



MINNESOTA STATE
Farm Business Management



INFLUENCE OF INTENSIFIED ENVIRONMENTAL PRACTICES ON FARM PROFITABILITY



APRIL | 2025



EST 1953

FARM BUSINESS
MANAGEMENT



Influence of Intensified Environmental Practices on Farm Profitability

This database has expanded from the initial 53 farms in 2019 to 153 farms in 2024, as shown below:

Year	2019	2020	2021	2022	2023	2024
Number of Farms	53	64	94	101	126	153

This report provides financial and enterprise data for a comparison of Minnesota State Farm Business Management (FBM) farms that are MDA Water Quality Certified, the “Intensified Environmental Practices” cohort, and the Minnesota State FBM Database average. A 5-Year average and data for 2022, 2023, and 2024 are provided for most tables. Sections in this special report include:

- Demographics
- Financial Analysis - Income Statement, Balance Sheet, and selected crop expense measures
- Crop Enterprise Summary Information - Corn, Soybeans, and Alfalfa Hay
- Pre and Post Study Data
- Livestock Enterprise Summary Information - Dairy Cows
- A look at FBM farms that are Water Quality Certified and growing Cover Crop

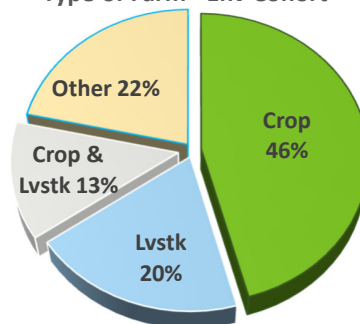
The pre- and post-study comparison of the farmers in the Environmental Cohort has shown that this Cohort had a financial advantage over the FBM State Database average before this study began. That comparison has recognized that those producers who achieve water quality certification have a management style that enhances profitability.

<u>Demographics</u>	5-Year Avg.		2022		2023		2024	
	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.
Number of Farms	108	2247	101	2154	126	2317	153	2223
Total Crop Acres per Farm	759	801	831	808	729	800	739	830
Total Crop Acres/Cohort	87,503	1,799,758	83,931	1,740,432	91,854	1,853,600	113,067	1,845,090
Age of Operator	48.2	47.2	48.3	47.2	48.4	47.4	48.7	47.4
Years Farming	23.0	22.8	23.3	23.0	22.4	22.8	23.8	22.8
Beginning Farmers (<10 yrs)	25%	30%	23%	29%	28%	30%	21%	29%

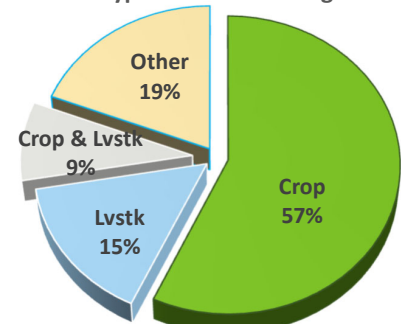
Demographics

The 2024 MN FBM State Database includes data from 2,223 producers who participate in the Minnesota State FBM program. The Environmental Cohort consists of 153 of those producers in 2024, up from 126 in 2023. The table and charts below illustrate that the Environmental Cohort continues to represent a similar demographic to that found in the FBM State Database, and continues to include a greater percentage of livestock enterprises. The 5-year average brings that similarity into single factors over time.

Type of Farm - Env Cohort



Type of Farm - Average



FINANCIALS AT-A-GLANCE

The 2024 data again shows that the Environmental Cohort generated more gross cash farm income and net farm income than the FBM State Database average. This data also shows that the farms in the Environmental Cohort generated more income from livestock sales. The 5-year average shows the

