



# December 2016 – Crop Market Update

## Public Policy Department

### Budget & Economic Analysis Team

### The Acres They Are A-Changin’

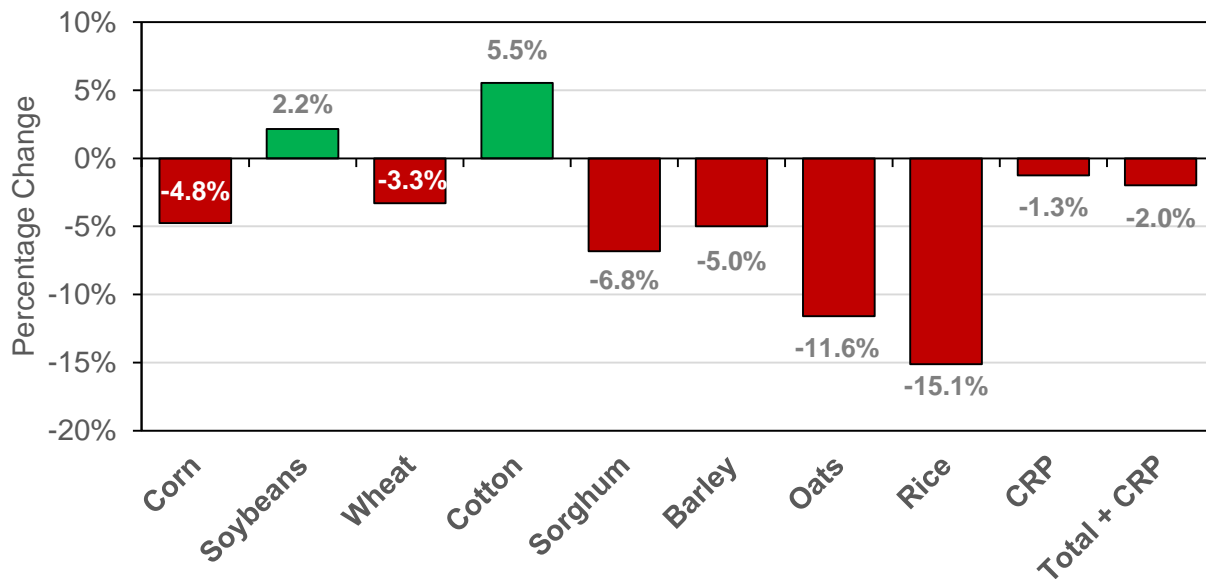
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On November 30, 2016 USDA released several tables previewing the annual long-term [Agricultural Projections to 2026](#) (the complete projections will be released in February 2017). These early-release tables provide USDA estimates on the supply and demand for agricultural commodities through 2026 and take into consideration macroeconomic conditions, GDP growth, population growth, and farm policy among other factors. USDA assumes in the projections normal weather and no significant supply or demand disruptions, i.e. a business-as-usual environment.

One of the most anticipated items from the early-release are USDA’s projections for planted area in 2017. During 2016, the total planted area for the eight principal crops and conservation reserve program (CRP) was 277.9 million acres. For 2017, USDA projects planted area to decline for all crops except cotton and soybeans, with a total acreage loss of 5.5 million acres to 272.4 million acres, Figure 1. Then, from 2018 to 2026 USDA projects planted area and CRP land to steadily decline to 268 million acres by 2026 – well below the planted area seen in recent years.

**Figure 1. USDA projected year-over-year percentage change in planted area for eight principal crops and CRP for 2017/18 marketing year**

