Economic Hot Topics

January 19, 2023

East Tennessee Grain Conference

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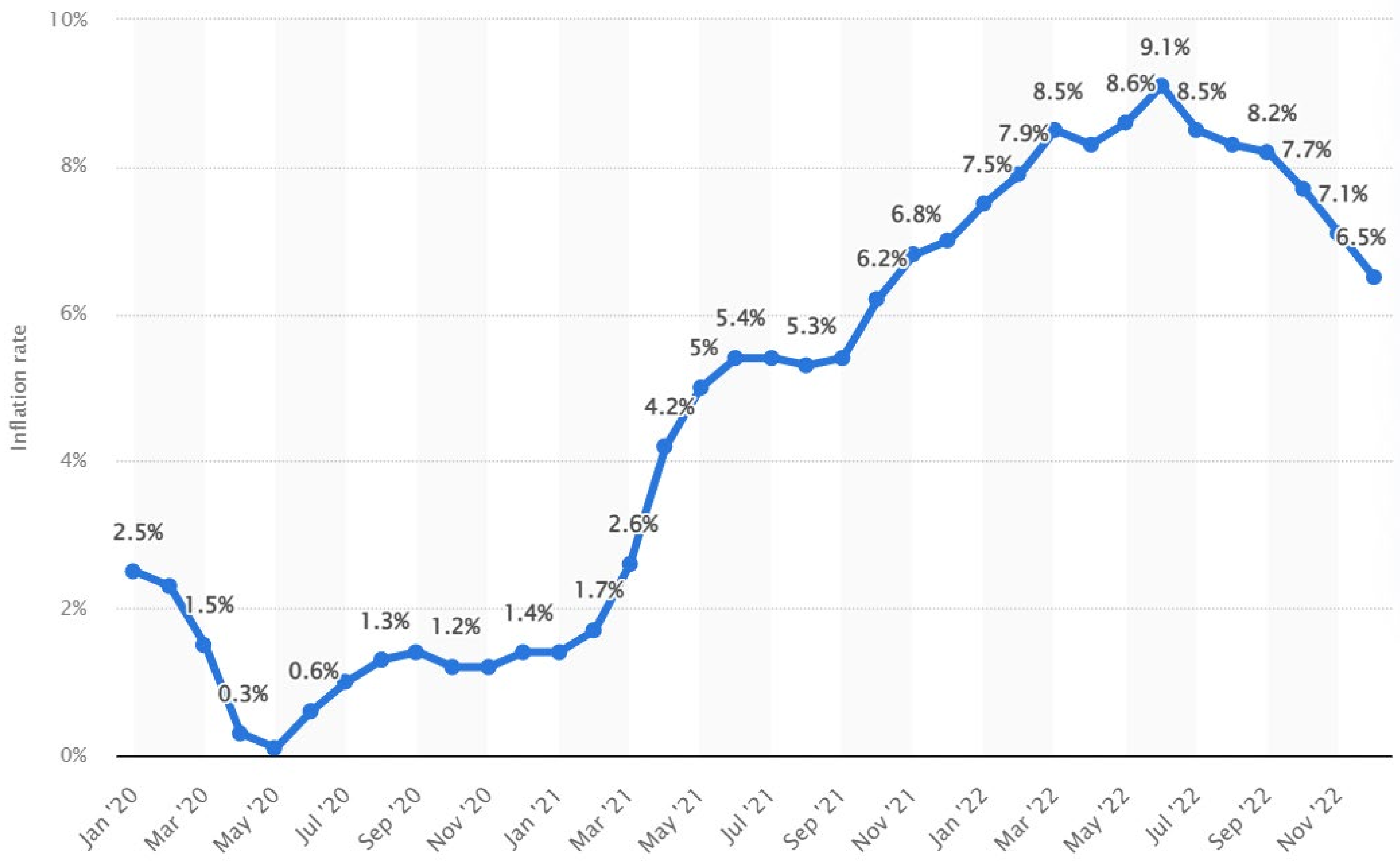
Center of Farm Management
THE UNIVERSITY OF TENNESSEE

ECONOMIC TRENDS

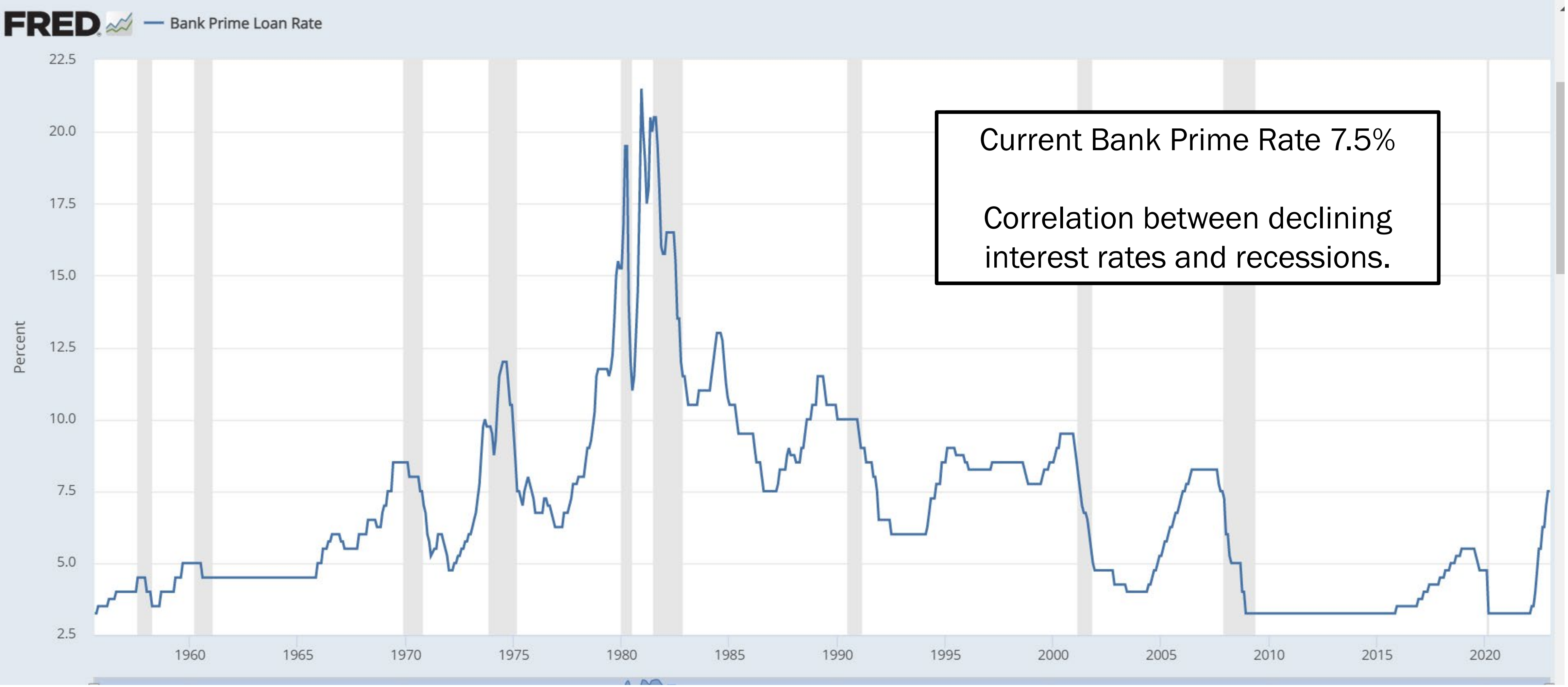
Inflation, Interest Rates, Labor Force Participation, GDP Growth, Government Spending, Exchange Rates



Monthly Inflation Rate 2020-2022

Source: https://www.statista.com/statistics

Bank Prime Loan Rate

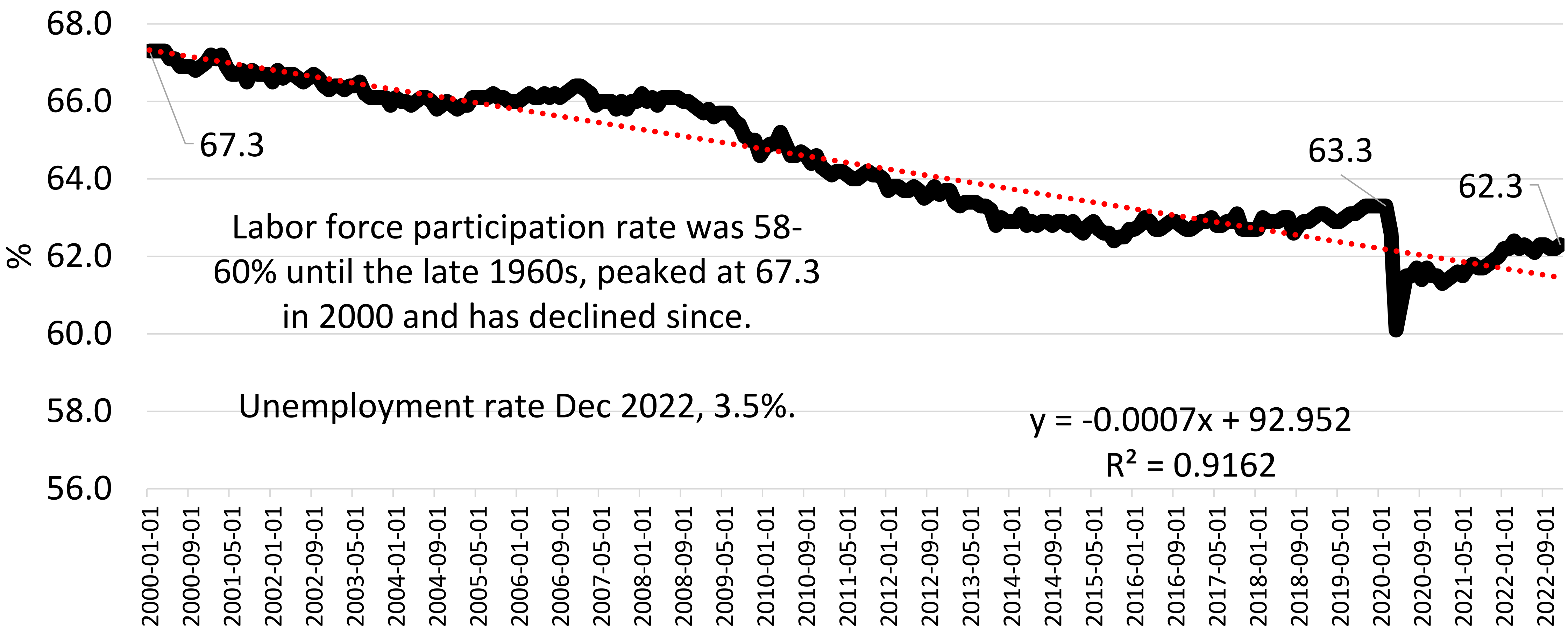


Current Bank Prime Rate 7.5%

Correlation between declining interest rates and recessions.

