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2020 Northeast Ag Expo Grain Marketing Webinar
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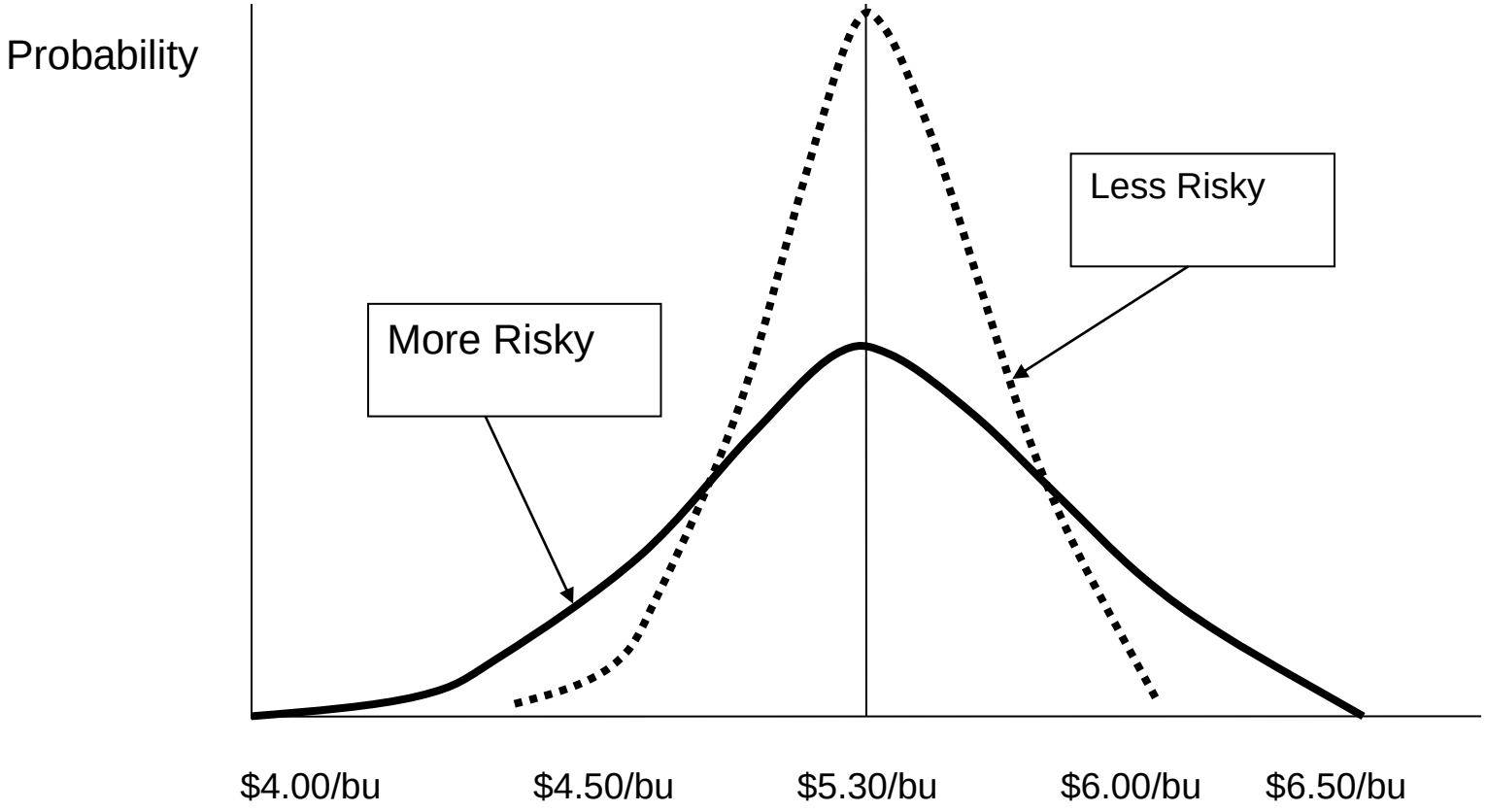
Outline

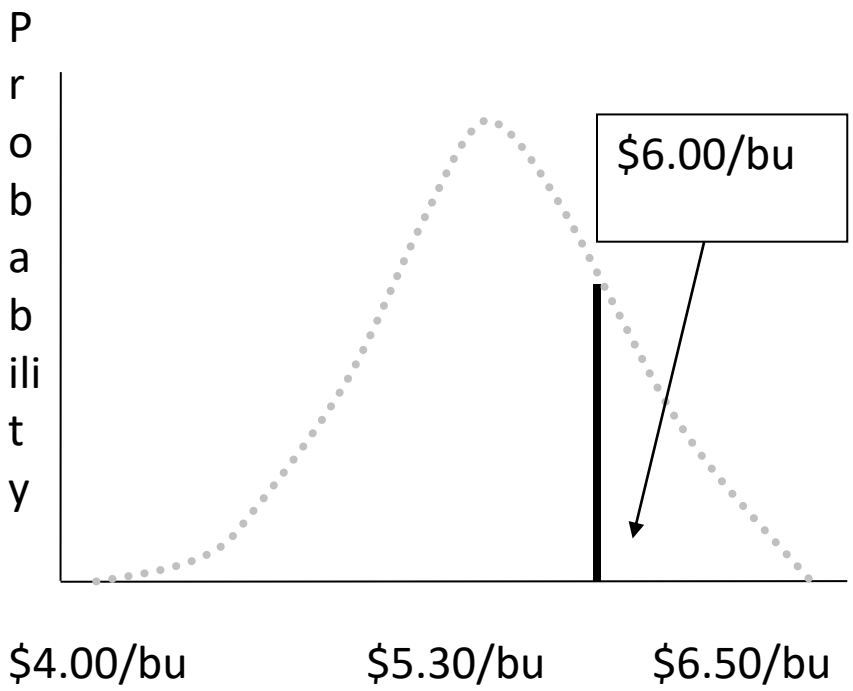
- **Price risk**
  - The possibility that the selling price of a crop will decline, even to a less than profitable level
  - Marketing instruments to manage price risk include cash grain contracts, futures markets, options markets, and crop insurance
- **Basis and its role in marketing**
  - Establishing how local prices are determined using futures price and basis
- **Review marketing strategies for different futures price and basis risk situations**
- **Evaluate current situations for corn, soybeans, and wheat**

VISUALIZING PRICE RISK

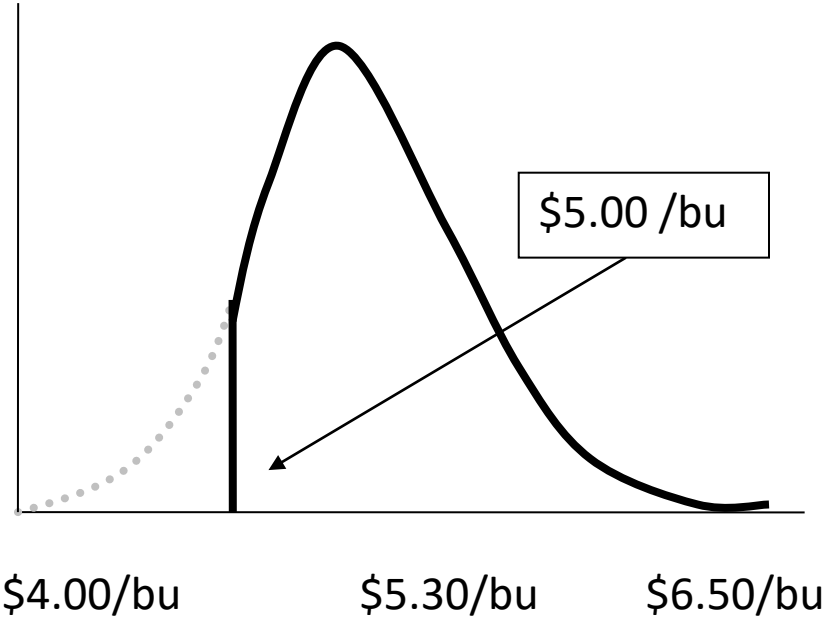


Transforming the PDF By Managing Price Risk

Locking in Cash Price



Setting a Cash Price Floor at Harvest by Purchasing Put Option



WHAT IS "*BASIS*"?

"Basis is the difference between local cash prices and futures market prices at any point in time."

BASIS = LOCAL CASH PRICE – FUTURES PRICE

AND, IT FOLLOWS THAT:

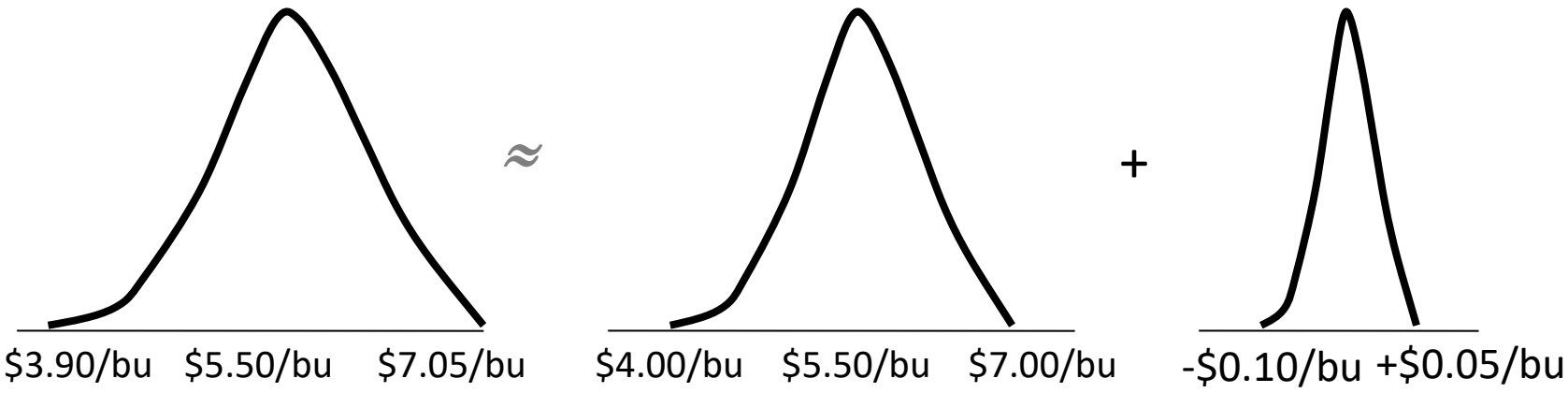
LOCAL CASH PRICE = FUTURES PRICE + BASIS

VISUALIZING LOCAL CASH PRICES, FUTURES PRICE AND BASIS

Reflects World Demand and Supply

Reflects Local Demand and Supply

Cash Price PDF ≈ *Futures Price PDF* + *Basis PDF*



All distributions are hypothetical for illustration only.

Using Futures and Historical Basis to Evaluate Offers

Because of the fundamental relationship between cash prices, futures prices, and basis we can evaluate cash price offers (immediate delivery) and forward contracts (harvest delivery).

