US and NC Agricultural Outlook

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Contemporary Market and Environmental Issues Affecting NC Agriculture

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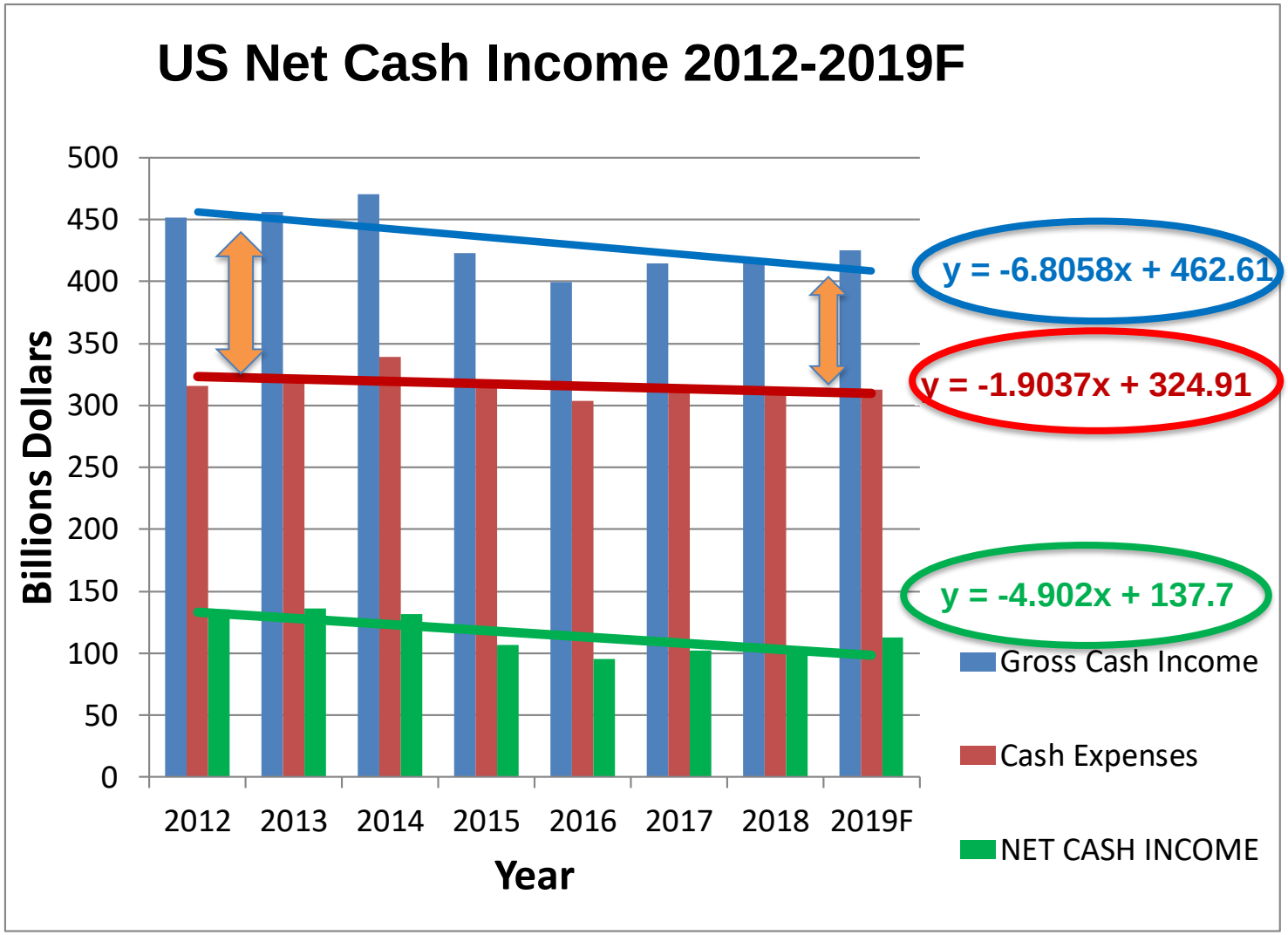
2019F US agricultural economy continues to shows some turn around

Income Statement U.S. Farm Sector 2012-2019F

	2012	2013	2014	2015	2016	2017	2018	2019F	2019F v. 2018F	2019F v. 2013
	$ billion									
Cash Receipts	401.4	404.1	424.0	377.4	358.5	370.4	373.5	371.1	-0.6%	-8.2%
Crops	231.6	220.9	211.7	187.9	195.8	194.9	197.0	193.7	-1.7%	-12.3%
Livestock	169.8	183.1	212.3	189.5	162.7	175.6	176.5	177.4	0.5%	-3.1%
Direct Govt. Pay	10.6	11.0	9.8	10.8	13.0	11.5	13.7	19.5	42.5%	77.0%
Farm-related income	39.3	41.0	36.6	34.4	27.9	32.7	29.1	34.7	19.3%	-15.3%
Gross Cash Income	451.3	456.1	470.3	422.6	399.4	414.7	416.3	425.3	2.2%	-6.8%
Cash Expenses	316.1	320.0	339.0	315.8	303.8	312.1	311.3	312.7	0.5%	-2.3%
NET CASH INCOME	135.3	136.1	131.3	106.8	95.6	102.5	105.0	112.6	7.3%	-17.3%
Selected ratios:	Percent									
Debt-to-equity	12.7	12.9	13.4	14.1	14.7	15.0	15.3	15.6	1.6%	21.3%
Debt-to-asset	11.3	11.4	11.8	12.4	12.8	13.1	13.3	13.5	1.4%	18.4%