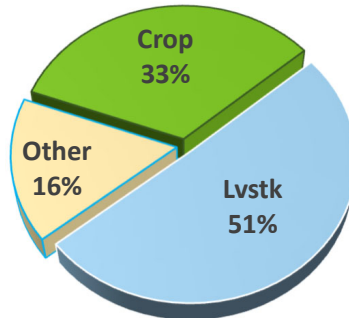
<u>Income Statement</u>	5-Year Avg.		2022		2023		2024	
	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.
Gross Cash Farm Income	\$1,260,749	\$1,008,328	\$1,397,679	\$1,092,140	\$1,286,889	\$1,099,812	\$1,304,767	\$1,057,092
<i>Crop Sales</i>	\$434,888	\$509,218	\$554,751	\$607,954	\$436,845	\$611,435	\$432,778	\$508,162
<i>Livestock Sales</i>	\$631,048	\$319,585	\$677,019	\$334,348	\$674,573	\$325,729	\$659,242	\$365,204
<i>Other Income</i>	\$194,813	\$179,524	\$165,909	\$149,838	\$175,471	\$162,648	\$212,747	\$183,726
Total Cash Farm Expense	\$1,039,938	\$833,826	\$1,138,814	\$893,176	\$1,091,684	\$904,500	\$1,090,492	\$898,843
Net Cash Income	\$220,811	\$174,502	\$258,866	\$198,964	\$195,205	\$195,312	\$214,275	\$158,249
Inv Chg, Deprec, Cap Sales	-\$21,274	\$7,065	\$75,926	\$112,288	-\$95,427	-\$101,376	-\$79,458	-\$90,545
Average Net Farm Income	\$199,537	\$181,567	\$334,792	\$311,252	\$99,778	\$93,936	\$134,817	\$67,704
Median Net Farm Income	\$102,724	\$99,760	\$183,787	\$176,616	\$41,360	\$44,596	\$42,409	\$21,473

summary of these between 2020 and 2024. 2024 was the second straight year of reduced average Net Farm Income for the State FBM Database average, while the Environmental Cohort showed an increase. The Environmental Cohort was significantly above the State FBM Database average farm, with \$134,817 compared to \$67,704. Overall, livestock producers had a better year financially than crop producers in 2024.

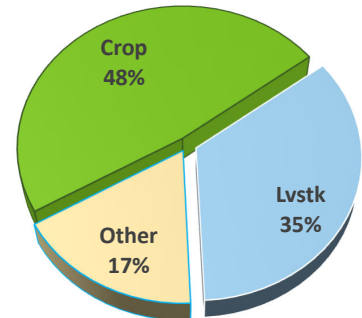
The Environmental Cohort showed more income from livestock sales, \$659,442 vs \$365,204; while the State FBM Database average showed more income from crop sales, \$508,162 vs \$432,778. Net Farm Income dropped significantly in both instances. Median Net Farm Income for the Environmental Cohort was about the same, while the State FBM Database average reduced by over 50%.

Both the recent three years of data and the 5-year average indicate that the Environmental Cohort farms continue to have a slightly larger asset value and net worth on the Market Value Balance Sheet.

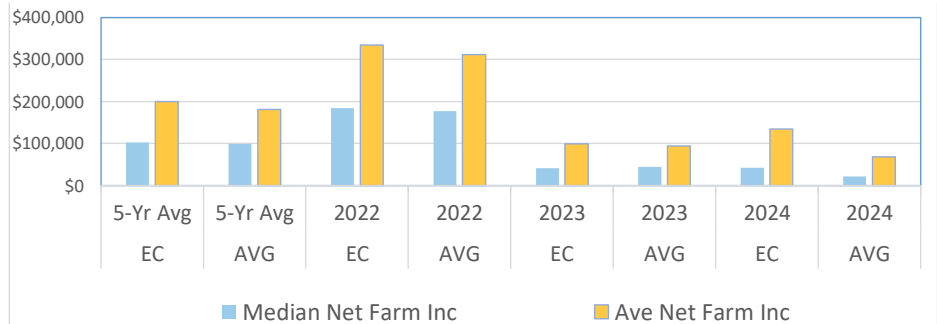
Income Source - Env Cohort



Income Source - Average



Net Farm Income

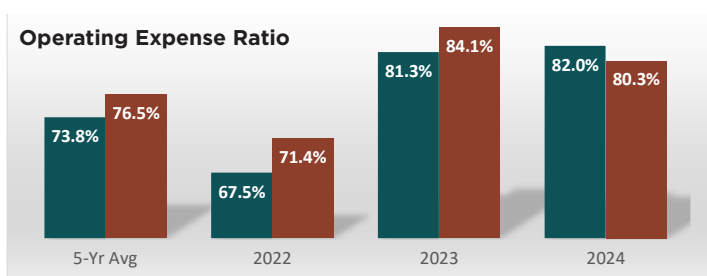


<u>Balance Sheet (Market)</u>	5-Year Avg.		2022		2023		2024	
	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.
Total Assets	\$4,052,230	\$3,635,339	\$4,018,685	\$3,791,346	\$4,015,827	\$3,889,238	\$4,511,371	\$4,083,817
Total Liabilities	\$1,367,049	\$1,432,356	\$1,508,376	\$1,552,675	\$1,435,274	\$1,601,661	\$1,240,051	\$1,313,204
Net Worth	\$2,685,181	\$2,202,983	\$2,510,309	\$2,238,671	\$2,580,553	\$2,287,577	\$3,271,320	\$2,770,613