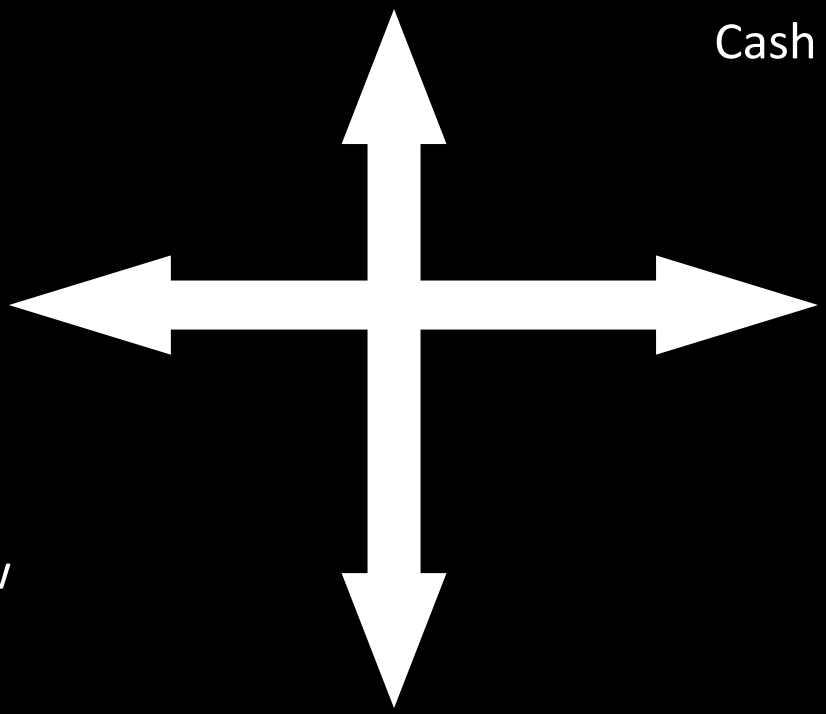
Pricing follows these relationships:

Cash Price Offer ≈ Nearby Futures Price + Historical Current Basis

Forward Price Offer ≈ Harvest Contract Futures Price + Historical Basis at Harvest

These relationships enable evaluation of the attractiveness of offers.

RECOMMENDED MARKETING STRATEGIES FOR DIFFERENT FUTURES PRICE AND BASIS RISK SITUATIONS

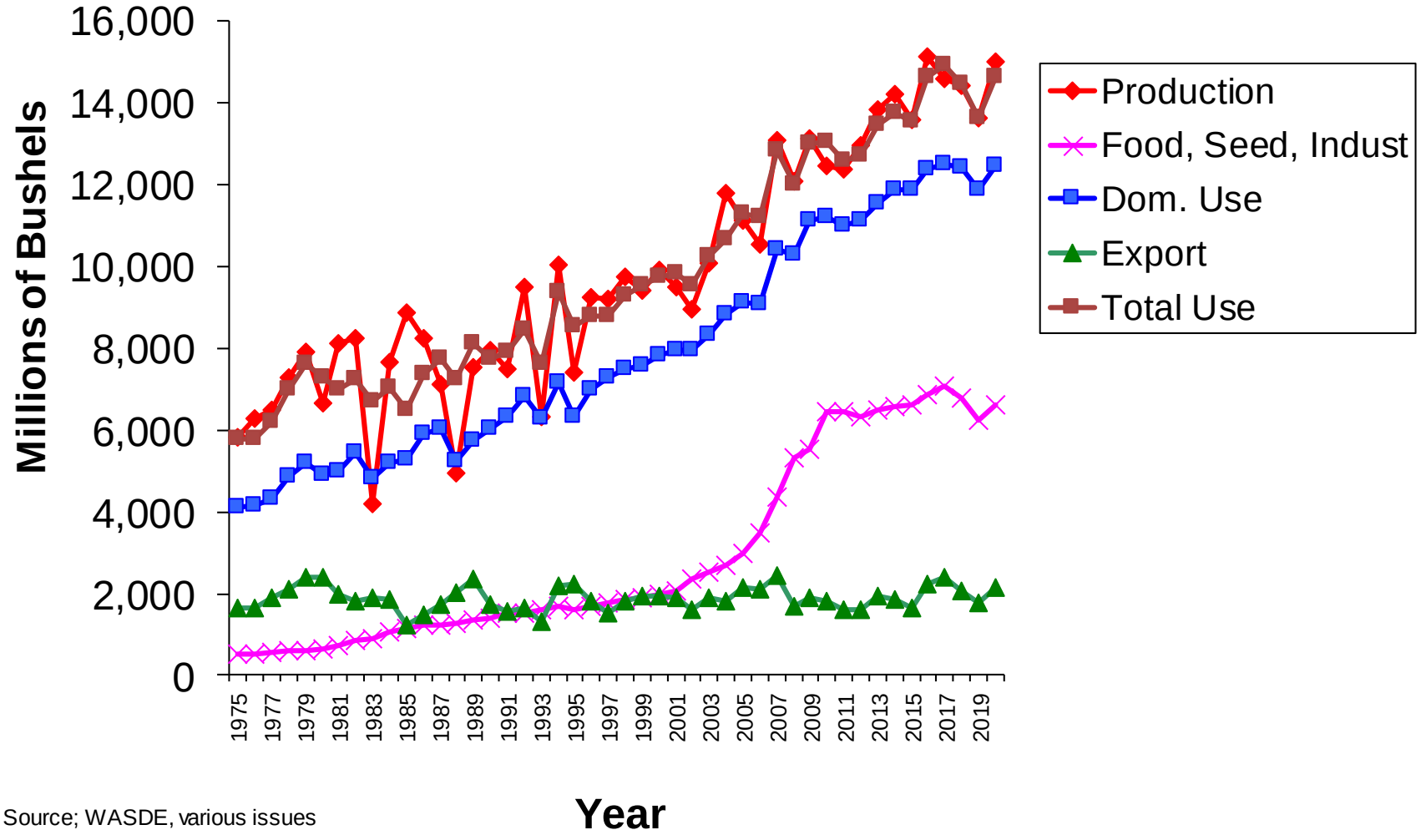


USDA SUPPLY/DEMAND BALANCE SHEET FOR CORN

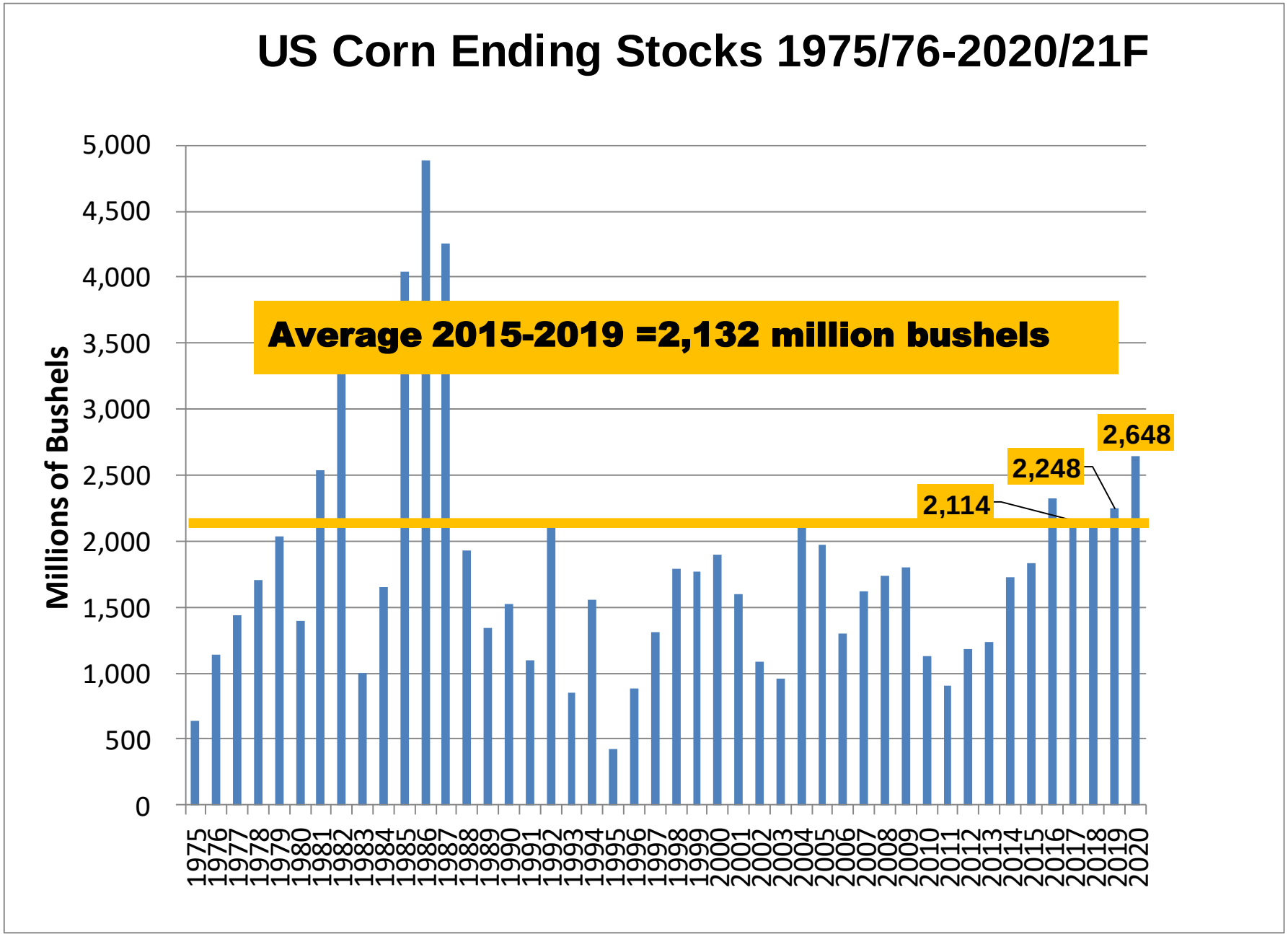
	2018/19	2019/20	2020/21	%Δ
	Million Acres			
Acres Planted	88.9	89.7	92.0	2.6%
Acres Harvested	81.3	81.3	84.0	3.3%
Bu./Harvested Acre	176.4	167.4	178.5	6.6%
	Million Bushels			
Beginning Stocks	2,140	2,221	2,248	1.2%
Production	14,340	13,617	15,000	10.2%
Total Supply	16,509	15,883	17,273	8.8%
Use:				
Feed and Residual	5,429	5,600	5,850	4.5%
Ethanol for fuel	5,378	4,850	5,200	7.2%
Exports	2,066	1,775	2,150	21.1%
Total Use (Demand)	14,288	13,635	14,625	7.3%
Ending Stocks	2,221	2,248	2,648	17.8%
Ending Stocks, % of Use	15.5	16.5	18.1	9.8%
U.S. Season Avg. Farm Price, $/ Bu.	$3.61	$3.60	$3.35	-6.9%