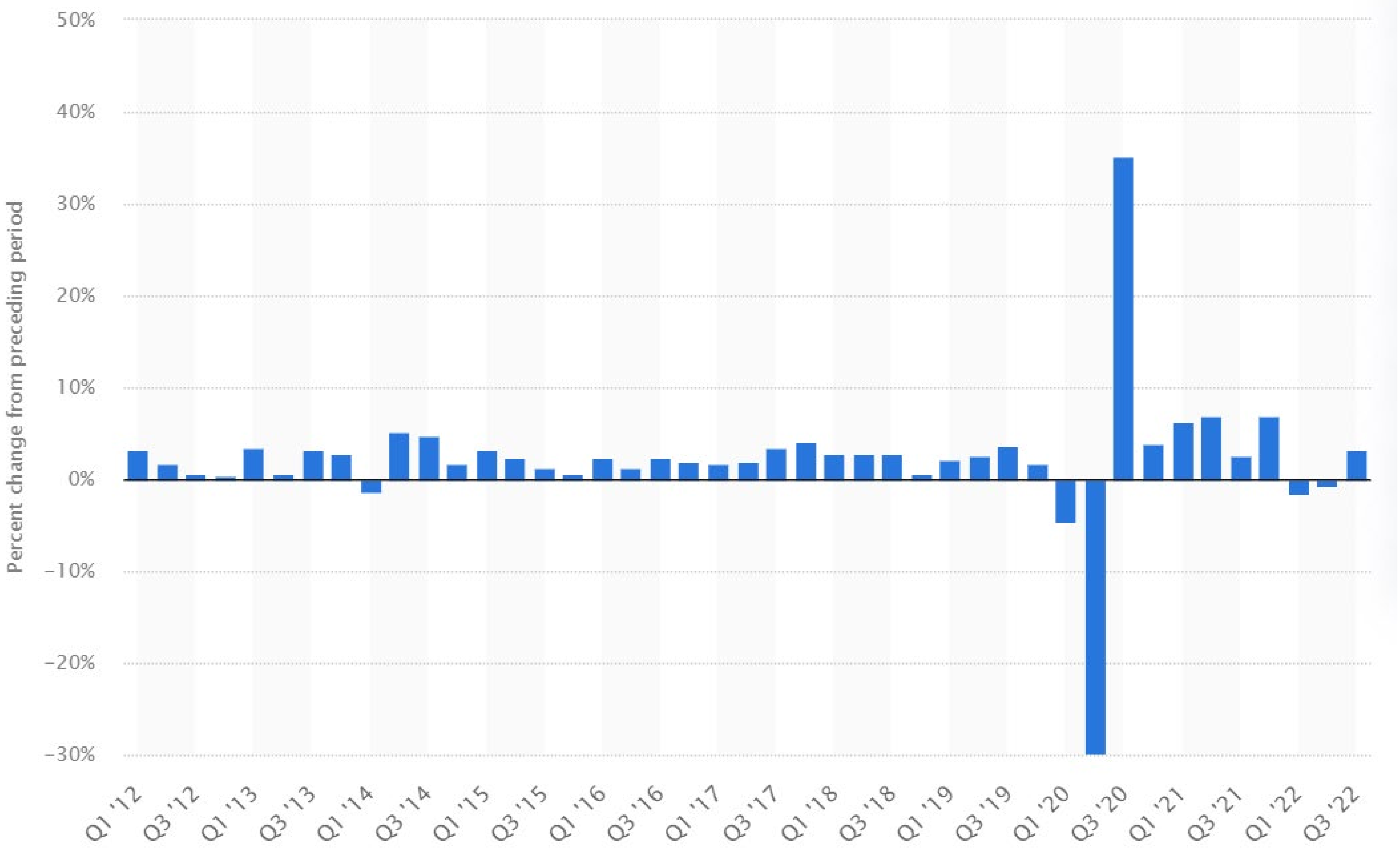
Source: https://fred.stlouisfed.org/series/DPRIME

U.S. Labor Force Participation Rate



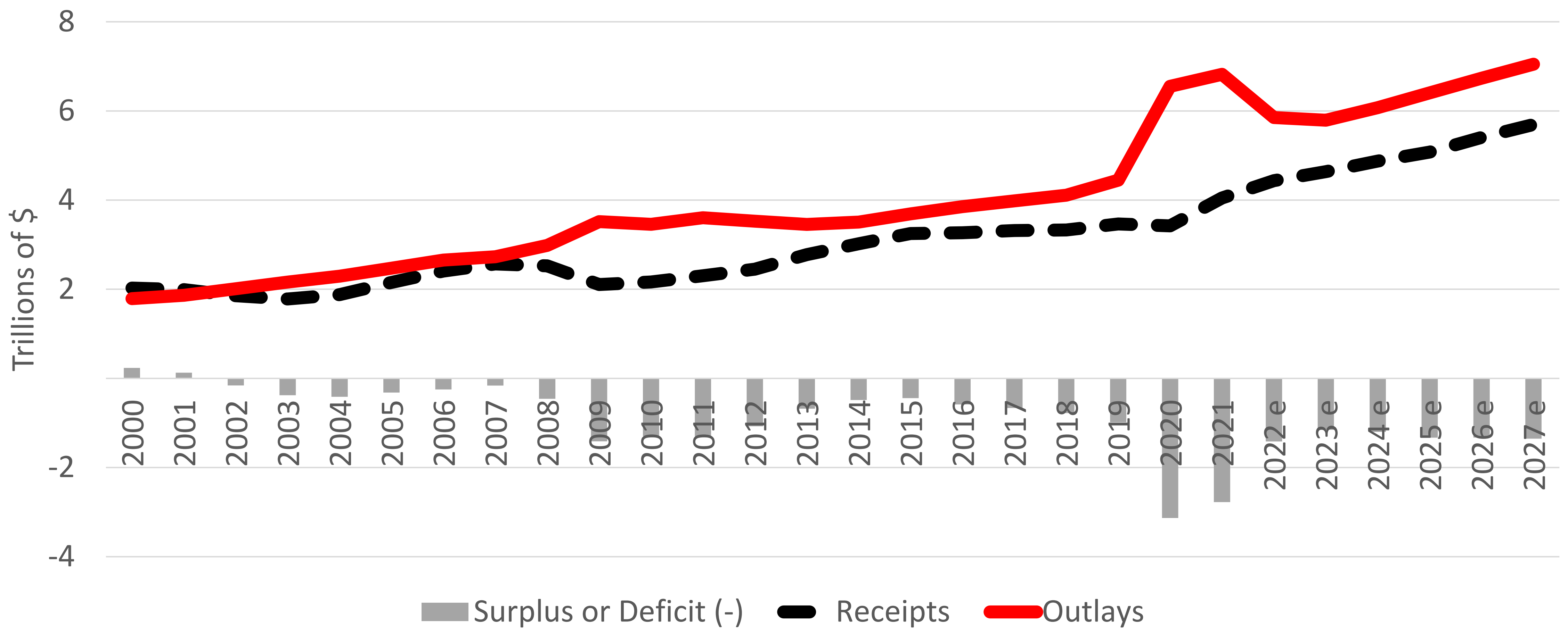
Source: https://fred.stlouisfed.org/series/DPRIME

U.S. GDP Growth by Quarter, 2012-2022



Source: https://www.statista.com/statistics

Government Receipts, Outlays, and Deficit, 2000-2027e



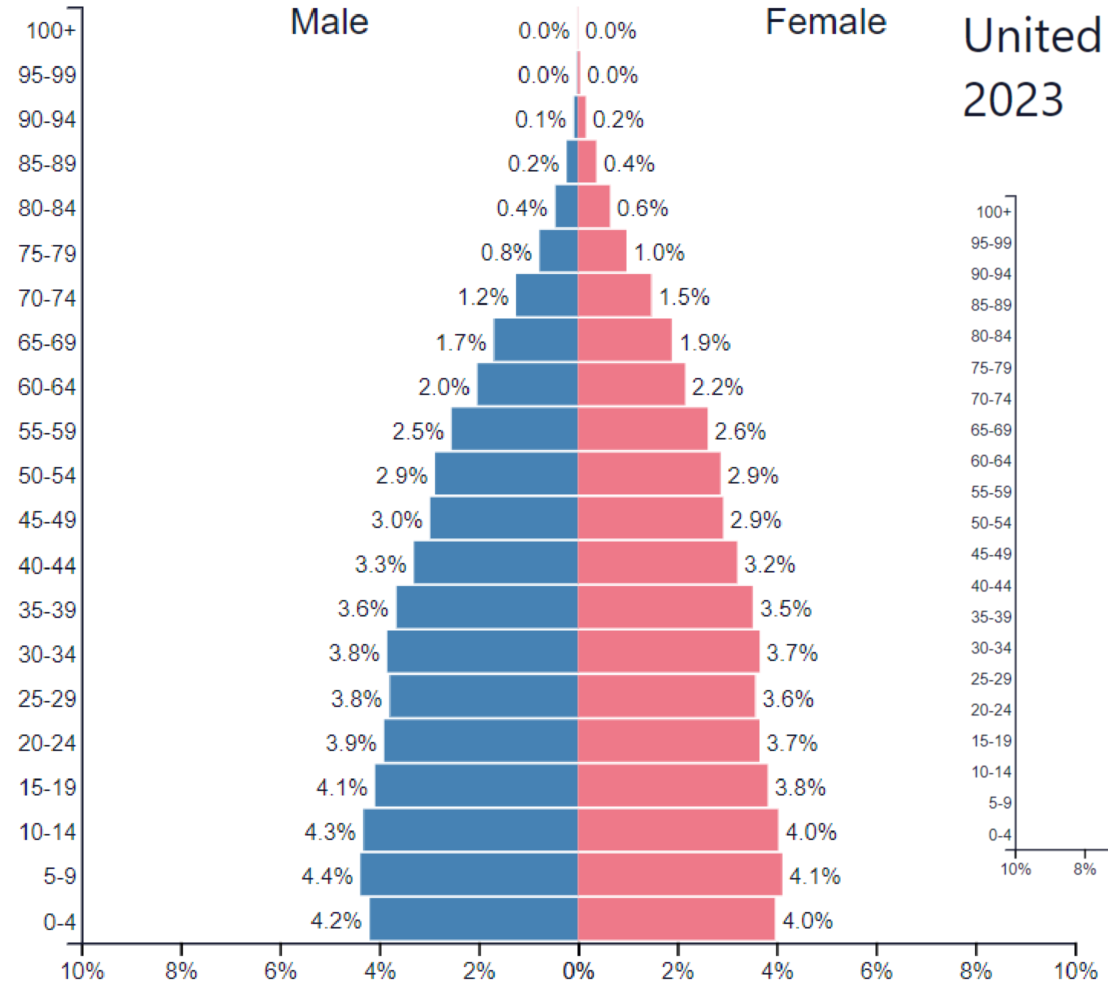
Source: https://www.whitehouse.gov/omb/budget/historical-tables/

