Fertilizer Outlook and Technology Conference

Agriculture Outlook

Martyn Foreman
Doane Advisory Services

November 15, 2017

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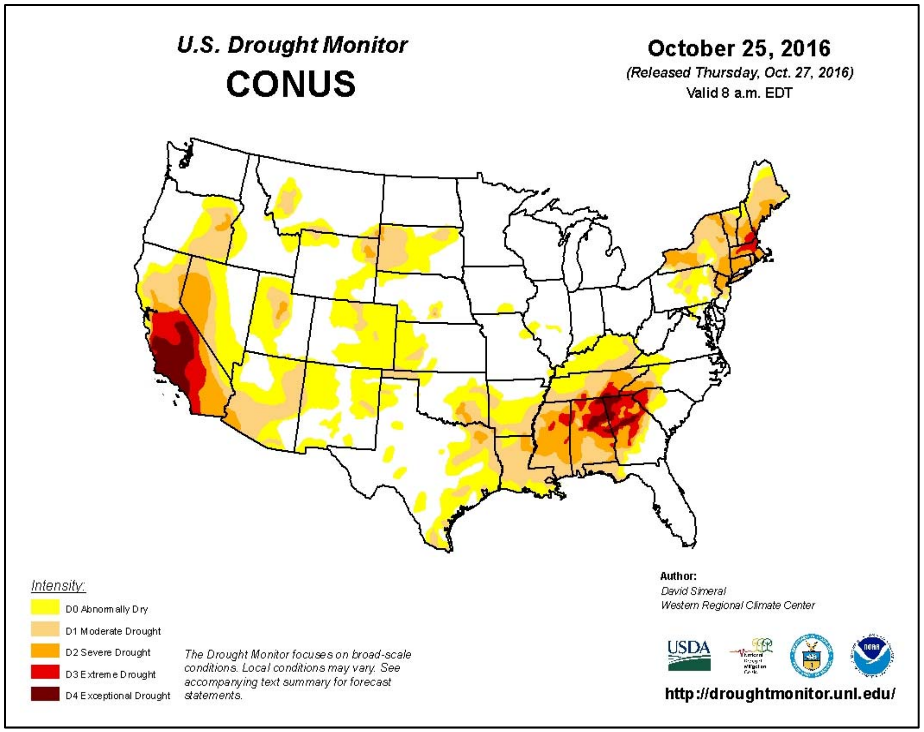
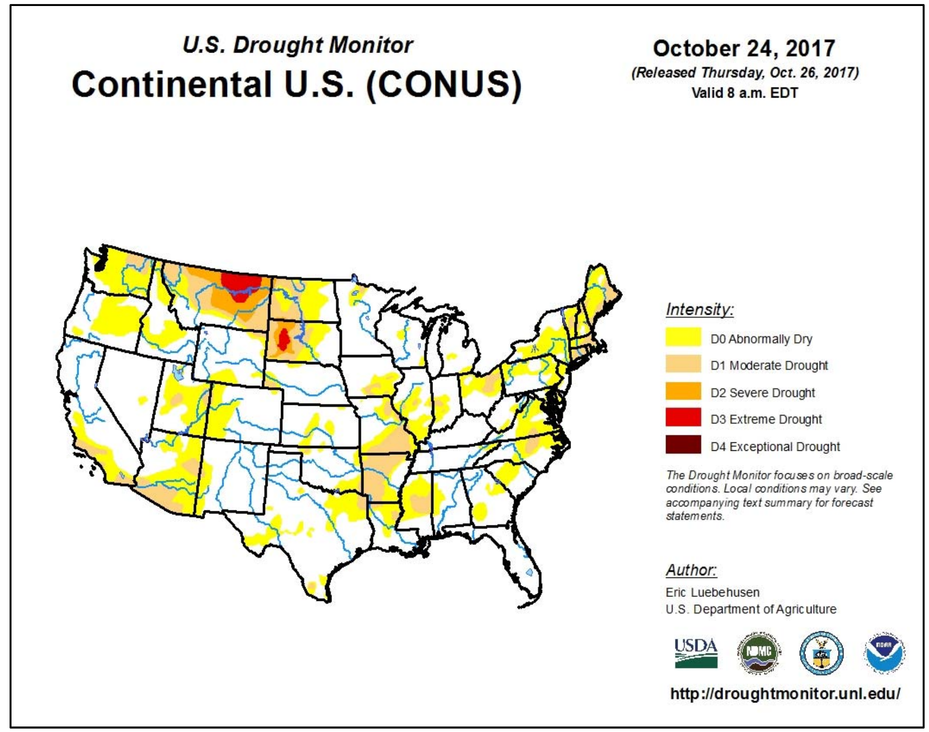
General Outline

- Weather
  - Possible transition to “mild” La Niña
- Key factors for major crops
  - Corn, Soybeans, Wheat and Cotton
  - Crop Acreage
- Livestock situation
- The financial situation for the farm sector
- Questions

Drought Monitor Fall 2016 vs. Fall 2017





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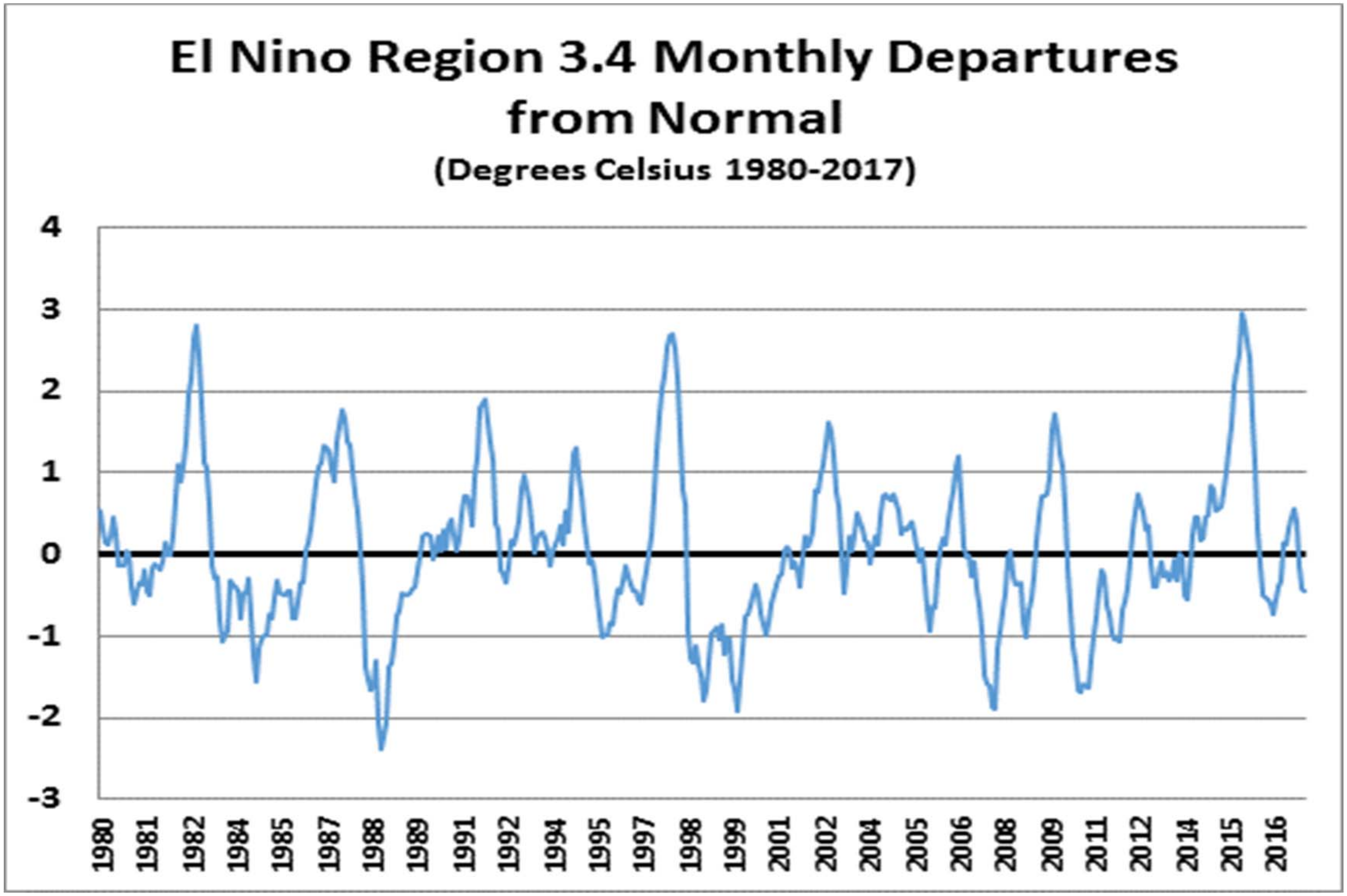
La Niña Probability

National Weather Service Forecast

CPC/IRI Early-Month Official ENSO Forecast Probabilities

Season	La Niña	Neutral	El Niño
OND 2017	72%	28%	0%
NDJ 2017	76%	24%	0%
DJF 2017	73%	26%	1%
JFM 2017	64%	34%	2%
FMA 2018	51%	45%	4%
MAM 2018	35%	56%	9%
AMJ 2018	24%	61%	15%
MJJ 2018	18%	60%	22%
JJA 2018	18%	57%	25%


El Nino Region 3.4 Monthly Departures from Normal
(Degrees Celsius 1980-2017)
4
3
2
1
0
-1
-2
-3
1980
1981
1982
1984
1985
1987
1988
1989
1991
1992
1994
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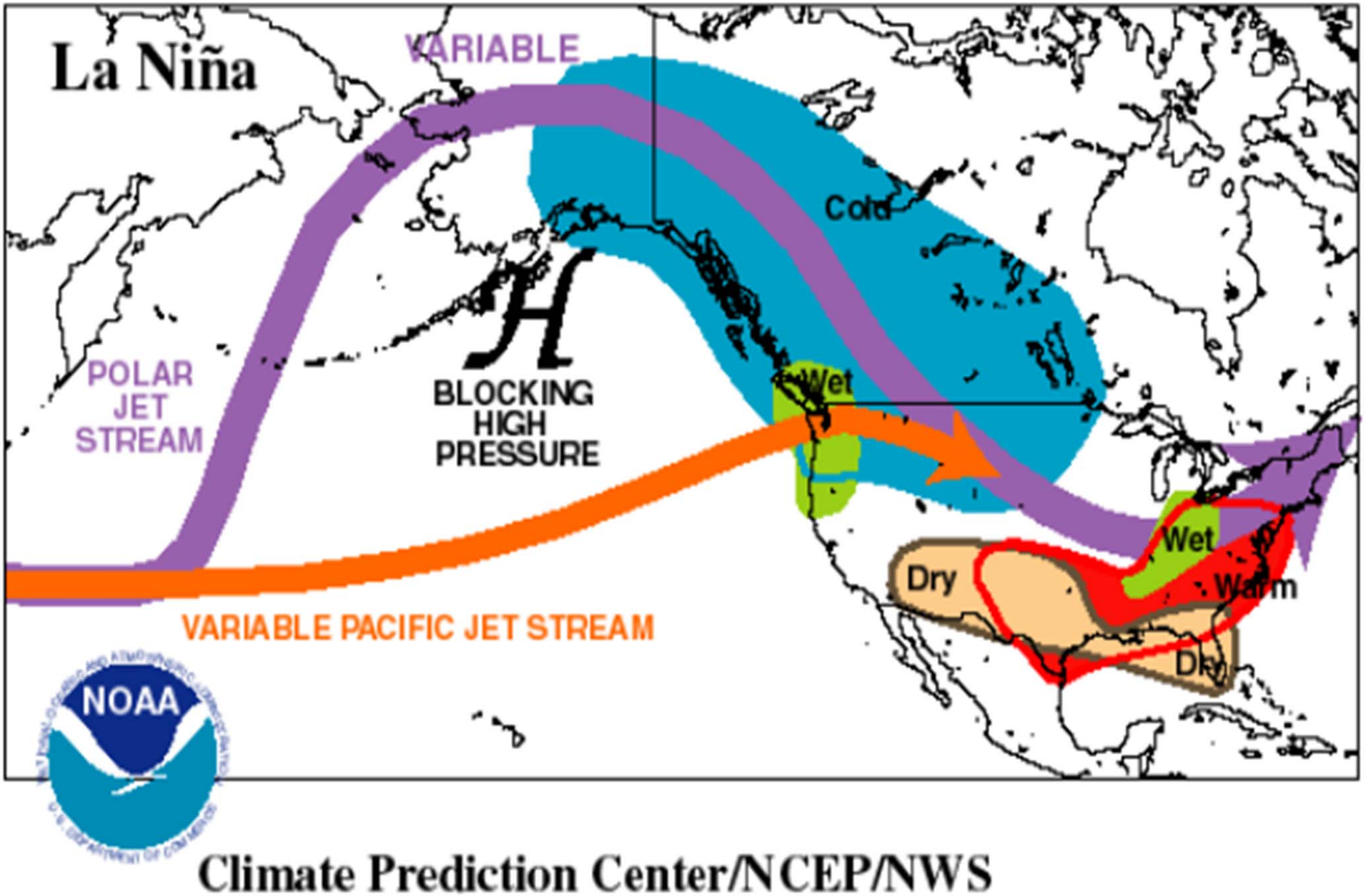
2008
2009
2011
2012
2014
2015
2016


La Niña
VARIABLE
Cold
POLAR
JET
STREAM
BLOCKING
HIGH
PRESSURE
Wet
Wet
Dry
Warm
Dry
VARIABLE PACIFIC JET STREAM
NOAA
Climate Prediction Center/NCEP/NWS

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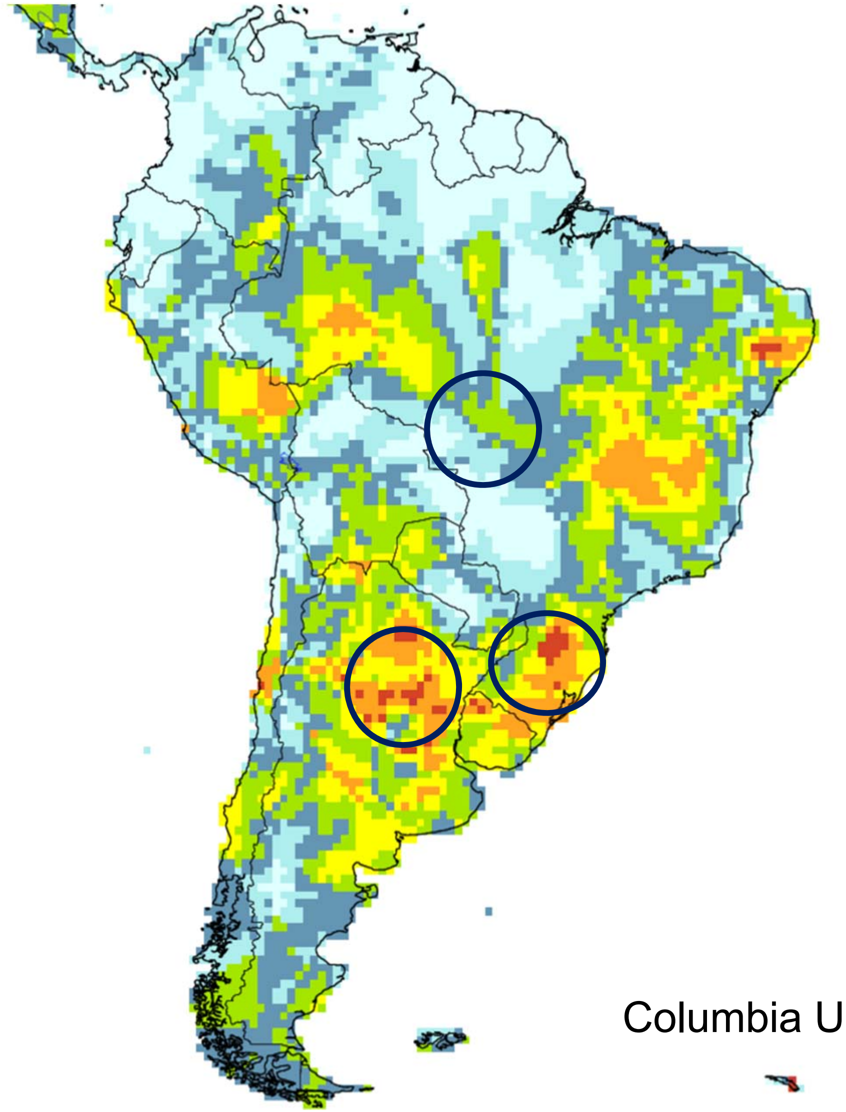
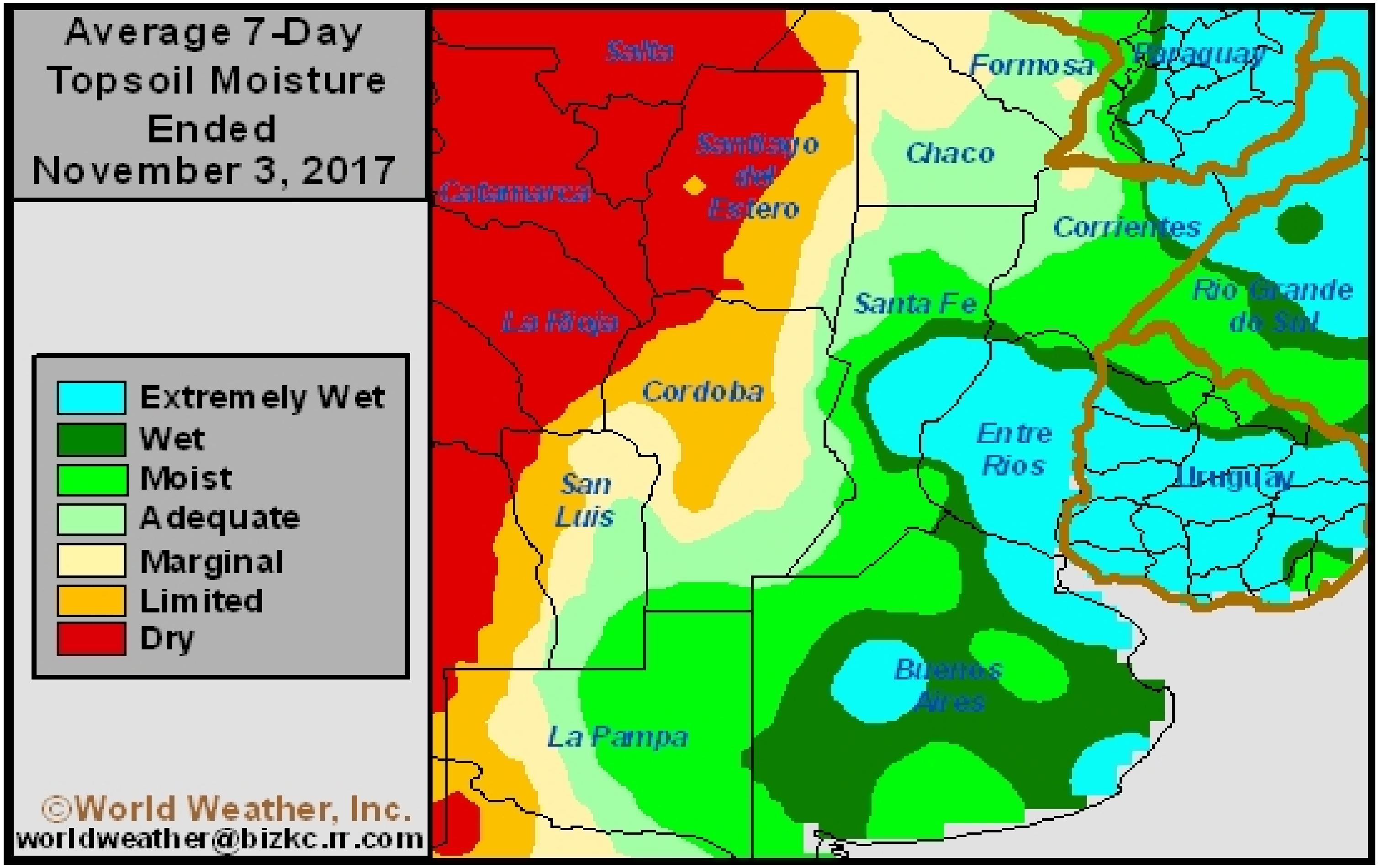
South America's past probabilities for drier than normal weather during La Niñas for 3-month period November to January

