



MINNESOTA STATE

Farm Business Management Program Database

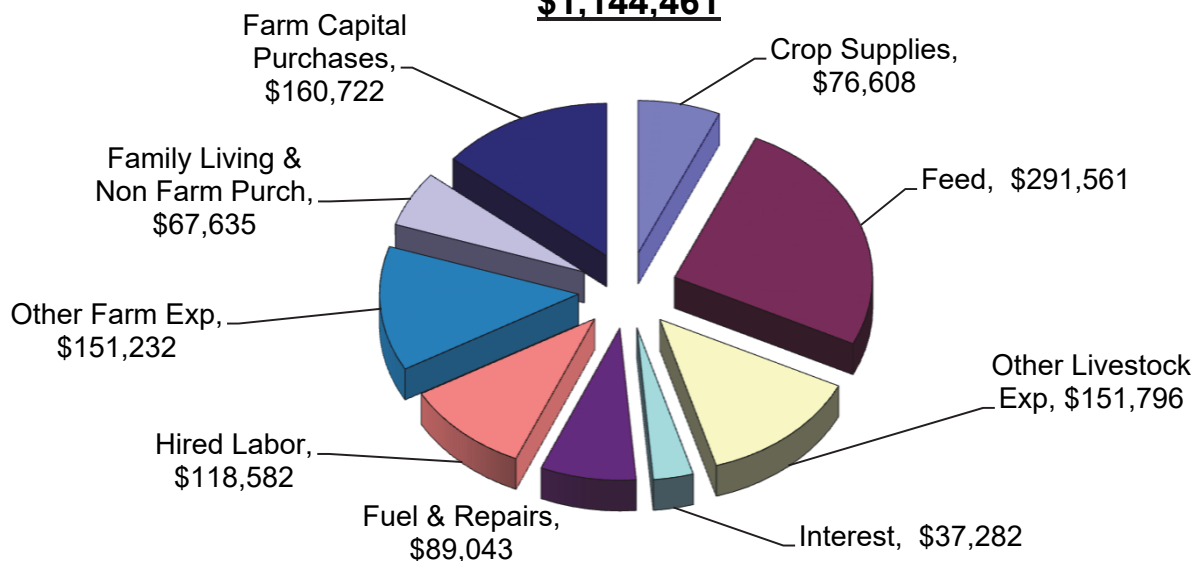
21st Annual

Dairy Farm Sort - 2017

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

April, 2018

Average Dollars Spent by a Minnesota Dairy Farm totals \$1,144,461



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 2017

Despite a third consecutive year of record crop yields, Minnesota farmers experienced their fifth consecutive year of low profitability. With average investment of over \$2 million, farms earned a 2.2% return on investment. Across all farms types, almost one-third of farms lost net worth in 2017.

As a group, profits were up each of Minnesota's major types of livestock operations: dairy, pork and beef. Still the median dairy producer did not earn enough to cover family living costs. On a statewide basis the Dairy Cow enterprise, for all types of dairy operations, generated a Net Return per cow of \$360 in 2017, compared to \$137 per cow in 2016. This is still \$108 below the 5 year average and a decrease of \$877 from the 5 year high experienced in 2014.

NOTE: The increase in returns resulted from higher milk prices during the first half of 2017. During the second half of the year, producers experienced a much lower price and most farms operated at a loss. This reduced price was influenced by a lowering basis, which did not rebound after the normal seasonal summer drop. Dairy farms are looking at very difficult cash flow projections for 2018 as markets are currently \$2.00 under the cost of production.

Dairy farm profits increased slightly in 2017. The median dairy farm earned \$47,254, up from \$31,563 in 2016.

- The average price received for milk increased by 9% percent, from \$16.57 per hundred pounds in 2016 to \$17.92.
- The average cost of production for direct, overhead, and operator labor expense was \$16.10. As a result, dairy producers netted \$1.82 per hundred pounds of production, or about \$360 per cow.
- The average dairy farm milked 206 cows, which is up from an average of 195 cows in 2016.
- The average milk production was 24,637 pounds, also up from 24,390 pounds in 2016.

This special report consists of data from all herds included in the State FBM Database. It 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. Using the average Gross Margin per dairy cow of \$4,134 in 2017, one can compare to the whole farm financial data for a given farm size. The 5 columns of the dairy cow enterprise, listed by number of cows, generally equates to the 5 columns of whole farm financial data, listed by Gross Farm Income.