U.S. dollar-euro exchange rate

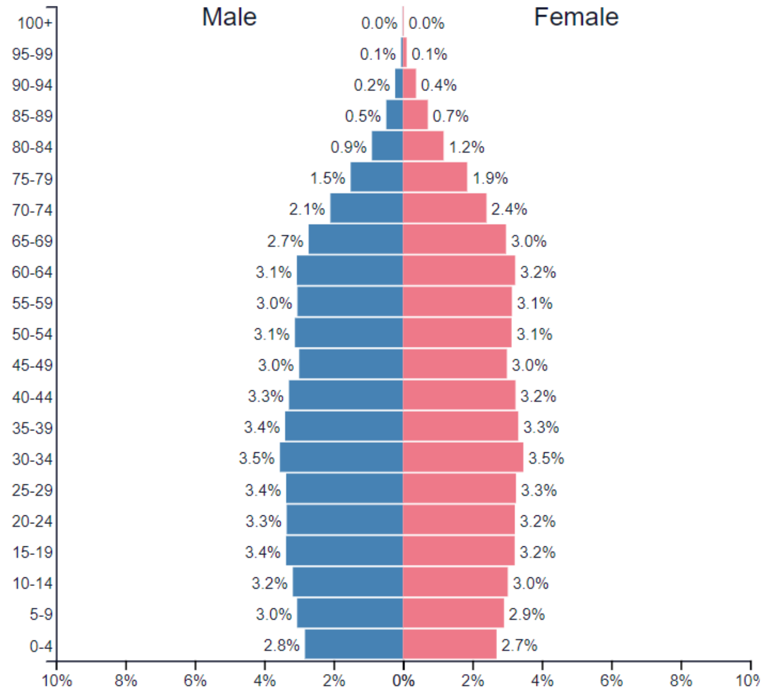
Source: Bloomberg; RSM US

Population Pyramids

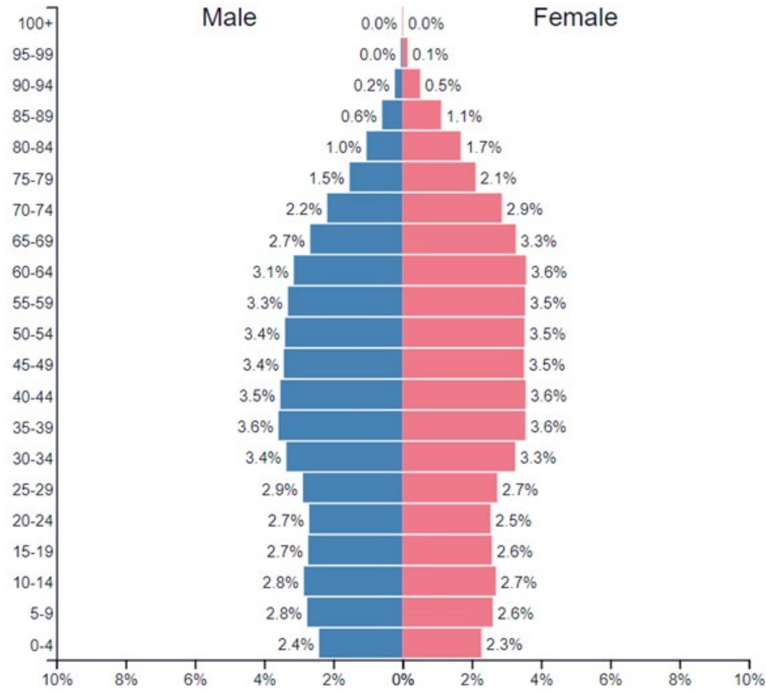
WORLD ▾
2023
Population: 8,045,311,447



United States of America ▾
2023
Population: 339,996,563



EUROPE ▾
2023
Population: 742,272,652

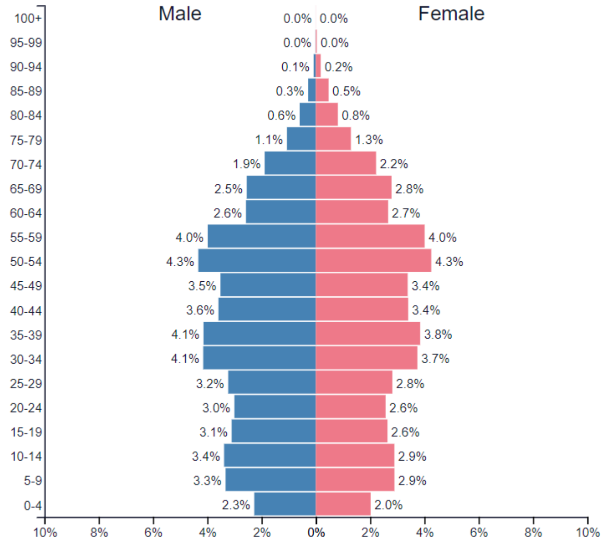


Source:
https://www.populationpyramid.net/world/2023/

Population Pyramids

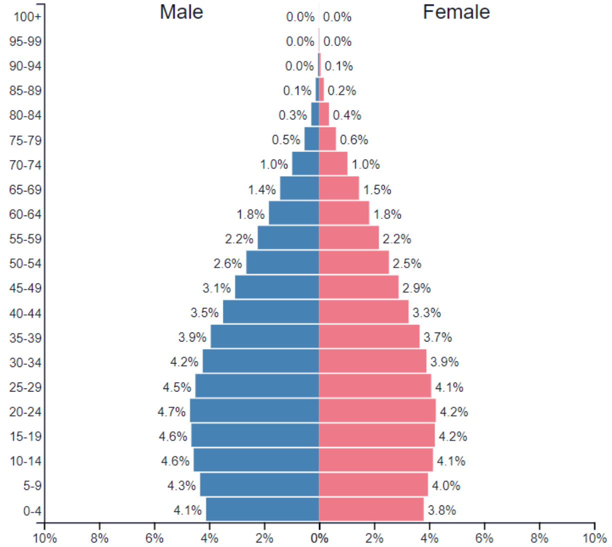
China ▾
2023

Population: 1,425,671,351



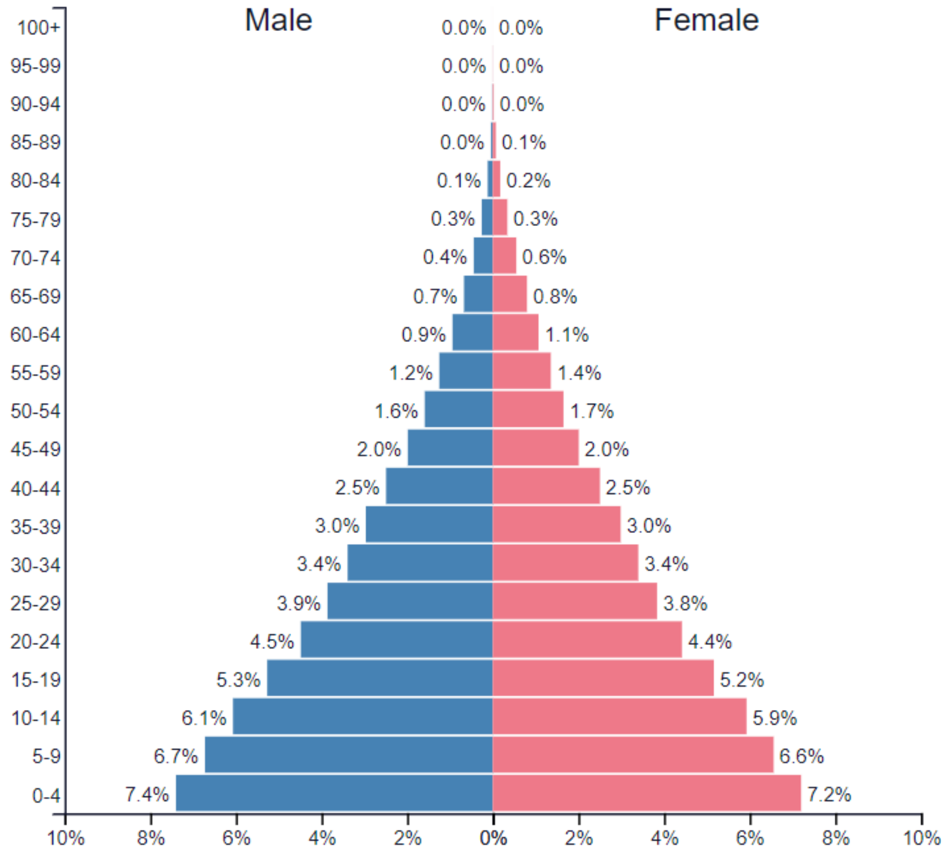
India ▾
2023

Population: 1,428,627,663



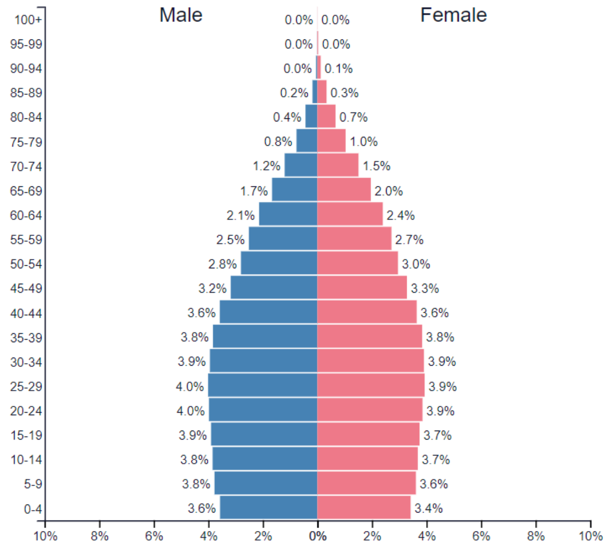
AFRICA ▾
2023

Population: 1,460,481,772



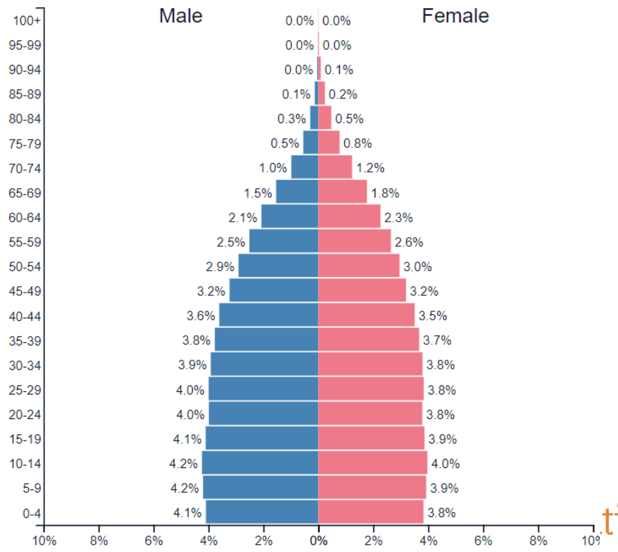
South America ▾
2023

Population: 439,719,008



South-Eastern Asia ▾
2023

Population: 686,824,688



tions.

Source: https://www.populationpyramid.net/world/2023/

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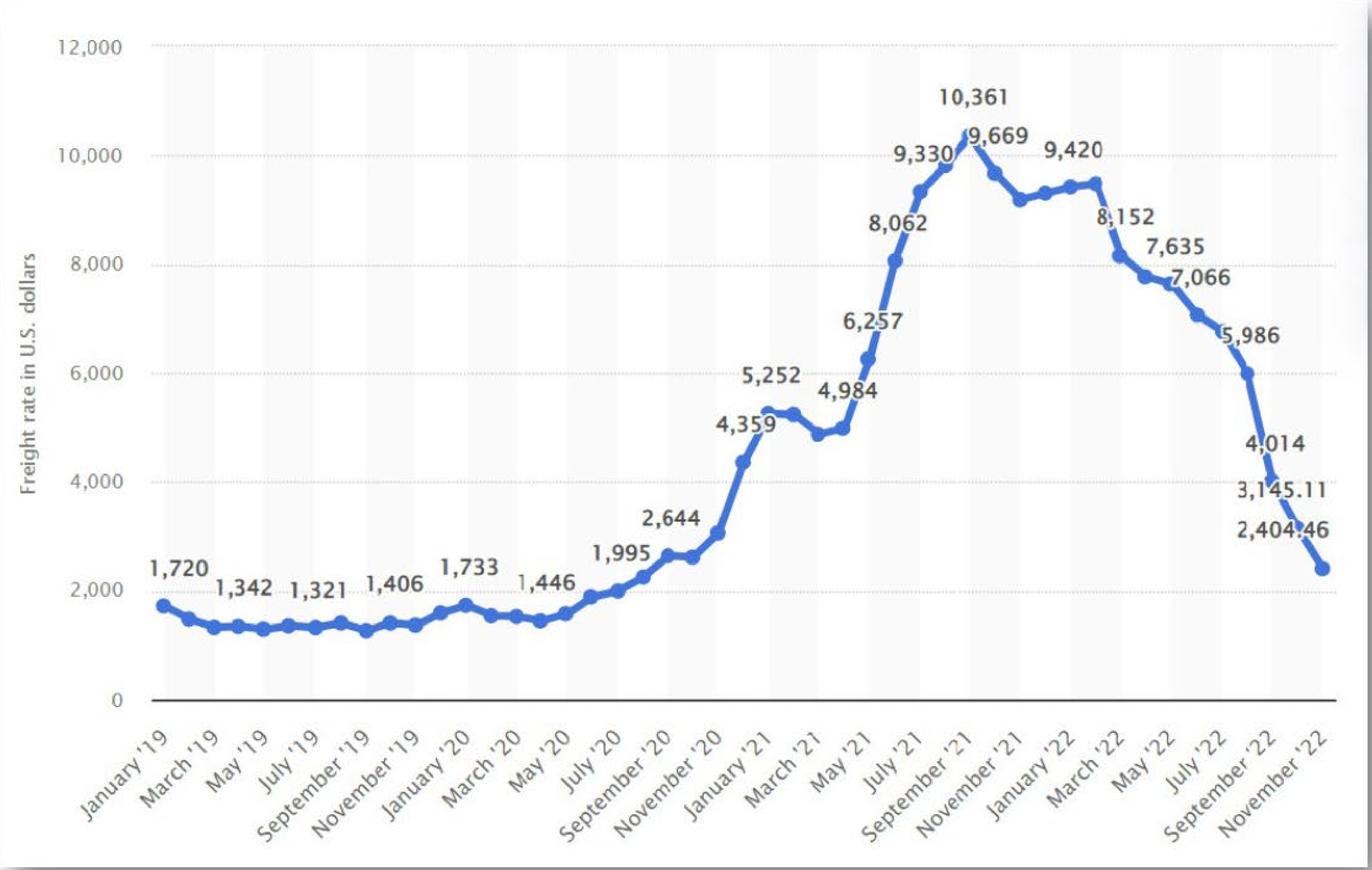
Global container freight rate index from July 2019 to Nov. 2022 (in U.S. dollars)



76% since peak (Sept. 2021)

Source(s): Freightos; ID 1250636 (downloaded from statista.com)

Baltic Dry Index: January 2001 – January 2023

Source: https://tradingeconomics.com/commodity/baltic

Macro Economic Takeaways

- Recession in 2023?
