

AEDE Outlook and Policy Conference 2022/23

# Grain Market Outlook: Market Snapshots and Potential Risks

November 15, 2022

**Seungki Lee**, Ph.D.

Assistant Professor

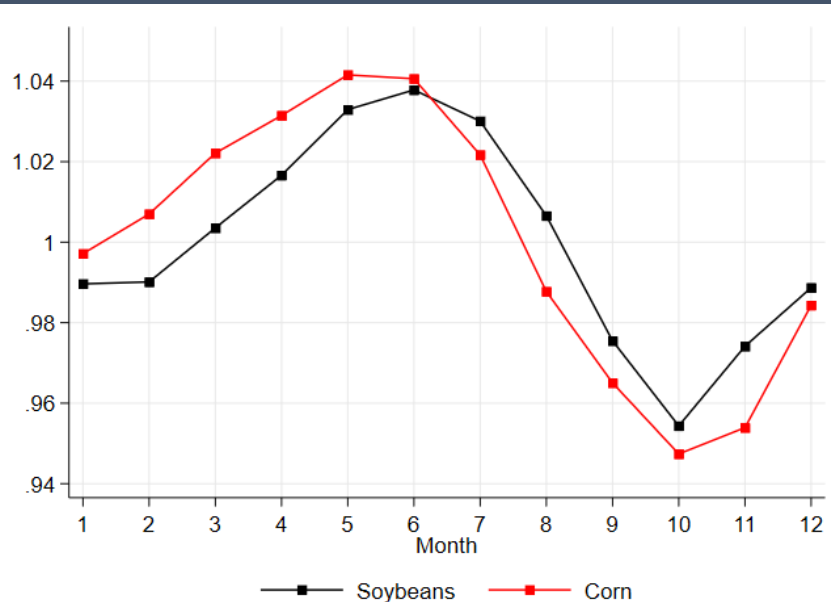
Department of Agricultural,  
Environmental, and Development  
Economics (AEDE)

Price Related Index

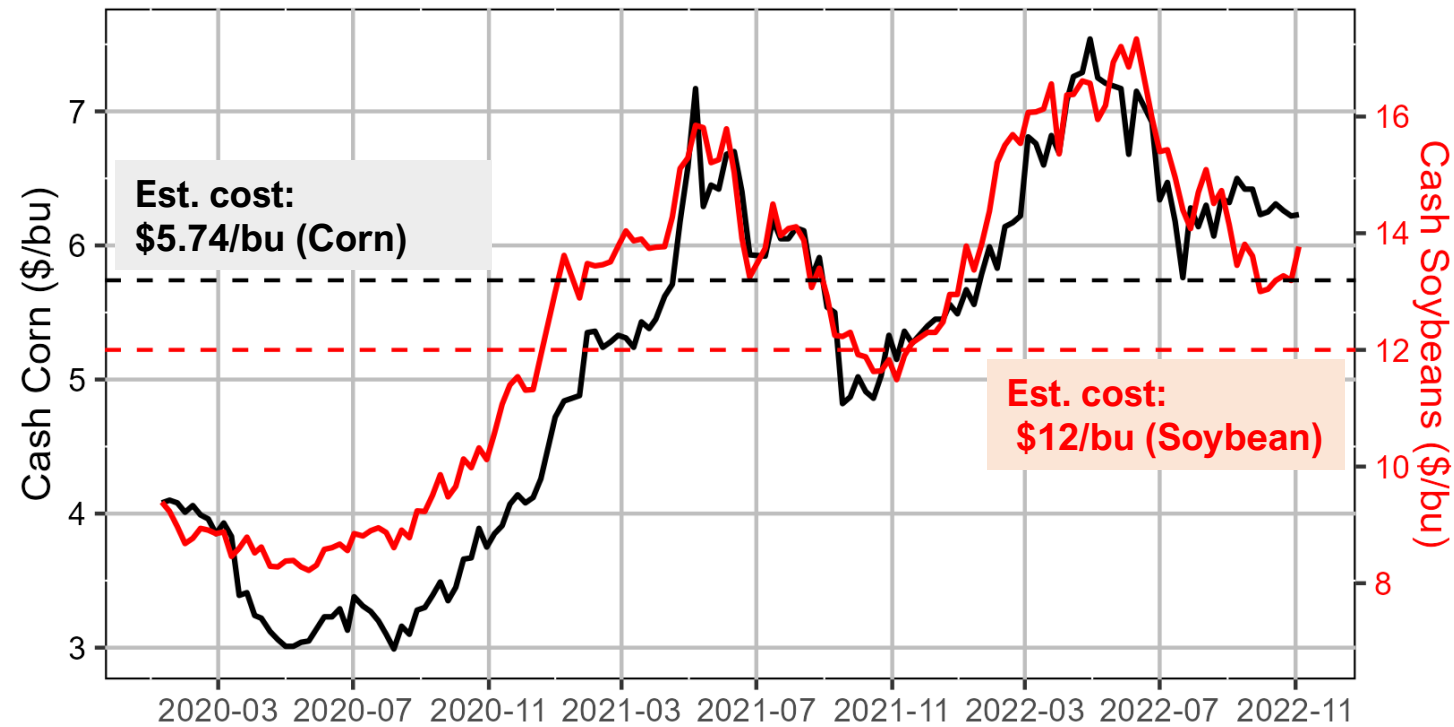
## Price Trends: Seasonality &amp; Volatility

- Strong prices for both corn and soybeans
- Margin squeeze risk still exists

## 40-year price pattern (1981-2020)



## Corn and Soybean Prices through Nov. 4 (Toledo, OH)

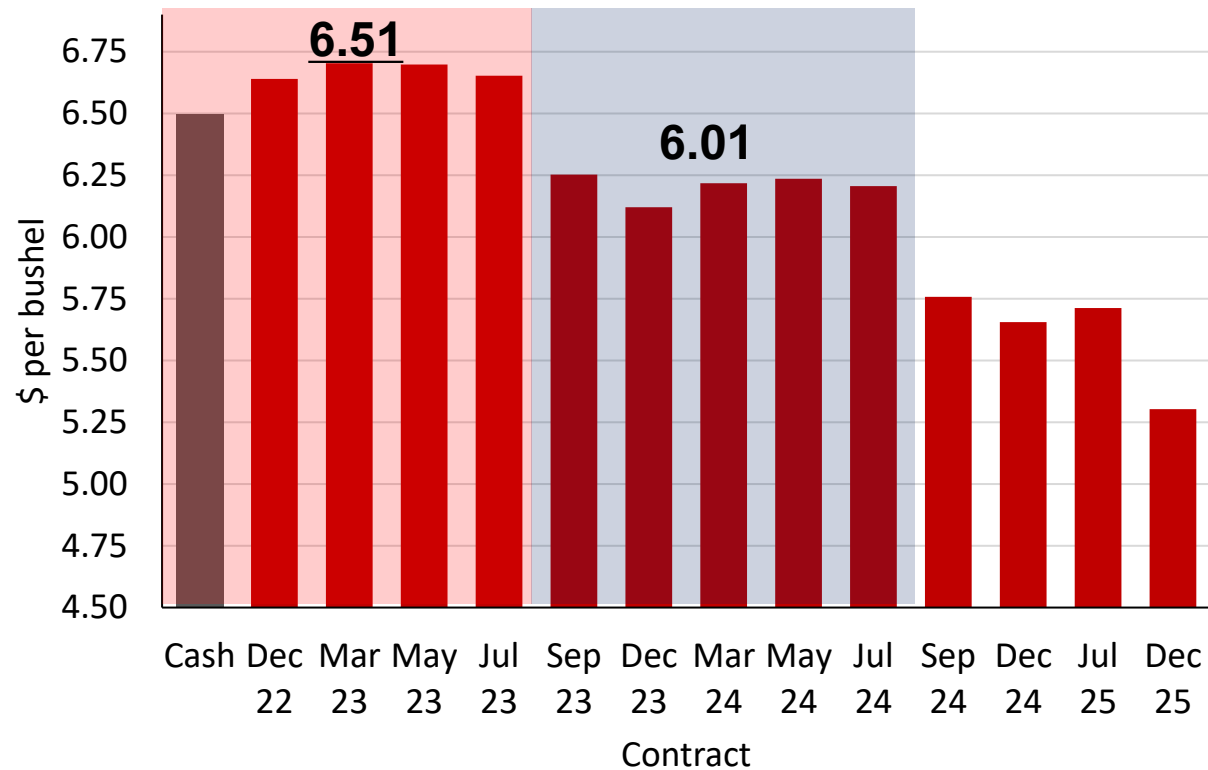


Source: USDA-AMS, USDA-NASS, and Farm Office (OSU Extension)

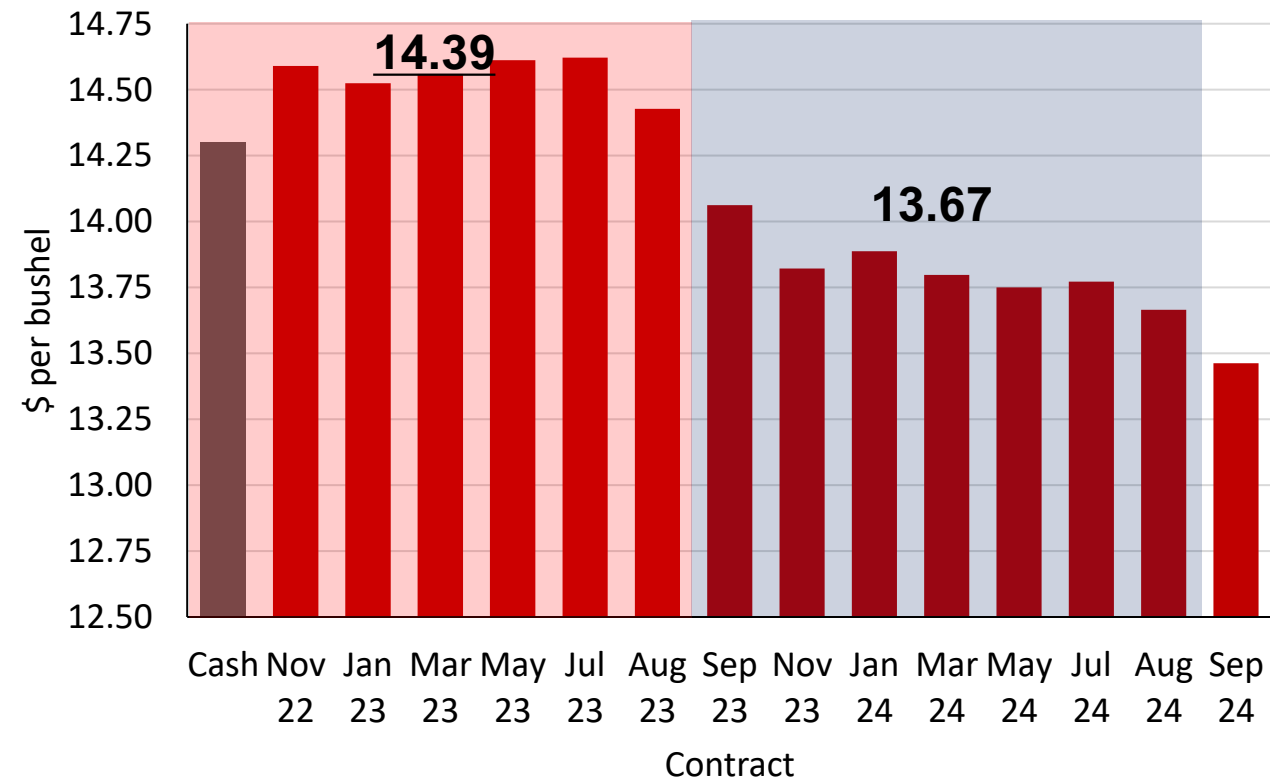
Price Related Index

## Futures Prices

## Corn Futures Price



## Soybean Futures Price

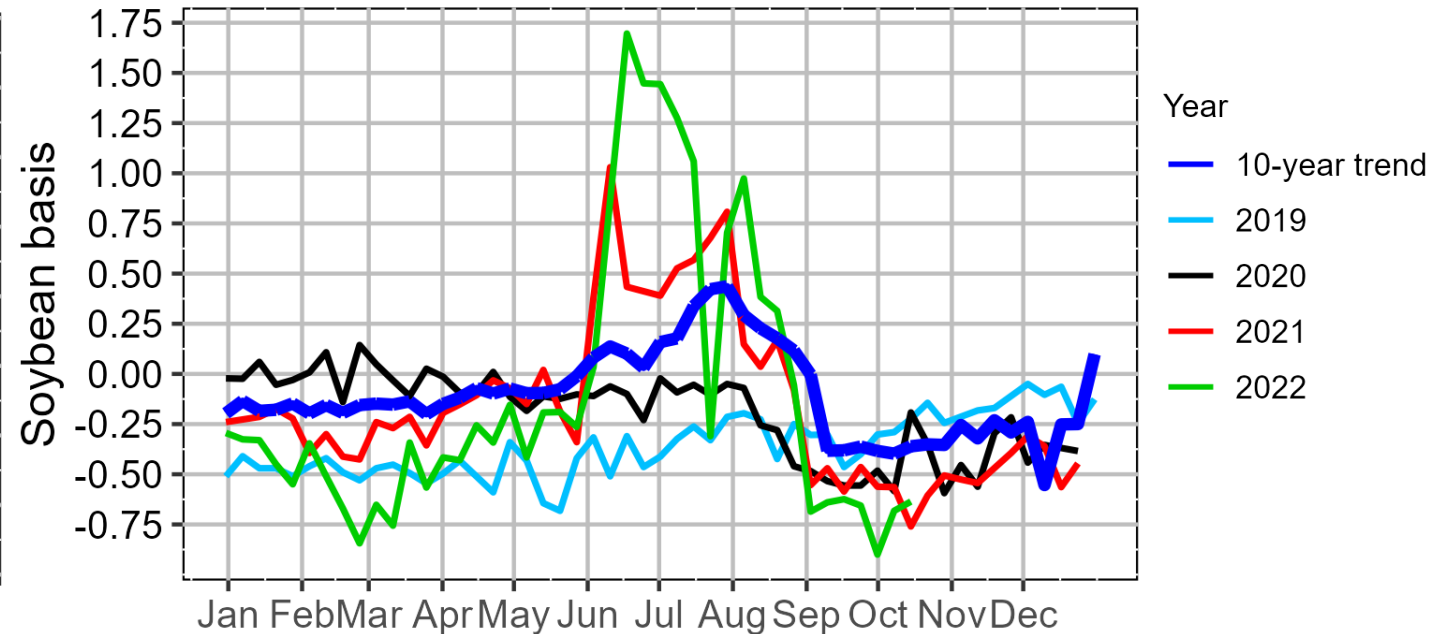
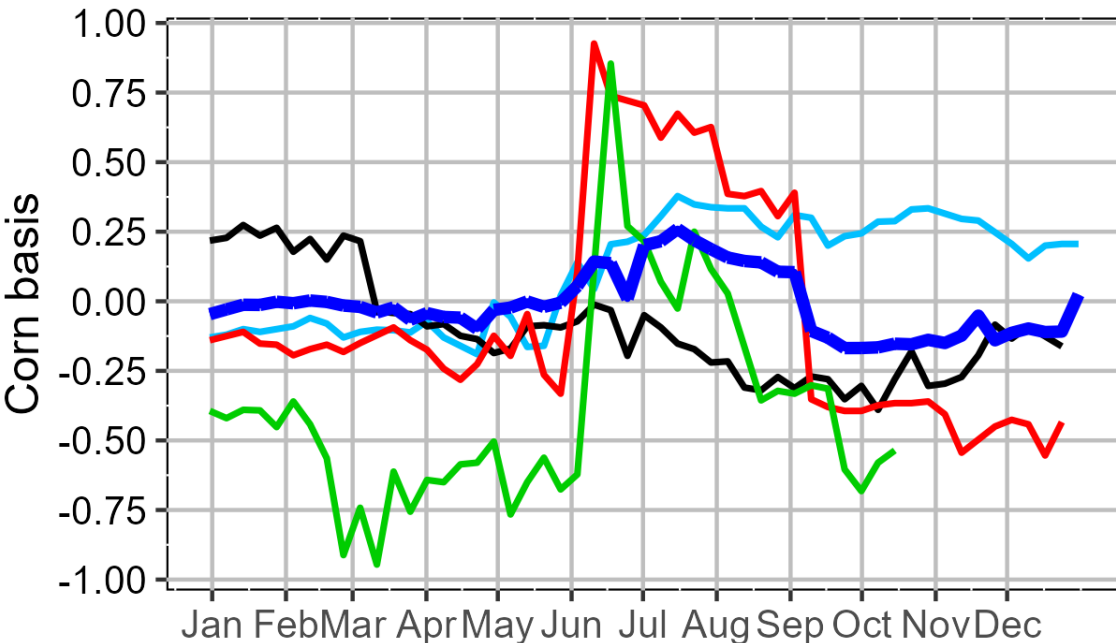


