



Budgeted 2024 Corn and Soybean Profitability: Updated for Recent Futures Prices

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Executive Summary

- USDA is projecting 2024 corn stocks at 2.1 billion bushels, about 860 million bushels more than the ending stocks in 2020. Also, USDA projects soybean stocks at 435 million bushels, up 178 million bushels from 2020. USDA projects corn and soybean stocks to reach similar levels to those in 2019.
- Increasing stocks are pressuring prices lower, with December corn and November soybean prices declining by about \$1 a bushel for corn and about \$2 per soy bushel since November 1, 2023.
- Lower futures prices translate to lower budgeted returns over variable costs for corn, which declined by \$180 an acre, and \$110 per acre for soybeans from November 1 last year.
- Farmers should update their marketing plans to determine the per-bushel cost of 2024 corn and soybeans so that they can effectively use on-farm and commercial storage for the 2024 crops.

The futures market has given Indiana farmers a roller-coaster ride over the last five years as the U.S. Department of Agriculture (USDA) projects corn and soybean ending stocks returning to their respective 2019 levels. USDA currently projects the 2024 corn crop at 15.1 billion bushels, 1.6% less than last year's record crop of 15.3 billion bushels.

If realized, three of the previous four corn crops would exceed 15 billion bushels. Similarly, USDA projects the 2024 soybean crop to be 4.4 billion bushels. If realized, the 2024 soybean crop would be just 0.7% below the record 2021 crop, and three of the last four soybean crops would have exceeded 4.2 billion bushels.

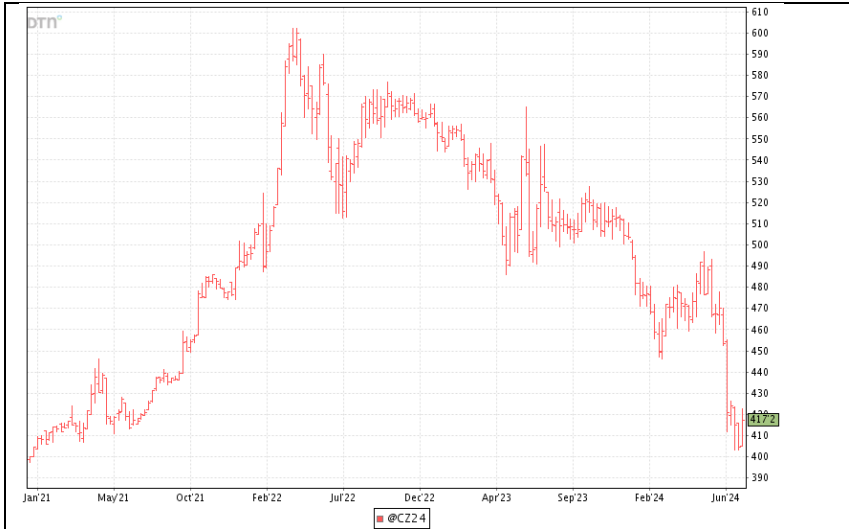


Figure 1. Dec. 2024 Corn Futures Weekly Prices from Jan. 2021 to July 2024. Source: DTN. Accessed July 23, 2024.

Figure 1 shows the volatility in the December 2024 corn futures contract from early January 2021 to mid-July 2024.

The contract exceeded \$5 due to corn stocks tightening below a 35-day supply for the 2020 to 2022 marketing years. USDA expects 2024 stocks to rebuild to over a 50-day inventory, so the corn futures contract has slipped to levels last experienced in May 2021 when prices rose.

The November 2024 soybean contract has given farmers a similar ride, as shown in Figure 2, which shows the volatility in this contract from early January 2021 to mid-July 2024.

