2023 Minnesota Farm Finances Annual Report

This report recaps the financial performance and position of Minnesota Farms in the FINBIN database in 2023.

FINBIN

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Center for Farm Financial Management

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About this Report

Title: 2023 FINBIN Annual Report on Minnesota Farm Finances

Authors[1]: Pauline A. Van Nurden, Katherine A. Wilts Johnson, Dale W. Nordquist, Mariah D. Beverly

Report Contents
This report provides an overview of the Minnesota farms in the FINBIN database for the 2023 financial analysis year. This report contains valuable data, figures, and insightful commentary on the farms' profitability, liquidity, solvency, debt repayment capacity, and financial efficiency. Comparisons across regions of the state and farm types are also provided along with a look at family living expenses.

About the Data
The Minnesota data included in FINBIN is provided by producers who participate in farm business management education programs throughout the state. The majority (2,293 farms) are participants in the Farm Business Management Education programs offered through Minnesota State. Click here for more information on these programs.

Another 113 farms are members of the Southwest Minnesota Farm Business Management Association (SWMFBMA). More information is available on SWMFBMA here.

42 additional farms were contributed by other affiliated groups.

FINBIN data is not survey data. Participating producers complete a comprehensive financial analysis of their operation at the end of each year, with the help of a farm business management educator. The farm financial data is processed through several rounds of screening for accuracy and completeness. Farms that do not meet strict accuracy requirements are excluded. Every effort is made to verify the integrity of each set of farm financial data included in the database. It must be stressed, that this is not a random sample of Minnesota farms. Farms pay a fee to be part of these programs and there are likely characteristics of participating farms that distinguish them from other farms in the state.

The 2,448 Minnesota farms included in the FINBIN database represent a broad cross-section of the state's production agriculture. These farms represent almost 4% of the farms in Minnesota and 13% of Minnesota's commercial farms with sales of over $250,000[2]. While there is no "typical" Minnesota farm, these farms include a large enough sample to provide a good barometer of commercial farming in Minnesota. Table A compares the farms included in FINBIN to all Minnesota farms based on USDA/NASS data.

Table A: Size of Farms in FINBIN Compared to Minnesota Farm Population

Sales Class (proxy for farm size)	All MN Farms	Number in FINBIN	% in FINBIN
<$100,000	44,700	224	0.5%
$100,001 - $250,000	7,600	353	4.6%
$250,001 - $500,000	5,900	460	7.8%
$500,001 - $1,000,000	4,800	571	11.9%
>$1,000,000	4,100	840	20.5%

1 - Van Nurden, Wilts Johnson, Nordquist, and Beverly are each Extension Economists with the Center for Farm Financial Management at the University of Minnesota

2 - Minnesota Ag News – Farms and Land in Farms, United States Department of Agriculture, National Agricultural Statistics Service, Washington, D.C., February 17, 2024.

2023 Farm Financial Scorecard Summary

The scorecard below shows the financial performance of Minnesota farms in FINBIN in 2023. The scorecard uses recommended financial measures from the Farm Financial Standards Council (FFSC). To learn more about these measures and how they are calculated, see this document.

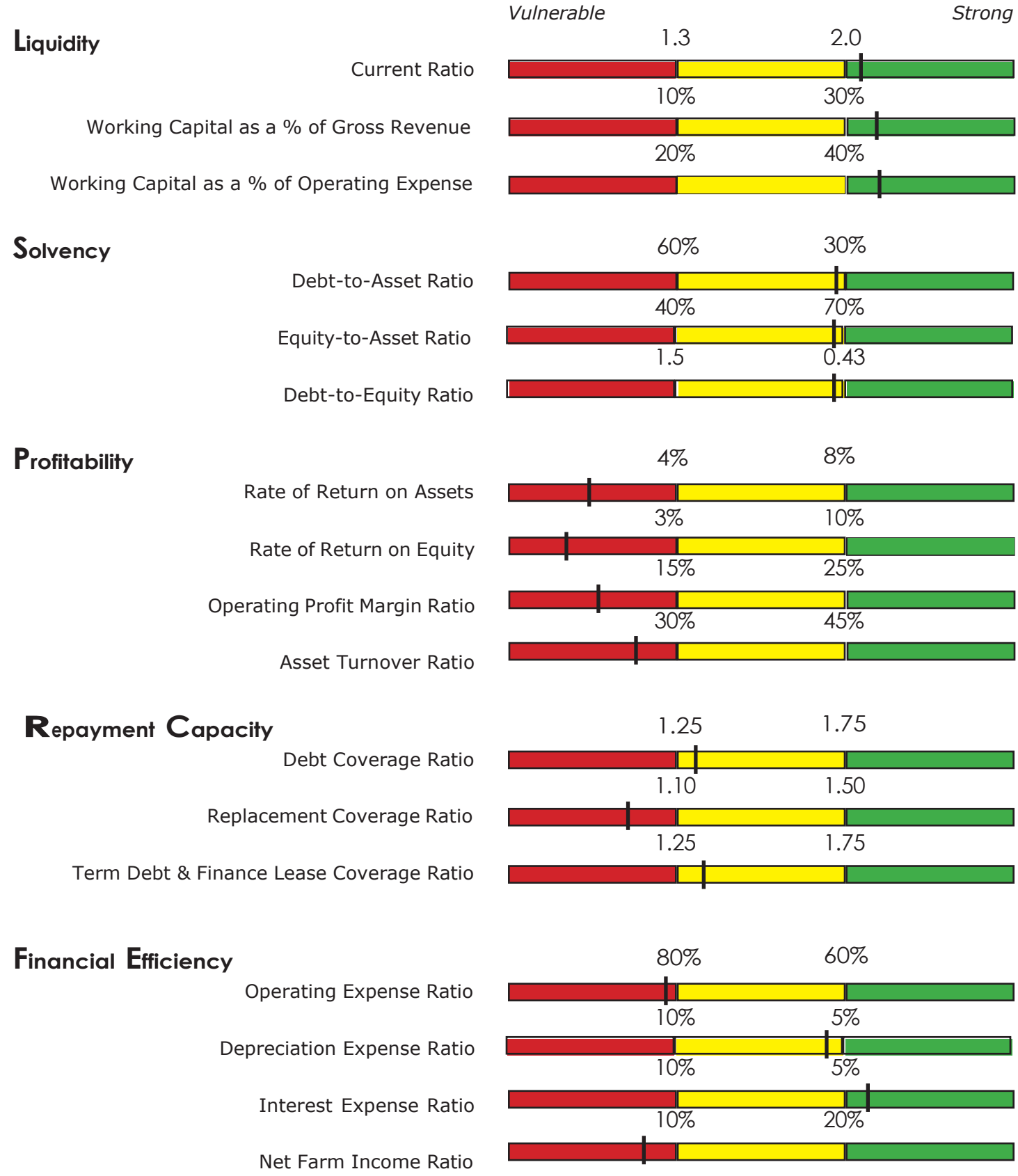

Figure A. 2023 Farm Financial Scorecard Summary

The Year in Brief

Minnesota farms saw a drastic reduction in farm income in 2023. This was primarily caused by decreasing prices for several commodities, including corn, soybeans, milk, and pork. Revenue was down substantially for dairy and hog farms in 2023. Crop farms experienced inventory value changes at year end that led to a reduction in accrual adjusted net farm income for the year. Median[3] net farm income for Minnesota farms was reduced to $44,719 in 2023, down from $189,807 (adjusted for inflation) in 2022. This was a 76 percent decrease from the previous year. After adjusting for inflation, 2023 was on par with the low profitability experienced by Minnesota farms from 2013 to 2019.

Crop farms reported decreased profitability in 2023 with a median net farm income of $45,760, down from $246,204 (adjusted for inflation) in 2022. Decreased profits were the result of lower yields year over year and decreasing prices during the year. The impact of accrual adjustments at year end led to the change in profitability. Additionally, it was another dry year in much of the state, which led to reduced yields for corn and soybean producers on average.

Dairy farms also reported lower earnings in 2023 than 2022. The median net farm income for dairy farms was $40,530, down 75 percent from $161,254 (adjusted for inflation) the previous year. The average milk price decreased $5.09 per hundred pounds compared to 2022. Production expenses decreased by 2 percent from 2022, but this was not enough to offset a 21 percent decrease in milk prices for the year.

Pork producer net income plummeted in 2023, with the median producer experiencing a loss of $32,022 for the year. This was down from a positive net income of $305,312 (adjusted for inflation) in 2022. The average price received for wean-to-finish market hogs was $80 per hundred pounds (carcass), down from $96 from the previous year. Production expenses also decreased for hogs, but the drop in commodity prices was devasting to producer's bottom lines.

Profits retreated for Minnesota beef operations, with a median net farm income of $44,747, down 63 percent from the median net farm income for beef producers of $122,009 (adjusted for inflation) in 2022. This income reduction was driven largely by the cropping side of their operations and the accrual adjustments for crop commodities at year end. Also, any cattle placed in feedlots at the end of 2023 were at much higher prices. Overall, beef prices experienced for sales were strong for cattle producers in 2023. Cow-calf producers made $127 per cow in 2023, this was much improved over the previous year. Likewise, cattle finishers made $180 per head, up from the previous year as well.

The average Minnesota farm earned a rate of return on assets of 2.5% (based on adjusted cost or book valuation of assets). This was a decrease of 8.1 percent from 2022. Working capital decreased with the challenging profitability landscape. The average farm saw a decrease of $92,950 in working capital in 2023. Debt coverage also decreased substantially in 2023. The average farm had a debt coverage ratio of 1.29:1 in 2023, down from 3.38:1 in 2022.

Government payments were not a large factor in 2023, especially compared to their impact in 2020 and 2021 due to the Covid-19 pandemic and other disaster related aid. Payments of all types decreased in 2023, totaling $22,202 per farm, which comprised 2 percent of gross farm income. Most of the payments received in 2023 were actually related to disasters in previous years or the Covid-19 pandemic. Payments related to 2023 crop production support were essentially nonexistent.

The average farm's total net worth increased by over $162,000. Forty percent (40%) of net worth growth resulted from farm and non-farm earnings, with the other 60% of net worth growth resulting from increases in estimated market value of farm assets. With this, the average debt-to-asset ratio increased slightly from 30% in 2022 to 31% in 2023.

Net farm income decreased in every region of the state in 2023. Farms in Northwest Minnesota had the

highest median income and the smallest decline in income from 2022. Farms in the North Central/Northeast region had the lowest incomes. Profitability decreases were driven by decreased yields and lower commodity prices across the state.

Family living expenses for the average family keeping detailed records averaged $78,283 in 2023, an increase of 5% from the previous year when adjusting for inflation.

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3 - The median represents the value separating the data in two equal halves. This can be thought of as the middle value.