Source: USDA and AFBF calculations

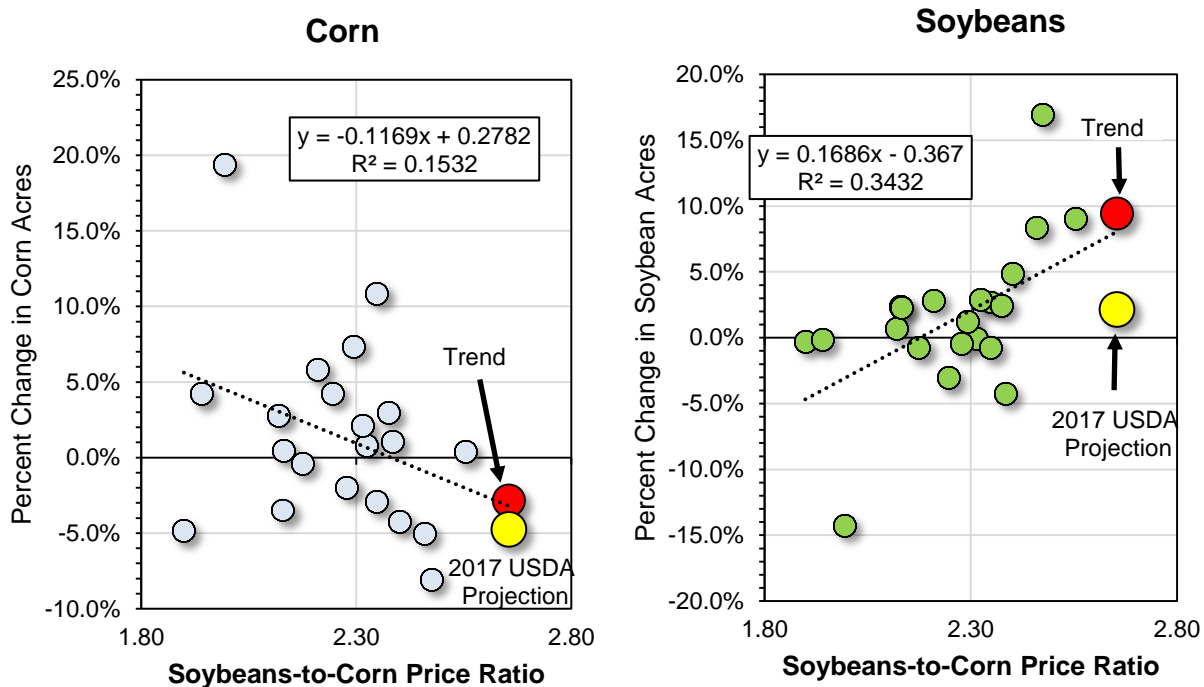


While in aggregate USDA projects acreage to decline, for soybeans and cotton USDA projects acreage to remain at or above current levels through 2026. USDA’s projection for additional acres in the soybean complex confirms trade expectations and current market price signals for next year.

In 2016, U.S. planted area of corn and soybeans totaled 94.5 and 83.7 million acres respectively. However, recent strength in soybean prices are sending market signals that more soybean acres and fewer corn acres are desired in 2017. Current Chicago Board of Trade futures prices project the spring planting soybeans-corn price ratio to be near 2.7, well above the five-year average of 2.3. Historically, when the spring price ratio for new crop corn and soybean contracts favors soybeans there has been a positive year-over-year change in soybean acres and a negative change in corn acreage, Figure 2.

**Figure 2. Year-over-year percent change in corn and soybean acres relative to the spring crop insurance soybean-corn price ratio, 1996 to 2016 with 2017 projection.**