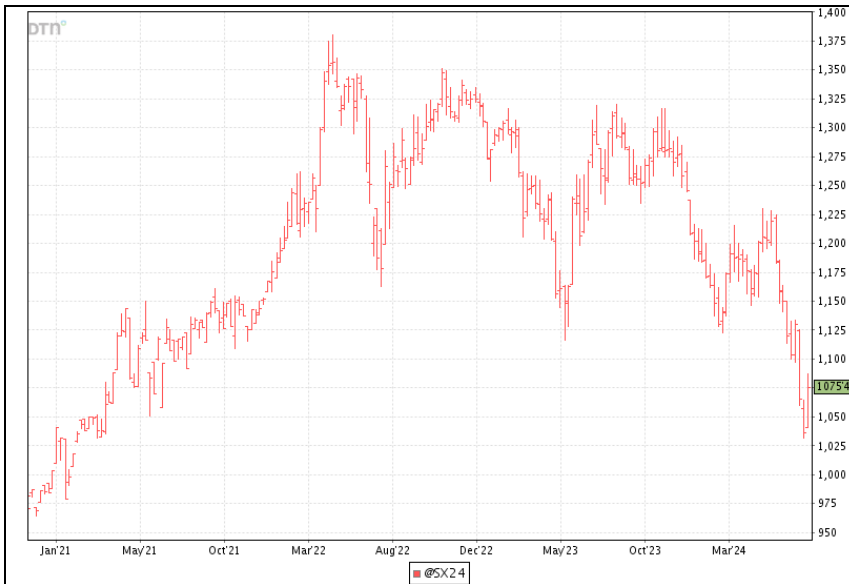


Figure 2. Nov. 2024 Corn Futures Weekly Prices from Jan. 2021 to July 2024. Source: DTN. Accessed July 23, 2024.

Figure 2 shows the price reaction to soybean stocks tightening to below 23 days' supply for the 2020 through 2022 marketing years. As in the corn market, soybean stocks have been building with the 2023 and 2024 crops.

The NOV 2024 contract closed at \$10.36 on July 19 but has rebounded slightly to close at \$10.75 1/2 on July 23. The contract last closed at \$10.36 in January 2021.

Indiana farmers experienced a different ride with input costs and cash rental rates, which have increased significantly since 2020. Using Purdue University *Crop Enterprise Budgets* as a guide, the direct costs for average soils planting a corn-soybean rotation have increased by 50% for corn and 43% for soybeans since 2020. The percentage increases correspond to a \$209 per acre increase for rotation corn and a \$102 increase

in direct costs for rotation soybeans. In addition, Indiana's rental rate for average soils has increased by \$40 per acre (18%) since 2020, according to Purdue University's annual survey.

What does this mean for 2024 corn and soybean profitability?

When adjusted for changes to the DEC 2024 corn futures price, the budgeted return over variable costs for corn has declined by about \$180 per acre since November 1, 2023. This return over direct expenses was budgeted at \$297 an acre on November 1 but ebbed and flowed lower over winter and spring. The budgeted return on June 3 was \$205 per acre and has declined steadily since mid-June and continued declining throughout July to a budgeted return of \$118 an acre on July 23, 2024.

Figure 3 also shows the impact of land tenure on profitability for 190-bushel corn. The graph shows how this budgeted return has changed since November 1, assuming farmers own 100% of their land base (green line), rent 50% of land (black line), or rent 100% of their land base (red line).

Farmers renting a sizable percentage of their land base have spent most of 2024 with negative budgeted returns for corn (Figure 3). The average economic loss has exceeded \$100 per acre since late June. Farmers that rent 50% of their land (black line) have had negative returns since July. Farmers that own their land have budgeted returns above \$125 per acre until July.

Figure 4 shows the budget return over variable and land costs for 2024 soybeans. Soybean direct inputs are \$290 per acre less than corn's inputs, so the budgeted returns for soybeans at a 58-bushel yield are greater than that for corn yielding 190 bushels.

The return over total variable costs declined by \$110 per acre from November 1, 2023, to July 23, 2024. The budgeted return over total costs was \$380 per acre on November 1 last year and remained above \$300 an acre until mid-June 2024. Soybeans experienced a comparable price slide as corn from mid-July to the present. The budgeted return over total variable costs on July 23 was \$266 per acre (Figure 4).

The profitability for farmers renting 100% of their land base (red line) has been positive until recently (Figure 4), dipping to a loss of \$10 an acre in early July. Farmers that rent a smaller percentage of their land base are more profitable. The return over total direct costs for farmers owning their land base has exceeded \$300 per acre, assuming a 58-bushel yield, until mid-June.