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:

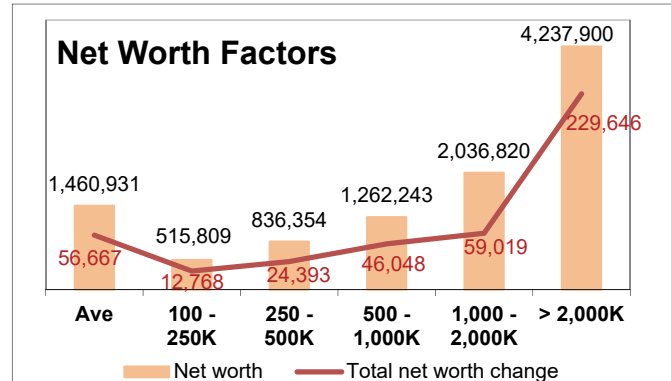
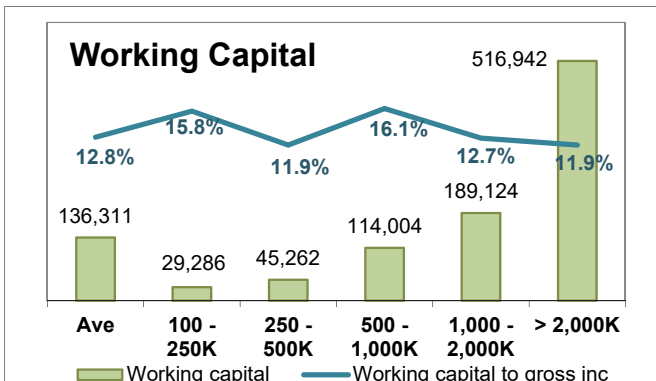
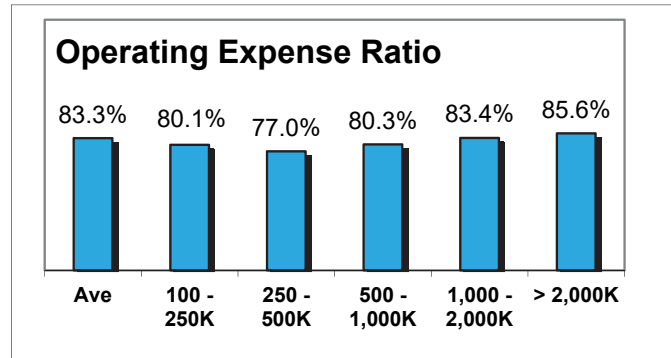
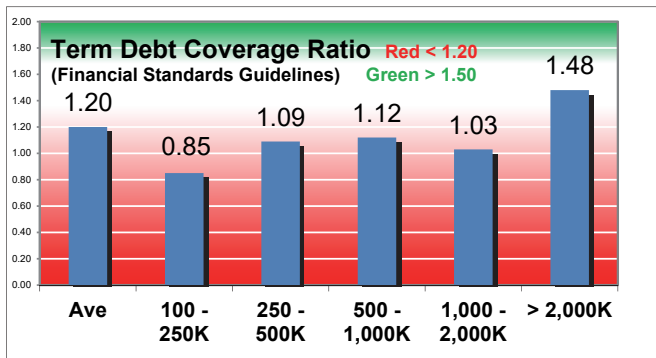
Herd Size	All	< 50 Cows	51-100	101-200	201-500	>500
	12.6%	4+%	9+%	30+%	30+%	40+%

General Financial Summary Farm Business Management Program Database (Dairy Farms Sorted by Gross Farm Income)

	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	361	56	98	86	62	42
<u>Income Statement</u>						
Gross cash farm income	1,044,417	187,003	376,533	700,087	1,476,034	4,211,823
Total cash farm expense	916,104	161,087	312,734	601,400	1,297,759	3,759,256
Net cash farm income	128,313	25,916	63,798	98,687	178,275	452,566
Average net farm income	83,011	14,206	41,982	59,996	100,619	327,417
Median net farm income	47,254	17,034	40,222	63,531	136,082	222,809
<u>Solvency (end of year at market)</u>						
Total assets	2,604,507	897,279	1,456,007	2,237,489	3,756,740	7,499,201
Total liabilities	1,143,576	381,470	619,652	975,246	1,719,920	3,261,300
Net worth	1,460,931	515,809	836,354	1,262,243	2,036,820	4,237,900
Total net worth change	56,667	12,768	24,393	46,048	59,019	229,646