Source: USDA, WASDE Jul, 2020

U.S. Corn Supply and Disappearance 1975/76-2020/21F



Source; WASDE, various issues


US Corn Ending Stocks 1975/76-2020/21F
Millions of Bushels
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Average 2015-2019 =2,132 million bushels
2,114
2,248
2,648
1975
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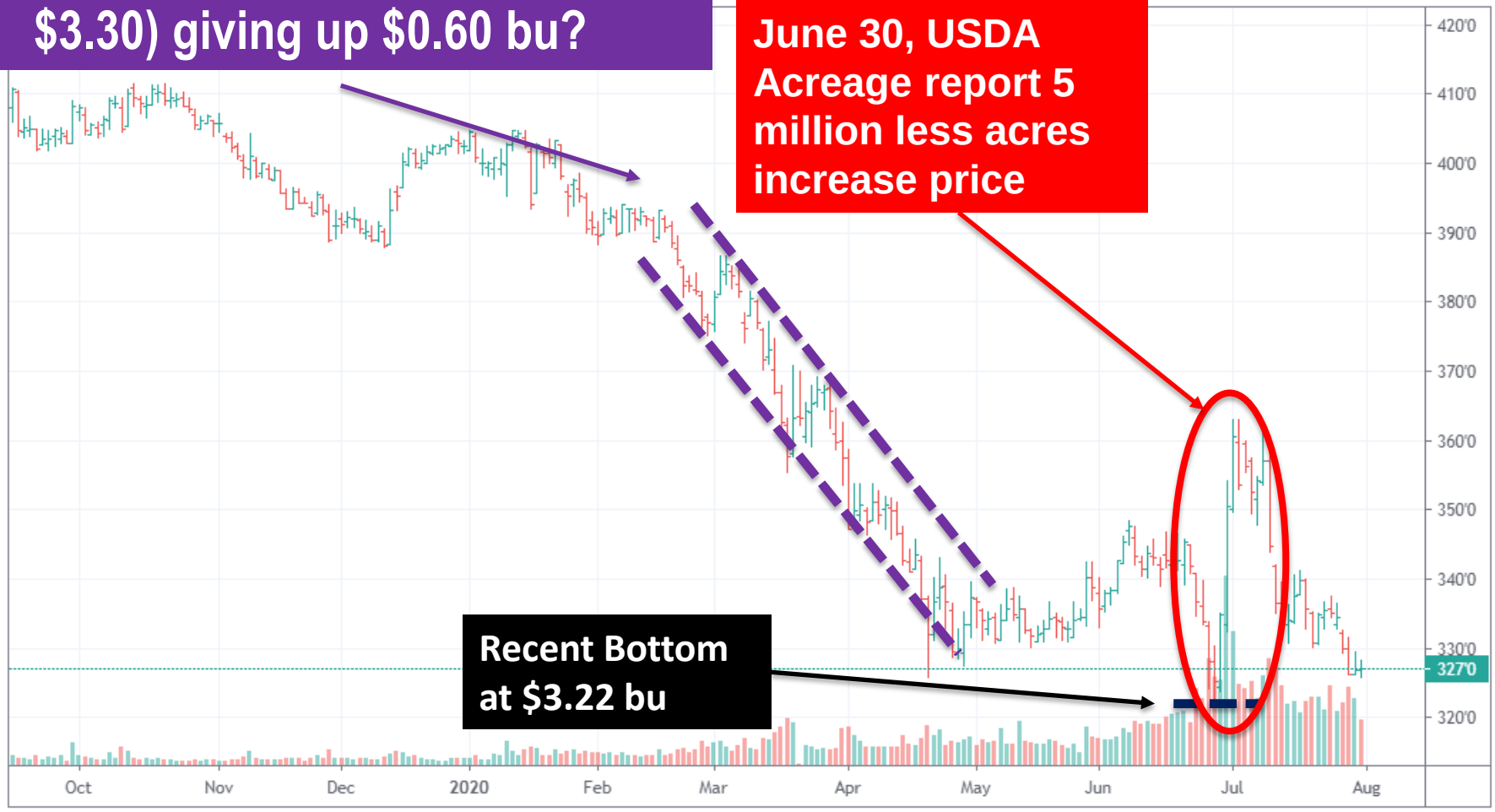
Corn Dec 2020

Significant downward trend ($3.90--$3.30) giving up $0.60 bu?



Probabilistic Statement Regarding Corn Futures December 2020 at expiration

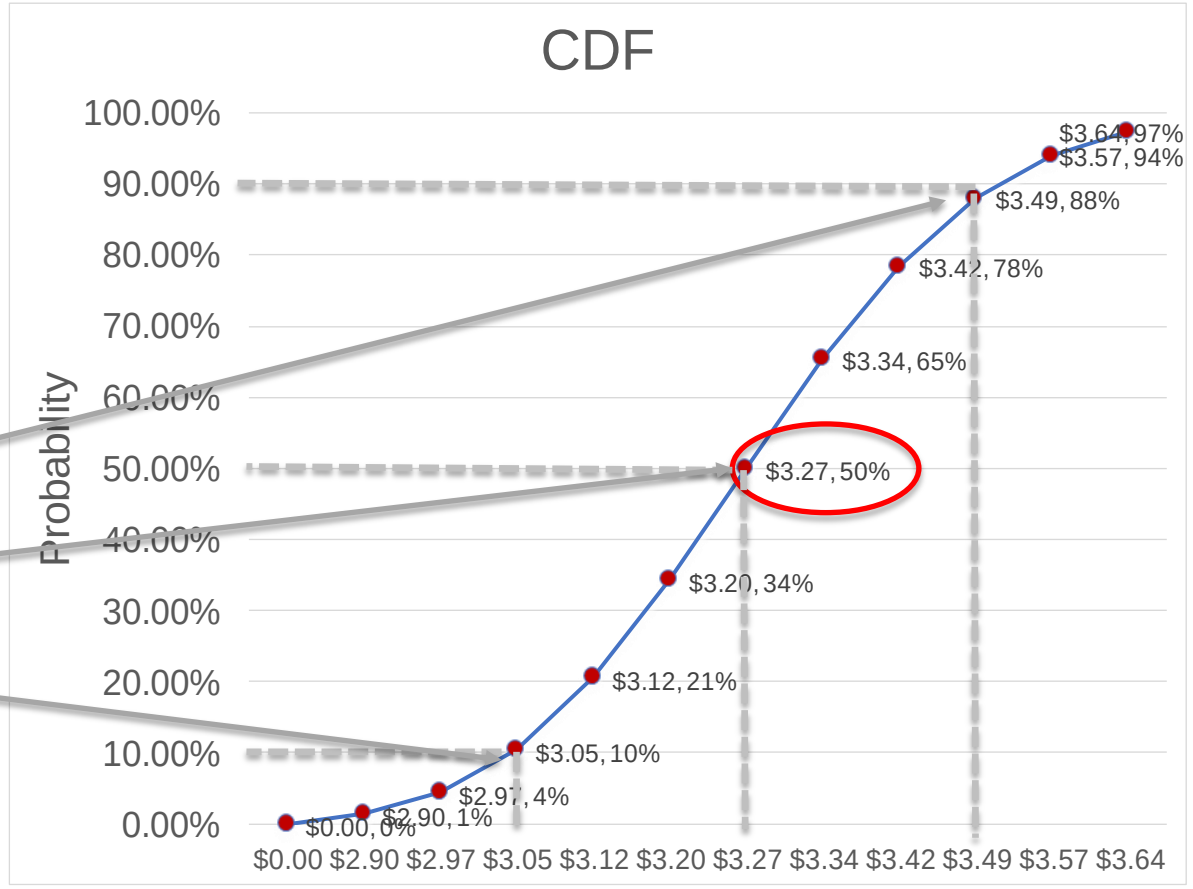
Date	7/31/2020
Crop:	Corn
Futures & Options Contract Month:	12
Futures & Options Contract Year:	2020
Futures Price	$3.27 /bu
OPTION PREMIUMS FOR PROBABILITIES	
Nearest-to-the Money Strike Price	$3.30 /bu
Nearest-to-the Money Put Option Premium	$0.15250 /bu
Nearest-to-the Money Call Option Premium	$0.11875 /bu
Interest Rate	2.0%

Note: Data is time-sensitive and changes daily

Pr(C_Dec2020>$3.49) = 12%

Pr(C_Dec2020<$3.27) = 50%

Pr(C_Dec2020<$3.05) = 10%



Methodology Based on Curtis, C E & G L Carriker, "Estimating Implied Volatility Directly from “Nearest-to-the-money“ Commodity Options Premiums." WP081588, Dept of Ag & Applied Economics, Clemson University, Aug 1988.

Also see: https://farmdoc.illinois.edu/decision-tools/price-distribution

Monthly Nearby Corn Basis--Cofield

Corn Basis 1 record

Year	Location	Location Type	Commodity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Cofield	Feed Mill	Corn	0.48	0.60	0.60	0.65	0.60	0.62	0.62	⊘	⊘	⊘	⊘	⊘

Previous 1 Next

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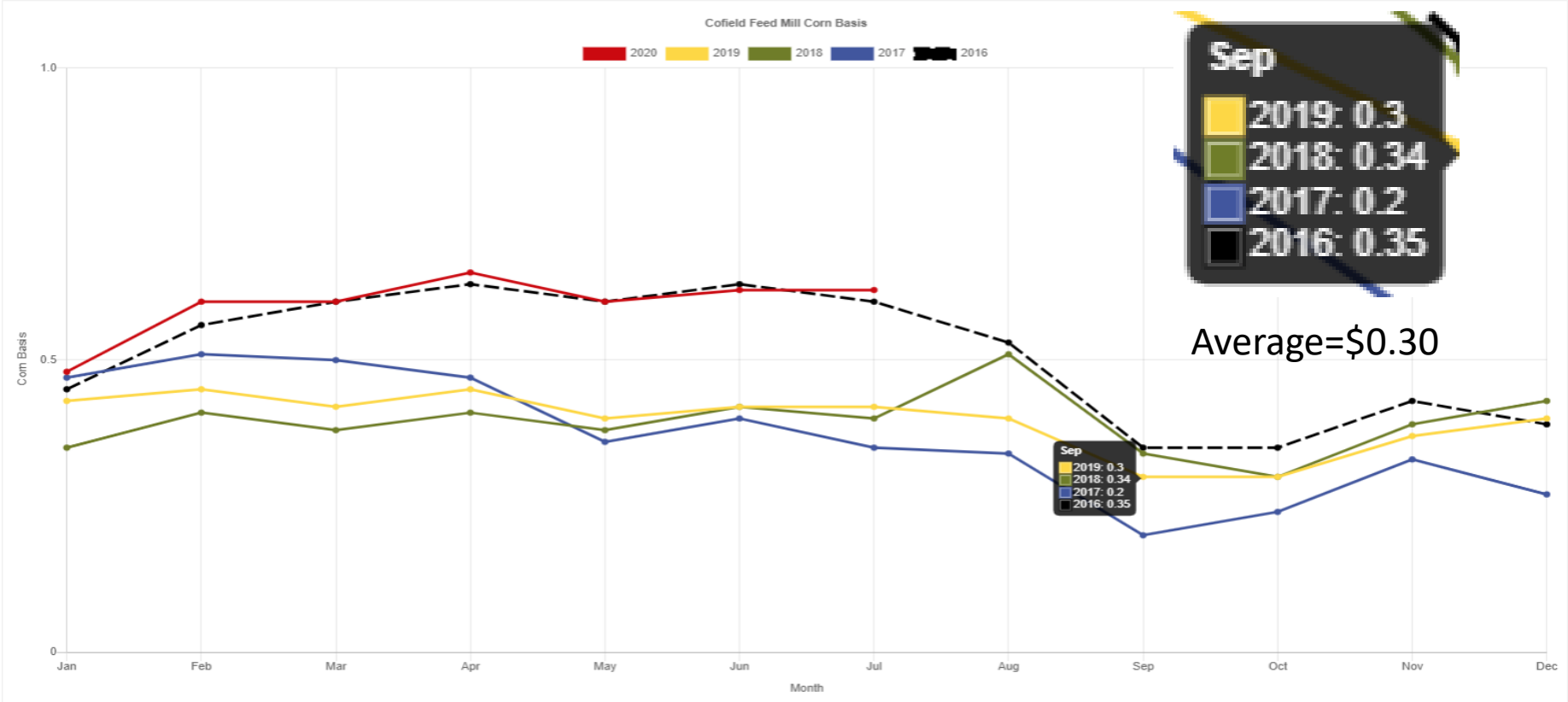


