Crops Marketing and Management Update

Grains and Forage Center of Excellence

Dr. Todd D. Davis

Assistant Extension Professor – Department of Agricultural Economics

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Topic 1. March *WASDE* Update: USDA Increases Corn and Wheat Stocks

The March *WASDE* tends to focus on the size of the South American crops and the demand side of the balance sheet. Analysts surveyed before the report expected corn stocks to increase slightly (20 million bushels) from February but soybean stocks were expected to decline slightly (12 million bushels) from last month's estimates.

USDA surprised analysts by increase corn stock by 100 million bushels from the previous report. USDA reduced corn used in ethanol by 25 million bushels reflecting the slower pace of ethanol crush. Exports were trimmed by 75 million bushels reflecting that U.S. corn is becoming less competitive in the export market as South America will become more competitive as their harvest approaches (Table 1)

Ending corn stocks are projected at 1.835 billion bushels (Table 1). If realized, 2018 ending corn stocks will decline by 305 million bushels from 2017. This reduction in inventories will support a higher U.S. marketing-year average (MYA) price of $3.55 per bushel. Further decrease in stocks will be supportive of higher prices, especially as the stocks-to-use ratio falls below 10%.

The March report updated the corn production estimates for Argentina and Brazil. The 2018-planted corn crop is projected at 1.8 and 3.7 billion bushels in Argentina and Brazil, respectively, and is not changed from the February report. If realized, this would be a 551 and 492 million bushel increase over the 2017-corn crop.

USDA made minor adjustments to the soybean demand estimates in the March report by increasing the quantity of soybeans crushed to 2.1 billion bushels, a 10 million bushel increase from the previous month. This reduced ending stocks by 10 million bushels to a projected ending stocks of 900 million bushels. USDA did not adjust the U.S. MYA soybean price from the previous month keeping it at $8.60/bushel. If realized, the 2018-19 MYA price would be $0.73/bushel less than the 2017-18 MYA price (Table 2).

Table 1. U.S. Corn Supply and Use.

	2015-16	2016-17	2017-18 Estimated	2018-19 Projected	Change from 17-18
Planted Area (million)	88.0	94.0	90.2	89.1	-1.1
Harvested Area (million)	80.8	86.7	82.7	81.7	-1.0
Yield (bushels/acre)	168.4	174.6	176.6	176.4	-0.2
			Million Bushels		
Beginning Stocks	1,731	1,737	2,293	2,140	-153
Production	13,602	15,148	14,609	14,420	-189
Imports	67	57	36	40	+4
Total Supply	15,401	16,942	16,939	16,600	-339
Feed and Residual	5,131	5,472	5,304	5,375	+71
Food, Seed & Industrial	6,635	6,883	7,056	7,015	-41
Ethanol and by-products	5,206	5,432	5,605	5,550	-55
Exports	1,898	2,293	2,438	2,375	-63
Total Use	13,664	14,649	14,799	14,765	-34
Ending Stocks	1,737	2,293	2,140	1,835	-305
Stocks/Use	12.7%	15.7%	14.5%	12.4%	-2.0%
Days of Stocks	46	57	53	45	-7
U.S. Marketing-Year Average Price ($/bu)	$3.61	$3.36	$3.36	$3.55	+$0.19

Source: March 2019 WASDE - USDA: WAOB.

Table 2. U.S. Soybeans Supply and Use.

	2015-16	2016-17	2017-18 Estimated	2018-19 Projected	Change from 17-18
Planted Area (million)	82.7	83.4	90.2	89.2	-1.0
Harvested Area (million)	81.7	82.7	89.5	88.1	-1.4
Yield (bushels/acre)	48	52	49.3	51.6	+2.3
			Million Bushels		
Beginning Stocks	191	197	302	438	+136
Production	3,926	4,296	4,412	4,544	+132
Imports	24	22	22	20	-2
Total Supply	4,140	4,515	4,735	5,002	+267
Crushings	1,886	1,901	2,055	2,100	+45
Exports	1,936	2,174	2,129	1,875	-254
Seed	97	105	104	96	-8
Residual	24	34	9	31	+22
Total Use	3,944	4,213	4,297	4,102	-195
Ending Stocks	197	302	438	900	+462
Stocks/Use	5.0%	7.2%	10.2%	21.9%	+11.7%
Days of Stocks	18	26	37	80	+42.9
U.S. Marketing-Year Average Price ($/bu)	$8.95	$9.47	$9.33	$8.60	-$0.73

Source: March 2019 WASDE - USDA: WAOB.

