

# Grain Market Update & Risk Management Insights

February 2, 2024

KY TN Grain Day

Dr. S. Aaron Smith, Associate Professor and Extension Economist

Department of Agricultural and Resource Economics

University of Tennessee Institute of Agriculture

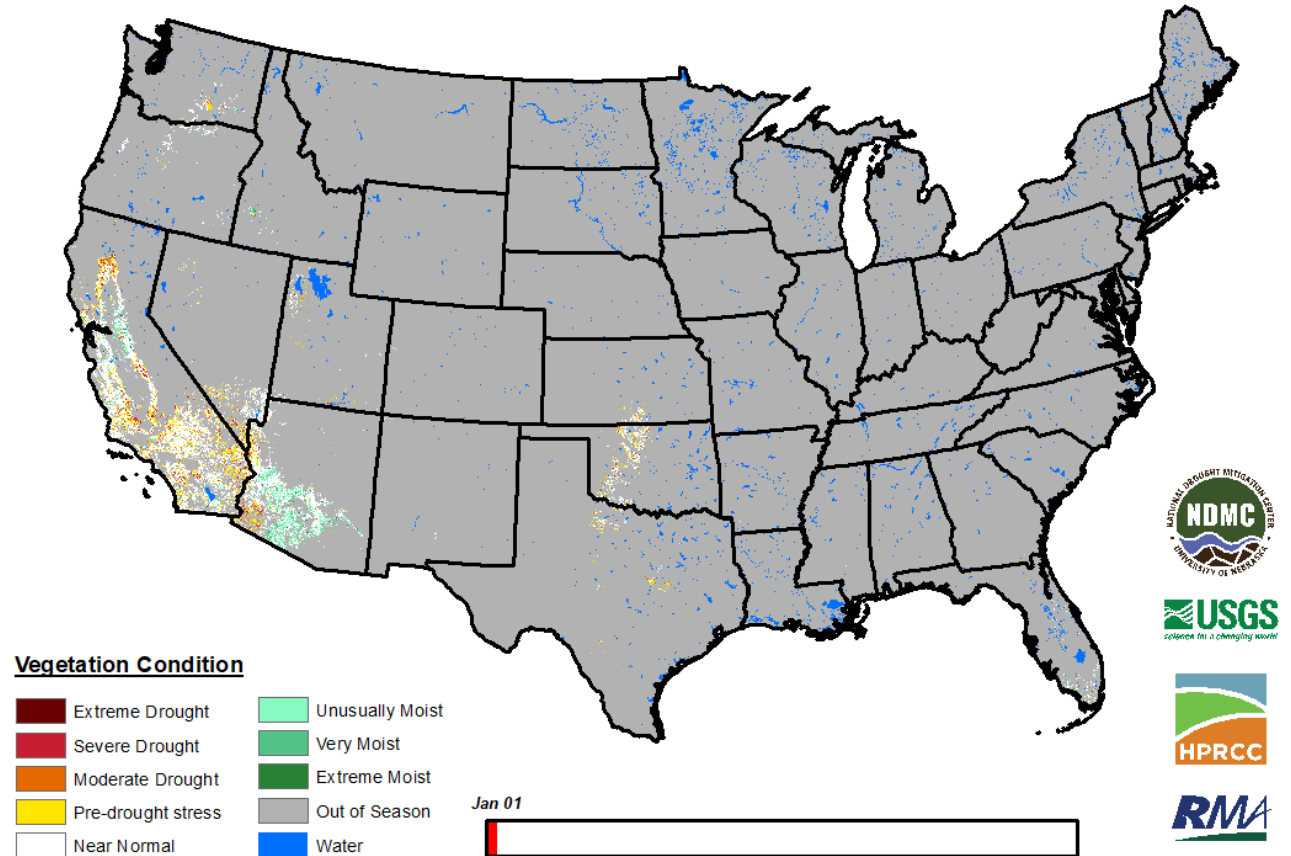
Email: [aaron.smith@utk.edu](mailto:aaron.smith@utk.edu)

Web Page: <https://cropeconomics.tennessee.edu>

# Overview

- General Economy
- Input Prices
- Corn and Soybean Supply and Demand
- Old and New Crop Pricing
- Risk Management & Marketing Strategies

## 2023 Vegetation Drought Response Index (VegDRI)

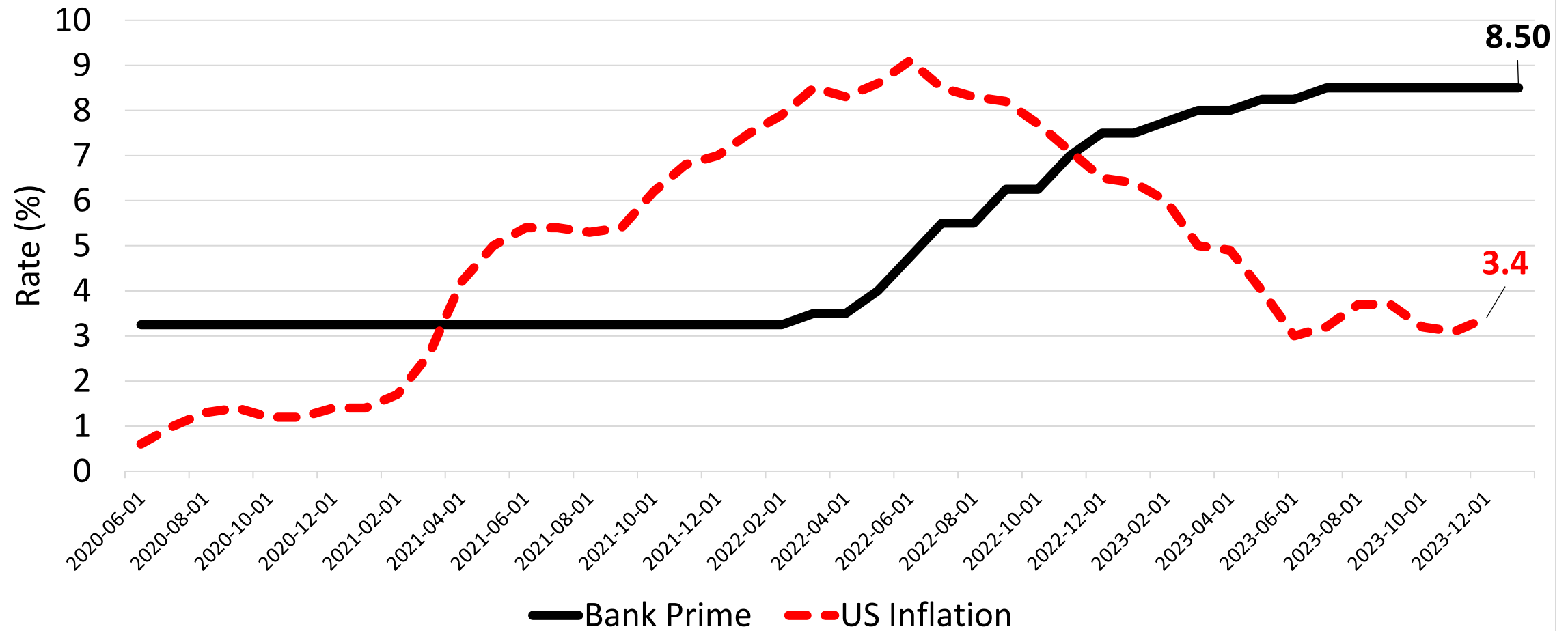


Slow down in 2024?

# GENERAL ECONOMY



# Prime Rate and Inflation Rate, Jun 2020 to Dec 2023

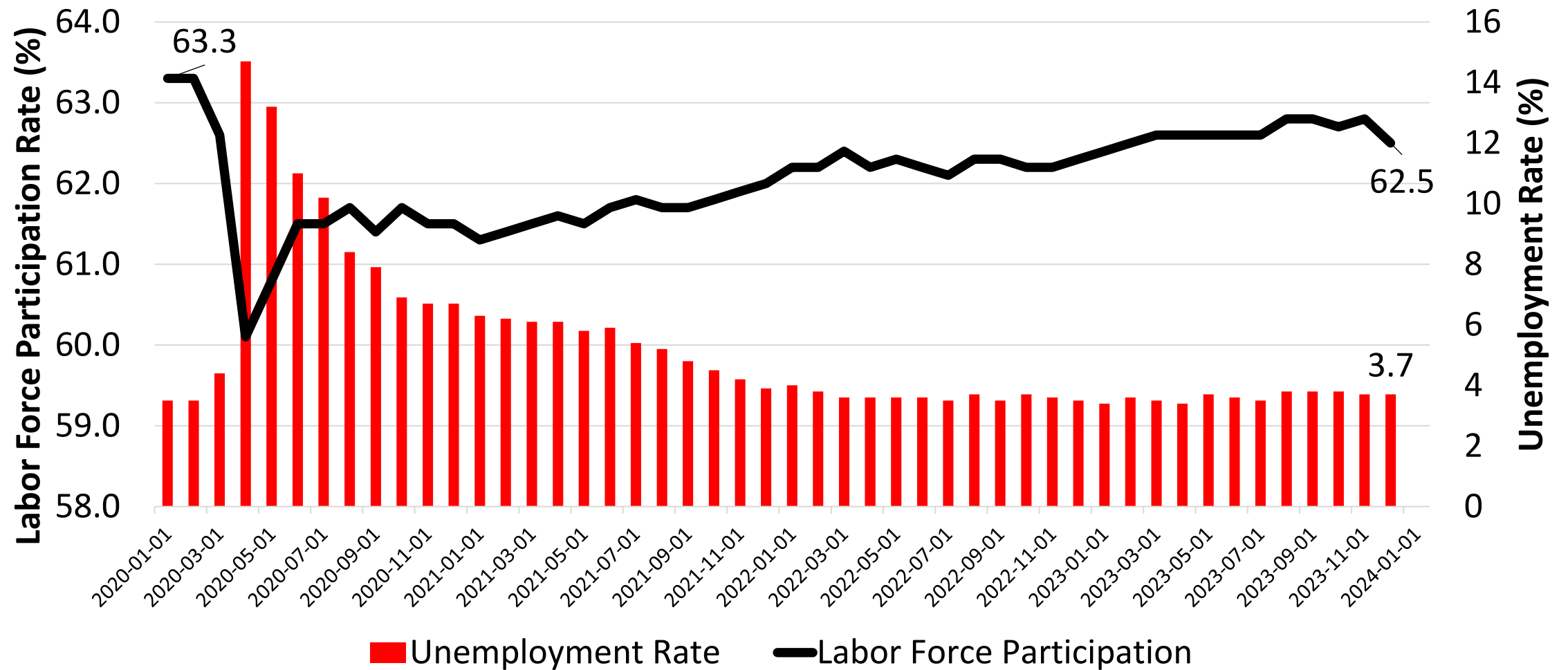


Data Sources:

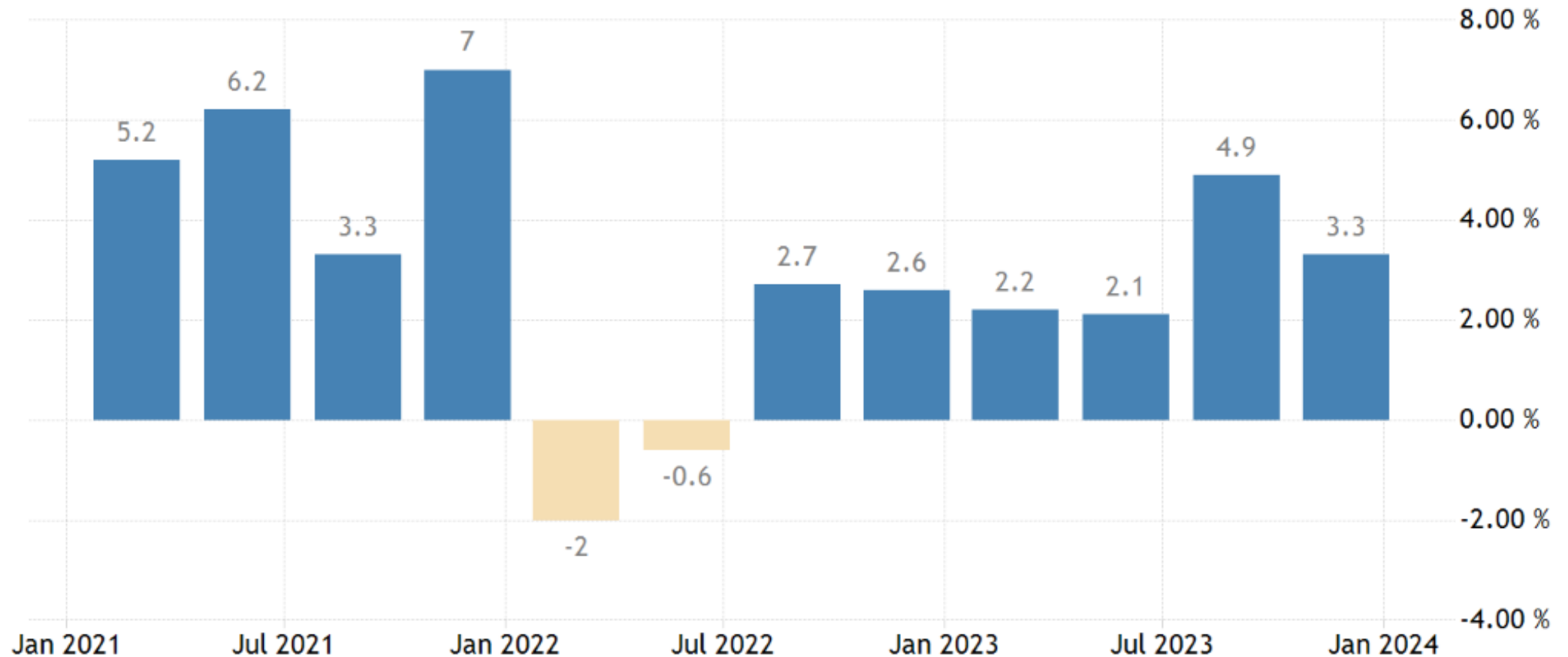
<https://www.statista.com/statistics/273418/unadjusted-monthly-inflation-rate-in-the-us/> and  
<https://fred.stlouisfed.org/series/DPRIME>

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# Unemployment and Labor Force Participation Rate, 2020 to 2023



