

Crops Marketing and Management Update

Grains and Forage Center of Excellence

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Topic 1. 2019 Acreage Survey Confounds Market

The June 28th *Acreage* report was anticipated by the market to quantify the extent of the impact of the late planting season on corn and soybean acreage. Analysts surveyed before the report's release expected corn area to decline to 87.03 million acres, which would be a 5.77 million-acre drop from the March *Prospective Planting* report. USDA's reduction in corn area in the June report, made without any survey data, fueled this anticipated substantial reduction in planted area. In contrast, the analysts expected the *Acreage* report to show a modest reduction in soybean planted area from the initial estimate in March.

As is typically the case with USDA reports, the market was surprised by the survey results. For corn, the survey indicated that farmers planted or **intended to plant** 91.7 million acres, down 1.1 million acres from the March *Prospective Plantings* survey. The corn planted area was also an increase of 1.9 million acres from the June *WASDE* planted area estimate. The *Acreage* report also pegged soybean planted or **intended to plant** area at 80 million acres. If realized, this is a reduction of 4.6 million acres from the March survey and a reduction of 9.2 million acres from the 2018 crop.

Along with the publication of the *Acreage* report, USDA announced that several corn and soybean states would be resurveyed with the revised acreage estimates incorporated with the initial yield estimates in the August *Production* and *WASDE* reports. The 14 states re-surveyed typically account for 87 percent of the U.S. corn and soybean production, on average.

Table 1 reports the planted area for corn for Midwest states surveyed by NASS. The acreage reported in the June survey, the change from the *Prospective Plantings* report, and the statistical unplanted corn area as of June 9, 2019, are shown in Table 1. The objective of Table 1 is to illustrate the discrepancy in the potential area not planted

during the survey period and where the planted area might change for the resurvey released in August. The Eastern Corn Belt has the largest amount of area unplanted as of June 9, 2019. Illinois, Indiana, and Ohio potentially had 3, 1.8, and 1.75 million corn acres remaining to be planted during the survey period. The June survey suggested that corn acreage slippage in those states of 400, 200, and 450 thousand acres, respectively, from the *Prospective Plantings* survey.

The statistical amount of unplanted corn on June 9, 2019, was 15.7 million acres with 7 million acres in the top-five corn-producing states of Iowa, Illinois, Indiana, Minnesota, and Nebraska. Another 2.4 million statistical corn acres were not planted on that date in North Dakota and South Dakota. The Dakotas typically have a large share of the prevented planted area each year and represent the states with large increases in intended corn area from 2018.

| Table 1. 2019 U.S. Corn Planted Area (Selected States) with the Change from the March Survey and the Statistical Unplanted Area on June 9, 2019. | | | | Table 2. 2019 U.S. Soybean Planted Area (Selected States) with the Change from the March Survey and the Statistical Unplanted Area on June 23, 2019. | | | |
|---|------------------|----------------------|---------------------------|---|------------------|----------------------|----------------------------|
| Corn Planted Area (1,000 Acres) | | | | Soybean Planted Area (1,000 Acres) | | | |
| | June 2019 (F) | Change from March | Unplanted June 9, 2019 | | June 2019 (F) | Change from March | Unplanted June 23, 2019 |
| Midwest States | | | | Midwest States | | | |
| Illinois | 10,800 | -400 | 3,024 | Illinois | 10,240 | -260 | 2,205 |
| Indiana | 5,300 | -200 | 1,815 | Indiana | 5,280 | -420 | 1,425 |
| Iowa | 13,200 | -400 | 952 | Iowa | 9,030 | -370 | 470 |
| Kansas | 5,530 | -170 | 627 | Kansas | 4,650 | -300 | 792 |
| Michigan | 1,950 | -400 | 870 | Michigan | 2,090 | -110 | 682 |
| Minnesota | 7,500 | -500 | 640 | Minnesota | 6,830 | -470 | 146 |
| Missouri | 3,200 | -300 | 665 | Missouri | 5,230 | -270 | 1,870 |
| Nebraska | 9,650 | -50 | 582 | Nebraska | 4,950 | -450 | 216 |
| North Dakota | 3,450 | -600 | 284 | North Dakota | 5,850 | -650 | 130 |
| Ohio | 3,050 | -450 | 1,750 | Ohio | 4,690 | -260 | 1,733 |
| South Dakota | 4,320 | -1,680 | 2,160 | South Dakota | 4,360 | -840 | 832 |
| Wisconsin | 2,800 | -1,250 | 891 | Wisconsin | 2,030 | -120 | 258 |
| Kentucky | 1,550 | +120 | 86 | Kentucky | 1,690 | -60 | 350 |
| United States | 91,700 | -1,092 | 15,775 | United States | 80,040 | -4,577 | 12,693 |

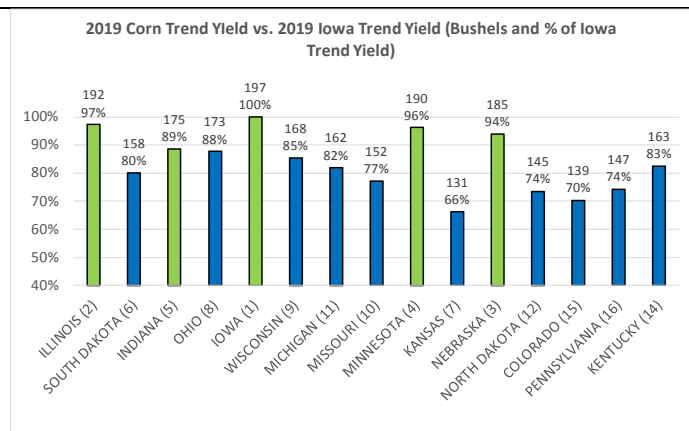
Source: 2019 *Acreage* survey, 2019 *Prospective Plantings* survey, and USDA: NASS *Crop Progress* reports.

Table 2 reports the soybean planted area from the *Acreage* survey, the *Prospective Plantings* survey, and the statistical unplanted soybean area as of June 23, 2019. While June 23 is after the *Acreage* report survey period, it may reflect actual farmer plantings for the 2019 crop year. The *Acreage* report created confusion for the soybean market as the planted area was projected lower by 4.6 million acres from the March survey. Because of the late corn-planting season, one expectation was for intended corn area to have switched from corn to soybeans. The discrepancy from the change in soybean area from March to June compared to the statistical unplanted area is greatest in the Eastern Corn Belt. For example, the statistical unplanted soybean area in Illinois, Indiana, and Ohio on June 23 was 2.2, 1.4, and 1.7 million soybean acres, respectively. In contrast, the *Acreage* survey found soybean area to be down by 260, 420, and 260 thousand acres, respectively, from the March survey. The total statistical soybean area unplanted on June 23 was 12.6 million acres with the unplanted area in the top-five soybean-producing states totaling 4.4 million acres.

Figure 1 and Figure 2 show the 2019 trend yields for corn and soybean, respectively, and the percentage of each state's trend yield compared to Iowa's trend yield. The top-five corn and soybean producing states are shaded green in each figure. The potential loss of planted area in the top producing states combined with reduced yield potential due to the late planting and adverse growing conditions creates the potential for below-trend corn and soybean crops. The impact of smaller corn and soybean crops on ending stocks and price will be discussed in Topic 9.

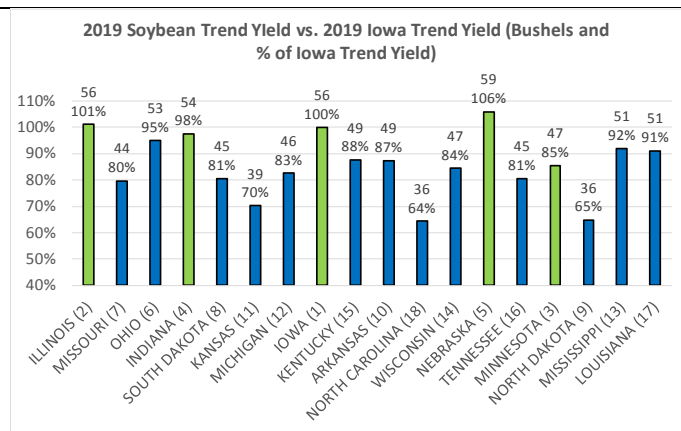
The August report will create volatility in the corn and soybean markets. For corn, the bearish news would be planted area not being reduced as expected and yield near the current expectation of 166-bushels per acre. For soybeans, the bearish news would be an increase in planted area and yields near the current expectation of 48.5-bushels per acre. The August reports often generate sharp moves in the commodity futures market, and that will likely be the outcome for the August 2019 report. Managers should remain vigilant for pricing opportunities if the reports are bullish for managers expecting to sell at harvest.