USDA did not adjust the size of the 2018-planted soybean crop in Argentina from the February report but did reduce Brazil's soybean crop by 18 million bushels. USDA projects the Argentine soybean crop at 2 billion bushels and the Brazilian crop at 4.2 billion bushels. If realized, the Argentine crop will be 632 million bushels than in 2017 while the Brazilian soybean crop will be 158 million bushels smaller than the 2017 crop. Still, the Brazilian soybean crop would be slightly larger than the substantial 2016 soybean crop.

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

	2015-16	2016-17	2017-18 Estimated	2018-19 Projected	Change from 17-18
Planted Acres (million)	55.0	50.1	46.1	47.8	+1.7
Harvested Acres (million)	47.3	43.9	37.6	39.6	+2.0
Yield (bushels/acre)	43.6	52.7	46.4	47.6	+1.2
			Million Bushels		
Beginning Stocks	752	976	1,181	1,099	-82
Production	2,062	2,309	1,741	1,884	+143
Imports	113	118	157	145	-12
Total Supply	2,927	3,402	3,079	3,128	+49
Food	957	949	964	965	+1
Seed	67	61	63	63	+0
Feed and Residual	152	156	51	80	+29
Exports	775	1,055	901	965	+64
Total Use	1,952	2,222	1,980	2,073	+93
Ending Stocks	976	1,181	1,099	1,055	-44
Stocks/Use	50.0%	53.2%	55.5%	50.9%	-4.6%
Days of Stocks	183	194	203	186	-17
U.S. Marketing-Year Average Price ($/bu)	$4.89	$3.89	$4.72	$5.15	+$0.43

Source: March 2019 WASDE - USDA: WAOB.

USDA made minor adjustments to the wheat supply and demand estimates. USDA increased imports by 5 million bushels from the previous month. USDA also reduced wheat for food use by 5 million bushels and exports by 35 million bushels. The net impact on stocks is a 45 million bushel increase from the December projections.

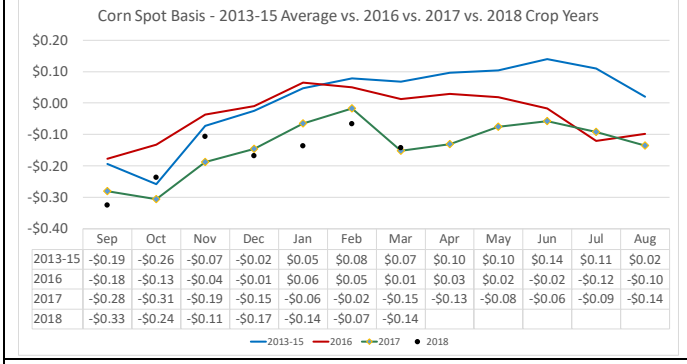
If realized, wheat stocks could shrink by 44 million bushels from last year. The days of stocks are projected at 186 days, which is a 17-day reduction in inventories from last year. The U.S. MYA price is expected to increase by $0.43/bushel to $5.15/bushel for 2018-19.

Topic 2. 2018 Corn, Soybean, Wheat Basis vs. Previous Years – Implications for Storage

Figure 1, Figure 2, and Figure 3 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.

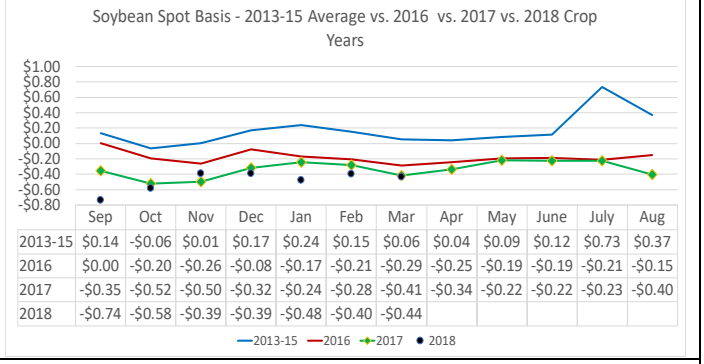
The corn basis is -$0.14/bushel under the May corn contract, which is a $0.10/bushel increase from harvest in October. Last year, the corn basis appreciated from October to March by $0.15/bushel, which is the same amount of appreciation in basis for the 2016 corn crop (Figure 1).