Table 1. FINBIN Highlights for Minnesota Farms in 2023 (averages unless otherwise noted)

	2020	2021	2022	2023	% Change from '22 to '23
Number of Farms	2,408	2,458	2,307	2,448	6%
Income and Expenses					
Gross Revenue	$927,574	$1,111,267	$1,256,174	$1,091,727	-13%
Total Expense	$749,204	$834,624	$951,237	$1,007,793	6%
Average Net Farm Income	$182,121	$280,280	$315,173	$89,359	-72%
Median Net Farm Income	$107,077	$166,529	$182,332	$44,719	-75%
Family Living Expense	$60,122	$65,553	$71,440	$78,283	10%
Crop Production and Prices Received (cash sales only)					
Corn Yield (bushels per acre)	199	187	202	192	-5%
Corn Price Received (cash sales only, $/bushel)	$3.40	$4.73	$6.07	$6.05	-0.3%
Soybean Yield (bushels per acre)	53	49	53	51	-4%
Soybean Price Received (cash sales only, $/bushel)	$8.97	$11.43	$13.66	$13.72	0.4%
Spring Wheat Yield (bushels per acre)	59	52	66	69	4%
Spring Wheat Price Received (cash sales only, $/bushel)	$4.96	$6.78	$9.03	$8.24	-9%
Livestock Production and Prices Received					
Number of Milk Cows (per dairy farm)	238	269	260	282	9%
Pounds of Milk Produced (per cow)	24,663	25,030	25,216	25,561	1%
Pounds of Energy Corrected Milk (ECM)[4] Produced (per cow)	26,421	27,224	27,859	28,547	2%
Milk Price Received ($ per 100 pounds)	$19.90	$18.59	$24.35	$19.26	-21%
Market Hog Price Received ($ per 100 pounds sold)	$47.90	$69.88	$71.52	$59.64	-17%
Wean Pig Price Paid ($ per head)	$39.13	$41.83	$54.29	$46.76	-14%
Finished Beef Price Received ($ per 100 pounds sold)	$108.67	$121.86	$145.96	$174.95	20%
Feeder Calf Price Paid ($ per hundred pounds)	$140.12	$148.89	$175.09	$223.21	27%
Net Worth					
Change in Net Worth ($)	224,236	350,114	354,770	162,698	-54%
% Net Worth Change from Farm and Non-Farm Earnings	79%	79%	80%	40%	-41%
% Net Worth Change from Market Value Adjustments	21%	21%	20%	60%	41%
Selected Financial Measures					
Current Ratio	1.97	2.43	2.73	2.24	-
Working Capital ($)	$306,275	$448,723	$587,087	$457,205	-22%
Working Capital to Gross Revenue	33%	40%	47%	42%	-
Farm Debt-to-Asset Ratio	34%	33%	31%	32%	-
Rate of Return on Farm *Assets* (a)	8%	11%	11%	3%	-
Rate of Return on Farm *Equity* (b)	11%	17%	16%	1%	-
Difference Between ROR on Equity & Assets (b-a)[5]	3%	6%	5%	-1%	-
Debt Coverage Ratio	2.47	3.44	3.38	1.29	-
Term Debt Coverage & Finance Lease Coverage Ratio	2.63	3.61	3.59	1.33	-
Operating Expense Ratio	71%	67%	68%	82%	-
Net Farm Income Ratio	19%	25%	24%	8%	-

4 - Energy Corrected Milk (ECM) determines the amount of energy in the milk based upon fat and protein levels in the milk adjusted to 3.5% fat and 3.2% protein.

5 - A negative difference represents years where borrowed capital cost more than it earned.

Farm Profitability Recap

Significant Decrease in Farm Profits in 2023 for Minnesota Farms

Median net income for Minnesota farmers decreased in 2023 for the first time since 2019. The median net farm income for all farms fell 76% from $189,807 (adjusted for inflation) in 2022 to $44,719 in 2023 (Figure 1). The profit decrease seen from 2022 to 2023 resembles the decline seen from 2012 to 2013.

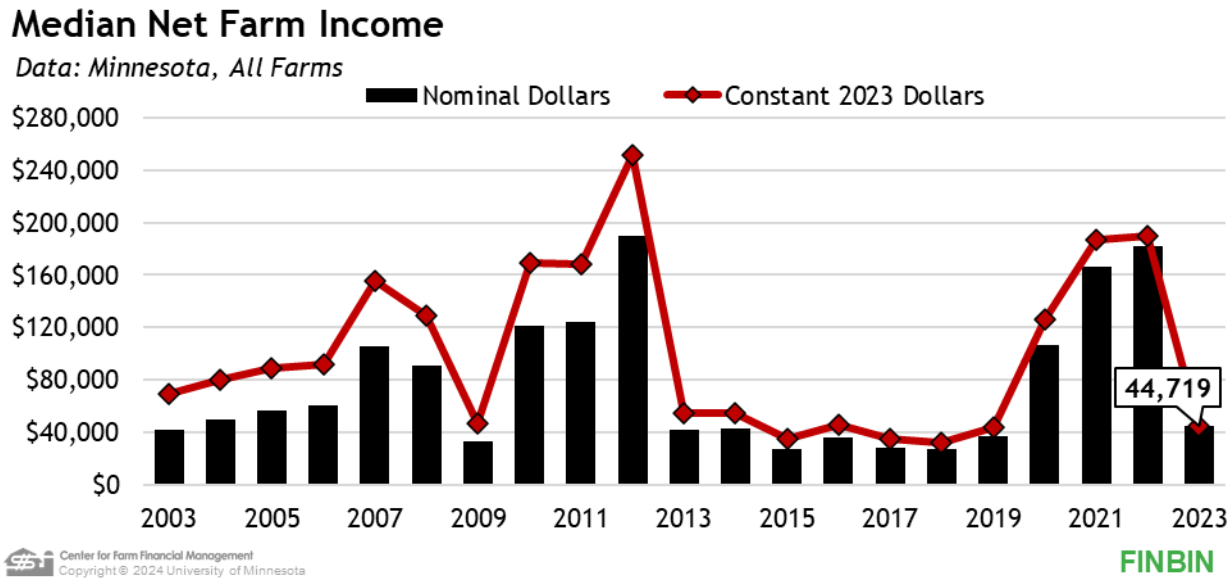

Figure 1. Median Net Farm Income in Nominal and Inflation-Adjusted Dollars from 2003 to 2023

$44,719
median net income in 2023

$89,359
average net income in 2023

-76%
change in median net income from 2022 to 2023

-73%
change in average net income from 2022 to 2023

The average net farm income for 2023 was higher than the median, indicating the more profitable farms were profitable enough to positively skew the average for all farms.

A decrease in commodity prices, yields, and high input prices for the state's major cash crops were large drivers of the declined net incomes in 2023. Commodity prices received for 2023 cash sales were only slightly changed from 2022 cash sales, however the 2023 crop held in inventory decreased in value significantly at the end of the year.

-24%
Change in average corn inventory value from 2022 to 2023

-10%
Change in average soybean inventory value from 2022 to 2023

-20%
Change in average spring wheat inventory value from 2022 to 2023

Earnings were weak across the broad cross-section of Minnesota agriculture. Approximately 31% of farms reported a financial loss in 2023 compared to less than 4% in 2022. The median net income for the most profitable 20% of Minnesota farms in 2023 in the database was $309,243. The median income for the least profitable 20% of farms was -$93,341. Both of these metrics fell significantly from previous years.

Government payments were much less of a factor in 2023 compared to 2019 through 2022. The minimal 2023 payments included disaster payments dating back several years. Government payments comprised only 2% of gross revenue in 2023 (compared to 2% in 2022, 6% in 2021, and 12% in 2020).

The rate of return on farm assets (ROA)[6] can be thought of as the average interest rate being earned on all investments in the farm. The rate of return on farm equity (ROE) represents the interest rate being earned by the farmer's investment in the farm. This 'interest rate' can be compared to returns available if the farmer had invested their equity elsewhere such as the stock market or a certificate of deposit.

Rates of return were very vulnerable in 2023. ROA fell from 10.6% in 2022 to just 2.5% in 2023. Similarly, ROE decreased from 15.5% in 2022 to 1.4% in 2023.

The relationship between ROE and ROA is a good barometer of sector profitability. When ROE is higher than ROA, borrowed capital earned more than it cost (ROA was higher than the interest rate paid on borrowed capital). When ROE is lower than ROA, the average producer loses money on borrowed capital. Unfortunately, this was the case in 2023. Figure 2 shows the historic relationship between ROA and ROE.

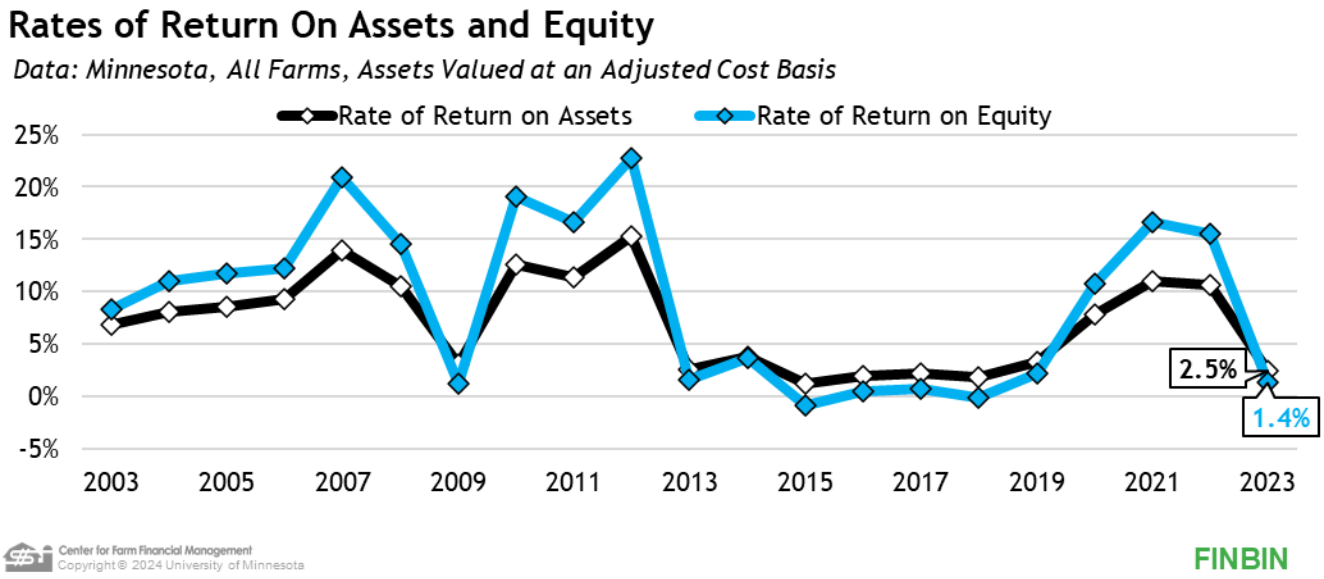

Figure 2. Average Rate of Return on Assets and Equity (ROA and ROE) from 2003 to 2023

2.5% average ROA in 2023

Down from **10.6%** ROA in 2022

1.4% average ROE in 2023

Down from **15.5%** ROE in 2022

6 - ROA presented here has assets valued at an adjusted cost basis. FINBIN includes assets valued at both cost (book) value and at their estimated market value. Cost valuation of capital assets is based on economic depreciation, which depreciates assets at a rate generally slower than allowed by tax law.