# United States Quarterly GDP Growth Rate, 2021 to 2023

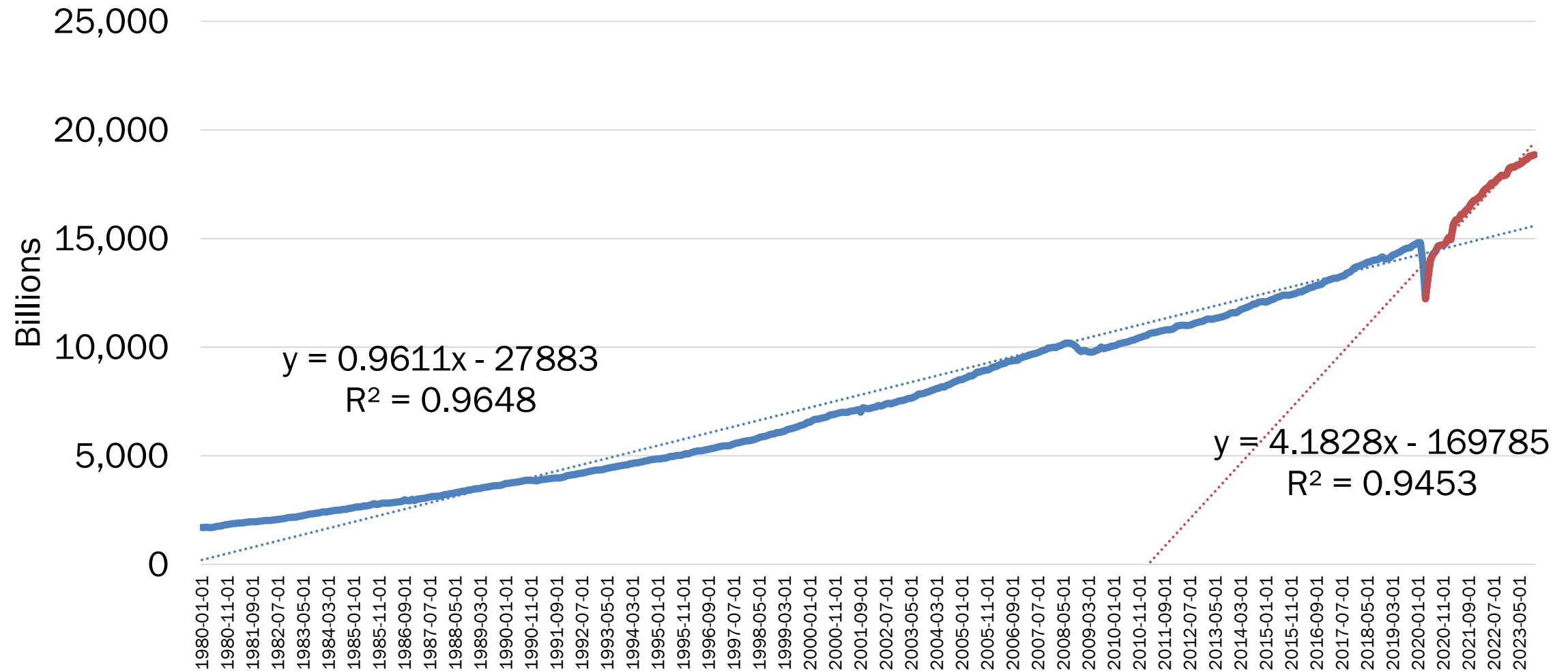


TRADINGECONOMICS.COM | U.S. BUREAU OF ECONOMIC ANALYSIS

Data Source: <https://tradingeconomics.com/united-states/gdp-growth>

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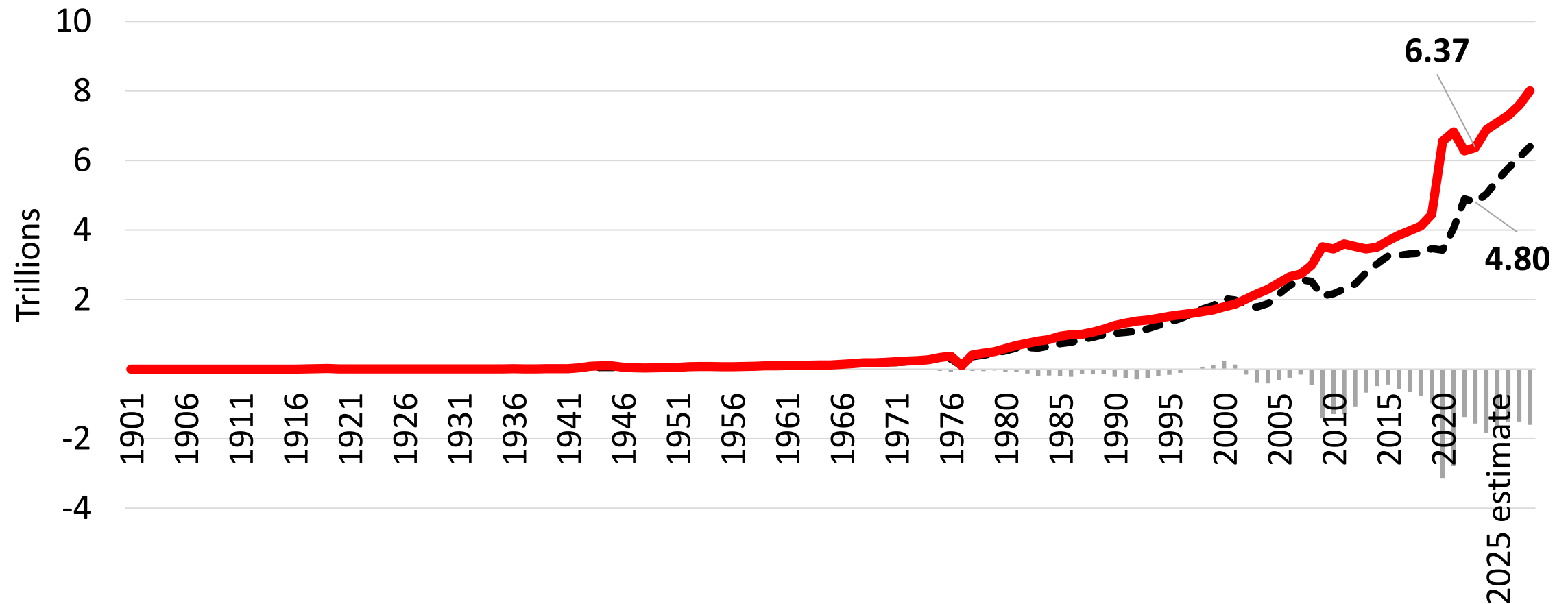
# Personal Consumption Expenditures, Monthly Seasonally Adjusted, 1980 to 2023



Data Source: <https://fred.stlouisfed.org/series/PCE>

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# U.S. Receipts, Outlays, and Surplus or Deficits, 1901 to 2028 (projected)



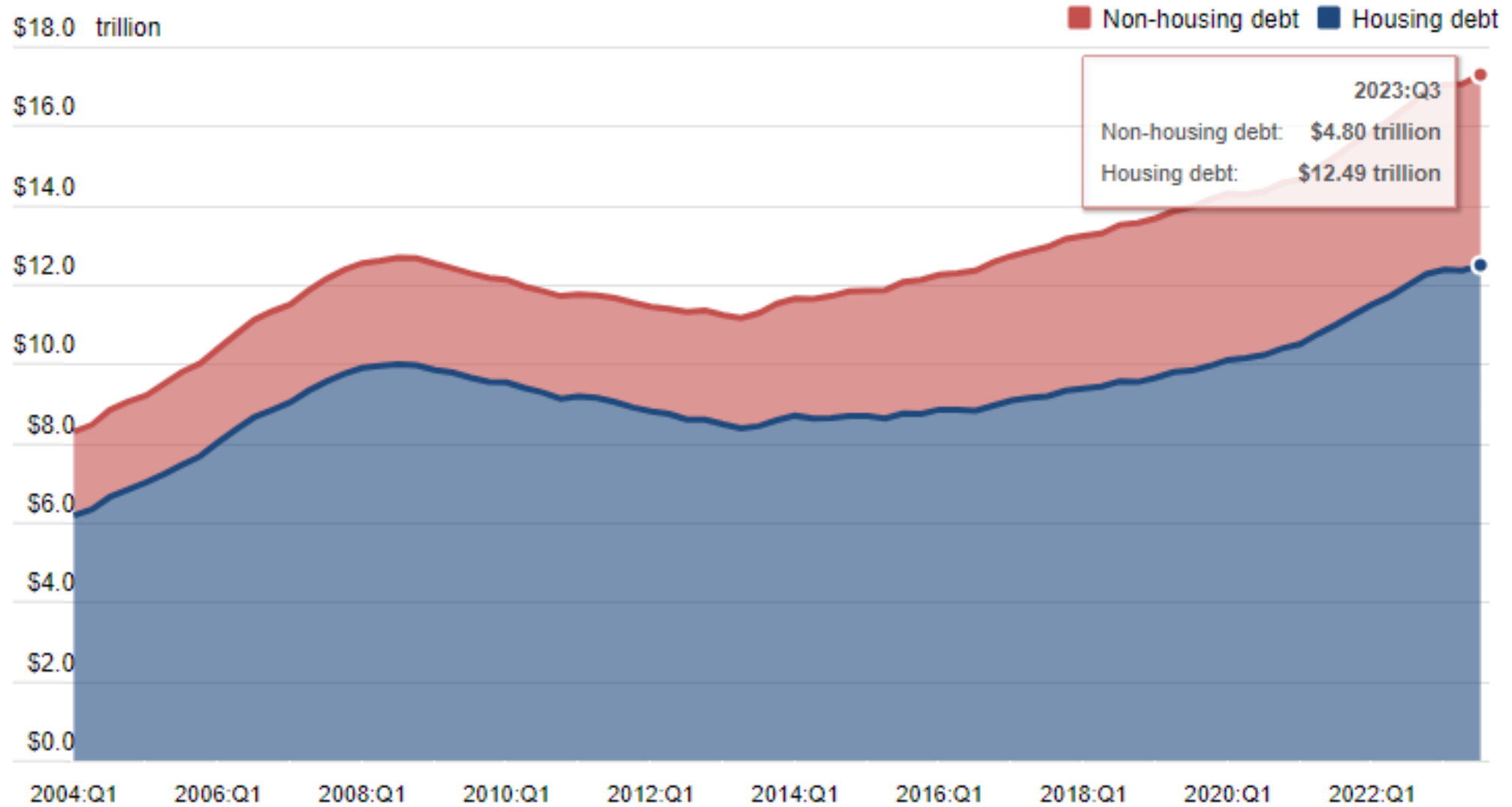
■ Surplus or Deficit (-)    - - - Receipts    — Outlays

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

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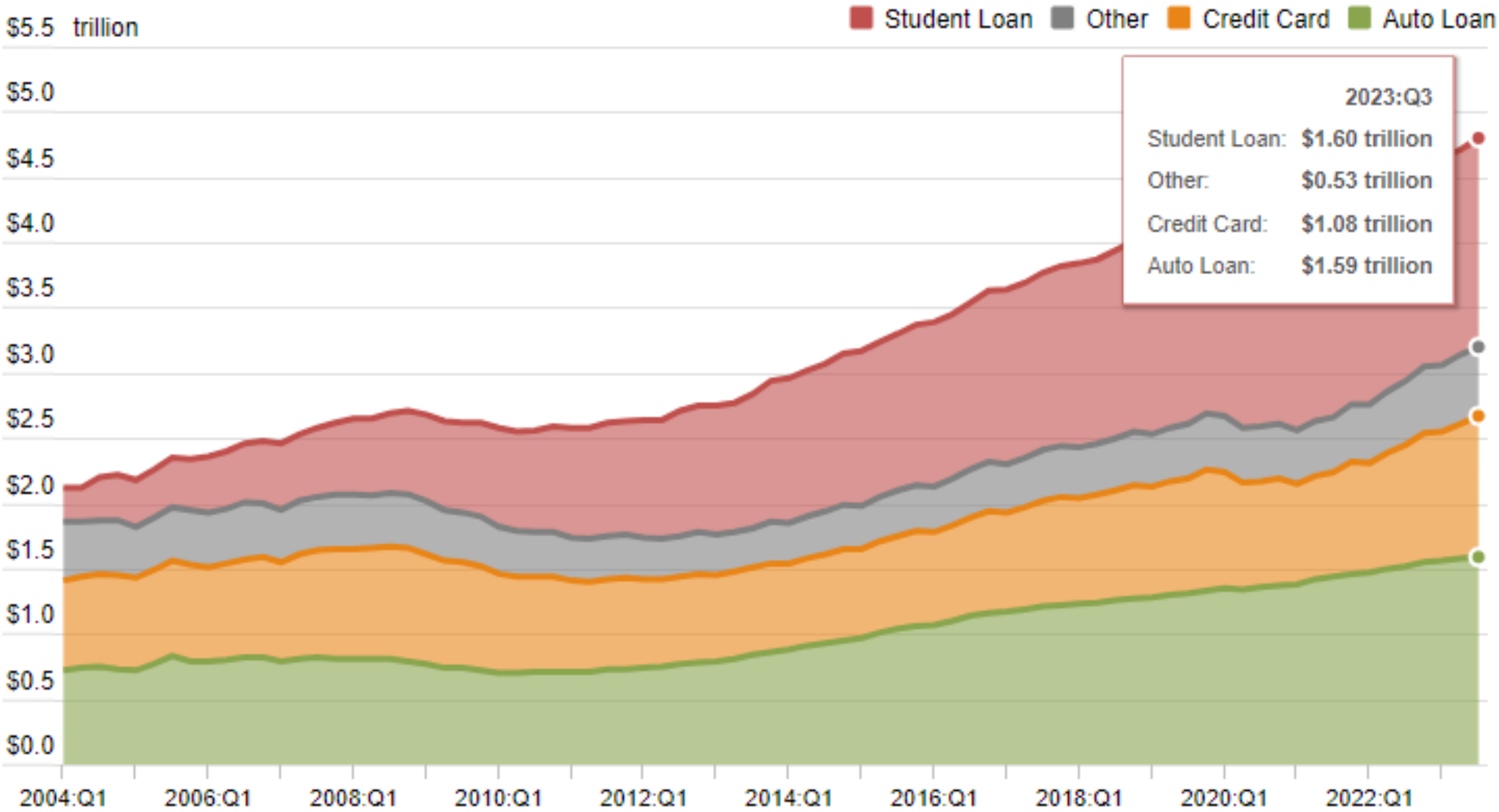


# Total Debt Balance



Source: FRBNY Consumer Credit Panel/Equifax

# Non-Housing Debt Balance



Source: FRBNY Consumer Credit Panel/Equifax

# General Economy Summary

- Interest rates have likely peaked (unless inflation flairs up).
  - Small declines (0.75-1%) forecast for 2024.
- Inflation has subsided but remains above the fed target of 2%.
- Labor markets remain tight.
- US GDP growth peaked in the 3<sup>rd</sup> quarter, expected to soften in 2024.
- Government spending - projected trillion plus deficits out to 2028.
- Consumer spending and debt have been on unsustainable paths.