Figure 1. 2019 Corn Trend Yields and Percentage of Iowa's 2019 Trend Yield for Selected States.



Source: 2019 Prospective Plantings survey, and USDA: NASS Crop Progress reports.

Figure 2. 2019 Soybean Trend Yields and Percentage of Iowa's 2019 Trend Yield for Selected States.



Source: 2019 Prospective Plantings survey, and USDA: NASS Crop Progress reports.

Topic 2. July WASDE Report Adopts Uncertain Acreage Projections

Analysts expected the July WASDE to reduce the 2019 corn crop and ending stocks from the June estimate. Apparently, the analysts did not adopt the *Acreage* report planted area estimates in their own projections, and they anticipated a different story to be told in the July WASDE report. Analysts were disappointed that USDA increased the size of the 2019 corn crop to 13.875 billion bushels, which was 364 million bushels more than the average expectation by the analysts surveyed before the report was released.

Table 3. U.S. Corn Supply and Use.

| | 2016-17 | 2017-18 | 2018-19 Estimated | 2019-20 Projected | Change from 18-19 |
|---|---------|---------|----------------------|----------------------|----------------------|
| Planted Area (million) | 94.0 | 90.2 | 89.1 | 91.7 | +2.6 |
| Harvested Area (million) | 86.7 | 82.7 | 81.7 | 83.6 | +1.9 |
| Yield (bushels/acre) | 174.6 | 176.6 | 176.4 | 166.0 | -10.4 |
| ----- Million Bushels ----- | | | | | |
| Beginning Stocks | 1,737 | 2,293 | 2,140 | 2,340 | +200 |
| Production | 15,148 | 14,609 | 14,420 | 13,875 | -545 |
| Imports | 57 | 36 | 35 | 50 | +15 |
| Total Supply | 16,942 | 16,939 | 16,595 | 16,265 | -330 |
| Feed and Residual | 5,472 | 5,304 | 5,275 | 5,175 | -100 |
| Food, Seed & Industrial | 6,883 | 7,056 | 6,880 | 6,930 | +50 |
| Ethanol and by-products | 5,432 | 5,605 | 5,450 | 5,500 | +50 |
| Exports | 2,293 | 2,438 | 2,100 | 2,150 | +50 |
| Total Use | 14,649 | 14,799 | 14,255 | 14,255 | +0 |
| Ending Stocks | 2,293 | 2,140 | 2,340 | 2,010 | -330 |
| Stocks/Use | 15.7% | 14.5% | 16.4% | 14.1% | -2.3% |
| Days of Stocks | 57 | 53 | 60 | 51 | -8 |
| U.S. Marketing-Year Average Price (\$/bu) | \$3.36 | \$3.36 | \$3.60 | \$3.70 | +\$0.10 |

Source: July 2019 WASDE - USDA: WAOB.

The July WASDE reduced old-crop corn use by 145 million bushels. The largest reduction was for projected exports, down 100 million bushels from the June report, due to sluggish export pace. The July report also trimmed feed and residual demand by 25 million bushels and non-ethanol industrial use by another 20 million bushels. The net effect of the use adjustments was a 145 million bushel increase in 2018-19 ending stocks to 2.34 billion bushels.

USDA did not adjust the old-crop U.S. marketing year average (MYA) farm price, which is projected at \$3.60 per bushel. The old-crop stocks can be thought of as a 60-day inventory of corn available at the start of the 2019 marketing year.

The July report adopted the planted area from the *Acreage* report, which increased the projected 2019 corn crop by 195 million bushels from the June estimates to 13.875 billion bushels. The projected 2019-corn supply is projected at 16.2 billion bushels, an increase of 340 million bushels from last month due to the increase in production and carry-in. USDA did not make major adjustments to 2019 corn use from the previous month. USDA increased feed use by 25 million bushels, but reduced non-ethanol industrial use by 20 million bushels from the June report.

The net effect of the supply and demand adjustments was a 335 million bushel increase in ending stocks from June to 2.01 billion bushels. The stocks-to-use ratio for the 2019-20 corn crop is projected at 14.1%, which is about a 51-day supply of corn in the bins at the end of the 2019-20 marketing year. The projected reduction in stocks from the

2018-19 marketing year is projected to support a slightly higher U.S. marketing year average (MYA) farm price of \$3.70 per bushel (Table 3).

| Table 4. U.S. Soybean Supply and Use. | | | | | |
|--|-----------|-----------|----------------------|----------------------|----------------------|
| | 2016-17 | 2017-18 | 2018-19 Estimated | 2019-20 Projected | Change from 18-19 |
| Planted Area (million) | 83.4 | 90.2 | 89.2 | 80.0 | -9.2 |
| Harvested Area (million) | 82.7 | 89.5 | 88.1 | 79.3 | -8.8 |
| Yield (bushels/acre) | 52 | 49.3 | 51.6 | 48.5 | -3.1 |
| ----- Million Bushels ----- | | | | | |
| Beginning Stocks | 197 | 302 | 438 | 1,050 | +612 |
| Production | 4,296 | 4,412 | 4,544 | 3,845 | -699 |
| Imports | <u>22</u> | <u>22</u> | <u>17</u> | <u>20</u> | +3 |
| Total Supply | 4,515 | 4,735 | 4,999 | 4,915 | -84 |
| Crushings | 1,901 | 2,055 | 2,085 | 2,115 | +30 |
| Exports | 2,174 | 2,129 | 1,700 | 1,875 | +175 |
| Seed | 105 | 104 | 93 | 96 | +3 |
| Residual | <u>34</u> | <u>9</u> | <u>72</u> | <u>34</u> | -38 |
| Total Use | 4,213 | 4,297 | 3,949 | 4,120 | +171 |
| Ending Stocks | 302 | 438 | 1050 | 795 | -255 |
| Stocks/Use | 7.2% | 10.2% | 26.6% | 19.3% | -7.3% |
| Days of Stocks | 26 | 37 | 97 | 70 | -26.6 |
| U.S. Marketing-Year Average Price (\$/bu) | \$9.47 | \$9.33 | \$8.50 | \$8.40 | -\$0.10 |
| Source: July 2019 WASDE - USDA: WAOB. | | | | | |

The July report made minor adjustments to the old-crop soybean use projections. Crushing use was reduced by 15 million bushels from the June estimate to 2.08 billion bushels. The report also reduced seed use but increased the statistical catchall residual by 41 million bushels. The net effect was a 20 million increase in projected soybean use from the previous report. The impact on stocks was a 20 million bushels reduction in soybean stocks to 1.05 billion bushels. The 2018-19 ending soybean stocks is about a 97-day supply of soybeans, with a U.S. MYA farm price of \$8.50/bushel (Table 4).

The new-crop soybean balance sheet reduced the size of the 2018 crop by 305 million bushels from June due to the 4.5 million-acre reduction in the projected harvested area combined with a 1-bushel reduction in the projected soybean yield. The smaller carry-in combined with smaller soybean crop reduced the projected soybean supply by 325 million bushels to a projected 4.9 billion bushels.