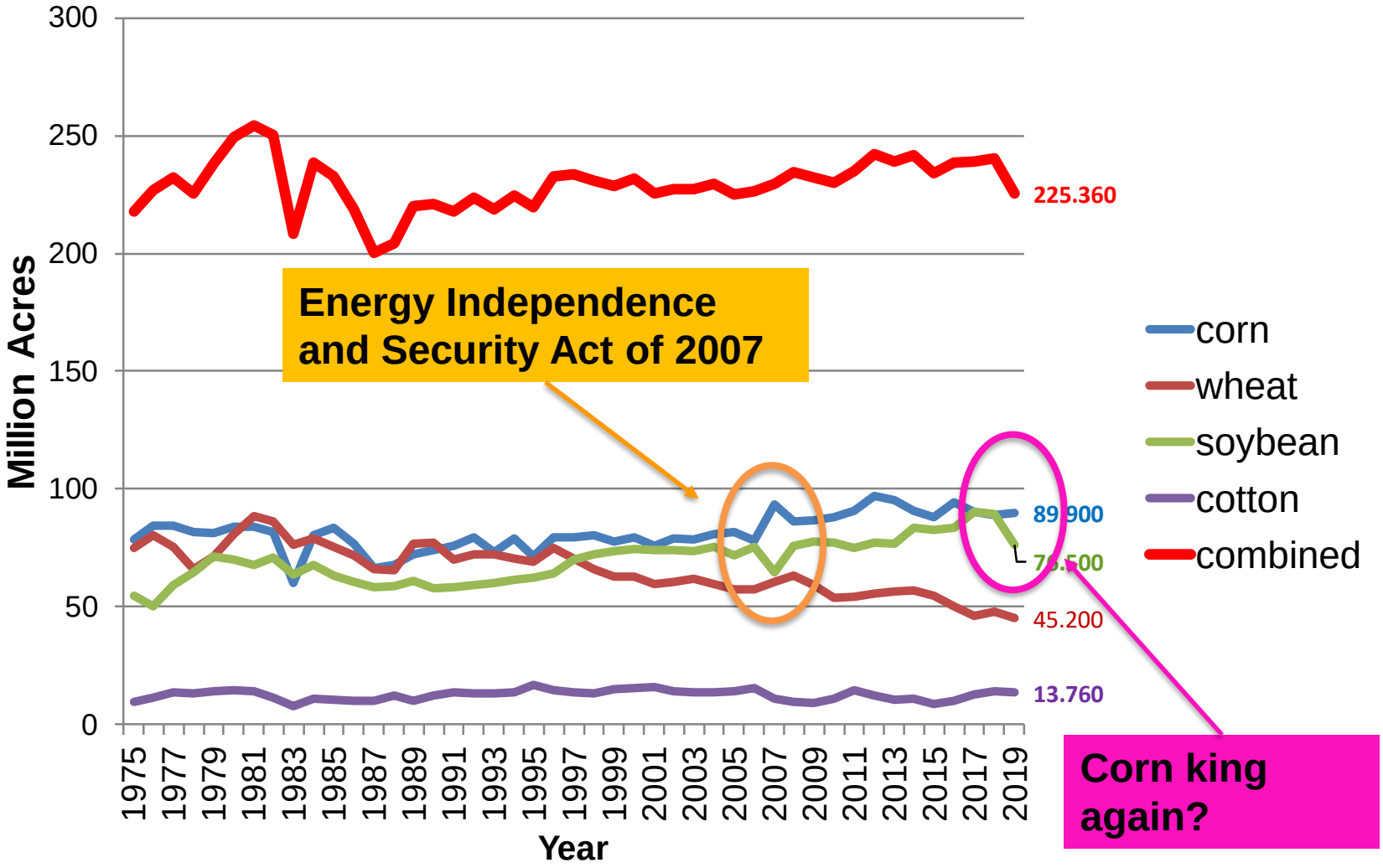
Source: http://ers.usda.gov/data-products/farm-income-and-wealth-statistics/data-files-us-and-state-level-farm-income-and-wealth-statistics.aspx

US agriculture experiencing simultaneously decreasing income and expenses but incomes are declining faster



