



MINNESOTA STATE

Farm Business Management Program Database 23rd Annual

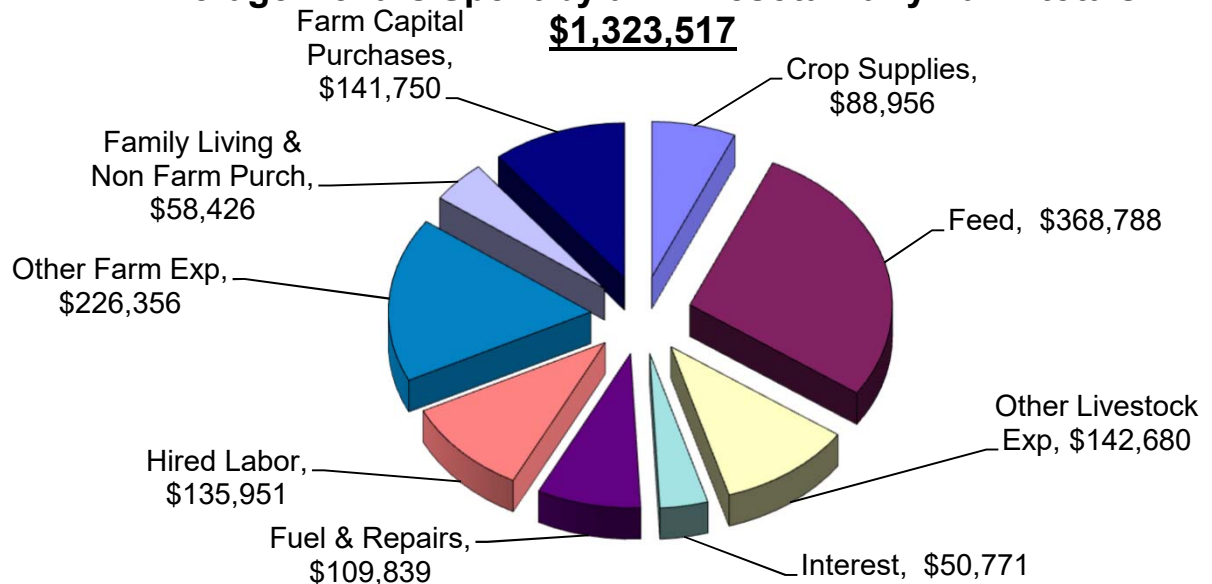
Dairy Farm Sort - 2019

*Financial Sort By Gross Revenue & Enterprise Sort Data by Herd Size
Selected Production Practice Sorts, 5-yr & Long Term Trends of Selected Data*

April, 2020

Average Dollars Spent by a Minnesota Dairy Farm totals

\$1,323,517



In Cooperation with the Center for Farm Financial Management, University of Minnesota
Compiled by Nathan Converse and DelRay Lecy

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Farm Business Management Website: agcentric.org or centerofagriculture.org

A Brief Overview of 2019

This special report for dairy provides summary information for dairy producers in the Minnesota State Farm Business Management (FBM) Database.

Based on the graphic on the cover, over a 40 year farming career, each dairy farmer would spend \$52,940,680. Based on that same graphic, the farms in this report spent \$389,113,998 in their greater communities in 2019. The majority of the money is spent locally, including businesses and cooperatives; demonstrating the vital importance of farming on the economy of Minnesota.

2019 was a tale of two halves. The first 6 months of the year were similar to 2018 with Class 3 prices averaging \$15.25. In July, Class 3 prices rose and finished the year strong. The July to December futures averaged \$18.67, \$3.42 higher than the 1st 6 months. The increased milk price along with support from Government payments led to an increase in dairy farms profits in 2019. The median dairy farm earned \$65,100 up from \$11,722 in 2018.

- The average price received for milk increased by 13% from \$16.44 in 2018 to \$18.64 in 2019
- The average cost of production including all expenses was \$17.65, up from \$17.29 in 2018.
- Dairy producers showed a profit of \$0.95 per hundred pounds of milk, or about \$233 per cow.
- The average dairy farm milked 235 cows, which is up from an average of 228 cows in 2018.
- The average milk production was 24,390 pounds, up from 23,975 pounds in 2018.