- Impact of higher interest rates on operating expenses and capital purchases.
- USD direction and attendant impact on export and import purchasing power.
- Government spending on ad hoc versus Farm Bill.

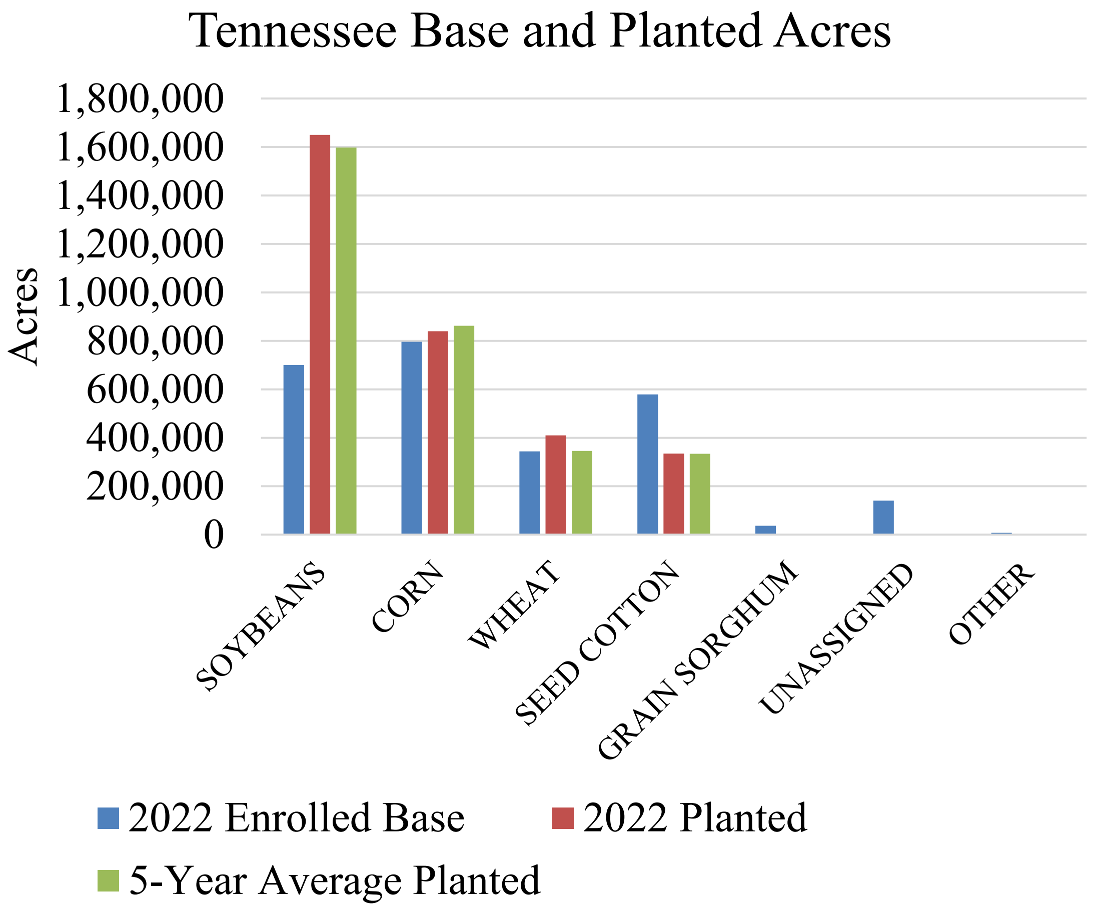
Commodity Programs

Crop Insurance

FARM BILL AND POLICY

Title I Analysis (ARC or PLC)

- County-level optional or mandatory
  - Reallocation
  - Update / Addition
- Reference price adjustment
  - Cost of production
- Producer enrollment decision
  - Max PLC or ARC



Title I: Commodity Programs (ARC & PLC)

- Budget neutral
- Base acre reallocation / update / payment eligibility.
- Reference price
  – $8.40 soybeans
  – $3.70 corn
- Enrollment decision
  – Reduce paperwork for producers and FSA personnel

Crop Insurance

- 2022 insured acres (% of planted)
  - Soybeans: 1,400,649 (85%)
  - Corn: 706,700 (84%)
  - Cotton: 299,849 (90%)
  - Wheat: 284,608 (70%)
- Changes to premium subsidization
- Crop insurance options (ex) prevented planting factors)
- Companion policies
- Ties to other programs

Premium Subsidies

Coverage Level (%)	Basic & Optional (%)	Enterprise (%)	Whole Farm Unit (%)
50	67	80	80
55	64	80	80
60	64	80	80
65	59	80	80
70	59	80	80
75	55	77	80
80	48	68	71
85	38	53	56

Fertilizer, Fuel, Cash Rent, Property Values.

