

Managing Price Risk in Volatile Markets

February 8, 2023

Cotton Focus

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Overview



Macro Economic Conditions

Supply and Demand

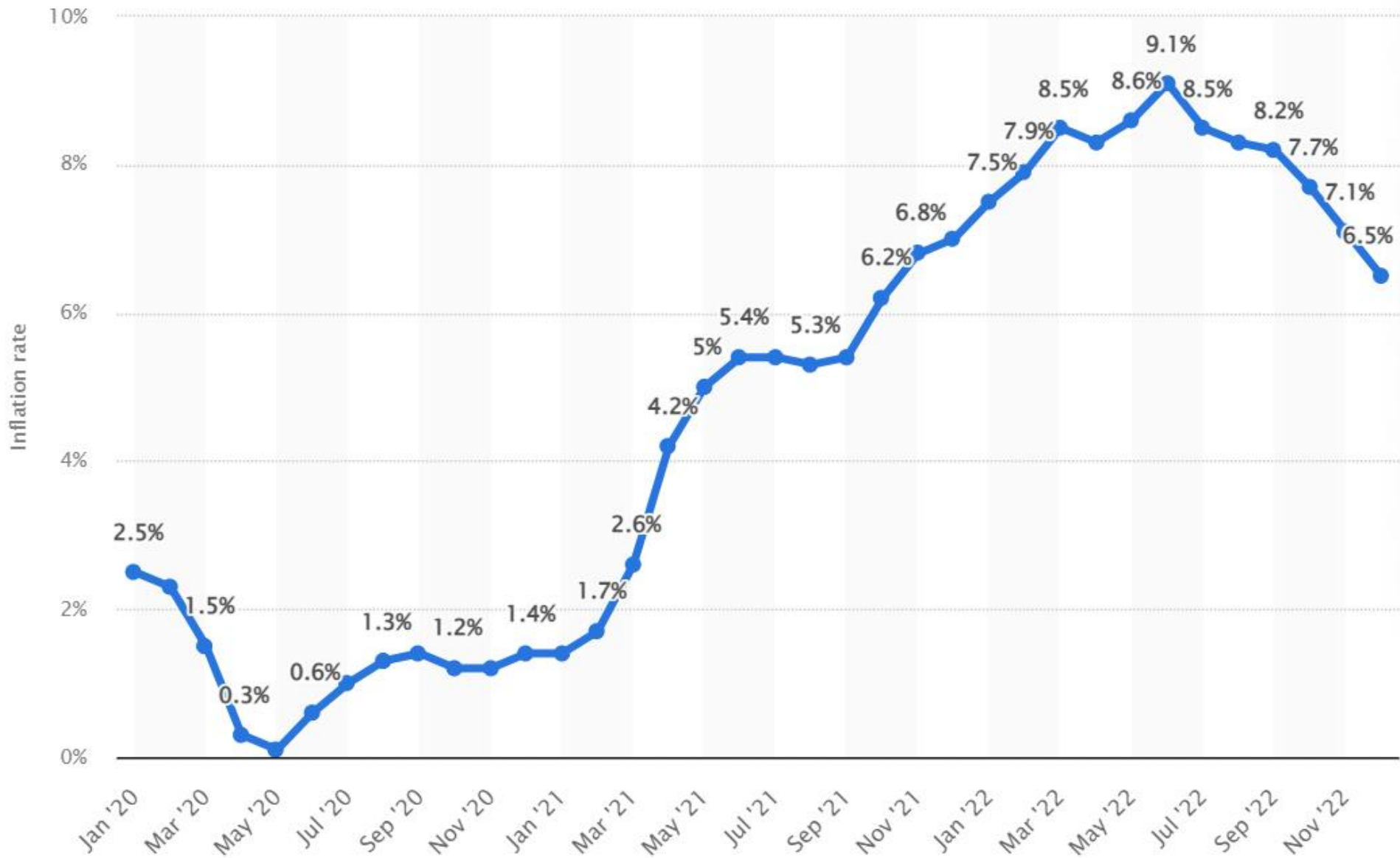
Input Prices and Cost of Production

Cotton Prices and Risk Management

Inflation
Interest Rates
GDP Growth
Government Spending
Labor Force
Exchange Rates



MACRO ECONOMIC CONDITIONS



Monthly Inflation Rate 2020-2022

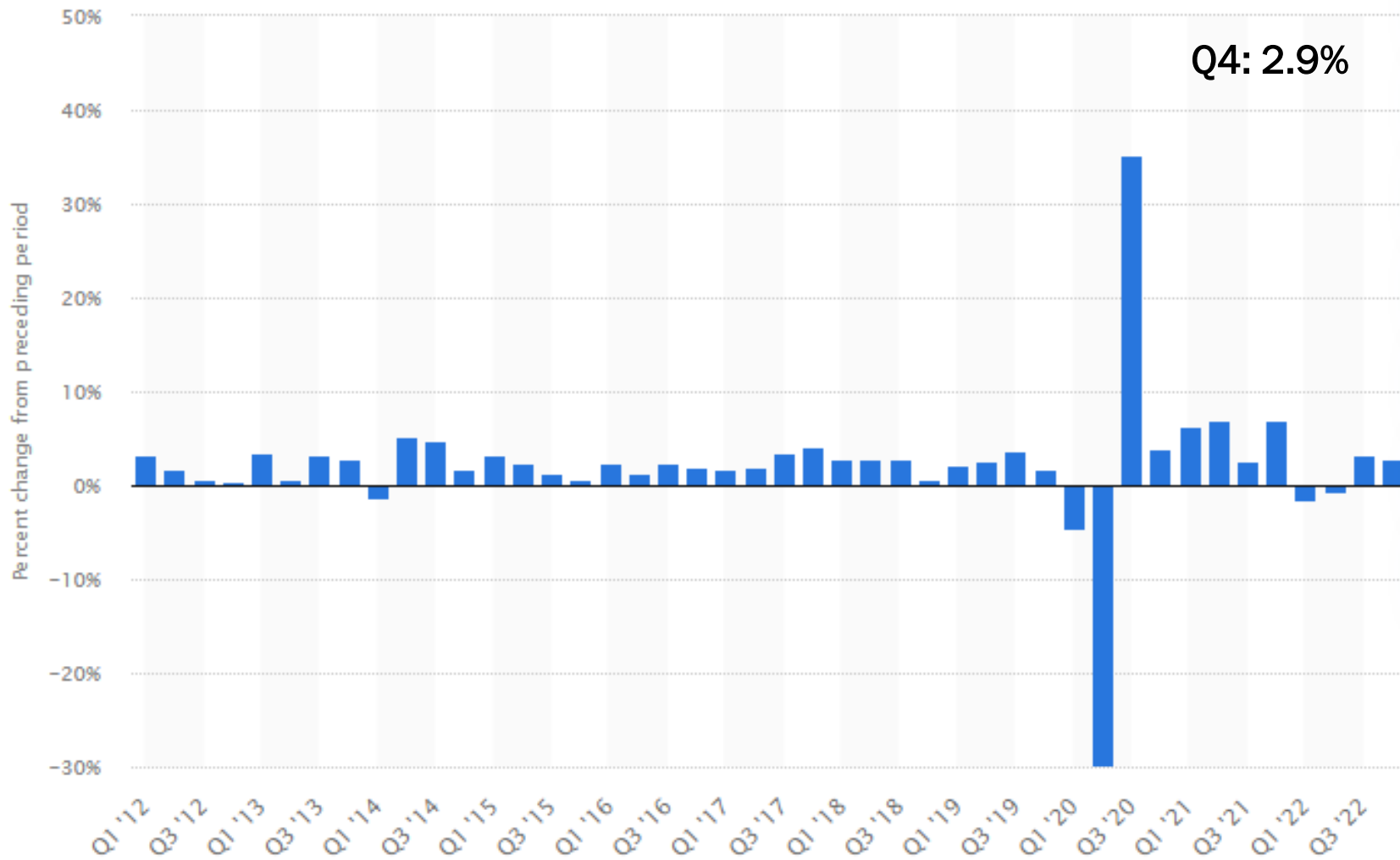
Source: <https://www.statista.com/statistics>

