per cow	\$5,095	\$5,243	2.9
Gross milk sales per cwt.	\$19.78	\$19.91	0.7
Net milk sales per cwt.	\$18.92	\$19.12	1.1
Dairy cattle sales per cow	\$405	\$403	-0.5
Dairy calf sales per cow	\$45	\$54	20.0
<u>Profitability</u>			
Net farm income without appreciation	\$587,704	\$1,212,620	106.9
Net farm income with appreciation	\$827,510	\$1,434,909	73.8
Labor & management income per operator/manager	\$125,529	\$365,067	190.8
Rate of return on equity capital without appreciation	7.1%	14.3%	101.4
Rate of return on all capital without appreciation	6.0%	11.5%	91.7
<u>Financial Summary</u> (excluding deferred taxes)			
Farm net worth, end of year	\$6,296,632	\$7,876,650	25.1
Debt to asset ratio	0.32	0.26	-18.8
Farm debt per cow	\$3,389	\$2,627	-22.5

<sup>3</sup>Average of large herd dairy farms that provided this data.

**RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT**  
 Same 18 Top 20% Large Herd Dairy Farms, 2011 & 2012

Item	2011		2012	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	959		1,040	
Cwt. of Milk Sold		247,362		273,021
<u>Accrual Operating Receipts</u>				
Milk	\$5,642	\$21.88	\$5,249	\$20.00
Dairy cattle	378	1.46	423	1.61
Dairy calves	23	0.09	56	0.21
Other livestock	4	0.01	-1	0.00
Crops	160	0.62	252	0.96
Miscellaneous receipts	<u>137</u>	<u>0.53</u>	<u>178</u>	<u>0.68</u>
Total	\$6,344	\$24.60	\$6,158	\$23.46
<u>Accrual Operating Expenses</u>				
Hired labor	\$690	\$2.68	\$703	\$2.68
Dairy grain & concentrate	1,504	5.83	1,638	6.24
Dairy roughage	94	0.36	154	0.59
Nondairy feed	0	0.00	0	0.00
Professional nutritional services	1	0.00	1	0.00
Machine hire, rent & lease	100	0.39	120	0.46
Machine repair & vehicle expense	201	0.78	225	0.86
Fuel, oil & grease	203	0.79	206	0.78
Replacement livestock	4	0.02	1	0.00
Breeding	49	0.19	47	0.18
Veterinary & medicine	152	0.59	156	0.59
Milk marketing	206	0.80	203	0.77
Bedding	93	0.36	107	0.41
Milking supplies	84	0.33	83	0.31
Cattle lease	6	0.03	9	0.03
Custom boarding	75	0.29	72	0.28
bST expense	38	0.15	26	0.10
Livestock professional fees	15	0.06	13	0.05
Other livestock expense	16	0.06	15	0.06
Fertilizer & lime	92	0.36	127	0.48
Seeds & plants	97	0.37	105	0.40
Spray & other crop expense	55	0.21	58	0.22
Crop professional fees	4	0.02	5	0.02
Land, building & fence repair	85	0.33	88	0.34
Taxes	51	0.20	50	0.19
Real estate rent/lease	90	0.35	84	0.32
Insurance	39	0.15	45	0.17
Utilities	105	0.41	96	0.37
Interest paid	95	0.37	87	0.33
Other professional fees	22	0.08	28	0.11
Miscellaneous	<u>41</u>	<u>0.16</u>	<u>26</u>	<u>0.10</u>
Total Operating Expenses	\$4,310	\$16.71	\$4,577	\$17.44
Expansion livestock	27	0.11	54	0.21
Extraordinary Expense	0	0.00	0	0.00
Machinery depreciation	214	0.83	211	0.80
Real Estate depreciation	<u>133</u>	<u>0.51</u>	<u>143</u>	<u>0.54</u>
Total Expenses	\$4,684	\$18.16	\$4,985	\$18.99
Net Farm Income without appreciation	\$1,660	\$ 6.44	\$1,173	\$ 4.47

### **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**

15 New York Dairy Farms, 2012

<u>Animals Entering Herd</u>	Average
Number calving in 2012 for first time	353
Animals purchased, % <sup>4</sup>	4.0
Animals raised by farm, % <sup>5</sup>	96.0
<u>Current Heifer Inventory</u>	
Raised on dairy, %	87.1
Raised by a custom grower, %	12.8

<sup>4</sup>Animals purchased are animals purchased from a different farm and were not the farm's genetics.

<sup>5</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, 353 animals calved for the first time in 2012. The breakdown on the source of these animals was 4.0 percent purchased and 96.0 percent raised on the farm. Of the current heifer inventory, 87.1 percent were raised on the dairy and 12.8 percent were 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 component 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, 98 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 line item in this section is the expense associated with utilizing forward contracting or hedging programs to market milk, such as commissions or broker fees. The fifth area is income 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 13 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>6</sup> MILK INCOME AND MARKETING REPORT**  
98 Large Herd Dairy Farms, 2012

	Pounds	Percent	Price/Pound	Total	\$/Cwt of Milk
<b>BASE FARM PRICE</b>					
Butterfat	847,707	3.80%	\$1.70	\$1,441,455	\$ 6.38
Protein	703,693	3.14%	\$3.01	\$2,121,046	\$ 9.39
Solids	1,324,373	5.89%	\$0.40	\$530,026	\$ 2.35
<b>Total Component Contribution</b>					<b>\$ 18.11</b>
<b>PPD</b>	22,598,887			\$82,268	<b>\$ 0.36</b>
<b>Base Farm Price</b>					<b>\$ 18.47</b>
<b>Premiums</b>					
Quality				\$70,848	\$ 0.31
Volume				\$65,722	\$ 0.29
Market Premiums				\$126,881	\$ 0.56
<b>Total Premiums</b>					<b>\$ 1.17</b>
<b>BASE FARM PRICE + PREMIUM</b>					<b>\$ 19.64</b>
<hr style="border-top: 1px dashed black;"/>					
<b>Deductions</b>					
Promo				\$33,963	\$ 0.15
Hauling + Stop Charges.				\$145,184	\$ 0.64
Market Fees & Coop Dues				\$13,918	\$ 0.06
<b>Total Deductions</b>					<b>\$ 0.85</b>
<b>BASE FARM PRICE + PREMIUMS – DEDUCTIONS</b>					<b>\$ 18.78</b>
<b>Marketing Programs</b>					
Futures Contracts, Forward Contracting, Etc.				\$-14,100	\$ -0.06
<b>Total Marketing Income</b>					<b>\$ -0.06</b>
<b>Patronage Dividends</b>				\$53,593	<b>\$ 0.24</b>
<b>NET PRICE RECEIVED ON FARM, ALL SOURCES</b>					<b>\$ 18.96</b>
<hr/>					
<b>PPD - Hauling, per cwt., \$ per cwt.</b>					<b>\$ - 0.28</b>
<b>PPD - Hauling + Market Premiums, per cwt., \$ per cwt.</b>					<b>\$ 0.28</b>
<b>Net Marketing Value (PPD + Total Premiums – Total Deductions), \$ per cwt.</b>					<b>\$ 0.68</b>

<sup>6</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>7</sup>**

(Each Category Sorted Independently)

98 Large Herd Dairy Farms, 2012

	Lowest Quintile	←————→			Highest Quintile
Butterfat, %	3.56	3.66	3.71	3.78	4.31
Protein, %	2.98	3.05	3.09	3.12	3.48
Other Solids, %	5.71	5.76	5.78	5.80	6.44
Butterfat, \$ per Cwt.	6.10	6.27	6.40	6.49	6.85
Protein, \$ per Cwt.	9.05	9.27	9.38	9.49	9.90
Other solids, \$ per Cwt.	2.29	2.33	2.35	2.35	2.38
<b>Total Component Value per Cwt.</b>	<b>\$ 17.60</b>	<b>\$ 17.89</b>	<b>\$ 18.08</b>	<b>\$ 18.28</b>	<b>\$ 19.03</b>
PPD, \$ per Cwt.	0.11	0.20	0.31	0.43	0.74
<b>Base Farm Price per Cwt.</b>	<b>\$ 17.83</b>	<b>\$ 18.19</b>	<b>\$ 18.41</b>	<b>\$ 18.73</b>	<b>\$ 19.47</b>
Quality, \$ per Cwt.	0.13	0.23	0.31	0.40	0.58
Volume, \$ per Cwt.	0.00	0.04	0.25	0.44	0.64
Market premium, \$ per Cwt.	0.03	0.25	0.53	0.85	1.22
<b>Total Premium, \$ per Cwt.</b>	<b>0.61</b>	<b>0.91</b>	<b>1.19</b>	<b>1.42</b>	<b>1.71</b>
<b>Base Farm Price + Premiums per Cwt.</b>	<b>\$ 18.66</b>	<b>\$ 19.17</b>	<b>\$ 19.65</b>	<b>\$ 20.09</b>	<b>\$ 20.87</b>
Promotion, \$ per Cwt.	0.15	0.15	0.15	0.15	0.15
Hauling, \$ per Cwt.	0.32	0.46	0.58	0.76	1.10
Market fees & coop dues per Cwt.	0.00	0.02	0.05	0.09	0.13
<b>Total Marketing Expenses per Cwt.</b>	<b>\$ 0.50</b>	<b>\$ 0.65</b>	<b>\$ 0.82</b>	<b>\$ 1.00</b>	<b>\$ 1.31</b>
<b>Base + Premiums – Deductions per Cwt.</b>	<b>\$ 17.98</b>	<b>\$ 18.49</b>	<b>\$ 18.79</b>	<b>\$ 19.15</b>	<b>\$ 19.78</b>
Futures contract, forward contracting, \$ per Cwt.	-0.32	-0.01	0.00	0.00	0.04
<b>Total Marketing Income, \$ per Cwt.</b>	<b>\$ -0.32</b>	<b>\$ -0.01</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.04</b>
<b>Patronage Dividends, \$ per Cwt.</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.20</b>	<b>\$ 1.00</b>
<b>Net Price Received From All Sources, \$ per Cwt.</b>	<b>\$ 18.17</b>	<b>\$ 18.62</b>	<b>\$ 18.97</b>	<b>\$ 19.33</b>	<b>\$ 19.97</b>
<b>PPD – Hauling, \$ per cwt.</b>	<b>\$ -0.59</b>	<b>\$ -0.40</b>	<b>\$ -0.27</b>	<b>\$ -0.16</b>	<b>\$ 0.03</b>
<b>PPD – Hauling + Market Premiums, \$ per cwt.</b>	<b>\$ -0.31</b>	<b>\$ -0.01</b>	<b>\$ 0.28</b>	<b>\$ 0.58</b>	<b>\$ 0.91</b>
<b>Net Marketing Value (PPD + Total Premiums – Total Deductions), \$ per cwt.</b>	<b>\$ 0.13</b>	<b>\$ 0.42</b>	<b>\$ 0.68</b>	<b>\$ 0.88</b>	<b>\$ 1.24</b>

<sup>7</sup>Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals.

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.

## 108 Large Herd Dairy Farms, 2012

### Income Statement

Cash paid is the actual cash outlay during the year and does not necessarily represent the cost of goods and services actually used in 2012.

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**  
108 Large Herd Dairy Farms, 2012

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 637,806		\$ -1,805		\$ -581		\$ 639,030
<u>Feed</u>							
Dairy grain & concentrate	1,508,968		-13,499		17,473		1,539,940
Dairy roughage	114,864		12,445		3,741		106,160
Nondairy	254		0		0		254
Professional nutritional services	798		0		5		803
<u>Machinery</u>							
Machinery hire, rent/lease	86,489		374		1,120		87,235
Mach. repair & farm vehicle exp.	212,240		-112		217		212,569
Fuel, oil & grease	189,622		341		429		189,710
<u>Livestock</u>							
Replacement livestock	11,963		0		-48		11,915
Breeding	46,444		585		-32		45,828
Vet & medicine	149,712		55		-98		149,559
Milk marketing	193,431		0		1,456		194,886
Bedding	91,905		-63		387		92,355
Milk supplies	80,185		650		-36		79,499
Cattle lease/rent	4,750		0		0		4,750
Custom boarding	80,711		-1,440		656		82,807
bST expense	44,230		-481		210		44,921
Livestock professional fees	13,779		-79		117		13,976
Other livestock expense	15,083		-206		225		15,513
<u>Crops</u>							
Fertilizer & lime	120,219		-4,234		3,128		127,581
Seeds & plants	105,459		8,849		919		97,529
Spray, other crop exp.	50,699		-183		3,096		53,977
Crop professional fees	5,665		14		0		5,650
<u>Real Estate</u>							
Land/bldg./fence repair	82,757		856		398		82,299
Taxes	50,208		488		289		50,009
Rent & lease	59,352		-536		543		60,431
<u>Other</u>							
Insurance	38,337		126		-238		37,972
Utilities (farm share)	83,507		15		213		83,705
Interest paid	102,914		-89		-207		102,796
Other professional fees	27,277		-90		119		27,485
Miscellaneous	<u>27,520</u>		<u>19</u>		<u>243</u>		<u>27,485</u>
Total Operating Expenses	\$4,237,147		\$2,001		\$33,745		\$4,268,891
Expansion livestock	\$ 34,771		0		1,655		36,426
Extraordinary expense	\$ 178		0		0		178
Machinery depreciation							194,680
Building depreciation							126,867
Total Accrual Expenses							\$4,627,041

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 2012 funds used to prepay 2012 leases exceed the amount of 2012 leases prepaid in 2011, the amount of this excess is subtracted to exclude it from 2012 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 2012 but not paid for. A decrease is subtracted because the resource was used before 2012.

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

108 Large Herd Dairy Farms, 2012

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$4,417,233				\$60,086		\$4,477,318
Dairy cattle	290,349		66,289		-410		356,228
Dairy calves	34,278		5,313		16		39,607
Other livestock	8,382		4,481		324		13,188
Crops	95,489		65,811		-3,768		157,532
Government receipts	55,953		0 <sup>8</sup>		-91		55,861
Custom machine work	25,288				564		25,852
Gas tax refund	733				0		733
Other	<u>90,409</u>				<u>-1,982</u>		88,426
Less nonfarm noncash cap.			<u>0<sup>9</sup></u>				<u>0</u>
Total Receipts	\$5,018,113		\$141,895		\$54,738		\$5,214,746

<sup>8</sup> Change in advanced government receipts.

<sup>9</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 2012 for the 2012 crop year in excess of funds earned for 2012. Likewise, a decrease is added to cash government receipts because it represents funds earned for 2012 but received in 2011.