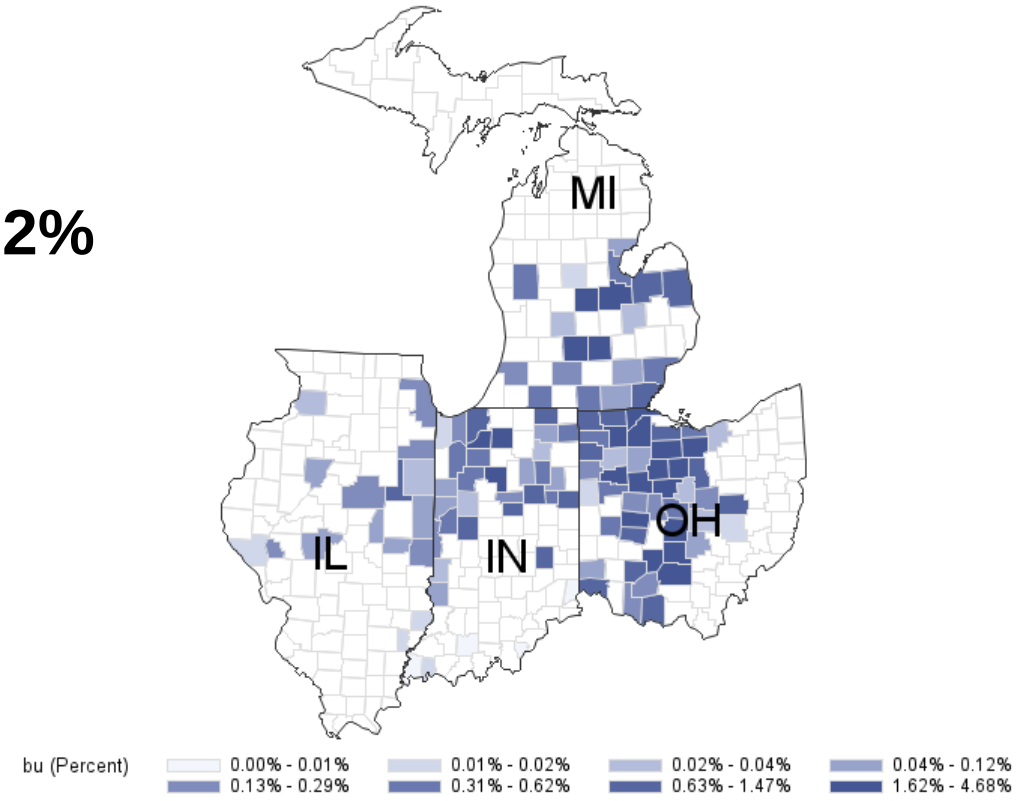
Source: https://agecon.ces.ncsu.edu/price_record/

Funded by North Carolina Corn Growers Association

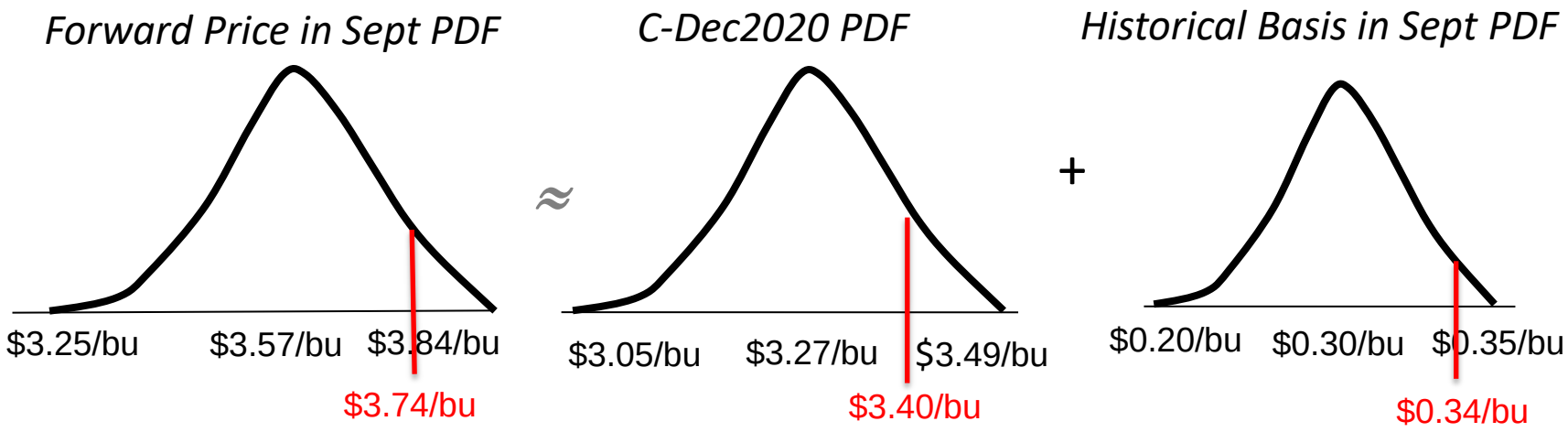
- By State
  - Ohio -> 46%
  - Indiana -> 28%
  - Michigan -> 18%

92%

Origin of corn imported to NC by county from 1990-2017



Putting it together to evaluate forward price offers for corn in Cofield around Sept 2020



Hypothetical: Next week Cofield is offering a forward price contract for $3.74/bu for harvest delivery and the C-Dec2020 has rallied to $3.40/bu is that a good deal?

Answer: This represents a $0.34/bu basis ($0.04 higher and almost the historical high) and C-Dec2020 is $0.13/bu higher than last weeks expectations. Combined, this amounts to $0.17/bu above last weeks expected forward price placing it in the ***upper percentile*** and so it ***does represent a good deal*** based on last weeks expectation. Will it get better? It depends on your expectations on where C-Dec2020 with an improvement in basis unlikely given historical levels.

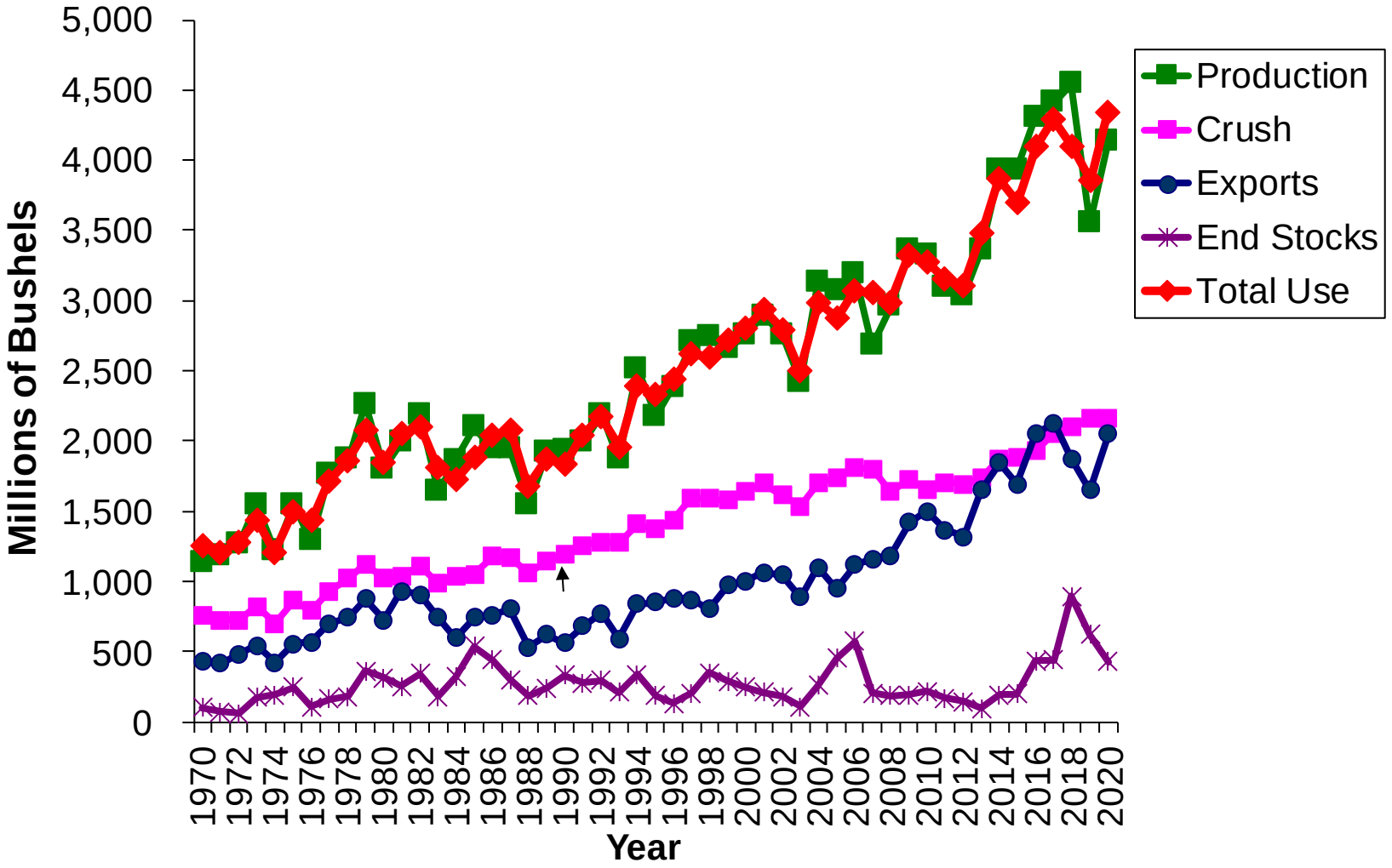
All distributions are hypothetical for illustration only.

