

September 2020

E.B. 2020-10



**Six Year Trend Analysis 2018
New York State Dairy Farms
Selected Financial and Production Factors**

**Dairy Farm Business Summary
New York State
Same 128 Farms
2013-2018**

Jason Karszes

Jessica Skellie

**Charles H. Dyson School of Applied Economics and Management
College of Agriculture and Life Sciences
Cornell University
Ithaca, New York 14853-7801**

It is the policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

For online access to this report please visit <http://dyson.cornell.edu/outreach/#bulletins> or
<http://prodairy.cals.cornell.edu/business-management/resources>

Six Year Trend Analysis
New York Dairy Farms
Selected Financial and Production Factors
Dairy Farm Business Summary
New York State
Same 128 Farms, 2013 – 2018

Jason Karszes and Jessica Skellie¹

Trend analysis is an important use of benchmarking within a dairy businesses. While current year performance is important, understanding trends within the business and the industry may provide additional insight into strengths and areas of opportunities within the business. To provide benchmark trends of various financial and performance factors over time, data was utilized from 128 farms that have participated in the Dairy Farm Business Summary and Analysis Project in New York State for six years, from 2013 thru 2018. This information is reported on an average basis, the top 20% of farms as determined by average return on assets w/o appreciation over the six years, and the remaining 80% of farms. For selected factors, the trends and changes between the top 20% of farms and the remaining 80% are highlighted. The following tables present these benchmarks:

Table 1	Selected Characteristics, Six Year Comparison, Average All 128 Farms
Table 2	Top 20% of Farms vs Remaining 80% of Farms, Percent Change and Differences
Table 3	Top 20% of Farms vs Remaining 80% of Farms, Selected Measures, Six Year
Table 4	Six Year per Cwt. Comparison, Same 26 Farms, Top 20%
Table 5	Selected Characteristics, Six Year Comparison, Same 26 Farms, Top 20%
Table 6	Six Year per Cwt. Comparison, Same 102 Farms, Remaining 80%
Table 7	Selected Characteristics, Six Year Comparison, Same 102 Farms, Remaining 80%
Table 8	“Legal 21” Farm Financial Ratios, Same 26 Farms, Top 20%
Table 9	“Legal 21” Farm Financial Ratios, Same 128 Farms

To utilize these tables, place your number for the appropriate benchmark next to or below the corresponding number for the appropriate year. Once all six years are recorded, than can compare your trend to the benchmark trend. If your trend is different than the industry, than can ask the question why, and if it is better or worse than the industry trend. If you are a DFBS cooperator, you can work with your extension educator to look at these trends and comparisons for all farms and your farm business.

These benchmarks and comparison are provided for use for comparison purposes only and represents the performance of those farms participating in the Dairy Farm Business Summary and Analysis Program in New York State. These numbers don’t represent the average for all dairy farms across New York and are from farms that are generally considered above average dairy farms in New York. No analysis or interpretation of these benchmarks and ratios is provided.

¹ PRO-DAIRY Program, Department of Animal Science, Cornell University, Ithaca, NY



Selected Characteristics, Six Year Comparison
Same 128 Farms

Table 1

New York State, Dairy Farm Business Summary & Analysis Program

	2013	2014	2015	2016	2017	2018	% Change
Size of Business							
average number of cows	720	763	803	844	891	947	31.5%
percent heifers to cows	87%	85%	85%	87%	87%	85%	
milk sold, pounds	18,502,093	19,521,827	20,559,603	22,193,735	23,166,516	24,459,516	32.2%
worker equivalent	15.9	17.0	17.8	18.1	18.8	19.4	
tillable acres per cow	2.11	2.06	2.06	2.03	1.97	1.92	-9.0%
corn grain acres per cow	0.21	0.19	0.19	0.16	0.16	0.24	
Rates of Production							
milk sold per cow, pounds	25,697	25,577	25,618	26,298	25,987	25,828	0.5%
cull rate	35%	34%	34%	34%	34%	32%	
net calf & cow sales, per cow	391	502	566	409	376	303	
Labor Efficiency							
cows per worker	45.2	44.8	45.2	46.5	47.4	48.9	8.2%
milk sold per worker, pounds	1,161,462	1,145,647	1,156,333	1,223,469	1,231,606	1,262,753	8.7%
Cost Control and Milk Price							
dairy feed & crop expense per cwt. milk	\$ 8.78	\$ 9.01	\$ 8.23	\$ 7.25	\$ 7.14	\$ 7.17	
labor and machinery costs per cow	\$ 1,743	\$ 1,743	\$ 1,831	\$ 1,754	\$ 1,689	\$ 1,745	
hired labor cost per cwt.	\$ 2.74	\$ 2.89	\$ 2.96	\$ 2.84	\$ 2.94	\$ 2.96	
labor cost per hired worker equivalent	\$ 37,843	\$ 38,723	\$ 39,920	\$ 40,525	\$ 42,225	\$ 43,468	14.9%
operating cost of producing milk per cwt.	\$ 16.31	\$ 17.01	\$ 15.55	\$ 14.48	\$ 14.79	\$ 15.01	
purch. input cost of producing milk per cwt.	\$ 17.87	\$ 18.68	\$ 17.24	\$ 16.20	\$ 16.56	\$ 16.71	
total cost of producing milk per cwt.	\$ 20.09	\$ 21.04	\$ 19.70	\$ 18.55	\$ 18.90	\$ 18.98	
net milk price per cwt.	\$ 20.85	\$ 24.52	\$ 17.37	\$ 16.14	\$ 17.38	\$ 16.08	
Capital Efficiency(average for year)							
farm capital per cow	\$ 10,805	\$ 11,489	\$ 12,117	\$ 12,150	\$ 12,141	\$ 11,773	9.0%
machinery and equipment per cow	\$ 1,764	\$ 1,893	\$ 2,000	\$ 1,965	\$ 1,896	\$ 1,817	
net reinvestment per cow	\$ (939)	\$ (1,315)	\$ (1,233)	\$ (911)	\$ (878)	\$ (572)	
Profitability							
net farm income without appreciation	\$ 703,757	\$ 1,312,737	\$ 222,143	\$ 197,326	\$ 441,030	\$ 134,694	
net farm income w/o apprec. per cow	\$ 977	\$ 1,720	\$ 277	\$ 234	\$ 495	\$ 142	
labor & management income per oper.	\$ 204,767	\$ 468,800	\$ (57,275)	\$ (71,110)	\$ 30,902	\$ (102,582)	
rate of return on equity capital w/o apprec.	10.5%	18.7%	0.9%	0.4%	3.6%	-0.7%	
rate of return on all capital w/o apprec.	8.3%	14.2%	1.6%	1.4%	3.8%	1.1%	
Financial Summary							
farm net worth, end of year	5,635,525	6,819,913	6,973,523	7,108,604	7,546,008	7,287,797	47.2%
debt to asset ratio	0.30	0.28	0.30	0.32	0.32	0.35	
farm debt per cow	\$ 3,377	\$ 3,407	\$ 3,726	\$ 3,887	\$ 3,956	\$ 3,996	18.4%
retained earnings	\$ 457,680	\$ 1,074,723	\$ (35,969)	\$ (38,313)	\$ 259,895	\$ (105,497)	\$1,612,519
valuation equity	\$ 33,749	\$ 99,771	\$ 68,640	\$ 44,674	\$ 121,697	\$ (215,410)	\$153,120