Financial Standards Measures
Farm Business Management Program Database
(Dairy Farms Sorted by Gross Farm Income)

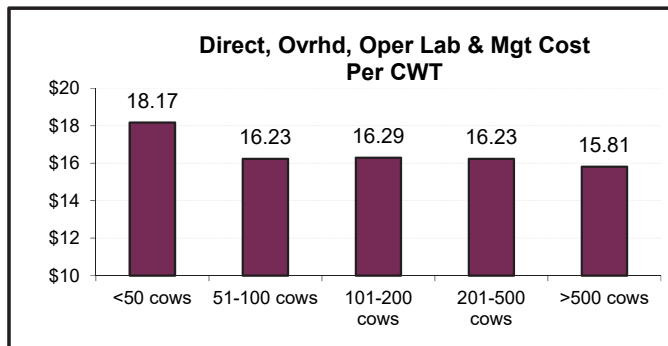
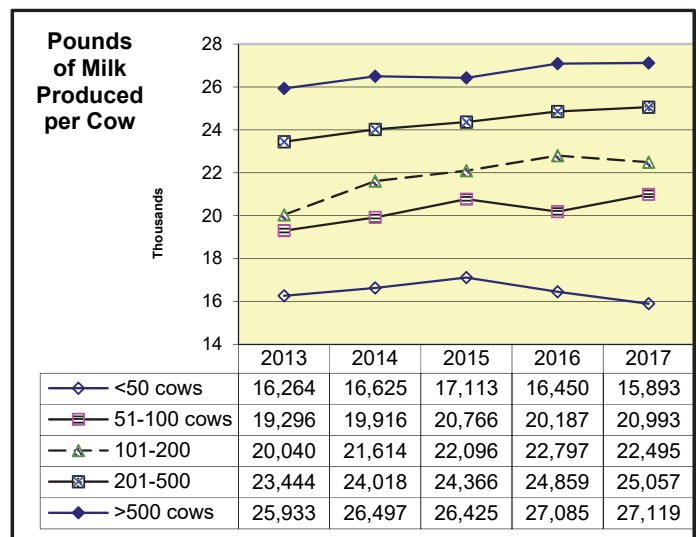
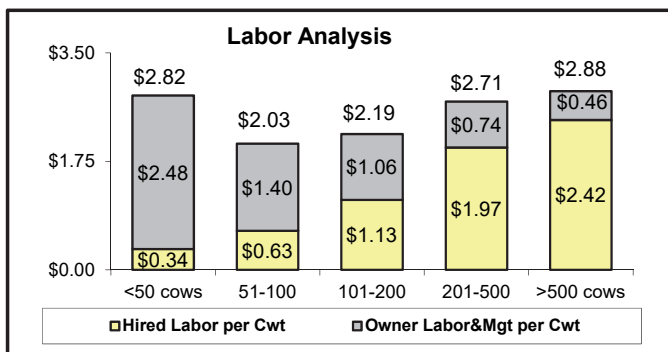
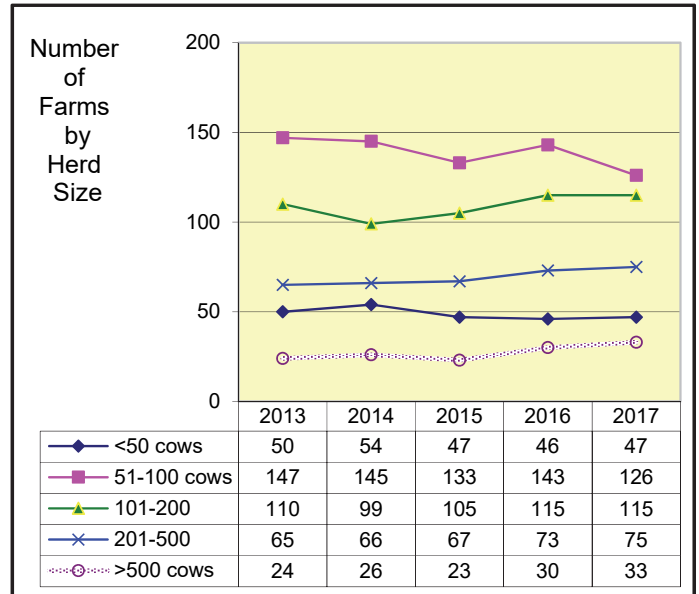
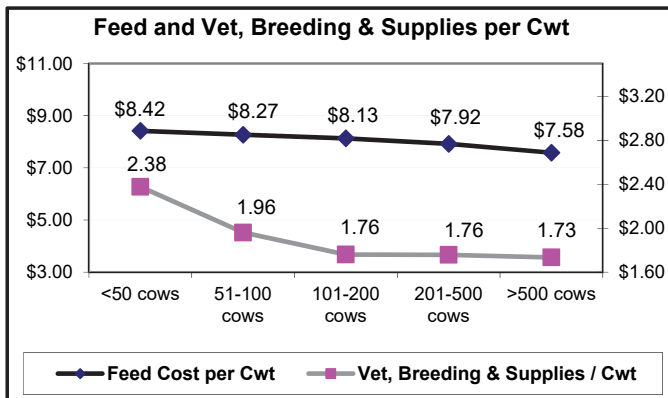
	Avg. Of All Farms	100,000 - 250,000	250,001 - 500,000	500,001 - 1,000,000	1,000,000 - 2,000,000	Over 2,000,000
Number of farms	361	56	98	86	62	42
<u>Liquidity</u>						
Current ratio	1.65	1.63	1.48	1.85	1.60	1.68
Working capital	136,311	29,286	45,262	114,004	189,124	516,942
Working capital to gross inc	12.8%	15.8%	11.9%	16.1%	12.7%	11.9%
<u>Solvency (market)</u>						
Farm debt to asset ratio	45%	45%	46%	46%	47%	44%
Farm equity to asset ratio	55%	55%	54%	54%	53%	56%
Change in total net worth %	4%	3%	3%	4%	3%	6%
<u>Profitability (cost)</u>						
Rate of return on farm assets	2.9%	-0.1%	2.1%	2.1%	2.3%	4.6%