Term Debt Coverage Ratio Trends			
2016	2017	2018	2019
0.89	1.2	0.61	1.52

While overall term debt coverage ratios improved, 33% of farms still showed negative debt repayment margins. This impact was felt most by the smaller herds with less than \$500,000 gross income. These smaller herds are carrying a significantly higher amount of term debt per dollar of cash earnings. This is evident in the Term Debt to EBITDA (Earnings before interest, taxes, depreciation, and amortization) ratio listed in the table below:

Gross Farm Income	100K-250K	250K-500K	500K-1M	1M-2M	> 2M
Approx. Herd Size	< 75	75 – 125	125 – 200	200 – 400	>400
Term Debt to Earnings	7.89	5.39	4.11	3.51	2.71

Larger farms showed some benefits of scale. While the mid-sized farms in the \$250,001-1,000,000 Gross farm income range showed the lowest operating expense ratio, the larger farms showed the strongest Operating Profit Margin and Term Debt Coverage ratios. These large farms also exceeded the rest of the group in Asset Turnover Rate. This led to the large farms group leading in earned net worth change.

This special report is designed to provide an overview of both the whole farm financial picture for dairy operations, and provide insight into the dairy enterprise based on herd size. Pages 1 and 2 provide financial information based on the size of the business using Gross Farm Income. Pages 3 and 4 provide enterprise information for the various herd sizes.

In cooperation with the Minnesota Department of Agriculture, we have estimated that the data in this report represents the following percentage of dairy herds in the state of Minnesota:

Herd Size	All	< 50 Cows	51-100	101-200	201-500	>500
	11.7%	3+%	8+%	24+%	26+%	26+%

General Financial Summary Farm Business Management Program Database (Dairy Farms Sorted by Gross Farm Income, includes Organic and Organic Transition)

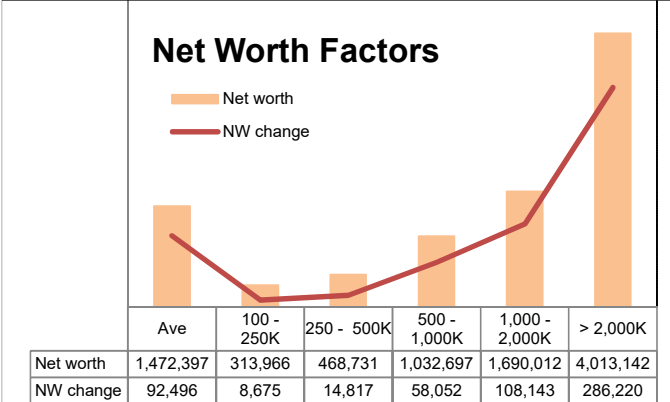
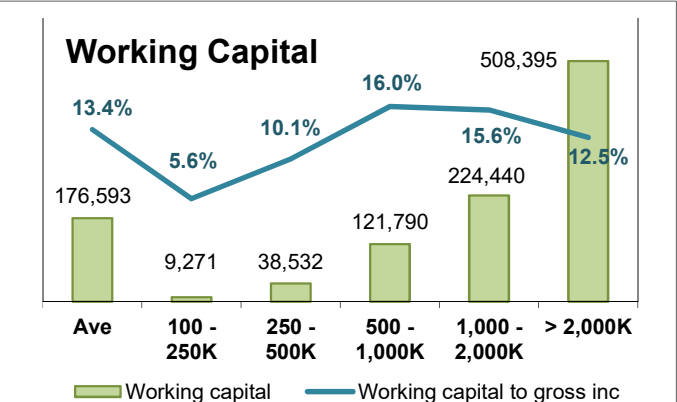
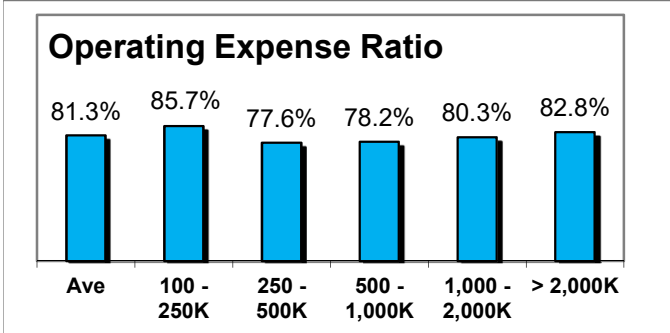
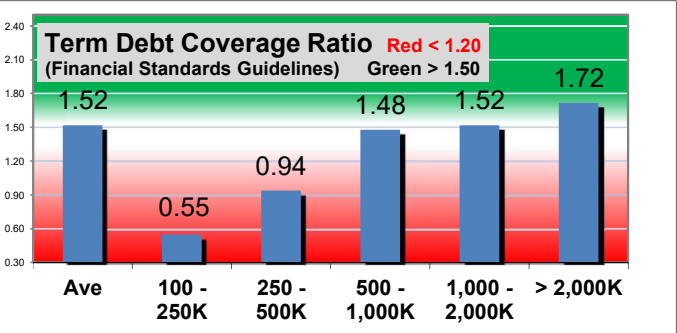
	Avg. Of All Farms	100,001 - 250,000	250,001 - 500,000	500,001 - 1,000,000	1,000,001 - 2,000,000	Over 2,000,000
Number of farms	290	39	60	80	53	53
<u>Income Statement</u>						
Gross cash farm income	1,288,692	172,387	384,349	734,925	1,423,800	3,950,606
Total cash farm expense	1,134,139	149,239	329,224	636,040	1,240,598	3,515,364
Net cash farm income	154,553	23,148	55,125	98,885	183,202	435,242
Average net farm income	121,291	2,638	34,798	78,796	125,234	380,108
Median net farm income	65,100	6,379	36,495	75,008	110,639	258,107
<u>Solvency (end of year at market)</u>						
Total assets	2,582,420	583,217	1,039,199	1,858,199	3,051,438	6,625,134
Total liabilities	1,110,023	269,251	570,468	825,502	1,361,426	2,611,992
Net worth	1,472,397	313,966	468,731	1,032,697	1,690,012	4,013,142
Total net worth change	92,496	8,675	14,817	58,052	108,143	286,220