The Working Capital as a % of Operating Expense for the Environmental Cohort is above the State Database average for the first time in three years, while the 5-year average has the State FBM Database average slightly above. Farms in the Environmental Cohort continue to have a slightly stronger Debt to Asset Ratio, at 39%

Selected Measures	5-Year Avg.		2022		2023		2024	
	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.
Working Capital as % of Exp.	41.2%	43.7%	67.8%	68.1%	48.8%	51.1%	48.8%	43.8%
Farm Debt to Asset Ratio	39.1%	44.0%	40.0%	43.0%	38.0%	44.0%	39.0%	44.0%
Debt Coverage Ratio	2.38	2.08	3.48	3.35	1.48	1.33	1.52	1.05
Operating Expense Ratio	76.5%	73.8%	71.4%	67.5%	84.1%	81.3%	80.3%	82.0%

compared to the State Database average of 44% in 2024. The Debt Coverage Ratio increased slightly for the Environmental Cohort, while the State FBM Database average reduced significantly. Operating Expense Ratio weakened slightly for the State FBM Database average while strengthening slightly for the Environmental Cohort.



Crop Production Costs

This report continues to focus on the four production costs in the table below that typically would have a higher correlation to expanded use of intensified environmental practices. In 2024, the Environmental Cohort has a lower chemical cost per acre, while the

State FBM Database average was lower in the other three factors. The 5-year average shows that the State FBM Database average was lower for only fuel & oil cost.

Selected Costs	5-Year Avg.		2022		2023		2024	
	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.	Environ. Cohort	Database Avg.
Seed Cost / crop acre	\$83.42	\$83.97	\$87.80	\$86.72	\$81.71	\$89.29	\$85.25	\$84.77
Fertilizer Cost / crop acre	\$110.90	\$114.28	\$129.44	\$145.59	\$109.97	\$128.39	\$115.60	\$104.67
Chemical Cost / crop acre	\$50.57	\$54.23	\$59.41	\$63.29	\$56.39	\$62.59	\$50.05	\$53.81
Fuel and Oil Cost / crop acre	\$50.45	\$41.11	\$58.81	\$53.18	\$53.73	\$47.59	\$50.22	\$39.58

Crop Enterprises At-A-Glance

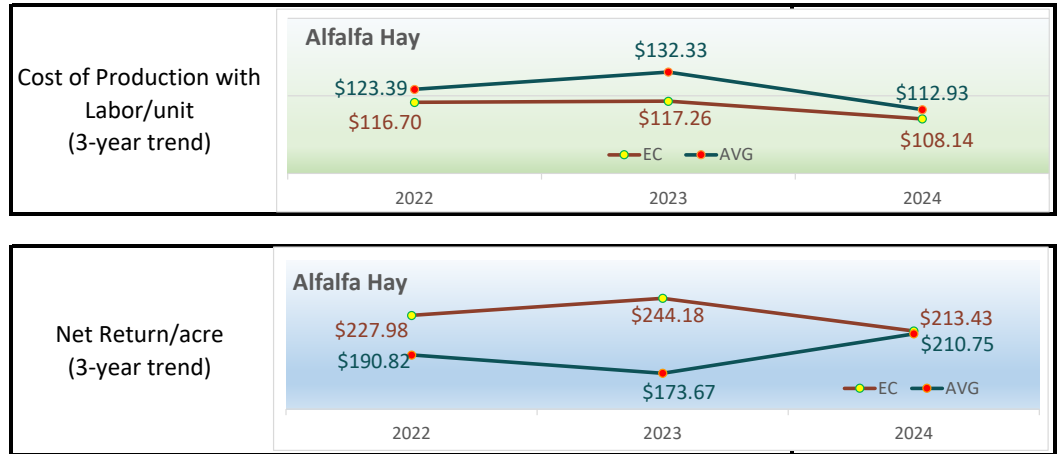
Selected expenses and management factors from each crop enterprise table are listed in a 3-year summary table for each crop. Below each table is a comparison of the Net Return per acre and the Cost of Production with Labor per unit. The 2024 data for Corn shows that yields are better for the State FBM Database average while total direct expenses are lower for the Environmental Cohort, while Net Return per acre varies. This suggests that

there is generally no ongoing cost-saving benefit to one set of practices vs the other.