Corn and Soybean Prices 2008-2018

US Major Corn, Soybean, Wheat, and Cotton Acreage 1975-2019F

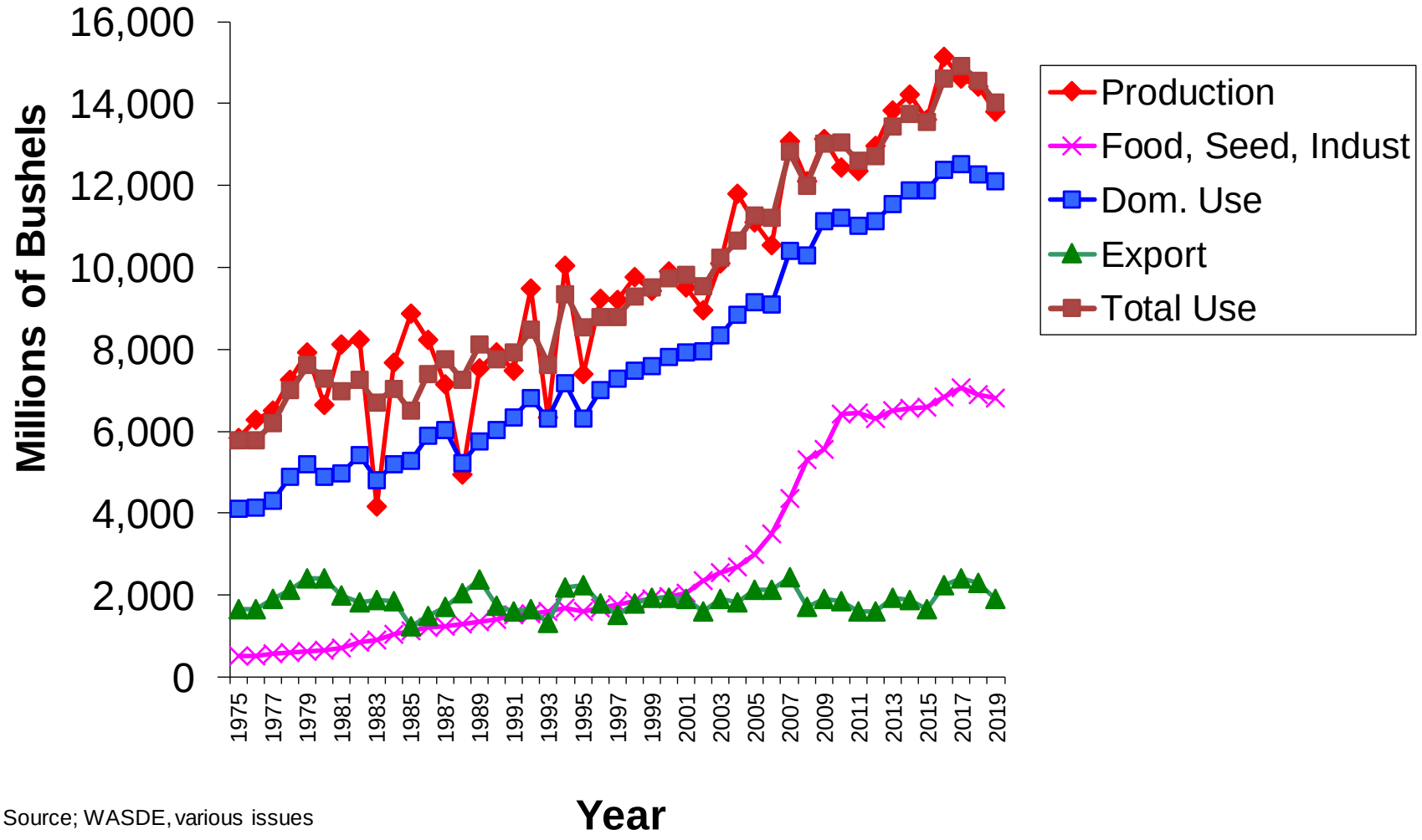


USDA SUPPLY/DEMAND BALANCE SHEET FOR CORN

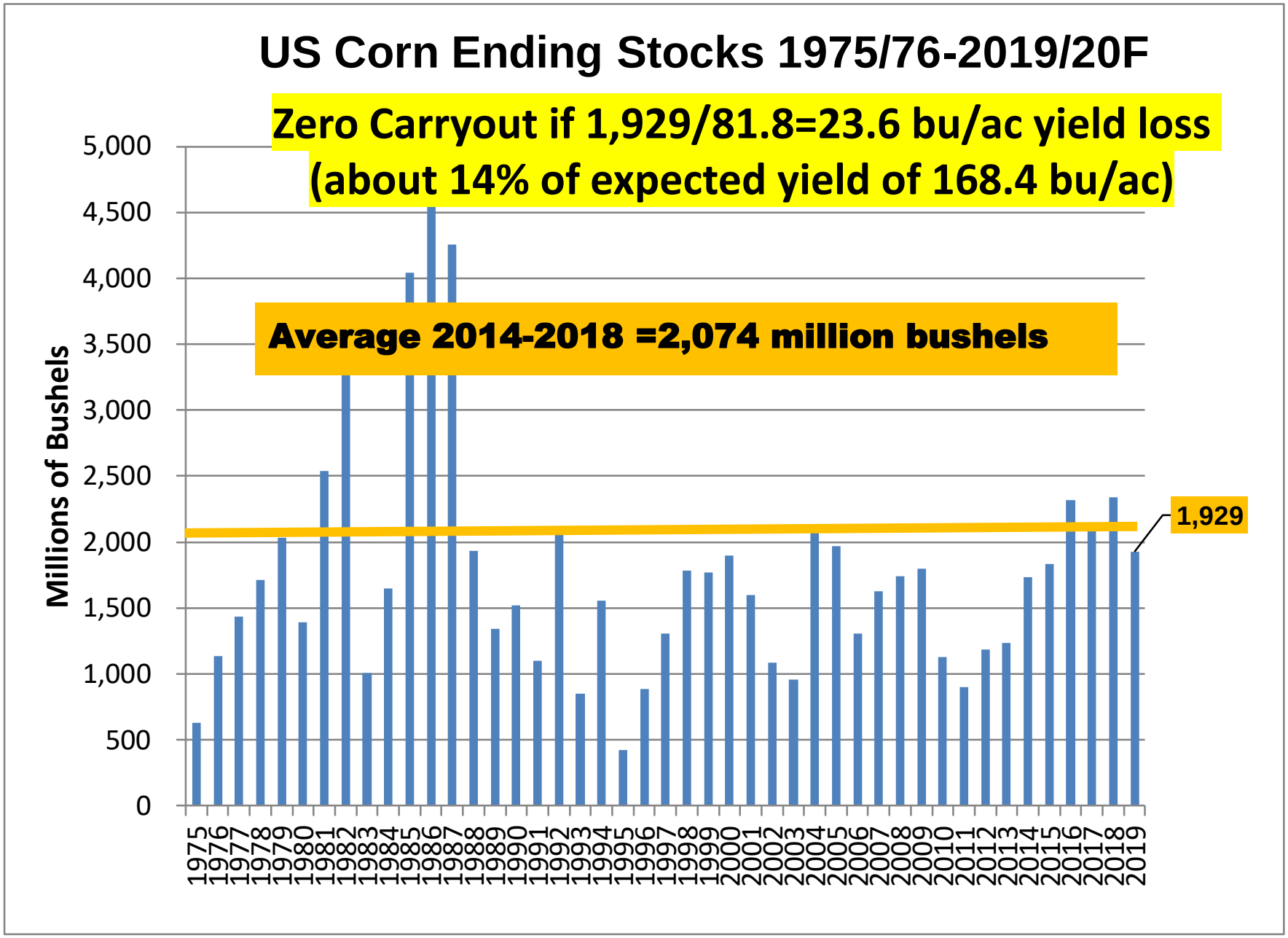
	2017/18	2018/19	2019/20	%Δ
		Million Acres		
Acres Planted	90.2	89.1	89.9	0.9%
Acres Harvested	82.7	81.7	81.8	0.1%
Bu./Harvested Acre	176.6	176.4	168.4	-4.5%
		Million Bushels		
Beginning Stocks	2,293	2,140	2,114	-1.2%
Production	14,604	14,420	13,799	-4.3%
Total Supply	16,939	16,585	15,944	-3.9%
Use:				
Feed and Residual	5,304	5,275	5,300	0.5%
Ethanol for fuel	5,605	6,805	5,400	-20.6%
Exports	2,438	2,060	1,900	-7.8%
Total Use (Demand)	14,798	14,140	14,015	-0.9%
Ending Stocks	2,140	2,445	1,929	-21.1%
Ending Stocks, % of Use	14.5	17.3	13.8	-20.4%
U.S. Season Avg. Farm Price, $/ Bu.	$3.36	$3.60	$3.80	5.6%

Source: USDA, WASDE Oct, 2019

U.S. Corn Supply and Disappearance 1975/76-2019/20F



Source; WASDE, various issues


US Corn Ending Stocks 1975/76-2019/20F
Zero Carryout if 1,929/81.8=23.6 bu/ac yield loss
(about 14% of expected yield of 168.4 bu/ac)
Average 2014-2018 =2,074 million bushels
1,929
Millions of Bushels
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1975
1976
1977
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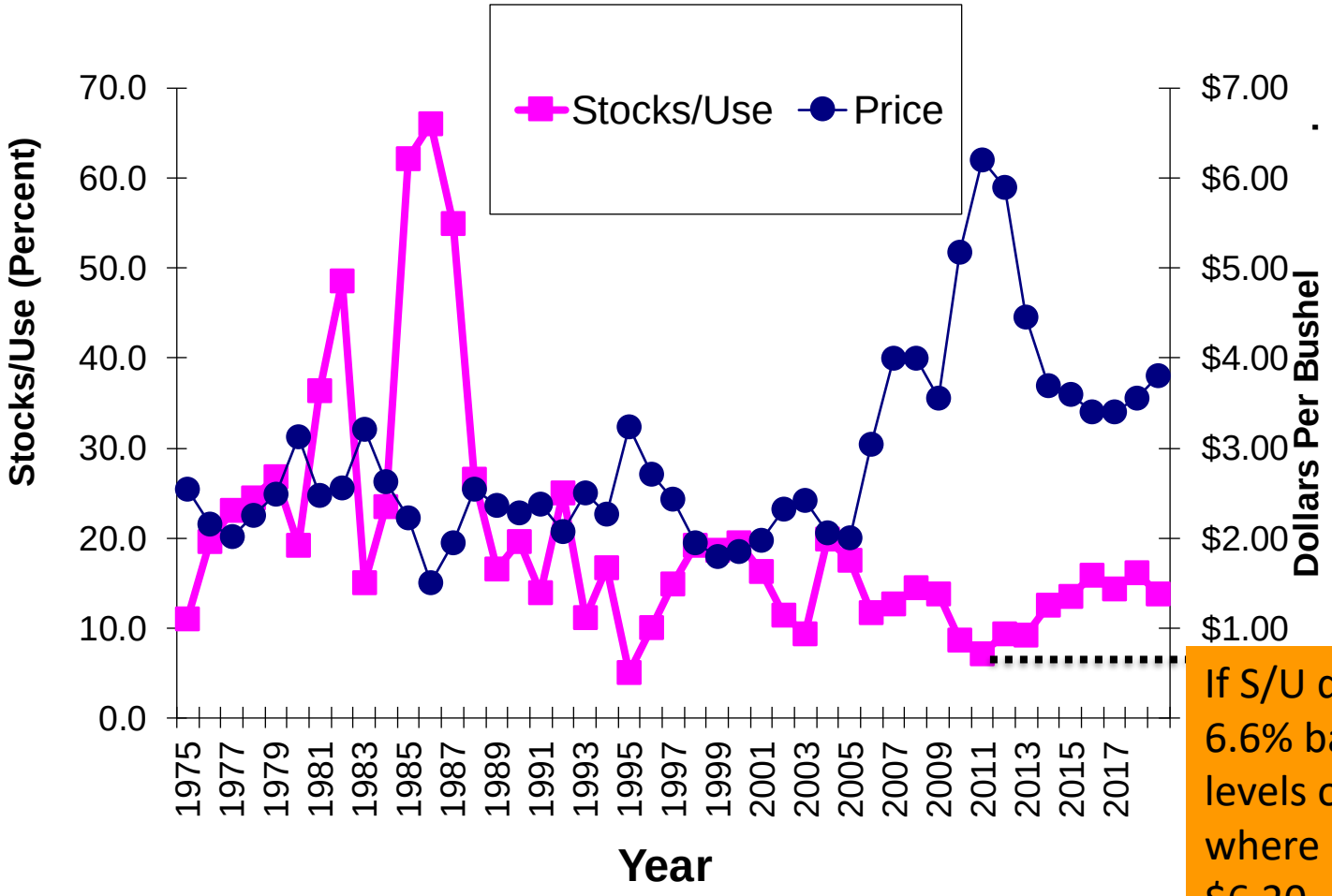
2019

