2017 Illinois Farm Economics Summit

The Profitability of Illinois Agriculture:

Managing Financial Stress

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Agricultural and Consumer Economics

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Dates/Locations

- *Monday, December 18, 2017 - Dekalb, IL*
  - *Faranda's Banquet Center*
- *Tuesday, December 19, 2017 - Peoria, IL*
  - *Par-A-Dice Hotel Casino*
- *Wednesday, December 20, 2017 - Springfield, IL*
  - *Crowne Plaza*
- *Thursday, December 21, 2017 - Carlyle, IL*
  - *Bretz Wildlife Lodge and Winery*
- *Friday, December 22, 2017 - Champaign, IL*
  - *I Hotel and Conference Center*

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2017 Illinois Farm Economics Summit

The Profitability of Illinois Agriculture: Managing Financial Stress

7:45 – 8:15 am ..... Registration and Coffee

8:15 – 8:20 am ..... Introduction and Overview
- *Todd Gleason*

8:20 – 8:50 am ..... Crop and Livestock Price Prospects for 2018
- *Todd Hubbs*

8:50 – 9:20 am ..... What Is Up With Soybean Yields?
- *Scott Irwin*

9:20 – 9:50 am ..... Farm Policy Review and Outlook for the 2018 Farm Bill
- *Jonathan Coppess*

9:50 – 10:10 am ..... Break

10:10 – 10:40 am ..... Financial Position of Illinois Farms: Where We Are At and Where To From Here
- *Dwight Raab*

10:40 – 11:10 am ..... Habits of Financially Resilient Farms
- *Nick Paulson*

11:10 – 11:40 pm ..... Crop Economics: Crop Choice and Rental Decisions
- *Gary Schnitkey & Dale Lattz*

11:40 – 12:10 pm ..... Question and Answer/Wrap-Up

12:10 – 1:10 pm ..... Lunch (Included)

Table of Contents

Crop and Livestock Price Prospects for 2018

Todd Hubbs
Department of Agricultural and Consumer Economics
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CROPS

Crop prices will remain below the high levels seen in the early part of this decade due to large global inventories. Global economic growth continues to build on the momentum seen over the last year. Growth in China and emerging market in Asia is projected to remain strong throughout 2018. The prospects of improved growth support commodity demand, but the significant changes to trade policy could mitigate some of this demand growth in export markets. Lower prices are expected to continue in 2018 barring a shortfall in one of the major production regions. The following price outlook analysis assumes a good 2018 growing season.

Corn prices continue to struggle with large crops and five consecutive years of growth in ending stocks. Domestic corn demand continues to see moderate growth in corn used for ethanol which has been supported by record levels of ethanol exports. Growth in livestock production and low corn prices provide support for increased feed usage during the 2017-18 marketing year. The potential for greater than 5.5 billion bushels in feed and residual use would be the largest amount since 2007-08. Corn exports currently lag the pace of last marketing year's 2.29 billion bushels and are projected at 1.95 billion bushels by the end of the current year. Planted acreage of corn is expected to increase slightly in 2018 to 90.8 million acres. Assuming a trend yield near 172.3 bushels would result in a 2018 crop near 14.4 billion bushels. A projected total use of 14.5 billion bushels would result in the 2018-19 marketing year ending stocks near 2.44 billion bushels, a slight decrease from 2017-18 projections. Prices are expected to average near $3.30 during the current year and near $3.40 during the 2018-19 marketing year if production develops as expected.

Soybean prices remain strong relative to corn and wheat prices. U.S. soybean ending stocks continue a five-year pattern of growth with 2016-17 ending stocks ending at 301 million bushels. The lower than initially projected ending stocks benefited from very strong export numbers driven by continued growth in exports to China. Soybean exports are projected to exceed 2.2 billion bushels during this marketing year, up from last marketing year's 2.174 billion bushels. Expanded soybean acreage and a 49.5 bushel yield for the 2017 crop are expected to increase 2017-18 marketing year ending stocks to 480 million bushels. Planted acreage of soybeans is expected to increase moderately to 90.6 million acres in 2018 due to the low prices of corn and wheat and the lower cost of producing soybeans relative to corn. A yield near 48.5 bushels would result in a 2018 crop about 52 million bushels smaller than the 2017 crop. With total use projected at 4.32 billion bushels, a further increase in U.S. stocks is expected by the end of the 2017-18 marketing year. Prices are expected to average near $9.20 during the current year and near $8.80 during the 2018-19 marketing year if world production develops as expected.

U.S. **wheat** acreage is expected to continue declining. Planted acreage decreased to 46.01 million acres in 2017. U.S. wheat production decreased by 508 million bushels in 2017 with average yield down by 6.3 bushels per acre. Soft red winter wheat production decreased to 202 million acres on 230,000 fewer acres nationally. Soft red winter wheat production is down 49 percent from 2010-2017 in Illinois. During the same period, wheat acreage in Illinois declined by 450,000 acres. World wheat production in 2017-18 is expected to decline slightly from the record levels of 2016-17. Foreign wheat production is expected to increase for the fifth consecutive year. U.S. stocks of wheat in all classes are projected to decline to 935 million bushels after hitting 1.18 billion bushels in

2016-17. U.S. soft red winter wheat ending stocks are expected to grow by 7 million bushels in 2017-18. The average price received for the 2017 crop is expected to be near $4.60. The Illinois price at harvest is expected to be near $4.75.

LIVESTOCK

Livestock markets continue to respond to the growing demand for meat globally and lower feed costs. Prices in the livestock sector look to level out after declining from the highs seen in 2014 and the subsequent supply response. Production levels are expected to increase in 2018.

U.S. **beef** production is expected to increase 4.6 percent in 2018 on higher levels of feedlot placements in last half of 2017 and the beginning of 2018. Beef production is forecast at 27.6 billion pounds in 2018, up 1.2 billion pounds over 2017. Beef export markets continue to exemplify U.S. competitiveness in foreign markets. Exports are projected at 2.97 billion pounds, up from 2.85 billion in 2017. Recent strength in export markets has been driven by strong demand from Japan. Domestic per capita beef consumption is projected to increase in 2018 to 59.2 pounds, up 1.9 pounds from 2017. Strong demand in 2017 moved cattle through feedlots at a rapid pace. Fed cattle prices look to move lower in the first half of 2018 on large supplies. Fed cattle prices average near $122 in 2017 but look to average near $117 in 2018. Feeder steer prices averaged $145 in 2017 and are projected to be around $142 in 2018.

U.S. **pork** production is projected to increase in 2018 to 26.9 billion pounds, up 1.2 billion pounds from 2017. Delays in hog slaughter levels in the fourth quarter of 2017 are projected to push first quarter pork production in 2018 up 4.7 percent of 2017 levels. Pork exports in 2018 are expected to increase from the 5.6 billion pounds exported in 2017 to 5.9 billion pounds. While increased exports to Mexico helped to support the export pace thus far in 2017, lower export levels to Japan and China is currently a drag on pork exports. Domestic pork supplies in 2018 are forecast at 52.1 pounds per capita, up from 50.4 in 2017. The average hog price is expected to decrease to $45.00 in 2018, down from $49.01 in 2017

Notes

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Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

For current outlook information, see:

http://www.farmdocdaily.illinois.edu/

http://www.agmanager.info/

https://ag.purdue.edu/agecon/Pages/Prices-and-Outlook.aspx

http://cattlemarketanalysis.org/

http://www.extension.iastate.edu/agdm/

Commodity Market Outlook

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U.S. Corn Supply and Use

		2013/14	2014/15	2015/16	2016/17 USDA Estimate	2017/18 USDA Current Forecast
Area Planted	(mil. Acres)	95.4	90.6	88	94.0	90.4
Area Harvested	(mil. Acres)	87.5	83.1	80.8	86.7	83.1
Yield	(Bu./acre)	158.1	171	168.4	174.6	175.4
Production	(mil. Bu.)	13,829	14,216	13,602	15,148	14,578
Imports	(mil. Bu.)	36	32	67	57	50
Total Supply	(mil. Bu.)	14,686	15,479	15,401	16,942	16,922
Feed and Residual	(mil. Bu.)	5,002	5,284	5,113	5,463	5,575
Food, Seed, and Industrial	(mil. Bu.)	6,493	6,601	6,643	6,891	6,935
Ethanol	(mil. Bu.)	5,124	5,200	5,224	5,439	5,475
Exports	(mil. Bu.)	1,920	1,867	1,901	2,293	1,925
Total Use	(mil. Bu.)	13,454	13,748	13,664	14,647	14,435
Ending Stocks	(mil. Bu.)	1,232	1,731	1,737	2,295	2,487
Average Price	($ per Bu.)	$4.46	$3.70	$3.61	$3.36	$2.80-$3.60

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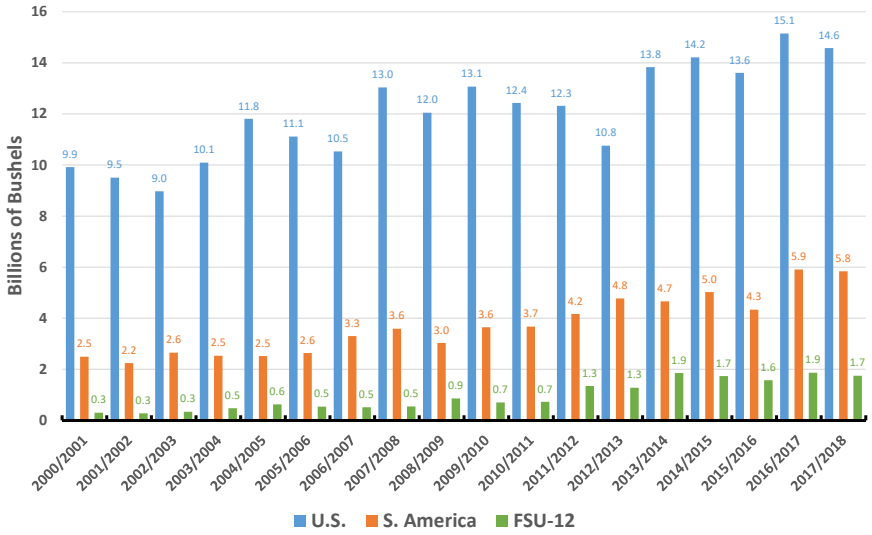
Corn Production



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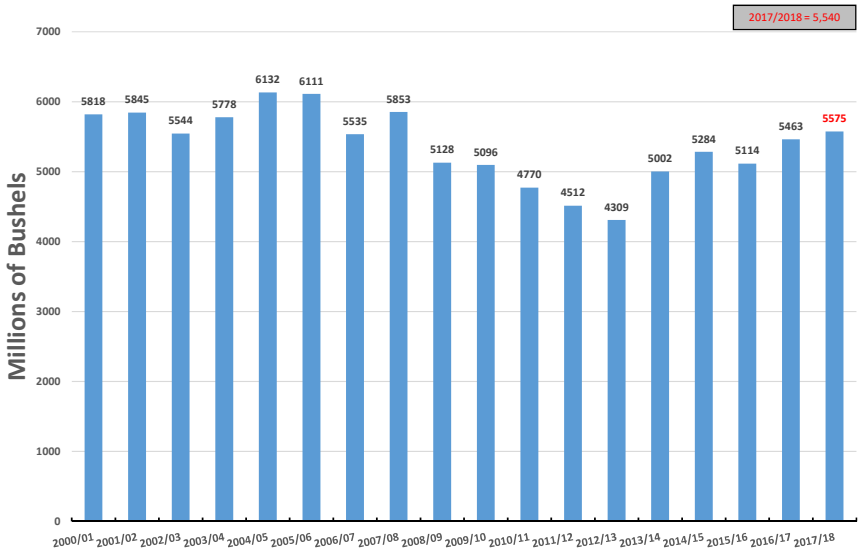
U.S. Feed and Residual Use



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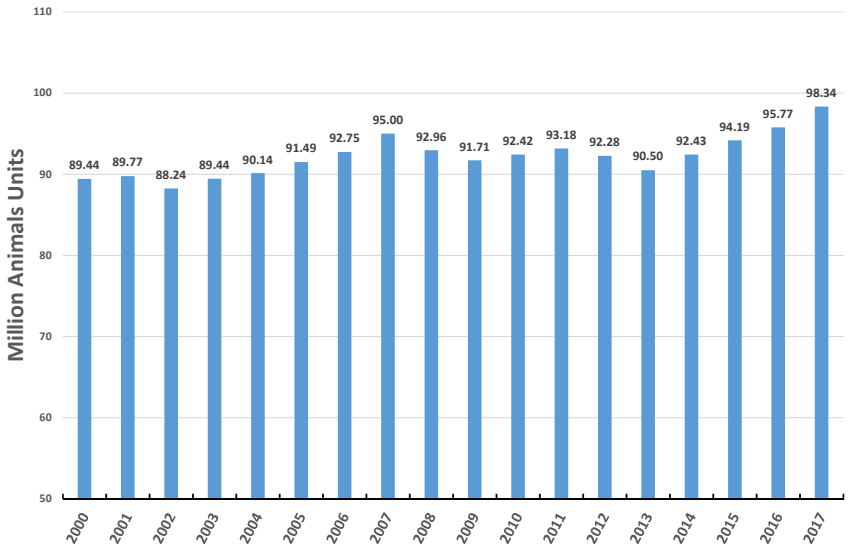
Grain Consuming Animal Units



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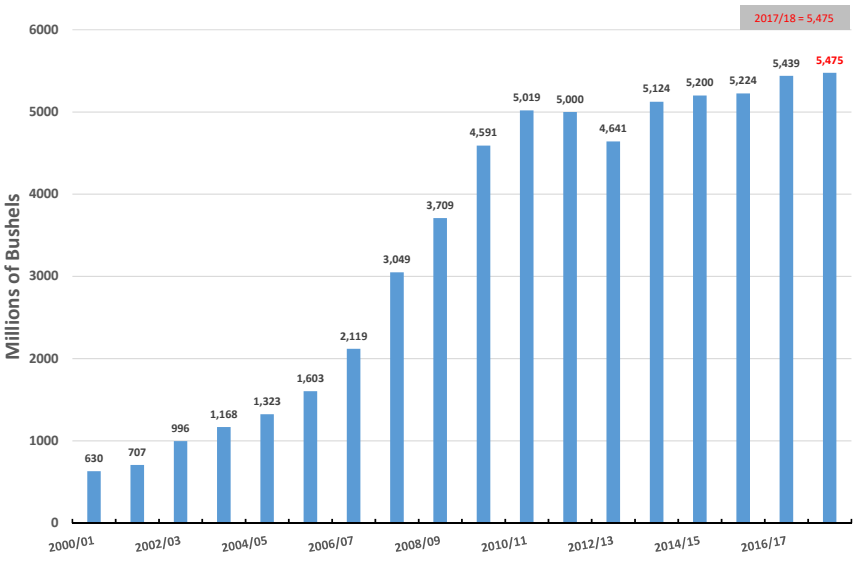
U.S. Corn Used for Ethanol



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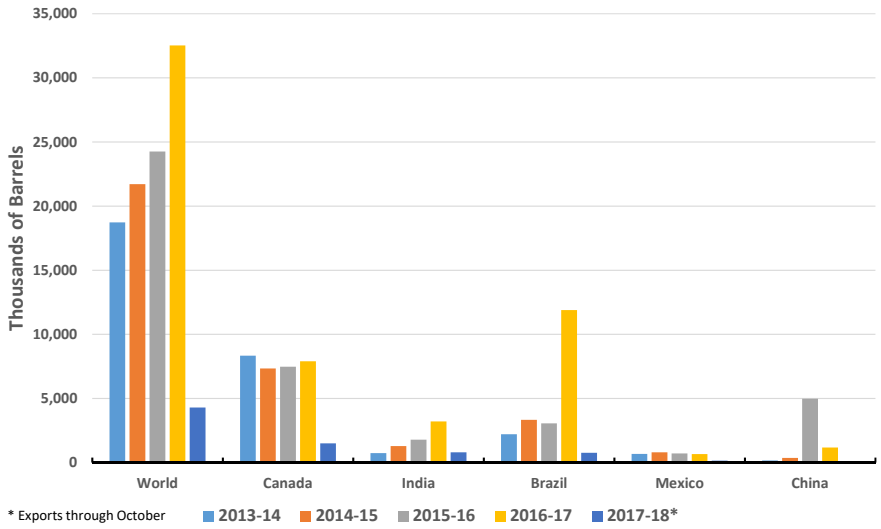
U.S Ethanol Exports by Marketing Year



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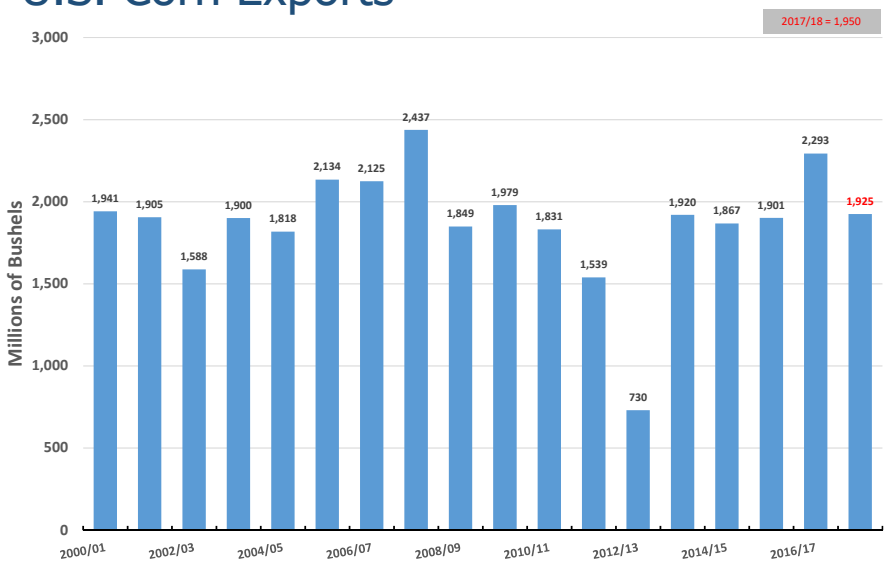
U.S. Corn Exports



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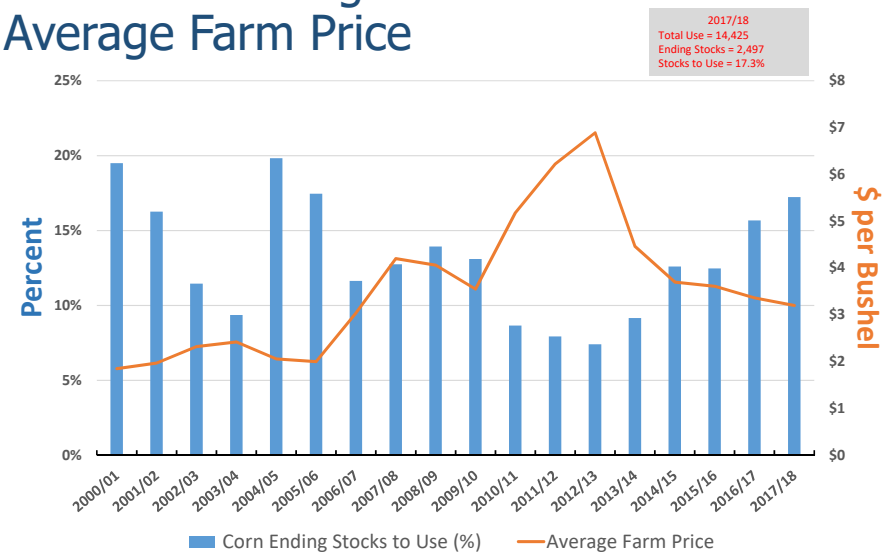
U.S. Corn Ending Stocks to Use Ratio and Average Farm Price