Asset valuation is a major factor in measuring rates of return. Figure 2 is based on the adjusted cost or book value of assets. This provides the best picture of returns on funds actually invested by business owners. When assets are valued at estimated market value, ROA increases to 4.2% and ROE increases to 5%. This includes capitalization of estimated increases in asset values during the year in addition to actual farm earnings.

Farm Liquidity Recap

Farms' Liquidity Position Declined in 2023 for the First Time Since 2019

Working capital[7], which is a measure of liquidity[8], is typically a focus for producers and agricultural lenders and is the major financial resource farms rely on to survive during depressed financial conditions. Minnesota farms built working capital (current assets minus current liabilities) rapidly during the 'golden years' of 2007 through 2012. The average farm consumed about 50% of that working capital over the period of 2013 – 2019.

Average working capital rebounded from 2020 – 2022 but declined in 2023 for the first time since 2019 (Figure 3). Working capital decreased by almost $154,000 (adjusted for inflation) for the average of Minnesota farms in 2023. After three very profitable years, average working capital has returned to the level seen between 2020 and 2021. Figure 3 shows the average working capital and current ratio from 2003 to 2023.

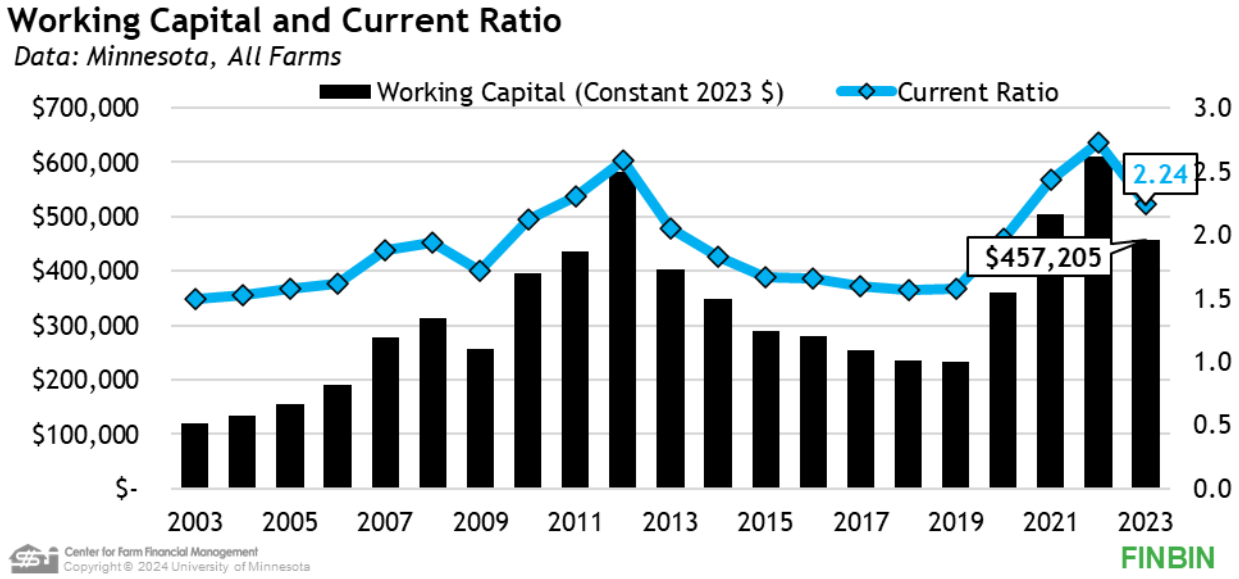

Figure 3. Average Working Capital and Current Ratio from 2003 to 2023

-$153,951

Average change in working capital from 2022 to 2023

-0.49

Change in average current ratio from 2022 to 2023

The current ratio for the average farm was 2.24:1 at the end of 2023, meaning $2.24 of current assets were available to cover each dollar of current debt. This was down from 2.73:1 in 2022. The improvements from 2020 to 2022 gave farms a stronger financial footing going into the downturn of 2023.

7 - Working capital is the difference between current assets and current liabilities.

8 - Liquidity is the ability of a business to meet financial obligations as they come due.

Working capital-to-operating expense ratio measures the available operating capital against the operating expenses of a farm. A ratio of over 40% is considered to be strong. Working capital-to-gross revenue ratio measures the available operating capital against the size of the business. A ratio greater than 30% is considered strong.

Figure 4 shows these two working capital ratios since 2003.

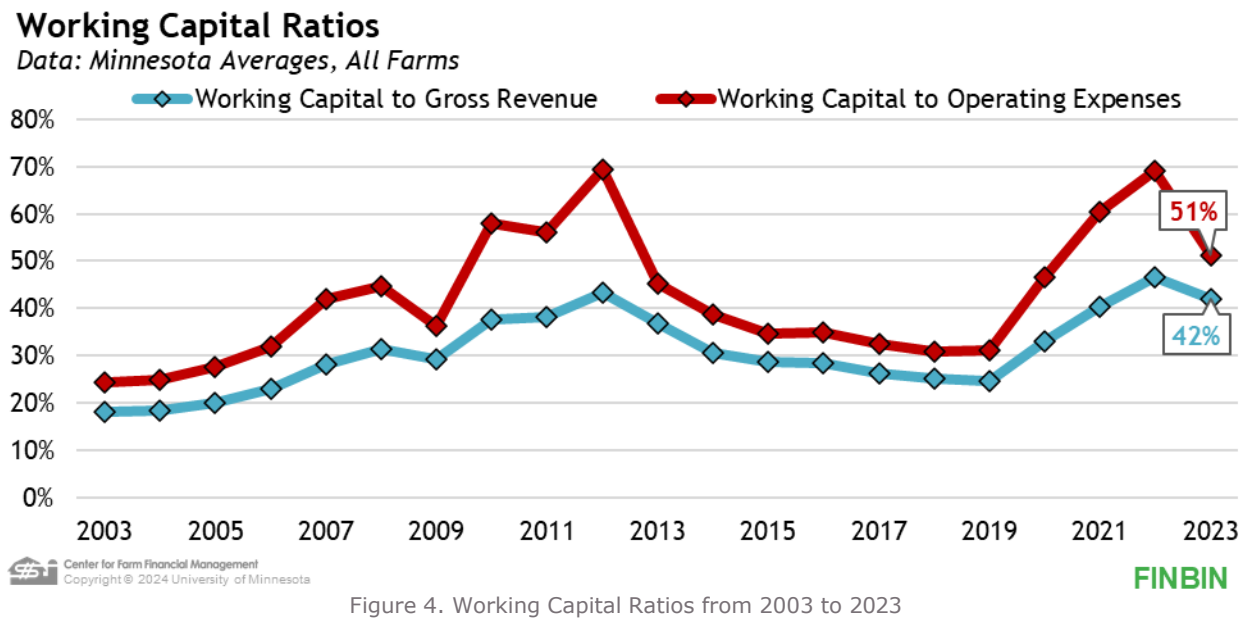

Figure 4. Working Capital Ratios from 2003 to 2023

$457,205 (-25% from 2022)
Average working capital in 2023 for the average farm

-$92,950
Change in working capital from 2022 to 2023 for the average farm

The average working capital-to-operating expense dropped from 69% in 2022 to 51% in 2023. Average working capital-to-gross revenue was 42% in 2023, a decrease from 47% the prior year. Although both ratios decreased from the previous year, they are each well above the recommended benchmarks for strong liquidity position. Even with the declines, the average farm is still well-positioned to withstand further financial challenges in the short-term.

Farm Solvency Recap

Minnesota Farms Slowed Growth in 2023

A farm's balance sheet can also inform us about its solvency position. Solvency is the ability of a business to meet all its debt obligations if the business were sold at the current point in time.

Since the inception of the FINBIN database in 1996, the average Minnesota farm has seen significant changes in their balance sheets. Farms have been growing rapidly.

Figure 5 displays the average Minnesota farm balance sheet since 2003. Note, this figure has assets valued at estimated market values rather than at cost values. Using estimated market values provides the most accurate estimate of solvency by factoring in what the farm would receive if it were to liquidate assets to pay off debts.

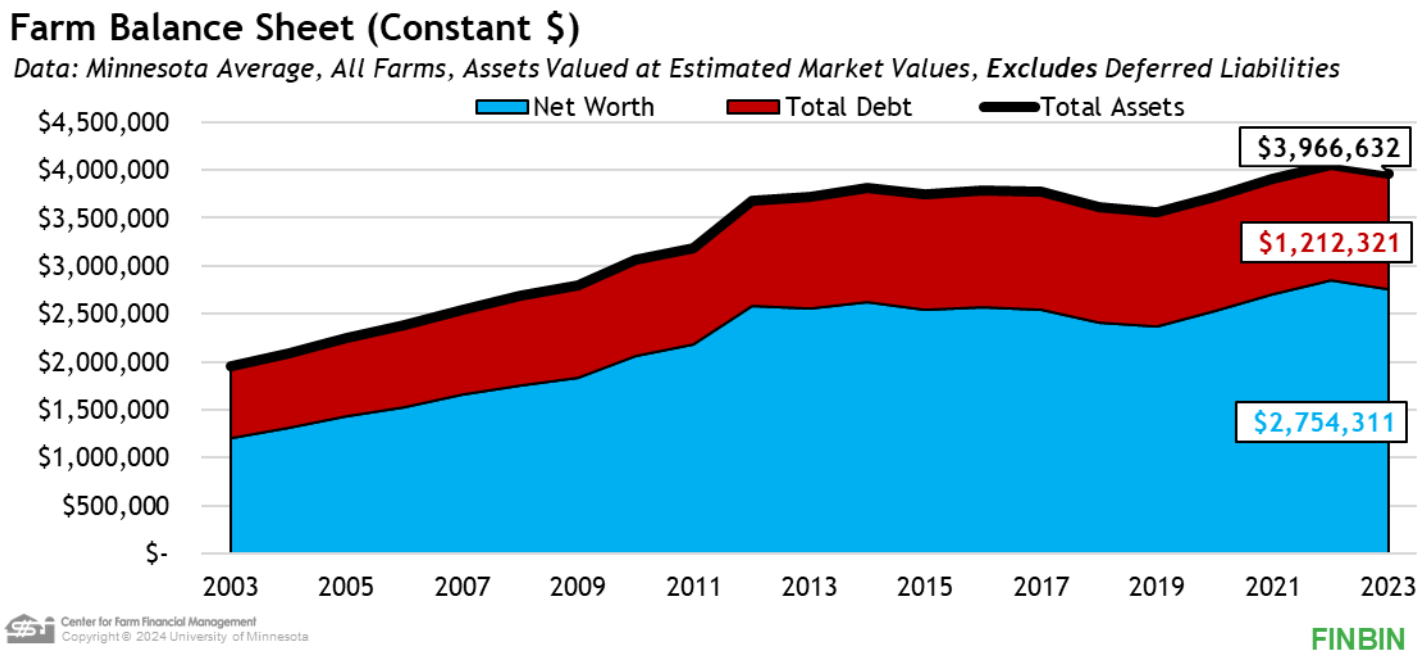

Figure 5. Farm Balance Sheet from 2003 to 2023

In 2023, the average Minnesota farm in FINBIN had total assets of $3,966,632, total debt of $1,212,321, and $2,754,311 of net worth. The net worth levels depicted in Figure 5 for 2013 – 2019 and 2023 are a bit deceiving in that they appear to show decreases in inflation adjusted net worth in several years. Those apparent net worth decreases result from changes in the composition of farms analyzed and not actual net worth losses. The individual farms included in FINBIN change somewhat each year, as some farms exit, and new farms join the contributing educational programs. The average farm has reported a net worth increase every year in FINBIN. The average farm in the FINBIN database reported an increased net worth of over $162,000 in 2023 compared to the previous year.