US Corn Stocks/Use and Average Farm Price 1975/76-2019/20F



If S/U declines by 6.6% back to 2011 levels of 7.2% where price was $6.20—an increase of $2.60

Weather market reflecting uncertainty about acres and yields $1.00 ($4.70--$3.70)

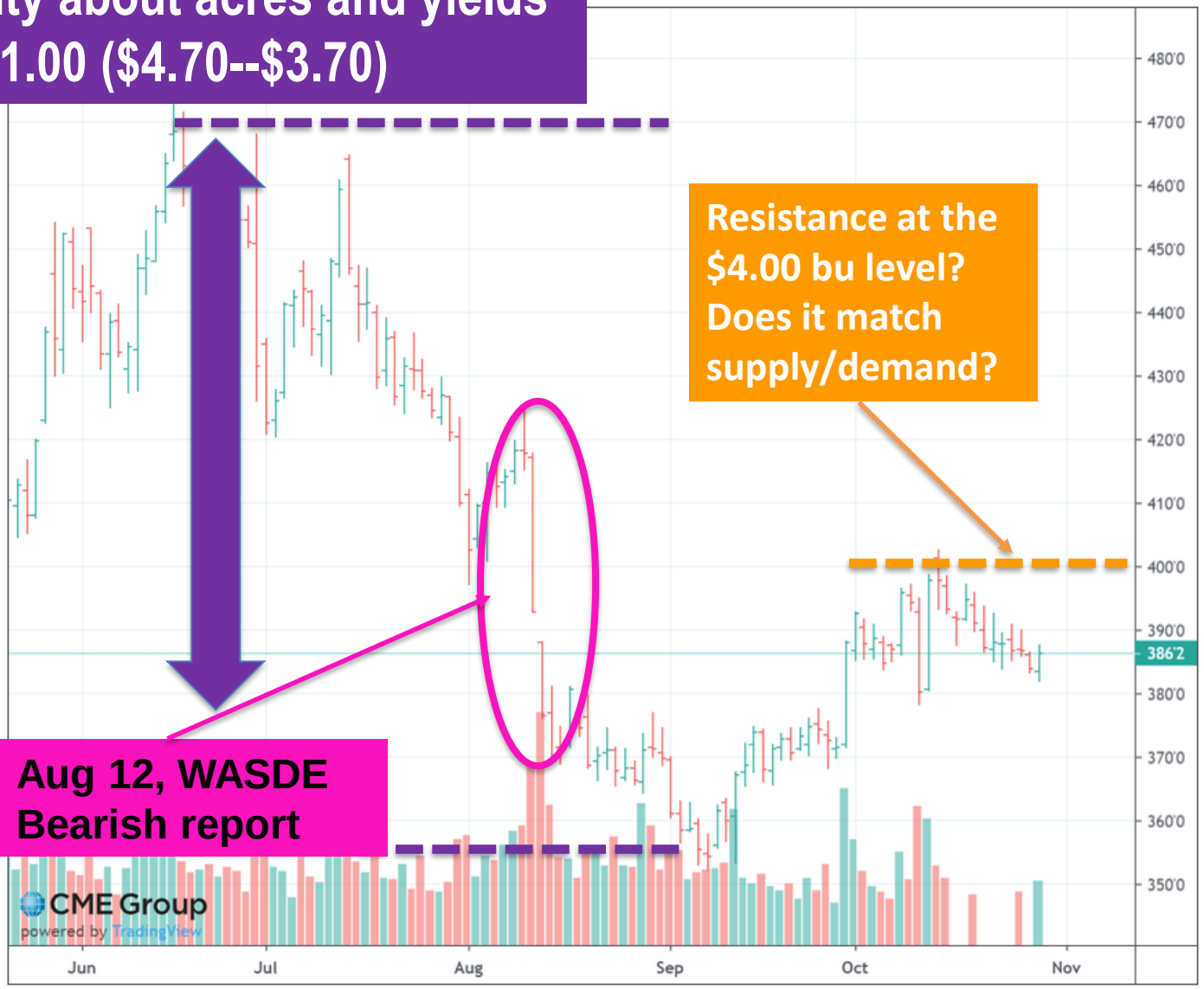
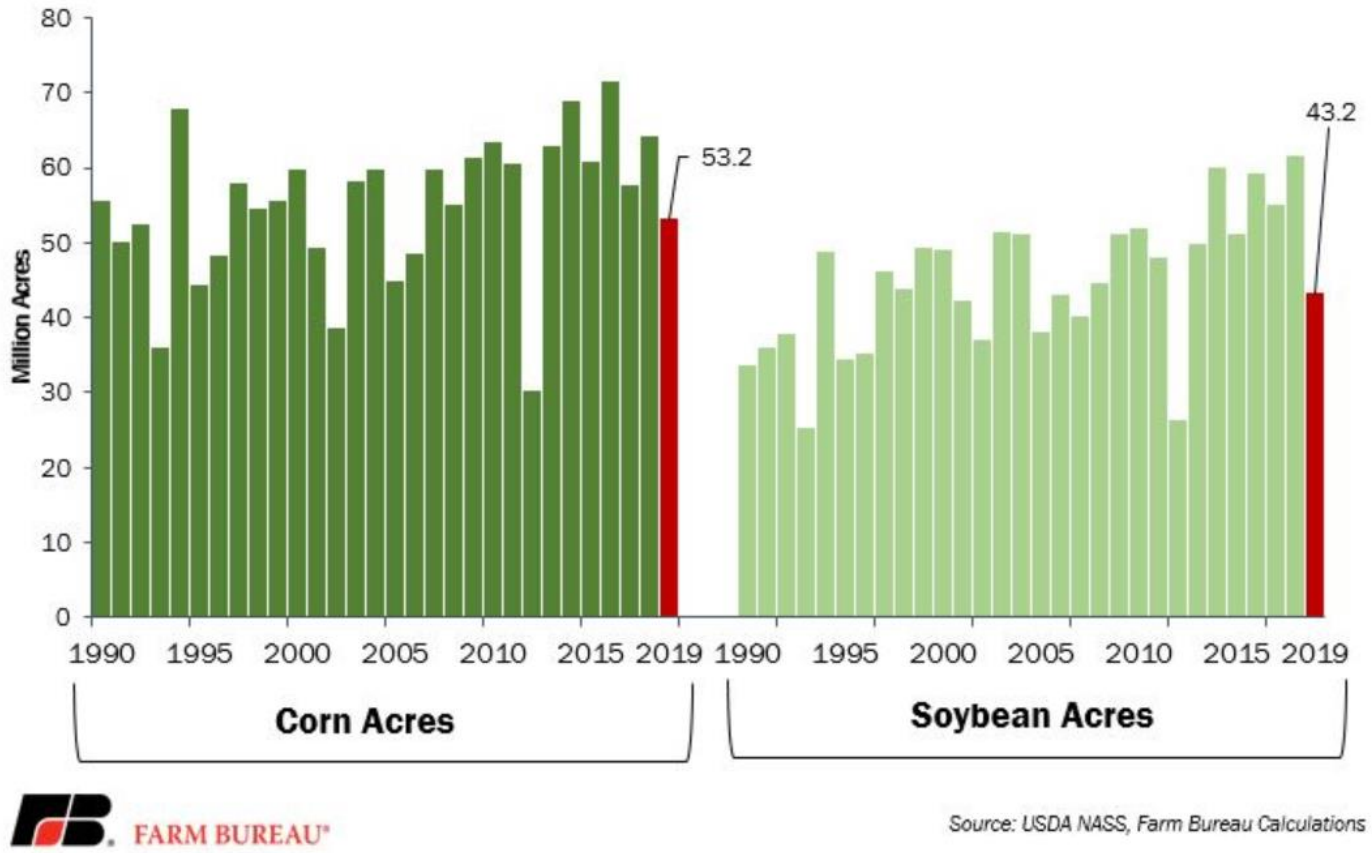