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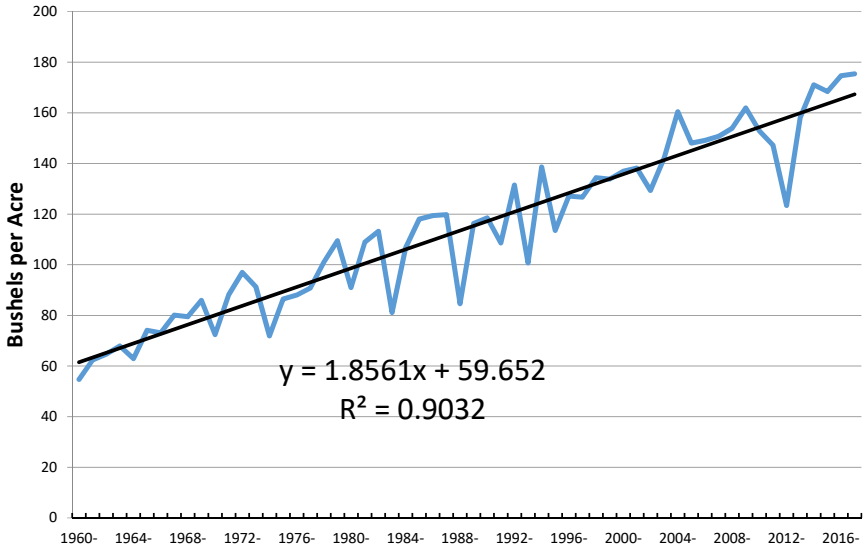
U.S. Average Corn Yield



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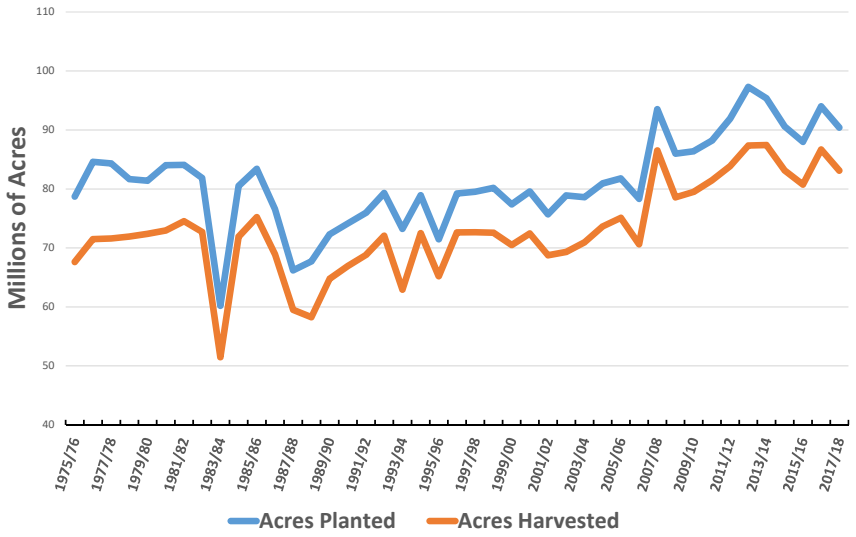
U.S. Corn Acreage



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U.S. Corn Supply and Use

		2017/18 USDA Current Forecast	2017/2018 Forecast	2018/2019 Forecast
Area Planted	(mil. Acres)	90.4	90.4	90.8
Area Harvested	(mil. Acres)	83.1	83.1	83.5
Yield	(Bu./acre)	175.4	175.4	172.3
Production	(mil. Bu.)	14,578	14,578	14,387
Imports	(mil. Bu.)	50	50	50
Total Supply	(mil. Bu.)	16,922	16,922	16,934
Feed and Residual	(mil. Bu.)	5,575	5,540	5,525
Food, Seed, and Industrial	(mil. Bu.)	6,935	6,935	6,990
Ethanol	(mil. Bu.)	5,475	5,475	5,480
Exports	(mil. Bu.)	1,925	1,950	1,975
Total Use	(mil. Bu.)	14,435	14,425	14,490
Ending Stocks	(mil. Bu.)	2,487	2,497	2,444
Average Price	($ per Bu.)	$2.80-$3.60	$3.30	$3.40

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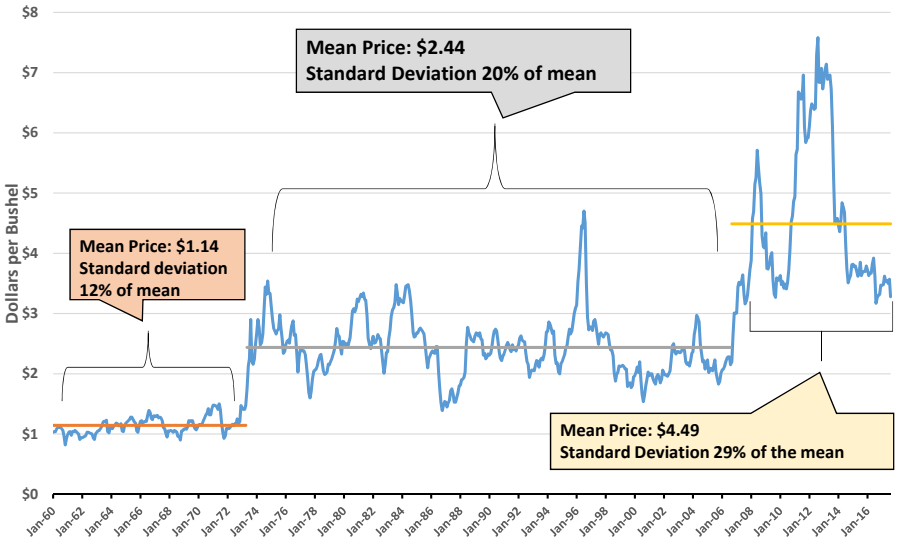
Monthly Average Corn Price for Illinois



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U.S. Soybean Supply and Use

		2013/14	2014/15	2015/16	2016/17 USDA Estimate	2017/18 USDA Current Forecast
Area Planted	(mil. Acres)	76.8	83.3	82.7	83.4	90.2
Area Harvested	(mil. Acres)	76.3	82.6	81.7	82.7	89.5
Yield	(Bu./acre)	44	47.5	48	52.0	49.5
Production	(mil. Bu.)	3,358	3,927	3,296	4,296	4,425
Imports	(mil. Bu.)	72	33	24	22	25
Total Supply	(mil. Bu.)	3,570	4,052	4,140	4,515	4,752
Crush	(mil. Bu.)	1,734	1,873	1,886	1,899	1,940
Seed and Residual	(mil. Bu.)	107	146	122	141	136
Exports	(mil. Bu.)	1,638	1,842	1,936	2,174	2,250
Total Use	(mil. Bu.)	3,478	3,862	3,944	4,214	4,326
Ending Stocks	(mil. Bu.)	92	191	197	301	425
Season Average Price	($ per Bu.)	$13.00	$10.10	$8.95	$9.47	$8.45-$10.15

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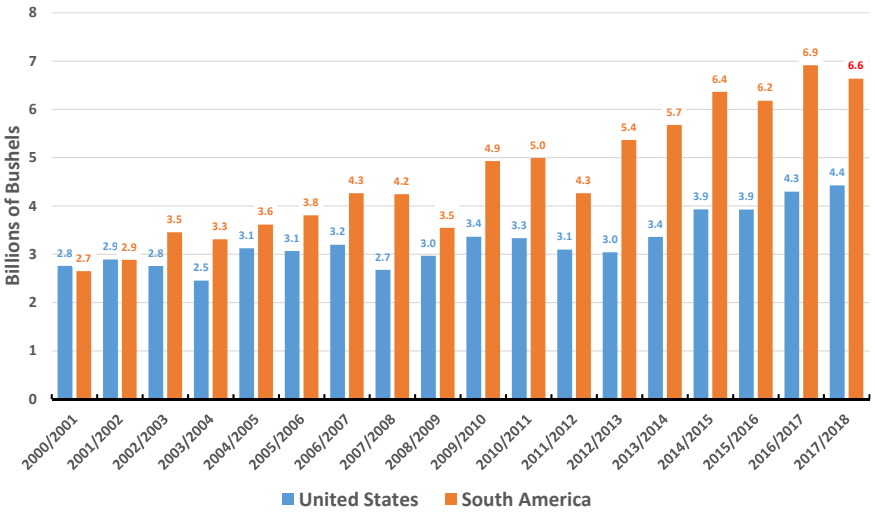
Soybean Production



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Monthly USDA Ending Stock Forecast and Illinois Average Farm Price – Last 3 Mkt. Years

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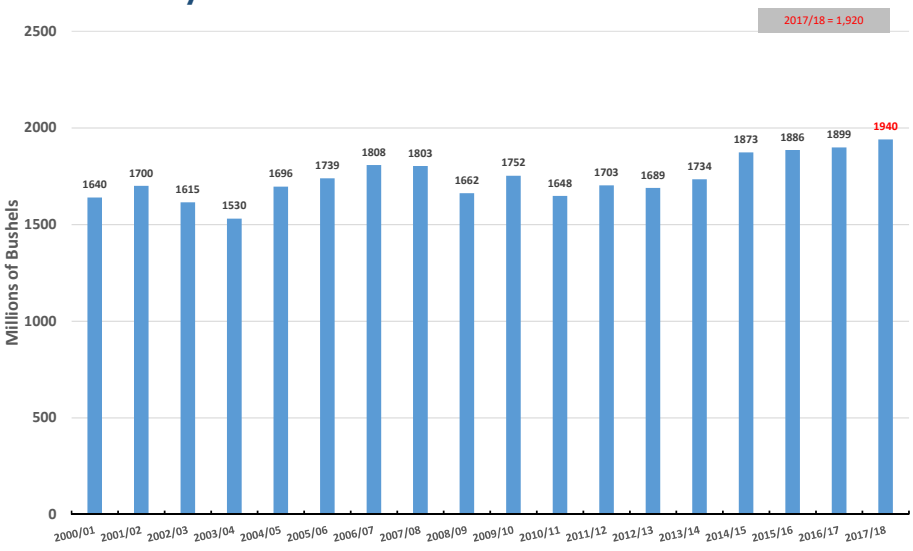
U.S. Soybean Crush



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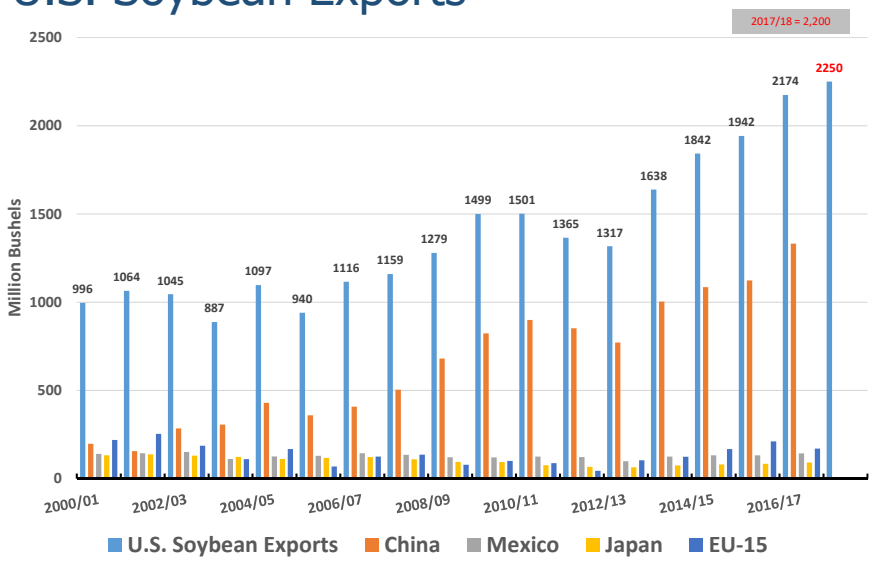
U.S. Soybean Exports



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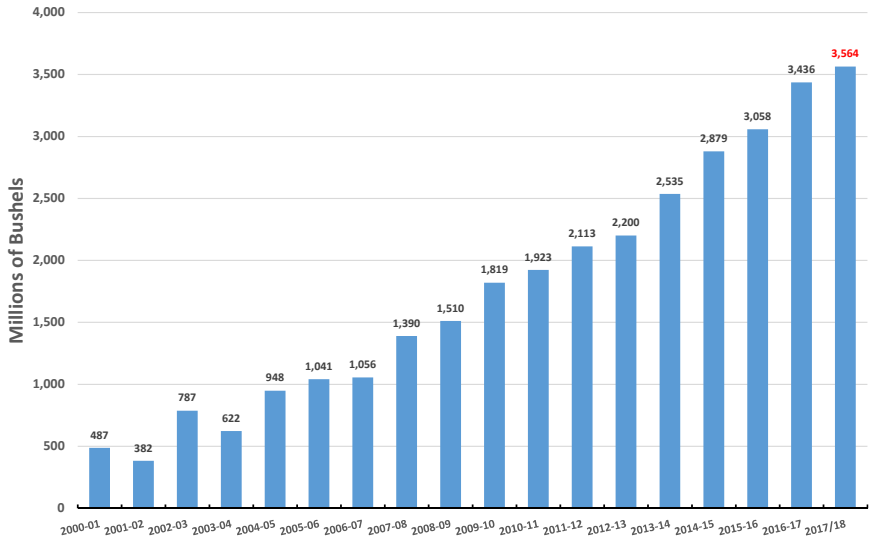
China Soybean Imports



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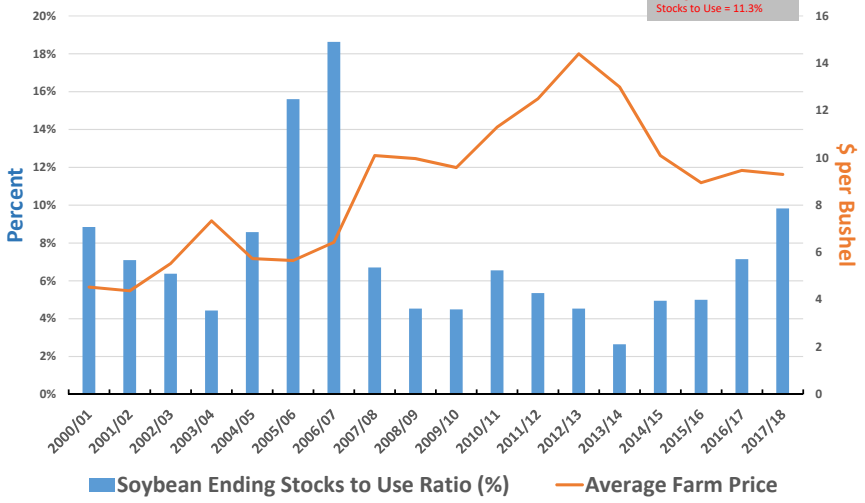
U.S. Soybean Ending Stocks to Use Ratio and Average Farm Price

2017/18
Total Use = 4,256
Ending Stocks = 482
Stocks to Use = 11.3%



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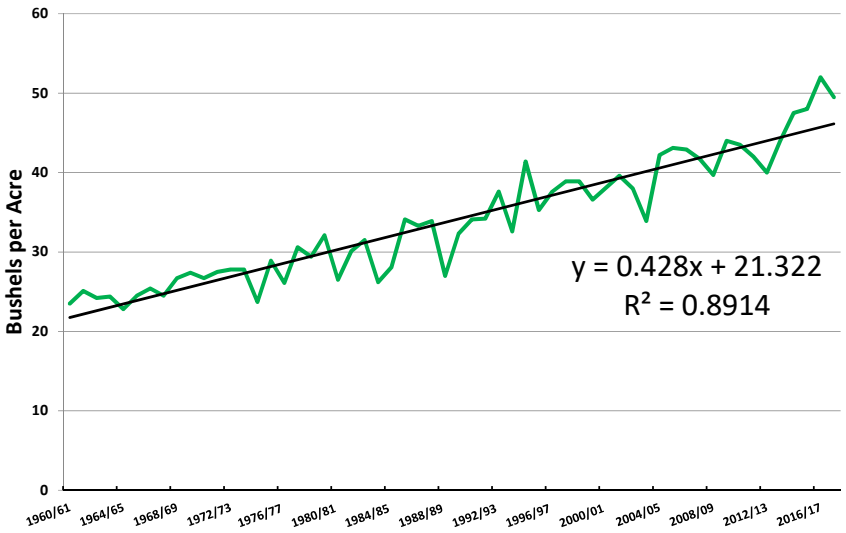
U.S. Soybean Average Yield



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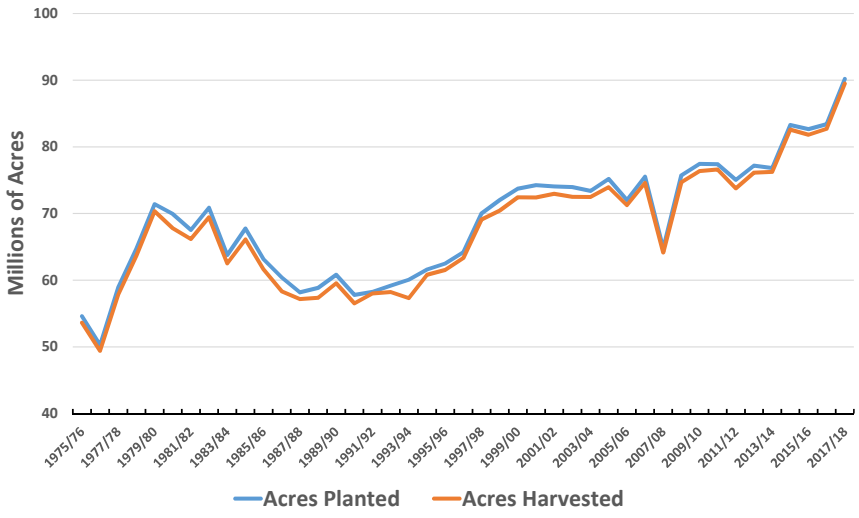
U.S. Soybean Acreage



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U.S. Soybean Supply and Use

		2017/18 USDA Current Forecast	2017/18 Forecast	2018/19 Forecast
Area Planted	(mil. Acres)	90.2	90.2	90.6
Area Harvested	(mil. Acres)	89.5	89.5	89.9
Yield	(Bu./acre)	49.5	49.3	48.5
Production	(mil. Bu.)	4,425	4,412	4,360
Imports	(mil. Bu.)	25	25	25
Total Supply	(mil. Bu.)	4,752	4,738	4,867
Crush	(mil. Bu.)	1,940	1,920	1,950
Seed and Residual	(mil. Bu.)	136	136	135
Exports	(mil. Bu.)	2,250	2,200	2,235
Total Use	(mil. Bu.)	4,326	4,256	4,320
Ending Stocks	(mil. Bu.)	425	482	547
Average Price	($ per Bu.)	$8.45-10.15	$9.20	$8.80

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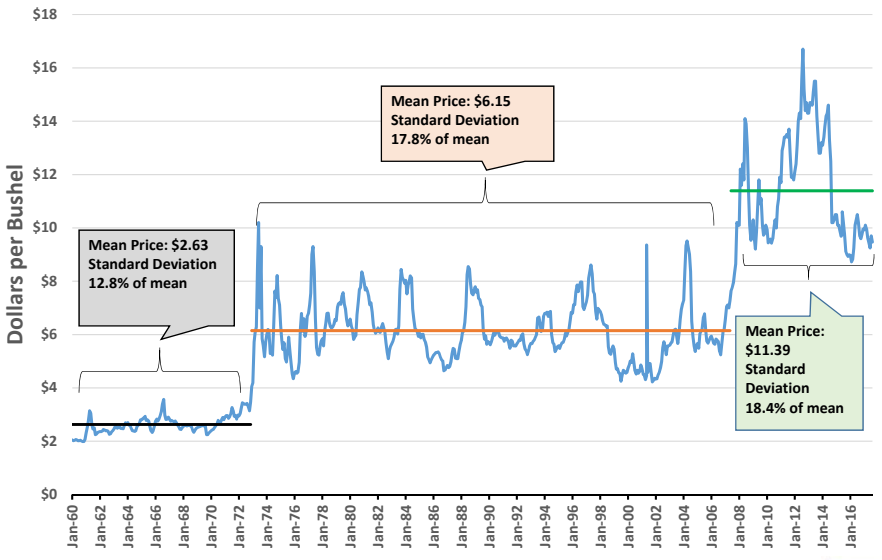
Monthly Average Soybean Price for Illinois



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- Thank You
- Questions?

