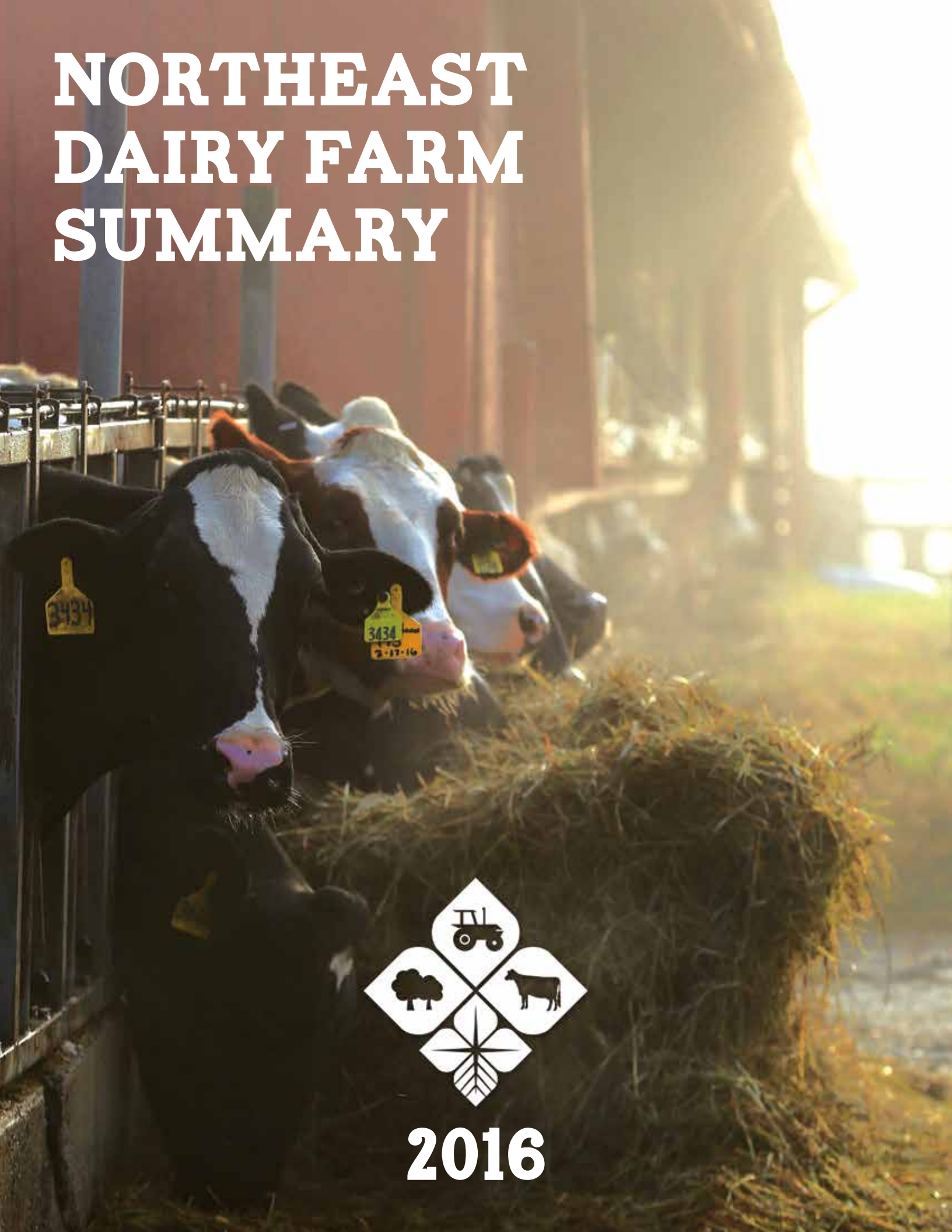
NORTHEAST DAIRY FARM SUMMARY



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NORTHEAST DAIRY FARM SUMMARY 2016

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FARM CREDIT EAST

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This report is a collaboration of Farm Credit East and Yankee Farm Credit.

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In addition, thanks are due to all Farm Credit East and Yankee Farm Credit staff, who reconciled reams of farm financial data from hundreds of farms and entered the information into the system. Every year, their hard work provides the raw material for creating the DFS.

And, most importantly, the entire Farm Credit team extends our sincere thanks to the hardworking Northeast dairy farmers who entrusted their farm data to this project. We hope the end product is helpful in your continual pursuit of improved farm profitability. You inspire us all with the valuable work that you do

HIGHLIGHTS OF THE 2016 NORTHEAST DAIRY FARM SUMMARY

- 457 dairy farms participated in the *2016 Northeast Dairy Farm Summary.*
- Profitability increased marginally in 2016 from the previous year. Net earnings rose to an average of $15 per cow in 2016[1], from a loss of $30 per cow in 2015. This is despite a decrease in farm milk price of $1.39 per hundredweight (cwt.) to $16.85.
- Many costs declined in 2016. Total expenses per cwt. decreased by $1.93 per cwt. to $20.20 in 2016[2].
- Net cost of production[3] (NCOP) also declined to $16.79 per cwt., $1.57 below 2015.
- Some specific operating cost categories which decreased in 2016 are:
  - Feed expense decreased from $1,733 per cow in 2015 to $1,576 in 2016, due to falling grain and soybean meal prices, and possibly some economizing on feed purchases.
  - Labor, a dairy farm's second largest expense, was virtually flat, increasing 1.4 percent per cow, and decreasing 2.1 percent per cwt., due to productivity gains.
  - Fuel expenses declined by 21 percent per cow.
- Productivity increased. Per cow production of our sample was 3.6 percent higher than the prior year. Milk sold per worker increased 6.3 percent.
- Cash flow was insufficient to meet all financial commitments (e.g., operating expenses, debt repayment, family living and income taxes), resulting in an average cash margin per cwt. of -$0.10. This shortfall was made up primarily by borrowing.
- Percent net worth fell to 68 percent. Debt-per-cow increased from $3,681 per cow to $4,194.

PROFILE OF THE AVERAGE NORTHEAST DAIRY FARM

	2015	2016
Number of Cows	374	403
Milk Sold per Cow	24,366 lbs.	25,239 lbs.
Milk Sold per Worker	1,134,300 lbs.	1,210,871 lbs.
Milk Price per Cwt.	$18.24	$16.85
NCOP per Cwt.	$18.36	$16.79
Net Worth	72%	68%
Net Earnings	-$30	$15
Net Household Income per Cow	$14	$58
Return on Assets	0.6%	1.1%

[1]After family living, on an accrual basis. Does not include nonfarm income.
[2]Including family living.
[3]Total farm expense, plus family living, less non-milk income. For more information, see page 12.


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INTRODUCTION

The purpose of Farm Credit's annual *Dairy Farm Summary (DFS)* is to assess the financial health and progress of dairy farm businesses within the Northeast – New England, New York and New Jersey. It is intended to provide dairy producers, Farm Credit personnel, Northeast public policymakers and dairy industry leaders with a better understanding of the current status and future prospects of the Northeast's largest farm sector.

As a major regional summary of actual dairy farm business results, the *Dairy Farm Summary* is a unique annual project within the U.S. dairy industry. It is the result of cooperation and hard work by many people. We are grateful, first and foremost, to the 457 dairy producers who allowed their financial and production records to be used in this study. Further, we appreciate the teamwork and timeliness of Farm Credit East and Yankee Farm Credit staff who helped customers provide that information. This report contains five years of financial data for dairy farms in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York and Vermont. The majority of the farms in this study are from New York.

This sample of 457 farm operations represents a solid cross section of better-than-average Northeast dairy farm businesses, most of which maintain loan relationships with Farm Credit. All farms included in the study received the majority of their income from milk sales, but many farms have additional business income, such as custom work, maple sugaring and crop sales. We have purposely not excluded these farms from the sample (unless such income comprises a majority of farm income) as we feel it reflects the diverse face of Northeast dairying, where many producers have supplementary income streams.

Where such activity constitutes a separate enterprise from the main dairy farming activity, and both revenue and expenses can be broken out, the net return is included in *nonfarm income*. If the expenses of this ancillary activity cannot be separated from the dairy farming expenses, such revenue is included in *Other Farm Income*.Thus, the total farm income represented in this report often includes some return from these affiliated business ventures, increasing the income that would have been generated from the dairy enterprise alone. This is typically most significant in the smaller herd sizes.

Partnerships and corporations were adjusted to a sole proprietor basis for consistency. Farms with unusual events, such as a natural disaster, a major herd-health problem, a significant inheritance, significant unexplained gains or losses (>10 percent of total assets), or other types of business anomalies were excluded from the sample. Each farm's data was carefully reviewed to ensure both cash flow and net worth reconciled to within a limited margin of error. This approach ensures a high level of integrity for the financial results presented in the *2016 Dairy Farm Summary*.

The *DFS* tends to focus discussion on the "average farm." And while there is no single farm which is exactly "average," focusing on the average allows us to highlight changes of Northeast dairy farms over time. While the use of averages leads to an effective discussion with respect to change and overall industry trends, it tends to minimize the best and worst conditions experienced by farms within the sample.

This is again true in a year such as 2016. While the "average farm" had $15 per cow in net earnings in 2016, nearly half the farms in our sample had negative net earnings, while a handful earned more than $1,000 per cow. Focusing on average results belies the fact that many producers, of all sizes, still struggle to make a profit in this challenging industry. For this reason, we also look at the data within individual herd-size groups and within the top and bottom profitability groups.

The *Dairy Farm Summary* includes farms within both Farm Credit East and Yankee Farm Credit's loan servicing areas to provide a complete picture of Northeast farm results.

CHANGES TO THE DAIRY FARM SUMMARY

In past years' editions, nonfarm income was included in some calculations. While nonfarm income is an important factor in the survival of many dairy farm businesses, it has been argued that such income should not be considered in the profitability of the farm enterprise.

We have reorganized the figures contained within the *DFS*, as well as the tables in the back of the book to segregate nonfarm income. "Net Earnings" refers to earnings from the farm enterprise, less family living draw, but does not include nonfarm income. Past years' data in some figures in the body of the report have been restated to eliminate nonfarm income as a component of Net Earnings.

Figure 1

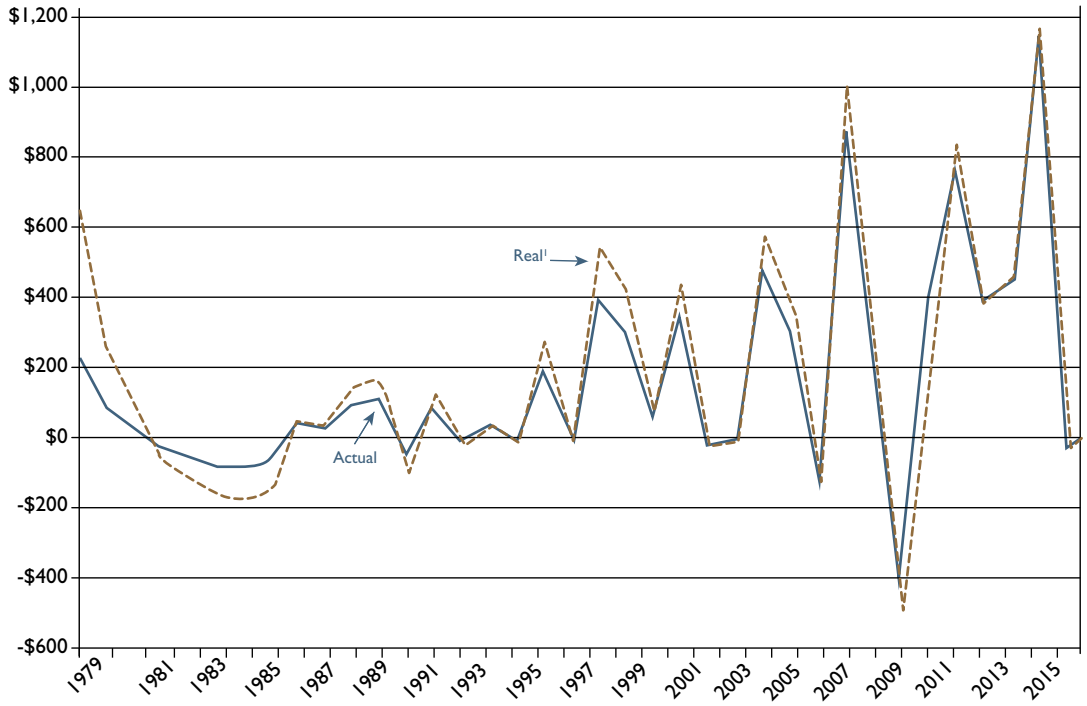
DAIRY FARM PROFITABILITY

	Net Earnings Per Cow[1]	Return on Assets[2]	Return on Equity[3]
2012	$369	4.1%	4.4%
2013	$434	4.4%	4.7%
2014	$1,124	9.1%	11.0%
2015	$-30	0.6%	-0.3%
2016	$15	1.1%	0.2%
3-Year Average	$370	3.6%	3.6%
5-Year Average	$383	3.9%	4.0%

[1]Net earnings includes nonfarm income.
[2]Return on assets = (net earnings + interest) / average total assets
[3]Return on equity = net earnings / average net worth

Figure 2

NET EARNINGS PER COW 1979–2016



[1]Real price is actual price adjusted for inflation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ANALYSIS OF 2016
FARMERS SHOW RESILIENCE

In 2014, profitability set a *DFS* record in both actual and inflation-adjusted terms. Since October of that year, milk prices have declined sharply, falling from an average of $25.58 per cwt. in 2014, to $18.24 in 2015, and to $16.85 in 2016. Nonetheless, Northeast dairy producers have shown remarkable resilience in the face of falling revenues. Despite milk prices that averaged $1.39 per cwt. lower, farms managed to post higher earnings in 2016 than the year before.