Financial Standards Measures

Farm Business Management Program Database

(Dairy Farms Sorted by Gross Farm Income, includes Organic and Organic Transition)

	Avg. Of All Farms	100,000 - 250,000	250,001 - 500,000	500,001 - 1,000,000	1,000,001 - 2,000,000	Over 2,000,000
Number of farms	290	39	60	80	53	53
Liquidity						
Current ratio	1.75	1.18	1.38	1.82	1.93	1.76
Working capital	176,593	9,271	38,532	121,790	224,440	508,395
Working capital to gross inc	13.4%	5.6%	10.1%	16.0%	15.6%	12.5%
Solvency (market)						
Farm debt to asset ratio	44%	51%	58%	47%	46%	40%
Farm equity to asset ratio	56%	49%	42%	53%	54%	60%
Change in total net worth %	7%	3%	3%	6%	7%	8%
Profitability (cost)						
Rate of return on farm assets	4.6%	-2.6%	2.5%	3.8%	3.9%	6.2%
Rate of return on farm equity	4.6%	-9.2%	-0.7%	3.2%	3.2%	7.0%
Operating profit margin	11.9%	-11.2%	8.7%	11.9%	10.8%	13.5%
Net farm income	121,291	2,638	34,798	78,796	125,234	380,108
EBIDTA	245,621	23,932	85,778	165,458	282,354	698,015
Repayment Capacity						
Capital debt repayment capacity	194,673	15,266	57,607	129,466	224,595	567,457
Capital debt repayment margin	66,273	-12,443	-3,944	41,800	77,168	236,966
Replacement margin	41,537	-17,810	-10,462	20,771	48,683	173,359
Term debt coverage ratio	1.52	0.55	0.94	1.48	1.52	1.72
Replacement coverage ratio	1.27	0.46	0.85	1.19	1.28	1.44
Efficiency						
Asset turnover rate (cost)	39.0%	23.7%	29.0%	32.1%	35.9%	45.9%
Operating expense ratio	81.3%	85.7%	77.6%	78.2%	80.3%	82.8%
Depreciation expense ratio	5.6%	7.0%	6.9%	6.6%	6.7%	4.7%
Interest expense ratio	3.9%	5.7%	6.9%	4.7%	4.3%	3.2%
Net farm income ratio	9.2%	1.7%	8.6%	10.5%	8.7%	9.3%