Table 2

Top 20% of Farms vs. Remaining 80% of Farms
Percent Change and Differences, Selected Measures
Same 128 Farms, 2013-2018
Dairy Farm Business Summary, New York State

	2013	2018	Change	Percent Change	Percent Difference	
					2013	2018
Average Herd Size, Milking & Dry						
Top 20%	1,108	1,686	578	52.2%	82.5%	122.1%
80%	607	759	152	25.0%		
Milk per Cow, Lbs.						
Top 20%	26,579	25,846	-733	-2.8%	5.2%	0.1%
80%	25,267	25,817	551	2.2%		
Milk Sold per Farm, Lbs.						
Top 20%	30,909,952	43,583,475	12,673,523	41.0%	101.5%	122.5%
80%	15,339,305	19,584,782	4,245,477	27.7%		
Cows per Worker						
Top 20%	46.7	52.1	5.36	11.5%	7.4%	10.1%
80%	43.5	47.3	3.78	8.7%		
Milk Sold per Worker, Lbs.						
Top 20%	1,303,118	1,346,000	42,882	3.3%	18.5%	10.3%
80%	1,099,592	1,220,236	120,644	11.0%		
Hired Labor Cost per Cwt.						
Top 20%	\$2.60	\$3.03	\$0.43	16.5%	-7.6%	3.6%
80%	\$2.81	\$2.92	\$0.11	4.0%		
Cost per Hired Worker						
Top 20%	\$37,900	\$44,157	\$6,257	16.5%	0.2%	2.5%
80%	\$37,818	\$43,070	\$5,252	13.9%		
Investment Per Cow						
Top 20%	\$10,116	\$11,003	\$887	8.8%	-9.2%	-9.9%
80%	\$11,141	\$12,209	\$1,068	9.6%		
Machinery Invest. per Cow						
Top 20%	\$1,505	\$1,493	-\$11.67	-0.8%	-20.4%	-25.4%
80%	\$1,890	\$2,001	\$110.69	5.9%		
Debt Per Cow, End of Year						
Top 20%	\$2,678	\$2,846	\$168.00	6.3%	-28.1%	-39.0%
80%	\$3,723	\$4,665	\$942.00	25.3%		
Net Worth, Beginning of 2013 to End of 2018						
Top 20%	\$8,044,390	\$13,756,729	\$5,712,339	71.0%	85.7%	144.0%
80%	\$4,331,179	\$5,638,854	\$1,307,675	30.2%		

Table 3

Top 20% of Farms vs. Remaining 80% of Farms
Selected Measures, Six Year Comparison
Same 128 Farms, 2013-2018
Dairy Farm Business Summary, New York State

	2013	2014	2015	2016	2017	2018
Net Investment Per Cow						
Top 20%	\$1,060	\$1,459	\$1,058	\$1,166	\$1,070	\$731
80%	\$904	\$1,241	\$1,327	\$773	\$771	\$482
Farm Capital per Cow						
Top 20%	\$10,116	\$10,781	\$11,215	\$11,259	\$11,367	\$11,003
80%	\$11,141	\$11,852	\$12,591	\$12,631	\$12,568	\$12,209
Tillable Acres per Cow						
Top 20%	1.94	1.82	1.80	1.82	1.76	1.70
80%	2.18	2.11	2.13	2.11	2.05	1.99
Corn Grain Acres per Cow						
Top 20%	0.14	0.15	0.17	0.14	0.12	0.23
80%	0.24	0.21	0.20	0.17	0.19	0.24
Crop Revenue, Per Cow						
Top 20%	\$192	\$149	\$86	\$51	\$158	\$162
80%	\$162	\$148	\$126	\$129	\$136	\$80
Cull Rate, Percent						
Top 20%	34%	32%	32%	34%	34%	30%
80%	36%	35%	35%	34%	34%	34%
Net Calf & Cow Income, per Cow(1)						
Top 20%	\$417	\$507	\$568	\$421	\$358	\$319
80%	\$388	\$500	\$564	\$404	\$385	\$294
Percent Heifers to Cows						
Top 20%	91%	84%	83%	84%	85%	81%
80%	86%	86%	87%	88%	89%	87%
Operating Cost to Produce Milk per Cwt.						
Top 20%	\$15.42	\$15.83	\$14.79	\$13.89	\$14.05	\$14.31
80%	\$16.78	\$17.64	\$15.96	\$14.81	\$15.20	\$15.41
Total Cost to Produce Milk per Cwt.						
Top 20%	\$18.77	\$19.42	\$18.52	\$17.56	\$17.83	\$17.98
80%	\$20.77	\$21.90	\$20.34	\$19.09	\$19.50	\$19.54
Net Farm Income Per Cow						
Top 20%	\$1,437	\$2,161	\$557	\$475	\$755	\$374
80%	\$785	\$1,494	\$130	\$104	\$351	\$11
Net Milk Price per Cwt.						
Top 20%	\$21.14	\$24.62	\$17.47	\$16.27	\$17.51	\$16.14
80%	\$20.70	\$24.46	\$17.31	\$16.06	\$17.31	\$16.04
Farm Operating Receipts per Cwt.						
Top 20%	\$24.86	\$28.87	\$21.47	\$19.82	\$21.53	\$20.21
80%	\$24.74	\$28.57	\$21.90	\$19.91	\$21.32	\$19.47
Working Capital as Percent of Expenses						
Top 20%	30%	40%	31%	28%	29%	30%
80%	21%	27%	20%	17%	16%	14%

(1) Net Calf & Cow Income, per Cow = cattle revenue plus calf revenue - purchased replacement - expansion cattle expense.



