

2023 Markets in Review

A publication of

Fryar Price Risk Management Center of Excellence

Agricultural Economics & Agribusiness Department
Dale Bumpers College of Agriculture Food & Life Sciences
and
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About the Fryar Center

In 2020, the Fryar Price Risk Management Center of Excellence was established in the department of Agricultural Economics and Agribusiness at the University of Arkansas through a generous gift from Dr. Ed and Michelle Fryar. Dr. and Mrs. Fryar are both alumni of the department, and after receiving his Ph.D. in agricultural economics, Dr. Fryar returned to the department and served as a faculty member for 13 years.

The mission of the Fryar Center is to deliver a stakeholder-informed, internationally-recognized research programs in price risk management that improves decision making for farms and businesses, offers unparalleled educational opportunities for students, and enhances professional opportunities for faculty and staff.

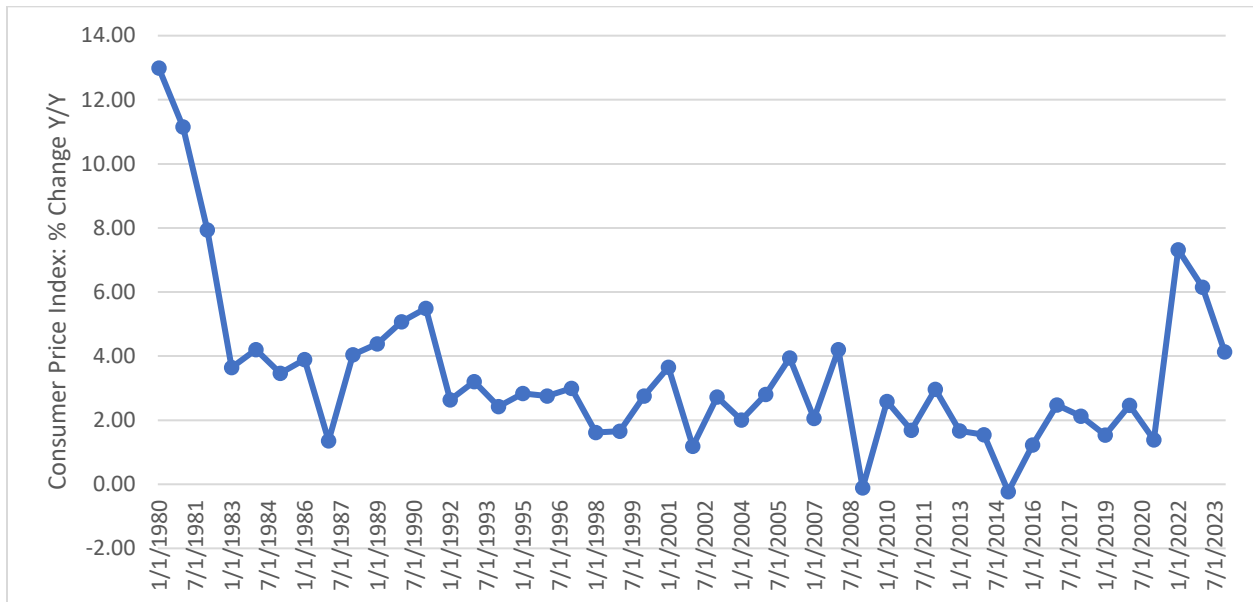
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2023 Economic Overview

Andrew M. McKenzie

Inflation was again a major topic in 2023 with the Federal Reserve raising interest rates to try and decrease its rate of growth. Figure 1 shows the year-over-year percentage change in the monthly Consumer Price Index (all urban consumers, all items in U.S. city average). Annual inflation stood at 6.15% at the beginning of 2023 and ended the year at 4.13%.