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Bank Prime Loan Rate



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

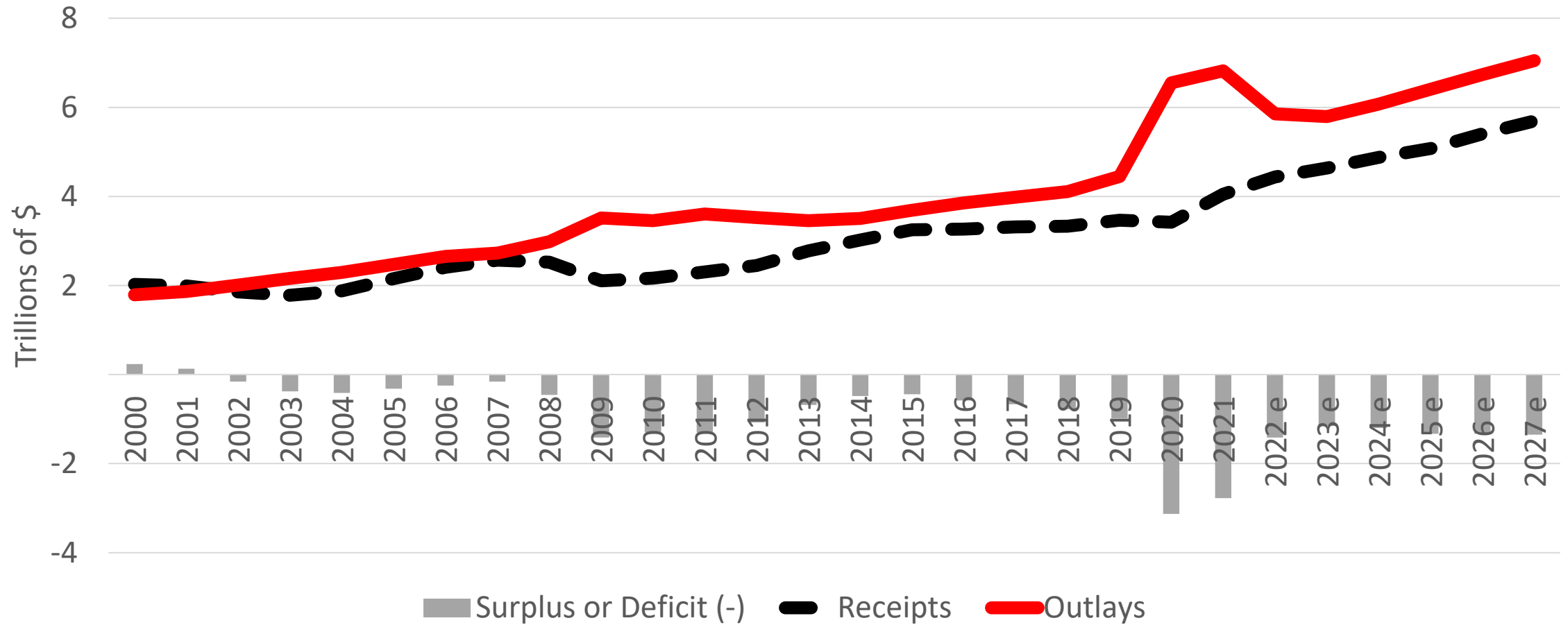


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Annualized U.S. GDP Growth by Quarter, 2012-2022

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

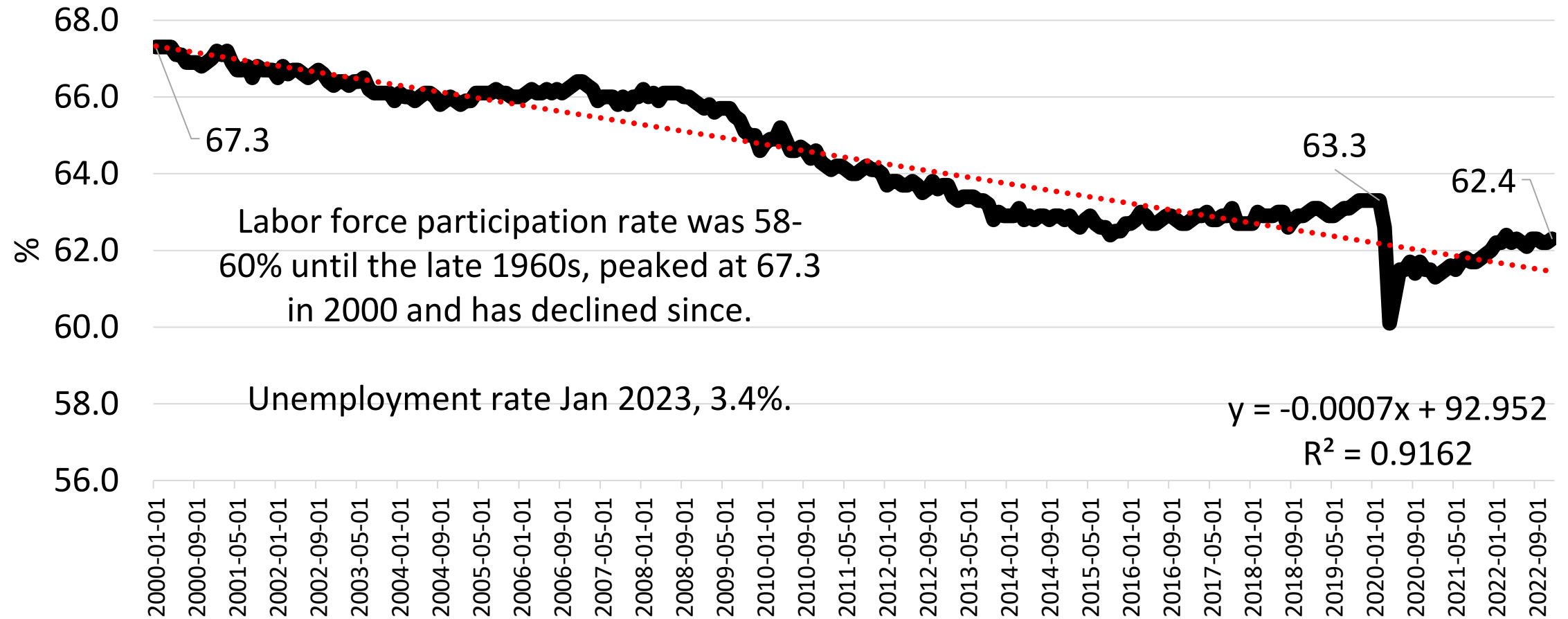
Government Receipts, Outlays, and Deficit, 2000-2027e



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

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U.S. Labor Force Participation Rate, 2000-2023



Source: <https://fred.stlouisfed.org/series/CIVPART>

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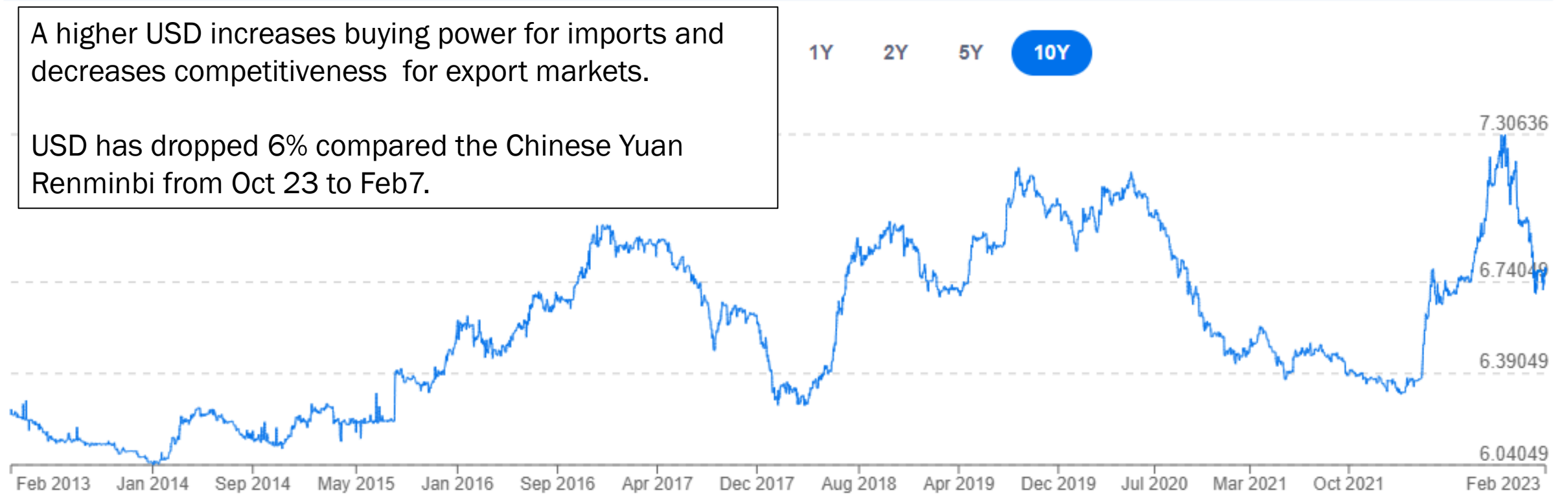
USD to CNY Chart +9.00% (10Y)

• 1 USD = 6.79315 CNY Feb 7, 2023, 17:59 UTC

US Dollar to Chinese Yuan Renminbi

A higher USD increases buying power for imports and decreases competitiveness for export markets.