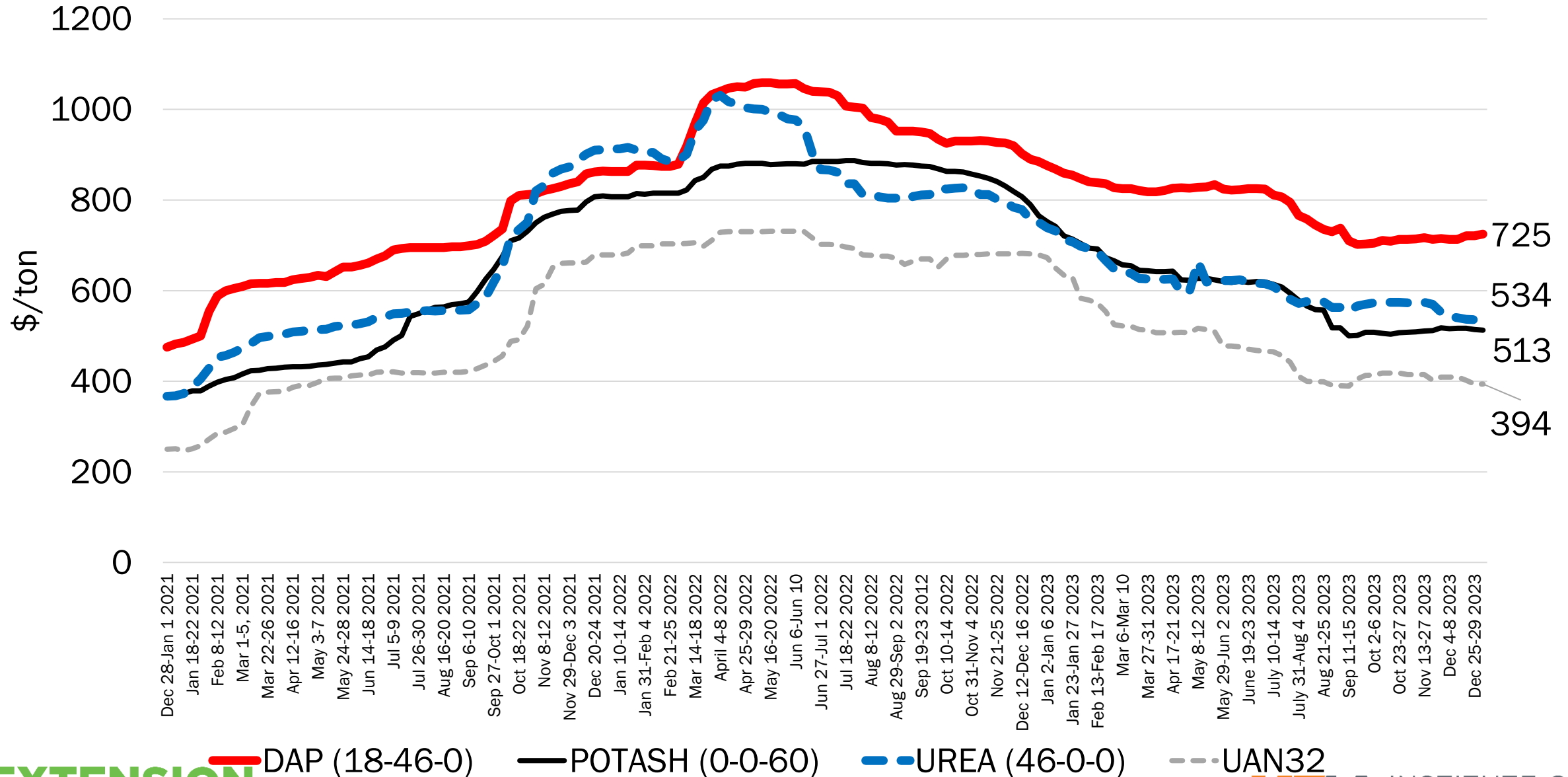




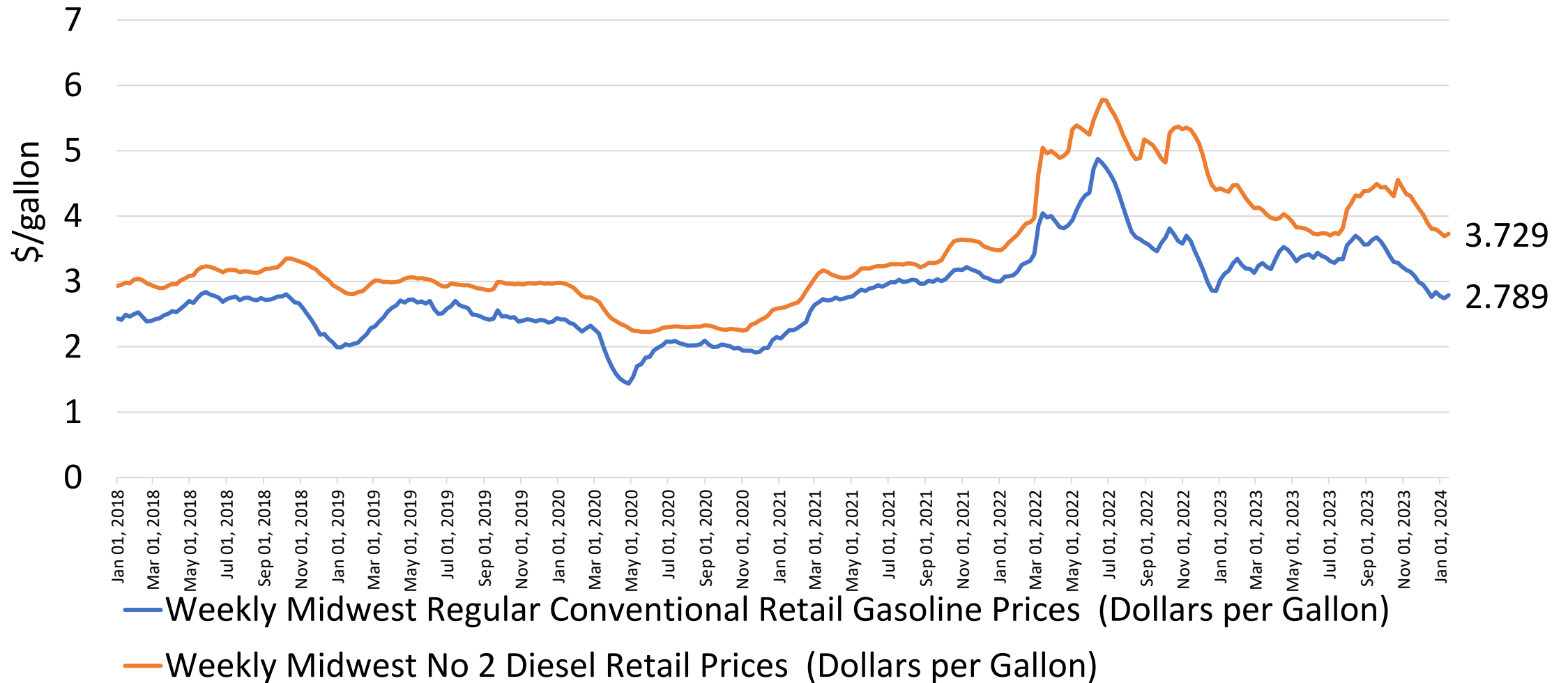
Fertilizer, Fuel, Land

# INPUT PRICES

# Select Fertilizer Prices, 2021-2023

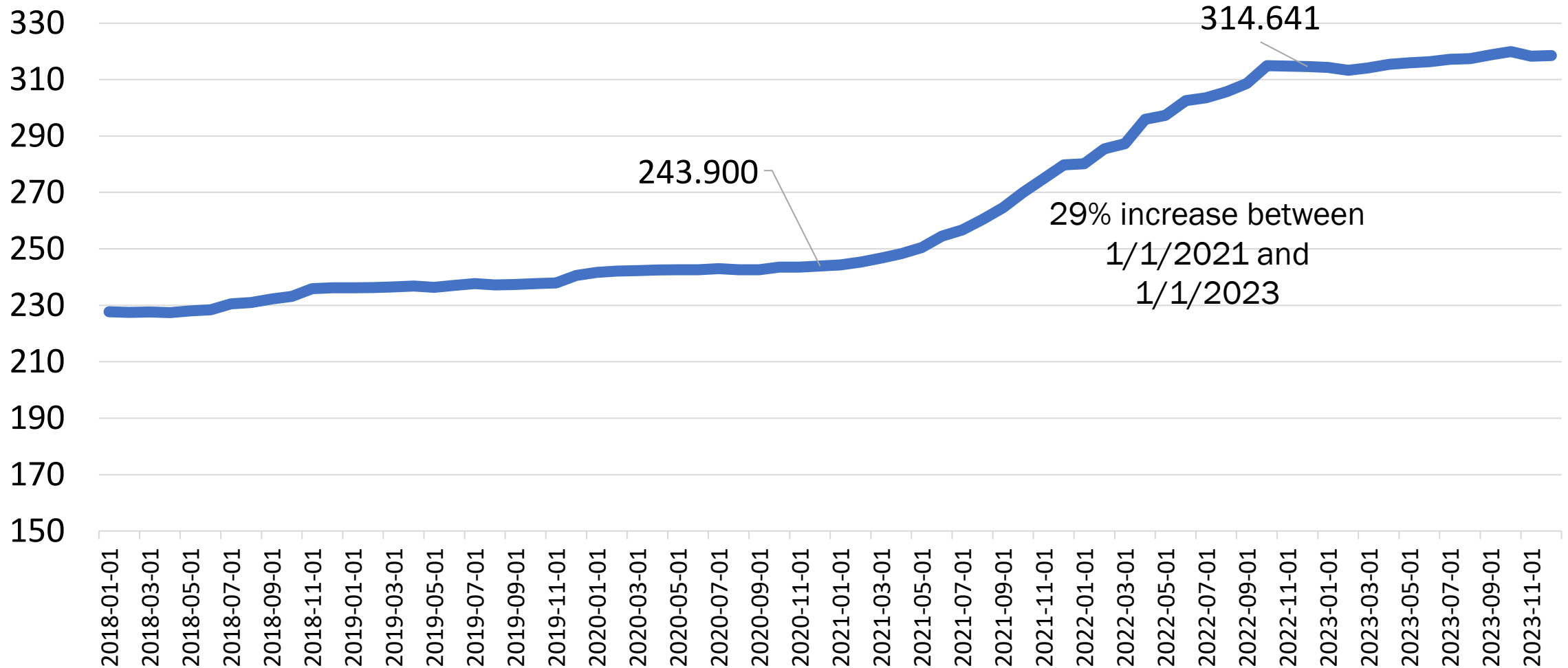


# Gasoline and Diesel Prices, January 2018 to January 2024





# Producer Price Index by Commodity: Machinery and Equipment: Agricultural Machinery and Equipment

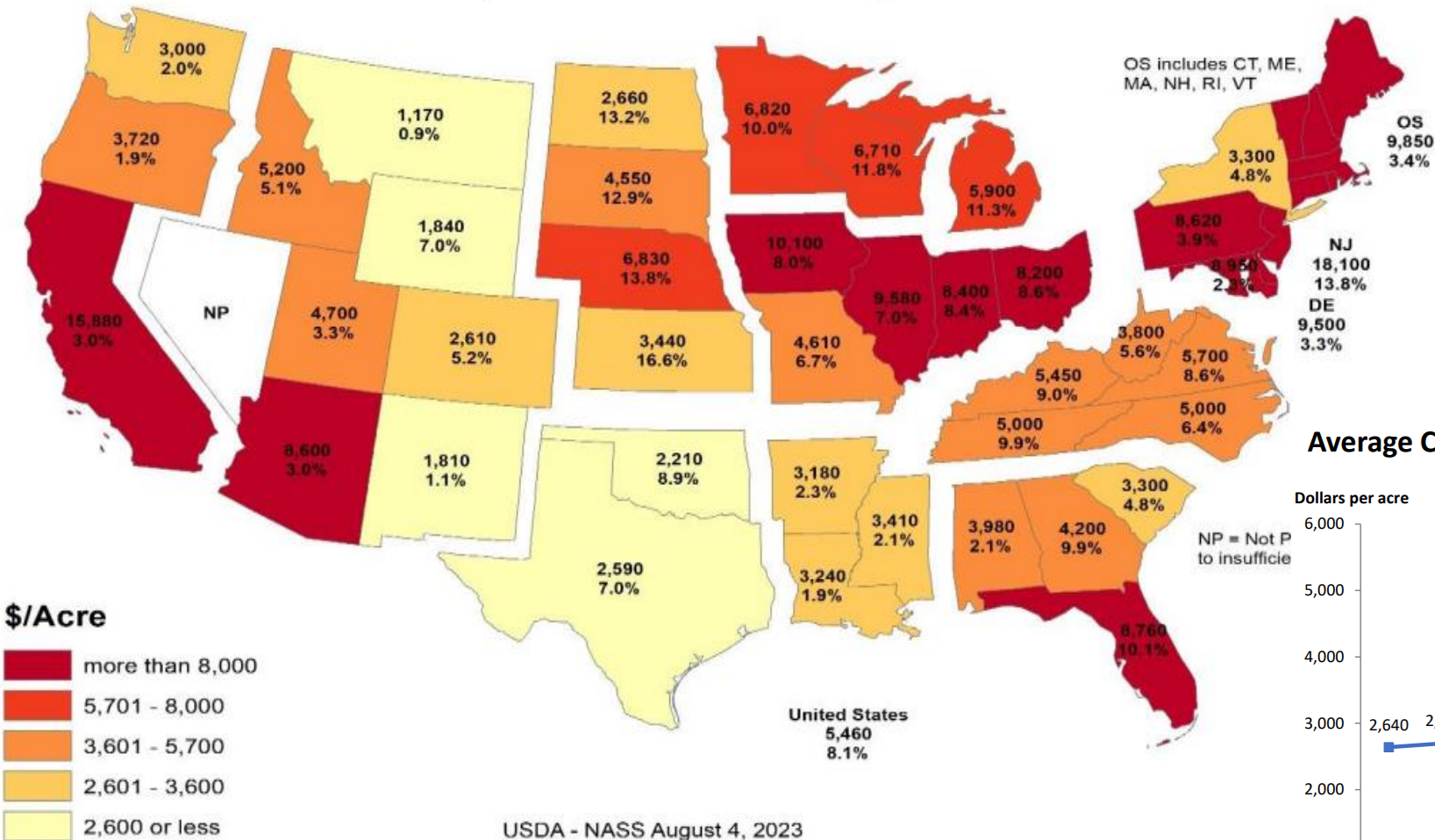


Data Source: <https://fred.stlouisfed.org/series/WPU111>

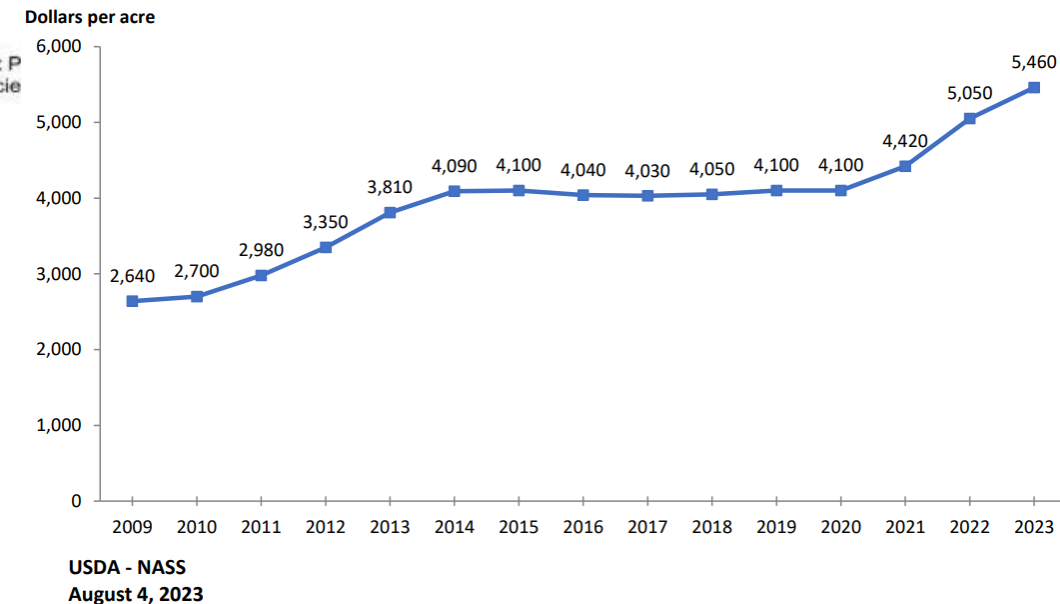
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# 2023 Cropland Value by State

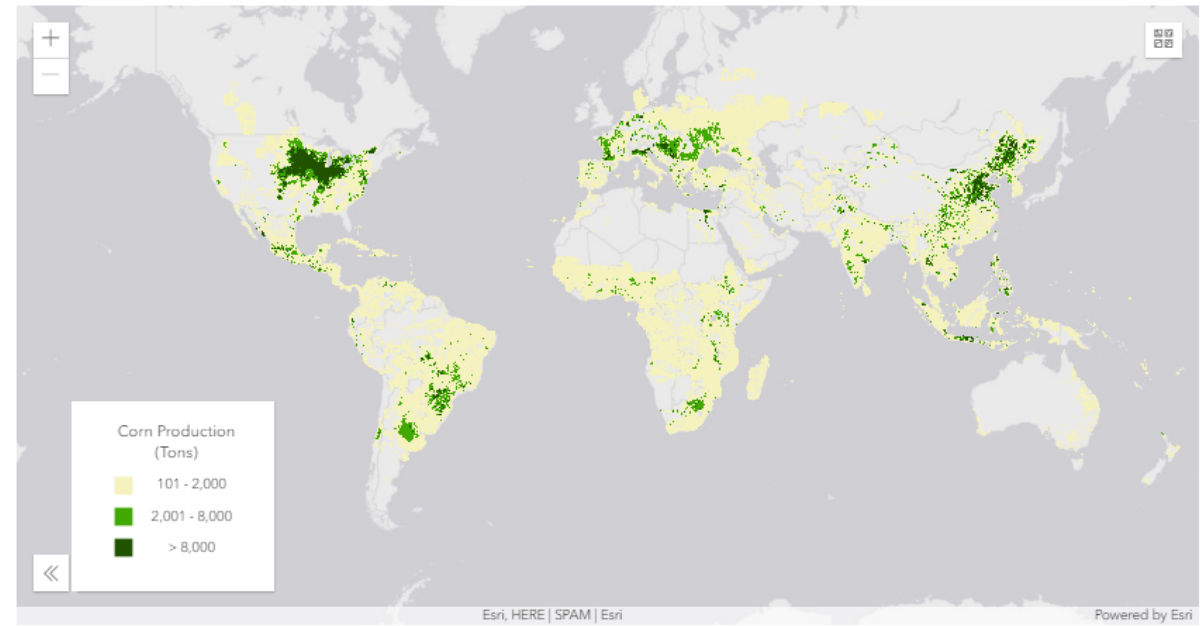
Dollars per Acre and Percent Change from 2022