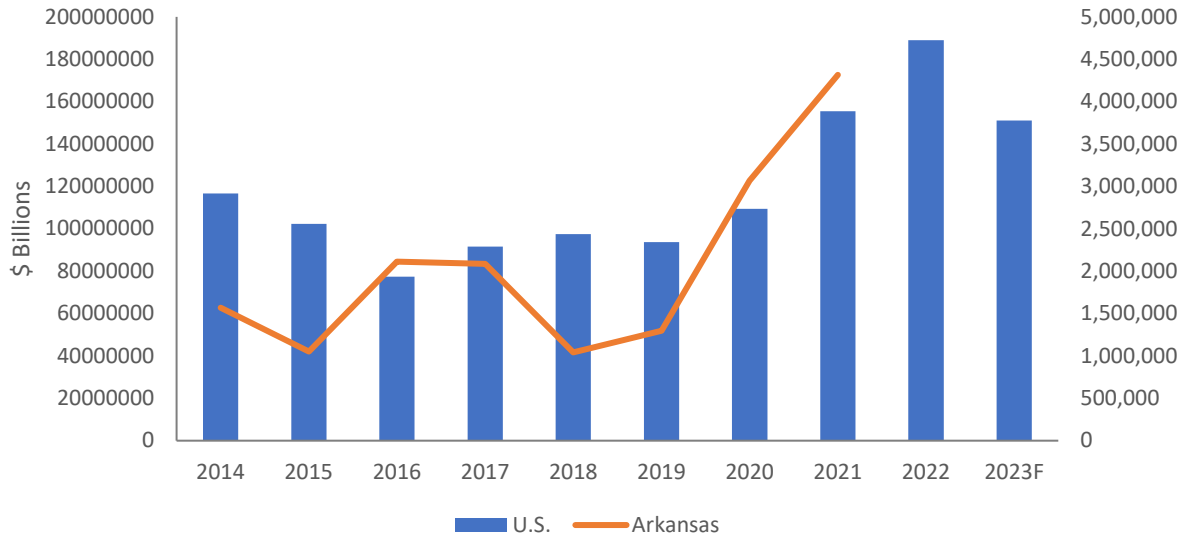


Data Source: Federal Reserve Bank of St. Louis, Federal Reserve Economic Data.

Notes: Consumer Price Index for All Urban Consumers: All Items in U.S. City Average, Seasonally Adjusted.

Figure 1. Consumer Price Index: Percent Change from a Year Ago

On balance, 2023 will likely see net farm income nationally lower than in 2022 with crop producers still incurring relatively high input costs while output prices fell significantly over the fall and harvest period. USDA Economic Research Service's (ERS) November farm income forecast estimated real U.S. net farm income for 2023 at around \$151 billion – markedly down from 2022. Figure 2 shows real U.S. and Arkansas NFI since 2014 (however, note that state-level estimates are not yet available for 2023).

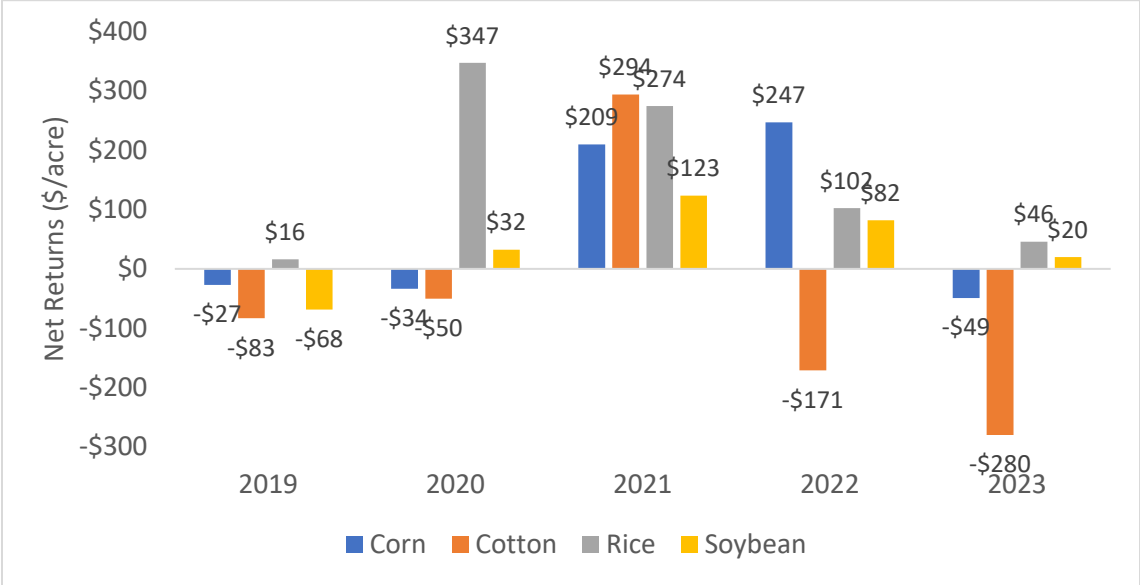


Notes: F=forecast; inflation adjusted using gross domestic product chain-type price index: 2023=100.