USD has dropped 6% compared the Chinese Yuan Renminbi from Oct 23 to Feb 7.



Macro Economic Takeaways

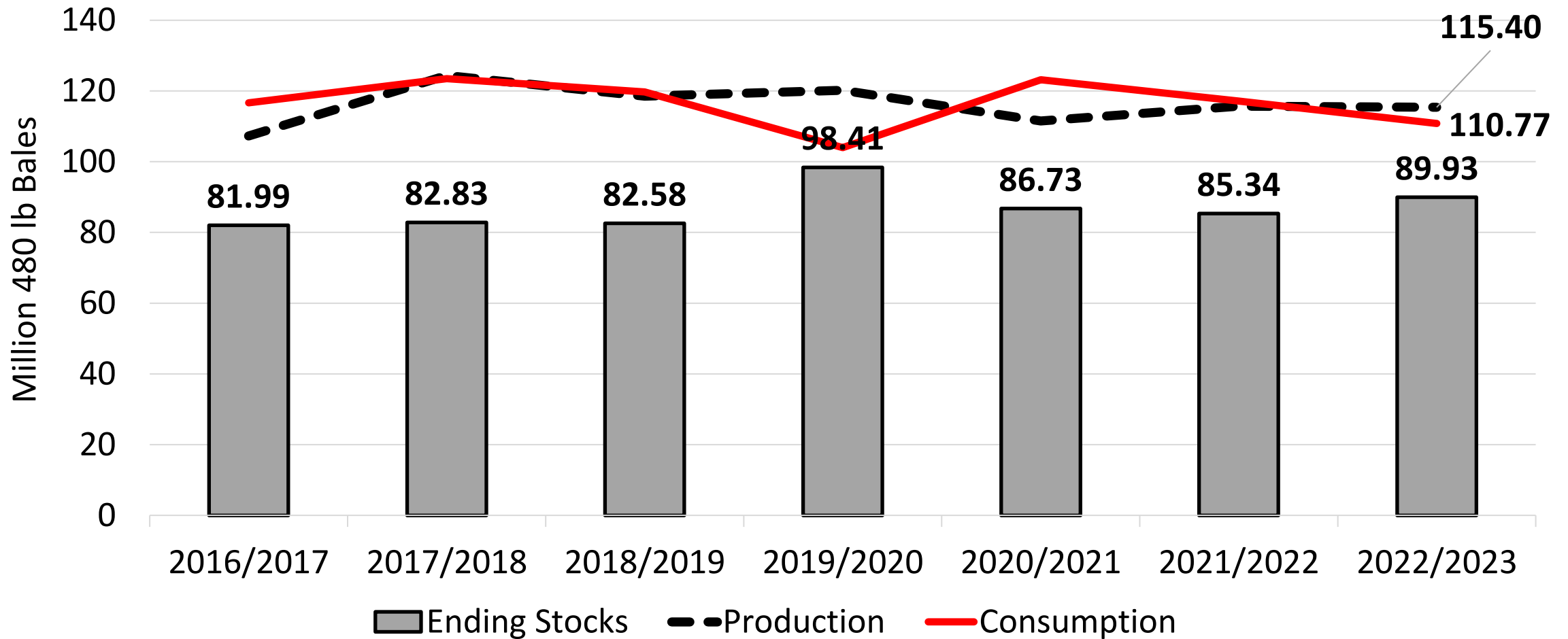
- Recession in 2023 or 2024? Severity?
- Impact of higher interest rates on operating expenses and capital purchases.
- USD direction and attendant impact on export and import purchasing power.
- Government spending on ad hoc versus Farm Bill.



Global
U.S.
Exports
Ending Stocks

SUPPLY AND DEMAND

Global Cotton Production, Consumption, and Ending Stocks, 2016/17 to 2022/23

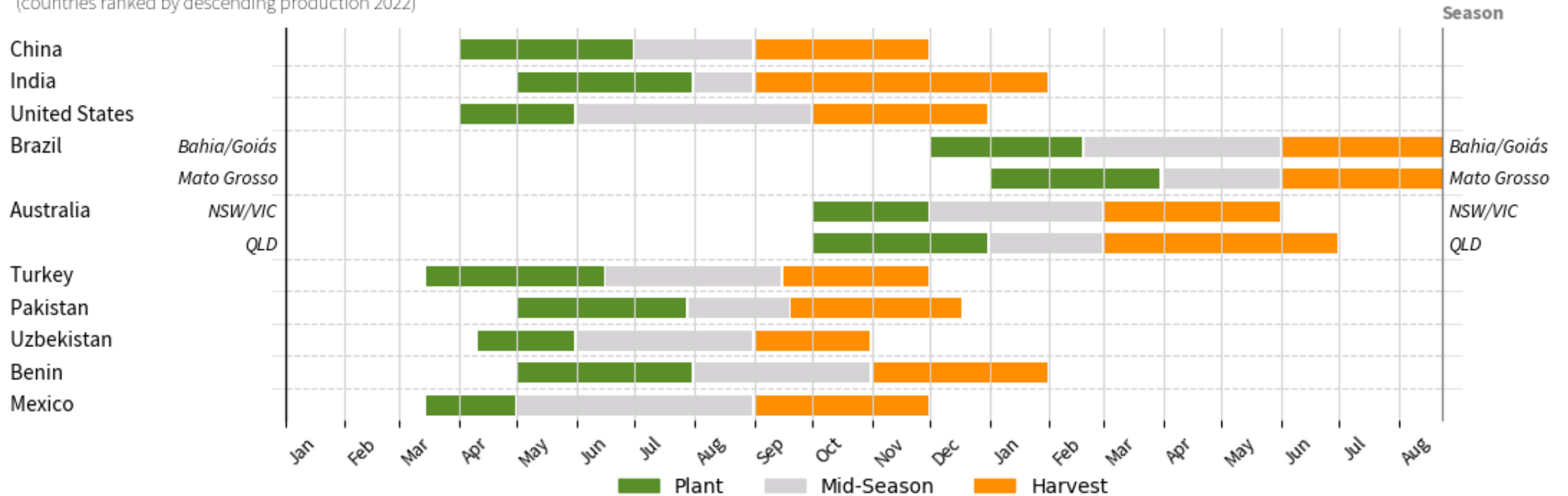


Source: USDA FAS - <https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery>

Cotton Production Calendar

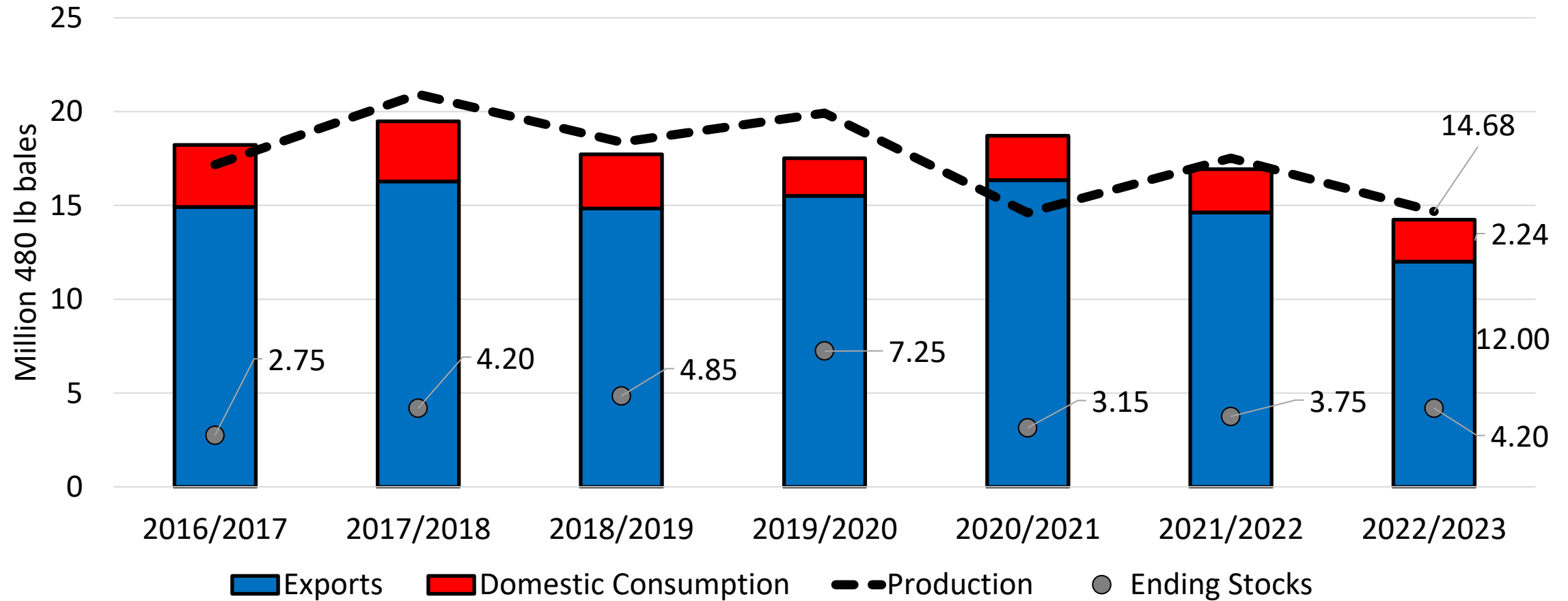
Cotton

(countries ranked by descending production 2022)