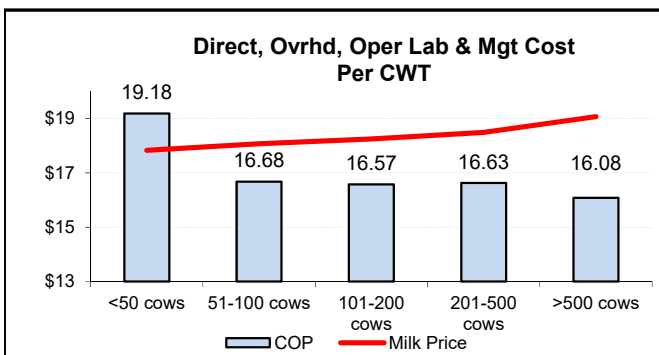
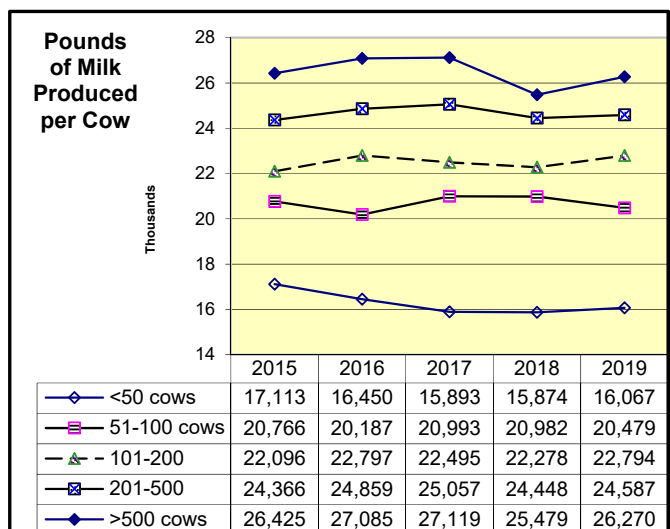
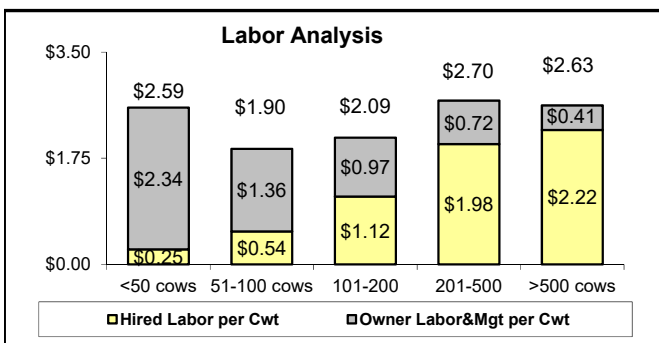
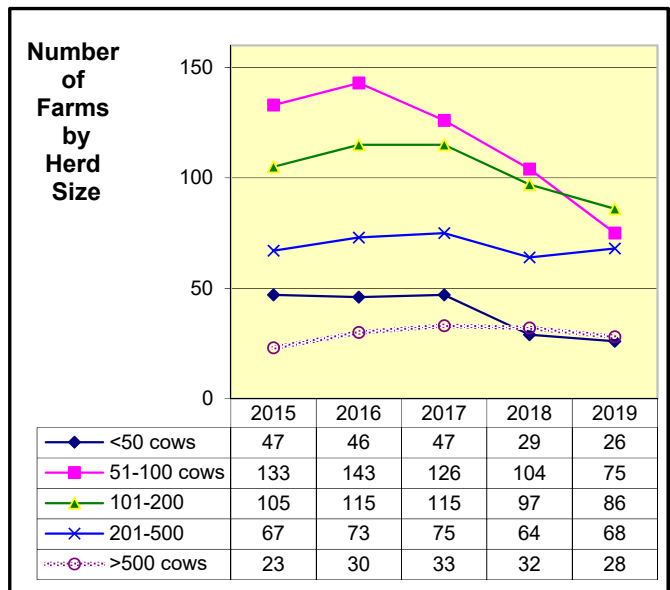
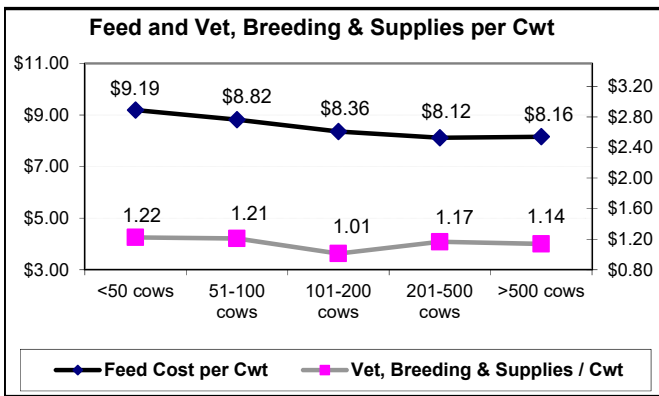