Data Source: U.S. Department of Agriculture, Economic Research Service.

Figure 2. U.S. Net Farm Income: 2000-2022F

Figure 3 provides some additional detail related to farm income numbers for four of Arkansas’ major crops. The figure charts estimated national net returns per acre based on USDA Economic Research Service (ERS) net value estimates for 2019 through 2023 (forecast). All commodities are expected to drop below the net returns seen in 2022, with cotton and corn projected to see net losses. Both corn and cotton are expected to have the lowest net returns experienced in the last five years. Rice and soybeans are expected to see positive returns, albeit relatively low compared to recent history.



Data Source: USDA Economic Research Service and USDA World Agricultural Outlook Board

Figure 3: Estimated per Acre Net Returns for Selected Major Crops: US Data, 2019 – 2023 (forecast)

As was the case in 2022, more than likely Arkansas net returns by crop and farm incomes in 2023 will be lower than suggested by these national figures. Like 2022, transportation disruptions on the Mississippi River due to low water levels – an effect of this year’s drought – led to weak cash market prices during harvest this year. The relatively weak market along the river in fall has now been a challenge for Arkansas farmers two years running.

Review of Arkansas Crop Markets in 2023

Ryan Loy

2023 represented another challenging year for Arkansas' row crop producers. Global factors that inflated crop prices in 2022 have since reversed in 2023 from rebounds in global grain production and rising interest rates. Conversely, input costs have decreased since much of the worldwide production capacity has adjusted for the Russia-Ukraine war. Spring 2023 was a time of extreme weather events, followed by severe drought as we drew closer to Arkansas' harvest season. While severe weather events brought much-needed rain to the state, they also caused widespread crop damage that hindered crop development and yields. The state was out of the 2022 drought for much of the 2023 growing season but ended back in a drought as harvest was beginning. Producers then faced weak basis levels as barge traffic on the Mississippi River was slowed due to low water levels.

Fertilizer prices sharply increased in 2022 from tightening supplies following Russia's invasion of Ukraine. However, 2023 had a 1.14% decrease in overall fertilizer price. Fertilizer pricing for 2023 was sensitive to the timing of input purchase decisions as input prices were still coming off record highs of 2022 and began steadily falling throughout spring 2023. Fertilizer prices are expected to continue their downward trajectory as much of the global capacity to produce nitrogen fertilizers has adjusted for the lack of Russian exports.

Even with the lower input costs, expected crop returns for 2023 declined significantly from 2022's record-setting year for cash receipts. Considering changes since 2022 in fertilizer and fuel prices, projected variable costs were down 7.9%, 5.3%, 8.6%, 8.2%, and 7.3% for corn, soybean, wheat, cotton, and rice, respectively. Projected net revenues remained above the 10-year average but were forecasted

