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Shifting Corn and Soybean Acres Vary by Farm Size and Region of Illinois

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Illinois farmers have been planting more soybeans since 2013. This increase in soybeans comes after an increase in corn acres beginning in 2006 and ending in 2012 (*farmdoc daily*, March 21, 2017). Corn and soybean acre shifts have not been the same across all Illinois farms. In general, farms with more than 5000 acres in northern and central Illinois have shifted acres more than farms with fewer acres. Compared to northern and central Illinois, acre shifts have been smaller in southern Illinois.

Data Description

Acres devoted to corn, soybeans, wheat, double-crop soybeans, and other crops were obtained from Illinois Farm Business Farm Management (FBFM) for the years from 2006 to 2015. Farms were divided into regions: northern, central, and southern Illinois. Farms also were divided into four tillable acre sizes: 500 to 1,000 tillable acres, 1,001 to 3,000 tillable acres, 3,001 to 5,000 tillable acres, and over 5,000 tillable acres.

Northern Illinois

Table 1 shows percent acres in corn and soybeans for the four tillable acre sizes for northern Illinois farms. Percent acres in corn are given on the left side of the table while percent acres in soybeans are on the right hand side. To illustrate interpretation, take farms with between 1,001 and 3,000 tillable acres. In 2015, these farms planted 61% of their acres to corn and 36% of their acres to soybeans. Adding up the 61% corn and 36% soybean percentages results in 97% of acres in corn and soybeans. In most years, percentages in corn and soybeans add up to over 95% of acres. The remaining acres on the farm could be in wheat, hay, or some sort of specialty grain or crop.

Four points can be gleaned from Table 1. First, farms in northern Illinois typically grew more corn than soybeans. All percentages in the "Percent Acres in Corn" columns exceeded 55% (see Table 1). Conversely, all percentages in the "Percent Acres in Soybeans" are below 40%.

Table 1. Percent Corn and Soybeans Grown on Northern Illinois Grain Farms

	Acres Tillable				Acres Tillable			
	500 to 1000	1001 to 3000	3001 to 5000	Over 5000	500 to 1000	1001 to 3000	3001 to 5000	Over 5000
	Percent Acres in Corn				Percent Acres in Soybeans			
2006	56%	58%	61%	75%	39%	38%	34%	21%
2007	65%	68%	70%	79%	30%	29%	26%	16%
2008	60%	66%	68%	86%	32%	29%	27%	11%
2009	62%	64%	65%	88%	32%	30%	31%	10%
2010	63%	64%	67%	85%	29%	30%	29%	11%
2011	64%	66%	66%	81%	25%	27%	28%	13%
2012	63%	64%	68%	77%	27%	29%	30%	20%
2013	61%	63%	67%	81%	29%	30%	31%	16%
2014	60%	61%	65%	76%	34%	34%	32%	23%
2015	59%	61%	64%	59%	35%	36%	33%	39%

Secondly, percentages devoted to corn and soybeans have changed over time. More acres were in corn in the years from 2007 to 2013. In these years, 60% of tillable acres were planted to corn for all farm sizes while percent of acres in soybeans were always less than 32% of tillable acres. Take farms with between 3,001 and 5000 tillable acres. In 2013, 67% of acres were devoted to corn and 31% were in soybeans. By 2015, 64% of acres were devoted to corn and 33% were devoted to soybeans.

Third, farms with over 5,000 acres planted more corn the other tillable acre sizes in all years before 2015. Corn planting percentages were particularly high in 2008 through 2011, exceeding 80% of acres in all years: 86% in 2008, 88% in 2009, 85% in 2010, and 81% in 2011. In years from 2008 to 2011, acres planted to corn never exceeded 68% for the other farm sizes.

Fourth, farms with over 5,000 acres have adjusted acres more than farms in the other farm sizes, particularly in recent year. While always having the highest percent planted to corn from 2006 to 2014, farms with over 5,000 acres were tied for the lowest percentage in 2015.