State Database Dairy Cow Enterprise (Excludes Organic and Organic Transition)	Sorted by Average Number of Dairy Cows					
	Average	Up to 50 Cows	51 to 100 Cows	101 to 200 Cows	201 To 500 Cows	Over 500 Cows
	***** Per Cow *****					
Number Of Farms	283	26	75	86	68	28
Milk sold (hd)	4,520.03	2,838.96	3,667.86	4,137.95	4,512.17	4,985.75
Dairy Calves sold (hd)	44.28	45.50	24.30	70.66	39.06	39.86
Transferred out (hd)	38.28	62.73	58.84	43.85	38.20	29.78
Cull sales (hd)	200.40	172.64	206.18	212.57	204.77	190.20
Other income (includes gov. payments)	140.90	181.24	186.23	160.38	173.15	91.07
Purchased (hd)	-43.57	-78.36	-31.51	-33.37	-43.01	-50.62
Transferred in (hd)	-62.06	-104.94	-118.21	-82.72	-73.95	-26.60
Inventory change (hd)	37.33	-51.52	-39.38	-43.60	30.20	106.05
Dairy repl net cost	-637.34	-369.91	-524.40	-616.74	-595.59	-720.66
Gross margin	4,238.25	2,696.33	3,429.91	3,848.99	4,284.99	4,644.84
Direct Expenses						
Protein Vit Minerals (lb.)	721.91	396.42	623.73	639.85	685.30	831.12
Complete Ration (lb.)	338.79	80.06	213.61	318.72	359.63	370.30
Corn (bu.)	244.08	208.46	213.73	201.91	231.48	284.90
Corn Silage (lb.)	312.57	241.99	261.02	294.70	317.14	332.47
Hay, Alfalfa (lb.)	187.02	260.98	310.40	219.49	209.32	119.82
Haylage, Alfalfa (lb.)	117.92	137.35	92.95	106.05	113.98	132.35
Other feed stuffs (lb)	87.66	151.06	90.94	124.81	79.73	72.24
Breeding fees	46.73	27.44	46.57	43.29	42.27	53.14
Veterinary	106.16	54.41	87.54	85.75	112.28	117.66
Supplies	122.84	114.72	113.50	101.75	132.03	128.15
Fuel & oil	81.08	61.36	62.74	83.83	82.57	83.42
Repairs	155.77	117.56	128.22	161.41	153.90	162.37
Custom hire	64.40	40.06	29.50	40.64	56.93	92.00
Hired labor	323.44	15.71	45.20	129.41	307.22	512.95
Hauling, & Trucking	95.89	94.60	105.98	80.58	84.61	111.17
Marketing	49.06	47.58	38.75	50.19	48.08	51.75
Bedding	78.01	32.77	44.06	76.47	87.04	80.63
Total direct expenses	3,223.18	2,228.91	2,593.84	2,849.87	3,201.65	3,617.27
Return over direct expense	1,015.07	467.42	836.07	999.13	1,083.34	1,027.57
Overhead Expenses						
Hired labor	115.22	24.22	65.82	125.14	180.40	68.95
Building & Machinery leases	50.14	4.04	26.55	31.64	66.95	52.36
Utilities	64.03	60.71	91.98	78.52	59.29	54.43
Interest	99.96	121.63	86.10	114.88	119.79	77.53
Mach & bldg depreciation	186.83	148.50	171.57	233.24	183.89	170.74
Miscellaneous	23.03	15.22	25.65	30.89	25.56	16.53
Total overhead expenses	611.76	477.61	542.43	706.43	709.83	500.17
Total dir & ovhd expenses	3,834.94	2,706.52	3,136.27	3,556.29	3,911.48	4,117.44
Net return	403.31	-10.19	293.64	292.70	373.51	527.40
Labor & management charge	170.72	375.38	278.69	221.78	176.47	106.58
Net return over lbr & mgt	232.60	-385.57	14.94	70.92	197.04	420.82
Cost of Production per CWT						
Total direct expense per cwt.	13.22	13.87	12.67	12.50	13.02	13.77
Total dir& ovhd expense per cwt.	15.72	16.85	15.31	15.60	15.91	15.67
With other revenue adjustments	16.95	17.95	16.61	16.93	16.92	17.03
With labor and management	17.65	20.28	17.97	17.91	17.63	17.43
Est. labor hours per unit	37.64	46.85	32.54	32.84	39.00	39.71
Other Information						
Avg. number of Cows	234.7	38.9	77.1	149.1	318.9	897.2
Milk produced per Cow	24,390	16,067	20,479	22,794	24,587	26,270
Lbs of protein & fat per Cow	1,608	1,136	1,495	1,591	1,730	1,901
Turnover rate	37.2	43.4	36.8	38.5	36.7	36.9
Cows milking per unit	24	10	13	18	27	36
Feed cost per day	5.51	4.04	4.95	5.22	5.47	5.87
Feed cost per cwt of milk	8.24	9.19	8.82	8.36	8.12	8.16
Feed cost per Cow	2,009.97	1,476.31	1,806.38	1,905.54	1,996.58	2,143.20
Avg. milk price per cwt.	18.64	17.83	18.07	18.25	18.49	19.07
Milk price / feed margin	10.40	8.64	9.25	9.89	10.37	10.91

Selected Dairy Enterprise Factors from the Farm Business Management Program Database

(excludes Organic and Organic Transition)