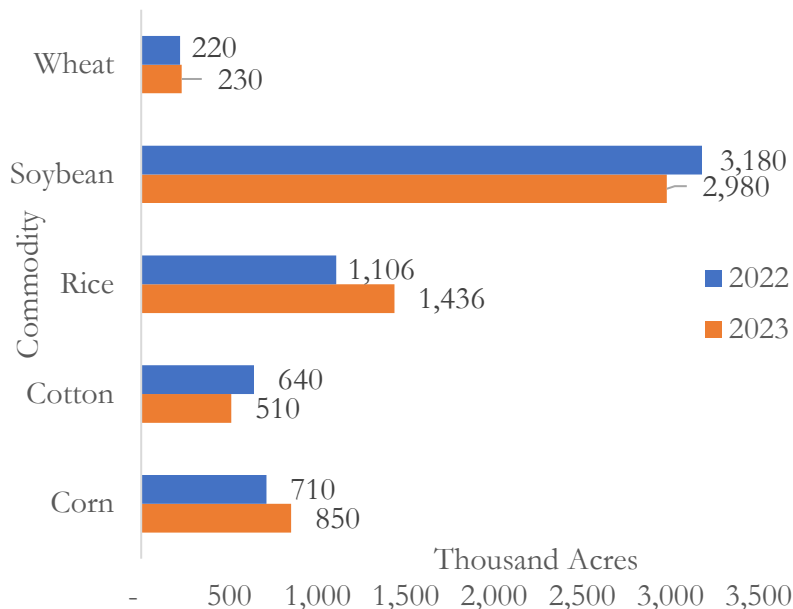


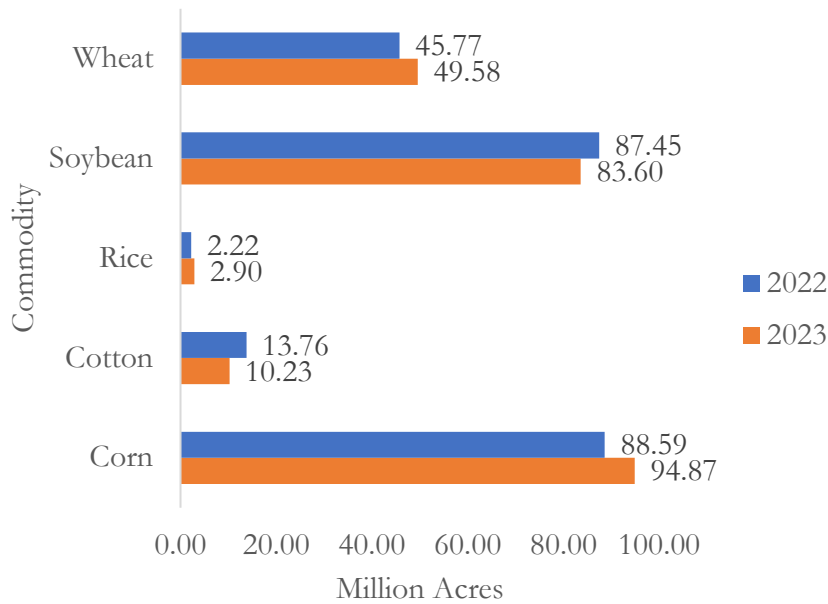
Figure 1. Arkansas Planted Acres: 2022 vs. 2023, Selected Crops. Source: USDA-NASS

to be significantly lower than the previous year due to commodity prices rebounding from the Ukraine conflict.

Corn was forecasted to have a higher projected price than the 2022 marketing year. With lower input costs, producers switched their acreage from soybean to corn. However, the major shift toward corn production hurt corn prices. Cotton price was steady since acreage remained low from production shifts from cotton to other commodities such as rice and corn. From 2022 to 2023, the change in planted acres for wheat, soybean, rice, cotton, and corn were 16.5%, -25.5%, 23%, -6.7%, and 4.4%, respectively. Figures 1

and 2 show planted acres for wheat, soybean, rice, cotton, and corn in Arkansas (Figure 1) and the

United States (Figure 2). The increase in corn acreage was more pronounced in Arkansas (16.5%) than in the United States (6.6%). Additionally, the decline in cotton acres was more severe overall in the United States (-34.5%) than in Arkansas (-6.7%).



Despite extreme weather and heat stress post-planting season, Arkansas row crop yields rose quite well. Yields have rebounded following the drought-stricken production season of 2022, with every row crop having increased yields. Figures 3 through 7 show Arkansas state average yield as reported by the USDA National Agricultural Statistics Service for 2003 – 2023. Each Figure also includes a 20-year trend line to make conclusions between

the trajectory of yields and actual yields at the farm level. Despite improved planting conditions, corn was the only crop that surpassed the 20-year trend. Wheat was precisely on the trend while the remainder of crops were below. However, 2023 yields are still good, with corn, cotton, rice, soybean, and wheat being 8.6%, 13.8%, 5.3%, 20.6%, and 4.9% above the 20-year average, respectively.

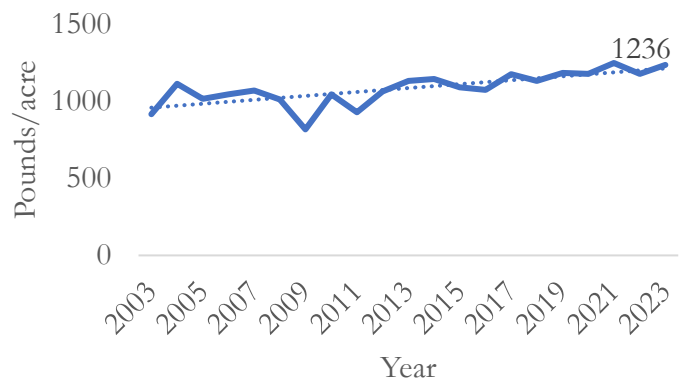
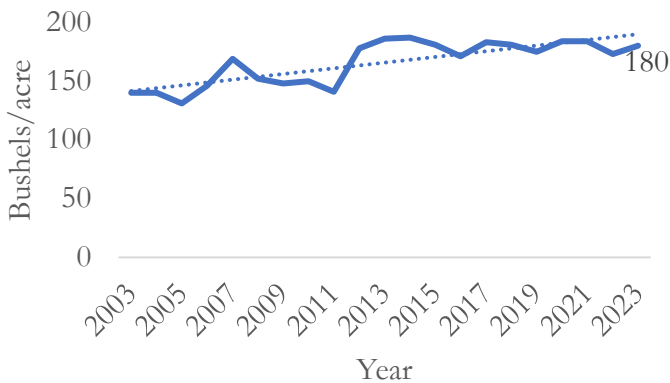