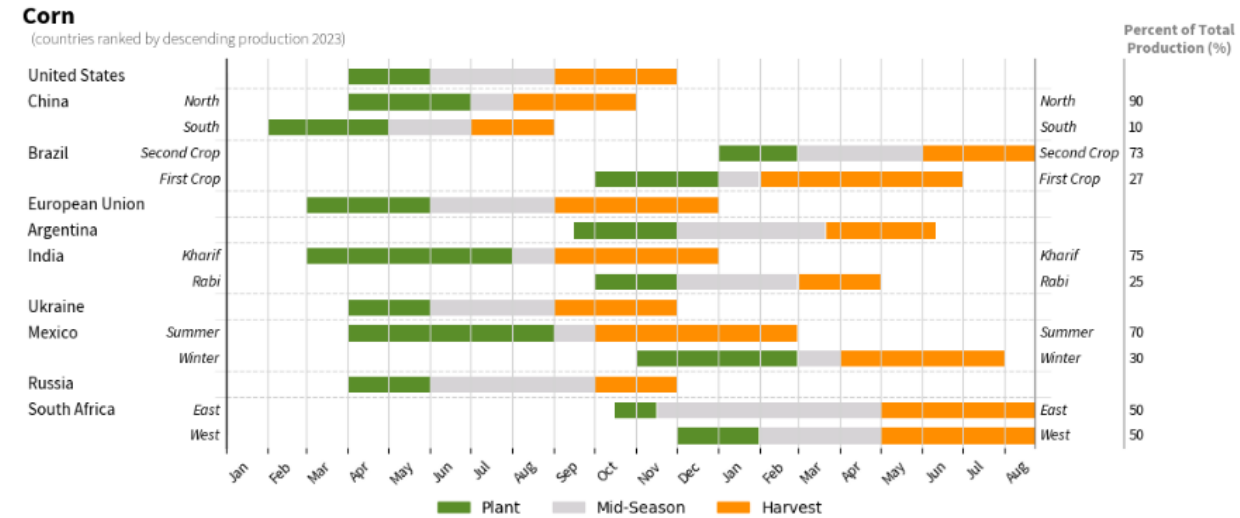
## Average Cropland Value – United States: 2009-2023





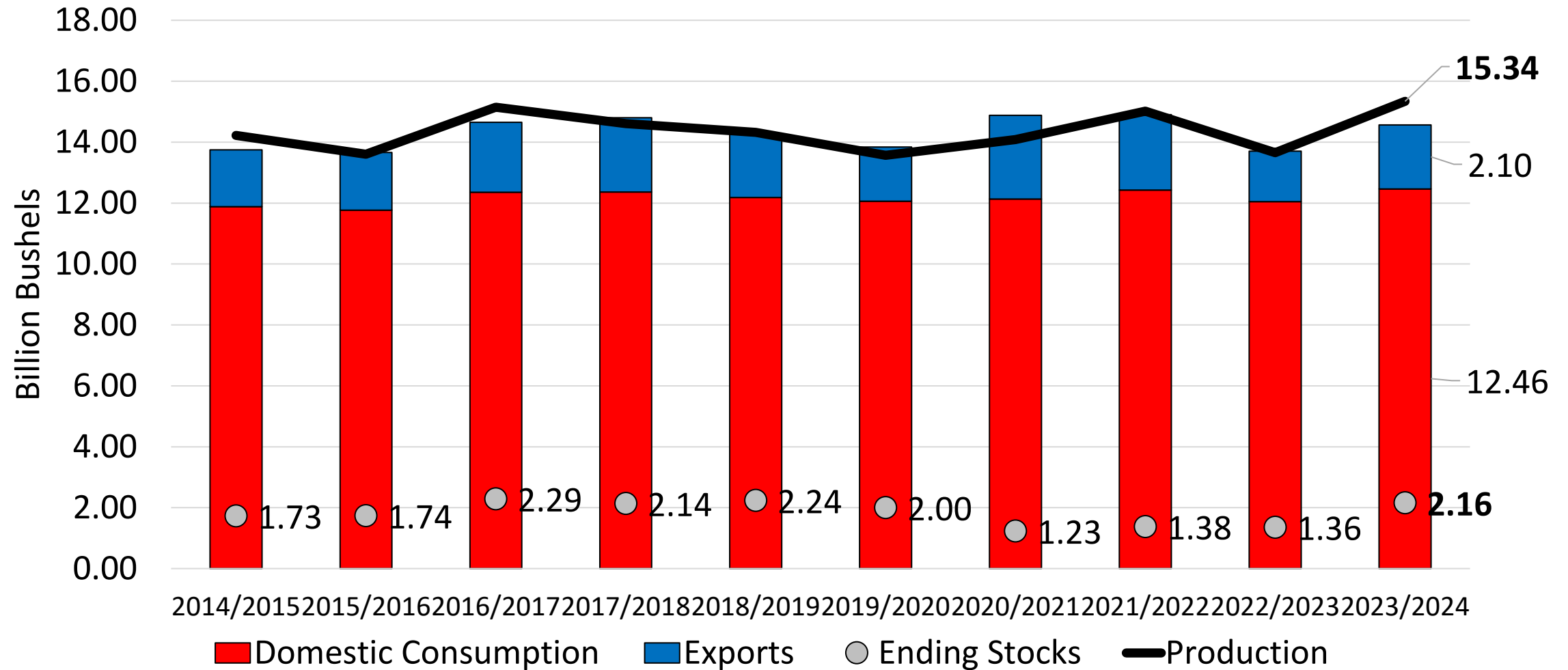


Corn Calendar

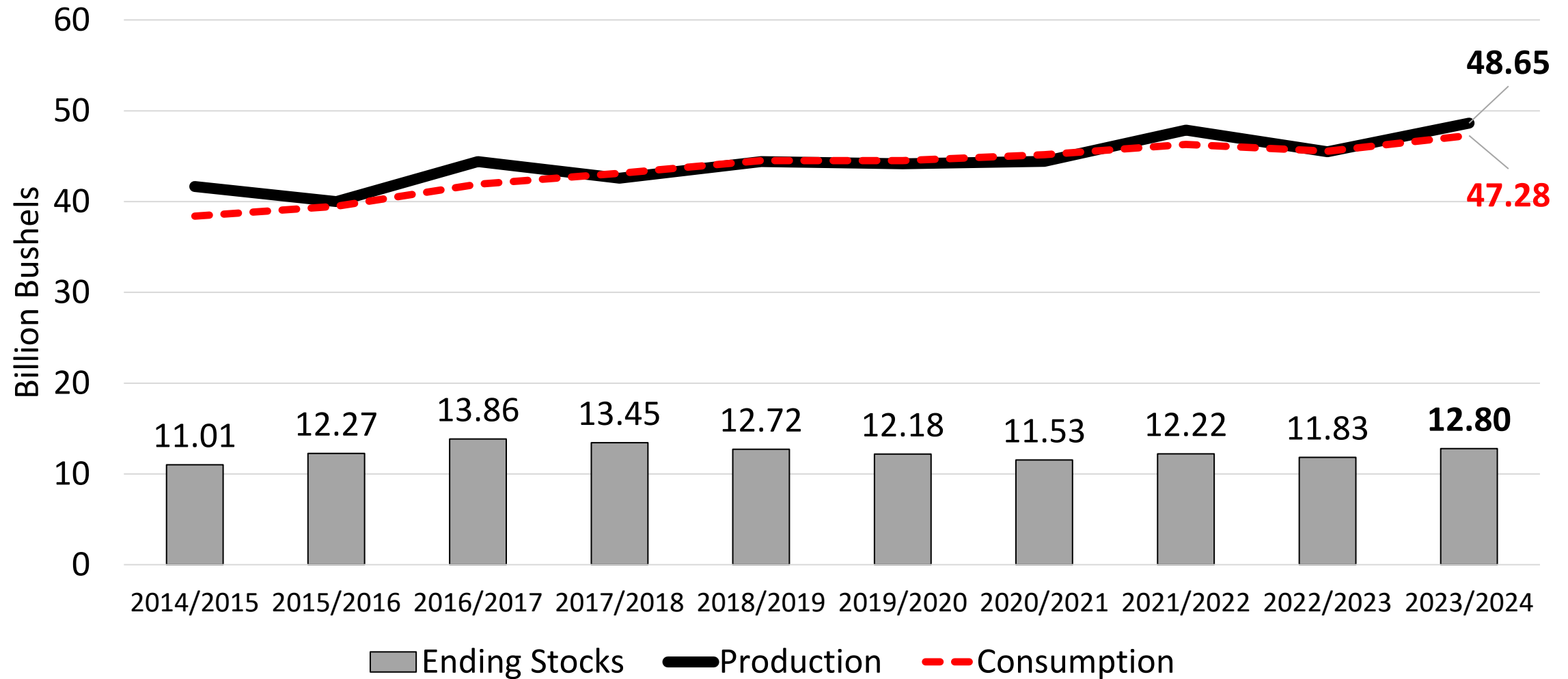


# CORN SUPPLY AND DEMAND

# U.S. Corn Production, Consumption, Exports, and Ending Stocks, 2014/15 to 2023/24



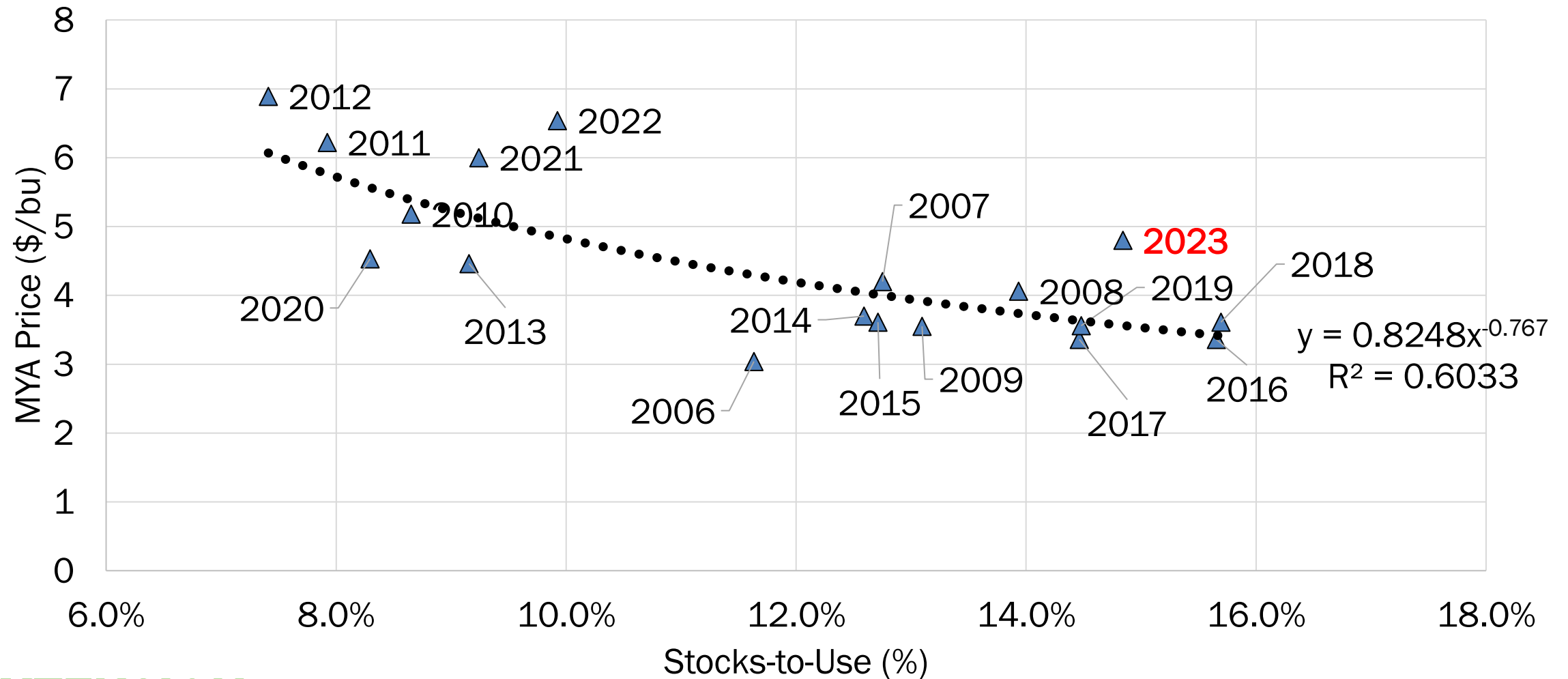
# World Corn Production, Consumption, and Ending Stocks, 2014/15 to 2023/24



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

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# U.S. Corn Stocks-to-Use and Price Relationship, 2006-2023

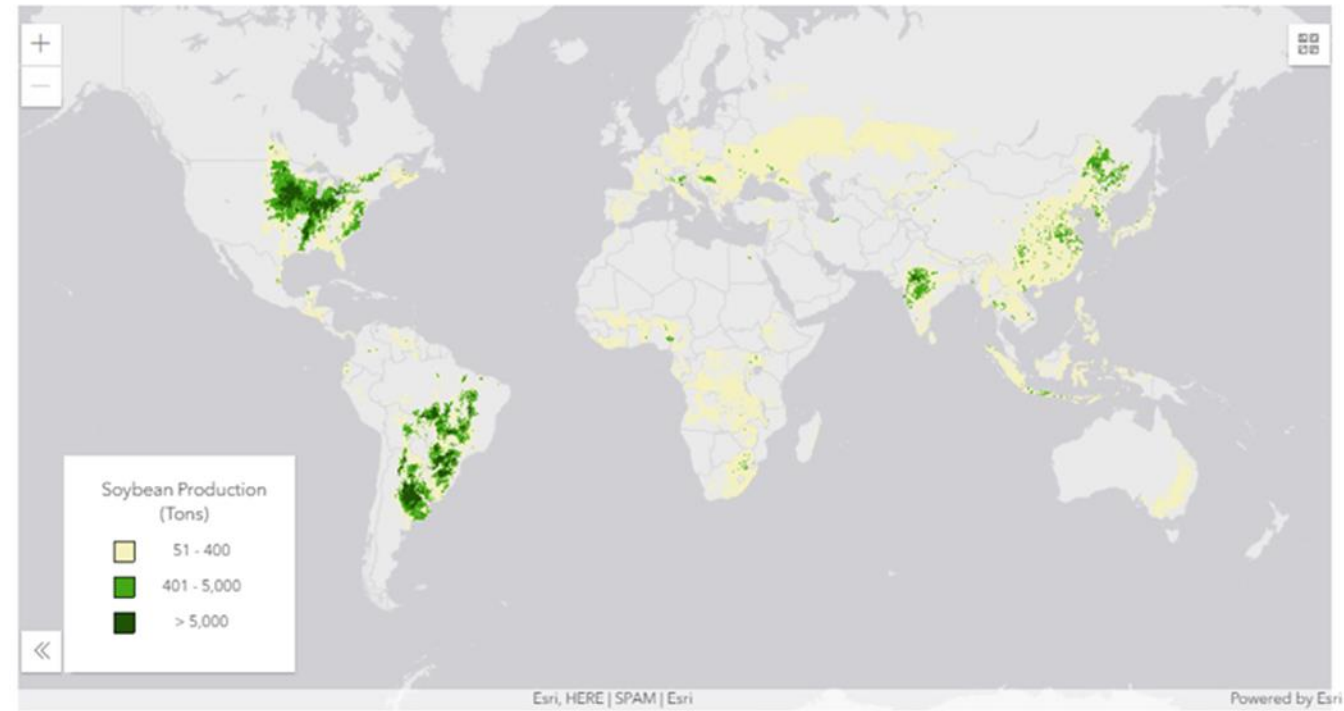


Data Source: USDA PSD - <https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery>

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# Corn Supply and Demand Summary

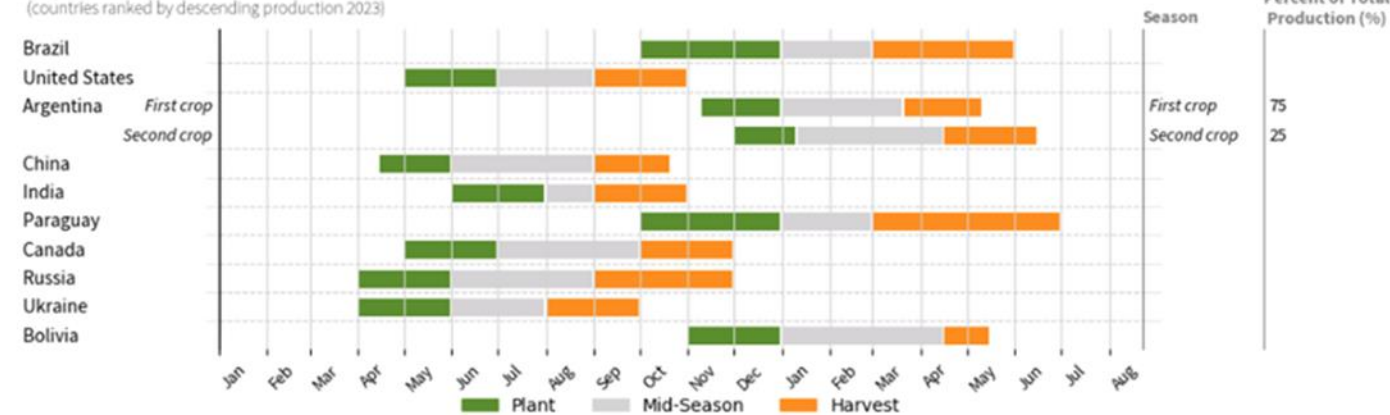
- Higher US yields than initially anticipated.
- US carryover stocks over 2.1 billion bushels.
- World stocks projected at highest level since 2017/18.
- Second crop corn production in Brazil will be a key determinant in 2024 price direction.
- 2024 economy and geo-politics are likely to continue to influence corn prices in 2024.