Average net earnings increased from a loss of $30 per cow in 2015 (not counting nonfarm income), to a net gain of $15 per cow in 2016, again a remarkable achievement, given the falling milk price. This brings the five-year average earnings to $383 per cow. Many producers were able to cut expenses significantly, which helped avoid or reduce losses. Several expense line items declined, including feed costs, fuel, crop inputs, and repairs and maintenance.

The increase in average net earnings was due to a combination of belt-tightening on expenses and increased per-cow productivity. Milk price received declined by $1.39 per cwt. However, net cost of production decreased as well by $1.57 per cwt. to $16.79. The modest earnings on milk production, combined with non-milk farm income to yield slightly-above-breakeven earnings of 6 cents per cwt. for the average *DFS* farm.

2016 was the second-least profitable year since the $425 loss per cow in 2009 (2015 showed a loss as well). In the 37-year history of the *DFS*, 2016 ranks 22nd in terms of profitability in nominal terms, or 24th when adjusted for inflation. The average farm has lost money in 14 out of the 37 years of the *DFS*. 2016 was the lowest positive earnings year we have seen.

This summary uses three primary measures of profitability, each of which provides a useful perspective on dairy farm financial performance:

- **Net earnings per cow** measures sheer dollars of profit earned and includes all farm business sources of income.
- **Return on assets (ROA)** measures profit earned relative to the present market value of total farm assets. This indicates the earning power of each dollar invested in the farming operation, regardless of whether it comes from the farm operator or was borrowed from a lender.
- **Return on equity (ROE)** measures profit earned relative to the farmer's equity investment in the operation. This measure is the best indicator of how the dairy producer's investment is paying off compared to how it might pay off if invested another way.

A single year does not provide an accurate picture of the dairy industry's long-term operating performance given the volatility we have seen in recent years. To further illustrate, in the last ten years we have seen both the top three years for profitability in *DFS* history (2011, 2007 and 2014) as well as the greatest loss in *DFS* history (2009). Given these extremes, multi-year averages yield a more accurate picture of the industry. If we look at both shorter- and longer-term averages, we see similar results (Figure 2A). Continued year-to-year volatility confirms the challenges and opportunities that Northeast dairy producers face.

Figure 2A

COMPARISON OF MULTIYEAR AVERAGES

	Three-Year Average	Five-Year Average	Ten-Year Average
Net Earnings per Cow	**$370**	**$382**	**$380**
Return on Assets	**3.6%**	**3.9%**	**4.4%**
Return on Equity	**3.6%**	**4.0%**	**4.5%**

It is important to differentiate net earnings (profit) from cash flow. Farm businesses rely on cash flow to pay ongoing bills, but cash flow is not an accurate measure of profitability. Net earnings are an accrual measure of profit, which represents a farm business's ability to provide an economic return for the operator's investment and management. It offers the most complete picture of a farm's profitability by adjusting cash farm income and expenses to reflect changes in inventories, accounts receivable, accounts payable and prepaid expenses. The difference is particularly notable in a year such as 2016, when many producers showed positive net earnings on an accrual basis, yet faced cash shortfalls during the year.

MILK PRICE DECLINES

The average farm milk price at $16.85 per cwt. was $1.39, or roughly eight percent, less than 2015's $18.24. It was $3.49 below the five-year average of $20.34 per cwt. (Figure 3A). In terms of actual (nominal dollars, not adjusted for inflation) milk prices, 2016 ranked 10th in the 38 years of the *DFS*. However, to better understand the true story of how milk prices have changed over time, we must account for the impact of inflation (Figure 3B). In terms of "real," inflation-adjusted rankings, 2016 drops to 33rd . The first year of the *DFS*, 1979, ranks first.

Figure 3A

FARM MILK PRICES PER CWT.

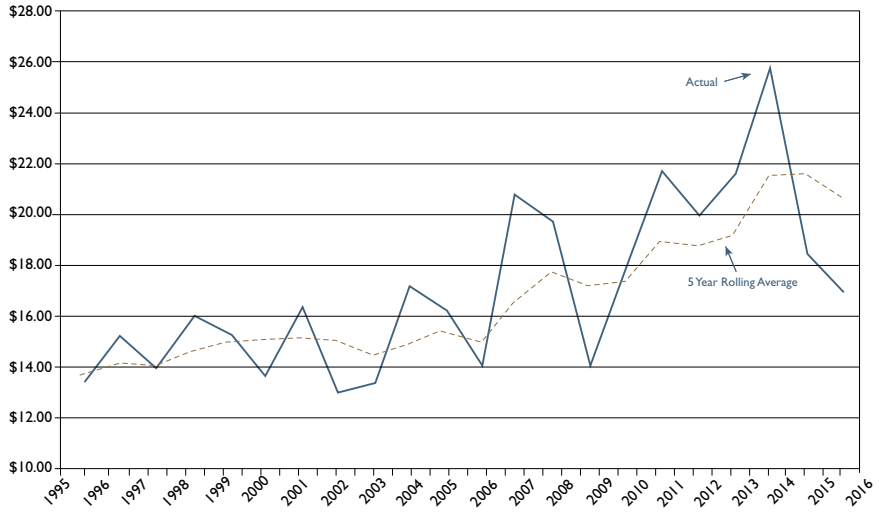
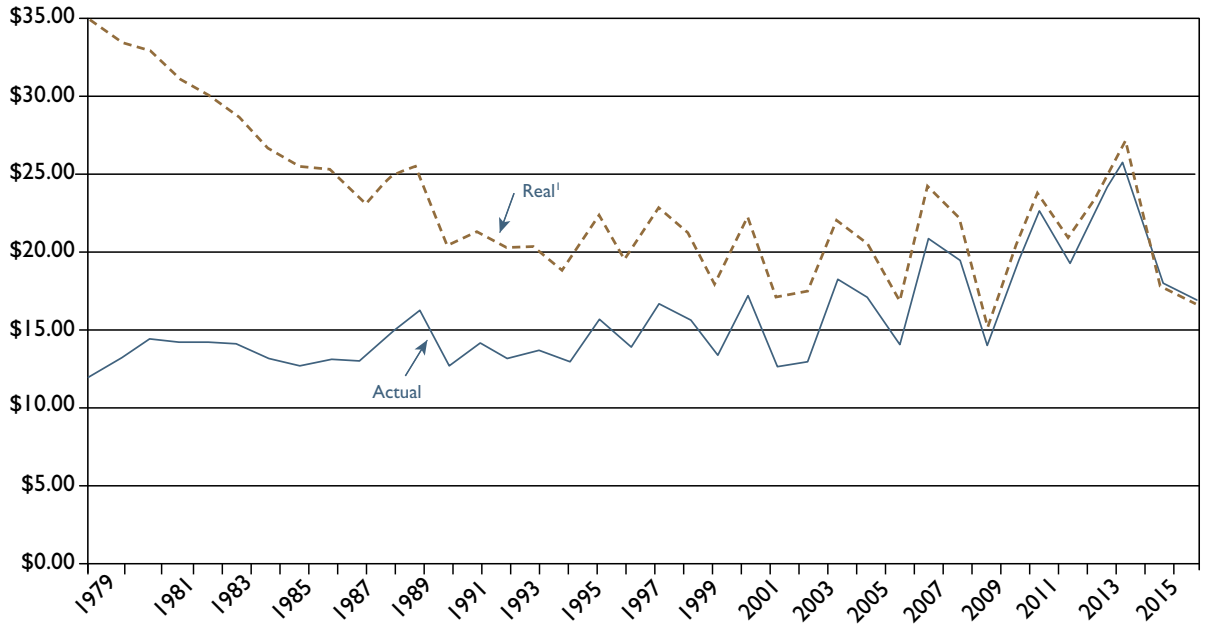


Figure 3B

FARM MILK PRICES PER CWT.



[1]Real = actual price adjusted for inflation, 2016 dollars.

The Federal Milk Marketing Order One statistical uniform price began 2016 at $15.52/cwt. (Boston blend at 3.5 percent butterfat). The price declined to $14.73 in May, eventually climbing to $17.68 in December. The average Boston blend price for 2016 was $15.90. Several factors have contributed to increased milk price volatility in recent years. Changes in export markets and domestic demand as well as shifts in supply affect prices. Global market activity has a significant influence on U.S. milk prices and can sometimes seem disconnected from regional market conditions. Investment decisions should include an analysis of management's ability to cope with price and earnings volatility.

COST OF PRODUCTION DECLINES DUE TO BELT-TIGHTENING

The net cost of production (NCOP) peaked in 2014 at $20.84 per cwt. It fell by 12 percent in 2015 to $18.36, and by an additional nine percent in 2016, to $16.79, $4 per cwt. lower than in 2014. Three key figures to review for 2016's cost of production analysis of the average dairy farm in the *DFS* include:

- Cash operating expenses were $18.24 per cwt., 8.8 percent lower than 2015.
- Total costs, including depreciation and family living were $20.20 per cwt., $1.93 per cwt. lower than 2015.
- After subtracting non-milk income, NCOP was $16.79 per cwt., $1.57 below the previous year[4].

Figure 4A

COST OF PRODUCING MILK – ACCRUAL BASIS

	2012	2013	2014	2015	2016
Feed	$7.61	$7.75	$7.99	$7.12	$6.24
Labor	3.11	3.09	3.34	3.27	3.20
Interest	0.50	0.49	0.48	0.47	0.52
Freight & Marketing	0.95	0.95	0.95	0.97	0.98
Crop	1.54	1.61	1.64	1.40	1.21
Other	6.78	6.74	7.86	6.77	6.09
Adjusted Cash Operating Expenses	$20.49	$20.63	$22.26	$20.00	$18.24
+ Depreciation	1.34	1.43	1.49	1.44	1.38
+ Family Living	0.64	0.76	0.75	0.69	0.58
Total Costs	$22.47	$22.82	$24.50	$22.13	$20.20
- Non-Milk Income[1]	4.24	3.59	3.66	3.77	3.41
Net Cost of Production[2]	$18.23	$19.23	$20.84	$18.36	$16.79

[1] Non-milk income includes cattle, crop and other income adjusted for inventory changes.
[2] Before any return on equity. Each 1 percent return on equity would be equivalent to another $0.35 added to the NCOP for 2016.

Given the sharply reduced milk prices in 2016, Northeast dairy producers engaged in significant cost cutting. This was helped by a decline in feed commodity costs and energy costs. Producers spent an average of 9.1 percent less on feed per cow in 2015 than they did the prior year. They also realized significant savings in fuel costs, spending an average of 20.5 percent less per cow in 2015.

[4]Nonfarm income is not factored into NCOP.

Repairs, supplies and crop inputs also decreased. Some of this decline was driven by falling prices of certain inputs, such as fuel, while other declines were driven by producers' attempts to spend less and economize given their reduced income.

Presumably Northeast dairy producers utilized some of their 2014 profits to catch up on deferred maintenance that they had put off in prior years as well as make some improvements to facilities. Repair and maintenance expenses increased to $421 per cow in 2014 after averaging $285 for the previous five years. Repair expense declined to $310 per cow in 2016 from $350 per cow in 2015, which may reflect either a deferring of expenses or a return to more normal levels of repairs compared to the peak of 2014.

Figure 4B

SPECIFIC COST CATEGORIES

	2015		2016		Percent Change	
	per Cow	per Cwt.	per Cow	per Cwt.	per Cow	per Cwt.
Feed	$1,733	$7.12	$1,576	$6.24	-9.1%	-12.3%
Labor	$797	$3.27	$808	$3.20	1.4%	-2.1%
Fuel	$166	$0.68	$132	$0.52	-20.5%	-23.1%
Supplies	$287	$1.18	$276	$1.09	-3.8%	-7.3%
Rent	$110	$0.45	$99	$0.39	-10.0%	-12.8%
Repairs	$350	$1.43	$310	$1.23	-11.4%	-14.1%
Crop Inputs	$339	$1.40	$305	$1.21	-10.0%	-13.7%
Other Expenses	$1,444	$5.91	$1,447	$5.73	0.2%	-3.0%

The formula used in the *DFS* for calculating NCOP is as follows:

[Cash Operating Expenses (with accrual adjustments made for pre-pays, accounts payable, etc) + Calculated Depreciation[5]+ Family Living Expense] - Non-Milk Farm Income[6]= Net Cost of Production.

It is important to note that the $16.79 average NCOP includes no return on the producer's equity investment. While it may be debatable what an appropriate return on equity (ROE) might be, earning some level of return should be a business objective. For the average *DFS* producer in 2016, each one percent return on equity is equivalent to an additional $0.35 per cwt. If we were to include a six percent ROE goal as part of NCOP, for example, this would be equivalent to a $18.89 NCOP, well above 2016 average milk prices.

[5]For the *DFS*, all farms have their submitted depreciation restated by applying a standard percentage of straight-line depreciation to various asset classes in order to be able to compare consistent numbers from year to year and avoid variations driven by accounting and changes in tax laws.
[6]Non-milk income includes cattle, crop and other income adjusted for inventory changes, but does not include nonfarm income.