USDA FAS: <https://ipad.fas.usda.gov/cropexplorer/cropview/commodityView.aspx?cropid=2631000>

U.S. Cotton Production, Consumption, Exports, and Ending Stocks, 2016/17 to 2022/23



Source: USDA FAS - <https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery>

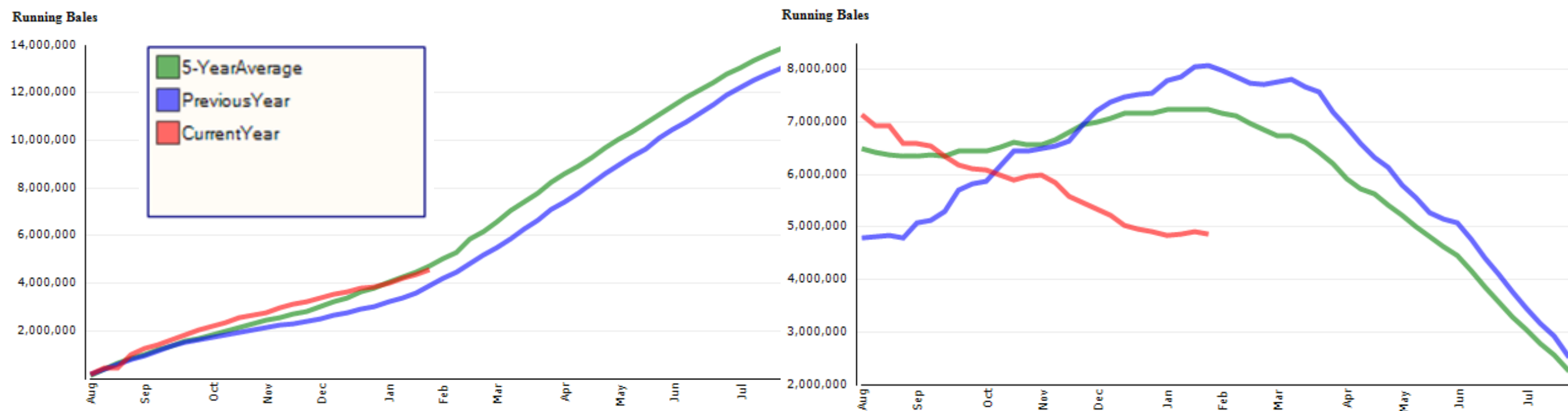
Export Sales, Upland Cotton

Accumulated Exports - World Total

Selected Year: 2022-2023 as of 01/26/2023

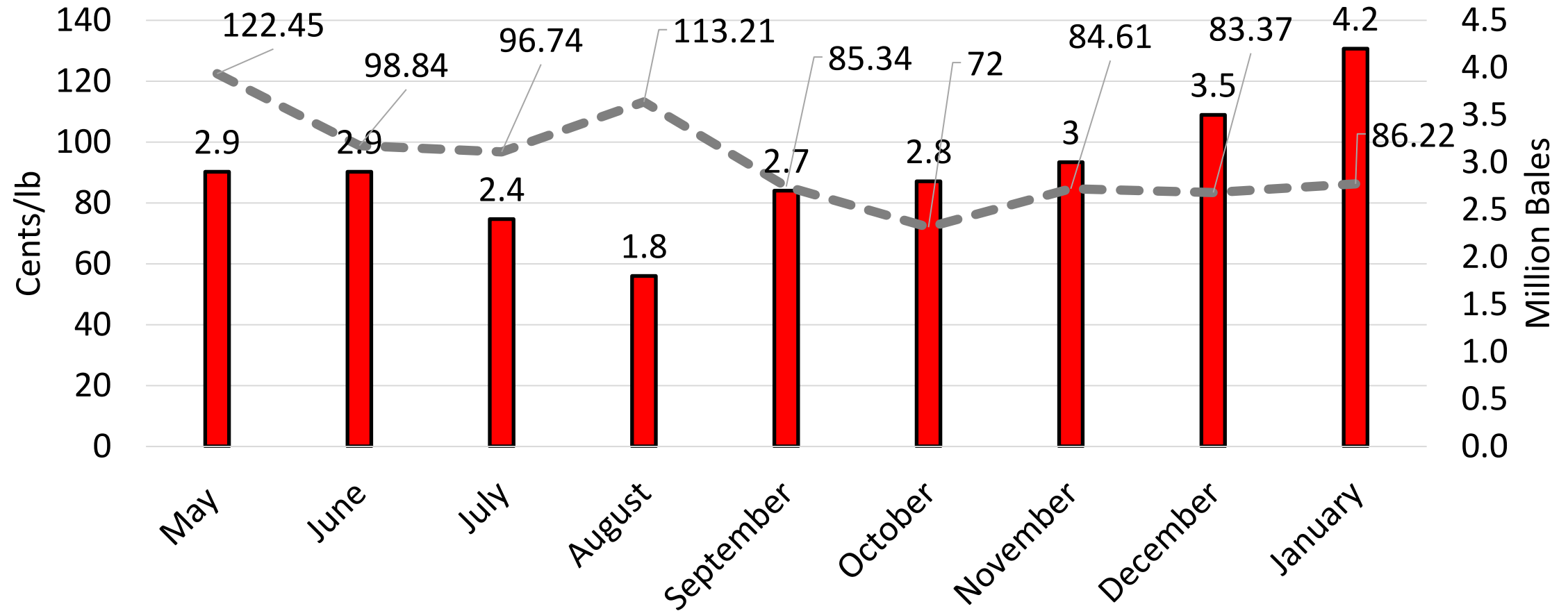
Outstanding Sales - World Total

Selected Year: 2022-2023 as of 01/26/2023



Source: USDA FAS - <https://apps.fas.usda.gov/esquery/egraph5y.aspx>

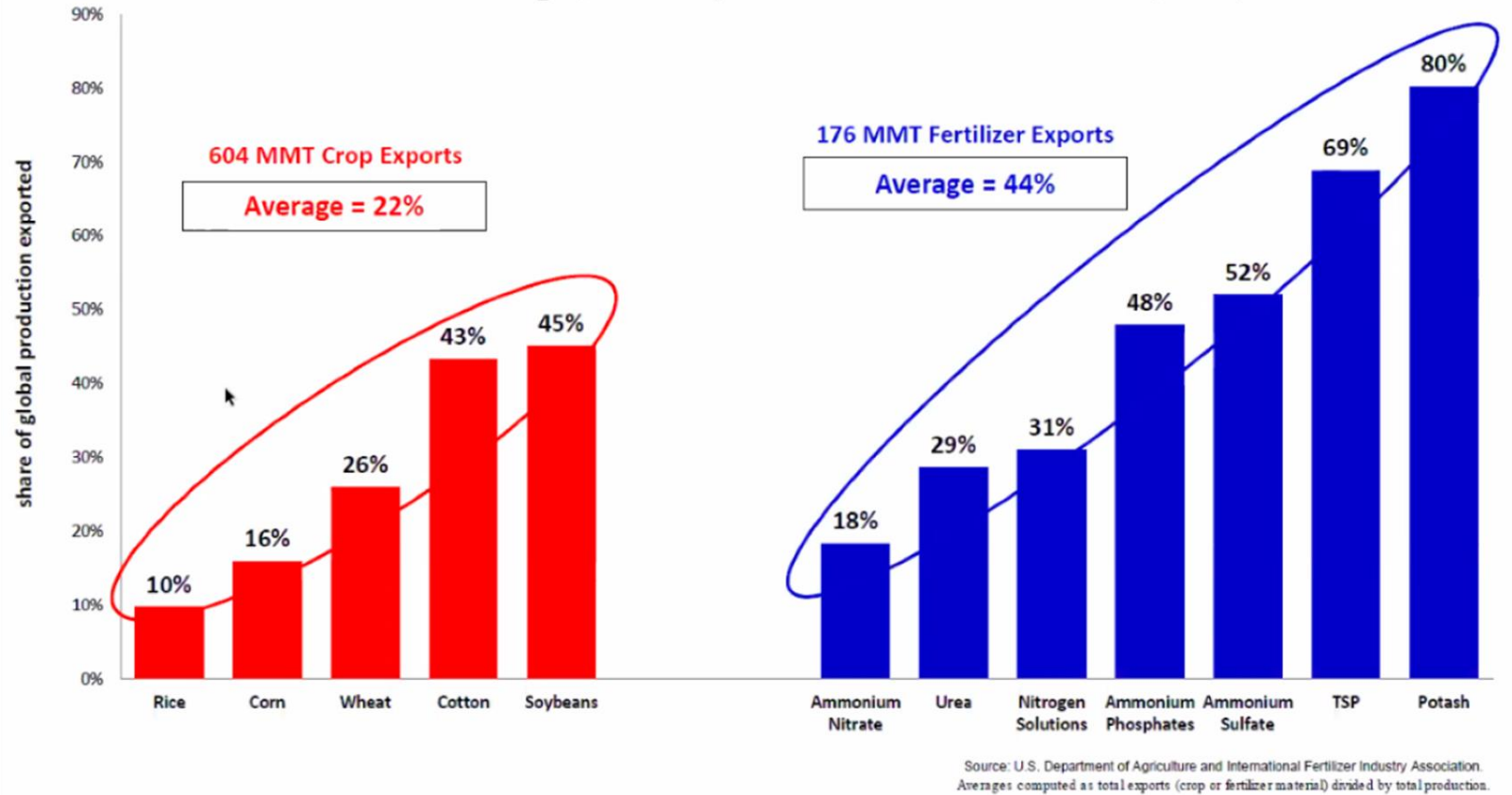
USDA Projected U.S. Ending Stocks and Nearby Futures Price by Month for 2022/2023 Marketing Year



