THE ECONOMICS OF COVER CROPS ON UPPER MIDWEST FARMS

2024 data report

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The Center for Farm Financial Management (CFFM) develops applications and educational programs that provide educators, lenders, other professionals and farmers resources to successfully manage farms and the financial activities related to farms and small businesses. Products and training focus on farm financial planning, financial analysis, business planning, commodity marketing and credit analysis. CFFM products are widely used by farmers, lenders and educators across the United States. FINPACK, CFFM's flagship software product, provides a suite of tools that guide producers, lenders and educators to sound financial decisions. To learn more, visit **https://www.cffm.umn.edu/**.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

In 2021, Environmental Defense Fund (EDF), the University of Minnesota's Center for Farm Financial Management, the Minnesota State Farm Business Management program and the University of Minnesota Extension's Southwest Minnesota Farm Business Management Association launched a collaborative effort to collect financial data on cover crops to answer farmers' economic questions about the practice. The goal of the program is to provide farmers with clear, data-driven insights into the financial impacts of cover crops by analyzing multi-year data from a broad network of real farms across the upper Midwest. From 2022 to 2024, the program has been collecting in-depth financial data from farms, starting with Minnesota farms in 2022, including Wisconsin farms in 2023 and expanding into South Dakota in 2024.

The 2024 cover crop cohort consisted of 124 farms in Minnesota, South Dakota and Wisconsin. These farms, collectively referred to as the "cover crop cohort", shared demographic characteristics with the average Minnesota farm in 2024, including comparable years of farming experience, farm size and net worth. The farms provided financial data on their cover crop revenue and expenses alongside the financial data for their cash crops. The data was gathered in collaboration with farm business management instructors who support farms with financial education, recordkeeping and benchmarking analysis. During the process, all producer identifiable information is removed.

The goal of the program is to provide farmers with clear, data-driven insights into the financial impacts of cover crops by analyzing multi-year data from a broad network of real farms across the upper Midwest.

THE KEY FINDINGS FROM THE 2024 COVER CROP DATA INCLUDE:

1 | Cover crop costs and returns varied significantly

- **Cover crops planted for feed purposes generated enough revenue to cover their production cost.** Rye silage enterprises reported a median gross return (revenue) of $280 per acre, making it the only group where gross returns exceeded total direct expenses. In contrast, the median rye, cover crop rye mix and cover crop mix enterprises did not generate any revenue.

  Note: In farm financial accounting, an 'enterprise' includes all costs and returns associated with a single crop grown in a field. Throughout this report, the terms 'enterprise' and 'field' are used interchangeably.

- **The median total cost for all cover crop fields was $41 per acre, ranging from $11 to $287 per acre.** Seed, machinery repairs, and fuel and oil expenses were the greatest cost contributors.

The median total direct expense for all cover crop fields was

$41 PER ACRE, RANGING FROM $11 TO $287 PER ACRE.

2 | Cost-share payments significantly offset cover crop expenses for producers that accessed these programs

- **Cost-share payments covered 59% of total direct cover crop expenses for fields that received those payments.** However, only 27% of cover crop enterprises in the cohort received cost-share payments. Cost-share contributions received from both government and private sector sources offset only about 14% of total cover crop expenses, when averaged across all fields in the cohort.

Cost-share payments covered

59% OF TOTAL DIRECT COVER CROP EXPENSES.

3 | The most profitable cover crop fields generated strong revenue and had effective cost management

- **The most profitable cover crop fields typically generated more income from their cover crops by harvesting them for livestock feed.**
- High-profit fields tended to receive more supplemental income, such as conservation payments or other incentives tied to cover crop adoption, compared to less profitable fields.
- **High-profit fields generally maintained lower per-acre costs,** demonstrating stronger overall cost management.

The most profitable cover crop fields typically generated

MORE INCOME FROM COVER CROPS BY HARVESTING THEM FOR LIVESTOCK FEED.

4 | Cover crops had mixed financial impacts on the primary commodity crops that followed them

- **Gross returns (revenue) were generally comparable (within 6% difference) between fields where cover crops were planted before the main commodity crop and fields where they were not.**
- **Fertilizer costs on corn and wheat fields were lower after cover crops were planted** compared to regional averages in most subregions.
- **Average net returns for commodity crops and the cover crop preceding them were lower for the fields with cover crops compared to those without** in most regions and for most commodity crops (except for corn grown in southern Minnesota, South Dakota, and Wisconsin).

Fertilizer costs on corn and wheat fields

WERE LOWER AFTER COVER CROPS WERE PLANTED.

5 | Farmers with more cover crop experience tended to plant more diverse mixes and saw higher combined returns for corn

- **Farmers planted more elaborate mixes of cover crop species as they gained more experience.** Farmers who contributed cover crop data had varying levels of experience planting cover crops: 23% had one to three years of experience, 27% had four to five years of experience, and 50% had more than six years of experience using cover crops. While there was no clear trend in cover crop returns and costs across the three experience levels in 2024, the species make-up changed as experience increased.
- Generally, producers raising livestock have a longer history of producing cover crops. The use of cover crops as an additional feed source is a decision factor for these producers.
- **The most experienced producers (with more than six years of experience) had the highest net returns on their combined corn and cover crop enterprises.** This trend was not observed for soybeans.

The most experienced producers (with more than six years of experience)

HAD THE HIGHEST NET RETURNS ON THEIR COMBINED CORN AND COVER CROP ENTERPRISES.

This ongoing collaborative effort continues in 2025 to collect detailed farm-level financial data and evaluates the costs, returns, and financial impact of cover crops over time. As the dataset grows, it will provide farmers, researchers, extension educators, and conservation programs with robust evidence to support successful cover crop adoption.

DATA-DRIVEN INSIGHTS TO FARMERS' ECONOMIC QUESTIONS ON COVER CROPS

Farmers are stewards of the soil and water resources they depend on. The agronomic practice of cover cropping, which can improve soil health and water quality as well as provide additional resilience benefits, has grown in popularity in recent years. Cropland acres planted with a winter cover crop increased by 17% between 2017 and 2022 to represent 4.7% of U.S. cropland in 2022.[i]

In the Midwest, a winter cover crop is planted after harvesting the previous crop, with the general objective of maintaining soil cover and soil structure over the winter months. These cover crops naturally die off in the winter, are harvested, or are terminated before planting the next main commodity crop the following spring. Planting cover crops can increase soil organic matter in the surface soil layers, reduce erosion and improve soil structure, water retention and drainage.[ii] Improving soil health by planting cover crops and reducing tillage may reduce yield risk during extreme rain events.[iii]

Despite the agronomic potential, farmers continue to have questions about the economic impacts of cover crops on their farming operations. Out of the farmers surveyed in the 2024-2025 National Cover Crop Survey who do not use cover crops, 74% identified "no measurable economic return" as a concern regarding planting cover crops, making it the most commonly reported barrier to adoption.[iv]

In 2021, Environmental Defense Fund (EDF), the University of Minnesota's Center for Farm Financial Management (CFFM), the Minnesota State Farm Business Management program and the University of Minnesota Extension's Southwest Minnesota Farm Business Management Association launched a collaborative effort to collect financial data on cover crops to answer farmers' economic questions about the practice. The program is gathering detailed financial data on cover crops from corn, soybean, and other row crop farms across Minnesota and parts of South Dakota and Wisconsin. The program aims to inform producer decisions by analyzing actual farm financial data consistently gathered from a large sample of farms.

The insights generated from this program may also support farm policy, federal, local and private sector cost-share programs, agricultural lending solutions and other conservation initiatives.

[i] USDA – ERS. Bowman, M., Morales, M. (2024) Charts of Note: 2022 Census of Agriculture: cover crop use continues to be most common in eastern United States. https://www.ers.usda.gov/data-products/charts-of-note/chart-detail?chartId=108950

[ii] Daryanto, S., Fu, B., Wang, L., Jacinthe, P.A. and Zhao, W., 2018. Quantitative synthesis on the ecosystem services of cover crops. Earth-Science Reviews, 185, pp.357-373.

[iii] AGree. February 2023. Conservation and crop insurance research pilot. Accessed at: https://foodandagpolicy.org/wp-content/uploads/sites/17/2023/03/Conservation-Crop-Insurance-Data-Pilot-Results-1.pdf

[iv] SARE, CTIC & ASTA. 2025. National cover crop survey report 2024-2025. Accessed at: https://www.sare.org/resources/national-cover-crop-survey-reports/

In 2023, EDF and CFFM released a report presenting preliminary findings on the financial impacts of cover crops on Minnesota farms during the 2022 growing season. Building on that foundation, data collection continued in 2023 with the inclusion of farms from Wisconsin and further expanded in 2024 to include farms from South Dakota. This report presents financial data for the 2024 growing season, based on participating farms across Minnesota, South Dakota and Wisconsin.

To enable accurate year-to-year comparisons, our annual reports do not combine data from 2022, 2023 and 2024 as each year had distinct weather and market conditions. A **synthesis report** aggregating data across all three years is published separately to provide a comprehensive trend analysis of cover crop economics over time while accounting for annual variations.

This report presents financial data for the 2024 growing season, based on participating farms across Minnesota, South Dakota and Wisconsin.

It is also important to note that the agronomic benefits from cover crops typically emerge over time. Therefore, the findings presented in this report should be viewed as preliminary, offering early insights into the financial considerations of incorporating cover crops into crop rotations.

ABOUT THE DATA

About the FINBIN database

FINBIN is one of the world's largest farm financial databases and the most extensive publicly available resource of its kind in the United States. Each year, approximately 3,500 farms from 12 states contribute data to FINBIN. The database supports the generation of summary financial reports by management system, crop or livestock enterprise and geographic region. It also enables users to benchmark a farm's financial performance against similar operations. Annually, over 40,000 FINBIN reports are generated by farmers, lenders and other stakeholders.

FINBIN's information is derived from comprehensive year-end financial analyses conducted by participating producers with the guidance of farm business management educators. These professionals are part of farm business management programs who assist producers with recordkeeping, financial analysis and education, recordkeeping, and benchmarking support. Data is collected consistently using the FINPACK farm financial management software. The Center for Farm Financial Management provides annual training and software updates to ensure uniformity.

All farm financial data undergoes multiple rounds of screening for accuracy and completeness. Farms that do not meet strict quality standards are excluded. Each dataset is anonymized and secured before aggregation to ensure individual privacy and data integrity.

FINBIN is accessible at **https://finbin.umn.edu/**, where users can find a guide for querying cover crop financial reports.

Farm benchmarking data

The data included in the FINBIN database is provided by approximately 3,500 farms annually who participate in farm business management programs. The FINBIN database represents a broad cross-section of production agriculture. In Minnesota, FINBIN represents approximately 10% of the state's commercial farms with sales of over $250,000.[v] While there is no "typical" Minnesota farm, these farms include a large enough sample to provide a good barometer of commercial farming in Minnesota. It's important to note that farms pay a fee to participate in these programs, and there are likely characteristics of participating farms that set them apart from the broader farming population in the state.

Approximately 3,500 farms contribute data to FINBIN annually from approximately 12 U.S. states.

Gathering cover crop financial data

The methodology for collecting detailed financial data on cover crops treats the cover crop as a distinct enterprise (or field), capturing all revenues and expenses directly associated with their use. This cover crop enterprise is then analyzed both independently and in conjunction with the primary commodity crop that follows, recognizing that cover crops can influence soil health and subsequent crop production.

To support this effort, grants from Environmental Defense Fund (EDF), the Minnesota Office for Soil Health, Minnesota Natural Resources Conservation Service and the Morgan Family Foundation are funding scholarships that cover a portion of tuition and fees for producers in the Farm Business Management program. With the support of these scholarships, participating producers who plant cover crops contributed financial data to the program during 2022–2024.

[v] United States Department of Agriculture (USDA). (2025). Farms and Land in Farms, 2024 Summary. USDA National Agricultural Statistics Service (NASS). ISSN: 1995-2004.