INPUT COSTS

Inputs Prices and Availability

- Land prices and rents are up.
- Prices for most crop protection products and fertilizers are down from highs but remain elevated.
- Labor shortages.
- Trucking and logistical issues.

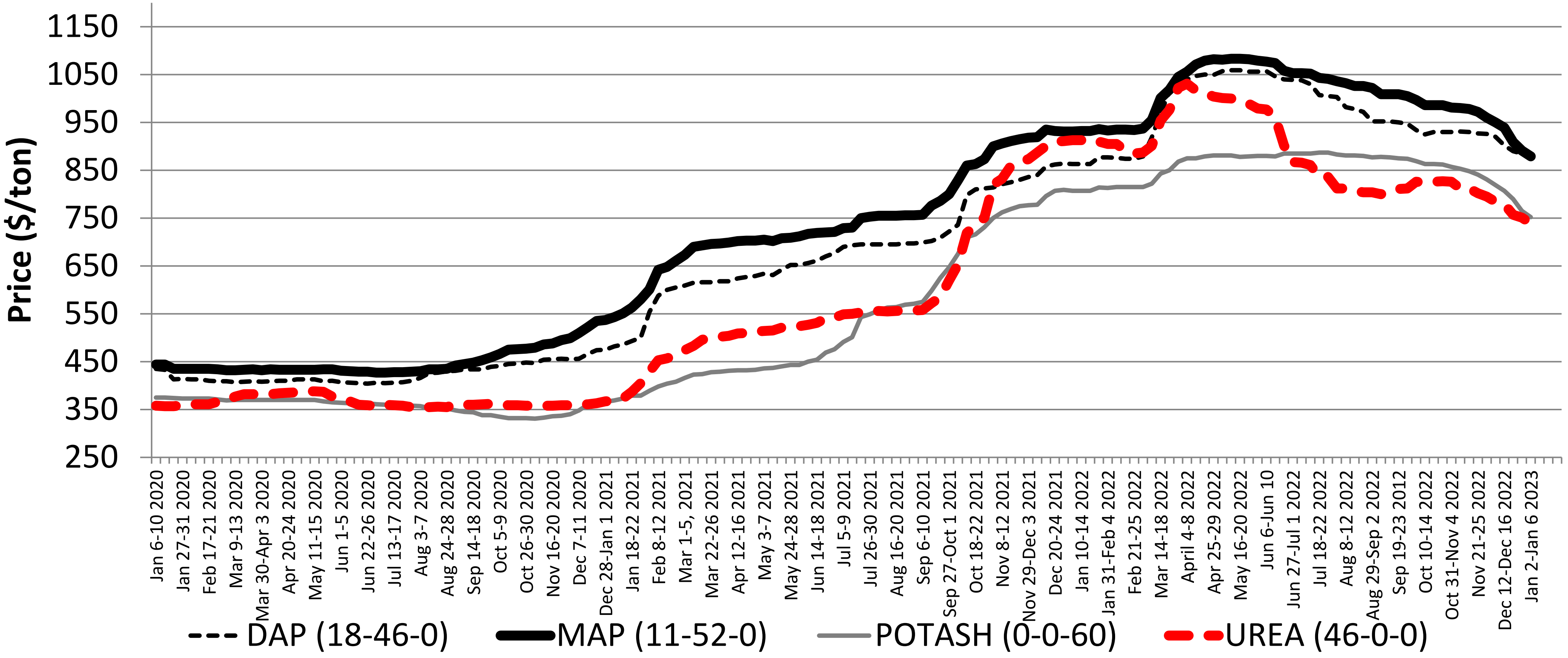
- **Will prices be cheaper between now and planting?**

Rising interest rates will cost you money

	$1,250,000 Operating Utilization		
Interest Rate	3.25%	5.5%	7.5%
Interest	$40,625	$68,750	$93,750
Change	-	$28,125	$53,125
Increase ($/acre)	-	$11.25	$21.25

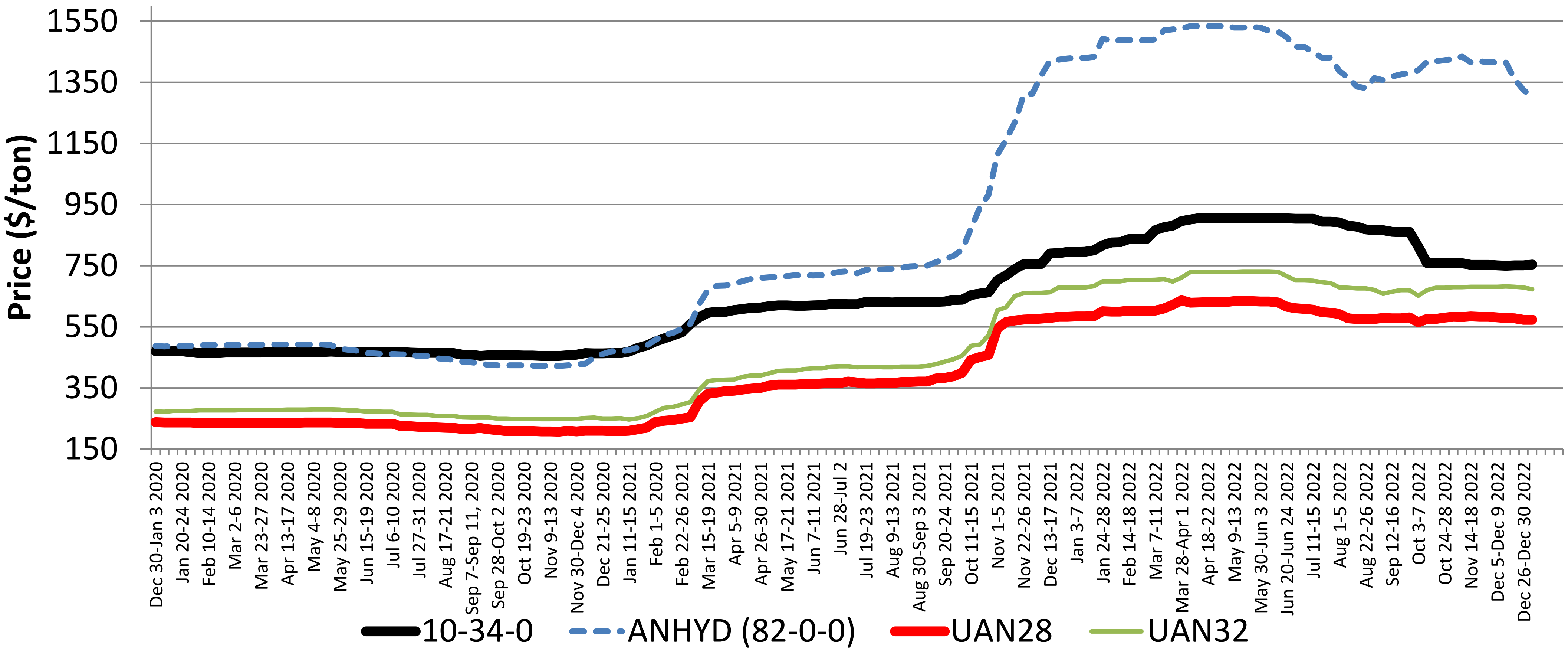
Assumptions: 2,500 acres; 50% of COP financed.