## Soybean Calendar

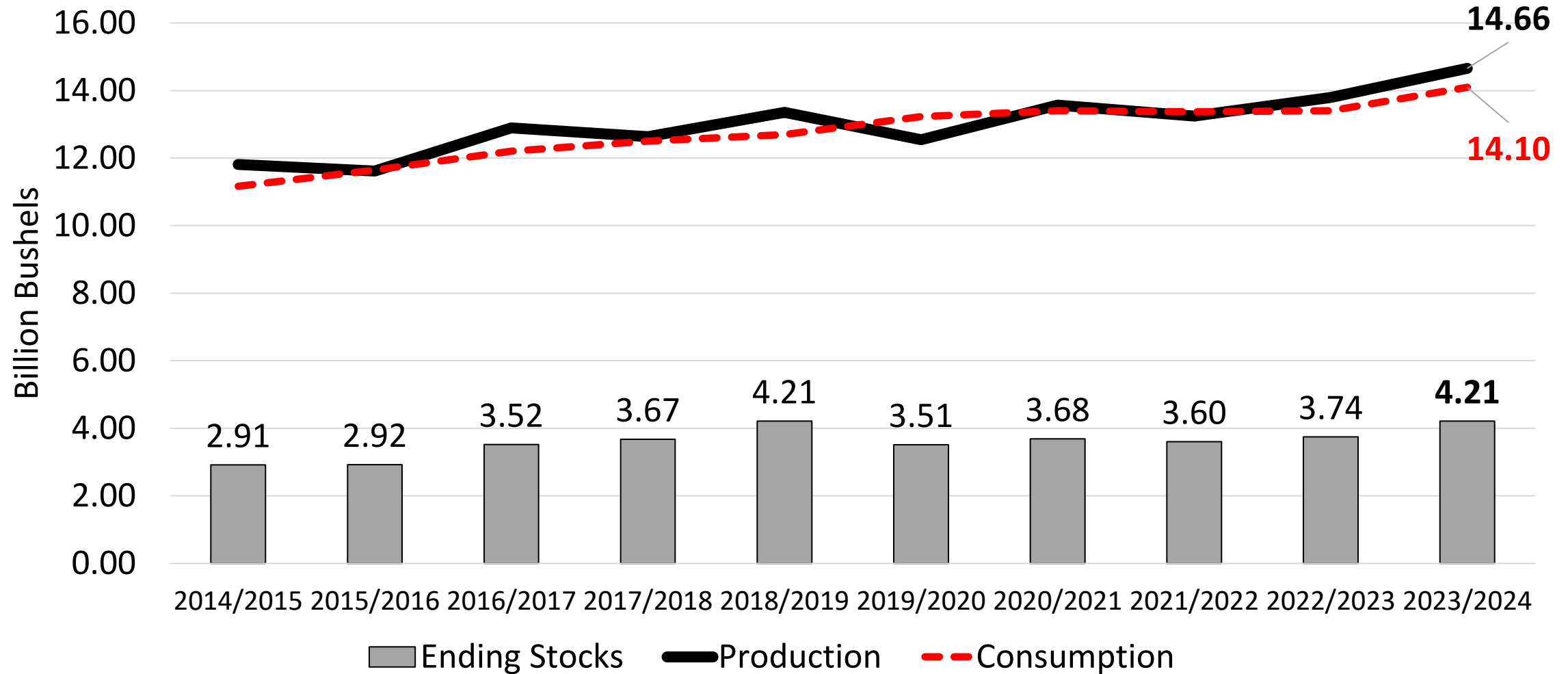
## Soybean

(countries ranked by descending production 2023)



# SOYBEAN SUPPLY AND DEMAND

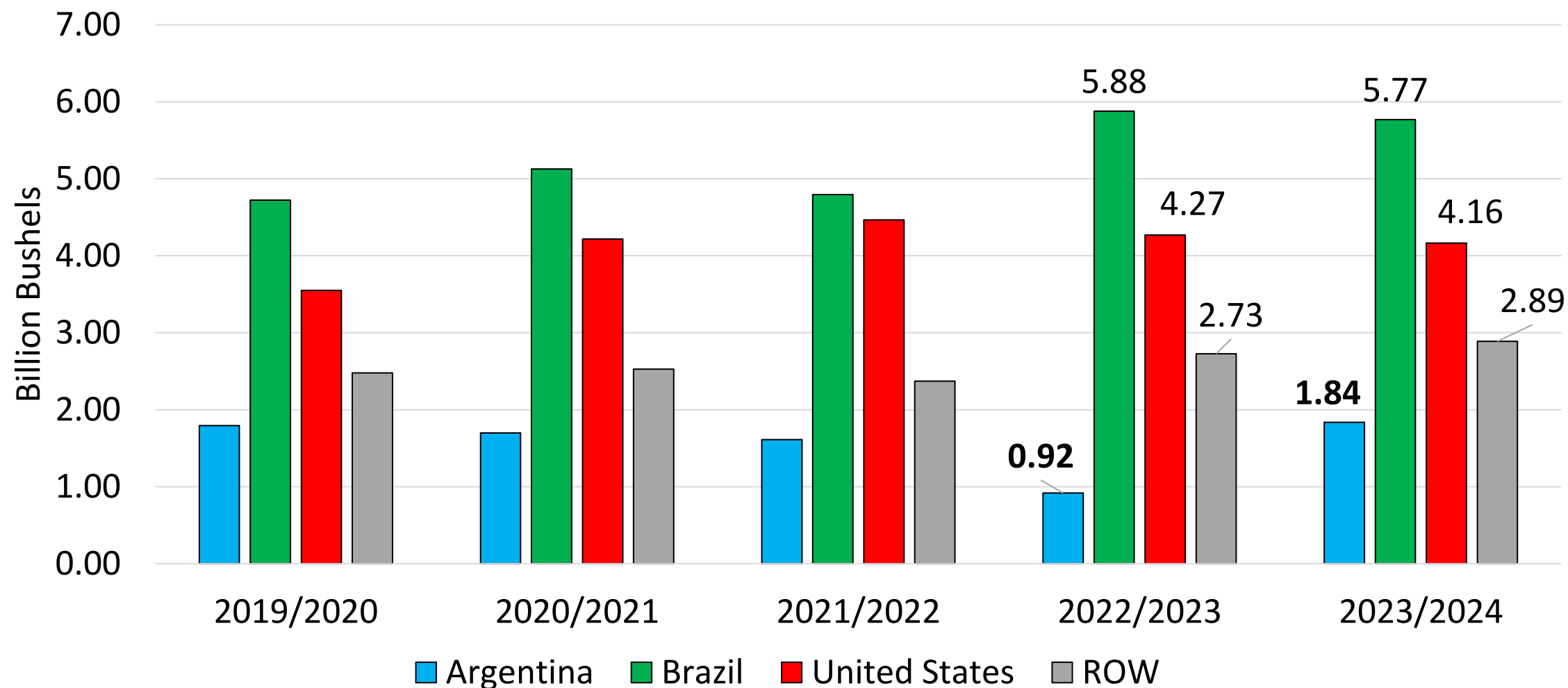
# World Soybean Production, Consumption, and Ending Stocks, 2014/15 to 2023/24



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

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# World Soybean Production, 2019/20 to 2023/24

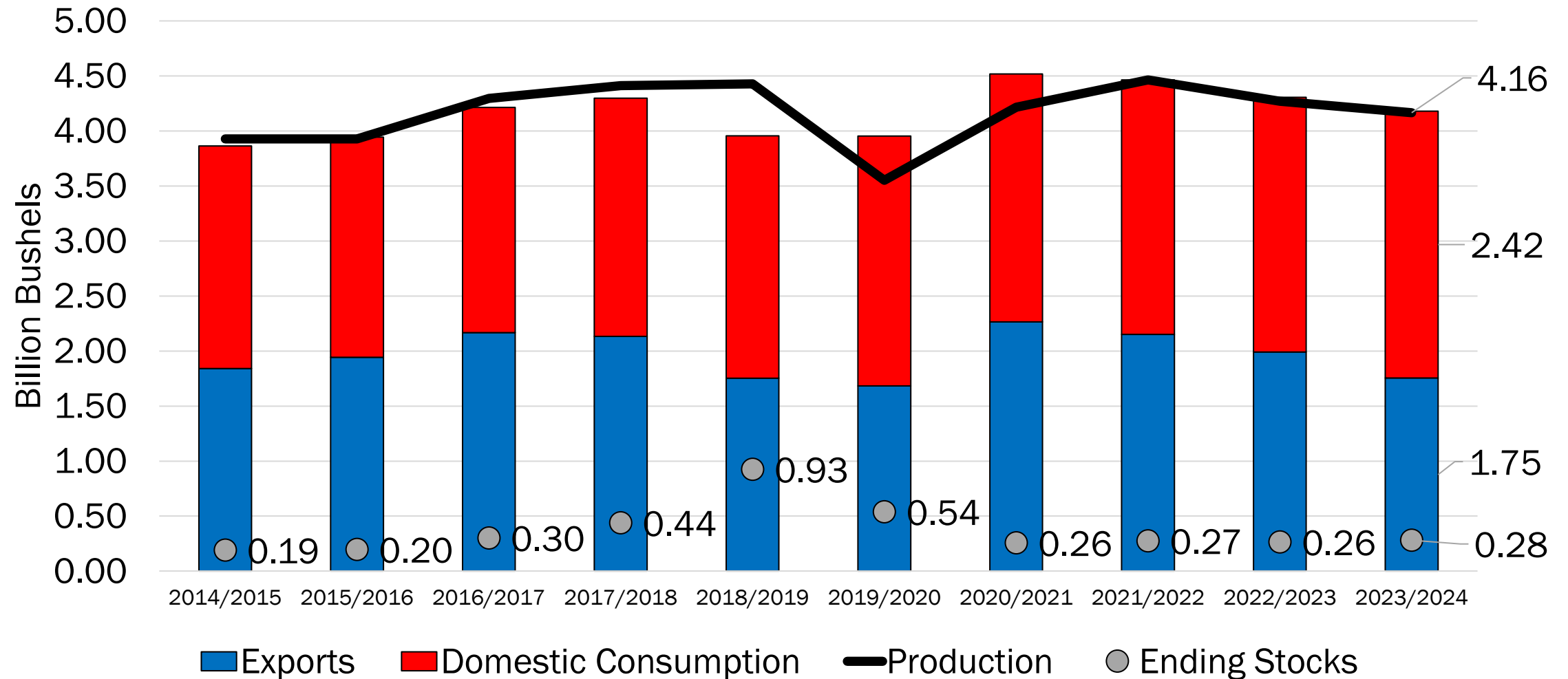


Data Source: USDA PSD - <https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery>

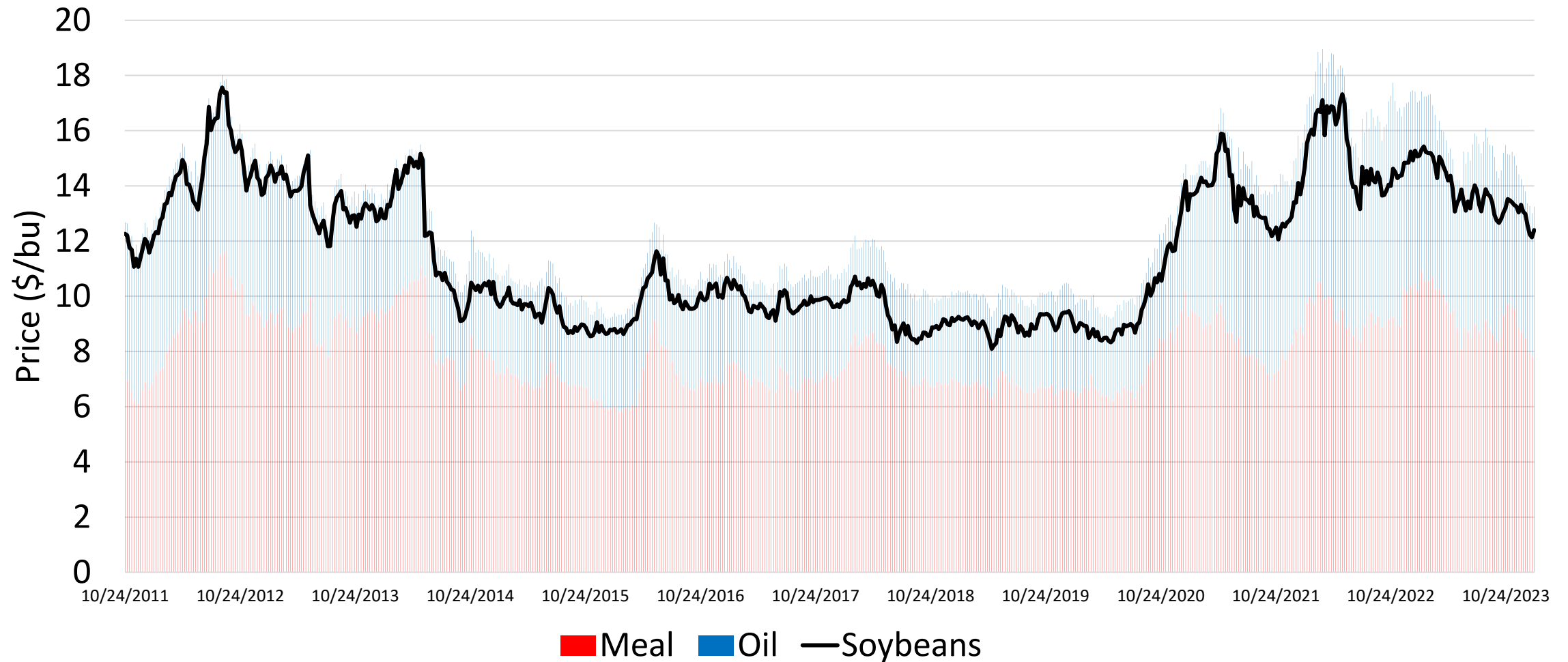
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# U.S. Soybean Production, Consumption, Exports, and Ending Stocks, 2014/15 to 2023/24



