

## PRX Blue Sky Model #42, 2012-2025

# US CORN + SOYBEANS FARM VALUE, COSTS, & NET RETURN

### *How the File Works, Old Crop & New Crop*

PRX\_BS5\_CornBeanIncome\_Start, GTB-16-07, Jul-12-16

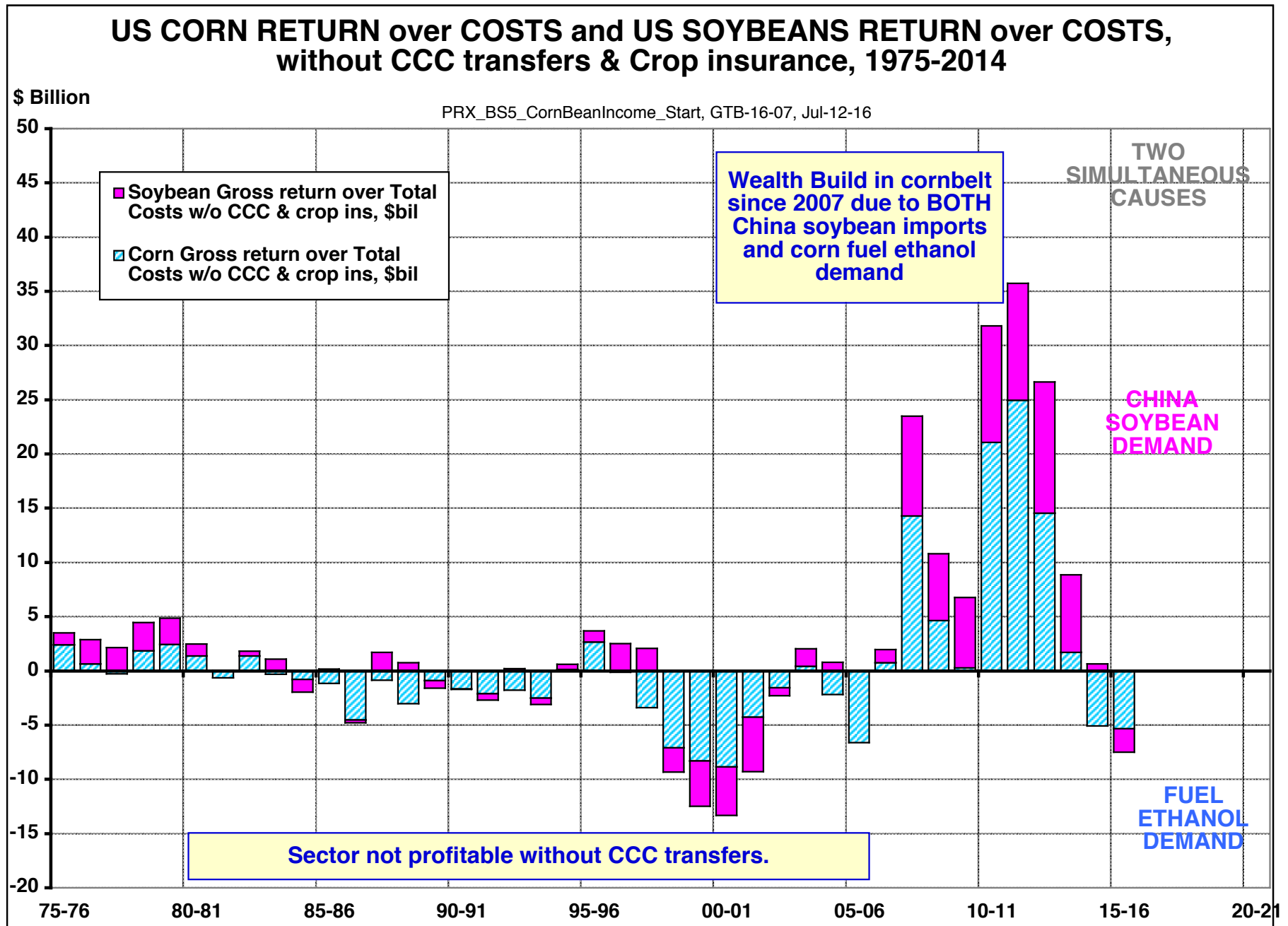
Item	Source		Cropyear Output		File Pages
	History	Future	14-15	15-16	
			\$bil	\$bil	
Corn + Soybeans gross value	USDA-NASS	PRX Blue Sky	92.2	85.2	3
Seed cost	USDA-ERS*	PRX forecast**	13.4	13.1	7
Fertilizer cost	USDA-ERS*	PRX forecast**	15.5	13.8	8
Chemicals cost	USDA-ERS*	PRX forecast**	4.8	4.3	7
Other variable costs	USDA-ERS*	PRX forecast**	11.0	9.6	9
Total variable costs	USDA-ERS*	PRX forecast**	44.6	40.9	12
Gross value over variable costs	calc		47.6	44.3	
Land costs	USDA-ERS*	PRX forecast**	27.6	27.5	10
Machinery & oth overhead costs	USDA-ERS*	PRX forecast**	24.4	24.3	11
Total overhead costs	USDA-ERS*	PRX forecast**	52.1	51.8	12
Total Costs	calc	calc	96.7	92.7	12
Net return over Total Costs	calc	calc	-4.4	-7.5	
CCC Transfers (income)	USDA-CCC	PRX forecast**	4.5	6.0	
Crop Insurance Payments	NCIS	PRX forecast**	5.0	3.0	
Net return with CCC & Insurance	calc	calc	5.1	1.5	6

\*ERS cost of production series, 1975-2013, at US aggregate level, with sale prices normalized to annual farm price.

\*\*PRX forecasts based on historical share of all costs, and other current (but speculative) estimates.

### NET INCOME TO PLUMMET IN 2014-15 (and 2015-16)

After an all-time corn production record in 2013, some 3 billion bushels more than the drought crop of 2012, and a soybean crop also very large, the carryouts of both crops will grow, sending farm prices down. Input costs will need to decline, except perhaps seeds.