Source: Chicago Board of Trade (CBOT), 11/09/2022 (Barchart.com)

## Price Related Index

# Basis Pattern

Great Lakes – Toledo, OH

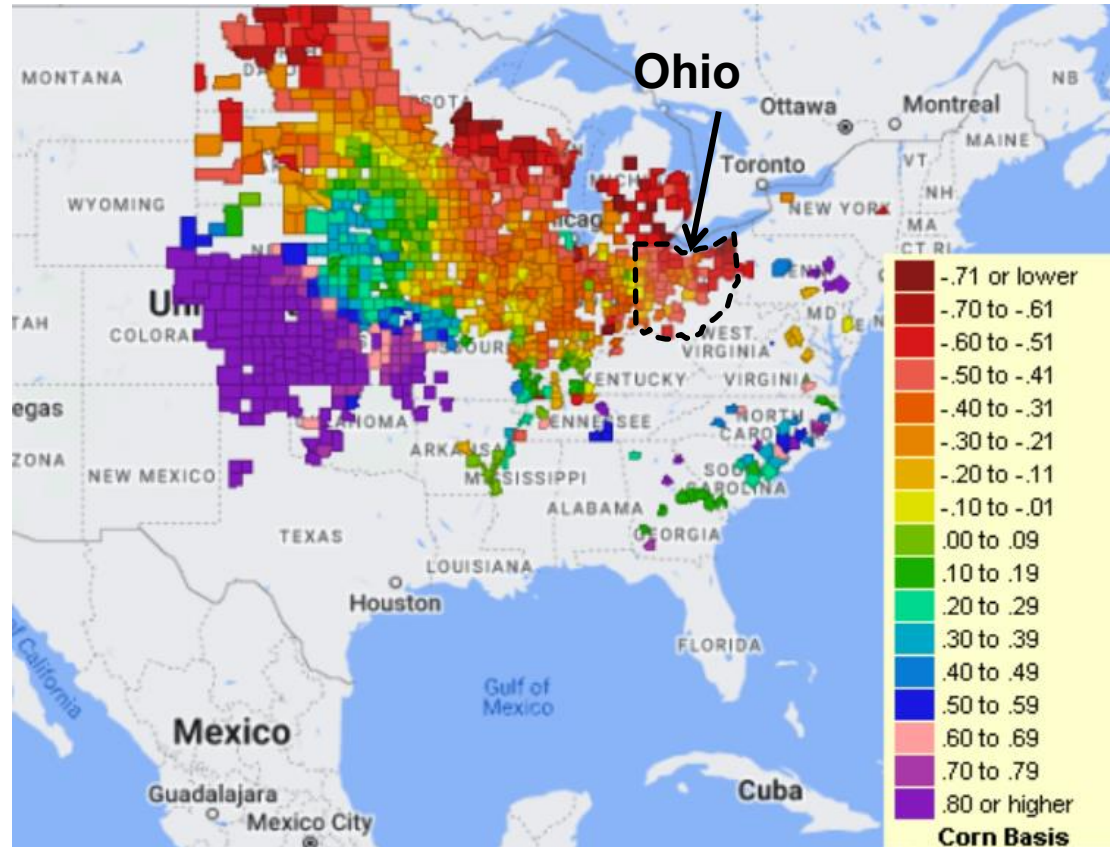


Source: USDA Agricultural Transportation Open Data, 11/10/2022

- Exceptional volatility in basis is observed both in corn and soybean
- Corn's negative basis during the first half of this year was remarkable (followed by War in Ukraine)

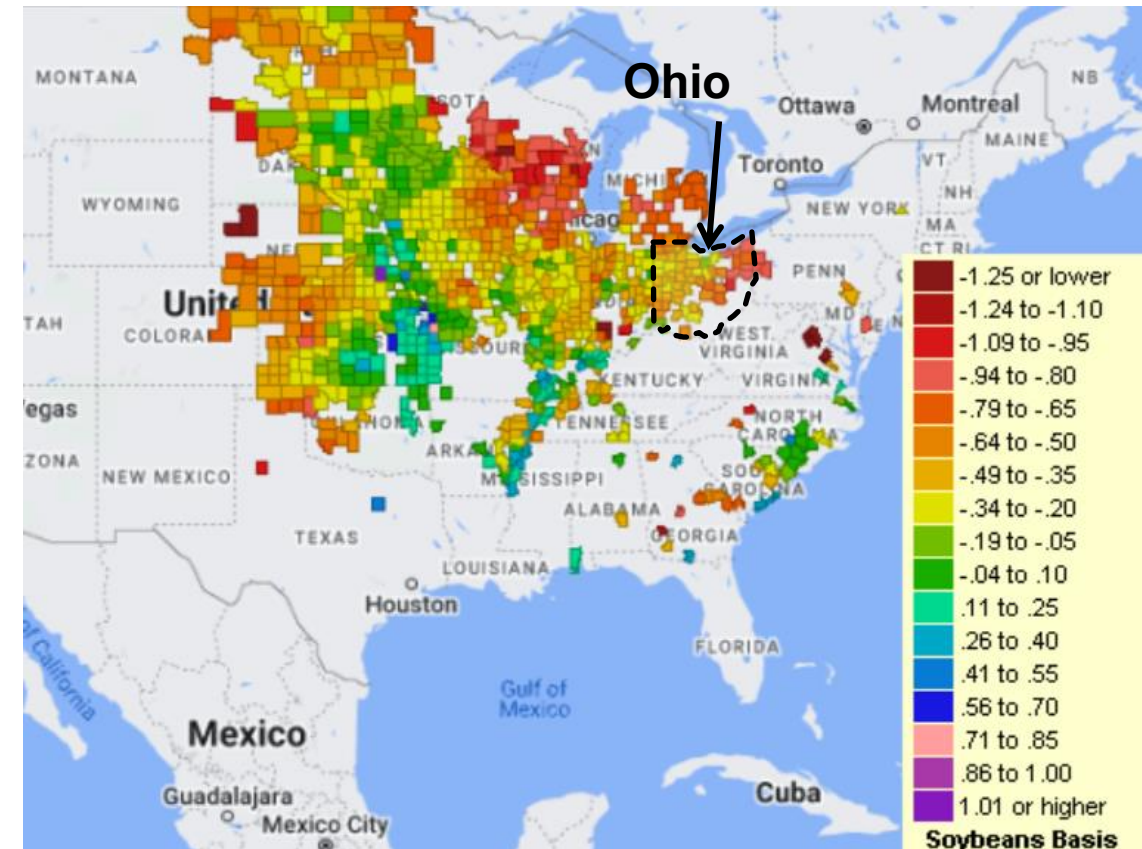
# Price Related Index Basis

## Corn Local Basis



- Weak corn basis in Ohio

## Soybean Local Basis

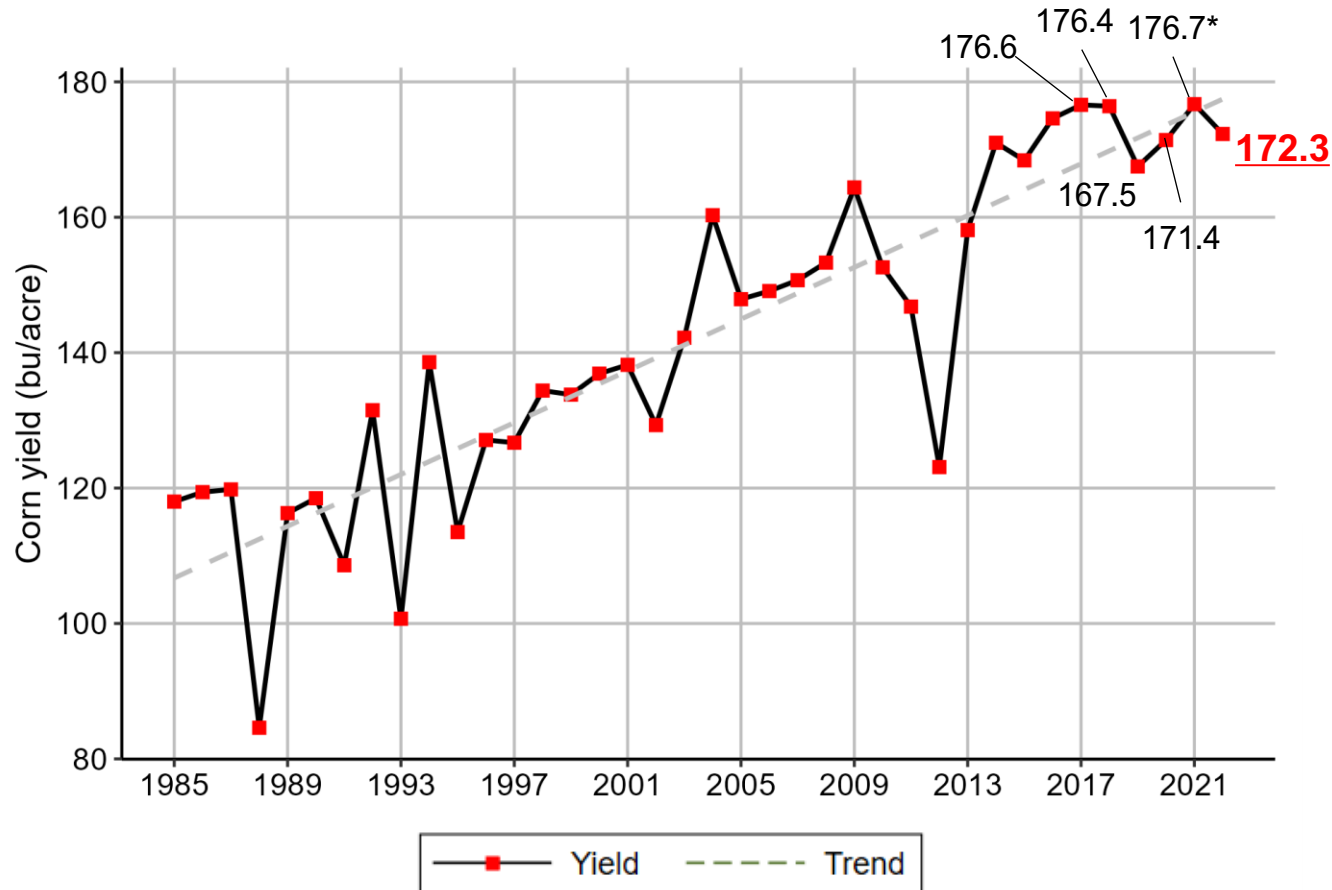


- Relatively strong soybean basis in Ohio

Source: DTN Market Tracker, 11/10/2022

Supply Side

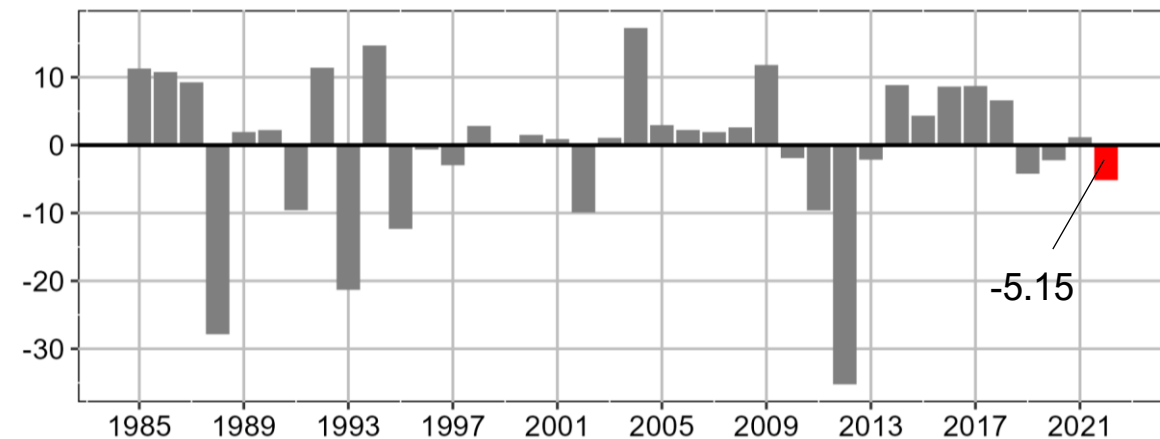
## U.S. Corn Yield



Source: USDA-NASS

- 87% of corn acreage is harvested (Nov 6, 2022)
- Yield estimate for this year is 172.3 bu/acre
- Yield rate is below the trend (increase by 1.9 bu/acre/year)
- Total production is projected to be 13.9 billion bushels

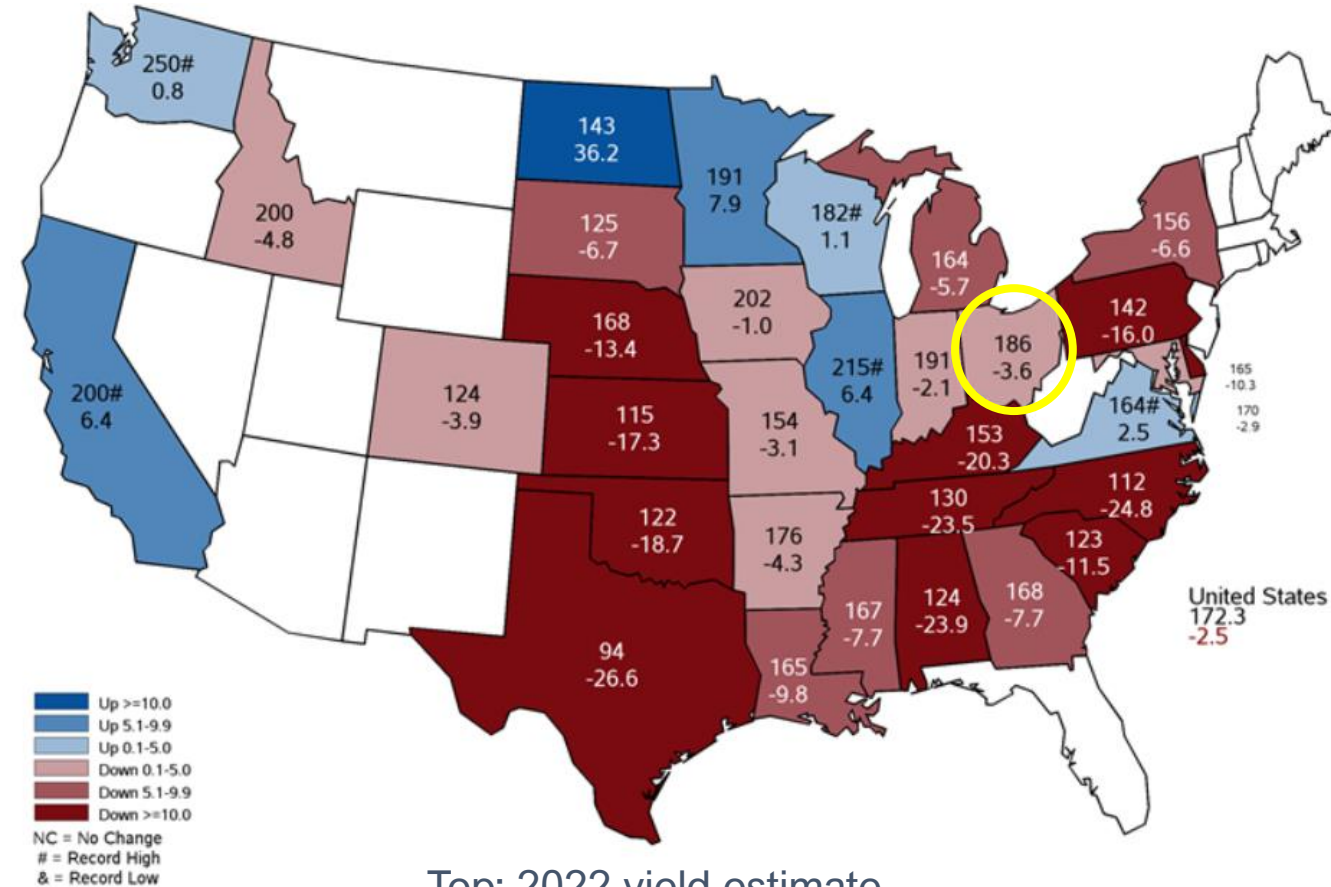
## Changes in U.S. Trend Adjusted Yields (bu/acre)