Figure 3. Arkansas State Average Corn Yield: 2003 – 2023 with 20-year Trend

Figure 4. Arkansas State Average Cotton Yield: 2003 - 2023 with 20-year Trend

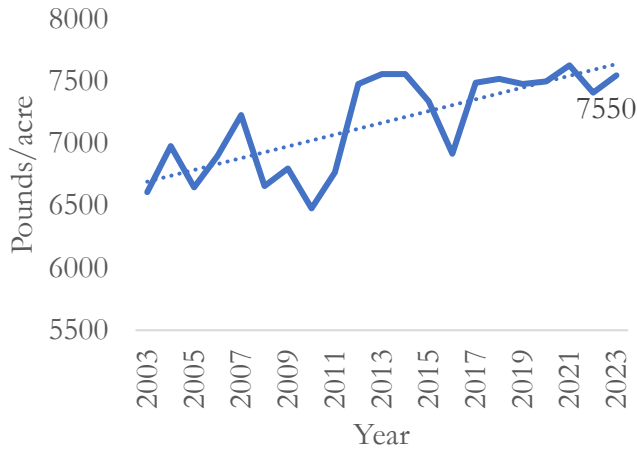


Figure 5. Arkansas State Average Rice Yield: 2003 – 2023 with 20-year Trend

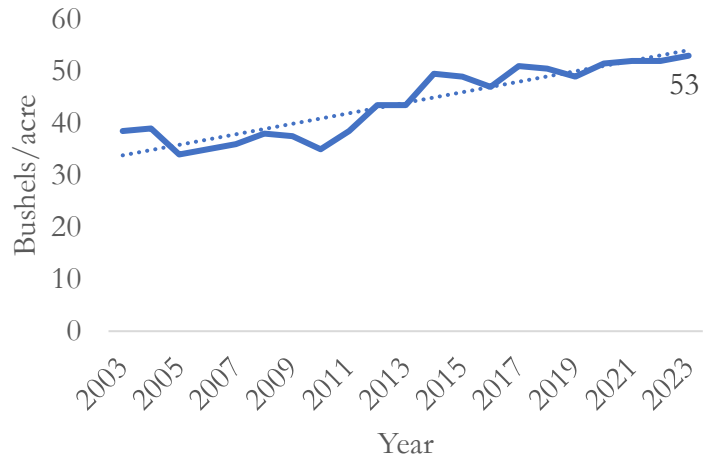


Figure 6. Arkansas State Average Soybean Yield: 2003 – 2023 with 20-year Trend

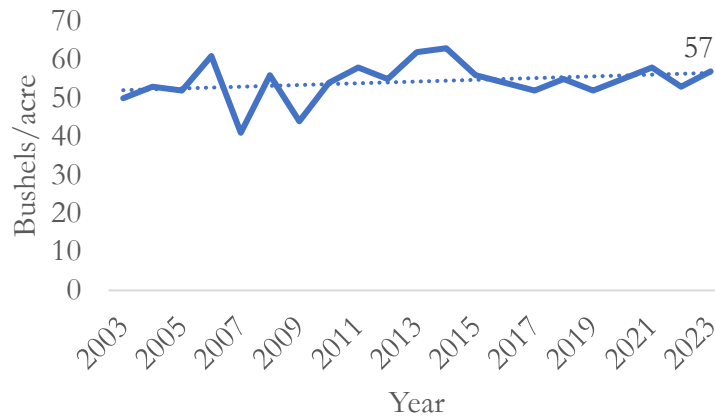


Figure 7. Arkansas State Average Wheat Yield: 2003 - 2023 with 20-year Trend

One of the most notable issues facing an Arkansas producer in 2023 is the decline in crop prices. Much of the decline in these prices is contributed to global production rebounding after the initial invasion of Ukraine. Additionally, Mississippi River barge traffic was slowed and less efficient due to the extreme drought into harvest season. With barge traffic slow, basis was heavily affected, signaling limited demand in the cash market. Table 1 contains prices for row crops as reported nationally to the USDA. Corn and cotton had the most severe declines, with 26.8% and 18.3% price reductions, respectively. Corn acres (as shown in the above Figures) increased and thus increased the supply of corn, putting downward pressure on farm-level corn prices. An Arkansas farmer’s bottom line is still negatively impacted, like the 2022 season. A reduction in row crop prices swiftly offset any decrease in input prices.

Table 1. Arkansas Selected Crop Prices: 2021 - 2023

	2021	2022	2023	% change from 2022
Rice (\$/cwt) ¹	\$14.16	\$17.60	\$17.30	-1.7%
Soybeans (\$/bu) ¹	\$13.33	\$14.80	\$14.05	-5.1%
Corn (\$/bu) ¹	\$5.44	\$6.76	\$4.95	-26.8%
Cotton (\$/lb) ¹	\$0.72	\$0.93	\$0.76	-18.3%
Wheat (\$/bu) ¹	\$6.84	\$7.63	\$7.20	-5.6%

¹Prices are national averages as reported to USDA-NASS

Interest Rates and Grain Storage

Ryan Loy

Higher interest rates are one of the main factors negatively impacting Arkansas producer's bottom line in the 2023/24 marketing year. This is especially true for producers who finance their enterprise through operating loan debt. This report examines the impact of interest rates on storing feed grains in Arkansas. For example, if a producer chooses to store corn for six months with an increase in the operating loan rate from 5% to 10%, it will increase storage costs by 50% or \$0.12/bushel.