Figure 1. Corn and Soybean Acres in Good or Excellent Condition
Week 28



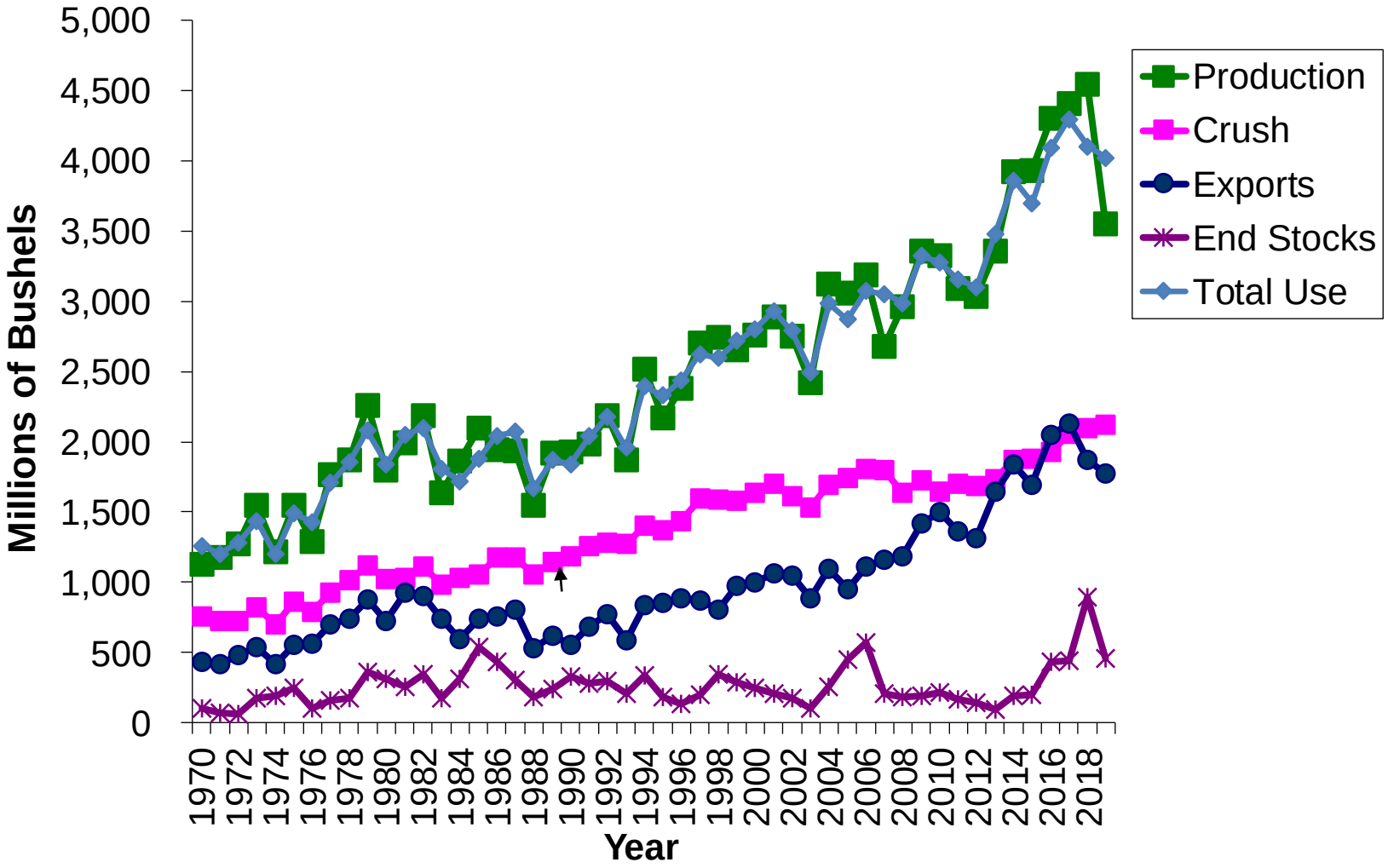
Source: https://www.agweb.com/article/crop-conditions-havent-been-bad-2012