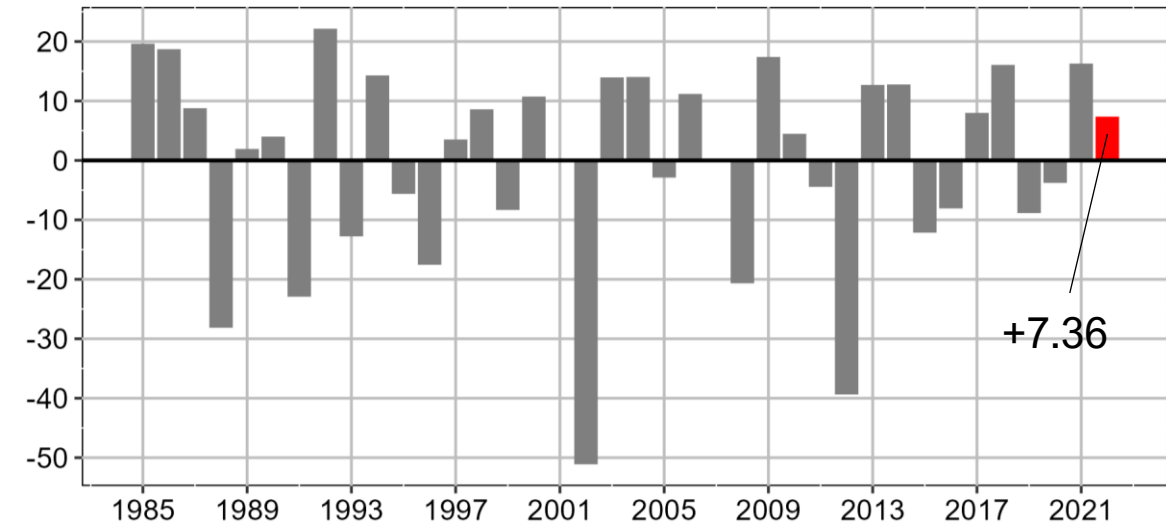


Supply Side

## State-level Corn Yield



## Changes in Ohio Trend Adjusted Yields (bu/acre)

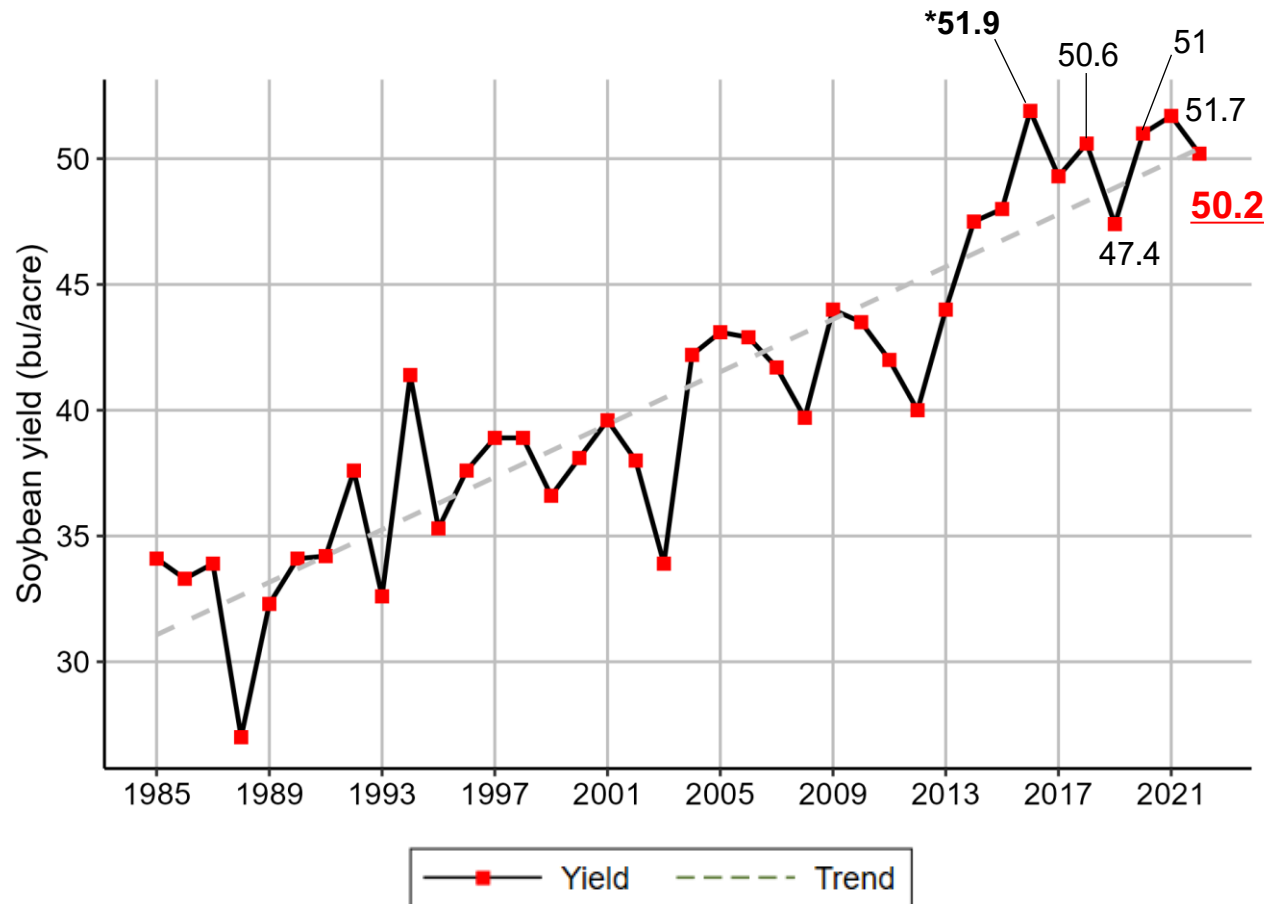


## Ohio corn production

- Currently, 75% of Ohio corn grain is harvested (Nov 6, 2022)
- 3.6% down from last year but still 7.4 bushels per acre above the trend (186 bu/acre)

Supply Side

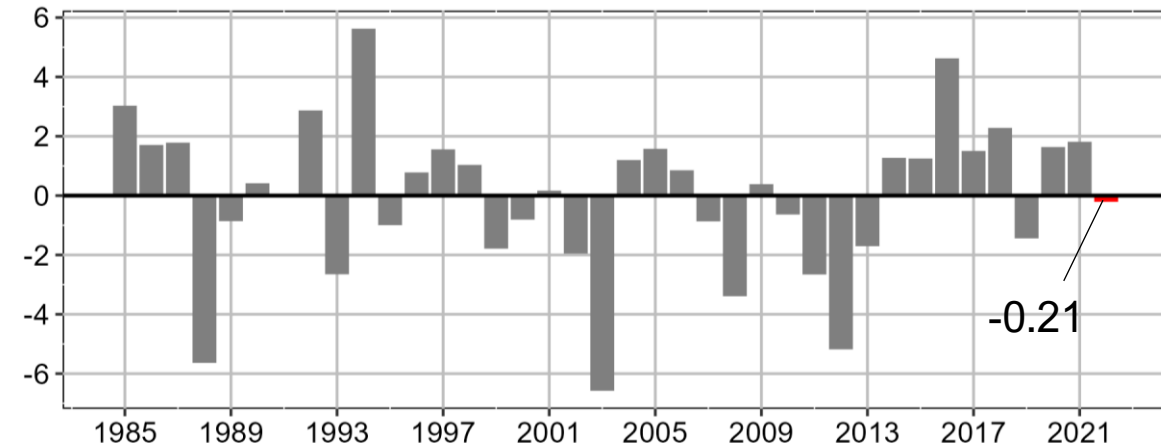
## U.S. Soybean Yield



Source: USDA-NASS

- 94% of soybean acreage is harvested (Nov 6)
- Yield estimate for this year is 50.2 bu/acre
- Second time below the trend line for the last 9 years  
(trend coefficient: increase by 0.52 bu/acre/year)
- Total production is projected to be 4.3 billion bushels

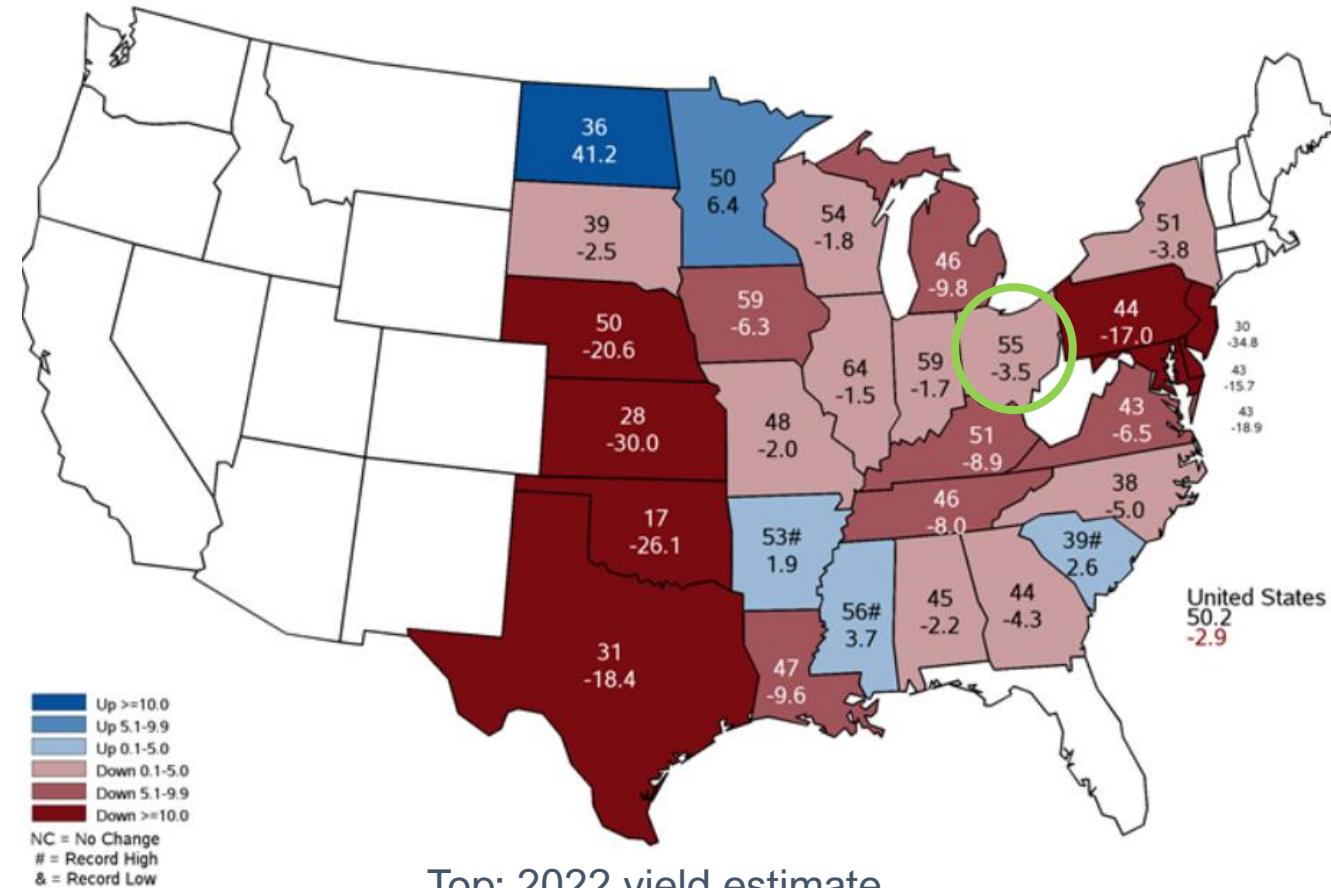
## Changes in U.S. Trend Adjusted Yields (bu/acre)





Supply Side

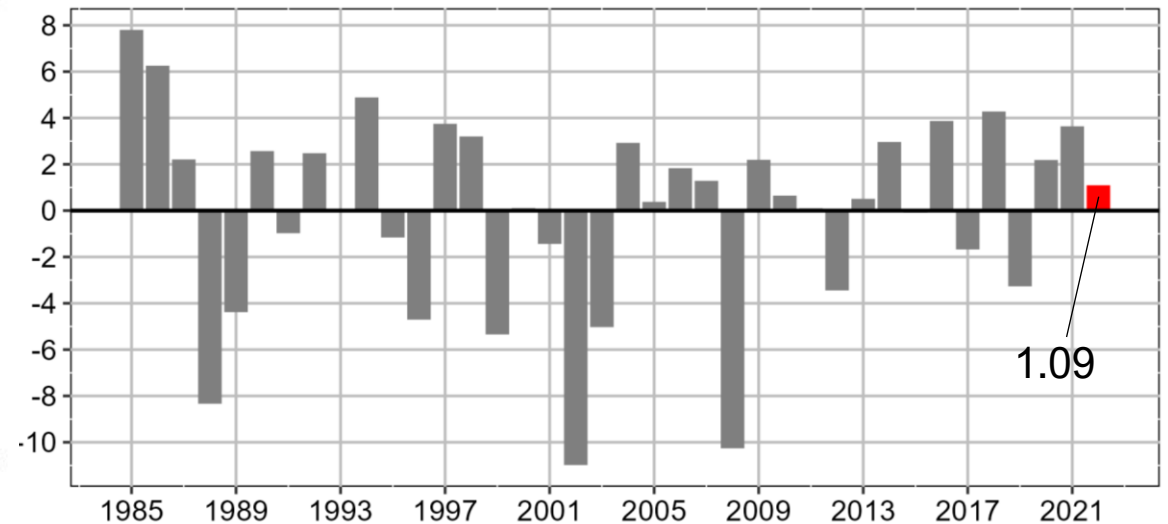
## State-level Soybean Yield



Top: 2022 yield estimate  
Bottom: % change from previous year

Source: USDA-NASS, November 9, 2022

## Changes in Ohio Trend Adjusted Yields (bu/acre)



## Ohio soybean production

- Currently, 92% of Ohio soybean acreage is harvested (Nov 6, 2022)
- 3.5% down from last year but still 1.1 bushels per acre above the trend (55 bu/acre)