On the demand side, the July report reduced 2019-20 exports by 75 million bushels from the June estimates to a projected 1.875 billion bushels exported. The report did not adjust any of the other use categories. The net effect of the supply and demand adjustments is a projected reduction in 2019-20 ending stocks by 250 million bushels to a projected level of 795 million bushels. The projected stocks-to-use ratio is 19.3%, which is a record for recent soybean history. The projected reduction in stocks would support a U.S. MYA farm price of \$8.40 per bushel.

| Table 5. U.S. Wheat Supply and Use. | | | | | |
|--|--------------|------------|----------------------|----------------------|----------------------|
| | 2016-17 | 2017-18 | 2018-19 Estimated | 2019-20 Projected | Change from 18-19 |
| Planted Acres (million) | 50.1 | 46.1 | 47.8 | 45.6 | -2.2 |
| Harvested Acres (million) | 43.9 | 37.6 | 39.6 | 38.4 | -1.2 |
| Yield (bushels/acre) | 52.7 | 46.4 | 47.6 | 50.0 | +2.4 |
| ----- Million Bushels ----- | | | | | |
| Beginning Stocks | 976 | 1,181 | 1,099 | 1,072 | -27 |
| Production | 2,309 | 1,741 | 1,884 | 1,921 | +37 |
| Imports | <u>118</u> | <u>157</u> | <u>135</u> | <u>140</u> | +5 |
| Total Supply | 3,402 | 3,079 | 3,118 | 3,133 | +15 |
| Food | 949 | 964 | 960 | 965 | +5 |
| Seed | 61 | 63 | 60 | 68 | +8 |
| Feed and Residual | 156 | 51 | 91 | 150 | +59 |
| Exports | <u>1,055</u> | <u>901</u> | <u>936</u> | <u>950</u> | +14 |
| Total Use | 2,222 | 1,980 | 2,046 | 2,133 | +87 |
| Ending Stocks | 1,181 | 1,099 | 1,072 | 1,000 | -72 |
| Stocks/Use | 53.2% | 55.5% | 52.4% | 46.9% | -5.5% |
| Days of Stocks | 194 | 203 | 191 | 171 | -20 |
| U.S. Marketing-Year Average Price (\$/bu) | \$3.89 | \$4.72 | \$5.16 | \$5.20 | +\$0.04 |
| Source: July 2019 WASDE - USDA: WAOB. | | | | | |

The July report adjusted the old-crop wheat supply and demand estimates from the June report. Wheat imports were reduced by 5 million bushels, seed use was reduced by 2 million bushels, exports were trimmed by 14 million bushels, but feed demand was increased by 41 million bushels from the previous estimate. The net change in stocks was a 30 million bushel reduction to 1.072 billion bushels.

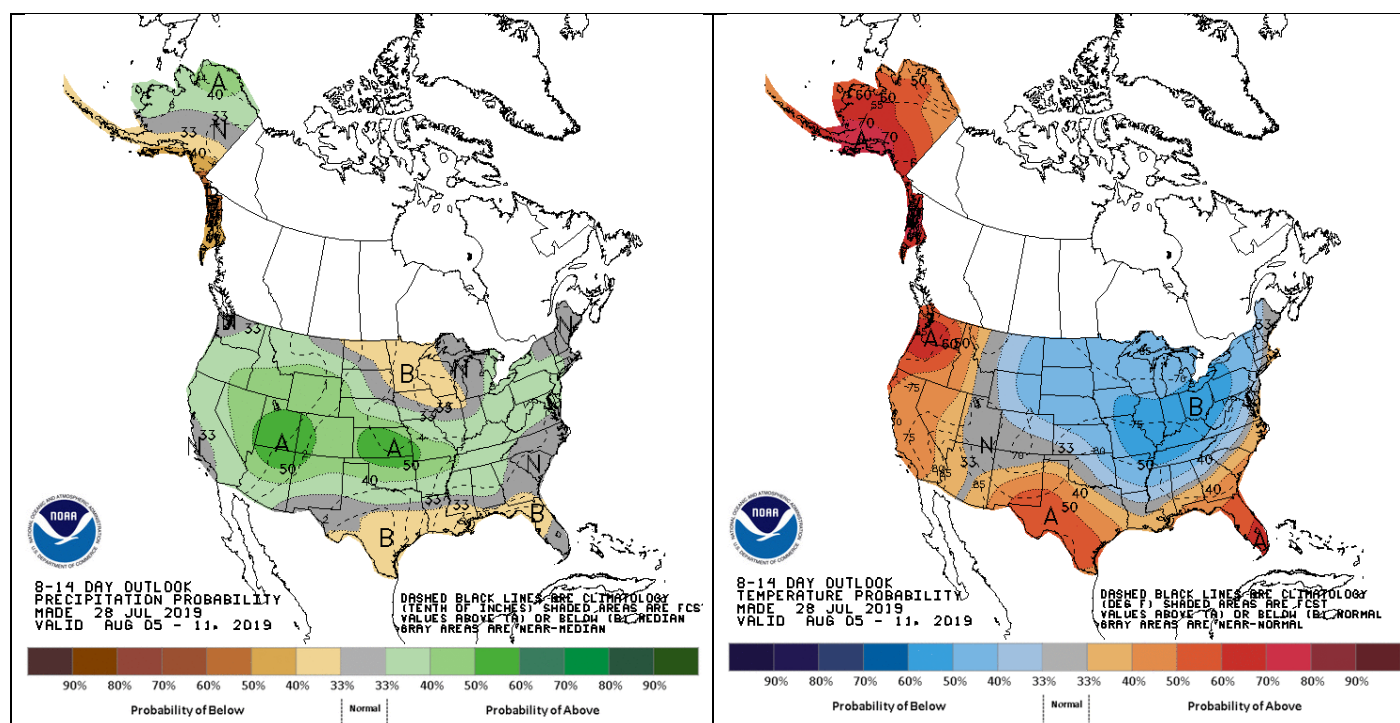
For new-crop wheat, the July report increased the projected yield to 50-bushels per acre but reduced the harvested area by 600 thousand acres from the previous report. The net impact is an increase in the size of the 2019 wheat crop by 18 million bushels. Given the smaller projected carry-in, the report reduced the wheat supply by 12 million bushels to 3.133 billion bushels.

The July report increased new-crop feed use by 10 million bushels to a projected 150 million bushels. Similarly, USDA increased projected exports to 950 million bushels. If realized, total use would increase by 87 million bushels from the 2018-19 marketing year.

USDA projects 2019-20 ending stocks for wheat at 1 billion bushels. This slight reduction in stocks would support a minor increase in the U.S. MYA farm price to \$5.20 per bushel.

Topic 3. Short-Term Precipitation and Temperature Outlook

The 8 to 14-day precipitation (below left) outlook suggest there is an above-average probability of rain throughout central Illinois, central Indiana, and Kentucky. The temperature outlook (below right) forecasts below-normal temperatures will continue across the Midwest, Delta, and into the Southeast United States for the next 8 to 14-day period. The below-normal temperatures will not help late-planted corn in the race to catch-up on progressing towards physiological maturity.



Topic 4. 2019 Corn and Soybean Condition and Progress

The late-planted corn and soybean crops are in worst condition than the 2018 crops. Table 6 and Table 7 report the percentages of the corn and soybean crops, respectively, rated in very poor plus poor (VPP) and good and excellent (GE) condition for the U.S., the top-five producing states, and Kentucky as of July 22, 2019. The tables also show the change in the ratings from 2018 and the 2018 yield. The states east of the Mississippi River have a larger percentage of corn in VPP condition this year as compared to 2018. Also, those states east of the Mississippi River have a smaller percentage rated in GE condition this year compared to last year. For example, Illinois has 18% of the 2019 corn crop rated in VPP condition and 43% rated in GE condition as of July 22, 2019. The Illinois crop has 13% more rated in VPP and 39% less in GE condition this year as compared to the 2018 corn crop.

The message from Table 6 is that the late-planted corn crop is in worse condition than the 2018 crop, and the market will begin to price in potential yield loss if weather stress occurs during tasseling or before the crop reaches physiological maturity. Anecdotal stories from farmers throughout the Midwest is that the corn crop needs an extra month in the growing season, which suggests the risk of a percentage of the crop at risk of an early frost. The U.S. corn crop is currently rated as having 13% in VPP condition and 57% in GE condition. Compared to 2018, the U.S. corn crop has 4% more in VPP condition and 15% less in GE condition.