# Nearby Soybean, Meal, and Oil Futures Value

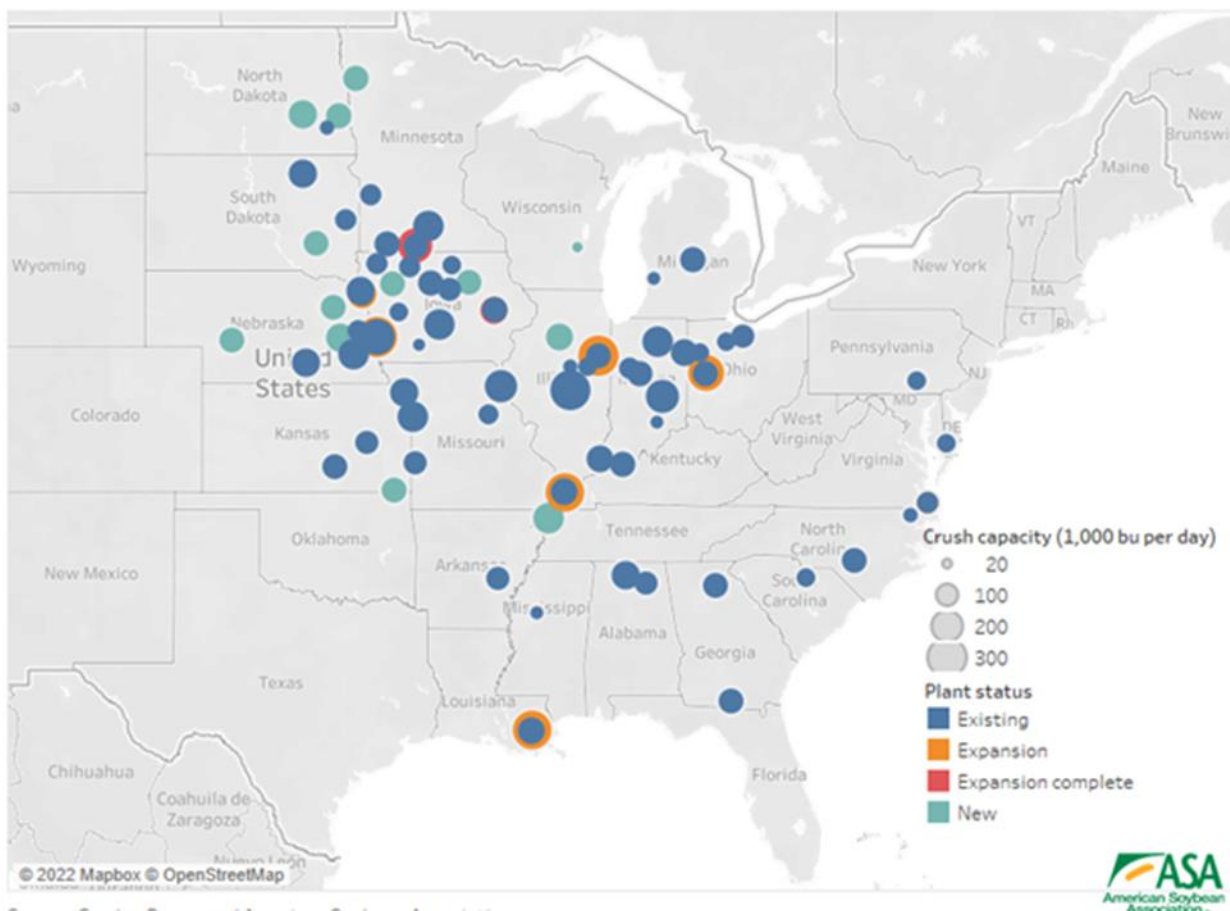


Data Source: [https://www.barchart.com/futures/quotes/ZS\\*0/futures-prices?viewName=main](https://www.barchart.com/futures/quotes/ZS*0/futures-prices?viewName=main)

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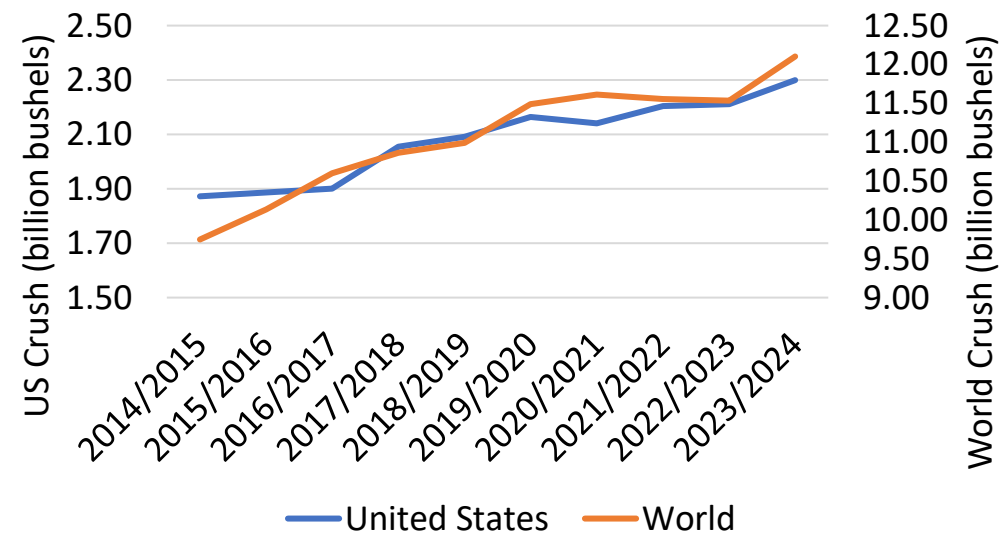
# US Soybean Crush, 2000/01 to 2023/24

U.S. Soybean Crush Plants

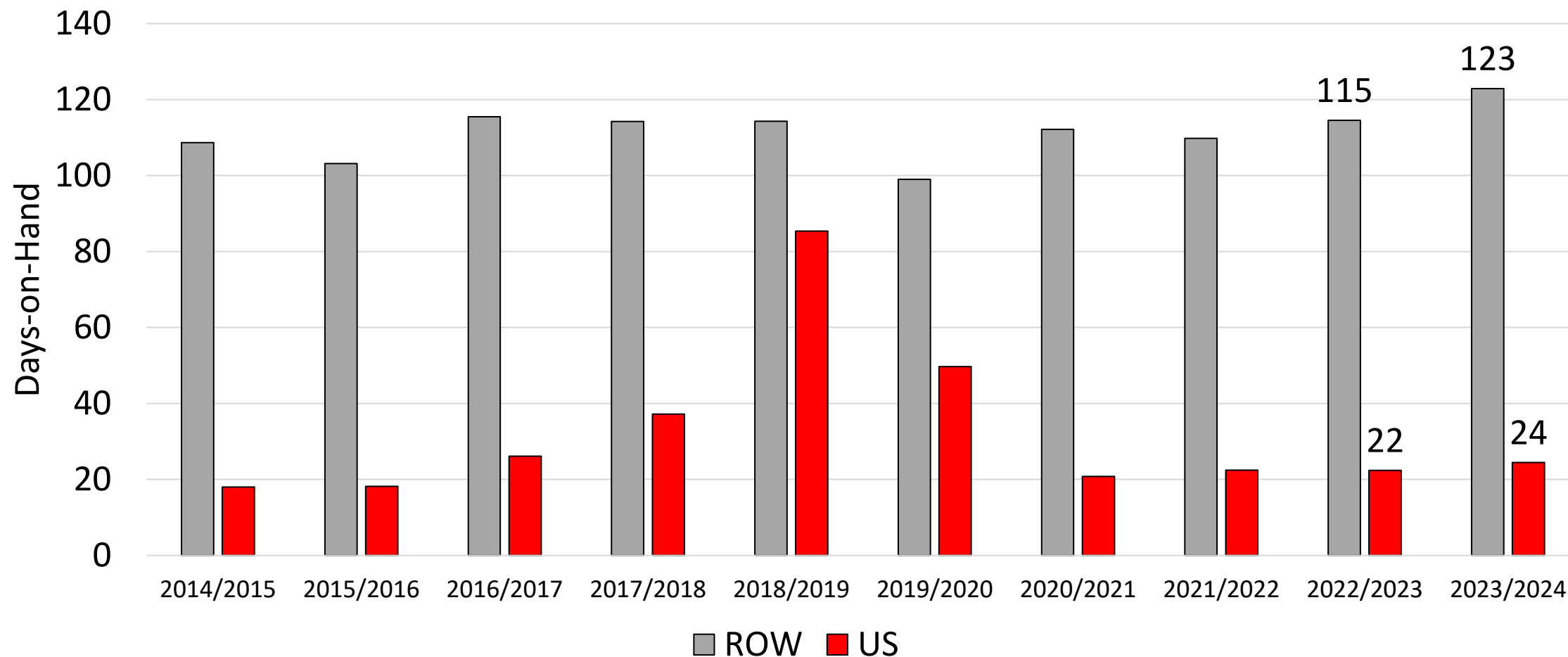


- Past Ten Years
  - US crush up – 22.8%
  - World crush up – 24.2%

Crush, 2014-2023



# Soybean Days on Hand, 2014/15 to 2023/24



# Soybean Supply and Demand Summary

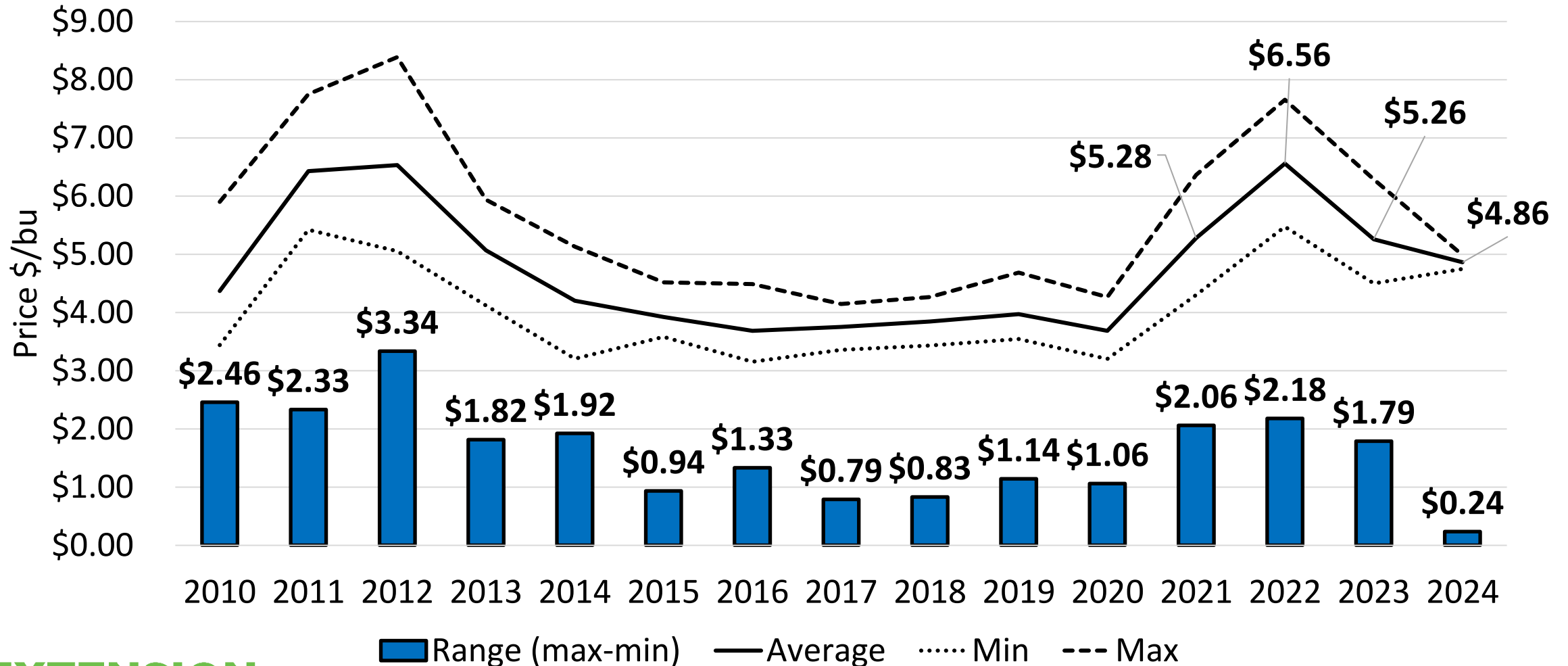
- Brazil may have record production (again), Argentina is expected to nearly double production compared to last year's drought reduced soybean crop.
- Erosion of US soybean export share
- Expansion of US soybean crush capacity
- Tight US stocks; large foreign stocks
- Lower anticipated prices for 2024.