What Is Up with Soybean Yields?

Scott Irwin, Professor
Department of Agricultural and Consumer Economics
Email: sirwin@illinois.edu

Soybean yields in the U.S. have been very high the last four years. The U.S. average yield set new records in a stair-step fashion each year between 2014 and 2016. The 2016 yield reached the remarkable level of 52.1 bushels. While not a record, the 2017 yield (based on the November 1 USDA estimate) was 49.5 bushels, the second largest ever. On top of the high U.S. average yields are the numerous reports of field-level yields in the 70s, 80s, and even a few in the 90s.

The high soybean yields of recent years have sparked a debate about what is driving the exceptional yields. In thinking about this debate it is important to understand that there are only three possible sources of soybean yield gain. The first is weather during the growing season. The second is genetic improvement in soybean varieties. The third is a management, which encompasses all aspects of the soybean production process. Genetic improvement and management sometimes go hand-in-hand so that one requires the other.

It is a not an easy task to disentangle the complex and sometimes interacting impacts of weather, genetics, and management on soybean yields. One approach is to use a crop weather regression model to estimate the separate impacts of weather and technology on soybean yield, where technology is the combined impact of genetic improvement and management. I estimated this type of model for U.S. average soybean yields over 1970-2017. A linear time trend was used to represent technological change and summer precipitation and temperature variables were used to represent growing season weather. The modeling results showed that U.S. average soybean yields in 2014, 2015, and 2017 could be explained by a continuation of the linear improvement in technology and good growing season weather. The exception was 2016, when yield was substantially higher than what could be predicted based on a linear technology trend and good weather. It is not clear from this exercise whether we should view the 2016 yield like a 100-year flood or a permanent jump in soybean yield potential.

Agronomic data can be helpful in further disentangling genetic improvement from other sources of soybean yield gain. One recent study collected seed for over 150 soybean varieties released from the 1920s through the 2000s. Using randomized trials from across the country in 2010 and 2011, the study estimated "pure" genetic improvement in soybean yields. The results indicated a linear progression of soybean genetic yield gain from 1970 through 2008. This indicates that the historical pattern of soybean genetic gains in yield have been steady and marked jumps in the rate of improvement are rare. Soybean variety test results from the Department of Crop Sciences at the University of Illinois provide relevant data through 2017. The yield of conventional soybean varieties relative to the older Williams variety shows no change of trend in recent years. Overall, there is little evidence to date that soybean genetics have been improving at a faster rate in recent years.

If we dig into the soybean yield data for the U.S. state-by-state an interesting pattern emerges that points to important changes in management practices. In general, soybean trend yields in the

Southeastern U.S. have been growing at a much faster rate than in other growing regions. This non-linear trend appears to be related to a number of management practices, which can be roughly described as having the purpose of replicating Midwestern growing conditions. This includes planting much earlier in the past, planting earlier maturing indeterminate varieties, including corn in the crop rotation to increase organic matter in the soil, and using raised bed production systems. These management practices have allowed soybean yields in the Southeast to largely catch up with those in the rest of the country.

In sum, the data indicate that the biggest factor explaining high soybean yields in recent years is simply exceptionally good growing season weather. Improved management practices, particular in the Southeastern U.S., have also certainly contributed. A jump in the rate of genetic improvement in soybeans was not likely a big contributor to the surge in soybean yields.

Notes

Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

For related analysis, see the following *farmdoc daily* articles:

Irwin, S., T. Hubbs, and D. Good. "What's Driving the Non-Linear Trend in U.S. Average Soybean Yields?" *farmdoc daily* (7):86, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, May 10, 2017.

Irwin, S., T. Hubbs, and D. Good. "U.S. Soybean Yield Trends for Irrigated and Non-Irrigated Production." *farmdoc daily* (7):81, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, May 3, 2017.

What Is Up with Soybean Yields?

Scott Irwin

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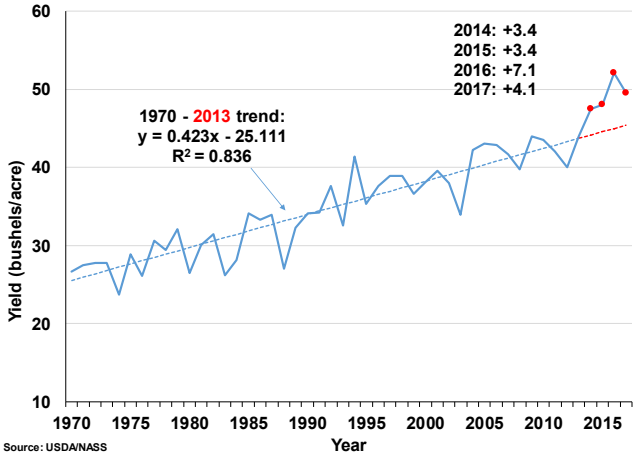
U.S. Average Yield of Soybeans, 1970-2017 (2017 = USDA Nov 1)



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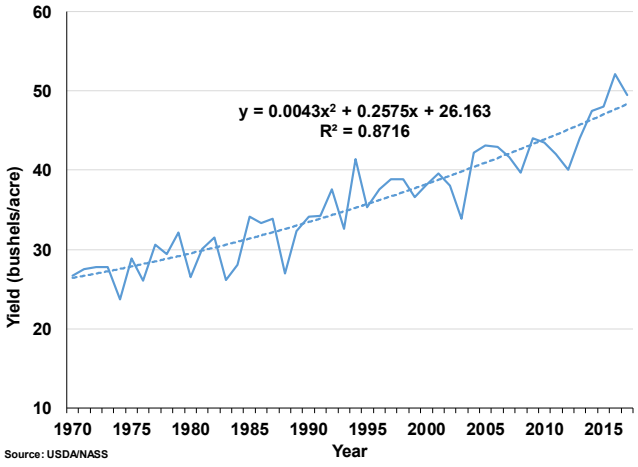
U.S. Average Yield of Soybeans, 1970-2017 (2017 = USDA Nov 1)



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Factors Driving Soybean Yield

Weather (W)
Genetics (G)
Management (M)

→ **Yield per acre (Y)**

$$Y = G + M + W$$

"Technology"

$$Y = G \times M + W$$

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Was it the Weather?

https://theperrynews.com/severe-thunderstorm-watch-in-effect-until-11-p-m-saturday/

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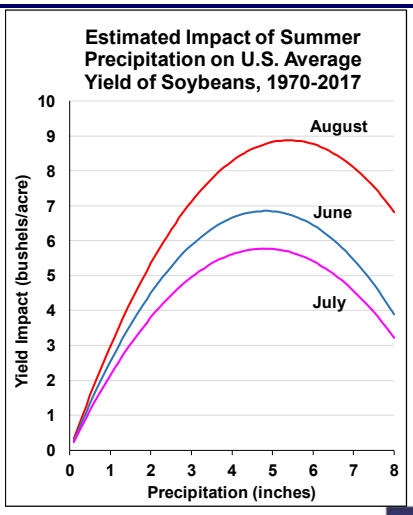
US Crop Weather Model for Soybeans

- Dependent Variable
  - US average soybean yield
- Independent Variables
  - Linear or quadratic trend for technology
  - June, July, and August precipitation and temperature
  - Weather variables are 10-stated weighted averages for Corn Belt
- Sample period
  - 1970-2017



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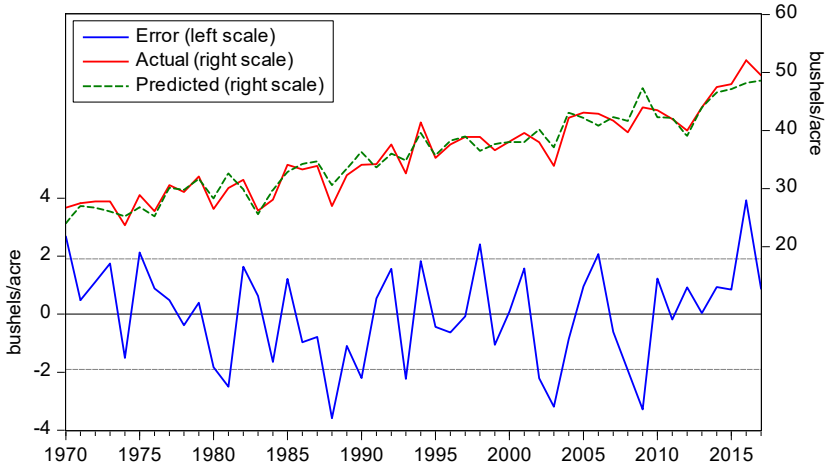
US Soybean Crop Weather Model Estimates, Linear Trend, 1970-2017 (Nov 1)



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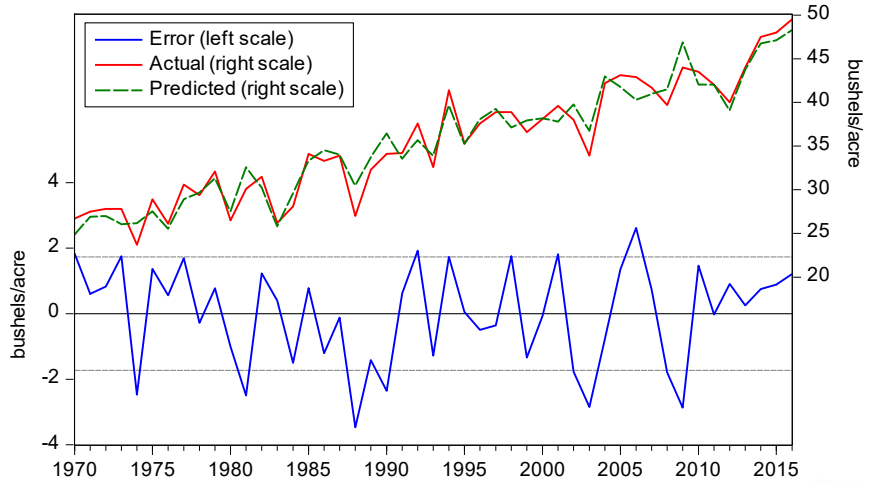
US Soybean Crop Weather Model Estimates, Linear Trend, 1970-2017 (Nov 1) Excluding 2016



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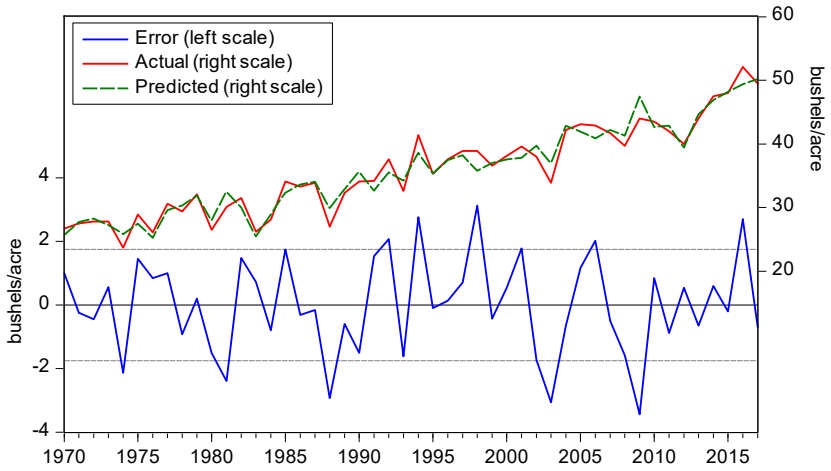
US Soybean Crop Weather Model Estimates, Quadratic Trend, 1970-2017 (Nov 1)



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Was it Genetics?

http://passel.unl.edu/Image/siteImages/DSCN2538-LG.jpg

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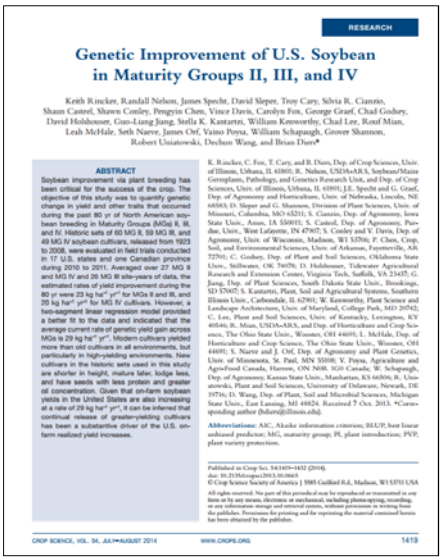
Measuring Genetic Improvement in Soybean Yields



RESEARCH

Genetic Improvement of U.S. Soybean in Maturity Groups II, III, and IV

Keith Rincker, Randall Nelson, James Specht, David Sleper, Troy Cary, Silvia R. Cianzio, Shaun Casteel, Shawn Conley, Pengyin Chen, Vince Davis, Carolyn Fox, George Graef, Chad Godsey, David Holshouser, Guo-Liang Jiang, Stella K. Kantartzi, William Kenworthy, Chad Lee, Rouf Mian, Leah McHale, Seth Naeve, James Orf, Vaino Poysa, William Schapaugh, Grover Shannon, Robert Uniatowski, Dechun Wang, and Brian Diers*

ABSTRACT

Soybean improvement via plant breeding has been critical for the success of the crop. The objective of this study was to quantify genetic change in yield and other traits that occurred during the past 80 yr of North American soybean breeding in Maturity Groups (MGs) II, III, and IV. Historic sets of 60 MG II, 59 MG III, and 49 MG IV soybean cultivars, released from 1923 to 2008, were evaluated in field trials conducted in 17 U.S. states and one Canadian province during 2010 to 2011. Averaged over 27 MG II and MG IV and 26 MG III site-years of data, the estimated rates of yield improvement during the 80 yr were 23 kg ha^{-1} yr^{-1} for MGs II and III, and 20 kg ha^{-1} yr^{-1} for MG IV cultivars. However, a two-segment linear regression model provided a better fit to the data and indicated that the average current rate of genetic yield gain across MGs is 29 kg ha^{-1} yr^{-1}. Modern cultivars yielded more than old cultivars in all environments, but particularly in high-yielding environments. New cultivars in the historic sets used in this study are shorter in height, mature later, lodge less, and have seeds with less protein and greater oil concentration. Given that on-farm soybean yields in the United States are also increasing at a rate of 29 kg ha^{-1} yr^{-1}, it can be inferred that continual release of greater-yielding cultivars has been a substantive driver of the U.S. on-farm realized yield increases.

Abbreviations: AIC, Akaike information criterion; BLUP, best linear unbiased predictor; MG, maturity group; PI, plant introduction; PVP, plant variety protection.

Published in Crop Sci. 54:1419–1432 (2014).
doi: 10.2135/cropsci2013.10.0665

- Collected seed for 158 soybean varieties
  - Released over 1920s to 2000s
- Randomized field trials across U.S. in 2010 and 2011
  - All variables the same except genetics
- Average yields across locations for same maturity group

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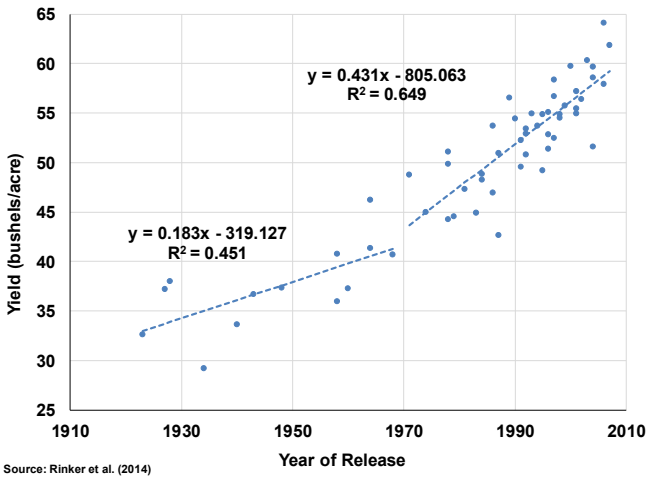
Rate of Genetic Improvement in U.S. Soybean Yields, MG III, 1923-2007



Source: Rinker et al. (2014)

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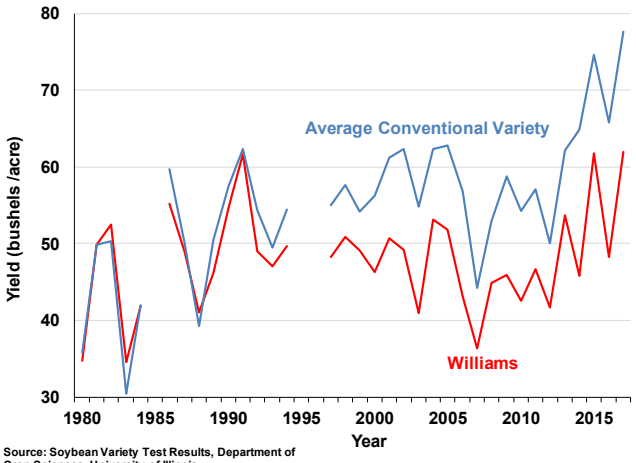
Average Yield of Conventional Soybean Varieties and Williams at Three Illinois Locations, 1980-2017



Source: Soybean Variety Test Results, Department of Crop Sciences, University of Illinois

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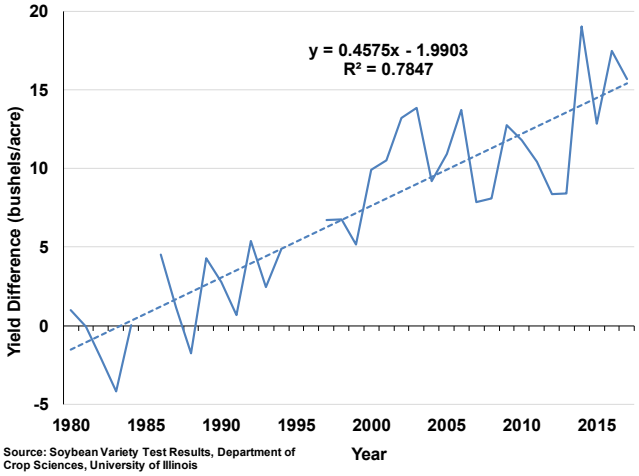
Difference between Average Yield of Conventional Soybean Varieties and Williams at Three Illinois Locations, 1980-2017



Source: Soybean Variety Test Results, Department of Crop Sciences, University of Illinois

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Was it Management?

https://i.ytimg.com/vi/xlUJADMEUIw/maxresdefault.jpg

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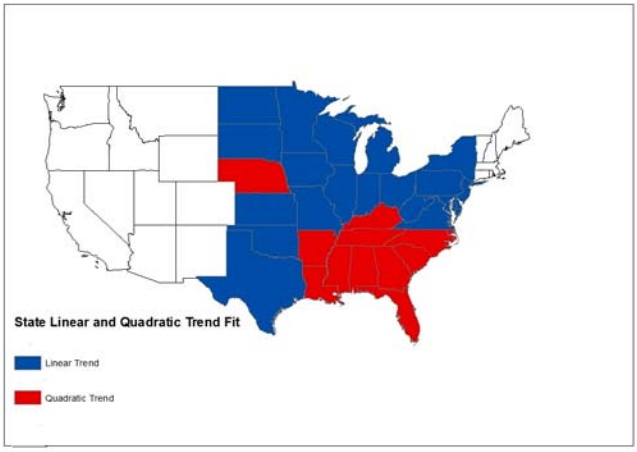
Linear vs. Quadratic Soybean Trend Yields by State