Table 7 provides the percentage of the 2019 soybean crop rated in VPP condition and GE condition as of July 21, 2019, with a comparison for the same period in 2018. The top-five soybean-producing states, Kentucky, and the U.S. soybean crop's condition are worse than the 2018 soybean crop. As in corn, the soybean crops east of the Mississippi River have a larger percentage in VPP condition and a smaller percentage in GE condition than in 2018 as compared to soybeans in states west of the Mississippi River.

Indiana, the fifth-largest soybean state, has 24% of the soybean crop rated in VPP condition and 36% rated in GE condition. Compared to 2018, more rated in VPP condition and 32% less rated 15% in GE condition for Indiana soybeans. In contrast, Nebraska's soybeans are viewed to have 5% in VPP condition and 73% in GE condition for 2019. Compared to 2018, the VPP condition is 2% higher than last year, and the percentage in GE condition is 12% smaller than last year.

The U.S. soybean crop is rated as having 12% in VPP condition and 54% in GE condition as of July 21, 2019. Compared to last year, the percentage in VPP condition has increased by 4% and the percentage rated in GE condition has decreased by 16%.

| Table 6. Corn Crop Rating Comparison for the 2018 and 2019 Crop Years for the U.S. and Selected States. | | | | | |
|---|---------------------|---------------------|----------------------------------|----------------------------------|---------------|
| | Very Poor + Poor | Good + Excellent | Change in Very Poor + Poor | Change in Good + Excellent | 2018 Yield |
| Illinois (#2) | | | | | |
| 2018 | 5% | 82% | +13% | -39% | 210 |
| 2019 | 18% | 43% | | | |
| Indiana (#5) | | | | | |
| 2018 | 8% | 72% | +16% | -37% | 189 |
| 2019 | 24% | 35% | | | |
| Iowa (#1) | | | | | |
| 2018 | 6% | 79% | +3% | -16% | 196 |
| 2019 | 9% | 63% | | | |
| Minnesota (#4) | | | | | |
| 2018 | 6% | 78% | +5% | -21% | 182 |
| 2019 | 11% | 57% | | | |
| Nebraska (#3) | | | | | |
| 2018 | 3% | 87% | +2% | -10% | 192 |
| 2019 | 5% | 77% | | | |
| Kentucky (#14) | | | | | |
| 2018 | 2% | 83% | +7% | -10% | 175 |
| 2019 | 9% | 73% | | | |
| U.S. 18-State Ranking | | | | | |
| 2018 | 9% | 72% | +4% | -15% | 176.4 |
| 2019 | 13% | 57% | | | |
| Source: USDA <i>Crop Progress</i> Report, July 22, 2019. | | | | | |

| Table 7. Soybean Crop Rating Comparison for the 2018 and 2019 Crop Years for the U.S. and Selected States. | | | | | |
|--|---------------------|---------------------|----------------------------------|----------------------------------|---------------|
| | Very Poor + Poor | Good + Excellent | Change in Very Poor + Poor | Change in Good + Excellent | 2018 Yield |
| Illinois (#2) | | | | | |
| 2018 | 6% | 78% | +12% | -33% | 65 |
| 2019 | 18% | 45% | | | |
| Indiana (#5) | | | | | |
| 2018 | 9% | 68% | +15% | -32% | 58.5 |
| 2019 | 24% | 36% | | | |
| Iowa (#1) | | | | | |
| 2018 | 6% | 76% | +1% | -12% | 57 |
| 2019 | 7% | 64% | | | |
| Minnesota (#4) | | | | | |
| 2018 | 5% | 76% | +4% | -16% | 50.5 |
| 2019 | 9% | 60% | | | |
| Nebraska (#3) | | | | | |
| 2018 | 3% | 85% | +2% | -12% | 59 |
| 2019 | 5% | 73% | | | |
| Kentucky (#14) | | | | | |
| 2018 | 3% | 81% | +5% | -9% | 52 |
| 2019 | 8% | 72% | | | |
| U.S. 18-State Ranking | | | | | |
| 2018 | 8% | 70% | +4% | -16% | 51.6 |
| 2019 | 12% | 54% | | | |
| Source: USDA <i>Crop Progress</i> Report, July 22, 2019. | | | | | |

Source: USDA Crop Progress Report, July 22, 2019.

Source: USDA Crop Progress Report, July 22, 2019.

Table 8 reports the percentage of each state's corn crop at silking progress compared to last week, last year, and the five-year average progress. The state production rankings are included behind the state name with the top-five corn-producing states shaded green. As of July 21, 2019, 35% of the U.S. corn crop was at the silk phase, which is 31% behind the five-year average (Table 8). Of the eighteen states surveyed, only Pennsylvania is ahead of the five-year silking progress. The cells shaded yellow represent silking, that is 30% or more behind the five-year progress. The top-five corn states are all at least 30% behind the long-term average progress. Illinois, Indiana, Iowa, Minnesota, and Nebraska are 48%, 44%, 30%, 35%, and 30% behind their respective five-year average.

Table 9 provides an update of the 2019 soybean progress at the blooming stage of production. As of July 22, 40% of the U.S. soybean crop is blooming, which is 26% behind the 5-year average progress for this date. The top-five soybean-producing states, shaded green, are running 42% (Illinois), 46% (Indiana), 25% (Iowa), 23% (Minnesota), and 25% (Nebraska) behind their respective five-year average blooming progress. Michigan, Ohio, and Wisconsin are also 37%, 33% and 31% behind, respectively, their five-year average blooming progress. Soybeans produced in the Delta are slightly behind the five-year average but are the closest to being average of the 18-states surveyed weekly by NASS.

Table 8. 2019 Corn Silking Progress Compared to the Previous Week, Previous Year, and the Five-Year Average.

| | July 21, 2018 | July 14, 2019 | July 21, 2019 | 2014-2018 Average | Change from 5-Year Average |
|---------------------|---------------|---------------|---------------|----------------------|-------------------------------|
| | % | % | % | % | % |
| COLORADO (15) | 50 | 4 | 21 | 30 | -9 |
| ILLINOIS (2) | 96 | 19 | 36 | 84 | -48 |
| INDIANA (5) | 84 | 10 | 23 | 67 | -44 |
| IOWA (1) | 85 | 8 | 41 | 71 | -30 |
| KANSAS (7) | 80 | 36 | 54 | 74 | -20 |
| KENTUCKY (14) | 85 | 60 | 69 | 81 | -12 |
| MICHIGAN (11) | 43 | 0 | 5 | 38 | -33 |
| MINNESOTA (4) | 72 | 2 | 21 | 56 | -35 |
| MISSOURI (10) | 94 | 45 | 62 | 89 | -27 |
| NEBRASKA (3) | 80 | 11 | 40 | 70 | -30 |
| NORTH CAROLINA (18) | 93 | 80 | 89 | 94 | -5 |
| NORTH DAKOTA (12) | 59 | 1 | 10 | 32 | -22 |
| OHIO (8) | 77 | 6 | 18 | 56 | -38 |
| PENNSYLVANIA (16) | 49 | 30 | 55 | 47 | +8 |
| SOUTH DAKOTA (6) | 72 | 0 | 9 | 50 | -41 |
| TENNESSEE (17) | 94 | 80 | 88 | 92 | -4 |
| TEXAS (13) | 84 | 75 | 81 | 82 | -1 |
| WISCONSIN (9) | 50 | 1 | 10 | 37 | -27 |
| 18-States | 78 | 17 | 35 | 66 | -31 |

Source: USDA Crop Progress Report, July 22, 2019.