As evident in Figure 5, balance sheet growth is not a new phenomenon for Minnesota farms. In constant dollars, total assets have increased by over $2 million since 2003. Total debt increased by nearly $470,000 over the same period. As a result, the average farm has gained over $1.5 million in constant dollars of net worth since 2003.

Net worth change can have two sources – the amount resulting from retained earnings and the amount resulting from changes in the market valuation of assets. In 2023, 40% of net worth growth for these farms was "earned". Retained earnings result when farm and non-farm income exceed the amount consumed by family living expenditures and income taxes. The remaining 60% of net worth growth resulted from asset value appreciation. Again, it should be noted that the mix of individual farms included in FINBIN changes somewhat each year as some farms exit the educational programs and new farms join.

A commonly used metric to evaluate solvency is the debt-to-asset ratio, which can be thought of as representing the bank's share of the farm business by comparing total farm debt to total farm assets. A higher debt-to-asset ratio indicates lower financial borrowing capacity and greater financial risk for the farm.

Net worth represents the owner of the farm's equity or share of the farm business.

Figure 6 displays the average inflation-adjusted net worth (in constant 2023 dollars) and the average debt-to-asset ratio, excluding deferred liabilities.

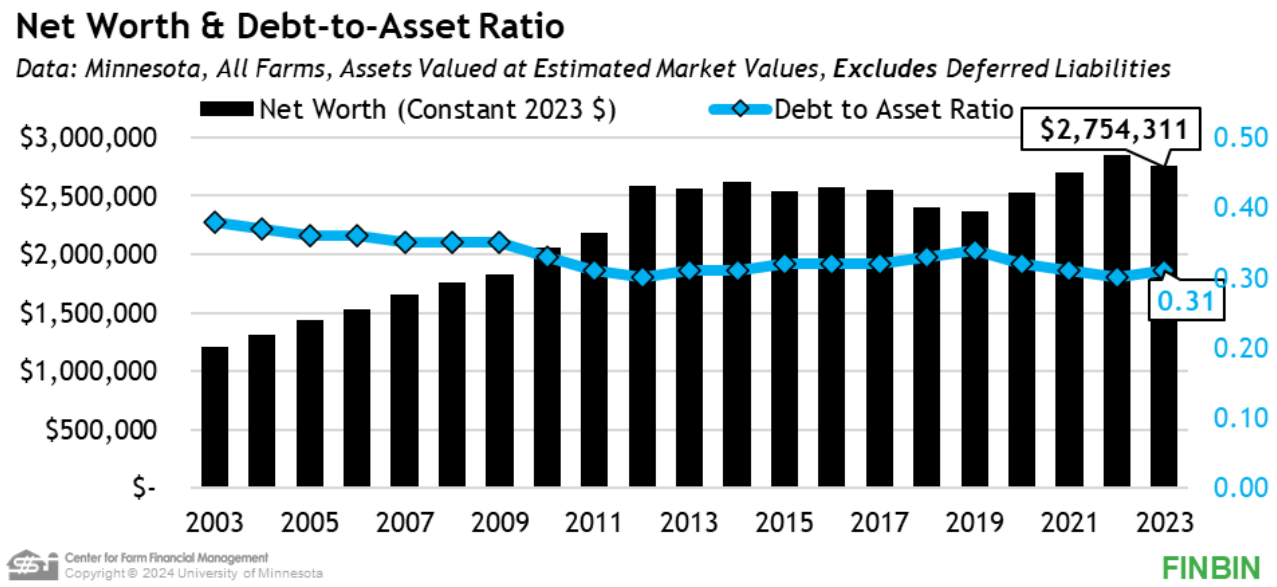

Figure 6. Net Worth and Debt to Asset Ratio from 2003 to 2023

+$162,698

Change in Net Worth from 2022 to 2023 for the average farm

+$64,512

Change in Earned Net Worth from 2022 to 2023 for the average farm

The average farm's debt-to-asset ratio was 31%, up one percentage point from 2022, placing the average farm on the edge of the strong solvency position threshold. The average farm's total net worth grew by over $162,000 in nominal dollars in 2023.

Evaluating the Impact of High Financial Leverage in 2023

Table 2 shows the impact of financial leverage (or the debt-to-asset position) on the financial performance of these farms.

	Farms with Under 40% Debt-to-Asset Ratio *Less Leveraged Farms*	Farms with Over 60% Debt-to-Asset Ratio *Highly Leveraged Farms*
Number of Farms	1152	476
Rate of Return on Assets	2%	3%
Rate of Return on Equity	2%	-2%
Current Ratio	3.97	1.3
Working Capital to Gross Revenue	64%	14%
Debt Coverage Ratio	1.85	0.91
Term Debt & Finance Lease Coverage Ratio	1.91	0.89

Many farms struggled financially in 2023, but as is always the case in low-income years, 2023 was especially difficult for highly leveraged farms. While they generated a slightly higher ROA, highly leveraged farms generated an ROE of -2%, compared to 2% for the low debt group. In profitable years, like 2022, highly leveraged businesses benefited from earning high returns using borrowed capital. This is a very high-risk strategy, as seen in less profitable years such as 2023. These highly leveraged farms remain in a much tighter liquidity position than their low-leveraged peers.

Debt Repayment Capacity Recap

Farms Faced Weak Repayment Capacity Levels in 2023

Debt coverage is a primary measure used by lenders when extending credit to businesses. The debt coverage ratio (DCR) compares dollars available for debt repayment after family living and income taxes versus scheduled debt payments. A DCR of 1:1 indicates that income available for debt repayment exactly equaled scheduled payments. Other measures of business soundness, such as current ratio and debt to asset ratio, tend to change very little from year to year, but DCR shows much more variation. Therefore, it is a better indicator of year-over-year financial stress.

Debt coverage declined significantly for the average farm in 2023, averaging 1.29:1 for all farms, down from 3.38:1 in 2022. Consistent with income trends, 2023 brought the average debt coverage ratio level back to the levels seen in 2013 – 2019 (Figure 7).

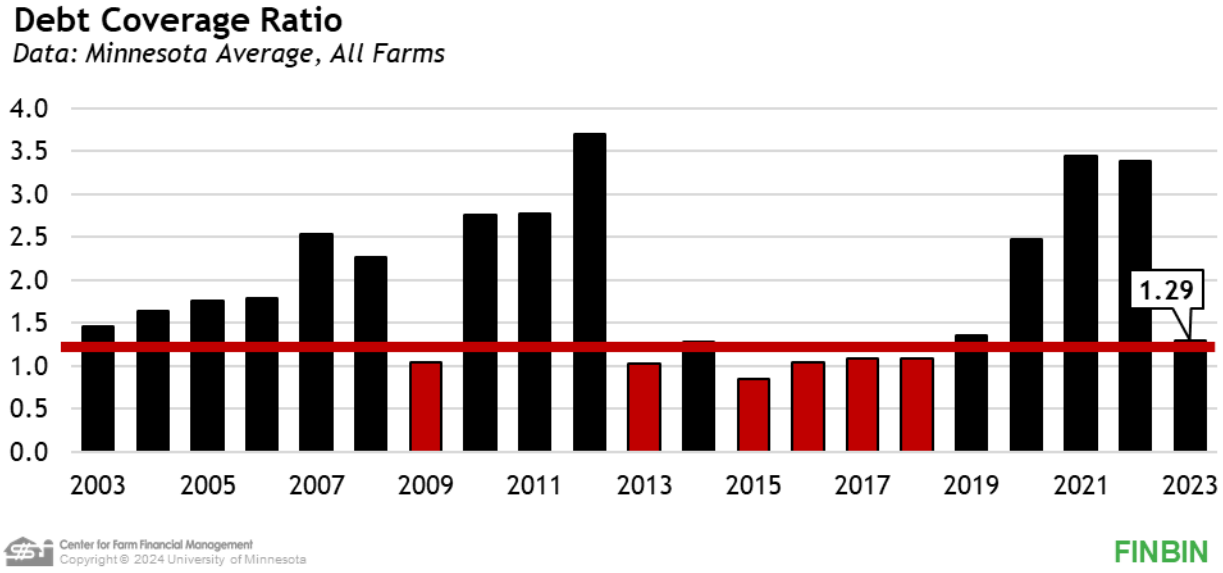

Figure 7. Debt Coverage Ratio from 2003 to 2023

In 2023 there were many individual farmers who struggled to make their payments. Approximately 43% of the farms had a debt coverage ratio under 1:1, meaning they may have needed to draw from outside sources of cash or borrow additional money to make their debt payments.

Financial Efficiency Recap

Minnesota Farms Retained Just 8% of Gross Revenue as Net Income in 2023

Financial efficiency metrics show where each dollar of income or generated revenue is spent. Financial efficiency ratios include the Operating Expense Ratio[9], Depreciation Expense Ratio[10], Interest Expense Ratio[11], and Net Farm Income Ratio[12]. Figure 8 displays each of these ratios from 2013 to 2023.

9 - shows the proportion of farm income used to pay operating expenses, excluding depreciation and interest.

10 - shows the proportion of farm income needed to maintain the capital used by the business.

11 - shows how much of farm income is used to pay interest on borrowed capital.

12 - compares profit to gross income and shows how much is left after all farm expenses are paid, except for unpaid labor and management.