Figure 4C compares NCOP between New York and New England in 2016. New York producers typically have an advantage in lower costs and higher production per cow over producers in New England. Additionally, with the ability to grow more feed, New York farms generally have higher crop sales and are able to grow more grain. However, Connecticut, Maine and Massachusetts have state support programs for dairy farmers, which help supplement farm income. Income from these support programs is included under "Government Payments" in the tables in the back of the report, and is factored into their NCOP. Even taking state support programs into account, New York farms' NCOP was still $0.47 per cwt. lower than New England farms.

Figure 4C

NCOP BY REGION

Cost per CWT.	New York	New England
Feed	$6.02	$6.76
Labor	3.11	3.42
Interest	0.53	0.48
Freight & Trucking	0.97	1.00
Crop Inputs	1.24	1.14
Other Expenses	6.03	6.20
Adjusted Cash Operating Expenses	$17.90	$19.01
+ Depreciation	1.33	1.47
+ Family Living	0.56	0.62
Total Costs	$19.79	$21.09
- Non-milk Income	3.11	3.95
Net Cost of Production	$16.67	$17.14

Figure 4D shows NCOP by herd size. Generally, larger herds have an advantage in spreading fixed costs over more units, driving per-unit cost down. Smaller herds typically have lower labor costs and higher non-milk income per unit; however, family living and other costs are usually higher, when expressed on a per-unit basis. Some of the herds with fewer than 100 cows were among the most profitable in the study due to their low labor costs, even when family living expenses are accounted for. This may understate the true value of the family labor, but on paper, several of them showed healthy net returns.

Given the uncertainty of milk prices from year to year, the ability to control expenditures, improve efficiency and adjust to changing input costs is critical to a dairy producer's financial performance.

Figure 4D

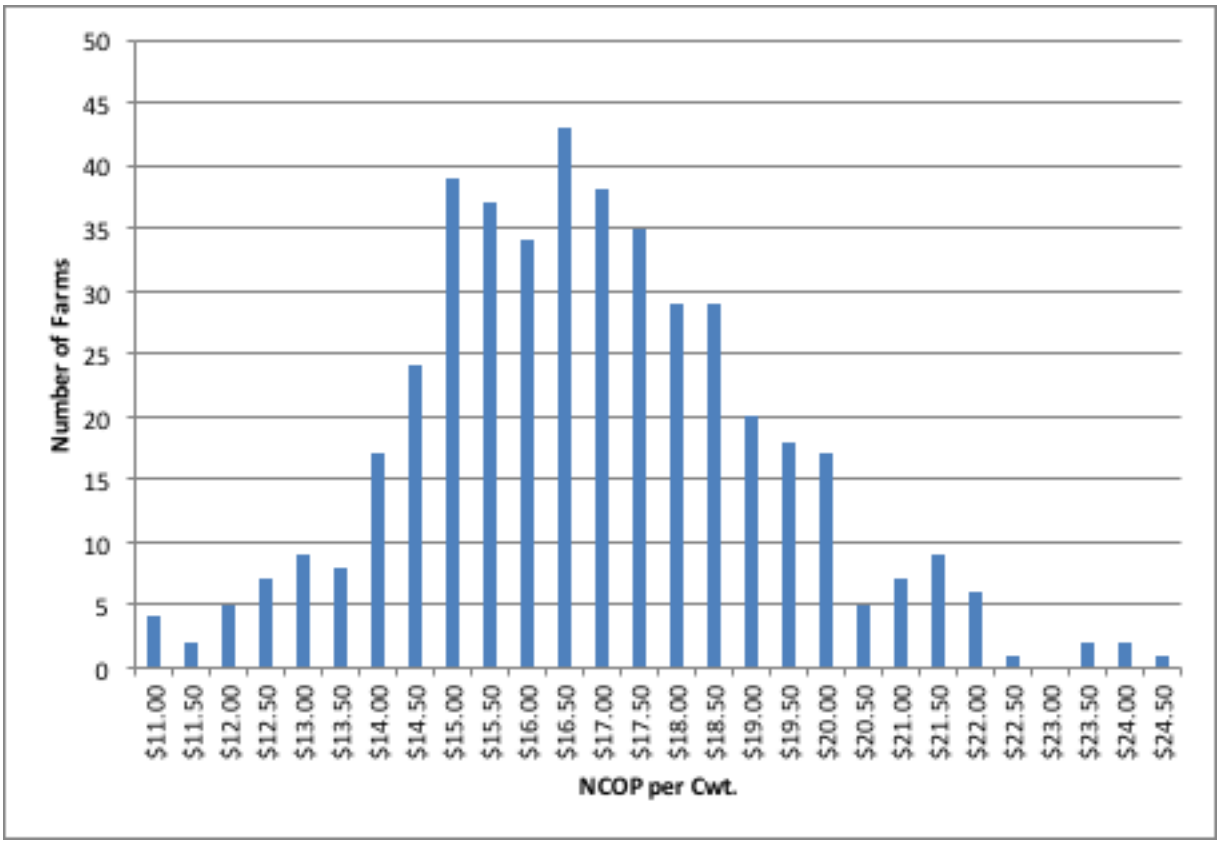
NCOP BY HERD SIZE

Cost per CWT.	< 100 Cows	100-299 Cows	300-699 Cows	700+ Cows
Feed	$5.79	$5.94	$6.11	$6.43
Labor	1.41	2.81	3.30	3.36
Interest	0.68	0.55	0.49	0.51
Freight & Trucking	1.13	1.02	0.95	0.97
Crop Inputs	1.57	1.43	1.29	1.11
Other Expenses	7.24	6.54	6.29	5.78
Adjusted Cash Operating Expenses	$17.82	$18.29	$18.43	$18.16
+ Depreciation	2.61	1.96	1.40	1.17
+ Family Living	2.46	1.24	0.59	0.30
Total Costs	$22.89	$21.49	$20.42	$19.63
- Non-Milk Income[1]	4.74	3.73	3.49	3.09
Net Cost of Production	$18.15	$17.76	$16.93	$16.53

[1] Non-milk income includes cattle, crop and other income adjusted for inventory changes.

Figure 4E

DISTRIBUTION OF DAIRY FARM NET COST OF PRODUCTION



We often speak of NCOP as if it is a single number. But as we can see in Figure 4E, in reality each farm has its own unique cost of production. The distribution of NCOP roughly follows a bell-shaped curve, with a cluster around the average of $16.79 per cwt. and "tails" of outliers on either side.

HERD SIZE CHANGES

The farms that participate in the *Dairy Farm Summary* change slightly from year to year. In recent years, the average number of cows per farm has ranged between 300 and 400 milking head in the *DFS*, even as average farm size has increased in the region. The *DFS* average increased from 374 head in 2015 to 403 in 2016. This is the highest average farm size in the history of the *DFS* report, and is a result of continued expansion on the part of some long-time *DFS* participants, as well as changes in the farm sample.

As shown in Figure 5A, the largest size group remains responsible for the greatest percentage of milk production, and that percentage is increasing. While farms with 700 cows or more were only 21 percent of the farms in the report, they were responsible for a majority of the milk produced.

Figure 5A

FARM SIZE AND MILK PRODUCTION

	99 Cows or Fewer	100-299 Cows	300-699 Cows	700 Cows or More
Number of Farms	116	155	101	85
Volume of Milk Produced[1]	3.5%	13.8%	25.8%	56.9%

[1] As a percent of all farms in the 2016 *DFS*

Figure 5B illustrates the relationship between labor productivity, cow productivity and overall dairy farm profitability. As more cows are handled per worker, milk sold per worker increases. Milk sold per worker and per cow are closely correlated. More milk per cow is generally favorable in terms of greater productivity and total production and also drives gross revenue, a key factor in profitability.

While milk sold per cow correlates positively with adjusted net earnings per cow, more important is a low NCOP, which is enhanced by better labor efficiency. Figure 5A also shows increasing labor and family living expenses as milk sold per worker increases. Farms with higher labor efficiency tend to have a lower cost per cwt. for labor and family living. For example, those farms selling less than 500,000 pounds of milk per worker have the lowest average combined labor and family living expense per person at $20,969, but on a per cwt. basis, their cost is $4.94 per cwt. In contrast, those selling 1.4 million or more pounds of milk per person have a lower labor and family living cost, or $3.22 per cwt. despite paying more than 2.6 times more per person. Thus the efficiency gained also allows for greater flexibility with respect to employee compensation and family living draws.

Note that while adjusted net earnings per cow generally trends higher with increased labor productivity, it does not follow a continuous gradient from one group to the next, such as between the 700,000+ pounds category and the 800,000+ category, indicating that labor productivity is only one factor in determining overall profitability.

Figure 5B

LABOR PRODUCTIVITY INFLUENCES PROFITS

Pounds of Milk Sold per Worker	Percent of Farms	Number of Cows	Cows per Worker	Milk Sold per Cow	Avg. Labor & Family Living Per Person[1]	Net Earnings Per Cow
499,000 or less	6%	70	25	16,992	$20,969	$-14
500,000-599,000	7%	98	29	19,364	$19,734	$-39
600,000-699,000	7%	97	34	20,040	$29,544	$-261
700,000-799,000	9%	168	35	21,333	$33,852	$-67
800,000-899,000	9%	224	38	22,594	$35,477	$-1
900,000-999,000	6%	345	41	24,160	$41,388	$9
1 to 1.09 million	9%	401	45	23,643	$41,357	$127
1.1 to 1.19 million	12%	541	47	24,735	$44,635	$101
1.2 to 1.39 million	17%	630	52	24,851	$48,366	$66
1.4 million or more	19%	668	67	25,862	$55,871	$140

[1] Includes operator and other family labor

CAPITAL EFFICIENCY

When viewed on a per cow, or per cwt. basis, larger farms are able to spread costs and investments over more units. For example, the 99 cows or fewer group produced almost 50 percent less milk per worker than the average of all farms and had 83 percent more investment per cwt. sold ($95 versus $52). Return on assets was poor for all groups, though the 700 or more cows group was the most profitable with the highest return on assets.

Figure 6

CAPITAL EFFICIENCY

Herd Size (No. of Cows)	Pounds Sold Per Worker	Pounds Sold Per Cow	Total Assets Per Cwt. Sold[1]	Asset Turnover (Per Year)[2]	Return on Assets[3]
99 or Fewer	651,120	20,679	$95	0.23	-0.8%
100 to 299	1,023,499	22,928	69	0.30	-0.4%
300 to 699	1,173,162	24,892	52	0.39	1.0%
700 or More	1,358,146	26,315	46	0.44	1.7%
All Farms	1,210,871	25,239	52	0.39	1.1%

[1] Total assets / cwt. of milk sold
[2] Total assets divided by cash receipts = turnover per year
[3] Return on assets = (net earnings + interest) / average farm assets

CASH FLOW WEAKENS

Cash flow is another measure of financial health for a dairy operation or any business. Each business has a minimum cash requirement to meet its ongoing commitments, such as operating costs, overhead, debt principal payments and family living. What remains can be used for capital investment, to build liquidity or to invest in a retirement fund. Cash margin declined in 2016 to a deficit of $0.10 per cwt., compared to $4.60 in 2014 (Figure 7). This indicates that money was extremely tight for the average farm in 2016, and many farms had to make up for this cash deficit through borrowing, restructuring payment terms or increasing vendor payables.

Figure 7

CASH FLOW ANALYSIS PER CWT.

	2012	2013	2014	2015	2016
Actual Milk Price	$19.74	$21.30	$25.58	$18.24	$16.85
Cash Required	$22.09	$22.77	$24.25	$22.14	$20.34
- Other Income	$3.71	$3.33	$3.37	$3.81	$3.39
Breakeven Milk Price	$18.38	$19.43	$20.88	$18.33	$16.95
Cash Margin	$1.36	$1.87	$4.60	$-0.09	$-0.10

Cash Margin Definitions

Total cash operating expenses + Family living expense and income tax + Scheduled principal payments	Cattle sales + Capital sales + Crop sales + Other farm & non-farm income
= Cash required	= Other income

Figure 7 shows the range of cash margins for the average dairy farm since 2012. Due to the inflation of farm costs in recent years, the breakeven milk price has increased significantly from approximately $14 per cwt., which was common prior to 2007, to a peak of over $20 in 2014. Milk prices have also increased, on average, in recent years, setting new records in 2011 and 2014. Since that time, however, the milk price has declined significantly, while the breakeven milk price fell by a lesser amount, resulting in a greater cash deficit.

Given the variation in average cash margins, making a financial decision based on a single year's performance would be dangerous. Figure 7 further illustrates this point: The cash margin in 2014 was very strong, while margins in 2012 and 2013 were much lower, and those in 2015 and 2016 were negative.

This level of variability makes financial management more challenging, underscoring the importance of a long-range view of cash flow. Timing of major capital expenditures, managing debt load, building liquidity for the tight years and adjusting family withdrawals are all means of managing volatility. Some producers have adopted risk management strategies involving both input costs and milk prices using a combination of crop insurance-type government programs, such as LGM-Dairy, as well as hedging strategies.

CAPITAL DEBT EXCEEDS DEBT CAPACITY

Debt capacity measures the maximum amount of capital debt a farmer could repay from cash generated from the farm business. It is determined primarily by cash flow as well as by interest rates. Reserve debt capacity is the difference between debt capacity and the actual amount of capital debt invested in the business. It is a buffer against financial adversity which could occur within the business, such as herd health problems or crop failure, or from the marketplace, such as low milk prices or high feed costs. It represents the amount by which capital debt can be increased above existing levels and still be repaid from that year's cash flow. In 2015 and 2016, weak farm earnings provided inadequate cash flow to service all financial obligations for many *DFS* farms, requiring some to take on additional debt (Figure 8). No additional reserve debt capacity remained in 2016 for the average *DFS* farm.