Table 9. 2019 Soybean Blooming Progress Compared to the Previous Week, Previous Year, and the Five-Year Average.

| | July 21, 2018 | July 14, 2019 | July 21, 2019 | 2014-2018 Average | Change from 5-Year Average |
|----------------------|---------------|---------------|---------------|----------------------|-------------------------------|
| | % | % | % | % | % |
| Arkansas (#11) | 92 | 66 | 75 | 83 | -8 |
| Illinois (#1) | 87 | 12 | 30 | 72 | -42 |
| Indiana (#4) | 79 | 7 | 21 | 67 | -46 |
| Iowa (#2) | 79 | 26 | 47 | 72 | -25 |
| Kansas (#10) | 72 | 15 | 23 | 52 | -29 |
| Kentucky (#15) | 50 | 23 | 34 | 44 | -10 |
| Louisiana (#17) | 98 | 84 | 90 | 93 | -3 |
| Michigan (#13) | 59 | 9 | 23 | 60 | -37 |
| Minnesota (#3) | 71 | 16 | 47 | 70 | -23 |
| Mississippi (#12) | 91 | 76 | 82 | 82 | +0 |
| Missouri (#7) | 67 | 13 | 25 | 49 | -24 |
| Nebraska (#5) | 76 | 28 | 46 | 71 | -25 |
| North Carolina (#18) | 47 | 22 | 36 | 43 | -7 |
| North Dakota (#9) | 83 | 18 | 49 | 70 | -21 |
| Ohio (#6) | 76 | 12 | 27 | 60 | -33 |
| South Dakota (#8) | 66 | 32 | 45 | 65 | -20 |
| Tennessee (#16) | 70 | 40 | 56 | 60 | -4 |
| Wisconsin (#14) | 64 | 7 | 29 | 60 | -31 |
| 18-States | 76 | 22 | 40 | 66 | -26 |

Source: USDA Crop Progress Report, July 22, 2019.

Topic 5. 2018 Corn and Soybean Basis; and 2019 Wheat Basis vs. Previous Years

Figure 3, Figure 4, and Figure 5 show the monthly average corn, soybean, and wheat spot basis, respectively, for twelve Western Kentucky markets. For each figure, the blue line represents the average basis for the 2013-15 crop years, and the red line is the basis for the 2016 crop. The green line is the 2017 basis while the black dots represent the 2018 basis. The triangles in Figure 5 represents the 2019 basis for wheat.

The corn basis is \$0.19/bushel over the September corn contract, which is a \$0.42/bushel increase from harvest in October. Last year, the corn basis appreciated from October to July by \$0.21/bushel, which was \$0.20/bushel higher than the amount of appreciation in basis for the 2016 corn crop from harvest to July (Figure 3).

The average soybean basis, as of July 24, 2019, was -\$0.19/bushel under the September 2019 soybean contract. The basis is \$0.04 per bushel narrower than 2017 basis and \$0.02 per bushel narrower than the 2016 basis (Figure 4). Last year, the basis appreciated \$0.30/bushel from October to July, but the 2016 crop's basis had an appreciation in the basis of -\$0.02/bushel from harvest to July. Current basis appreciation for the 2018 crop is \$0.39/bushel from October to July (Figure 4).

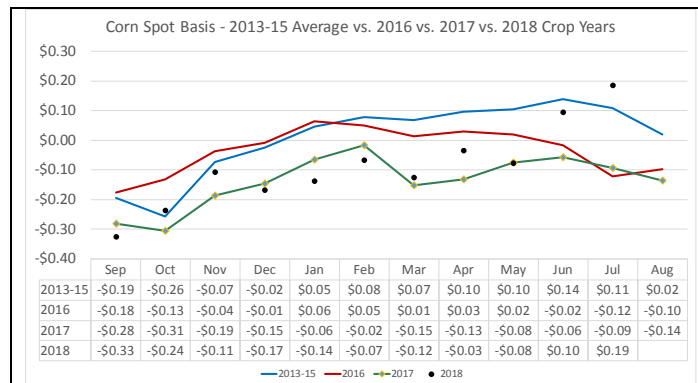


Figure 3. Western Kentucky Corn Spot Market Basis Appreciation from September to August for the 2013 to 2018 Crop Years.

Basis Calculated on July 24, 2019

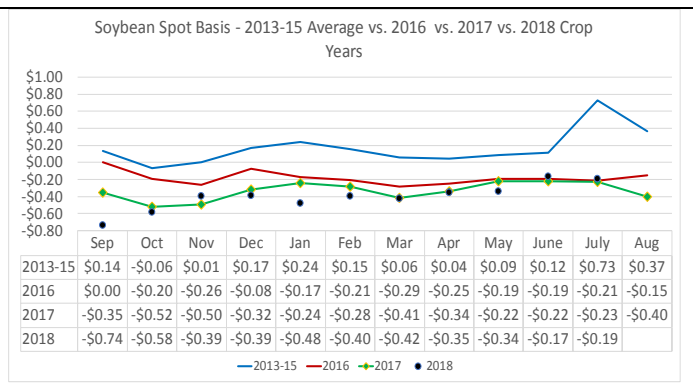


Figure 4. Western Kentucky Soybean Spot Market Basis Appreciation from September to August for the 2013 to 2018 Crop Years.

Basis Calculated on July 24, 2019

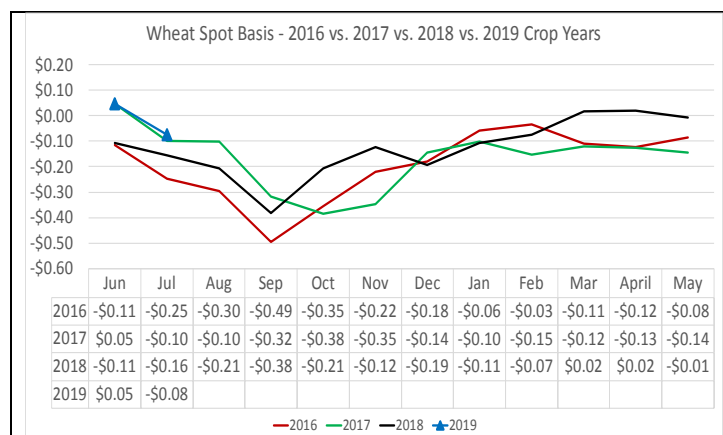


Figure 5. Western Kentucky Wheat Spot Market Basis Appreciation from June to May for the 2016 to 2019 Crop Years.

Basis Calculated on July 24, 2019

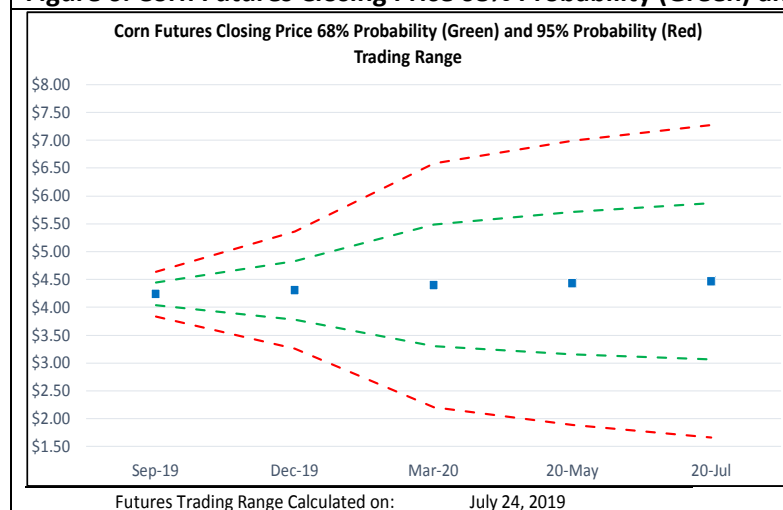
The average wheat spot basis has been strengthening since January 2019. The average basis for the 2018 crop (black line) has been narrower than the 2017 crop and is stronger than the basis for the 2016 wheat crop.

The 2019 wheat basis is $-\$0.08$ /bushel below the September futures contract. Seasonality suggests that basis will widen into the fall. However, the fundamental struggle in the corn market may support a stronger wheat basis for the 2019 crop, especially in areas with strong feed demand where wheat may be a substitute for corn in feed rations.

Topic 6. Projected Corn, Soybean, and Wheat Futures Trading Ranges to July 2020

Figures 6–8 provide the projected futures price trading range, by futures contract month, based on the contracts' volatility for the previous 21-day period for corn, soybeans, and wheat. The green lines represent the range that describes the 68% probability of the projected trading range with the red line representing a 95% likelihood of the expected trading range. Notice how these projections fan out for the contracts that will expire later in 2020. That is because there is more time until the contract's expiration; thus, there is a wider potential trading range for these deferred futures contracts.