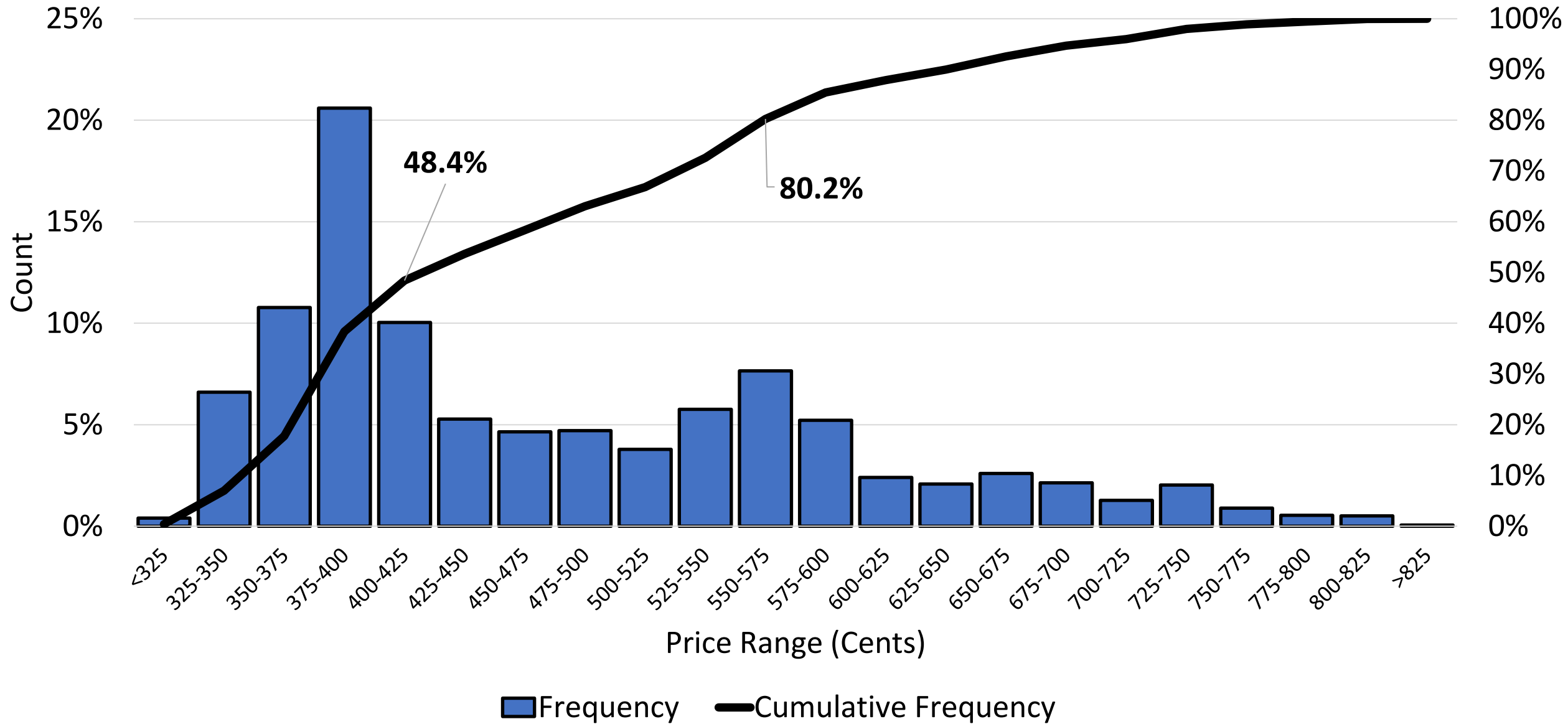
Historical, Old, and New Crop

# PRICES

# December Corn Futures Contract, Jan 1 to Expiration, 2010-2024\*

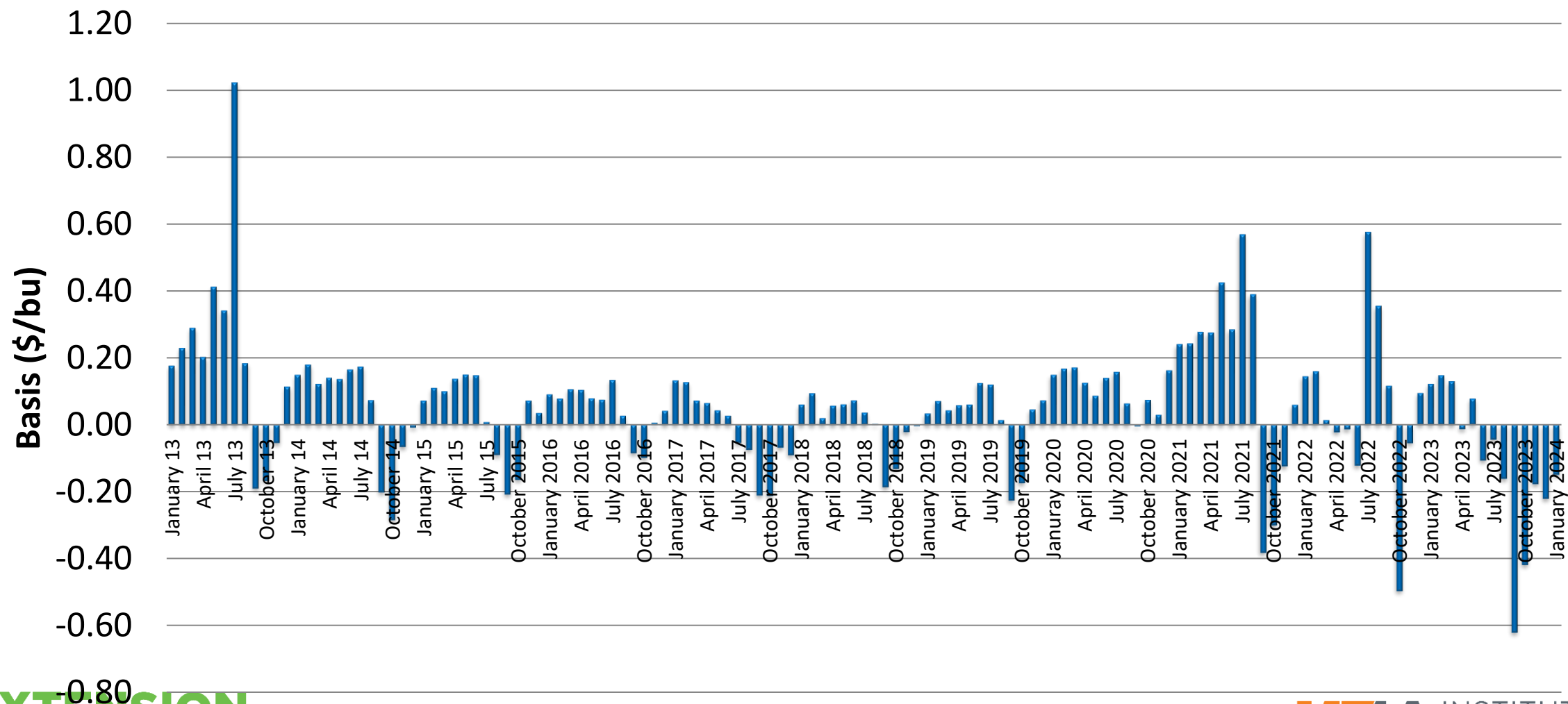


# December Corn Closing Futures Price Frequency, 12/1/09 to 1/26/24

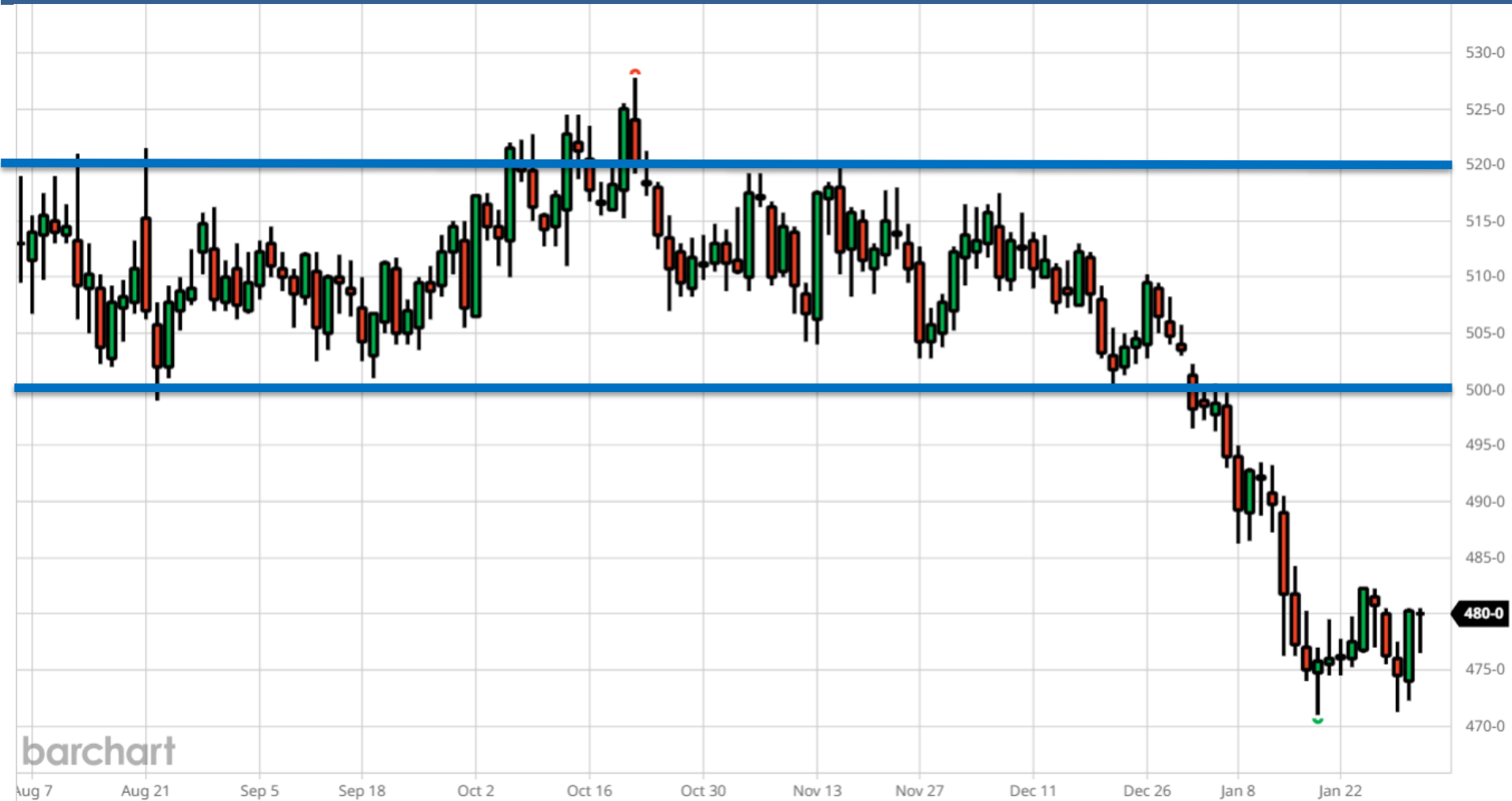




# West Tennessee Monthly Average Corn Basis at Elevators and Barge Points, 2013-2024\*

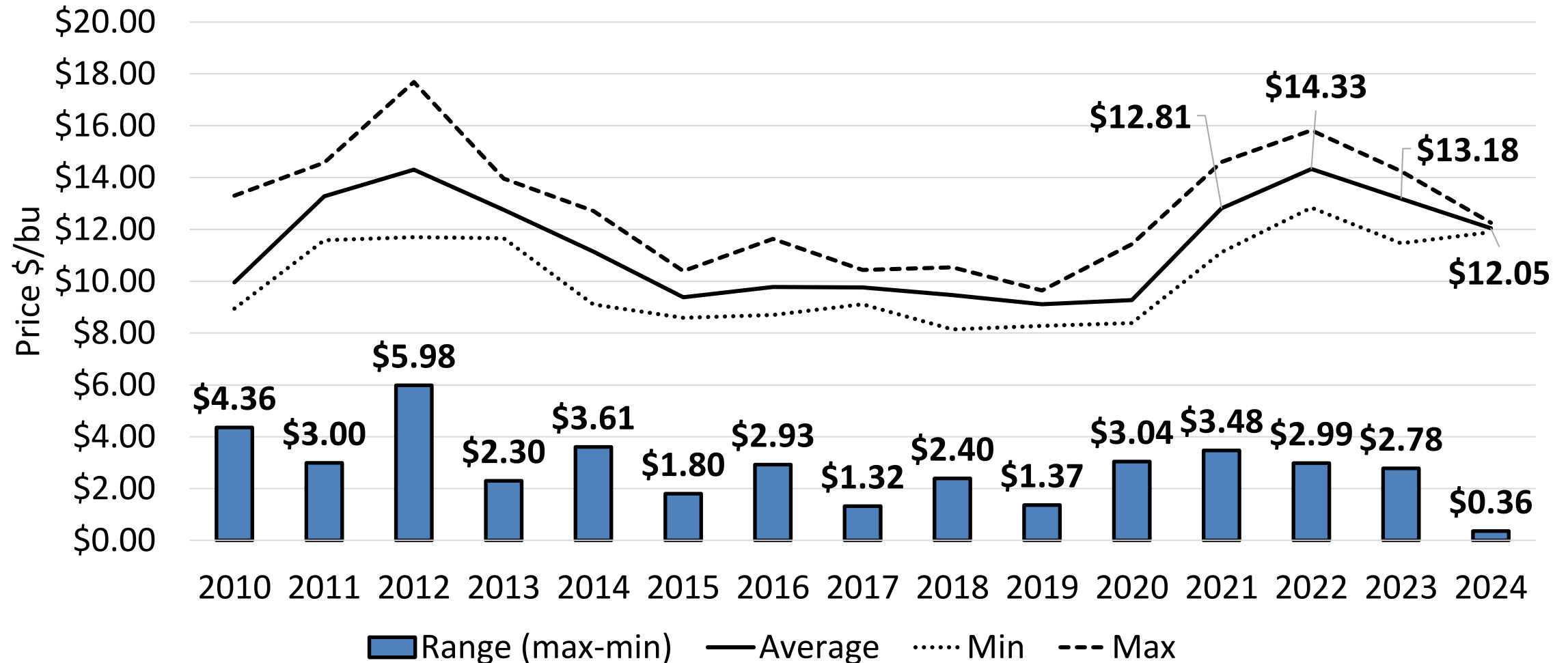


# December 2024 Corn Futures

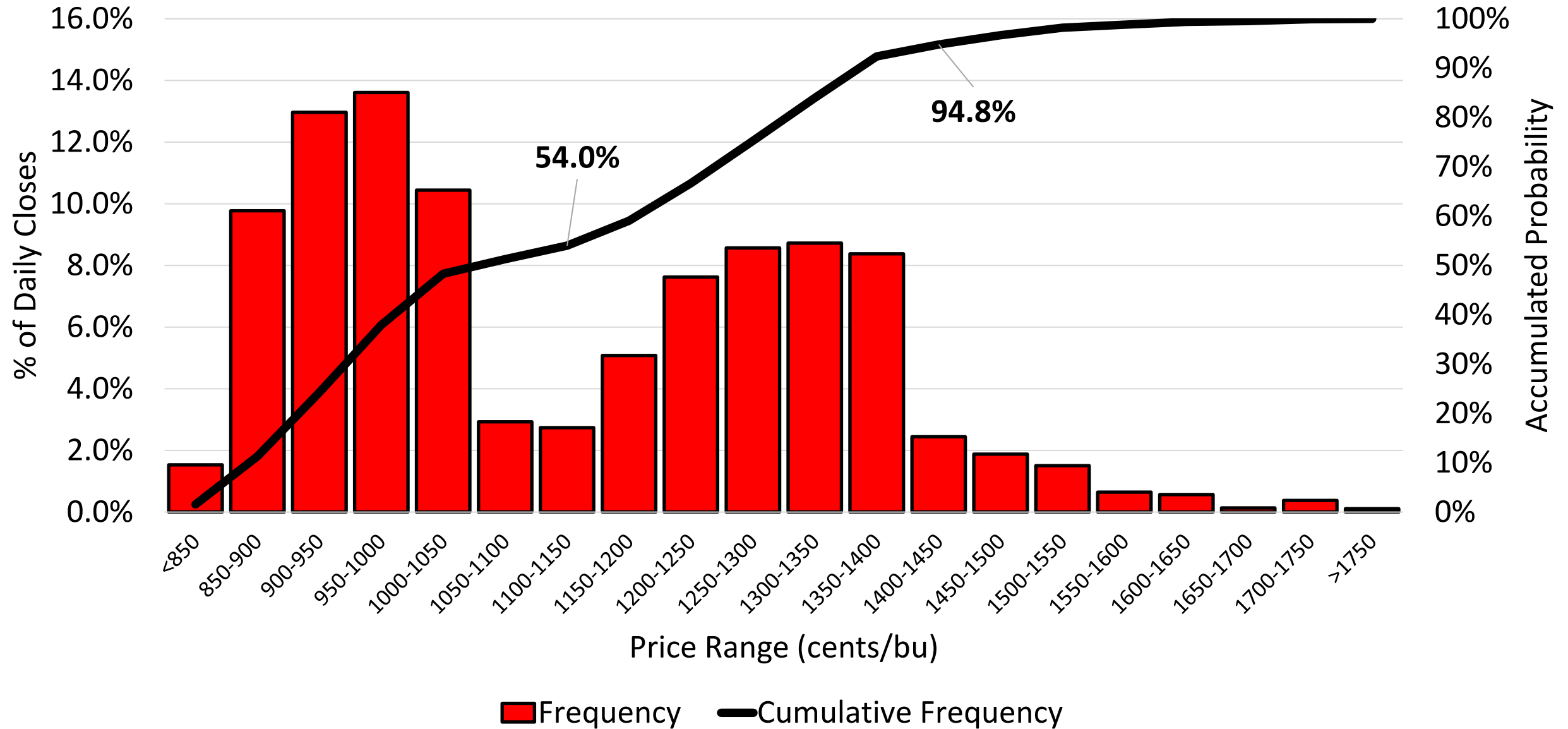


Prices have broken out of the trading range and are looking to establish a new range.

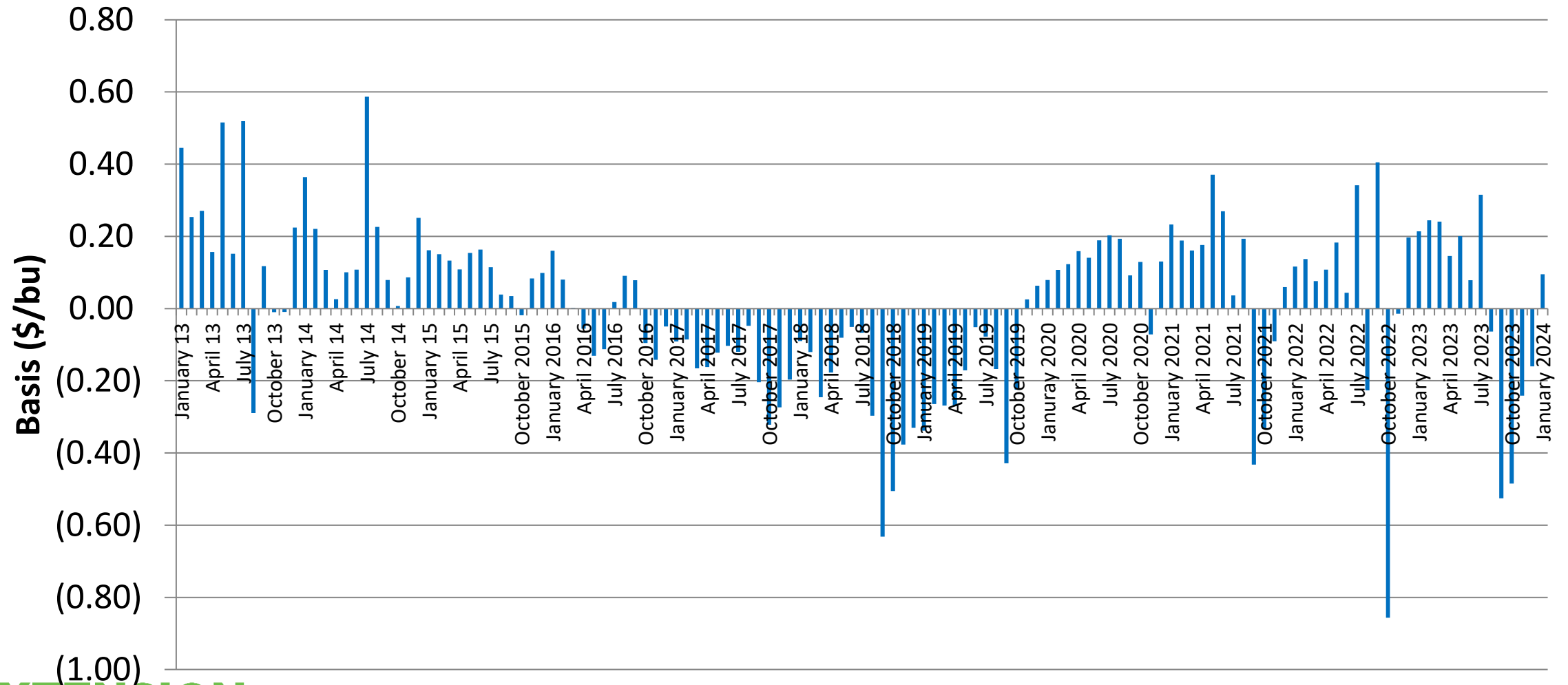
# November Soybean Futures Contract, Jan 1 to Expiration, 2010-2024\*



# November Soybean Closing Futures Price Frequency, 11/1/09 to 1/26/24



# West Tennessee Monthly Average Soybean Basis at Elevators and Barge Points, 2013-2024



# November 2024 Soybean Futures



South American production will continue to strongly influence price direction. \$12.40 price gap will provide resistance.