Figure 8

DEBT CAPACITY

	2012	2013	2014	2015	2016
Average Farm Credit Interest Rate[1]					
Commercial (Intermediate Term)	4.0%	4.0%	4.0%	4.0%	4.1%
Real Estate (Long Term)	4.4%	4.3%	4.3%	4.3%	4.3%
Debt Capacity (per Cow)	$5,322	$6,108	$11,384	$3,053	$3,047
- Capital Debt	3,080	3,104	3,109	3,390	3,620
RESERVE DEBT CAPACITY (per Cow)	$2,242	$3,004	$8,275	$-337	$-573
3-Year Average Reserve Debt Capacity	$3,007	$3,460	$4,507	$3,647	$2,455
5-Year Average Reserve Debt Capacity[3]	$1,549	$1,721	$4,060	$3,664	$2,522
Debt Payments as Percent of Milk Sales	13%	12%	7%	13%	14%

[1] Average interest rates for outstanding debt with Farm Credit, excluding benefit of patronage dividends.

Current debt capacity is substantially impacted by historically low interest rates, which continued during 2016. In planning for the future, it is important not to be lulled into thinking that today's low interest rates will last indefinitely. The Federal Reserve has already begun to increase short-term rates and this will impact debt service requirements and capacity for those producers who have variable rate debt. If the average producer had to repay today's debt at 2007 interest rates (approximately 7.7 percent), it would reduce both debt capacity and reserve debt capacity by about $1,500 per cow, a major change in repayment capacity.

Figure 8 shows the five-year average for reserve debt capacity. In 2016, it was $2,591 per cow, a level heavily influenced by 2014's remarkable profitability. "Never borrow your last dollar during a good year" is time-tested financial wisdom in the farming community. The implication is that a prudent borrower preserves significant liquidity in terms of unused borrowing capacity to fall back on during years of low income or other adversity. The lack of reserve debt capacity in the last two years puts some farms in a precarious position where their ability to borrow additional funds is limited.

In today's dairy business climate, liquidity is a critical factor to achieve long-term business viability and financial flexibility to deal with tough years. Whether cash in a savings account, prepaid expenses, inventories that can be quickly turned into cash or substantial unused capacity on one's line of credit, strong liquidity is critical to dairy business success. While milk prices are projected to recover somewhat in 2017, managing liquidity and cash flow will remain important.

PRODUCERS TRIM CAPITAL PURCHASES

Northeast dairy farmers' capital spending reverted back to close to the five-year average in 2015, and was further reduced in 2016 (Figure 9). The majority of capital purchases were for replacement machinery and equipment, with some buildings and land expansion. Total capital purchases per farm were $272,296, just below the five-year average of $292,778. While the average capital purchases were $674 per cow, it should be noted that this represents expansion investments (some of which were planned in 2014) by some more profitable farms, and substantially lower spending by others.

In addition to reduced capital purchases, as noted earlier, Northeast producers also cut back on annual repairs and maintenance expenses in 2016 compared to 2015.

Figure 9

CAPITAL PURCHASES

	Per Farm	Per Cow	% of Total Assets[1]
2012	$265,825	$775	7.1%
2013	$256,095	$813	6.5%
2014	$365,612	$1,066	7.9%
2015	$304,062	$813	6.2%
2016	$272,296	$674	5.1%
3-Year Average	$313,990	$851	6.4%
5-Year Average	$292,778	$828	6.6%

[1] Capital purchases as a percent of total assets show an approximate rate of reinvestment in the farm enterprise.

Figure 10 shows a cash flow statement on a per-cow basis for the average Northeast dairy producer in the study. It includes sources and use of cash for the business, including what was available to cover capital purchases.

Figure 10

CASH SOURCES AND USE STATEMENT

	2012	2013	2014	2015	2016
Sources			Dollars per Cow		
Net Farm Income[1]	$613	$617	$1,555	$432	$451
Sale of Capital Assets	58	59	44	67	55
Paid-in Capital[2]	42	33	33	40	59
Money Borrowed	633	760	111	906	730
TOTAL SOURCES	$1,346	$1,469	$1,749	$1,445	$1,295
Uses					
Family Living	$150	$180	$178	$166	$146
Capital Purchases	775	813	1,089	813	674
Debt Principal Payments	421	476	482	466	475
TOTAL USES	$1,346	$1,469	$1,749	$1,445	$1,295
Percent Capital Purchases Financed[3]	82%	86%	10%	111%	108%

[1] Cash basis – No accrual adjustment to expenses
[2] Includes savings withdrawn, gifts, inheritances, grants, debt forgiven and other extraordinary income
[3] Money borrowed / capital purchases

Total sources of cash fell by $150 in 2016 to $1,295 per cow. Net cash farm income increased slightly in 2016, to $451 per cow, but remained at a relatively low level. This required producers to finance capital purchases (and some operating expenses) by taking on additional debt. Producers were generally able to meet loan servicing requirements during the year, but many sought additional financing, restructured existing debt or extended trade credit, so net debt per cow increased.

BALANCE SHEETS WEAKEN

Net worth, or owner's equity, measures the wealth of the farm business owner. It is measured at each year's end in the *DFS* in order to compare changes from year to year. Net worth is an indicator of the ability of the business to absorb financial losses and to collateralize additional borrowing. It is also a measure of the amount of money that could be redeployed toward other endeavors if the business were liquidated.

The average *DFS* dairy farmer's net worth in 2016 declined by $453 to $8,944 per cow from $9,397 in 2015. Percent net worth also decreased to 68 percent (Figure 11). Nonetheless, solvency remains solid for the average *DFS* farm, meaning that the average *DFS* participant would have more than enough farm assets to liquidate, in order to satisfy all farm debts, selling fees and resulting income tax liability.

Figure 11

CHANGE IN FINANCIAL POSITION

	Change in NW per Cow	Percent Net Worth[1]	Current Ratio[2]	Quick Ratio[3]	Asset Turnover[4]
2012	$-367	72%	2.8	1.2	0.52
2013	$1,351	73%	2.8	1.2	0.48
2014	$1,048	75%	3.5	1.6	0.53
2015	$-813	72%	2.8	1.1	0.50
2016	$-453	68%	1.8	0.5	0.40

[1] Percent net worth = Owner's net worth / total assets
[2] Current ratio = Current assets / current liabilities
[3] Quick ratio = Current assets - inventory / current liabilities
[4] Asset turnover = Value of farm production / average total assets

There is an important distinction between growth in net worth resulting from earnings versus market revaluation. Net earnings are the result of profits from dairy farming. Market revaluation generally occurs in farm real estate and cattle, while machinery and equipment ordinarily depreciate.

In 2014 livestock values increased significantly to $2,397 per milking head (Table A-3). This was reflective of both the high milk price environment as well as high beef prices. Despite lower milk and beef prices in 2015 and 2016, livestock values have remained relatively flat, falling to $2,372 per cow and increasing in 2016 to $2,405. The average *DFS* farm raises a relatively large amount of replacement heifers as reflected in youngstock as a percent of cows.

Liquidity is the ability of the farm operator to convert short-term assets (current assets) to cash to meet short-term obligations (current liabilities) as they become due. Current and quick ratios are two important measures of liquidity. In 2016, the average dairy farm had a current ratio of 1.8, sharply lower than years prior (Figure 11). This means that the average farm had 1.8 times the value of current assets compared to the value of their current liabilities.

However, since inventory on a dairy farm is primarily feed for on-farm use and not intended to be directly converted into cash to pay bills, subtracting inventory from the current ratio produces the quick ratio and provides a closer look at a dairy farm's true short-term liquidity situation. The quick ratio of 0.5 at the end of the year demonstrates that the average farm did not have sufficient near-cash assets (such as cash and accounts receivable) to meet the current year's financial obligations, and is instead relying on converting inventory (primarily feed) to milk, and subsequently, cash, to pay their bills as they come due. This indicates that producers had, on average, 50 percent of the value of short-term liabilities available in cash or assets that could be quickly converted to cash.

Finally, asset turnover is commonly used to measure the efficiency of total capital invested in the business by determining gross revenue dollars generated for every dollar invested. The higher the asset turnover ratio, the more efficiently the investment is working for the business. Thus greater asset turnover should translate into a higher return on assets (ROA). In 2016, asset turnover for the average Northeast dairy business was 0.40, lower than prior years. This was largely a result of the decrease in milk prices. This means $0.40 of gross revenue was generated for every $1 invested in assets.

NET MARGIN DIFFERENCES REMAIN SIGNIFICANT IN 2016

We again saw a wide range of profits around the $15 per cow average net earnings in 2016. Many farms had negative net income, while a few posted more than a $1,000 profit per cow. Figure 12 demonstrates the range of profitability between the top, bottom and all farms profit groups. Farms in the *DFS* are ranked by profit margin and divided into four quartiles.

Figure 12

RANGE OF 2016 PROFITS

	Bottom 25%	All Farms	Top 25%
Number of Farms	114	457	115
Average Number of Cows	350	403	327
Milk Sold per Cow (lbs.)	24,314	25,239	25,728
Milk Sold per Worker (lbs.)	1,124,294	1,206,043	1,230,403
Net Earnings			
Per Farm	$-164,850	$6,045	$116,412
Per Cow	$-245	$15	$356
Per Cwt.	$-1.03	$0.06	$1.38
Return on Assets[1]	-0.9%	1.1%	3.2%
Return on Equity[1]	-1.0%	0.2%	3.2%

[1] ROA and ROE calculations do not include asset appreciation.

There was a $601 difference in net earnings per cow between the top and bottom quartile groups. This is greater than 2015's difference, which stood at $536. Similarly, on a per cwt. basis, the top farms posted $2.41 more in net earnings than the least profitable farms with earnings of $1.38 per cwt., while the bottom group lost $1.03 per cwt. Several management factors contribute to this disparity.

Also shown in Figure 12 are two productivity measures: Milk Sold per Worker and Milk Sold per Cow. The Top 25 percent group sold six percent more milk per cow and nine percent more milk per worker than the Bottom 25 percent, which contributes to the disparity in the bottom line.

Interestingly, as in 2015, the average herd size of the top profit quartile was lower than that of the group overall. Some of the most profitable farms on a per cow basis were found at both the high end and at the low end of herd sizes. The large herd dairy farms were able to capitalize on economies of scale, while some of the small herd farms were able to keep a tight rein on expenses and utilize family labor. When combined, the result was a lower average herd size. The group that had the lowest profitability overall was not the smallest farms, but those between 100 and 299 cows.

Another area where the top profit group excels is in NCOP. Figure 13 shows the difference in the cost of producing milk between the most and least profitable groups. The difference between the two came to $2.43 per cwt. in 2016, slightly narrower than the average difference of the preceding five years.

Figure 13

COST OF PRODUCING MILK BY PROFIT GROUPS

	2012	2013	2014	2015	2016
NCOP[1]			Dollars per Cwt.		
Bottom 25%	**$19.84**	**$21.11**	**$22.14**	**$19.26**	**$18.39**
Top 25%	**17.40**	**17.99**	**19.38**	**17.39**	**15.96**
Difference	**$2.44**	**$3.12**	**$2.76**	**$1.87**	**$2.43**

[1]Before any return on equity

Certainly, high milk production per cow influences profitability. However, Figure 14A illustrates that by itself, high production per cow does not guarantee superior earnings. A significant number of high production farms fall in the lower profit groups. However, fewer of the low production farms fall in the top profit group.

The importance of balancing production with total costs to achieve profitability is much more obvious (Figure 14B). As NCOP decreases, the possibility of higher profits increases on nearly a straight line. Herd management, cost control, buying savvy and labor management are the main factors determining the cost of production.