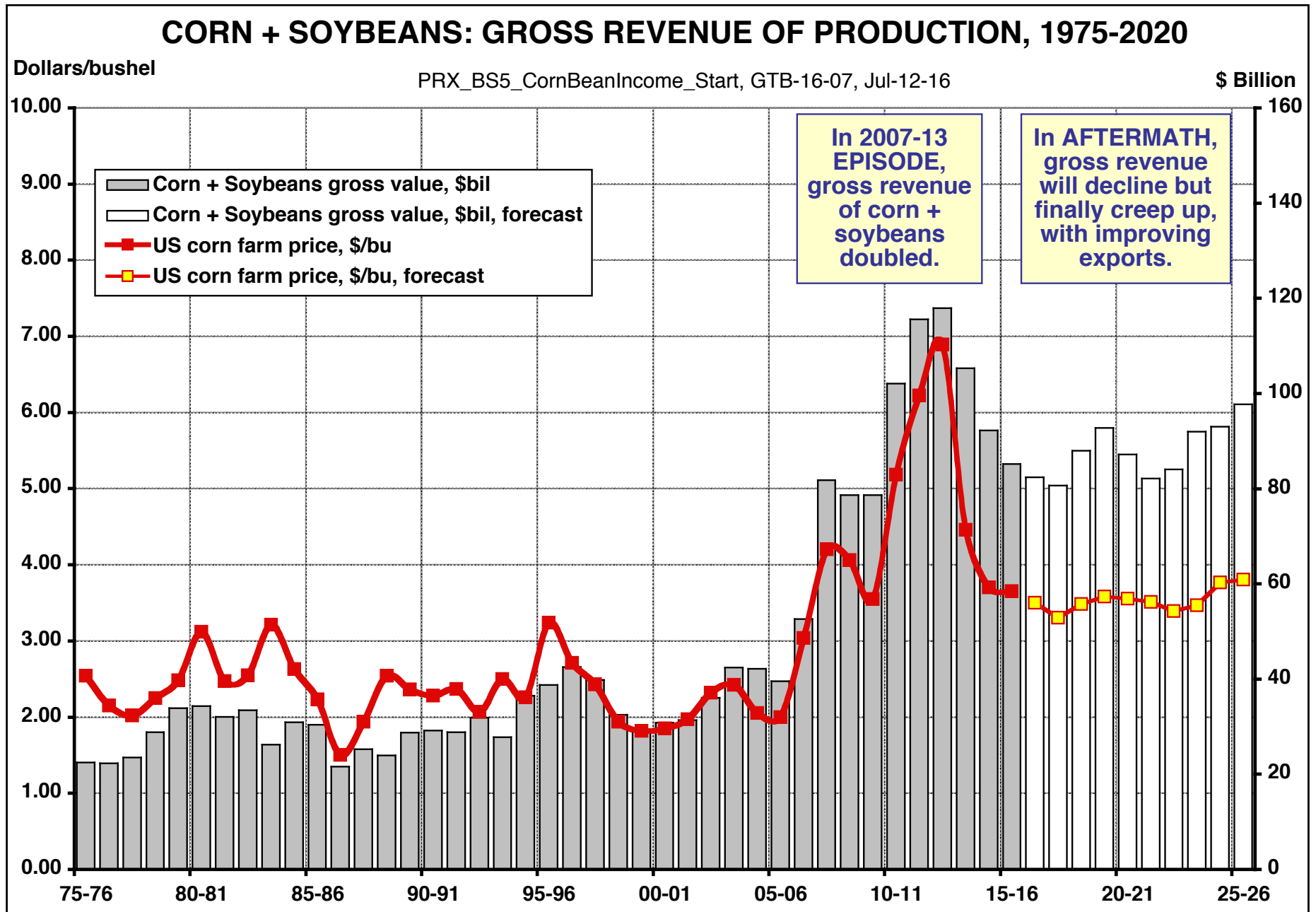


## PRX Blue Sky Model #42 US CORN & SOYBEAN GROSS INCOME RESULTS

PRX\_BS5\_CornBeanIncome\_Start, GTB-16-07, Jul-12-16

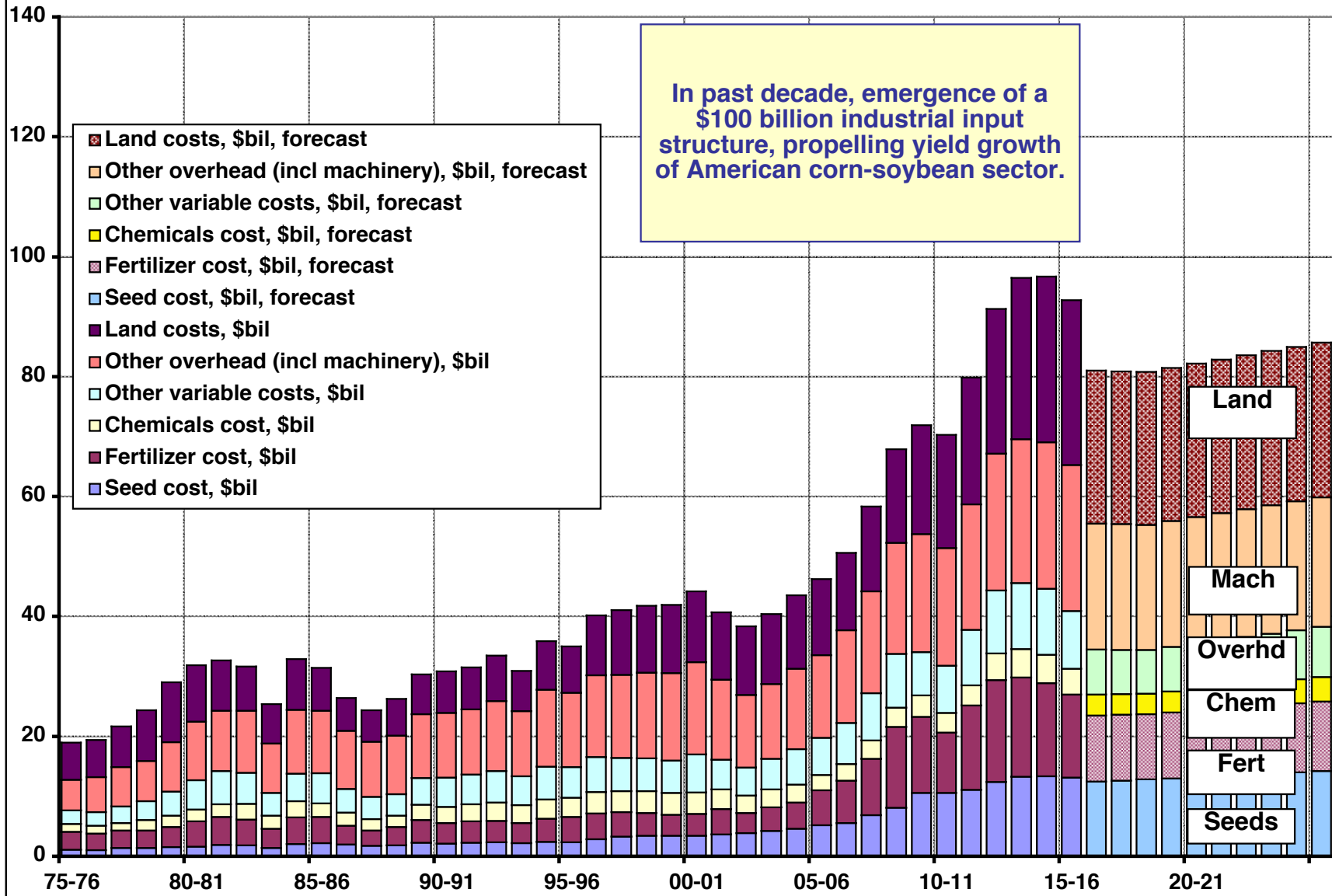
Item	Unit	Crop Year								
		08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	20-21
Soybean area planted	<i>mil ac</i>	75.7	77.5	77.4	75.0	77.2	76.8	83.2	82.6	80.0
Corn area planted	<i>mil ac</i>	86.0	86.4	88.2	91.9	97.3	95.4	90.6	88.0	90.0
Soybean & Corn area planted	<i>mil ac</i>	161.7	163.8	165.6	167.0	174.5	172.2	173.8	170.6	170.0
Principal Crops area planted	<i>mil ac</i>	325.0	319.3	316.7	315.1	324.3	324.9	326.4	318.5	
Soybean & Corn share	<i>pct</i>	49.8%	51.3%	52.3%	53.0%	53.8%	53.0%	53.3%	53.6%	
Soybean production	<i>mil bu</i>	2967	3359	3329	3094	3042	3357	3926	3930	3932
Corn Production	<i>mil bu</i>	12092	13092	12447	12360	10755	13829	14216	13601	14688