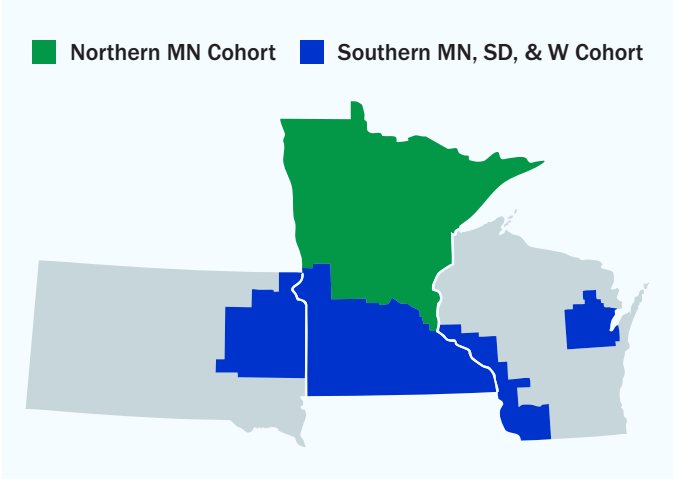
CHARACTERISTICS OF THE FARMS IN THIS REPORT

94 Minnesota, South Dakota and Wisconsin farms participated in cover crop financial data collection in 2024

A total of 124 farms from Minnesota, South Dakota and Wisconsin are part of the cover crop cohort that contributed cover crop financial data to FINBIN. This group included 110 farms from Minnesota and 14 farms from South Dakota and Wisconsin. Since the application of a winter cover crop is affected by fall weather conditions, it is not always possible for farms to plant a cover crop in extraordinarily dry or wet seasons. Even when cover crops are planted, weather challenges can cause poor emergence from the soil. Additionally, cover crops require logistical management and investment, which similarly can pose a barrier to the annual use of cover crops, even for farming operations that place a strong emphasis on conservation. Therefore, of the 124 farms in the FINBIN cover crop cohort, 94 farms provided cover crop financial data for the 2024 growing season, which forms the basis of the analysis in this report. The remaining 30 farms, while not contributing 2024 field data, are included in this demographic comparison due to their ongoing commitment to implementing cover crop practices. Many of these farms contributed cover crop financial data in previous years and plan to contribute data in the future.

Throughout this report, the 124 farms are collectively referred to as the "cover crop cohort." Where possible, data from specific enterprises – such as corn or cover crops – are further separated into two regional groups: northern Minnesota, and southern Minnesota combined with South Dakota and Wisconsin. Figure 1 illustrates the general geographic distribution of the participating farm locations.

FIGURE 1 | Geographic distribution of the 124 farms in Minnesota, South Dakota and Wisconsin that participated in the cover crop cohort



The characteristics of the cover crop cohort farms closely resemble the average Minnesota farm

Table 1 compares the demographic and business characteristics of the cover crop cohort to all Minnesota farms in the FINBIN database. Due to the timing of FINBIN data collection, this comparison is limited to Minnesota farms and does not include farms from South Dakota or Wisconsin. The comparison shows that, on average, farms in the cover crop cohort were similar to other Minnesota farms in 2024. This similarity suggests that the cover crop cohort is broadly representative of the typical farm, allowing for meaningful insights into how cover crops might impact a typical farm in Minnesota. Additional demographic details are available in Table 1A of Appendix A.

While the cover crop cohort had slightly fewer total crop acres than the average Minnesota farm, many other characteristics were nearly identical. The average operator age was 48 years in both groups. The average years of farming experience was 24 years in the cover crop cohort, compared to 23 years for all Minnesota farms.

Interestingly, there was a much smaller share of beginning farmers in the cover crop cohort compared to the rest of the state. This may be a result of the added complexity that arises when planting and harvesting or terminating cover crops.

Also noteworthy, the cover crop cohort had a notably larger percentage of farms with livestock production. The cover crop group had larger net farm incomes than the rest of the state, likely stemming from the higher share of farms with livestock. Overall in 2024, farms throughout Minnesota with livestock production saw much stronger returns compared to crop enterprises due to strong livestock commodity prices and lower feed prices.

In other financial measures, the two groups were in fairly similar financial positions in 2024. Both groups had comparable debt-to-asset ratios, net worth positions and operating expenses as a percentage of revenue ratios.

TABLE 1 | Comparison of farm demographic and business characteristics, 2024
(This table displays averages unless otherwise noted)

	COVER CROP COHORT	ALL MINNESOTA FARMS IN FINBIN
Number of farms (Total)	124	2,349
Total crop acres per farm	783	823
Operator age	48	48
Years farming	24	23
Percentage of farms that are beginning farmers*	16%	29%
Percentage of farms with livestock production	33%	23%
Average net farm income	$113,472	$67,890
Median net farm income	$63,141	$21,964
Net worth	$2,816,475	$2,870,207
Debt-to-asset ratio	36%	34%
Operating expense ratio	79%	82%

**Beginning farmers are defined as someone who has operated a farm for 10 years or less.*

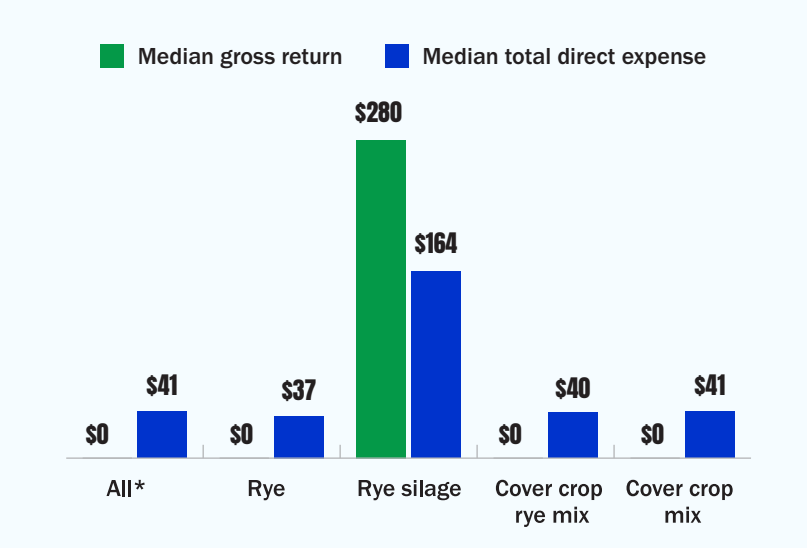
COVER CROP COSTS AND RETURNS

The 94 farms that submitted cover crop financial data for the 2024 growing season planted cover crops on 227 differentiated fields. The primary cover crop enterprises included rye, rye silage, cover crop rye mix and cover crop mix. The cover crop rye mix enterprise refers to a mix of two to four species, with a base species of cereal rye. The cover crop mix enterprise includes four or more species without a specific cereal rye base. An additional enterprise, cover crop forage, was also reported by some farms; however, due to limited data, it was not detailed in this report's analysis.

Variation in cover crop costs and returns and the role of cost-share programs

Figure 2 illustrates the median gross return and median total direct expense for cover crop enterprises reported in FINBIN in 2024, based on data from Minnesota, South Dakota and Wisconsin cover crop enterprises. We shifted from reporting averages in previous years to medians in 2024, as outliers significantly skewed the averages. Medians offer a more accurate representation of a typical farm in the region.

FIGURE 2 | **Costs and returns of cover crops by species**
Data: Minnesota, South Dakota, and Wisconsin, Owned and Rented, 2024



*'All' includes the cover crop enterprises of rye, rye silage, cover crop rye mix, cover crop mix and cover crop forage from FINBIN in 2024

2024 crop and financial conditions

The cover crops analyzed in this report were planted in the fall of 2023, harvested or terminated in the winter or spring of 2024, and then analyzed alongside the primary commodity crop that was planted in the spring of 2024 and harvested in the fall of 2024.

The fall of 2023 was extremely dry in Minnesota, which made it difficult for farms to plant a cover crop. In fields where cover crops were planted, the dry conditions caused poor cover crop emergence. Subsequently, the spring of 2024 was extraordinarily wet in Minnesota, especially the southwest region of the state. Many primary commodity crops were planted late and others were unable to be planted altogether. The wet conditions made cover crop management difficult. Following the wet spring, Minnesota faced lingering drought conditions across much of the state for the rest of the summer. Despite the drought conditions, crop yields maintained 10-year averages for corn and soybeans and yields were above average for wheat.

Financially, low commodity prices resulted in lower farm income for Minnesota farms in 2024. This was the lowest net farm income for farms this century. Crop farms experienced the brunt of the challenges, given lower crop prices and limited marketing opportunities. Livestock farms saw improved profits in 2024 as they received higher commodity prices and had lower costs, especially feed costs.

Gross returns from cover crop enterprises were generated through a combination of crop production, grazing of the cover crop and payments from cost-share or other incentive programs. Among the enterprises, rye silage produced the highest median gross return at $280 per acre, making it the only enterprise where returns exceeded total direct expenses. The other cover crops did not generate crop revenue.

The 2024 data reveals that direct expenses for cover crops can vary widely. A key source of this variation appears to be the intended use of the cover crop. Enterprises grown for feed (i.e., rye silage) tend to have higher machinery-related costs due to harvesting activities, whereas cover crop mixes planted primarily for soil health generally incur lower direct expenses overall.

Even among farms planting the same cover crop type, total direct expenses varied significantly, highlighting differences in management practices, equipment use and input costs. This variability will continue to be evaluated in future years of the program.

Cost-share programs played a notable role in offsetting expenses. Approximately 27% of cover crop fields in the cohort received cost-share payments in 2024. For those fields, the payments covered an average of 59% of total cover crop costs. When averaged across all fields in the cohort, cost-share contributions received from both government and private sector sources covered approximately 14% of total cover crop expenses.

Detailed cover crop direct expenses

Table 2 outlines the gross return and detailed direct expenses associated with cover crop enterprises reported in FINBIN for 2024. For each expense category, the table presents the minimum, maximum, average and median per acre. To protect the confidentiality of individual producers, all values are rounded to the nearest whole number.

The median value represents the midpoint of the database, meaning half of the enterprises reported costs below this value and half reported costs above it. When working with smaller sample sizes, it is helpful to consider both the average and median, since averages can be skewed by outliers.

Across all cover crop enterprises in 2024, total direct expenses ranged from $11 to $287 per acre, with the average of $62 and a median of $41. These total direct expenses include costs for seed, chemical, fertilizer, fuel and oil, repairs and custom hire. Table 2 provides a breakdown of each of these expense categories by cover crop species.

TABLE 2 | Return and cost comparison across Minnesota, South Dakota and Wisconsin cover crop enterprises in 2024

	ALL	RYE	RYE SILAGE	COVER CROP RYE MIX	COVER CROP MIX
Number of enterprises	227*	9	25	83	102
% of all enterprises	100%	4%	11%	37%	45%
Gross return	**n = 102**				
Min	$0	$0	$15	$0	$0
Max	$660	$449	$660	$173	$237
Median	$0	$0	$280	$0	$0
Average	$46	$50	$262	$21	$13
Seed	**n = 227**				
Min	$5	$13	$9	$5	$5
Max	$100	$69	$69	$75	$100
Median	$21	$18	$24	$11	$26
Average	$22	$26	$26	$17	$25
Fertilizer	**n = 18**				
Min	$0	$0	$0	$0	$0
Max	$34	$27	$34	$6	$0
Median	$0	$0	$0	$0	$0
Average	$1	$3	$6	$1	$0
Chemical	**n = 4**				
Min	$0	$0	$0	$0	$0
Max	$15	$0	$0	$15	$0
Median	$0	$0	$0	$0	$0
Average	$0	$0	$0	$1	$0
Fuel & oil	**n = 225**				
Min	$0	$0	$2	$1	$0
Max	$32	$14	$32	$16	$19
Median	$5	$2	$14	$7	$3
Average	$6	$4	$16	$6	$4
Repairs	**n = 224**				
Min	$0	$1	$5	$3	$0
Max	$81	$69	$81	$30	$71
Median	$12	$8	$27	$12	$9
Average	$15	$17	$33	$13	$11
Custom hire	**n = 63**				
Min	$0	$0	$0	$0	$0
Max	$208	$69	$208	$64	$154
Median	$0	$15	$34	$0	$0
Average	$13	$17	$80	$3	$4
Total direct expense	**n = 227**				
Min	$11	$16	$62	$16	$11
Max	$287	$217	$287	$124	$277
Median	$41	$37	$164	$40	$41
Average	$62	$68	$180	$45	$48

*There was also cover crop data submitted for cover crop forage enterprises; however, there was not enough data for that enterprise to show independently in this report.

Among the cover crop enterprises reported in 2024, rye silage had the highest median total direct expenses at $164 per acre. In comparison, the cover crop rye mix had median total direct expenses of $40 per acre, and the cover crop mix had median total expenses of $41 per acre.