The average soybean basis, as of March 8, 2019, was -$0.44/bushel under the May 2019 soybean contract. The basis is $0.03 per bushel wider than 2017 basis and $0.15 per bushel wider than the 2016 basis (Figure 2). Last year, the basis appreciated $0.28/bushel from October to January, but the 2016 crop's basis had a maximum appreciation in the basis of $0.12/bushel in December. Basis appreciation will be necessary for positive returns to soybean storage with current appreciation at $0.15/bushel from October to March (Figure 2).



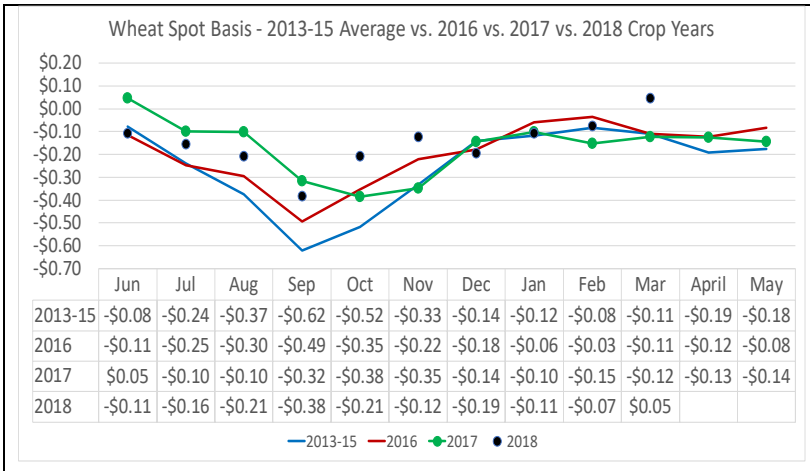
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
2013-15	-$0.19	-$0.26	-$0.07	-$0.02	$0.05	$0.08	$0.07	$0.10	$0.10	$0.14	$0.11	$0.02
2016	-$0.18	-$0.13	-$0.04	-$0.01	$0.06	$0.05	$0.01	$0.03	$0.02	-$0.02	-$0.12	-$0.10
2017	-$0.28	-$0.31	-$0.19	-$0.15	-$0.06	-$0.02	-$0.15	-$0.13	-$0.08	-$0.06	-$0.09	-$0.14
2018	-$0.33	-$0.24	-$0.11	-$0.17	-$0.14	-$0.07	-$0.14					

Figure 1. Western Kentucky Corn Spot Market Basis Appreciation from September to August for 2013 to 2018 Crop Years.
Basis Calculated on March 8, 2019



	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
2013-15	$0.14	-$0.06	$0.01	$0.17	$0.24	$0.15	$0.06	$0.04	$0.09	$0.12	$0.73	$0.37
2016	$0.00	-$0.20	-$0.26	-$0.08	-$0.17	-$0.21	-$0.29	-$0.25	-$0.19	-$0.19	-$0.21	-$0.15
2017	-$0.35	-$0.52	-$0.50	-$0.32	-$0.24	-$0.28	-$0.41	-$0.34	-$0.22	-$0.22	-$0.23	-$0.40
2018	-$0.74	-$0.58	-$0.39	-$0.39	-$0.48	-$0.40	-$0.44					

Figure 2. Western Kentucky Soybean Spot Market Basis Appreciation from September to August for 2013 to 2018 Crop Years.
Basis Calculated on March 8, 2019



	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May
2013-15	-$0.08	-$0.24	-$0.37	-$0.62	-$0.52	-$0.33	-$0.14	-$0.12	-$0.08	-$0.11	-$0.19	-$0.18
2016	-$0.11	-$0.25	-$0.30	-$0.49	-$0.35	-$0.22	-$0.18	-$0.06	-$0.03	-$0.11	-$0.12	-$0.08
2017	$0.05	-$0.10	-$0.10	-$0.32	-$0.38	-$0.35	-$0.14	-$0.10	-$0.15	-$0.12	-$0.13	-$0.14
2018	-$0.11	-$0.16	-$0.21	-$0.38	-$0.21	-$0.12	-$0.19	-$0.11	-$0.07	$0.05		

Figure 3. Western Kentucky Wheat Spot Market Basis Appreciation from June to May for 2013 to 2018 Crop Years.
Basis Calculated on March 8, 2019

The average appreciation in wheat basis was $0.14/bushel from harvest to February for the 2013-15 crop years. The average appreciation in the basis for the 2016 crop year was $0.21/bushel from harvest to February. Maximum appreciation was $0.00/bushel in January for the 2017 crop (Figure 3).