Source: USDA FAS - <https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery>

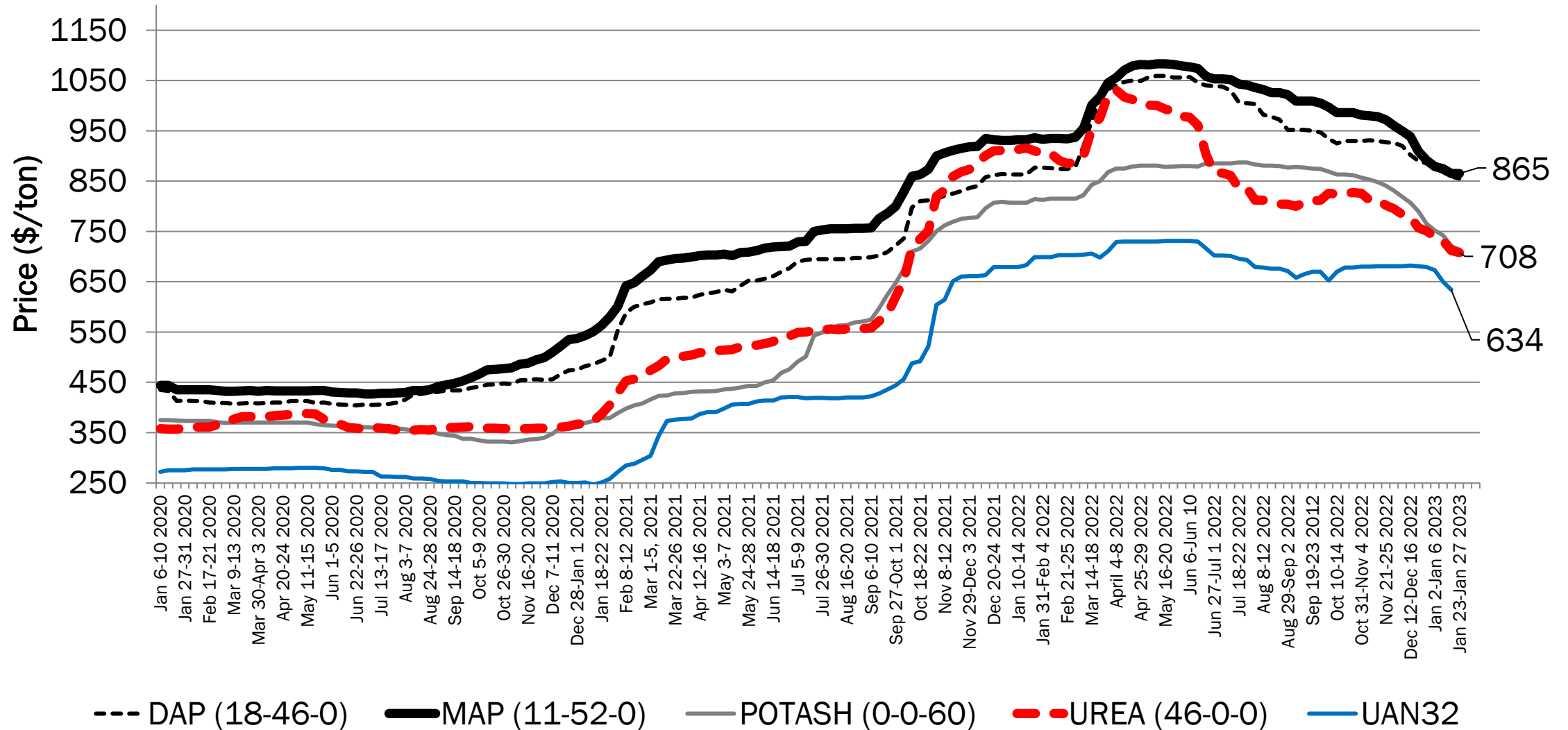
Fertilizer
Land
Machinery
Diesel Price
Interest

Share of World Crop (2020/21) and Fertilizer Products (2020) Traded



INPUT PRICES AND COST OF PRODUCTION

Select Fertilizer Prices, 2020-2023

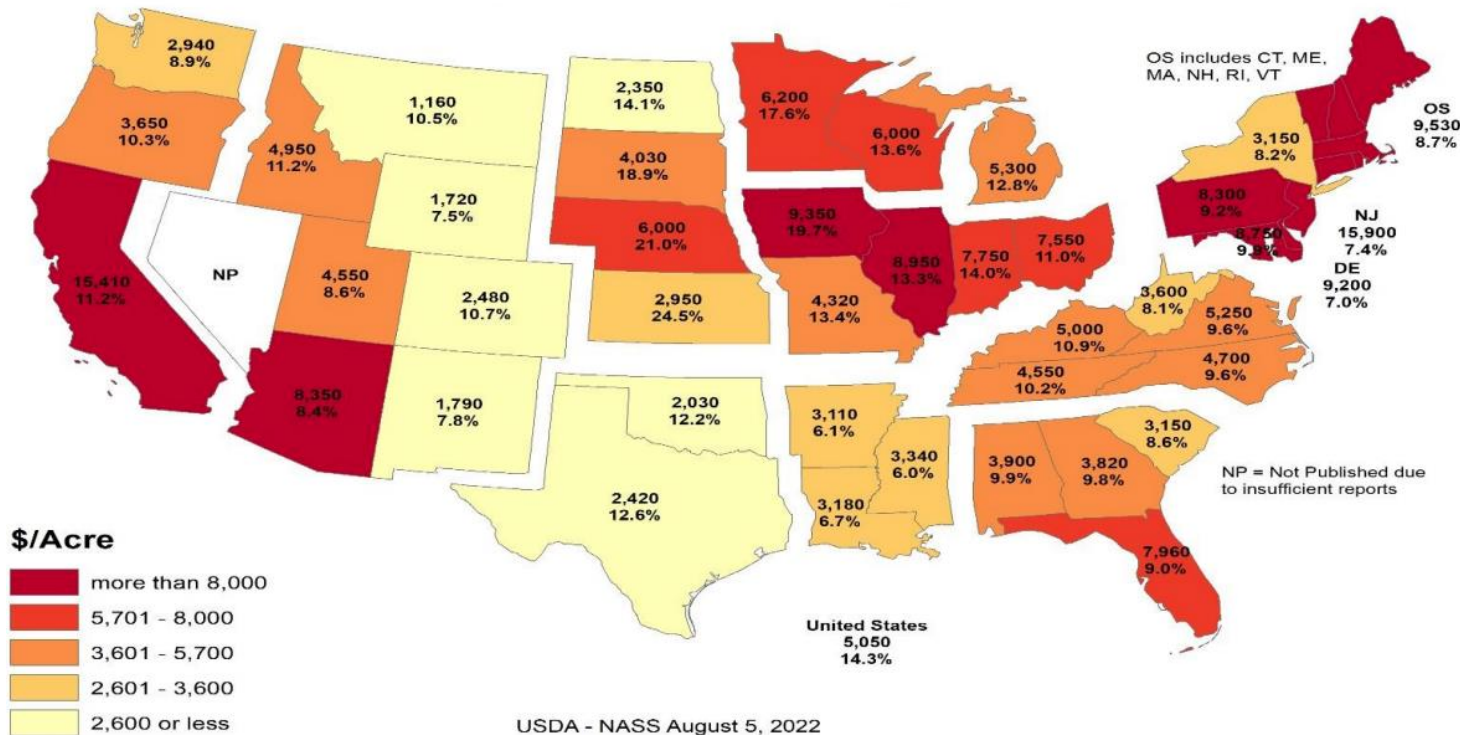


Data Source: DTN
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Land and Cash Rental Rates

2022 Cropland Value by State

Dollars per Acre and Percent Change from 2021



In Tennessee, cropland cash rents averaged **\$111/acre** (\$21/acre to **\$187/acre**). NASS.