Rate of return on farm equity	2.0%	-4.5%	0.2%	0.4%	0.6%	4.9%
Operating profit margin	7.6%	-0.4%	7.3%	7.1%	6.3%	9.3%
Net farm income	83,011	14,206	41,982	59,996	100,619	327,417
EBIDTA	178,105	36,855	87,446	139,047	248,454	622,934
<u>Repayment Capacity</u>						
Capital debt repayment capacity	125,006	24,329	58,969	95,497	169,065	453,518
Capital debt repayment margin	20,842	-4,360	5,097	10,135	5,194	146,811
Replacement margin	2,784	-9,498	-4,265	-8,097	-18,468	93,719
Term debt coverage ratio	1.20	0.85	1.09	1.12	1.03	1.48
Replacement coverage ratio	1.02	0.72	0.93	0.92	0.90	1.26
<u>Efficiency</u>						
Asset turnover rate (cost)	38.4%	25.5%	28.5%	30.2%	36.6%	49.3%
Operating expense ratio	83.3%	80.1%	77.0%	80.3%	83.4%	85.6%
Depreciation expense ratio	5.5%	5.9%	6.8%	7.0%	5.9%	4.4%
Interest expense ratio	3.5%	5.8%	5.2%	4.5%	3.9%	2.4%
Net farm income ratio	7.8%	7.7%	11.0%	8.5%	6.7%	7.6%