Figure 14A

PROFIT VS. MILK SOLD PER COW

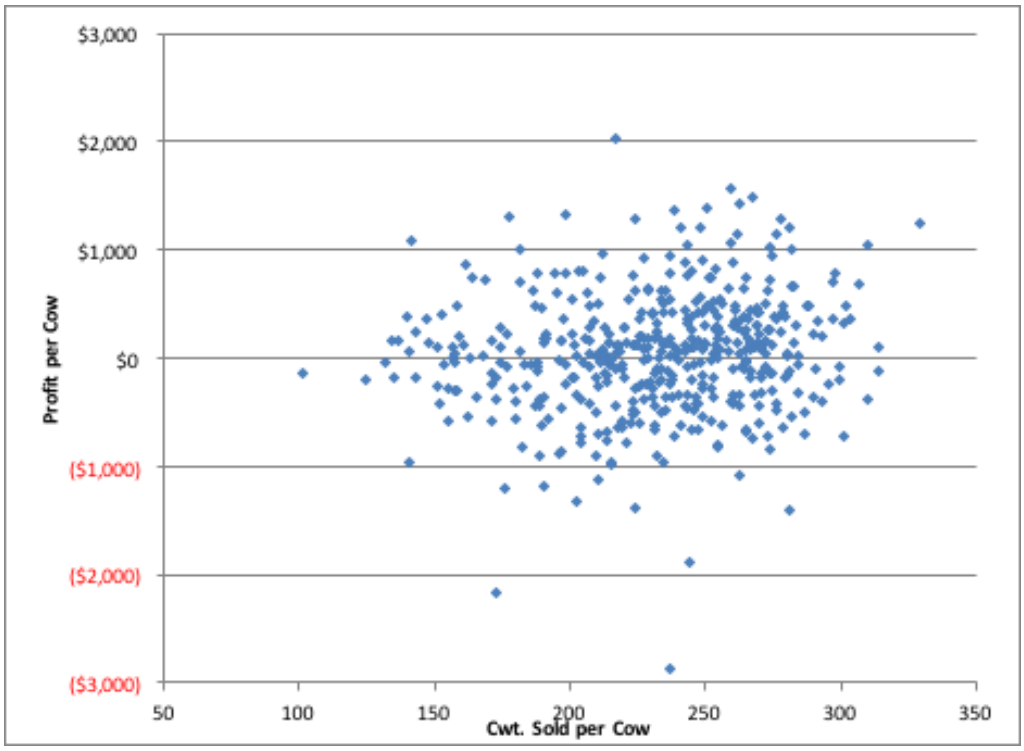
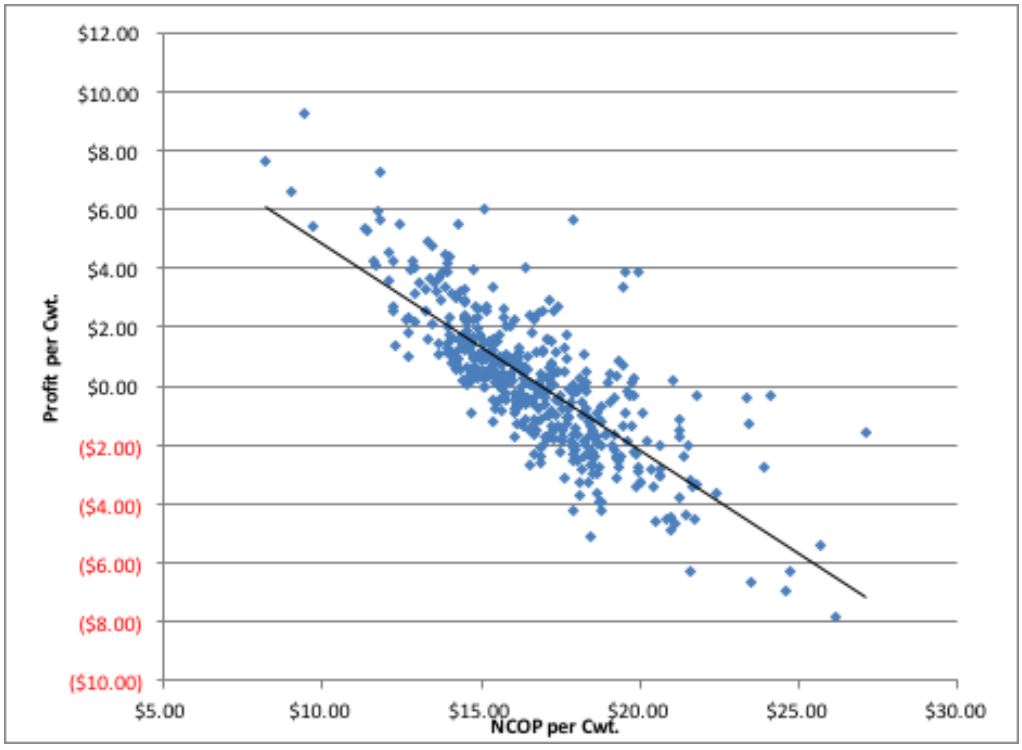


Figure 14B

PROFIT VS. NCOP



MANAGEMENT STYLE AND DAIRY PROFITS

Above average management is critical to profits, but "above average" can encompass a range of styles. Successful managers have been able to identify and leverage their individual management strengths on which to build a profitable dairy business. In short, these managers have developed a management strategy that fits their personalities and resources.

Figure 15

WINNING MANAGEMENT STYLES OF THE TOP 25%

	Great with Cows	Labor Efficient	Better Milk Price	Tight With a Buck	Balanced
Number of Farms	16	44	13	22	20
Average Number of Cows	604	531	191	154	162
Milk Sold per Cow (lbs.)	28,633	27,740	22,719	23,264	22,556
Milk Sold per Worker (lbs.)	1,218,440	1,696,307	905,515	822,626	849,340
NCOP Per Cwt.	$16.07	$15.87	$18.66	$15.34	$15.87
Milk Price per Cwt.	$17.38	$17.20	$20.11	$16.90	$17.31
Net Earnings per Cow	$375	$368	$329	$364	$325
Net Earnings per Cwt.	$1.31	$1.33	$1.45	$1.56	$1.44
Return on Assets (%)	3.3%	3.2%	2.9%	3.5%	2.9%
Percent Net Worth (%)	77%	74%	81%	73%	75%

Of the 115 farms included in 2016 top profit quartile, 95 exhibited distinct characteristics, while the remaining 20 farms displayed a more balanced approach, doing well in all areas, without any standout factor. Figure 15 breaks down these winning farm styles in the corresponding management factor. For example, farms included in the Great-with-Cows group outperformed all others in producing the most milk per cow.

Great with Cows These farmers likely spend more time and money on cow productivity. The average milk sold per cow was 28,633, the highest among the five styles. High production allowed them to produce and sell 1,218,440 pounds of milk per worker, second only to the Labor Efficient group.

Labor Efficient Effective labor management, highly productive cows and a large herd size enabled this group to be the most labor efficient, with milk sold per worker of more than 1.6 million pounds. In addition to labor efficiency, this group reported the second highest milk sold per cow. This management style typically gains labor efficiencies from economies of scale and high output per cow.

Better Milk Price This group received $20.11 per cwt. for their milk, $2.77 more than average for the top profit group. Higher milk prices could be the result of high milk fat or protein content; negotiated premiums for quality; and/or specialty markets. This category likely contains non-Holstein herds which made the top profit group.

Tight with a Buck These operators excel at cost control, achieving the lowest cost of production at $15.34 per cwt. Although milk per cow and milk per worker are below the top profit group average, these farmers have implemented tight cost control to achieve superior results. With the smallest average herd size, this group likely utilizes a lot of family labor. Some of these farms also have significant non-milk business income, which influences NCOP. The rewards of managing costs are easily seen in the highest earnings per cwt.

Balanced These are good, all-around managers performing well in all areas. Although profits are less than some of the other styles, the data indicates that these farmers are good all-around managers.

The common theme is that top-profit farmers have reached a profitable balance between milk production per cow and costs through a variety of management styles.

FARM SIZE AND PROFITABILITY

Average farm sizes in the Northeast and across the country have continually increased for many decades. The *DFS* has illustrated that, to some extent, all size farms can be profitable. However, there are strong correlations in the data regarding size of farm, efficiency, pounds of milk sold per cow, cost of production and, ultimately, profitability.

As a group, the largest-size group was by far the most profitable of the four size groups with $70 net earnings per cow in 2016 (Figure 16). In addition, this group was:

- The most productive on a milk-sold-per-cow and per-worker measure.
- The lowest per-cow investor in productive assets. As a result, this group had the highest asset turnover ratio.
- The lowest cost producer.

It is noteworthy that the other three size groups were also represented in the top profit quartile, while not all of the 700+ size group made that distinction. This is important because it shows there is opportunity to achieve superior profitability over a range of farm sizes. It also shows, however, that, as a group, the largest farms also have the highest average earnings per cow.

Figure 16

FARM SIZE AND PROFITABILITY

	99 Cows or Fewer	100-299 Cows	300-699 Cows	700 Cows or more
Average Number of Cows	68	180	478	1,180
Milk Sold Per Cow (lbs.)	20,679	22,928	24,892	26,315
Milk Sold Per Worker (lbs.)	651,120	1,023,499	1,173,162	1,358,146
Net Cost of Production per Cwt.	$18.15	$17.76	$16.93	$16.53
Milk Price per Cwt.	$16.69	$16.94	$16.95	$16.75
Assets per Cow	$19,574	$15,818	$12,989	$11,983
Asset Turnover	0.23	0.30	0.39	0.44
Percentage Net Worth	79%	75%	70%	63%
Net Earnings per Cow	$-291	$-186	$7	$70
Return on Assets %	-0.8%	-0.4%	1.0%	1.7%

CONCLUSION

Both 2015 and 2016 have been challenging years and difficult for many Northeast producers. Milk prices continued to decrease, squeezing margins and cash flow. Many Northeast dairy farmers responded to the challenge with a remarkable ability to economize, cut costs and gain further efficiencies in their already well-run operations. This resulted in increased accrual earnings from the prior year, in spite of lower milk (and beef) prices.

Money was certainly tighter in 2016 than it was the year before, when producers were coming off a high-profit 2014 season. This is evidenced by, among other things, a significant increase in debt which exceeded $4,000 per cow for the first time in *DFS* history.

Debt per cow for the average *DFS* farm has increased from $3,126 in 2012 to $4,194 in 2016. Given the impact of inflation, this increase may not be as significant in real terms, but still raises some concerns about the leverage of the average farm, and their ability to navigate through an unpredictable market. Managing risk is more important than ever, given the high levels of debt carried by many farms, and the uncertainty they face in commodity prices on both the input and output sides.

However, producers are reevaluating the USDA Dairy Margin Protection Program (MPP), as well as other risk management strategies like LGM-Dairy, crop insurance and futures hedging. Many were disappointed that the MPP program has made few payouts since its inception, as despite the depressed milk prices, the Income-Over-Feed-Cost margin (IOFC) remained close to $8.00 per cwt. most of the time.

The greatest risk management tool remains smart management and cost control. By investing in property, livestock and equipment in 2014, Northeast producers entered the current downturn better prepared than they were in 2009, and milk prices have not fallen as precipitously as they did then. What is different this time, is the apparent duration of the downturn and the unclear future of dairy markets. Some analysts argue that in fact, this is not a downturn at all, but rather a reversion to the mean of marginal profitability for the dairy industry, and that producers may need to retool their business models to survive in a low-margin environment. Only time will tell. 2017 is shaping up to be a better year, but far from a return to 2014. At press time, milk prices are expected to average about $1.40 per cwt. above 2016 levels, but things could change.

Overall, the *Northeast Dairy Farm Summary* shows us that there are multiple paths to dairy farm success. Strategies are as different as the individual characteristics of farms within this study. Positioning your farm for success will be crucial to meeting the challenges of today and tomorrow. This summary presented various proven management strategies that have consistently resulted in above-average performance. Working closely with your Farm Credit loan officer and/or business consultant to assess your strengths and weaknesses and developing a strategy to position your farm to meet industry challenges is now more critical than ever.

If you are interested in improving your profitability, the *DFS* is only the beginning. Farm Credit's *Success Strategies Dairy Benchmarks* delves much deeper into not only farm financial data, but a host of production and herd management metrics as well. Membership includes a personalized profit assessment of your farm. For more on this program, a joint project between Farm Credit East, Yankee Farm Credit, AgChoice Farm Credit and the Pennsylvania Farm Bureau/MSC – Business Services, contact a representative of one of those partner organizations to learn more.

We hope that this year's *Northeast Dairy Farm Summary* is a useful tool for managing your farm and business. It remains essential that dairy farmers and those who serve them continue to seek answers in order to have a healthy, economically sustainable Northeast dairy industry. The entire Farm Credit team of loan officers, farm accounting professionals and business consultants are eager and prepared to help Northeast dairy farmers achieve financial success. On behalf of our entire team, thank you for your interest and participation.

FINANCIAL RECORDS

The following 17 tables present the detailed financial data on which this summary was based. These tables are organized into four sets:

- Tables A-1 through A-5 are COMPARISONS BETWEEN YEARS
- Tables B-1 through B-3 are DATA BY HERD SIZES
- Tables C-1 through C-6 are DATA BY PROFIT GROUPS
- Tables D-1 through D-3 are DATA BY REGIONS

Each set includes a condensed earnings worksheet, a balance sheet summary and a page of evaluation factors. The 2012-to-2016 data series includes farms in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York and Vermont.

Please note the following in order to properly use this data:

- Cattle purchased for replacements are considered operating expenses, but cattle purchased for expansion are capital purchases. The accrual adjustment change in the inventory of raised livestock is calculated by subtracting purchases for expansion from the total increase in cattle inventory value.
- Depreciation has been restated by applying a standard percentage of depreciation to various asset classes in order to compare consistent numbers from year to year and avoid variations driven by changes in tax laws.
- Incorporated farms were adjusted to sole proprietor status, and owner draw was recorded as Family Living Expense. If there was more than one owner, the largest draw was recorded as Family Living, and other owner salaries were recorded under Hired Labor.
- Appreciation and revaluation of capital assets do not appear in the earnings statements. They are, however, included on the balance sheets.
- Current liabilities on the balance sheet include both current debts as well as the current portion of intermediate-term and long-term liabilities.
- Government payments include MPP and state program payments. Crop insurance indemnities are recorded as Crop Revenue.

Your Farm Credit team of ag finance specialists encourages you to review the following financial data thoughtfully and thoroughly. It allows you to identify your strengths and weaknesses and to improve your operation for the future.

TABLE A-1.