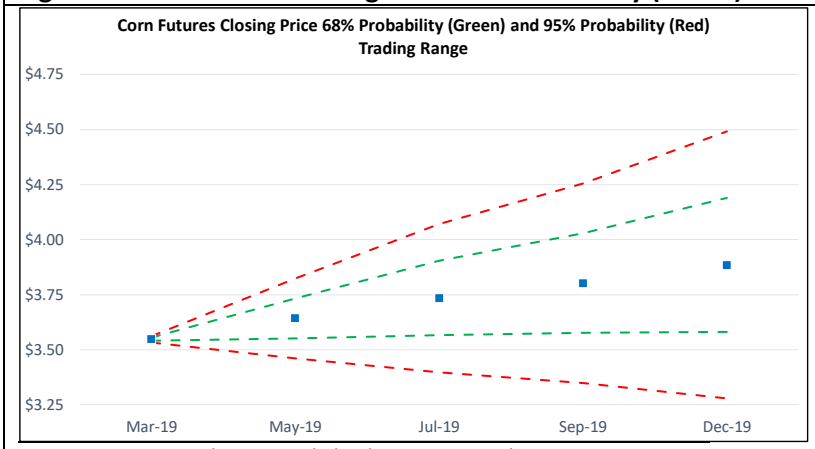
The 2018 wheat basis is currently at +$0.05 / bushel under the May contract. Further narrowing in basis will improve the returns to wheat storage for those that may have wheat in storage to sell before 2019 harvest.

Topic 3. Projected Corn, Soybean, and Wheat Futures Trading Ranges to December 2019

Figures 4–6 provide the projected futures price trading range, by futures contract month, based on the contracts' volatility for the previous 21-day period. 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 2019. That is because there is more time until expiration; thus, there is a wider potential trading range for these deferred futures contracts.

Figure 4 provides the probabilistic trading range for the corn futures contracts from March 2019 to December 2019. There is a 68% probability that the May 2019 corn contract will trade between $3.55 and $3.73 and a 95% probability that the May 2019 corn contract will trade between $3.46 and $3.82 (Figure 4). 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 $3.58 and $4.19 per bushel.

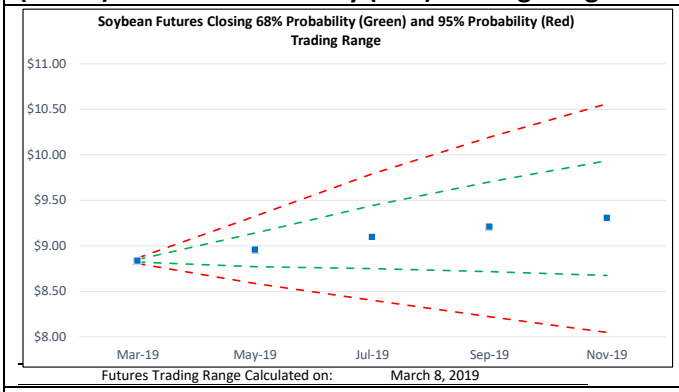
Figure 4. Corn Futures Closing Price 68% Probability (Green) and 95% Probability (Red) Trading Range.



Trading range calculated on March 8, 2019, using the average volatility of the previous 21-day period. The 68% probability range is the closing futures price on March 8, 2019, plus and minus one standard deviation. The 95% probability range is the closing price plus and minus two standard deviations.

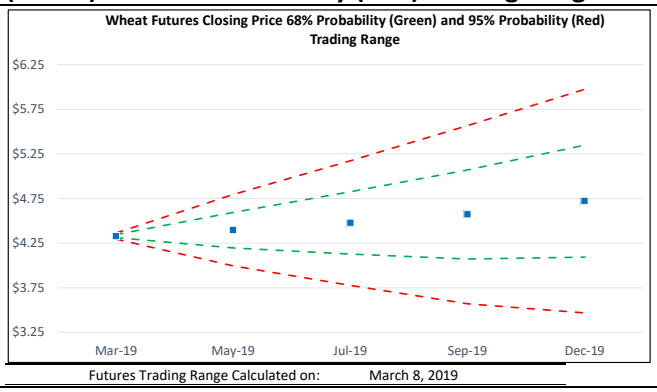
Figure 5 provides the probabilistic trading range for soybean futures contracts from March 2019 to November 2019. The May 2019 soybean futures have a 68% probability of trading between $8.77 to $9.14 with a 95% likelihood of trading between $8.59 and $9.33. The November 2019 futures contract has a 68% probability of trading between $8.68 and $9.93 per bushel (Figure 5). The increased volatility in the soybean market contributes to this wide range in possible soybean prices for the new-crop soybean futures contracts.