Select Fertilizer Prices, 2020-2023



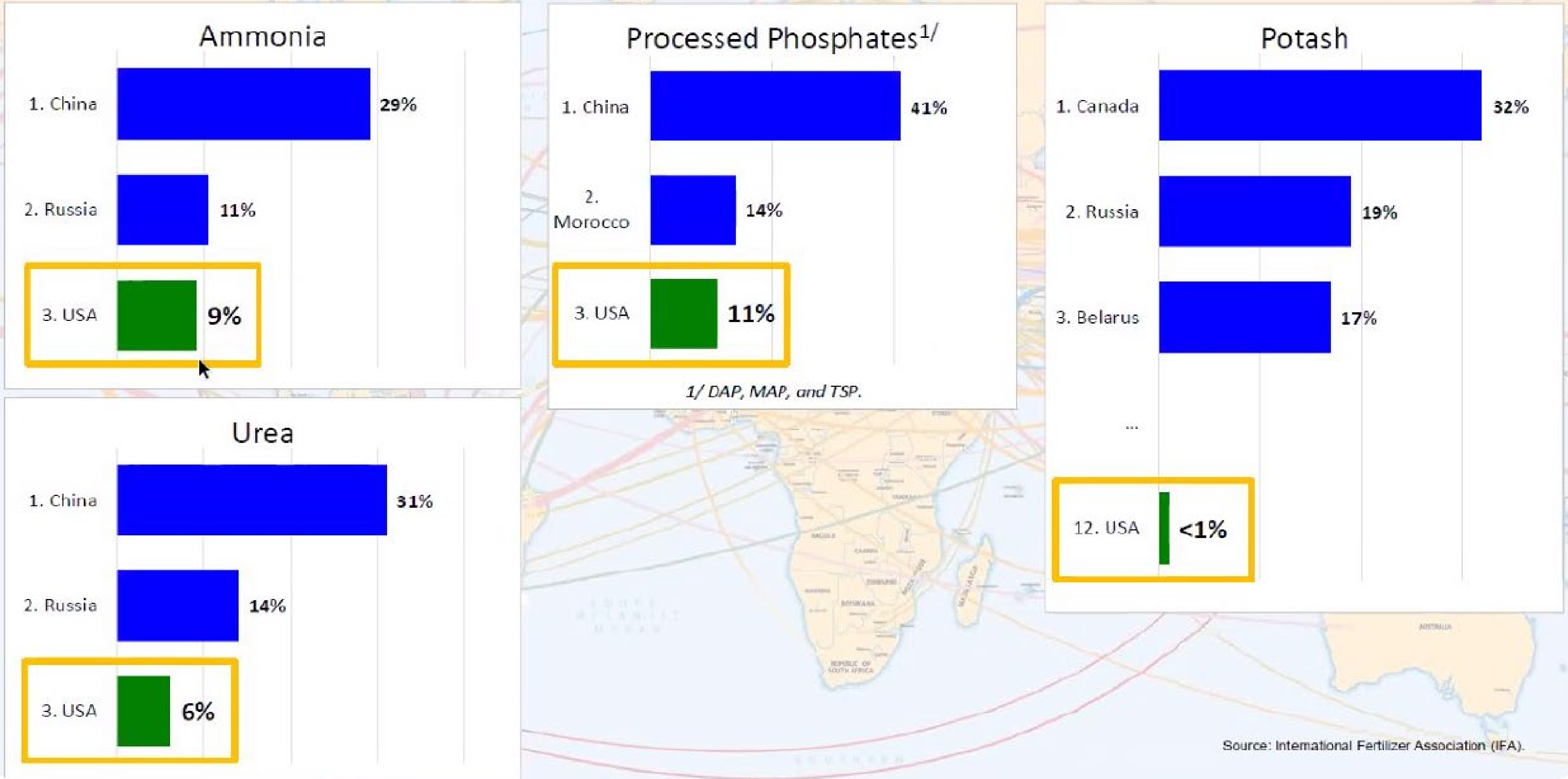
Source: DTN

Select Fertilizer Prices



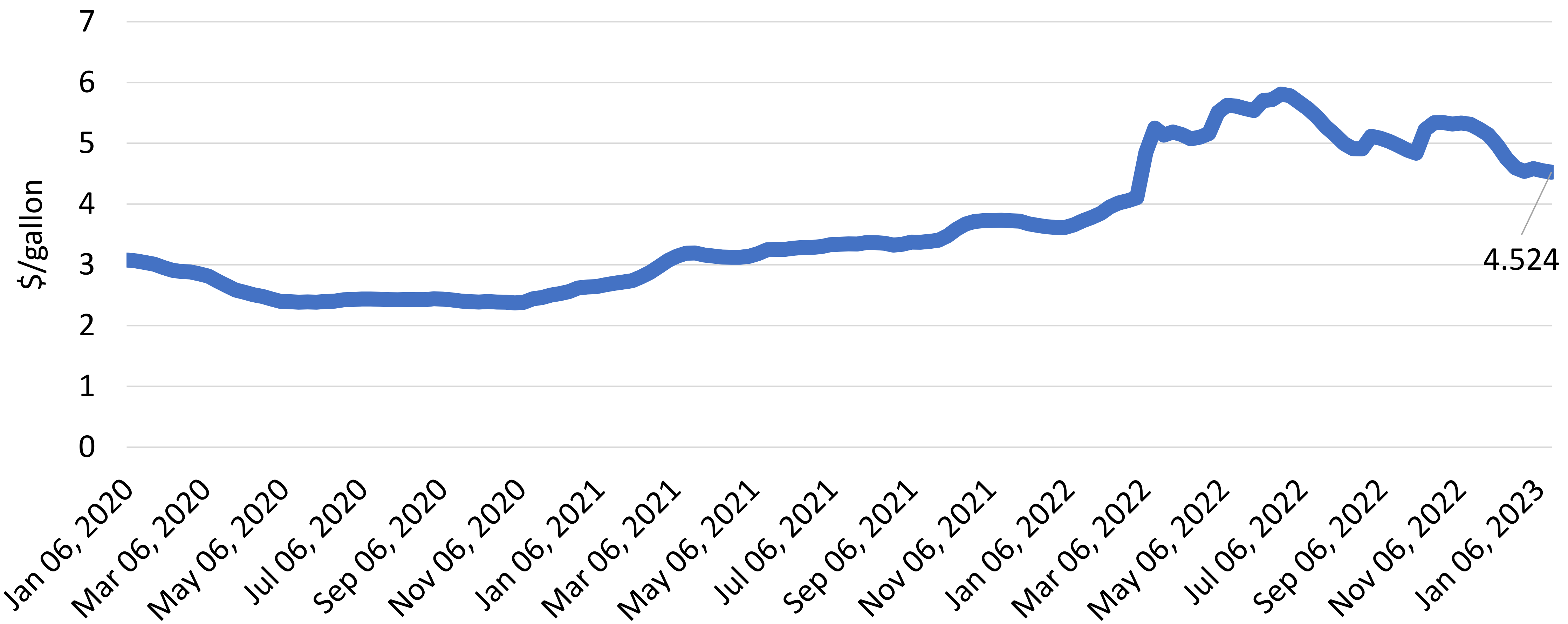
Source: DTN

Global Producers - 2020



Source: International Fertilizer Association (IFA).

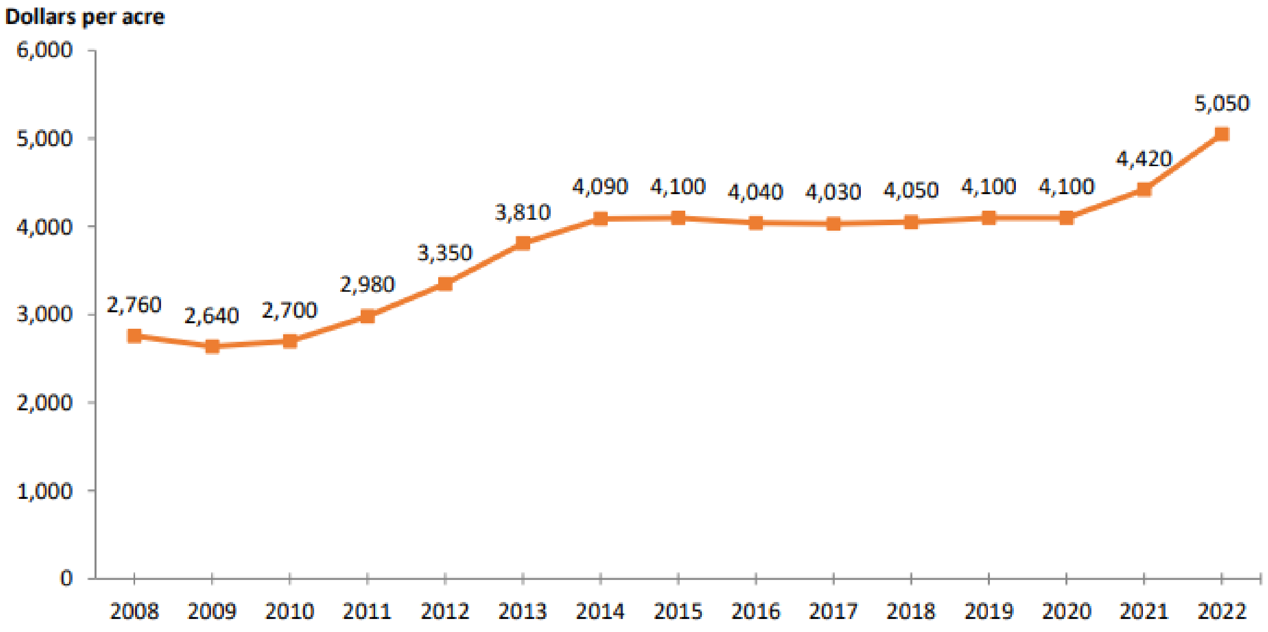
Weekly U.S. No 2 Diesel Retail Prices



Source: https://www.eia.gov/petroleum/gasdiesel/

Land Values

Average Cropland Value – United States: 2008-2022



USDA - NASS
August 5, 2022

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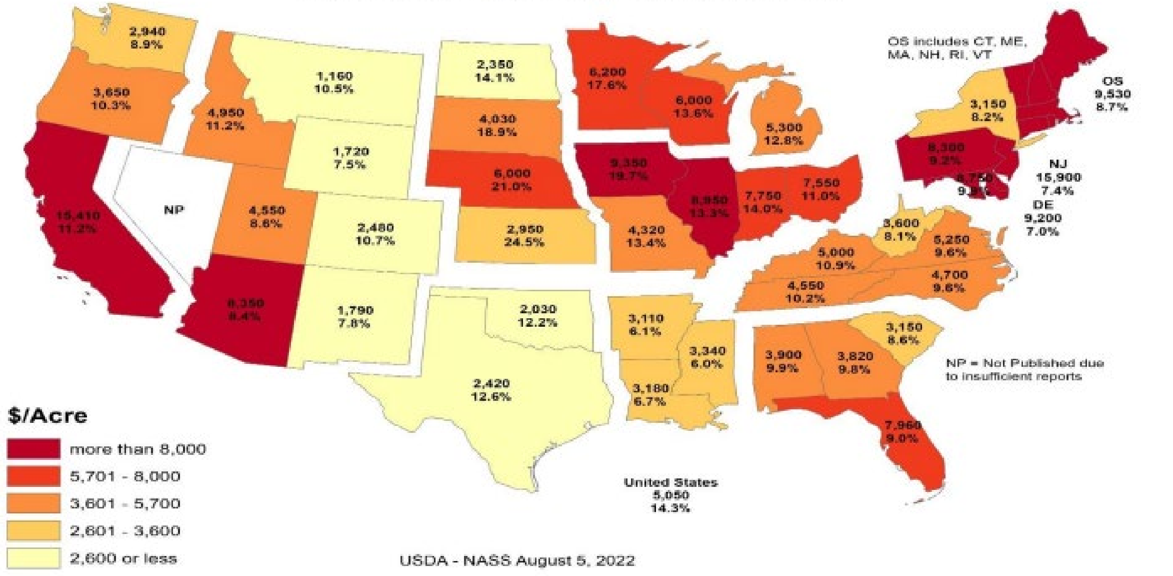
2022 Cropland Value by State

Dollars per Acre and Percent Change from 2021



Land Values 2022 Summary (August 2022)
USDA, National Agricultural Statistics Service

Source: USDA https://www.nass.usda.gov/Publications/Todays_Reports/reports/land0822.pdf

Reducing Input Costs

- Not an easy task.
  - Soil testing – know what you have.
  - Alternative nutrient sources – poultry litter, manure, other.
  - Eliminate products that are not contributing to sufficient yield gains relative to costs.
  - You will need a plan A, B, C…. If “typical” inputs are not available.
  - Crop rotation.
    - High input cost versus low input cost commodities.
    - Profitability comparison and mange price risk.
  - Crop share leases – balance the risk/reward.
  - Maximum Return to Nitrogen (MRTN).
  - Protect output prices / manage the margin.

Need for Risk Management

- For row crop producers, there are more risk management tools available to manage output price risk than input price risk.

- Risk management tools need to be utilized this winter/spring to avoid potential catastrophic outcomes.
  - Buy high input prices + corn & soybean price declines = substantial losses.
  - Price protection versus establishing a price.