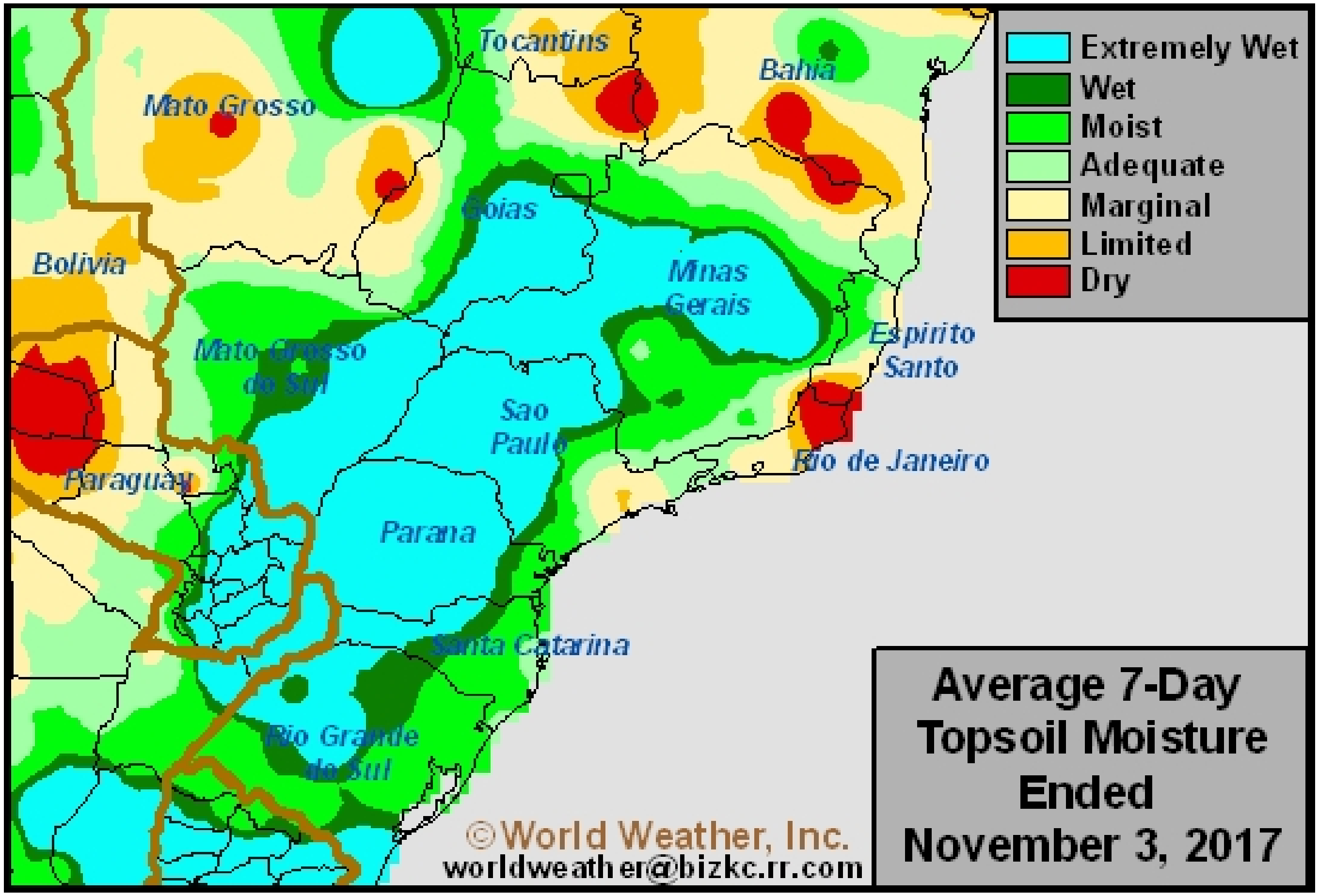


Columbia University Website

Argentina Topsoil Moisture



Brazil Topsoil Moisture

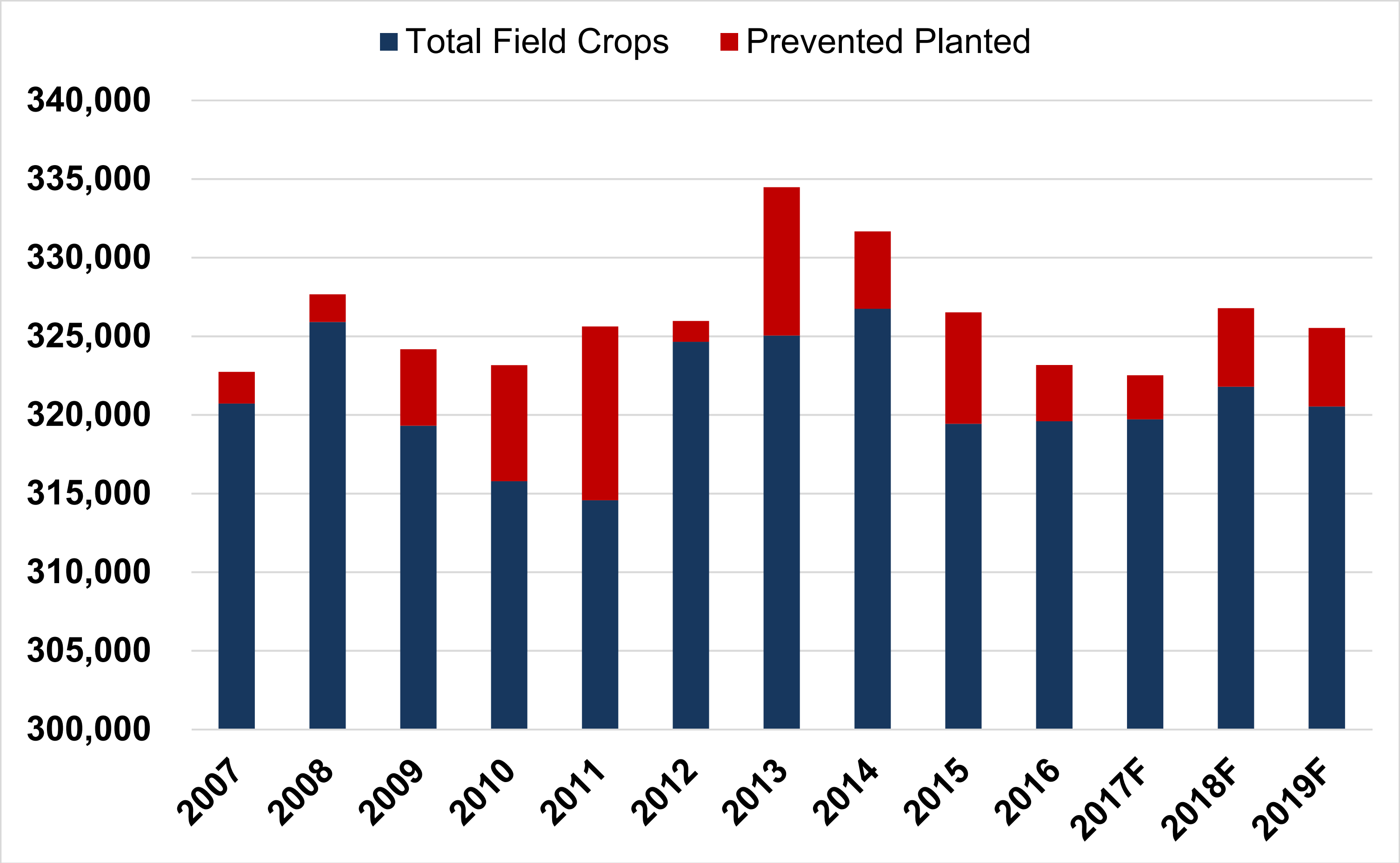


Crop Sector Outlook

Corn

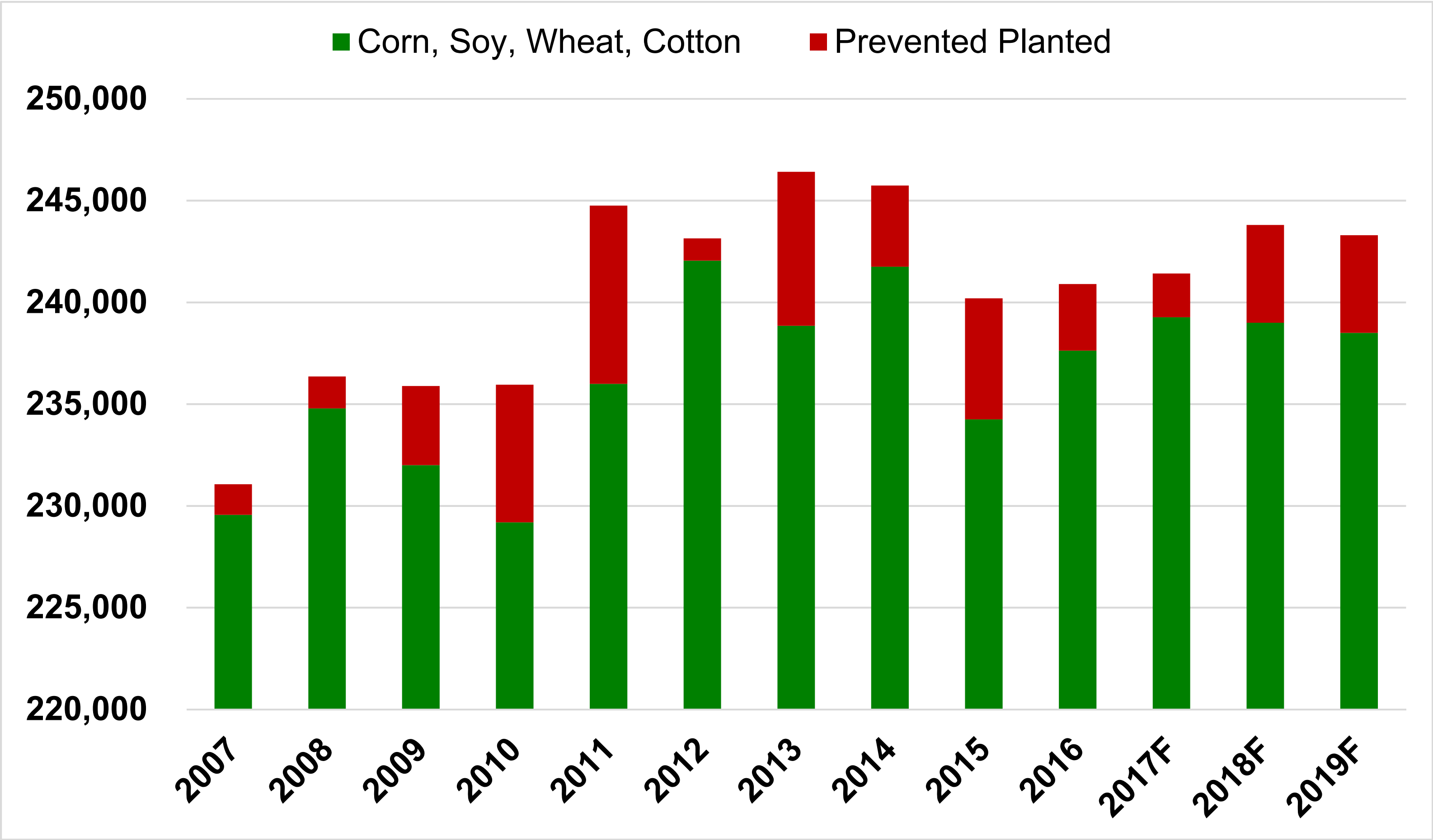
U.S. Crop Acreage

(1,000 acres)



Corn, Soybean, Wheat and Cotton

(1,000 acres)



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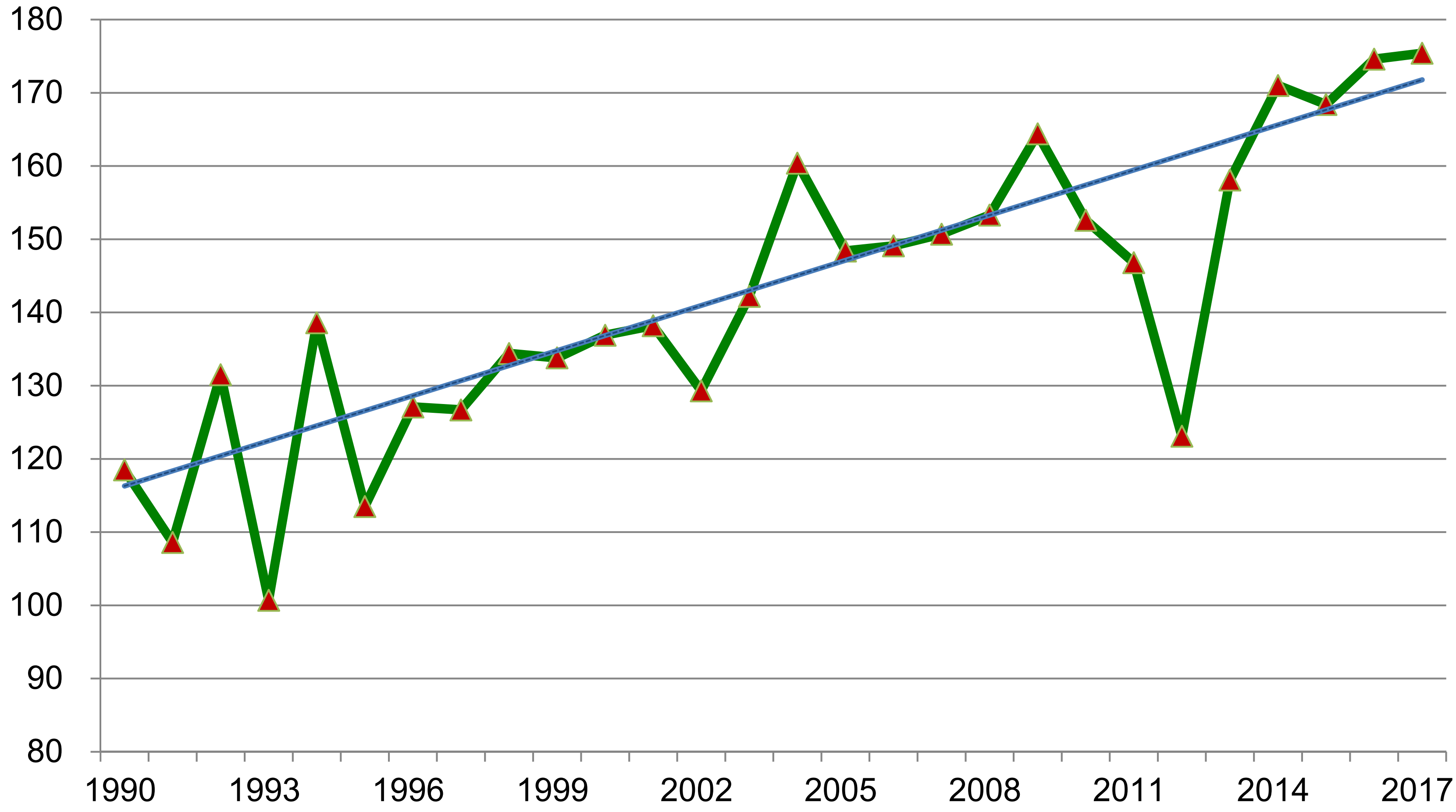
Key Points for the Corn Sector

- Better than expected yield
- Sharply lower exports more than offset modest increase in domestic use
- Corn for ethanol growth – export dependent
- South America – La Niña risk
- Little change in U.S. corn acreage next year

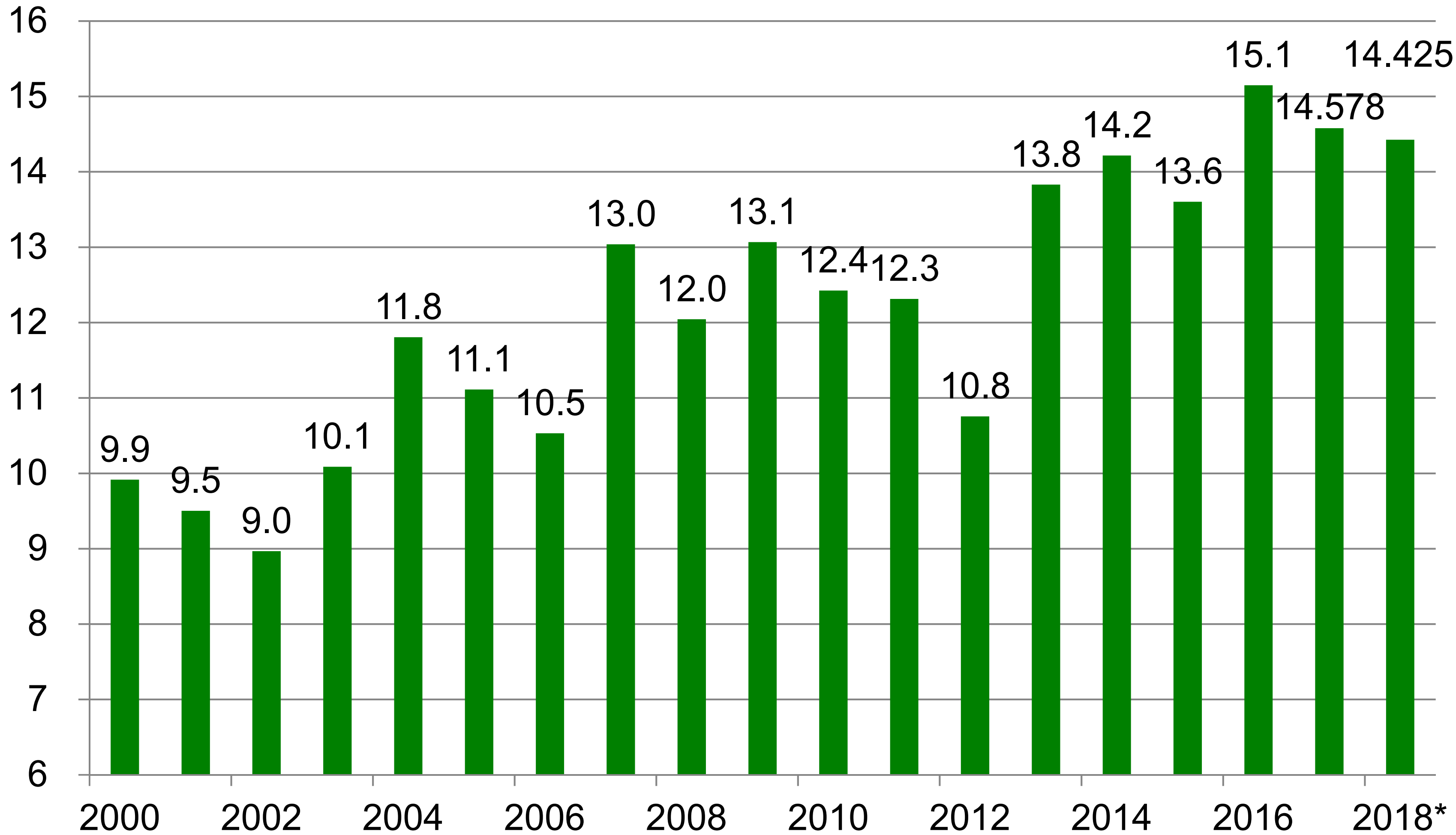
U.S. Corn Yield

(bu/ac)



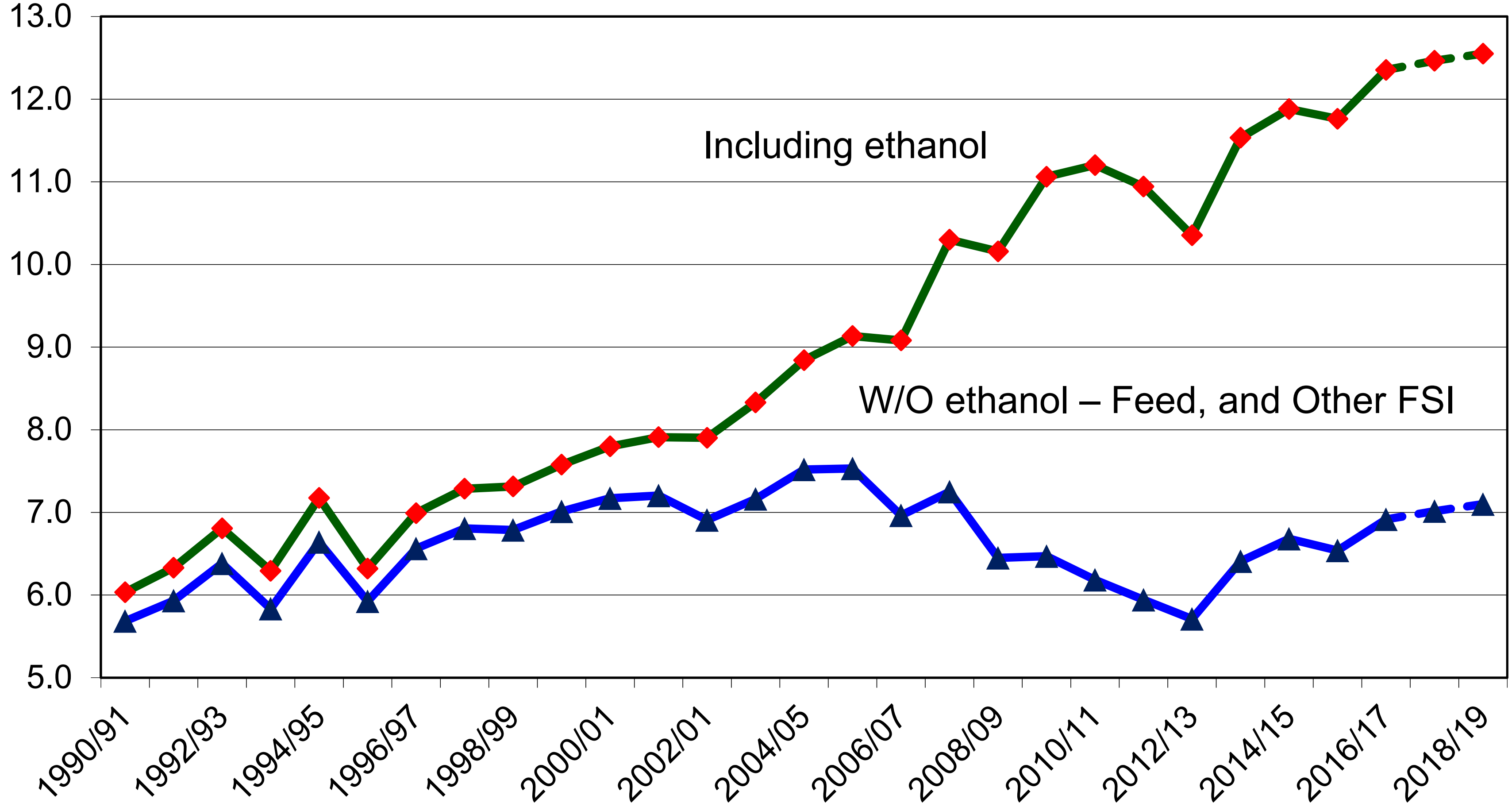
Corn Production

(billion bushels)



Domestic Corn Use

(billion bushels)