	2013	2014	2015	2016	2017	2018
Hired Labor Cost per Cwt.						
Top 20%	\$2.60	\$2.77	\$2.83	\$2.79	\$2.99	\$3.03
80%	\$2.81	\$2.95	\$3.03	\$2.86	\$2.92	\$2.92
Purchased Feed per Cwt.						
Top 20%	\$7.00	\$7.06	\$6.46	\$5.58	\$5.53	\$5.67
80%	\$7.02	\$7.39	\$6.63	\$5.82	\$5.79	\$5.83
Livestock Expenses, Total (2) per Cwt.						
Top 20%	\$3.03	\$3.16	\$3.24	\$3.08	\$3.15	\$3.14
80%	\$3.42	\$3.53	\$3.51	\$3.23	\$3.31	\$3.06
Machinery & Fuel Expenses (3) per Cwt.						
Top 20%	\$2.12	\$2.25	\$1.92	\$1.69	\$1.83	\$1.81
80%	\$2.47	\$2.60	\$2.20	\$1.91	\$2.07	\$1.99
Machinery Depreciation Expense per Cwt.						
Top 20%	\$0.78	\$0.85	\$0.87	\$0.85	\$0.89	\$0.84
80%	\$1.00	\$1.11	\$1.04	\$1.05	\$1.06	\$0.95
Crop Input Costs (4) per Cwt.						
Top 20%	\$1.21	\$1.19	\$1.13	\$1.02	\$1.00	\$1.00
80%	\$1.50	\$1.46	\$1.46	\$1.24	\$1.18	\$1.09
Additional Fixed Costs (5) per Cwt.						
Top 20%	\$1.55	\$1.75	\$1.58	\$1.36	\$1.39	\$1.39
80%	\$1.76	\$1.98	\$1.85	\$1.60	\$1.64	\$1.64
Interest Costs per Cwt.						
Top 20%	\$0.32	\$0.27	\$0.28	\$0.32	\$0.40	\$0.51
80%	\$0.53	\$0.50	\$0.53	\$0.61	\$0.72	\$0.82
Total Farm Operating Expenses per Cwt.						
Top 20%	\$18.28	\$18.86	\$17.80	\$16.23	\$16.69	\$16.99
80%	\$19.86	\$20.77	\$19.49	\$17.62	\$17.93	\$17.64
<p>(2) Livestock Expenses = sum of replacement livestock, breeding, vet, milk marketing, bedding, milking supplies, cattle lease, custom boarding, bST, livestock professional fees, and other livestock expenses categories</p> <p>(3) Machinery & Fuel Expenses = sum of machine hire, rent, & lease, machine repairs & parts, and fuel, oil, & grease expense categories</p> <p>(4) Crop Input Costs = sum of fertilizer & lime, seeds & plants, spray & other crop expenses, and crop, professional fees expense categories</p> <p>(5) Fixed Costs = sum of land, building & fence repair, taxes, rent & lease, insurance, utilities other professional fees, and miscellaneous expenses categories</p>						



Six Year Per Cwt. Comparison
Same 26 Farms, Top 20% Sorted by Return on Assets w/o Appreciation
 New York State, Dairy Farm Business Summary & Analysis Program

Table 4

	Year					
	2013	2014	2015	2016	2017	2018
number of cows	1,108	1,271	1,360	1,458	1,558	1,686
milk sales in pounds	30,909,952	33,377,935	35,707,557	39,032,683	41,028,994	43,583,475
milk per cow	26,579	26,254	26,247	26,767	26,342	25,846
RECEIPTS						
milk sales-\$	\$21.94	\$25.50	\$18.40	\$17.19	\$18.56	\$17.35
dairy cattle sales	\$1.42	\$2.02	\$1.84	\$1.67	\$1.50	\$1.39
dairy calf sales	\$0.16	\$0.25	\$0.38	\$0.20	\$0.20	\$0.07
other livestock sales	\$0.02	\$0.05	\$0.00	\$0.06	\$0.05	\$0.06
crop sales	\$0.69	\$0.57	\$0.33	\$0.19	\$0.60	\$0.63
government receipts	\$0.17	\$0.01	\$0.11	\$0.09	\$0.06	\$0.09
custom machine work	\$0.10	\$0.09	\$0.07	\$0.07	\$0.07	\$0.08
gas tax refund	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
other	\$0.36	\$0.37	\$0.35	\$0.36	\$0.49	\$0.55
non-cash transfer(subtract)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Farm operating receipts	\$24.86	\$28.87	\$21.47	\$19.82	\$21.53	\$20.21
EXPENSES						
Hired labor	\$2.60	\$2.77	\$2.83	\$2.79	\$2.99	\$3.03
Feed						
dairy grain & concentrate	\$7.00	\$7.06	\$6.46	\$5.58	\$5.53	\$5.67
dairy roughage	\$0.45	\$0.40	\$0.37	\$0.40	\$0.40	\$0.44
nondairy feed	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
professional nutritional services	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Machinery						
machine hire, rent & lease	\$0.35	\$0.45	\$0.43	\$0.41	\$0.42	\$0.42
machine repairs & parts	\$0.96	\$1.00	\$0.94	\$0.86	\$0.92	\$0.84
fuel, oil & grease	\$0.80	\$0.81	\$0.55	\$0.41	\$0.48	\$0.55