Source: USDA and AFBF calculations



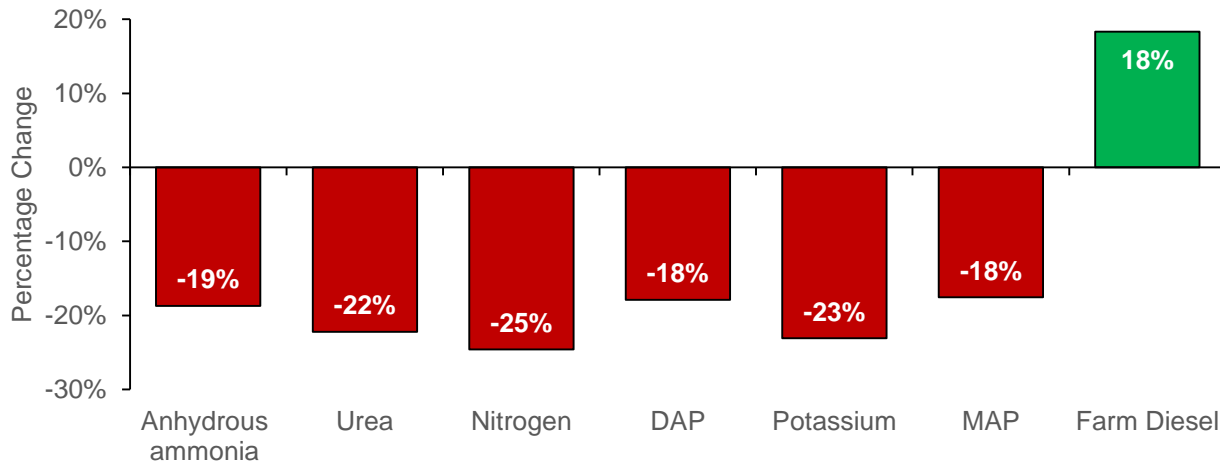
USDA was in alignment with the historical trend in their projections for corn acres. For 2017, USDA estimated corn planted area to drop 4.5 million acres to 90 million acres. If realized this acreage change would represent a 4.8 percent decrease in corn acres. As evidenced in Figure 2, regression results suggest an acreage change of negative 3 percent would be expected given the current price ratio. However, for soybeans, USDA projected plantings to increase a modest 1.8 million acres to 85.5 million acres. This acreage change represents a 2.2 percent increase in soybean acres and is an outlier relative to historical trends. Regression results presented in Figure 2 suggest that if the current price ratio holds or gets stronger acreage moving into soybeans could be higher than current USDA projections.

With corn in line with trend estimates, why then is USDA so low on changes in soybean acreage? On average, based on USDA's projections net returns on soybeans are expected to outperform corn by \$41 per acre. One clue from USDA's long-run projections is in the variable costs of production for corn and soybeans. Corn variable costs of production are anticipated to decline by 1.5 percent to \$329 per acre. Expectations for lower costs of production are confirmed in [USDA's](#)

[Illinois Production Costs Report](#). As evidenced in Figure 3, production costs for fertilizers are down substantially from prior year levels. Lower anhydrous, DAP, and potash prices result in a 19 percent decline in implied corn fertilizer costs (using either 215-190-60 or 180-70-70 applications rates respectively).

**Figure 3. Year-Over-Year Percent Change in December Illinois Production Costs, 2016 Compared to 2015**

Source: USDA



Alternatively, for soybeans, variable costs are unchanged in USDA's projection for 2017. [USDA's Commodity Cost and Returns](#) indicate that on average corn fertilizer prices represent more than 40 percent of the total variable costs of production. Meanwhile, for soybeans, on average fertilizer costs represent less than 20 percent of total variable costs. As a result, lower input costs are likely to make corn more competitive with soybeans, especially on highly productive lands, despite the 2017 new-crop price ratio favoring soybeans. This improved rate of return for corn in 2017 could keep soybeans from seeing the type of acreage gain implied by the regression model in Figure 2 and supports USDA's conservative estimate of the soybean acreage change.

**Implications**

USDA's early projections confirm that lower commodity prices and lower revenues per acre are likely to result in fewer acres planted in 2017. However, for soybeans the market signal is clearly signaling a demand for additional acres planted in 2017. The challenge is that while the anticipated spring price ratio is sending a strong signal, lower input costs for corn may mute the market signal and keep soybeans acres from growing aggressively. A lot of uncertainty remains before planting decisions are ultimately made. The ongoing pace of consumption, strength in the export market, the value of the U.S. dollar, and global inventory levels are important metrics to monitor in order to form production and marketing plans for 2017. The next opportunity to review potential acreage decisions will come in the [March 31, 2017 Prospective Plantings](#) report.