Figure 6. Corn Futures Closing Price 68% Probability (Green) and 95% Probability (Red) Trading Range.



Trading range calculated on July 24, 2019, using the average volatility of the previous 21-day period. The 68% probability range is the closing futures price on July 24, 2019, plus and minus one standard deviation. The 95% probability range is the closing price plus and minus two standard deviations.

Figure 6 provides the probabilistic trading range for the corn futures contracts from September 2019 to July 2020. There is a 68% probability that the September 2019 corn contract will trade between \$4.04 and \$4.44 and a 95% probability that the September 2019 corn contract will trade between \$3.84 and \$4.64. Managers who are thinking about managing price risk for the 2019 corn crop should consider that there is a 68% probability that the December corn futures contract will trade between \$3.78 and \$4.83 per bushel. Managers considering storing corn into 2020 should monitor the March 2020 contract, which has a 68% probability of trading between \$3.30 and \$5.49 per bushel (Figure 6).

Figure 7 provides the probabilistic trading range for soybean futures contracts from September 2019 to July 2020. The November 2019 futures contract has a 68% probability of trading between \$8.56 and \$9.61 per bushel (Figure 7). The increased volatility in the soybean market contributes to this wide range in possible soybean prices for the new-crop soybean futures contracts. Managers planning to store soybeans into the new-year should monitor the March 2020 soybean contract. The March 2020 contract has a 68% probability of trading between \$8.28 and \$10.34 per bushel. The July 2020 soybean contract has a 68% probability of trading between \$8.08 and \$10.90 per bushel.

Figure 7. Soybean Futures Closing Price 68% Probability (Green) and 95% Probability (Red) Trading Range.

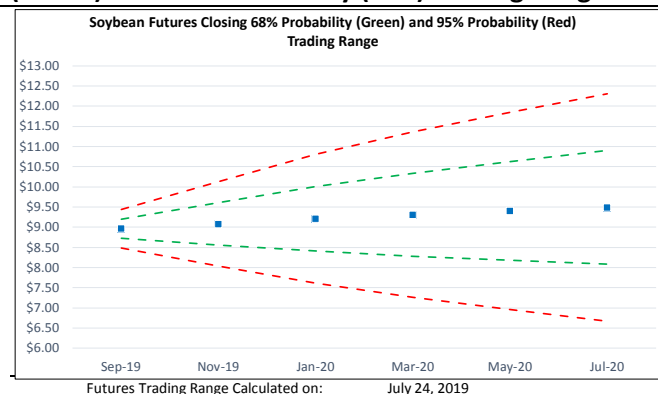


Figure 8. Wheat Futures Closing Price 68% Probability (Green) and 95% Probability (Red) Trading Range.

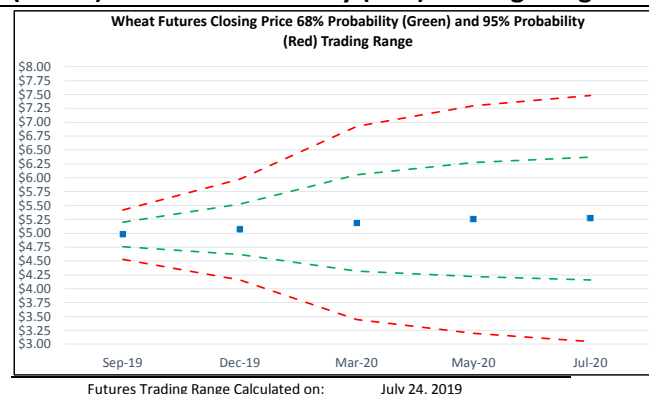


Figure 8 provides the probabilistic trading range for wheat futures contract from September 2019 to July 2020 contracts. The September 2019 wheat contract has a 68% chance of trading between \$4.75 and \$5.20. Similarly, the December 2019 wheat contract has a 68% chance of trading between \$4.61 and \$5.52/bushel, which should be monitored for managing 2019 wheat that is planned to be stored. The July 2020 Futures contract has a 68% probability of trading between \$4.16 and \$6.37 per bushel and should be considered as a tool to manage price risk for producers planning on seeding wheat for 2020.

Topic 7. Pre-Harvest 2019 Corn and Soybean Risk Management Opportunities

Tables 10-12 analyze the effectiveness of using hedging with futures, put options, and cash forward contracts in protecting revenue that covers total input costs, cash rent, overhead and family living for corn, soybeans, and double-crop soybeans in 2019.

Table 10 presents risk management alternatives for Western Kentucky corn production for 2019. Several yield projections are provided to show what yield is needed to find profitable pricing opportunities. Three risk management alternatives are compared. The first marketing alternative is to hedge with commodity futures, or HTA contracts, that would lock in an expected cash price at \$4.15/bushel assuming a -\$0.10/bushel harvest-time basis. The second is to lock in a cash price with a forward contract at \$4.25/bushel. The third alternative is to establish a price floor at \$3.92/bushel by buying a put option with a \$4.30 strike price that costs \$0.284.

Table 10. Risk Management Alternatives for 2019 Western Kentucky Corn for Various Yield Objectives.

| Yield | 150 | 160 | 170 | 180 | 190 | 200 |
|--|---------------|---------|---------|---------|---------|---------|
| TVC+Rent+Overhead+Family Living (\$/acre) | \$704 | \$704 | \$704 | \$704 | \$704 | \$704 |
| TVC+Rent+Overhead+Family Living (\$/bu) | \$4.69 | \$4.40 | \$4.14 | \$3.91 | \$3.71 | \$3.52 |
| Hedge @ \$4.25+ -\$0.10 basis = \$4.15 | -\$0.55 | -\$0.26 | +\$0.00 | +\$0.23 | +\$0.44 | +\$0.63 |
| Forward Contract at \$4.25 | -\$0.44 | -\$0.15 | +\$0.11 | +\$0.34 | +\$0.55 | +\$0.73 |
| Put: \$4.30 strike @\$0.284 = \$3.92 floor | -\$0.78 | -\$0.48 | -\$0.23 | +\$0.00 | +\$0.21 | +\$0.40 |
| Strategies Evaluated on: | July 26, 2019 | | | | | |

Table 10 demonstrates that the weather market is providing risk management opportunities for farmers that typically harvest 170-bushel corn or larger. Forward contracting may offer better risk protection by removing both futures price risk and basis risk.

Table 11 illustrates that the November 2019 futures contract is providing an opportunity to protect revenue for full-season soybeans with yields greater than 60 bushels/acre. Managers should continue to monitor for opportunities to manage soybean revenue risk. A more substantial reduction in the planted area will support higher prices; however, the export demand issues will serve as an anchor to price until trade issues are resolved.

The market is providing an opportunity to protect double-crop soybean risk for those that typically harvest 50-bushel double-crop soybeans or better. Given the fundamental weakness for soybeans, managers should consider pricing a percentage of double-crop soybean production that will be sold at harvest (Table 12).