Soybean farm price	<i>\$/bu</i>	9.97	9.59	11.30	12.50	14.40	13.00	10.10	9.05	8.89
Corn farm price	<i>\$/bu</i>	4.06	3.55	5.18	6.22	6.89	4.46	3.70	3.65	3.56
Soybean production value	<i>\$bil</i>	29.6	32.2	37.6	38.7	43.8	43.6	39.7	35.6	35.0
Corn production value	<i>\$bil</i>	49.1	46.5	64.5	76.9	74.1	61.7	52.6	49.6	52.2
Soybean & Corn prod value	<i>\$bil</i>	78.7	78.7	102.1	115.5	117.9	105.3	92.2	85.2	87.2
Soybean & Corn prod value	<i>\$/ac Pltd</i>	487	480	617	692	676	612	531	499	513

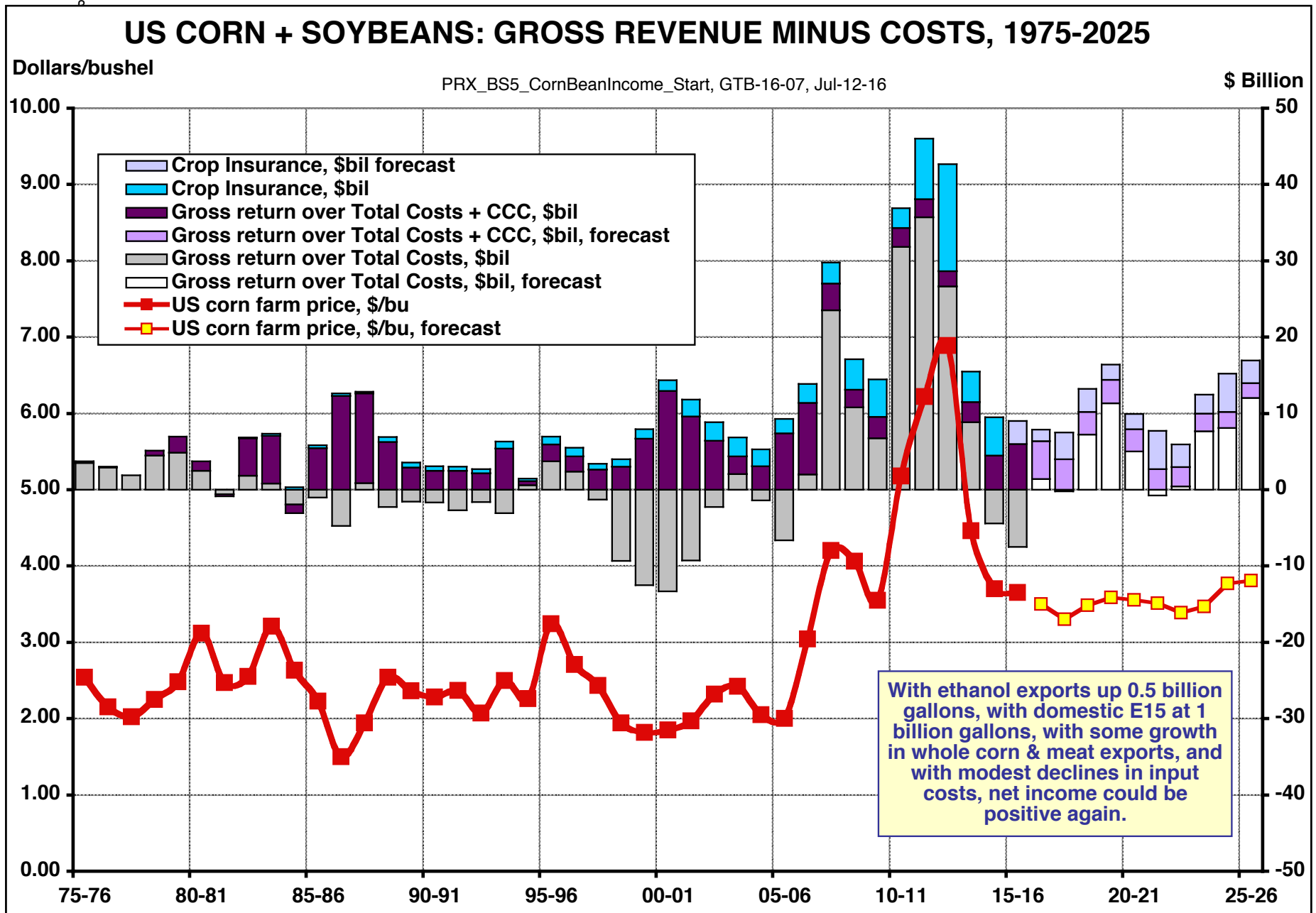
Provided that (1) EPA's execution of RFS2 Final Rule 2014 is as Proposed; that (2) US share of world grain trade rebounds some from 2012-13; and that (3) US corn-soybean weather in 2015 & beyond is "normal", then combined corn+soybean acreage and farm prices should be relatively strong.