The Cost of Production chart illustrates a similar situation

Corn Enterprise	2022		2023		2024	
	EC	AVG	EC	AVG	EC	AVG
Owned & Rented Combined						
Number of Farms	70	1,425	67	1,544	98	1,401
Yield per acre	198.0	203.8	185.8	192.6	174.1	179.2
Seed Expense/acre	\$109.44	\$111.81	\$112.66	\$116.87	\$119.68	\$124.25
Fertilizer Expense/acre	\$208.12	\$217.74	\$199.13	\$232.00	\$187.78	\$188.71
Chemical Expense/acre	\$51.96	\$52.25	\$54.70	\$54.16	\$51.81	\$50.44
Fuel & Oil Expense/acre	\$39.82	\$39.89	\$30.02	\$36.34	\$29.49	\$30.31
Total dir & ovhd exp/ac	\$902.91	\$905.46	\$904.79	\$937.49	\$871.06	\$911.08
Net Return/acre	\$350.81	\$382.52	\$88.65	\$51.13	-\$43.75	-\$32.43
Gov. Payments/acre	\$1.06	\$0.32	NA	NA	\$42.72	\$42.06
Machinery Cost/acre	\$197.61	\$185.71	\$201.44	\$189.22	\$194.84	\$189.56
Cost of Prod w Lbr/unit	\$4.86	\$4.74	\$4.66	\$4.83	\$4.64	\$4.68

with the State FBM Database having the advantage in 2023 and 2024. The one factor that shows a consistent trend is the Machinery Cost per acre, where the FBM Database average is lower than the Environmental Cohort.

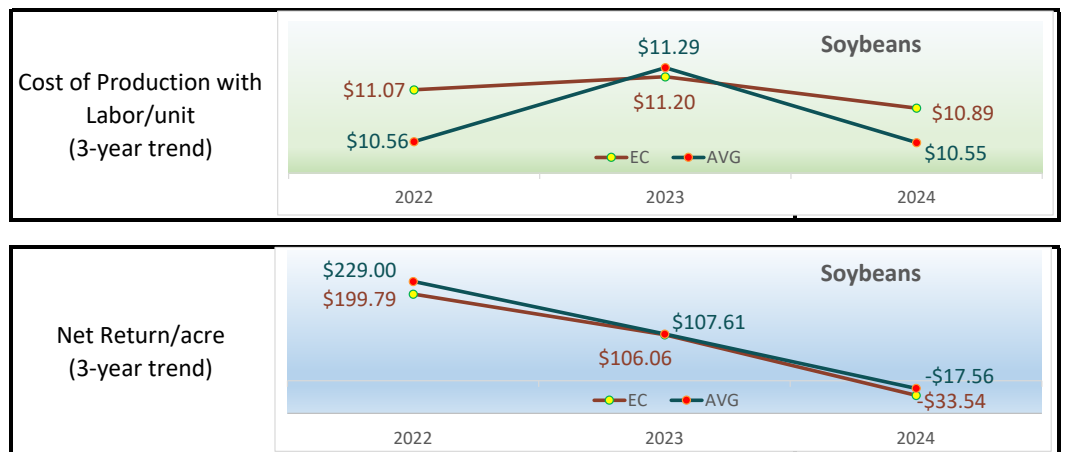


Soybeans

The data for Soybeans shows that the Environmental Cohort has higher fertilizer costs each year but generally lower expenses for the other items listed in this 3-year trend. The FBM State Database average has a higher yield and net return. Each year, for several factors, the difference is so minor that there is limited cost-saving benefit to one set of practices vs the other. Machinery costs showed the largest difference in the past two years while government payments limited the negative returns in 2024.