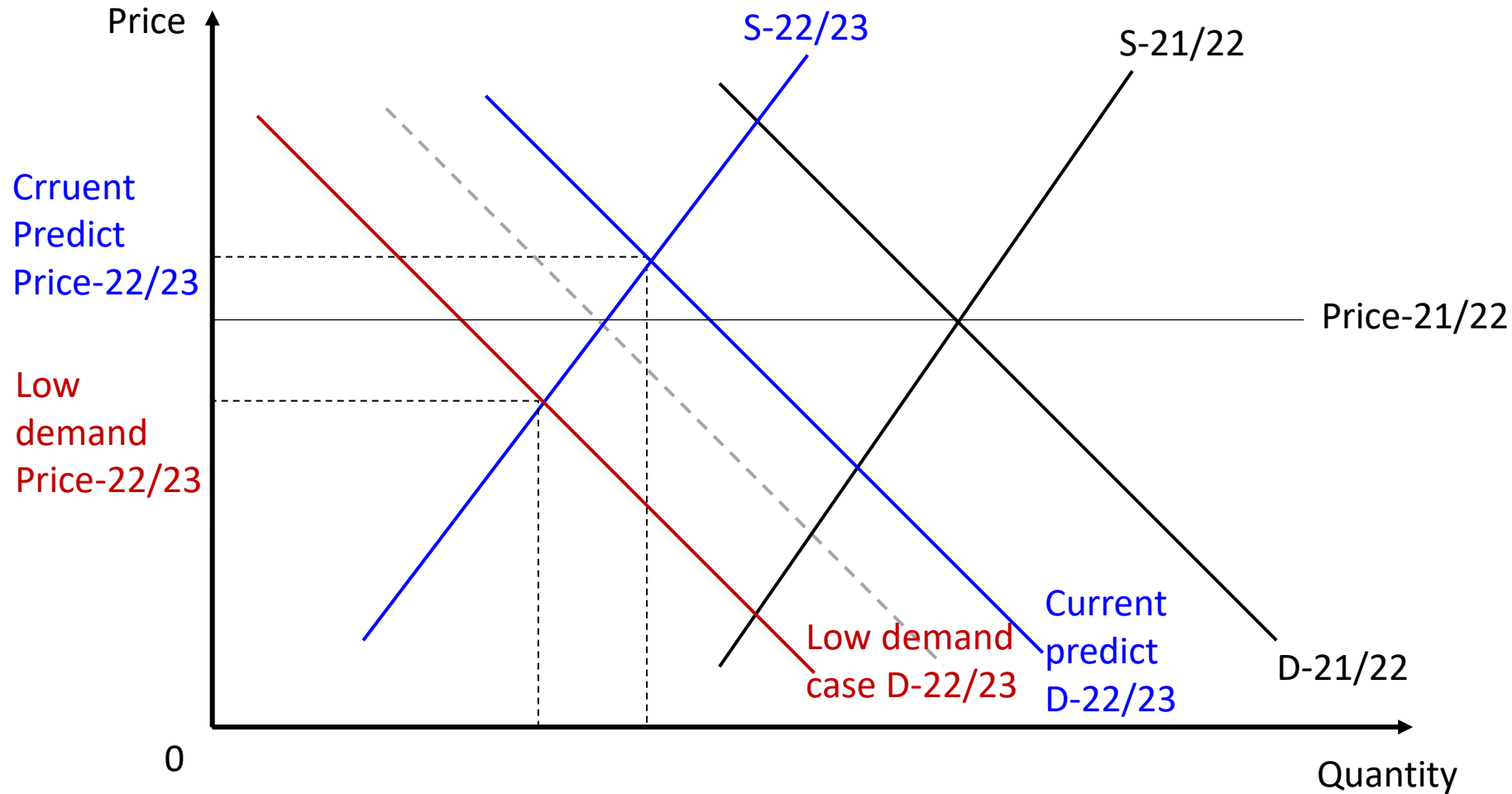
# U.S. Corn Supply and Use

Marketing Year (2022/23 = 9/1/21 to 8/31/23)		2018/19	2019/20	2020/21	2021/22	2022/23F	Δ2022/23
Area Planted	(mil. acres)	88.9	89.7	90.7	93.3	88.6	-5%
Yield	(bu./acre)	176.4	167.5	171.4	176.7	172.3	-2%
Production	(mil. bu.)	14,340	13,620	14,111	15,074	13,930	-8%
Beg. Stocks	(mil. bu.)	2,140	2,221	1,919	1,235	1,377	11%
Imports	(mil. bu.)	28	42	24	24	50	108%
<b>Total Supply</b>	<b>(mil. bu.)</b>	<b>16,509</b>	<b>15,883</b>	<b>16,055</b>	<b>16,333</b>	<b>15,357</b>	<b>-6%</b>
Feed & Residual	(mil. bu.)	5,429	5,897	5,597	5,715	5,300	-7%
Ethanol	(mil. bu.)	5,378	4,857	5,032	5,328	5,275	-1%
Food, Seed, & Other	(mil. bu.)	1,425	1,430	1,437	1,442	1,450	1%
Exports	(mil. bu.)	2,066	1,778	2,753	2,471	2,150	-13%
<b>Total Use</b>	<b>(mil. bu.)</b>	<b>14,288</b>	<b>13,963</b>	<b>14,819</b>	<b>14,956</b>	<b>14,175</b>	<b>-5%</b>
Ending Stocks	(mil. bu.)	2,221	1,919	1,236	1,377	1,182	-14%
Season-Average Price	(\$/bu.)	3.61	3.56	4.53	6.00	6.80	13%

Source: USDA-WAOB

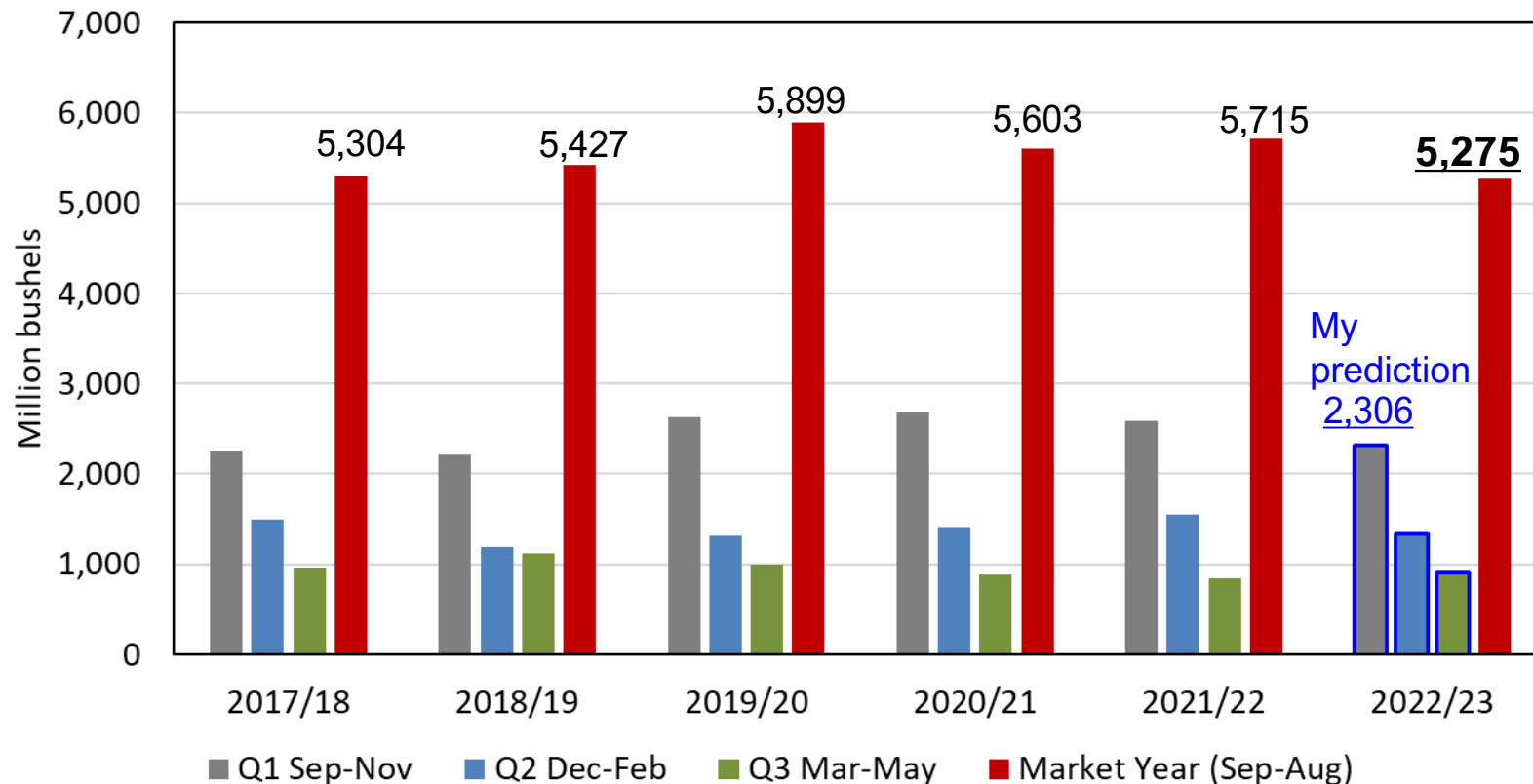
# U.S. Corn Supply and Use

## Conceptual Summary



Demand Side

## Corn Feed and Residual Use

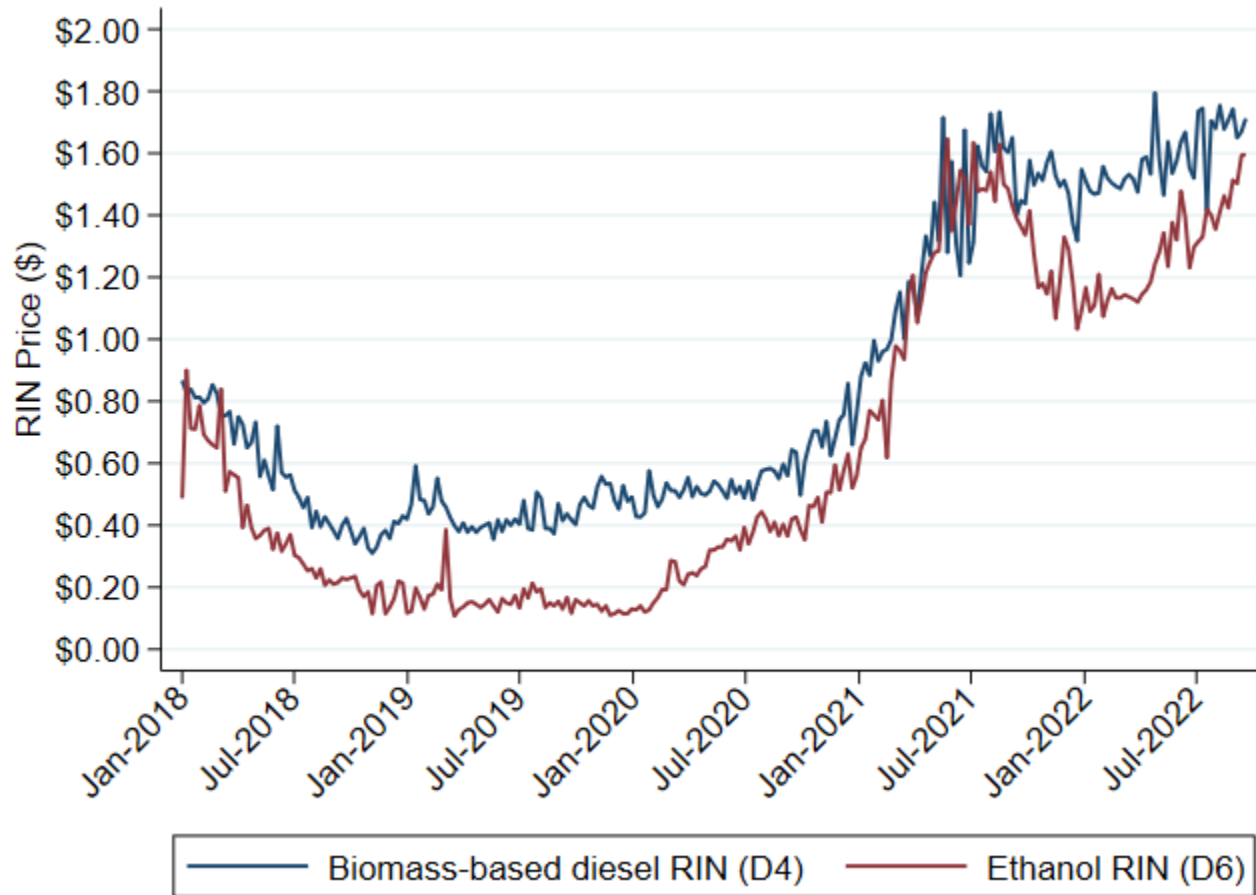


- Total feed and residual use is expected 7% smaller than 2021/22
- Feed and residual demand is projected to be relatively low, which is mainly due to the possibility of economic downturn (economic stress → low protein consumption → feed demand ↓)
- My prediction for the first quarter (Sep-Nov) feed demand is 2,306 million bushels, which is 10% down from the first quarter of 21/22

Source: USDA ERS, Feed Grains Data: Yearbook Tables (Oct 17, 2022),  
2021/22 and 2022/23 market year numbers are brought from WASDE Nov report

Demand Side

# Ethanol Consumption



Source: U.S. Energy Information Administration data

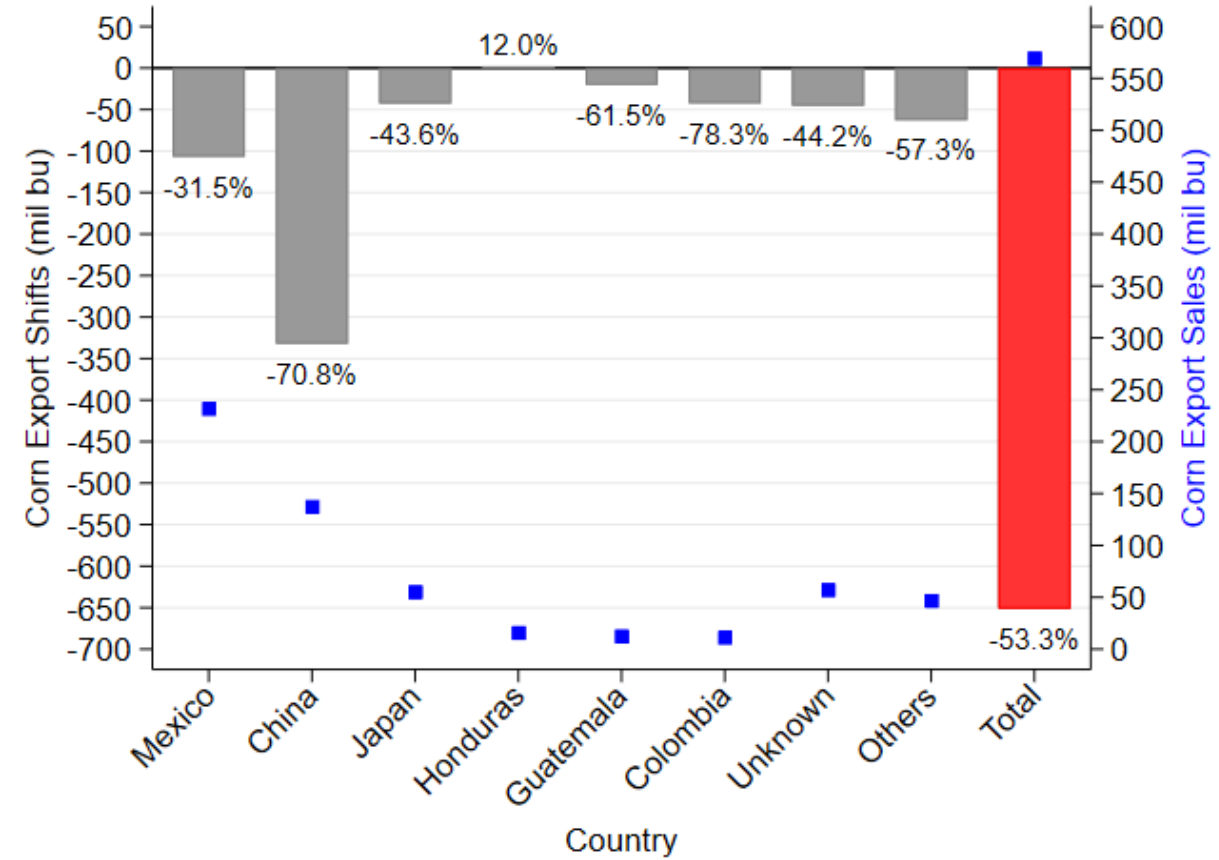
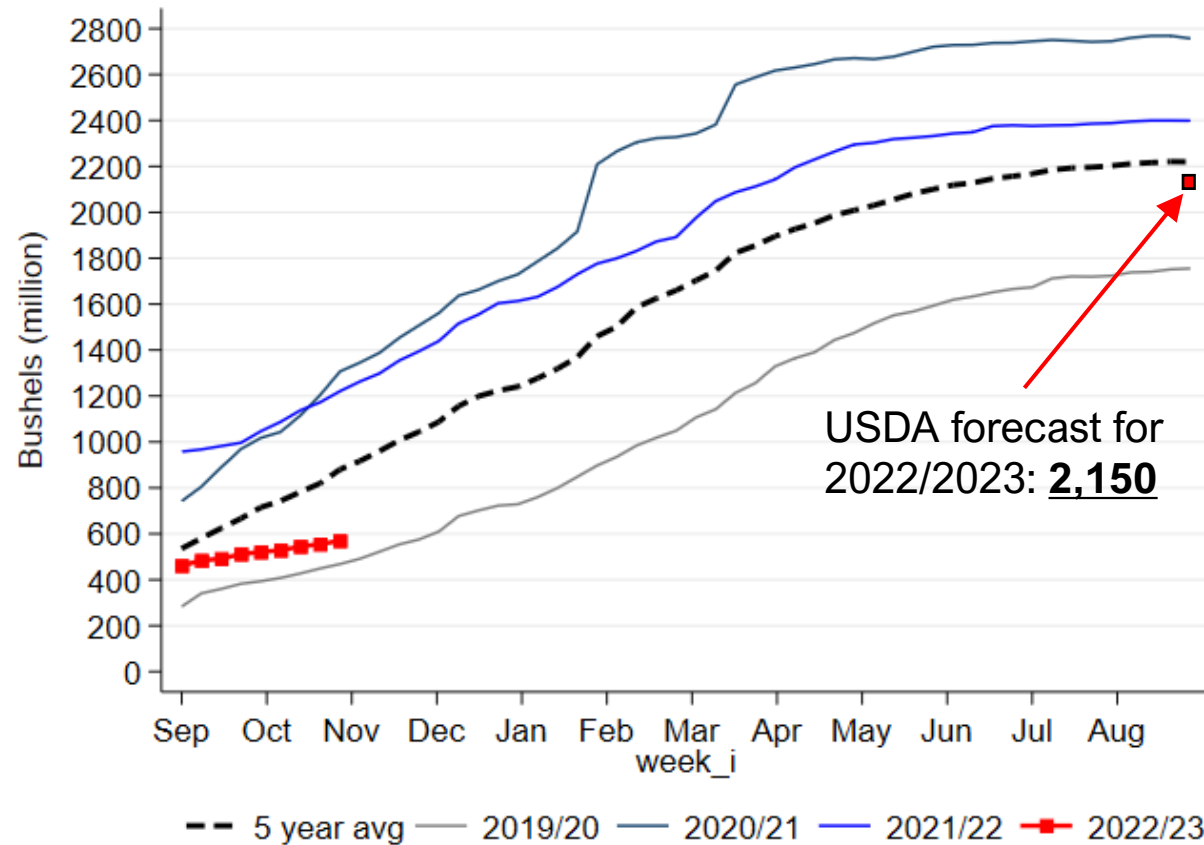
- Relatively high gasoline and renewable identification number (RIN) prices supports **relatively stable corn demand for ethanol production**  
(2022/23 forecast: 1% down from 2021/22)