COMPARISON BETWEEN YEARS – EARNINGS WORKSHEET

	2012	2013	2014	2015	2016
Number of Farms	504	517	474	487	457
Average Number of Cows	343	315	348	374	403
Receipts					
Milk Sales	$1,594,407	$ 1,600,058	$ 2,111,261	$ 1,662,185	$ 1,714,362
Cattle Sales	112,841	96,009	136,337	197,941	184,171
Crop Sales	98,865	52,877	67,552	44,799	50,778
Government Payments[1]		28,185	12,112	27,947	36,270
Other	88,846	54,794	51,003	51,745	51,584
CASH RECEIPTS	$1,894,959	$1,831,923	$2,378,265	$1,984,617	$2,037,165
Accrual Adjustments					
+ Change in Inventory-Raised Livestock	$22,814	$19,198	$34,838	$21,523	$23,777
VALUE OF FARM PRODUCTION (a)	$1,917,773	$1,851,121	$2,413,103	$2,006,140	$2,060,942
COST OF GOODS SOLD					
Chemicals & Sprays	$18,266	$18,525	$23,467	$18,632	$18,538
Custom Hire	50,175	48,814	59,086	67,315	64,077
Purchased Feed	606,162	582,279	660,022	648,148	635,128
Fertilizer & Lime	63,550	61,429	61,748	61,829	56,823
Freight & Trucking (Marketing)	75,749	71,550	78,300	88,766	99,541
Gasoline, Fuel & Oil	86,746	78,925	89,719	62,094	53,196
Hired Labor	247,698	232,019	275,440	298,246	325,624
Seed & Plants	40,965	40,896	49,750	46,404	47,554
Supplies	96,904	83,997	102,636	107,466	111,228
Veterinary, Medicine & Breeding	66,622	62,360	75,495	76,649	80,600
Cow Replacements	3,848	4,121	15,747	1,611	6,851
Total Cost of Goods Sold	$1,356,685	$1,284,915	$1,491,410	$1,477,160	$1,499,160
Gross Margin	$561,088	$566,206	$921,693	$528,980	$561,782
OVERHEAD					
Insurance	20,196	19,464	24,516	26,756	27,404
Interest	40,140	37,049	39,477	43,080	53,196
Rent	27,910	29,358	37,327	41,130	39,897
Repairs	104,147	104,372	142,733	130,927	124,930
Property & Misc. Taxes	21,464	22,402	24,899	25,680	28,613
Utilities	35,014	35,256	43,726	42,831	43,121
Other	27,262	17,310	32,991	35,610	39,091
Accrual Adjustments					
+ Depreciation	106,684	107,267	123,144	131,249	140,647
Total Overhead Expenses	$382,817	$372,478	$468,813	$477,263	$496,899
Total Farm Production Costs (b)	$1,739,502	$1,657,393	$1,960,223	$1,954,423	$1,996,059
NET FARM EARNINGS (a) - (b)	$178,271	$193,728	$452,880	$51,717	$64,883
- Family Living & Income Taxes	51,371	56,837	61,785	62,711	58,838
NET EARNINGS	$126,900	$136,891	$391,095	$-10,994	$6,045
+ Net Nonfarm Income	14,924	17,799	15,660	16,289	17,329
NET HOUSEHOLD INCOME	$141,824	$154,690	$406,755	$5,295	$23,374

Note: Expenses are adjusted for changes in accounts payable, prepaid expenses, and supply inventories to remove the effects of tax planning and reflect only 1 year's expenses.
[1]Prior to 2013, government payments have been included in "other"

TABLE A-2.

COMPARISON BETWEEN YEARS – EARNINGS WORKSHEET PER CWT.

	2012	2013	2014	2015	2016
Number of Farms	504	517	474	487	457
Average Number of Cows	343	315	348	374	403
Receipts	DOLLARS PER CWT. OF MILK				
Milk Sales	$ 20.01	$ 21.30	$ 25.58	$ 18.24	$ 16.85
Cattle Sales	1.42	1.28	1.66	2.17	1.82
Crop Sales	1.24	0.70	0.81	0.49	0.50
Government Payments		0.38	0.15	0.31	0.36
Other	1.11	0.73	0.61	0.56	0.50
CASH RECEIPTS	$ 23.78	$ 24.39	$ 28.81	$ 21.77	$20.03
Accrual Adjustments					
+ Change in Inventory-Raised Livestock	$ 0.29	$ 0.26	$ 0.43	$ 0.24	$ 0.24
VALUE OF FARM PRODUCTION (a)	$ 24.07	$ 24.64	$ 29.24	$ 22.01	$ 20.27
COST OF GOODS SOLD					
Chemicals & Sprays	$ 0.23	$ 0.25	$ 0.29	$ 0.21	$ 0.18
Custom Hire	0.63	0.65	0.71	0.74	0.63
Purchased Feed	7.61	7.75	7.99	7.12	6.25
Fertilizer & Lime	0.80	0.82	0.75	0.68	0.56
Freight & Trucking (Marketing)	0.95	0.95	0.95	0.97	0.98
Gasoline, Fuel & Oil	1.09	1.05	1.08	0.68	0.53
Hired Labor	3.11	3.09	3.34	3.27	3.20
Seed & Plants	0.51	0.54	0.60	0.51	0.46
Supplies	1.21	1.12	1.25	1.18	1.09
Veterinary, Medicine & Breeding	0.84	0.83	0.91	0.84	0.80
Cow Replacements	0.05	0.05	0.19	0.03	0.07
Total Cost of Goods Sold	$17.03	$17.10	$18.06	$16.23	$14.75
Gross Margin	$7.04	$7.54	$11.18	$5.78	$5.52
OVERHEAD					
Insurance	0.25	0.26	0.29	0.29	0.27
Interest	0.50	0.49	0.48	0.47	0.52
Rent	0.35	0.39	0.45	0.45	0.39
Repairs	1.31	1.39	1.73	1.43	1.23
Property & Misc. Taxes	0.27	0.30	0.31	0.28	0.28
Utilities	0.44	0.47	0.53	0.47	0.43
Other	0.34	0.23	0.41	0.38	0.38
Accrual Adjustments					
+ Depreciation	1.34	1.43	1.49	1.44	1.38
Total Overhead Expenses	$4.80	$4.96	$5.69	$5.21	$4.88
Total Farm Production Costs (b)	$21.83	$22.06	$23.75	$21.44	$19.63
NET FARM EARNINGS (a) - (b)	$ 2.24	$ 2.58	$ 5.49	$ 0.57	$ 0.64
- Family Living & Income Taxes	0.60	0.76	0.75	0.69	0.58
NET EARNINGS	$ 1.64	$ 1.82	$ 4.74	$ -0.12	$ 0.06
+ Net Nonfarm Income	0.18	0.24	0.19	0.18	0.18
NET HOUSEHOLD INCOME	$ 1.82	$ 2.06	$ 4.93	$ 0.06	$ 0.24

Note: Expenses adjusted for changes in accounts payable, prepaid expenses and supply inventories to remove the effects of tax planning and reflect only one year's expenses.

TABLE A-3.

COMPARISON BETWEEN YEARS – BALANCE SHEET SUMMARY DECEMBER 31

	2012	2013	2014	2015	2016
Number of Farms	504	517	474	487	457
Average Number of Cows	343	315	348	374	403
Assets			DOLLARS PER FARM		
Livestock	$788,849	$720,116	$834,062	$887,198	$969,036
Feed & Crops	394,507	356,717	418,949	434,736	457,579
Machinery & Equipment	699,551	725,365	846,834	857,528	905,862
Farm–Land & Buildings	1,696,332	1,675,190	1,852,583	1,974,315	2,231,620
All Other	472,771	474,546	767,829	737,271	735,038
TOTAL ASSETS	4,052,010	3,951,934	4,720,257	4,891,048	5,299,135
TOTAL LIABILITIES	$1,156,617	1,066,046	1,167,218	1,376,593	1,689,998
TOTAL NET WORTH	$2,895,393	2,885,888	3,553,039	3,514,455	3,609,137
Assets			DOLLARS PER COW		
Livestock	$2,300	$2,286	$2,397	$2,372	$2,405
Feed & Crops	1,150	1,132	1,204	1,162	1,135
Machinery & Equipment	2,040	2,303	2,433	2,293	2,248
Farm-Land & Buildings	4,946	5,141	5,324	5,279	5,538
All Other	1,378	1,684	2,206	$1,971	$1,824
TOTAL ASSETS	$11,813	$12,546	$13,564	$13,078	$13,150
TOTAL LIABILITIES	$3,372	$3,384	$3,354	$3,681	$4,194
TOTAL NET WORTH	$8,441	$9,162	$10,210	$9,397	$8,956
Assets			DOLLARS PER CWT. OF MILK		
Livestock	$9.90	$9.59	$10.02	$10.09	$9.52
Feed & Crops	4.95	4.75	5.03	4.95	4.50
Machinery & Equipment	8.78	9.66	10.17	9.76	8.90
Farm–Land & Buildings	21.29	22.30	22.25	22.46	21.93
All Other	5.93	6.32	9.22	8.39	7.22
TOTAL ASSETS	$50.85	$52.61	$56.69	$55.65	$52.07
TOTAL LIABILITIES	$14.51	$14.19	$14.02	$15.66	$16.61
TOTAL NET WORTH	$36.34	$38.42	$42.67	$39.99	$35.46
PERCENT NET WORTH	72%	73%	75%	72%	68%

TABLE A-4.

COMPARISON BETWEEN YEARS – EVALUATION FACTORS

	2012	2013	2014	2015	2016
Number of Farms	513	517	474	487	457
Average Number of Cows	339	315	348	374	403
Worker Equivalents	7.2	6.8	7.5	8.1	8.4
Cows Per Worker	47	46	46	47	48
Pounds of Milk Sold Per Worker	1,115,785	1,097,288	1,102,149	1,134,300	1,210,871
Pounds of Milk Sold	8,078,285	7,512,009	8,255,565	9,142,456	10,171,317
Pounds of Milk Sold Per Cow	23,552	23,848	23,759	24,365	25,239
Milk Price Per Cwt.	$19.74	$21.30	$25.58	$18.24	$16.85
Total Crop Acres	822	766	819	825	898
Crop Acres Per Cow	2.4	2.4	2.4	2.2	2.2
Feed Cost Per Cow	$1,767	$1,849	$1,897	$1,733	$1,576
Feed as a Percent of Milk Sales	38%	36%	31%	39%	37%
Feed & Crop Expense Per Cow[1]	$2,123	$2,233	$2,287	$2,072	$1,882
Feed & Crop Expense Per Cwt.	$9.01	$9.36	$9.63	$8.51	$7.46
Machinery Costs Per Cow[2]	$1,016	$910	$1,039	$898	$813
Machinery Costs Per Cwt.	$4.31	$3.82	$4.37	$3.69	$3.22
Labor & Family Living Per Cow	$863	$917	$965	$958	$947
Labor & Family Living Per Cwt.	$3.66	$3.85	$4.06	$3.93	$3.75
Assets Per Cow	$11,408	$12,546	$13,564	$13,078	$13,150
Debt Per Cow	$3,136	$3,384	$3,354	$3,681	$4,194
Net Worth Per Cow	$8,272	$9,162	$10,210	$9,397	$8,956
Percent Net Worth	72%	73%	75%	72%	68%

[1] Feed & Crop Expense = Feed + Seed & Plants + Fertilizer + Chemicals & Spray.

[2] Machinery Costs = Machinery Repairs + Fuel & Oil + Custom Hire + Machinery & Equipment Depreciation.

TABLE A-5.

COMPARISON BETWEEN YEARS – TREND ANALYSIS

ADJUSTED FINANCIAL CONDITION AS OF DECEMBER 31	2012	2013	2014	2015	2016
Current Assets	$586,106	$621,951	$807,176	$745,987	$743,492
Intermediate Assets	1,589,227	1,642,957	1,917,597	1,998,014	2,141,809
Fixed Assets	1,568,586	1,687,026	1,995,484	2,147,047	2,413,833
TOTAL ASSETS	$3,743,919	$3,951,934	$4,720,257	$4,891,048	$5,299,134
Change (+ or -) from Prior Years	$46,235	$208,015	$768,323	$170,791	$408,086
Current Liabilities	$207,872	$219,220	$233,547	$271,247	$410,227
Intermediate Liabilities	439,020	430,905	464,711	544,019	645,338
Long-Term Liabilities	417,587	415,921	468,959	561,327	634,433
TOTAL LIABILITIES	$1,064,479	$1,066,046	$1,167,217	$1,376,593	$1,689,998
Change (+ or -) from Prior Years	$32,403	$1,567	$101,171	$209,376	$313,405
NET WORTH	$2,679,440	$2,885,888	$3,553,040	$3,514,455	$3,609,136
Change (+ or -) from Prior Years	$13,832	$206,448	$667,152	$-38,585	$94,681
% Net Worth	72%	73%	75%	72%	68%

I & E Farm (Cash Basis)	2012	2013	2014	2015	2016
Sales - Milk	$1,594,407	$1,600,058	$2,111,261	$1,662,185	$1,714,756
Sales - Livestock	112,841	96,009	136,337	197,941	184,692
Other Farm Income	187,711	135,856	130,667	124,491	139,408
TOTAL FARM INCOME	$1,894,959	$1,831,923	$2,378,265	$1,984,617	$2,038,856
FARM EXPENSES	$1,632,818	$1,550,126	$1,837,079	$1,823,174	$1,856,466
NET FARM INCOME	$262,141	$281,797	$541,186	$161,443	$182,390
ADD: Interest	$40,140	$37,049	$39,477	$43,080	$52,914
TOTAL AVAILABLE - Farm	$302,281	$318,846	$580,663	$204,523	$235,304
ADD: Net Nonfarm Income	$31,690	$17,799	$15,660	$16,289	$17,717
Sale Capital Assets	$25,406	$14,251	$14,489	$25,033	$22,231
TOTAL FUNDS AVAILABLE (A)	$359,377	$350,896	$610,812	$245,845	$275,252
Family Living + Income Taxes	$51,371	$56,837	$61,785	$62,711	$59,207
Debt Service Requirement	$183,882	$180,421	$204,112	$219,747	$244,790
TOTAL FUNDS REQUIRED (B)	$235,253	$237,258	$265,897	$282,458	$303,997
EXCESS (A – B)	$124,124	$113,638	$344,915	$-36,613	$-28,745

TABLE B-1.