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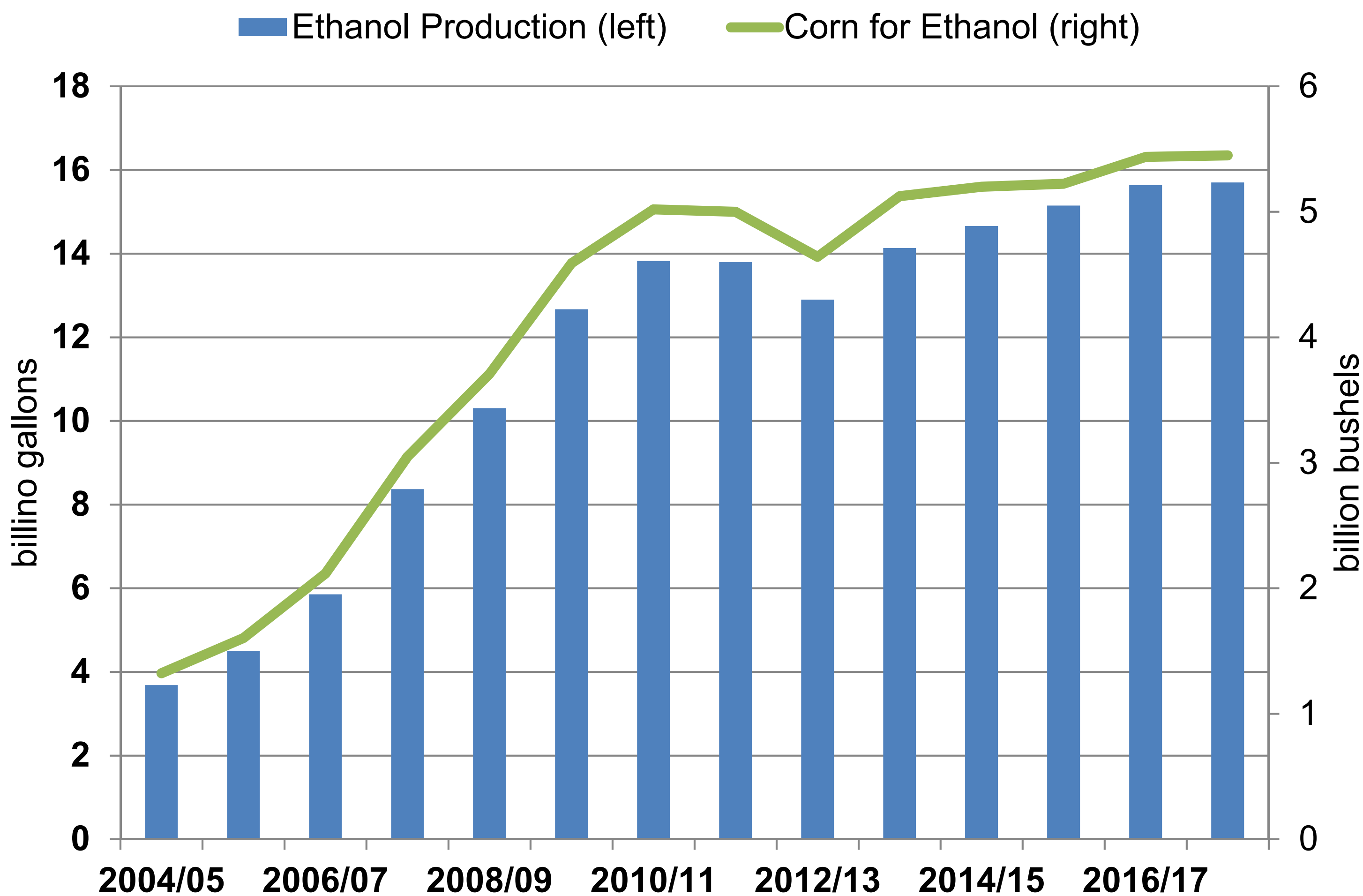
U.S. Ethanol Production and Corn for Ethanol

(Sep-Aug)



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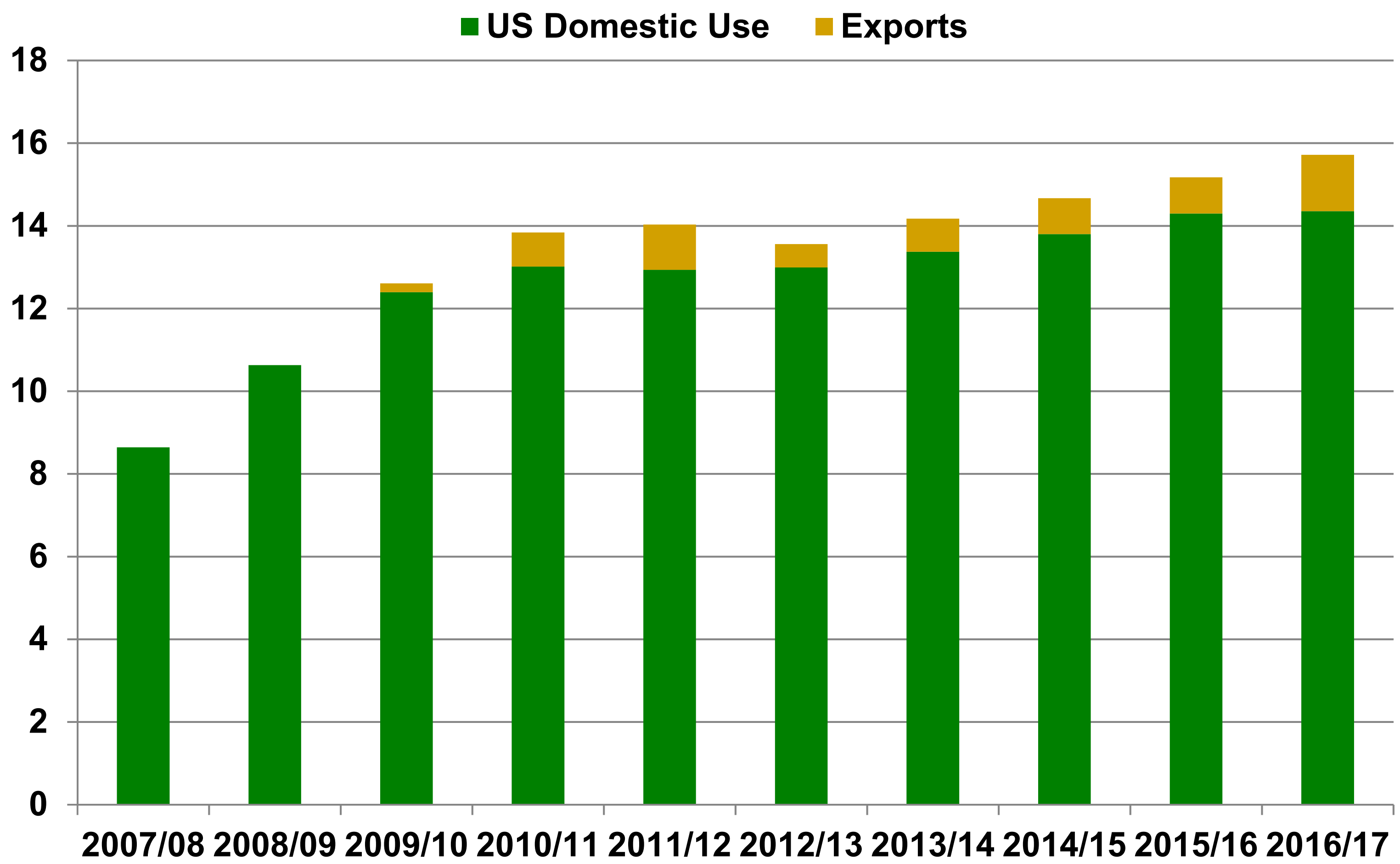
U.S. Ethanol Domestic Use and Exports

(billion gallons)



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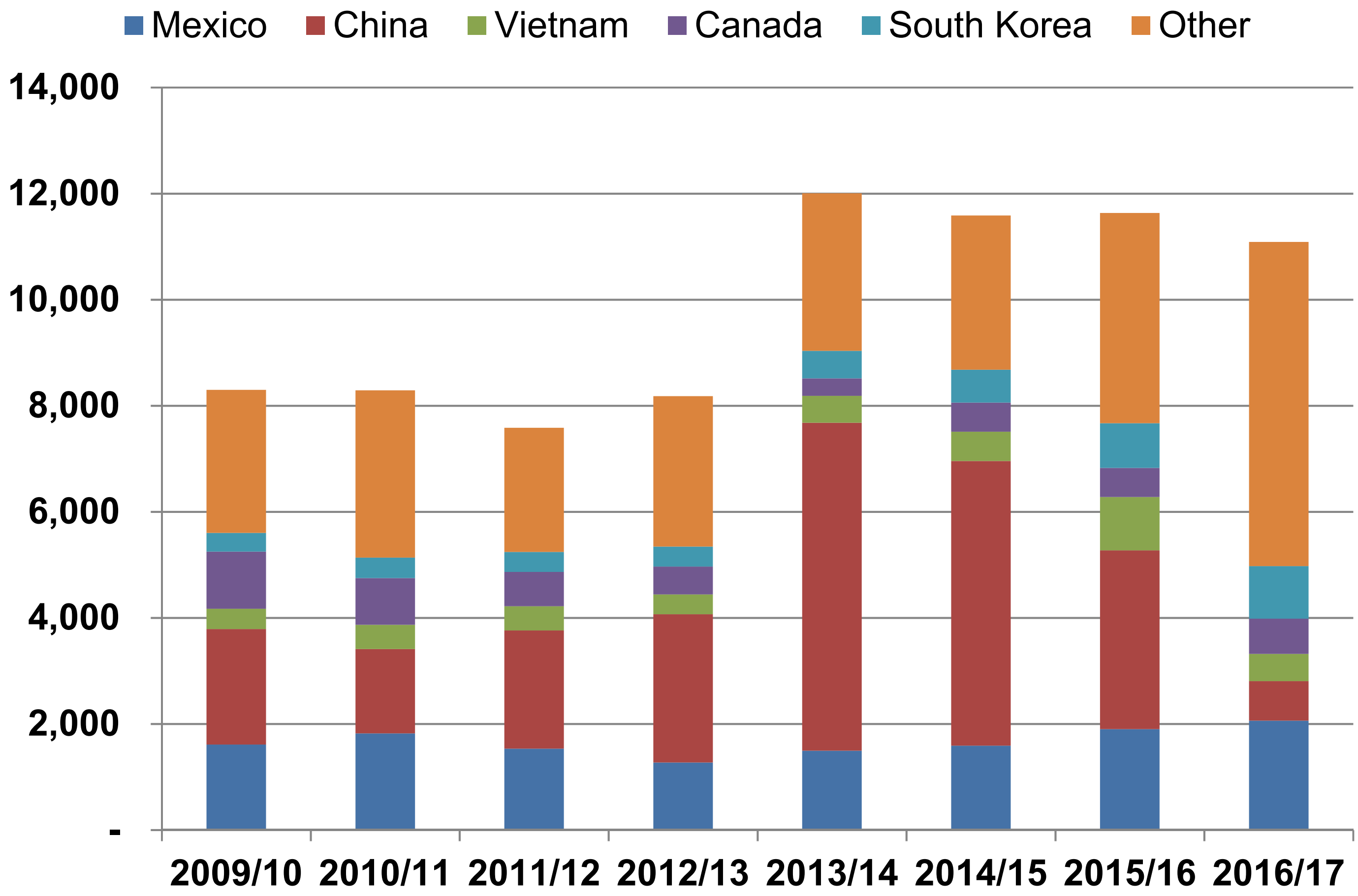
U.S. DDG Exports (Sep-Aug)

(1,000 MT)



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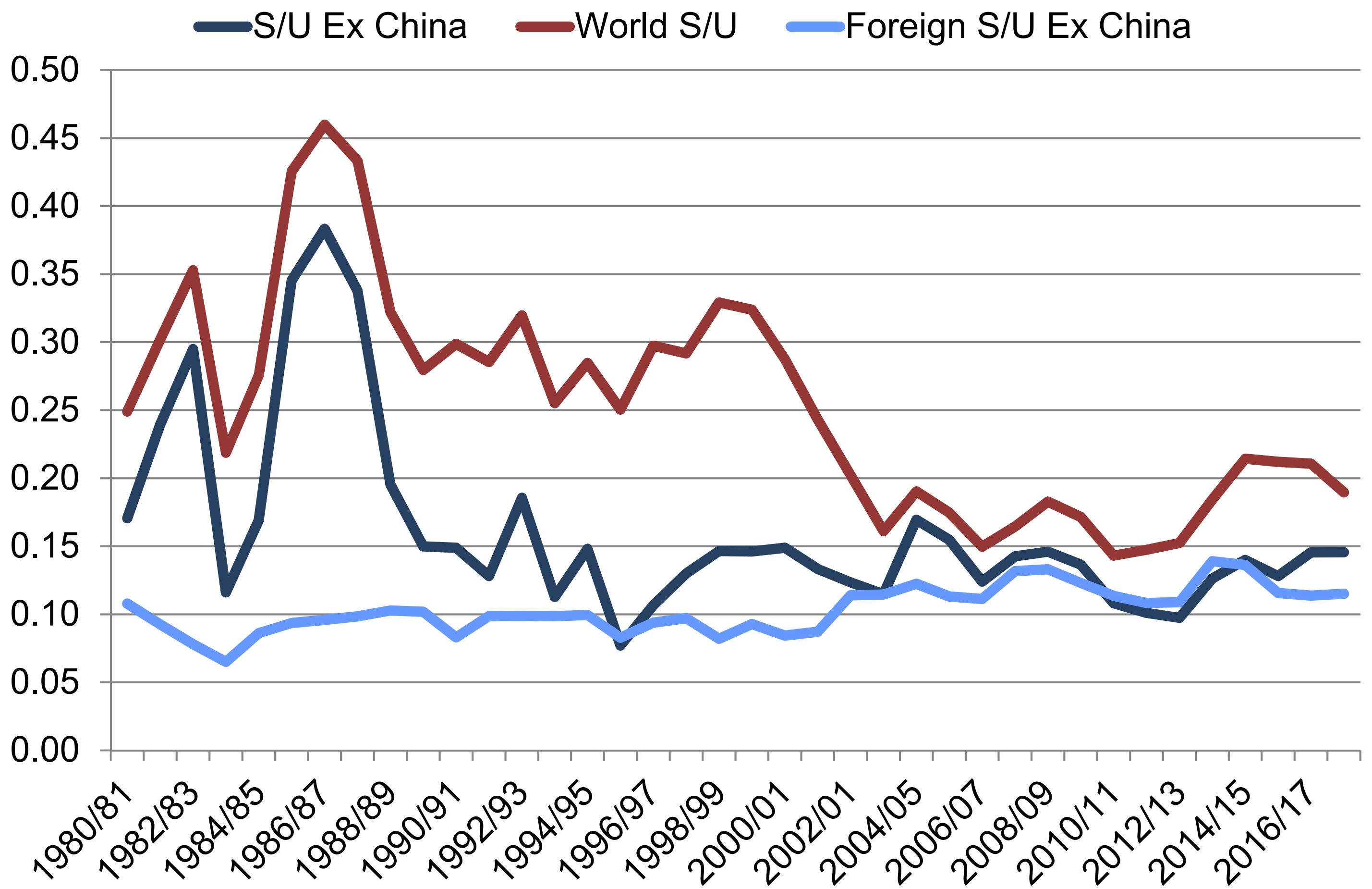
World Corn Ending Stocks-to-Use Ratio

(S/U ratio)



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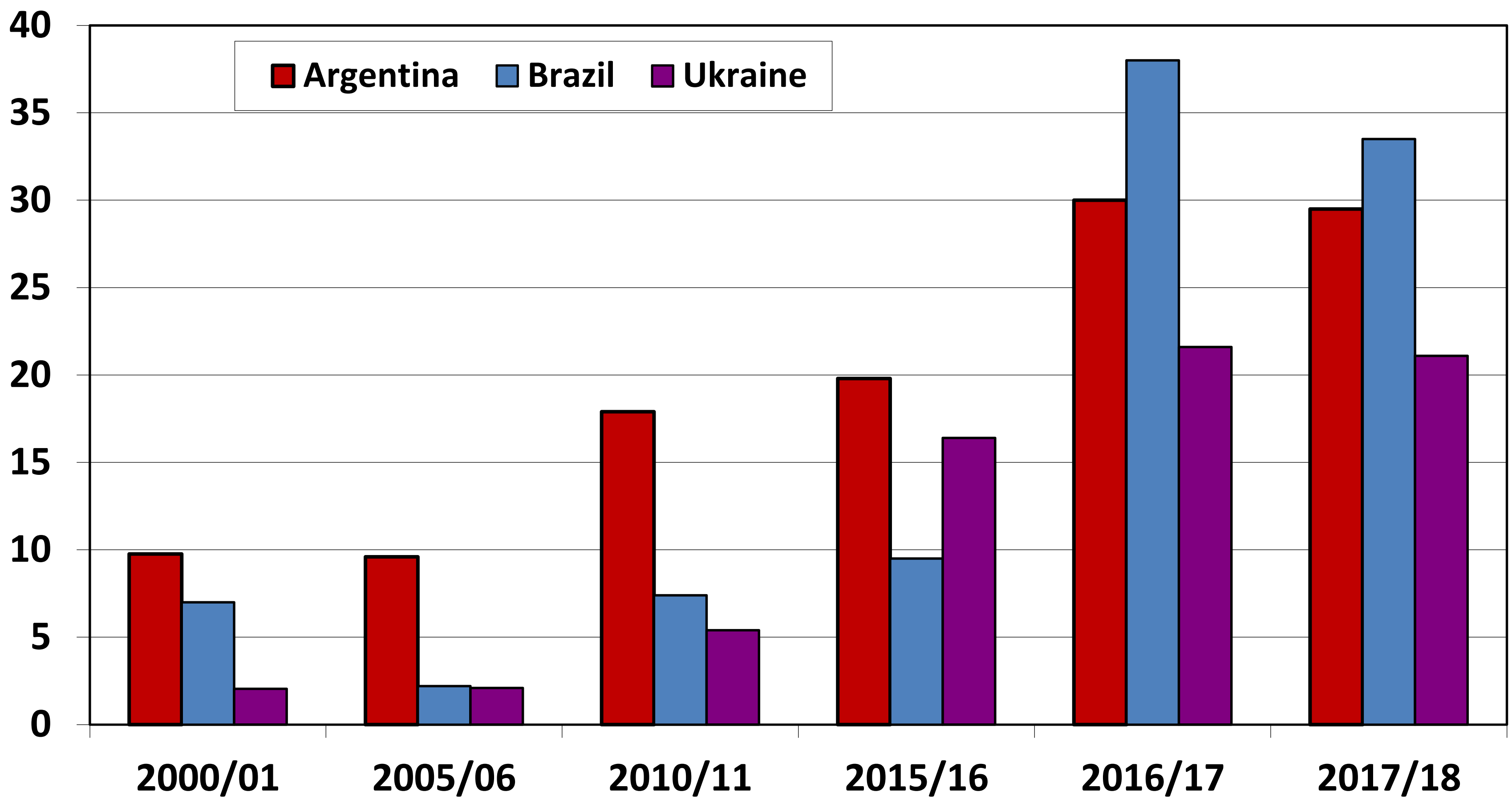
Corn Surplus - U.S. Export Competitors

(billion bushels)