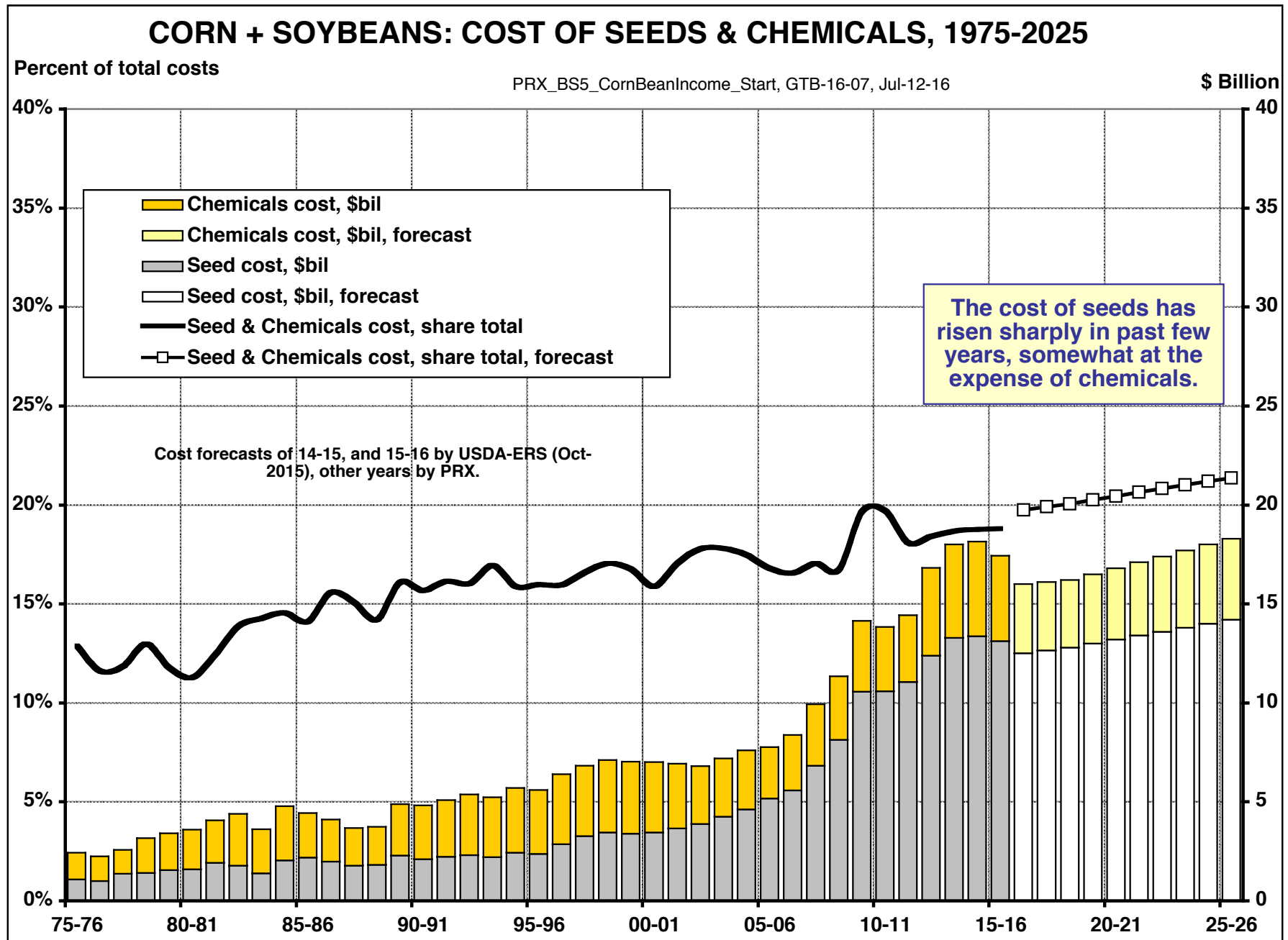


## US CORN + SOYBEANS: TOTAL COSTS OF PRODUCTION, 1975-2025

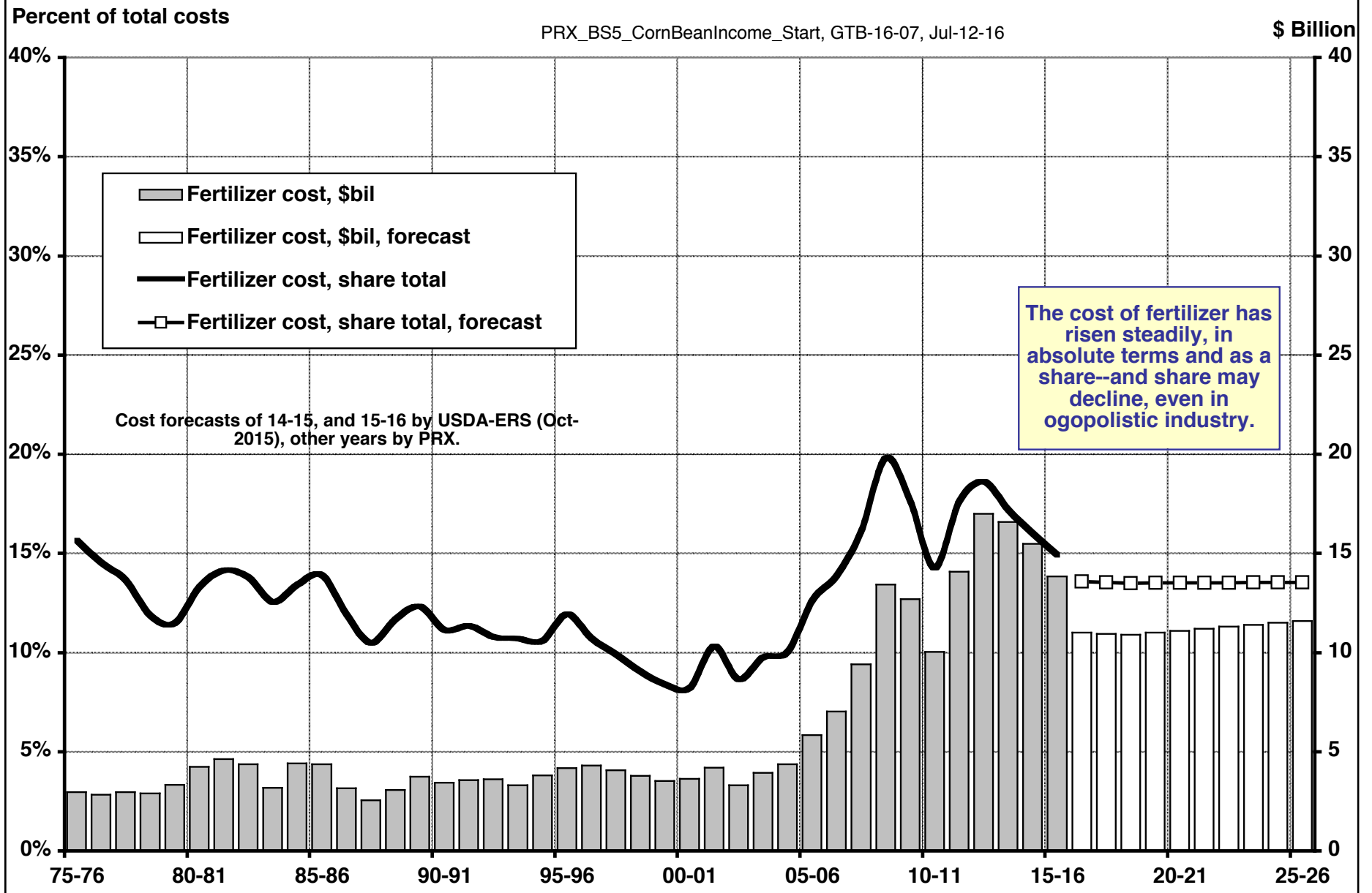
PRX\_BS5\_CornBeanIncome\_Start, GTB-16-07, Jul-12-16