USDA SUPPLY/DEMAND BALANCE SHEET FOR SOYBEANS

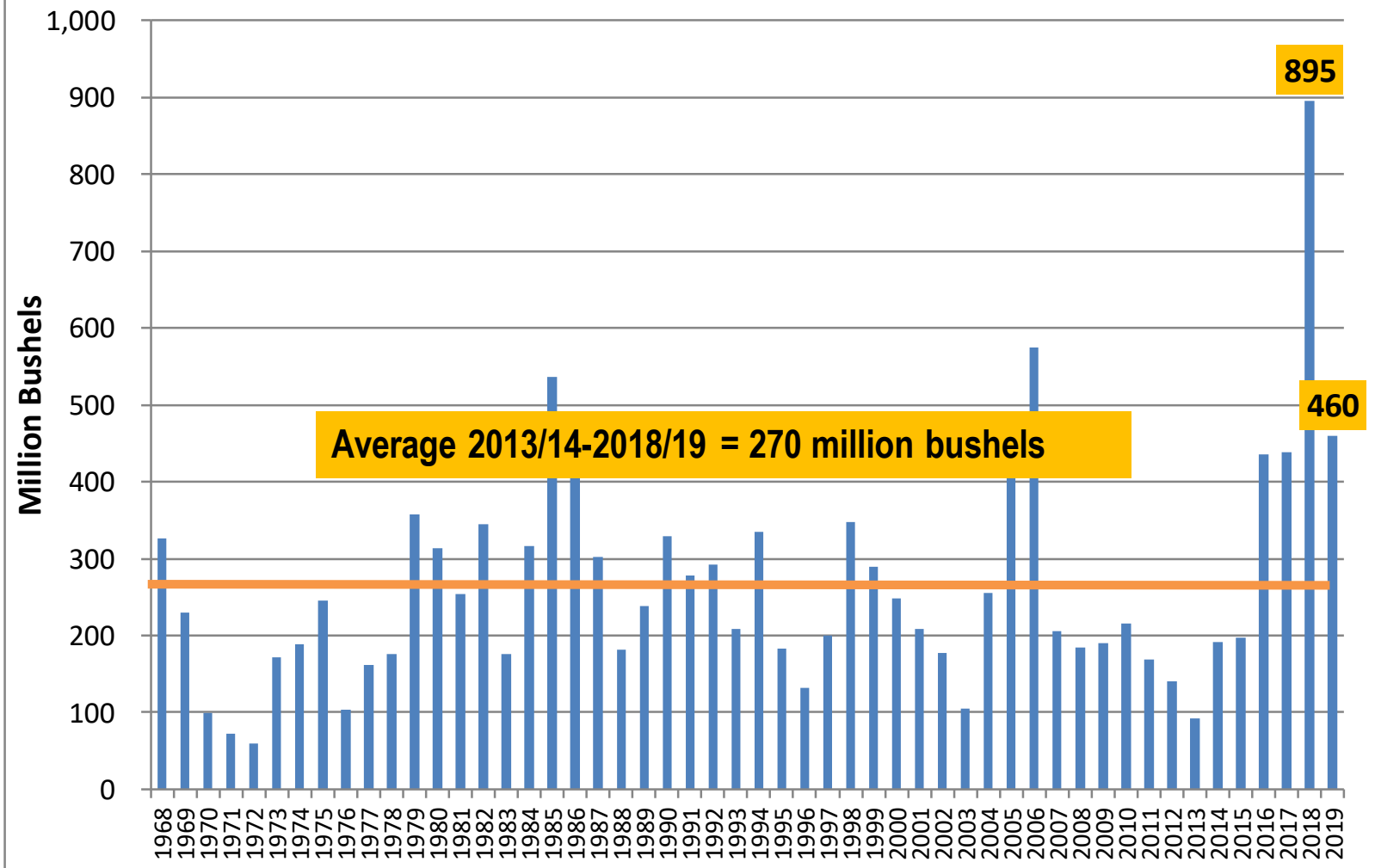
	2017/18	2018/19	2019/20 Proj	%Δ
	Millions of Acres			
Acres Planted	90.2	89.2	76.5	-14.2%
Acres Harvested	89.5	88.1	75.6	-14.2%
Bu./Harvested Acre	49.3	51.6	46.9	-9.1%
	Millions of Bushels			
Beginning Stocks	302	438	913	108.4%
Production	4,112	4,544	3,550	-21.9%
Total Supply	**4,735**	**4,999**	**4,483**	-10.3%
Use:				
Crushing	2,055	2,085	2,120	1.7%
Exports	2,134	1,700	1,775	4.4%
Seed & Residuals	109	165	128	-22.4%
Total Use (Demand)	**4,297**	**3,949**	**4,023**	1.9%
Ending Stocks	438	1,050	640	-39.0%
Ending Stocks, % of Use	10.2%	26.6%	15.9%	-40.2%
U.S. Season Average Farm Price, $/ Bu.	$9.33	$8.50	$9.00	5.9%