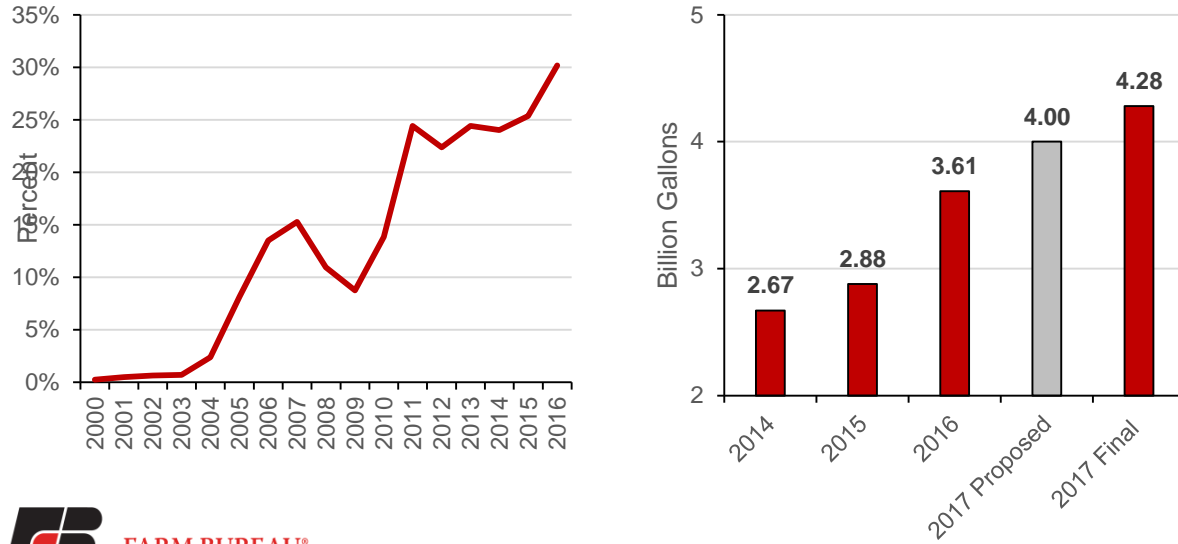
**Update on Advanced Biofuel Requirements**

Since 2000 soybean oil biodiesel made from methyl ester has grown from 44 million pounds to more than six billion pounds, and now represents 26 percent of total soybean oil disappearance. This growth coincides with advanced biofuel requirement growth under the Renewable Fuel

Standard (RFS) Program, Figure 4. On November 23, 2016 the U.S. Environmental Protection Agency (EPA) released the [Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018](#). These final rules set the advanced biofuel requirement at 4.28 billion gallons, 670 million gallons higher than the 2016 requirement, and 280 million gallons higher than the [May 2016 proposal](#) for 4 billion gallons.

**Figure 4. Biodiesel Made from Methyl Ester as a Percentage of Total Use of Soybean Oil, 2000/01 to 2016/17 Marketing Years (Left) and Growth in Advanced Biofuel Requirements (Right)**

Source: USDA and Environmental Protection Agency



This advanced biofuels requirement was larger than the market anticipated, and is expected to provide an economic incentive for the market to grow. Following the report, a [sharp price rally in soybean oil futures](#) was experienced. Based on a yield of 7.4 pounds of feedstock per gallon of biodiesel, the 2017 requirements represent an increase of 2.1 billion pounds and 5.2 billion pounds of additional feedstock consumption over the proposed requirement and prior year requirement (respectively). Soybean oil is likely to capture a majority of this market, boosting soybean oil biodiesel disappearance substantially.

The first opportunity to incorporate these new regulatory parameters into crop balance sheets was the December 9, 2016 [World Agricultural Supply and Demand Estimates](#). USDA recognized the impact of the RFS on soybean oil consumption and raised biodiesel production from methyl ester by 250 million pounds to 6.2 billion in 2016/17, an increase of 9.3 percent year-over-year. Food, feed, and industrial use of soybean oil was reduced by 100 million pounds and ending stocks were reduced by 106 million pounds. More competition in the consumption space led to higher prices for soybean oil by 2¢ to a midpoint of 36¢ per pound, 21 percent higher than the 2015/16 marketing year average price.

**Implications**

In recent years, advanced biodiesel requirements are having the desired effect of boosting biodiesel production from methyl ester. This consumption category now represents nearly 30 percent of the domestic use of soybean oil and will continue to play a factor in soybean and crushing demand going forward. Increased competition for soybeans between crushing and exports will ultimately help to make soybean prices and acres more competitive. USDA has

confirmed as much by projecting soybean acreage at a record 85.5 million acres in 2017 and holding at 85 million acres through 2026, Figure 5.

**Figure 5. Actual and Projected Soybean Planted Area, 1996 to 2026**

Source: USDA