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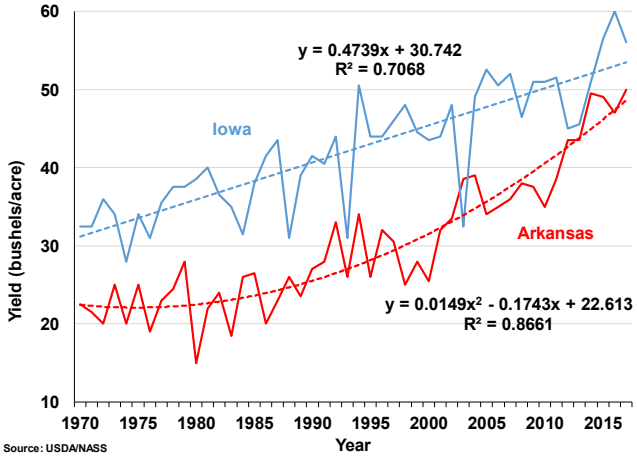
Average Yield of Soybeans in Iowa and Arkansas, 1970-2017 (2017 = USDA Nov 1)



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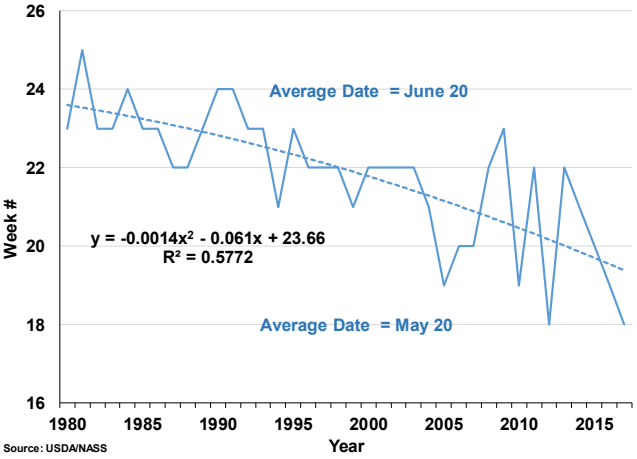
Week When Soybean Planting Progress in Arkansas Reaches 50 Percent, 1980-2017



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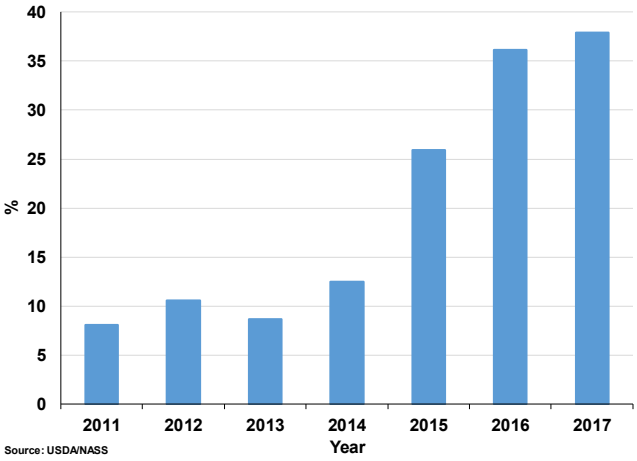
Soybean Row Width of 34.6 Inches or Greater in Arkansas, 2011-2017



Source: USDA/NASS

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Twin-Row Raised-Bed Soybean Production in Mississippi

http://www.mississippi-crops.com/2017/03/28/you-dont-need-to-push-soybean-seeding-rates/

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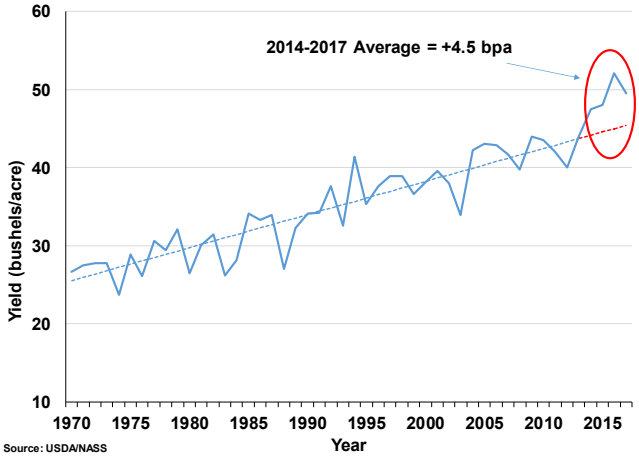
So, What is Up with U.S. Soybean Yields?



Farm Policy Review and Outlook for the 2018 Farm Bill

Jonathan Coppess, Clinical Asst. Prof., Law & Policy
Department of Agricultural and Consumer Economics
Email: jwcoppes@illinois.edu

The Agriculture Act of 2014 -- three years and two Congresses in the making -- is scheduled to expire with the 2018 crop and fiscal years. Congress is on the clock to reauthorize the programs by September 30, 2018, and has taken initial steps but the bill waits behind other legislative priorities. The following is a review of current farm policy and a discussion of the outlook for a new farm bill.

The 2014 Farm Bill provided farmers a choice between the Price Loss Coverage (PLC) program and the Agriculture Risk Coverage (ARC) program. PLC is a traditional fixed-price policy that provides deficiency payments when average prices are below a fixed statutory reference price. ARC is a revenue-based program that makes payments when actual revenue was less than 86% of a historic benchmark revenue. One ARC option was coverage at the county level, which used county average yields and national average prices to set the benchmark. These were calculated on a five-year Olympic moving average basis, dropping each of the highest and lowest years in the average.

The decision between ARC and PLC was a negotiated outcome in Congress due to an intense regional commodity dispute over the direction of farm policy after direct payments were eliminated. Midwestern commodities sought the revenue program and were opposed by Southern commodities that demanded the price program; a policy disagreement with a long history that dates to the parity era as it emerged from World War II.

For corn and soybeans, the ARC-CO program has performed largely as expected, although issues have been raised about the yield component of the program. With multiple years of relatively low prices, ARC-CO has made significant payments on corn base but some counties with high yields have received lower payments or have not received payments. Those payments are expected to decline under project price scenarios as the benchmark adjusts to the market prices; it is unlikely that ARC-CO will trigger payments for the 2018 crop.

The Federal Crop Insurance program has experienced significantly reduced indemnities after the 2012 drought, as well as decreases in outlays for premium discount. With lower prices, the cost of insurance premiums has decreased. The program insured nearly 300 million acres with liability above $100 billion in 2017. Premium discount continues to constitute the bulk of Federal outlays in this program.

The conservation title of the farm bill is the other major source of mandatory funds for farmers. The 2014 Farm Bill reduced the acreage cap for the Conservation Reserve Program (CRP) to 24 million acres. Conservation policy continues to be divided in three categories: (1) reserve or retirement programs, like CRP; (2) working lands programs, such as Conservation Stewardship (CSP) and Environmental Quality Incentives (EQIP); and (3) compliance on highly erodible lands and wetlands. CRP, CSP and EQIP make up the bulk of all Federal outlays in this title.

The outlook for a farm bill in 2018 is complicated and there are at least seven major issues likely to dominate the debate. First and foremost is the Congressional Budget Office (CBO) Baseline. This is a 10-year forecast of spending under existing programs and it limits the funds available to the Agriculture Committees; increases in one area require offsets from others.

Second is crop insurance, with approximately $6 billion per year in premium discount it is likely to remain a primary political target for any spending offsets or reductions. Others will look

for reforms to the program that also reduce expenditures.

Third and fourth are the commodity title issues. Commodity groups that supported ARC-CO in 2014 are likely to seek revisions to the program that improve the yields used (e.g., trend yields and RMA data), as well as potential changes in response to forecasts for lower prices. The cotton industry is seeking to have cottonseed added as a covered commodity, returning its base acres to the Title I payment programs. Dairy producers seek fixes to the Margin Protection Program. These raise significant issues, not the least of which is how any additional costs will be offset.

Some conservation interests are pushing to increase the CRP acreage cap which will have substantial costs in the CBO Baseline and require offsets. This is the fifth issue that Congress will need to resolve in the farm bill.

Sixth, the Supplemental Nutrition Assistance Program (SNAP) remains the largest item for participation and expenditures. Partisan politics over this program resulted in the farm bill's defeat in the House in 2013 and remains to be seen how Congress will deal with the program; history and vote counting counsel against efforts to make drastic changes to the program.

The seventh and final issue for the farm bill are the unknowns that could result if Congress agrees to tax legislation. Current estimates are that the bill would add more than $1 trillion to the deficit and debt. This could trigger automatic cuts through sequestration that would wipe out farm bill baseline or it could put pressure on Congress to seek to take drastic action to reduce spending; a situation similar to the previous farm bill debate.

Notes

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Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

USDA, Office of the Chief Economist, "Long-Term Agricultural Projections," Early-Release Tables from USDA Agricultural Projections to 2027, available online: https://www.usda.gov/oce/commodity/projections/

Coppess, J., C. Zulauf, G. Schnitkey, and N. Paulson. "Reviewing the June 2017 CBO Baseline." *farmdoc daily* (7):127, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, July 14, 2017, available online: http://farmdocdaily.illinois.edu/2017/07/reviewing-the-june-2017-cbo-baseline.html

Paulson, N., G. Paulson, N., G. Schnitkey, J. Coppess, and C. Zulauf. "Comparing ARC-CO and PLC Payments from 2014 to 2016." farmdoc daily (7):196, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, October 25, 2017, available online: http://farmdocdaily.illinois.edu/2017/10/comparing-arc-co-plc-payments-2014-to-2016.html

FARM POLICY REVIEW & OUTLOOK FOR 2018 FARM BILL

Jonathan Coppess

Gardner Agricultural Policy Program

December 2017

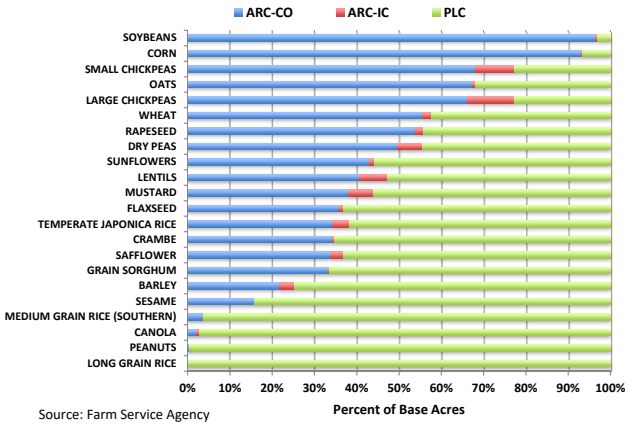
farmdoc UNIVERSITY OF ILLINOIS

www.farmdocdaily.illinois.edu
www.farmdoc.illinois.edu

2014 FARM PROGRAM ELECTION

- ✓ **Budget pressures = elimination of direct payments and dispute over policy.**
- ✓ **Farmer election represented the regional dispute.**
- ✓ **Lower price environment for 2018 farm bill and potential for revising program election.**

Figure 1. Percent of Base Acres Enrolled in ARC and PLC.



Source: Farm Service Agency

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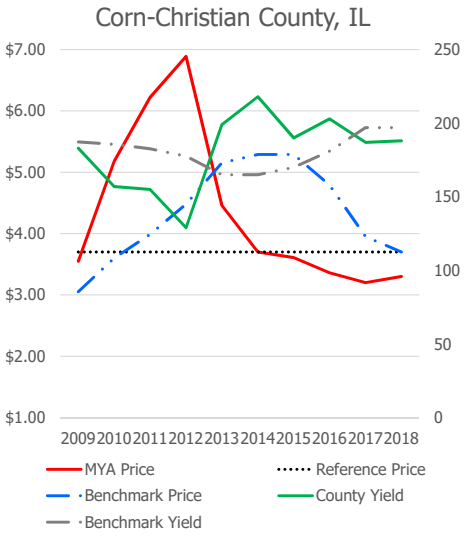
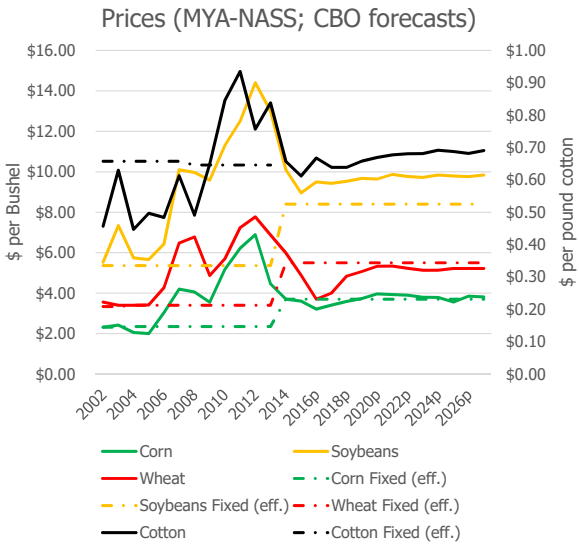
FARM PROGRAM REVIEW: ARC-CO



- **Benchmark = 5-year Olympic average price & yield (drop high and low).**
- **Guarantee from 86% to 76% of benchmark.**
- **Payments on 85% of base.**
- **Key feature is the adjustment of price & yield components.**

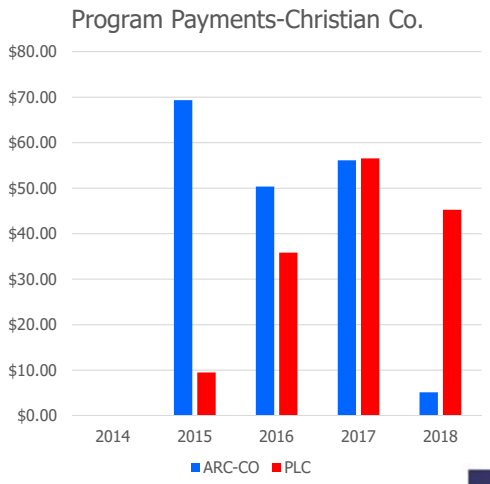
FARM PROGRAM REVIEW: PLC



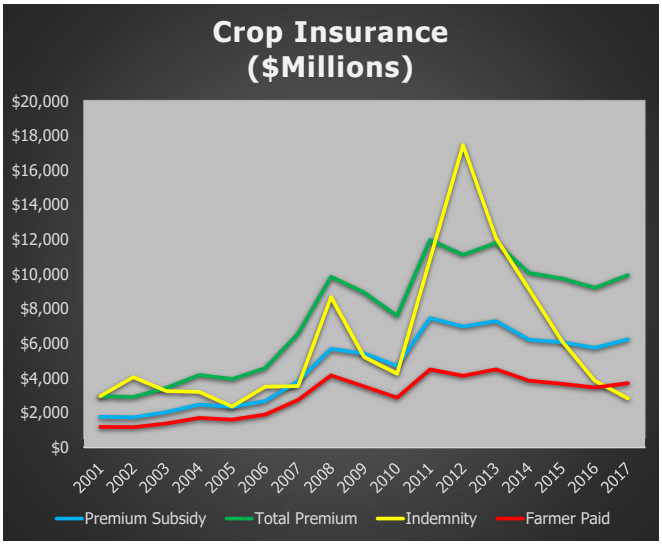
- **2014 Farm Bill raised reference prices; deficiencies paid on 85% of base.**
- **Not all reference prices are the same; lack of transparency and equity.**
- **Peanut price trigger (not shown) has averaged 120% of MYA since 2002.**

Farm Program Review

- **ARC-CO has averaged $36.17 per base acre.**
- **PLC has averaged $29 per base acre.**
- **Under current price scenarios, ARC unlikely to trigger payments; PLC likely to.**



Overview of Crop Insurance



- **2017 total liability was over $100b.**
- **Over 1m policies covering almost 300m acres insured.**
- **Loss ratio 0.28.**

FARM BILL CONSERVATION TITLE

Reserve or Retirement

- CRP (1985): 10-15 year rental to reserve from production
- ACEP (1990): Easement purchased on land; wetlands, grasslands; farmland

Working Lands

- EQIP (1996): cost-share assistance for practices; meet or avoid regulation
- CSP (2002): 5-year contracts for maintaining and improving conservation
- RCPP (2014): works across programs; regional basis; private funding match

Compliance (1985)

- Determines eligibility for Federal assistance, including premium subsidy
- Highly Erodible Land w/ plan; no converting or farming on converted wetlands
- Significance: added in Eighties crisis; crop insurance removed 1996; reattached 2014

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Outlook 2018.

SEVEN ISSUES FOR THE NEXT FARM BILL

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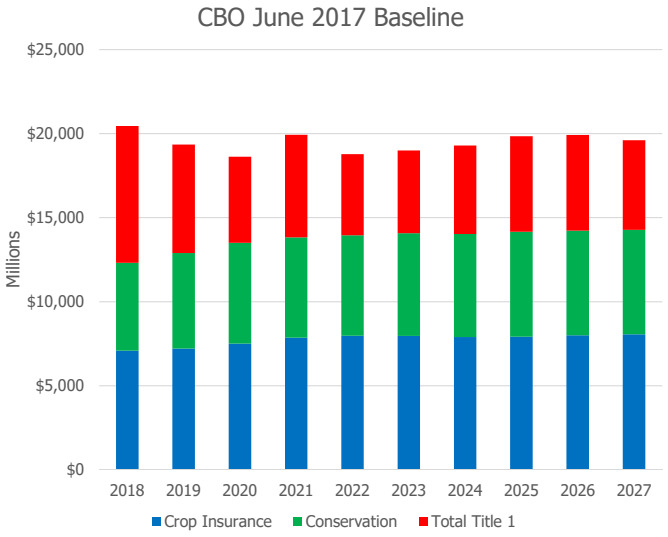
ISSUE #1: CBO BASELINE



- ✓ **Budget rules create "zero sum" effort**
- ✓ **Increases in baseline for program or title requires offsets elsewhere in the baseline (program, crop or title).**
- ✓ **CBO estimates spending for 10 years based on existing policy.**

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ISSUE #2: CROP INSURANCE

- **At roughly $6b per year, premium discount is a target.**
- **Admin./Heritage: save over $30b by capping discount, eliminating harvest price, AGI.**
- **Flake-Shaheen, save $24b from harvest price, rate of return and capping premium subsidies/AGI.**

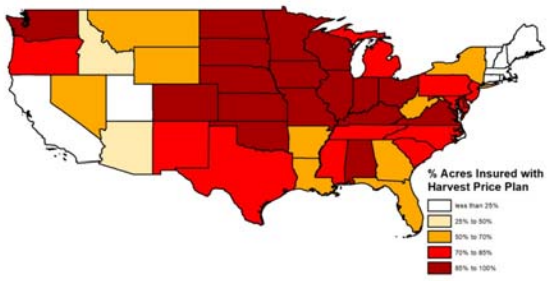

Figure 2. Percentage of Acres Insured with a Harvest Price Plan (RP or ARP), All Crops, 2016
Note: Based on insured acreage for all crops under RP, RP-HPE, YP, ARP, ARP-HPE, and AYP plans of insurance.