USDA SUPPLY/DEMAND BALANCE SHEET FOR SOYBEANS

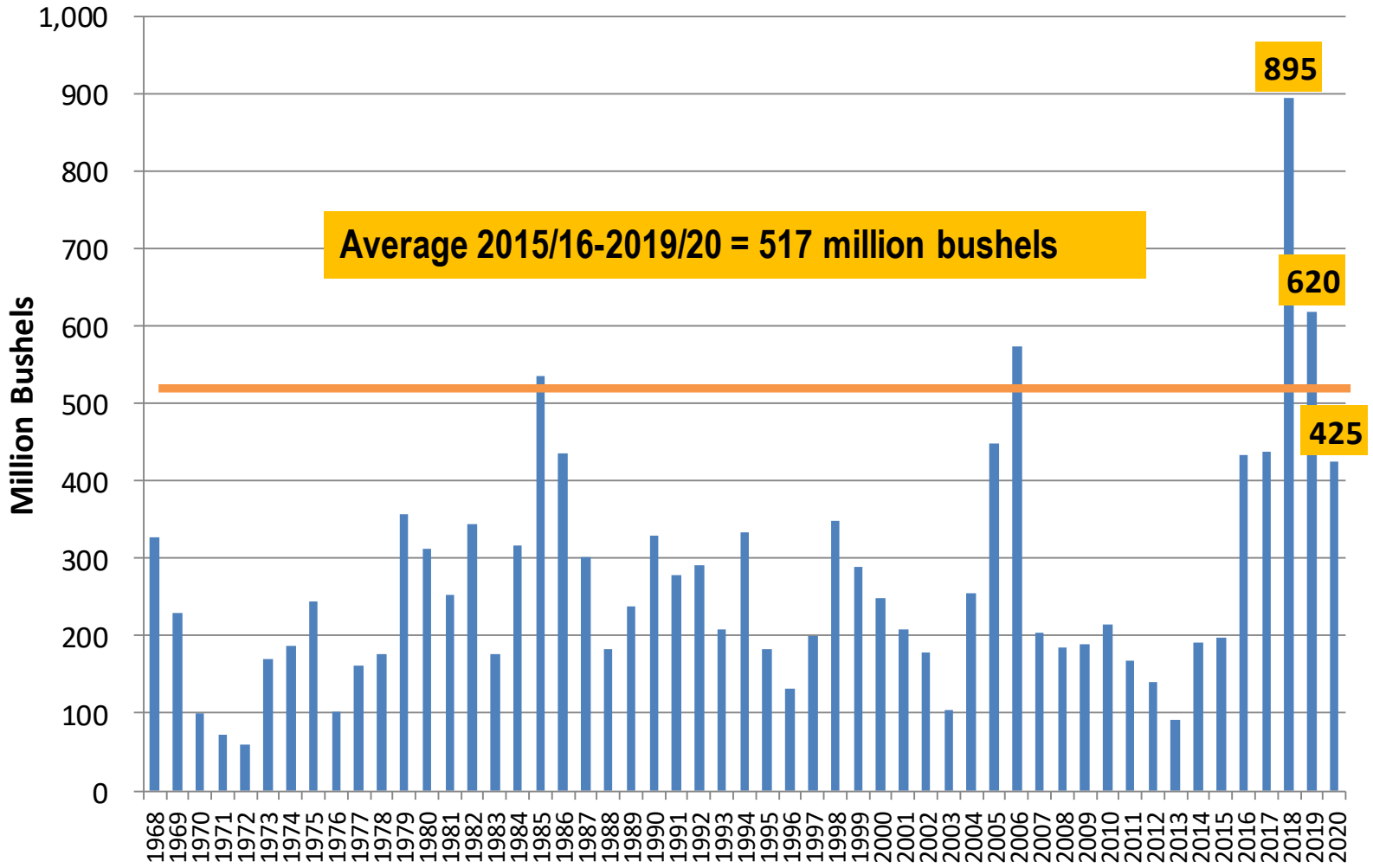
	2018/19	2019/20 Est	2020/21 Proj	%Δ
		Millions of Acres		
Acres Planted	89.2	76.1	83.8	10.1%
Acres Harvested	87.6	75.0	83.0	10.7%
Bu./Harvested Acre	50.6	47.4	49.8	5.1%
		Millions of Bushels		
Beginning Stocks	438	909	620	-31.8%
Production	4,428	3,552	4,135	16.4%
Total Supply	**4,880**	**4,476**	**4,770**	6.6%
Use:				
Crushing	2,092	2,155	2,160	0.2%
Exports	1,752	1,650	2,050	24.2%
Seed & Residuals	127	51	135	164.7%
Total Use (Demand)	**3,971**	**3,857**	**4,345**	12.7%
Ending Stocks	909	620	425	-31.5%
Ending Stocks, % of Use	22.9%	16.1%	9.8%	-39.2%
U.S. Season Average Farm Price, $/ Bu.	$8.48	$8.55	$8.50	-0.6%

Source: WASDE, USDA, Jul 2020

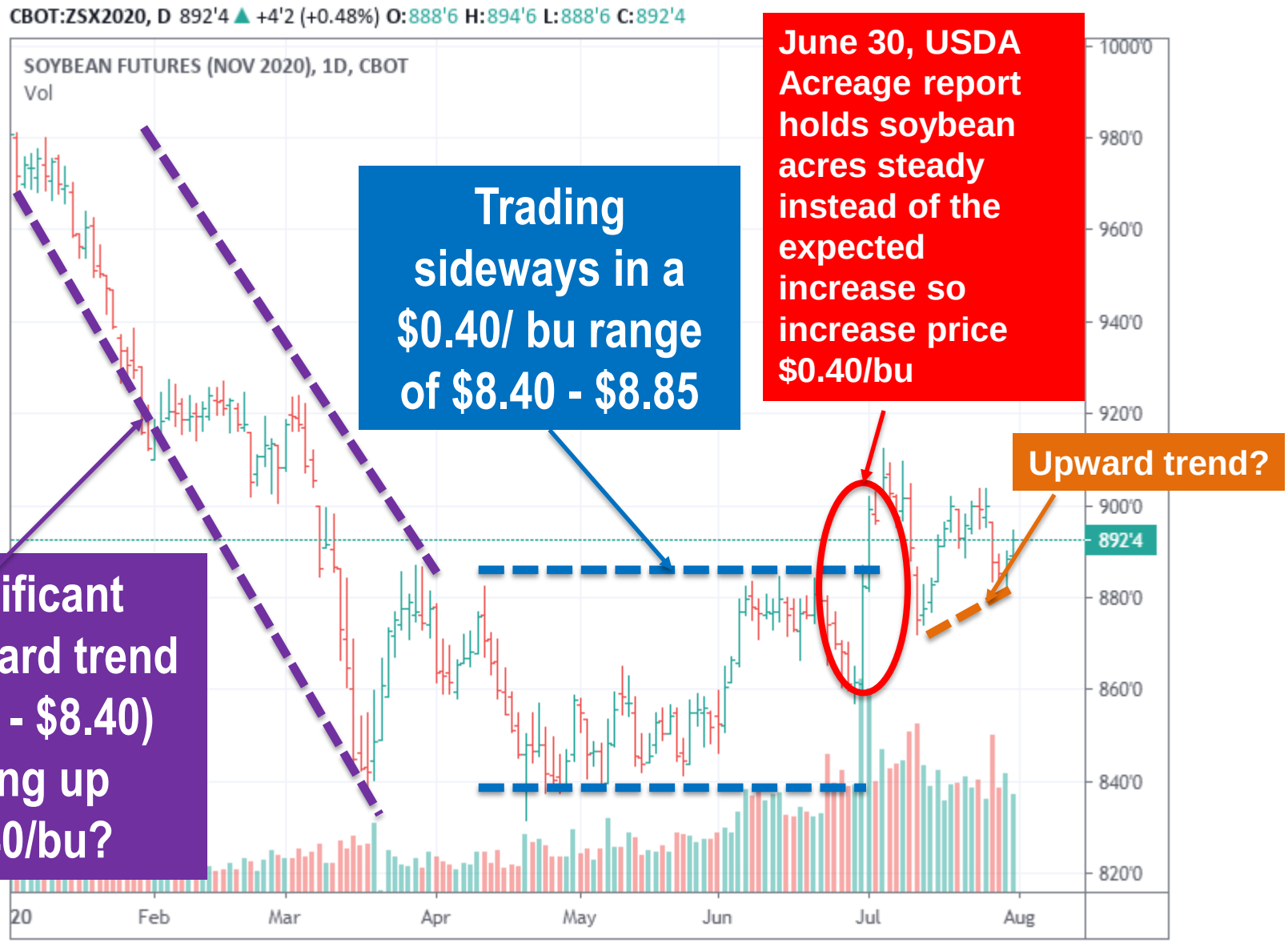
US Soybean Supply and Disappearance 1970/71-2020/21F