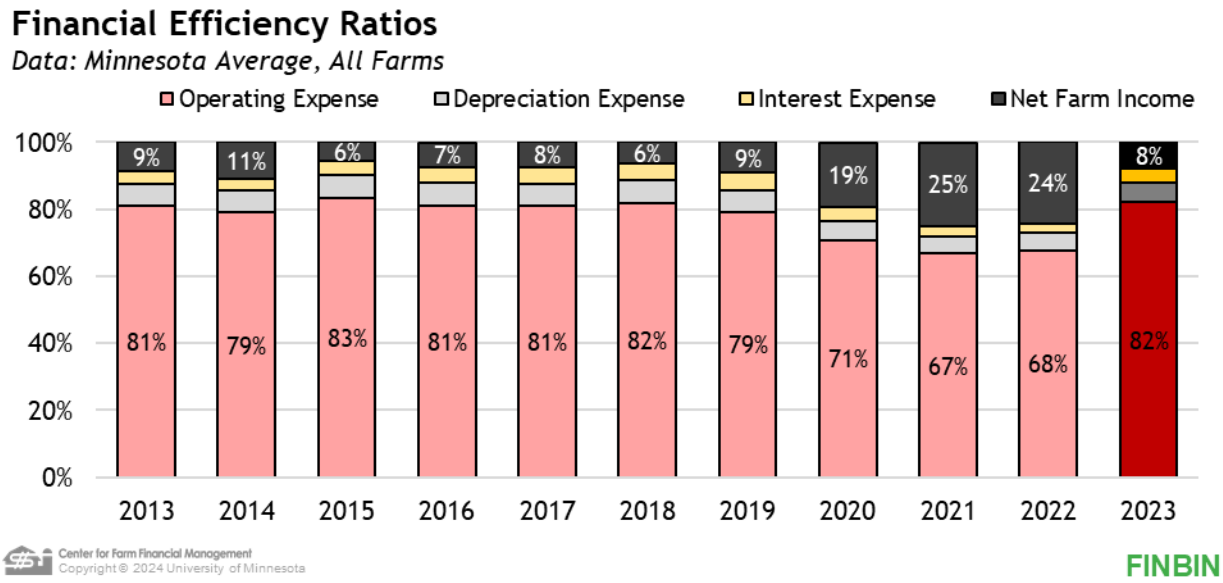

Figure 8. Financial Efficiency Ratios from 2013 to 2023

82%

Operating Expense Ratio for Minnesota Farms in 2023

6%

Depreciation Expense Ratio for Minnesota Farms in 2023

4%

Interest Expense Ratio for Minnesota Farms in 2023

8%

Net Farm Income Ratio for Minnesota Farms in 2023

In 2023, 82% of gross revenue went towards operating expenses for the average Minnesota farm, which was a significant increase compared to 68% the prior year. According to standard benchmarks from the Farm Financial Scorecard, an 82% level falls into an vulnerable range. This ratio, although recovered in 2020 – 2022, is back to the weak levels seen in 2013 – 2019.

The shares of gross revenue that went towards depreciation and interest expense increased by one percentage point from 2022 at 6% and 4% respectively. These ratios have remained relatively stable since 2012. Moving forward, a larger share of gross revenue may likely go towards interest expense. It will be more important to monitor this metric than it has been in recent years.

On average, Minnesota farms kept 8% of gross revenue as net farm income in 2023 (down from 24% in 2022). This is below the standard vulnerable benchmark level of 10%, reinforcing the observation that 2023 was a tough profitability year for Minnesota producers.

Comparing Regional Median Net Farm Income Across Minnesota

All Regions of Minnesota Saw Significant Decreases in Profit from 2022 to 2023.

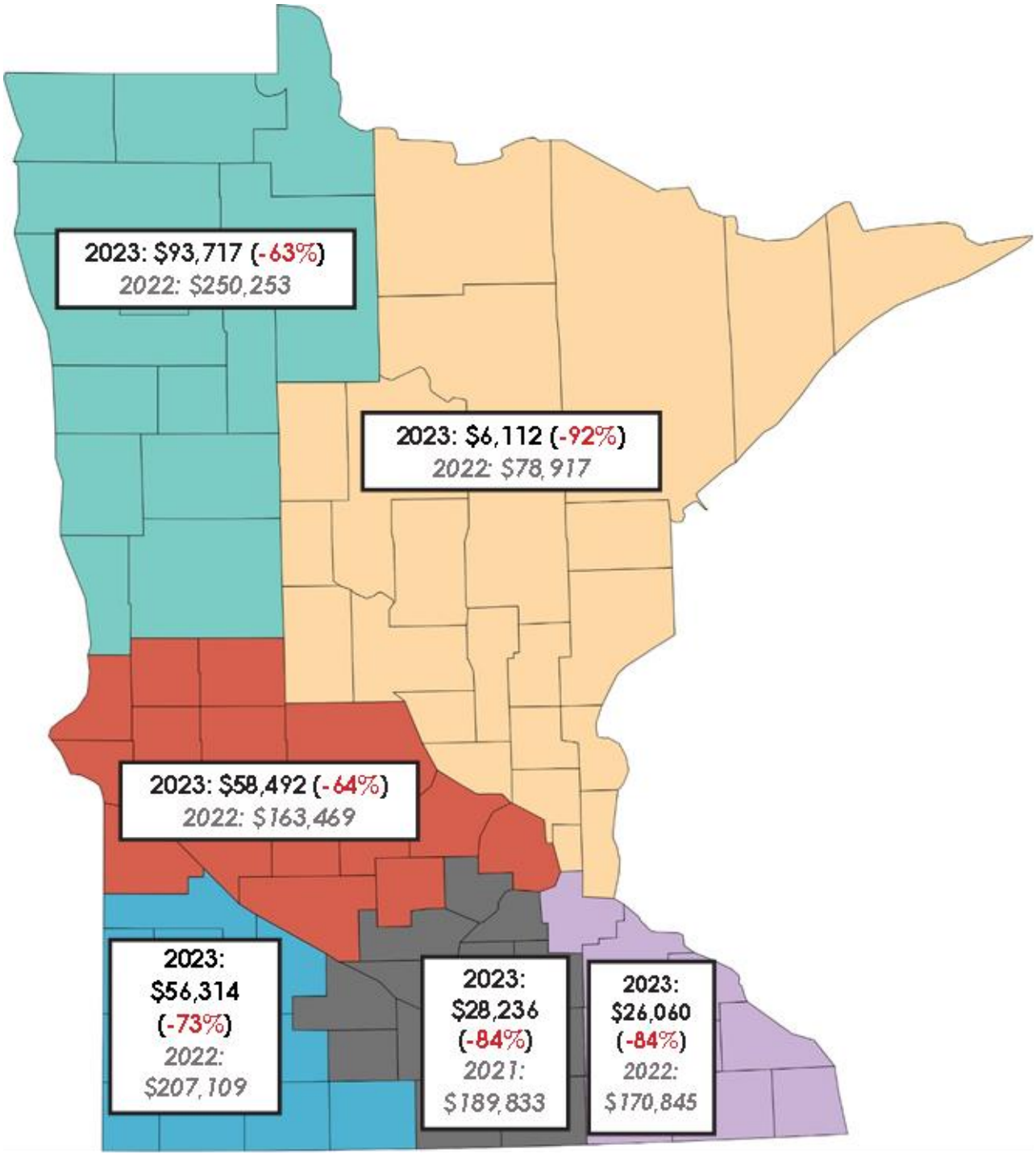

Figure 9. Minnesota Regional Median Net Farm Income in 2023 Compared to 2022

Family Expenses Recap

Family Living Expense Jumped in 2023

Figure 10 displays the average family living expense for Minnesota farms.

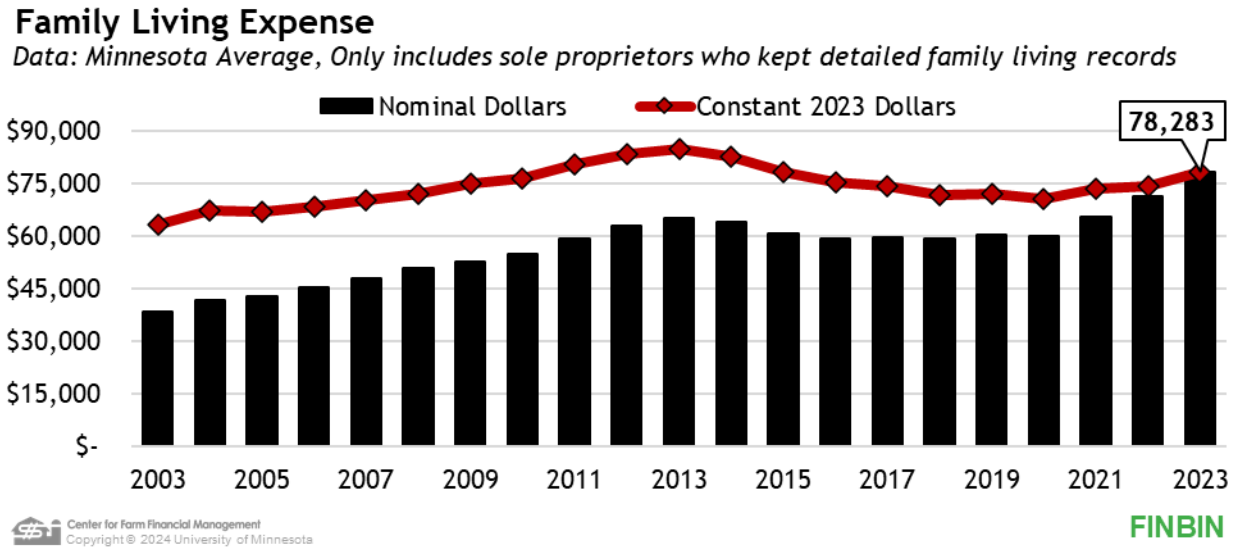

Figure 10. Average Family Living Expense for Sole Proprietor Farms in Minnesota with Detailed Family Living Records

$78,283	+10%	$23,935	>$112,888
Average family living expense for MN sole proprietor farms with detailed records	Change in family living expenses from 2022 to 2023	Average income and social security taxes paid in 2023	Amount needed from farm and non-farm sources to cover family consumption and taxes

Family living expenses for the 418 farms that kept detailed living records jumped by 10% in 2023. The average of these families spent $78,283 for family living expenses. The general level of inflation was likely the big driver of increased living expenditures. 'Food and meals' was the highest individual expenditure category at $11,784, a 9% increase from 2022. The second highest expenditure when added together was medical care and health insurance expense at $9,753, up 5%. These categories made up 28% of total family living.

The average farm also paid $23,935 of income and social security taxes and spent $10,670 on personal vehicles, household items and non-real-estate purchase. Given these expenditures, the average farm needed to generate $112,888 from farm and nonfarm earnings to cover non-farm expenditures and show a positive earned net worth change.

Comparisons Across Farm Types[13]

Summary Comparison Across All Farm Types

Profits were down dramatically for all of Minnesota's primary farm types in 2023. The median net farm income for participating crop farms was $45,760, down 81% from 2022. The median income for dairy farms dropped by 74% to 40,530. Even though beef prices were up substantially, the median income for beef farms was only $44,747, down 62% from 2022. Hog farms faced the most severe financial challenges in 2023, with the median farm losing $32,022, a decrease greater than $300,000 from the previous year.

Figure 11 displays the median net farm income for the major farm types in Minnesota over time.