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

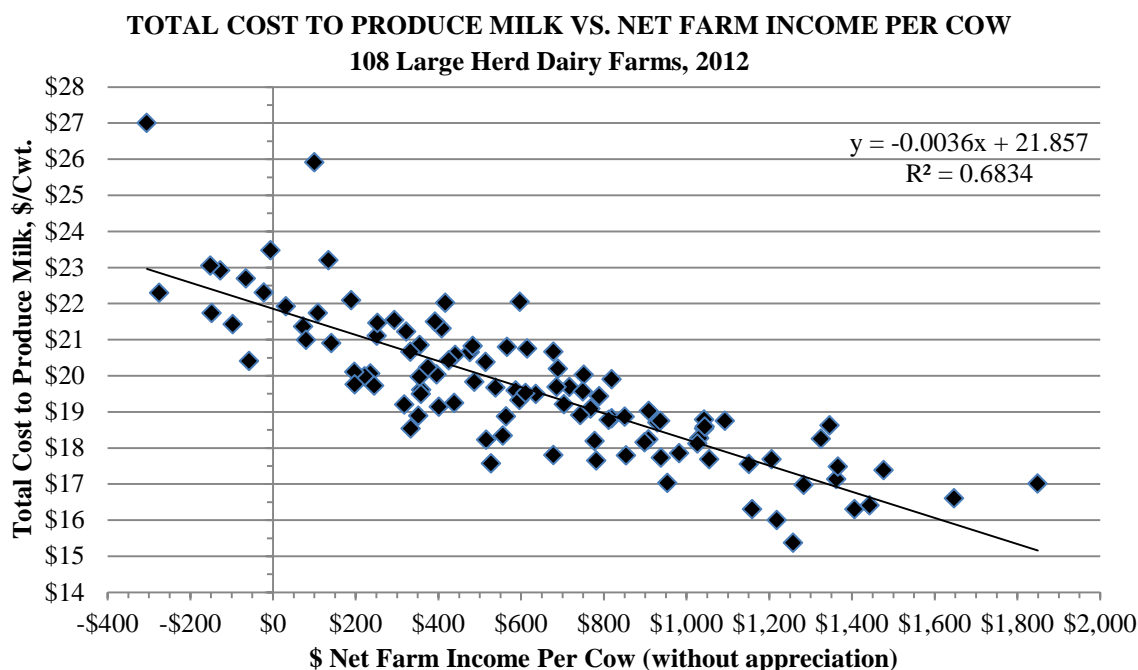
Farm operators<sup>10</sup> contribute labor, management, and equity capital to their businesses and the combination of these resources, and the other resources used in the business, determines profitability. Farm profitability can be measured as the return to all family resources or as the return to 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 108 Large Herd Dairy Farms, 2012

Item	<u>Average 108 farms</u>		<u>Average Top 20%<sup>11</sup> Farms</u>	
	Total	Per Cow	Total	Per Cow
Total accrual receipts	\$ 5,214,746		\$ 6,309,330	
Appreciation: Livestock	7,872		8,281	
Machinery	44,320		104,103	
Real Estate	181,942		101,064	
Other Stock/Certificates	<u>5,672</u>		<u>8,841</u>	
Total Including Appreciation	\$ 5,454,552		\$ 6,531,619	
Total accrual expenses	<u>4,627,041</u>		<u>5,096,710</u>	
Net Farm Income (with appreciation)	\$ 827,510	\$942	\$ 1,434,909	\$1,390
Net Farm Income (without appreciation)	\$ 587,704	\$669	\$ 1,212,620	\$1,175



<sup>10</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>11</sup>Top 20% of large herd farms by rate of return on all assets without appreciation.

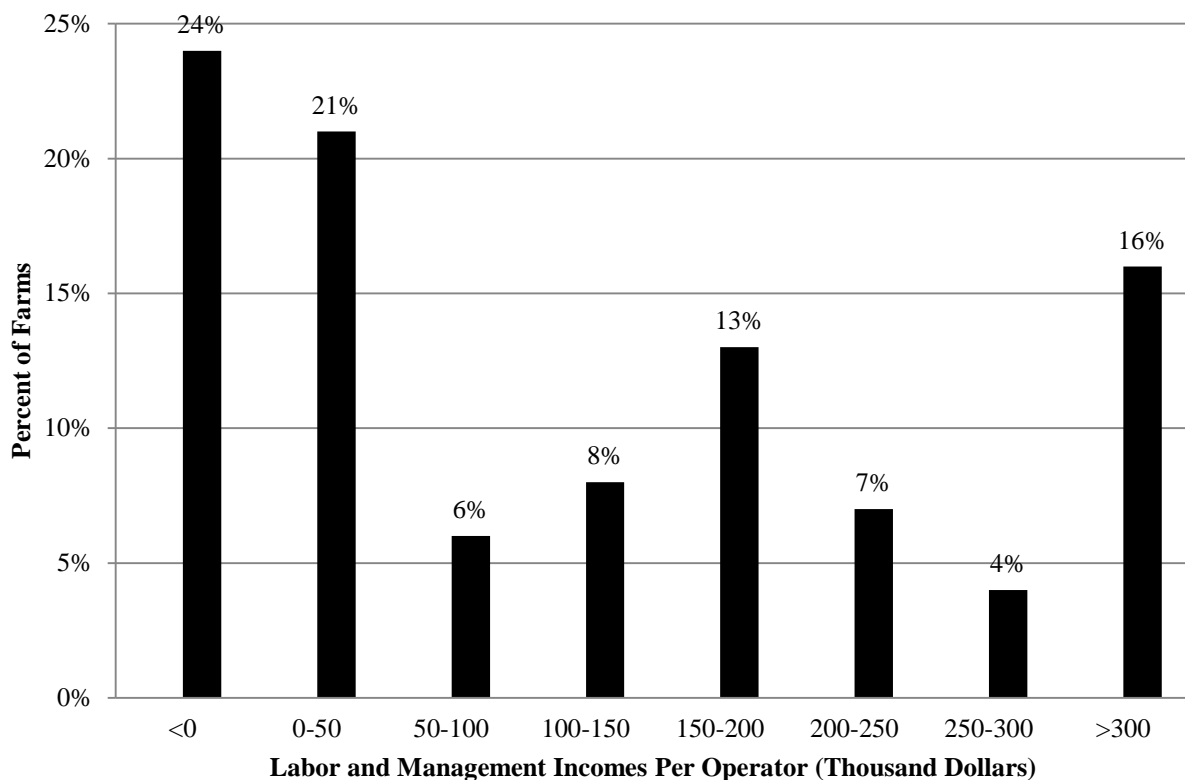
Labor and management income is the return which farm operators receive for their labor and management used in operating the farm business. Appreciation is not included as part of the return to labor and management because it results from ownership of assets rather than management of the farm business. 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**  
108 Large Herd Dairy Farms, 2012

Item	Average 108 farms	Average Top 20% Farms
Net farm income without appreciation	\$ 587,704	\$ 1,212,620
Family labor unpaid @ \$2,550 per month	- 1,281	- 414
Interest on \$6,004,380 (\$7,086,000 for top 20%) average equity capital @ 5% real rate	- 300,219	- 354,300
Labor & Management Income per Farm (2.28 operators/farm; 2.35 operators for top 20%)	\$ 286,205	\$ 857,907
Labor & Management Income per Operator/Manager	\$ 125,529	\$ 365,067

Labor and management income per operator averaged \$125,529 on these 108 farms in 2012. Returns to labor and management were less than \$200,000 on 73 percent of the farms, with 24% of the farms showing a negative return to labor & management. Labor and management income per operator ranged from \$200,000 to \$500,000 on 20 percent of the farms while 7 percent showed labor and management incomes per operator greater than \$500,000.

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR**  
108 Large Herd Dairy Farms, 2012



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

108 Large Herd Dairy Farms, 2012

Item	Average 108 farms	Average Top 20% Farms
Net farm income with appreciation	\$ 827,510	\$ 1,434,909
Family labor unpaid @ \$2,550 per month	- 1,281	- 414
Value of operators' labor & management	- 155,042	- 151,876
Return on equity capital with appreciation	\$ 671,188	\$ 1,282,619
Interest paid	+ 102,796	+ 91,886
Return on total capital with appreciation	\$ 773,984	\$ 1,374,505
Return on equity capital without appreciation	\$ 431,382	\$ 1,060,330
Return on total capital without appreciation	\$ 534,178	\$ 1,152,216
Rate of return on average equity capital:		
with appreciation	11.1%	17.3%
without appreciation	7.1%	14.3%
Rate of return on average total capital:		
with appreciation	8.7%	13.7%
without appreciation	6.0%	11.5%
Net farm income from operations ratio	0.11	0.19

### 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 2012, leases were discounted by 7 percent.

Advanced government receipts are included as current liabilities. Government payments received in 2012 that are for participation in the 2012 program are the end year balance and payments received in 2011 for participation in the 2012 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.

**2012 FARM BUSINESS & NONFARM MARKET VALUE BALANCE SHEET**

108 Large Herd Dairy Farms, 2012

Farm Assets			Farm Liabilities & Net Worth		
	Jan. 1	Dec. 31		Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 71,882	\$ 67,256	Accounts payable	\$ 83,566	\$ 118,966
Accounts receivable	452,114	506,852	Operating debt	191,680	227,274
Prepaid expenses	11,808	8,788	Short Term	8,535	5,174
Feed & supplies	1,058,265	1,129,098	Advanced govt. receipts	0	0
			Current Portion:		
			Intermediate	64,442	242,470
			Long Term	78,668	86,828
Total Current	\$ 1,594,069	\$ 1,711,993	Total Current	\$ 426,891	\$ 680,711
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 1,188,602	\$ 1,250,364	1-10 years	\$1,209,778	\$ 1,141,378
leased	3,035	2,435	Financial lease		
Heifers	709,123	726,075	(cattle/machinery)	5,960	8,394
Bulls/other livestock	15,847	21,090	Farm Credit stock	1,108	1,148
Mach./equipment owned	1,371,343	1,515,441	Total Intermediate	\$1,216,846	\$ 1,150,920
Mach./equipment leased	2,925	5,960			
Farm Credit stock	1,108	1,148			
Other stock/certificate	243,521	277,538			
Total Intermediate	\$ 3,535,503	\$ 3,800,049			
<u>Long Term</u>			<u>Long Term</u>		
Land/buildings:			Structured debt		
owned	\$ 3,361,954	\$ 3,780,357	>10 years	\$1,006,337	\$ 1,164,133
leased	2,448	1,784	Financial lease		
Total Long Term	\$ 3,364,402	\$ 3,782,140	(structures)	2,448	1,784
			Total Long Term	\$1,008,785	\$ 1,165,917
Total Farm Assets	\$ 8,493,974	\$ 9,294,182	Total Farm Liab.	\$2,652,522	\$2,997,550
			FARM NET WORTH	\$5,841,452	\$6,296,632
Nonfarm Assets, Liabilities & Net Worth (Average of 29 farms reporting)					
Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 4,684	\$ 7,563	Nonfarm Liabilities	\$ 1,678	\$ 2,334
Cash value life insurance	95,501	102,231			
Nonfarm real estate	322,414	312,931			
Auto (personal share)	4,172	5,807			
Stocks & bonds	122,752	161,734			
Household furnishings	3,155	3,276			
All other nonfarm assets	46,385	122,101			
Total Nonfarm Assets	\$599,063	\$715,643	NONFARM NET WORTH	\$ 597,385	\$ 713,310
Farm & Nonfarm Assets, Liabilities, and Net Worth <sup>12</sup>					
				Jan. 1	Dec. 31
Total Assets				\$ 9,093,037	\$10,009,825
Total Liabilities				2,654,200	2,999,884
TOTAL FARM & NONFARM NET WORTH				\$ 6,438,837	\$ 7,009,942

<sup>12</sup>Assumes that average nonfarm assets and liabilities for the nonreporting farms were the same as for those reporting.

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**  
108 Large Herd Dairy Farms, 2012

108 Large Herd Dairy Farms, 2012				
Item	Average 108 farms		Average Top 20% Farms	
<u>Financial Ratios - Farm:</u>				
Percent equity	68%		74%	
Debt/asset ratio: total	0.32		0.26	
long-term	0.31		0.23	
intermediate/current	0.33		0.28	
Leverage Ratio	0.48		0.35	
Current Ratio	2.52		3.06	
Working Capital: \$1,031,281	as % of Total Expenses:	22%	\$1,512,945	30%
<u>Farm Debt Analysis:</u>				
Accounts payable as % of total debt	4%		2%	
Long-term liabilities as a % of total debt	39%		34%	
Current & intermediate liabilities as a % of total debt	61%		66%	
Cost of term debt (weighted average)	4.4%		3.9%	
	<u>Average 108 farms</u>		<u>Average Top 20% Farms</u>	
	Per Tillable		Per Tillable	
<u>Farm Debt Levels:</u>	<u>Per Cow</u>	<u>Acre Owned</u>	<u>Per Cow</u>	<u>Acre Owned</u>
Total farm debt	\$ 3,389	\$3,379	\$ 2,627	\$ 2,780
Long-term debt	1,318	1,314	882	934
Long-term & intermediate	2,619	2,612	1,924	2,036
Intermediate & current debt	2,071	2,065	1,744	1,846

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**  
108 Large Herd Dairy Farms, 2012

Item	Average of 108 farms	
	<u>Real Estate</u>	<u>Machinery &amp; Equipment</u>
Value beginning of year	\$ 3,361,954	\$ 1,371,343
Purchases	\$ 518,998 <sup>13</sup>	\$ 308,647
Gift/inheritance	+ 1,049	+ 0
Lost capital	- 147,406	
Sales	- 9,314	- 14,190
Depreciation	- 126,867	- 194,680
Net investment	= 236,460	= 99,778
Appreciation	+ 181,942	+ 44,320
Value end of year	\$ 3,780,357	\$ 1,515,441

<sup>13</sup> \$195,182 land and \$323,816 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)**

108 Large Herd Dairy Farms, 2012

Item	Average 108 farms	Average Top 20% Farms
Beginning of year farm net worth	\$ 5,841,452	\$6,930,294
Net farm income without appreciation	\$586,237	\$1,212,620
+ Nonfarm cash income	+ 4,747	+ 4,677
- Personal withdrawals & family expenditures excluding nonfarm borrowings	- 302,621	- \$ 372,375
Retained Earnings	+\$ 288,363	+ \$844,923
Nonfarm noncash transfers to farm	\$ 1,049	\$ 3,484
+ Cash used in business from nonfarm capital	+ 67,329	+ 96,571
- Note/mortgage from farm real estate sold (nonfarm)	- 0	- 0
Contributed/Withdrawn Capital	= \$ 68,378	+ \$ 100,055
Appreciation	\$ 239,807	\$ 222,289
- Lost capital	- 147,406	- 231,458
Change in Valuation Equity	+\$ 92,400	+ \$ -9,170
Imbalance/Error	- -4,680	- -10,548
End of year farm net worth <sup>14</sup>	= \$ 6,296,632	= \$7,876,650
Change in net worth with appreciation	\$ 455,181	\$ 946,356
<u>Change in Net Worth</u>		
Without appreciation	\$ 215,375	\$724,068
With appreciation	\$ 455,181	\$946,356

<sup>14</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 108 Large Herd Dairy Farms, 2012

Item	Average 108 farms		
<u>Cash Flow from Operating Activities</u>			
Cash farm receipts	\$ 5,018,113		
- Cash farm expenses	4,237,147		
- Extraordinary expense	<u>178</u>		
= Net cash farm income		\$ 780,788	
Personal withdrawals/family expenses including nonfarm debt payments	\$ 303,026		
- Nonfarm income	<u>4,747</u>		
- Net cash withdrawals from the farm		\$ <u>298,279</u>	
= Net Provided by Operating Activities			\$ 482,509
<u>Cash Flow From Investing Activities</u>			
Sale of Assets: Machinery	\$ 14,190		
+ real estate	9,314		
+ other stock & certificates	<u>8,788</u>		
= Total asset sales		\$ 32,292	
Capital purchases: expansion livestock	\$ 34,771		
+ machinery	308,647		
+ real estate	518,998		
+ other stock & certificates	<u>37,134</u>		
- Total invested in farm assets		\$ <u>899,550</u>	
= Net Provided by Investment Activities			\$ -867,258
<u>Cash Flow From Financing Activities</u>			
Money borrowed (intermediate & long term)	\$ 582,517		
+ Money borrowed (short-term)	3,817		
+ Increase in operating debt	35,594		
+ Cash from nonfarm capital used in business	67,329		
+ Money borrowed - nonfarm	<u>405</u>		
= Cash inflow from financing		\$ 689,661	
Principal payments (intermediate & long-term)	\$ 306,933		
+ Principal payments (short-term)	7,178		
+ Decrease in operating debt	<u>0</u>		
- Cash outflow for financing		\$ <u>314,111</u>	
= Net Provided by Financing Activities			\$ 375,550
<u>Cash Flow From Business</u>			
Beginning farm cash, checking & savings		\$ 71,882	
- Ending farm cash, checking & savings		<u>67,256</u>	
= Net Provided from Reserves			\$ <u>4,626</u>
Imbalance (error)			\$ -4,680

**ANNUAL CASH FLOW STATEMENT**  
22 Top 20% Large Herd Dairy Farms, 2012

Item	Average Top 20% Farms		
<u>Cash Flow from Operating Activities</u>			
Cash farm receipts	\$5,970,441		
- Cash farm expenses	4,818,708		
- Extraordinary expense	<u>0</u>		
= Net cash farm income		\$ 1,151,732	
Personal withdrawals/family expenses including nonfarm debt payments	\$ 372,375		
- Nonfarm income	<u>4,677</u>		
- Net cash withdrawals from the farm		<u>\$ 367,397</u>	
= Net Provided by Operating Activities			\$ 784,035
<u>Cash Flow From Investing Activities</u>			
Sale of Assets: Machinery	\$ 18,240		
+ real estate	16,681		
+ other stock & certificate	<u>10,382</u>		
= Total asset sales		\$ 45,302	
Capital purchases: expansion livestock	\$ 46,058		
+ machinery	369,970		
+ real estate	667,193		
+ other stock & certificate	<u>66,459</u>		
- Total invested in farm assets		<u>\$ 1,149,680</u>	
= Net Provided by Investment Activities			\$ -1,104,378
<u>Cash Flow From Financing Activities</u>			
Money borrowed (intermediate & long term)	\$ 475,779		
+ Money borrowed (short-term)	0		
+ Increase in operating debt	82,837		
+ Cash from nonfarm capital used in business	96,571		
+ Money borrowed - nonfarm	<u>0</u>		
= Cash inflow from financing		\$ 655,187	
Principal payments (intermediate & long-term)	\$ 316,485		
+ Principal payments (short-term)	2,599		
+ Decrease in operating debt	<u>0</u>		
- Cash outflow for financing		<u>\$ 3,319,084</u>	
= Net Provided by Financing Activities			\$ 336,103
<u>Cash Flow From Business</u>			
Beginning farm cash, checking & savings		\$ 84,741	
- Ending farm cash, checking & savings		<u>111,049</u>	
= Net Provided from Reserves			\$ -26,308
<u>Imbalance (error)</u>			\$ -10,548



## 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 2013. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 2013 debt payments shown below.