PRICES AND PROFITABILITY

Prices and Profitability

- Cost of production
- Yield and price expectations
- Access to storage / drying facilities
- Crop insurance protection
- Risk management strategies vs. speculative strategies

Revenue		Quantity	Price	Total
		175	5.99	1,048.25
Total Revenue				1,048.25
Variable Expenses				
	Seed	32	3.60	115.20
	Fertilizer & Lime	1	243.00	243.00
	Chemical	1	64.79	64.79
	Crop Scout or Consultant	1	18.00	18.00
	Repair & Maintenance	1	43.89	43.89
	Fuel, Oil & Filter	1	29.80	29.80
	Operator Labor	1	13.98	13.98
	Crop Insurance	1	21.47	21.47
	Operating Interest	621	0.08	24.05
Total Variable Expenses				**574.18**
Return Above Variable Expenses				474.07
Fixed Expenses				
	Machinery			
	Capital Recovery	1	120.73	120.73
	General Overhead	1	20	20.00
	Cash Rent	1	120	120.00
	Management Labor	1	25	25.00
Total Fixed Expenses				**285.73**
Total Expenses				**859.92**
Return Above Specified Expenses				**188.33**

2023 Corn Budget

What's your projected cost of production?

Track actual versus budgeted.

Use your budget and actual expenses top guide risk management and marketing decisions.

Corn - Net Return Table ($/acre); $860/acre Cost of Production

Yield (bu/acre)

Price ($/bu)	120	130	140	150	160	170	180	190	200	210	220	230
4.00	(380)	(340)	(300)	(260)	(220)	(180)	(140)	(100)	(60)	(20)	20	60
4.25	(350)	(307)	(265)	(222)	(180)	(137)	(95)	(52)	(10)	33	75	118
4.50	(320)	(275)	(230)	(185)	(140)	(95)	(50)	(5)	40	85	130	175
4.75	(290)	(242)	(195)	(147)	(100)	(52)	(5)	43	90	138	185	233
5.00	(260)	(210)	(160)	(110)	(60)	(10)	40	90	140	190	240	290
5.25	(230)	(177)	(125)	(72)	(20)	33	85	138	190	243	295	348
5.50	(200)	(145)	(90)	(35)	20	75	130	185	240	295	350	405
5.75	(170)	(112)	(55)	3	60	118	175	233	290	348	405	463
6.00	(140)	(80)	(20)	40	100	160	220	280	340	400	460	520
6.25	(110)	(47)	15	78	140	203	265	328	390	453	515	578
6.50	(80)	(15)	50	115	180	245	310	375	440	505	570	635
6.75	(50)	18	85	153	220	288	355	423	490	558	625	693
7.00	(20)	50	120	190	260	330	400	470	540	610	680	750
7.25	10	83	155	228	300	373	445	518	590	663	735	808
7.50	40	115	190	265	340	415	490	565	640	715	790	865
7.75	70	148	225	303	380	458	535	613	690	768	845	923

Corn Crop Insurance Prices

Commodity Year	Sales Closing Date	Projected Price Market Symbol	Projected Price Date Range	Projected Price	Price Volatility	Harvest Price Date Range	Harvest Price	Harvest less Projected
2011	3/15/2011	ZCZ11	02/01 - 02/28	$6.01	0.29	10/01 - 10/31	$6.32	$0.31
2012	3/15/2012	ZCZ12	02/01 - 02/29	$5.68	0.22	10/01 - 10/31	$7.50	$1.82
2013	3/15/2013	ZCZ13	02/01 - 02/28	$5.65	0.2	10/01 - 10/31	$4.39	($1.26)
2014	3/15/2014	ZCZ14	02/01 - 02/28	$4.62	0.19	10/01 - 10/31	$3.49	($1.13)
2015	3/15/2015	ZCZ15	02/01 - 02/28	$4.15	0.21	10/01 - 10/31	$3.83	($0.32)
2016	3/15/2016	ZCZ16	02/01 - 02/29	$3.86	0.17	10/01 - 10/31	$3.49	($0.37)
2017	3/15/2017	ZCZ17	02/01 - 02/28	$3.96	0.19	10/01 - 10/31	$3.49	($0.47)
2018	3/15/2018	ZCZ18	02/01 - 02/28	$3.96	0.15	10/01 - 10/31	$3.68	($0.28)
2019	3/15/2019	ZCZ19	02/01 - 02/28	$4.00	0.15	10/01 - 10/31	$3.90	($0.10)
2020	3/15/2020	ZCZ20	02/01 - 02/29	$3.88	0.15	10/01 - 10/31	$3.99	$0.11
2021	3/15/2021	ZCZ21	02/01 - 02/28	$4.58	0.23	10/01 - 10/31	$5.37	$0.79
2022	**3/15/2022**	**ZCZ22**	**02/01 - 02/28**	**$5.90**	**0.23**	**10/01 - 10/31**	**$6.86**	**$0.96**

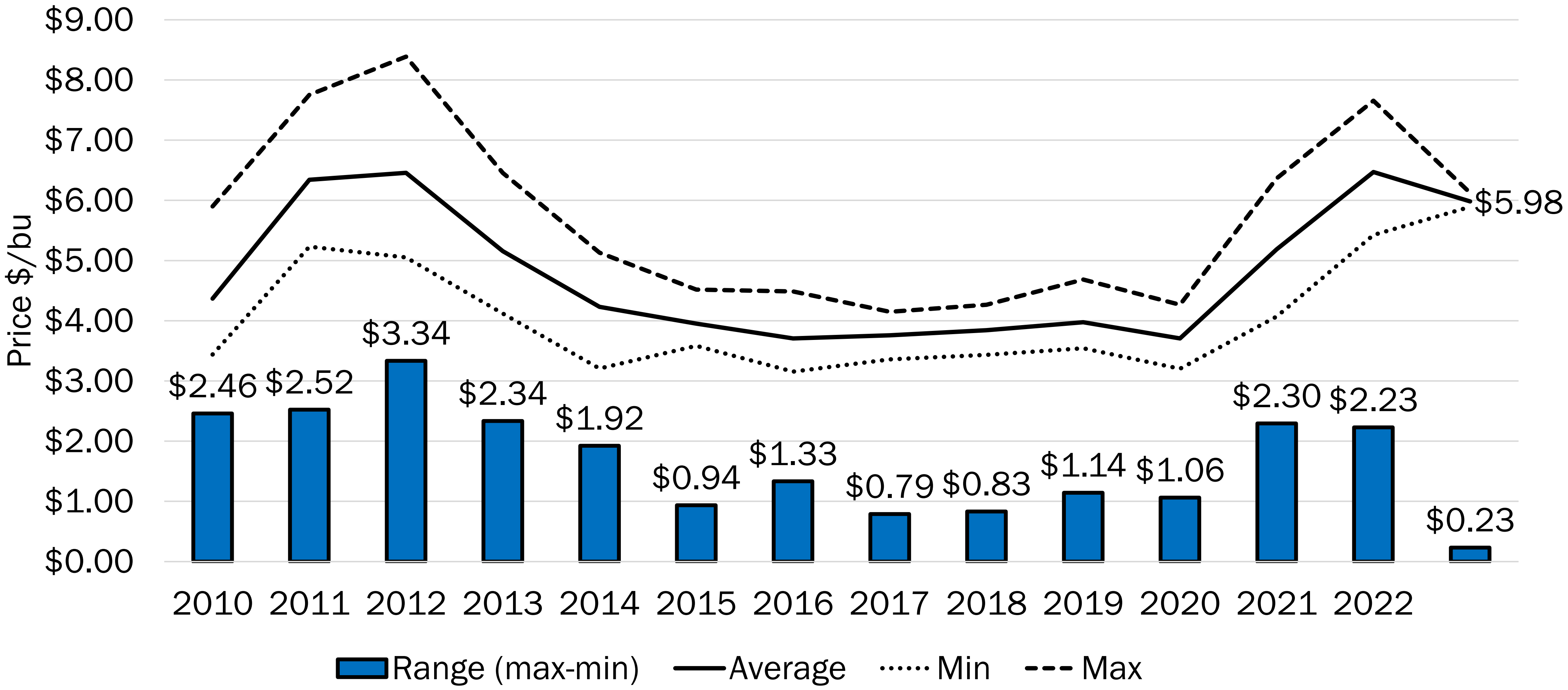
Source: USDA RMA https://prodwebnlb.rma.usda.gov/apps/pricediscovery