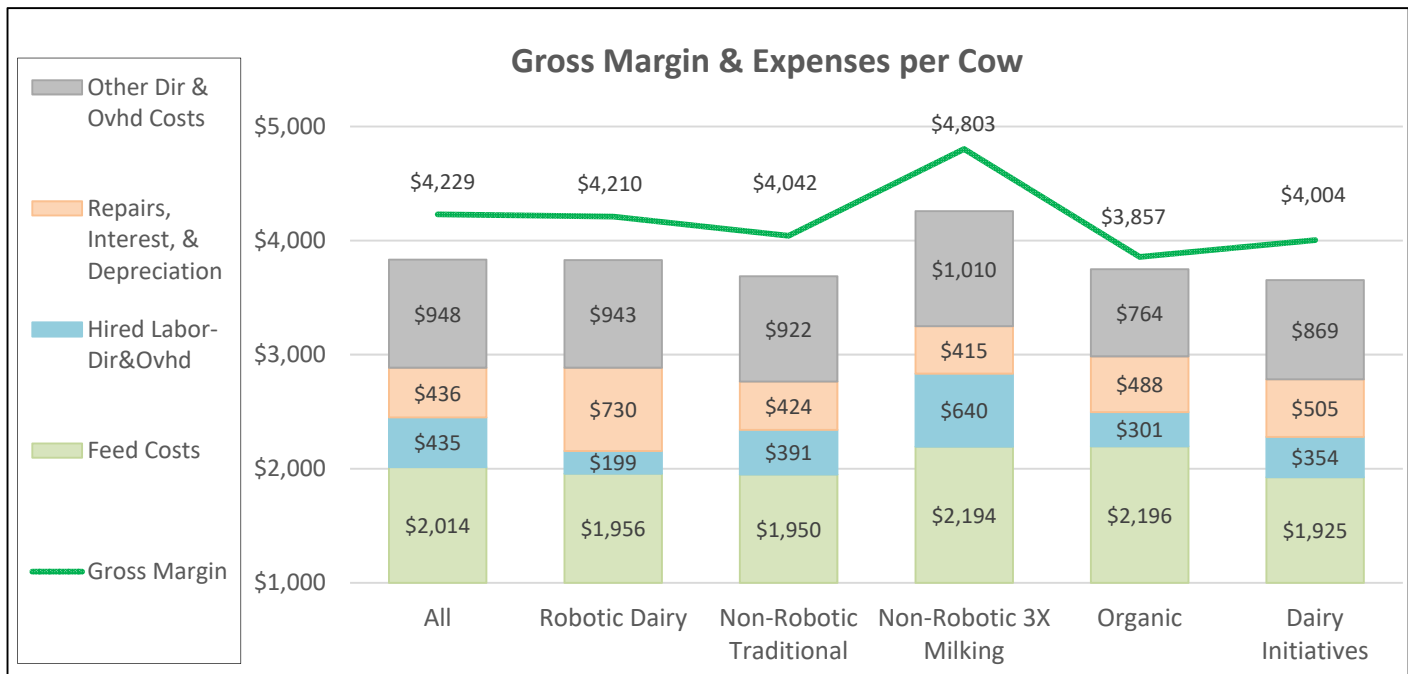
Herd Size	State Ave.	up to 50 cows	51-100 cows	101-200 cows	201-500 cows	over 500 cows
Number of Farms	283	26	75	86	68	28
Ave # of Cows	234.7	38.9	77.1	149.1	318.9	897.2
Milk Prod. Per Cow	24,390	16,067	20,479	22,794	24,587	26,270
Feed Cost per Cwt	\$8.24	\$9.19	\$8.82	\$8.36	\$8.12	\$8.16
Interest per Cwt	\$0.41	\$0.76	\$0.42	\$0.50	\$0.49	\$0.30
Vet, Breeding & Supplies / Cwt	\$1.13	\$1.22	\$1.21	\$1.01	\$1.17	\$1.14
Hired Labor per Cwt	\$1.80	\$0.25	\$0.54	\$1.12	\$1.98	\$2.22
Deprec/Lease per Cwt	\$0.97	\$0.95	\$0.97	\$1.16	\$1.02	\$0.85
Milk Price per Cwt	\$18.64	\$17.83	\$18.07	\$18.25	\$18.49	\$19.07
Dir & Ovhd Cost per Cwt	\$15.70	\$16.85	\$15.31	\$15.60	\$15.91	\$15.67
Return over Dir & Ovhd per Cow	\$403	-\$10	\$294	\$293	\$374	\$527
Herd Profit over Dir&Ovhd	\$94,657	-\$396	\$22,640	\$43,642	\$119,112	\$473,183
Owner Labor&Mgt per Cwt	\$0.70	\$2.34	\$1.36	\$0.97	\$0.72	\$0.41
Net per Cow after Labor&Mgt	\$233	-\$386	\$15	\$71	\$197	\$421
Herd Profit over Labor&Mgt	\$54,589	-\$14,999	\$1,153	\$10,574	\$62,836	\$377,560