$750k AGI passed Senate 2012 and 2013 (66 and 59 votes, respectively)

House narrowly defeated crop insurance reform amendment 2013 (208 to 217)

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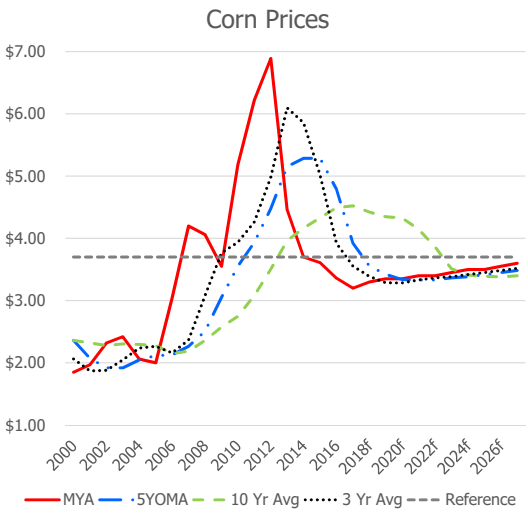
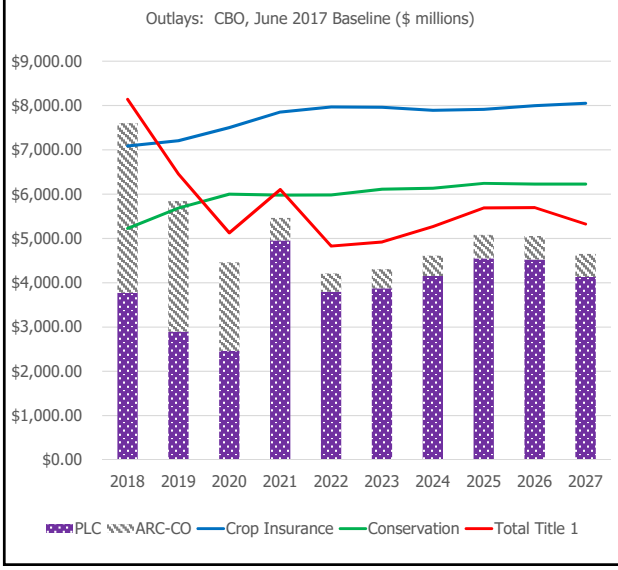
ISSUE #3: REVISING ARC

- **Yield fixes: trend yield instead of 5-year Olympic; use RMA yields.**
- **Price fixes: different moving average prices (3-year; 10-year).**
- **Higher guarantee (e.g. 90%) and bigger coverage band (e.g. 15-20%).**



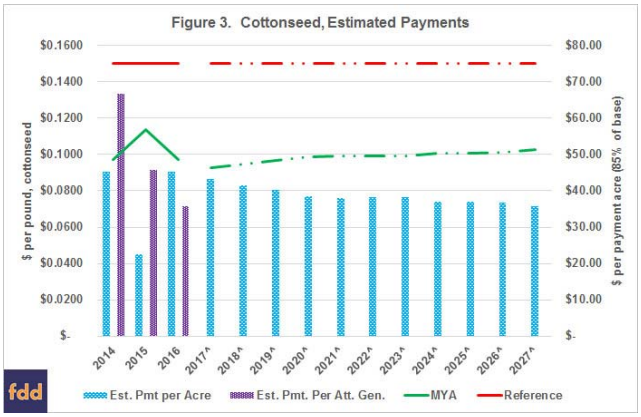
ARC & PLC IN THE BASELINE



- **Notable shift in Title I baseline from ARC to PLC.**
- **CBO assumes 82% of corn base takes PLC; low ARC payments.**

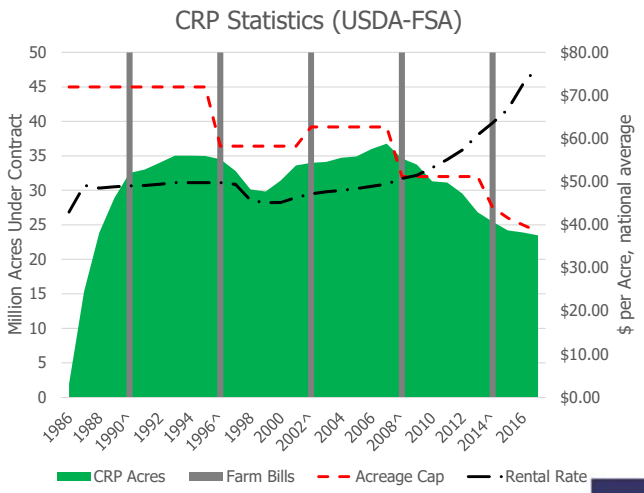
Issue #4: Cottonseed & Dairy

- **Cotton removed in 2014 because of WTO dispute with Brazil.**
- **Demand that cottonseed be added to list of covered commodities at $15.00 cwt. ($0.15/lb.).**
- **Potentially $5.4 billion in baseline cost; what gets cut (corn, crop insurance, conservation, all of the above)?**
- **Dairy: seeking fixes to Margin Protection Program; feed cost calculation; premium; cost unknown.**



Issue #5: CRP and Conservation

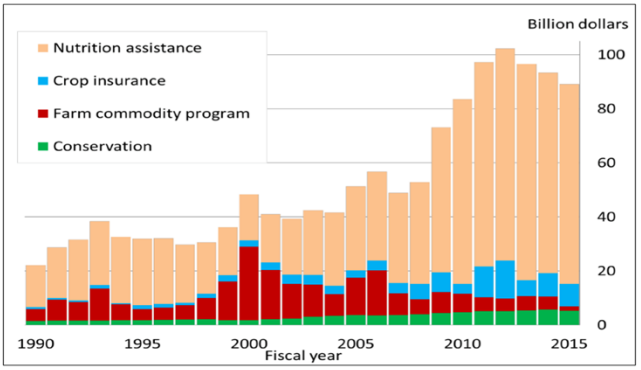
- ✓ **2014 Farm Bill reduced acreage cap to 24 million acres.**
- ✓ **Lower prices have increased interest in an increase to cap; wildlife and hunting interests are pushing.**
- ✓ **Previous high was from 2002 Farm Bill at 39.2m; Concerns about baseline and offset issues; impact on working lands programs.**
- ✓ **Problems with increasing rental rates in some areas competing with cash rents in low price environment.**



ISSUE #6: SNAP

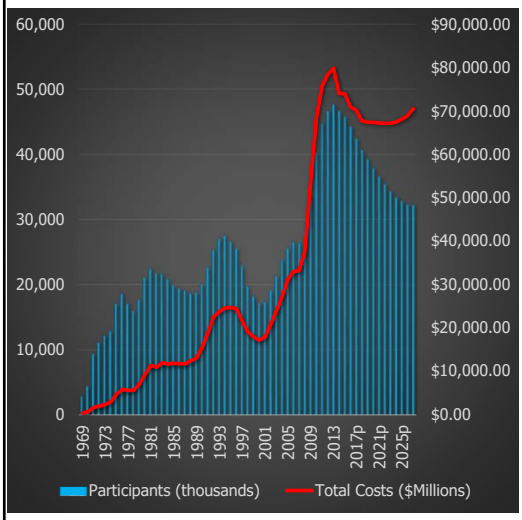
- **Substantial increase in nutrition assistance particularly since 2008 recession; increases political pressure.**
- **Recent hearings raise concerns about error rates, fraud, etc.**
- **Signal another partisan SNAP fight?**
- **Congressional challenges in general, will this make it worse?**

Figure 3. Farm Bill Spending by Major Mandatory Programs

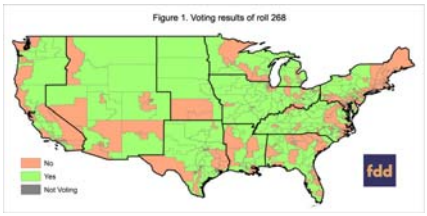


Source: CRS, using USDA data, including USDA Farm Service Agency, "Table 35," *Agricultural Outlook;* USDA Risk Management Agency, "Program Costs and Outlays by Fiscal Year;" J. Glauber, "Crop Insurance Reconsidered," *American Journal of Agricultural Economics*, 2004; USDA Farm Service Agency, "Output 3," *Commodity Estimates Book;* USDA Natural Resources Conservation Service, "Soil and Water Conservation Expenditures, 1935-2010," 2011; and USDA Food and Nutrition Service, "National Level Annual Summary, Participation and Costs."

SNAP: HISTORICAL BACKGROUND

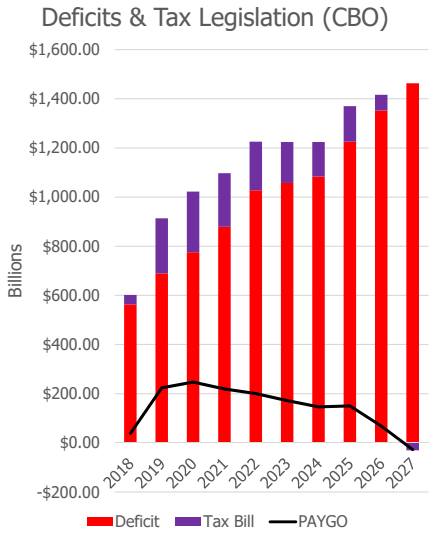


Source: USDA; CBO (projections)



- Helped farm programs in 1964; added to farm bill in 1973; spending is on food, which benefits farmers.
- Controversial amendment in 2013 and farm bill defeat in House (195 to 234).
- Strongest opponents of SNAP tend to oppose farm programs and crop insurance.

ISSUE #7: TAX & DEFICIT.



- **Before the tax legislation, CBO estimated debt would increase from $15.5 trillion to $25.5 trillion by 2027.**
- **Statutory Pay-As-You-Go (PAYGO) would require offsets for tax bill; Congress would need to revise.**
- **Note: 2018 PAYGO estimate is $38 billion.**

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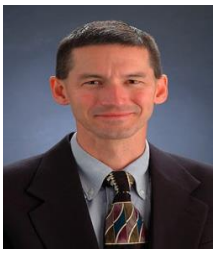

Where To From Here

Dwight D. Raab, CEO
Illinois Farm Business Farm Management Association
Email: dwight.raab@fbfm.org

While yields for most have assisted in mitigating working capital losses, commodity prices continue to present challenges in creating positive cash flows and profits. Corn at less than $4 continues to be reality while soybeans yields and prices contribute strongly to positive cash flows.

2017 Margins

Incomes likely will be down for most grain farms in Illinois for 2017. Yields have been a pleasant surprise for many but the decrease in accrual net farm income is due to 1) continued low corn prices, 2) lower soybean prices and 3) decreased County ARC payments. Accrual net income on Illinois farms enrolled in Illinois Farm Business Farm Management (FBFM) was approximately $94,000 in 2016 and was just below $0 in 2015. For the 2017 crop, ARC-CO payments should not be expected.

2018 Projected Incomes

At this point, reasonable expectations for 2018 include continued low corn prices and soybean prices that make soybeans more profitable that corn. Some input costs will be lower such as nitrogen fertilizer, but it remains to be seen if selected lower input costs and the hope of lower land costs will lead to higher accrual net farm incomes. Low to no ARC-CO payments will not provide cash to boost cash flow or profitability for 2018.

Profitability is the Problem

Illinois producers continue to face a profitability problem. More so with the profitable production of corn as compared to soybeans. Revenue from corn production sees that price trumps bushels and makes it difficult for corn revenue to be greater than land and non-land costs. This will continue the difficulty of generating sufficient cash flow to cover all the needs.

Financial Status

Fortunately, most Illinois grain farms are in good to strong financial position. Median debt to asset ratios are strong and have decreased over the previous ten years. This decrease is due in part to asset values increasing at a rate that is faster than the debt load is increasing. Liquidity remains good with median working capital of $305 per acre but this is a marked decrease from the record working capital of $540 per acre in 2012. For the short-term, equity and solvency are such that lower profitability can be weathered.

Rebuilding and protecting working capital is paramount in this era of lower profitability. Dealing with the underlying profitability problem is key to future financial success.

	Median Debt/Asset	Median Working Capital	Working Capital Per OprAc	Working Capital as % of GFR
2015	0.202	$ 232,173	$ 305	0.433
2014	0.187	$ 293,067	$ 393	0.461
2013	0.185	$ 329,910	$ 452	0.512
2012	0.182	$ 396,050	$ 540	0.520
2011	0.198	$ 340,554	$ 403	0.487
2010	0.213	$ 269,069	$ 374	0.469
2009	0.225	$ 222,698	$ 299	0.433
2008	0.227	$ 253,535	$ 340	0.433
2007	0.236	$ 207,713	$ 288	0.414
2006	0.258	$ 119,841	$ 167	0.325
Source: Illinois FBFM Association				

Notes

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Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

For current farm management information
http://www.farmdoc.illinois.edu/manage/index.asp

Schnitkey, G. "Forecast of 2017 Net Income on Grain Farms in Illinois" *farmdoc daily* (7):215, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 21, 2017.

Krapf,B. D. Raab and B. Zwilling "Evaluating Your Capital Debt Repayment Capacity" *farmdoc daily* (7):213, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 17, 2017.

Krapf,B. D. Raab and B. Zwilling "Trends in Working Capital and Financial Solvency" *farmdoc daily* (7):10, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 20, 2017.

Krapf,B. D. Raab and B. Zwilling "Agricultural Debt Continues to Increase" *farmdoc daily* (7):30, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, February 17, 2017.

The Financial Position of Illinois Farms: We Are At and Where to From Here

Dwight Raab

Illinois Farm Business Farm Management (FBFM)

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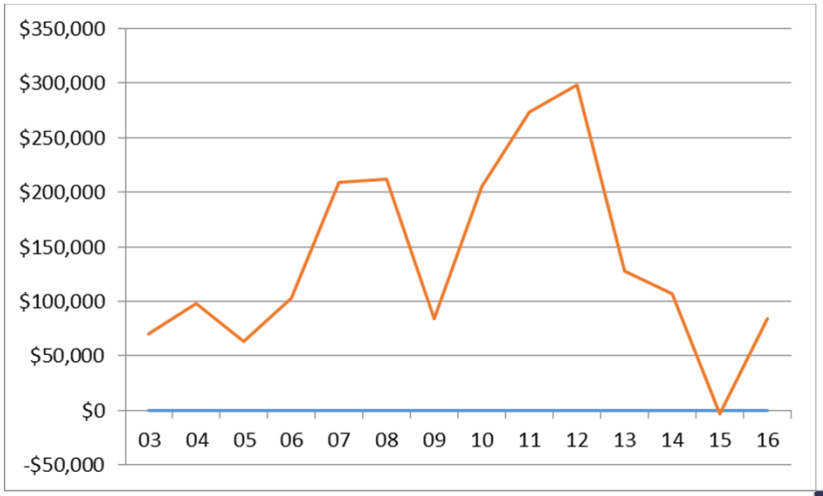
Accrual Net Farm Income



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Accrual Net Farm Income

2016	$ 86,731
2015	$ - 2,971
2014	$ 107,290
2013	$ 127,664
2012	$ 298,028
2011	$ 273,612
2010	$ 204,631
2009	$ 84,212
2008	$ 211,890
2007	$ 209,012
2006	$ 103,303
2005	$ 62,940
2004	$ 97,514
2003	$ 70,640

Down 57% from 2012, similar to 03-09 average

2003–2009 average $ 119,930

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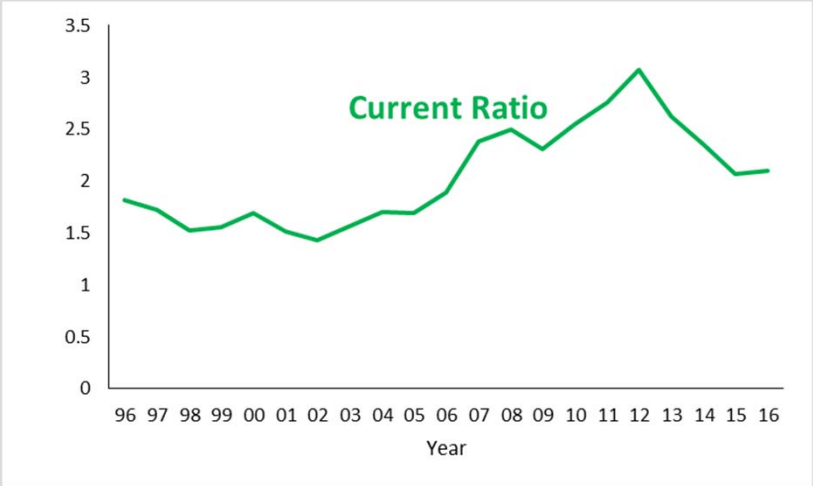
Current Ratio



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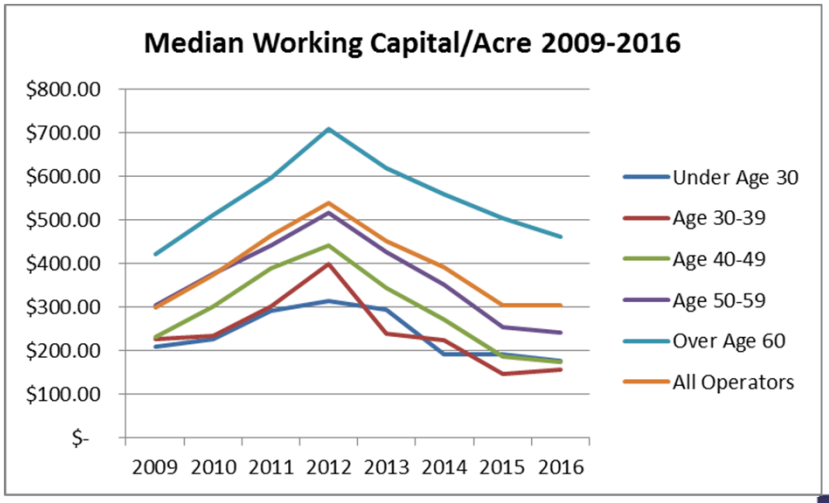

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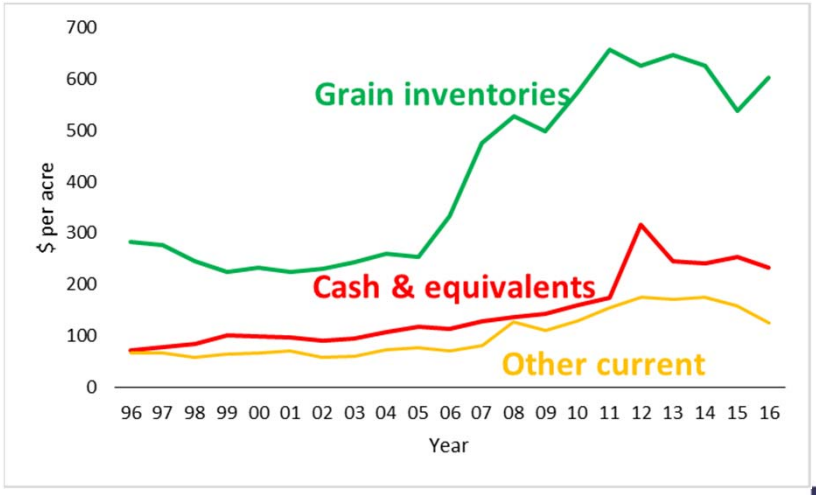
Components of Current Assets