Table 11. Risk Management Alternatives for 2019 Western Kentucky Soybeans for Various Yield Objectives.

| Yield | 45 | 50 | 55 | 60 | 65 |
|--|---------|---------|---------|---------|---------|
| TVC+Rent+Overhead+Family Living (\$/acre) | \$522 | \$522 | \$522 | \$522 | \$522 |
| TVC+Rent+Overhead+Family Living (\$/bu) | \$11.60 | \$10.44 | \$9.49 | \$8.70 | \$8.03 |
| Hedge @ \$9.01 + -\$0.35 basis = \$8.66 | -\$2.94 | -\$1.78 | -\$0.83 | -\$0.04 | +\$0.63 |
| Forward Contract at \$8.66 | -\$2.94 | -\$1.78 | -\$0.84 | -\$0.04 | +\$0.62 |
| Put: \$9.00 strike @\$0.292 = \$8.36 floor | -\$3.24 | -\$2.08 | -\$1.13 | -\$0.34 | +\$0.33 |
| Strategies Evaluated on: July 26, 2019 | | | | | |

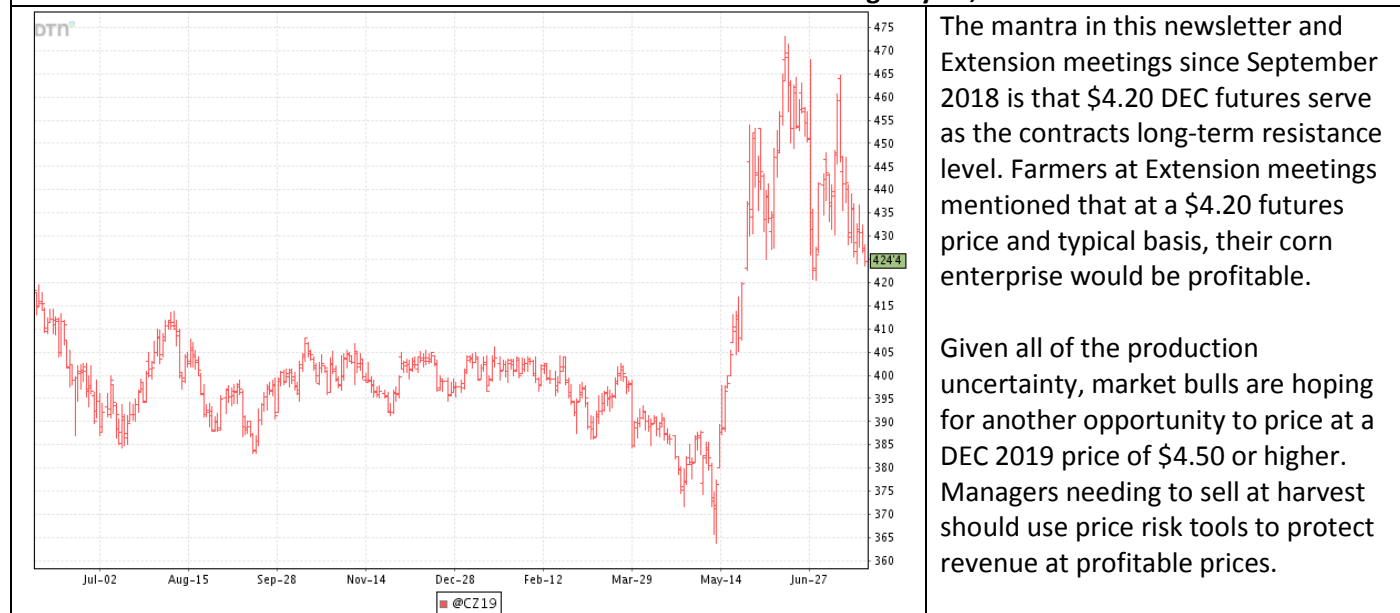
Table 12. Risk Management Alternatives for 2019 Western Kentucky Double-Crop Soybeans for Various Yield Objectives.

| Yield | 35 | 40 | 45 | 50 | 55 |
|--|---------|---------|---------|---------|---------|
| TVC+Rent+Overhead+Family Living (\$/acre) | \$393 | \$393 | \$393 | \$393 | \$393 |
| TVC+Rent+Overhead+Family Living (\$/bu) | \$11.21 | \$9.81 | \$8.72 | \$7.85 | \$7.14 |
| Hedge @ \$9.01+ -\$0.35 basis = \$8.66 | -\$2.55 | -\$1.15 | -\$0.06 | +\$0.81 | +\$1.52 |
| Forward Contract at \$8.66 | -\$2.56 | -\$1.16 | -\$0.07 | +\$0.81 | +\$1.52 |
| Put: \$9.00 strike @\$0.292 = \$8.36 floor | -\$2.86 | -\$1.45 | -\$0.36 | +\$0.51 | +\$1.22 |
| Strategies Evaluated on: July 26, 2019 | | | | | |

Topic 8. December Corn Trading Days Frequency for the 2014 and 2019 Crop Years-Revisited

The December 2019 corn futures market has provided an exciting ride since mid-May. The daily futures chart for the DEC 2019 contract is shown below to remind managers that the contract rallied \$0.96/bushel from late May 10 to June 17, 2019, but has then traded lower \$0.44/bushel to \$4.24 ½ on July 26, 2019. The contract struggled to close above \$4.05 per bushel from September 2018 to May 15, 2019, so the better than expected prices are welcome to those that can produce a corn crop this year.

December 2019 Corn Futures Chart for the Previous 12 Months Ending July 26, 2019

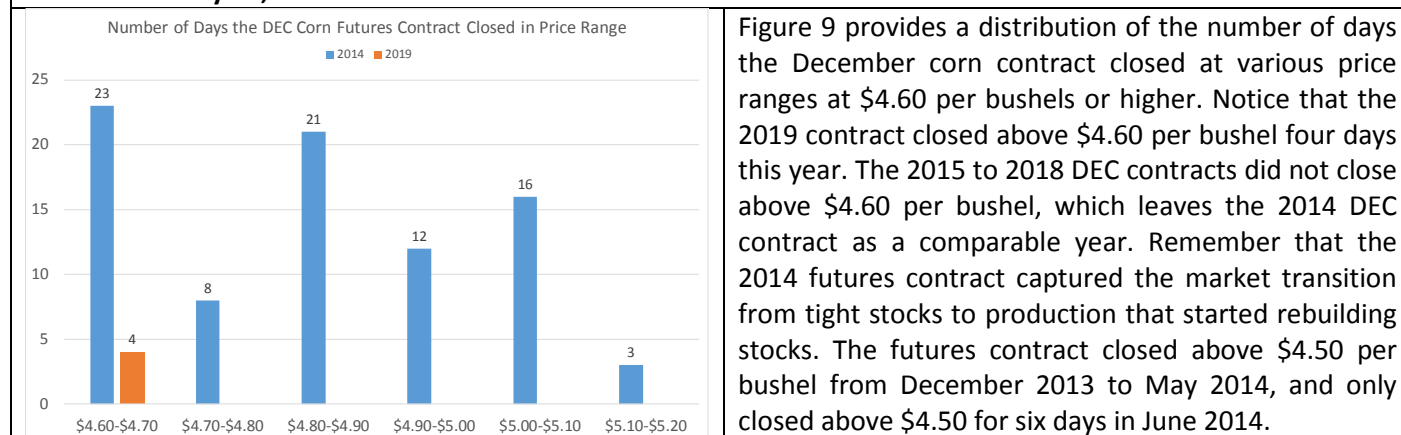


The mantra in this newsletter and Extension meetings since September 2018 is that \$4.20 DEC futures serve as the contracts long-term resistance level. Farmers at Extension meetings mentioned that at a \$4.20 futures price and typical basis, their corn enterprise would be profitable.

Given all of the production uncertainty, market bulls are hoping for another opportunity to price at a DEC 2019 price of \$4.50 or higher. Managers needing to sell at harvest should use price risk tools to protect revenue at profitable prices.

A challenge of using the futures market to manage risk during a weather market is not getting absorbed by the emotion of locking in a futures price that is profitable but could go even higher. The feeling of missing out on an even higher price and the ability to talk about hedging at the top of the market with neighbors may keep some managers from acting on profitable prices.

Figure 9. Frequency of the 2014 and 2019 DEC Corn Futures Contracts Trading in Price Ranges above \$4.60 per Bushel as of July 26, 2019.



This article is to serve as a reminder that the December 2019 contract could trade higher in response to information in the reports released on August 10. However, it is important to understand the true price potential for the contract and that the best pricing opportunities tend to occur before August. Managers should keep the potential of DEC 2019 corn futures reaching \$5/bushel in mind relative to recent history and seasonality of the futures market. Do not pass up the opportunity to be profitable in hopes of reaching \$5/bushel.