Table 4 Continued

Livestock	2013	2014	2015	2016	2017	2018
replacement livestock	\$0.03	\$0.01	\$0.00	\$0.01	\$0.01	\$0.04
breeding fees	\$0.19	\$0.20	\$0.20	\$0.19	\$0.21	\$0.20
veterinary & medicine	\$0.70	\$0.67	\$0.69	\$0.66	\$0.65	\$0.62
milk marketing	\$0.80	\$0.89	\$0.93	\$0.92	\$1.06	\$1.21
bedding	\$0.42	\$0.42	\$0.41	\$0.39	\$0.39	\$0.35
milking supplies	\$0.31	\$0.31	\$0.36	\$0.36	\$0.30	\$0.31
cattle leased	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.02
custom boarding	\$0.21	\$0.29	\$0.31	\$0.31	\$0.29	\$0.26
bST	\$0.19	\$0.20	\$0.19	\$0.12	\$0.04	\$0.00
livestock, professional fees	\$0.06	\$0.05	\$0.05	\$0.06	\$0.05	\$0.05
other livestock expense	\$0.09	\$0.10	\$0.08	\$0.05	\$0.11	\$0.08
Crops						
fertilizer & lime	\$0.52	\$0.46	\$0.48	\$0.38	\$0.37	\$0.40
seeds & plants	\$0.46	\$0.50	\$0.43	\$0.42	\$0.46	\$0.41
spray & other crop expense	\$0.20	\$0.22	\$0.21	\$0.18	\$0.16	\$0.18
crop, professional fees	\$0.02	\$0.01	\$0.01	\$0.04	\$0.01	\$0.01
Real estate						
land, build., fence repair	\$0.37	\$0.42	\$0.36	\$0.28	\$0.30	\$0.27
taxes	\$0.21	\$0.25	\$0.23	\$0.25	\$0.25	\$0.25
rent & lease	\$0.25	\$0.23	\$0.25	\$0.22	\$0.22	\$0.22
Other cash expense						
insurance	\$0.14	\$0.16	\$0.19	\$0.15	\$0.15	\$0.14
utilities	\$0.38	\$0.44	\$0.35	\$0.30	\$0.30	\$0.34
interest paid	\$0.32	\$0.27	\$0.28	\$0.32	\$0.40	\$0.51
other, professional fees	\$0.09	\$0.09	\$0.10	\$0.07	\$0.08	\$0.09
miscellaneous	\$0.11	\$0.15	\$0.10	\$0.08	\$0.08	\$0.08
Farm operating expenses	\$18.28	\$18.86	\$17.80	\$16.23	\$16.69	\$16.99
Expansion Cattle	\$0.06	\$0.33	\$0.06	\$0.29	\$0.33	\$0.18
Extraordinary Expense	\$0.00	\$0.02	\$0.00	\$0.00	\$0.01	\$0.00
Machinery Depreciation	\$0.78	\$0.85	\$0.87	\$0.85	\$0.89	\$0.84
Building Depreciation	\$0.59	\$0.58	\$0.62	\$0.68	\$0.74	\$0.75
Total Accrual Expenses	\$19.71	\$20.64	\$19.35	\$18.05	\$18.67	\$18.76
Net Farm Income w/o Appreciation	\$5.15	\$8.23	\$2.12	\$1.77	\$2.87	\$1.45



Selected Characteristics, Six Year Comparison
Same 26 Farms, Top 20%, Sorted by Return on Assets w/o Appreciation
 New York State, Dairy Farm Business Summary & Analysis Program

Table 5

	Year						Percent Change
	2013	2014	2015	2016	2017	2018	
Size of Business							
average number of cows	1,108	1,271	1,360	1,458	1,558	1,686	52.2%
average number of heifers	1,005	1,067	1,132	1,231	1,319	1,368	36.1%
percent heifers to cows	91%	84%	83%	84%	85%	81%	
milk sold, pounds	30,909,952	33,377,935	35,707,557	39,032,683	41,028,994	43,583,475	41.0%
worker equivalent	23.72	26.35	27.77	29.28	31.22	32.38	36.5%
total tillable acres	2,148	2,309	2,448	2,660	2,743	2,867	33.4%
Rates of Production							
milk sold per cow, pounds	26,579	26,254	26,247	26,767	26,342	25,846	-2.8%
hay DM per acre, tons	3.80	3.50	3.30	3.20	3.20	3.30	-13.2%
corn silage per acre, tons	18.40	19.20	19.00	16.80	18.90	19.20	4.3%
grain acres per cow	0.14	0.15	0.17	0.14	0.12	0.23	63.6%
cull rate	34%	32%	32%	34%	34%	30%	-11.8%
net calf & cow sales, per cow	\$ 417	\$ 507	\$ 568	\$ 421	\$ 358	\$ 319	
Labor Efficiency							
cows per worker	46.7	48.2	49.0	49.8	49.9	52.1	11.5%
milk sold per worker, pounds	1,303,118	1,266,715	1,285,832	1,333,083	1,314,189	1,346,000	3.3%
Cost Control and Milk Price							
grain & conc. purchased as % of milk sales	32%	28%	35%	32%	30%	33%	
dairy feed & crop expense per cwt. milk	\$ 8.65	\$ 8.65	\$ 7.95	\$ 6.99	\$ 6.93	\$ 7.10	
labor and machinery costs per cow	\$ 1,605	\$ 1,686	\$ 1,630	\$ 1,573	\$ 1,645	\$ 1,598	-0.4%
hired labor cost per cwt.	\$ 2.60	\$ 2.77	\$ 2.83	\$ 2.79	\$ 2.99	\$ 3.03	
labor cost per hired worker equivalent	\$ 37,900	\$ 38,900	\$ 40,296	\$ 40,809	\$ 42,753	\$ 44,157	16.5%
operating cost of producing milk per cwt.	\$ 15.42	\$ 15.83	\$ 14.79	\$ 13.89	\$ 14.05	\$ 14.31	
purch. input cost of prod. milk per cwt.	\$ 16.79	\$ 17.28	\$ 16.28	\$ 15.42	\$ 15.70	\$ 15.90	
total cost of producing milk per cwt.	\$ 18.77	\$ 19.42	\$ 18.52	\$ 17.56	\$ 17.83	\$ 17.98	
net milk price per cwt.	\$ 21.14	\$ 24.62	\$ 17.47	\$ 16.27	\$ 17.51	\$ 16.14	