Additional Selected Sorts within the Dairy Enterprise

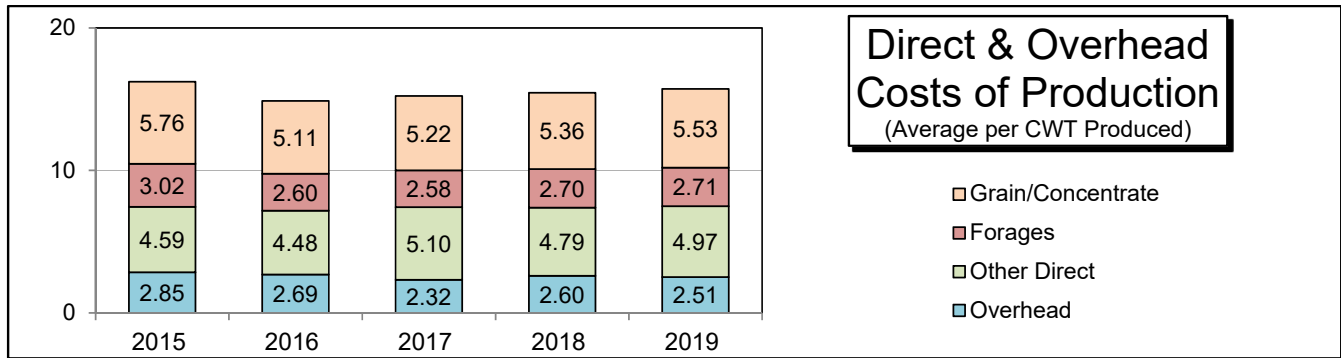
The State Database provides the opportunity to dig deeper into the data using special markers on farms with different practices. Using the FINPACK & RankEM Central software from the Center for Farm Financial Management, specific production practices can be included or excluded from a given sort. This enables selected practices to be compared. Below is a sample of the sort options which provide another comparative look at Minnesota's State Dairy Data.

Sort - Includes	All	Robotic Dairy	Non-Robotic Traditional	Non-Robotic 3X Milking	Organic	Dairy Initiatives
Number of Farms	299	23	229	28	16	79
Number of Cows	228	193	198	587	101	193
Milk Produced per Cow	24,143	24,775	23,429	27,032	13,966	23,370
Milk Sold	\$4,512.78	\$4,453.20	\$4,336.81	\$5,058.60	\$4,213.68	\$4,281.57
Gross Margin	\$4,229.24	\$4,210.33	\$4,041.81	\$4,802.79	\$3,857.21	\$4,004.25
Feed Cost per Cow	\$2,014.36	\$1,956.24	\$1,949.84	\$2,193.56	\$2,195.64	\$1,924.76
Breeding Fees	\$46.17	\$44.82	\$47.77	\$44.65	\$23.01	\$36.63
Veterinary	\$104.45	\$101.88	\$99.92	\$125.53	\$34.19	\$94.12
Repairs	\$148.02	\$152.69	\$149.89	\$170.97	\$168.92	\$160.79
Hired Labor-Dir&Ovhd	\$435.41	\$199.22	\$391.12	\$639.84	\$301.07	\$354.04
Interest	\$100.78	\$214.09	\$99.35	\$71.84	\$134.94	\$121.65
Depreciation	\$186.77	\$363.12	\$175.10	\$172.24	\$184.41	\$222.55
Total Dir & Ovhd Cost	\$3,832.91	\$3,828.11	\$3,687.18	\$4,257.95	\$3,749.19	\$3,652.50
Net Return	\$396.33	\$382.22	\$354.62	\$544.84	\$108.02	\$351.75
Cost of Prod - O&D	\$15.88	\$15.45	\$15.74	\$15.75	\$26.85	\$15.63
Culling Percentage	30.4	31.6	30.0	31.9	22.9	29.4
Turnover Rate	37.0	37.8	37.1	37.4	28.3	36.2
Lb. of Milk Sold/FTE	1,785,213	2,482,737	1,790,800	1,722,381	1,022,395	1,807,249
Feed Cost per CWT	\$8.34	\$7.90	\$8.13	\$8.11	\$15.72	\$8.24
Average Milk Price	\$18.81	\$18.05	\$18.61	\$18.87	\$30.80	\$18.49