1/4 Share Cotton:

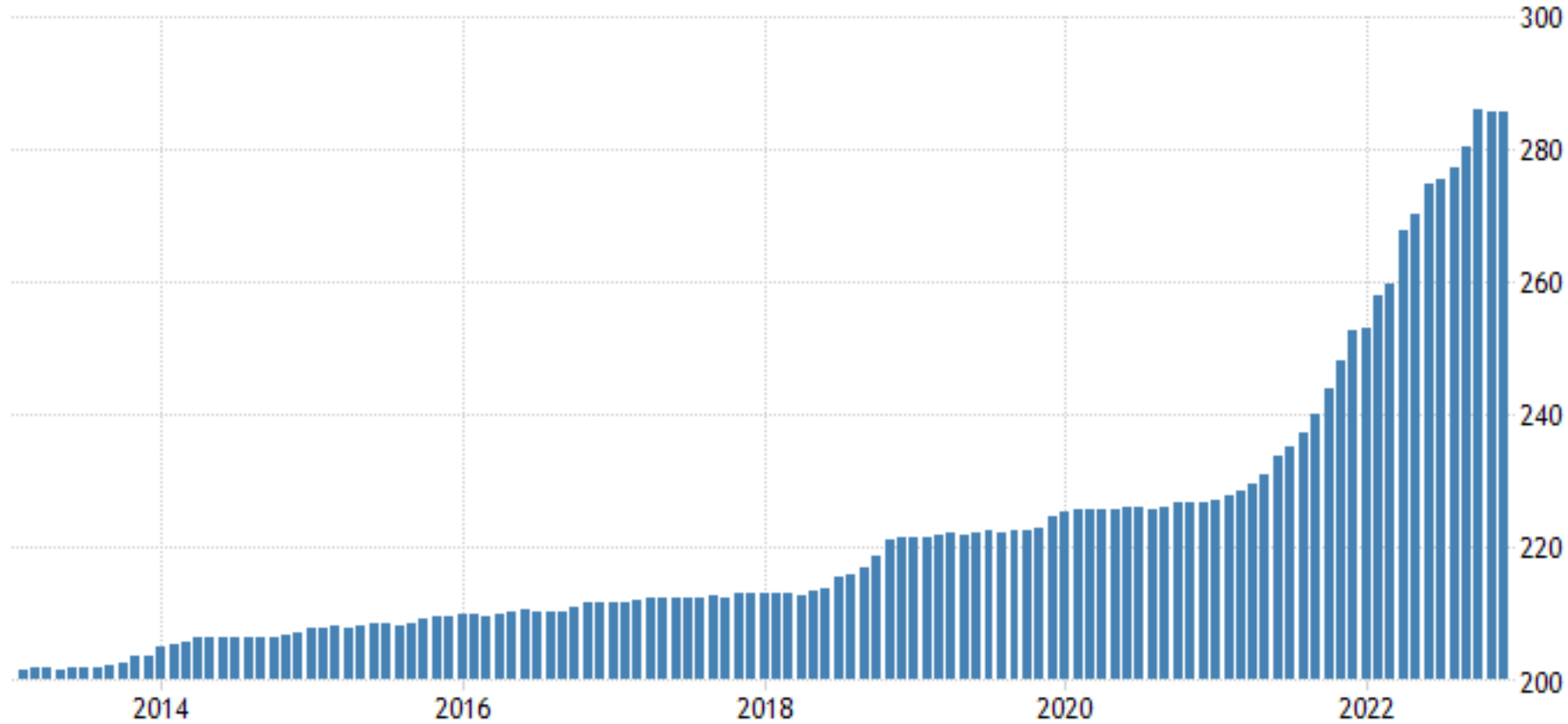
2022: 1,100 lb/acre at \$1.01/lb ~ **\$278/acre**

2023?: 1,100 lb/acre at \$0.82/lb ~ **\$226/acre**

Risk exposure and input cost structure between landowner and producer.

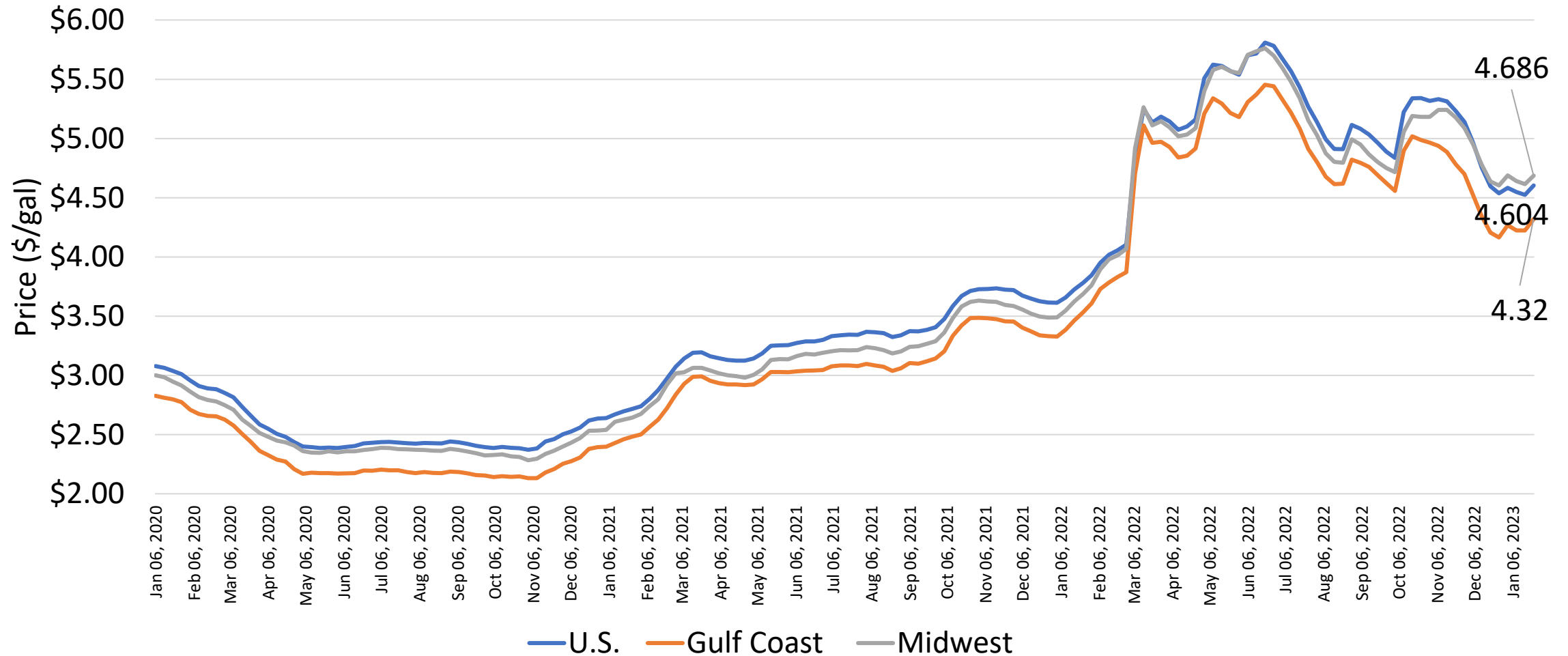
Land Values 2022 Summary (August 2022)
USDA, National Agricultural Statistics Service

Producer Price Index by Industry: Farm Machinery and Equipment Manufacturing was 285.735 Index Dec 1982=100 in December of 2022



Farm machinery in December 2022 was up ~ 30% compared to 2020.

Weekly Retail No 2 Diesel Prices (\$/gal), 2020-2023



Data Source: <https://www.eia.gov/petroleum/gasdiesel/>

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Rising interest rates will cost you money

\$1,250,000 Operating Utilization

Interest Rate	3.25%	5.5%	7.5%
Interest	\$40,750	\$68,750	\$93,750
Change	-	\$28,000	\$53,000
Increase (\$/acre)	-	\$11.20	\$21.20

Assumptions: 2,500 acres.