Soybean Enterprise Owned & Rented Combined	2022		2023		2024	
	EC	AVG	EC	AVG	EC	AVG
Number of Farms	59	1,342	58	1,439	81	1,285
Yield per acre	51.2	53.0	49.6	50.9	46.7	48.2
Seed Expense/acre	\$55.19	\$56.60	\$55.95	\$59.34	\$54.91	\$58.38
Fertilizer Expense/acre	\$38.73	\$34.07	\$49.33	\$46.88	\$46.70	\$41.09
Chemical Expense/acre	\$61.49	\$61.88	\$65.82	\$66.05	\$62.04	\$61.85
Fuel & Oil Expense/acre	\$22.71	\$24.39	\$18.04	\$22.09	\$16.94	\$18.56
Total dir & ovhd exp/ac	\$529.83	\$528.25	\$555.61	\$562.22	\$552.67	\$565.82
Net Return/acre	\$199.79	\$229.00	\$106.06	\$107.61	-\$33.54	-\$17.56
Gov. Payments/acre	\$0.93	\$0.36	NA	NA	\$31.05	\$30.10
Machinery Cost/acre	\$113.22	\$114.42	\$127.27	\$117.39	\$126.11	\$117.76
Cost of Prod w Lbr/unit	\$11.07	\$10.56	\$11.20	\$11.29	\$10.89	\$10.55

This Cost of Production chart illustrates that production practices for these two groups result in total Costs of Production that are very similar over time, with the State FBM Database average having the advantage in 2022 and 2024. For the 3-year comparison, the FBM State Database average has the advantage of a higher Net Return per acre in each year, with 2022 and 2024 showing the largest advantage.

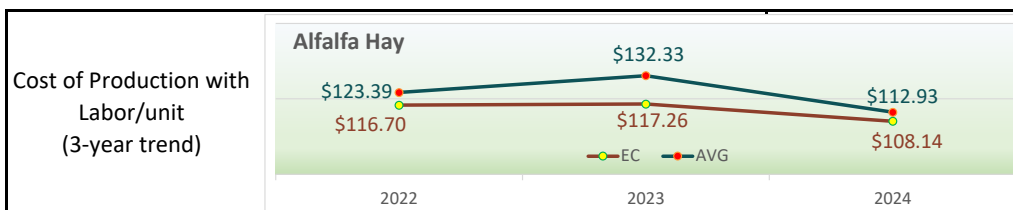


Alfalfa Hay

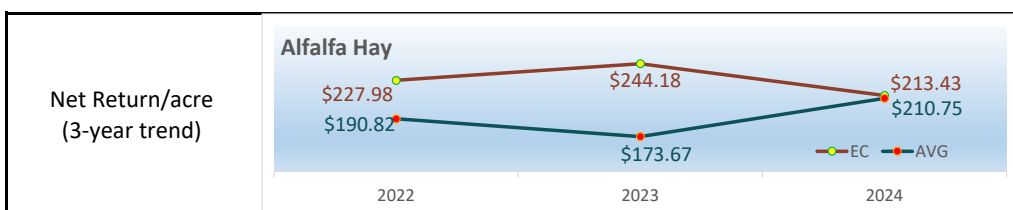
Yields for Alfalfa Hay were similar during the 3-Year period, while the FBM State Database average showed higher total direct and overhead expenses each year. Fertilizer expenses were higher for the Environmental

Alfalfa Hay Enterprise Owned & Rented Combined	2022		2023		2024	
	EC	AVG	EC	AVG	EC	AVG
Number of Farms	23	317	29	318	28	273
Yield per acre	4.6	4.5	4.3	4.2	5.2	5.2
Seed Expense/acre	\$0.54	\$1.02	NA	\$1.57	\$4.88	\$0.92
Fertilizer Expense/ac	\$82.55	\$75.97	\$78.25	\$73.04	\$51.36	\$66.89
Chemical Expense/ac	\$11.65	\$11.52	\$8.00	\$13.37	\$10.40	\$11.52
Fuel & Oil Expense/ac	\$45.58	\$47.33	\$38.96	\$42.80	\$35.36	\$36.67
Total dir & ovhd exp/ac	\$500.42	\$506.03	\$464.25	\$516.33	\$511.16	\$538.87
Net Return/acre	\$227.98	\$190.82	\$244.18	\$173.67	\$213.43	\$210.75
Gov. Payments/acre	NA	\$0.13	NA	NA	NA	\$1.90
Machinery Cost/acre	\$192.01	\$199.98	\$188.05	\$202.02	\$199.81	\$216.78
Cost of Prod w Lbr/unit	\$116.70	\$123.39	\$117.26	\$132.33	\$108.14	\$112.93

Cohort for two of the three years. The Environmental Cohort also had higher returns in the recent two years of this study. The Cost of Production was lower for the Environmental Cohort in the last two years.