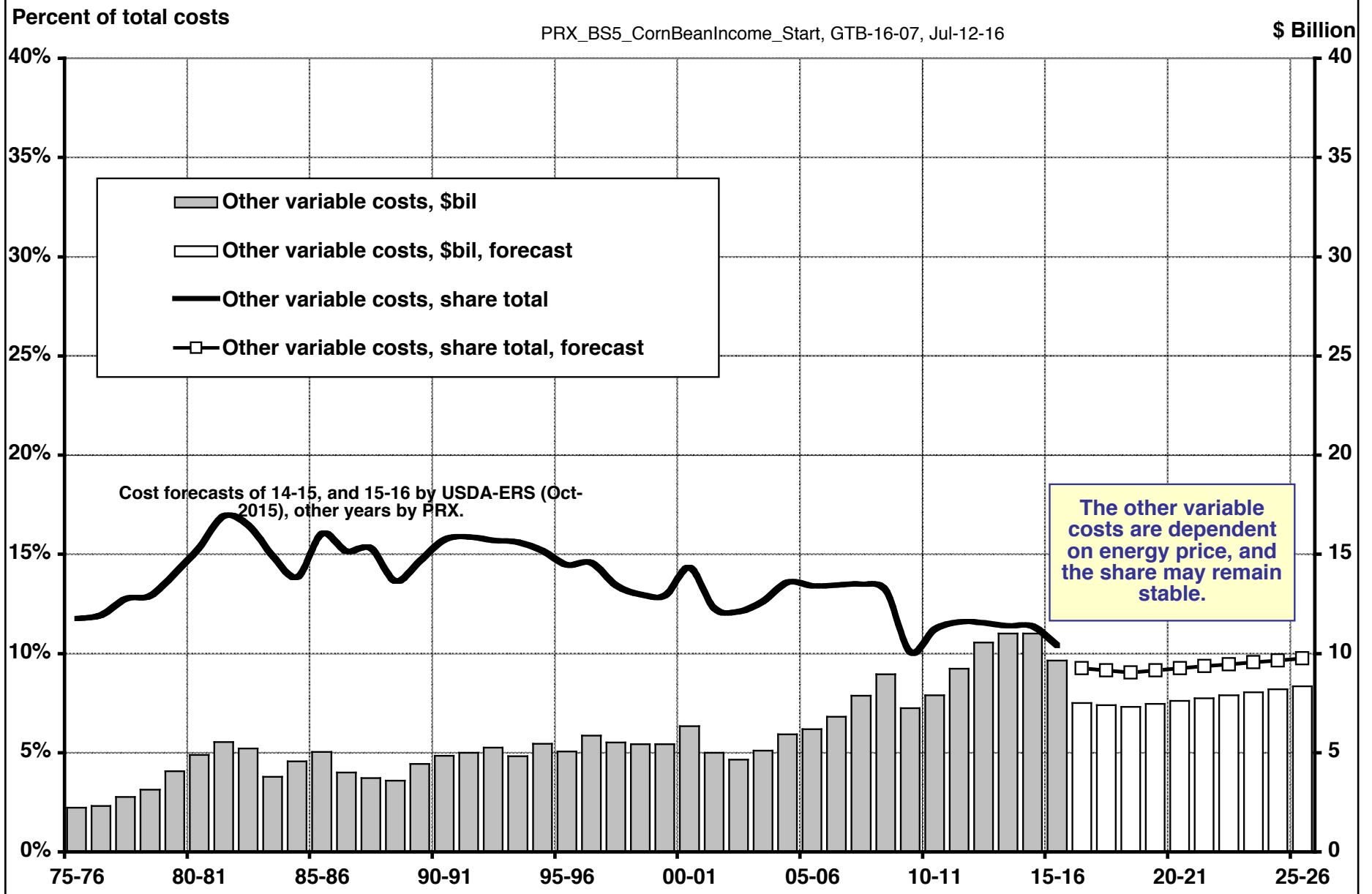


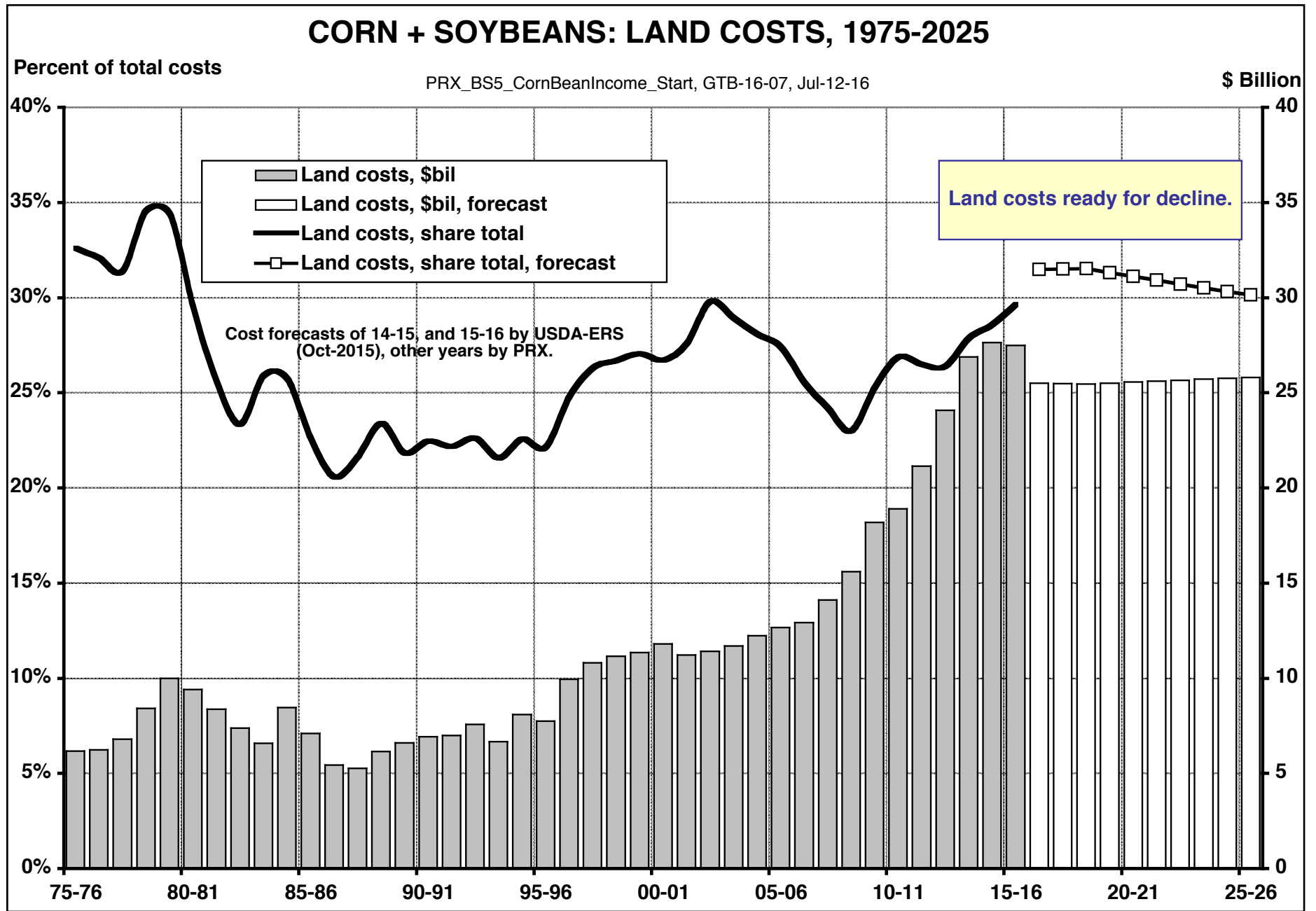