### FARM DEBT PAYMENTS PLANNED

Large Herd Dairy Farms, 2011 & 2012

Debt Payments	Same 102 Dairy Farms			Same 18 Top 20% Farms		
	2012 Payments		Planned 2013	2012 Payments		Planned 2013
	Planned	Made		Planned	Made	
Long-term	\$ 126,339	\$ 128,036	\$ 140,299	\$ 111,120	\$ 105,526	\$ 108,158
Intermediate-term	276,235	277,024	292,189	238,833	277,436	247,339
Short-term	8,373	7,745	1,951	11,280	3,242	1,797
Operating (net reduction)	8,115	34,343	33,442	5,556	30,706	63,889
Accounts payable (net reduction)	0	6,413	541	0	12,762	0
Total	\$ 419,062	\$ 453,561	\$ 468,422	\$ 366,788	\$ 429,671	\$ 421,183
Per cow	\$ 474	\$ 513		\$ 353	\$ 413	
Per cwt. 2012 milk	\$ 1.84	\$ 1.99		\$ 1.34	\$ 1.57	
Percent of total 2012 receipts	8%	9%		6%	7%	
Percent of 2012 milk receipts	9%	10%		7%	8%	

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 2012 (as of December 31, 2011) that could have been made with the amount available for debt service in 2012. Farmers who did not participate in DFBS in 2011 have their 2012 cash flow coverage ratio based on planned debt payments for 2013.

### COVERAGE RATIOS

Same 102 Large Herd Dairy Farms, 2011 & 2012

Item	Average	Item	Average
<b>Cash Flow Coverage Ratio</b>		<b>Debt Coverage Ratio</b>	
Cash farm receipts	\$ 5,051,286	Net farm income (without appreciation)	\$ 570,862
- Cash farm expenses	4,271,257	+ Depreciation	326,024
+ Interest paid (cash)	103,743	+ Interest paid (accrual)	103,618
- Net personal withdrawals from farm <sup>15</sup>	<u>306,627</u>	- Net personal withdrawals from farm <sup>15</sup>	<u>306,627</u>
(A) = Amount Available for Debt Service	\$ 577,145	(A') = Repayment Capacity	\$ 693,877
(B) = Debt Payments Planned for 2012 (as of December 31, 2011)	\$ 419,062	(B) = Debt Payments Planned for 2012 (as of December 31, 2011)	\$ 419,062
(A/B) = Cash Flow Coverage Ratio for 2012	1.38	(A'/B) = Debt Coverage Ratio for 2012	1.66
-----			
Same 18 Top 20% Dairy Farms, 2011 & 2012			
(A) = Amount Available for Debt Service	\$ 852,315	(A') = Repayment Capacity	\$1,268,636
(B) = Debt Payments Planned for 2012	\$ 366,788	(B) = Debt Payments Planned for 2012	\$ 366,788
(A/B) = Cash Flow Coverage Ratio for 2012	2.32	(A'/B) = Debt Coverage Ratio for 2012	3.46

<sup>15</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**  
108 Large Herd Dairy Farms, 2012

Item	Average 108 farms		Total
	Per Cow	Per Cwt.	
Number cows and cwt. Milk	879	226,343	
<u>Accrual Operating Receipts</u>			
Milk	\$5,095	\$19.78	\$4,477,318
Dairy cattle	405	1.57	356,228
Dairy calves	45	0.17	39,607
Other livestock	15	0.06	13,188
Crops	178	0.69	156,065
Misc. receipts	<u>194</u>	<u>0.75</u>	<u>170,873</u>
Total Operating Receipts	\$5,933	\$23.03	\$5,213,279
<u>Accrual Operating Expenses</u>			
Hired labor	\$727	\$2.82	\$639,030
Dairy grain & concentrate	1,752	6.80	1,539,940
Dairy roughage	121	0.47	106,160
Nondairy feed	0	0.00	254
Professional nutritional services	1	0.00	803
Machinery hire/rent/lease	99	0.39	87,235
Machinery repair & farm vehicle expense	242	0.94	212,569
Fuel, oil & grease	216	0.84	189,710
Replacement livestock	14	0.05	11,915
Breeding	52	0.20	45,828
Veterinary & medicine	170	0.66	149,559
Milk marketing	222	0.86	194,886
Bedding	105	0.41	92,355
Milking supplies	90	0.35	79,499
Cattle lease	5	0.02	4,750
Custom boarding	94	0.37	82,807
bST expense	51	0.20	44,921
Livestock professional fees	16	0.06	13,976
Other livestock expense	18	0.07	15,513
Fertilizer & lime	145	0.56	127,581
Seeds & plants	111	0.43	97,529
Spray/other crop expenses	61	0.24	53,977
Crop professional fees	6	0.02	5,650
Land, building, fence repair	94	0.36	82,299
Taxes	57	0.22	50,009
Real estate rent/lease	69	0.27	60,431
Insurance	43	0.17	37,972
Utilities	95	0.37	83,705
Other professional fees	31	0.12	27,485
Miscellaneous	32	0.12	27,744
Total Less Interest Paid	\$4,741	\$18.41	\$4,166,095
<u>Net Accrual Operating Income</u>			
(without interest paid)	\$1,192	\$4.63	\$1,047,184
- Change in livestock/crop inventory <sup>16</sup>	160	0.62	140,428
- Change in accounts receivable	62	0.24	54,738
- Change in feed/supply inventory <sup>17</sup>	2	0.01	2,001
+ Change in accounts payable <sup>18</sup>	<u>39</u>	<u>0.15</u>	<u>33,951</u>
NET CASH FLOW	\$1,006	\$ 3.91	\$883,969
- Net personal withdrawals from farm (see footnote on page 22)	<u>339</u>	<u>1.32</u>	<u>297,874</u>
Available for Farm Debt Payments & Investments	\$667	\$ 2.59	\$ 586,095
- Farm debt payments	<u>515</u>	<u>2.00</u>	<u>452,603</u>
Available for Farm Investment	\$ 152	\$ 0.59	\$ 133,491
- Capital purchases: cattle, machinery & improvements	<u>1,024</u>	<u>3.97</u>	<u>899,550</u>
Additional Capital Needed	\$ 872	\$ 3.38	\$ 766,058

<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.

**ANNUAL CASH FLOW WORKSHEET**  
 22 Top 20% Large Herd Dairy Farms, 2012

Item	Average Top 20% Farms		
	Per Cow	Per Cwt.	Total
No. cows or cwt. milk	1,032	271,789	
<u>Accrual Operating Receipts</u>			
Milk	\$5,243	\$19.91	\$5,410,906
Dairy cattle	403	1.53	416,110
Dairy calves	54	0.21	55,907
Other livestock	0	0.00	-452
Crops	219	0.83	226,032
Misc. receipts	195	0.74	200,828
Total Operating Receipts	\$6,113	\$23.21	\$6,309,330
<u>Accrual Operating Expenses</u>			
Hired labor	\$681	\$2.59	\$702,798
Dairy grain & concentrate	1,649	6.26	1,701,380
Dairy roughage	184	0.70	189,680
Nondairy feed	0	0.00	0
Professional nutritional services	1	0.00	926
Mach. hire/rent/lease	116	0.44	119,293
Mach. repair & farm vehicle expense	223	0.85	229,838
Fuel, oil & grease	198	0.75	204,420
Replacement livestock	5	0.02	5,496
Breeding	44	0.17	45,307
Veterinary & medicine	152	0.58	156,617
Milk marketing	207	0.79	213,666
Bedding	105	0.40	108,163
Milking supplies	83	0.32	85,879
Cattle lease	8	0.03	7,811
Custom boarding	71	0.27	73,172
bST expense	35	0.13	36,319
Livestock professional fees	13	0.05	13,645
Other livestock expense	12	0.05	12,573
Fertilizer & lime	122	0.46	126,285
Seeds & plants	97	0.37	100,536
Spray/other crop expenses	54	0.20	55,590
Crop professional fees	4	0.01	3,889
Land, building, fence repair	84	0.32	86,858
Taxes	50	0.19	51,363
Real estate rent/lease	72	0.27	73,855
Insurance	44	0.17	44,914
Utilities	95	0.36	97,961
Other professional fees	29	0.11	29,575
Miscellaneous	27	0.10	27,933
Total Less Interest Paid	\$4,463	\$16.95	\$4,605,743
<u>Net Accrual Operating Income</u>			
(without interest paid)	\$1,651	\$6.27	\$1,703,587
- Change in livestock/crop inventory <sup>19</sup>	262	1.00	270,545
- Change in accounts receivable	66	0.25	68,344
- Change in feed/supply inventory <sup>20</sup>	125	0.47	128,766
+ Change in accounts payable <sup>21</sup>	8	0.03	7,860
NET CASH FLOW	\$1,205	\$ 4.58	\$1,243,792
- Net personal withdrawals from farm(see footnote page 22)	356	1.35	367,397
Available for Farm Debt Payments & Investments	\$ 849	\$ 3.22	\$876,095
- Farm debt payments	431	1.64	444,881
Available for Farm Investment	\$ 418	\$ 1.59	\$ 431,214
- Capital purchases: cattle, machinery & improvements	1,114	4.23	1,149,680
Additional Capital Needed	\$ 696	\$ 2.64	\$ 718,466

<sup>19</sup>Includes change in advance government receipts.

<sup>20</sup>Includes change in prepaid expenses.

<sup>21</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**

108 Large Herd Dairy Farms, 2012

Item	Average 108 farms			Average Top 20% Farms		
<u>Land</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
Tillable	887	841	1,728	986	818	1,804
Nontillable	22	7	28	11	0	11
Other nontillable	<u>181</u>	<u>5</u>	<u>186</u>	<u>126</u>	<u>0</u>	<u>126</u>
Total	1,090	853	1,942	1,122	818	1,941
 <u>Crop Yields</u>	 <u>Farms</u>	 <u>Acres</u> <sup>22</sup>	 <u>Prod/Acre</u>	 <u>Farms</u>	 <u>Acres</u>	 <u>Prod/Acre</u>
Hay crop	104	751	3.01 tn DM	20	849	3.30 tn DM
Corn silage	101	762	16.67 tn	20	883	17.33 tn
Other forage	26	165	3.23 tn DM	6	125	3.28 tn DM
Total forage	104	1,532	4.35 tn DM	20	1,770	4.68 tn DM
Corn grain	64	261	134 bu	13	273	132 bu
Oats	7	158	35 bu	2	10	82 bu
Wheat	27	152	55 bu	8	138	64 bu
Other crops	28	190		6	109	
Tillable pasture	8	230		0	0	
 Idle tillable	 25	 63		 3	 44	
Total Tillable Acres	108	1,728		22	1,804	

<sup>22</sup>This column represents the average acreage for the farms producing that crop. Average acreages including those farms not producing were corn grain 155, oats 10, wheat 38, tillable pasture 17, and idle 15.

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**

104 Large Herd Dairy Farms, 2012 <sup>23</sup>

Item	Average 104 Farms	Average Top 20% Farms
Total tillable acres per cow	2.01	1.89
Total forage acres per cow	1.72	1.68
Harvested forage dry matter, tons per cow	7.50	7.88

<sup>23</sup> Excludes farms that do not harvest forages.

**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 three farms.

**CROP RELATED ACCRUAL EXPENSES**

Large Herd Dairy Farms Reporting, 2012

Item	Total Per Till. Acre	All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Sh. Bu.	Hay Crop	
					Per Acre	Per Ton DM
No. of farms reporting	104 <sup>24</sup>	6			6	
Ave. number of acres	1,786	812			699	
Fertilizer/lime	\$ 74.18	\$ 74.12	\$ 12.95	\$ 0.56	\$ 47.06	\$ 16.02
Seed/plants	56.95	87.14	14.95	0.48	27.67	9.83
Spray/other crop exp.	31.80	68.90	11.11	0.46	23.68	6.63
TOTAL	\$ 162.93	\$ 230.16	\$ 39.01	\$ 1.50	\$ 98.41	\$ 32.48
<b>Average Top 20% Farms:</b>						
No. of farms reporting	20 <sup>24</sup>					
Ave. number of acres	1,985					
Fertilizer/lime	\$ 71.11					
Seeds/plants	53.96					
Spray/other crop exp.	29.86					
TOTAL	\$ 154.93					

<sup>24</sup> Excludes farms that do not harvest forages.

Most machinery costs are associated with crop production and should be analyzed with the crop enterprise. Total machinery expenses include the major fixed costs (interest and depreciation), as well as the accrual operating costs. Although machinery costs have not been allocated to individual crops, they are shown below per total tillable acre.

**ACCRUAL MACHINERY EXPENSES** <sup>25</sup>

104 Large Herd Dairy Farms, 2012

Machinery Expense Item	Average 104 Farms		Average Top 20% Farms	
	Total Expenses	Per Tillable Acre	Total Expenses	Per Tillable Acre
Fuel, oil & grease	\$193,563	\$ 108.37	\$213,636	\$ 107.64
Machinery repairs & farm vehicle exp.	217,145	121.57	240,935	121.39
Machine hire, rent & lease	89,325	50.01	127,252	64.11
Interest (5%)	73,810	41.32	82,039	41.33
Depreciation	198,912	111.36	224,184	112.95
Total	\$772,755	\$432.63	\$888,046	\$447.42

<sup>25</sup> Excludes farms that do not harvest forages.

**Dairy Analysis**

Analysis of the dairy enterprise can reveal a great deal about the strengths and weaknesses of the dairy farm business. Information on the following pages 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 14 through 16.