The Net Return per acre was slightly higher and the Cost of Production was lower for the Environmental Cohort for each year.



The Crop Enterprise tables continue to suggest any advantage in individual costs and returns varies for each group each year. After five years of comparative data, it is difficult to suggest ongoing cost benefits of intensified environmental crop production practices. This report will continue to add data annually to aid in understanding the overall implications of intensified practices on crop profitability.

Pre-Study and Post-Study Data

The 2024 report continues to use five years of pre-study data from producers enrolled in the FBM program since 2014. The data for the Environmental Cohort comes from **36** farms that were enrolled all 11 years and are included in the data from the 153 farms in this report. The FBM State Database average group includes **635** farms that were enrolled all 11 years but NOT Water Quality Certified in 2024. A 5-year average is used to show the trend comparison, 2014 to 2018 and 2020 to 2024.

This table includes that average and a percentage comparison. The Environmental Cohort continues to show similar advantages (in the form of a 100+%) over the State Database average for most factors. Crop sales are less due to a higher level of livestock on the Environmental Cohort farms, while Operating Expense Ratio was basically even between the two.

Financial Factors	Pre-Study 5-Year Average (2014 - 2018)			Post-Study 5-Year Average (2020 - 2024)		
	Environ. Cohort	State Avg.	EC as % of State Avg	Environ. Cohort	State Avg.	EC as % of State Avg
Gross Cash Farm Income	\$1,077,081	\$892,514	121%	\$1,500,762	\$1,248,688	120%
<i>Crop Sales</i>	\$289,287	\$458,097	63%	\$471,811	\$870,829	54%
<i>Livestock Sales</i>	\$627,647	\$290,381	216%	\$777,196	\$423,262	184%
Total Cash Farm Expense	\$875,067	\$753,494	116%	\$1,205,389	\$1,007,142	120%
Net Cash Income	\$202,014	\$139,020	145%	\$295,373	\$241,546	122%
Average Net Farm Income	\$140,711	\$76,447	184%	\$313,904	\$232,213	135%
Median Net Farm Income	\$53,460	\$41,936	127%	\$111,970	\$142,683	78%
Working Capital as % of OE	55.7%	38.1%	146%	79.1%	60.7%	130%
Farm Debt to Asset Ratio	38%	43%	114%	35%	41%	117%
Rate of Return on Assets	3.70%	2.40%	154%	7.14%	6.56%	109%
Debt Coverage Ratio	1.64	1.11	148%	3.52	2.31	153%
Operating Expense Ratio	77.5%	80.3%	96%	73.1%	72.8%	100%
Total net worth change	\$117,745	\$72,185	163%	\$263,174	\$302,405	87%

Livestock Enterprises At-A-Glance

The Income Source charts shared earlier in this report indicate that the Environmental Cohort generates more income from livestock than the FBM State Database average. Those two charts noted that the Environmental Cohort has 16% more livestock and livestock & crop farm types than the FBM State Database average, and 15% less crop farms.

Dairy Enterprise (Excl Organic, Org Trans)	2022		2023		2024	
	EC	AVG	EC	AVG	EC	AVG
Number of Farms	17	243	18	249	18	222
Gross Margin / cow	\$6,440	\$5,740	\$5,442	\$5,037	\$6,168	\$5,669
Feed Cost / cow	\$3,256	\$2,908	\$3,015	\$2,780	\$2,845	\$2,679
Net Return / cow	\$1,168	\$686	\$419	\$37	\$1,101	\$688
Gov. Payments /cow	\$41	\$32	\$268	\$259	\$15	\$12
Avg. Milk Price / cwt	\$25.34	\$24.24	\$19.96	\$19.14	\$21.84	\$21.36
Milk Produced / cow	26,810	25,485	27,158	25,918	27,648	26,380
Number of Cows	319	274	355	288	370	303

The Dairy and Beef Cow-Calf enterprises were submitted by more farms in the Environmental Cohort, so they are highlighted. For the dairy enterprise, this cohort had larger herds, more net return, received a higher milk price, and

produced more milk per cow than the State FBM Database average. The State FBM Database average showed a lower feed cost.