Table 5 Continued

Capital Efficiency(average for year)	2013	2014	2015	2016	2017	2018	
farm capital per cow	\$ 10,116	\$ 10,781	\$ 11,215	\$ 11,259	\$ 11,367	\$ 11,003	8.8%
machinery and equipment per cow	\$ 1,505	\$ 1,628	\$ 1,750	\$ 1,693	\$ 1,598	\$ 1,493	-0.8%
asset turnover ratio	0.67	0.72	0.53	0.49	0.52	0.45	
net reinvestment per cow	\$ (1,060)	\$ (1,459)	\$ (1,058)	\$ (1,166)	\$ (1,070)	\$ (731)	
Profitability							
net farm income without appreciation	\$ 1,592,729	\$ 2,746,236	\$ 757,212	\$ 692,083	\$ 1,176,009	\$ 631,229	\$7,595,498
net farm income w/o apprec. per cow	\$ 1,437	\$ 2,161	\$ 557	\$ 475	\$ 755	\$ 374	
net farm income with appreciation	\$ 1,824,341	\$ 3,003,000	\$ 1,223,555	\$ 998,606	\$ 1,511,070	\$ 262,617	
net farm income with apprec. per cow	\$ 1,647	\$ 2,363	\$ 900	\$ 685	\$ 970	\$ 156	
labor & management income per oper.	\$ 499,722	\$ 955,649	\$ 68,339	\$ 27,374	\$ 218,943	\$ (24,459)	\$1,745,569
net non-farm withdrawals per cwt.	\$ 1.40	\$ 1.30	\$ 1.57	\$ 1.01	\$ 0.68	\$ 0.65	
rate of return on equity capital with apprec.	19.0%	27.0%	8.6%	6.3%	9.8%	0.3%	
rate of return on all capital with apprec.	14.8%	21.1%	7.3%	5.6%	8.3%	1.4%	
rate of return on equity capital w/o apprec.	16.3%	24.6%	4.6%	3.9%	7.3%	3.0%	
rate of return on all capital w/o apprec.	12.9%	19.3%	4.2%	3.7%	6.4%	3.4%	
Financial Summary							
farm net worth, end of year	\$ 9,256,560	\$ 11,565,084	\$ 12,015,419	\$ 12,723,679	\$ 13,717,160	\$ 13,756,729	71.0%
debt to asset ratio	0.26	0.23	0.23	0.25	0.26	0.27	
farm debt per cow	\$ 2,678	\$ 2,666	\$ 2,534	\$ 2,826	\$ 2,902	\$ 2,846	6.3%
debt coverage ratio	3.43	5.37	1.64	1.74	3.01	1.88	
working capital, as % of expenses	30%	40%	31%	28%	29%	30%	
retained earnings	\$ 1,158,496	\$ 2,313,761	\$ 197,835	\$ 299,004	\$ 895,957	\$ 345,786	\$5,210,839
valuation equity	\$ (28,721)	\$ (37,834)	\$ 184,169	\$ 24,247	\$ 62,093	\$ (544,865)	(\$340,911)



Six Year Per Cwt. Comparison
Same 102 Farms, Remaining 80% Sorted by ROA w/o Appreciation
 New York State, Dairy Farm Business Summary & Analysis Program

Table 6

	Year					
	2013	2014	2015	2016	2017	2018
number of cows	607	634	660	687	722	759
milk sales in pounds	15,339,305	15,989,878	16,698,360	17,901,455	18,613,335	19,584,782
milk per cow	25,267	25,230	25,288	26,044	25,792	25,817
RECEIPTS						
milk sales-\$	\$21.53	\$25.35	\$18.27	\$17.03	\$18.41	\$17.21
dairy cattle sales	\$1.59	\$1.81	\$1.91	\$1.47	\$1.52	\$1.10
dairy calf sales	\$0.16	\$0.32	\$0.46	\$0.19	\$0.21	\$0.09
other livestock sales	\$0.64	\$0.59	\$0.50	\$0.49	\$0.06	\$0.10
crop sales	\$0.64	\$0.59	\$0.50	\$0.49	\$0.53	\$0.31
government receipts	\$0.25	\$0.04	\$0.21	\$0.24	\$0.20	\$0.19
custom machine work	\$0.09	\$0.07	\$0.08	\$0.06	\$0.07	\$0.07
gas tax refund	\$0.01	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00
other	\$0.41	\$0.34	\$0.33	\$0.36	\$0.31	\$0.40
non-cash transfer(subtract)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Farm operating receipts	\$24.74	\$28.57	\$21.90	\$19.91	\$21.32	\$19.47
EXPENSES						
Hired labor	\$2.81	\$2.95	\$3.03	\$2.86	\$2.92	\$2.92
Feed						
dairy grain & concentrate	\$7.02	\$7.39	\$6.63	\$5.82	\$5.79	\$5.83
dairy roughage	\$0.33	\$0.35	\$0.28	\$0.33	\$0.30	\$0.29
nondairy feed	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
professional nutritional services	\$0.00	\$0.01	\$0.01	\$0.01	\$0.01	\$0.00
Machinery						
machine hire, rent & lease	\$0.52	\$0.54	\$0.56	\$0.51	\$0.57	\$0.52
machine repairs & parts	\$1.05	\$1.13	\$1.03	\$0.95	\$0.98	\$0.85
fuel, oil & grease	\$0.91	\$0.93	\$0.61	\$0.46	\$0.53	\$0.61