**Dairy Analysis** (continued)

**DAIRY HERD INVENTORY**  
108 Large Herd Dairy Farms, 2012

	Dairy Cows				Heifers			
Item	No.	Value	No.	Bred Value	No.	Open Value	No.	Calves Value
<u>Average 108 farms:</u>								
Beginning year (owned)	846	\$1,188,602	278	\$386,161	252	\$216,238	215	\$106,724
+ Change w/o appreciation		53,909		3,047		9,333		5,313
+ Appreciation		<u>7,852</u>		<u>-827</u>		<u>1,704</u>		<u>-1,621</u>
End year (owned)	885	\$1,250,364	281	\$388,381	262	\$227,276	228	\$110,416
End including leased	885							
Average number	879		759 (all age groups)					
<u>Average Top 20% Farms:</u>								
Beginning year (owned)	961	\$1,360,055	318	\$446,817	269	\$238,947	256	\$124,675
+ Change w/o appreciation		106,564		-6,473		14,235		17,013
+ Appreciation		<u>7,664</u>		<u>4,245</u>		<u>-1,636</u>		<u>-2,219</u>
End of year (owned)	1,039	\$1,474,282	313	\$444,589	283	\$251,546	291	\$139,469
End including leased	1,044							
Average number	1,032		868 (all age groups)					

Total milk sold and milk sold per cow along with components produced 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**  
108 Large Herd Dairy Farms, 2012

Item	Average 108 farms	Average Top 20% Farms
Total milk sold, lbs.	22,634,262	27,178,901
Milk sold per cow, lbs.	25,758	26,335
Butterfat per cow, lbs.	968 <sup>26</sup>	971
Protein per cow, lbs.	807 <sup>26</sup>	812
Total butterfat and protein per cow, lbs	1,775 <sup>26</sup>	1,783
Other solids per cow, lbs.	1,518 <sup>26</sup>	1,524
Total components per cow, lbs.	3,293 <sup>26</sup>	3,307

<sup>26</sup> This data is an average for the 98 farms that provided the data.

**ANIMALS LEAVING THE HERD**  
108 Large Herd Dairy Farms, 2012

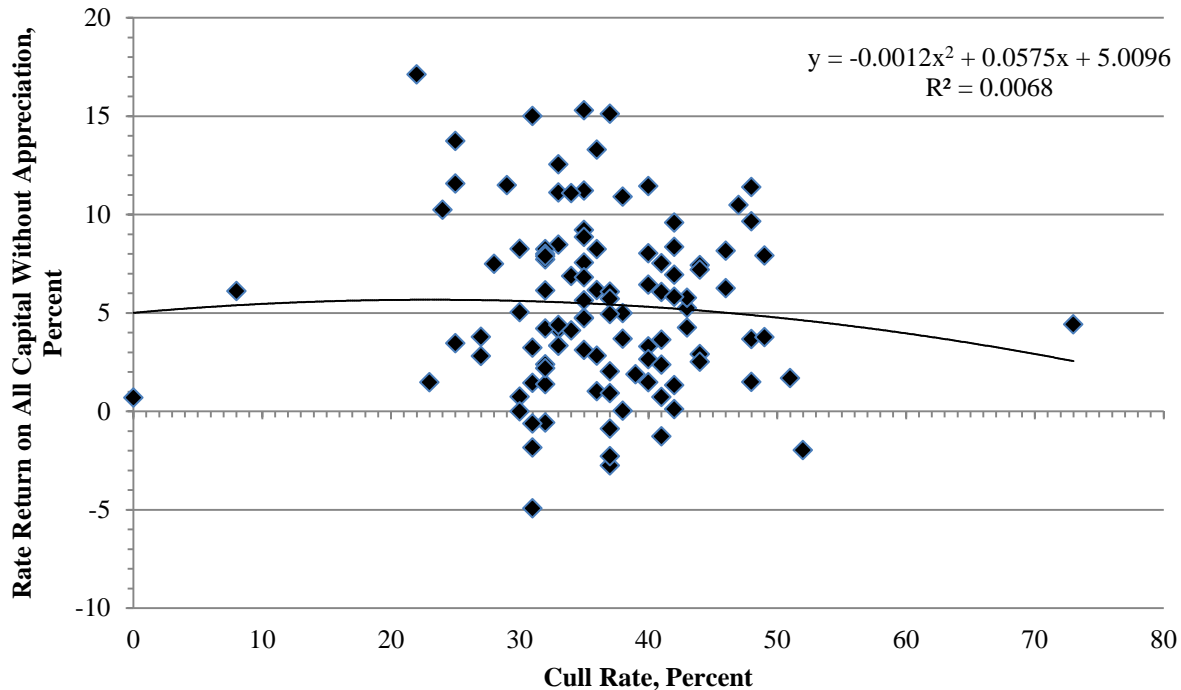
	Average 108 farms		Average Top 20% Farms	
	Number	Percent <sup>27</sup>	Number	Percent <sup>27</sup>
Cows sold for beef	260	29.6	304	29.5
Cows sold for dairy	16	1.9	6	0.6
Cows died	52	5.9	56	5.4
Culling rate <sup>28</sup>	---	35.0	---	35.0

<sup>27</sup> Percent of average number of cows in the herd.

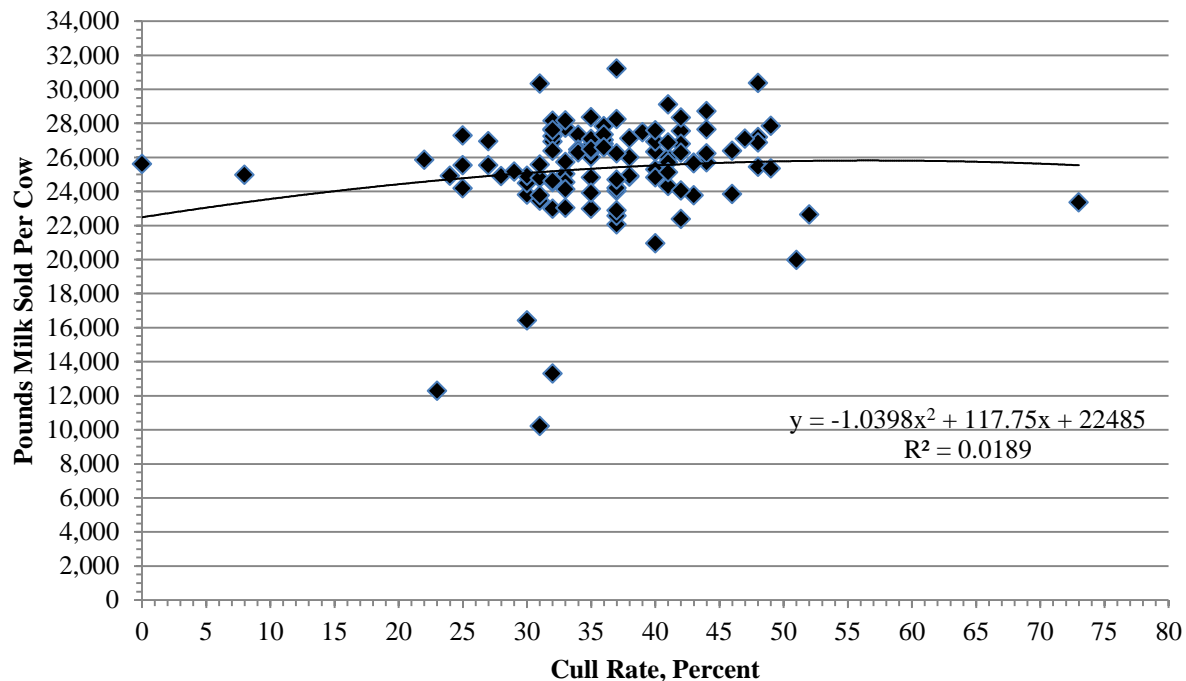
<sup>28</sup> Cows sold for beef plus cows died.

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. There is a curvilinear relationship between cull rate and these two measures for 2012.

**RETURN TO ALL CAPITAL WITHOUT APPRECIATION VERSUS CULL RATE**  
**108 Large Herd Dairy Farms, 2012**



**MILK SOLD PER COW VERSUS CULL RATE**  
**108 Large Herd Dairy Farms, 2012**



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

108 Large Herd Dairy Farms, 2012

Item	Average 108 farms			Average Top 20% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
<u>Accrual Costs of Producing Milk</u>						
Operating costs	\$ 3,569,356	\$ 4,062	\$15.77	\$ 3,845,263	\$ 3,726	\$14.15
Purchased inputs costs	\$ 3,891,081	\$ 4,428	\$17.19	\$ 4,198,286	\$ 4,068	\$15.45
Total Costs	\$ 4,347,623	\$ 4,948	\$19.21	\$ 4,704,876	\$ 4,559	\$17.31
<u>Accrual Receipts From Milk</u>	\$ 4,477,318	\$ 5,095	\$19.78	\$ 5,410,906	\$ 5,243	\$19.91
Net Milk Receipts	\$ 4,282,432	\$ 4,873	\$18.92	\$ 5,197,240	\$ 5,036	\$19.12
Net Farm Income without appreciation	\$ 586,237	\$ 667	\$ 2.59	\$ 1,212,620	\$ 1,175	\$ 4.46
Net Farm Income with appreciation	\$ 826,043	\$ 940	\$ 3.62	\$ 1,434,909	\$ 1,390	\$ 5.28

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

108 Large Herd Dairy Farms, 2012

Item	Average 108 farms		Average Top 20% Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 1,752	\$6.80	\$ 1,649	\$ 6.26
Purchased dairy roughage	121	0.47	184	0.70
Total Purchased Dairy Feed	\$ 1,873	\$7.27	\$ 1,832	\$ 6.96
Purchased grain & concentrate as % of milk receipts		34%		31%
Purchased feed & crop expense	\$ 2,197	\$8.53	\$ 2,110	\$ 8.01
Purchased feed & crop expense as % of milk receipts		43%		40%
Breeding	\$ 52	\$0.20	\$ 44	\$ 0.17
Veterinary & medicine	170	0.66	152	0.58
Milk marketing	222	0.86	207	0.79
Bedding	105	0.41	105	0.40
Milking supplies	90	0.35	83	0.32
Cattle lease	5	0.02	8	0.03
Custom boarding	94	0.37	71	0.27
bST expense	51	0.20	35	0.13
Livestock professional fees	16	0.06	13	0.05
Other livestock expenses	18	0.07	12	0.05



**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.

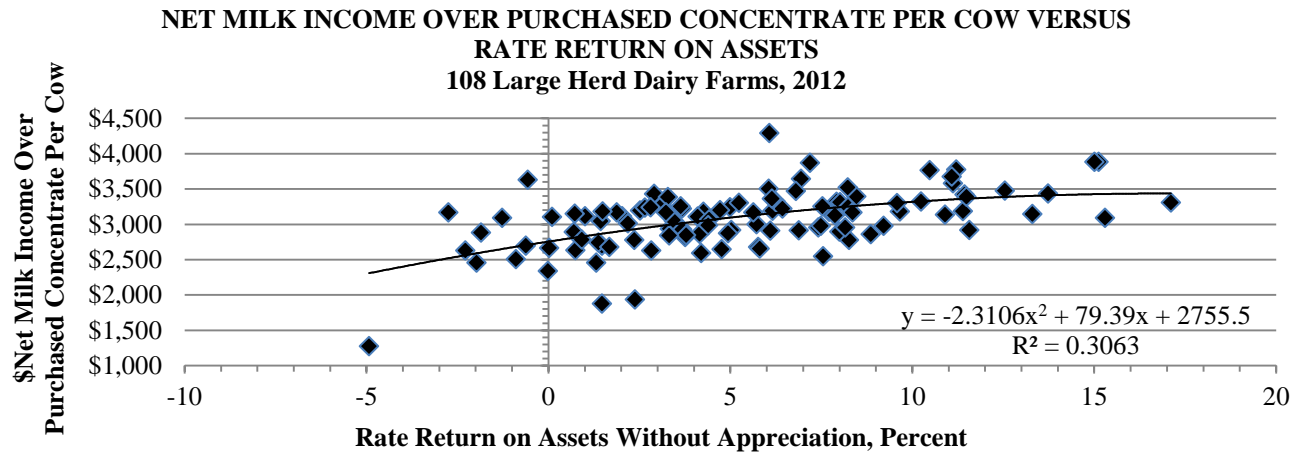
1. The cost of expansion livestock is added to total accrual operating expenses to offset any related inventory increase included in accrual receipts.
2. Accrual milk sales are deducted from total accrual receipts to get total accrual nonmilk receipts which are used to represent total nonmilk operating 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**

108 Large Herd Dairy Farms, 2012

Item	Average 108 farms		Average Top 20% Farms	
Total Accrual Operating Expenses	\$	4,268,891	\$	4,697,629
Expansion Livestock, Accrual	+	<u>36,426</u>	+	<u>46,058</u>
1. Total Accrual Operating Expenses, Including Expansion Livestock		\$ 4,305,317		\$ 4,743,687
Total Accrual Receipts	\$	5,214,746	\$	6,309,330
Milk Sales, Accrual	-	<u>4,477,318</u>	-	<u>5,410,906</u>
2. Total Accrual Nonmilk Receipts		- <u>737,428</u>		- <u>898,424</u>
3. Operating Costs of Producing Milk		\$ 3,569,356		\$ 3,845,263
Cwt. of Milk Sold	÷	226,343	÷	271,789
Operating Costs/Cwt.	=	\$15.77	=	\$14.15
Machinery Depreciation	+	194,680	+	209,172
Building Depreciation	+	126,867	+	143,851
Extraordinary Expenses	+	<u>178</u>	+	<u>0</u>
4. Purchased Inputs Cost of Producing Milk		\$ 3,891,081		\$ 4,198,286
Cwt. of Milk Sold	÷	226,343	÷	271,789
Purchased Inputs Cost/Cwt.	=	\$17.19	=	\$15.45
Family Labor Unpaid (\$2,550/month)	+	1,281	+	414
Real Interest on Equity Capital	+	300,219	+	354,300
Value of Operators' Labor & Management	+	<u>286,205</u>	+	<u>857,907</u>
5. Total Costs of Producing Milk		\$ 4,347,623		\$ 4,704,876
Cwt. Milk Sold	÷	226,343	÷	271,789
Total Costs/Cwt.	=	\$19.21	=	\$17.31

Net milk income over purchased feed cost per cow is a measure that incorporates the cost of purchased grain and concentrates along with the milk produced per cow and the price received for the component production. It is one of the key measures used to evaluate the effectiveness of the feeding program. Below is the relationship between net milk income over purchased feed cost per cow and return on assets without appreciation.

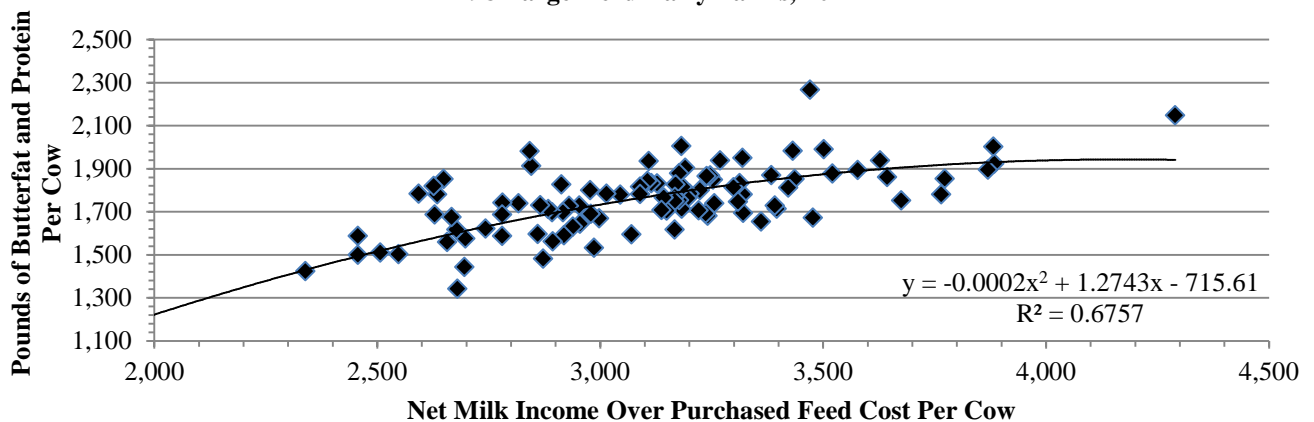


With the change to component milk pricing in 2000, component production has become a focus point for dairy managers. The table and chart below examine the relationship between net milk income over purchased grain and concentrates and cost, price, and milk composition characteristics. The table and charts on page 32 and 33 present costs of producing milk and profitability on the basis of butterfat and protein produced.