45.7 MMT 89.6 MMT 84.1 MMT

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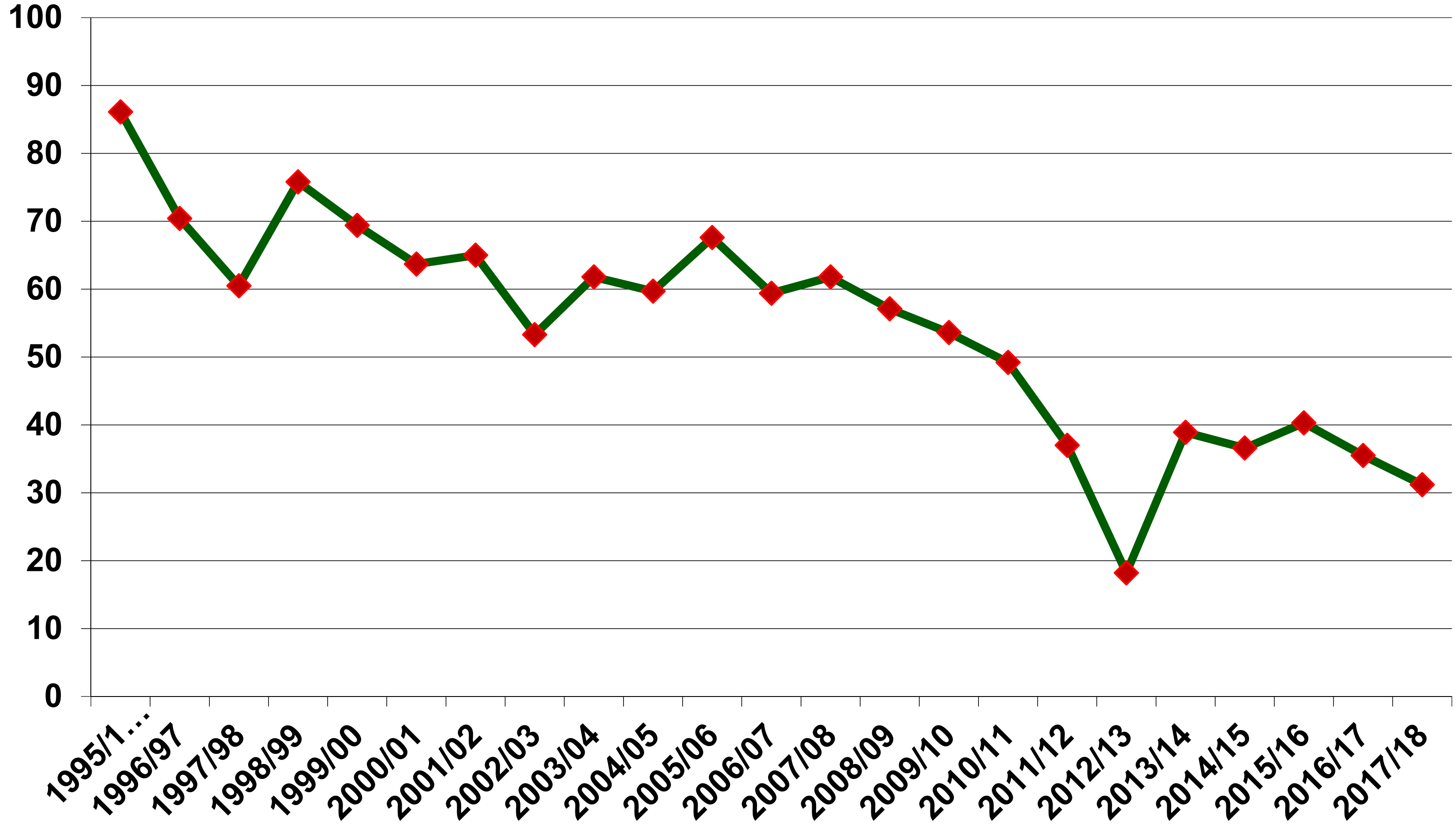
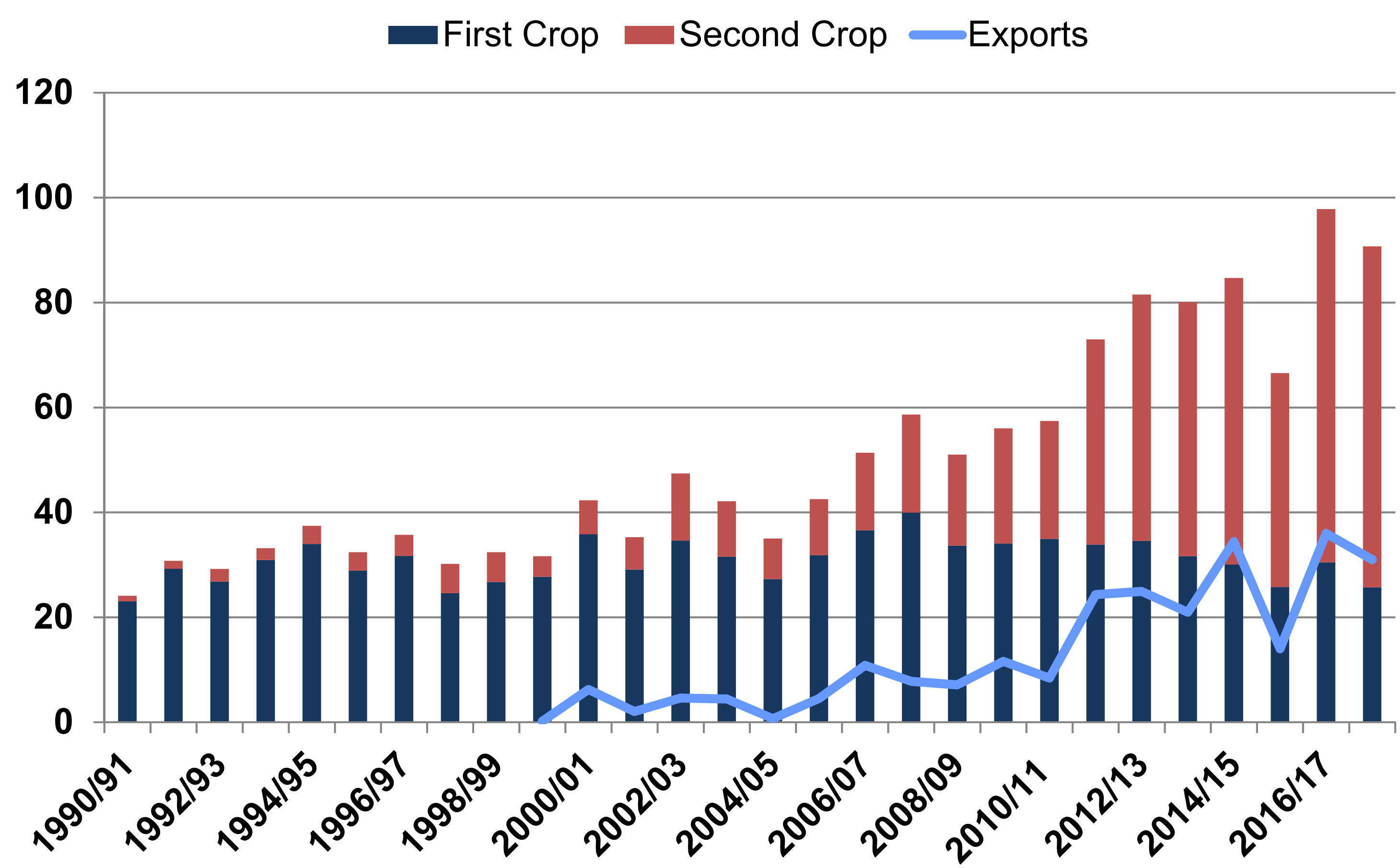
U.S. Share of World Corn Trade

(percent)



Brazil’s Corn Production and Exports

(million tonnes)



Source: Conab, USDA

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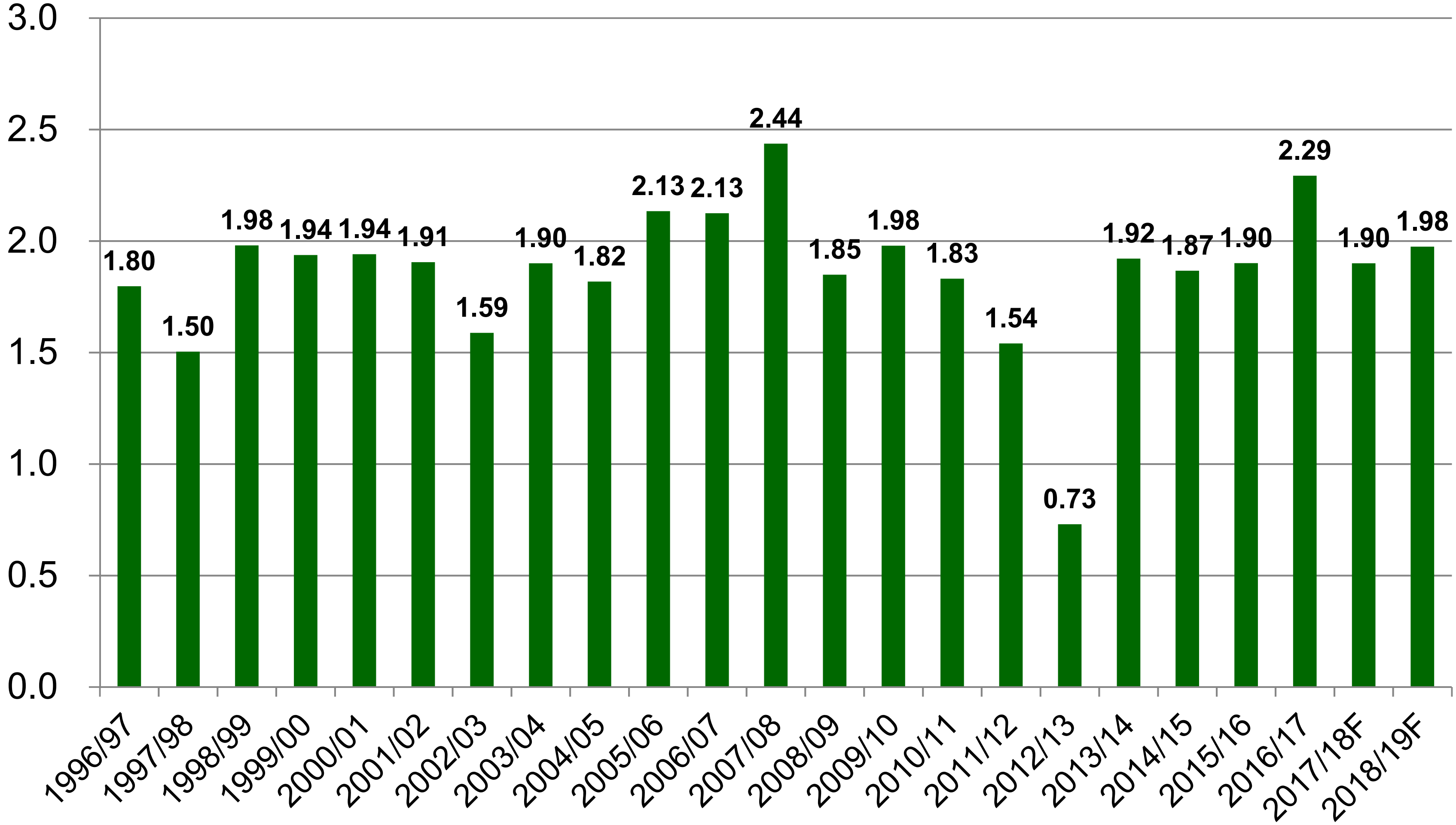
U.S. Corn Exports

(million bushels)



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Soybean/Corn Price Ratio

(SX18/CZ18)

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Crop Budgets for 2018

(dollars per acre)

	Corn		Soybeans
Revenue	588		453
Operating Costs	317		165
Allocated Costs	335		288
Total Costs	652		453
Net over Operating Costs	271		288
Net over all costs	-64		0

Revenue based on $3.40 corn price and 173 bu/ac yield and $9.25 soybean price and 49 bu/ac yield

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Crop Budgets for 2018

(dollars per acre)

	Corn-Corn		Soybeans
Revenue	558		453
Operating Costs	329		165
Allocated Costs	335		288
Total Costs	664		453
Net over Operating Costs	229		288
Net over all costs	-106		0

Revenue based on $3.40 corn price and 164 bu/ac yield and $9.25 soybean price and 49 bu/ac yield

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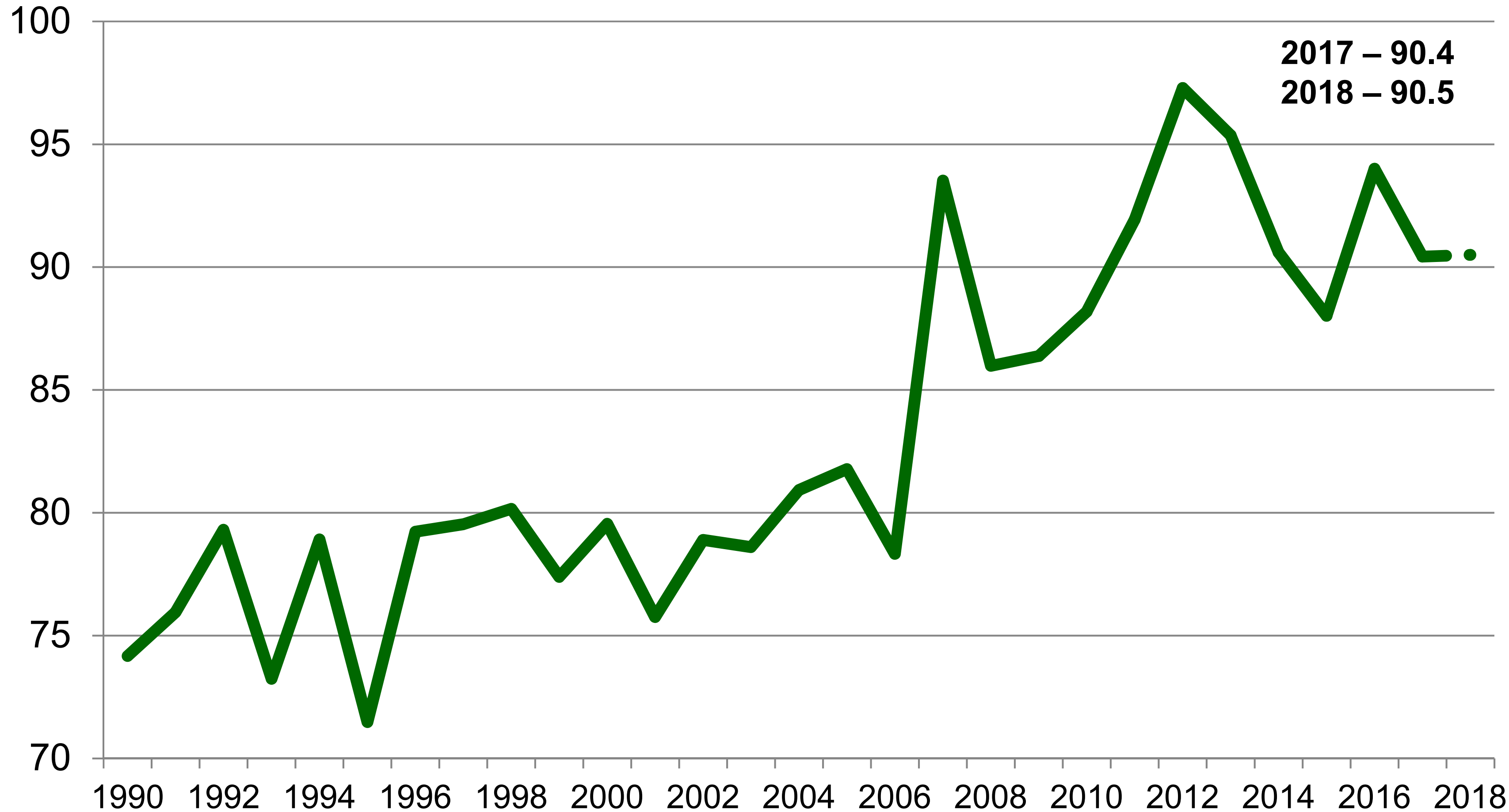
U.S. Corn Planted Acreage

(million acres)

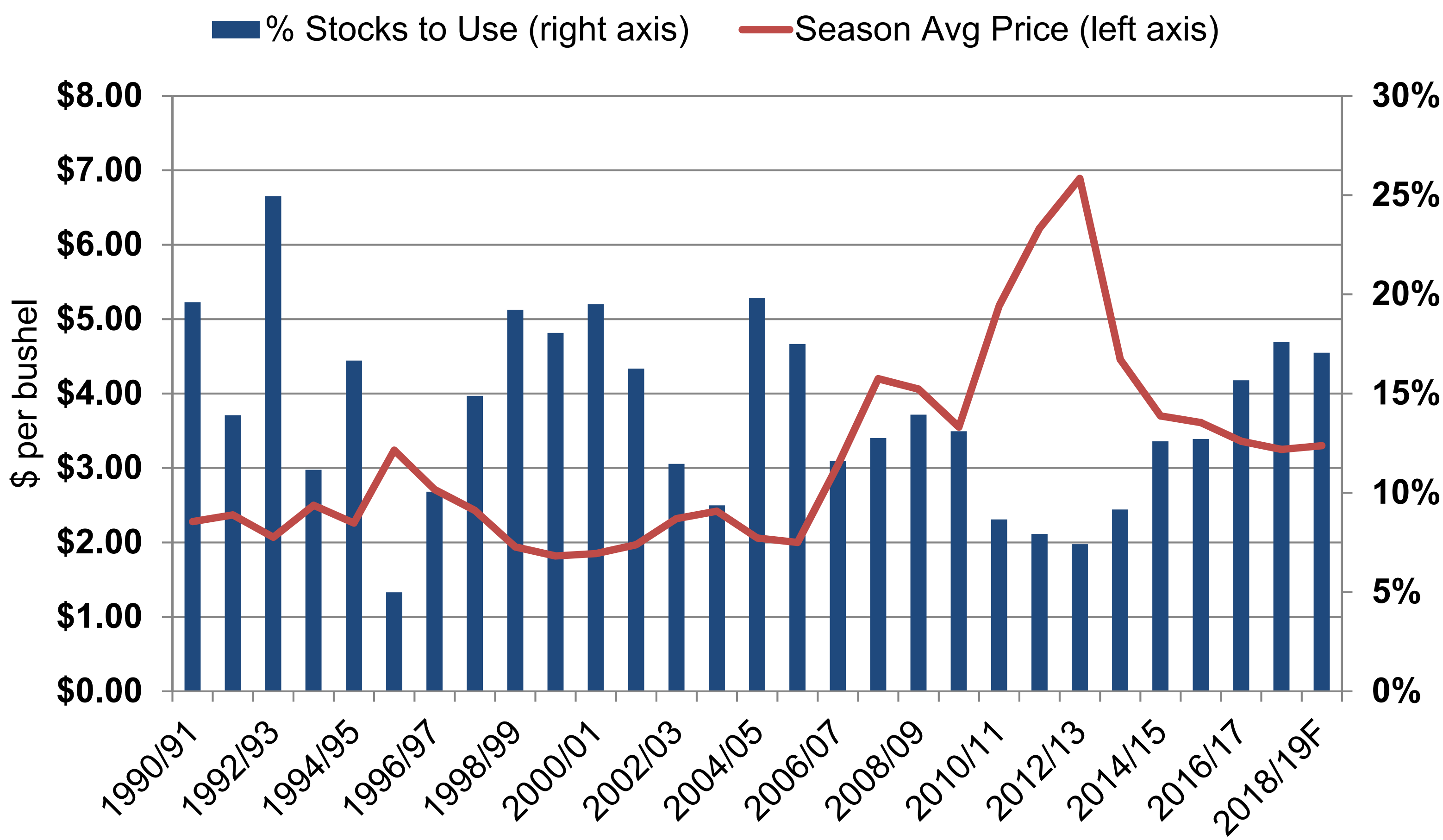


Corn Yield Scenarios 2018-19

(thousand bushels)

	2017-18	Poor Yield 2018-19	Norm Yield 2018-19	High Yield 2018-19
Planted Acres (mil ac)	90.4	90.5	90.5	90.5
Yield (bu/ac)	175.4	160.0	174.0	180.0
Beginning Stocks, 9/1	2,295	2,532	2,532	2,532
Production	14,578	13,104	14,425	14,987
Total Supply	16,922	15,691	17,002	17,549
Disappearance				
Food, Seed	1,465	1,450	1,475	1,485
Ethanol	5,450	5,400	5,450	5,475
Feed/Residual	5,575	5,500	5,625	5,675
Exports	1,900	1,875	1,975	2,050
Total Disappearance	14,390	14,225	14,525	14,685
Ending Stocks	2,532	1,466	2,477	2,864
% Stocks to Use	**17.6**	**10.3**	**17.1**	**19.5**
Corn Price ($/bu)	**$3.25**	**$4.10**	**$3.30**	**$2.95**

Corn Percent Stocks-to-Use & Season Avg Price



*Doane Estimates

Weekly Corn Futures Continuation

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Crop Sector Outlook

Soybeans

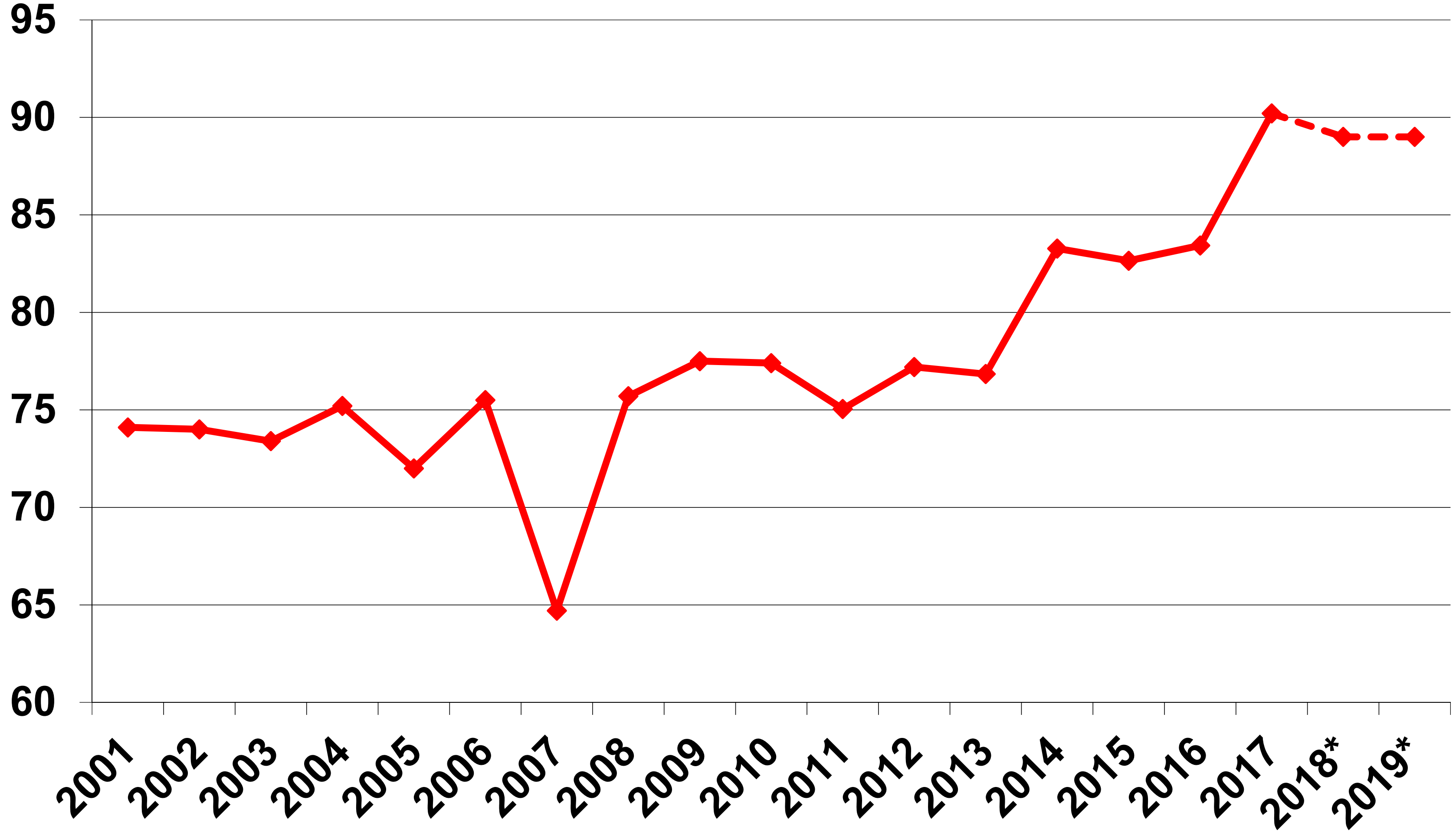
Key Points for Soybeans

- Record 2017 plantings, high yields, projecting to record production
- Pod weights second highest on record and continuing to drive long-term yield gains
- Utilization up on spectacular export demand, especially to foreign ex-China
- 2017/18 ending stocks ~400 million bu + – high barring South American setback – La Nina?
- Farm price $9.25 2017/18, 89.0 mln acres in 2018