2016 DATA BY HERD SIZE – EARNINGS WORKSHEET

	HERD SIZE				
	99 COWS OR FEWER	100-299 COWS	300-699 COWS	700 COWS OR MORE	ALL FARMS
Number of Farms	116	155	101	85	457
Average Number of Cows	68	180	478	1,180	403
Receipts	DOLLARS PER COW				
Milk Sales	$3,461	$3,886	$4,221	$4,419	$4,254
Cattle Sales	546	418	444	402	457
Crop Sales	224	181	144	98	126
Government Payments	75	87	113	81	90
Other	159	151	108	131	128
CASH RECEIPTS	$4,465	$4,723	$5,030	$5,131	$5,055
Accrual Adjustments					
+ Change in Inventory-Raised Livestock	$-23	$19	$60	$102	$59
VALUE OF FARM PRODUCTION (a)	$4,442	$4,742	$5,090	$5,233	$5,114
COST OF GOODS SOLD					
Chemicals & Sprays	$59	$44	$49	$43	$46
Custom Hire	104	133	195	154	159
Purchased Feed	1,197	1,362	1,520	1,692	1,576
Fertilizer & Lime	137	153	155	134	141
Freight & Trucking (Marketing)	233	233	236	256	247
Gasoline, Fuel & Oil	143	141	133	130	132
Hired Labor	292	645	822	884	808
Seed & Plants	129	131	116	114	118
Supplies	278	271	282	272	276
Veterinary, Medicine & Breeding	150	184	201	206	200
Cow Replacements	25	45	13	1	17
Total Cost of Goods Sold	$2,747	$3,342	$3,722	$3,886	$3,720
Gross Margin	$1,695	$1,400	$1,368	$1,347	$1,394
OVERHEAD					
Insurance	86	85	68	60	68
Interest	140	127	123	135	132
Rent	72	77	103	102	99
Repairs	289	278	298	324	310
Property & Misc. Taxes	119	88	76	58	71
Utilities	121	106	107	106	107
Other	111	91	90	108	97
Accrual Adjustments					
+ Depreciation	539	449	348	308	349
Total Overhead Expenses	$1,477	$1,301	$1,213	$1,201	$1,233
Total Farm Production Costs (b)	$4,224	$4,643	$4,935	$5,087	$4,953
NET FARM EARNINGS (a) - (b)	$218	$99	$155	$148	$161
- Family Living & Income Taxes	509	285	148	78	146
NET EARNINGS	$-291	$-186	$7	$70	$15
+ Net Nonfarm Income	266	106	43	9	43
NET HOUSEHOLD INCOME	$-25	$-80	$50	$79	$58

Note: Expenses adjusted for changes in accounts payable, prepaid expenses, and supply inventories to remove the effects of tax planning and reflect only one year's expenses.

TABLE B-2.

2016 DATA BY HERD SIZE – BALANCE SHEET SUMMARY

December 31, 2016

	HERD SIZE				
	99 COWS OR FEWER	100-299 COWS	300-699 COWS	700 COWS OR MORE	ALL FARMS
Number of Farms	116	155	101	85	457
Average Number of Cows	68	180	478	1180	403
	ASSETS PER COW				
Cash & Accounts Receivable	$624	$562	$510	$446	$488
Feed & Crop Inventory	1,095	1,180	1,194	1,094	1,135
Supplies & Prepaid Expenses	111	103	172	187	165
Other Current Assets	98	84	52	48	57
TOTAL CURRENT ASSETS	$1,928	$1,929	$1,928	$1,775	$1,845
Dairy Livestock	$2,181	$2,310	$2,378	$2,452	$2,411
Machinery & Equipment	3,845	3,064	2,214	1,918	2,244
Other Intermediate Assets	1,461	1,040	646	503	654
TOTAL INTERMEDIATE ASSETS	$7,487	$6,414	$5,238	$4,873	$5,309
Farm Real Estate	$9,637	$6,859	$5,437	$4,896	$5,529
Other Fixed Assets	4522	616	386	439	451
TOTAL FIXED ASSETS	$10,159	$7,475	$5,823	$5,335	$5,980
TOTAL ASSETS	$19,574	$15,818	$12,989	$11,983	$13,134
	LIABILITIES PER COW				
Accounts Payable	$105	$131	$114	$110	$115
Farm Credit Short-Term Loans	24	93	132	163	136
Other Current Liabilities	667	723	706	811	764
TOTAL CURRENT LIABILITIES	$796	$947	$952	$1,084	$1,015
Farm Credit Intermediate Term	$1,074	$1,137	$1,170	$1,513	$1,352
Other Intermediate Liabilities	328	384	116	97	155
TOTAL INTERMEDIATE LIABILITIES	$1,831	$1,572	$1,527	$1,567	$1,575
Farm Credit Long-Term Real Estate	$1,503	$1,188	$1,411	$1,470	$1,420
Other Long-Term Liabilities	349	218	122	68	128
TOTAL LONG-TERM LIABILITIES	$1,383	$1,455	$1,159	$1,455	$1,361
TOTAL LIABILITIES	$4,032	$3,984	$3,880	$4,390	$4,190
	NET WORTH PER COW				
OWNER'S NET WORTH	$15,542	$11,834	$9,109	$7,593	$8,944
TOTAL LIABILITIES & NET WORTH	$19,574	$15,818	$12,989	$11,983	$13,134
PERCENT NET WORTH	79%	75%	70%	63%	68%

TABLE B-3.

2016 DATA BY HERD SIZE – EVALUATION FACTORS

	HERD SIZE				
	99 COWS OR FEWER	100-299 COWS	300-699 COWS	700 COWS OR MORE	ALL FARMS
Number of Farms	116	155	101	85	457
Average Number of Cows	68	180	478	1,180	403
Worker Equivalents	2.1	4.1	10.2	23.0	8.4
Cows Per Worker	31	45	48	52	48
Pounds of Milk Sold Per Worker	651,120	1,023,499	1,173,162	1,358,146	1,210,871
Pounds of Milk Sold Per Farm	1,397,982	4,135,750	11,899,567	31,103,011	10,171,317
Pounds of Milk Sold Per Cow	20,679	22,928	24,892	26,315	25,239
Milk Price Per Cwt.	$16.69	$16.94	$16.95	$16.75	$16.85
Total Crop Acres	252	502	1,128	2,226	898
Crop Acres Per Cow	3.7	2.8	2.4	1.9	2.2
Crop Acres Per Worker	117	124	110	97	107
Feed Cost Per Cow	$1,197	$1,362	$1,520	$1,692	$1,576
Feed Cost Per Cwt.	$5.79	$5.94	$6.11	$6.43	$6.24
Feed as a Percent of Milk Sales	35%	35%	36%	39%	37%
Feed & Crop Expense Per Cow[1]	$1,521	$1,690	$1,840	$1,982	$1,882
Feed & Crop Expense Per Cwt.	$7.36	$7.37	$7.39	$7.53	$7.46
Machinery Cost Per Cow[2]	$937	$864	$844	$778	$813
Machinery Costs Per Cwt.	$4.53	$3.77	$3.39	$2.96	$3.22
Labor & Family Living Per Cow	$786	$926	$957	$957	$947
Labor & Family Living Per Cwt.	$3.80	$4.04	$3.84	$3.64	$3.75
Assets Per Cow	$19,574	$15,818	$12,989	$11,983	$13,150
Debt Per Cow	$4,032	$3,984	$3,880	$4,390	$4,194
Net Worth Per Cow	$15,542	$11,834	$9,109	$7,593	$8,956
Percent Return on Assets[3]	-0.8%	-0.4%	1.0%	1.7%	1.1%
Percent Return on Equity[4]	-1.9%	-1.6%	0.1%	0.9%	0.2%

[1]Feed & Crop Expense = Feed + Seed & Plants + Fertilizer + Chemicals & Sprays.

[2]Machinery Cost = Machinery Repairs + Custom Hire + Fuel & Oil + Machinery & Equipment Depreciation.

[3]Return on Assets = (Net Earnings + Interest) / Average Farm Assets.

[4]Return on Equity = Net Earnings / Average Farm Net Worth.

TABLE C-1.

2016 DATA BY PROFIT GROUPS – EARNINGS WORKSHEET

	PROFIT GROUP				
	BOTTOM 25%	THIRD 25%	SECOND 25%	TOP 25%	ALL FARMS
Number of Farms	114	114	114	115	457
Average Number of Cows	350	495	441	327	403
Receipts	DOLLARS PER COW				
Milk Sales	$4,001	$4,223	$4,331	$4,463	$4,254
Cattle Sales	348	449	392	358	457
Crop Sales	59	101	147	207	126
Government Payments	71	64	122	109	90
Other	121	94	154	156	$128
CASH RECEIPTS	$4,600	$4,931	$5,146	$5,293	$5,055
Accrual Adjustments					
+ Change in Inventory-Raised Livestock	$53	$67	$41	$118	$59
VALUE OF FARM PRODUCTION (a)	$4,653	$4,998	$5,187	$5,411	$5,114
COST OF GOODS SOLD					
Chemicals & Sprays	$41	$35	$54	$57	$46
Custom Hire	181	192	112	153	159
Purchased Feed	1,549	1,630	1,607	1,483	1,576
Fertilizer & Lime	149	132	146	144	141
Freight & Trucking (Marketing)	237	246	241	267	247
Gasoline, Fuel & Oil	136	131	137	126	132
Hired Labor	812	791	855	764	808
Seed & Plants	117	111	119	125	118
Supplies	310	285	308	283	297
Veterinary, Medicine & Breeding	208	193	202	198	200
Cow Replacements	4	13	17	14	17
Total Cost of Goods Sold	$3,727	$3,760	$3,757	$3,584	$3,720
Gross Margin	$926	$1,238	$1,430	$1,827	$1,394
OVERHEAD					
Insurance	73	62	66	72	68
Interest	154	137	125	107	132
Rent	104	93	112	82	99
Repairs	300	299	329	310	310
Property & Misc. Taxes	72	69	70	72	71
Utilities	109	101	108	109	107
Other	131	91	94	91	97
Accrual Adjustments					
+ Depreciation	320	323	352	415	349
Total Overhead Expenses	$1,263	$1,175	$1,256	$1,258	$1,233
Total Farm Production Costs (b)	$4,990	$4,935	$5,013	$4,842	$4,953
NET FARM EARNINGS (a) - (b)	$-337	$63	$174	$569	$161
- Family Living & Income Taxes	134	125	131	213	146
NET EARNINGS	$-471	$-62	$43	$356	$15
+ Net Nonfarm Income	26	25	47	84	43
NET HOUSEHOLD INCOME	$-445	$-37	$90	$440	$58

Note: Expenses adjusted for changes in accounts payable, prepaid expenses and supply inventories to remove the effects of tax planning and reflect only one year's expenses.

TABLE C-2.

2016 DATA BY PROFIT GROUPS – BALANCE SHEET SUMMARY

December 31, 2016

	PROFIT GROUP				
	BOTTOM 25%	THIRD 25%	SECOND 25%	TOP 25%	ALL FARMS
Number of Farms	114	114	114	115	457
Average Number of Cows	350	495	495	327	403
	ASSETS PER COW				
Cash & Accounts Receivable	$423	$384	$540	$644	$488
Feed & Crop Inventory	1,066	1,157	1,183	1,116	1,135
Supplies & Prepaid Expenses	49	83	213	340	165
Other Current Assets	49	29	69	91	57
TOTAL CURRENT ASSETS	$1,587	$1,653	$2,005	$2,191	$1,845
Dairy Livestock	$2,325	$2,419	$2,413	$2,456	$2,411
Machinery & Equipment	2,039	2,016	2,267	2,799	2,244
Other Intermediate Assets	621	555	745	759	654
TOTAL INTERMEDIATE ASSETS	$4,985	$4,990	$5,425	$6,014	$5,309
Farm Real Estate	$5,843	$4,960	$5,700	$5,788	$5,529
Other Fixed Assets	389	413	487	534	451
TOTAL FIXED ASSETS	$6,232	$5,373	$6,187	$6,322	$5,980
TOTAL ASSETS	$12,804	$12,016	$13,617	$14,527	$13,134
	LIABILITIES PER COW				
Accounts Payable	$148	$143	$94	$66	$115
Farm Credit Short-Term Loans	136	114	161	134	136
Other Current Liabilities	834	812	742	658	764
TOTAL CURRENT LIABILITIES	$1,118	$1,069	$997	$858	$1,015
Farm Credit Intermediate Term	$1,393	$1,603	$1,200	$1,152	$1,352
Other Intermediate Liabilities	168	292	246	269	248
TOTAL INTERMEDIATE LIABILITIES	$1,561	$1,895	$1,446	$1,421	$1,600
Farm Credit Long-Term Real Estate	$1,919	$1,241	$1,460	$1,075	$1,420
Other Long-Term Liabilities	154	166	142	168	155
TOTAL LONG-TERM LIABILITES	$2,073	$1,407	$1,602	$1,243	$1,575
TOTAL LIABILITIES	$4,752	$4,371	$4,045	$3,522	$4,190
	NET WORTH PER COW				
OWNER'S NET WORTH	$8,052	$7,645	$9,572	$11,005	$8,944
TOTAL LIABILITIES & NET WORTH	$12,804	$12,016	$13,617	$14,527	$13,134
PERCENT NET WORTH	63%	64%	70%	76%	68%

TABLE C-3.