2023 Cotton, No-Till, Non-Irrigated Budget

	<u>Quantity</u>	<u>Price</u>	<u>Total</u>
Cotton	1,130	\$0.83	\$937.90
Gross Revenue (\$/Acre)			\$937.90
Seed			\$106.00
Wrap			\$30.51
Fertilizer & Lime			\$211.15
Chemical			\$175.30
Crop Scout or Consultant			\$12.00
Repair & Maintenance			\$32.66
Fuel, Oil & Filter			\$38.28
Operator Labor			\$15.44
Crop Insurance			\$14.64
Operating Interest			\$24.64
Variable Expenses			\$660.63
Returns Over Variable			\$277.27
Machinery Capital Recovery			\$174.04
General Overhead			\$20.00
Cash Rent			\$111.00
Management Labor			\$25.00
Fixed Expenses			\$330.04
Total Expenses			\$990.67
Returns Over Specified			-\$52.77

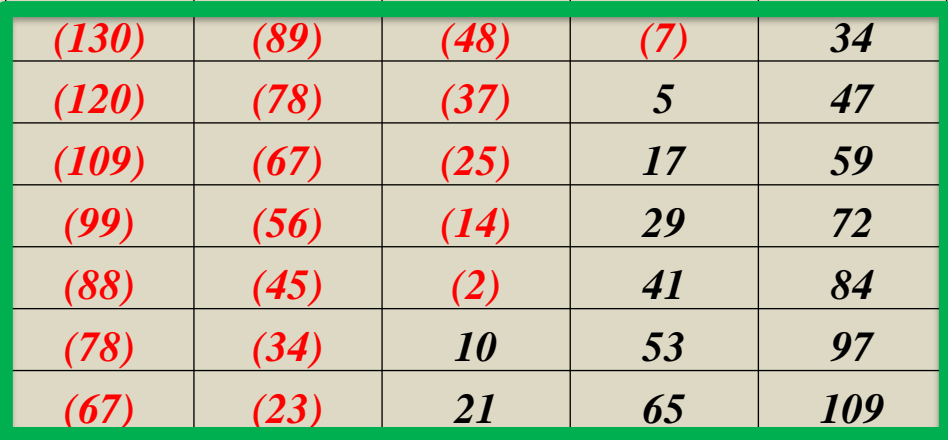
What is your cost of production?

How much production do you need to cover a specified expense?
 Ex) Fertilizer
 \$211/acre at \$0.86
 cotton = 245
 lb/acre

Cotton - Net Return Table (\$/acre) (\$991/acre COP)

Yield (lb/acre)

		900	950	1,000	1,050	1,100	1,150	1,200	1,250	1,300	1,350	1,400
Price (cent/lb)	78	(289)	(250)	(211)	(172)	(133)	(94)	(55)	(16)	23	62	101
	79	(280)	(241)	(201)	(162)	(122)	(83)	(43)	(4)	36	76	115
	80	(271)	(231)	(191)	(151)	(111)	(71)	(31)	9	49	89	129
	81	(262)	(222)	(181)	(141)	(100)	(59)	(19)	22	62	103	143
	82	(253)	(212)	(171)	(130)	(89)	(48)	(7)	34	75	116	157
	83	(244)	(203)	(161)	(120)	(78)	(37)	5	47	88	130	171
	84	(235)	(193)	(151)	(109)	(67)	(25)	17	59	101	143	185
	85	(226)	(184)	(141)	(99)	(56)	(14)	29	72	114	157	199
	86	(217)	(174)	(131)	(88)	(45)	(2)	41	84	127	170	213
	87	(208)	(165)	(121)	(78)	(34)	10	53	97	140	184	227
	88	(199)	(155)	(111)	(67)	(23)	21	65	109	153	197	241
	89	(190)	(146)	(101)	(57)	(12)	33	77	122	166	211	255
	90	(181)	(136)	(91)	(46)	(1)	44	89	134	179	224	269
	91	(172)	(127)	(81)	(36)	10	56	101	147	192	238	283
92	(163)	(117)	(71)	(25)	21	67	113	159	205	251	297	
93	(154)	(108)	(61)	(15)	32	79	125	172	218	265	311	





COTTON PRICES AND RISK MANAGEMENT

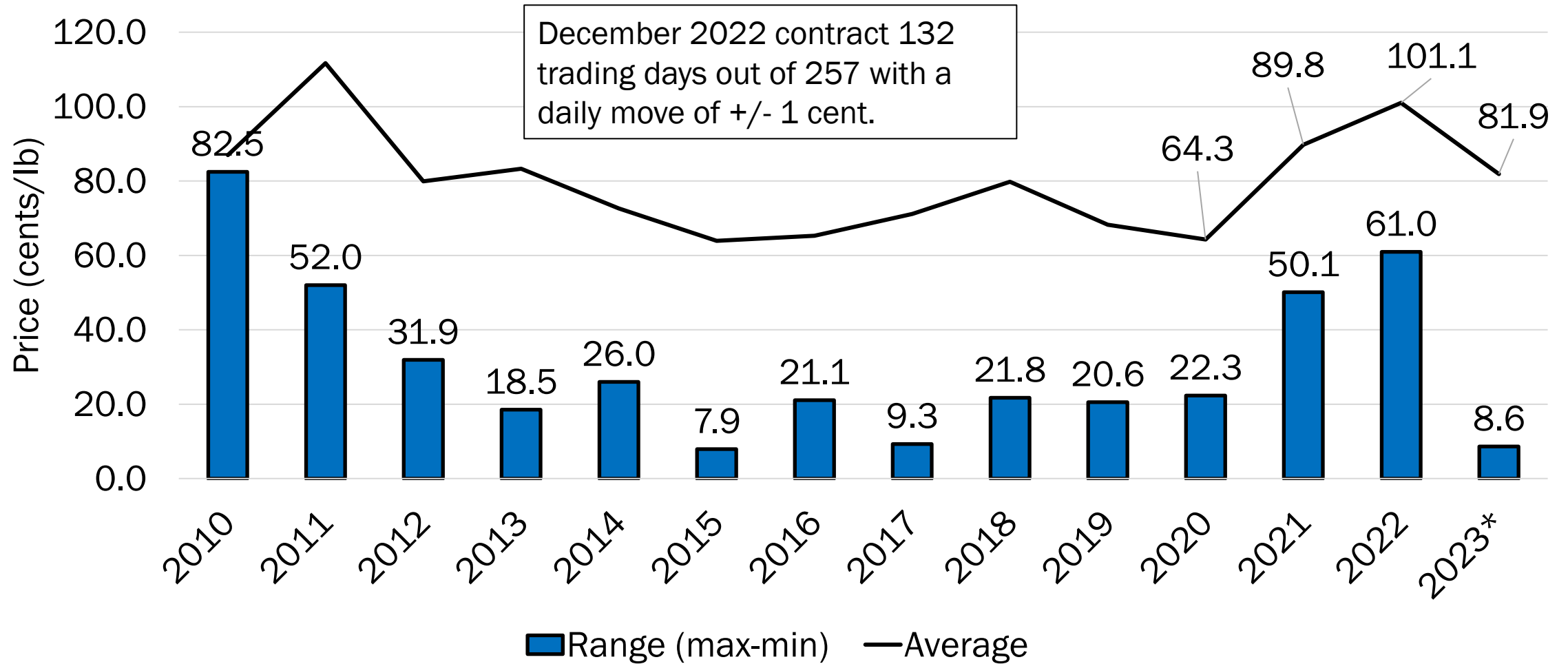
Monthly Nearby Cotton Futures, 2018-2023



Source: <https://www.barchart.com/futures/quotes/CTH23/interactive-chart/fullscreen>

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December Cotton Futures Contract, Dec 1 to Expiration, 2010-2023*



Identify Price Risk Intervals

- Pre-crop insurance price determination
 - Crop insurance price discovery
 - In season
 - Post harvest
-
- Price risk management vs. final price.