Source: Doane

U.S. Soybean Planted Acreage

(million acres)



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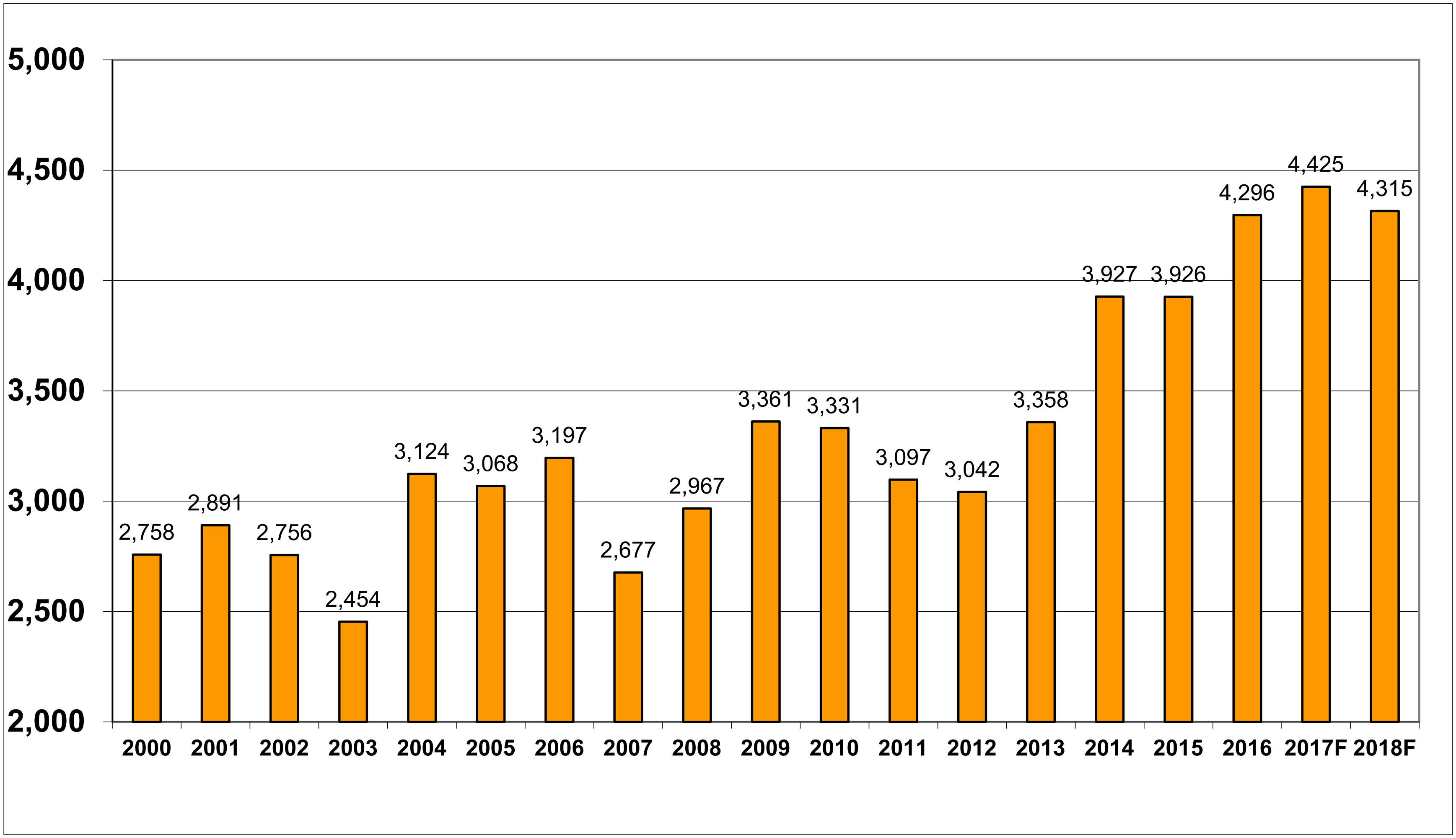
U.S. Soybean Yields (Bu/a)

Source: USDA, Doane Forecast

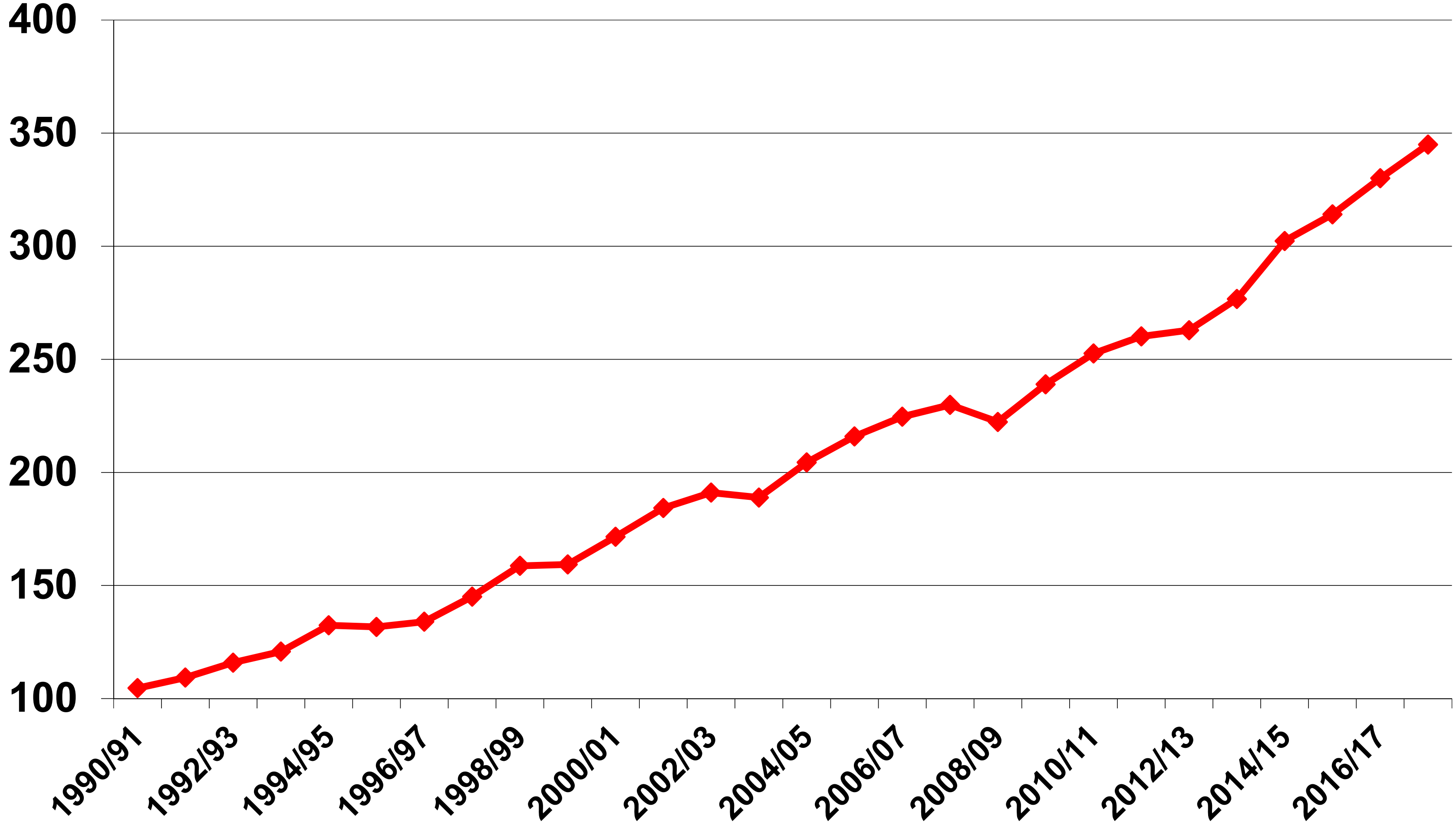
Soybean Production

(Million bushels)



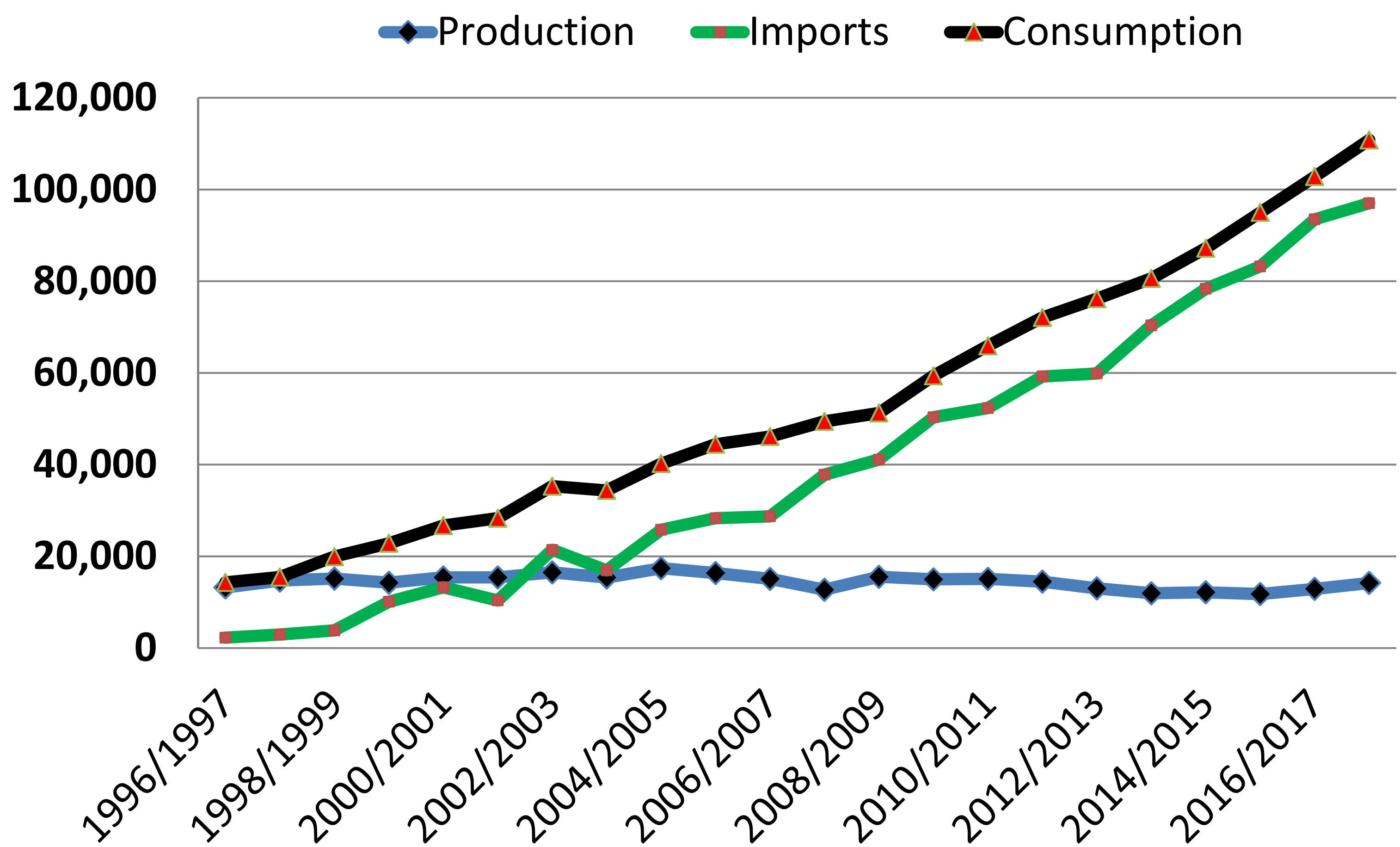
World Soybean Demand

(million tonnes)



China's Soybean Balance

(1,000 tonnes)



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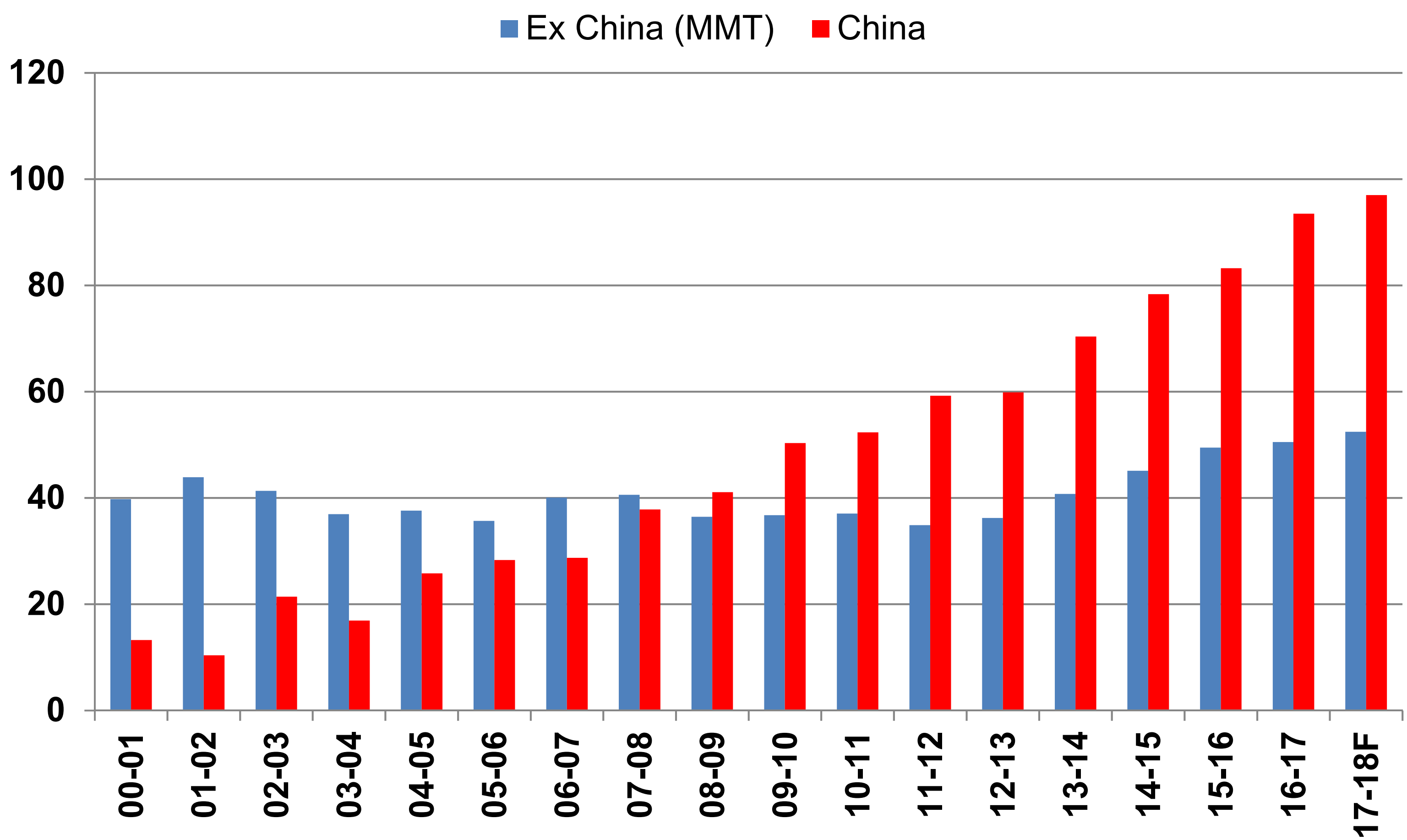
Foreign Soybean Imports

(MMT)



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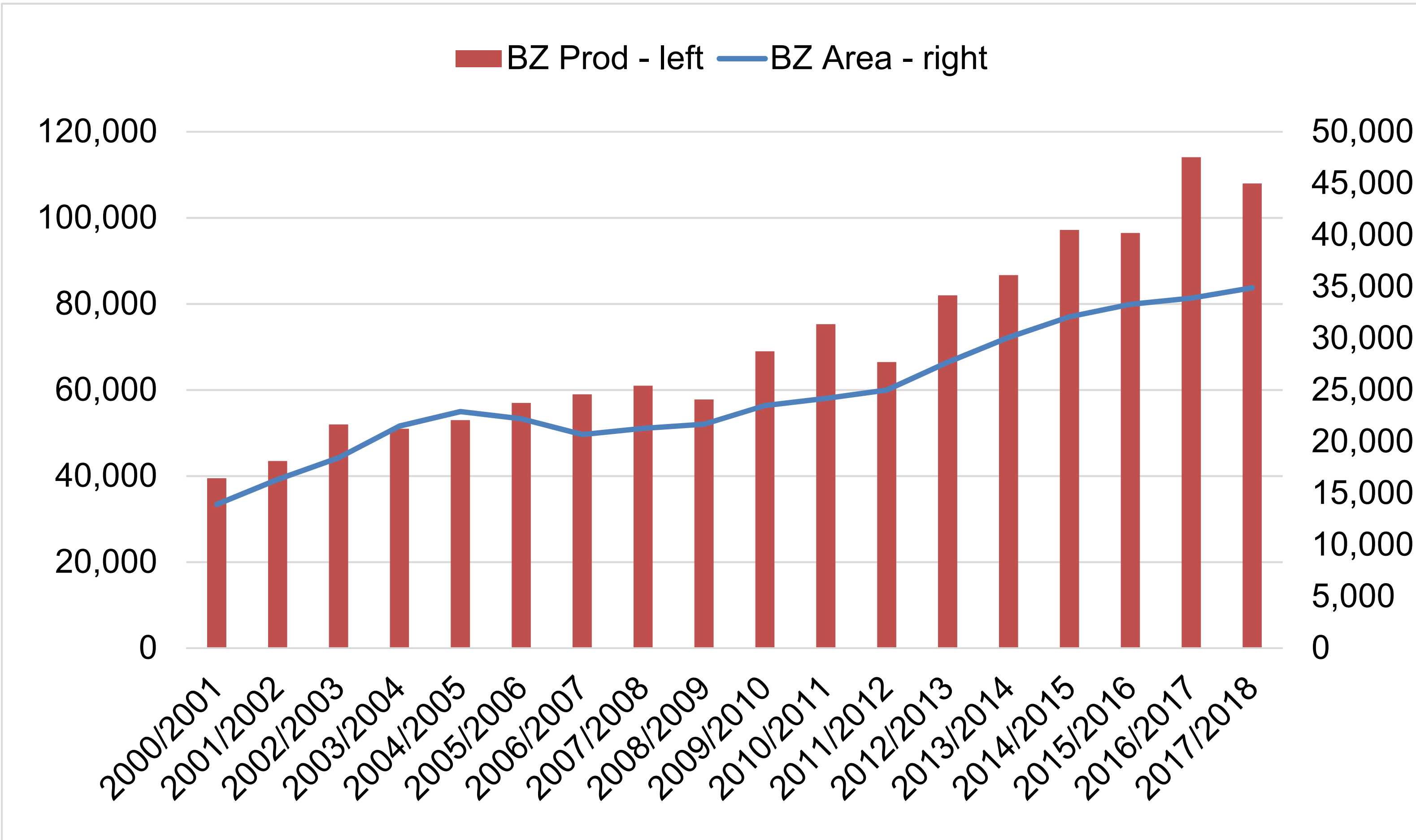
Brazil Soybean Production (MMT) and Area (HA)



Soybean Area Harvested

(million hectares)

	2005	2017		Change	Million acres
Argentina	15.2	19.1		4.1	10.1
Brazil	22.2	34.7		12.5	30.8
Canada	1.2	2.9		1.7	4.2
China	9.6	7.8		-1.7	-4.3
India	7.7	10.5		2.8	6.9
Oth. Latin America	3.8	6.1		2.3	5.7
USA	28.8	36.2		7.4	18.3
Others	4.5	8.8		4.3	10.6
World total	93.0	126.1		33.1	81.8

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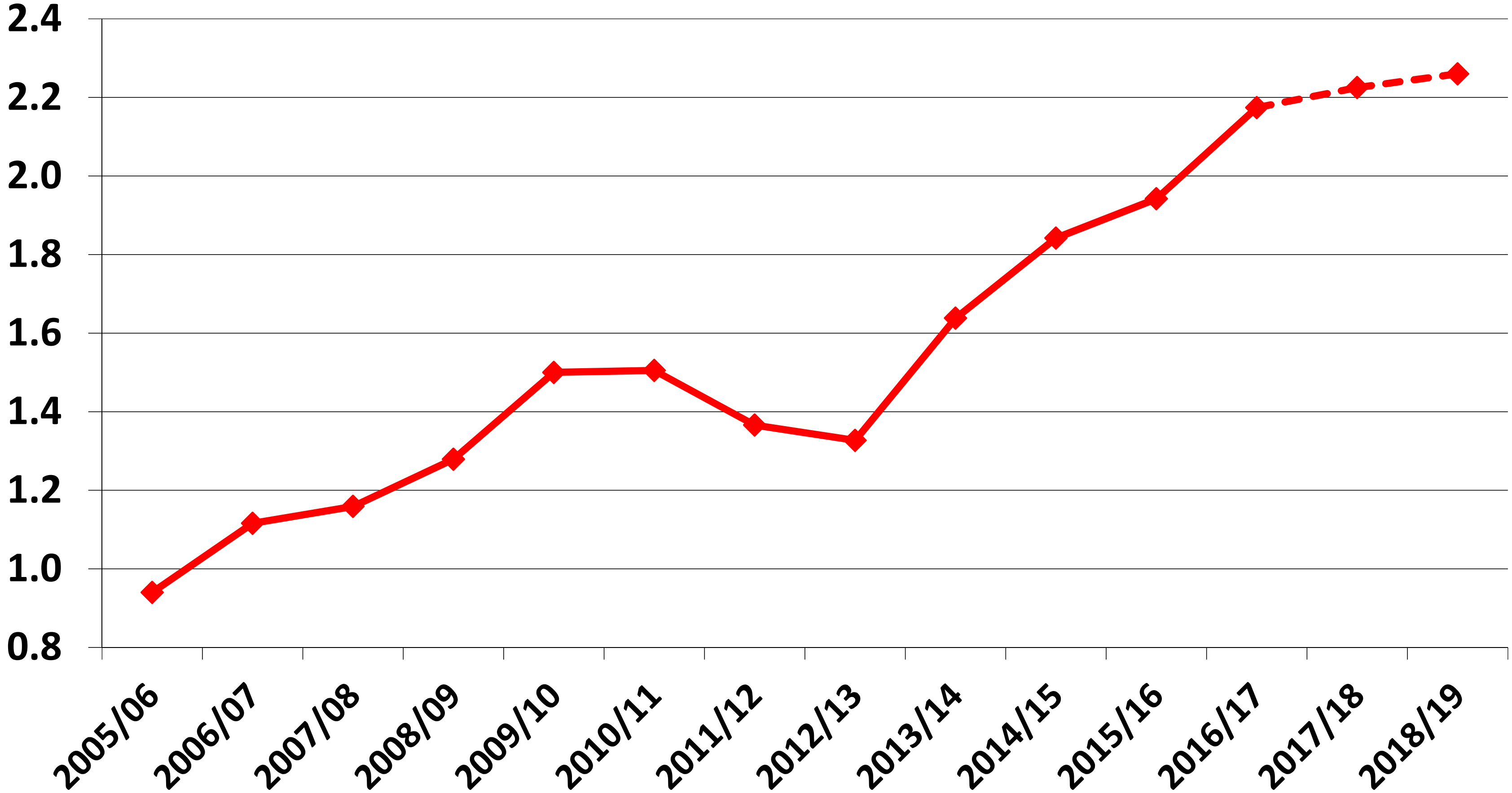
U.S. Soybean Exports