2016 DATA BY PROFIT GROUPS – EVALUATION FACTORS

	PROFIT GROUP				
	BOTTOM 25%	THIRD 25%	SECOND 25%	TOP 25%	ALL FARMS
Number of Farms	114	114	114	115	457
Average Number of Cows	350	495	495	327	403
Worker Equivalents	7.6	9.9	9.5	6.9	8.4
Cows Per Worker	46	51	46	48	48
Pounds of Milk Sold Per Worker	1,124,294	1,263,764	1,193,187	1,230,403	1,210,871
Pounds of Milk Sold Per Farm	8,502,723	12,399,045	11,359,834	8,415,244	10,171,317
Pounds of Milk Sold Per Cow	24,314	25,070	25,771	25,728	25,239
Milk Price Per Cwt.	$16.34	$16.84	$16.79	$17.34	$16.85
Total Crop Acres	805	997	1,036	752	898
Crop Acres Per Cow	2.3	2.0	2.4	2.3	2.2
Crop Acres Per Worker	105	102	108	110	107
Feed Cost Per Cow	$1,549	$1,630	$1,607	$1,483	$1,576
Feed Cost Per Cwt.	$6.37	$6.50	$6.24	$5.76	$6.24
Feed as a Percent of Milk Sales	39%	39%	37%	33%	37%
Feed & Crop Expense Per Cow[1]	$1,856	$1,909	$1,926	$1,810	$1,882
Feed & Crop Expense Per Cwt.	$7.63	$7.61	$7.47	$7.04	$7.46
Machinery Cost Per Cow[2]	$806	$812	$788	$863	$813
Machinery Cost Per Cwt.	$3.31	$3.24	$3.06	$3.35	$3.22
Labor & Family Living Per Cow	$942	$913	$980	$958	$947
Labor & Family Living Per Cwt.	$3.87	$3.64	$3.80	$3.72	$3.75
Assets Per Cow	$12,804	$12,016	$13,616	$14,527	$13,150
Debt Per Cow	$4,751	$4,371	$4,045	$3,522	$4,194
Net Worth Per Cow	$8,053	$7,645	$9,571	$11,005	$8,956
Percent Return on Assets[3]	-2.5%	0.6%	1.2%	3.2%	1.1%
Percent Return on Equity[4]	-5.9%	-0.8%	0.4%	3.2%	0.2%

[1] Feed & Crop Expense = Feed + Seed & Plants + Fertilizer + Chemicals & Spray

[2] Machinery Cost = Machinery Repairs + Custom Hire + Fuel & Oil + Machinery & Equipment Depreciation

[3] Return on Assets = (Net Earnings + Interest) / Average Farm Assets

[4] Return on Equity = Net Earnings / Average Farm Net Worth

TABLE C-4.

2016 COST OF PRODUCING MILK BY PROFIT GROUPS

	BOTTOM 25%	ALL FARM AVERAGE	TOP 25%
		DOLLARS PER CWT.	
Feed	$ 6.37	$ 6.24	$ 5.76
Labor	$ 3.34	$ 3.20	$ 2.97
Interest	$ 0.63	$ 0.52	$ 0.42
Trucking (Marketing)	$ 0.97	$ 0.98	$ 1.04
Crop	$ 1.26	$ 1.21	$ 1.27
Other Expenses	$ 6.63	$ 6.09	$ 5.75
Adjusted Cash Operating Expenses	$ 19.21	$ 18.24	$ 17.21
+ Depreciation	1.32	1.38	1.61
+ Family Living	0.55	0.58	0.83
Total Costs	$ 21.07	$ 20.20	$ 19.65
– Non-milk Income[1]	2.68	3.41	3.68
Net Cost of Production[2]	$ 18.39	$ 16.79	$ 15.96

[1] Nonmilk income includes accrual basis cattle, crop, other income and farm income.
[2] Before any return on equity

TABLE C-5.

CASH MARGINS BY PROFIT GROUPS

	2012	2013	2014	2015	2016
Bottom Profit Group					
Actual Milk Price	$ 19.81	$ 21.25	$ 25.20	$ 17.92	$ 16.34
Break-Even Milk Price	20.43	21.48	22.48	18.81	18.69
CASH MARGIN	$ -0.62	$ -0.23	$ 2.72	$ -0.89	$ -2.35
Top Profit Group					
Actual Milk Price	$ 19.70	$ 21.18	$ 25.41	$ 18.41	$ 17.34
Break-Even Milk Price	15.82	18.04	19.02	17.23	15.89
CASH MARGIN	$ 3.88	$ 3.14	$ 6.39	$ 1.18	$ 1.45

TABLE C-6.

2016 RESERVE DEBT CAPACITY BY PROFIT GROUPS

	BOTTOM 25%	ALL FARM AVERAGE	TOP 25%
		DOLLARS PER COW	
Debt Capacity	$ -364	$ 3,047	$ 5,135
– Capital Debt	3,683	3,620	3,383
RESERVE DEBT CAPACITY	$ -4,047	$-573	$ 1,752

TABLE D-1.

2016 DATA BY REGIONS – EARNINGS WORKSHEET

	REGIONS		
	NEW YORK	NEW ENGLAND	ALL FARMS
Number of Farms	302	152	457
Average Number of Cows	407	401	403
Receipts	DOLLARS PER COW		
Milk Sales	$4,301	$4,163	$4,254
Cattle Sales	434	485	4577
Crop Sales	111	151	126
Government Payments	62	153	90
Other	120	141	128
CASH RECEIPTS	$5,028	$5,093	$5,055
Accrual Adjustments			
+ Change in Inventory-Raised Livestock	$72	$32	$59
VALUE OF FARM PRODUCTION (a)	$5,100	$5,125	$5,114
COST OF GOODS SOLD			
Chemicals & Sprays	$56	$25	$46
Custom Hire	154	169	159
Purchased Feed	1,546	1,646	1,576
Fertilizer & Lime	132	161	141
Freight & Trucking (Marketing)	249	244	247
Gasoline, Fuel & Oil	131	136	132
Hired Labor	798	832	808
Seed & Plants	130	91	118
Supplies	275	276	276
Veterinary, Medicine & Breeding	205	190	200
Cow Replacements	18	10	17
Total Cost of Goods Sold	$3,694	$3,780	$3,720
Gross Margin	$1,406	$1,345	$1,394
OVERHEAD			
Insurance	68	66	68
Interest	137	118	132
Rent	110	75	99
Repairs	320	289	310
Property & Misc. Taxes	78	54	71
Utilities	95	129	107
Other	94	115	97
Accrual Adjustments			
Depreciation	342	358	349
Total Overhead Expenses	$1,244	$1,204	$1,233
Total Farm Production Costs (b)	$4,938	$4,984	$4,953
NET FARM EARNINGS (a) - (b)	$162	$141	$161
- Family Living & Income Taxes	143	150	146
NET EARNINGS	$19	$-9	$15
+ Net Nonfarm Income	40	57	42
NET HOUSEHOLD EARNINGS	$53	$54	$58

Note: Expenses adjusted for changes in accounts payable, prepaid expenses and supply inventories to remove the effects of tax planning and reflect only one year's expenses.

TABLE D-2.

2016 DATA BY REGIONS – BALANCE SHEET SUMMARY

	DECEMBER 31, 2016 REGIONS[1]		
	NEW YORK	NEW ENGLAND	ALL FARMS
Number of Farms	302	152	457
Average Number of Cows	407	401	403
	ASSETS PER COW		
Cash & Accounts Receivable	$501	$458	$488
Feed & Crop Inventory	1,162	1,072	1,135
Supplies & Prepaid Expenses	153	189	165
Other Current Assets	63	44	57
TOTAL CURRENT ASSETS	$1,879	$1,763	$1,845
Dairy Livestock	$2,444	$2,304	$2,411
Machinery & Equipment	2,179	2,367	2,244
Other Intermediate Assets	654	667	654
TOTAL INTERMEDIATE ASSETS	$5,277	$5,338	$5,309
Farm Real Estate	$5,377	$5,817	$5,529
Other Fixed Assets	438	475	451
TOTAL FIXED ASSETS	$5,815	$6,292	$5,980
TOTAL ASSETS	$12,971	$13,393	$13,134
	LIABILITIES PER COW		
Accounts Payable	$117	$109	$115
Farm Credit Short-Term Loans	104	201	136
Other Current Liabilities	754	784	764
TOTAL CURRENT LIABILITIES	$975	$1,094	$1,015
Farm Credit Intermediate Term	$1,434	$1,172	$1,352
Other Intermediate Liabilities	232	280	248
TOTAL INTERMEDIATE LIABILITIES	$1,666	$1,452	$1,600
Farm Credit Long-Term Real Estate	$1,499	$1,242	$1,420
Other Long-Term Liabilities	148	167	155
TOTAL LONG-TERM LIABILITES	$1,647	$1,409	$1,575
TOTAL LIABILITIES	$4,288	$3,955	$4,190
	NET WORTH PER COW		
OWNER'S NET WORTH	$8,683	$9,438	$8,944
TOTAL LIABILITIES & NET WORTH	$12,971	$13,393	$13,134
PERCENT NET WORTH	67%	70%	68%

[1]Regions are divided by state not Federal Milk Orders.

TABLE D-3.

2016 DATA BY REGIONS – EVALUATION FACTORS

	REGIONS[1]		
	NEW YORK	NEW ENGLAND	ALL FARMS
Number of Farms	302	152	457
Average Number of Cows	407	401	403
Worker Equivalents	8.7	7.9	8.4
Cows Per Worker	47	51	48
Pounds of Milk Sold Per Worker	1,196,362	1,230,643	1,210,871
Pounds of Milk Sold Per Farm	10,451,353	9,768,270	10,171,317
Pounds of Milk Sold Per Cow	25,679	24,336	25,239
Milk Price Per Cwt.	$16.74	$17.03	$16.85
Total Crop Acres	950	806	898
Crop Acres Per Cow	2.3	2.0	2.2
Crop Acres Per Worker	109	102	107
Feed Cost Per Cow	$1,546	$1,646	$1,576
Feed Cost Per Cwt.	$6.02	$6.76	$6.24
Feed as a Percent of Milk Sales	36%	40%	37%
Feed & Crop Expense Per Cow[2]	$1,864	$1,923	$1,882
Feed & Crop Expense Per Cwt.	$7.26	$7.90	$7.46
Machinery Cost Per Cow[3]	$790	$858	$813
Machinery Cost Per Cwt.	$3.08	$3.53	$3.22
Labor & Family Living Per Cow	$939	$964	$947
Labor & Family Living Per Cwt.	$3.66	$3.96	$3.75
Assets Per Cow	$12,971	$13,393	$13,150
Debt Per Cow	$4,288	$3,955	$4,194
Net Worth Per Cow	$8,683	$9,438	$8,956
Percent Return on Assets[4]	1.2%	0.8%	1.1%
Percent Return on Equity[5]	0.2%	-0.1%	0.2%

[1] Regions are divided by states not Federal Milk Orders.

[2] Feed & Crop Expense = Feed + Seed & Plants + Fertilizer + Chemicals & Spray

[3] Machinery Cost = Machinery Repairs + Custom Hire + Fuel & Oil + Machinery & Equipment Depreciation

[4] Return on Assets = (Net Earnings + Interest) / Average Farm Assets. In contrast, the Balance Sheet shows the year-end values

[5] Return on Equity = Net Earnings / Average Farm Net Worth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GLOSSARY

Net Farm Income

A measure of farm profitability in terms of cash flow, net farm income reflects the ability of a farm business to meet its cost of production through cash income. It is equal to:

Cash Receipts — Adjusted Cash Operating Expenses

Adjusted Cash Operating Expenses

Cash farm operating expenses adjusted to reflect 12 months of operation and to remove the effect of tax planning. Adjustments account for changes in supply inventories, accounts payable and prepaid expenses. Operating expenses do not include family living costs or capital expenditures.

Net Earnings

An accrual measure of farm profitability, net earnings reflects all revenues and costs associated with the farm business. It is equal to:

Net Farm Income
+ Change in Accounts Receivable
+ Change in Production Inventories
+ Net Nonfarm & Noncash Income
- Depreciation
- Family Living Expenses & Taxes

Return on Assets

Measures profit earned relative to total farm assets, including assets financed with debt and those financed with farm equity. Return on assets is equal to:

$$\frac{\text{Net Earnings + Interest Expense}}{\text{Average Assets}}$$

Return on Equity

Measures profit earned relative to a farmer's equity investment in the business. Equal to:

$$\frac{\text{Net Earnings}}{\text{Average Net Worth}}$$

Debt Capacity

The maximum amount of capital debt that can be repaid from a farm's cash flow.

Reserve Debt Capacity

The amount of additional capital debt (beyond that already incurred) which a farm can service from cash flow, reserve debt capacity represents a farm's buffer against financial adversity. It is equal to:

Debt Capacity — Capital Debt

Cost of Goods Sold

Costs directly related to the products produced, such as feed, production labor and crop expenses.

Overhead Costs

Costs that do not vary with a change in production output, such as depreciation, interest, repairs, taxes and insurance, etc.

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