US Soybeans Ending Stocks 1968/69-2020/21F



Soybean Nov 2020



Probabilistic Statement Regarding Soybean Futures November 2020 at expiration

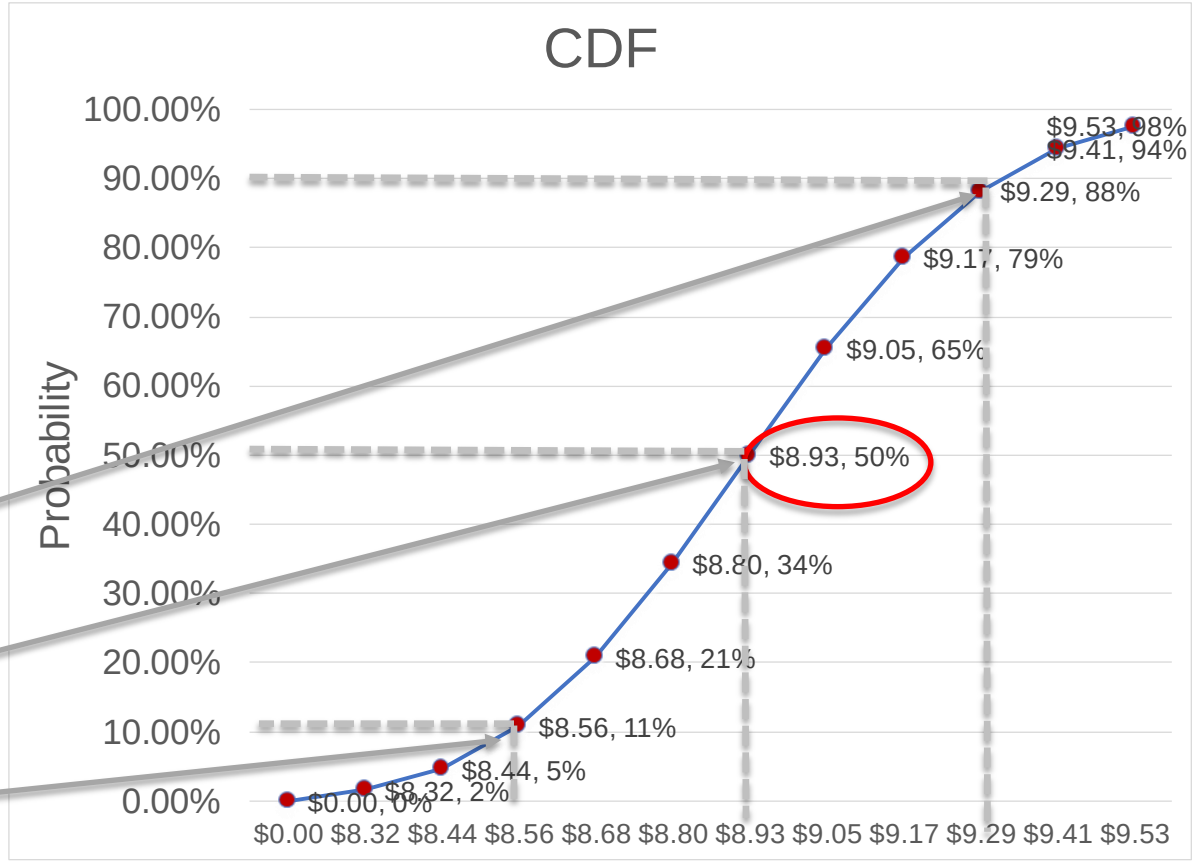
Date	7/31/2020
Crop:	Soybean
Futures & Options Contract Month:	11
Futures & Options Contract Year:	2020
Futures Price	$8.93 /bu
OPTION PREMIUMS FOR PROBABILITIES	
Nearest-to-the Money Strike Price	$8.90 /bu
Nearest-to-the Money Put Option Premium	$0.20625 /bu
Nearest-to-the Money Call Option Premium	$0.23250 /bu
Interest Rate	2.0%

Note: Data is time-sensitive and changes daily

Pr(S_Nov2020>$9.29) = 12%

Pr(S_Nov2020<$8.93) = 50%

Pr(S_Nov2020<$8.56) = 11%



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Also see: https://farmdoc.illinois.edu/decision-tools/price-distribution

Monthly Nearby Soybean Basis--Cofield

Soy Basis 1 record

Year	Location	Location Type	Commodity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Cofield	Feed Mill	Soy	0.03	0.07	0.24	0.30	0.30	0.34	0.35	⊘	⊘	⊘	⊘	⊘

Previous 1 Next

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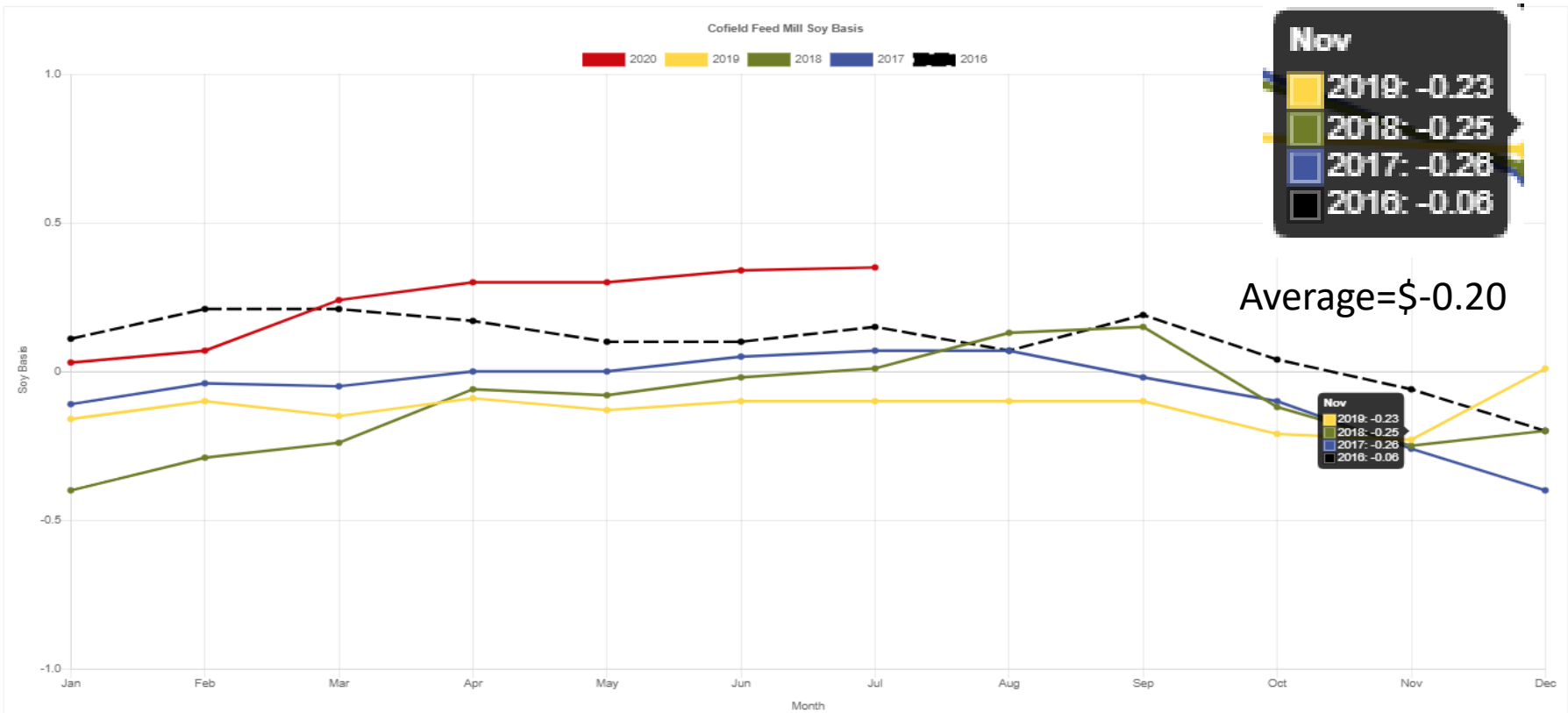
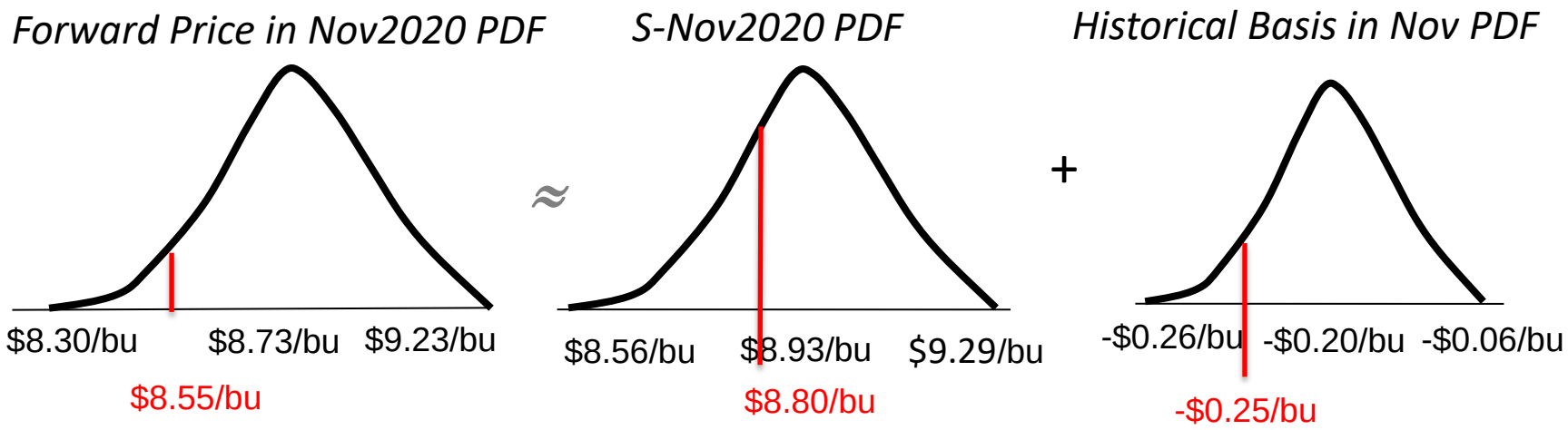


Source: https://agecon.ces.ncsu.edu/price_record/

Funded by North Carolina Corn Growers Association

Putting it together to evaluate forward price offers for soybeans in Cofield around Nov 2020



Hypothetical: Next week Cofield is offering a forward price contract for $8.55/bu for harvest delivery and the S-Nov2020 has declined to $8.80/bu is that a good deal?

Answer: This represents a -$0.25/bu basis (only $0.01 higher than the historical low) and S-Nov2020 is $0.13/bu lower than last weeks expectations. Combined, this amounts to $8.85/bu or $0.18/bu below last weeks expected forward price placing it in the **lower *percentile*** and so it is ***not a good deal*** based on last weeks expectation. Will it get better? It depends on your expectations on where S-Nov2020 will go with an improvement in basis more than likely given historical levels.