**COMPONENT PRODUCTION AND COSTS PER HUNDREDWEIGHT BY NET MILK  
INCOME OVER PURCHASED FEED COST PER COW  
98 Large Herd Dairy Farms, 2012**

Net Milk Income Over Purchased Feed Cost Per Cow	Milk Production Per Cow	Butterfat pounds Per Cow	Protein Pounds Per Cow	Purchased Feed Costs Per Cwt.	Operating Cost of Producing Milk	Net Milk Price Per Cwt.
\$ 3,774	28,237	1,030	\$ 872	\$ 6.25	\$ 14.88	\$ 19.00
3,418	26,030	1,034	805	6.55	14.84	19.40
3,284	26,749	902	752	7.63	15.24	18.94
3,203	26,659	987	812	6.98	15.25	18.80
3,153	26,045	875	732	6.72	16.34	18.70
3,060	25,105	960	815	7.46	16.74	19.05
2,935	24,999	831	691	7.59	15.19	18.82
2,838	25,223	938	776	8.03	16.52	18.74
2,673	23,751	875	740	7.94	17.07	18.99
2,261	19,716	755	618	7.93	18.00	19.31

**POUNDS BUTTERFAT AND PROTEIN PER COW VERSUS NET MILK INCOME  
OVER PURCHASED FEED COST PER COW  
98 Large Herd Dairy Farms, 2012**



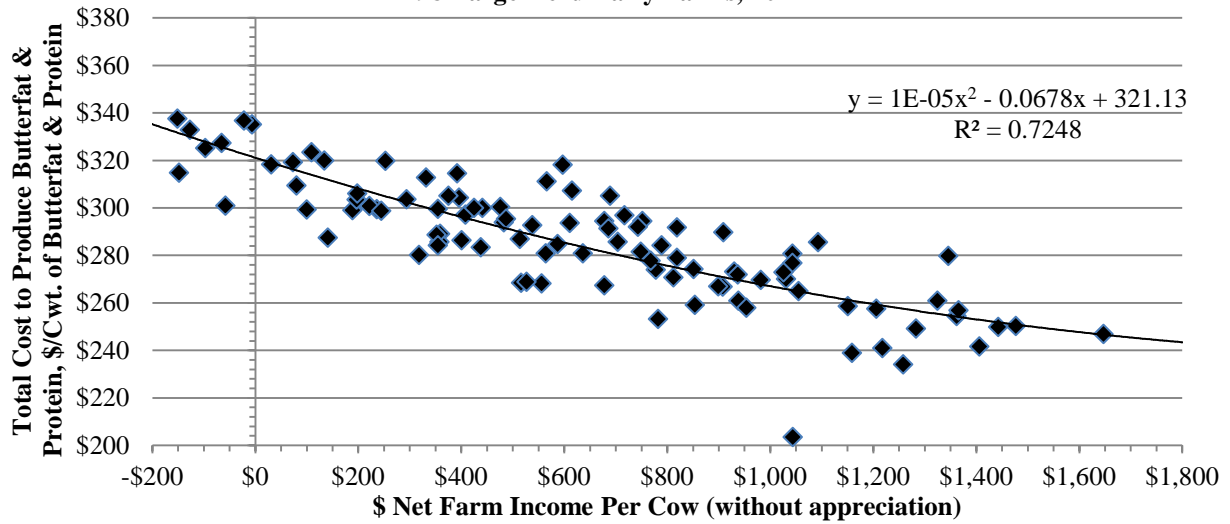
**RECEIPTS AND EXPENSES PER HUNDREDWEIGHT OF BUTTERFAT AND PROTEIN<sup>29</sup>**

Same 93 Large Herd Dairy Farms, 2011 &amp; 2012

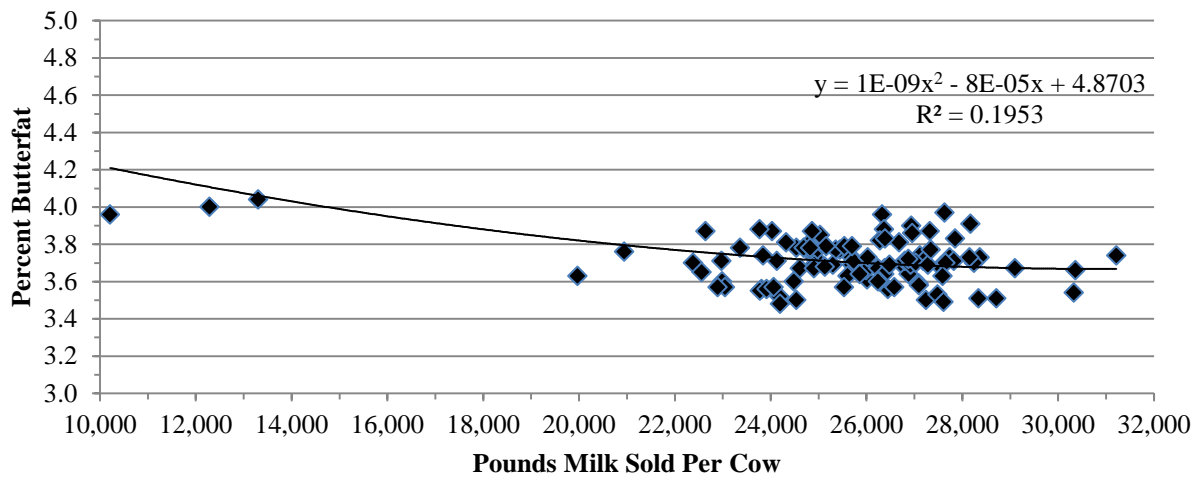
Item	Average Same 93 Large Herd Dairy Farms		Average Top 20% Farms	
	<u>2011</u>	<u>2012</u>	<u>2011</u>	<u>2012</u>
Cwt. of butterfat and protein sold	14,544	15,550	15,540	16,882
<u>Accrual Operating Receipts</u>				
Milk	\$318.53	\$289.92	\$348.18	\$323.36
Dairy cattle	20.06	23.33	23.33	26.06
Dairy calves	1.88	2.56	1.42	3.45
Other livestock	0.88	0.91	0.25	-0.06
Crops	6.92	10.24	9.87	15.52
Miscellaneous receipts	<u>9.15</u>	<u>10.87</u>	<u>8.45</u>	<u>10.97</u>
Total Operating Receipts	\$357.35	\$337.78	\$391.50	\$379.36
<u>Accrual Operating Expenses</u>				
Hired labor	\$41.47	\$41.77	\$42.58	\$43.31
Dairy grain & concentrate	89.91	99.94	92.81	100.91
Dairy roughage	5.45	6.37	5.80	9.49
Nondairy feed	0.00	0.00	0.00	0.00
Professional nutritional services	0.06	0.06	0.06	0.06
Machine hire, rent & lease	5.57	5.69	6.17	7.39
Machine repair & vehicle expense	13.61	13.83	12.40	13.86
Fuel, oil & grease	12.43	12.41	12.53	12.69
Replacement livestock	1.11	0.74	0.25	0.06
Breeding	3.17	3.02	3.02	2.90
Veterinary & medicine	9.91	9.79	9.38	9.61
Milk marketing	12.55	12.63	12.71	12.51
Bedding	5.75	5.98	5.74	6.59
Milking supplies	5.45	5.12	5.18	5.11
Cattle lease	0.23	0.34	0.37	0.55
Custom boarding	5.16	5.46	4.63	4.44
bST expense	3.28	2.85	2.35	1.60
Livestock professional fees	0.88	0.91	0.93	0.80
Other livestock expense	1.00	1.02	0.99	0.92
Fertilizer & lime	6.45	8.31	5.68	7.82
Seeds & plants	5.92	6.43	5.99	6.47
Spray & other crop expense	3.17	3.53	3.39	3.57
Crop professional fees	0.35	0.40	0.25	0.31
Land, building & fence repair	5.63	5.41	5.25	5.42
Taxes	3.17	3.24	3.15	3.08
Real estate rent/lease	4.40	4.04	5.55	5.17
Insurance	2.52	2.45	2.41	2.77
Utilities	5.98	5.41	6.48	5.91
Interest paid	7.10	6.66	5.86	5.36
Other professional fees	1.52	1.76	1.36	1.72
Miscellaneous	<u>1.94</u>	<u>1.82</u>	<u>2.53</u>	<u>1.60</u>
Total Operating Expenses	\$265.10	\$277.62	\$265.98	\$281.96
Expansion livestock	0.88	2.50	1.67	3.33
Extraordinary expense	0.00	0.00	0.00	0.00
Machinery depreciation	12.26	12.75	13.21	113.00
Real Estate depreciation	<u>7.86</u>	<u>8.25</u>	<u>8.21</u>	<u>8.81</u>
Total Expenses	\$286.09	\$301.13	\$289.06	\$307.10
Net Farm Income without appreciation	\$71.14	\$ 36.71	\$102.44	\$72.26

<sup>29</sup> Average data for farms that provided complete milk component data for 2011 – 2012.

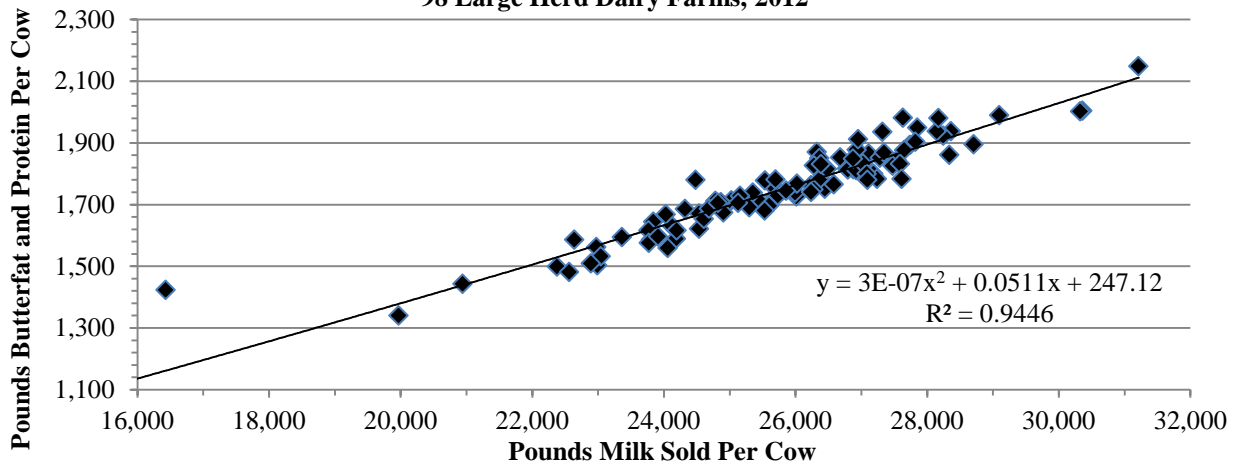
**TOTAL COST TO PRODUCE BUTTERFAT & PROTEIN VERSUS  
NET FARM INCOME PER COW  
98 Large Herd Dairy Farms, 2012**



**POUNDS MILK SOLD PER COW VERSUS PERCENT BUTTERFAT  
98 Large Herd Dairy Farms, 2012**



**POUNDS OF BUTTERFAT AND PROTEIN PER COW VERSUS  
POUNDS MILK SOLD PER COW  
98 Large Herd Dairy Farms, 2012**



**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**  
108 Large Herd Dairy Farms, 2012

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>Average 108 farms:</u>				
Farm capital	\$ 457,750	\$ 10,122	\$ 5,146	\$ 10,026
Real estate		4,066		4,028
Machinery & equipment	74,515	1,648	838	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense	Depreciation Expense	
0.61	0.81	0.02	0.06	
<u>Average Top 20% Farms:</u>				
Farm capital	\$ 477,184	\$ 9,710	\$ 5,554	\$ 10,162
Real estate		3,729		3,903
Machinery & equipment	73,859	1,503	860	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense	Depreciation Expense	
0.65	0.74	0.01	0.06	