The higher costs for rye silage are largely due to increased machinery use associated with harvesting activities of the crop for feed. Custom hire was also a significant expense for the rye silage enterprise, with a median cost of $34 per acre on the rye silage fields.

Across all other cover crop enterprises, the three largest cost contributors were seed, machinery repairs, and fuel and oil.

- **Seed:** Median cost was $21 per acre, with a range from $5 to $100 per acre.
- **Repairs:** Median cost was $12 per acre, ranging from $0 to $81 per acre.
- **Fuel and oil:** Median cost was $5 per acre, with a range from $0 to $32 per acre.

Comparison of high- and low-profit cover crop fields

Across all cover crop species, there were both profitable and unprofitable cover crop enterprises. Three key factors consistently distinguished the most profitable cover crop enterprises from the least profitable:

- **Production income:** The most profitable cover crop fields typically generated more income from their cover crops by harvesting them. These harvested cover crops were often used as livestock feed or saved as seed for future cover crop planting.
- **Other income:** High-profit fields tended to receive more supplemental income, such as conservation payments or other incentives tied to cover crop adoption, compared to less profitable fields.
- **Cost management:** Farms in the high-profit group generally maintained lower per-acre expenses, demonstrating stronger overall cost management. Seed and repairs were the key cost differentiators between the high-profit and low-profit groups for the cover crop rye mix and cover crop mix enterprises.

Table 3 compares profit levels across three cover crop types – cover crop rye mix, cover crop mix and rye silage. Within each cover crop species, the "high-profit" group represents the 20% of fields within each species of the cover crop cohort with the highest profit per acre, while the "low-profit" group represents the 20% of fields with the lowest profit per acre.

TABLE 3 | **High-profit vs. Low-profit comparison across FINBIN cover crop species in 2024**
(This table displays median values unless otherwise noted. The values do not sum to a total, as they are not from a single farm operation.)

	Cover crop rye mix		Cover crop mix		Rye silage	
	High profit	**Low profit**	**High profit**	**Low profit**	**High profit**	**Low profit**
Number of enterprises	17	17	20	20	5	5
Years of experience	4.53	5.47	8.20	8.75	10.60	5.80
Returns						
Production income	$0	$0	$0	$0	$336	$54
Other income	$24	$0	$17	$0	$0	$0
Expenses						
Seed	$13	$29	$26	$31	$33	$11
Fertilizer	$0	$0	$0	$0	$0	$0
Chemical	$0	$0	$0	$0	$0	$0
Fuel & oil	$2	$8	$2	$5	$14	$21
Repairs	$5	$17	$5	$17	$28	$16
Custom hire	$0	$0	$0	$0	$26	$27
Total direct expense	$37	$60	$36	$68	$151	$120
Net return	**-$5**	**-$81**	**-$16**	**-$101**	**$173**	**-$172**
Cost share payments						
% of enterprises that received cost share payments	88%	6%	80%	0%	0%	0%
Average % of direct expenses covered for those enterprises that received cost share payments	93%	35%	77%	0%	0%	0%

COVER CROP IMPACTS ON COMMODITY CROPS

This section analyzes the financial performance of farms using cover crops in Minnesota, South Dakota and Wisconsin, and compares them to Minnesota farms that did not use cover crops in 2024. Cover crops can influence the management and outcomes of the subsequent cash crop by affecting soil fertility, pest and weed pressure, water availability, and planting effectiveness due to field accessibility by equipment or cover crop termination timing. As such, it is important to evaluate the direct costs and returns of cover crops and the financial performance of the commodity crop that follows. For this analysis, the cover crop enterprises were planted in the fall of 2023 and either harvested or terminated in the spring of 2024, prior to planting the 2024 growing season's primary commodity crop.

Where possible, enterprise data is separated by region – Northern and Southern Minnesota – to reflect the state's diverse growing conditions. South Dakota and Wisconsin farms are included in the Southern Minnesota group for comparison since they have growing conditions more similar to the Southern Minnesota region. Due to limited sample sizes, corn silage and wheat data are not separated by region.

The analysis also distinguishes between owned and rented land when there are enough data points to do so. This distinction is important because rental and ownership costs can differ significantly and influence profitability.

Cost figures in this report represent average accrual adjusted expenses reported by producers, meaning they are influenced by timing, management practices and vendor choices. Similarly, crop values reflect producers' marketing strategies, which are shaped by timing, methods and location.

It is important to note that while this analysis highlights potential profitability differences between cover cropped acres and non-cover cropped acres, it does not account for all variables that can influence financial outcomes. Factors such as weather events, soil quality, field selection for cover crops and individual management styles are not directly captured in the data set and should be considered when interpreting the results.

How to interpret the data tables

COLUMN 1

Crop grown after cover crop

This column shows the primary commodity crop planted in spring 2024 and harvested in the fall 2024. The acreage for this crop matches exactly with the preceding cover crop to allow for long-term analysis.

COLUMN 2

Cover crop

This column details the revenue and expenses directly related to the cover crop planted in fall 2023 and either harvested or terminated in spring 2024. Revenue includes product returns such as those generated from selling or using the cover crop as feed, and any cost-share or government payments.

COLUMN 3

Combined: cover crop + following crop

This column combines the financial data from Columns 1 and 2, representing the total income and expenses for the acres that were planted as a cover crop in the fall of 2023 and then planted to a primary crop in the spring of 2024. Yield and price details are not shown here, as the two crop types are combined.

COLUMN 4

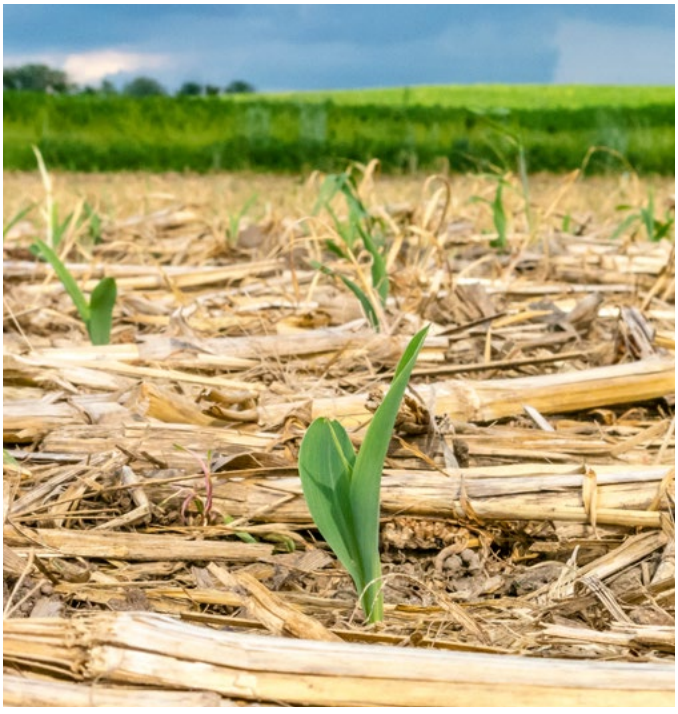
Cover crop cohort – no cover crop fields

This column includes data from fields managed by 124 cover crop cohort members that did *not* have a cover crop in 2024. It allows for a direct comparison between the cover crop cohort's fields planted with a cover crop (Column 3) and the cohort's non-cover cropped acres (Column 4). Column 4 is a subset of Column 5.

COLUMN 5

Regional average – no cover crop

This column presents the average financial performance of all fields in the region that did not use cover crops in 2024. Due to limited data from South Dakota and Wisconsin, this average is based only on Minnesota farms.



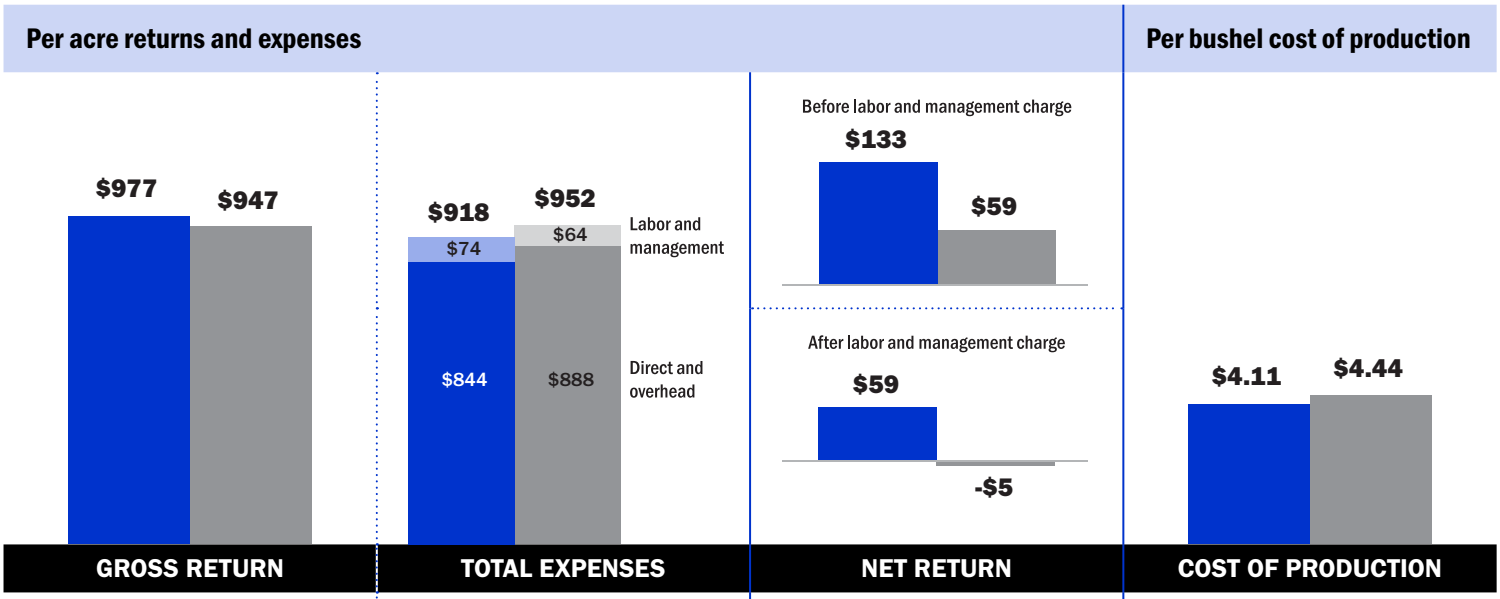
CORN
in Southern Minnesota, South Dakota and Wisconsin on owned land

KEY RESULTS

FIGURE 3 | Profitability comparisons

Corn combined with cover crop

All corn fields without a cover crop



Gross return of the corn and cover crop combined enterprise on owned land was over 3% higher than the average corn acre grown in the region without cover crops in 2024.

Total direct and overhead expenses of the corn and cover crop combined enterprise were almost 5% lower than the average corn acre not using cover crops.

Before labor and management charge

Net return of the corn and cover crop combined enterprise was $133 per acre, $74 higher per acre than the region's average corn acre not using cover crops.

After labor and management charge

Net return after labor and management charge of the corn and cover crop combined enterprise was $59 per acre, $64 higher per acre than the region's average corn acre not using cover crops.

The cost of production of the corn and cover crop combined enterprise on owned land was $4.11 per bushel, compared to $4.44 per bushel for the average corn field in the region.