## Final Volume Requirements for 2020-2022 (Bil. Gal)

	2020	2021	2022
Cellulosic Biofuel	0.51	0.56	0.63
Biomass-Based Diesel	2.43**	2.43**	2.76
Advanced Biofuel	4.63	5.05	5.63
Total Renewable Fuel	<b>17.13</b>	<b>18.84</b>	<b>20.63</b>
Supplemental Standard	n/a	n/a	0.25

Demand Side

## Corn Export Volume



Source: USDA-FAS



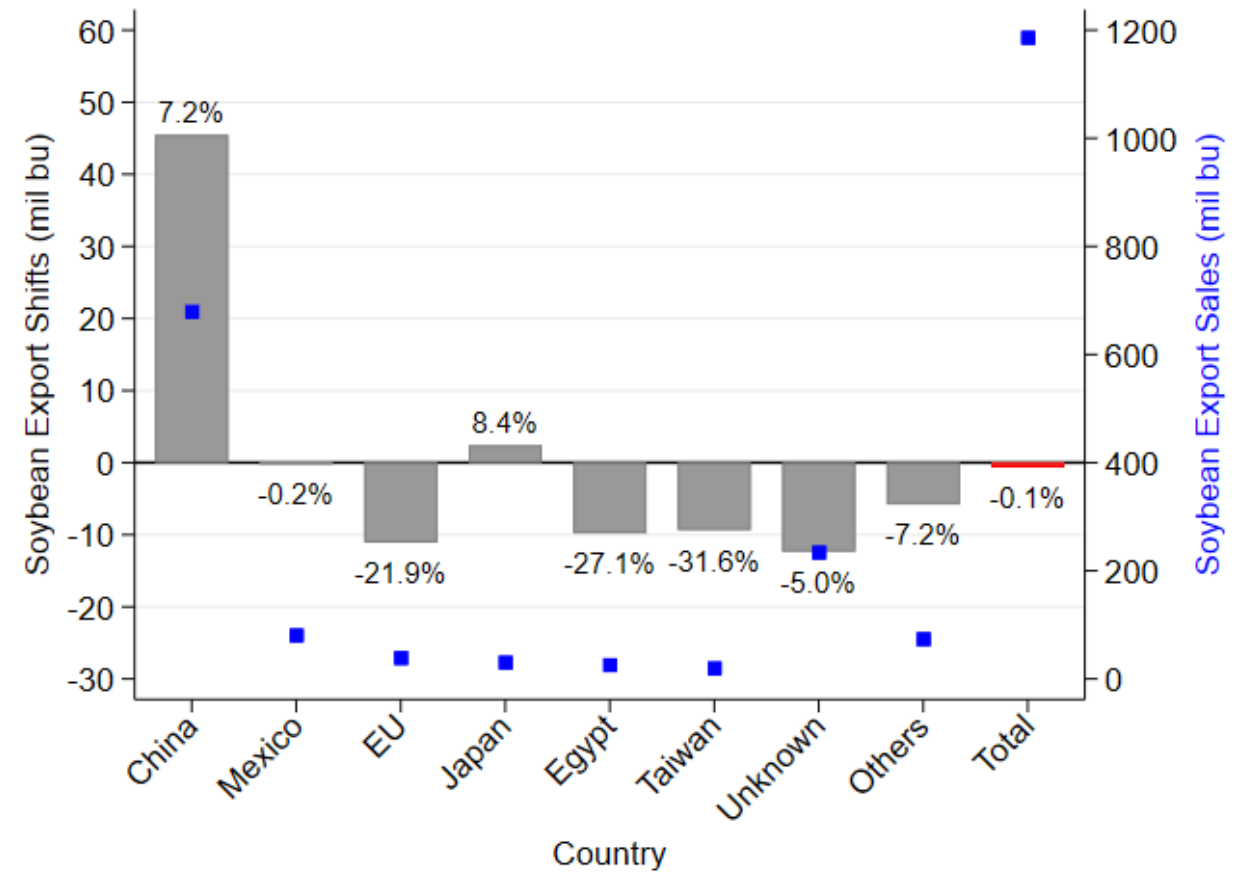
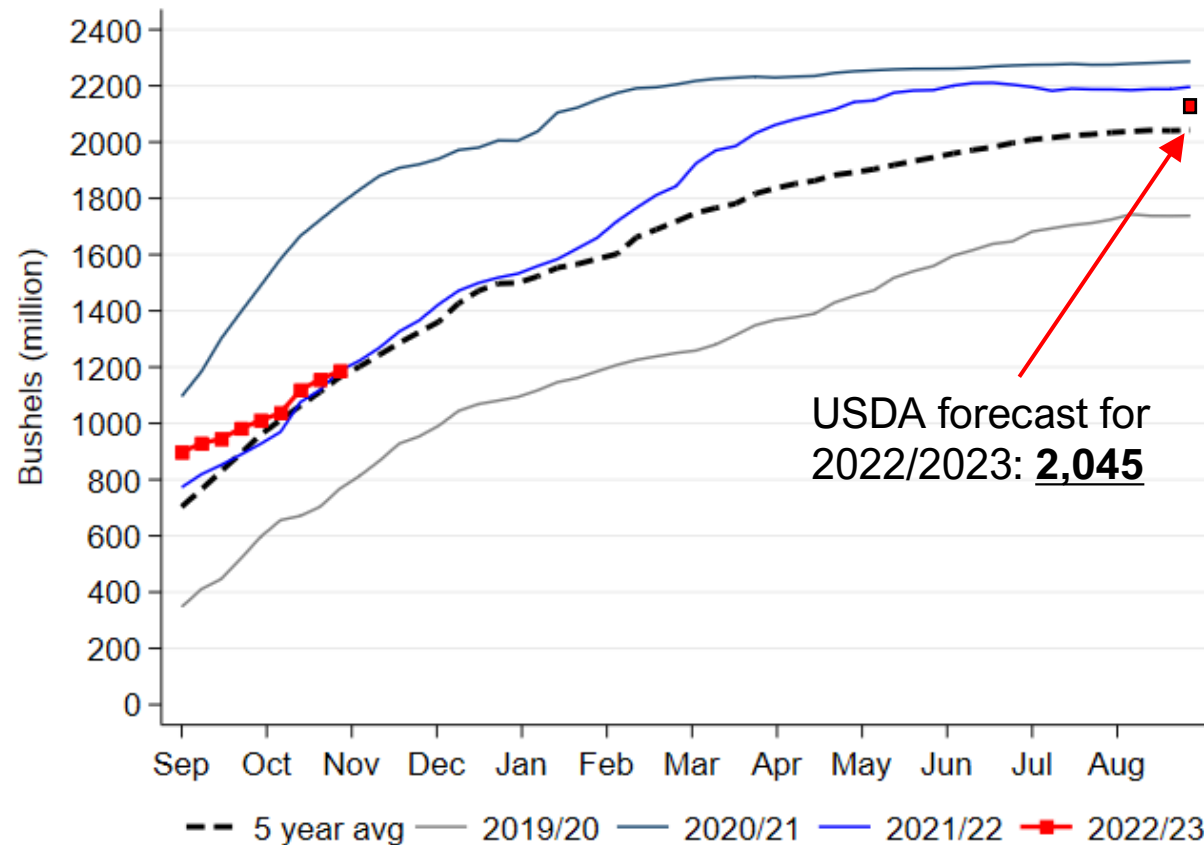
# U.S. Soybean Supply and Use

Marketing Year (2022/23 = 9/1/21 to 8/31/23)		2018/19	2019/20	2020/21	2021/22	2022/23F	Δ2022/2023
Area Planted	(mil. acres)	89.2	76.1	83.4	87.2	87.5	0%
Yield	(bu./acre)	50.6	47.4	51.0	51.7	50.2	-3%
Production	(mil. bu.)	4,428	3,552	4,216	4,465	4,346	-3%
Beg. Stocks	(mil. bu.)	438	909	525	257	274	7%
Imports	(mil. bu.)	14	15	20	16	15	-6%
<b>Total Supply</b>	<b>(mil. bu.)</b>	<b>4,880</b>	<b>4,476</b>	<b>4,761</b>	<b>4,738</b>	<b>4,634</b>	<b>-2%</b>
Crush	(mil. bu.)	2,092	2,165	2,141	2,204	2,245	2%
Seed & Residual	(mil. bu.)	127	105	97	103	124	20%
Exports	(mil. bu.)	1,752	1,682	2,266	2,158	2,045	-5%
<b>Total Use</b>	<b>(mil. bu.)</b>	<b>3,971</b>	<b>3,952</b>	<b>4,504</b>	<b>4,465</b>	<b>4,414</b>	<b>-1%</b>
Ending Stocks	(mil. bu.)	909	525	256	274	220	-20%
Season-Avg Price	(\$/bu.)	8.48	8.57	10.80	13.30	14.00	5%

Source: USDA-WAOB

Demand Side

## Soybean Export Volume



Source: USDA-FAS

Global View

## World Corn Production

Country or Region	2021/2022 estimate	2022/2023 forecast	Change from October 12	Change from 2021/2022
----- Million Tons -----				
World	1,217.5	1,168.4	-0.4	-49.1
United States	382.9	353.8	0.9	-29.1
Foreign	834.6	814.5	-1.2	-20.0
Argentina	51.5	55.0	--	3.5
Brazil	116.0	126.0	--	10.0
Mexico	26.8	27.6	--	0.8
Canada	14.0	14.5	--	0.5
European Union	71.0	54.8	-1.4	-16.2
Serbia	6.0	5.4	--	-0.6
FSU-12	63.7	51.8	--	-11.9
Ukraine	42.1	31.5	--	-10.6
Russia	15.2	15.0	--	-0.2
South Africa	16.3	16.7	-0.6	0.4
China	272.6	274.0	--	1.4
India	33.6	32.0	--	-1.6

Yr-to-yr change: -4%

65%

114% of World change

Source: USDA-WASDE, November 2022

Global View

## World Soybean Production

Country or Region	2021/2022 estimate	2022/2023 forecast	Change from October 12	Change from 2021/2022
----- Million Tons -----				
World	355.6	390.5	-0.5	34.9
United States	121.5	118.3	0.9	-3.3
Foreign	234.1	272.3	-1.4	38.2
Argentina	43.9	49.5	-1.5	5.6
Brazil	127.0	152.0	--	25.0
Paraguay	4.2	10.0	--	5.8
Canada	6.3	6.5	--	0.2
India	11.9	11.5	--	-0.4
China	16.4	18.4	--	2.0

-- No change.