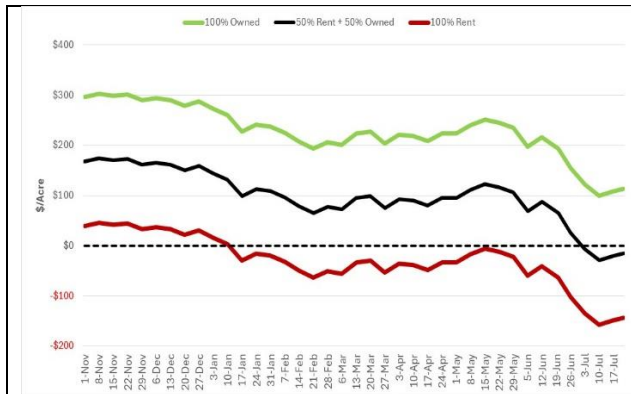


Figure 3. 2024 Budgeted Profitability for Indiana Corn – 190-Bushel Yield.
 Source: Purdue University Budgets and DTN December 2024 Closing Prices.

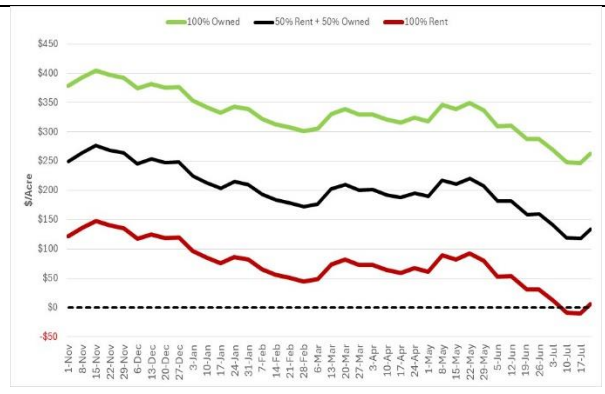


Figure 4. 2024 Budgeted Profitability for Indiana Soybeans – 58-Bushel Yield.
 Source: Purdue University Budgets and DTN November 2024 Closing Prices.

A takeaway from comparing Figure 4 to Figure 3 is that soybeans will buoy the profitability of the corn-soybean rotation. However, the budgeted returns do not consider higher-than-budgeted yields. If corn yields are 10% higher than budgeted (209 bushels), the return over direct costs plus 50% of the rent is positive even at lower corn prices.

While Figures 3 and 4 provide a sobering message, it is essential to recognize that the analysis does not consider cash overhead costs for machinery and equipment or withdrawals for family living expenses. Purdue University *Crop Enterprise Budgets* for a 1,000-acre farm have machinery overhead and family living expenses budgeted at \$139 and \$64 an acre, respectively.

Family living expenses are difficult to generalize, and data sources are limited. The University of Illinois *Farm Business Farm Management Farm Records Extension* program provides family living expense summaries. Illinois farm families have increased average family living expenses from \$78,900 in 2019 to \$91,400 in 2022. The average age of the operator is 58, with 2.6 people per family. You need to keep accurate spending records to avoid spending more on family living expenses than you realize.

What should farmers do now?

Grain farmers are positioned to experience financial stress, with those paying equipment loans or relying on the farm to provide a large share of family expenses facing more significant economic stress.

Farmers will likely need to use working capital or increase operating debt to meet liquidity problems. As farmers update their crop enterprise and cash flow budgets, it may be an excellent opportunity to talk with your lender about your profitability expectations for 2024

and your plans for managing any cash flow problems. If you typically combine your household finances with the farm business finances, including family members in this conversation may be beneficial.

Growers should calculate the cost of storing corn and soybeans on their farms. One cost component to include is the opportunity cost of storage. This opportunity cost recognizes that time is money, and holding inventory for an extended period incurs a cost. At higher interest rates, the cost of carrying grain has increased.

Farmers should also know how their local basis appreciates from harvest into spring to help plan risk management for stored grain. Understanding the typical basis appreciation will help managers gauge when the markets are signaling for grain to be sold from storage.