TABLE 4 | Southern Minnesota, South Dakota and Wisconsin corn enterprise analysis on owned land

	COVER CROP COHORT				AREA AVERAGE
	Corn grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn combined with cover crop** (3)=(1)+(2)	**Corn fields in cohort with no cover crop** (4)	**All corn fields with no cover crop** (5)
Gross return per acre	$961	$15	$977	$947	$947
Total direct expenses per acre[8]	$527	$38	$565	$557	$573
Return over direct expense per acre	**$434**	**-$23**	**$411**	**$390**	**$374**
Total overhead expense per acre[9]	$254	$24	$279	$274	$315
Net return per acre	**$180**	**-$47**	**$133**	**$116**	**$59**
Labor and management charge	$63	$11	$74	$53	$64
Net return over labor and management per acre	**$117**	**-$58**	**$59**	**$63**	**-$5**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table >

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

CORN
in Southern Minnesota, South Dakota and Wisconsin on rented land

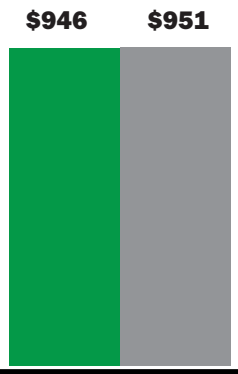
KEY RESULTS

FIGURE 4 | Profitability comparisons

Corn combined with cover crop

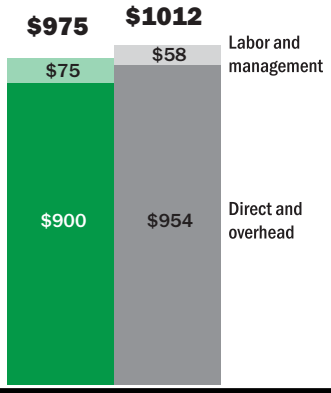
All corn fields without a cover crop

Per acre returns and expenses



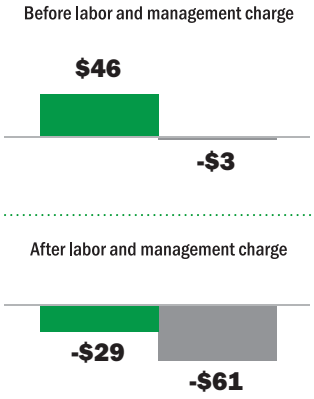
GROSS RETURN

Gross return of the corn and cover crop combined enterprise on rented land was not significantly different (0.5% lower) from that of the average corn acre grown in the region without cover crops in 2024.



TOTAL EXPENSES

Total direct and overhead expenses of the corn and cover crop combined enterprise were 6% lower compared to the average corn acre not using cover crops.



NET RETURN

Before labor and management charge

The net return of the corn and cover crop combined enterprise was $46 per acre, $49 higher than the average corn field in the region without cover crops.

After labor and management charge

Net return after labor and management charge of the corn and cover crop combined enterprise was a loss of $29 per acre, $32 higher return per acre than the region's average corn acre not using cover crops.

Per bushel cost of production

COST OF PRODUCTION

The cost of production of the corn and cover crop combined enterprise on rented land was $4.44 per bushel, compared to the cost of production of $4.78 per bushel for the average corn field in the region.

TABLE 5 | Southern Minnesota, South Dakota and Wisconsin corn enterprise analysis on rented land

	COVER CROP COHORT				AREA AVERAGE
	Corn grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn combined with cover crop** (3)=(1)+(2)	**Corn fields in cohort with no cover crop** (4)	**All corn fields with no cover crop** (5)
Gross return per acre	$923	$23	$946	$960	$951
Total direct expenses per acre[8]	$731	$42	$772	$761	$821
Return over direct expense per acre	**$192**	**-$18**	**$174**	**$199**	**$130**
Total overhead expense per acre[9]	$109	$19	$128	$127	$133
Net return per acre	**$83**	**-$37**	**$46**	**$72**	**-$3**
Labor and management charge	$64	$11	$75	$62	$58
Net return over labor and management per acre	**$19**	**-$48**	**-$29**	**$10**	**-$61**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table >

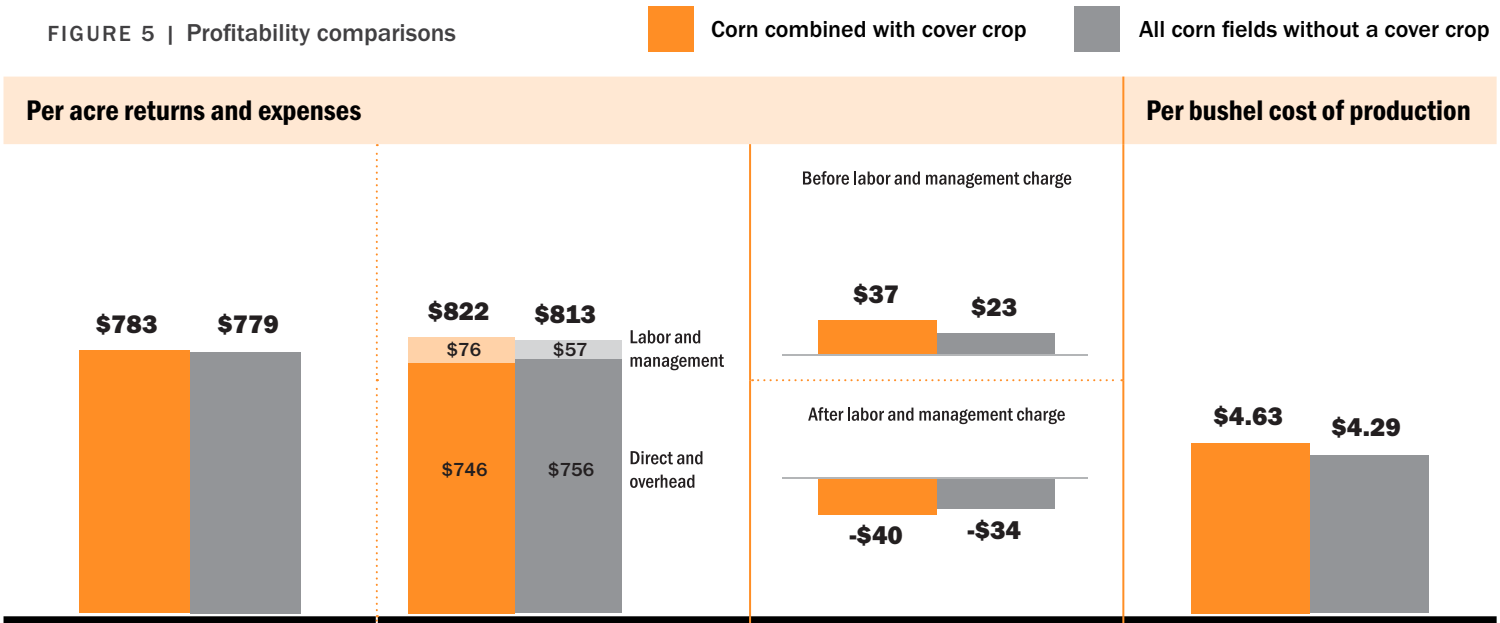
TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

CORN
in Northern Minnesota

KEY RESULTS

FIGURE 5 | Profitability comparisons



Gross return of the corn and cover crop combined enterprise was similar (0.5% higher) to the average corn acre grown in the region without cover crops in 2024.

Total direct and overhead expenses of the corn and cover crop combined enterprise were also similar (1% lower) to the average corn acre not using cover crops.

Before labor and management charge

Net return of the corn and cover crop combined enterprise was $37 per acre, $14 higher per acre than the average corn field not using cover crops.

After labor and management charge

Net return after labor and management charge of the corn and cover crop combined enterprise was a loss of $40 per acre, $6 lower return per acre than the region's average corn acre not using cover crops.

The cost of production for the corn and cover crop combined enterprise was $4.63 per bushel, compared to a cost of production of $4.29 per bushel for the average corn field in the region.

TABLE 6 | Northern Minnesota corn enterprise analysis (owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Corn grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn combined with cover crop** (3)=(1)+(2)	**Corn fields in cohort with no cover crop** (4)	**All corn fields with no cover crop** (5)
Gross return per acre	$779	$4	$783	$780	$779
Total direct expense per acre[8]	$558	$49	$608	$568	$600
Return over direct expense per acre	**$221**	**-$46**	**$175**	**$212**	**$179**
Total overhead expense per acre[9]	$113	$25	$138	$118	$156
Net return per acre	**$108**	**-$71**	**$37**	**$95**	**$23**
Labor and management charge	$61	$15	$76	$51	$57
Net return over labor and management per acre	**$46**	**-$86**	**-$40**	**$44**	**-$34**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table >

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

CORN SILAGE
in Southern Minnesota, South Dakota and Wisconsin

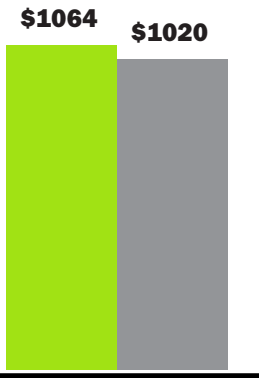
KEY RESULTS

FIGURE 6 | Profitability comparisons

Corn silage combined with cover crop

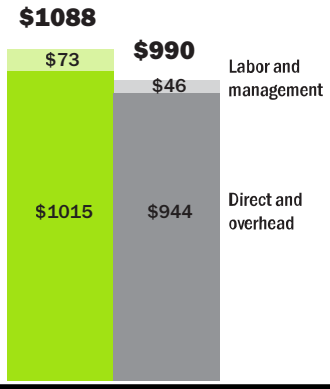
All corn silage fields without a cover crop

Per acre returns and expenses



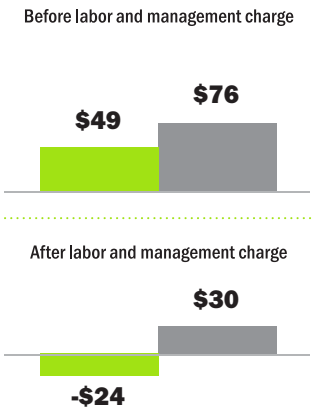
GROSS RETURN

Gross return of the corn silage and cover crop combined enterprise was 4% higher than the average corn silage acre grown in the region without cover crops in 2024.



TOTAL EXPENSES

Total direct and overhead expenses of the corn silage and cover crop combined enterprise were 8% higher than the average corn silage acre not using cover crops.



NET RETURN

Before labor and management charge

Net return of the corn silage and cover crop combined enterprise was $49 per acre, $27 lower per acre than the average corn silage field in the region not using cover crops.

After labor and management charge

Net return after labor and management charge of the corn silage and cover crop combined enterprise was a loss of $24 per acre, $54 lower return per acre than the region's average corn silage acre not using cover crops.

Per ton cost of production

COST OF PRODUCTION

The cost of production for the corn silage and cover crop combined enterprise was $47.13 per ton, compared to a cost of production of $41.59 per ton for the average corn silage field in the region.

TABLE 7 | Southern Minnesota, South Dakota and Wisconsin corn silage enterprise analysis (owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Corn silage grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn silage combined with cover crop** (3)=(1)+(2)	**Corn silage fields in cohort with no cover crop** (4)	**All corn silage fields with no cover crop** (5)
Gross return per acre	$981	$83	$1,064	$995	$1,020
Total direct expense per acre[8]	$717	$102	$819	$699	$761
Return over direct expense per acre	**$264**	**-$19**	**$245**	**$296**	**$259**
Total overhead expense per acre[9]	$158	$38	$196	$265	$183
Net return per acre	**$106**	**-$57**	**$49**	**$32**	**$76**
Labor and management charge	$56	$17	$73	$51	$46
Net return over labor and management per acre	**$50**	**-$74**	**-$24**	**-$20**	**$30**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table >

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

SOYBEANS
in Southern Minnesota, South Dakota and Wisconsin on owned land

KEY RESULTS

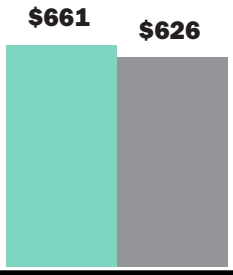
FIGURE 7 | Profitability comparisons

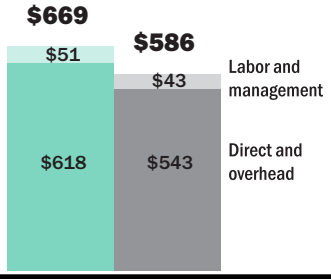
Soybeans combined with cover crop

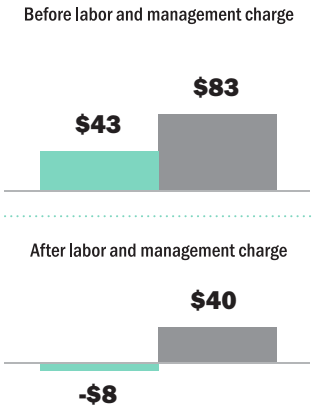
All soybean fields without a cover crop

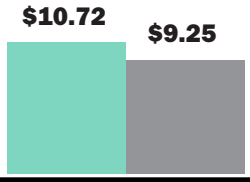
Per acre returns and expenses

Per bushel cost of production









GROSS RETURN

Gross return of the soybean and cover crop combined enterprise on owned land in southern Minnesota, South Dakota and Wisconsin was 6% higher than the average soybean acre grown in the region without cover crops in 2024.

TOTAL EXPENSES

Total direct and overhead expenses of the soybean and cover crop combined enterprise were 14% higher than the average soybean acre not using cover crops.