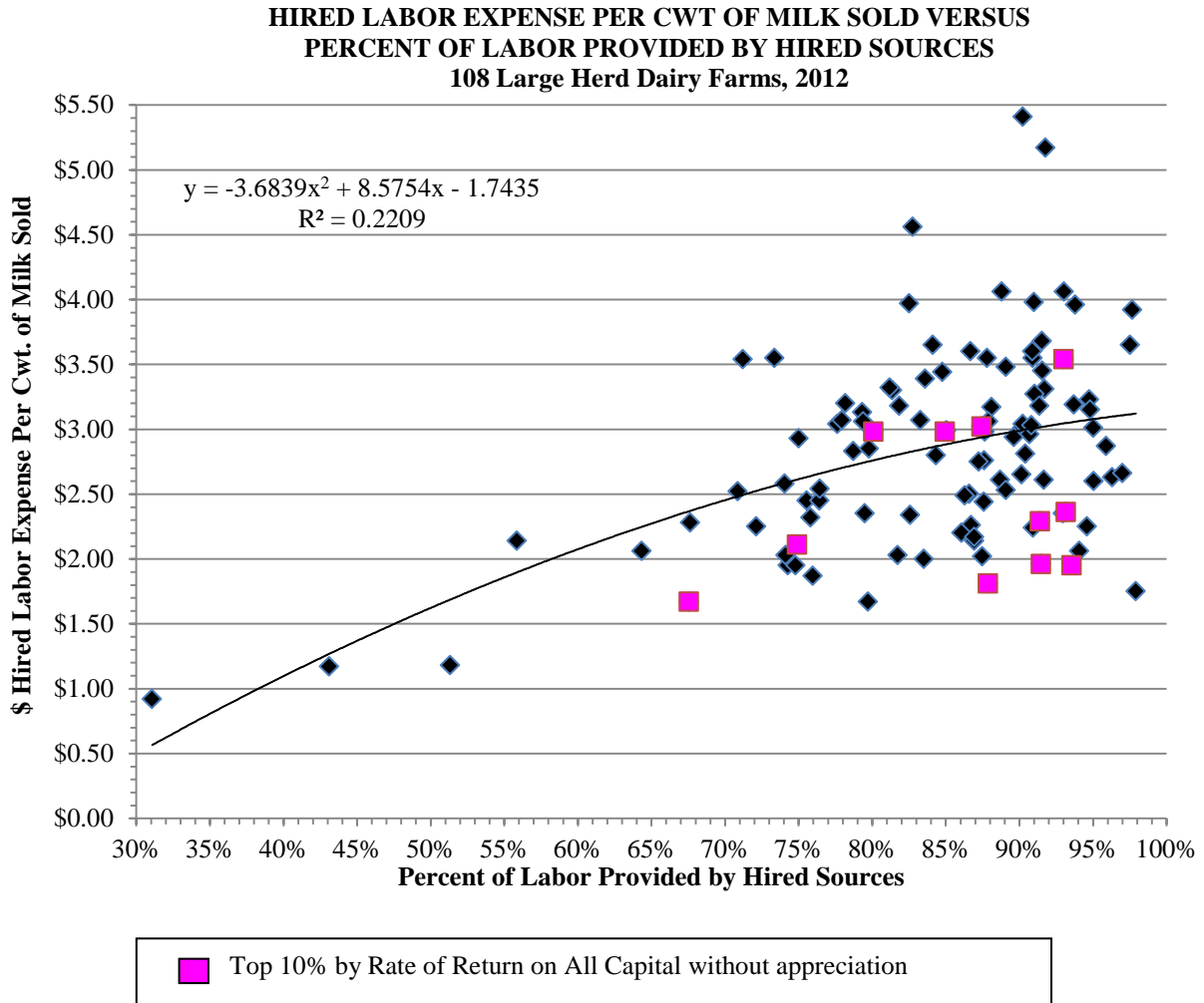
**LABOR FORCE INVENTORY AND ANALYSIS**

108 Large Herd Dairy Farms, 2012

100 Large Herd Dairy Farms, 2012						
Labor Force	Months	Age	Years of Education	Value of Labor & Mgmt.		
Operator number 1	12.38	55	14	\$ 66,932		
Operator number 2	9.52	47	14	49,309		
Operator number 3	5.32	41	15	26,652		
Operator number 4	2.88	42	16	12,149		
Family paid	1.99					
Family unpaid	0.49					
Hired	<u>200.61</u>					
Total	233.19	/ 12 = 19.43 Worker Equivalent 2.28Operator/Manager Equivalent				
<u>Average Top 20% Farms:</u>						
Total	251.92	/ 12 = 20.99 Worker Equivalent 2.35 Operator/Manager Equivalent				
Operator's						
Labor	Average 108 farms		Average Top 20% Farms			
Efficiency	Total	Per Worker	Total	Per Worker		
Cows, average number	879	45	1,032	49		
Milk sold, pounds	22,634,262	1,164,763	27,178,901	1,294,644		
Tillable acres	1,728	89	1,804	86		
Labor Costs	Average 108 farms			Average Top 20% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Value of operator(s) labor (\$2,550/month)	\$ 77,535	\$ 88	\$0.34	\$ 75,472	\$ 73	\$ 0.28
Family unpaid (\$2,550/month)	1,262	1	0.01	397	0	0.00
Hired	<u>639,030</u>	<u>727</u>	<u>2.82</u>	<u>702,798</u>	<u>681</u>	<u>2.59</u>
Total Labor	\$ 717,828	\$ 817	\$3.17	\$ 778,667	\$ 754	\$ 2.86
Machinery Cost	<u>756,325</u>	<u>861</u>	<u>3.34</u>	<u>839,000</u>	<u>813</u>	<u>3.09</u>
Total Labor & Machinery	\$1,474,153	\$ 1,678	\$6.51	\$ 1,617,667	\$ 1,567	\$ 5.95
Hired labor expense per hired worker equiv.	\$ 37,850			\$ 38,101		
Hired labor expense as % of milk sales	14.3%			13.0%		

## Labor Cost Evaluation

Labor costs have been the second largest expense on large dairy farms in New York the last five 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 farm's expense compares to other farms. To calculate percent of labor provided by hired sources use the worksheet below.



### **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 14 of your farm's Dairy Farm Business Summary report.

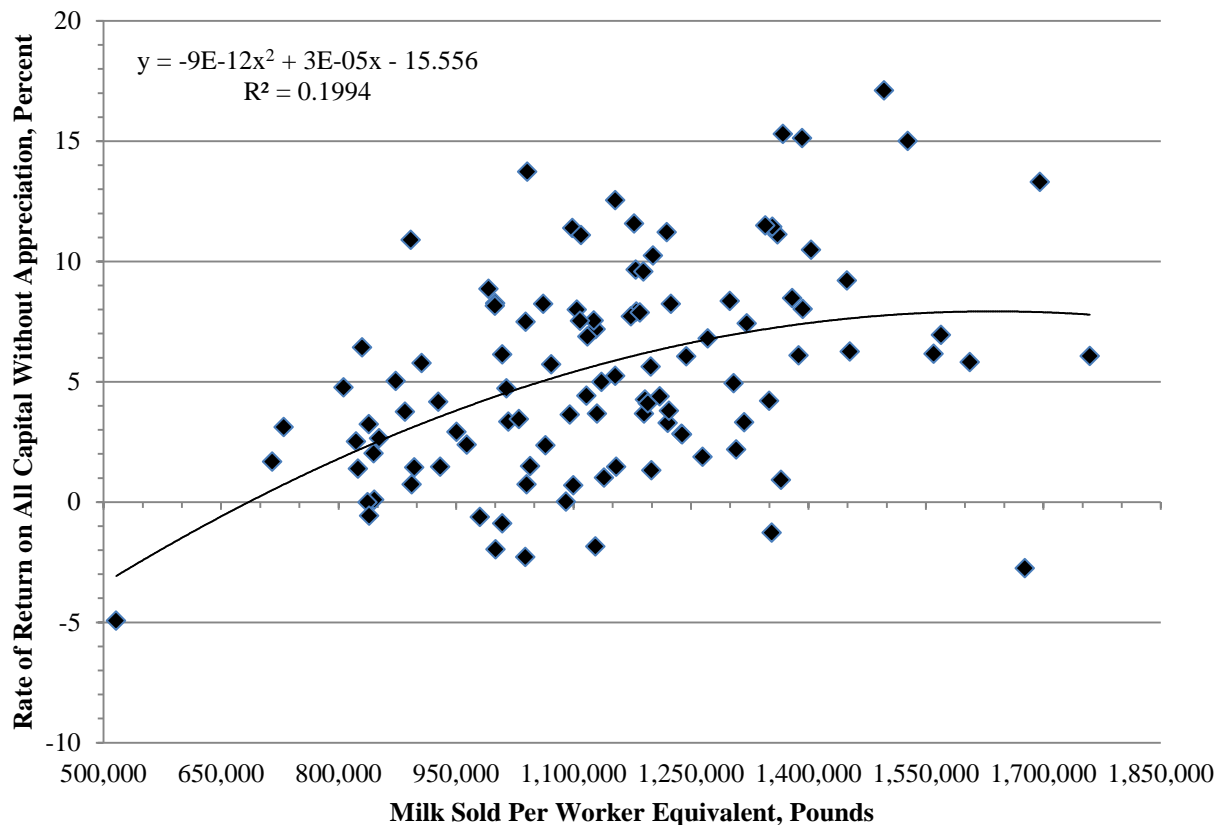
Months of hired labor	+	_____	
Months of family paid labor	+	_____	
 Total hired labor	 =	 _____	
Total Labor Months	÷	_____	
Percent of labor from hired sources	x 100 =	_____	%

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 hundredweight 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 hundredweight of milk sold.

**HIRED LABOR EXPENSE BUSINESS CHARTS**  
108 Large Herd Dairy Farms, 2012

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	\$1.63	8%	\$28,667	\$10.39
	2.07	10	30,852	11.18
	2.28	11	32,468	11.76
	2.50	13	34,072	12.34
	2.72	14	35,720	12.94
	2.97	15	37,889	13.73
	3.09	16	39,176	14.19
	3.30	16	41,148	14.91
	3.57	18	43,178	15.64
Average of Highest Decile	4.28	22	48,643	17.62

**RATE OF RETURN ON ALL CAPITAL WITHOUT APPRECIATION VERSUS  
MILK SOLD PER WORKER EQUIVALENT**  
108 Large Herd Dairy Farms, 2012



## CONDENSED SUMMARY &amp; SELECTED BUSINESS FACTORS

## CONDENSED FARM BUSINESS SUMMARY FOR THREE LARGE HERD GROUPS

108 Large Herd Dairy Farms, 2012

Item	39 Farms with 300-599 Cows		30 Farms with 600-899 Cows		39 Farms with ≥900 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<b>ACCRUAL EXPENSES</b>						
Hired labor	\$ 659	\$ 2.71	\$ 697	\$ 2.74	\$ 761	\$ 2.89
Dairy grain & concentrate	1,614	6.63	1,786	7.01	1,782	6.77
Dairy roughage	125	0.51	149	0.58	108	0.41
Nondairy feed	0	0.00	1	0.00	0	0.00
Professional nutritional services	1	0.01	1	0.01	1	0.00
Machine hire, rent & lease	163	0.67	92	0.36	82	0.31
Machine repairs & farm vehicle expense	226	0.93	225	0.88	254	0.97
Fuel, oil & grease	219	0.90	214	0.84	216	0.82
Replacement livestock	36	0.15	6	0.02	10	0.04
Breeding	53	0.22	52	0.20	52	0.20
Veterinary & medicine	145	0.60	168	0.66	179	0.68
Milk marketing	199	0.82	224	0.88	228	0.87
Bedding	100	0.41	112	0.44	104	0.39
Milking supplies	81	0.33	92	0.36	93	0.35
Cattle lease & rent	0	0.00	5	0.02	7	0.03
Custom boarding	102	0.42	112	0.44	84	0.32
bST expense	22	0.09	41	0.16	65	0.25
Livestock professional fees	18	0.07	14	0.06	16	0.06
Other livestock expense	18	0.07	15	0.06	19	0.07
Fertilizer & lime	155	0.64	147	0.58	141	0.54
Seeds & plants	117	0.48	108	0.42	110	0.42
Spray & other crop expense	66	0.27	63	0.25	60	0.23
Crop professional fees	8	0.03	6	0.02	6	0.02
Land, building & fence repair	82	0.34	80	0.31	103	0.39
Taxes & rent	136	0.56	115	0.45	126	0.48
Utilities	97	0.40	92	0.36	96	0.37
Interest paid	124	0.51	50	0.20	110	0.42
Other professional fees	31	0.13	28	0.11	33	0.12
Misc. (including insurance)	<u>73</u>	<u>0.31</u>	<u>81</u>	<u>0.32</u>	<u>73</u>	<u>0.28</u>
Total Operating Expenses	\$4,669	\$19.18	\$4,855	\$19.06	\$4,919	\$18.68
Expansion livestock	11	0.05	34	0.13	54	0.21
Extraordinary expense	1	0.00	0	0.00	0	0.00
Machinery depreciation	229	0.94	223	0.88	218	0.83
Building depreciation	<u>150</u>	<u>0.62</u>	<u>155</u>	<u>0.61</u>	<u>138</u>	<u>0.52</u>
Total Accrual Expenses	\$5,061	\$20.79	\$5,268	\$20.69	\$5,329	\$20.24
<b>ACCRUAL RECEIPTS</b>						
Milk sales	\$4,806	\$19.74	\$5,055	\$19.85	\$5,204	\$19.76
Dairy cattle	334	1.37	386	1.52	436	1.66
Dairy calves	43	0.18	47	0.18	45	0.17
Other livestock	12	0.05	38	0.15	6	0.02
Crops	155	0.63	165	0.65	190	0.72
Miscellaneous receipts	<u>217</u>	<u>0.89</u>	<u>191</u>	<u>0.75</u>	<u>189</u>	<u>0.72</u>
Total Accrual Receipts	\$5,566	\$22.87	\$5,883	\$23.10	\$6,070	\$23.05
<b>PROFITABILITY ANALYSIS (Total)</b>						
Net farm income (without appreciation)	\$225,109		\$464,671		\$1,040,878	
Net farm income (with appreciation)	\$350,634		\$699,123		\$1,399,084	
Labor & management income	\$69,023		\$221,505		\$553,156	
Number of operators	1.97		2.23		2.64	
Labor & management income/operator	\$35,037		\$99,330		\$209,529	
Rates of return on: Equity capital w/o apprec.	3.8%		6.4%		8.4%	
Equity capital w/ apprec.	7.9%		11.0%		12.1%	
All capital w/o apprec.	3.9%		5.5%		6.9%	
All capital w/ apprec.	6.7%		8.5%		9.4%	



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

108 Large Herd Dairy Farms, 2012

Item	39 Farms with 300-599 Cows	30 Farms with 600-899 Cows	39 Farms with ≥ 900 Cows
<u>Cropping Program Analysis</u>			
Total Tillable acres	1,007	1,445	2,668
Tillable acres rented <sup>30</sup>	556	679	1,251
Hay crop acres <sup>30</sup>	467	601	1,075
Corn silage acres <sup>30</sup>	348	589	1,171
Hay crop, tons DM/acre	2.5	3.1	3.2
Corn silage, tons/acre	15.8	17.4	16.7
Forage DM per cow, tons	7.2	7.7	7.5
Tillable acres/cow	2.3	2.1	1.9
Fertilizer & lime expense/tillable acre	\$67.87	\$85.90	\$71.75
Machinery cost/tillable acre	\$405	\$423	\$447
<u>Dairy Analysis</u>			
Number of cows	446	756	1,406
Number of heifers	376	663	1,214
Milk sold, lbs.	10,849,330	19,259,100	37,015,471
Butterfat & protein, lbs./cow	1,798	1,745	1,745
Milk sold/cow, lbs.	24,341	25,467	26,328
Operating cost of prod. milk/cwt.	\$16.10	\$15.95	\$15.60
Total cost of prod. milk/cwt.	\$20.07	\$19.44	\$18.86
Price/cwt. milk sold	\$19.74	\$19.85	\$19.76
Purchased dairy feed/cow	\$1,739	\$1,935	\$1,890
Purchased dairy feed/cwt. milk	\$7.14	\$7.60	\$7.18
Purchased grain & concentrate as % of milk receipts	34%	35%	34%
Purchased feed & crop expense/cwt. milk	\$8.56	\$8.86	\$8.39
Net milk income over purchased feed costs per cow	\$2,992	\$3,045	\$2,324
<u>Capital Efficiency</u>			
Farm capital/worker	\$423,177	\$458,306	\$469,489
Farm capital/cow	\$10,054	\$10,278	\$10,078
Real estate/cow	\$4,008	\$4,106	\$4,069
Machinery investment/cow	\$1,863	\$1,708	\$1,555
Asset turnover ratio	0.58	0.60	0.63
<u>Labor Efficiency</u>			
Worker equivalent	10.59	16.96	30.18
Operator/manager equivalent	1.97	2.23	2.64
Milk sold/worker, lbs.	1,024,569	1,135,449	1,226,626
Cows/worker	42	45	47
Labor cost/cow	\$819	\$791	\$827
<u>Financial Measures</u>			
Percent equity	68%	66%	68%
Debt/asset ratio - long term	0.34	0.37	0.27
Debt/asset ratio - intermediate & current	0.30	0.32	0.35
Change in net worth with appreciation	\$179,709	\$401,203	\$772,173
Total farm debt per cow	\$3,351	\$3,634	\$3,300
Debt payments made per cow	\$593	\$585	\$457
Debt payments as % of milk sales	12%	12%	9%
Amount available for debt service	\$340,221	\$531,512	\$848,601
Debt coverage ratio for 2012	1.34	1.66	1.78

<sup>30</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 599 cows. The second two tables are of farms with 600 - 899 cows. The third set of tables is of farms with 900 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 row 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 row 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 39 Large Herd Dairy Farms with 300 – 599 Cows, 2012