Yr-to-yr change: +10%

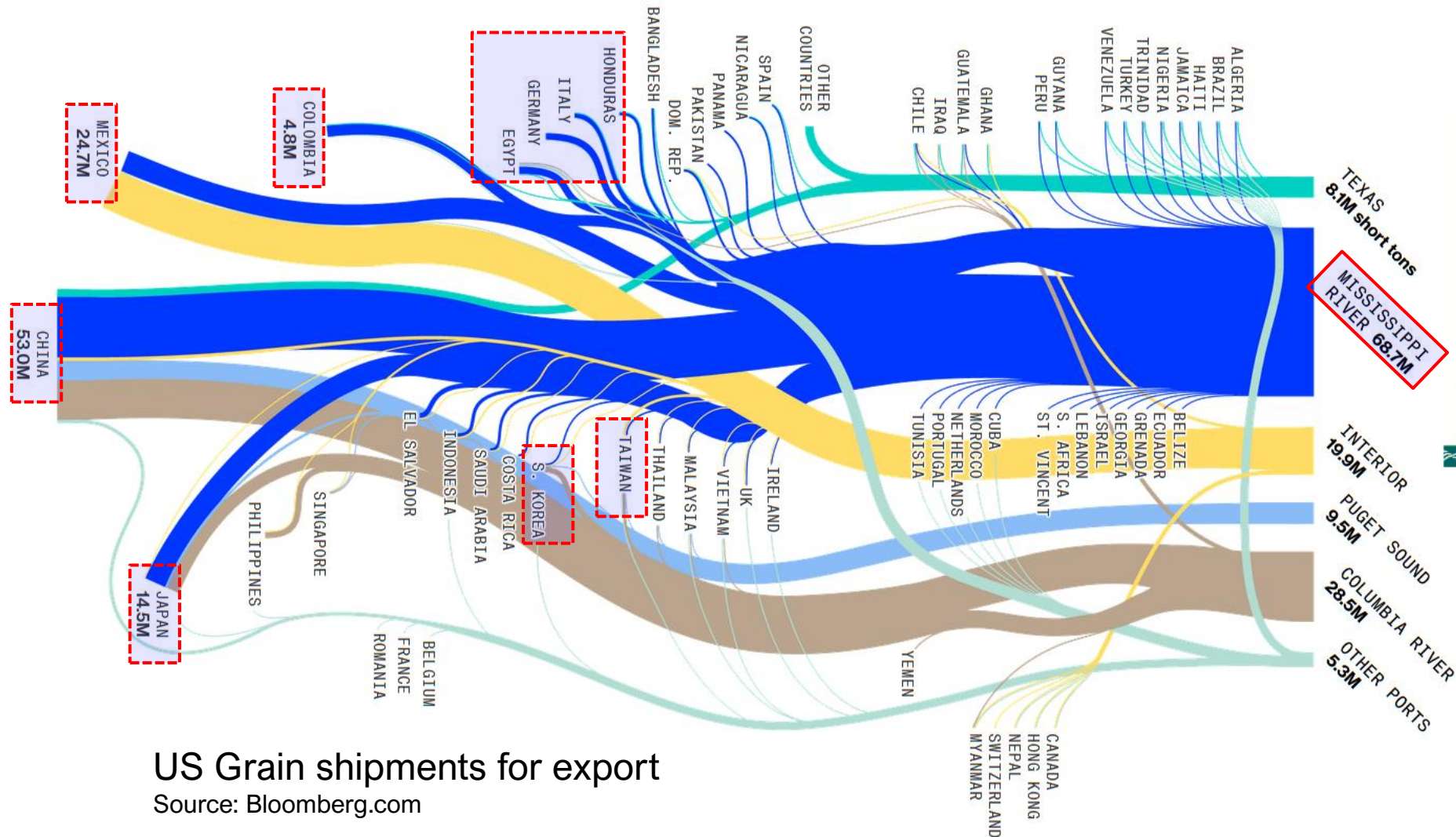
82%

104% of World change

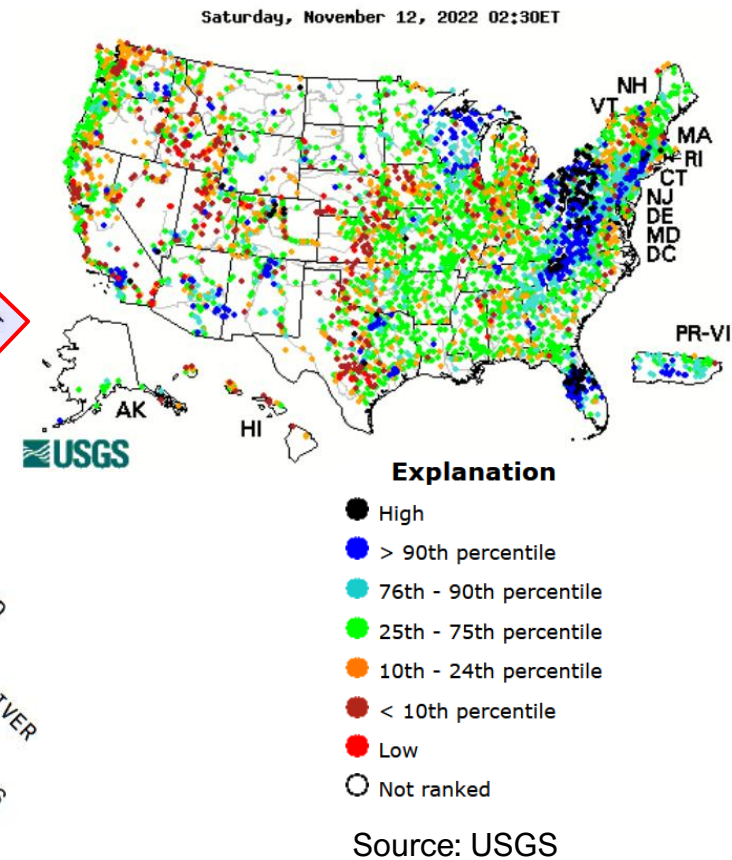
Source: USDA-WASDE, November 2022

Wild Cards

## Risk of Ship Traffic Jam: Low Water streamflow



## USGS streamflow conditions

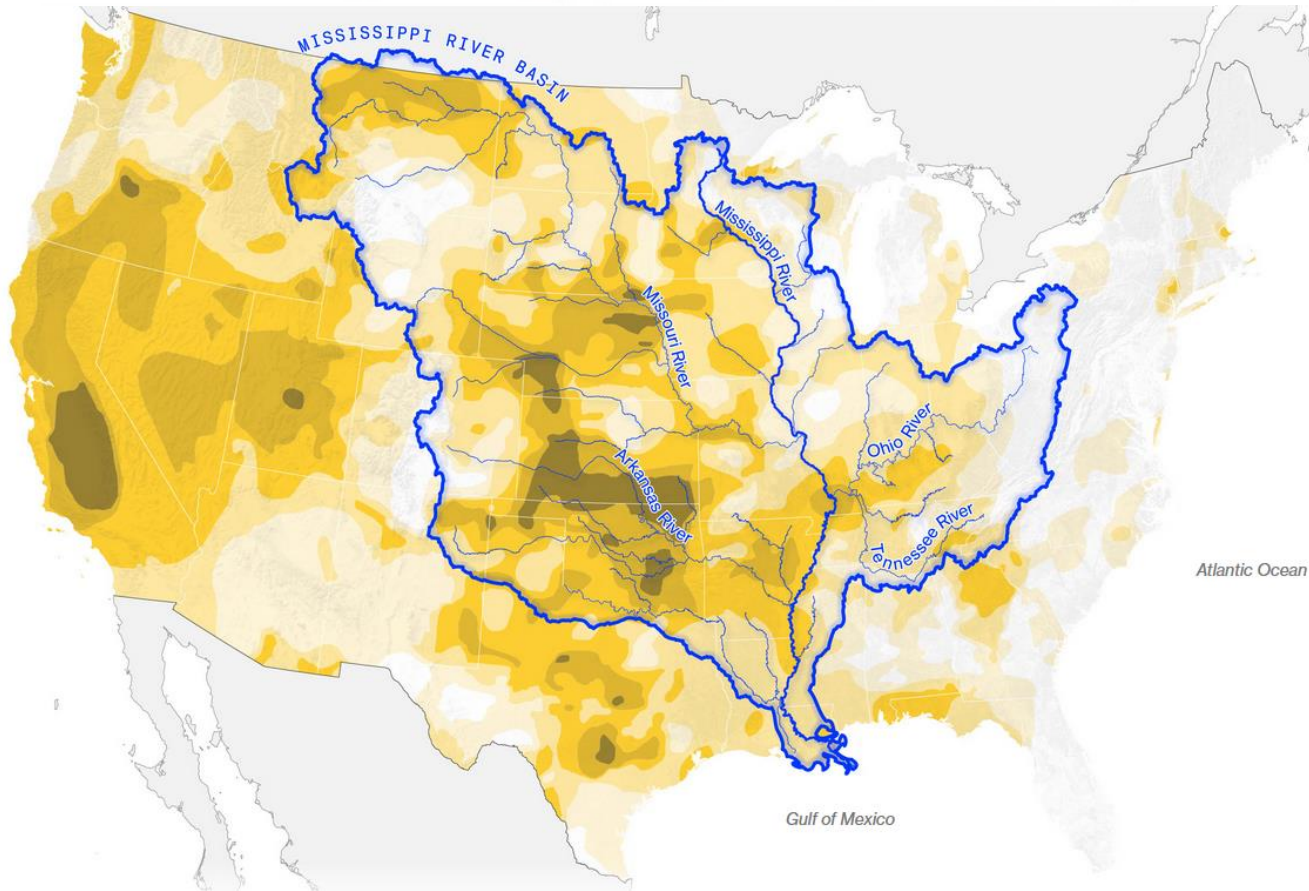




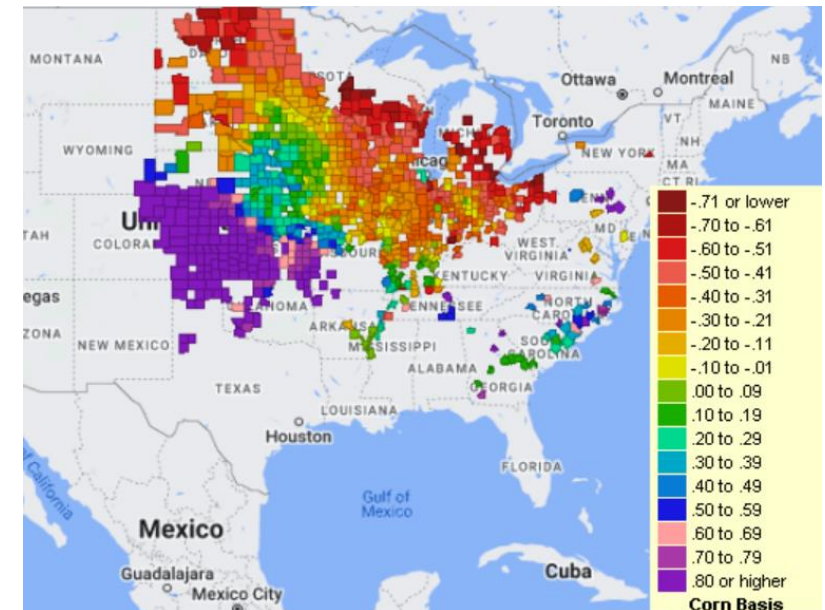
Wild Cards

## Risk of Ship Traffic Jam: Low Water streamflow

Drought intensity: Abnormal Moderate Severe Extreme Exceptional



Reminder: we are seeing unusually strong basis in the western cornbelt



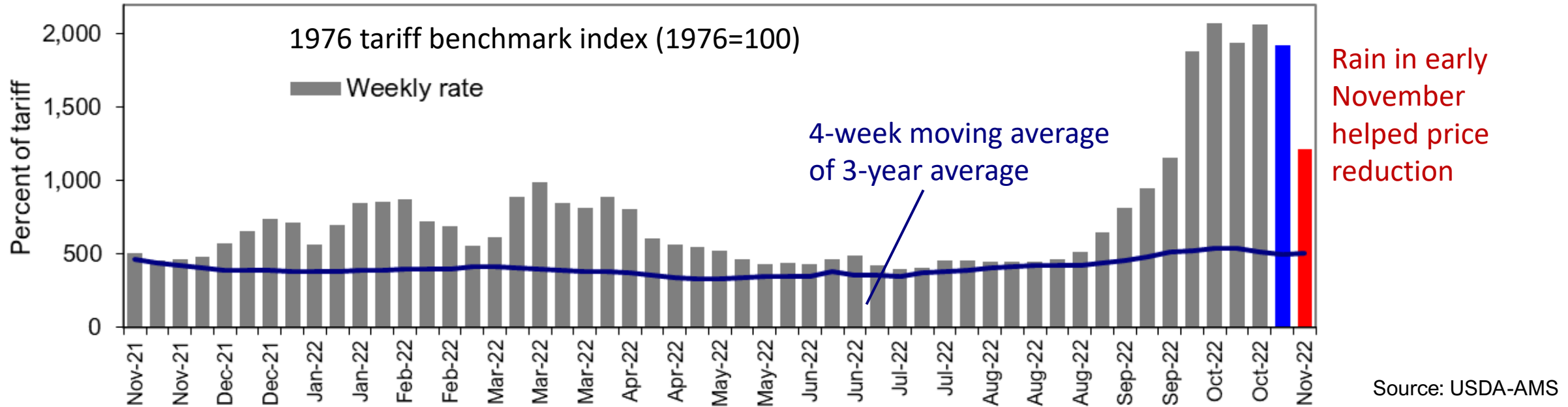
Source: US Drought Monitor, 10/25/2022  
DTN Market Tracker, 11/10/2022



Wild Cards

# Risk of Ship Traffic Jam: Low Water streamflow

## Illinois River barge freight rate



- For the week of November 8, 37 percent lower than last week; **140 percent higher than last year**; and 139 percent higher than the 3-year average
- The economic hit from the river's historically low levels could reach **\$20 billion**, according to AccuWeather

Wild Cards

## Risk of Railroad Strike

**The threat of national rail strike eases, for now, as key union BMWED extends deal deadline**

PUBLISHED WED, NOV 9 2022-12:43 PM EST | UPDATED WED, NOV 9 2022-3:20 PM EST

**U.S. railroads, union extend strike deadline until at least Dec. 4**

- Railroad strike's new deadline is due on Dec 4
- A rail shutdown could impact **30% of U.S. cargo shipments by weight**, stoke inflation, cost the economy as much as **\$2 billion per day** (REUTERS, Nov. 9 2022)

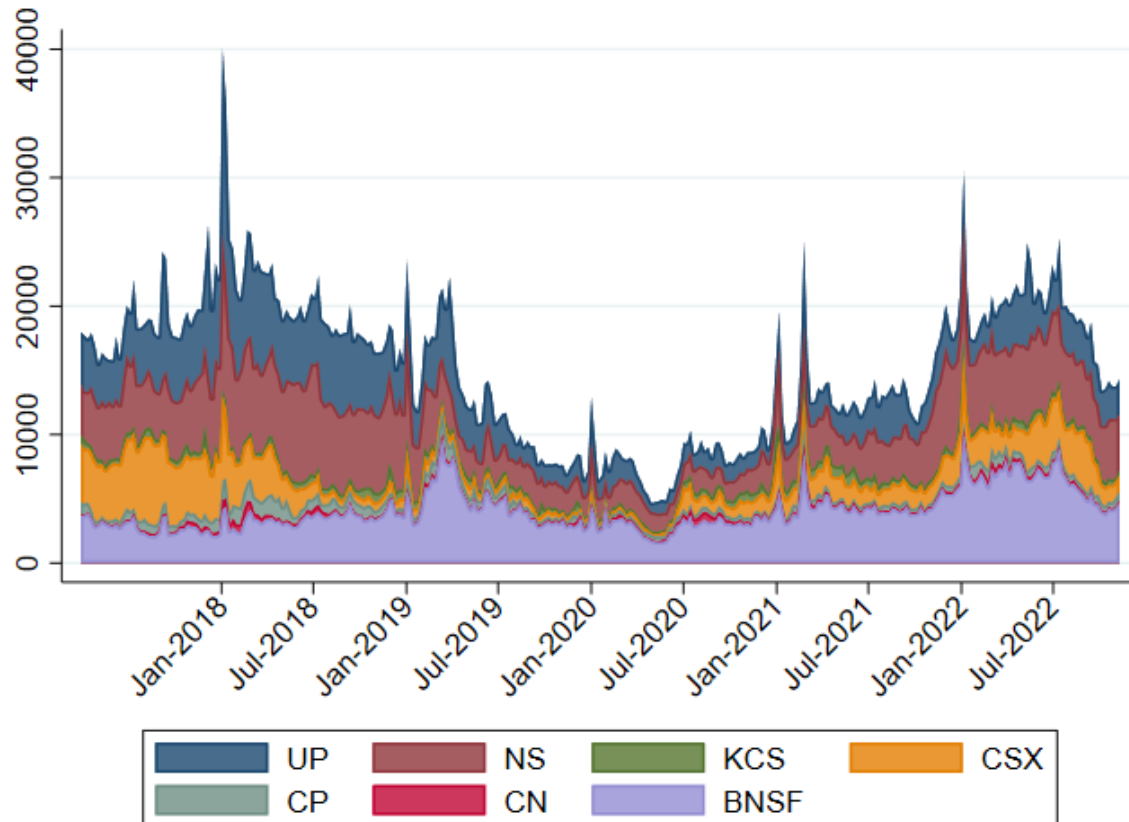
**Rail Strike Averted Until Dec. 4, Saving U.S. \$2 Billion Per Day**