NET RETURN

Before labor and management charge

Net return of the soybean and cover crop combined enterprise was $43 per acre, $40 lower per acre than the average soybean field in the region without cover crops.

After labor and management charge

Net return after labor and management charge of the soybean and cover crop combined enterprise was a loss of $8 per acre, $48 lower return per acre than the region's average soybean acre not using cover crops.

COST OF PRODUCTION

The cost of production for the soybeans and cover crop combined enterprise was $10.72 per bushel, compared to a cost of production of $9.25 per bushel for the average soybean field in the region on owned land.

TABLE 8 | Southern Minnesota, South Dakota and Wisconsin soybean enterprise analysis on owned land

	COVER CROP COHORT				AREA AVERAGE
	Soybeans grown after cover crop (1)	**Cover crop enterprise** (2)	**Soybeans combined with cover crop** (3) = (1) + (2)	**Soybean fields in cohort with no cover crop** (4)	**All soybean fields with no cover crop** (5)
Gross return per acre	$625	$36	$661	$568	$626
Total direct expense per acre[8]	$312	$55	$367	$274	$298
Return over direct expense per acre	**$313**	**-$19**	**$294**	**$294**	**$328**
Total overhead expense per acre[9]	$216	$35	$251	$212	$245
Net return per acre	**$97**	**-$53**	**$43**	**$82**	**$83**
Labor and management charge	$38	$13	$51	$44	$43
Net return over labor and management per acre	**$59**	**-$66**	**-$8**	**$39**	**$40**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table ›

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

SOYBEANS
in Southern Minnesota, South Dakota and Wisconsin on rented land

KEY RESULTS

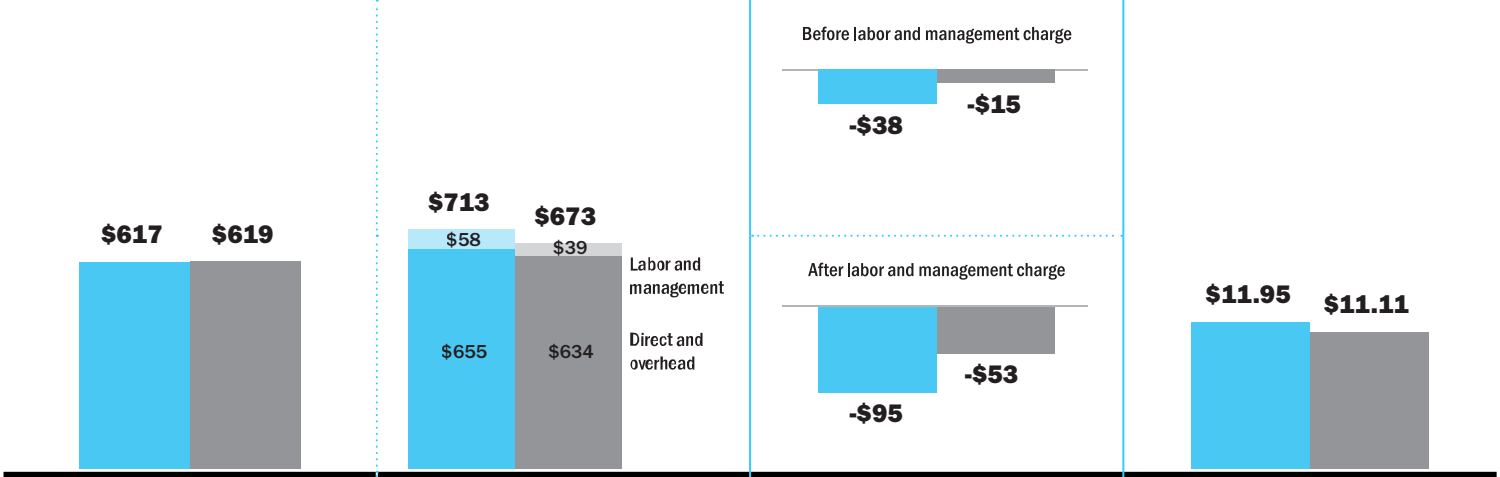
FIGURE 8 | Profitability comparisons

Soybeans combined with cover crop

All soybean fields without a cover crop

Per acre returns and expenses

Per bushel cost of production



GROSS RETURN

Gross return of the soybean and cover crop combined enterprise on rented land was similar (0.3% lower) to the average soybean acre grown in the region without cover crops in 2024.

TOTAL EXPENSES

Total direct and overhead expenses of the soybean and cover crop combined enterprise were 3% higher than the average soybean acre not using cover crops.

NET RETURN

Before labor and management charge

Net return of the soybean and cover crop combined enterprise was a loss of $38 per acre, $23 lower return per acre than the average soybean acre in the region without cover crops.

After labor and management charge

Net return after labor and management charge of the soybean and cover crop combined enterprise was a loss of $95 per acre, $42 lower return per acre than the region's average soybean acre not using cover crops.

COST OF PRODUCTION

The cost of production for the soybeans and cover crop combined enterprise was $11.95 per bushel, compared to a cost of production of $11.11 per bushel for the average soybean field in the region on rented land.

TABLE 9 | Southern Minnesota, South Dakota and Wisconsin soybean enterprise analysis on rented land

	COVER CROP COHORT				AREA AVERAGE
	Soybeans grown after cover crop (1)	**Cover crop enterprise** (2)	**Soybeans combined with cover crop** (1) + (2)	**Soybean fields in cohort with no cover crop** (4)	**All soybean fields with no cover crop** (5)
Gross return per acre	$576	$41	$617	$602	$619
Total direct expense per acre[8]	$498	$52	$550	$521	$549
Return over direct expense per acre	**$78**	**-$11**	**$67**	**$81**	**$70**
Total overhead expense per acre[9]	$82	$23	$105	$86	$85
Net return per acre	**-$4**	**-$34**	**-$38**	**-$6**	**-$15**
Labor and management charge	$44	$14	$58	$43	$39
Net return over labor and management per acre	**-$48**	**-$47**	**-$95**	**-$49**	**-$53**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table ›

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

SOYBEANS
in Northern Minnesota

KEY RESULTS

FIGURE 9 | **Profitability comparisons**

Gross return of the soybean and cover crop combined enterprise was 2% higher than the average soybean acre grown in northern Minnesota without cover crops in 2024.

Total direct and overhead expenses of the soybean and cover crop combined enterprise were similar (1% lower) to those of the average soybean field in northern Minnesota.

Before labor and management charge

Net return of the soybean and cover crop combined enterprise was $12 per acre, $11 higher per acre than the average soybean field in northern Minnesota without cover crops.

After labor and management charge

Net return after labor and management charge of the soybean and cover crop combined enterprise was a loss of $44 per acre, $12 lower return per acre than the region's average soybean acre not using cover crops.

The cost of production for the soybeans and cover crop combined enterprise was $10.94 per bushel, compared to a cost of production of $10.51 per bushel for the average soybean field in the region.

TABLE 10 | Northern Minnesota soybean enterprise analysis (owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Soybeans grown after cover crop (1)	**Cover crop enterprise** (2)	**Soybeans combined with cover crop** (1) + (2)	**Soybean fields in cohort with no cover crop** (4)	**All soybean fields with no cover crop** (5)
Gross return per acre	$446	$6	$452	$470	$445
Total direct expense per acre[8]	$291	$44	$336	$375	$349
Return over direct expense per acre	**$155**	**-$38**	**$116**	**$95**	**$96**
Total overhead expense per acre[9]	$81	$23	$104	$73	$95
Net return per acre	**$74**	**-$62**	**$12**	**$22**	**$1**
Labor and management charge	$38	$18	$56	$29	$33
Net return over labor and management per acre	**$36**	**-$79**	**-$44**	**-$7**	**-$32**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table ›

TABLE FORMULA

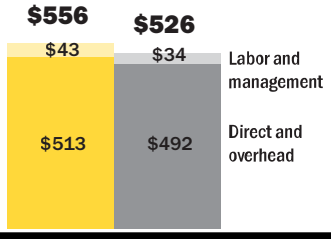
GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

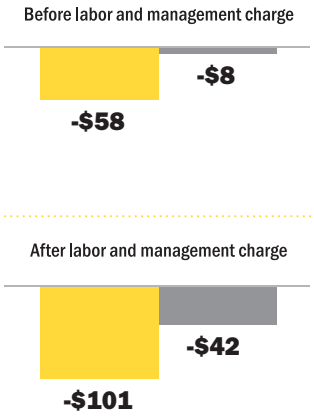
WHEAT
in Minnesota

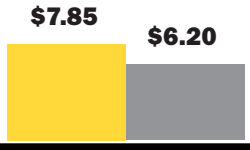
KEY RESULTS

FIGURE 10 | **Profitability comparisons** Spring wheat combined with cover crop All spring wheat fields without a cover crop

Per acre returns and expenses | **Per bushel cost of production**







GROSS RETURN

Gross return of the wheat and cover crop combined enterprise was 6% lower than the average wheat acre grown in Minnesota without cover crops in 2024.

TOTAL EXPENSES

Total direct and overhead expenses of the wheat and cover crop combined enterprise were 4% higher than the average wheat acre not using cover crops.

NET RETURN

Before labor and management charge

Net return of the wheat and cover crop combined enterprise was a loss of $58 per acre, $50 lower return per acre than the average wheat field in Minnesota not using cover crops.

After labor and management charge

Net return after labor and management charge of the wheat and cover crop combined enterprise was a loss of $101 per acre, $59 lower return per acre than the region's average wheat acre not using cover crops.

COST OF PRODUCTION

The cost of production for one acre of the wheat and cover crop combined enterprise was $7.85 per bushel, compared to a cost of production of $6.20 per bushel for the average wheat field in the region.

TABLE 11 | Minnesota statewide wheat enterprise analysis (owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Spring wheat grown after cover crop (1)	**Cover crop enterprise** (2)	**Spring wheat combined with cover crop** (3) = (1) + (2)	**Spring wheat fields in cohort with no cover crop** (4)	**All Spring wheat fields with no cover crop** (5)
Gross return per acre	$454	$0	$455	$575	$484
Total direct expense per acre[8]	$327	$42	$369	$383	$394
Return over direct expense per acre	**$127**	**-$41**	**$86**	**$193**	**$90**
Total overhead expense per acre[9]	$103	$40	$144	$99	$98
Net return per acre	**$24**	**-$82**	**-$58**	**$94**	**-$8**
Labor and management charge	$29	$14	$43	$30	$34
Net return over labor and management per acre	**-$5**	**-$96**	**-$101**	**$64**	**-$42**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table >

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

COMPARISON ACROSS YEARS OF EXPERIENCE WITH COVER CROPS

Adopting a new management practice on the farm often comes with a learning curve, during which producers improve the cost-efficiency of the practice as they gain more experience. This program seeks to determine whether such a learning curve exists for cover crop implementation, specifically examining whether cost-efficiency improves with more years of cover crop production experience.

In this section, we analyze the costs and returns associated with cover crop use across different levels of producer experience, measured by the number of years the producer has been planting cover crops. The analysis uses the cover crop cohort data from the 2024 FINBIN database.

A total of 94 farms submitted cover crop financial data to FINBIN in 2024. These farms represent a broad spectrum of experience with growing cover crops (see Table 12), ranging from one to 16 years of cover crop production.

TABLE 12 | Number of farms by years of cover crop production experience

Years of production experience	# of farms	% of total
1 – 3 years	22	23%
4 – 5 years	25	27%
6+ years	47	50%

Producers with more years of production experience with cover crops were more likely to have livestock production as a part of their operation. More than half of the producers with 4+ years of experience had livestock production in their farming operation.

TABLE 13 | Percentage of livestock producers within each cover crop experience group

Years of production experience	# of livestock farms	% livestock farms for experience group
1 – 3 years	4	18%
4 – 5 years	15	60%
6+ years	25	53%

Figure 11 presents the median gross return and total direct expenses per acre for cover crops by years of producer experience.

In 2024, there was no clear trend in cover crop costs and returns across experience levels. Producers with 4–5 years of experience reported both the highest median gross return and the highest median total direct expense per acre. In contrast, the other two experience groups reported a median gross return of zero and nearly identical total direct expenses. This will continue to be monitored as more data becomes available in future years.