(billion bushels)



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Soybean Yield Scenarios 2018-19

(thousand bushels)

	2017-18	Poor Yield 2018-19	Norm Yield 2018-19	High Yield 2018-19
Planted Acres (mil ac)	90.2	89.0	89.0	89.0
Yield (bu/ac)	49.5	46.5	49.0	51.5
Beginning Stocks, 9/1	301	440	440	440
Production	4,425	4,090	4,315	4,540
Total Supply	4,747	4,550	4,775	5,000
Disappearance				
Crush	1,940	1,950	1,970	1,980
Exports	2,225	2,220	2,260	2,330
Seed	103	105	103	100
Residual	39	25	32	40
Total Disappearance	4,307	4,300	4,365	4,450
Ending Stocks	440	250	410	550
% Stocks to Use	**10.2**	**5.8**	**9.4**	**12.4**
Soybean Price ($/bu)	**$9.25**	**$10.50**	**$9.30**	**$8.75**

Weekly Soybean Futures Continuation

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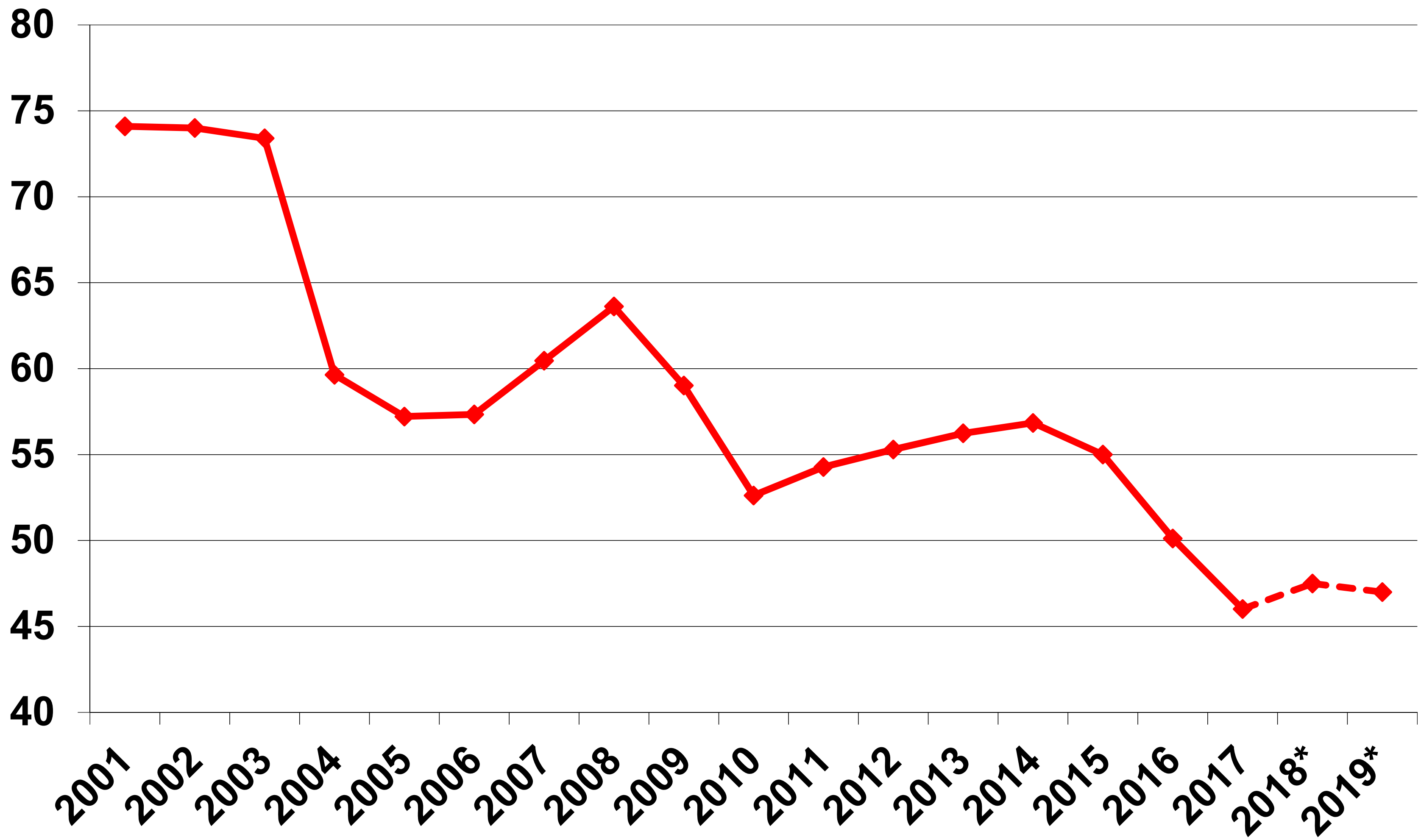
Crop Sector Outlook

Wheat

U.S. Wheat Acreage

(million acres)



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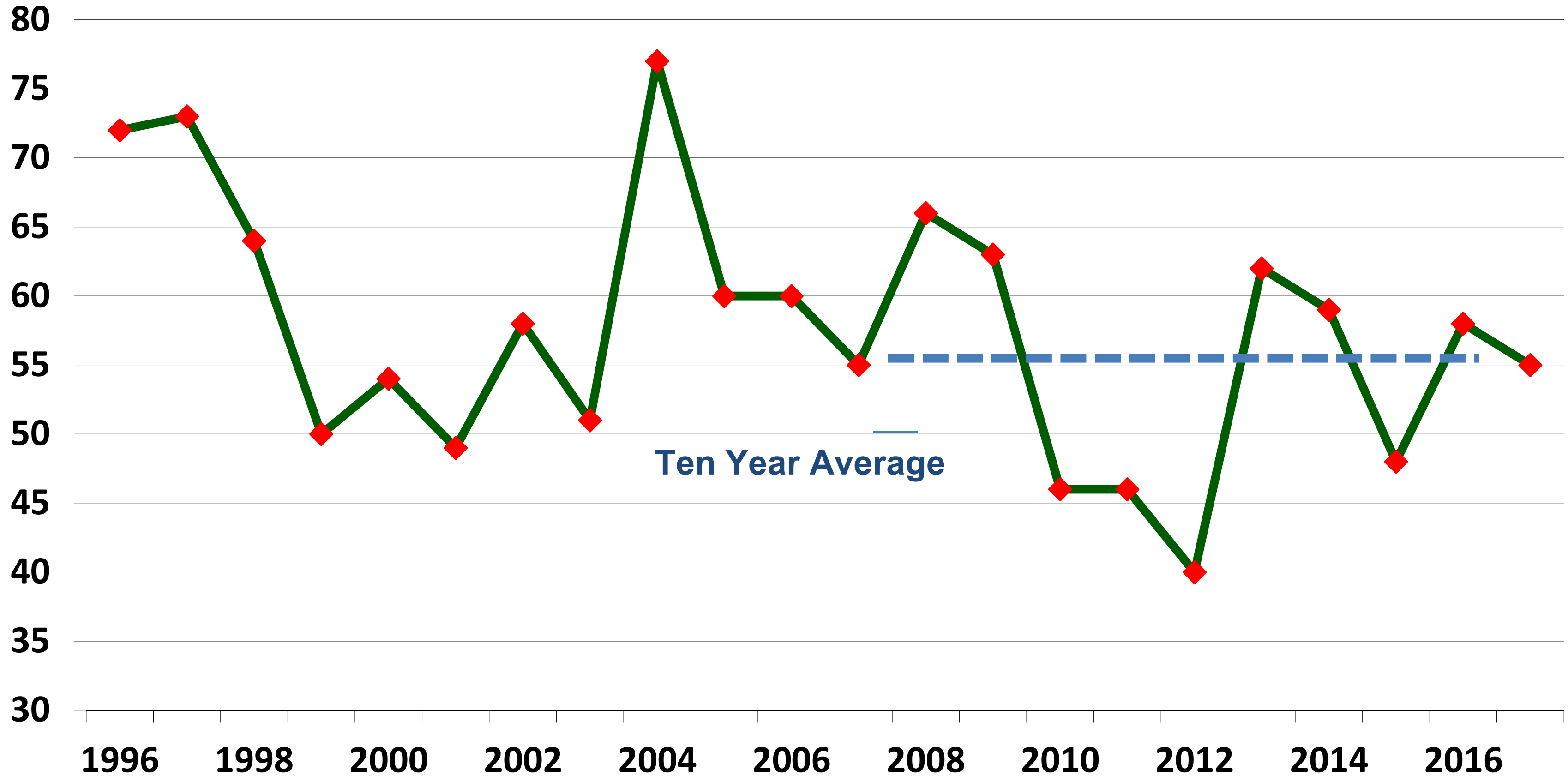
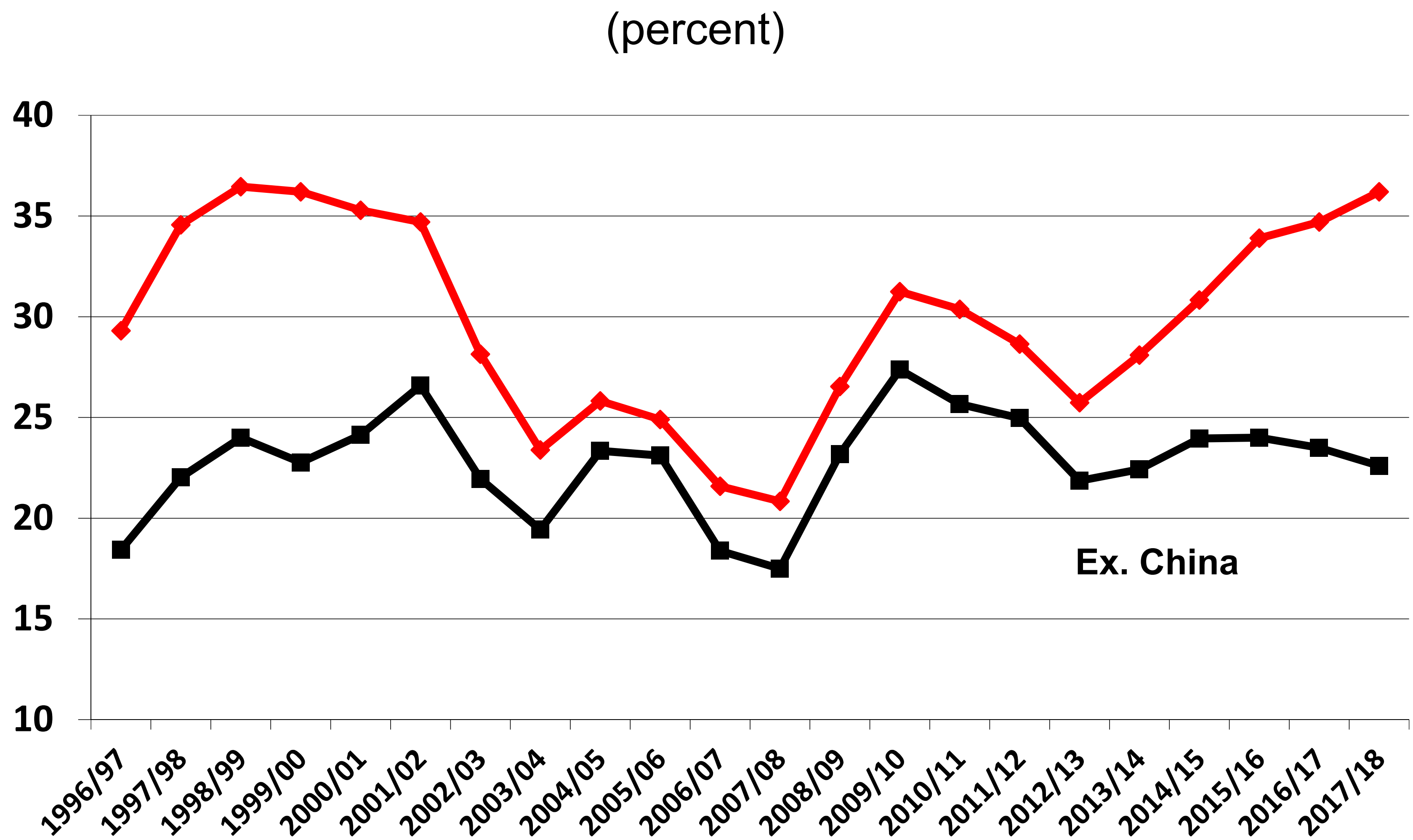
Early November Winter Wheat Condition Rating

(share rated good or excellent)

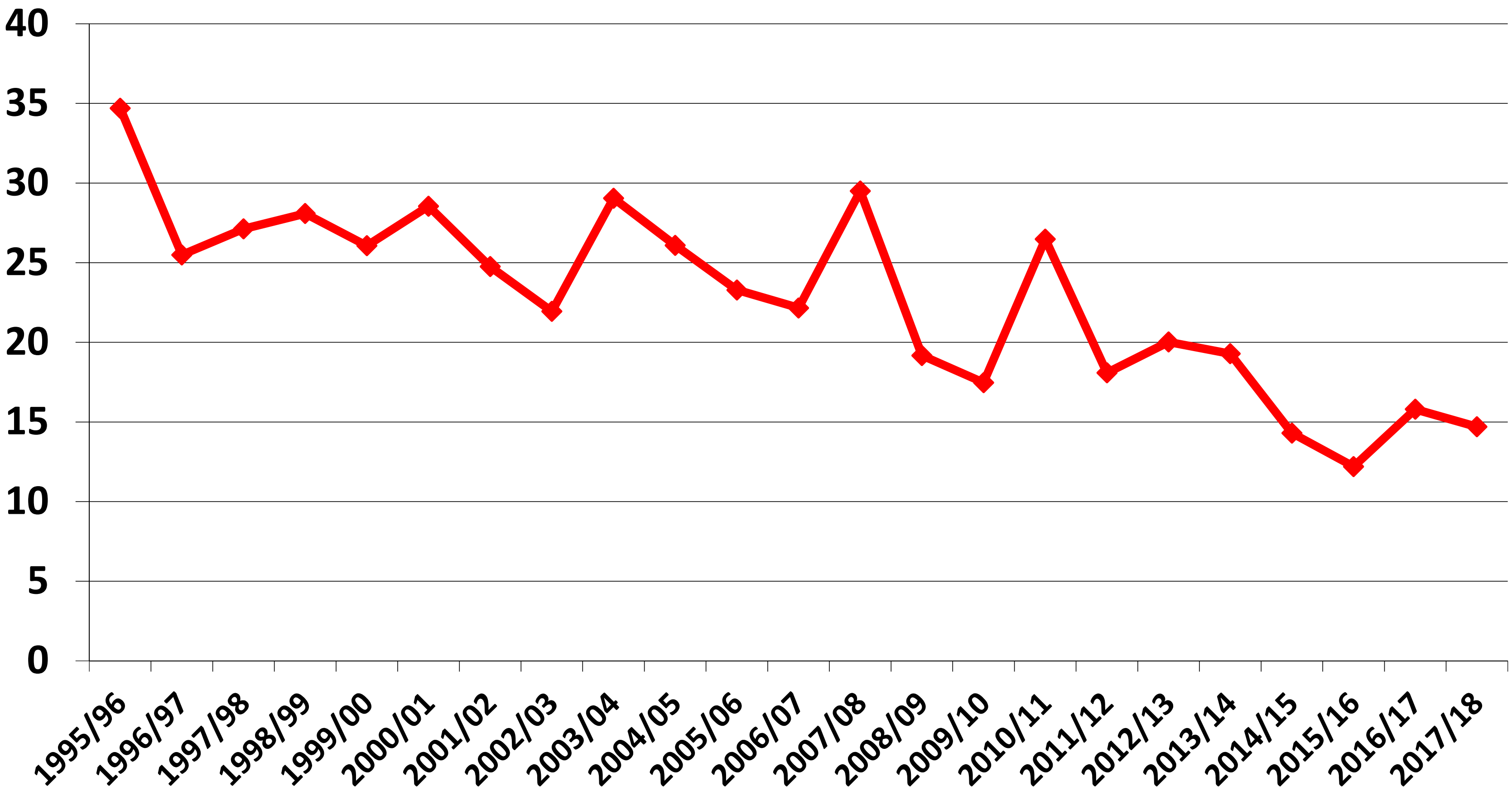


World Wheat Percent Stocks to Use



U.S. Share of Word Wheat Trade

(percent)



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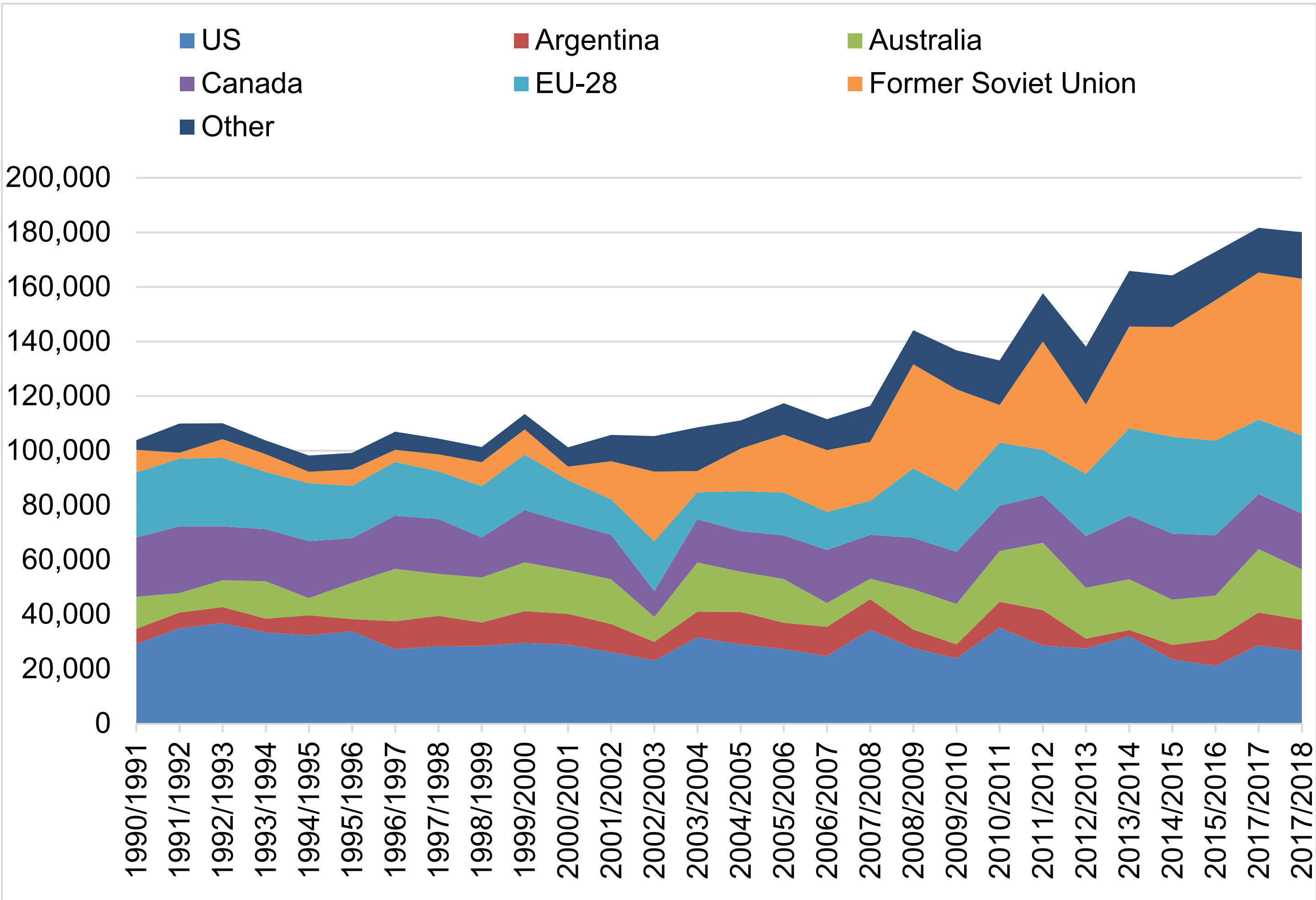
World Wheat Exports

(1000 tonnes)