Some feel for size for the adjustments across farm size is obtained by calculating the range form the maximum percent in soybeans to the minimum percent in soybeans. For farms with over 5000 acres, the maximum percent in soybeans was 39% in 2015 and the minimum percent was 10% in 2009, given a ranges of 29%. The 29% range for 5,000 acres is much larger than for the other farm sizes. The soybean range is 14% for 500 to 1,000 tillable acre farms, 11% for 1,001 to 3,000 acre farms, and 9% for or 3,001 to 5,000 acre farms.

Central Illinois

Table 2 shows results for central Illinois and has the same layout as Table 1. The same four points are evident for central Illinois as were for northern Illinois farms:

- Farms in central Illinois typically planted more of their acres in corn than in soybeans. Percent acre in corn for all farm sizes in all years exceeded 50% for corn and were less than 50% for soybeans.
- Acres devoted to corn typically peaked in 2009 to 2012. More acres have been planted to soybeans since 2013.
- Farms with over 5,000 acres have devoted more acres to corn than the other farm sizes.
- Farms with over 5,000 acres have switched acres devoted to corn and soybeans than the other farm sizes. The range from the maximum to minimum soybean percent planted was 27% for farms with over 5,000 acres. The 27% range is much higher than the ranges for the other acre categories: 8% for 500 to 1,000 tillable acer, 9% for 1,001 to 3,000 tillable acre, and 13% for 3,001 to 5,000 tillable acres.

Table 2. Percent Corn and Soybeans Grown on Central Illinois Grain Farms

	Acres Tillable				Acres Tillable			
	500 to 1000	1001 to 3000	3001 to 5000	Over 5000	500 to 1000	1001 to 3000	3001 to 5000	Over 5000
	Percent Acres in Corn				Percent Acres in Soybeans			
2006	51%	52%	57%	59%	45%	44%	40%	35%
2007	58%	60%	66%	79%	39%	36%	31%	18%
2008	53%	57%	59%	84%	42%	39%	36%	13%
2009	55%	57%	61%	81%	41%	39%	35%	17%
2010	53%	55%	59%	72%	43%	42%	38%	26%
2011	54%	56%	59%	76%	42%	40%	37%	21%
2012	53%	54%	59%	72%	43%	42%	36%	25%
2013	51%	53%	53%	70%	45%	43%	43%	27%
2014	52%	53%	53%	58%	46%	44%	43%	40%
2015	51%	52%	53%	63%	46%	45%	43%	35%

The single, largest difference between northern and central Illinois farms is that central Illinois farms have typically planted less corn and more soybeans than have northern Illinois farms. As can be seen by comparing Tables 1 and 2. Averaged over all the years, soybeans averaged 12% more of the acres for 500 to 1,000 acre farms, 10% for 1,001 to 3000 tillable acre farms, 8% for 3,001 to 5000 tillable acre farmers, and 8% for over 5,000 tillable acre farms.

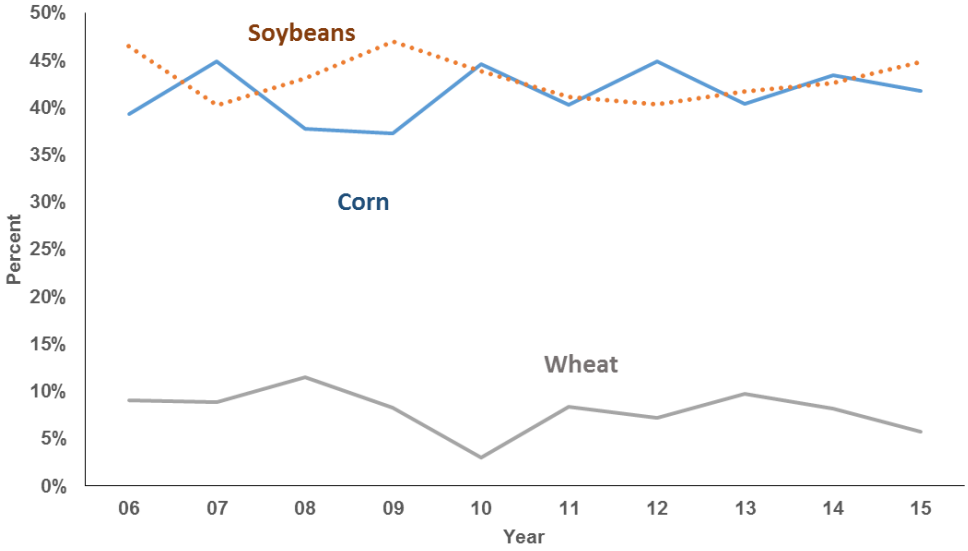
Why this might be is open to speculation. Northern Illinois farms have raised more corn than soybeans for many years. Historically, more livestock has existed in northern Illinois, potentially leading to more intense corn rotations.