State Database Dairy Cow Enterprise (Sorted by Herd Size)	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	396	47	126	115	75	33
Milk sold (hd)	4,387.85	2,906.82	3,688.34	4,020.32	4,437.39	4,853.18
Dairy Calves sold (hd)	45.33	32.51	41.82	36.87	57.69	41.96
Transferred out (hd)	35.85	53.28	66.26	36.94	34.19	26.13
Cull sales (hd)	233.83	181.28	224.43	218.29	229.09	252.08
Other income	47.18	46.49	38.34	34.77	49.49	54.80
Purchased (hd)	-31.95	-157.69	-63.43	-42.09	-23.34	-15.87
Transferred in (hd)	-60.77	-46.75	-89.22	-61.17	-78.33	-38.74
Inventory change (hd)	51.26	58.50	49.65	47.85	37.00	64.45
Dairy repl net cost	-574.59	-473.89	-534.60	-557.04	-563.53	-611.32
Gross margin	4,134.11	2,601.65	3,421.58	3,735.26	4,179.64	4,626.66
Direct Expenses						
Protein Vit Minerals (lb.)	686.73	343.00	633.58	597.85	655.75	796.66
Complete Ration (lb.)	335.86	184.25	190.81	352.31	350.87	369.14
Corn (bu.)	207.07	139.76	188.55	179.92	226.90	215.82
Corn Silage (lb.)	290.01	184.57	231.71	240.00	309.51	325.95
Hay, Alfalfa (lb.)	159.81	211.88	244.61	194.94	149.74	119.53
Haylage, Alfalfa (lb.)	134.48	62.93	99.01	98.58	160.96	148.15
Other feed stuffs (lb)	122.59	212.14	146.92	164.46	131.77	79.77
Breeding fees	47.94	29.94	48.07	42.69	48.17	51.65
Veterinary	114.70	69.61	98.02	97.37	119.76	127.92
BST	37.97	-	5.98	9.87	38.68	64.72
Supplies	275.42	278.42	265.69	256.06	272.59	290.91
Fuel & oil	69.67	56.06	52.85	59.89	67.21	82.90
Repairs	153.08	120.75	134.37	153.32	149.00	163.93
Custom hire	71.03	19.69	44.93	48.25	76.43	90.21
Hired labor	355.95	20.55	64.34	152.10	381.02	556.35
Hauling & Trucking	51.52	66.42	69.25	57.12	44.78	47.47
Bedding	80.81	31.80	54.86	69.51	89.11	91.34
Total direct expenses	3,194.63	2,031.78	2,573.56	2,774.23	3,272.25	3,622.42
Return over direct expense	939.48	569.87	848.01	961.03	907.40	1004.24
Overhead Expenses						
Hired labor	98.81	32.74	67.96	101.82	113.32	99.26
Building leases	57.83	15.61	21.71	51.84	65.92	68.37
Utilities	60.93	85.11	92.83	66.11	55.86	50.82
Interest	88.80	89.63	83.94	109.57	96.79	72.72
Mach & bldg depreciation	168.06	112.90	157.45	200.63	173.16	153.14
Miscellaneous	105.37	126.31	114.64	121.17	103.81	93.96
Total overhead expenses	579.79	462.30	538.54	651.13	608.87	538.27
Total dir & ovhd expenses	3,774.42	2,494.07	3,112.10	3,425.36	3,881.11	4,160.70
Net return	359.70	107.58	309.47	309.90	298.53	465.96
Labor & management charge	191.23	393.60	294.57	238.38	185.80	125.84
Net return over lbr & mgt	168.47	-286.02	14.91	71.52	112.73	340.13
Cost of Production per CWT						
Total direct expense per cwt.	12.97	12.78	12.26	12.33	13.06	13.36
Total dir& ovhd expense per cwt.	15.32	15.69	14.82	15.23	15.49	15.34
With other revenue adjustments	16.44	17.83	16.22	16.60	16.64	16.24
With labor and management	17.22	20.31	17.62	17.66	17.38	16.70
Est. labor hours per unit	41.62	43.33	36.30	32.90	40.84	48.45
Other Information						
Avg. number of Cows	205.6	39.5	73.7	141.1	318.5	913.6
Milk produced per Cow	24,637	15,893	20,993	22,495	25,057	27,119
Culling percentage	29.9	26.4	28.7	27.3	28.8	32.8
Turnover rate	36.6	36.2	36.9	34.4	35.7	38.4
Percent of barn capacity	113.4	91.8	108.4	110.4	116	116.3
Feed cost per day	5.31	3.67	4.75	5.01	5.44	5.63
Feed cost per cwt of milk	7.86	8.42	8.27	8.13	7.92	7.58
Feed cost per Cow	1,936.55	1,338.53	1,735.19	1,828.06	1,985.49	2,055.02
Hired Labor per Cow	454.76	53.29	132.30	253.91	494.34	655.61
Avg. milk price per cwt.	17.92	18.52	17.7	17.98	17.86	17.97
Milk price / feed margin	10.06	10.1	9.43	9.85	9.93	10.39