FIGURE 11 | Comparing returns and expenses of cover crops in 2024 by years of cover crop experience

Data: Minnesota and Wisconsin, owned and rented, 2024

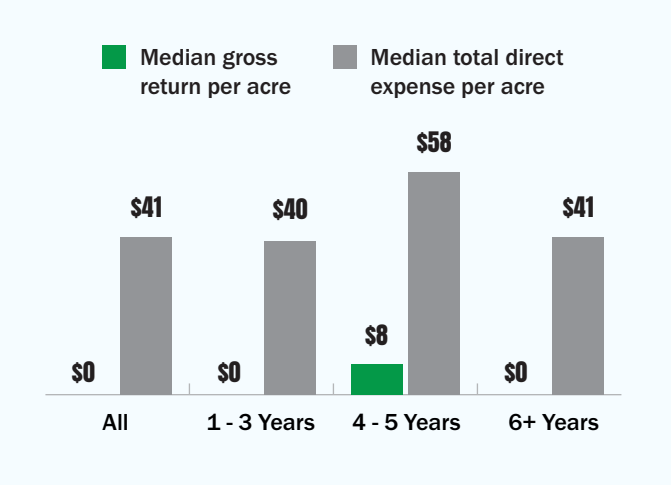


Table 14 shows a further breakdown of cover crop return and expenses by years of cover crop production experience, providing the minimum, maximum, median and average values for each expense category.

TABLE 14 | Return and cost comparison across cover crop enterprises in 2024 by years of cover crop production experience

	ALL	1 - 3 YEARS	4 - 5 YEARS	6+ YEARS
Number of enterprises	227	47	41	139
% of all enterprises	100%	21%	18%	61%
Gross return	**n = 227**			
Min	$0	$0	$0	$0
Max	$660	$153	$338	$660
Median	$0	$0	$8	$0
Average	$46	$23	$87	$42
Seed	**n = 227**			
Min	$5	$5	$5	$5
Max	$100	$34	$52	$100
Median	$21	$21	$17	$23
Average	$22	$19	$19	$24
Fertilizer	**n = 18**			
Min	$0	$0	$0	$0
Max	$34	$0	$18	$34
Median	$0	$0	$0	$0
Average	$1	$0	$1	$2
Chemical	**n = 4**			
Min	$0	$0	$0	$0
Max	$15	$0	$0	$15
Median	$0	$0	$0	$0
Average	$0	$0	$0	$0
Fuel & oil	**n = 225**			
Min	$0	$0	$1	$1
Max	$32	$10	$27	$32
Median	$5	$2	$7	$6
Average	$6	$4	$9	$6
Repairs	**n = 224**			
Min	$0	$0	$3	$0
Max	$81	$28	$69	$81
Median	$12	$6	$17	$13
Average	$15	$8	$18	$16
Custom hire	**n = 63**			
Min	$0	$0	$0	$0
Max	$208	$26	$208	$157
Median	$0	$0	$0	$0
Average	$13	$5	$36	$8

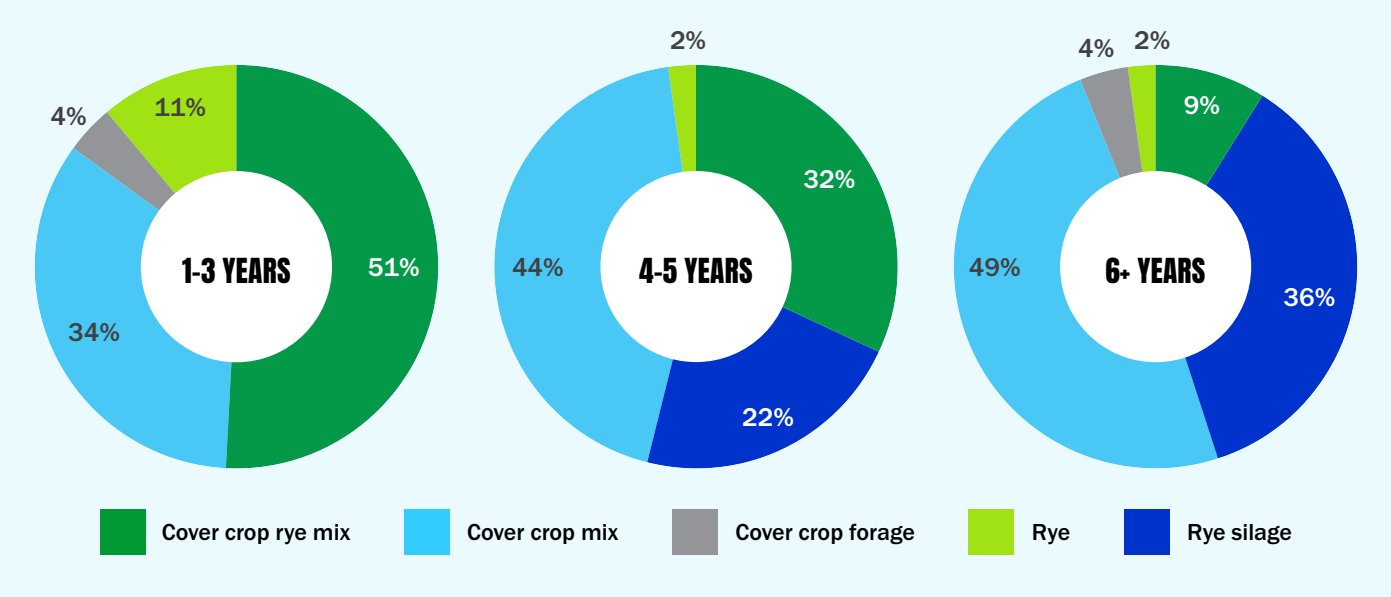
	ALL	1 - 3 YEARS	4 - 5 YEARS	6+ YEARS
Total direct expense	**n = 227**			
Min	$11	$11	$22	$16
Max	$287	$67	$254	$287
Median	$41	$40	$58	$41
Average	$62	$39	$93	$61
Cover crop species				
Rye	-	11%	2%	2%
Cover crop rye mix	-	51%	32%	9%
Rye silage	-	0%	22%	36%
Cover crop mix	-	34%	44%	49%
Cover crop forage	-	4%	0%	4%

Across the three categories of experience level, the species make-up changed as experience increased. Rye was used for agronomic purposes much more prevalently on farms with less cover crop experience. As experience increased, the use of rye for agronomic purposes dramatically decreased. Farms planted more elaborate mixes of cover crop species as they gained years of experience. While the use of rye for agronomic purposes decreased with years of experience, rye used for feed purposes (rye silage) increased with experience.

This report also includes a comparison of enterprise-level financial data from farms using cover crops, broken down by years of experience implementing the practice (see Tables 15 and 16).

The data comparing experience levels combines results from Minnesota, South Dakota, and Wisconsin farms. Only corn and soybean enterprises on owned and rented land combined are evaluated, as other categories did not have a large enough sample size.

FIGURE 12 | **Cover crop species planted by years of experience**
Data: Minnesota and Wisconsin, owned and rented, 2024



CORN GROWN AFTER A COVER CROP BY EXPERIENCE LEVEL

KEY RESULTS

- **Gross return:** Gross return for the corn and cover crop combined enterprise was highest for farms with the least experience with cover crop production.
- **Total expenses:** Total direct and overhead expenses of the corn and cover crop combined enterprise were highest for farms with the least experience with cover crop production.
- **Net return:** The net return, both before and after labor and management charge, of the corn and cover crop combined enterprise was highest for farms with the most experience with cover crop production.

TABLE 15 | Minnesota, South Dakota and Wisconsin corn grown after a cover crop (all tenures combined) by years of cover cropping production experience

	1 TO 3 YEARS' EXPERIENCE			4 TO 5 YEARS' EXPERIENCE			6 OR MORE YEARS' EXPERIENCE		
	Corn grown after cover crop	Cover crop Enterprise	Corn combined with cover crop	Corn grown after cover crop	Cover crop enterprise	Corn combined with cover crop	Corn grown after cover crop	Cover crop Enterprise	Corn combined with cover crop
Gross return per acre	$904	$14	**$919**	$799	$7	**$807**	$899	$18	**$917**
Total direct expense per acre[8]	$680	$34	**$714**	$589	$48	**$637**	$625	$46	**$671**
Return over direct expense per acre	$224	-$20	**$204**	$210	-$40	**$170**	$274	-$28	**$246**
Total overhead expense per acre[9]	$142	$15	**$158**	$124	$19	**$144**	$146	$25	**$171**
Net return per acre	$82	-$35	**$47**	$86	-$60	**$26**	$128	-$53	**$75**
Labor and management charge	$66	$9	**$75**	$74	$12	**$86**	$60	$13	**$73**
Net return over labor and management per acre	$15	-$44	**-$29**	$12	-$72	**-$60**	$68	-$66	**$2**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table >

SOYBEANS GROWN AFTER A COVER CROP BY EXPERIENCE LEVEL

KEY RESULTS

- **Gross return:** Gross return of the soybean and cover crop combined enterprise was highest for farms with the middle level of cover crop production experience.
- **Total expenses:** Total direct and overhead expenses of the soybean and cover crop combined enterprise were lowest for the most experienced group.
- **Net return:** Net return before labor and management charge was highest for farms with the middle level of cover crop production experience. After accounting for labor and management charge, these farms still reported the highest net return, though it was a loss of $45 per acre. The most experienced group followed, with a loss of $68 per acre in 2024.

TABLE 16 | Minnesota and Wisconsin soybeans grown after a cover crop (all tenures combined) by years of cover cropping production experience

	1 TO 3 YEARS OF EXPERIENCE			4 TO 5 YEARS OF EXPERIENCE			6 OR MORE YEARS OF EXPERIENCE		
	Soybeans grown after cover crop	Cover crop enterprise	Soybeans combined with cover crop	Soybeans grown after cover crop	Cover crop enterprise	Soybeans combined with cover crop	Soybeans grown after cover crop	Cover crop enterprise	Soybeans combined with cover crop
Gross return per acre	$584	$52	**$636**	$594	$75	**$669**	$546	$20	**$567**
Total direct expense per acre	$442	$40	**$482**	$445	$82	**$527**	$406	$48	**$454**
Return over direct expense per acre	$142	$12	**$154**	$149	-$7	**$142**	$140	-$27	**$113**
Total overhead expense per acre	$145	$22	**$168**	$100	$40	**$140**	$101	$23	**$125**
Net return per acre	-$3	-$10	**-$13**	$50	-$47	**$3**	$39	-$51	**-$12**
Labor and management charge	$54	$9	**$63**	$31	$16	**$48**	$41	$15	**$56**
Net return over labor and management per acre	-$57	-$19	**-$77**	$18	-$63	**-$45**	-$2	-$66	**-$68**

Values displayed may not calculate correctly due to rounding.

Explore the full cost and return data table ›

CONCLUSION

Early findings from three years of cover crop financial data collected in Minnesota, South Dakota and Wisconsin provide valuable insights into the costs, returns and effective economic management of cover cropping.

In the 2024 analysis, total direct expenses for cover crops ranged from $11 to $287 per acre, with a median of $41. Cover crops grown for feed purposes not only covered their production costs, but also contributed positively to farm income. Additionally, 27% of cover crop fields benefited from cost-share programs – both government and private sector sources – that helped offset 59% of cover crop expenses on those fields. Overall, cost-share payments covered approximately 14% of total cover crop expenses when considering all fields in the cohort.

High-profit cover crop fields often generate income by harvesting for livestock feed and receive more supplemental payments like conservation incentives. These fields also tend to have lower per-acre expenses, reflecting more effective cost management.

When comparing the impact of cover crops on commodity crops, fields with cover crops generally had gross returns comparable to regional averages for fields without cover crops. However, in most regions, and for most commodity crops, the average net return – after accounting for labor and management costs for both the cover crop and the subsequent commodity crop – was lower for the fields with cover crops compared to those without.

Experience appears to play a role in cover crop management. Farms with more years of cover crop experience tended to plant more elaborate cover crop mixes and were more apt to use their cover crop for feed purposes. The most experienced producers also saw the highest net returns from their combined corn and cover crop enterprises, though this pattern did not hold for soybeans.

In the 2024 analysis, total direct expenses for cover crops ranged from $11 to $287 per acre, with a median of $41. Cover crops grown for feed purposes not only covered their production costs, but also contributed positively to farm income.

This collaborative effort to collect detailed financial data on cover crops in Minnesota, South Dakota and Wisconsin continues in 2025. The program will further explore how cover crops influence commodity crop yields and profitability. Additionally, this program will analyze whether potential benefits associated with cover crops such as reducing fertilizer, chemical and other direct expenses in the primary commodity crop enterprises are able to offset the costs of growing the cover crop.