Southern Illinois

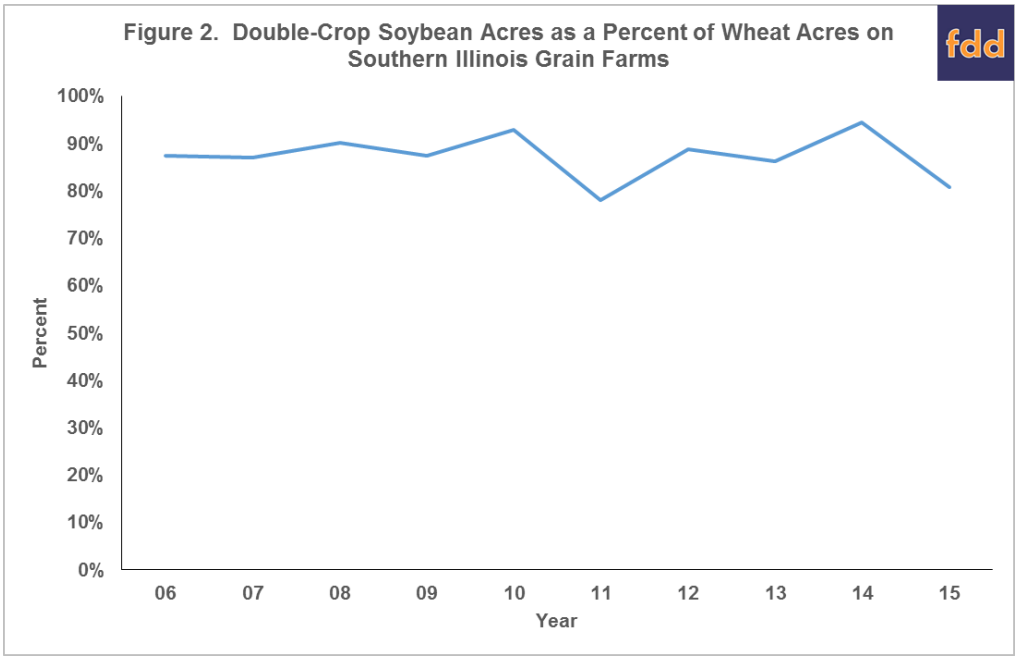
Differences in acres across farm sizes do not exist in southern Illinois like they do in northern Illinois. As a result, percentages are not shown for farm sizes for southern Illinois.

Figure 1 shows percent of acres in corn, soybeans, and wheat. From 2006 to 2015, there has not been large trends in acres devoted to the three crops. In 2015, 42% of the acres were planted to corn, 35% to soybeans, and 6% to wheat.

Figure 1. Percent Acres in Corn, Soybeans, and Wheat on Southern Illinois Grain Farms



Most wheat acres in southern Illinois are double-cropped. Double-crop soybean acres as a percent of wheat acres typically are near 90% in most year (see Figure 2). Variations in this percentage over time likely are the result of growing conditions during a particular year.



Commentary

In Illinois, more of the acre adjustments between corn and soybean have occurred on farms with over 5,000 acres in northern and central Illinois. As one examines acreage response, understanding the motive of farms with more acres appear key in understanding acreage responses.

References

Schnitkey, G. "Historical Planted Acre Changes for Corn and Soybeans." *farmdoc daily* (7):52, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, March 21, 2017.