Selected Dairy Enterprise Factors from the Farm Business Management Program Database

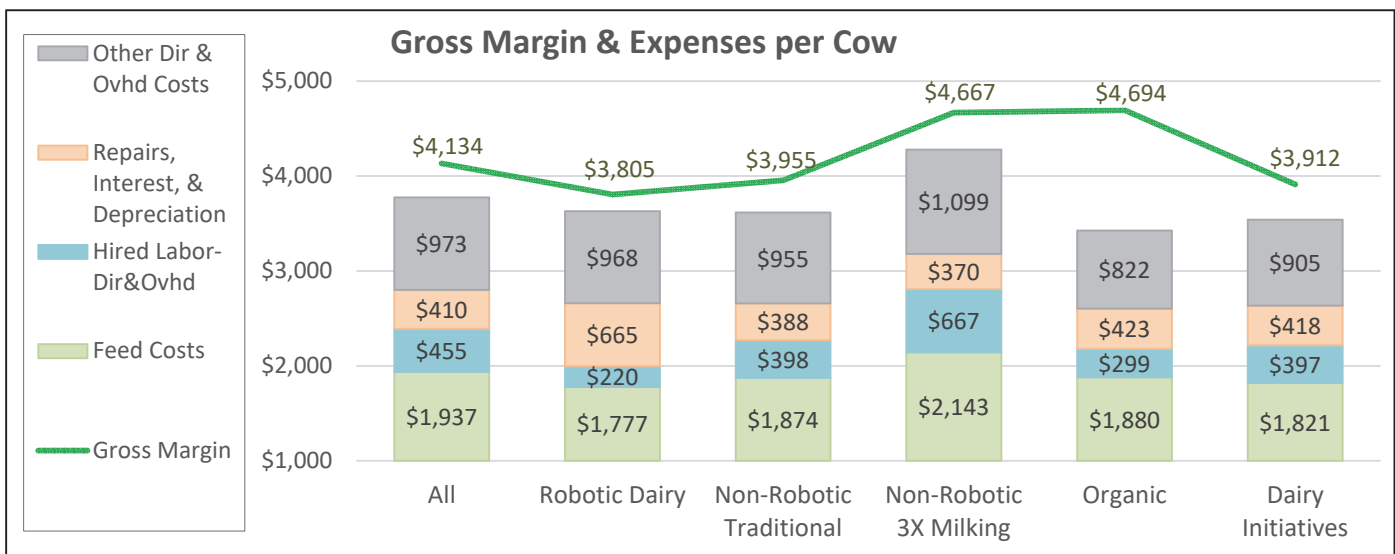
Herd Size	State Ave.	up to 50 cows	51-100 cows	101-200 cows	201-500 cows	over 500 cows
Number of Farms	396	47	126	115	75	33
Ave # of Cows	205.6	39.5	73.7	141.1	318.5	913.6
Milk Prod. Per Cow	24,637	15,893	20,993	22,495	25,057	27,119
Feed Cost per Cwt	\$7.86	\$8.42	\$8.27	\$8.13	\$7.92	\$7.58
Interest per Cwt	\$0.36	\$0.56	\$0.40	\$0.49	\$0.39	\$0.27
Vet, Breeding & Supplies / Cwt	\$1.78	\$2.38	\$1.96	\$1.76	\$1.76	\$1.73
Hired Labor per Cwt	\$1.85	\$0.34	\$0.63	\$1.13	\$1.97	\$2.42
Deprec/Lease per Cwt	\$0.92	\$0.81	\$0.85	\$1.12	\$0.95	\$0.82
Milk Price per Cwt	\$17.92	\$18.52	\$17.70	\$17.98	\$17.86	\$17.97
Dir & Ovhd Cost per Cwt	\$15.32	\$15.69	\$14.82	\$15.23	\$15.49	\$15.34
Return over Dir & Ovhd per Cow	\$360	\$108	\$309	\$310	\$299	\$466
Herd Profit over Dir&Ovhd	\$73,954	\$4,249	\$22,808	\$43,727	\$95,082	\$425,701
Owner Labor&Mgt per Cwt	\$0.78	\$2.48	\$1.40	\$1.06	\$0.74	\$0.46
Net per Cow after Labor&Mgt	\$168	-\$286	\$15	\$72	\$113	\$340
Herd Profit over Labor&Mgt	\$34,637	-\$11,298	\$1,098	\$10,091	\$35,905	\$310,734