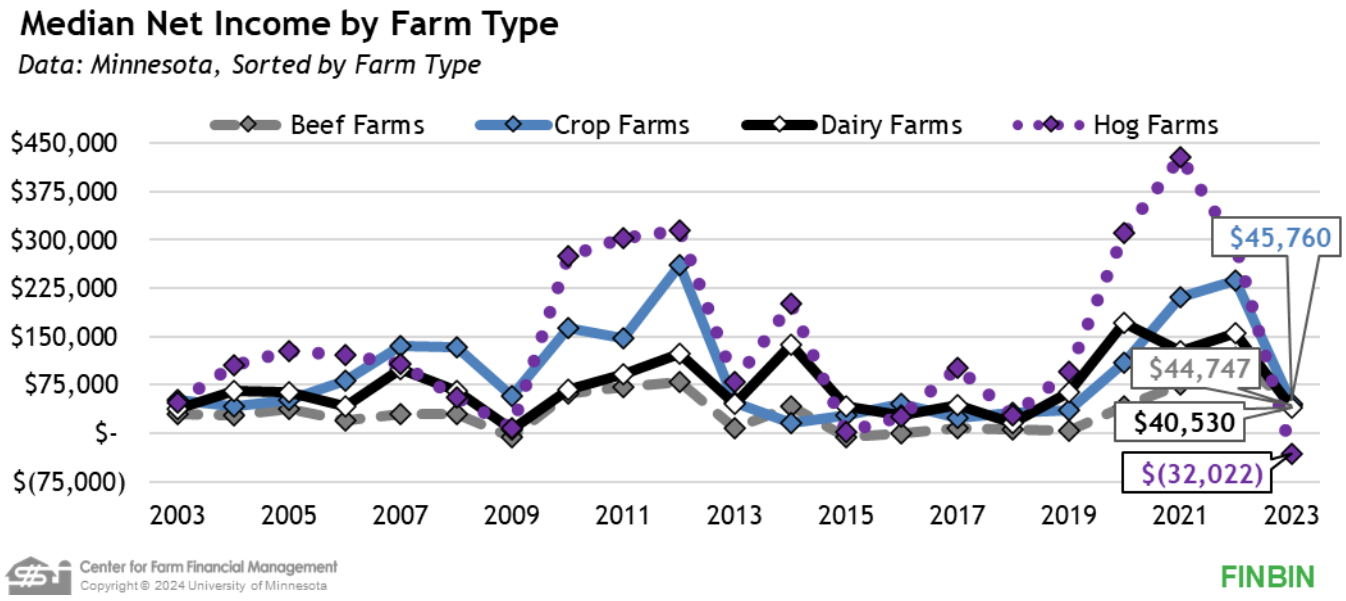

Figure 11. Median Net Farm Income Across Farm Types from 2003 to 2023

$44,747 (-62%)
Median net income for MN beef farms in 2023

$45,760 (-81%)
Median net income for MN crop farms in 2023

$40,530 (-74%)
Median net income for MN dairy farms in 2023

-$32,022 (-111%)
Median net income for MN hog farms in 2023

Table 3 provides a snapshot comparison across the four major farm types in 2023. Crop farms had the highest net farm income while beef farms had the greatest returns on assets and equity. Dairy farms had the lowest working capital-to-gross revenue while crop farms had the highest. Hog farms had the lowest debt coverage ratio.

Table 3. Snapshot Comparison Across Farm Types in 2023

	Beef Farms	Crop Farms	Dairy Farms	Hog Farms
Median Net Income	$44,747	$45,760	$40,530	$-32,022
Rate of Return on Assets	6%	3%	0%	-3%
Rate of Return on Equity	7%	2%	-3%	-8%
Working Capital to Gross Revenue	42%	54%	20%	26%
Change in Working Capital	+$26,549	-$117,851	-$95,025	-$423,038
Debt Coverage Ratio	1.9	1.4	0.8	-0.2
Net Worth Change	+$209,667	+$190,070	+$64,536	-$199,166

13 - Farm type is determined based on which enterprise type comprises at least 70% of gross revenue.

Beef Farms

High Prices Fail to Produce High Profits

Beef farmers were the only producers who saw higher commodity prices in 2023. Yet, the median net farm income for participating beef farms, at $44,747, was down dramatically from 2022. Still, returns for both cow-calf producers and cattle finishers were up. Both earned their highest average returns since 2014. These results are a bit counterintuitive. It appears that most of the reduction in income resulted from the reduced value of crop and feed inventories as crop values declined during the year. While these farms are categorized as beef farms, many of them also have large cropping operations. Given the drop in crop and feed values during the year, their earnings suffered from this lost crop inventory value.

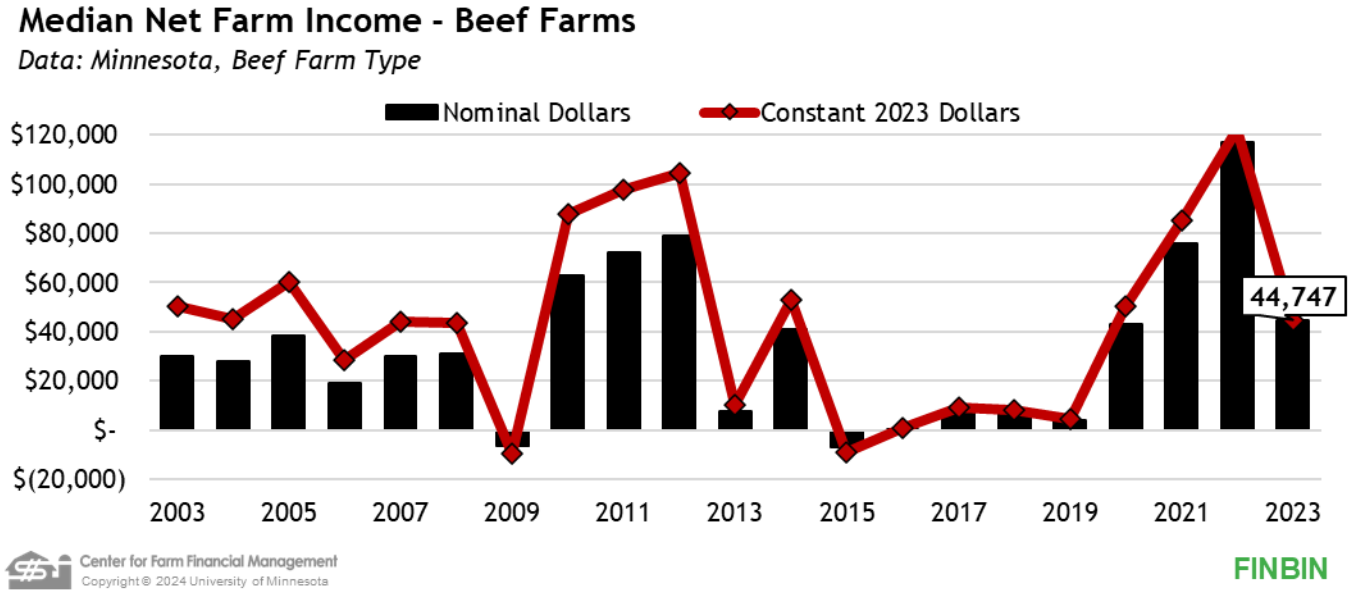

Figure 12. Median Net Farm Income for Beef Farms from 2003 to 2023

5.9%
ROA for beef farms in 2023

+$26,549
change in working capital for beef farms from 2022 to 2023

+$209,667
change in net worth for beef farms from 2022 to 2023

While 2023 was not a blockbuster year for beef farms, the average farm ended the year with improved financial soundness, adding over $26,000 of working capital and over $200,000 of net worth in 2023. Their debt coverage ratio was a comparatively strong at 1.9:1.

These beef farms include both cow-calf operators and cattle finishers. The average beef cow-calf enterprise made almost $130 per cow, a big turnaround after losing $240 per cow in 2022. Prices were up substantially with calves averaging $221 per hundredweight (cwt), up 22% from $180 in 2022. Participating beef cow-calf operators made positive returns on their cow herds for the first time since 2015.

Cattle finishers averaged net returns of almost $230 per head finished, their highest returns since 2014 and the second highest profit per head in two decades. The average price received for fed cattle was $175 per hundredweight, up from $146 in 2022. On average, it cost $162 to produce a hundredweight of beef, up from $147 in 2022. The cost of feeder cattle continued to increase, up from $175 per cwt in 2022 to $223 in 2023. But with somewhat lower feed costs and higher sales prices, most cattle finishers had a very profitable year.

Table 4. Beef Farm Summary Table

	2020	2021	2022	2023	% Change from 2022 to 2023
Whole Farm Highlights					
Median Net Income	$42,850	$76,057	$117,204	$44,747	-62%
Rate of Return on Assets	5%	9%	9%	6%	-
Rate of Return on Equity	7%	15%	14%	7%	-
Working Capital to Gross Revenue	35%	40%	45%	42%	-
Change in Working Capital	+$75,008	+$107,009	+$126,891	+$26,549	-
Debt Coverage Ratio	1.9	2.8	2.7	1.9	-
Net Worth Change	+$142,556	+$243,645	+$275,646	+$112,808	-
Production Highlights					
Beef Cow-Calf Enterprises					
Number of Cow-Calf Enterprises	97	101	85	79	-7%
Average Number of Cows	79	61	67	73	+8%
Calf Weaning Percentage	85%	87%	83%	86%	-
Calf Sales Price per cwt	$158.89	$154.34	$180.27	$220.79	+22%
Calf Cost of Production per cwt	$170.84	$207.07	$248.01	$228.51	-8%
Net return per cow	-$24.10	-$173.58	-$240.45	127.29	153%
Beef Finishing Enterprises					
Number of Finishing Enterprises	81	88	87	90	+3%
Number of Head Finished	257	324	230	318	+38%
Average Daily Gain	2.67 lbs	2.50 lbs	2.63 lbs	2.66 lbs	+4%
Purchase Price per cwt	$140.12	$148.89	$175.09	$223.21	+27%
Finished Beef Price per cwt	$108.67	$121.86	$145.96	$174.95	+20%
Cost of Production per cwt	$108.24	$120.31	$146.78	$161.80	+10%
Net return per head finished	$32.27	$63.36	$41.64	$227.94	+447%

Outlook for Minnesota Beef Farms in 2024

The price outlook for beef at the producer level, based on futures markets, is strong for the foreseeable future. Continued high beef prices along with reduced feed costs should translate into another profitable year for Minnesota beef producers. The wildcard might be feeder cattle prices which continue to increase. That should be a positive for cow-calf producers but might temper profits for cattle finishing operations.

Crop Farms

Minnesota Crop Farms Experience Lower Profits as Prices Declined in 2023

Profits for Minnesota crop farms were down sharply in 2023 after three years of strong profitability. The 1,466 crop farms in FINBIN in 2023 earned a median net farm income of $45,760, down 81% from the previous year. Profits dropped to levels consistent with 2013 – 2019 when Minnesota crop farms experienced consistently low profits. While cash prices received during the year were only slightly changed from 2022, the value of the 2023 crop held in inventory at the end of the year declined dramatically. In addition, production costs continued to increase.

Figure 13 shows the median net farm income trends for crop farms in both nominal and inflation-adjusted dollars.