Item	QUINTILE				
	1	2	3	4	5
<b><u>Accrual Operating Receipts</u></b>					
Milk	\$5,554	\$5,176	\$4,916	\$4,646	\$3,811
Dairy cattle	501	399	328	282	177
Dairy calves	102	59	40	24	-14
Other livestock	75	0	0	0	-4
Crops	587	282	120	9	-153
Miscellaneous receipts	472	245	181	151	101
Total Operating Receipts	\$6,495	\$6,008	\$5,707	\$5,366	\$4,392
<b><u>Accrual Operating Expenses</u></b>					
Hired labor	\$ 370	\$ 531	\$ 687	\$ 795	\$ 945
Dairy grain & concentrate	1,101	1,476	1,673	1,847	2,059
Dairy roughage	0	16	62	130	538
Nondairy feed	0	0	0	0	0
Professional nutritional services	0	0	0	0	7
Machinery hire/rent/lease	15	50	144	246	360
Mach. repair & farm vehicle exp.	110	178	217	263	366
Fuel, oil & grease	147	204	219	235	295
Replacement livestock	0	0	0	1	218
Breeding	21	36	49	71	96
Veterinary & medicine	84	127	144	164	219
Milk marketing	113	154	185	227	347
Bedding	27	63	97	134	212
Milking supplies	40	58	75	100	149
Cattle lease	0	0	0	0	3
Custom boarding	0	0	1	87	491
bST expense	0	0	0	26	95
Livestock professional fees	0	11	18	22	39
Other livestock expense	0	3	17	25	46
Fertilizer & lime	28	94	128	199	313
Seeds & plants	31	96	123	151	183
Spray/other crop expenses	5	34	59	87	136
Crop professional fees	0	0	6	14	21
Land, building, fence repair	23	55	70	100	153
Taxes	21	41	56	77	120
Real estate rent/lease	12	38	60	97	158
Insurance	21	33	45	54	82
Utilities	57	83	100	108	141
Interest	24	69	114	179	258
Other professional fees	4	15	26	41	71
Miscellaneous	10	16	21	29	67
Total Operating Expenses	\$3,499	\$4,508	\$4,736	\$5,042	\$5,731
Expansion livestock	0	0	0	0	58
Extraordinary expense	0	0	0	0	3
Machinery depreciation	116	173	228	281	374
Building depreciation	46	114	148	188	283
Net Farm Income w/o Appreciation	\$ 1,038	\$ 755	\$ 516	\$ 320	\$ -67

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**

39 Large Herd Dairy Farms with 300 – 599 Cows, 2012

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$20.78	\$20.13	\$19.80	\$19.48	\$18.90
Dairy cattle	2.13	1.64	1.38	1.13	0.76
Dairy calves	0.41	0.23	0.17	0.11	-0.11
Other livestock	0.39	0.00	0.00	0.00	-0.03
Crops	2.50	1.15	0.46	0.04	-0.80
Miscellaneous receipts	1.80	1.06	0.79	0.64	0.42
Total Operating Receipts	\$25.36	\$23.47	\$22.79	\$22.25	\$21.14
<u>Accrual Operating Expenses</u>					
Hired labor	\$ 1.53	\$ 2.28	\$ 2.86	\$ 3.22	\$ 4.08
Dairy grain & concentrate	5.47	6.12	6.75	7.18	7.82
Dairy roughage	0.00	0.06	0.24	0.50	2.27
Nondairy feed	0.00	0.00	0.00	0.00	0.00
Professional nutritional services	0.00	0.00	0.00	0.00	0.03
Machinery hire/rent/lease	0.06	0.24	0.59	0.94	1.51
Mach. repair & farm vehicle exp.	0.50	0.73	0.86	1.08	1.50
Fuel, oil & grease	0.63	0.78	0.89	1.02	1.29
Replacement livestock	0.00	0.00	0.00	0.00	0.91
Breeding	0.09	0.15	0.21	0.29	0.38
Veterinary & medicine	0.38	0.51	0.57	0.67	0.89
Milk marketing	0.49	0.66	0.77	0.93	1.40
Bedding	0.11	0.27	0.39	0.53	0.84
Milking supplies	0.18	0.25	0.32	0.39	0.60
Cattle lease	0.00	0.00	0.00	0.00	0.01
Custom boarding	0.00	0.00	0.00	0.34	1.91
bST expense	0.00	0.00	0.00	0.10	0.37
Livestock professional fees	0.00	0.05	0.07	0.09	0.16
Other livestock expense	0.00	0.01	0.07	0.11	0.19
Fertilizer & lime	0.12	0.37	0.54	0.81	1.38
Seeds & plants	0.14	0.38	0.50	0.60	0.78
Spray/other crop expenses	0.03	0.14	0.23	0.36	0.57
Crop professional fees	0.00	0.00	0.02	0.06	0.09
Land, building, fence repair	0.10	0.22	0.29	0.44	0.63
Taxes	0.10	0.18	0.22	0.31	0.51
Real estate rent/lease	0.05	0.16	0.24	0.41	0.67
Insurance	0.09	0.15	0.18	0.22	0.32
Utilities	0.26	0.34	0.38	0.44	0.60
Interest	0.09	0.29	0.49	0.78	1.05
Other professional fees	0.02	0.07	0.11	0.16	0.32
Miscellaneous	0.04	0.06	0.08	0.13	0.28
Total Operating Expenses	\$16.74	\$18.34	\$19.25	\$20.48	\$21.98
Expansion livestock	0.00	0.00	0.00	0.00	0.24
Extraordinary expense	0.00	0.00	0.00	0.00	0.02
Machinery depreciation	0.48	0.72	0.95	1.14	1.70
Building depreciation	0.18	0.48	0.59	0.80	1.24
Net Farm Income w/o Appreciation	\$ 4.22	\$ 2.99	\$2.09	\$1.33	\$-0.45

**RECEIPTS AND EXPENSES PER COW**  
30 Large Herd Dairy Farms with 600 – 899 Cows, 2012

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$5,756	\$5,317	\$5,038	\$4,891	\$4,188
Dairy cattle	599	443	382	315	196
Dairy calves	119	60	48	29	-15
Other livestock	222	2	0	0	-1
Crops	650	230	78	-3	-144
Miscellaneous receipts	416	199	150	122	85
Total Operating Receipts	\$6,873	\$6,169	\$5,861	\$5,578	\$4,892
<u>Accrual Operating Expenses</u>					
Hired labor	\$ 543	\$ 612	\$ 668	\$ 757	\$ 912
Dairy grain & concentrate	1,272	1,595	1,770	1,985	2,321
Dairy roughage	3	19	51	122	508
Nondairy feed	0	0	0	0	7
Professional nutritional services	0	0	0	0	7
Machinery hire/rent/lease	11	30	54	111	252
Mach. repair & farm vehicle exp.	107	173	219	276	352
Fuel, oil & grease	126	183	204	243	322
Replacement livestock	0	0	0	0	32
Breeding	18	34	45	66	94
Veterinary & medicine	105	135	162	189	249
Milk marketing	132	175	222	268	330
Bedding	36	85	107	137	196
Milking supplies	39	70	89	100	163
Cattle lease	0	0	0	0	27
Custom boarding	0	0	4	119	410
bST expense	0	0	2	71	127
Livestock professional fees	0	8	15	18	31
Other livestock expense	0	0	9	23	44
Fertilizer & lime	45	90	145	202	271
Seeds & plants	32	93	109	127	183
Spray/other crop expenses	11	46	63	78	114
Crop professional fees	0	0	0	10	17
Land, building, fence repair	22	56	79	96	151
Taxes	20	45	60	69	92
Real estate rent/lease	11	37	50	71	124
Insurance	30	39	45	57	78
Utilities	49	81	90	102	138
Interest	26	91	124	169	218
Other professional fees	7	21	26	32	55
Miscellaneous	9	19	28	41	58
Total Operating Expenses	\$3,903	\$4,562	\$4,846	\$5,207	\$5,727
Expansion livestock	0	0	0	4	197
Extraordinary expense	0	0	0	0	1
Machinery depreciation	71	187	245	278	336
Building depreciation	45	99	158	204	266
Net Farm Income w/o Appreciation	\$ 1,342	\$ 832	\$ 527	\$ 295	\$ 42

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
 30 Large Herd Dairy Farms with 600 – 899 Cows, 2012

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$21.25	\$22.28	\$19.97	\$19.39	\$18.84
Dairy cattle	2.65	1.74	1.50	1.21	0.77
Dairy calves	0.46	0.23	0.19	0.12	-0.09
Other livestock	1.33	0.01	0.00	0.00	-0.01
Crops	2.56	0.87	0.31	-0.01	-0.62
Miscellaneous receipts	1.69	0.82	0.61	0.50	0.32
Total Operating Receipts	\$27.21	\$24.17	\$22.59	\$21.87	\$21.01
<u>Accrual Operating Expenses</u>					
Hired labor	\$ 2.12	\$ 2.37	\$ 2.77	\$ 3.09	\$ 3.57
Dairy grain & concentrate	5.39	6.23	7.03	7.79	8.77
Dairy roughage	0.01	0.08	0.22	0.49	1.79
Nondairy feed	0.00	0.00	0.00	0.00	0.06
Professional nutritional services	0.00	0.00	0.00	0.00	0.03
Machinery hire/rent/lease	0.05	0.12	0.20	0.46	1.03
Mach. repair & farm vehicle exp.	0.46	0.67	0.88	1.09	1.35
Fuel, oil & grease	0.49	0.72	0.81	0.95	1.27
Replacement livestock	0.00	0.00	0.00	0.00	0.13
Breeding	0.07	0.13	0.18	0.26	0.39
Veterinary & medicine	0.43	0.54	0.62	0.74	0.98
Milk marketing	0.56	0.72	0.87	1.04	1.26
Bedding	0.14	0.32	0.41	0.56	0.81
Milking supplies	0.16	0.27	0.36	0.41	0.60
Cattle lease	0.00	0.00	0.00	0.00	0.12
Custom boarding	0.00	0.00	0.02	0.46	1.73
bST expense	0.00	0.00	0.01	0.28	0.46
Livestock professional fees	0.00	0.03	0.06	0.07	0.12
Other livestock expense	0.00	0.00	0.04	0.10	0.17
Fertilizer & lime	0.18	0.36	0.55	0.80	1.28
Seeds & plants	0.12	0.37	0.44	0.50	0.72
Spray/other crop expenses	0.05	0.17	0.25	0.32	0.46
Crop professional fees	0.00	0.00	0.00	0.04	0.07
Land, building, fence repair	0.09	0.22	0.30	0.38	0.62
Taxes	0.08	0.18	0.23	0.28	0.43
Real estate rent/lease	0.04	0.14	0.20	0.30	0.57
Insurance	0.11	0.16	0.19	0.23	0.31
Utilities	0.23	0.30	0.34	0.41	0.52
Interest	0.11	0.36	0.51	0.68	0.89
Other professional fees	0.03	0.08	0.10	0.13	0.24
Miscellaneous	0.04	0.08	0.11	0.16	0.23
Total Operating Expenses	\$16.69	\$18.33	\$19.04	\$20.15	\$21.94
Expansion livestock	0.00	0.00	0.00	0.02	1.36
Extraordinary expense	0.00	0.00	0.00	0.00	0.01
Machinery depreciation	0.31	0.70	0.97	1.15	1.33
Building depreciation	0.18	0.39	0.63	0.82	1.11
Net Farm Income w/o Appreciation	\$ 5.20	\$3.18	\$1.99	\$1.18	\$0.21

**RECEIPTS AND EXPENSES PER COW**  
 39 Large Herd Dairy Farms with 900 or More Cows, 2012

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$5,746	\$5,415	\$5,250	\$5,040	\$4,682
Dairy cattle	669	492	414	344	270
Dairy calves	86	57	47	36	5
Other livestock	53	1	0	0	-7
Crops	693	280	179	82	-105
Miscellaneous receipts	487	208	147	120	61
Total Operating Receipts	\$6,913	\$6,550	\$6,126	\$5,809	\$5,251
<u>Accrual Operating Expenses</u>					
Hired labor	\$ 523	\$ 663	\$ 749	\$ 860	\$ 1,061
Dairy grain & concentrate	1,417	1,640	1,789	1,921	2,193
Dairy roughage	4	46	71	111	318
Nondairy feed	0	0	0	0	0
Professional nutritional services	0	0	0	0	3
Machinery hire/rent/lease	5	27	72	117	253
Mach. repair & farm vehicle exp.	153	216	251	288	402
Fuel, oil & grease	155	187	221	255	292
Replacement livestock	0	0	0	4	52
Breeding	28	42	51	66	89
Veterinary & medicine	113	151	187	214	256
Milk marketing	111	177	211	289	397
Bedding	21	75	107	137	183
Milking supplies	40	69	97	111	166
Cattle lease	0	0	0	1	35
Custom boarding	0	0	14	101	307
bST expense	0	0	58	110	142
Livestock professional fees	2	11	15	20	37
Other livestock expense	0	0	8	26	58
Fertilizer & lime	45	89	130	166	326
Seeds & plants	65	86	106	133	184
Spray/other crop expenses	22	42	60	76	130
Crop professional fees	0	0	1	7	28
Land, building, fence repair	27	54	91	131	199
Taxes	32	47	56	65	91
Real estate rent/lease	17	44	69	97	173
Insurance	18	27	41	53	75
Utilities	53	85	104	118	150
Interest	25	71	108	158	243
Other professional fees	6	19	34	47	76
Miscellaneous	9	17	27	46	78
Total Operating Expenses	\$4,229	\$4,700	\$4,946	\$5,302	\$5,771
Expansion livestock	0	0	0	28	241
Extraordinary expense	0	0	0	0	0
Machinery depreciation	115	168	231	282	353
Building depreciation	64	92	119	179	239
Net Farm Income w/o Appreciation	\$ 1,412	\$ 1,019	\$ 708	\$ 467	\$ 124

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
 39 Large Herd Dairy Farms with 900 or More Cows, 2012

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$20.88	\$20.13	\$19.75	\$19.36	\$19.02
Dairy cattle	2.62	1.84	1.55	1.30	1.04
Dairy calves	0.33	0.21	0.17	0.14	0.01
Other livestock	0.20	0.00	0.00	0.00	-0.03
Crops	2.66	1.06	0.68	0.31	-0.44
Miscellaneous receipts	1.85	0.80	0.56	0.46	0.23
Total Operating Receipts	\$25.88	\$24.13	\$22.99	\$22.23	\$21.14
<u>Accrual Operating Expenses</u>					
Hired labor	\$ 2.01	\$ 2.48	\$ 2.89	\$ 3.25	\$ 4.04
Dairy grain & concentrate	5.40	6.36	6.74	7.26	8.34
Dairy roughage	0.02	0.17	0.27	0.44	1.21
Nondairy feed	0.00	0.00	0.00	0.00	0.00
Professional nutritional services	0.00	0.00	0.00	0.00	0.01
Machinery hire/rent/lease	0.02	0.10	0.27	0.45	0.97
Mach. repair & farm vehicle exp.	0.58	0.82	0.95	1.10	1.54
Fuel, oil & grease	0.58	0.72	0.84	0.97	1.12
Replacement livestock	0.00	0.00	0.00	0.01	0.19
Breeding	0.11	0.16	0.19	0.24	0.35
Veterinary & medicine	0.42	0.59	0.71	0.80	0.99
Milk marketing	0.44	0.65	0.82	1.10	1.45
Bedding	0.08	0.28	0.41	0.53	0.68
Milking supplies	0.15	0.27	0.37	0.42	0.65
Cattle lease	0.00	0.00	0.00	0.00	0.13
Custom boarding	0.00	0.00	0.06	0.38	1.16
bST expense	0.00	0.00	0.22	0.40	0.53
Livestock professional fees	0.01	0.04	0.06	0.07	0.14
Other livestock expense	0.00	0.00	0.03	0.10	0.21
Fertilizer & lime	0.17	0.34	0.50	0.63	1.27
Seeds & plants	0.25	0.33	0.39	0.51	0.73
Spray/other crop expenses	0.08	0.16	0.23	0.29	0.50
Crop professional fees	0.00	0.00	0.00	0.03	0.10
Land, building, fence repair	0.10	0.21	0.35	0.51	0.73
Taxes	0.12	0.18	0.21	0.25	0.35
Real estate rent/lease	0.07	0.17	0.26	0.37	0.69
Insurance	0.07	0.10	0.15	0.21	0.28
Utilities	0.20	0.31	0.40	0.45	0.58
Interest	0.09	0.27	0.41	0.62	0.94
Other professional fees	0.02	0.07	0.13	0.18	0.28
Miscellaneous	0.03	0.07	0.10	0.17	0.31
Total Operating Expenses	\$16.06	\$17.84	\$18.97	\$19.91	\$22.24
Expansion livestock	0.00	0.00	0.00	0.10	0.90
Extraordinary expense	0.00	0.00	0.00	0.00	0.00
Machinery depreciation	0.44	0.66	0.86	1.08	1.32
Building depreciation	0.25	0.37	0.45	0.67	0.88
Net Farm Income w/o Appreciation	\$ 5.26	\$ 3.72	\$ 2.76	\$ 1.77	\$ 0.45

