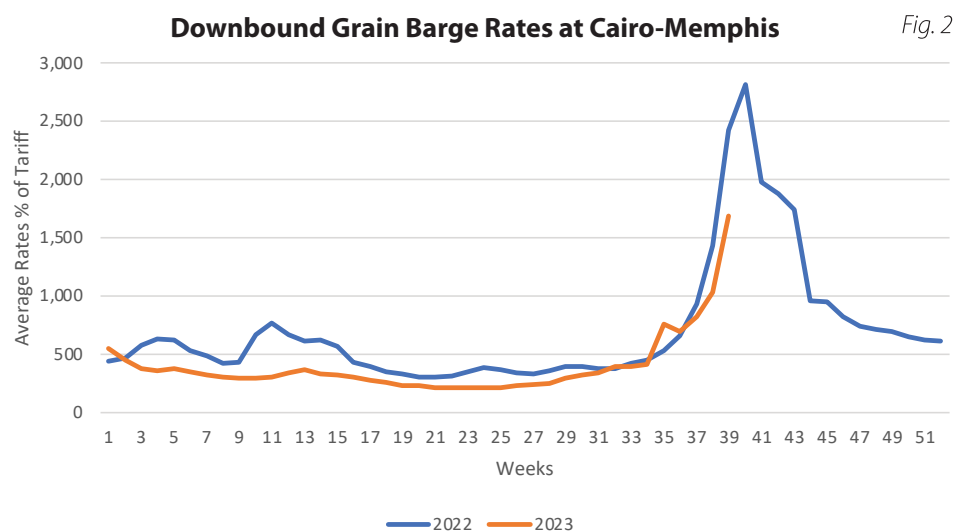
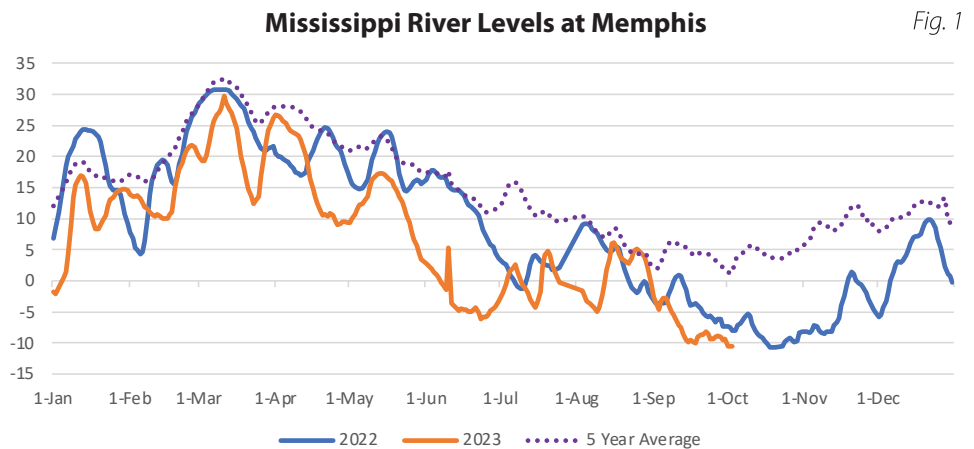


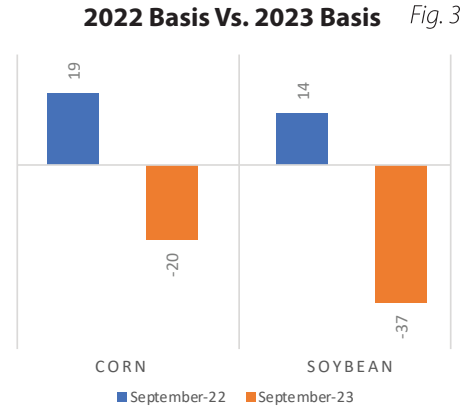
## Drought Challenges Along the Mississippi: Impact on Agriculture and Transportation

Little rain in the Midwest, the South and other key areas has led to low levels on the Mississippi River, impacting barge navigation and driving up transportation costs for farmers during the crucial harvest period of the year. Inland barges are typically a cost-effective means of transport, requiring minimal labor needs and energy costs. To break down costs, barges are approximately one-tenth the cost of railways and only one-sixteenth the cost of trucking. However, the efficiency of barges relies on sufficient water levels for unimpeded movement. It's something that's been an escalating challenge over the past few years.

Figure 1 shows Mississippi River levels in Memphis have mimicked last year's pattern but at a faster rate. Around this time last year, despite being low, the river was heading toward the all-time low (-10.81 feet in Oct. 2022). This year, it has already reached a low of -10.64 feet in late September. Typically, the river follows a trend of decreasing levels as harvest approaches, with a rebound during the winter months, as indicated by the 5-year average. However, ongoing dry weather forecasts raise concerns of potential record lows if sufficient rainfall doesn't occur.



Due to the low river, the industry has taken measures such as decreasing draft allowances (the depth a barge can sink into the water) and agreeing to reduce towing sizes (the number of barges a single boat can tow). As a result, more barges will be necessary to transport the same volume of products, and more boats will be required to move smaller groups of barges. This strains capacity and hampers downstream efficiency for users, consequently leading to increases in shipping costs. Figure 2 provides a visual representation of weekly downbound barge rates for Cairo-Memphis in 2022 and 2023.



The reduced barge capacity has created a bottleneck, leaving growers and elevators with no choice but to retain their grain. This, coupled with barge rates and limited storage space, has caused the basis for grain to widen. Figure 3 illustrates the gap in basis for corn and soybeans between last year and this year. In September 2022, growers were receiving an average basis of 19 cents over the futures price for December contracted corn. In contrast, this year, the basis stands at 20 cents under the futures price for the same period.

A similar trend can be observed with soybeans, where growers were getting an average of 14 cents over November futures prices in 2022, but now face an average of 37 cents under. It’s worth noting that these figures represent monthly averages, and in certain areas, corn bases dropped to -\$1.25, while soybean basis reached as low as -\$1.46 for 2023.

The reduced price farmers are being paid for delivering grain can add up significantly. Figure 4 illustrates the substantial impact on the producers’ bottom line due to lower prices and a widening basis. Even if the grower were to receive the same spot price year over year, assuming all other factors remained constant, the difference would still amount to more than \$7,000 due to the difference in basis.

*Fig. 4*

| Year | Crop | Acres | Yield | Production | Spot Price (Dec) | Spot Price +/- Basis | Received  |
|------|------|-------|-------|------------|------------------|----------------------|-----------|
| 2023 | Corn | 100   | 180   | 18,000     | \$4.76           | \$4.56               | \$82,080  |
| 2022 | Corn | 100   | 180   | 18,000     | \$6.78           | \$6.97               | \$125,460 |

In summary, persistent drought conditions in the Midwest, the South and other key areas have caused significant challenges, especially regarding the Mississippi River’s levels. As a result, transportation costs on the river have risen, impeding farmers during the crucial harvest season, and impacting their profit margins. Figures 1, 2, 3, and 4 illustrate the seriousness of these problems, such as lower river levels and wider basis for grain, putting pressure on agricultural producers’ profits. These challenges are interconnected, highlighting the complex relationship between climate, infrastructure, and agriculture. To return the river to more normal levels, it would require a substantial 10 inches or more of rainfall, a relief that may not arrive until this winter.



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