Source: WASDE, USDA, Oct 2019

US Soybean Supply and Disappearance 1970/71-2018/19F



US Soybeans Ending Stocks 1968/69-2019/20F

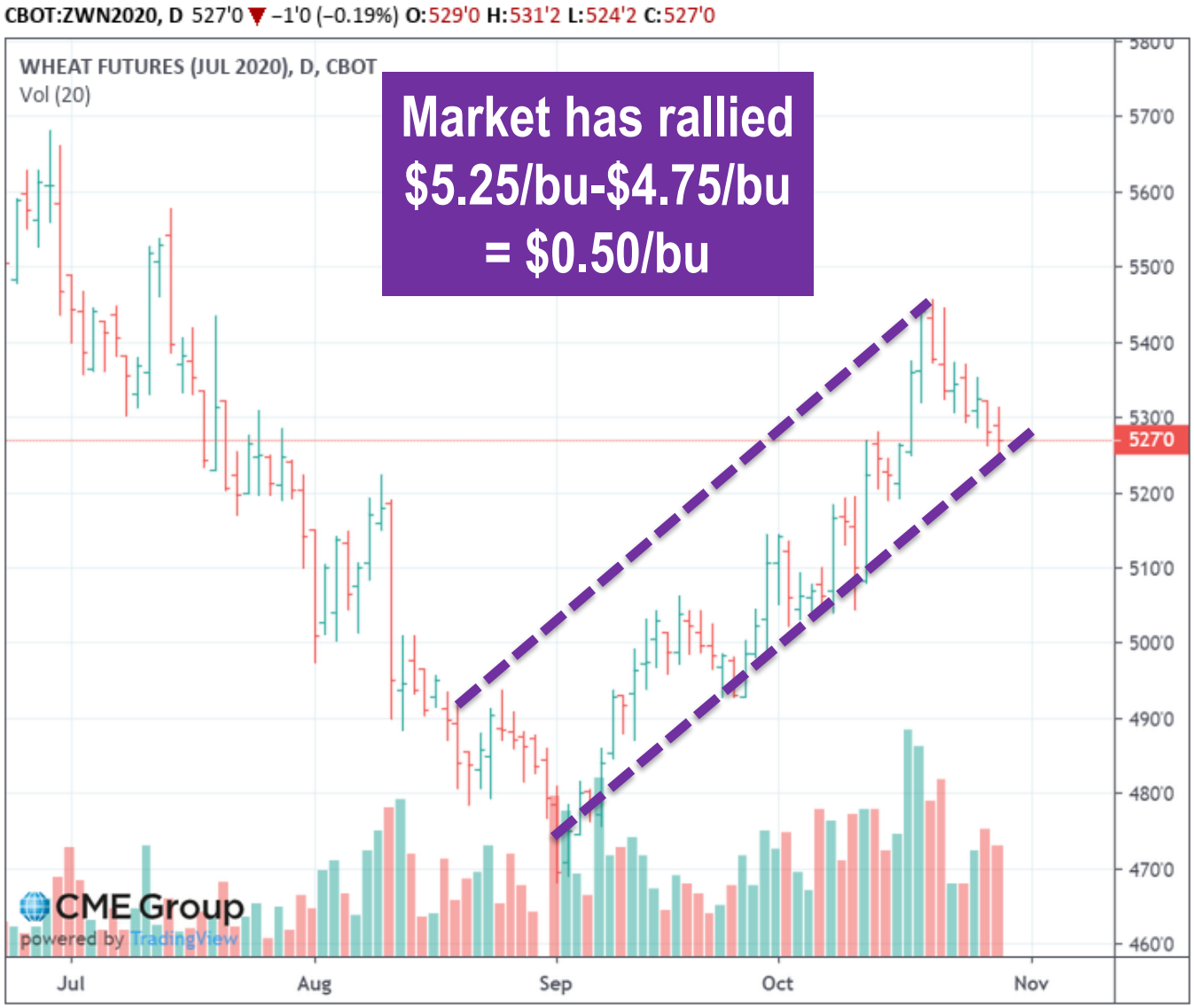


Market Sideways
$1.00/bu

USDA SUPPLY/DEMAND BALANCE SHEET FOR WHEAT

	2017/18	2018/19	2019/20 Proj	%Δ
Acres Planted	50.2	46.0	45.2	-1.7%
Acres Harvested	43.9	37.6	38.1	1.3%
Bu./Harvested Acre	52.6	46.3	51.6	11.4%
	Million Bushels			
Beginning Stocks	976	1,181	1,080	-8.6%
Production	2,310	1,741	1,962	12.7%
Imports	115	157	120	-23.6%
Total Supply	**3,400**	**3,079**	**3,161**	2.7%
Use:				
Food	960	963	960	-0.3%
Seed	61	64	68	6.3%
Feed & Residual	225	120	140	16.7%
Domestic, Total	1,246	1,077	1,168	8.4%
Exports	1,025	901	950	5.4%
Total Use (Demand)	**2,271**	**1,978**	**2,118**	7.1%
Ending Stocks	1,129	1,100	1,043	-5.2%
Ending Stocks, % of Use	49.7	55.6	49.2	-11.4%
U.S. Season Aver. Farm Price, $/ Bu.	$3.85	$4.73	$4.70	-0.6%

Source: USDA, WASDE Oct 2019


CBOT:ZWN2020, D 527'0 ▼ −1'0 (−0.19%) O:529'0 H:531'2 L:524'2 C:527'0
WHEAT FUTURES (JUL 2020), D, CBOT
Vol (20)
Market has rallied
$5.25/bu-$4.75/bu
= $0.50/bu
580'0
570'0
560'0
550'0
540'0
530'0
527'0
520'0
510'0
500'0
490'0
480'0
470'0
460'0
Jul
Aug
Sep
Oct
Nov
CME Group
powered by TradingView

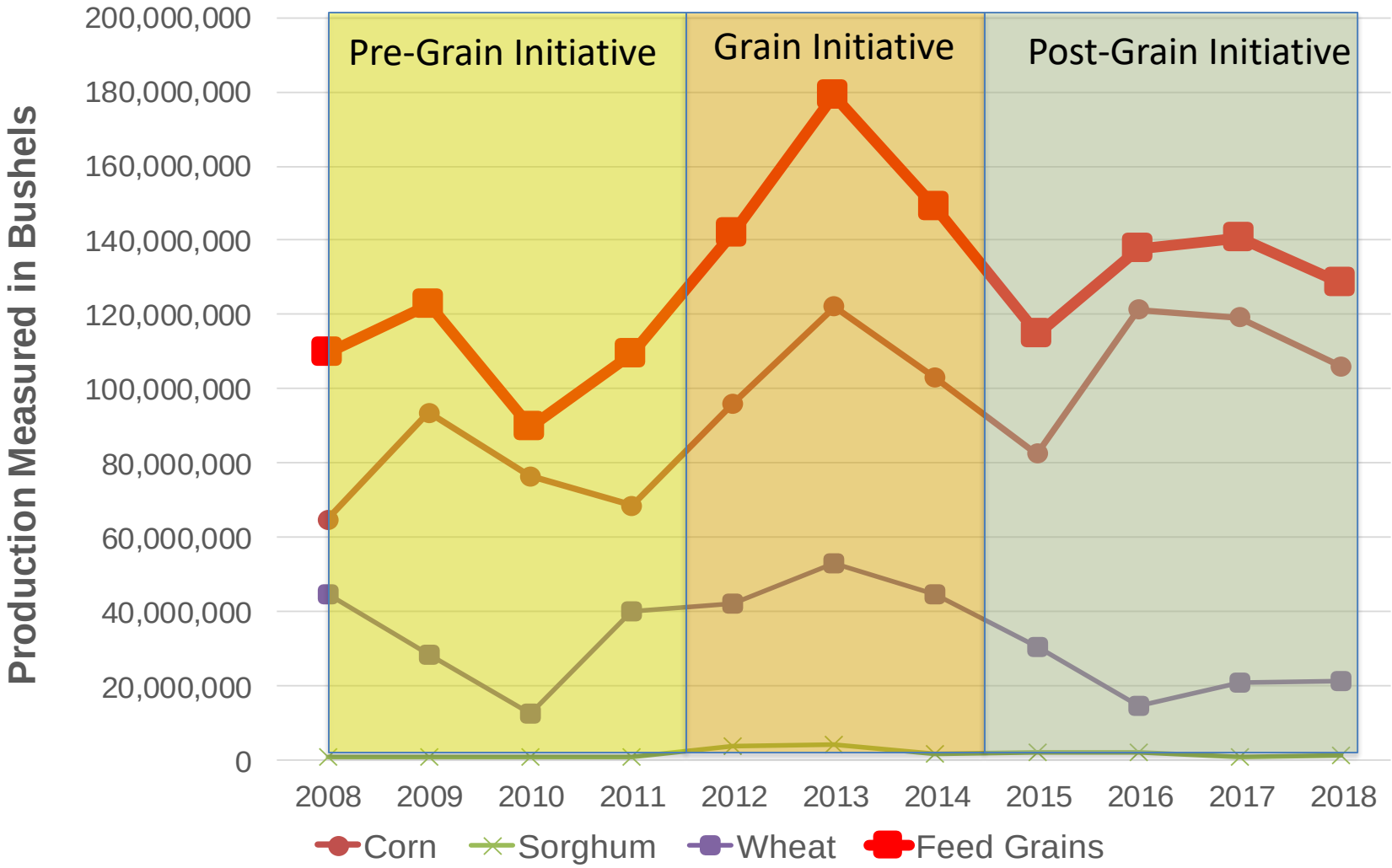
NC Major Row Crop Acreage: 2008-2018

- Past 11 years reveals, over the pre- and post-feed grain initiative, a decline in total acres of 10.7%, with a decline in feed grain acres (21%).
- Corn acres have slightly increased 1.1%
- Wheat acreage has declined by 45.9% but this masks a significant run-up between 2010 and 2013 when wheat acres more than doubled but then significantly steadily declined
- Sorghum acres peaked during feed grain initiative then declined