The Federal Reserve began raising the Federal Funds Rate – or the cost of borrowing money between financial institutions – in March of 2022 to curb inflation in the United States. As the Fed Fund Rate increases, so does the Prime Rate (the referenced rate for banks to loan dollars). Speculators believe there will not be further rate hikes in 2023 and that rates will be slowly reduced in 2024. The current prevailing prime rate is 8.5%, and a survey of agricultural lenders from the Kansas City Federal Reserve showed that fixed operating loan rates for Q3 2023 hovered around 9%. Therefore, producers in the debt market face expensive borrowing, putting tremendous pressure on their farm's balance sheet.

Increasing interest rates impact every facet of a farming enterprise but are especially severe for producers utilizing operating loans to finance their enterprise. Operating loans pay for inputs such that a producer can fund their farming operation and repay the loan when the grain is sold. In the case of grain storage, a producer has the option to sell grain at harvest or store the grain to sell further into the marketing year. Storing grain conventionally allows producers more marketing flexibility and less exposure to price risks such as basis risk. Interest rates are a critical factor in their timing decision to sell grain. Since there is an interest cost for storing grain, a producer must compare selling the grain at harvest and repaying the operating loan or accumulating interest by holding grain and repaying the loan later. In a tight credit market, operating loan interest costs must be accounted for when marketing grain.

Operating loan interest costs in dollar-per-bushel terms are calculated by multiplying the harvest price by the prevailing operating loan interest rate and dividing the number of months the crop is stored by 12. Consider an Arkansas producer with an operating loan rate of 9% and a harvest price of \$4.84 per bushel. This producer stores corn from October until April (6 months). Interest costs on storing corn would be $\$4.84 \times 0.09 \times \left(\frac{6}{12}\right) = \0.22 per bushel. Assuming storage of 50,000 bushels, the producer

would face an interest cost of \$11,000. This is a tremendous cost, considering the decline in expected commodity prices in 2023.

Figures 1, 2, 3, and 4 highlight the relationship between interest, harvest price, and months in storage on corn, grain sorghum, soybean, and wheat, respectively. Harvest prices are derived from the USDA-Risk Management Agency and are assumed to be \$4.84, \$4.76, \$12.84, and \$6.60 for corn, grain sorghum, soybean, and wheat, respectively. Interest rates range from 5% to 10%, and storage length is 1 to 11 months. The following Figures only account for interest rate costs and do not include considerations for depreciation, grain quality, transportation, etc.