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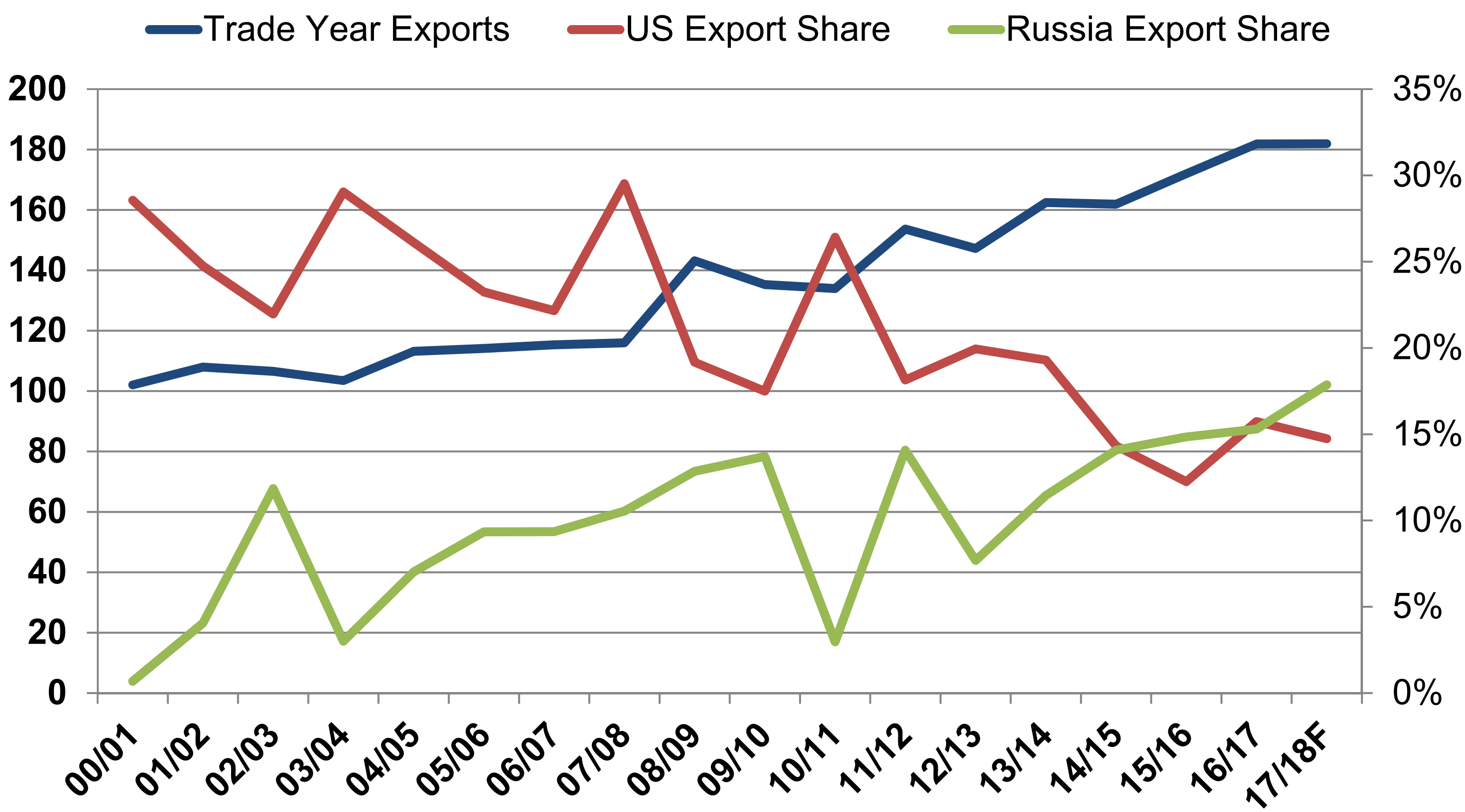
Global Wheat Trade. US and Russia Market Share

(million tonnes)



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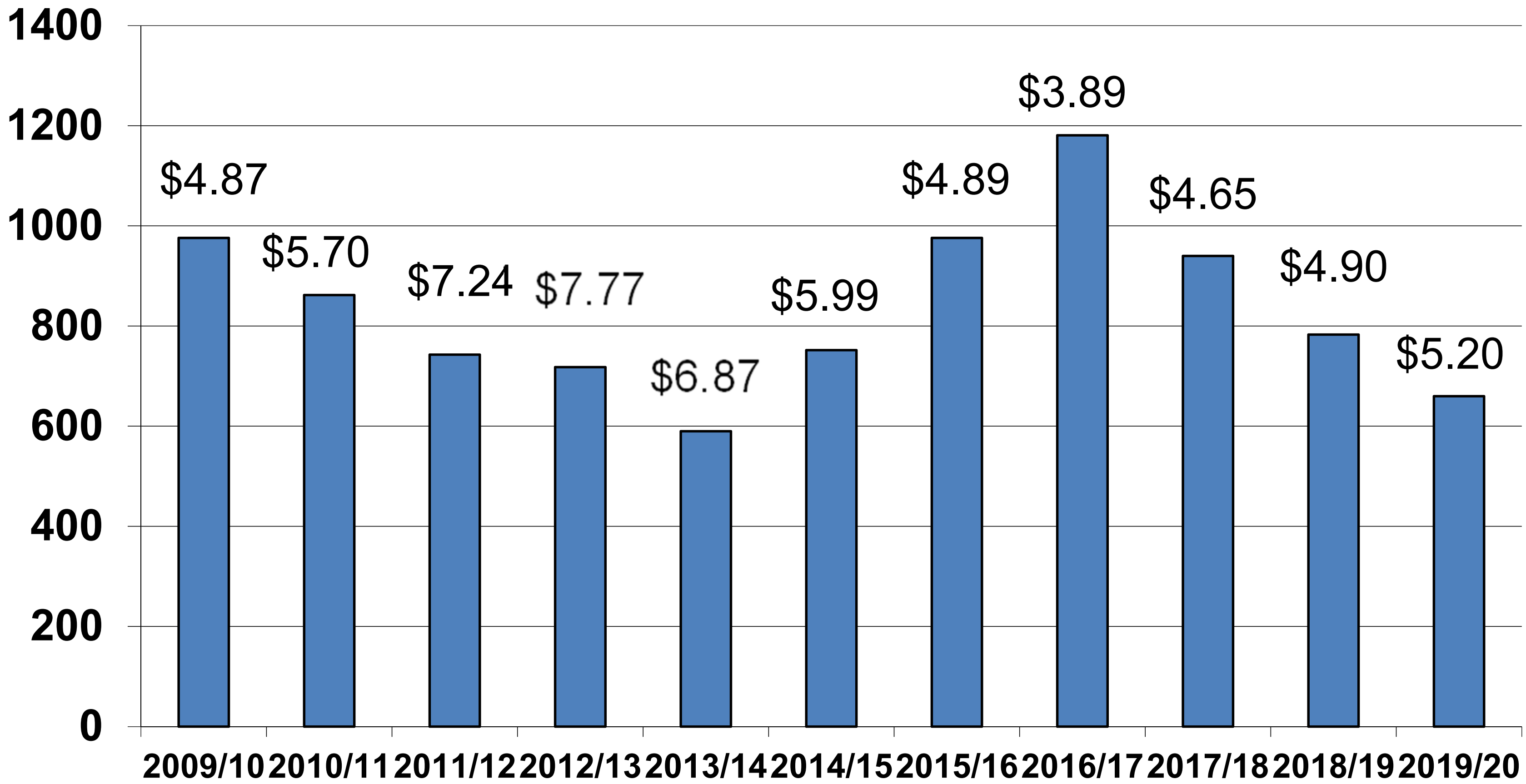
U.S. Wheat Supply/Demand

(billion bushels)

	2016/17	2017/18	2018/19
Planted Acres (mil)	50.1	46.0	47.5
Production	2.309	1.741	1.900
Domestic Use	1.167	1.141	1.192
Exports	1.055	.990	.995
Total Use	2.222	2.131	2.187
Ending Stocks	1.181	.940	.783
Price ($/bushel)	$3.89	$4.65	$4.90

U.S. Ending Wheat Stocks and Prices

(million bushels & $ per bushel)



Weekly Chicago Wheat Futures Continuation

Crop Sector Outlook

Cotton

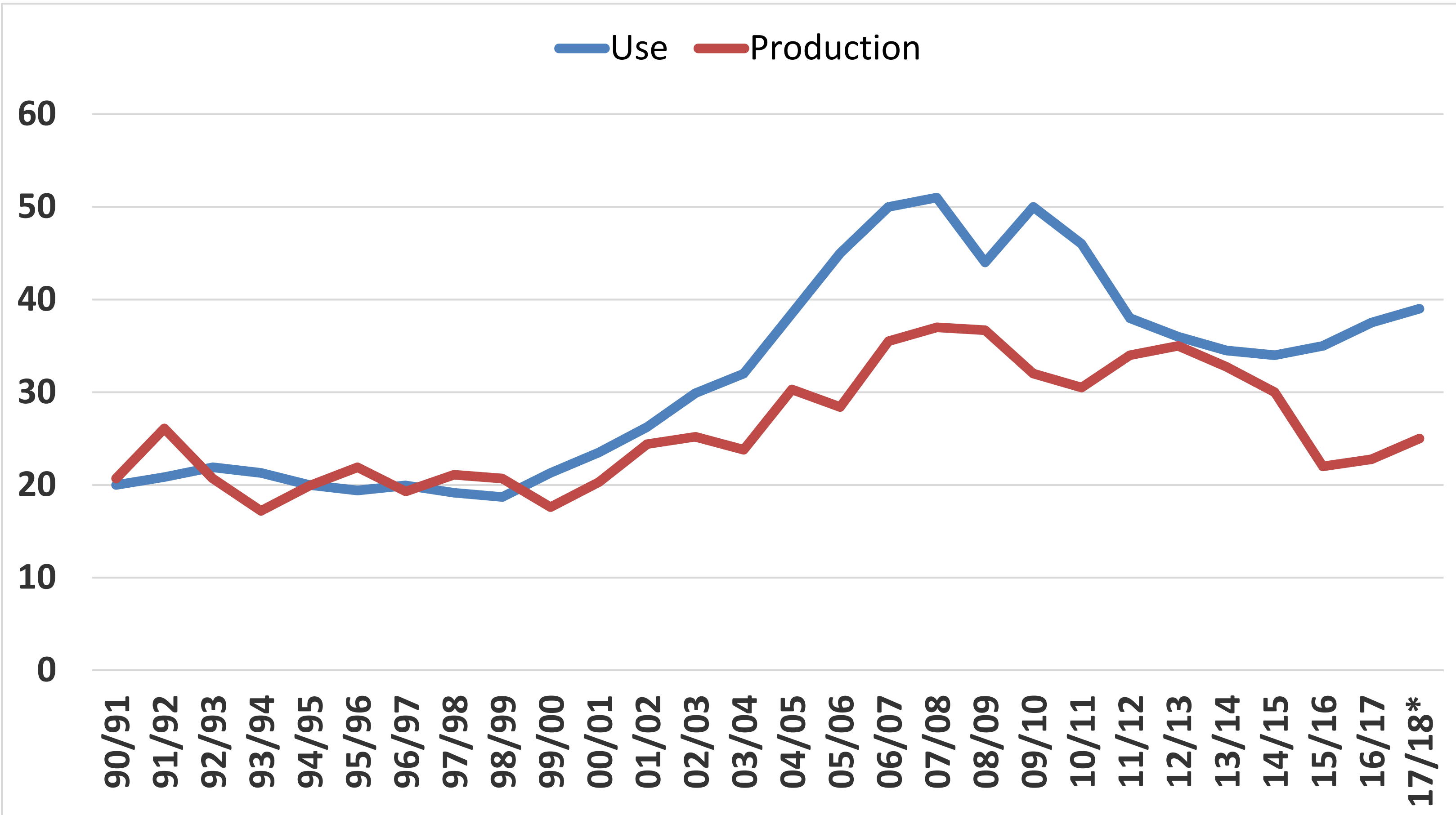
Key Points for Cotton

- Chinese stocks drawdown with positive implications for future cotton export sales
- Rising global demand forecasts
- U.S. - Higher yields, higher quality
- 2017 plantings at 12.6 million acres most since 2011, up 25% year–to-year
- New-crop price ratio corn/cotton – steady YOY
- 2018 plantings - 12 million acres, maybe better

Source: Doane

China Cotton Use and Production

(million bales)



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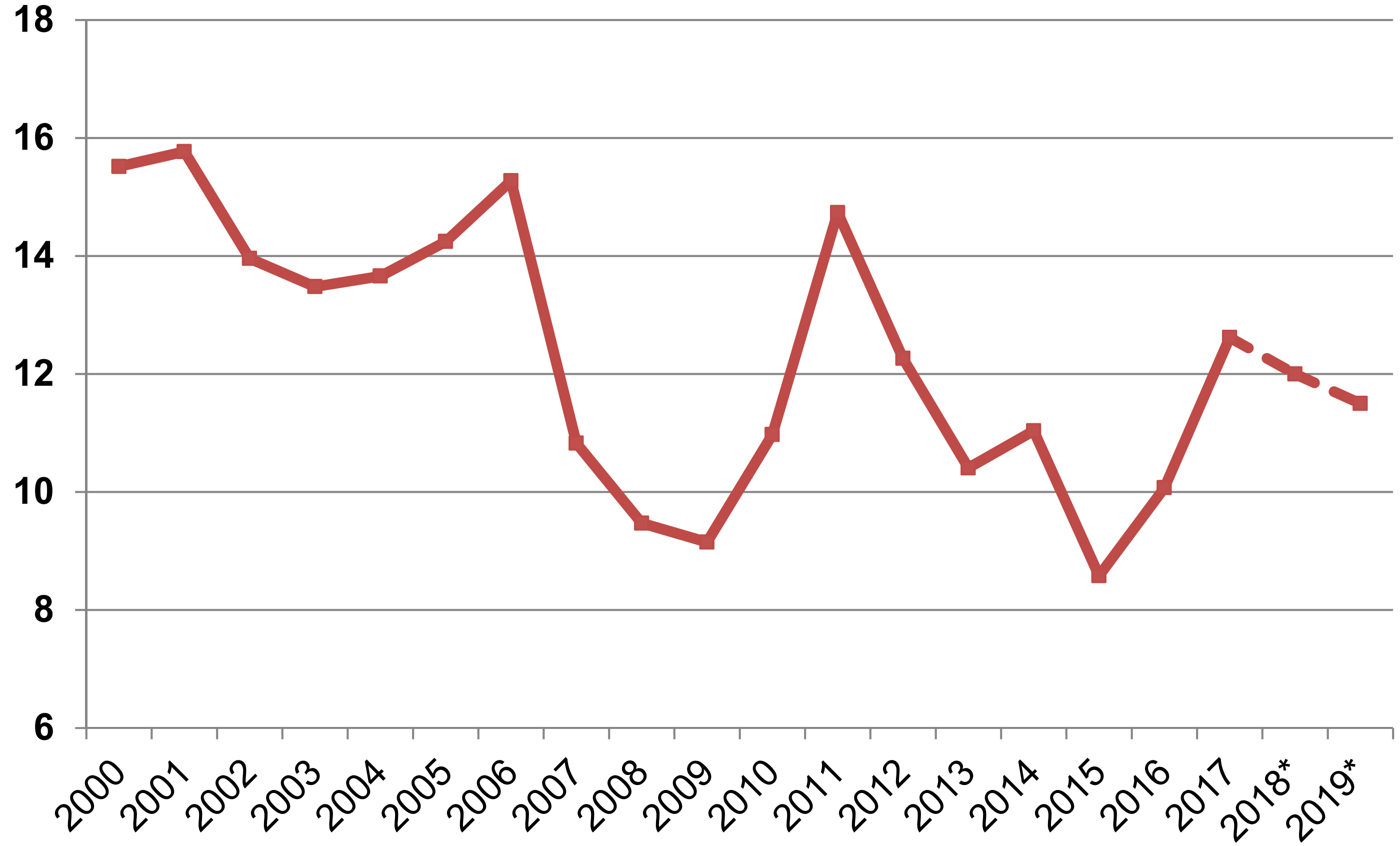
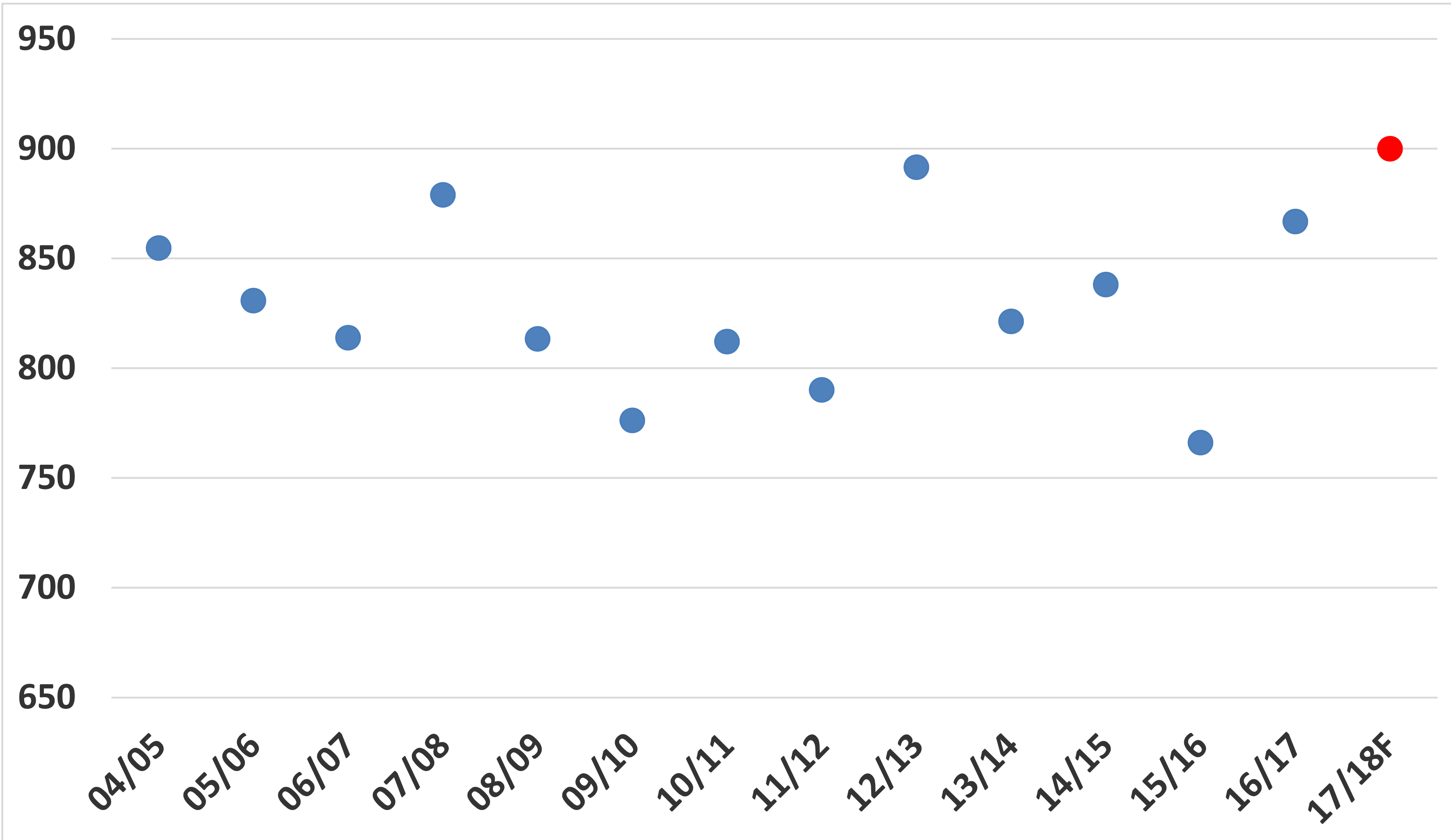
U.S. Cotton Acres

(million acres)



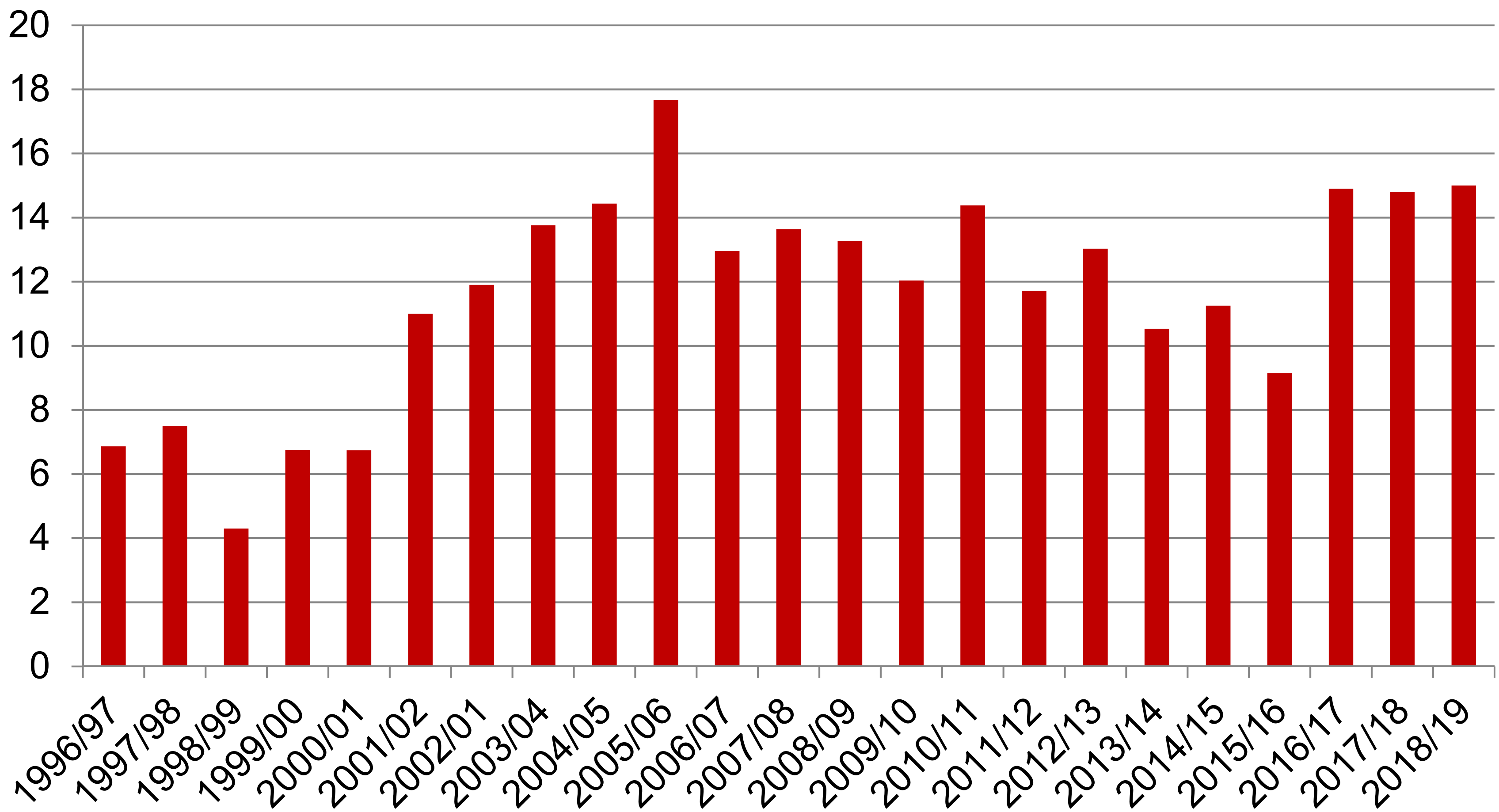
U.S. Cotton Yields (lbs/acre)