# Supply and Demand Summary

- General economy
  - Labor markets remain tight / GDP growth exceeded expectations last quarter
  - Increased consumer debt, inflation, and high interest rates create cautionary notes
- Inputs and commodity prices are down
  - Margins will be tighter in 2024.
- Prices are forecast to continue to move lower.
- Develop and execute a risk management and marketing plan.



Timing is everything.

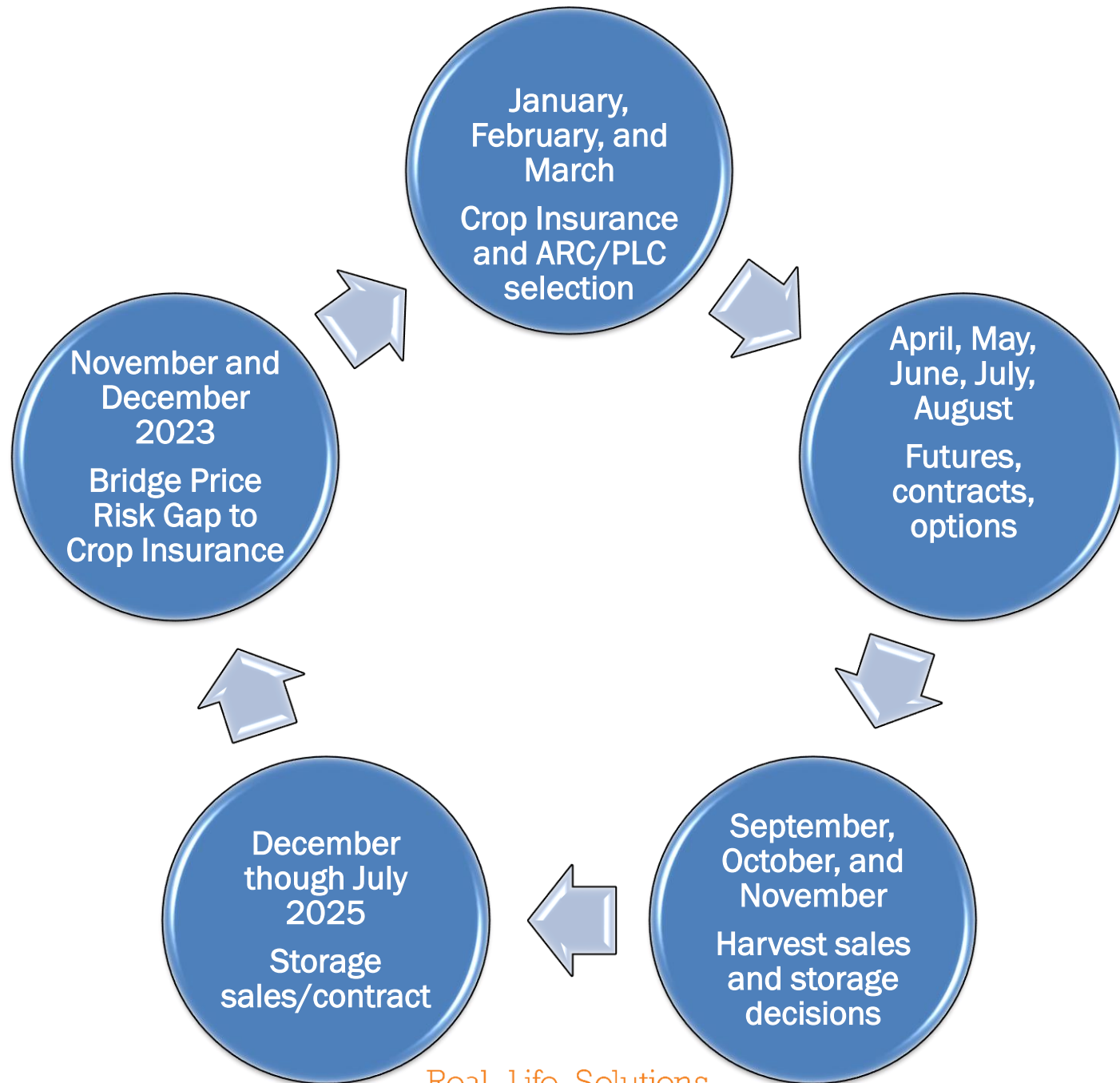
# RISK MANAGEMENT



How much risk are you willing to take?



# 2024 Crop Marketing Cycle



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## Example: Bridging the price risk gap until crop insurance prices are determined – put option

- Example: Bridging the price risk gap until crop insurance prices are determined – put option
  - On November 14, a \$5.20 December 2024 Corn Put Option cost \$0.44, setting a \$4.76 futures floor.
    - If December 2024 corn < \$4.76, in the money
      - January 29 \$5.20 put option was at \$0.65.
  - After crop insurance prices are determined:
    - Out-of-the money: exit options position recoup premium.
    - In-the-money: maintain the position as price protection.



# Corn MYA and Crop Insurance Prices, 2011-2023

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
MYA	\$6.22	\$6.89	\$4.46	\$3.70	\$3.61	\$3.36	\$3.36	\$3.61	\$3.56	\$4.53	\$6.00	\$6.54	<b>\$4.80</b>
Projected	\$6.01	\$5.68	\$5.65	\$4.62	\$4.15	\$3.86	\$3.96	\$3.96	\$4.00	\$3.88	\$4.58	\$5.90	<b>\$5.91</b>
Harvest	\$6.32	\$7.50	\$4.39	\$3.49	\$3.83	\$3.49	\$3.49	\$3.68	\$3.90	\$3.99	\$5.37	\$6.86	<b>\$4.88</b>

January 30, December corn at \$4.74; November Soybeans at \$11.81.

# Soybean MYA and Crop Insurance Prices, 2011-2023

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
MYA	\$12.50	\$14.40	\$13.00	\$10.10	\$8.95	\$9.47	\$9.33	\$8.48	\$8.57	\$10.80	\$13.30	\$14.20	<b>\$12.75</b>
Projected	\$13.49	\$12.55	\$12.87	\$11.36	\$9.73	\$8.85	\$10.19	\$10.16	\$9.54	\$9.17	\$11.87	\$14.33	<b>\$13.76</b>
Harvest	\$12.14	\$15.39	\$12.87	\$9.65	\$8.91	\$9.75	\$9.75	\$8.60	\$9.25	\$10.55	\$12.30	\$13.81	<b>\$12.84</b>

# Farm Bill

- Extended to September 30, 2024.
- Budget, narrow majorities in both chambers, and an election cycle will make negotiations challenging and likely necessitate another extension.
- Price Loss Coverage (PLC) effective reference prices
  - Corn: +31 cents @ \$4.01
  - Soybeans: +86 cents @ \$9.26
  - Seed cotton (\$0.367) and wheat (\$5.50) unchanged

# Determine Cost of Production

## 2024 Soybean Budget

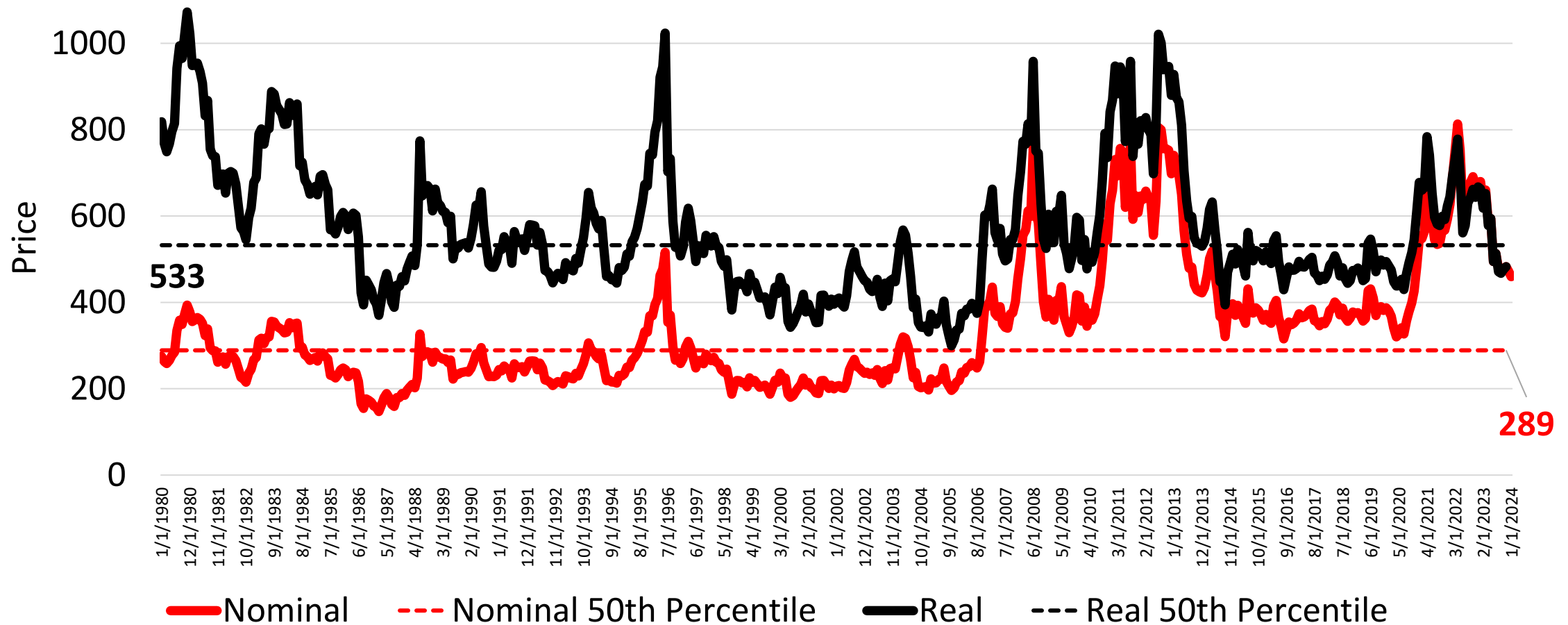
	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>
<b>Revenue</b>			<b><u>Gross Revenue (\$/Acre)</u></b>	
Soybeans	Bu/acre	50	\$12.20	\$610.00
			<b>Total Revenue</b>	<b>\$610.00</b>
<b>Variable Expenses</b>				
Seed	Thous.	140	\$0.45	\$63.00
Fertilizer & Lime	Acre	1	\$60.00	\$60.00
Chemical	Acre	1	\$86.73	\$80.00
Crop Scout or Consultant	Acre	1	\$10.00	\$10.00
Repair & Maintenance	Acre	1	\$33.13	\$35.00
Fuel, Oil & Filter	Acre	1	\$17.37	\$18.00
Operator Labor	Acre	1	\$8.90	\$9.00
Crop Insurance	Acre	1	\$15.00	\$15.00
Operating Interest	%	\$145.00	8.50%	\$12.33
			<b>Total Variable Expenses</b>	<b>\$302.33</b>
			<b>Return Above Variable Expenses</b>	<b>\$307.68</b>
<b>Fixed Expenses</b>				
Machinery				
Capital Recovery	Acre	1	\$115.28	\$115.00
General Overhead	Acre	1	\$20.00	\$20.00
Cash Rent	Acre	1	\$113.00	\$150.00
			<b>Total Fixed Expenses</b>	<b>\$285.00</b>
			<b>Total Expenses</b>	<b>\$587.33</b>
			<b>Return Above Specified Expenses</b>	<b>\$22.68</b>

- Estimate the cost for the production cycle
  - Cash expenses
  - Non-cash expenses
- Sensitivity to changes in cost categories
- Determine breakeven
- Identify price points

# Disaggregate Cash Prices

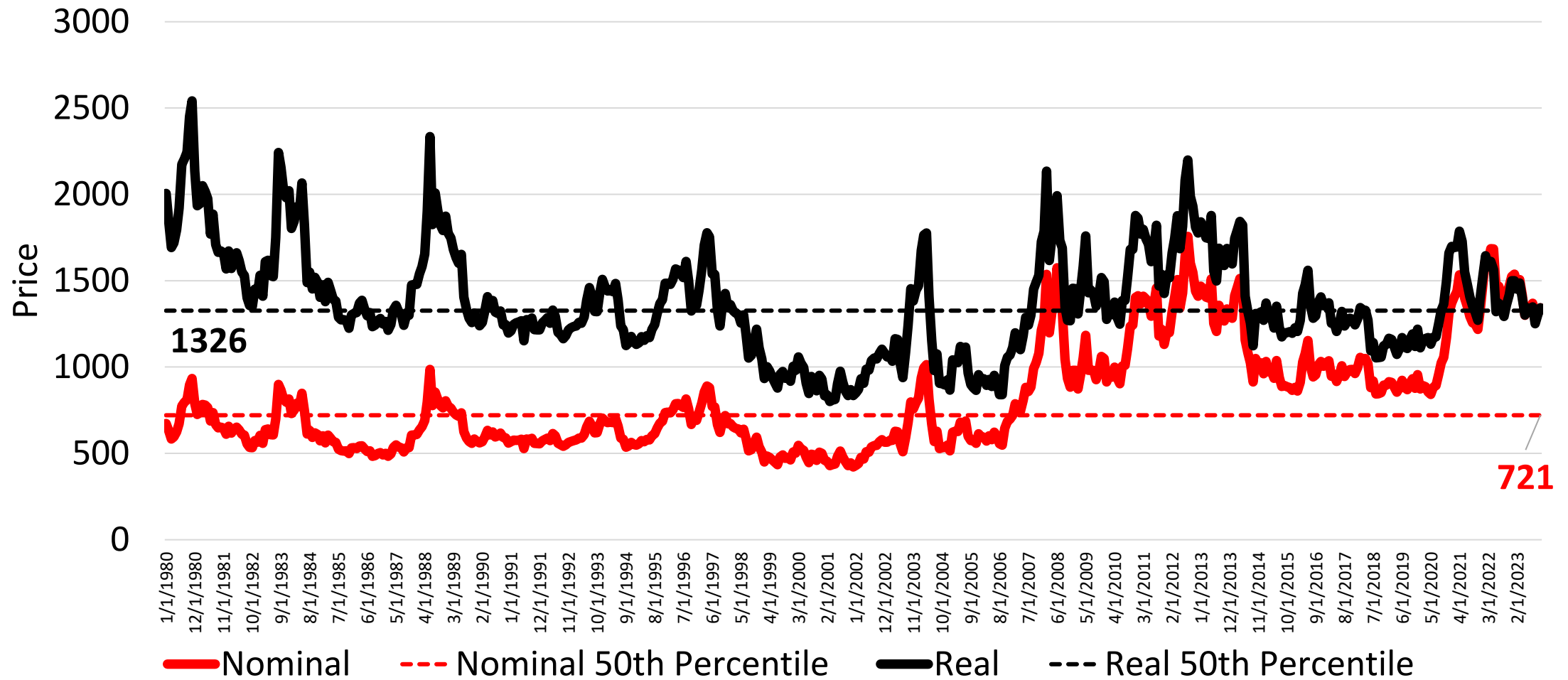
- Cash = Futures + Basis
  - Typically, 90%+ of price risk is in the futures market.
  - Need to evaluate strategies and tools that can be used to minimize risk for both.
  - Timing – Low basis levels the past three years due to the Mississippi river.

# Monthly Real and Nominal Nearby Corn Futures Prices, 1980-2023 (Base = November 2023)





# Monthly Real and Nominal Nearby Soybean Futures Prices, 1980-2023 (Base = November 2023)



## Fence in a Price?



December corn currently at \$4.74.

- Buy a \$4.40 December Put option for \$0.20 sets a \$4.20 futures price floor.
- Sell a \$5.70 December Call Option for \$0.12.

Futures price range established between \$4.20 to \$5.70 for \$0.08 premium.

- Set basis during the production year.

# Execute and Evaluate

- Make all decisions based on well thought analysis and risk preferences.
  - Wishing and hoping ruin good marketing and risk management plans.
- Execute the strategy – be comfortable with the potential range of outcomes.
- Examine successes and failures from the strategy employed
  - Was the result what you expected?
  - Why or why not?

Dr. S. Aaron Smith Associate Professor and Extension  
Economist

Department of Agricultural and Resource Economics  
University of Tennessee Institute of Agriculture

Email: [aaron.smith@utk.edu](mailto:aaron.smith@utk.edu)

Web Page: <https://cropeconomics.tennessee.edu>



# THANK YOU