Crop	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008 vs 2018
CORN[a]	1,090,000	900,000	870,000	910,000	870,000	870,000	930,000	840,000	790,000	1,000,000	890,000	910,000	1.1%
WHEAT[a]	630,000	850,000	660,000	430,000	670,000	810,000	990,000	830,000	650,000	420,000	450,000	460,000	-45.9%
SORGHUM[b]	12,000	16,000	16,159	13,262	14,936	70,366	79,187	26,640	39,516	45,000	20,000	20,000	25.0%
COTTON[a]	500,000	430,000	375,000	550,000	805,000	585,000	465,000	465,000	385,000	280,000	375,000	430,000	0.0%
SOYBEANS[a]	1,440,000	1,690,000	1,800,000	1,580,000	1,380,000	1,590,000	1,480,000	1,750,000	1,820,000	1,690,000	1,700,000	1,650,000	-2.4%
Total	3,672,000	3,886,000	3,721,159	3,483,262	3,739,936	3,925,366	3,944,187	3,911,640	3,684,516	3,435,000	3,435,000	3,470,000	-10.7%
Feed Grains	1,732,000	1,766,000	1,546,159	1,353,262	1,554,936	1,750,366	1,999,187	1,696,640	1,479,516	1,465,000	1,360,000	1,390,000	-21.3%
% Feed Grains	47.2%	45.4%	41.6%	38.9%	41.6%	44.6%	50.7%	43.4%	40.2%	42.6%	39.6%	40.1%	-11.9%

Pre-Feed Grain Initiative

During Feed Grain Initiative


NC Feed Grain Crop Production 2008-2018
Production Measured in Bushels
200,000,000
180,000,000
160,000,000
140,000,000
120,000,000
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
Pre-Grain Initiative
Grain Initiative
Post-Grain Initiative
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Corn
Sorghum
Wheat
Feed Grains

Average Profitability of NC Row Crops Around Pre-Planting 2019: Rented Land

Budget Comparison 2019 Crop Year of Crop Choices Given Current Market Conditions and Expected Yields					
Enter Average Land Rent Value Here	110				
	Corn	Soybean	Wheat	Sorghum	Cotton
Yield (bu/acre)[1]	127	36	53	55	
Yield (lbs./acre)--Cotton	--	--	--	--	837
Yield (lbs./acre)--Cotton Seed	--	--	--	--	1,398
Price (New Crop Futures Price from CME & NYBOT 4/23/2019)	$3.82	$9.09	$4.43	$3.63	$0.77
Cotton Seed	--	--	--	--	$0.08
Current New Crop Basis	$0.70	($0.14)	$0.00	$0.67	($0.02)
EXPECTED NET PRICE (New Crop Futures + Basis)[2]	$4.52	$8.95	$4.43	$4.29	$0.75
Gross Revenue	$572.23	$325.78	$233.90	$236.17	$739.75
VARIABLE EXPENSES[1]					
Total Variable Costs	$540.00	$362.13	$308.68	$374.69	$759.24
Return above Variable Costs	$32.24	-$36.35	-$74.78	-$138.52	-$19.49
FIXED EXPENSES					
Total Fixed Costs	$65.70	$82.63	$33.31	$80.66	$113.16
Total Cost	$605.70	$444.76	$341.99	$455.35	$872.40
NET RETURNS TO FARMER AND RISK:	($33.46)	($118.98)	($108.09)	($219.18)	($132.65)
Break Even Yield	134	50	77	106	1163
Break Even Price	$4.78	$12.22	$6.48	$8.28	$0.91
Break Even Yield % of 5 yr. aver.	105.8%	136.5%	146.2%	202.0%	138.9%

NC Feed Grain Deficit Averages Around 53%, But Higher in 2018 and 2019

Feed Grain/Livestock	Acres (5 yr. aver. 2013-17)	Yield	Lbs per Bushel	Production (5yr average 2013-2017)	Production 2018	Production 2019
		Bushel/Acre		*Million Bushels*		
Corn	890,000	131.6	56	109.6	93.8	100.1
Wheat (80% fed)	668,000	52.8	60	34.2	21.1	12.6
Sorghum	22,271	55.0	56	1.5	0.5	--
Total				**145.3**	**115.4**	**112.7**
	GCAU FACTOR	**2017 Annual Head**	**2017 GCAU**	**Feed Demand in Bushels**		
Hogs	0.2285	9,000,000	**2,056,500**	171.6		
Broilers	0.0020	125,953,846	**251,908**	21.0		
Layers	0.0217	15,143,000	**328,603**	27.4		
Turkeys	0.0155	10,307,692	**159,769**	13.3		
Cattle	0.0000	830,000	**917,533**	76.6		
Total			**3,714,313**	**310.0**	**310.0**	**310.0**
Feed Grain Deficit				**164.7**	**194.6**	**197.3**
				53%	**63%**	**64%**

Note: 1 GCAU=2.12 Metric tonnes (or 4,673.8 lbs) in 2017 (dry-weight quantity of feed consumed by an average milk cow); 1 bushel is 56 pounds

This will be revised upward with expansion of broiler industry

Potential for a Win-Win Strategy

- **For NC to become more self-sufficient in feed grains thereby reducing the deficit. To do this requires:**
  - **more feed grain acres planted consistently year-over-year**
  - **further yield increases and a reduction in variation**
  - **more local storage**
- **Calls for a change in the way the two parties do business**
  - **livestock industry must incentivize new crop acres by increasing the use of contracts that makes it profitable (a minimum forward price contract has potential) and enables growers to obtain financing**
  - **row crop farmers must be prepared to engage in the use of contracts that gives the livestock industry guaranteed acreage**

Final Thoughts….

- World demand for key agricultural products is *strong* as a result of rising incomes and populations
- US Farm Sector Income Statement
  - 2019 continues to shows some turn around
- Consecutive record US corn and soybean crops have resulted in significantly larger ending stocks
  - Lower prices but less price volatility
  - Implications for marketing opportunities and risk management
- Adverse weather in Midwest has impacted plantings of corn and soybeans causing price volatility
  - Uncertainty around actual planted acreage causing price volatility
  - Complications with preventive planting and incentives could lead to substantial less production than currently estimated
  - Late plantings will have yield implications but how much?

Final Thoughts

- NC Feed grain deficit is around 60%, meaning around 150 million bushels must be imported. This is on the rise with expansion of poultry business
- Costs of importing by rail have been steadily increasing
- Declining feed grain acreage is a concern for the vitality of the NC livestock industry
- Row crop farmers will respond with additional acres with price incentives which will require improved basis offers and use of more sophisticated marketing contracts