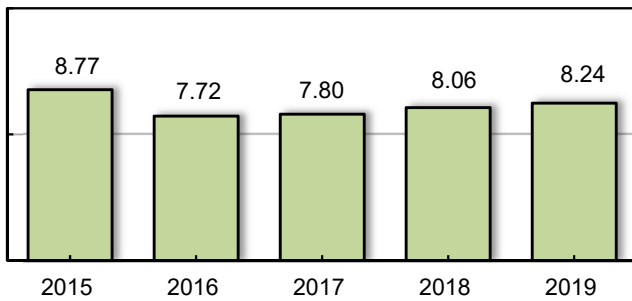


Summary of Selected Dairy Enterprise Factors - Average Farm Data

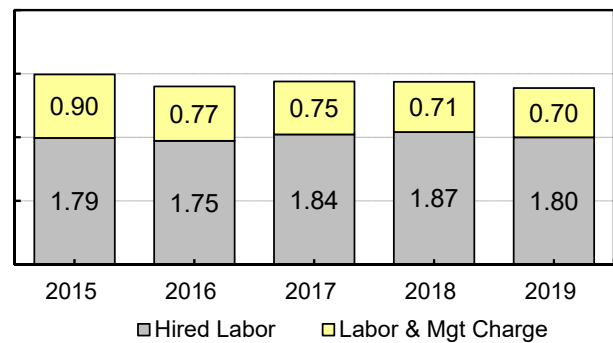
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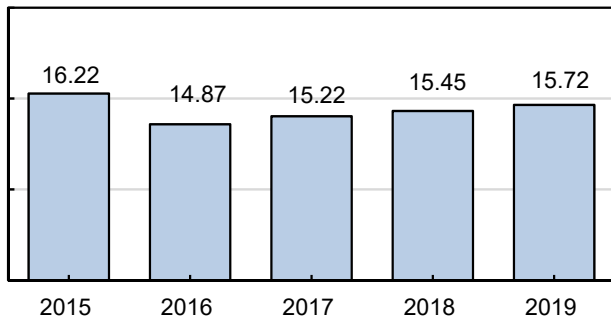
Feed Cost per CWT



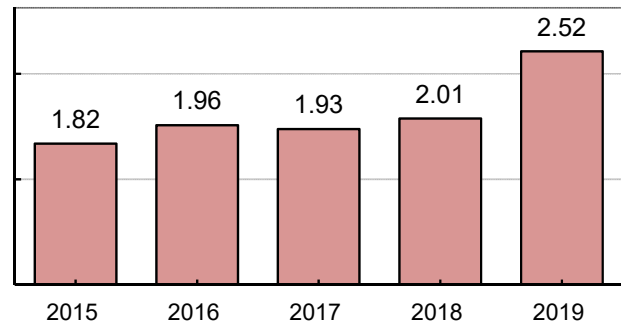
Labor per CWT



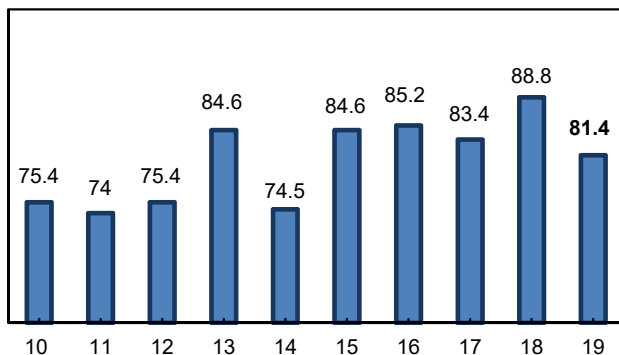
Dir & Ovhd Exp per CWT



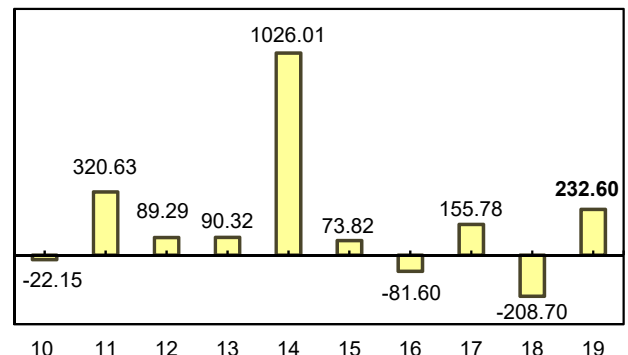
Vet, Breeding & Supplies



Operating Expense Ratio



Net Return after Dir, Ovhd, & Labor



A Long Term History of Selected Dairy Information

(Includes Organic and Organic Transition)