Soybean Crop Insurance Prices

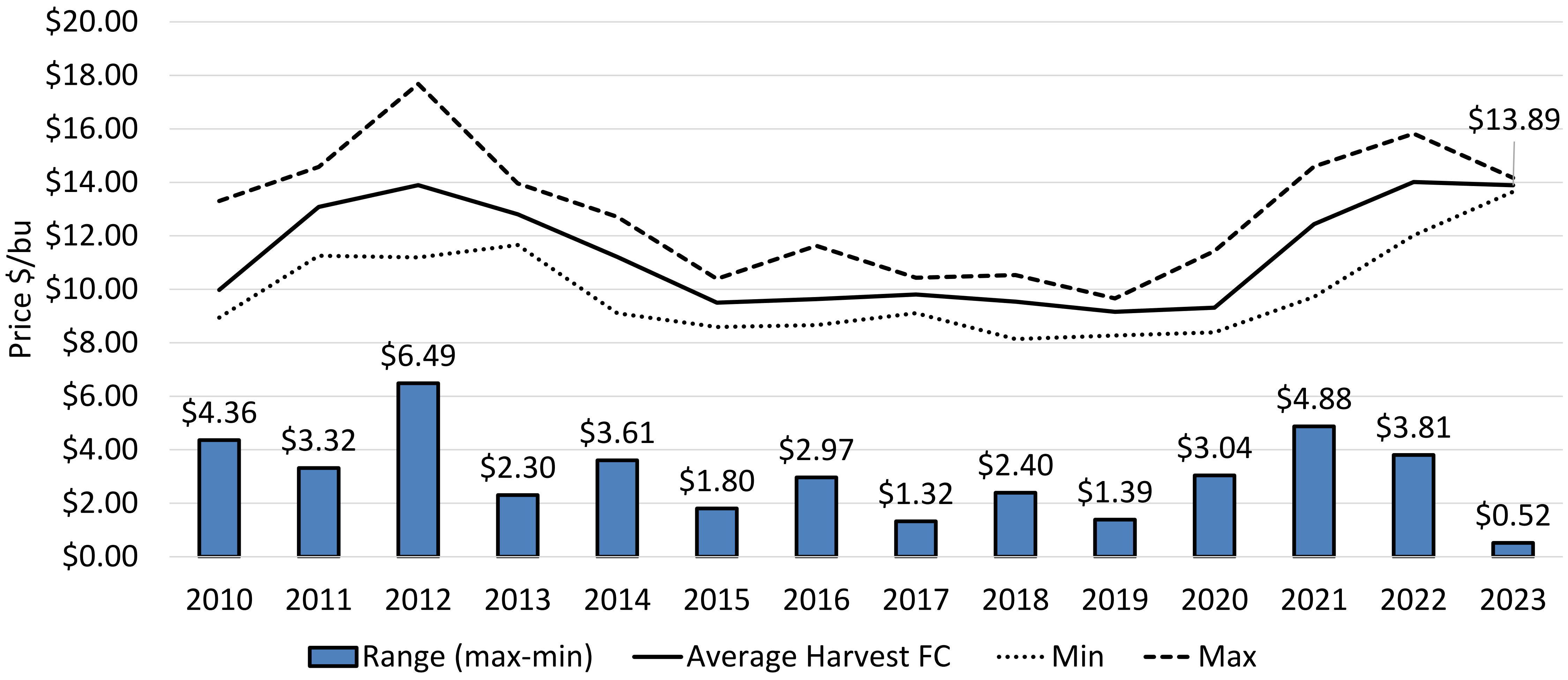
Commodity Year	Sales Closing Date	Market Symbol	Projected Price Date Range	Projected Price	Price Volatility	Harvest Price Date Range	Market Symbol	Harvest Price	Harvest less Projected
2011	3/15/2011	ZSF12	02/01 - 02/28	$13.52	0.24	10/01 - 10/31	ZSF12	$11.71	($1.81)
2012	3/15/2012	ZSF13	02/01 - 02/29	$12.60	0.18	10/01 - 10/31	ZSF13	$14.48	$1.88
2013	3/15/2013	ZSF14	02/01 - 02/28	$12.91	0.18	10/01 - 10/31	ZSF14	$12.93	$0.02
2014	3/15/2014	ZSF15	02/01 - 02/28	$11.41	0.13	10/01 - 10/31	ZSF15	$10.32	($1.09)
2015	3/15/2015	ZSF16	02/01 - 02/28	$9.78	0.16	10/01 - 10/31	ZSF16	$8.66	($1.12)
2016	3/15/2016	ZSF17	02/01 - 02/29	$8.90	0.13	10/01 - 10/31	ZSF17	$10.07	$1.17
2017	3/15/2017	ZSF18	02/01 - 02/28	$10.23	0.15	10/01 - 10/31	ZSF18	$9.88	($0.35)
2018	3/15/2018	ZSF19	02/01 - 02/28	$10.21	0.13	10/01 - 10/31	ZSF19	$8.83	($1.38)
2019	3/15/2019	ZSF20	02/01 - 02/28	$9.63	0.12	10/01 - 10/31	ZSF20	$9.12	($0.51)
2020	3/15/2020	ZSF21	02/01 - 02/29	$9.21	0.11	10/01 - 10/31	ZSF21	$11.45	$2.24
2021	3/15/2021	ZSF22	02/01 - 02/28	$11.81	0.19	10/01 - 10/31	ZSF22	$12.43	$0.62
2022	**3/15/2022**	**ZSF23**	**02/01 - 02/28**	**$14.30**	**0.2**	**10/01 - 10/31**	**ZSF23**	**$14.44**	**$0.14**

Source: USDA RMA https://prodwebnlb.rma.usda.gov/apps/pricediscovery

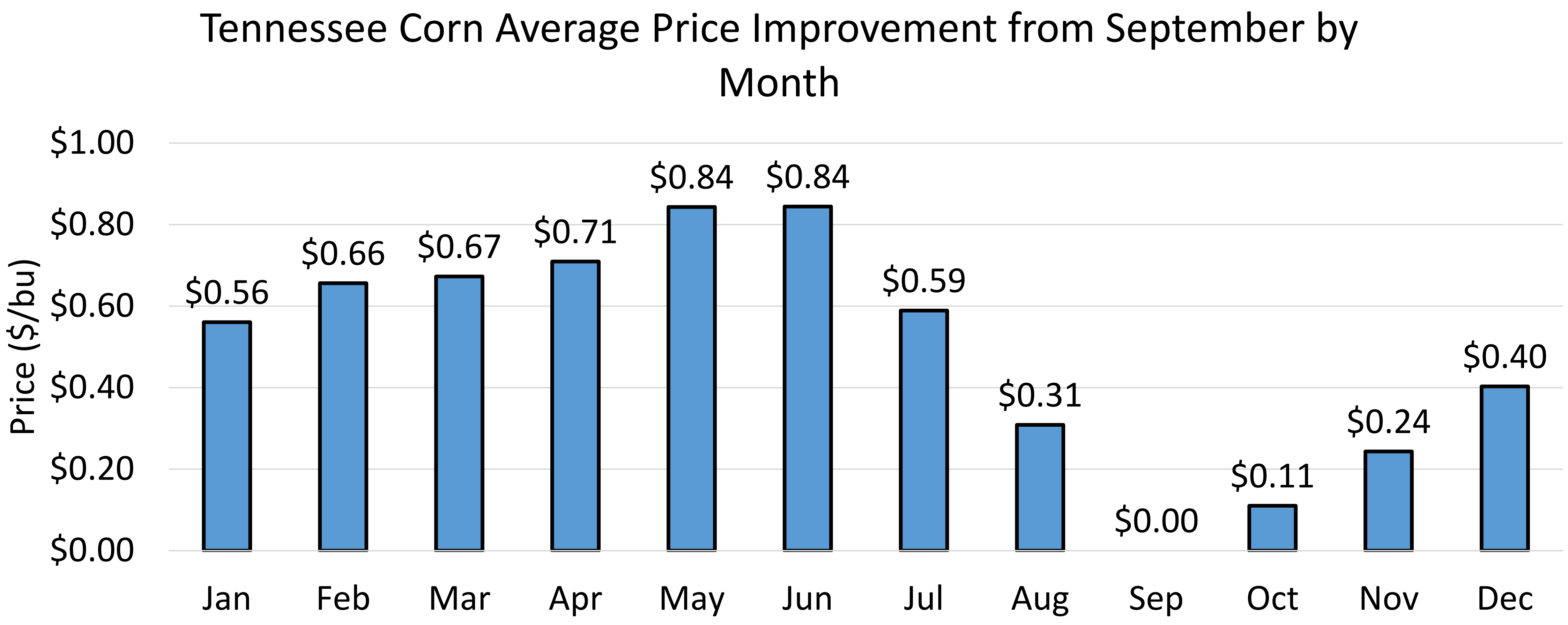
December Corn Futures Contract, Dec 1 to Expiration, 2010-2023



November Soybean Futures Contract, Nov 1 to Expiration, 2010-2023



10-year Average Price Improvement



Source: https://www.ams.usda.gov/market-news/state-grain-reports

Soybean

	2021/22 Est.	2022/23 Projected January	Change 2022/23-2021/22
Planted (Million)	87.2	**87.5**	0.3
Harvested (Million)	86.3	**86.3**	0.0
U.S. Avg. Yield (Bu/Acre)	51.7	**49.5**	-2.2
Beg. Stocks	257	**274**	17
Production	4,465	**4,276**	-189
Imports	16	**15**	-1
Total Supply	4,738	**4,566**	-172
Crushing	2,204	**2,245**	41
Exports	2,158	**1,990**	-168
Seed and Residual	103	**120**	17
Total Use	4,464	**4,355**	-109
U.S. Ending Stocks	**274**	**210**	**-64**
Foreign Stocks	3,334	**3,594**	260
U.S. Average Season Price ($/Bu)	$13.30	**$14.20**	$0.90
U.S. Stocks/Use	**6.14%**	**4.82%**	**-1.32%**

Corn

	2021/22 Est.	2022/23 Projected January	Change 2022/23-2021/22
Planted (Million)	93.3	**88.6**	-4.7
Harvested (Million)	85.3	**79.2**	-6.1
U.S. Avg. Yield (Bu/Acre)	176.7	**173.3**	-3.4
Beg. Stocks	1,235	**1,377**	142
Production	15,074	**13,730**	-1,344
Imports	24	**50**	26
Total Supply	16,333	**15,157**	-1,176
Feed and Residual	5,718	**5,275**	-443
Ethanol	5,326	**5,275**	-51
Food, Seed & Industrial	1,440	**1,440**	0
Exports	2,471	**1,925**	-546
Total Use	14,956	**13,915**	-1,041
U.S. Ending Stocks	**1,377**	**1,242**	**-135**
Foreign Stocks	10,668	**10,428**	-240
U.S. Avg. Price ($/Bu)	$6.00	**$6.70**	$0.70
U.S. Stocks/Use	**9.21%**	**8.93%**	**-0.28%**

Source: USDA WASDE https://www.usda.gov/oce/commodity/wasde

Corn Old Crop Versus New Crop

Contract	Last	Change
+ ZCY00 (Cash)	678-6s	-9-0
+ ZCH23 (Mar '23)	679-4	-1-6
+ ZCK23 (May '23)	677-2	-2-0
+ ZCN23 (Jul '23)	666-0	-2-0
+ ZCU23 (Sep '23)	615-0	-1-4
+ ZCZ23 (Dec '23)	600-2	-0-6
+ ZCH24 (Mar '24)	607-2	-0-4
+ ZCK24 (May '24)	610-4s	-2-2
+ ZCN24 (Jul '24)	608-4s	-2-4

Source: https://www.barchart.com/futures/grains?viewName=main

Soybean Old Crop Versus New Crop

Contract	Last	Change
ZSY00 (Cash)	1502-0s	-14-0
ZSH23 (Mar '23)	1519-2	-5-2
ZSK23 (May '23)	1515-0	-6-4
ZSN23 (Jul '23)	1508-0	-7-0
ZSQ23 (Aug '23)	1469-4	-7-0
ZSU23 (Sep '23)	1401-2	-6-2
ZSX23 (Nov '23)	1368-2	-6-0
ZSF24 (Jan '24)	1372-2	-4-4
ZSH24 (Mar '24)	1360-0	-5-0

Source: https://www.barchart.com/futures/grains?viewName=main

Take Home Message

- The general economy has major warning signs for 2023-2024.
- Farm Bill extension possible (likely)
- Cost of production remains elevated compared to previous years.
- Global influences continue to affect markets.
- Corn and soybean price volatility is likely to persist in 2023.
- Storage + price risk management pays, consider your options.

January 19, 2023
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THANK YOU