PHOTO: LINDSEY POUND, FARM JOURNAL

Wild Cards

## Risk of Railroad Strike

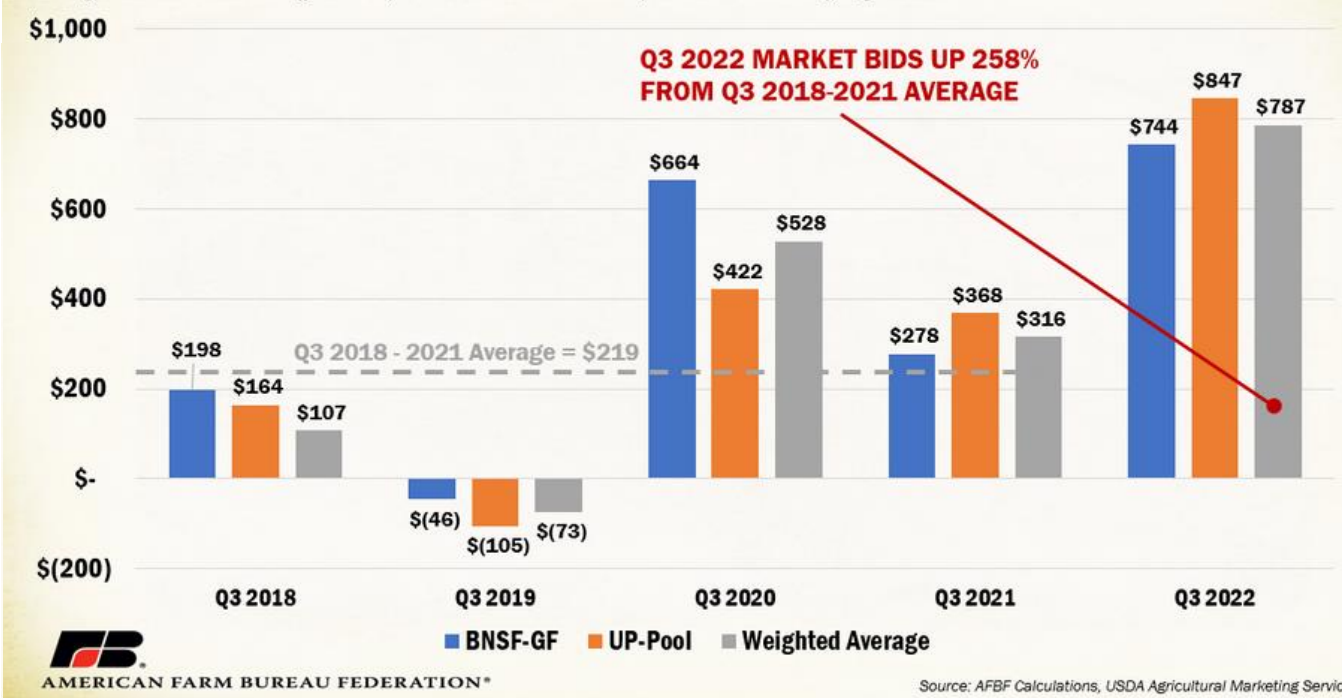
Number of loaded cars that have not moved 48 hrs



Source: USDA AMS

Average secondary rail car auction market bids

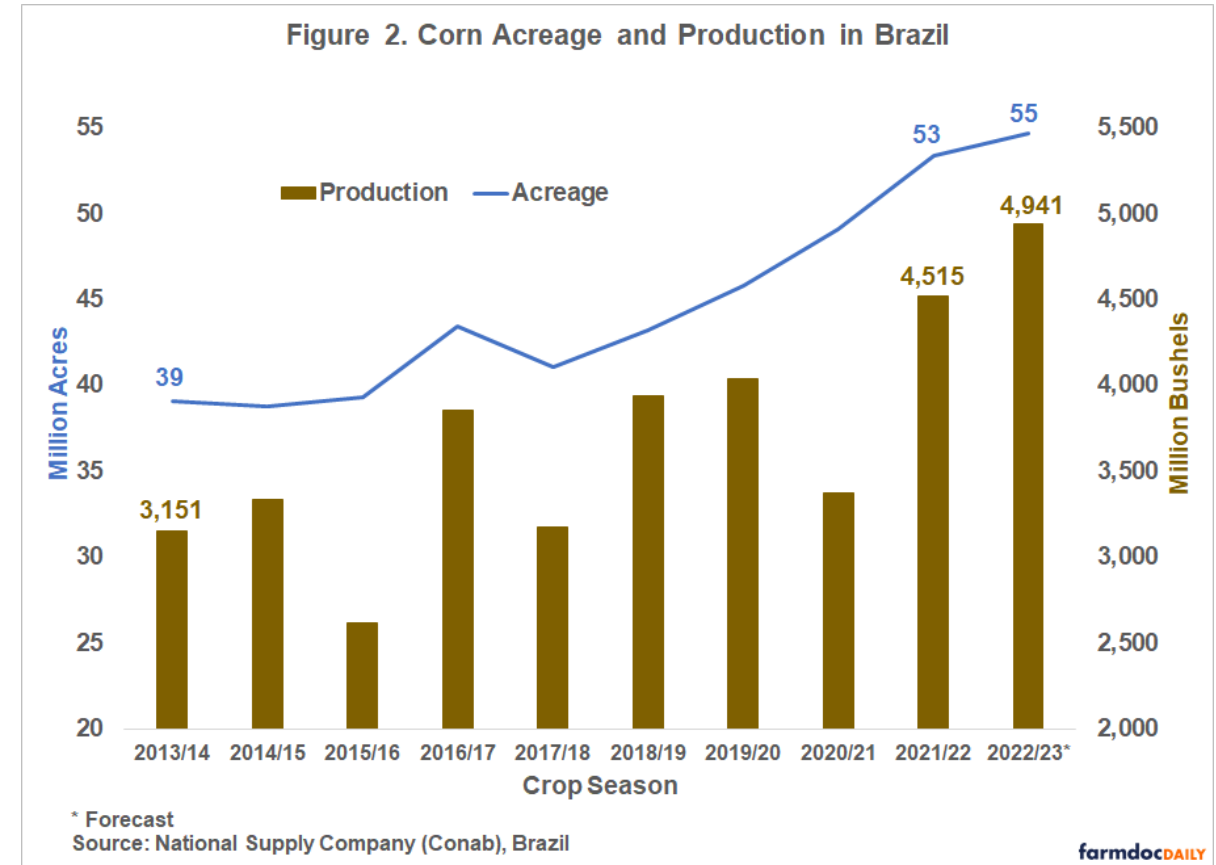
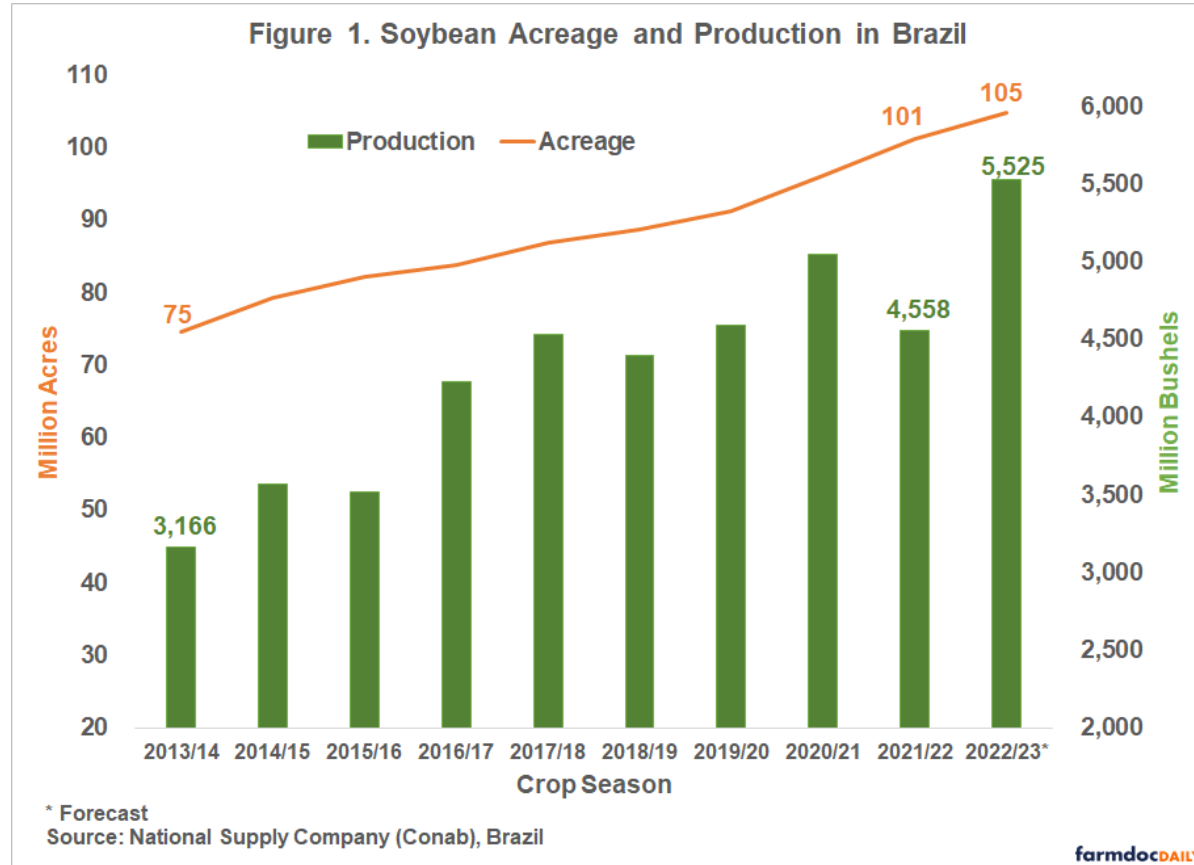
Average dollar amount (per car) of the bid/offer compared to underlying tariff



- High frequency of delayed shipping/unfilled orders (18 times more unfilled orders in Q3 2022 in yoy)
- Abnormally high secondary auction bids

Wild Cards

## Global Factors: Crop Progress in Brazil

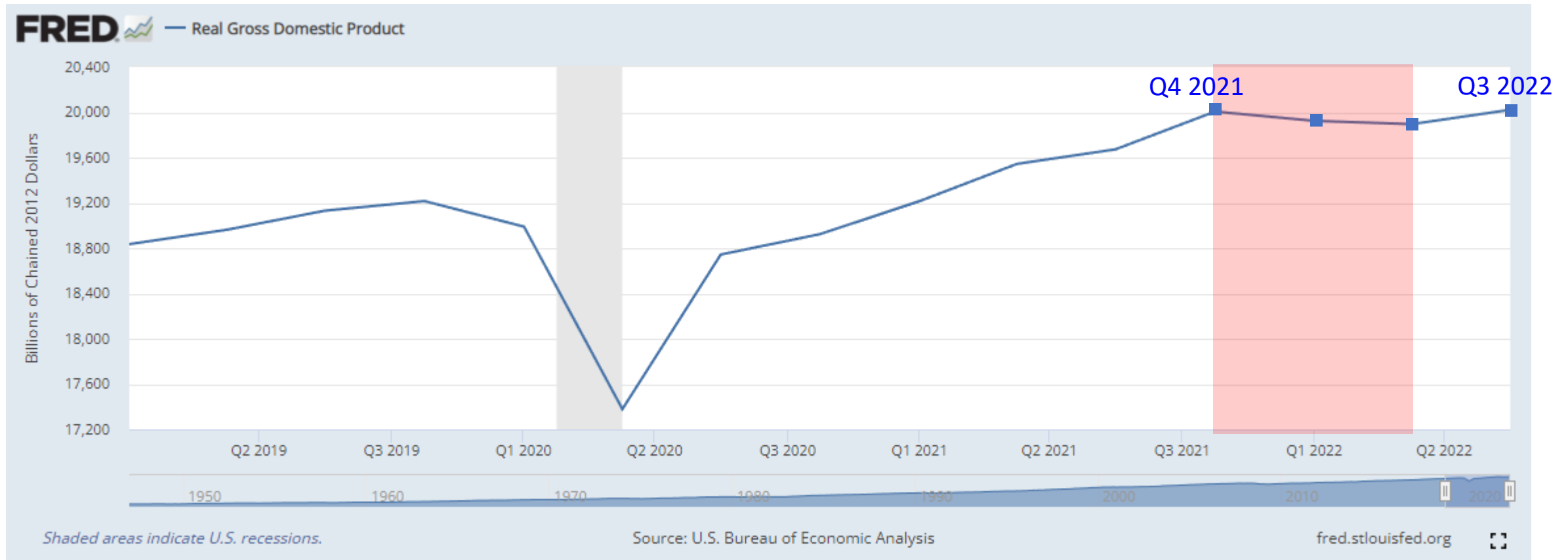


Source: Colussi, Schnitkey and Paulson, August 29, 2022, FarmdocDaily

- Record level production of corn and soybean is expected based on the current planting in Brazil

## Wild Cards

# (How large) Recession is coming?



Source: FRED

- Inflation is still high, and inflation-adjusted GDP has been weak since the first quarter of 2022
- Unemployment rate is 3.7% (Oct 2022)



Wild Cards

# (How large) Recession is coming?

Market Summary &gt; FedEx Corporation

**175.61** USD

-35.68 (-16.89%) ↓ past 6 months

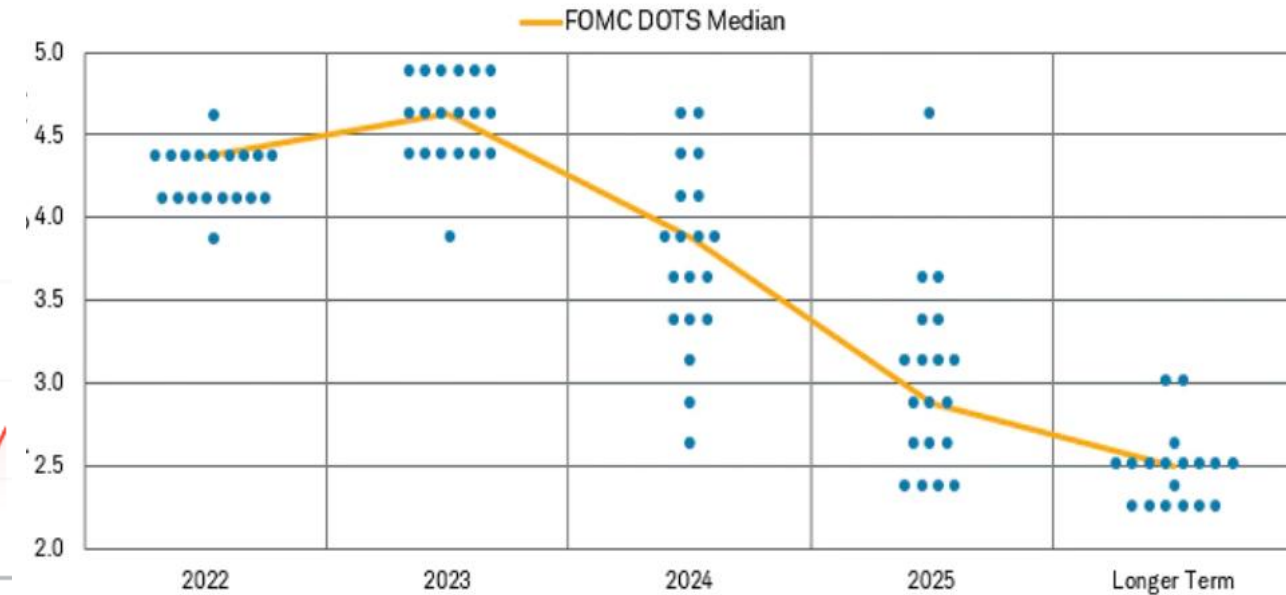
Closed: Nov 11, 5:09 PM EST • Disclaimer

After hours 175.61 0.00 (0.00%)

1D | 5D | 1M | **6M** | YTD | 1Y | 5Y | Max

- FedEx stock price is typically regarded as a leading indicator of business cycle