The final message refers to the corn futures profitability charts in Figure 3 and soybean profitability in Figure 4. Risk management opportunities may exist before the seed is planted. Crop insurance is a tool to protect the bushels contracted before harvest from yield risk affecting the ability to fulfill the contracts. Focusing on marketing and price protection will be essential if tight margins continue into next year. Having detailed farm records will help you prepare your 2025 budgets to guide your marketing and risk management plans for stored 2024 crops and plans for 2025.

Will revenue protection insurance provide a safety net this fall?

The projected prices for Revenue Protection (RP) corn and soybean insurance were established in February at \$4.66 and \$11.55 per bushel, respectively. Table 1 provides a matrix of indemnities for RP harvest prices, established in October, ranging from \$4.15 to \$4.65 per bushel. This matrix also has harvested corn yields ranging from 143-bushel (25% loss) to 190-bushel (0% loss). The green-shaded cells are price-yield combinations that trigger an indemnity, assuming an APH yield of 190-bushel and an 85% coverage level.

Table 1. Revenue Protection Insurance Example Indemnities for Various Harvest Price and Harvested Yield for 2024 Corn at 85% Coverage Level.

Projected Price	\$4.66					
APH Yield	190					
Coverage Level	85%					
Revenue Guarantee	\$753					
	October Average DEC Corn Futures Price (RP Harvest Price)					
Harvest Yield	\$4.15	\$4.25	\$4.35	\$4.45	\$4.55	\$4.65
190	\$0	\$0	\$0	\$0	\$0	\$0
181	\$4	\$0	\$0	\$0	\$0	\$0
171	\$43	\$26	\$9	\$0	\$0	\$0
162	\$82	\$66	\$50	\$34	\$18	\$2
152	\$122	\$107	\$91	\$76	\$61	\$46
143	\$161	\$147	\$133	\$118	\$104	\$90

Table 1 is for the 85% coverage level. At the 75% coverage level, indemnities are triggered at a harvest price of \$4.35 and a yield of 152 bushels per acre.

Low prices alone will not likely trigger indemnities, especially at lower coverage levels.

The December Futures contract has been trading near the \$4.15 price, which would trigger an indemnity IF the harvested yields were 181 bushels or lower (Table 1). The analysis in Table 1 does not include the farmer's share of the premium, so the indemnities may not exceed the premium paid.

Table 2 shows the RP insurance payoff matrix for soybeans at the 85% coverage level. Like the corn example, low prices alone will only trigger indemnities if yields are lower.

Table 2. Revenue Protection Insurance Example Indemnities for Various Harvest Price and Harvested Yield for 2024 Soybeans at 85% Coverage Level.

Projected Price	\$11.55								At the 85% coverage level, a harvest price of \$10.65 would require a 52-bushel soybean yield.
APH Yield	58								
Coverage Level	85%								
Revenue Guarantee	\$569								
October Average NOV Soybean Futures Price (RP Harvest Price)									
Harvest Yield	\$10.65	\$10.80	\$10.95	\$11.10	\$11.25	\$11.40	\$11.55		At 75% coverage, soybeans would have to yield 46 bushels at a \$10.65 harvest price. Will the soybean yield loss be that significant this year to trigger indemnities?
58	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
55	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
52	\$13	\$6	\$0	\$0	\$0	\$0	\$0	\$0	
49	\$44	\$37	\$30	\$22	\$15	\$7	\$0	\$0	
46	\$75	\$68	\$61	\$54	\$47	\$40	\$33	\$33	
44	\$106	\$100	\$93	\$87	\$80	\$74	\$67	\$67	

Parting Thoughts

USDA will incorporate farmer surveys of planted and harvested areas, yield expectations, and FSA *Certified Acreage* data starting with the August *WASDE*. The World Agricultural Outlook Board will better understand the 2024 crop potential as we move through the fall.

The market believes that corn and soybean stocks will rebuild to 2019 levels, and the market has room to remove any risk premium bid into price. A famous economics saying is that the “Cure for low prices is low prices.” Low prices will eventually stimulate demand and discourage production. The process is slow and painful, so I encourage you to use your time before harvest to think about how your farm would manage through a multi-year period of low prices and tight profit margins.