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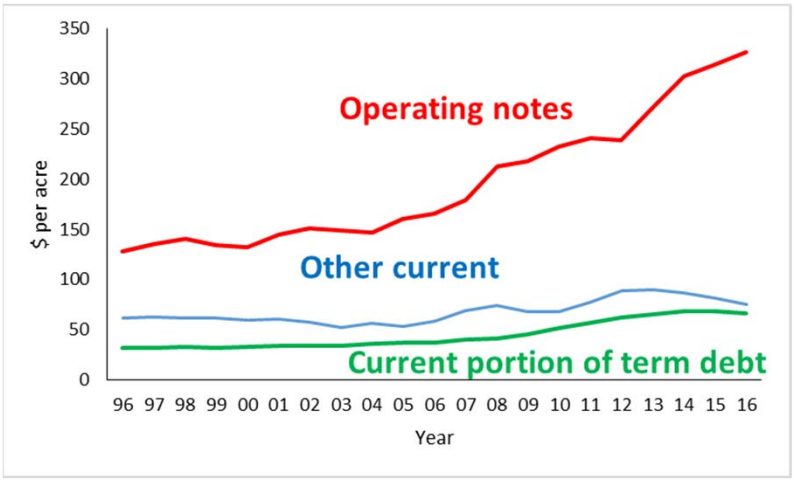
Components of Current Liabilities



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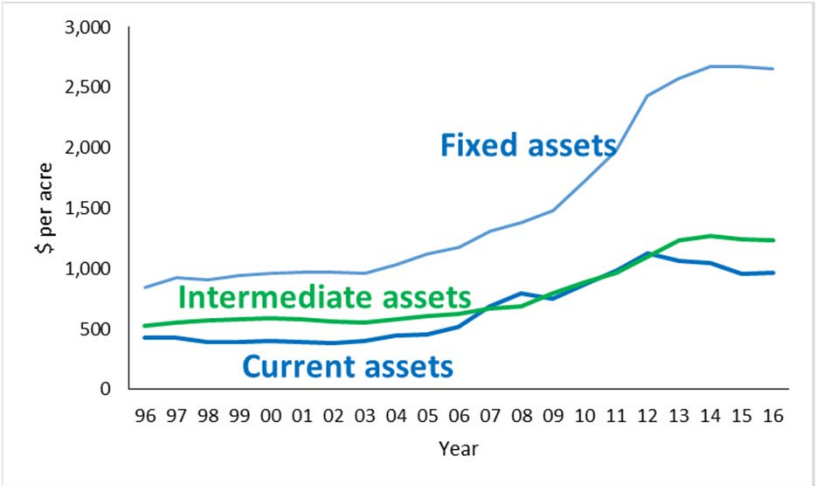
Components of Total Assets



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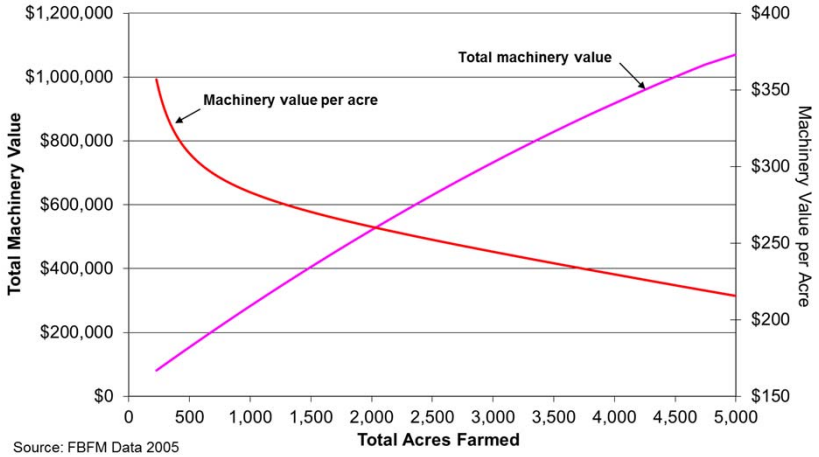
2005 Average Machinery Values – Grain Farms



Source: FBFM Data 2005

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2015 Average Machinery Values – Grain Farms

Source: FBFM Data 2015

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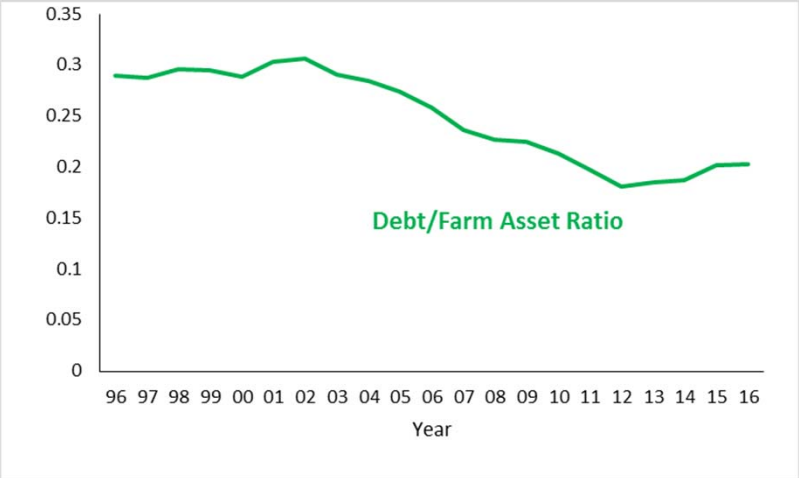
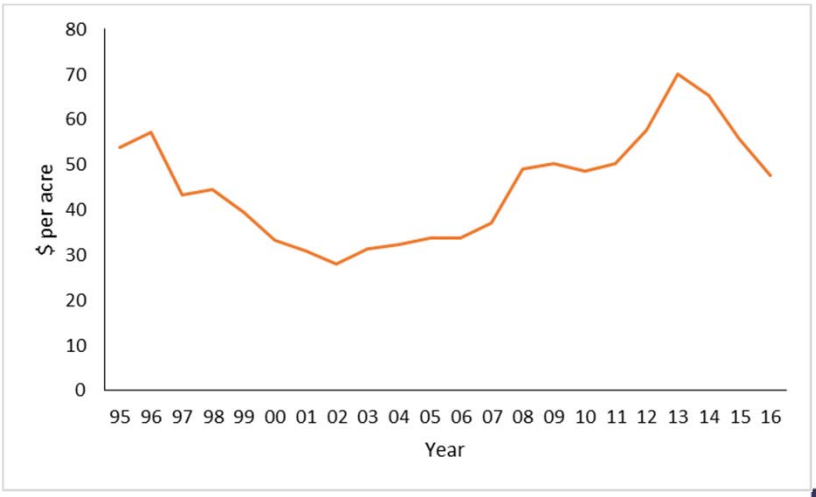
Debt-to-Asset Ratio



Slow Down Debt Increases

	Money Borrowed		Principal Paid
2006	$ 262	(thousands)	$ 245
2007	$ 306		$ 274
2008	$ 368		$ 332
2009	$ 340		$ 319
2010	$ 361		$ 327
2011	$ 398		$ 370
2012	$ 428		$ 396
2013	$ 418		$ 365
2014	$ 439		$ 390
2015	$ 450		$ 423
2016	$437		$ 438

Farm Share of Family Living and Taxes



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Family Living Expense Snapshot

Year	Non-Farm Income	Total Family Living	Income & S.S. Tax
1995	13,790	41,254	9,975
2010	35,976	74,208	20,064
2013	38,019	89,130	40,328
2014	39,676	88,937	38,801
2015	40,662	84,779	32,438
2016	44,503	82,260	25,512

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What Should My AGI Be?

Amounts needed for:

- **$ 80,000 Family living**
- **$ 30,000 Income tax liability**
- **$ 20,000 Principal payments above Depreciation**
- **$130,000 Adjusted Gross Income**

To the extent actual AGI is less than $130,000 - tax deferral happens

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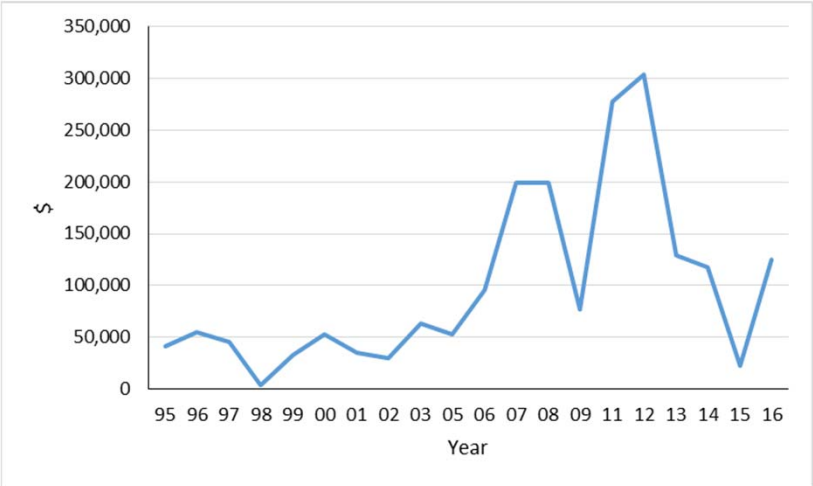
Capital Debt Repayment Capacity



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Questions?

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Habits of Financially Resilient Farms

Nick Paulson, Associate Professor
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Over the past 10 years, returns on Illinois grain farms have changed dramatically. High commodity prices led to rising income and return levels from 2009 to 2012. Beginning in 2013, much lower commodity prices led to a period of declining return levels over the past 4 crop years as production and land costs have remained relatively sticky. An important question facing farm operators is whether there exist management strategies which consistently result in success. In other words, is it possible to be successful consistently across time even when returns are volatile?

To address these issues, we used data from the IL Farm Business Farm Management (FBFM) association to identify farms that have higher returns, relative to their peers, over both the high/rising return period from 2010 to 2012 and the low/declining return period from 2014 to 2016. Our analysis of the financial records shows a significant gap in the returns earned by farms over time, and that these differences are persistent. This suggests that there are farm operations which do consistently outperform their peers.

Next, we examined the characteristics of farms that were part of the different performance groups. Farms earning higher returns typically do so through a combination of both higher revenues and lower costs. Higher revenues are achieved through a combination of higher corn and soybean yields as well as receiving slightly higher prices than farms in the lower return groups.

Higher return farms also tend to have better cost control across all main categories. The most important direct costs categories tend to be seed, pesticides, and fertilizer. For power costs, high return farms tended to have lower machinery depreciation and repairs per acre. Finally, while the overhead cost category tended to contribute.

Other characteristics of higher return farms were larger size (acres), and tended to use less corn-intensive rotations than their lower return peers within the same region.

The relative contribution of higher revenues towards higher returns was larger during the high/increasing return period from 2010 to 2012. In contrast, the relative contribution of lower costs towards achieving higher returns was greater during the low/declining return period from 2014 to 2016.

Overall, farms earning higher returns do so with bigger yields, higher prices, and lower costs across all categories. More specifically, devoting time to management decisions related to input use (seed and chemicals) which yields to the most profitable yield, and having an appropriately sized and well-maintained machinery complement tend to stand out as the most consistent factors associated with higher return farms.

Notes

Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

Returns on successful and resilient farms was discussed in these recent farmdoc daily articles:
http://farmdocdaily.illinois.edu/2017/06/differences-in-revenue-and-cost-higher-average.html

http://farmdocdaily.illinois.edu/2017/05/how-hard-is-it-to-be-above-average-in-farming.html

Habits of Financially Resilient Farms

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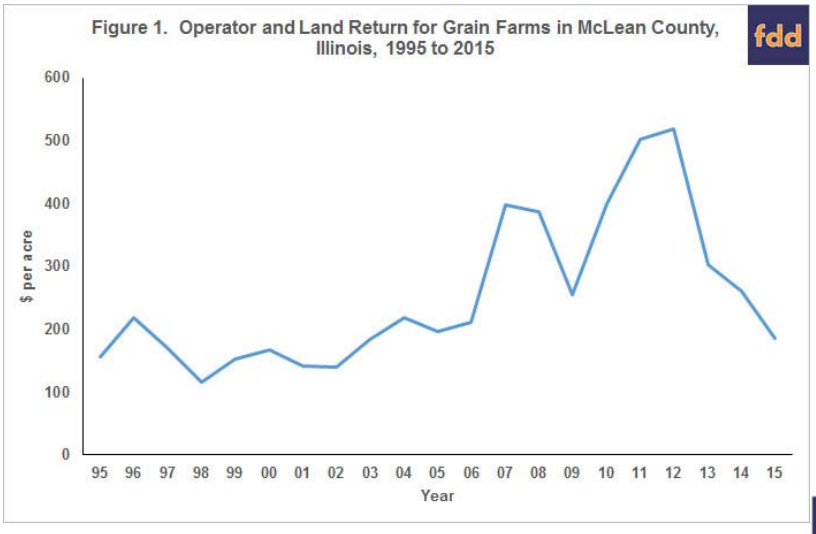
Operator and Farmland Returns



Resiliency of Returns

- **Are some farms *consistently* outperforming their peers?**
  - **YES**
- ***How* are these farms outperforming their peers?**
  - **Revenues, Costs, Other characteristics**

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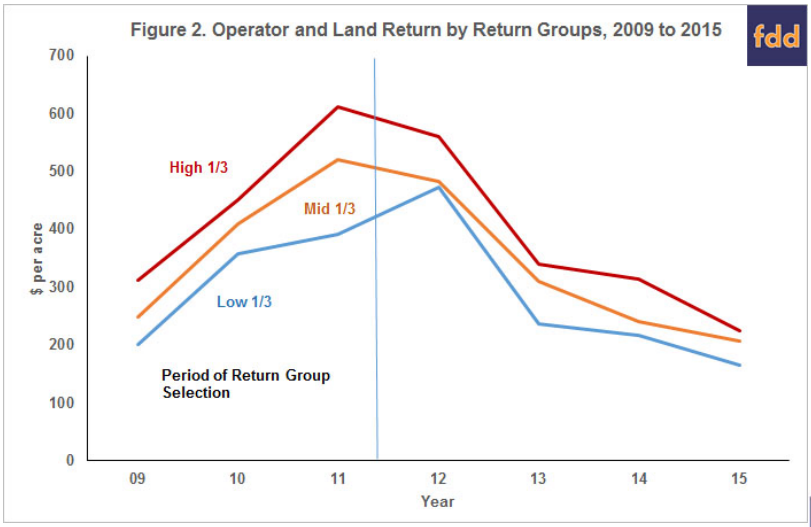
Operator and Farmland Returns



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Performance Groups

- **Central and Northern IL Counties**
  - **Champaign, Ford, McLean, Piatt**
  - **Dekalb, La Salle, Lee, Ogle**
- **Two time periods**
  - **High/rising returns, 2010 to 2012**
  - **Low/declining returns, 2014 to 2016**
- **Define performance groups over 3-year horizon**
  - **Top 1/3 of returns**
  - **Mid 1/3 of returns**
  - **Low 1/3 of returns**

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Revenue, Costs, and Returns

	2010 to 2012			2014 to 2016		
	Top1/3	Mid 1/3	Diff	Top1/3	Mid 1/3	Diff
Revenue	**$958**	**$870**	**$88**	**$783**	**$731**	**$52**
Direct Costs	$248	$247	**$1**	$270	$276	**-$6**
Power Costs	$98	$115	**-$17**	$118	$128	**-$10**
Overhead Costs	$64	$72	**-$8**	$67	$85	**-$18**
Total Costs	**$409**	**$433**	**-$24**	**$455**	**$488**	**-$33**
Returns	**$549**	**$437**	**$112**	**$328**	**$242**	**$85**

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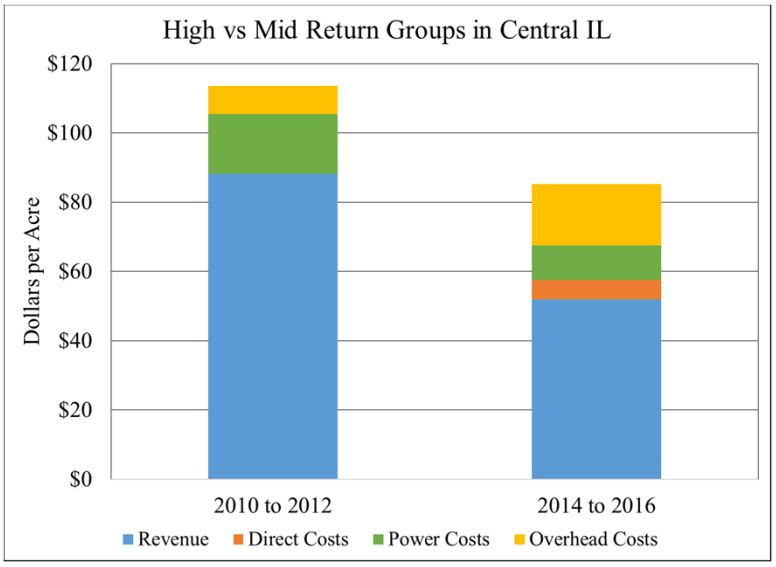
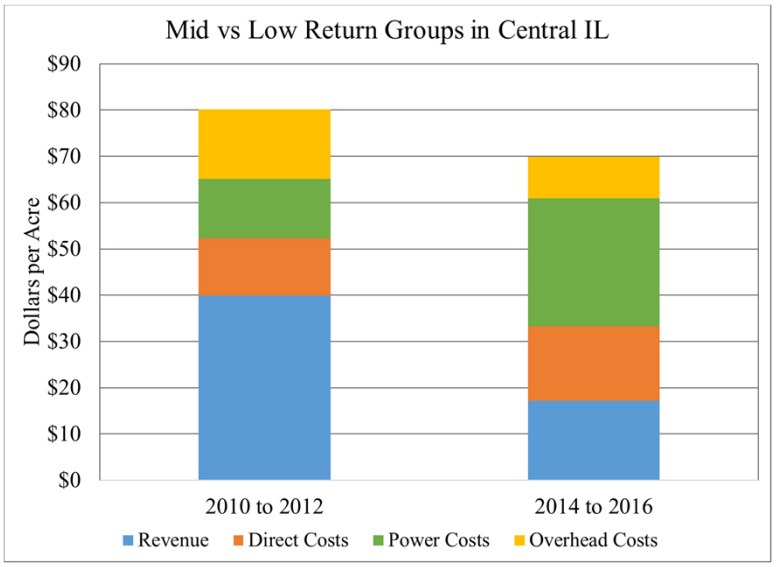
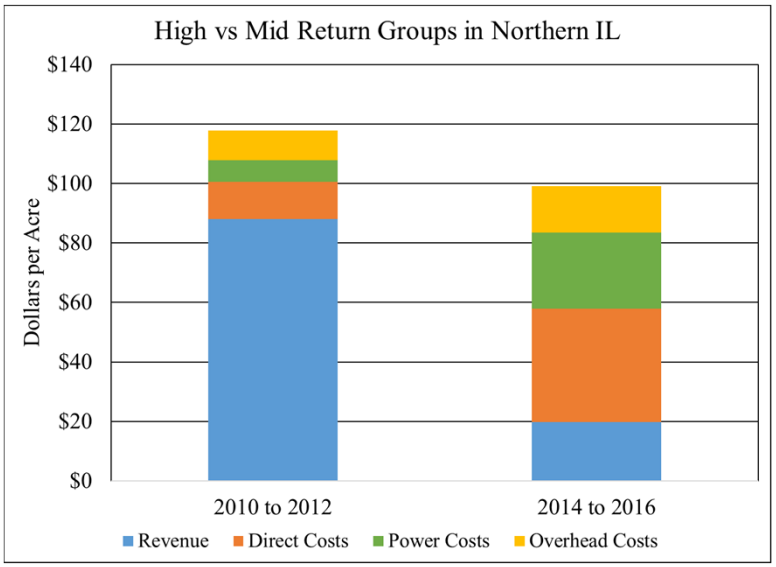
Top vs Mid Groups – Central IL



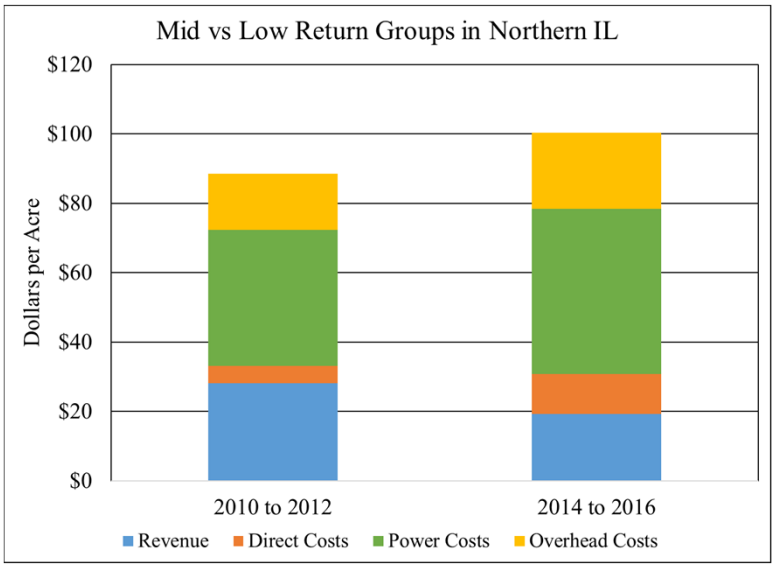
Mid vs Low Groups – Central IL



Top vs Mid Groups – Northern IL



Mid vs Low Groups – Northern IL



Revenue Factors

- **Bigger yields on higher return farms**

2010 to 2012		2014 to 2016	
Corn	Beans	Corn	Beans
14 bu/ac	4 bu/ac	9 bu/ac	2 bu/ac

- **Higher prices on higher return farms**

2010 to 2012		2014 to 2016	
Corn	Beans	Corn	Beans
$0.15-0.20/bu	$0.40-0.50/bu	$0.05-0.10/bu	$0.10-0.15/bu

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Main Cost Factors

- **Direct**
  - **Seed, fertilizer, pesticide, drying and storage**
- **Power**
  - **Machinery depreciation, hire, and repair; fuel and oil, utilities, light vehicle**
- **Overhead**
  - **Hired labor, building, insurance, misc, non-land interest**

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Other Characteristics

- **Farm size**
  - **High return group operate more acres**
  - **100 to 200 acre difference across groups**
- **Soil productivity not different across groups**
- **Close to 50/50 corn/soy rotation**

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Summary

- **Some farms outperform their peers consistently over time**
- **These farms tend to have higher revenues and lower costs**
  - **Revenues accounted for larger share of difference during high return period**
  - **Costs accounts for larger share of difference during lower return period**

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Summary

- **Focused on operator and farmland returns**
- **Do land costs tend to wash out these differences?**
  - **No**
  - **Farms identified in higher return groups tended to have lower land costs, pay average or lower cash rents as well**

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Thank You!