## Implied Fed Funds Target Rate (%)

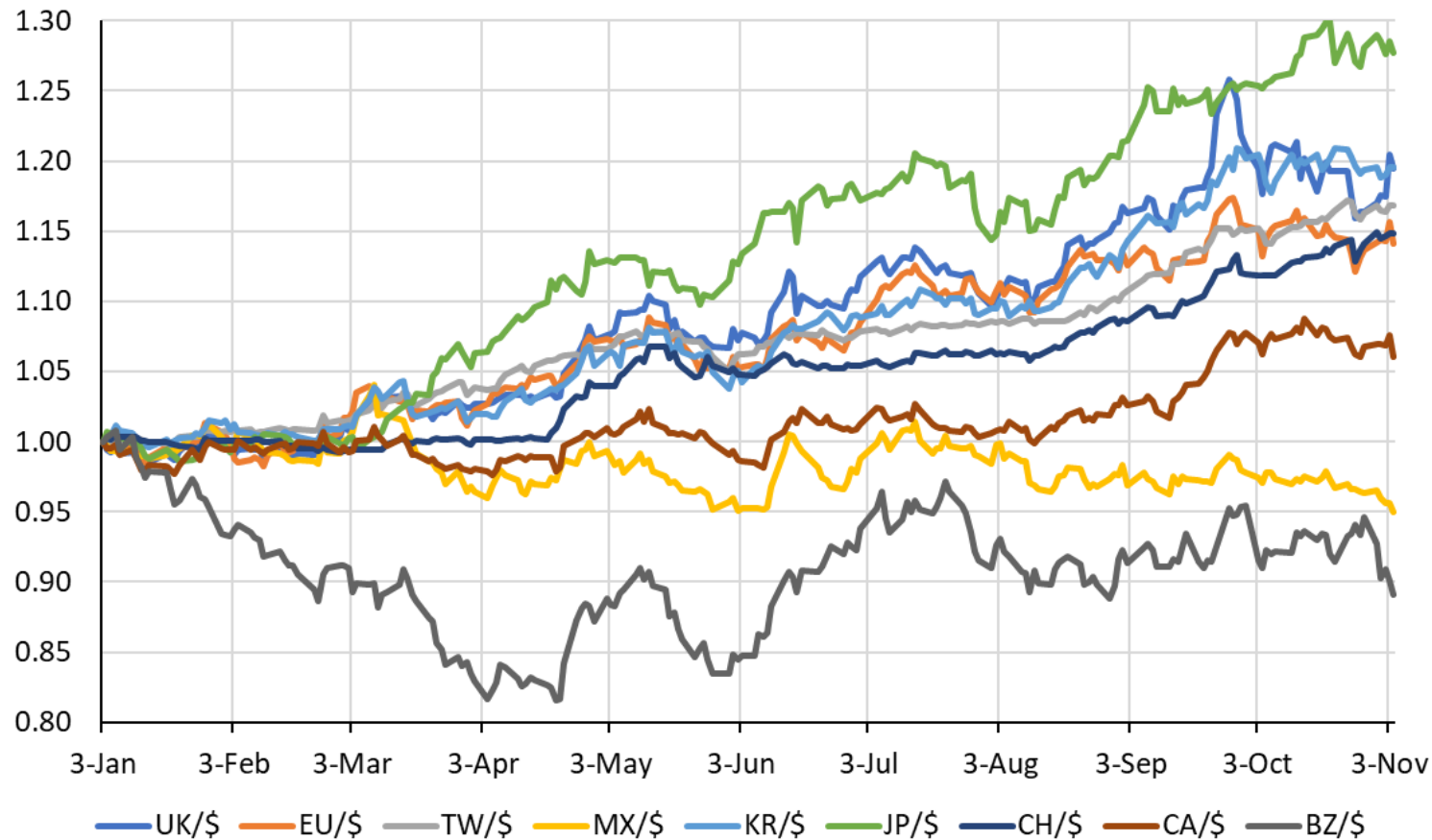
Source: Federal Reserve, *Summary of Economic Projections (SEP)*, Sep 2022

- Unlike Great Recession, we cannot expect liquidity provision by Fed
- Rate hikes will likely continue until 2023 (approx. 5 - 5.25%)



Wild Cards

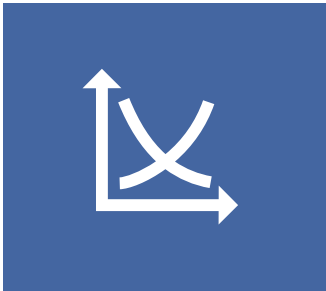
# (How large) Recession is coming?

**Exchange rate movements of major trade partners** (base= Jan 3 ,2022)

Source: FRED

- Global recession is another possibility that needs to factor in
- Developing countries have already spent an estimated \$379 billion to defend their currencies in 2022, but have suffered significant impact from capital flight (UNCTAD Trade Development Report 2022)
- Diminished purchasing power in foreign countries can bring a boomerang effect on US exports

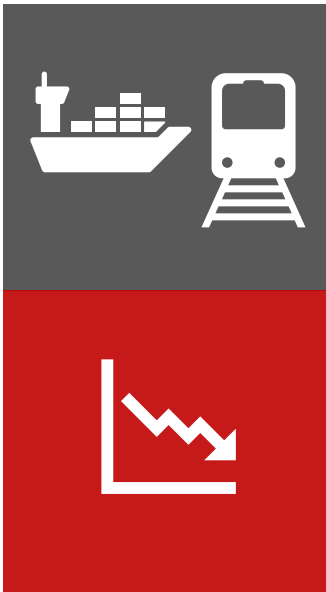
# Closing remarks: “*Don’t leave the market*”



New crop markets are showing **negatives shifts in supply and demand**, implying **elevated uncertainty**

- USDA predicts smaller new crop production and smaller demand in the 22/23 season

## Wild Cards



**Two transportation issues (low water level in Mississippi river system and possibility of railroad strike)** can be critical in the next few weeks

- Railroad strike deadline is on December 4

Several **unrealized demand side risks** require attention

- Global competition: Brazil (+ Latin countries) crop production
- Strong dollar
- Recession possibility

Thank you for your time!  
Any questions?

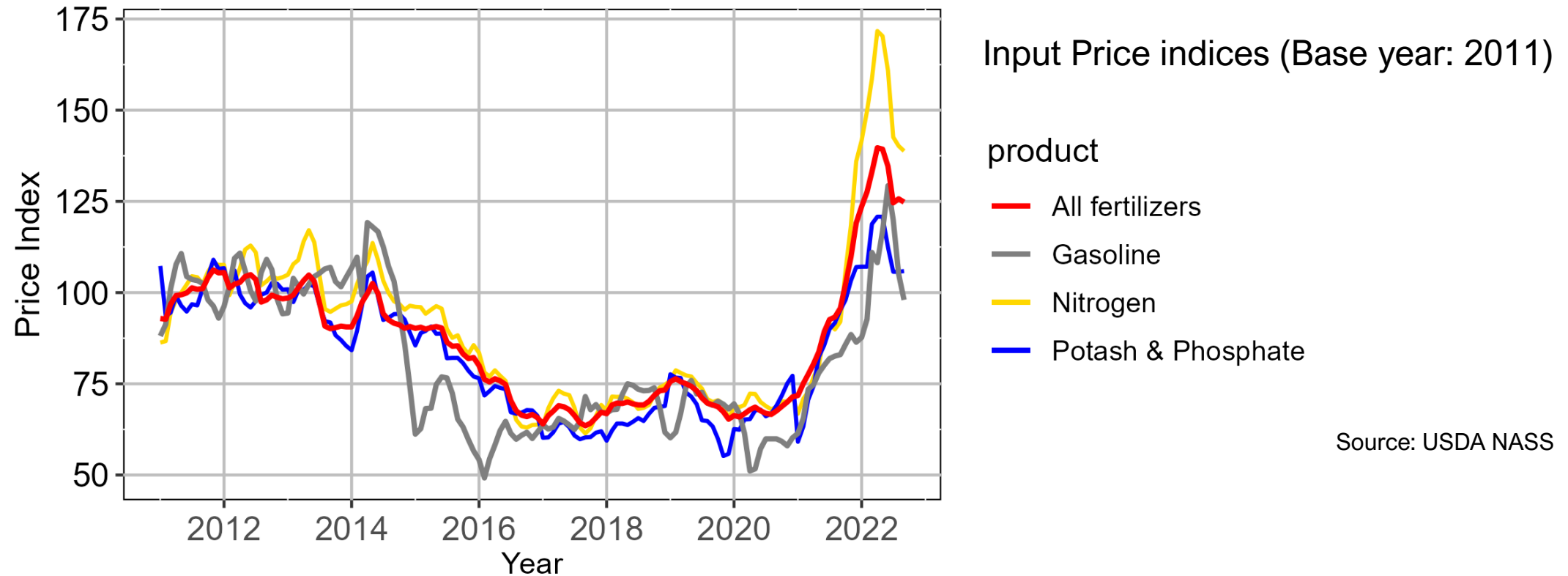
Seungki Lee – Contact Information

Email: [lee.10168@osu.edu](mailto:lee.10168@osu.edu)

614-247-9170

## Appendix

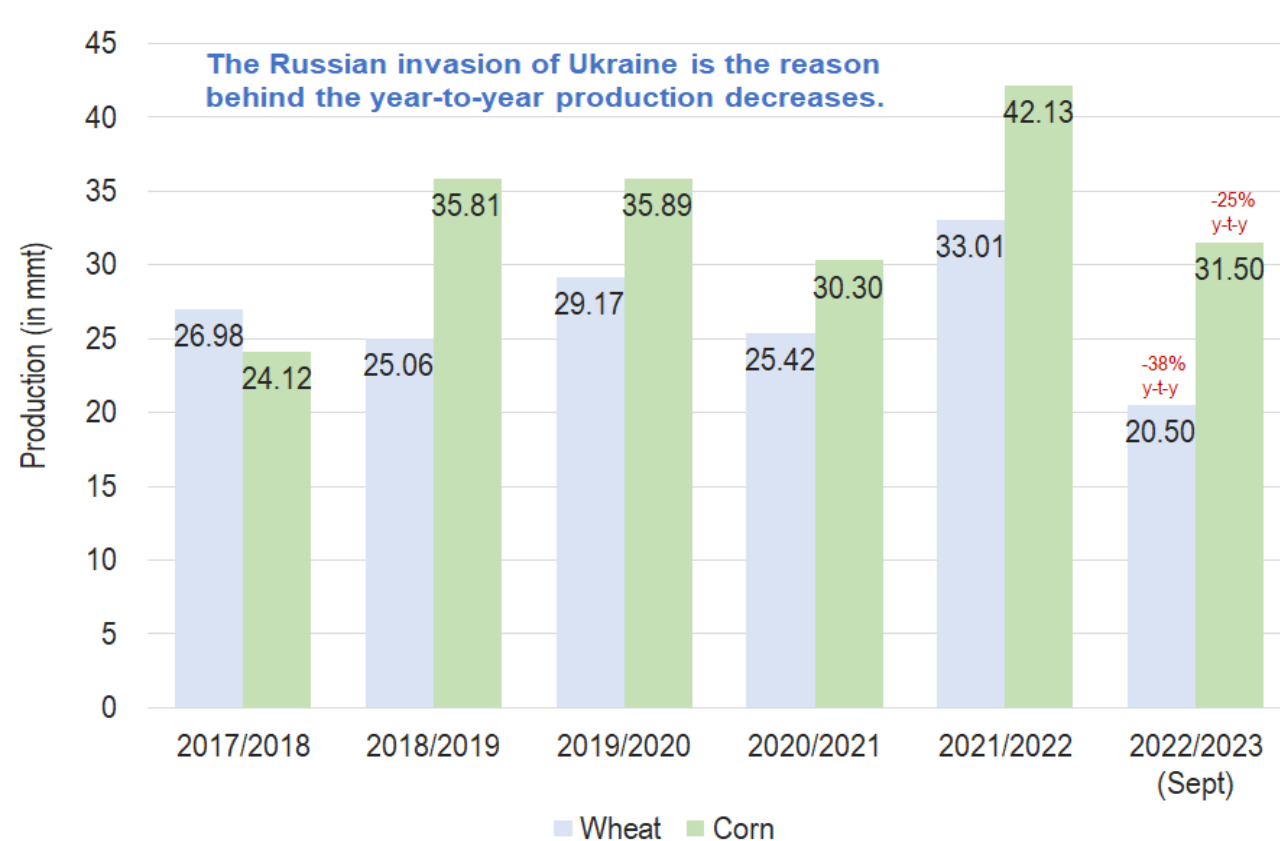
# Fertilizer Prices: Long-term Trend



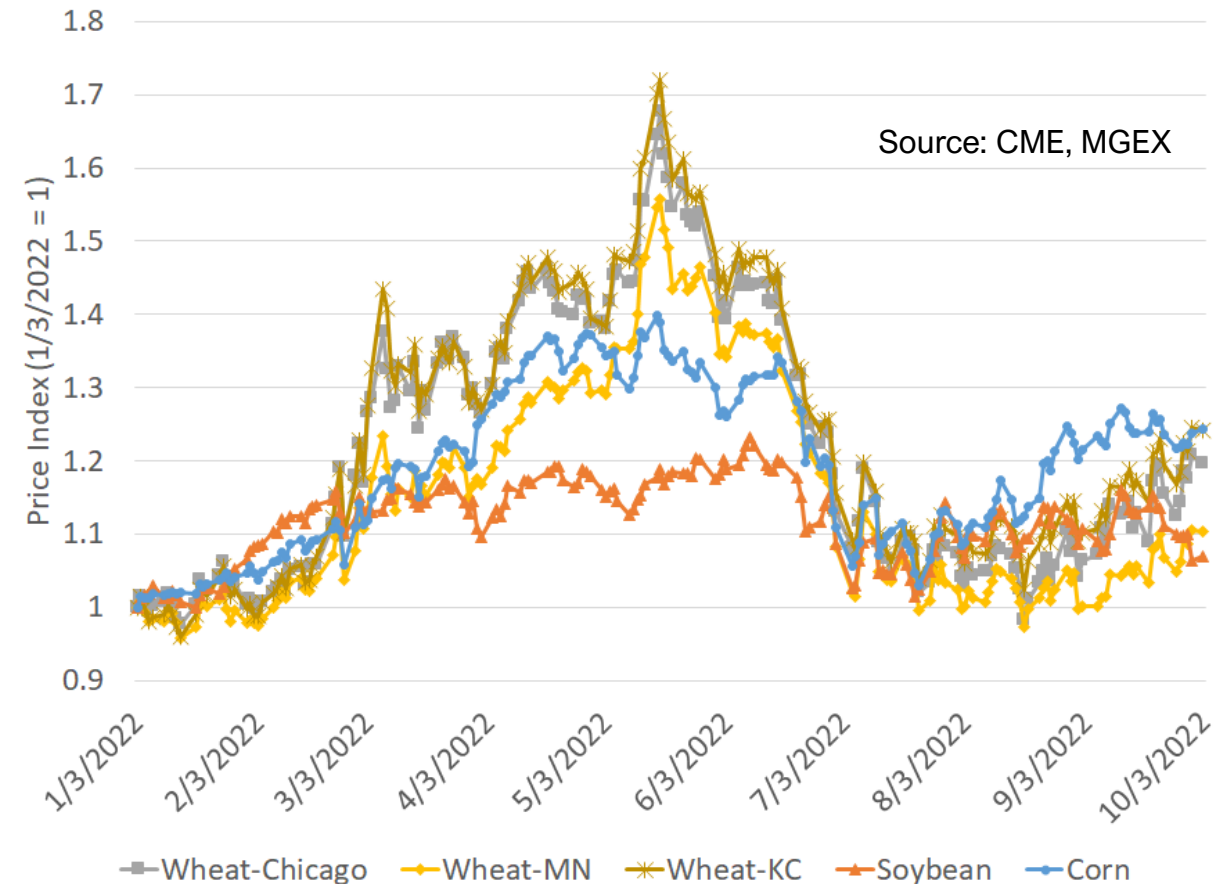
- Prices seem to pass their peaks, but still they are relatively high
- It is possible that the input market would stay with high level of prices for a while

## Appendix

# Global Factors: War in Ukraine



Source: USDA-WAOB



- Some risks were dissolved by a combination of better-than-expected planting in Ukraine and favorable weather across the Black Sea region, and ag transportation deal among Ukraine, Russian, and Turkey

## Appendix

# Farm Bill 2023

Several ideas floated about changing commodity programs in the next farm bill, and here are the few...

- Raising the reference price of the Price Loss Coverage (PLC)
  - In 21/22, the effective reference corn rate was \$3.70/bu (season average price was \$6.00/bu)
  - The current PLC safety net does not reflect the price rally after the Covid
- Combining the Agricultural Risk Coverage (ARC) and PLC
  - Revenue protection when price is high, price protection when price falls
  - More total payments to producers, but more difficult to determine the budget cost
- Margin-based safety net
  - Dairy margin program (month-to-month), but quite hard to design a budget that could stretch over two years
- Developing a permanent disaster assistance program for crops