As it advances, this program will work to add more farm-level enterprise data to further inform the program findings. Additionally, the program will continue to analyze the highest- and lowest-performing cover crop enterprises to understand differences in costs and returns and identify factors contributing to the profitability of a cover crop enterprise.

Finally, as more years of data become available, a more specific comprehensive benchmarking analysis of the cover crop cohort over time will be explored. This will help identify trends, assess long-term performance and better understand the characteristics of the most profitable cover crop enterprises. Read more about the first three-year trend analysis **here**.

You can stay up to date on the data reports and blogs about this project by visiting:

https://business.edf.org/insights/financial-impacts-of-cover-crops-in-the-upper-midwest/

APPENDIX A.

TABLE 1A | **Detailed farm demographic comparison**

	COVER CROP COHORT	MINNESOTA STATEWIDE
Number of farms	124	2,349
Farm demographics		
Total crop acres per farm	783	823
Total crop acres	97,092	1,933,227
Average operator age	48	48
Average years farming	24	23
Number of beginning farmers (have farmed 10 years or less)	20	678
Share of farmers that are beginning farmers	16%	29%
Farm type		
Number of crop farms	67	1359
Share of farms that are crop farms	54%	58%
Number of livestock farms	26	347
Share of farms that are livestock farms	21%	15%
Number of crop & livestock farms	15	190
Share of farms that are crop & livestock farms	12%	8%
Number of farms in diverse farm type	20	448
Share of farms that are diverse farm type	16%	19%
Farm income		
Gross cash farm income	$1,095,405	1,077,172
Gross crop income	363,660	429,093
Gross livestock income	518,536	406,754
Other income	179628	174,358
Total cash farm expenses	940,148	913,694
Inventory change, depreciation and capital sales adjustments	(41,784)	(95,587)
Average net farm income	113,472	67,890
Median net farm income	63,141	21,964
Farm balance sheet		
Total assets	4,199,761	4,178,421
Total liabilities	1,383,286	1,308,214
Net worth	2,816,475	2,870,207
Financial metrics		
Working capital as a % of operating expense	45%	44%
Farm debt-to-asset ratio	36%	34%
Debt coverage ratio	1.43	1.06
Operating expense as a % of gross revenue (operating expense ratio)	79%	82%

APPENDIX B.

TABLE 1B | Southern Minnesota, South Dakota and Wisconsin corn enterprise analysis on owned land

	COVER CROP COHORT				AREA AVERAGE
	Corn grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn & cover crop combined** (3)=(1)+(2)	**Corn fields with no cover crop** (4)	**All corn fields with no cover crop** (5)
Number of enterprises	19	19	19	34	729
Yield (bushels per acre)	171	0	0	191	183
Value per bushel	$4.42	$0.00	$0.00	$4.29	$4.41
Product return per acre[1]	$760	$8	$768	$829	$808
Crop insurance income per acre	$125	$0	$125	$75	$92
Government payment income per acre[2]	$44	$8	$52	$38	$42
Other income per acre[3]	$32	$0	$32	$6	$4
Gross return per acre	**$961**	**$15**	**$977**	**$947**	**$947**
Production expenses ($ per acre)					
Seed	$115	$21	$136	$139	$130
Fertilizer	$190	$1	$191	$169	$192
Chemicals	$60	$0	$60	$58	$54
Crop insurance	$26	$0	$26	$36	$30
Machinery cost[4]	$185	$26	$211	$162	$203
Land ownership costs[5]	$121	$0	$121	$162	$165
Other expenses	$84	$15	$99	$105	$114
Total direct[8] and overhead[9] expense per acre	$781	$63	$844	$831	$888
Net return per acre	**$180**	**-$47**	**$133**	**$116**	**$59**
Labor and management charge per acre	$63	$11	$74	$53	$64
Net return over labor and management per acre	**$117**	**-$58**	**$59**	**$63**	**-$5**
Cost of production w/ labor and management per bushel[6]	$3.73	$0.00	$4.11	$3.96	$4.44
Net value per bushel[7]	$4.43	$0.00	$4.46	$4.31	$4.42

Values displayed may not calculate correctly due to rounding

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 2B | Southern Minnesota, South Dakota and Wisconsin corn enterprise analysis on rented land

	COVER CROP COHORT				AREA AVERAGE
	Corn grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn combined with cover crop** (3)=(1)+(2)	**Corn fields in cohort with no cover crop** (4)	**All corn fields with no cover crop** (5)
Number of enterprises	25	25	25	52	1097
Yield (bushels per acre)	178	0	0	185	182
Value per bushel	$4.26	$0.00	$0.00	$4.31	$4.45
Product return per acre[1]	$761	$4	$765	$808	$812
Crop insurance income per acre	$68	$0	$68	$83	$92
Government payment income per acre[2]	$45	$19	$64	$43	$42
Other income per acre[3]	$49	$0	$49	$26	$5
Gross return per acre	**$923**	**$23**	**$946**	**$960**	**$951**
Production expenses ($ per acre)					
Seed	$119	$21	$140	$125	$127
Fertilizer	$164	$0	$164	$160	$192
Chemicals	$50	$0	$50	$56	$54
Crop insurance	$30	$0	$30	$34	$30
Machinery cost[4]	$164	$26	$191	$187	$184
Land rent	$226	$0	$226	$236	$258
Other expenses	$87	$13	$100	$89	$110
Total direct[8] and overhead[9] expense per acre	$840	$61	$900	$888	$954
Net return per acre	**$83**	**-$37**	**$46**	**$72**	**-$3**
Labor and management charge per acre	$64	$11	$75	$62	$58
Net return over labor and management per acre	**$19**	**-$48**	**-$29**	**$10**	**-$61**
Cost of production w/ labor and management per bushel[6]	$4.15	-	$4.44	$4.26	$4.78
Net value per bushel[7]	$4.40	-	$4.42	$4.42	$4.46

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 3B | Northern Minnesota corn enterprise analysis (on owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Corn grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn combined with cover crop** (3)=(1)+(2)	**Corn fields in cohort with no cover crop** (4)	**All corn fields with no cover crop** (5)
Number of enterprises	12	12	12	26	394
Yield (bushels per acre)	136	0	0	166	171
Value per bushel	$4.33	$0.00	$0.00	$4.24	$4.09
Product return per acre[1]	$592	$0	$592	$705	$700
Crop insurance income per acre	$143	$0	$143	$32	$31
Government payment income per acre[2]	$43	$3	$47	$41	$42
Other income per acre[3]	$1	$0	$1	$3	$6
Gross return per acre	**$779**	**$4**	**$783**	**$780**	**$779**
Production expenses ($ per acre)					
Seed	$96	$17	$114	$94	$109
Fertilizer	$160	$0	$160	$141	$162
Chemicals	$38	$0	$38	$42	$36
Crop insurance	$20	$0	$20	$27	$25
Machinery cost[4]	$137	$36	$173	$159	$186
Land-related costs[10]	$121	$0	$121	$145	$144
Other expenses	$99	$21	$121	$76	$94
Total direct[8] and overhead[9] expense per acre	$671	$75	$746	$685	$756
Net return per acre	**$108**	**-$71**	**$37**	**$95**	**$23**
Labor and management charge per acre	$61	$15	$76	$51	$57
Net return over labor and management per acre	**$46**	**-$86**	**-$40**	**$44**	**-$34**
Cost of production w/ labor and management per bushel[6]	$3.99	$0.00	$4.63	$3.97	$4.29
Net value per bushel[7]	$4.33	$0.00	$4.33	$4.24	$4.10

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 4B | Southern Minnesota, South Dakota and Wisconsin corn silage enterprise analysis (owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Corn silage grown after cover crop (1)	**Cover crop enterprise** (2)	**Corn silage combined with cover crop** (3) = (1) + (2)	**Corn silage fields in cohort with no cover crop** (4)	**All corn silage fields with no cover crop** (5)
Number of enterprises	11	11	11	32	203
Yield (tons per acre)	20	-	-	21	22
Value per ton	$46.57	-	-	$42.82	$43.00
Product return per acre[1]	$929	$80	$1,009	$889	$930
Crop insurance income per acre	$15	$0	$15	$61	$45
Government payment income per acre[2]	$37	$3	$40	$41	$42
Other income per acre[3]	$0	$0	$0	$4	$3
Gross return per acre	**$981**	**$83**	**$1,064**	**$995**	**$1,020**
Production expenses ($ per acre)					
Seed	$120	$28	$149	$126	$129
Fertilizer	$150	$4	$154	$188	$150
Chemicals	$58	$3	$61	$53	$61
Crop insurance	$19	$0	$19	$25	$23
Machinery cost[4]	$283	$75	$358	$243	$263
Land-related costs[10]	$173	$0	$173	$258	$222
Other expenses	$72	$29	$101	$72	$97
Total direct[8] and overhead[9] expense per acre	$875	$140	$1,015	$964	$943
Net return per acre	**$106**	**-$57**	**$49**	**$32**	**$76**
Labor and management charge per acre	$56	$17	$73	$51	$46
Net return over labor and management per acre	**$50**	**-$74**	**-$24**	**-$20**	**$30**
Cost of production w/ labor and management per ton[6]	$44.06	-	$47.13	$43.78	$41.59
Net value per ton[7]	$46.57	-	$46.02	$42.97	$43.01

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 5B | Southern Minnesota, South Dakota and Wisconsin soybean enterprise analysis on owned land

	COVER CROP COHORT				AREA AVERAGE
	Soybeans grown after cover crop (1)	**Cover crop enterprise** (2)	**Soybeans combined with cover crop** (3) = (1) + (2)	**Soybean fields in cohort with no cover crop** (4)	**All soybeans fields with no cover crop** (5)
Number of enterprises	19	19	19	23	635
Yield (bushels per acre)	52	-	-	50	52
Value per bushel	$10.18	-	-	$9.65	$10.01
Product return per acre[1]	$526	$32	$558	$482	$522
Crop insurance income per acre	$54	$0	$54	$53	$70
Government payment income per acre[2]	$30	$4	$35	$28	$30
Other income per acre[3]	$15	$0	$15	$5	$3
Gross return per acre	**$625**	**$36**	**$661**	**$568**	**$626**
Production expenses ($ per acre)					
Seed	$65	$16	$81	$60	$58
Fertilizer	$50	$1	$51	$44	$41
Chemicals	$63	$0	$63	$62	$67
Crop Insurance	$29	$0	$29	$23	$26
Machinery cost[4]	$134	$46	$180	$123	$137
Land ownership costs[5]	$126	$0	$126	$121	$145
Other expenses	$61	$26	$87	$52	$68
Total direct[8] and overhead[9] expense per acre	$529	$89	$618	$486	$543
Net return per acre	**$97**	**-$53**	**$43**	**$82**	**$83**
Labor and management charge per acre	$38	$13	$51	$44	$43
Net return over labor and management per acre	**$59**	**-$66**	**-$8**	**$39**	**$40**
Cost of production w/ labor and management per bushel[6]	$9.04	-	$10.72	$8.87	$9.25
Net value per bushel[7]	$10.20	-	$10.60	$9.65	$10.03

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 6B | Southern Minnesota, South Dakota and Wisconsin soybean enterprise analysis on rented land

	COVER CROP COHORT				AREA AVERAGE
	Soybeans grown after cover crop (1)	**Cover crop enterprise** (2)	**Soybeans combined with cover crop** (3) = (1) + (2)	**Soybean fields in cohort with no cover crop** (4)	**All soybeans fields with no cover crop** (5)
Number of enterprises	29	29	29	51	1,018
Yield (bushels per acre)	45	-	-	49	51
Value per bushel	$9.93	-	-	$9.84	$10.07
Product return per acre[1]	$451	$20	$471	$483	$517
Crop insurance income per acre	$68	$0	$68	$62	$70
Government payment income per acre[2]	$32	$21	$53	$30	$30
Other income per acre[3]	$25	$0	$25	$26	$3
Gross return per acre	**$576**	**$41**	**$617**	**$602**	**$619**
Production expenses ($ per acre)					
Seed	$57	$20	$76	$60	$57
Fertilizer	$43	$1	$44	$40	$41
Chemicals	$56	$0	$56	$59	$65
Crop insurance	$28	$0	$28	$26	$26
Machinery cost[4]	$119	$38	$158	$128	$122
Land rent	$225	$0	$225	$236	$258
Other expenses	$52	$16	$68	$59	$64
Total direct[8] and overhead[9] expense per acre	$580	$75	$655	$607	$634
Net return per acre	**-$4**	**-$34**	**-$38**	**-$6**	**-$15**
Labor and management charge per acre	$44	$14	$58	$43	$39
Net return over labor and management per acre	**-$48**	**-$47**	**-$95**	**-$49**	**-$53**
Cost of production w/ labor and management per bushel[6]	$10.99	-	$11.95	$10.84	$11.11
Net value per bushel[7]	$10.15	-	$10.14	$10.18	$10.10