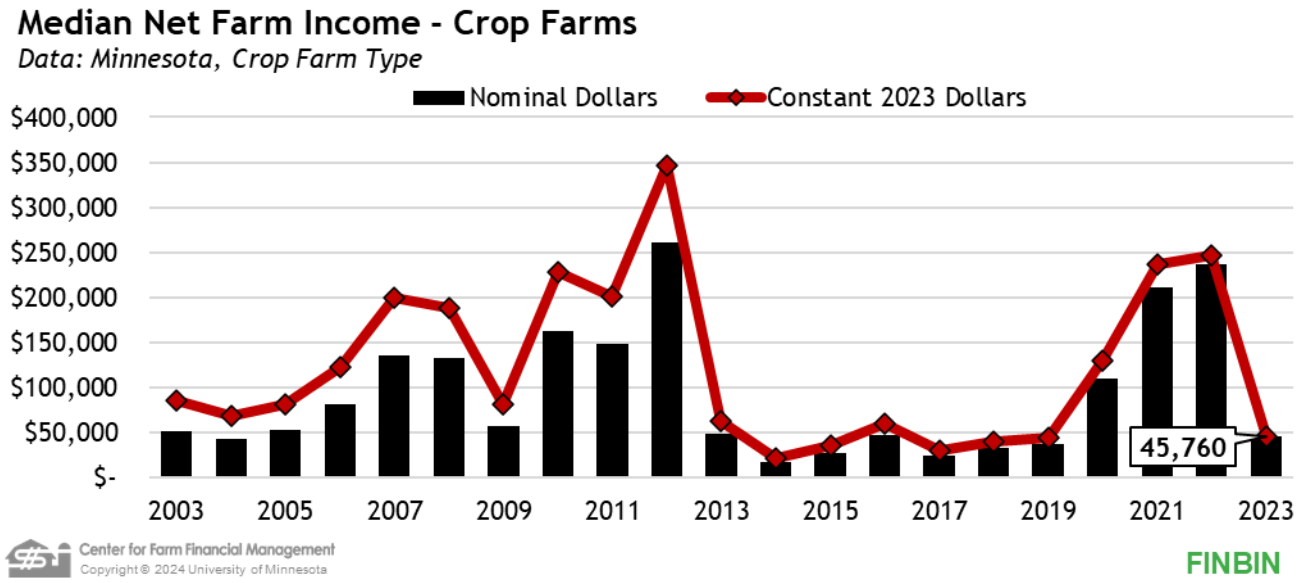

Figure 13. Median Net Farm Income for Crop Farms from 2003 to 2023

3%	-$118,000	+$190,000
Average ROA for crop farms in 2023	Average change in working capital for crop farms in 2023	Average change in net worth for crop farms in 2023

The average crop farm earned an ROA of 3%, much lower than the 8% benchmark for strong profitability. Despite low profits and reduced working capital, the average farm ended the year in a strong financial position. While working capital was down, the average farm had 54 cents of working capital for every dollar of gross revenue, a very strong liquidity position. The average farm also reported a sizeable gain in net worth and ended the year with 31% debt to assets. Both of these metrics compare very favorably with recommended financial benchmarks. At 1.4, their average debt coverage ratio was only slightly over the 1.25 level desired by most lenders. Overall, these farms ended 2023 with strong balance sheets, putting them in a strong position to withstand further potential financial shocks in the coming years.

Profits were widely variable across the spectrum of Minnesota crop farms. When sorted by net farm income, farms in the lowest 20% lost $83,000 and earned negative returns on investment. Farms in the high 20% group earned median net incomes of over $325,000 and a 7% ROA. These results were unrelated to farm size—both groups included some of the largest crop farms in the FINBIN database.

Although there was significant drought stress across much of the state during the growing season, yields were very close to trend. USDA estimates Minnesota corn yield at 185 bushels per acre in 2023. FINBIN participants did a little better, averaging 192, down 5% from 2022. Soybean yields were down 4% at 51 bushels per acre while spring wheat averaged 69 bushels per acre, up slightly from the previous year.

192 bushels	51 bushels	69 bushels	30 tons
Average corn yield per acre for MN crop farms in 2023	Average soybean yield per acre for MN crop farms in 2023	Average spring wheat yield per acre for MN crop farms in 2023	Average sugar beet yield per acre for MN crop farms in 2023

Crop prices for cash sales were actually very close or even up slightly. However, by year end, prices had fallen dramatically. Corn that started the year well over $6.00 per bushel fell to the mid-$4 range by year end. Soybeans fell from almost $15 per bushel in January to under $13 at the end of December.

Production costs, while up slightly, did not increase as much as in 2022. The cost to produce an acre of corn on cash rented land increased by 4% while soybean and spring wheat costs increased by 7% and 2% respectively. For corn, increases in seed, fertilizer, chemicals and rent were offset by decreases in crop insurance, fuel, and drying costs. Land rental rates were up 4%.

Table 5. Crop Farm Summary Table

	2020	2021	2022	2023	% Change from 2022 to 2023
Whole Farm Highlights					
Median Net Income	$109,850	$210,723	$236,508	$45,760	-81%
Rate of Return on Assets	7%	13%	13%	3%	-
Rate of Return on Equity	9%	20%	18%	2%	-
Working Capital to Gross Revenue	40%	50%	58%	54%	-
Change in Working Capital	+109,764	+$202,733	+$180,652	-$117,851	-
Debt Coverage Ratio	2.5	4.2	4.1	1.4	-
Net Worth Change	+$221,295	+$409,934	+$404,978	+$190,070	-
Production Highlights					
Corn					
Yield bushels per acre (bushels)	199	187	202	192	-5%
Price Received ($ per bu.)	$3.40	$4.73	$6.07	$6.05	0%
Cost of Production ($/bu.)	$3.33	$4.12	$4.83	$4.93	+2%
Cost of Production per acre	$700	$743	$918	$953	+4%
Net Return per acre	$156	$290	$361	$33	-91%
Soybeans					
Yield per acre (bushels)	53	49	53	51	-4%
Price Received ($ per bu.)	$8.97	$11.43	$13.66	$13.72	0%
Cost of Production ($/bu.)	$7.68	$9.71	$11.08	$11.80	+6%
Cost of Production per acre	$446	$472	$550	$589	+7%
Net Return per acre	$138	$169	$200	$83	-59%
Spring Wheat					
Yield per acre (bushels)	59	52	66	69	+4%
Price Received ($ per bu.)	$4.96	$6.78	$9.03	$8.24	-9%
Cost of Production ($/bu.)	$5.52	$6.74	$7.93	$7.63	-4%
Cost of Production per acre	$372	$382	$506	$517	+2%
Net Return per acre	$5	$114	$119	$11	-91%

Outlook for Minnesota Crop Farms in 2024

Given the outlook for continued low commodity prices into the fall, it is hard to be optimistic for crop farm incomes in 2024. Some expenses, particularly fertilizer, are down and that will help. Weather and yields are always the wildcard. Fortunately, Minnesota crop farm balance sheets are, on average, strong and there is enough liquidity in the mix to withstand another challenging year if the current outlook holds.

Dairy Farms

A Very Challenging Year for Dairy Farm Profitability

Much like crop farms, Minnesota dairy farm incomes dropped dramatically in 2023 after three years of strong profitability. Dairy farm profits dropped to levels not seen since 2018. Figure 14 shows the net farm income trends for participating dairy farms in both nominal and inflation-adjusted dollars.

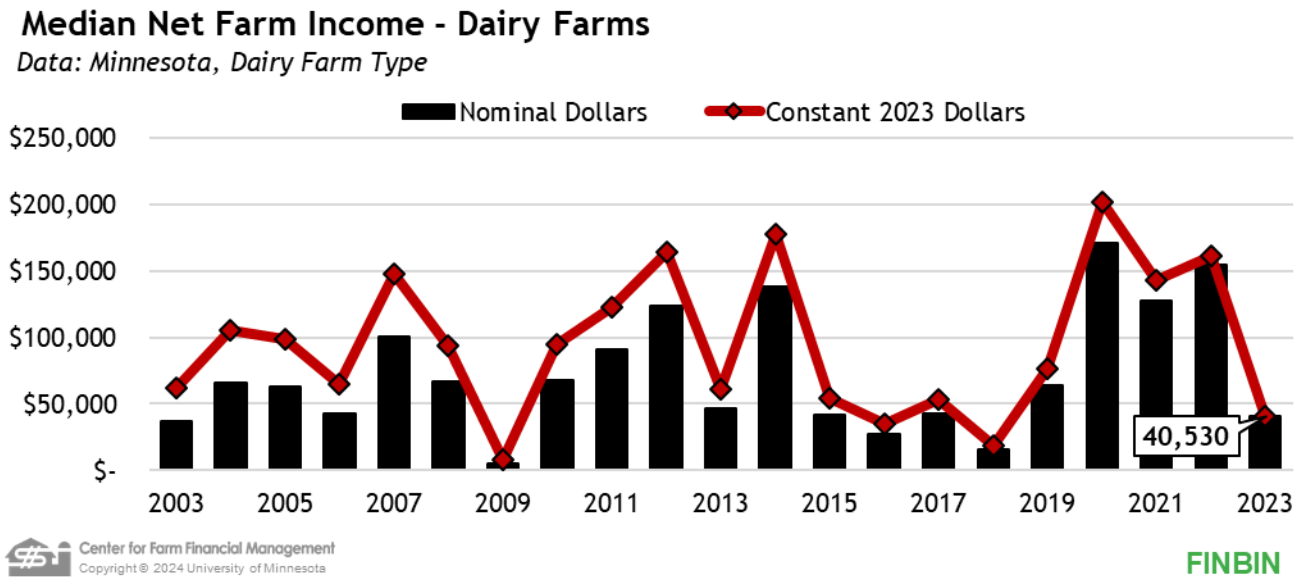

Figure 14. Median Net Farm Income for Dairy Farms from 2003 to 2023

The median net farm income for the 313 participating dairy farms in FINBIN was $40,530, down from $154,903 in 2022. Lower milk prices more than offset a slight reduction in production costs. The average milk price per hundredweight (cwt) dropped to $19.26, down from $24.35 in 2022. The average producer spent $19.81 to produce a hundred pounds of milk.

The situation could have been much worse had it not been for strong Dairy Margin Coverage payments. The average producer received $362 per cow in government and insurance payments, most of which were DMC payments. Without these payments, the average producer would have lost over $300 per cow.

0.4%	**-$95,025**	**+$64,536**
Average ROA for dairy farms in 2023	Average change in working capital for dairy farms in 2023	Change in net worth for dairy farms

Dairy farms have traditionally carried less working capital than other farm types, providing less buffer for financial downturns. Dairy farms consumed working capital in 2023 in order to meet financial obligations. The average dairy farm's working capital declined by $95,025, further tightening an already tight liquidity position for many producers. At year end, the average dairy farm had working capital equal to only 20% of gross revenue, relatively weak compared to other farm types.

The solvency position of these farms also deteriorated slightly. The average farm's net worth increased by $64,536 in 2023. Debt coverage was 0.84, meaning that the average farm generated only 84 cents for every dollar needed for debt repayment. The rest had to come from working capital. Yet, with an average debt-to-asset ratio of 34% (excluding deferred tax liabilities), the average participating dairy farm has a relatively strong solvency position going into 2024.

As is often the case in low income years, mid-sized herds were slightly more profitable than larger operations. Operations with 200 to 500 cows earned median net farm incomes of $108,326 with a 2% rate of return on assets, while those with over 500 cows made only $45,872 and a 0.5% ROA. The larger operations had the weakest liquidity position with only 16% working capital to gross revenue.