Table 6 Continued

	2013	2014	2015	2016	2017	2018
Livestock						
replacement livestock	\$0.08	\$0.07	\$0.05	\$0.04	\$0.06	\$0.02
breeding fees	\$0.22	\$0.25	\$0.23	\$0.23	\$0.23	\$0.21
veterinary & medicine	\$0.66	\$0.69	\$0.67	\$0.63	\$0.65	\$0.59
milk marketing	\$0.84	\$0.89	\$0.96	\$0.97	\$1.10	\$1.17
bedding	\$0.39	\$0.37	\$0.37	\$0.34	\$0.32	\$0.31
milking supplies	\$0.39	\$0.39	\$0.41	\$0.33	\$0.35	\$0.33
cattle leased	\$0.01	\$0.02	\$0.01	\$0.00	\$0.00	\$0.00
custom boarding	\$0.46	\$0.48	\$0.46	\$0.40	\$0.40	\$0.28
bST	\$0.19	\$0.21	\$0.19	\$0.14	\$0.05	\$0.00
livestock, professional fees	\$0.08	\$0.07	\$0.07	\$0.06	\$0.08	\$0.06
other livestock expense	\$0.09	\$0.11	\$0.10	\$0.09	\$0.09	\$0.09
Crops						
fertilizer & lime	\$0.68	\$0.60	\$0.63	\$0.46	\$0.40	\$0.39
seeds & plants	\$0.52	\$0.55	\$0.54	\$0.49	\$0.47	\$0.44
spray & other crop expense	\$0.25	\$0.28	\$0.25	\$0.26	\$0.26	\$0.22
crop, professional fees	\$0.05	\$0.03	\$0.04	\$0.03	\$0.05	\$0.03
Real estate						
land, build., fence repair	\$0.33	\$0.45	\$0.36	\$0.27	\$0.27	\$0.23
taxes	\$0.25	\$0.26	\$0.26	\$0.26	\$0.26	\$0.25
rent & lease	\$0.33	\$0.32	\$0.32	\$0.31	\$0.33	\$0.37
Other cash expense						
insurance	\$0.19	\$0.21	\$0.25	\$0.19	\$0.19	\$0.20
utilities	\$0.42	\$0.49	\$0.41	\$0.35	\$0.37	\$0.39
interest paid	\$0.53	\$0.50	\$0.53	\$0.61	\$0.72	\$0.82
other, professional fees	\$0.12	\$0.13	\$0.13	\$0.12	\$0.11	\$0.11
miscellaneous	\$0.12	\$0.13	\$0.12	\$0.10	\$0.11	\$0.10
Farm operating expenses	\$19.86	\$20.77	\$19.49	\$17.62	\$17.93	\$17.64
Expansion Cattle	\$0.13	\$0.08	\$0.10	\$0.07	\$0.18	\$0.03
Extraordinary Expense	\$0.00	\$0.00	\$0.01	\$0.00	\$0.02	\$0.02
Machinery Depreciation	\$1.00	\$1.11	\$1.04	\$1.05	\$1.06	\$0.95
Building Depreciation	\$0.65	\$0.67	\$0.75	\$0.77	\$0.76	\$0.79
Total Accrual Expenses	\$21.64	\$22.64	\$21.38	\$19.51	\$19.95	\$19.43
Net Farm Income w/o Appreciation	\$3.10	\$5.93	\$0.51	\$0.40	\$1.37	\$0.04



Selected Characteristics, Six Year Comparison
Same 102 Farms, Remaining 80% Sorted by ROA w/o Appreciation
 New York State, Dairy Farm Business Summary & Analysis Program

Table 7

	Year						Percent Change
	2013	2014	2015	2016	2017	2018	
Size of Business							
average number of cows	607	634	660	687	722	759	25.0%
average number of heifers	525	545	573	604	639	661	25.9%
percent heifers to cows	86%	86%	87%	88%	89%	87%	
milk sold, pounds	15,339,305	15,989,878	16,698,360	17,901,455	18,613,335	19,584,782	27.7%
worker equivalent	13.95	14.67	15.23	15.30	15.65	16.05	15.1%
total tillable acres	1,322	1,340	1,409	1,447	1,480	1,509	14.1%
Rates of Production							
milk sold per cow, pounds	25,267	25,230	25,288	26,044	25,792	25,817	2.2%
hay DM per acre, tons	3.40	3.40	3.30	3.20	3.50	3.20	-5.9%
corn silage per acre, tons	17.80	18.80	17.40	17.50	18.10	18.80	5.6%
grain acres per cow	0.24	0.21	0.20	0.17	0.19	0.24	-0.2%
cull rate, %	36%	35%	35%	34%	34%	34%	-5.6%
net calf & cow sales, per cow	\$ 388	\$ 500	\$ 564	\$ 404	\$ 385	\$ 294	
Labor Efficiency							
cows per worker	43.5	43.2	43.3	44.9	46.1	47.3	8.7%
milk sold per worker, pounds	1,099,592	1,089,971	1,096,412	1,170,030	1,189,350	1,220,236	11.0%
Cost Control and Milk Price							
grain & conc. purchased as % of milk sales	33.00	29.00	36.00	34.00	31.00	34.00	
dairy feed & crop expense per cwt. milk	\$ 8.85	\$ 9.20	\$ 8.37	\$ 7.39	\$ 7.26	\$ 7.21	
labor and machinery costs per cow	\$ 1,810	\$ 1,905	\$ 1,819	\$ 1,752	\$ 1,800	\$ 1,753	-3.1%
hired labor cost per cwt.	\$ 2.81	\$ 2.95	\$ 3.03	\$ 2.86	\$ 2.92	\$ 2.92	
labor cost per hired worker equivalent	\$ 37,818	\$ 38,633	\$ 39,729	\$ 40,372	\$ 41,926	\$ 43,070	13.9%
operating cost of producing milk per cwt.	\$ 16.78	\$ 17.64	\$ 15.96	\$ 14.81	\$ 15.20	\$ 15.41	
purch. input cost of prod. milk per cwt.	\$ 18.42	\$ 19.42	\$ 17.76	\$ 16.63	\$ 17.05	\$ 17.17	
total cost of producing milk per cwt.	\$ 20.77	\$ 21.90	\$ 20.34	\$ 19.09	\$ 19.50	\$ 19.54	
net milk price per cwt.	\$ 20.70	\$ 24.46	\$ 17.31	\$ 16.06	\$ 17.31	\$ 16.04	