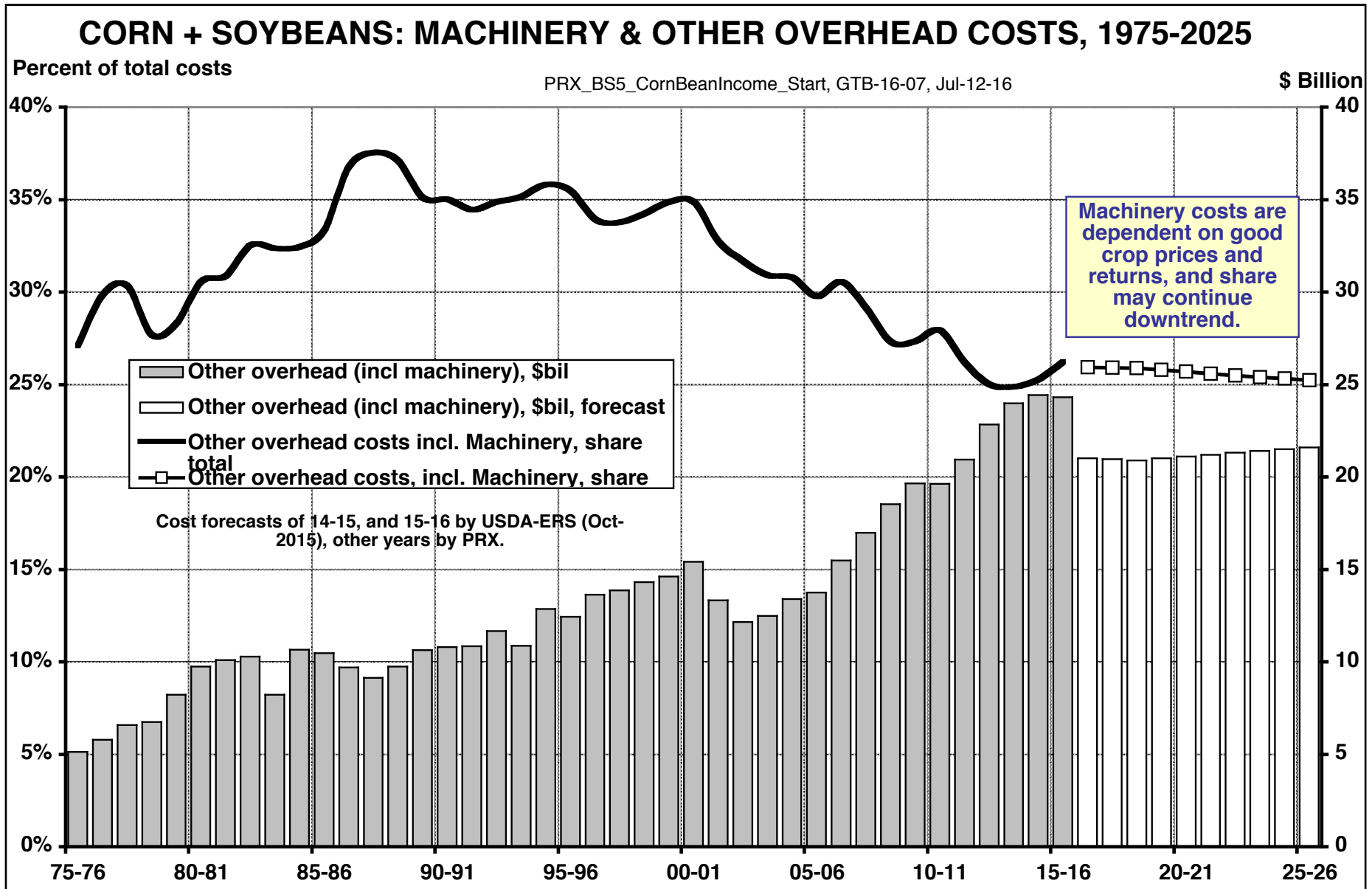
## CORN + SOYBEANS: COST OF FERTILIZER, 1975-2025