Figure 5. Soybean Futures Closing Price 68% Probability (Green) and 95% Probability (Red) Trading Range.



Trading range calculated on March 8, 2019, using the average volatility of the previous 21-day period. The 68% probability range is the closing futures price on March 8, 2019, plus and minus one standard deviation. The 95% probability range is the closing price plus and minus two standard deviations.

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



Trading range calculated on March 8, 2019, using the average volatility of the previous 21-day period. The 68% probability range is the closing futures price on March 8, 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 wheat futures contract from March 2019 to December 2019 contracts. The July 2019 wheat futures contract has a 68% probability of trading between $4.13 and $4.82 per bushel with a 95% chance of trading between $3.99 and $4.80/bushel (Figure 6). The wheat market is not as impacted by tariffs and trade uncertainty so any production problem domestic or worldwide would be supportive of higher prices. The December 2019 wheat contract has a 68% chance of trading between $4.09 and $5.35/bushel (Figure 6), which should be monitored for managing 2019 wheat that is planned to be stored.

Topic 4. 2018 Corn and Soybean Risk Management Opportunities for May Delivery

Managers storing corn, soybeans, and wheat into May 2019 should consider if the futures or options markets are providing opportunities to protect prices at profitable levels. Table 4 compares the risk protection provided by hedging (or Hedge-to-Arrive contracts), forward contracts, or with put options for corn for varying harvested yields.

Each table illustrates the break-even price that covers total inputs, rent, overhead, family living, and storage. The July 2019 corn futures contract and put options on the July 2019 corn contract are compared for May 2019 delivery. The similar price risk tools are evaluated for soybeans (Table 5) to measure the potential profitable returns over total variable costs, inputs, overhead, family living, and on-farm storage.

Table 4. Western Kentucky Corn Storage Risk Management to May 2019 for Various Yield Objectives.

Storage Hedge: May 2019	Corn			
Yield	170	180	190	200
TVC+Rent+Overhead+Family Living ($/acre)	$670	$670	$670	$670
TVC+Rent+Overhead+Family Living ($/bu)	$3.94	$3.72	$3.53	$3.35
TVC+Rent+OH+Family+$0.31 storage ($/bu)	$4.25	$4.03	$3.84	$3.66
Hedge @ $3.74+$-0.10 basis = $3.63	-$0.62	-$0.40	-$0.20	-$0.03
Forward Contract at $3.59	-$0.66	-$0.44	-$0.24	-$0.07
Put: $3.70 strike @$0.124 = $3.48 floor	-$0.78	-$0.56	-$0.36	-$0.18
Strategies Evaluated on:	March 8, 2019			

The market is not providing opportunities to protect returns for stored corn for the assumed costs and yields (Table 4). The best July 2019 Futures price, post-harvest, was $4.00 on 12/18/18. The July contract has fallen $0.26 since then.

Table 5 presents risk management alternatives for storing soybeans from harvest to February 2019. The example varies the harvested yield to illustrate how the break-even price over inputs, rent, overhead, family living, and storage changes with yield.

Table 5. Western Kentucky Soybean Storage Risk Management to May 2019 for Various Yield Objectives.

Storage Hedge: May2019	Soybeans			
Yield	45	55	65	75
TVC+Rent+Overhead+Family Living ($/acre)	$528	$528	$528	$528
TVC+Rent+Overhead+Family Living ($/bu)	$11.73	$9.60	$8.12	$7.04
TVC+Rent+OH+Family+$0.32 storage ($/bu)	$12.05	$9.92	$8.44	$7.36
Hedge @ $9.10 + -$0.45 basis = $8.65	-$3.41	-$1.27	+$0.20	+$1.29
Forward Contract at $8.65	-$3.40	-$1.27	+$0.21	+$1.29
Put: $9.00 strike @$0.22 = $8.33 floor	-$3.72	-$1.59	-$0.11	+$0.97
Strategies Evaluated on:	March 8, 2019			

The example illustrates that a yield of 65-bushels is needed to lock in a profit using forward contracts. Table 5 also shows that lower yields will be challenged to find profitability at current prices and the assumed costs.