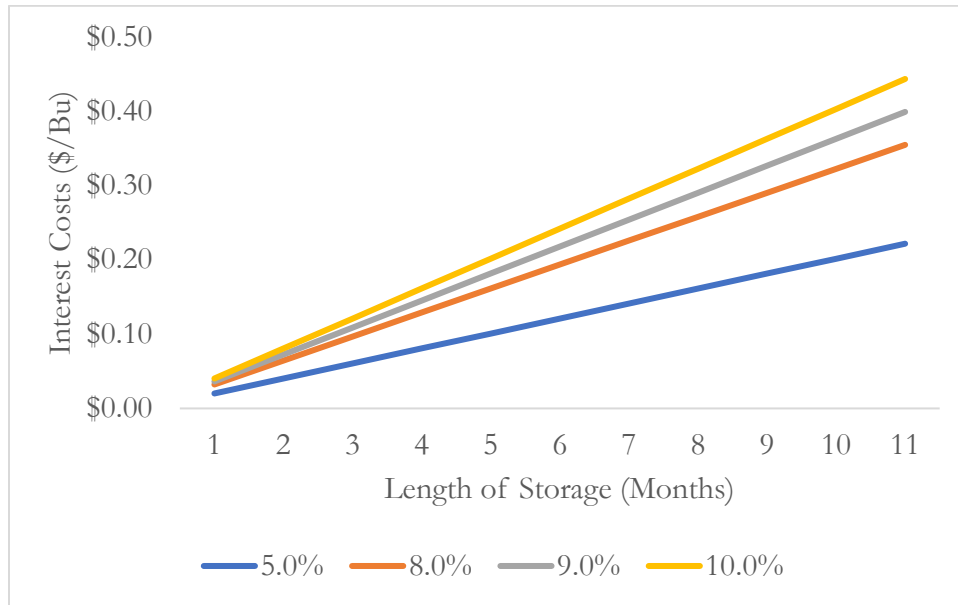


Figure 8. Interest Rate Increases on Corn Storage Costs

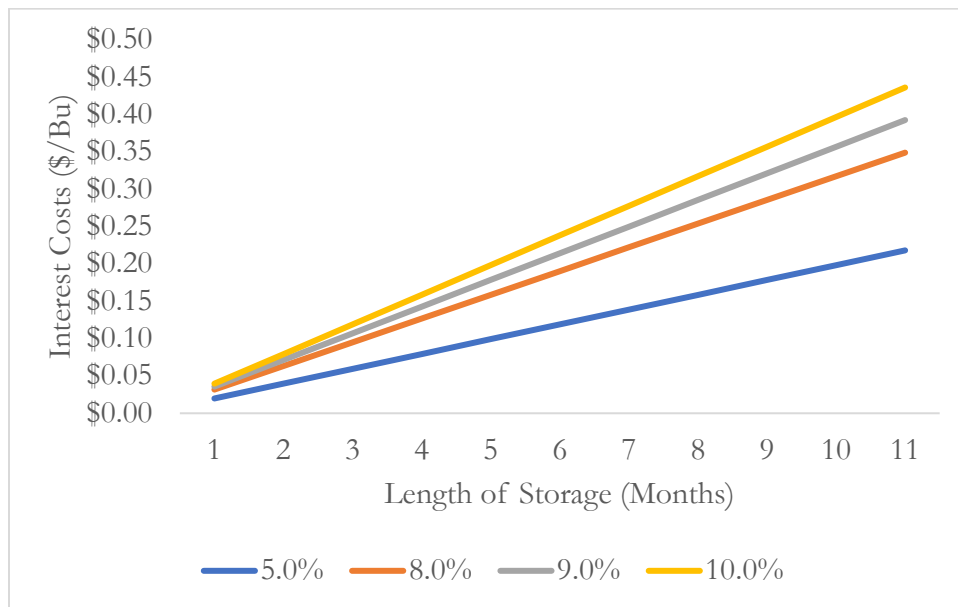


Figure 9. Interest Rate Increases on Grain Sorghum Storage Costs

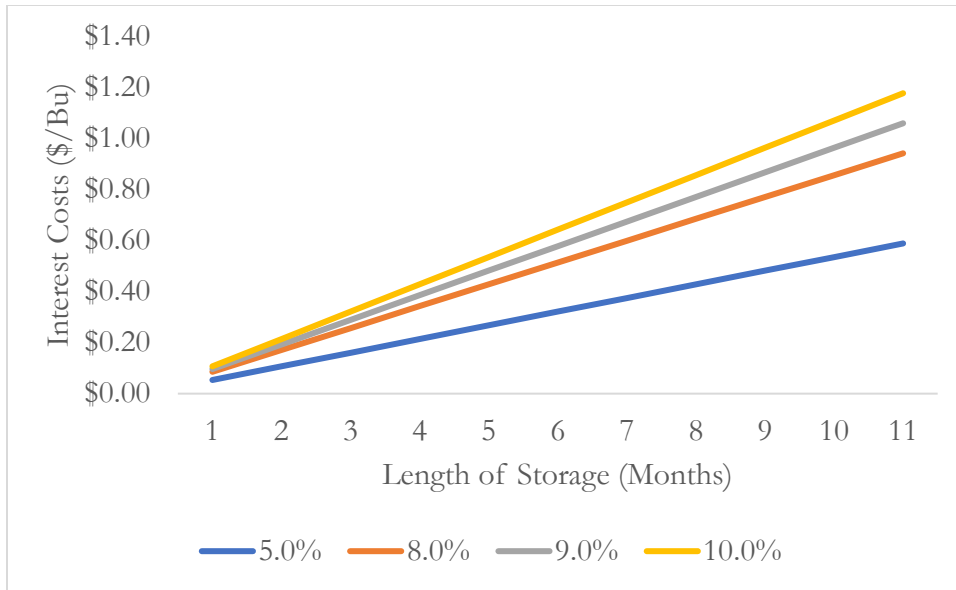


Figure 10. Interest Rate Increases on Soybean Storage Costs

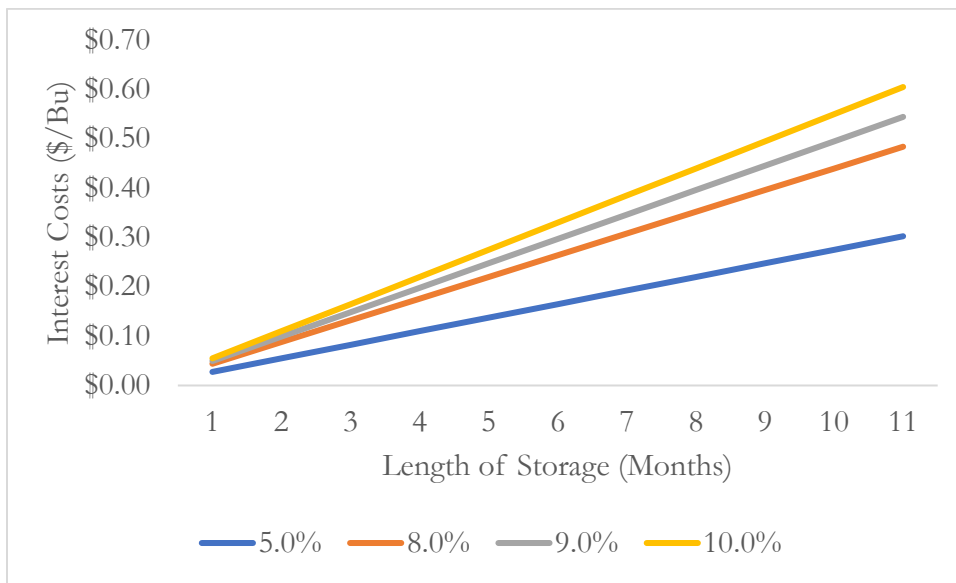


Figure 11. Interest Rate Increases on Wheat Storage Costs

Recall the example of the Arkansas corn producer given above. They choose to store grain for six months at a 9% interest rate and face a \$0.22 per bushel cost. Increasing the interest rate to 10% and holding every other variable constant, this producer would be on the hook for \$0.24 per bushel. A 2-cent increase based on a 1% increase in the interest rate may seem trivial, but when considering the amount of grain stored (50,000 bushels), the producer is paying \$12,000 to store for six months.

Interest rates increase the storage costs for producers who hold grain and participate in the operating debt market. These high interest rates can potentially neglect the positive impacts of storing grain and thus impact the producer's ability to repay operating loans. One option is to repay the operating loan at

harvest utilizing working capital reserves rather than waiting until grain holdings are sold. Interest rate costs and the timing of loan repayment should be accounted for in grain marketing decisions.

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