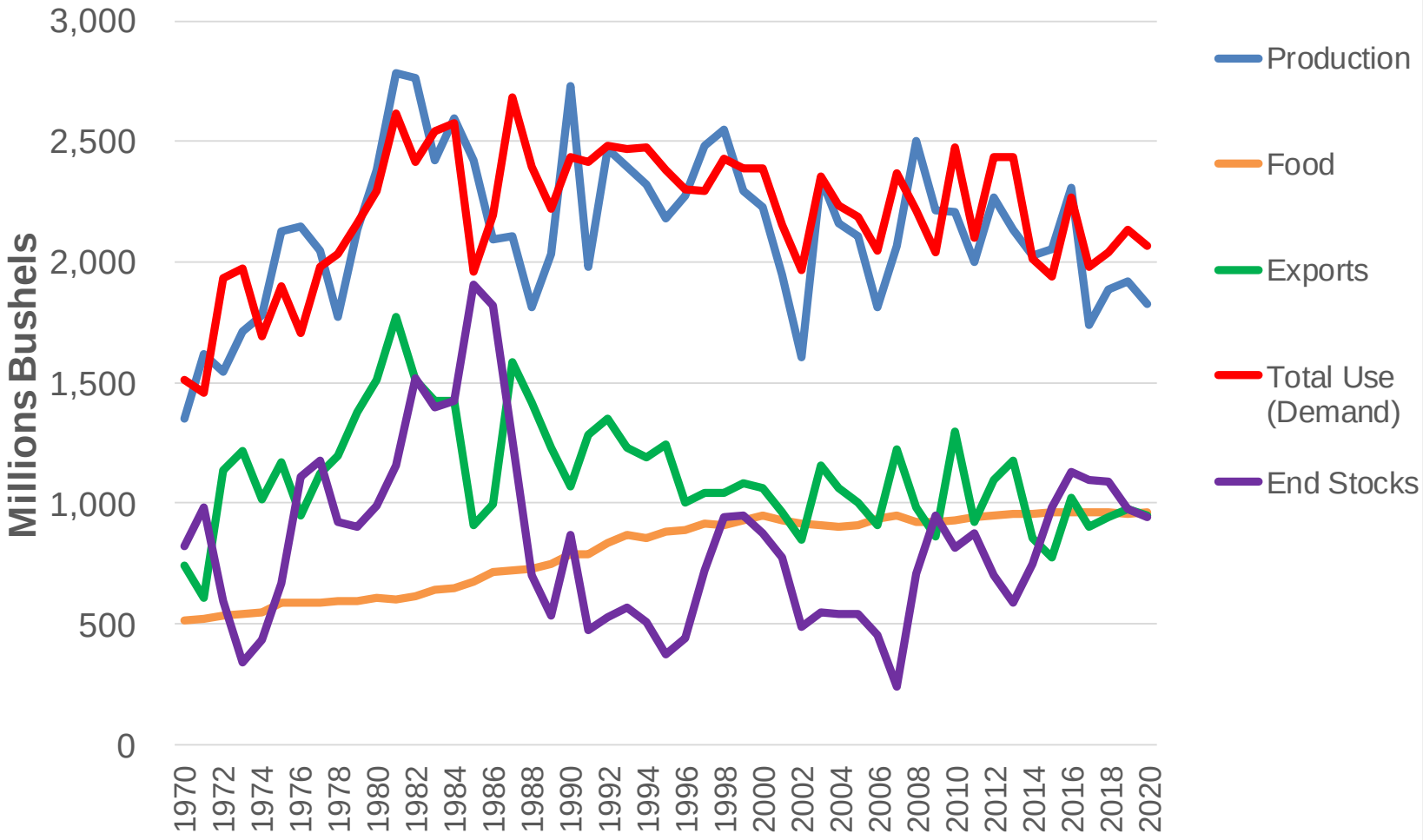
All distributions are hypothetical for illustration only.

USDA SUPPLY/DEMAND BALANCE SHEET FOR WHEAT

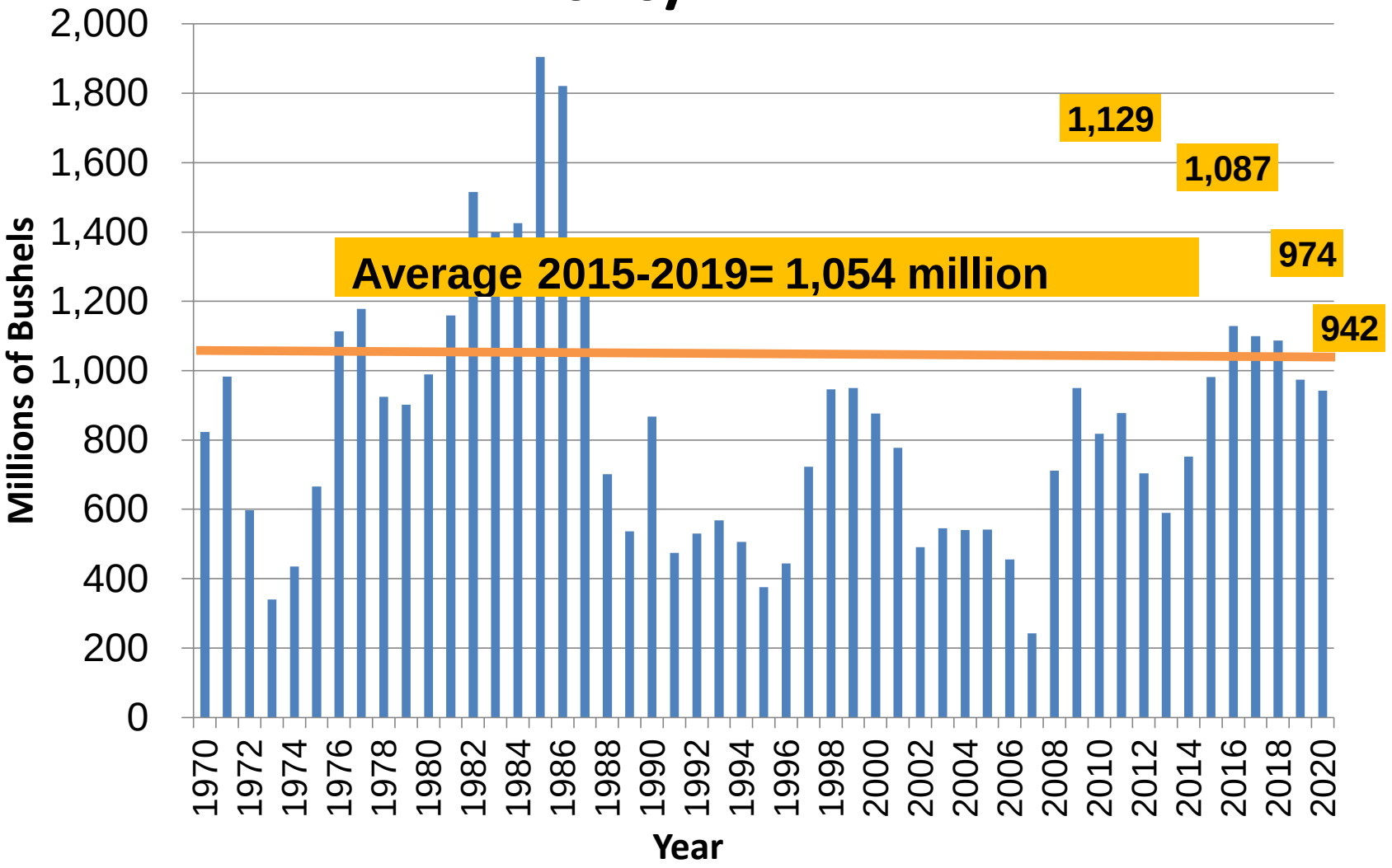
	2018/19	2019/20 Est	2020/21 Proj	%Δ
Acres Planted	47.8	45.2	44.3	-2.0%
Acres Harvested	39.6	37.2	36.7	-1.3%
Bu./Harvested Acre	47.6	51.7	49.7	-3.9%
	Million Bushels			
Beginning Stocks	1,099	1,080	1,044	-3.3%
Production	1,885	1,920	1,824	-5.0%
Imports	135	105	140	33.3%
Total Supply	**3,119**	**3,105**	**3,007**	-3.2%
Use:				
Food	955	962	964	0.2%
Seed	59	60	61	1.7%
Feed & Residual	88	74	90	21.6%
Domestic, Total	1,102	1,096	1,115	1.7%
Exports	937	965	950	-1.6%
Total Use (Demand)	**2,039**	**2,061**	**2,065**	0.2%
Ending Stocks	1,080	1,044	942	-9.8%
Ending Stocks, % of Use	53.0	50.7	45.6	-9.9%
U.S. Season Aver. Farm Price, $/ Bu.	$5.16	$4.58	$4.60	0.4%

Source: USDA, WASDE Jul 2020

Wheat Supply and Disappearance 1970/71-2020/21

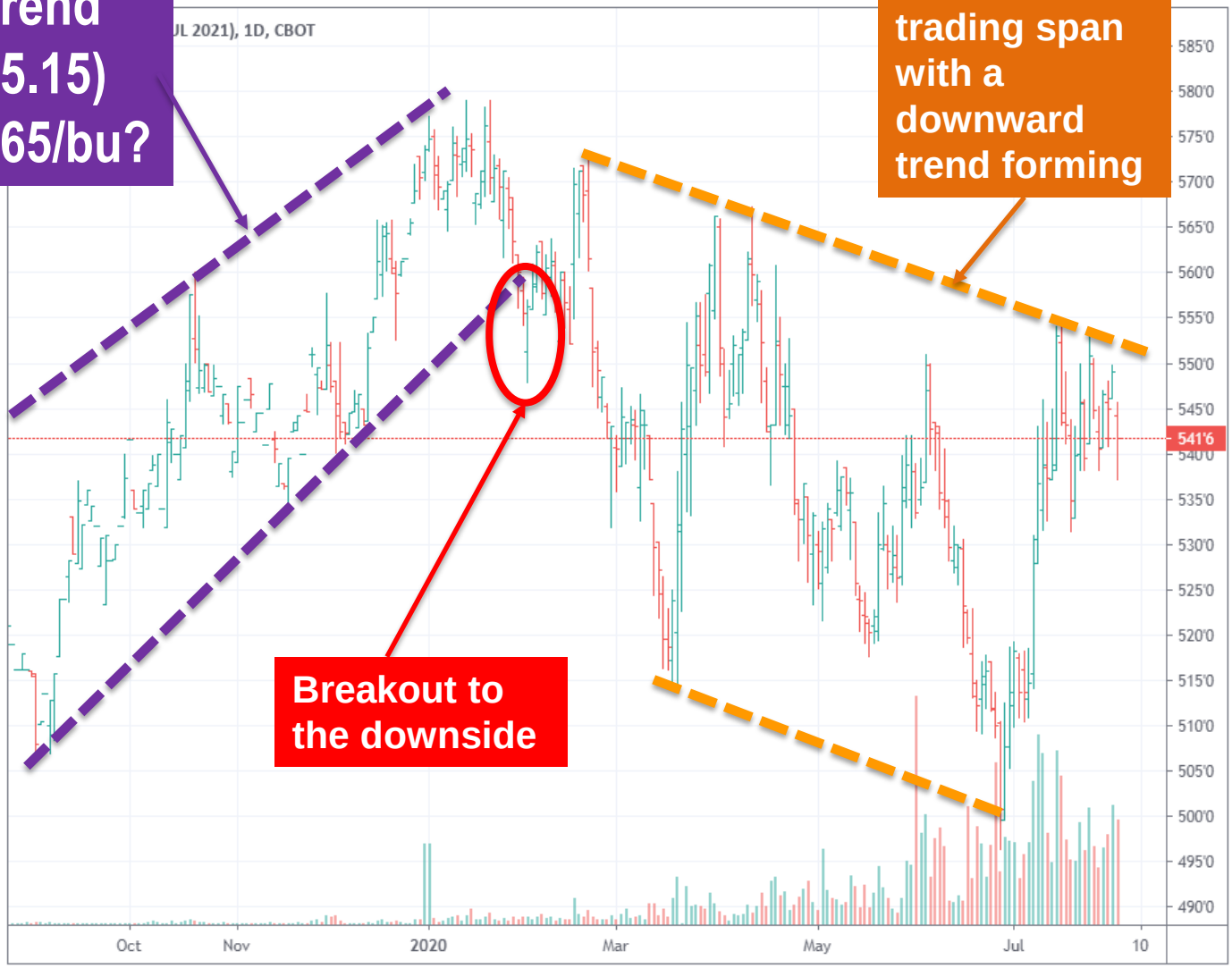


US Wheat Ending Stocks 1970/71-2020/21



Wheat Jul 2021

Significant upward trend ($5.80 - $5.15) gaining $0.65/bu?