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 7B | **Northern Minnesota soybean enterprise analysis (owned and rented land combined)**

	COVER CROP COHORT				AREA AVERAGE
	Soybeans grown after cover crop (1)	**Cover crop enterprise** (2)	**Soybeans combined with cover crop** (3) = (1) + (2)	**Soybean fields in cohort with no cover crop** (4)	**All soybeans fields with no cover crop** (5)
Number of enterprises	7	7	7	17	376
Yield (bushels per acre)	38	-	-	36	39
Value per bushel	$9.82	-	-	$9.83	$9.68
Product return per acre[1]	$374	$0	$374	$349	$375
Crop insurance income per acre	$31	$0	$31	$86	$33
Government payment income per acre[2]	$33	$6	$39	$33	$31
Other income per acre[3]	$9	$0	$9	$3	$6
Gross return per acre	**$446**	**$6**	**$452**	**$470**	**$445**
Production expenses ($ per acre)					
Seed	$60	$17	$76	$65	$63
Fertilizer	$32	$0	$32	$31	$34
Chemicals	$51	$0	$51	$49	$51
Crop insurance	$14	$0	$14	$24	$19
Machinery cost[4]	$70	$30	$101	$86	$103
Land-related costs[10]	$87	$0	$87	$151	$126
Other expenses	$59	$21	$79	$42	$49
Total direct[8] and overhead[9] expense per acre	$372	$68	$440	$448	$444
Net return per acre	**$74**	**-$62**	**$12**	**$22**	**$1**
Labor and management charge per acre	$38	$18	$56	$29	$33
Net return over labor and management per acre	**$36**	**-$79**	**-$44**	**-$7**	**-$32**
Cost of production w/ labor and management per bushel[6]	$8.89	-	$10.94	$10.02	$10.51
Net value per bushel[7]	$9.82	-	$9.82	$9.83	$9.69

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR AND MANAGEMENT CHARGE	=	NET RETURN OVER LABOR AND MANAGEMENT PER ACRE

TABLE 8B | Minnesota statewide wheat enterprise analysis (owned and rented land combined)

	COVER CROP COHORT				AREA AVERAGE
	Spring wheat grown after cover crop (1)	**Cover crop enterprise** (2)	**Spring wheat combined with cover crop** (3) = (1) + (2)	**Spring wheat fields in cohort with no cover crop** (4)	**All spring wheat fields with no cover crop** (5)
Number of enterprises	5	5	5	12	229
Yield (bushels per acre)	65	-	-	64	72
Value per bushel	$6.29	-	-	$6.44	$5.62
Product return per acre[1]	$409	$0	$409	$411	$404
Crop insurance income per acre	$12	$0	$12	$126	$40
Government payment income per acre[2]	$33	$0	$33	$32	$32
Other income per acre[3]	$1	$0	$1	$7	$8
Gross return per acre	**$454**	**$0**	**$455**	**$575**	**$484**
Production expenses ($ per acre)					
Seed	$30	$12	$43	$31	$29
Fertilizer	$116	$0	$116	$109	$129
Chemicals	$43	$0	$43	$39	$45
Crop insurance	$7	$0	$7	$9	$15
Machinery cost[4]	$95	$48	$143	$96	$104
Land-related costs[10]	$94	$0	$94	$145	$115
Other expenses	$45	$22	$67	$52	$54
Total direct[8] and overhead[9] expense per acre	$430	$82	$512	$482	$491
Net return per acre	**$24**	**-$82**	**-$58**	**$94**	**-$8**
Labor and management charge per acre	$29	$14	$43	$30	$34
Net return over labor and management per acre	**-$5**	**-$96**	**-$101**	**$64**	**-$42**
Cost of production w/ labor and management per bushel[6]	$6.37	-	$7.85	$5.44	$6.20
Net value per bushel[7]	$6.29	-	$6.29	$6.44	$5.63

Values displayed may not calculate correctly due to rounding.

TABLE FORMULA

GROSS RETURN PER ACRE	−	TOTAL DIRECT EXPENSE PER ACRE	=	RETURN OVER DIRECT EXPENSE PER ACRE
RETURN OVER DIRECT EXPENSE PER ACRE	−	TOTAL OVERHEAD EXPENSE PER ACRE	=	NET RETURN PER ACRE
NET RETURN PER ACRE	−	LABOR & MANAGEMENT CHARGE	=	NET RETURN OVER LABOR & MANAGEMENT PER ACRE

APPENDIX C.

TABLE 1C | Minnesota, South Dakota and Wisconsin corn grown after a cover crop (all tenures combined) by years of cover cropping production experience

	1 TO 3 YEARS' EXPERIENCE			4 TO 5 YEARS' EXPERIENCE			6 OR MORE YEARS' EXPERIENCE		
	Corn grown after cover crop	Cover crop enterprise	Corn combined with cover crop	Corn grown after cover crop	Cover crop enterprise	Corn combined with cover crop	Corn grown after cover crop	Cover crop enterprise	Corn combined with cover crop
Number of enterprises	14	14	**14**	7	7	**7**	25	25	**25**
Yield (bushels per acre)	142	0	**0**	167	0	**0**	173	0	**0**
Value per bushel	$4.28	$0	**$0**	$4.09	$0	**$0**	$4.36	$0	**$0**
Product return per acre[1]	$606	$0	**$606**	$684	$3	**$687**	$757	$6	**$763**
Crop insurance income per acre	$214	$0	**$214**	$28	$0	**$28**	$71	$0	**$71**
Government payment income per acre[2]	$44	$14	**$59**	$45	$4	**$49**	$44	$12	**$57**
Other income per acre[3]	$39	$0	**$39**	$43	$0	**$43**	$26	$0	**$26**
Gross return per acre	$904	$14	**$919**	$799	$7	**$807**	$899	$18	**$917**
Production expenses ($ per acre)									
Seed	$110	$16	**$126**	$112	$27	**$$139**	$112	$20	**$132**
Fertilizer	$171	$0	**$171**	$157	$0	**$157**	$169	$0	**$170**
Chemicals	$58	$0	**$58**	$53	$0	**$53**	$45	$0	**$45**
Crop Insurance	$38	$0	**$38**	$22	$0	**$22**	$22	$0	**$22**
Machinery cost[4]	$178	$24	**$202**	$132	$22	**$154**	$159	$32	**$191**
Land-related costs[10]	$186	$0	**$186**	$150	$0	**$150**	$174	$0	**$174**
Other expenses	$81	$9	**$90**	$88	$18	**$106**	$90	$18	**$108**
Total direct[8] and overhead[9] expense per acre	$823	$49	**$872**	$713	$67	**$780**	$771	$71	**$842**
Net return per acre	$82	-$35	**$47**	$86	-$60	**$26**	$128	-$53	**$75**
Labor and management charge per acre	$66	$9	**$75**	$74	$12	**$86**	$60	$13	**$73**
Net return over labor and management per acre	$15	-$44	**-$29**	$12	-$72	**-$60**	$68	-$66	**$2**
Cost of production w/ labor and management per bushel[6]	$4.17	-	**$4.48**	$4.02	-	**$4.46**	$3.97	-	**$4.37**
Net value per bushel[7]	$4.38	-	**$4.38**	$4.09	-	**$4.10**	$4.45	-	**$4.47**

Values displayed may not calculate correctly due to rounding.

TABLE 2C | Minnesota and Wisconsin soybeans grown after a cover crop (all tenures combined) by years of cover cropping production experience

	1 TO 3 YEARS' EXPERIENCE			4 TO 5 YEARS' EXPERIENCE			6 OR MORE YEARS' EXPERIENCE		
	Soybeans grown after cover crop	Cover crop enterprise	Soybeans combined with cover crop	Soybeans grown after cover crop	Cover crop enterprise	Soybeans combined with cover crop	Soybeans grown after cover crop	Cover crop enterprise	Soybeans combined with cover crop
Number of enterprises	10	10	**10**	11	11	**11**	23	23	**23**
Yield (bushels per acre)	45	0	**0**	46	0	**0**	45	0	**0**
Value per bushel	$9.54	$0	**$0**	$10.09	$0	**$0**	$10.06	$0	**$0**
Product return per acre[1]	$426	$2	**$428**	$466	$70	**$537**	$454	$13	**$467**
Crop insurance income per acre	$82	$0	**$82**	$87	$0	**$87**	$46	$0	**$46**
Government payment income per acre[2]	$30	$50	**$80**	$31	$5	**$36**	$32	$7	**$39**
Other income per acre[3]	$46	$0	**$46**	$9	$0	**$9**	$15	$0	**$15**
Gross return per acre	$584	52	**$636**	$594	$75	**$669**	$546	$20	**$567**
Production expenses ($ per acre)									
Seed	$47	$20	**$66**	$64	$21	**$85**	$61	$17	**$78**
Fertilizer	$38	$0	**$38**	$58	$0	**$58**	$40	$1	**$41**
Chemicals	$64	$0	**$64**	$64	$0	**$64**	$53	$0	**$53**
Crop Insurance	$27	$0	**$27**	$28	$0	**$28**	$24	$0	**$24**
Machinery cost[4]	$166	$34	**$199**	$100	$62	**$162**	$101	$1	**$102**
Land-related costs[10]	$202	$0	**$202**	$177	$0	**$177**	$173	$0	**$173**
Other expenses	$43	$9	**$52**	$53	$39	**$92**	$55	$52	**$107**
Total direct[8] and overhead[9] expense per acre	$587	$62	**$649**	$544	$122	**$666**	$508	$71	**$579**
Net return per acre	-$3	-$10	**-$13**	$50	-$47	**$3**	$39	-$51	**-$12**
Labor and management charge per acre	$54	$9	**$63**	$31	$16	**$48**	$41	$15	**$56**
Net return over labor and management per acre	-$57	-$19	**-$77**	$18	-$63	**-$45**	-$2	-$66	**-$68**
Cost of production w/ labor and management per bushel[6]	$10.82	-	**$11.27**	$9.69	-	**$12.30**	$10.10	-	**$11.41**
Net value per bushel[7]	$9.58	-	**$9.60**	$10.12	-	**$11.38**	$10.22	-	**$10.12**

Values displayed may not calculate correctly due to rounding.

ENDNOTES

1 Product return includes yield multiplied by value per unit for the primary commodity crop plus any secondary products, like straw or corn stalk bales. For cover crop enterprises, only a total production return value is provided. There is no yield detail as this is the average production for all cover crop enterprise, therefore varying production units are present.

2 Government payment income for the primary commodity crop includes ARC or PLC payments received during the year and any additional disaster or ad hoc payments related to the production year. For cover crop enterprises, government payment income are conservation and other support payments related to planting the cover crop.

3 Other crop income includes income from hedging gains or losses or other miscellaneous income for the enterprise.

4 Machinery cost includes fuel, repairs, custom hire, machinery lease expense, interest expense on intermediate term debts and machinery depreciation.

5 Land ownership costs include real estate taxes and interest on long-term debts.

6 Cost of production with labor and management is the breakeven price to provide a labor and management return for the operator(s). This calculation factors in government payments and any other income sources for the enterprise for the year, like crop insurance income, hedging gains and losses or other miscellaneous income.

7 Net value per unit is the value per unit adjusted for hedging gains or losses.

8 Total direct expenses include seed, fertilizer, crop chemicals, crop insurance, drying expense, storage, fuel and oil, repairs, custom hire, land rent (if applicable), machinery leases, hauling and trucking, marketing, operational interest and other miscellaneous expenses.

9 Total overhead expenses include hired labor, machinery leases, building leases, real estate and personal property taxes, farm insurance, utilities, dues and professional fees, interest, machinery and building depreciation and other miscellaneous overhead expenses.

10 Land-related costs include land rent, real estate taxes and interest on long-term debts for enterprise analysis tables that combine owned and rented land together.