### 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

108 Large Herd Dairy Farms, 2012

Size of Business			Rates of Production			Labor Efficiency	
Worker Equivalent	Number of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
(14) <sup>31</sup>	(12)	(12)	(12)	(11)	(11)	(14)	(14)
43.8	2,147	56,612,800	29,099	5.0	24	65	1,579,227
30.1	1,379	36,552,418	27,627	3.9	20	54	1,375,607
24.6	1,085	28,818,530	27,106	3.5	18	50	1,296,926
21.2	936	24,578,025	26,607	3.3	18	48	1,210,933
18.5	829	21,619,410	26,123	3.1	17	46	1,170,570
16.4	697	17,943,432	25,555	2.9	16	44	1,118,649
14.4	613	15,021,250	24,947	2.6	15	42	1,062,318
12.4	519	12,273,164	24,412	2.3	14	41	1,001,575
9.4	405	9,975,627	23,543	2.0	13	37	895,752
6.8	336	7,302,205	18,697	0.8	4	32	782,273

#### Cost Control

Grain Bought Per Cow	% Grain is of Milk Receipts	Net Milk Income Over Purchased Feed Cost Per Cow	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk
(12)	(12)	(CALC)	(14)	(14)	(12)	(12)
\$ 1,088	26%	\$3,774	\$507	\$1,119	\$1,508	\$6.87
1,404	29	3,418	678	1,420	1,807	7.46
1,532	31	3,284	749	1,552	1,944	7.79
1,622	32	3,203	807	1,630	2,055	8.14
1,699	34	3,153	864	1,691	2,139	8.44
1,782	35	3,060	932	1,751	2,242	8.76
1,868	36	2,935	967	1,813	2,345	9.00
1,943	38	2,838	1,028	1,894	2,440	9.29
2,071	39	2,673	1,080	1,975	2,582	9.89
2,332	43	2,261	1,272	2,265	2,869	10.94

<sup>31</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
(14)	(14)	(14)	(15)	(15)	(15)
\$1.63	\$28,667	8%	\$0.42	\$0.37	\$0.00
2.07	30,852	10	0.56	0.44	0.00
2.28	32,468	11	0.64	0.51	0.00
2.50	34,072	13	0.70	0.55	0.00
2.72	35,720	14	0.78	0.60	0.03
2.97	37,889	15	0.84	0.66	0.06
3.09	39,176	16	0.95	0.71	0.09
3.30	41,148	16	1.09	0.78	0.11
3.57	43,178	18	1.21	0.88	0.16
4.28	48,643	22	1.55	1.05	0.23

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)	(12)	(12)	(12)	(12)
\$404	\$116	\$2,829	\$12.48	\$3,770	\$16.59
479	128	3,409	14.11	4,403	17.72
518	140	3,663	14.75	4,587	18.36
555	147	3,890	15.22	4,788	18.83
587	156	4,040	15.73	4,963	19.33
626	164	4,137	16.24	5,073	19.76
664	174	4,225	16.76	5,185	20.28
703	191	4,428	17.23	5,333	20.91
757	204	4,748	18.16	5,512	21.67
1,061	261	5,084	19.63	5,943	23.49

bST Expense Per Cow	bST Expense Per Cwt.	Culling Rate	Expense Ratios		
			Operating	Depreciation	Interest
(12)	(12)	(12)	(14)	(14)	(14)
\$0	\$0.00	21%	0.69	0.02	0.00
0	0.00	30	0.74	0.04	0.01
0	0.00	32	0.77	0.05	0.01
0	0.00	34	0.78	0.06	0.01
0	0.00	35	0.80	0.06	0.02
9	0.03	37	0.83	0.07	0.02
63	0.25	39	0.84	0.07	0.03
98	0.36	41	0.87	0.08	0.03
112	0.41	44	0.89	0.09	0.04
142	0.53	51	0.94	0.12	0.05

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
(12)	(12)	(12)	(12)	(12)
\$21.27	\$20.28	\$5,840	\$690	\$128
20.66	19.62	5,581	517	77
20.27	19.42	5,361	464	62
20.09	19.22	5,268	420	54
19.91	19.05	5,137	389	47
19.72	18.90	5,024	358	42
19.54	18.65	4,921	328	35
19.28	18.49	4,806	293	26
19.07	18.29	4,588	255	12
18.77	18.00	3,757	164	-29
Debt Management				
Farm Debt Per Cow		Cost of	Planned Debt Payments	
Total	Intermediate & Long Term	Borrowed Capital	Per Cow	Per Cwt.
(7)	(7)	(7)	(10)	(10)
\$ 486	\$ 265	2.1%	\$ 17	\$0.09
1,606	888	3.0	194	1.00
2,261	1,617	3.9	280	1.00
2,900	2,246	4.0	361	1.27
3,338	2,609	4.0	453	2.00
3,817	3,058	4.0	522	2.00
4,302	3,487	4.0	600	2.36
4,792	3,832	4.4	678	3.00
5,233	4,123	5.0	779	3.00
6,105	4,798	9.9	1,029	4.30
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.	
(16)	(16)	(CALC)	(CALC)	(10)
\$1,753	\$7.14	\$853	\$3.45	4.94
1,372	5.47	522	2.10	2.78
1,239	4.85	389	1.61	2.09
1,130	4.48	334	1.36	1.60
1,034	4.13	264	1.08	1.40
945	3.86	211	0.82	1.23
874	3.51	178	0.69	1.01
776	3.13	139	0.55	0.91
686	2.71	98	0.38	0.71
420	1.64	61	0.24	-0.36
Capital Efficiency				
Farm Capital Per Cow	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Labor Cost Per Worker Equivalent	Asset Turnover Ratio
(14)	(14)	(14)	(CALC)	(14)
\$ 6,166	\$1,553	\$ 621	\$29,180	1.03
7,900	2,732	1,028	30,848	0.77
8,615	3,178	1,271	32,196	0.73
9,173	3,440	1,510	33,593	0.67
9,780	3,648	1,749	35,005	0.62
10,368	3,983	1,893	36,720	0.59
11,073	4,452	2,012	37,934	0.57
12,007	5,115	2,168	39,316	0.53
12,922	5,911	2,389	41,092	0.47
14,531	7,260	2,890	47,033	0.40

Solvency					Liquidity	
Percent Equity	Leverage Ratio	Debt to Asset Ratios			Working Capital as % of Total Expenses	Current Ratio
		Total	Current/ Intermediate	Long Term		
(7)	(7)	(7)	(7)	(7)	(7)	(7)
96%	0.05	0.05	0.04	0.00	56%	43.80%
87	0.17	0.15	0.14	0.02	40	6.69
79	0.28	0.22	0.22	0.11	32	4.30
73	0.41	0.29	0.28	0.20	28	3.21
67	0.51	0.34	0.32	0.31	23	2.67
63	0.62	0.38	0.36	0.39	19	2.20
58	0.77	0.43	0.42	0.48	15	1.82
53	0.89	0.47	0.47	0.55	9	1.43
49	1.05	0.51	0.52	0.61	4	1.14
40	2.07	0.61	0.68	0.73	-8	-0.25

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
(4)	(4)	(4)	(4)	(4)
\$684,899	32.01%	40.05%	13.66%	19.68%
339,630	12.81	18.12	10.49	13.85
223,465	10.37	14.80	8.22	11.41
171,463	8.83	13.44	7.11	9.90
118,939	6.91	10.95	5.79	8.72
52,417	4.77	8.93	4.43	7.31
27,874	3.31	6.82	3.40	5.48
1,672	1.59	4.82	2.26	4.44
-59,834	-0.55	2.45	1.03	2.91
-191,669	-5.06	-6.21	-1.56	-1.96

Profitability, Continued			
Net Farm Income Without Appreciation		Net Farm Income From Operations	Net Income Efficiency
Per Cow	Per Cwt.	Ratio	Ratio
(12)	(12)	(4)	(CALC)
\$ 1,450	\$ 5.51	23%	17%
1,127	4.32	19	10
943	3.65	16	8
787	3.03	13	7
655	2.59	11	6
529	2.03	9	5
401	1.55	7	4
310	1.26	6	3
153	0.68	3	3
-111	-0.60	-3	1

## 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

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## Worksheet for Setting Goals (Continued)

## II. Goals

[illegible]

## Summarize Your Business Performance

The Farm Business Charts on pages 45–48 can be used to help identify strengths and weaknesses of your farm business. Identify three major strengths and three areas of your farm business that need improvement.

[illegible]

## 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 20).

**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 22).

**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 10 & 11 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.

**Dairy Enterprise Only** – Dairy enterprise only represents the estimate of labor hours, hired and family, that was utilized to operate the dairy. This estimate includes all labor to milk, feed, scrape, and take care of the milking and dry cows. Labor to take care of dairy replacements, produce crops, and spread manure was excluded. Labor efficiency numbers calculated for the dairy enterprise only help evaluate the labor efficiency of the dairy and the overall business.

**Debt Coverage Ratio** – (defined on page 22).

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

**Debt to Asset Ratios** - (defined on page 18).

**Depreciation Expense Ratio** - The percentage of Total Accrual Receipts that is charged to depreciation expense. Machinery Depreciation (DFBS p. 3) plus Building Depreciation (p. 3) 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 22.

**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 (DFBS p. 2) by number of hired plus family paid worker equivalents (p. 14).

**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 (DFBS 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 (DFBS p. 3) 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 (DFBS p. 2) and total machinery expenses (p. 11), then divide by number of tillable acres, owned & rented (p. 11).

**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 (DFBS p. 2) and total machinery expenses (p. 11), then divide by total forage, production, tons DM (p. 11).

**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

**Milking System Only** – The milking center of dairy farms is a major investment and utilizes a significant portion of the farm labor. Producers provided estimates concerning the number of labor hours per day spent employed in the milking center and the number of milking units utilized. The labor represents time spent to set up, milk cows, and clean the milking center during a 24-hour period. Time spent to move cows to and from the milking center is not included.

**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 (DFBS p. 4) 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 (DFBS p. 4) by number of cwt. of milk sold, which is total milk sold (p. 12) 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 (DFBS p. 4) by average number of cows for the year (p. 12).

**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 (DFBS p. 4), plus Accrual Interest Paid (p. 3), divided by number of operators (p. 4), divided by Total Accrual Receipts (p. 3) times 100.

**Net Milk Income over Purchased Feed Costs per Cow** – A measure of the overall performance of the feeding program for the dairy. Gross milk sales per cow minus milk marketing expenses per cow minus purchased grain and concentrates per cow.

**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. (DFBS p. 12) minus accrual milk marketing expense per cwt. (p. 12).

**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 29).

**Operating Expense Ratio** - The percentage of Total Accrual Receipts that is used for operating expenses, excluding interest & depreciation. Total Accrual Expenses (DFBS p. 3) minus Machinery Depreciation (p. 3), minus Building Depreciation (p. 3), minus Accrual Interest Expense (p. 3), 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, milk house and parlor supplies, livestock board, registration fees and transfers.

**Percent Herd on bST** – Percent of maximum number of cow days per year that could be supplemented following label restrictions that were treated with bST.

**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 (DFBS p. 9) divided by pounds milk sold (p. 12) 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 (DFBS p. 9) divided by average number of cows (p. 12).

**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 one 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 29).

**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 29).

**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. 14) divided by number of worker equivalents (p. 14).

**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 .....	20
Accrual Receipts.....	13	Labor & Mgmt. Income .....	15
Acreage.....	25	Labor & Mgmt. Income Per Oper. ....	15
Advanced Government Receipts .....	16, 17	Labor Efficiency .....	34
Age .....	34	Land Resources .....	25
Amount Available for Debt Service .....	22	Liquidity.....	18
Annual Cash Flow Statement .....	20	Lost Capital.....	18
Appreciation .....	14, 19, 27	Machinery Expenses .....	12, 26
Asset Turnover Ratio.....	34	Marketing.....	9
Balance Sheet .....	17	Milk Price.....	9, 10
Barn Type .....	11	Milk Production .....	27
Business Type.....	11	Milking Frequency .....	11
Capital Efficiency .....	34	Milking System.....	11
Cash From Nonfarm Capital Used in		Money Borrowed .....	20
Business .....	20	Net Farm Income .....	14
Cash Flow Coverage Ratio .....	22	Net Investment .....	18
Cash Paid .....	11	Net Worth.....	17
Cash Receipts .....	13, 20	Number of Cows .....	27
Change in Accounts Payable .....	13	Operating Costs of Producing Milk .....	29, 31
Change in Accounts Receivable .....	13	Opportunity Cost.....	16
Change in Inventory .....	12, 13	Other Livestock Expenses.....	12
Change in Net Worth.....	19	Outflows.....	20
Crop Expenses .....	12, 26	Percent Equity .....	18
Crop/Dairy Ratios.....	25	Personal Withdrawals and Family	
Current Portion .....	16, 17	Expenditures Including Nonfarm	
Dairy (farm).....	11	Debt Payment.....	20
Dairy Cash-Crop (farm).....	11	Principal Payments.....	20
Dairy Replacements.....	8	Profitability .....	14
Debt Coverage Ratio .....	22	Purchased Inputs Cost.....	29, 31
Debt per Cow.....	18	Receipts.....	13
Debt to Asset Ratios .....	18	Record System .....	11
Depreciation .....	12, 18	Repayment Analysis .....	22
Dry Matter .....	25	Replacement Livestock .....	12
Education .....	34	Retained Earnings .....	19
Equity Capital.....	16	Return on Equity Capital.....	16
Expansion Livestock.....	12, 20	Return on Total Capital.....	16
Expenses .....	12	Solvency.....	18
Farm Business Chart.....	45, 46, 47, 48	Total Costs of Producing Milk.....	29, 31
Farm Debt Payments as Percent		Whole Farm Method .....	29, 31
of Milk Sales.....	22	Worker Equivalent .....	34
Farm Debt Payments Per Cow.....	22	Yields Per Acre .....	25

# OTHER A.E.M. EXTENSION BULLETINS

EB No	Title	Fee (if applicable)	Author(s)
2013-10	Milking Center Cost Study, New York State, 2010-2011		Howland, B., Karszes, J. and K. Skellie
2013-09	Marketing Module 8 - Promotion		Gómez, M. and S .Cuellar-Healey
2013-09i	Marketing Module 8 - Promotion Example		Cuellar-Healey, S. and M. Gómez
2013-09ii	Marketing Module 8 - Promotion Teaching Slides		Cuellar-Healey, S. and M. Gómez
2013-08i	Marketing Module 7 - Placement/Distribution Example		Cuellar-Healey, S. and M. Gómez
2013-08ii	Marketing Module 7 - Placement/Distribution Teaching Slides		Cuellar-Healey, S. and M. Gómez
2013-08	Marketing Module 7 - Placement/Distribution		Cuellar-Healey, S. and M. Gómez
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