Table 7 Continued

Capital Efficiency(average for year)	2013	2014	2015	2016	2017	2018	
farm capital per cow	\$ 11,141	\$ 11,852	\$ 12,591	\$ 12,631	\$ 12,568	\$ 12,209	9.6%
machinery and equipment per cow	\$ 1,890	\$ 2,028	\$ 2,132	\$ 2,112	\$ 2,061	\$ 2,001	5.9%
asset turnover ratio	0.58	0.65	0.47	0.43	0.46	0.40	
net reinvestment per cow	\$ (904)	\$ (1,241)	\$ (1,327)	\$ (773)	\$ (771)	\$ (482)	
Profitability							
net farm income without appreciation	\$ 476,202	\$ 947,336	\$ 85,753	\$ 71,211	\$ 253,682	\$ 8,127	
net farm income w/o apprec. per cow	\$ 785	\$ 1,494	\$ 130	\$ 104	\$ 351	\$ 11	
net farm income with appreciation	\$ 629,205	1,227,326	\$	\$ 231,456	\$ 492,941	\$ (60,870)	
net farm income with apprec. per cow	\$ 1,037	\$ 1,936	\$ 454	\$ 337	\$ 683	\$ (80)	
labor & management income per oper.	\$ 119,189	\$ 329,565	\$ (93,649)	\$ (98,398)	\$ (18,324)	\$ (122,079)	
net non-farm withdrawals per cwt.	\$ 1.29	\$ 1.18	\$ 1.08	\$ 1.10	\$ 0.84	\$ 1.17	
rate of return on equity capital with apprec.	11.0%	21.1%	2.7%	1.3%	5.6%	-4.1%	
rate of return on all capital with apprec.	8.5%	15.6%	2.9%	2.1%	5.1%	-0.8%	
rate of return on equity capital w/o apprec.	7.6%	15.7%	-1.1%	-1.5%	1.5%	-2.9%	
rate of return on all capital w/o apprec.	6.3%	11.8%	0.3%	0.3%	2.5%	-0.1%	
Financial Summary							
farm net worth, end of year	\$ 4,712,516	\$ 5,610,359	\$ 5,688,333	\$ 5,677,310	\$ 5,972,970	\$ 5,638,854	30.2%
debt to asset ratio	0.33	0.30	0.33	0.35	0.36	0.39	
farm debt per cow	\$ 3,723	\$ 3,781	\$ 4,373	\$ 4,472	\$ 4,551	\$ 4,665	25.3%
debt coverage ratio	1.87	3.24	0.79	0.80	1.33	0.60	
working capital, as % of expenses	21%	27%	20%	17%	16%	14%	
retained earnings	\$ 279,040	\$ 758,890	\$ (95,566)	\$ (124,295)	\$ 97,762	\$ (220,530)	\$695,300
valuation equity	\$ 49,673	\$ 134,847	\$ 39,191	\$ 49,881	\$ 136,890	\$ (131,431)	\$279,050



Table 8

"Legal 21" Farm Financial Ratios
Same 26 Farms, Top 20% Sorted by ROA w/o Appreciation, New York State, DFBS
2013-2018

	DFBS page	2013	2014	2015	2016	2017	2018	6 Year Average	Your Farm
Liquidity									
Current Ratio	7	3.32	4.04	3.54	3.26	3.46	3.58	3.52	
Working Capital	7	\$1,856,912	\$2,735,038	\$2,130,781	\$1,982,882	\$2,242,122	\$2,418,669	\$2,189,547	
As % of Total Expense	7	30.0%	40.0%	31.0%	28.0%	29.0%	30.0%	31.6%	
As % of Gross Revenue ¹	calc	24.2%	28.4%	27.8%	25.6%	25.4%	27.5%	26.3%	
Solvency									
Debt/Asset Ratio	7	0.26	0.23	0.23	0.25	0.26	0.27	0.25	
Equity/Asset Ratio	7	0.74	0.77	0.77	0.75	0.74	0.73	0.75	
Debt/Equity Ratio(Leverage Ratio)	7	0.35	0.29	0.29	0.34	0.34	0.36	0.32	
Profitability									
Net Farm Income w/o Apprec. (Per Cow)	1	\$1,370	\$2,160	\$557	\$475	\$755	\$374	\$1,063	
ROA w/o Apprec.	4	12.9%	19.3%	4.2%	3.7%	6.4%	3.4%	9.3%	
ROE w/o Apprec.	4	16.3%	24.6%	4.6%	3.9%	7.3%	3.0%	11.3%	
Operating Profit Margin Ratio ²	calc	0.20	0.27	0.08	0.08	0.13	0.07	0.152	
EBITDA(Per Cow) ³	calc	\$1,665	\$2,454	\$867	\$826	\$1,154	\$788	\$1,393	
Repayment Capacity									
Capital Debt Repayment Capacity(per cow) ⁴	calc	\$1,445	\$2,266	\$610	\$700	\$1,111	\$748	\$1,227	
Capital Debt Repayment Margin(per cow) ⁵	calc	\$1,024	\$1,845	\$238	\$298	\$742	\$351	\$829	
Replacement Margin(per cow) ⁶	calc	\$1,238	\$2,044	\$382	\$472	\$877	\$532	\$1,003	
Term Debt Coverage Ratio	1	3.43	5.37	1.64	1.74	3.01	1.88	3.04	
Replacement Margin Coverage Ratio ⁷	calc	2.3	3.5	1.0	1.1	1.8	1.2	1.96	

Financial Efficiency

Table 8 Continued

Asset Turnover Ratio ⁸	14	0.67	0.72	0.53	0.49	0.52	0.45	0.59
Operating Expense Ratio	14	0.72	0.66	0.82	0.82	0.77	0.82	0.76
Depreciation Expense Ratio	14	0.06	0.05	0.07	0.08	0.08	0.08	0.07
Interest Expense Ratio	14	0.01	0.01	0.01	0.02	0.02	0.03	0.01
Net Farm Income from Operations Ratio	4	0.21	0.29	0.10	0.09	0.13	0.07	0.16