Average production per cow increased to 25,561 pounds, a slight increase from 2022. On average, it cost $19.81 to produce a hundred pounds of milk, a decrease of 11% from 2022. Feed costs were down 5% and fuel costs were down 11%. Yet, with much lower prices, the average producer netted only $49 per cow, down from $692 in 2022.

Continuing past trends, the largest herds on average produced more milk per cow than smaller herds. However, this did not provide an advantage in 2023. Herds with over 500 cows lost $-63 per cow while mid-sized herds generally made $150 to $200 net return per cow.

Organic dairies were, on average, slightly more profitable than conventional dairy farms. The median organic dairy farm earned $66,288, up slightly from $61,923 in 2022. Organic dairies earned an ROA of only 2.7%. Organic herds averaged a $929 net return per cow, much higher than the average conventional herd, but that advantage was not as great on a whole farm basis because of their relatively small size. Organic milk prices were up slightly at $31.80 per cwt while it cost $28.82 to produce a hundredweight of organic milk.

Table 6. Dairy Farm Summary Table

	2020	2021	2022	2023	% Change from 2022 to 2023
Whole Farm Highlights					
Median Net Income	$170,922	$127,444	$154,903	$40,530	-74%
Rate of Return on Assets	11%	6%	8%	0.4%	-
Rate of Return on Equity	16%	8%	12%	-3%	-
Working Capital to Gross Revenue	22%	21%	23%	20%	-
Change in Working Capital	+$164,846	+$30,029	+$101,896	-$95,025	-
Debt Coverage Ratio	2.8	2.0	2.5	0.8	-
Net Worth Change	+$323,949	+$206,870	+$327,827	+$64,536	-
Production Highlights					
Number of Dairy Enterprises	306	297	261	270	+3%
Average Number of Milk Cows	238	269	260	282	+9%
Pounds of Milk Produced Per Cow	24,663	25,030	25,216	25,561	+1%
Price Received ($ / cwt milk)	$19.90	$18.59	$24.35	$19.26	-21%
Cost of Production per Cwt. of Milk	$16.63	$18.38	$22.33	$19.81	-11%
Cost of Production per Cow	$4,150	$4,304	$5,019	$4.930	-2%
Net Return per Cow	$940	$220	$692	$49	-93%

Outlook for Minnesota Dairy Farms in 2024

USDA projects a very modest increase in milk prices in 2024. Feed costs should be lower as producers will benefit from lower feed grain and protein prices for the entire year. Cull cows and bull calves should continue to bring historically high prices given high beef prices. The wildcard may be DMC payments which may be reduced given lower feed cost. Putting all these components together, the odds favor modest improvement in profits for Minnesota dairy farms in 2024.

Hog Farms

Large Financial Losses for Minnesota Hog Farms

For the first time in the 25 years included in FINBIN, the median hog farm lost money in 2023. Figure 15 shows the median net farm income trends for hog farms in both nominal and inflation-adjusted dollars.

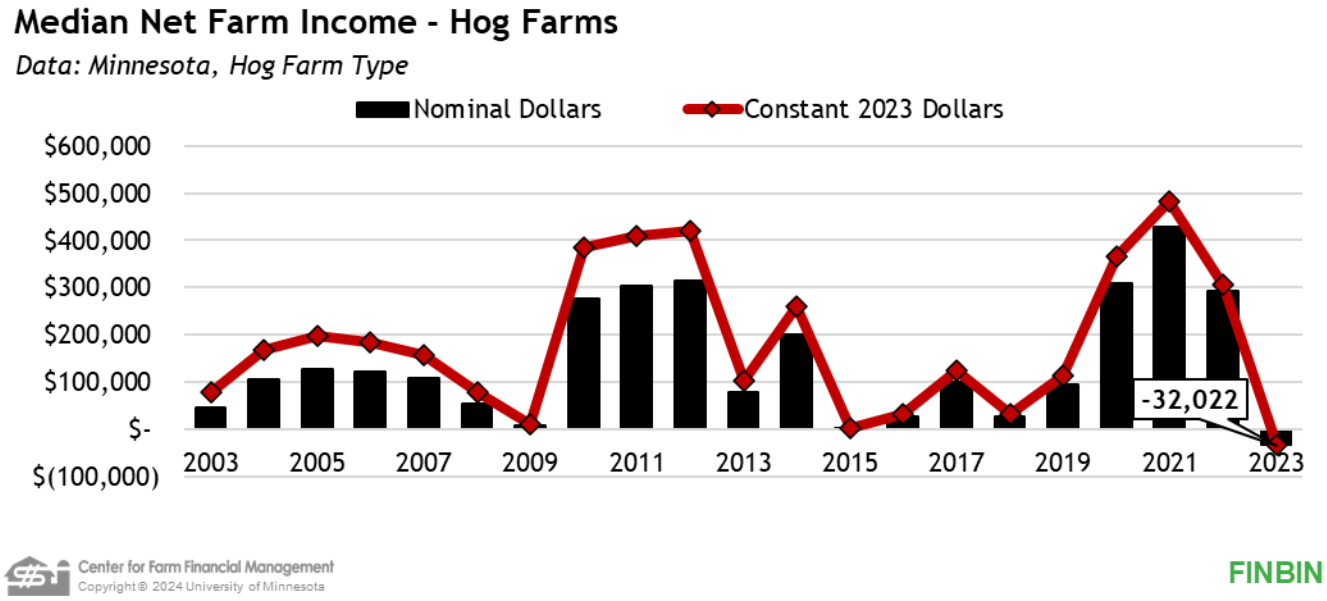

Figure 15. Median Net Farm Income for Hog Farms from 2003 to 2023

The median (or middle) income for pork producers was -$32,022. Average losses were even higher, as losses were skewed toward larger operations that suffered even greater losses. The average hog farm lost $156,834. As Figure 15 shows, hog farm profits are very cyclical. In addition, the average hog farm is larger than other farm types, so the financial highs tend to be higher and the lows tend to be lower.

-3%
average ROA for hog farms in 2023

-$423,038
average change in working capital for hog farms in 2023

-$199,166
average change in net worth for hog farms in 2023

Given these large losses, the financial metrics for hog operations were very weak in 2023. Participating pork operations earned a -3% ROA and a -8% ROE. The average farm used up $423,028 of working capital and lost $199,166 of net worth. Working capital to gross revenue declined from 32% in 2022 to 26% in 2023. Yet, average pork farm's debt-to-asset ratio stood at a comparatively strong 32% (excluding deferred liabilities) at the end of 2023.

Wean to finish enterprises, on average, lost $15 per pig finished in 2023. The average price received declined 15% to $81.81 on a carcass weight basis. Table 5 shows selected metrics for pig finishers (operations that purchase pigs and sell them at market weight). This includes both wean-to-finish operations and feeder pig finishing operations. While sales prices declined, cost of production also declined, but not enough to offset the reduction in revenue. Feed costs, by far the biggest expense for these operations, declined by 7%. The cost to purchase weaned pigs declined by 14% to $46.76 per pig.

Another important segment of the Minnesota pork industry are those producers who contract to grow pigs for larger pork producers. Ninety-two (92) producers reported hog contract finishing in 2023. Contract grower income has been very consistent over the years. The average wean-to-finish grower reported a net return of over $6.90 per pig space in 2023, up slightly from $6.17 the previous year.

There were not enough farrow-to-finish operations in FINBIN in 2023 to summarize, a sign of how the Minnesota pork industry has changed over the past many years. Most pigs are now produced by large networks that sell piglets to producers who raise the pigs or who contract with growers to provide facilities and labor to raise the pigs.

Table 7. Hog Farm Summary Table

	2020	2021	2022	2023	% Change from 2022 to 2023
All Hog Farms Highlights					
Median Net Income	$310,042	$429,421	$293,288	-$32,022	-111%
Rate of Return on Assets	9%	13%	5%	-3%	-
Rate of Return on Equity	14%	20%	7%	-8%	-
Working Capital to Gross Revenue	28%	38%	32%	26%	-
Change in Working Capital	+$313,747	+$477,927	+$27,048	-$423,038	-
Debt Coverage Ratio	2.9	4.3	1.9	-0.2	-
Net Worth Change	+$468,300	+$797,352	+$351,879	-$199,166	-
Finishing Enterprise Highlights					
Number of Finishing Enterprises	41	41	31	31	0%
Number of Pigs Finished	16,016	17,979	17,754	23,072	+30%
Price Received per cwt (carcass)	$64.51	$92.05	$95.43	$81.18	-15%
Cost of Production per cwt	$58.72	$86.77	$97.52	$90.32	-7%
Net Return per Pig (wean/finish)	$16.45	$19.74	$-1.01	-$15.01	-

Outlook for Minnesota Hog Farms in 2024

Figure 15 shows the cyclical nature of pork producer profits. The traditional hog cycle has been interrupted in recent years by domestic and international animal disease problems, international trade issues, and recently by the Covid-19 pandemic. At this point, based on futures markets, prices are forecasted to be slightly higher in 2024 than in 2023. With lower projected feed prices, overall costs should be down. While 2024 will not be a banner year for pork operations, hog producers should return to moderate profits in the coming year.

About the FINBIN Database

See the Data for Yourself

The information contained in this report is available for all to access at https://finbin.umn.edu/. This page provides a brief overview of how to query the database. Three primary types of reports are available in FINBIN. Table 8 briefly describes each report type and their use or value. More information on the various report types can be found here.

Table 8. Overview of FINBIN Report Types *(hyperlinks will take you to that particular report type page in FINBIN)*

Report Type	Description	Use(s)
Summary	Display the average results for the farms or enterprises you select. Whole Farm reports look at the farm as a whole. Crop and Livestock reports summarize a specific crop or livestock enterprise.	This type of report is an excellent guide to use when you are examining costs to produce a crop or even preparing a budget for your operation.
Benchmark	Display the range of results for a specific peer group for the whole-farm, or crop or livestock enterprise level.	Help producers identify where they are performing better than other like producers and where they may be able to improve.
Compare Your Farm	Uses standard ratios to compare your farm to farms included in FINBIN.	Allows anyone, even those who did not contribute data to FINBIN, to compare their farm's financial ratios to FINBIN.

Minimum Sample Sizes for Reports in FINBIN

To ensure data security and privacy, the reports in FINBIN have minimum sample sizes that are needed in order to generate. For enterprise summary reports, the minimum number of observations is 5. For benchmark reports, 30 observations are necessary.

Filtering Reports in FINBIN

FINBIN reports can be filtered by the items/categories below.

- States
- Groups
- Farm Type
- Total Crop Acres
- Gross Farm Income
- Net Farm Income
- Total Farm Assets
- Debt-to-Asset Ratio
- Age of Operator
- No. of Years Farming

Panel Reports in FINBIN

Panel reports are available in FINBIN. Panel reports contain the same set of farms over multiple years. To generate panel reports, check the box under the *Panel Data Reporting* header that is labeled "Create a report using only farms that are in every year."

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United States Department of Agriculture
National Institute of Food and Agriculture

This report is developed using data from FINBIN, the largest farm-level financial database in the country. FINBIN is open for free querying by all at finbin.umn.edu.

FINBIN

Center for Farm Financial Management
University of Minnesota