This is the first look at the Beef Cow-Calf data, which shows that the numbers are very similar in many cases, with the advantage changing between years. The Environmental Cohort had slightly larger number of cows each year and more cows per FTE (Full Time Equivalent) in 2022 and 2024. The State FBM Database average appeared to have stronger numbers in 2022 and 2023, while the Environmental Cohort showed strength in 2024.

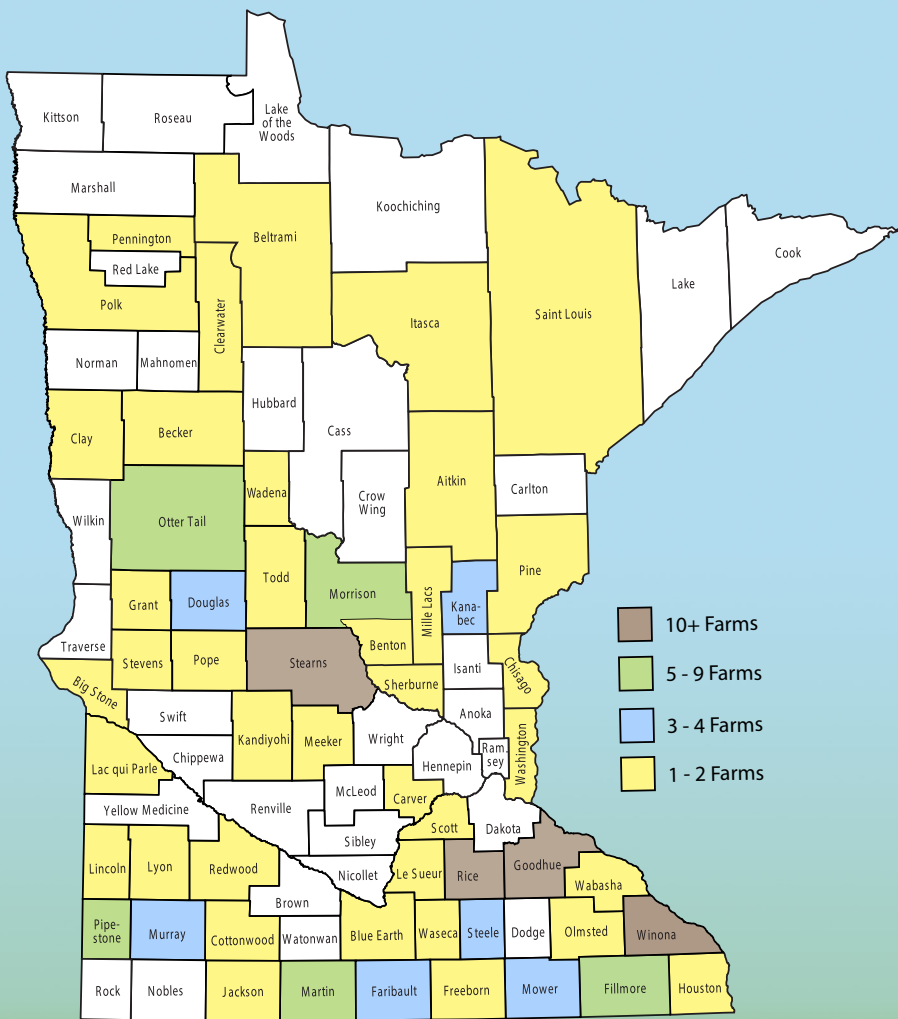
Beef Cow/Calf Enterprise (Excl Organic, Org Trans)	2022		2023		2024	
	EC	AVG	EC	AVG	EC	AVG
Number of Farms	12	86	12	72	15	68
Gross Margin / cow	\$730	\$815	\$1,129	\$1,142	\$1,377	\$1,314
Feed Cost / cow	\$667	\$640	\$589	\$624	\$593	\$625
Net Return / cow	(\$302)	(\$236)	\$92	\$98	\$326	\$262
Number of Cows	77	67	78	67	68	56
Cows per FTE	292	263	227	267	288	262
Calves sold per Cow	0.80	0.80	0.88	0.78	0.83	0.84
Price/ CWT Calves Sold	\$187	\$180	\$237	\$223	\$265	\$296