1 Calculated utilizing gross income instead of value of farm production. $(\text{Current Assets} - \text{Current Liabilities}) / \text{Gross Receipts} * 100$

2 $(\text{Net Farm Income} + \text{Interest Paid} - \text{Unpaid Family Labor} - \text{Owner Value}) / \text{Gross Revenue}$

3 $(\text{Net Farm Income} + \text{Depreciation} + \text{Interest} - \text{Value of Unpaid Owner Labor \& Management}) / \text{Average Cows}$

4 $(\text{Net Farm Income} + \text{Depreciation} + \text{Net Non-Farm Income} - \text{Non-Farm Cash Expenses} + \text{Interest Paid on Term Loans}) / \text{Average Cows}$

5 $(\text{Capital Debt Repayment Capacity} - \text{Scheduled Principle and Interest on Term Loans}) / \text{Average Cows}$

6 $(\text{Capital Debt Repayment Capacity} - \text{Unfunded(cash) Capital Replacement Allowance}) / \text{Annual machinery depreciation expense}$ utilized to represent un-funded capital replacement requirement.

7 $(\text{Capital Debt Repayment Capacity}) / (\text{Scheduled Principle \& Interest on Term Loans} + \text{Unfunded(cash) Capital Replacement Allowance})$

8 Utilizing Gross Farm Income to calculate instead of value of farm production

Source: Farm Financial Ratios and Guidelines, Farm Financial Standards Council, 2014



Table 9

**"Legal 21" Farm Financial Ratios
Same 128 Farms, New York State, DFBS
2013-2018**

	DFBS page	2013	2014	2015	2016	2017	2018	6 Year Average	Your Farm
Liquidity									
Current Ratio	7	2.62	3.1	2.53	2.21	2.23	2.16	2.48	
Working Capital	7	\$944,694	\$1,345,472	\$1,011,844	\$871,108	\$932,772	\$913,729	\$1,003,270	
As % of Total Expense	7	24.0%	31.0%	24.0%	21.0%	21.0%	19.0%	0.23	
As % of Gross Revenue ¹	calc	20.6%	24.0%	22.6%	19.7%	18.8%	18.9%	0.21	
Solvency									
Debt/Asset Ratio	7	0.3	0.28	0.3	0.32	0.32	0.35	0.31	
Equity/Asset Ratio	7	0.70	0.72	0.70	0.68	0.68	0.65	0.69	
Debt/Equity Ratio(Leverage Ratio)	7	0.44	0.38	0.43	0.47	0.48	0.53	0.46	
Profitability									
Net Farm Income w/o Apprec. (Per Cow)	1	\$977	\$1,720	\$277	\$234	\$495	\$142	\$641	
ROA w/o Apprec.	4	8.3%	14.2%	1.6%	1.4%	3.8%	1.1%	0.05	
ROE w/o Apprec.	4	10.5%	18.7%	0.9%	0.4%	3.6%	-0.7%	0.06	
Operating Profit Margin Ratio ²	calc	0.14	0.22	0.03	0.03	0.08	0.03	0.09	
EBITDA(Per Cow) ³	calc	\$1,303	\$2,061	\$626	\$625	\$915	\$569	\$1,016	
Repayment Capacity									
Capital Debt Repayment Capacity(per cow) ⁴	calc	\$1,154	\$1,941	\$501	\$540	\$904	\$509	\$925	
Capital Debt Repayment Margin(per cow) ⁵	calc	\$652	\$1,436	\$3	\$32	\$388	-\$32	\$413	
Replacement Margin(per cow) ⁶	calc	\$916	\$1,680	\$249	\$283	\$645	\$274	\$675	
Term Debt Coverage Ratio	1	2.30	3.84	1.01	1.06	1.75	0.94	1.82	
Replacement Margin Coverage Ratio ⁷	calc	1.6	2.5	0.7	0.7	1.2	0.7	1.21	

Financial Efficiency

Table 9 Continued

Asset Turnover Ratio ⁸	14	0.61	0.67	0.49	0.45	0.48	0.42	0.52	
Operating Expense Ratio	14	0.77	0.69	0.85	0.84	0.8	0.85	0.80	
Depreciation Expense Ratio	14	0.06	0.06	0.08	0.09	0.08	0.09	0.08	
Interest Expense Ratio	14	0.02	0.01	0.02	0.03	0.03	0.04	0.03	
Net Farm Income from Operations Ratio	4	0.15	0.23	0.05	0.04	0.09	0.03	0.10	

1 Calculated utilizing gross income instead of value of farm production. $(\text{Current Assets} - \text{Current Liabilities}) / \text{Gross Receipts} * 100$

2 $(\text{Net Farm Income} + \text{Interest Paid} - \text{Unpaid Family Labor} - \text{Owner Value}) / \text{Gross Revenue}$

3 $(\text{Net Farm Income} + \text{Depreciation} + \text{Interest} - \text{Value of Un-Paid Owner Labor \& Management}) / \text{Average Cows}$

4 $(\text{Net Farm Income} + \text{Depreciation} + \text{Net Non-Farm Income} - \text{Non-Farm Cash Expenses} + \text{Interest Paid on Term Loans}) / \text{Average Cows}$

5 $(\text{Capital Debt Repayment Capacity} - \text{Scheduled Principle and Interest on Term Loans}) / \text{Average Cows}$

6 $(\text{Capital Debt Repayment Capacity} - \text{Unfunded(cash) Capital Replacement Allowance})$. Annual machinery depreciation expense utilized to represent un-funded capital replacement requirement.

7 $(\text{Capital Debt Repayment Capacity}) / (\text{Scheduled Principle \& Interest on Term Loans} + \text{Unfunded(cash) Capital Replacement Allowance})$

8 Utilizing Gross Farm Income to calculate instead of value of farm production

Source: Farm Financial Ratios and Guidelines, Farm Financial Standards Council, 2014