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Habits of Financially Resilient Farms - continued

Dale Lattz, Farmdoc Research Associate
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A study funded by the Illinois Soybean Association titled "Identifying Management Strategies of Highly-Profitable Soybean Farmers" utilized data from the Illinois Farm Business Farm Management (FBFM) Association to identify farms ranked in the top one-third in terms of profitability over an extended period. As a follow-up to this study, a small group of producers that were in the top one-third was surveyed to try to identify common production and management strategies utilized by this group.

Nine producers in central Illinois were surveyed. Five farms were in the 1,000 to 2,499 acre size, three farms in the 2,500 to 5,000 acres and one farm was over 5,000 acres in size.

Regarding tillage, questions were asked about the type of tillage practices used in the spring and fall for land going into soybeans and land going into corn. No one type of tillage was predominant. For land going in to soybeans, conventional tillage in the fall was the most common. Conventional tillage is defined as tillage that leaves less than 30% residue cover. Conventional tillage was also the most common spring tillage practice. For land going into corn, no tillage in the fall was the most common practice. The most common practice in the spring was conventional tillage.

All farms were planting soybeans after corn in a typical corn/soybean rotation. The main reasons given for this type of rotation included better disease and insect control, risk reduction and producers felt this was the most economical rotation. Producers had a goal of starting soybean planting by mid to late April with four of the nine respondents wanting to start planting soybeans before corn planting was finished.

Six of the nine producers planted their soybeans in less than 30-inch rows with five of the nine planting in 15 to 18 inch rows. All but one producer had decreased their seeding rate in the last five years. The most common seeding rate was in the 130K to 140K seeds per acre range. All used seed treatments. The two main reasons given for using seed treatments include earlier planting dates and better emergence. Yield potential, herbicide resistance traits and disease resistance were the most common reasons given for seed variety selection. Price of seed was ranked last. Four of the producers planted at least some of their acres to seed production with two other producers planting Non-GMO soybeans. Planting seed beans and Non-GMO soybeans provided premiums above commercial soybean market prices.

Fungicide was partially or completed used by six producers with insecticide included by five producers. Producers felt this practice provided better yields, helped with disease and insect control and provided better quality soybeans for those raising seed.

No common harvesting strategy surfaced. It was depended on weather and crop conditions. Three producers did indicate they would stop harvesting soybeans when the moisture level got below 9% to 10%. Eight of the nine producers used a draper bean head.

All nine producers indicated their primary source of agronomic information was seed and chemical representatives followed by University specialists. The majority of producers did some comparison-shopping for crop inputs. Although eight of the nine used only one or two suppliers for fertilizer and pesticides in the last five years. Six of the nine producers used three or more suppliers for seed in the last five years.

Producers were asked to rank 10 factors as to how they felt the factors were important to the profitability of their business. The top four were: 1) attention to detail, 2) operating cost management, 3) maximize yields and 4) discipline spending. Surprisingly implementing new technologies was ranked last.

Some of the production and management practices that surfaced in the survey results that could have led to these producers being in the top one-third in terms of profit are as follows. Increasing revenue by growing seed beans or Non-GMO soybeans, utilizing narrower rows for soybeans compared to corn, earlier planting of soybeans and utilizing seed treatments, which then allowed lower seeding rates. Other practices include selecting seed based on the best traits and not just cost, implementing proven newer technologies and keeping close attention to all aspects of the business with a high focus on cost control.

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Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

Schnitkey, G., N. Paulson, D. Lattz. " How Hard is it to be Above Average in Farming." farmdoc daily (7):98, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, May 26, 2017.

Schnitkey, G., N. Paulson, D. Lattz. " Difference in Revenues and Costs for Higher and Average Return Grain Farms." farmdoc daily (7):104, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, June 6, 2017

Habits of Financially Resilient Farms - continued

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ISA Profitability Study

ILLINOIS SOYBEAN ASSOCIATION
CHECKOFF PROGRAM

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Follow-up survey with producers

- Face to face survey containing 56 questions with 9 producers in central and east central Illinois
- Most questions relate to the 2016 growing season
- Survey includes questions to get at type of production and managerial practices
- Goal of identifying common practices among the more profitable producers

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General areas addressed

- Size (acres) and labor force
- Tillage practices
- Planting practices
- Growing season practices
- Harvesting practices
- Managerial practices
- Attitudinal

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Size and Labor

- 5 farms – 1,000 – 2,499 acres
- 3 farms – 2,500 – 5,000 acres
- 1 farm over 5,000 acres

- 2 farms basically one full time equivalent for labor
- 3 farms 1 to 2 FTEs
- 3 farms 2 to 4 FTEs
- 1 farm 4 or more FTEs

Fall Tillage Practices

- Type of fall tillage for land going into soybeans
  - 4 – conventional (less than 30% residue cover)
  - 1 – reduced tillage (at least 30% residue cover)
  - 2 – no tillage
  - 2 – combination (conventional/reduced) and (reduced and no till)
- Type of fall tillage for land going into corn
  - 4 – no tillage
  - 1 – conventional tillage
  - 1 – strip tillage
  - 3 – combination of mainly conventional and reduced tillage

Spring Tillage Practices

- Type of spring tillage for land going into soybeans
  - 4 – conventional (less than 30% residue cover)
  - 2 – no tillage
  - 1 – strip tillage
  - 2 – combination (conventional/reduced) and (reduced and no till)
- Type of spring tillage for land going into corn
  - 6 – conventional tillage
  - 1 – strip tillage
  - 1 – no tillage
  - 1 – combination of no tillage and reduced tillage

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Planting Practices

- All farms were in a soybeans following corn in a corn/soybean rotation
- Main reasons given for this were for disease and pest control, risk reduction and most profitable option
- Goal for wanting to start soybean planting – 4 before corn planting is finished and 5 after corn planting
- Most would want to start planting soybeans by mid to late April
- Row spacing: 3 in 30", 1 in 20", 5 in 15" to 18"
- 3 have separate planter for soybeans

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Planting Practices - continued

- Only one utilized variable rate seeding technology
- Typical seeding rate from 120K to 150K per acre, most were 130K to 140K per acre
- 8 have decreased rate in last 5 years
- 8 used seed treatments on all acres, one on a majority of acres. All have been doing so for at least 5 years
- Main reasons for use of seed treatments include better emergence and planting earlier

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Planting Practices - continued

- Ranking of reasons for selection of soybean varieties, 1 to 7 with one being most important
  - 1.6 – yield potential
  - 2.8 – herbicide resistant traits
  - 3.1 – disease resistance
  - 3.6 – seed dealer's recommendation
  - 4.0 – nematode resistance
  - 5.5 – price of seed
  - One producer ranked company with elite genetics as his most important reason

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Planting Practices - continued

- All planted at least a majority of Group 3 maturity, 4 planted some Group 2 and 4 planted some Group 4
- 4 producers planted some or all seed beans, 2 planted some or all Non-GMO beans
- For 2017, 8 planted some or all Roundup Ready 2 Xtend
- All did a pre-emergence and post-emergence weed control with 4 doing burn down in spring before soybean planting and 2 doing fall residual before soybeans on some acres
- 4 applied a separate fertilizer application prior to soybean planting

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Growing Season Practices

- 6 producers routinely scouted fields themselves
- 6 completely or partially applied fungicide and 5 included an insecticide with the application
- Reasons given for fungicide application include yield gain, disease and insect control, normal practice and improve quality of seed beans to increase premiums
- All did grid soil sampling, 8 did used VRT for fertilizer or lime application

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Harvesting Practices

- Harvesting soybeans was dependent on weather and crop conditions, 2 harvested all soybeans after corn was finished
- 3 stopped harvesting when moisture level was too low – 9% to 10%
- 8 used a draper head
- 61% of soybeans commercially stored and 81% of corn commercially stored

Managerial Practices

- 2 producers had planted soybeans after soybeans
- For those that didn't, the reasons they might include changing rotations, reconfiguring a field, late spring or economics
- Forward pricing and the cash market were the most common forms of marketing, about 1/3 utilized hedging and options at some time
- Those with seed bean contracts were able to sell percentages of their crop

Managerial Practices - continued

- Number of producers that listed the following as their primary source of agronomic information.
  - 9 – Seed and chemical representatives
  - 8 – University specialists and Extension
  - 5 – Other farmers, neighbors and friends
  - 4 – Local businesses and retailers
  - 4 – Industry information
  - 2 – Independent crop consultants
  - 1 – Farm organizations

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Managerial Practices - continued

- Comparison shopping for fertilizer and pesticides
  - 4 yes, 2 no and 3 sometimes
- In last 5 years, how many different sources have you purchased fertilizer and pesticides from
  - 3 used 1 supplier, 5 used 2 and 1 used 3
- Comparison shopping for seed
  - 4 yes, 3 no and 2 sometimes
- In last 5 years, how many different sources have you purchased seed from
  - 3 used 2 suppliers, 2 used 3, 1 used 4 and 3 used 5

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Attitudinal

- 8 strove for the most profitable yields levels as compared to the highest yield levels
- In terms of risk management strategies, all took out crop insurance coverage at 75% or greater, 5 took out hail insurance, 4 subscribed to a marketing service.
- 8 of the 9 felt their machinery compliment was sized correctly
- 6 of the 9 divided their management functions among various family members, 2 were the only operator and handled all the management functions

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Attitudinal - continued

- Rank the following factors as how you feel they are important to the profitability of your business, 1 being the most important:
  - 3.2 – Attention to detail
  - 3.6 – Operating cost management
  - 3.9 – Maximize yields
  - 4.3 – Disciplined spending
  - 4.4 – Marketing
  - 4.6 – Machinery cost management
  - 4.6 – Land control and rent strategies
  - 5.2 – Financial planning
  - 5.9 – Overhead cost management
  - 6.8 – Implementing new technologies

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Take Aways

- Generally typical production practices regarding tillage and rotation but 6 of the 9 were less than 30 inch row spacing, 6 had a split row planter
- Create additional value, 6 of the 9 raised seed beans or Non-GMO beans which created additional revenue
- Movement toward earlier planting of soybeans, 4 started planting soybeans before corn planting was finished
- Seeding rates reduced, all using some type of seed treatments

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Take Aways - continued

- Seed selection mainly based on yield potential, herbicide use and disease resistance as compared to cost of seed
- Used typical marketing and risk management strategies
- Used newer technologies and production practices (seed treatments, draper heads, narrower rows, fungicides) but not on bleeding edge
- Attention to detail and cost control very important to financial success

fdd

Thanks

Crop Economics: Continuing Need to Cut Costs

Gary Schnitkey, Professor
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Corn and soybean prices continue to be near the mid-$3.00 per bushel range for corn and the mid-$9.00 per bushel range for soybeans. At those price levels, net income will be modest on most Illinois grain farms. In both 2016 and 2017, yields above trend resulted in positive incomes. Despite the positive incomes, many Illinois farmers experienced stable to moderate declines in working capital. Another year with mid-$3 corn and mid-$9 soybean prices will result in very low incomes if yields are at or below trend levels.

Since 2013, soybeans have been more profitable than corn and Illinois farmers have been shifting acres away from corn to soybeans, particularly in southern Illinois. However, corn acres still exceed soybean acres in most northern and central Illinois counties. Budgets indicate that corn-after-corn is less profitable than soybeans. Moreover, budgets indicate that soybeans-after-soybeans are more profitable than corn, assuming a 3-bushels lower compared to soybeans-after-soybeans and specific problems such as cyst nematodes do not exist in the field.

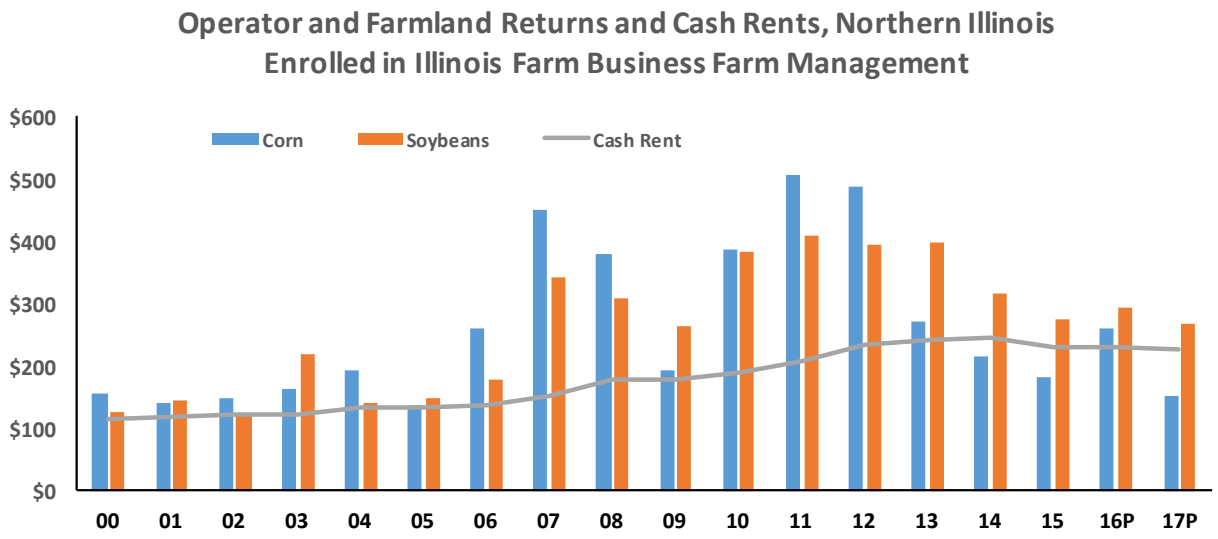
Since 2014, farmer returns to cash rent farmland have been low and sometimes negative. Low returns for cash rent likely will continue into 2018. In my opinion, these negative return represents the most significant profitability issue facing Illinois grain farms. Cost reductions must occur given that prices remain below $4 for corn and $10 per bushel for soybeans.

Non-land costs that represent a large share of costs should be examined for reductions:

- Fertilizer costs have come down each year since 2013 and further declines are projected for 2018. Most of these cost reductions are due to declines in fertilizer prices. Rate reductions may result in additional cutbacks in cost, particularly for farmers who apply at rates that exceed University recommendations.
- Capital purchases have declined from highs in 2013, reaching the mid $60 per acre range in 2016. Further cuts in capital costs may be possible.
- Seed costs have not declined in recent years. Evaluations of the value of hybrids and varieties need to continue. Innovations in buying arrangements could result in seed and other input cost declines.

On top of declines in non-land costs, cash rents will need to decrease. For some farms, the value of farming “high” cash rent farmland should be evaluated. Farms with a high proportion of farmland that is high cash rent will face difficult decisions. Other farmers with only a few high cash rent farms face less challenging decisions.

All farmers should evaluate how long the farming operation can be maintained at current price levels (low to mid $3 for corn, mid $9 for soybeans). Higher prices will occur in the future, but how soon is unknown and could be several years in the future.



Notes

Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2017

For current farm management information
http://www.farmdoc.illinois.edu/manage/index.asp

Schnitkey, G. "Forecast of 2017 Net Income on Grain Farms in Illinois: Lower than in 2016 but Better Than Expected." *farmdoc daily*(7):215, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 21, 2017.

Schnitkey, G. "A Narrowing of the Gap on Corn and Soybean Crop Revenue." *farmdoc daily* (7):200, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, October 31, 2017.

Schnitkey, G. "Negative Cash Rent Farmland Returns Since 2014 Reduced Farmer Net Incomes." *farmdoc daily* (7):153, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 22, 2017.

Schnitkey, G. "2018 Crop Budgets: More of the Same." *farmdoc daily* (7):134, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, July 25, 2017.