FBM Farms that are Water Quality Certified and using Cover Crops

Farmers enrolled in the Farm Business Management Education program may indicate if they are Water Quality Certified (Environmental Cohort) and if they are raising cover crops and following FBM recommended tracking and reporting methods. In 2024, 27 farms were identified as meeting the criteria for these two “special sorts”. The first table shows general demographic data comparing this combined cohort with the Environmental and Cover Crop cohorts individually, and with the State FBM Database average. These farms generally have smaller cropping programs and have fewer beginning farms in the group. When comparing financial data, these farms have a larger percentage of livestock sales which aligns with the Environmental Cohort. This group is similar in business size but generated the lowest Net Farm Income but not the lowest Median Net Farm Income. This group also holds the weakest Working Capital position.

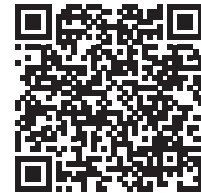
Demographics	2024			
	Environ. & Cover Crop	Environ. Cohort	Cover Crop Cohort	FBM State Database
Number of Farms	27	153	133	2223
Total Crop Acres per Farm	552	739	802	830
Age of Operator	48.2	48.7	47.9	47.4
Years Farming	26.1	23.8	24.3	22.8
Beginning Farmers (<10 yrs)	15%	21%	17%	29%

Financial Factors	2024			
	Environ. & Cover Crop	Environ. Cohort	Cover Crop Cohort	FBM State Database
Gross Cash Farm Income	\$1,216,891	\$1,304,767	\$1,073,189	\$1,057,092
<i>Crop Sales</i>	\$350,095	\$432,778	\$446,211	\$508,162
<i>Livestock Sales</i>	\$671,247	\$659,242	\$416,090	\$365,204
Total Cash Farm Expense	\$1,066,760	\$1,090,492	\$905,220	\$898,843
Average Net Farm Income	\$58,478	\$134,817	\$81,710	\$67,704
Median Net Farm Income	\$35,671	\$42,409	\$48,421	\$21,473
Working Capital as % of OE	28.0%	48.8%	49.3%	43.8%
Debt Coverage Ratio	1.14	1.52	1.23	1.05

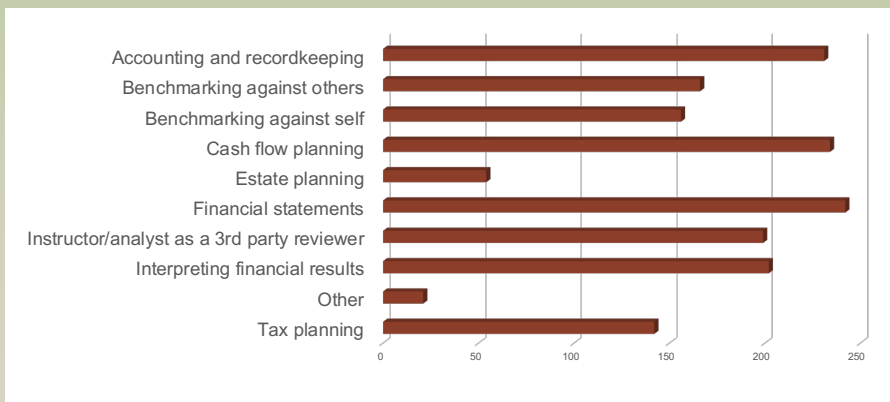


SOURCES OF DATA

The 153 producers who provided data for this report have all earned a Minnesota Water Quality Certification from the MN Department of Agriculture. Those producers are located in 53 of Minnesota's 87 counties. Those counties are highlighted on the map.



WHAT PRODUCERS LIKE BEST ABOUT THE MN FBM PROGRAM



MINNESOTA STATE
Northern Agricultural Center of Excellence

Keith Olander

Director of AgCentric,
the Northern Agricultural
Center of Excellence

Keith.Olander@clcmn.edu
(218) 894-5163

agcentric.org



Tina LeBrun

Executive Director of the
Southern Agricultural
Center of Excellence

Tina.LeBrun@southcentral.edu
(507) 389-7391

www.centerofagriculture.org



MINNESOTA STATE
Southern Agricultural Center of Excellence

Content Contributor: DelRay Lecy



United States
Department of
Agriculture

National Institute
of food and
Agriculture

This work is supported by FBMB under Award No. 2024-38504-42664 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