Topic 9. Potential 2019-20 Corn and Soybean Stocks-to-Use and Price Potential

The August series of production, acreage, and balance sheet estimates released on August 10 will provide the market a plethora of information to react to the potential size of the 2019 corn and soybean crops, potential ending stocks, and potential U.S. MYA farm prices for corn and soybeans. As discussed in Topic 1, the *Acreage* survey was conducted while farmers struggled to plant corn and soybeans and do not reflect what was actually planted this year. Tables 13 and 14 provide a matrix of potential U.S. corn and soybeans ending stocks-to-use ratios, respectively, for varying harvested area and yields. The objective of Tables 13 and 14 are to identify what acreage and yields might support higher corn and soybean U.S. MYA farm prices.

Let us start the discussion with the potential U.S. 2019-20 corn balance sheet in Table 13. The March survey indicated farmers intended to plant 92.8 million acres of corn, and the July *WASDE* adopted the 91.7 million acres from the *Acreage* survey. Another yield guess in the mix is from the June *WASDE* where the Outlook board reduced planted area by 3 million acres ad hoc based on the slow planting progress. Table 13 also considers a planted area that is 5, 7, and 9 million acres below the initial *Prospective Planting* survey. There is gossip in the market that corn's prevented planting acres will exceed 8 million acres this year, so the range of 9 million could be the upper limit for the extent of 2019 prevented planting area.

Table 13 also considers varying U.S. corn yields. USDA's initial yield was 176 bushels/acre in the May *WASDE*, but that yield was reduced to 166 bushels/acre in the June report due to the late-planted crop. Table 13 considers two lower yields, 160 and 158 bushels/acre, to provide sensitivity analysis on how lower yields would affect ending stocks and price.

Table 13 provides a matrix of potential ending stocks-to-use ratios for the 2019-20 corn market, assuming carry-in plus imports of 2.39 billion bushels from the July *WASDE*. Total use is held constant at 14.255 billion bushels, which is the total use from the July *WASDE*. The cells in the matrix for Table 13 shaded yellow indicate when ending stocks would fall below 1 billion bushels. The cells bordered by the black dashed line indicate the author's belief of the most likely outcome for 2019 corn. The 2019-20 stocks-to-use ratio could be 10% if the harvested area is 80 million acres, and the yield is 166 bushels/acre. A 10% stocks-to-use ratio suggests the U.S. MYA farm price would be

\$4.10/bushel, or \$0.40/bushel higher than the July 2019 estimate. A yield of 160 bushels/acre and harvested area of 78.2 million acres suggests a stocks-to-use ratio of 4.6% and a U.S. MYA farm price of \$5.50/bushel. At that price level, demand would decline and market dynamics would adjust towards a final stock-to-use ratio closer to 7%.

The story from Table 13 is that the futures price could adjust higher if there is the concern of stocks declining steadily. If a price bump occurs, it could be fleeting, and managers should be prepared to take advantage of pricing opportunities. The yield and acreage uncertainty will likely be debated all fall and into the final report in January. However, vigilance is necessary to monitor pricing opportunities for the 2019 crops as well as opportunities for the December 2020 corn futures contract.

Table 13. Projected 2019-20 U.S. Corn Stocks-to-Use Ratios for Varying Harvested Areas and Yields Assumptions.

| | | | 2019 U.S. Corn Yield (bu/acre) | | | |
|----------------------|---------------|-----------|----------------------------------|-------|-------|-------|
| | Planted | Harvested | 176 | 166 | 160 | 158 |
| | Million Acres | | 2019 U.S. Corn Ending Stocks-Use | | | |
| Prospective Planting | 92.8 | 84.6 | 21.2% | 15.3% | 11.7% | 10.5% |
| July WASDE | 91.7 | 83.6 | 20.0% | 14.1% | 10.6% | 9.4% |
| June WASDE | 89.8 | 82.4 | 18.5% | 12.7% | 9.3% | 8.1% |
| PP - 5 Million Acres | 87.8 | 80.0 | 15.6% | 10.0% | 6.6% | 5.5% |
| PP - 7 Million Acres | 85.8 | 78.2 | 13.3% | 7.8% | 4.6% | 3.5% |
| PP - 9 Million Acres | 83.8 | 76.4 | 11.1% | 5.7% | 2.5% | 1.4% |

Source: USDA-World Agricultural Outlook Board and Author's Projections.

Table 14. Projected 2019-20 U.S. Soybean Stocks-to-Use Ratios for Varying Harvested Areas and Yields Assumptions.

| Assumptions: | | | | | | |
|----------------------|---------------|-----------|--------------------------------------|-------|-------|-------|
| | | | 2019 U.S. Soybean Yield (bu/acre) | | | |
| | Planted | Harvested | 49.5 | 48.5 | 46 | 45 |
| | Million Acres | | 2019 U.S. Soybeans Ending Stocks-Use | | | |
| Prospective Planting | 84.6 | 83.6 | 26.4% | 24.3% | 19.3% | 17.2% |
| July WASDE | 80.0 | 79.0 | 20.9% | 19.0% | 14.2% | 12.3% |
| PP - 4 Million Acres | 80.6 | 79.6 | 21.6% | 19.7% | 14.9% | 12.9% |
| PP - 5 Million Acres | 79.6 | 78.6 | 20.4% | 18.5% | 13.8% | 11.9% |
| PP - 6 Million Acres | 78.6 | 77.6 | 19.3% | 17.4% | 12.7% | 10.8% |
| PP - 7 Million Acres | 77.6 | 76.7 | 18.1% | 16.2% | 11.6% | 9.7% |

Source: USDA-World Agricultural Outlook Board and Author's Projections.

Table 14 provides a similar analysis for the 2019-20 soybean ending stocks-to-use ratio and potential U.S. MYA farm price. Farmers intended to plant 84.6 million soybean acres when surveyed in March with the June *Acreage* survey at 80 million planted acres. Table 14 includes the potential loss of 4, 5, 6, and 7 million acres from the March survey due to prevented planting. The author doubts that soybean prevented planting area will exceed 5 million acres. However, the larger amount of prevented planting is included to demonstrate what harvested area and yields are needed to reduce the mountain of ending-stocks.

Table 14 provides varying U.S. average soybean yields. The May *WASDE* projected a yield of 49.5 bushels/acre, which was trimmed to 48.5-bushels in the July *WASDE*. Table 14 demonstrates the impact of a 46 and 45-bushel yield on ending stocks and price potential.


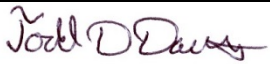

Table 14 assumes a carry-in plus imports of 1.07 billion bushels and total soybean use of 4.12 billion bushels. These estimates are from the July *WASDE*. The dashed box in the matrix in Table 14 is the values the author considers to be the most likely outcomes for the 2019 soybean stocks-to-use ratio. A harvested area of 79.6 million acres and a yield of 48.5 bushels would result in a stocks-to-use ratio of 19.7% and a U.S. MYA farm price of \$8.40/bushel, which is the estimate from the July *WASDE*. If the harvested area is 78.6 million acres and the yield is 46 bushels/acre, the

stocks-to-use ratio could decrease to 13.8%, which would correspond to a \$9.25/bushel U.S. MYA farm price. For comparison, a farm price of \$9.25 per bushel is \$0.85/bushel higher than the projections from the July report.

The takeaway message from Table 14 is that there could be a more bullish story to tell for soybeans. However, the production loss is not likely to be significant enough to mitigate the impact of a 1.05 billion bushel carry-in. The bearish risk for the soybean market is planted area that is larger than the 80 million acres from the June *Acreage* survey. The soybean market needs a production loss to whittle away at the mountain of stocks. Otherwise, the market will muddle through lower prices to stimulate use and discourage production. The price dynamics needed to reduce soybean stocks to levels achieved before the trade dispute would require multiple crop years. Mother Nature might be providing a quicker route to lower stocks and higher soybean prices.

Topic 10. How Do I Get on the Email Distribution List to Receive this Newsletter?

The *Crops Marketing and Management Update* is published monthly usually after the release of the USDA: WASDE report. You can find this issue and past issue on the UK Agricultural Economics Department's website at <http://www.uky.edu/Ag/AgEcon/extcmmu.php>. Email todd.davis@uky.edu to receive the newsletter by email.

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|---|--|--|
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