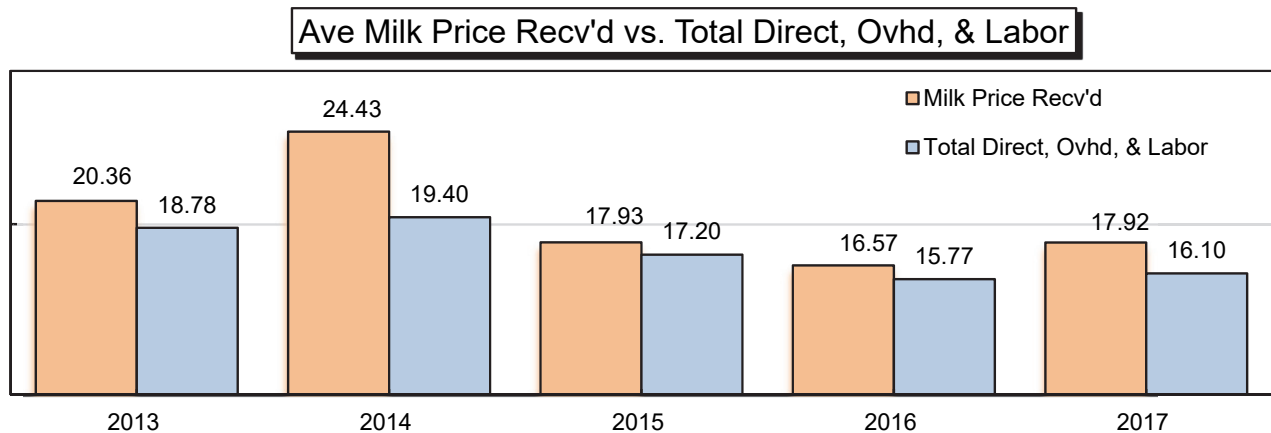
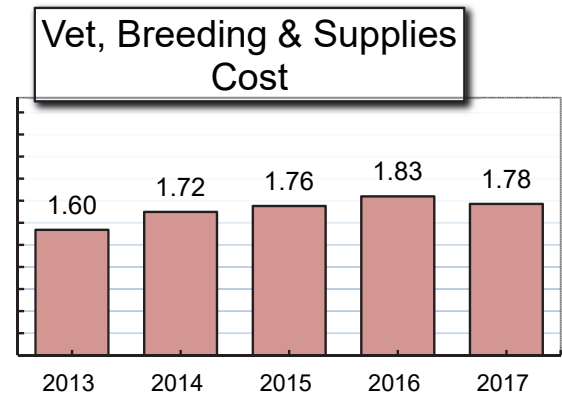
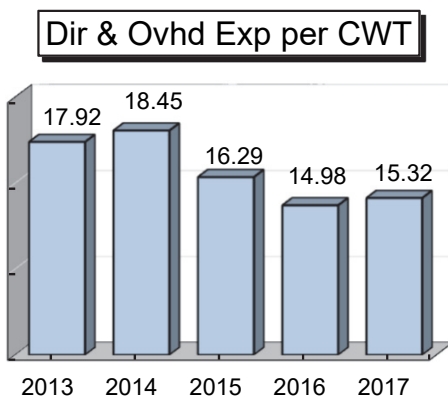
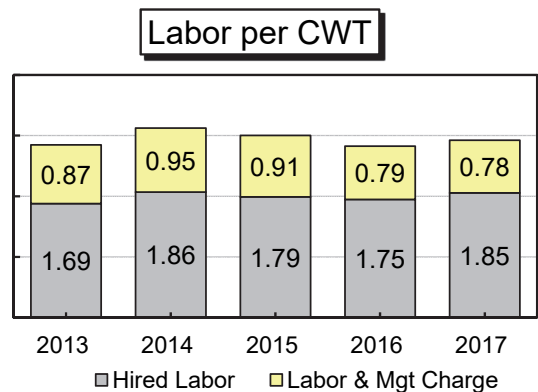
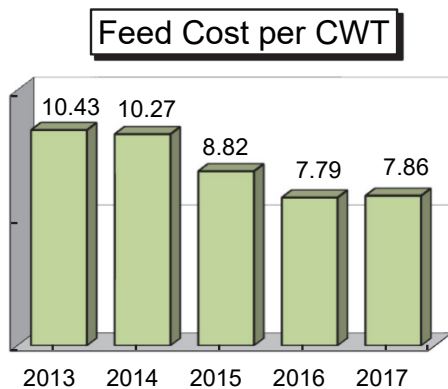
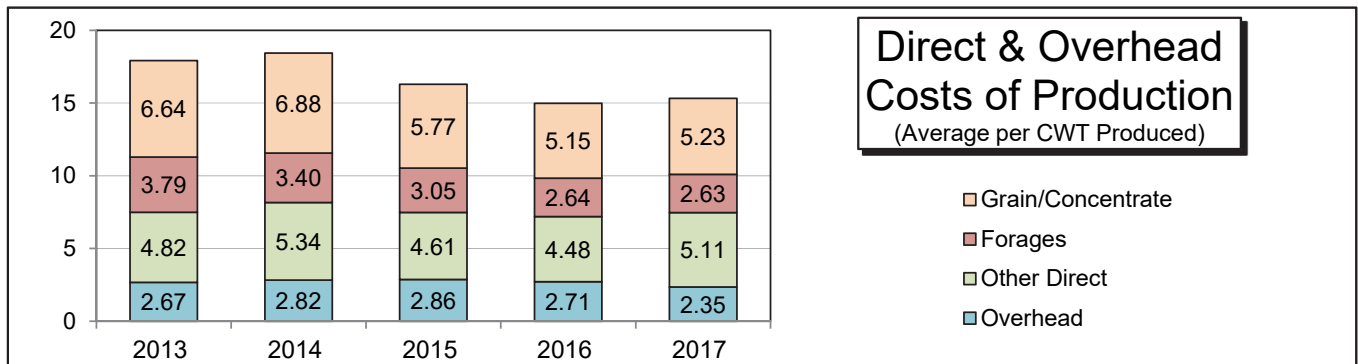
Additional Selected Sorts within the Dairy Enterprise