## CORN + SOYBEANS: OTHER VARIABLE COSTS, 1975-2025







## PRX Blue Sky Model #42 IMPLICATIONS FOR INPUT COSTS & NET RETURNS of US CORN & SOYBEAN SECTOR

PRX\_BS5\_CornBeanIncome\_Start, GTB-16-07, Jul-12-16

Item	Unit	Crop Year								
		08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	20-21
US corn farm price	\$/bu	4.06	3.55	5.18	6.22	6.89	4.46	3.70	3.65	3.56
Corn + Soybeans gross value	\$bil	78.7	78.7	102.1	115.5	117.9	105.3	92.2	85.2	87.2
Seed cost	\$bil	8.1	10.6	10.6	11.0	12.4	13.3	13.4	13.1	13.2
Fertilizer cost	\$bil	13.4	12.7	10.0	14.1	17.0	16.6	15.5	13.8	11.1
Chemicals cost	\$bil	3.2	3.6	3.3	3.4	4.4	4.7	4.8	4.3	3.6
Other variable costs	\$bil	9.0	7.2	7.9	9.2	10.5	11.0	11.0	9.6	7.6
Total variable costs	\$bil	33.7	34.1	31.8	37.8	44.3	45.6	44.6	40.9	35.5
Gross return over variable costs	\$bil	44.9	44.6	70.3	77.8	73.6	59.7	47.6	44.3	51.7
Land costs	\$bil	15.6	18.2	18.9	21.1	24.1	26.9	27.6	27.5	25.6
Machinery & oth overhead costs	\$bil	18.5	19.7	19.6	20.9	22.8	24.0	24.4	24.3	21.1
Total overhead costs	\$bil	34.1	37.8	38.5	42.1	46.9	50.9	52.1	51.8	46.7
Total Costs	\$bil	67.9	71.9	70.3	79.8	91.3	96.5	96.7	92.7	82.2
Net return over Total Costs	\$bil	10.8	6.8	31.8	35.7	26.6	8.9	-4.4	-7.5	5.0
CCC Transfers (income)	\$bil	2.3	2.8	2.5	2.4	2.0	2.6	4.5	6.0	2.9
Crop Insurance Payments (income)	\$bil	4.0	4.9	2.6	7.9	14.0	4.0	5.0	3.0	2.0
Net return with CCC & Insurance	\$bil	17.1	14.5	36.9	46.0	42.6	15.5	5.1	1.5	9.9
<b>Share of total costs</b>										
Seed cost	pct	12.0%	14.7%	15.1%	13.8%	13.6%	13.8%	13.8%	14.1%	16.1%
Fertilizer cost	pct	19.8%	17.6%	14.3%	17.6%	18.6%	17.2%	16.0%	14.9%	13.5%
Chemicals cost	pct	4.7%	5.0%	4.6%	4.2%	4.8%	4.9%	4.9%	4.7%	4.4%
Other variable costs	pct	13.2%	10.1%	11.2%	11.6%	11.6%	11.4%	11.4%	10.4%	9.3%
Total variable costs	pct	49.7%	47.4%	45.2%	47.3%	48.6%	47.3%	46.1%	44.1%	43.2%
Land costs	pct	23.0%	25.3%	26.9%	26.5%	26.4%	27.9%	28.6%	29.6%	31.1%
Machinery & oth overhead costs	pct	27.3%	27.3%	27.9%	26.2%	25.0%	24.9%	25.3%	26.2%	25.7%
Total overhead costs	pct	50.3%	52.6%	54.8%	52.7%	51.4%	52.7%	53.9%	55.9%	56.8%

**Point. Forecasting Input Costs requires more than a "cost plus" approach. Input suppliers all compete for share of the available Net Return Value for corn + soybeans. The Input Costs above in \$billions can be seen as "indexes" of potentially achievable average gross input prices.**