Source: USDA, Doane Forecast

U.S. Cotton Exports

(million bales)



Cotton S/D Forecasts

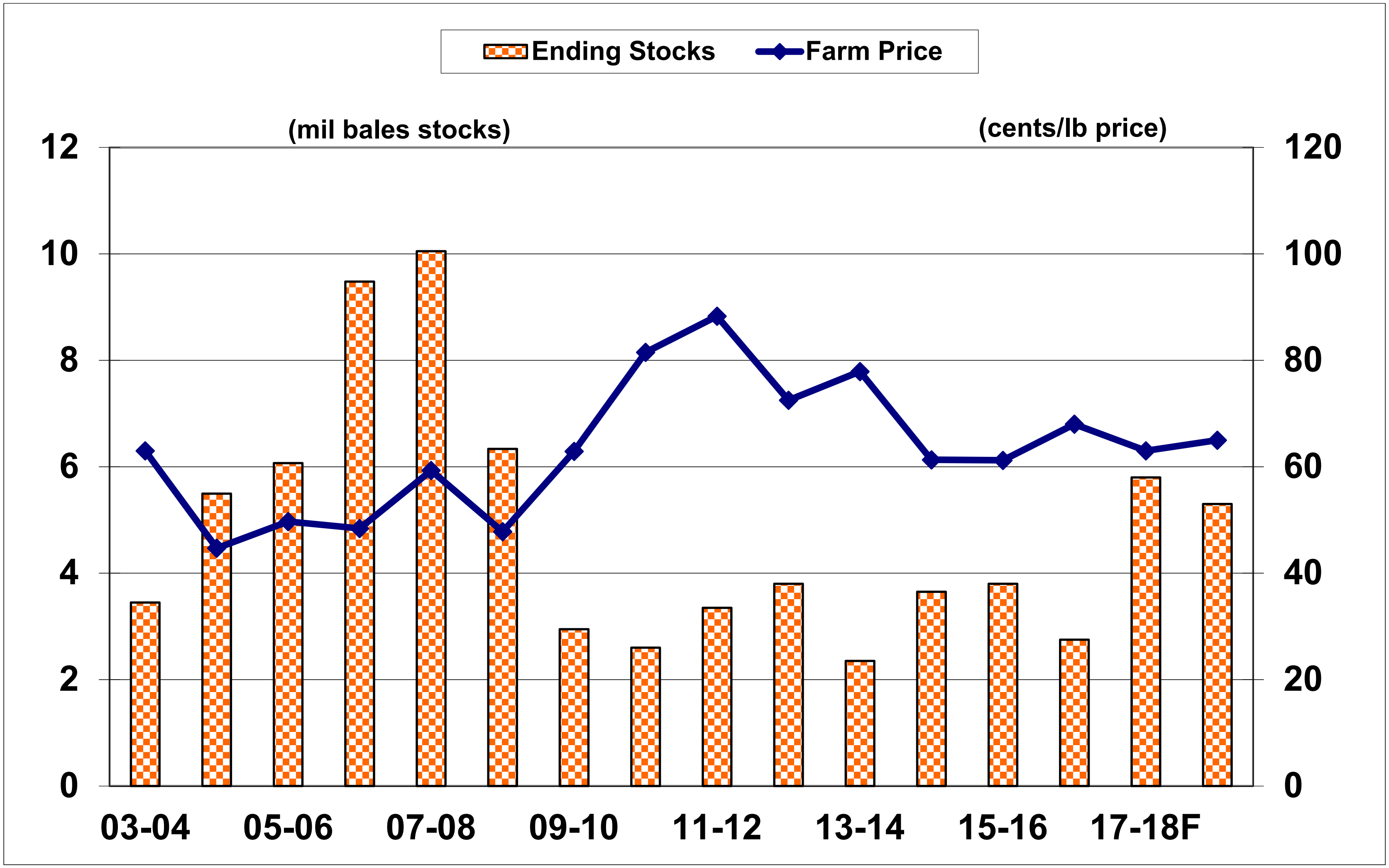
Million Acres and Bales

	USDA 2016-17	Doane 2017-18	Doane 2018-19
Planted	10.073	12.619	12.000
Yield (lb/ac)	867	900	825
Production	17.170	21.377	18.047
Beginning Stocks	3.800	2.750	5.800
Total Supply	20.980	24.137	23.850
Exports	14.920	14.800	15.000
Other Use	3.250	3.350	3.500
Total Use	18.170	18.150	18.500
Ending Stocks	2.750	5.800	5.300
Stocks-to-Use %	15.1	32.0	28.7
Farm Price cents	68.0	63.0	65.0

Source: USDA, Doane Forecasts

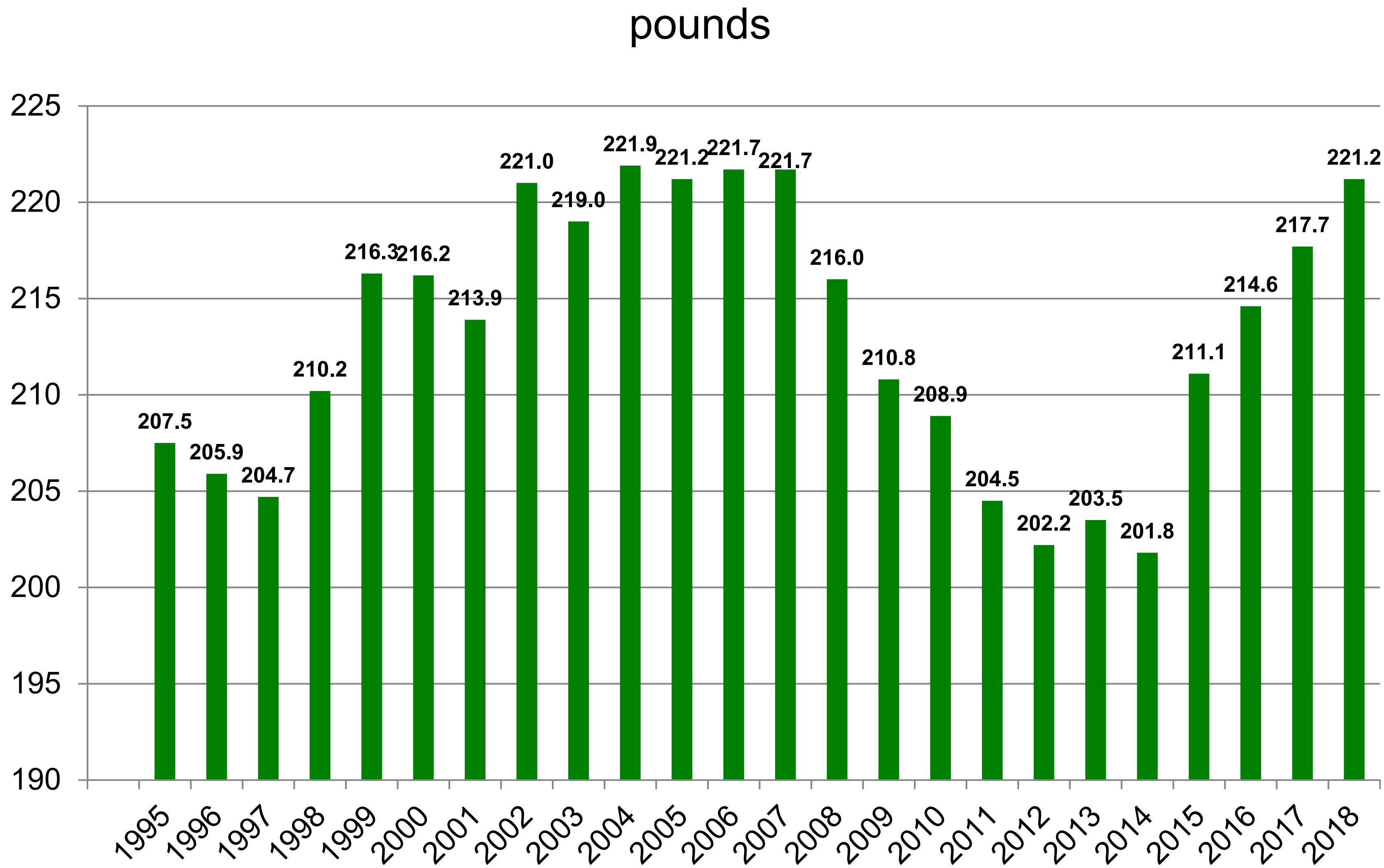
Cotton Ending Stocks and Prices

Million Bales and Cents/lb



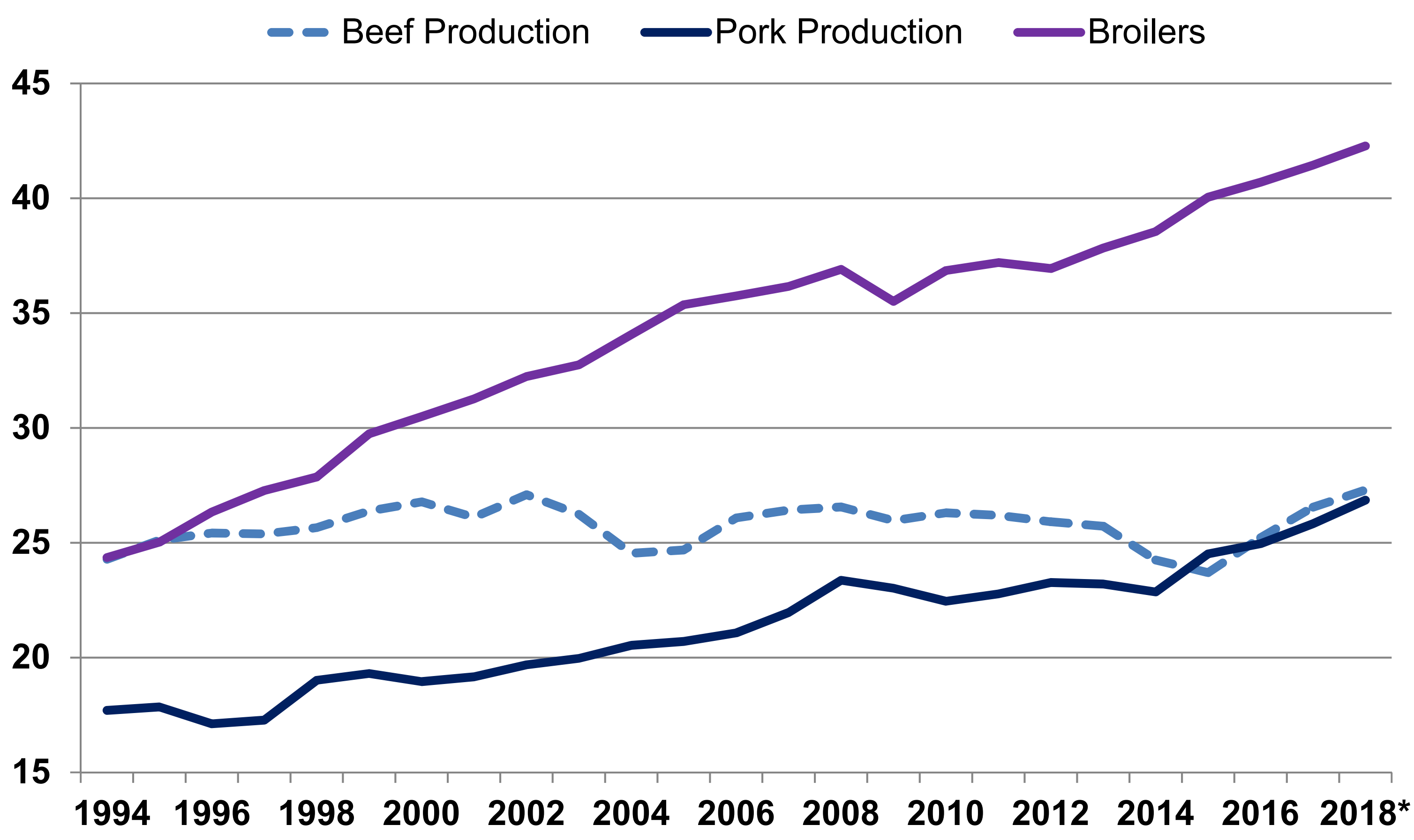
Livestock Sector Outlook

U.S. per Capita Meat Consumption



U.S. Meat Production

(billion pounds)



Livestock Sector

- Expansion phase of cattle cycle continues, should peak within in 1-2 yrs
  - Feeding industry recovering from extended period of large losses
  - Cattle prices moving higher seasonally, but lower average in 2018

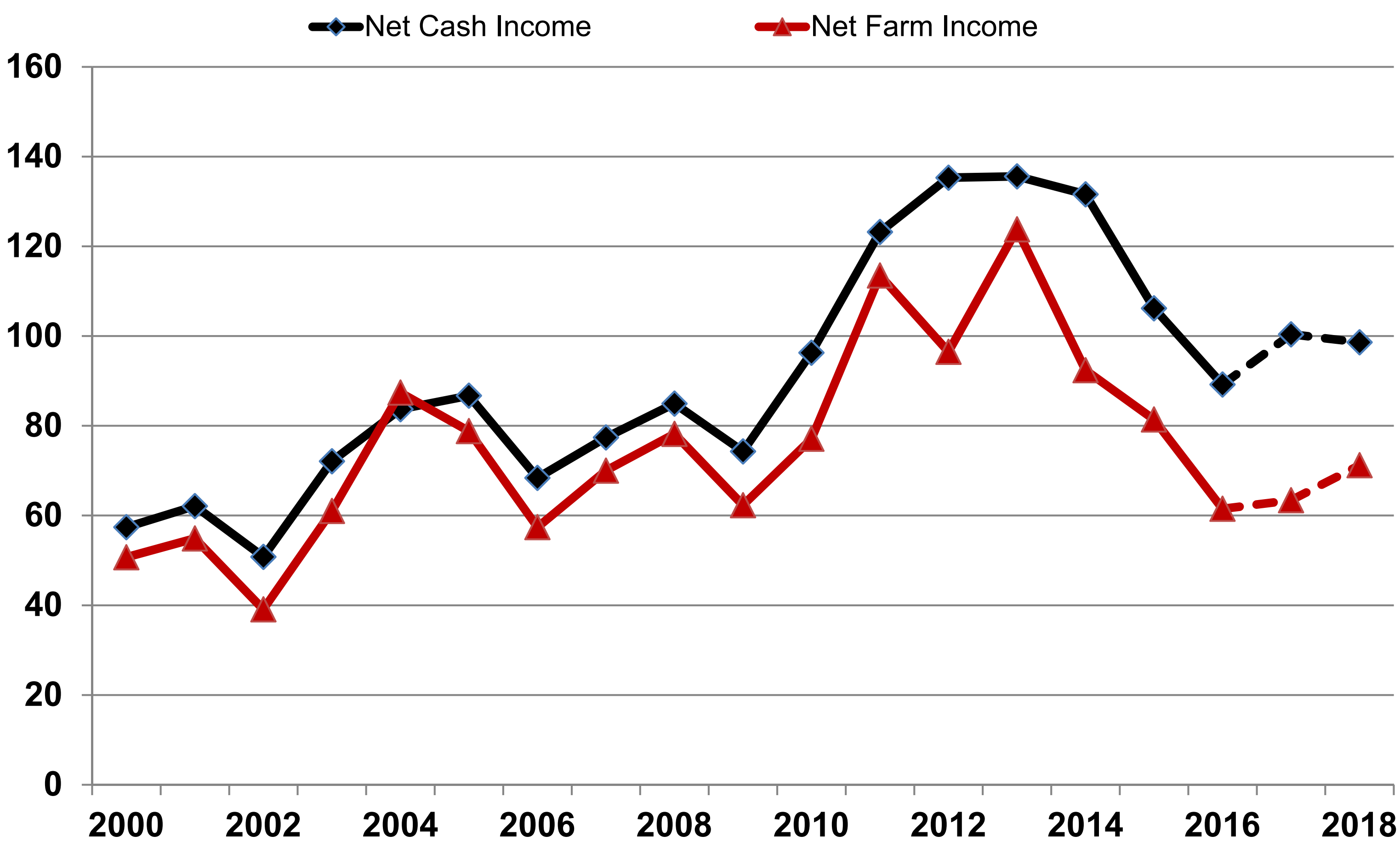
- Pork production rising, but packing industry expanding slaughter capacity
  - Pork production margins have turned positive
  - Cyclical increase in hog production continues through 2018

- Large meat supplies – Demand is very strong, domestically and for export

Financial Overview

Farm Income

(billion dollars)



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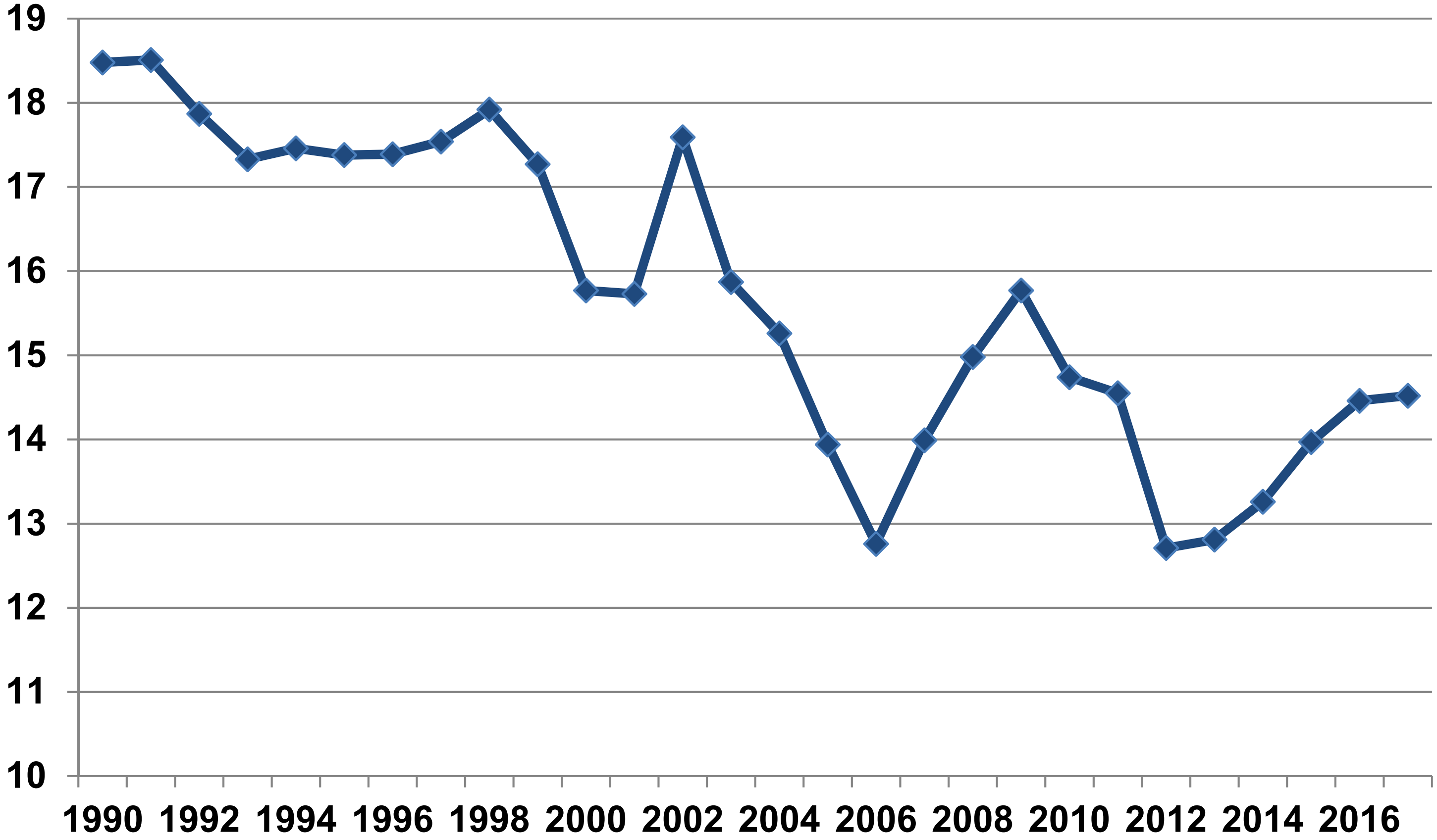
U.S. Farm Sector Debt/Equity Ratio

(percent)



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Closing Comments

- Grain supplies large, but one short crop!
- Exports struggling
- Corn acreage steady in 2018
- Outlook for livestock sector improving
- Farm income stabilizing

Questions?

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