How can you bridge the price risk gap until crop insurance prices are determined

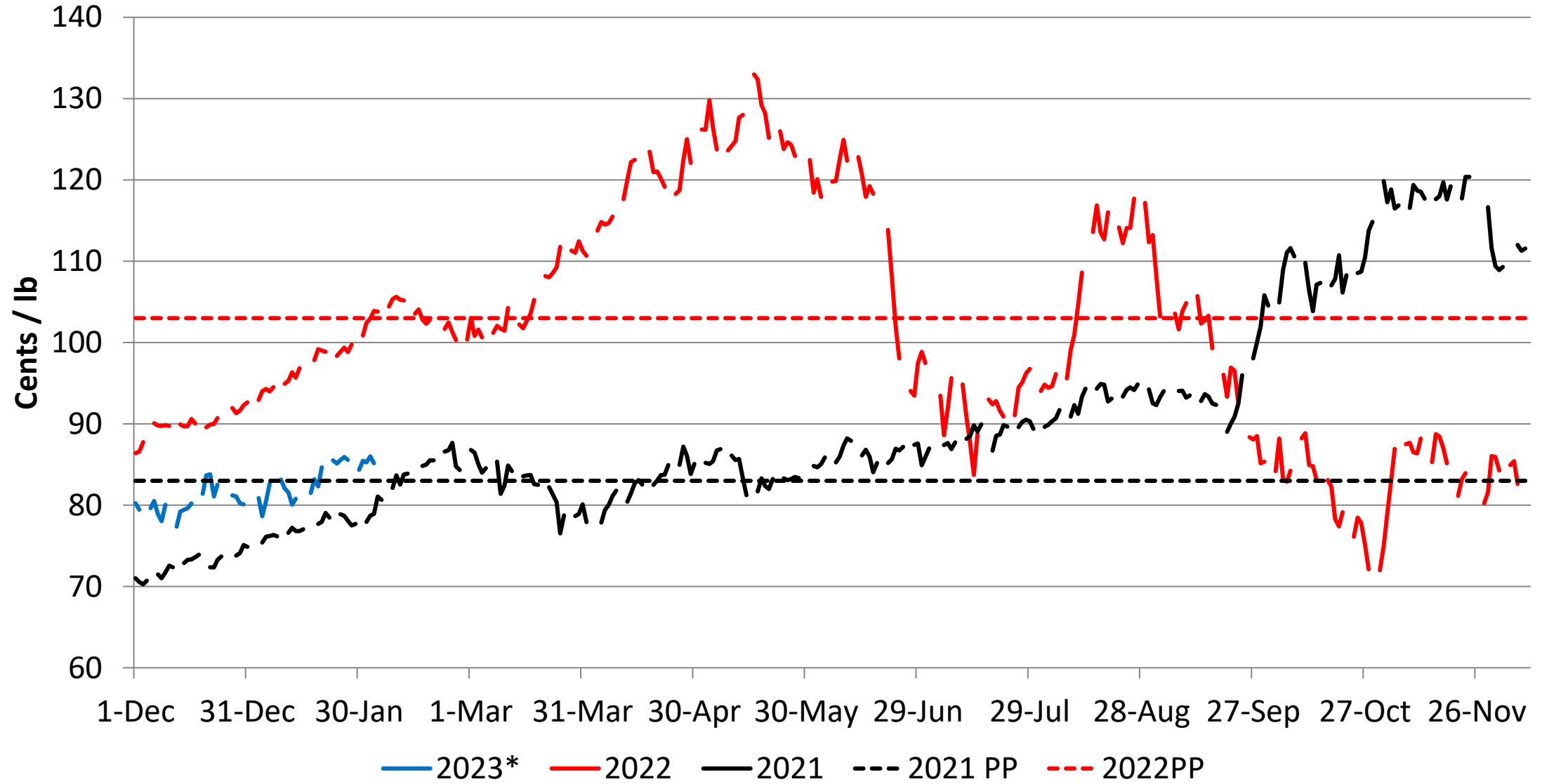
- December 2023 cotton futures were 95 cents on August 15.
 - Lay off price risk as inputs were purchased for the 2023 crop.
- Option strategies
 - Enter an option position(s)
 - After crop insurance prices are determined:
 - Out-of-the money: exit options position recoup premium.
 - In-the-money: maintain the position as price protection.
- All years will be different so adjust your strategy to market conditions.

Cotton Crop Insurance Prices, 2010-2023

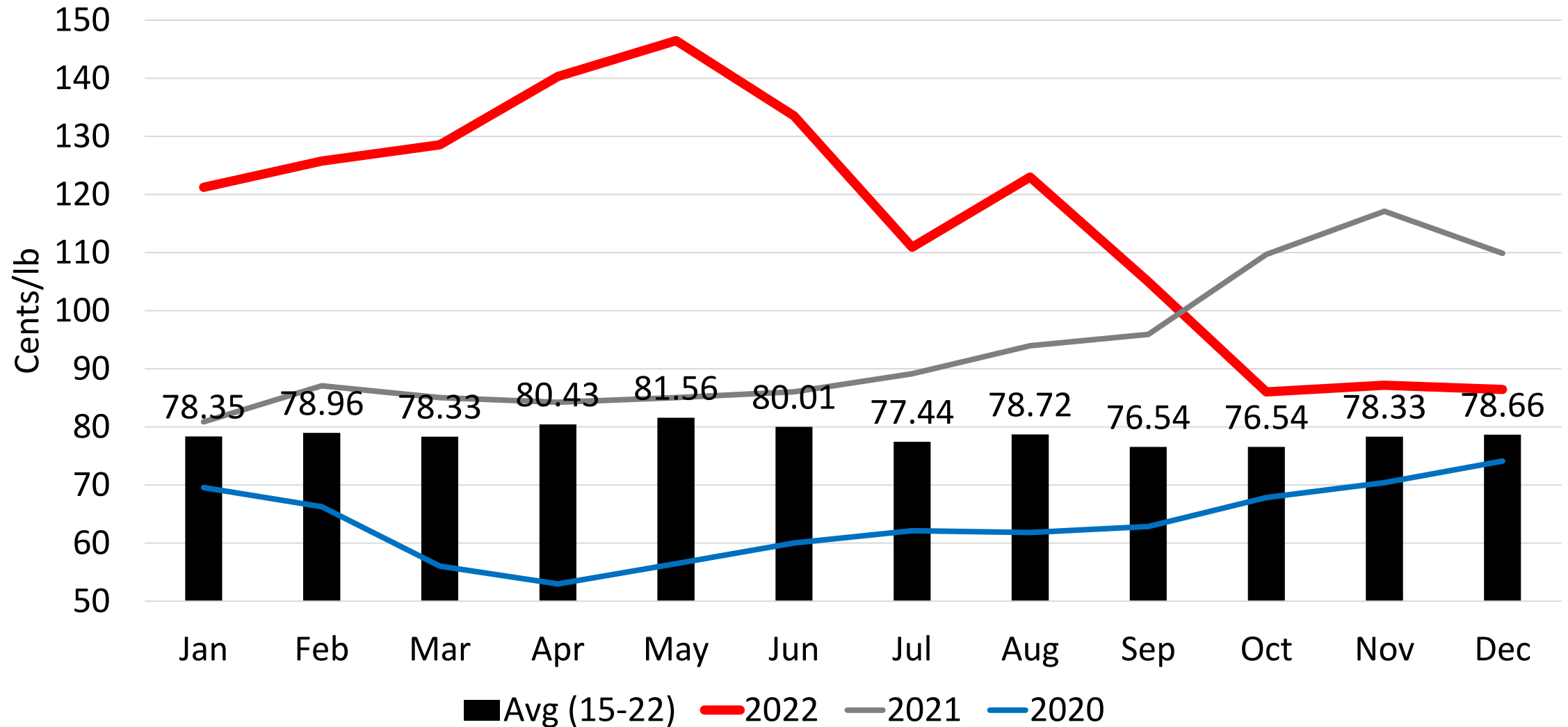
Commodity Year	Projected Price Market Symbol	Projected Price Date Range	Projected Price	Price Volatility	Harvest Price Date Range	Harvest Price	Harvest - Projected
2011	CTZ11	02/01 - 02/28	1.23	0.37	10/01 - 10/31	1.01	(0.22)
2012	CTZ12	02/01 - 02/29	0.93	0.18	10/01 - 10/31	0.73	(0.20)
2013	CTZ13	02/01 - 02/28	0.83	0.16	10/01 - 10/31	0.83	0.00
2014	CTZ14	02/01 - 02/28	0.78	0.14	10/01 - 10/31	0.64	(0.14)
2015	CTZ15	02/01 - 02/28	0.64	0.15	10/01 - 10/31	0.63	(0.01)
2016	CTZ16	02/01 - 02/29	0.6	0.14	10/01 - 10/31	0.69	0.09
2017	CTZ17	02/01 - 02/28	0.74	0.15	10/01 - 10/31	0.68	(0.06)
2018	CTZ18	02/01 - 02/28	0.76	0.14	10/01 - 10/31	0.77	0.01
2019	CTZ19	02/01 - 02/28	0.73	0.13	10/01 - 10/31	0.63	(0.10)
2020	CTZ20	02/01 - 02/29	0.68	0.14	10/01 - 10/31	0.69	0.01
2021	CTZ21	02/01 - 02/28	0.83	0.2	10/01 - 10/31	1.09	0.26
2022	CTZ22	02/01 - 02/28	1.03	0.22	10/01 - 10/31	0.81	(0.22)
2023**	CTZ23	02/01 - 02/28	0.85	0.25	10/01 - 10/31	NA	NA

Data Source: <https://prodwebnlb.rma.usda.gov/apps/PriceDiscovery/>

December Cotton Futures and Projected Crop Insurance Price, 2021-2022



USDA Delta Spot Cotton Prices, 2015-2022



Take Home Message

- Global and U.S. economic warning signs for 2023/2024.
- Geopolitical tensions
- Input costs coming down but are still elevated relative to pre 2021 prices.
- Volatility in cotton prices will likely remain in 2023.
- Identify price risk and seek mitigating strategies.

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THANK YOU