## Appendix. PRX Blue Sky Model #42 US CORN COST OF PRODUCTION, ADJUSTED FROM USDA-ERS\*

PRX\_BS5\_CornBeanIncome\_Start, GTB-16-07, Jul-12-16

Item	Unit	Crop Year								
		07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16
<b>Adjusted</b>										
Yield per acre planted	<i>\$/ac pltd</i>	139.41	140.63	151.56	141.13	134.44	110.55	145.01	156.91	154.56
Average farm price	<i>\$/bu</i>	<u>4.20</u>	<u>4.06</u>	<u>3.55</u>	<u>5.18</u>	<u>6.22</u>	<u>6.89</u>	<u>4.46</u>	<u>3.70</u>	<u>3.65</u>
Corn gross value (ex silage)	<i>\$/ac pltd</i>	585.52	570.96	538.03	731.07	836.20	761.66	646.75	580.57	564.15
<b>Variable Costs</b>										
Seed	<i>\$/ac pltd</i>	47.81	58.62	76.67	72.41	77.69	86.23	90.72	93.26	94.19
Fertilizer	<i>\$/ac pltd</i>	90.79	135.92	127.38	99.44	135.69	146.62	142.53	137.74	126.17
Chemicals	<i>\$/ac pltd</i>	23.77	24.60	27.04	23.34	24.26	25.78	26.56	26.95	25.66
Other	<i>\$/ac pltd</i>	<u>60.87</u>	<u>69.63</u>	<u>55.52</u>	<u>59.04</u>	<u>68.37</u>	<u>68.88</u>	<u>70.75</u>	<u>71.49</u>	<u>64.28</u>
Total variable costs	<i>\$/ac pltd</i>	223.24	288.77	286.61	254.23	306.01	327.51	330.55	329.44	310.30
Gross return over variable costs	<i>\$/ac pltd</i>	232.63	324.38	257.48	356.88	464.31	423.10	337.95	226.02	239.34
<b>Overhead Costs &amp; Total</b>										
Land	<i>\$/ac pltd</i>	94.77	104.86	120.34	113.02	127.25	145.15	155.92	162.08	165.86
Machinery and other	<i>\$/ac pltd</i>	<u>114.81</u>	<u>123.36</u>	<u>128.07</u>	<u>124.73</u>	<u>131.61</u>	<u>139.62</u>	<u>142.32</u>	<u>145.17</u>	<u>148.71</u>
Total overhead costs	<i>\$/ac pltd</i>	<u>209.58</u>	<u>228.22</u>	<u>248.41</u>	<u>237.75</u>	<u>258.87</u>	<u>284.78</u>	<u>298.25</u>	<u>307.25</u>	<u>314.56</u>
Total Costs	<i>\$/ac pltd</i>	432.82	516.99	535.02	491.98	564.88	612.28	628.80	636.68	624.86
<b>Return</b>										
Gross return vs. Total Costs	<i>\$/ac pltd</i>	152.70	53.97	3.01	239.09	271.32	149.38	17.95	-56.12	-60.71
Corn silage gross value	<i>\$/ac pltd</i>	1.33	1.52	1.18	0.92	1.19	1.33	1.35	1.38	1.38
Gross return over Total Costs	<i>\$/ac pltd</i>	151.37	52.45	1.83	238.17	270.13	148.05	16.60	-57.50	-62.09

\*<http://www.ers.usda.gov/data/costsandreturns/testpick.htm>

**USDA-ERS series has been adjusted to NASS yield and average annual farm price. Beyond 2013 in this file, forecasts are entirely PRX.**

The above survey results from 05-06 through 10-11 have been adjusted to the NASS yields and average farm prices for each year. The cost figures above for 11-12 through 13-14 were published by ERS in Autumn-2013, and have been adjusted to PRX Blue Sky estimates of these prices and also of yields. ERS early season estimates of 2014 are not used.

## Appendix. PRX Blue Sky Model #42

### US SOYBEANS COST OF PRODUCTION, ADJUSTED FROM USDA-ERS\*

PRX\_BS5\_CornBeanIncome\_Start, GTB-16-07, Jul-12-16

Item	Unit	Crop Year								
		07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16
<b>Adjusted</b>										
Yield per acre planted	<i>\$/ac pltd</i>	41.35	39.18	43.37	43.01	41.22	39.41	43.70	47.16	47.56
Average farm price	<i>\$/bu</i>	10.10	9.97	9.59	11.30	12.50	14.40	13.00	10.10	9.05
Soybeans gross value	<i>\$/ac pltd</i>	417.65	390.67	415.91	486.02	515.27	567.44	568.11	476.28	430.45
<b>Variable Costs</b>										
Seed	<i>\$/ac pltd</i>	36.43	40.81	50.99	54.17	52.04	51.90	60.31	59.01	58.39
Fertilizer	<i>\$/ac pltd</i>	14.02	23.11	21.82	16.35	21.40	35.22	38.81	36.06	33.04
Chemicals	<i>\$/ac pltd</i>	13.74	14.47	16.04	15.60	15.38	24.75	28.64	28.12	25.02
Other	<i>\$/ac pltd</i>	33.48	39.19	31.56	34.58	39.40	49.77	55.34	54.30	48.24
Total variable costs	<i>\$/ac pltd</i>	97.67	117.59	120.41	120.70	128.23	161.65	183.10	177.48	164.69
Gross return over variable costs	<i>\$/ac pltd</i>	230.93	293.22	282.93	290.48	363.96	398.31	365.79	311.54	258.76
<b>Overhead Costs &amp; Total</b>										
Land	<i>\$/ac pltd</i>	81.14	87.03	100.56	115.30	125.82	129.05	156.48	155.65	156.06
Machinery and other	<i>\$/ac pltd</i>	96.43	104.68	110.99	111.55	117.60	119.86	135.48	135.43	135.96
Total overhead costs	<i>\$/ac pltd</i>	177.57	191.71	211.55	226.85	243.42	248.91	291.96	291.08	292.02
Total Costs	<i>\$/ac pltd</i>	275.24	309.30	331.96	347.55	371.65	410.56	475.06	468.55	456.71
<b>Return</b>										
Gross return vs. Total Costs	<i>\$/ac pltd</i>	142.41	81.38	83.95	138.47	143.62	156.88	93.05	7.73	-26.25

\*<http://www.ers.usda.gov/data/costsandreturns/testpick.htm>

USDA-ERS series has been adjusted to NASS yield and average annual farm price. Beyond 2013 in this file, forecasts are entirely PRX.

For both corn and soybeans, the above series of dollars per acre could be extended arithmetically through 2020, using the forecasted acreages and prices from the Blue Sky Model. But such detailed forecasts are not credible, and the approach here is to combine both corn & soybeans into a single set of total value calculations and shares, as shown on the previous pages.