Crop Economics: Continuing Need to Cut Costs

Gary Schnitkey
University of Illinois

farmdoc UNIVERSITY OF ILLINOIS

www.farmdocdaily.illinois.edu
www.farmdoc.illinois.edu

Topics

- **Budgets for 2018**
  - **Repeat of last year, with lower fertilizer costs**
- **Soybeans more profitable than corn again?**
- **Cash rent farmland not profitable**
  - **Cut non-land costs, and**
  - **Cut cash rents**

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Results and Budgets for Northern Illinois
(see Revenue and Costs, Management Section of farmdoc)

	Corn				Soybeans		
	2013	2016	2017P	2018P	2016	2017P	2018P
Yield per acre	204	223	215	202	66	65	64
Price per bu	$4.61	$3.52	$3.25	$3.20	$9.66	$9.30	$8.80
	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre
Crop revenue	$940	$785	$699	$646	$638	$605	$563
ARC/PLC or ACRE	38	25	5	0	25	5	0
Other gov't payments	0	0	0	0	0	0	0
Crop insurance proceeds	46	5	20	0	4	7	0
Gross revenue	$1,024	$815	$724	$646	$667	$617	$563
Fertilizers	$199	$144	$124	$115	$30	$25	$22
Pesticides	60	56	60	60	30	29	29
Seed	118	118	116	115	76	74	73
Drying	29	15	15	15	0	0	0
Storage	5	9	7	7	3	3	3
Crop insurance	28	24	24	24	16	16	16
Total direct costs	$439	$366	$346	$336	$155	$147	$143
Total power costs	$150	$137	$133	$131	$119	$110	$108
Total overhead costs	$81	$83	$83	$82	$65	$63	$64
Total non-land costs	$670	$586	$562	$549	$339	$320	$315
Operator and land return	$354	$229	$162	$97	$328	$297	$248

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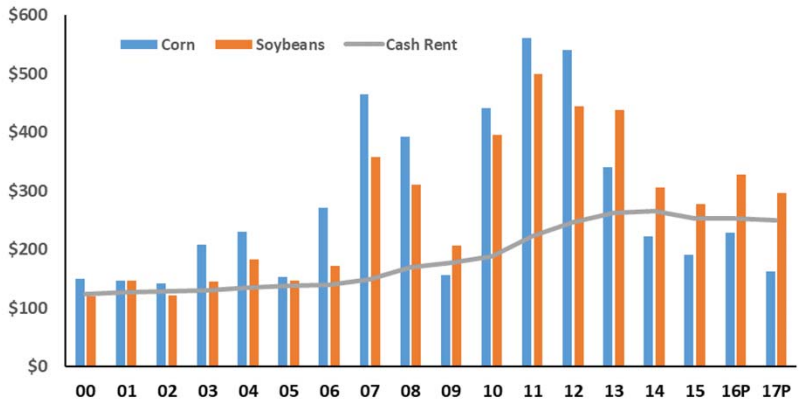
Operator and Farmland Returns and Cash Rents, Northern Illinois



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Results and Budgets for Central Illinois (High)
(see Revenue and Costs, Management Section of farmdoc)

	Corn				Soybeans		
	2013	2016	2017P	2018P	2016	2017P	2018P
Yield per acre	197	228	215	210	69	67	63
Price per bu	$4.52	$3.47	$3.30	$3.20	$9.65	$9.35	$8.80
	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre
Crop revenue	$890	$791	$710	$672	$666	$626	$554
ARC/PLC or ACRE	4	20	5	0	20	5	0
Other gov't payments	0	0	0	0	0	0	0
Crop insurance proceeds	10	5	20	0	4	7	0
Gross revenue	$904	$816	$735	$672	$690	$638	$554
Fertilizers	$193	$154	$134	$129	$49	$39	$36
Pesticides	66	64	65	65	40	39	39
Seed	114	118	118	117	74	74	73
Drying	24	13	11	11	1	1	1
Storage	8	11	10	10	8	8	8
Crop insurance	27	21	21	21	14	14	14
Total direct costs	$432	$381	$359	$353	$186	$175	$171
Total power costs	$127	$119	$116	$114	$106	$105	$102
Total overhead costs	$56	$65	$66	$66	$61	$61	$62
Total non-land costs	$615	$565	$541	$533	$353	$341	$335
Operator and land return	$289	$251	$194	$139	$337	$297	$219

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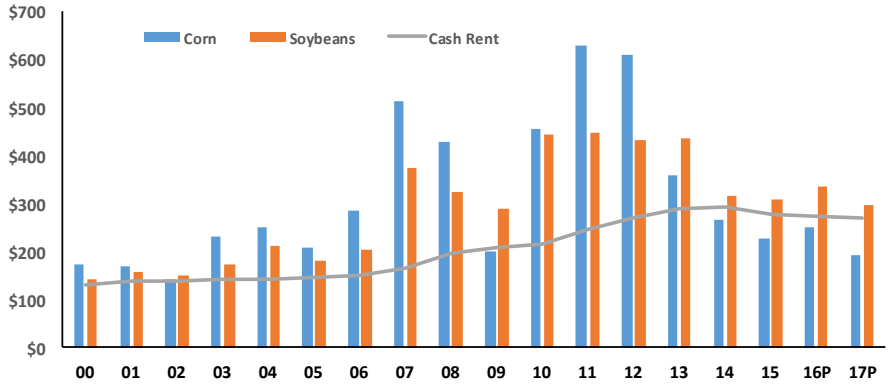
Operator and Farmland Returns and Cash Rents, Central Illinois (High Productivity)



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Results and Budgets for Central Illinois (Low)
(see Revenue and Costs, Management Section of farmdoc)

	Corn				Soybeans		
	2013	2016	2017P	2018P	2016	2017P	2018P
Yield per acre	183	218	205	195	63	62	59
Price per bu	$4.51	$3.69	$3.30	$3.20	$9.61	$9.35	$8.80
	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre
Crop revenue	$825	$804	$677	$624	$605	$580	$519
ARC/PLC or ACRE	4	25	5	0	25	5	0
Other gov't payments	0	0	0	0	0	0	0
Crop insurance proceeds	10	5	20	0	4	7	0
Gross revenue	$839	$834	$702	$624	$634	$592	$519
Fertilizers	$202	$154	$134	$129	$44	$34	$31
Pesticides	66	64	68	68	41	42	42
Seed	120	118	118	117	62	63	62
Drying	19	13	11	11	1	1	1
Storage	7	11	10	10	4	4	4
Crop insurance	26	22	22	22	15	16	16
Total direct costs	$440	$382	$363	$357	$167	$160	$156
Total power costs	$131	$127	$123	$121	$112	$103	$101
Total overhead costs	$67	$66	$67	$66	$62	$61	$62
Total non-land costs	$638	$575	$553	$544	$341	$324	$319
Operator and land return	$201	$259	$149	$80	$293	$268	$200

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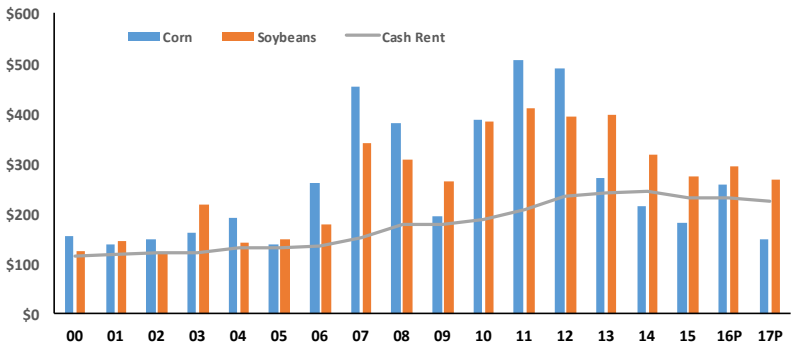
Operator and Farmland Returns and Cash Rents, Central Illinois (Low Productivity)



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Results and Budgets for Southern Illinois
(see Revenue and Costs, Management Section of farmdoc)

	Corn				Soybeans		
	2013	2016	2017P	2018P	2016	2017P	2018P
Yield per acre	183	163	160	165	56	54	50
Price per bu	$4.69	$3.54	$3.35	$3.20	$9.65	$9.40	$8.80
	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre
Crop revenue	$858	$577	$536	$528	$540	$508	$440
ARC/PLC or ACRE	2	25	5	0	25	5	0
Other gov't payments	0	0	0	0	0	0	0
Crop insurance proceeds	7	5	20	0	4	16	0
Gross revenue	$867	$607	$561	$528	$569	$529	$440
Fertilizers	$198	$138	$118	$113	$44	$34	$31
Pesticides	66	68	66	66	48	46	46
Seed	111	112	114	113	64	65	64
Drying	17	6	6	6	0	0	0
Storage	3	9	7	7	7	6	6
Crop insurance	24	20	18	18	13	13	13
Total direct costs	$419	$353	$329	$323	$176	$164	$160
Total power costs	$144	$130	$131	$129	$123	$124	$122
Total overhead costs	$83	$93	$93	$98	$75	$76	$77
Total non-land Costs	$646	$576	$553	$550	$374	$364	$359
Operator and land return	$221	$31	$8	-$22	$195	$165	$81

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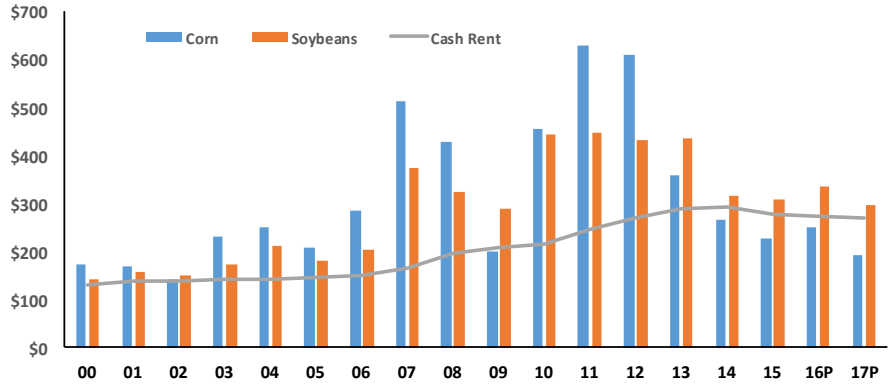
Operator and Farmland Returns and Cash Rents, Southern Illinois



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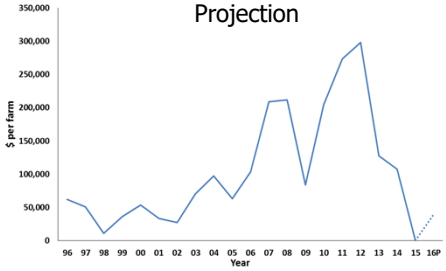
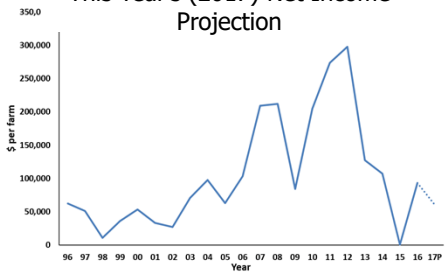
Net Income on Illinois Grain Farms

Last Year's (2016) Net Income Projection



This Year's (2017) Net Income Projection



Budgets would suggest incomes will be down in 2017, compared to 2016

Above trend yields in 2016 and 2017 have resulted in incomes above 2015

Can we have below trend yields? Yes

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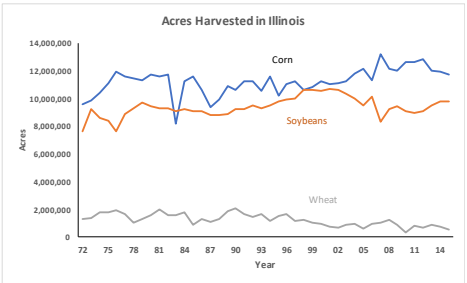
Corn Versus Soybeans

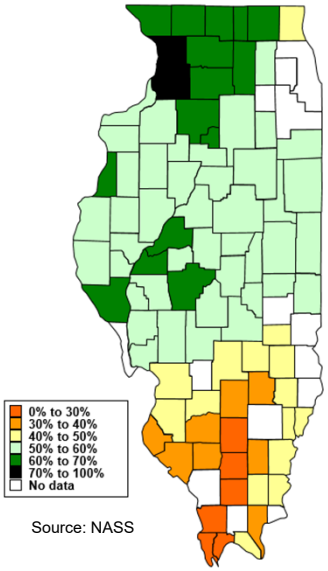
Budgets show:

Soybean-after-corn more profitable than corn

Soybeans-after-soybean more profitable than corn (3 bushel yield drag on soybeans-after-soybeans, no cyst problem)



Corn Acres as a Percent of Corn and Soybean Acres, 2016



Source: NASS

Largest Cost Items

Fertilizer 14% of total non-land costs and cash rent	Capital Purchases 8% of total non-land costs and cash rent
Seed 8% of total non-land costs and cash rent	Cash Rent 31% of total non-land costs and cash rent

These items total 61% of non-land costs and cash rent

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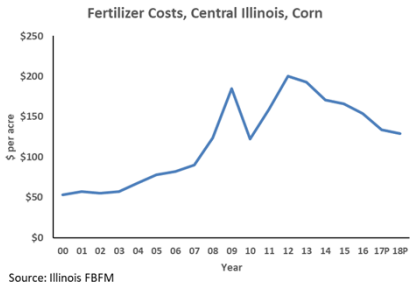
Fertilizer

Fertilizer costs have declined

Can we lower rates?

P and K replacement levels have been lowered



Source: Illinois FBFM

Recommended N applications (at $3.50 corn price, $400 ammonia price)

Northern – 169 pounds
Central – 186 pounds
Southern – 200 pounds

FarmdocDaily, Nov 14, 2017

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Capital Purchases

Can we go lower?

Source: Illinois Farm Business Farm Mangement

Caveat: Without purchases, low tax depreciation

FBFM grain farms who did not make capital purchases in 2016 had:

$25/acre tax depreciation
$67/acre economic depreciation

At most, save $.40 in taxes per $1 of capital purchases

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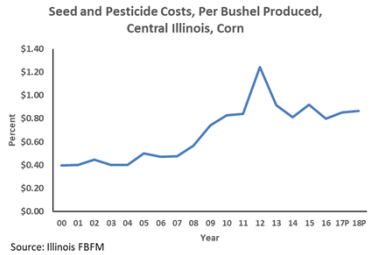
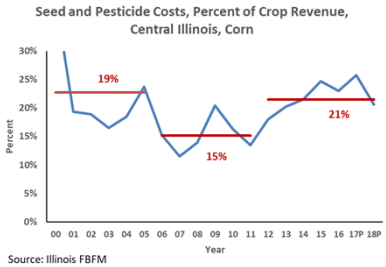
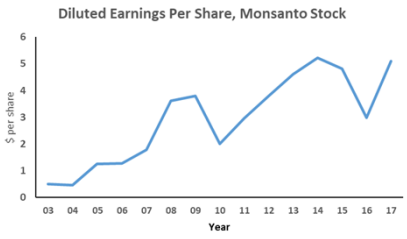
Seed



Source: Illinois FBFM



Source: Illinois FBFM



Source: Monsanto Financial Statements

Considerations:

1. **Can we lower seed costs?**
2. **Look at innovations in the input supply industry**

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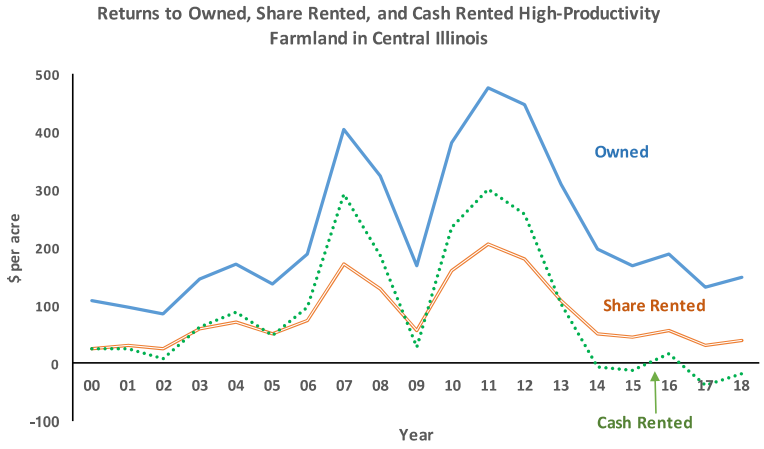
Cash Rent Decisions



Source: Illinois Farm Business Farm Management

See farmdocDaily, August 22, 2017

Why are Farmers Willing to Lose Money on Cash Rented Farmland?

- **Reasonably optimistic** (**except about yields in July through August**)
- **Farmland given up likely will not be farmed in the future**
- **Have the ability to continue farming high cash rent farmland** (**most farmers are here**)
  - **Other farmland at reasonable cost**
  - **Working capital**
- **Hope for better returns in the future** (**over $4 corn price**)
- **Need for growth sometime in the future**

Cash Rent Decisions, Northern Illinois

Operator and Land Return = $173/acre
Cash Rent in 2017p = $250/acre
$3.20 corn price, $8.80 soybean price
202 corn yield, 64 soybean yield
$549 corn non-land, $315 soybean non-land
(budgets in presentation)

What prices result in break-even at

$250 cash rent
$3.58 corn, $10.01 soybeans

$250 rent + $50 return
$3.83 corn, $10.79 soybeans

$300 cash rent + $50 return
$4.08 corn, $11.57 soybeans

What yields result in break-even at

$250 cash rent
226 bu corn, 72 bu soybeans

$250 cash rent + $50 return
241 bu corn, 78 bu soybeans

$300 cash rent + $50 return
257 bu corn, 84 bu soybeans

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Cash Rent Decisions, Central Illinois (High Productivity)

Operator and Land Return = $179/acre
Cash Rent in 2017p = $270/acre
$3.20 corn price, $8.80 soybean price
210 corn yield, 63 soybean yield
$533 corn non-land, $335 soybean non-land
(budgets in presentation)

What prices result in break-even at

$270 cash rent
$3.63 corn, $10.24 soybeans

$270 rent + $50 return
$3.87 corn, $11.04 soybeans

$300 cash rent + $50 return
$4.01 corn, $11.51 soybeans

What yields result in break-even at

$270 cash rent
238 bu corn, 73 bu soybeans

$270 cash rent + $50 return
254 bu corn, 79 bu soybeans

$300 cash rent + $50 return
263 bu corn, 82 bu soybeans

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Cash Rent Decisions, Central Illinois (Low Productivity)

Operator and Land Return = $140/acre
Cash Rent in 2017p = $225/acre
$3.20 corn price, $8.80 soybean price
210 corn yield, 63 soybean yield
$544 corn non-land, $319 soybean non-land
(budgets in presentation)

What prices result in break-even at

$225 cash rent
$3.64 corn, $10.24 soybeans

$225 rent + $50 return
$3.89 corn, $11.09 soybeans

$250 cash rent + $50 return
$4.02 corn, $11.51 soybeans

What yields result in break-even at

$225 cash rent
221 bu corn, 69 bu soybeans

$225 cash rent + $50 return
237 bu corn, 74 bu soybeans

$250 cash rent + $50 return
245 bu corn, 77 bu soybeans

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Cash Rent Decisions, Southern Illinois

Operator and Land Return = $30/acre
Cash Rent in 2017p = $160/acre
$3.20 corn price, $8.80 soybean price
165 corn yield, 50 soybean yield
$550 corn non-land, $339 soybean non-land
(budgets in presentation)

What prices result in break-even at

$160 cash rent
$3.99 corn, $11.41 soybeans

$160 rent + $50 return
$4.29 corn, $12.41 soybeans

$200 cash rent + $50 return
$4.54 corn, $13.21 soybeans

What yields result in break-even at

$160 cash rent
205 bu corn, 64 bu soybeans

$160 cash rent + $50 return
221 bu corn, 70 bu soybeans

$200 cash rent + $50 return
233 bu corn, 75 bu soybeans

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High Cash Rent Decisions

For profitability at high cash rents need:

1) Above $4 corn / $11 soybean prices

or

2) High yields

Recommended steps:

1. Calculate returns from different land ownership
2. Realize that the lender will limit credit availability at some point (might be a conversation worth having with the lender).
3. Determine how long it will be before credit is limited if prices continue in mid-$3.00's for corn and low $9.00s for soybeans

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Decisions for Two Farm Types with High Cash Rent Farmland

High levels of cash rent (90% of acres) at high cash rents ($50 above average), landowner will not lower cash rents

- Drop some of the high cash rent farmland
- Evaluate how long there is a desire to farm
- Evaluate exit strategies
- Ask: What happens if exit farming now?
- Ask: What happens afterwards if reach the credit limit?

Most of the land base is not high cash rent, maybe other sources of income, but have one or two farms that are high cash rent

- Financially strong, no one is going to prevent the continuing renting of high cash rent farmland
- Likely better off from a financial standpoint without the high cash rent farmland
- Ask: Will the cash rent stay the same when we get to "good" times?
- Ask: Why is the farm being rented?

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Summary

- **Merry Christmas and a Happy New Year**
- **Still in time of low returns and reductions in working capital**
- **Still facing tough decisions**