The State FBM 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 State's FBM Dairy Data.

Sort - Includes	All	Robotic Dairy	Non-Robotic Traditional	Non-Robotic 3X Milking	Organic	Dairy Initiatives
Number of Farms	396	20	315	38	16	112
Number of Cows	206	170	176	535	106	174
Milk Produced per Cow	24,637	23,880	23,834	27,866	15,730	23,826
Milk Sold	\$4,387.85	\$4,086.15	\$4,203.05	\$4,921.98	\$5,002.41	\$4,231.07
Gross Margin	\$4,134.11	\$3,805.43	\$3,955.06	\$4,667.16	\$4,694.14	\$3,911.81
Feed Cost per Cow	\$1,936.55	\$1,776.93	\$1,873.86	\$2,143.10	\$1,880.38	\$1,820.62
Breeding Fees	\$47.94	\$44.10	\$47.51	\$51.54	\$32.25	\$40.06
Veterinary	\$114.70	\$111.35	\$106.51	\$145.02	\$31.75	\$109.15
BST	\$37.97	\$17.78	\$27.02	\$75.36	\$0.00	\$29.36
Repairs	\$153.08	\$163.04	\$138.10	\$132.04	\$177.39	\$140.50
Hired Labor-Dir&Ovhd	\$454.76	\$219.68	\$398.29	\$666.55	\$299.49	\$396.88
Interest	\$88.80	\$181.42	\$90.39	\$69.95	\$87.60	\$93.80
Depreciation	\$168.06	\$320.33	\$159.30	\$167.97	\$158.45	\$184.00
Total Dir & Ovhd Cost	\$3,774.42	\$3,629.84	\$3,614.93	\$4,278.56	\$3,425.79	\$3,540.31
Net Return	\$359.70	\$175.59	\$340.13	\$388.60	\$1,268.35	\$371.50
Cost of Prod - O&D	\$15.32	\$15.20	\$15.17	\$15.35	\$21.78	\$14.86
Culling Percentage	29.9	25.0	29.4	32.7	25.6	28.6
Turnover Rate	36.6	30.6	36.3	38.7	30.3	35.5
Feed Cost per CWT	\$7.86	\$7.44	\$7.86	\$7.69	\$11.95	\$7.64
Average Milk Price	\$17.92	\$17.34	\$17.72	\$17.79	\$32.75	\$17.90



Summary of Selected Dairy Enterprise Factors - Average Farm Data



A Long Term History of Selected Dairy Information