Probabilistic Statement Regarding Wheat Futures July 2021 at expiration

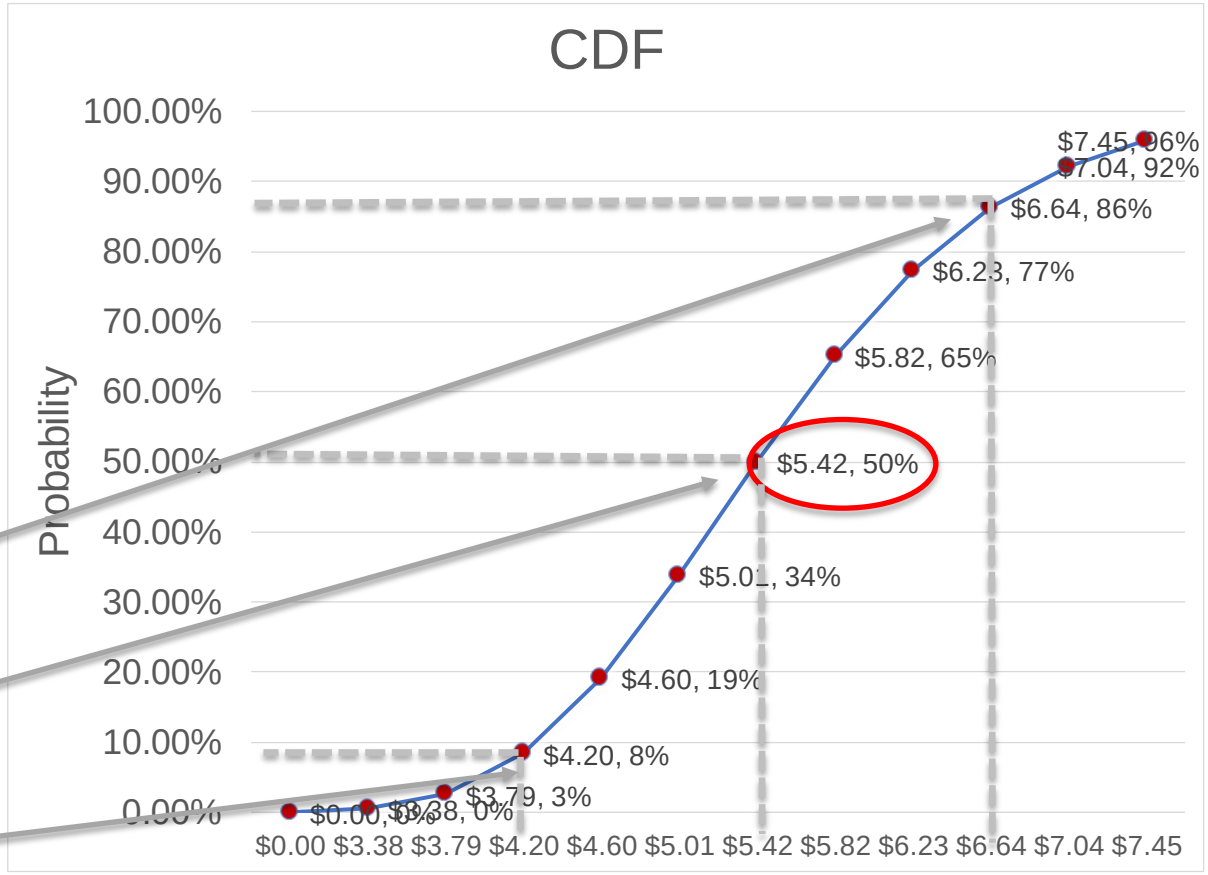
Date	8/3/2020
Crop:	Wheat
Futures & Options Contract Month:	7
Futures & Options Contract Year:	2021
Futures Price	$5.42 /bu
OPTION PREMIUMS FOR PROBABILITIES	
Nearest-to-the Money Strike Price	$5.40 /bu
Nearest-to-the Money Put Option Premium	$0.30250 /bu
Nearest-to-the Money Call Option Premium	$0.39250 /bu
Interest Rate	2.0%

Note: Data is time-sensitive and changes daily

Pr(W_Jul2021>$6.64) = 14%

Pr(W_Jul2021<$5.42) = 50%

Pr(W_Jul2021<$4.20) = 8%



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Also see: https://farmdoc.illinois.edu/decision-tools/price-distribution

Monthly Nearby Wheat Basis—Creswell

Wheat Basis over wheat 1 record

Year	Location	Location Type	Commodity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Creswell	Elevator	Wheat	⦸	⦸	⦸	⦸	⦸	⦸	-0.96	⦸	⦸	⦸	⦸	⦸

Previous 1 Next

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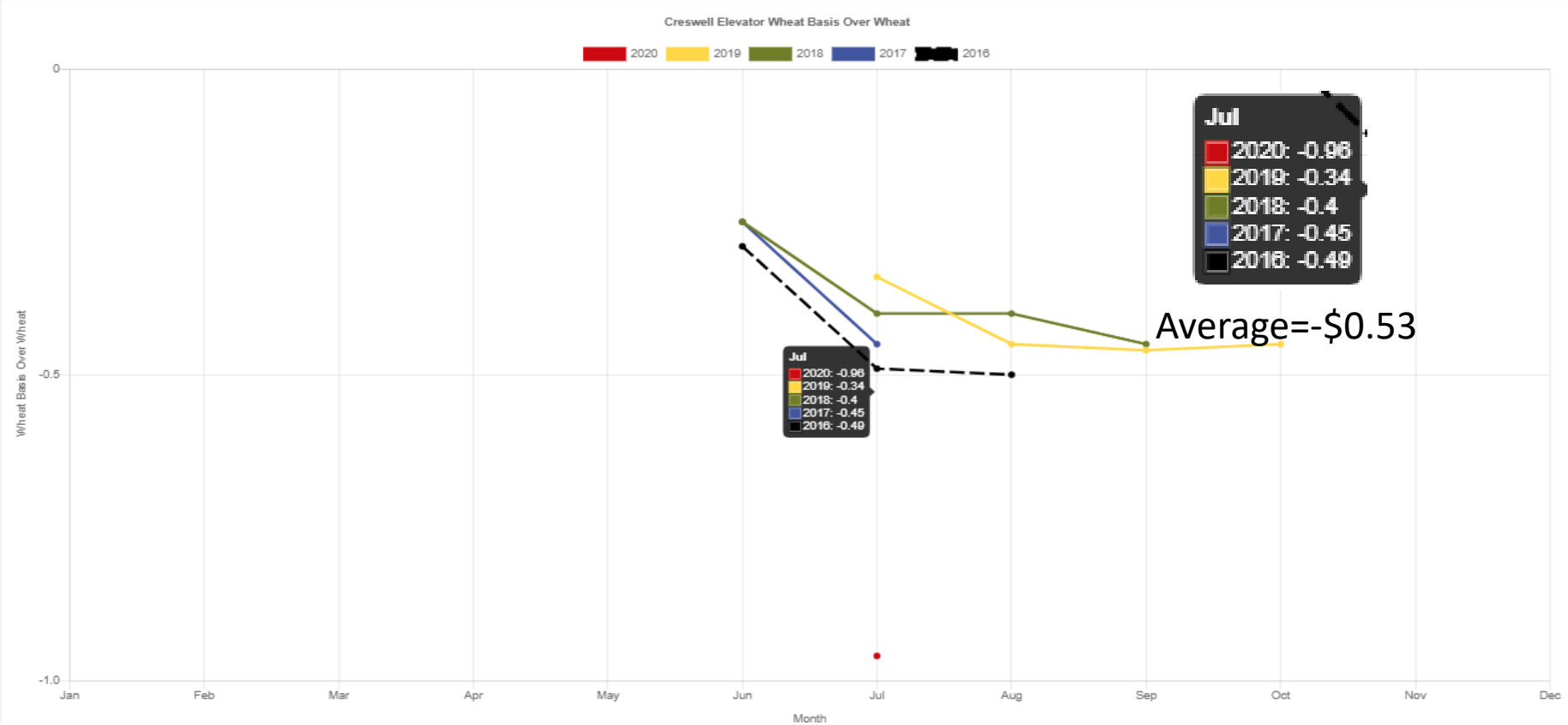
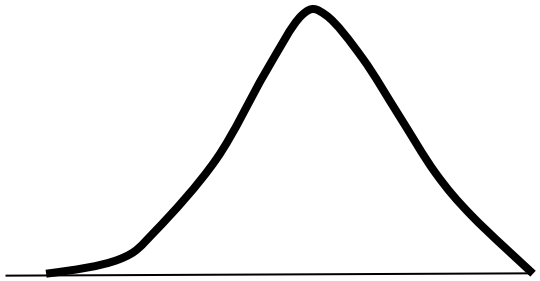


Source: https://agecon.ces.ncsu.edu/price_record/

Funded by North Carolina Corn Growers Association

Putting it together to evaluate forward price offers for wheat in Creswell around July 2021

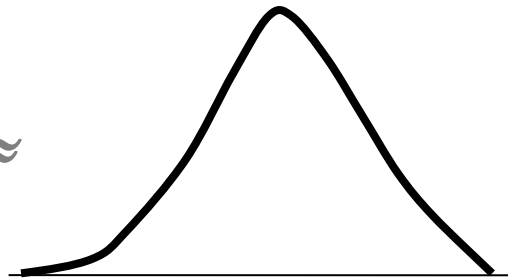
Forward Price in Jul2021 PDF



$3.24/bu $4.89/bu $6.24/bu

≈

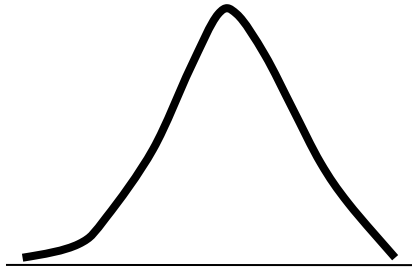
W-Jul2021 PDF



$4.20/bu $5.42/bu $6.64/bu

+

Historical Basis in July PDF



-$0.96/bu -$0.53/bu -$0.40/bu

All distributions are hypothetical for illustration only.

Final points….

- **Price risk can be visualized as a probability distribution**
- **Futures market price distributions at expiration can be approximated using option price premiums**
  - https://farmdoc.illinois.edu/decision-tools/price-distribution
- **Basis distributions can be approximated using historical basis data**
  - https://agecon.ces.ncsu.edu/price_record/
- **Local price distribution can be approximated by combining (adding together) futures price distributions with basis distribution**
- **Local price distribution can then be utilized to make informed decisions about the attractiveness of offers and guidance on the best marketing strategies to adopt (e.g., forward price contract, basis contract, price hedge).**

Thank You!

QUESTIONS