Topic 5. Projected Return to Storage for Corn and Soybeans

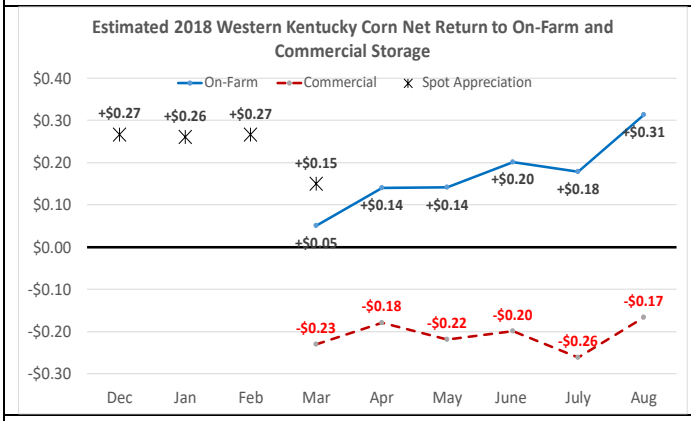
The returns to corn storage have declined significantly this month as the May and July futures contracts have lost $0.09 and $0.17 per bushel, respectively, since March 1, 2019. The futures contracts have traded in a consistent range with the May contract averaging $3.86/bushel from December through February. Similarly, the July contract averaged $3.93/bushel from December through February but is now $0.20/bushel below that average trading range.

Figure 7 provides projected returns to on-farm (blue) and commercial corn storage (red) from harvest to the following August. The return to on-farm storage is calculated as the deferred price less the harvest price less the monthly opportunity cost. The harvest price for corn is assumed at $3.34 per bushel. The annual interest rate is 5.5%, which gives a monthly interest cost of $0.015/bushel for corn. The corn futures complex closing prices on March 8, 2019, and the average monthly spot basis are used to forecast the deferred cash prices. The return to on-farm storage is the return to the farm's drying and storage system.

Figure 7 demonstrates that the realized spot price appreciation, less opportunity cost, has been $0.27 for December through February. The spot appreciation in March is $0.15/bushel with the projected on-farm storage with lower projected returns for April and May. The meltdown in the corn futures market has eroded the potential for further returns to storage given the current futures market fundamentals.

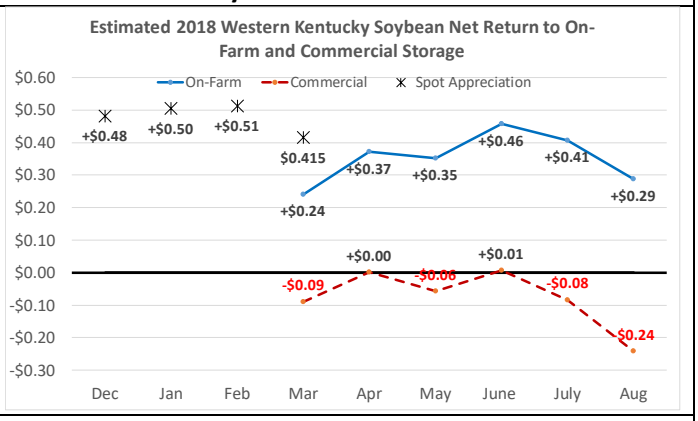
The return to commercial corn storage is the deferred price less the harvest price, interest costs, and commercial storage fees. Commercial storage is assumed at $0.20/bushel from harvest to January 31, with an additional $0.04/bushel per month starting in February. Given the conservative price forecast, returns from commercial storage for corn is currently projected to provide negative returns for the rest of the potential storage season (Figure 7).

Figure 7. Projected Return to Storage for On-Farm and Commercial for Corn.



Projected on March 8, 2019.

Figure 8. Projected Return to Storage for On-Farm and Commercial for Soybeans.



Projected on March 8, 2019.

The returns to soybean storage have also declined significantly this month as the May and July futures contracts have both lost $0.16 per bushel, respectively, since March 1, 2019. The futures contracts have traded in a consistent range with the May contract averaging $9.25/bushel from December through February. Similarly, the July contract averaged $9.38/bushel from December through February but is now $0.28/bushel below that average trading range.

The projected on-farm (red) and commercial (blue) storage returns for soybeans are presented in Figure 8. The harvest price for soybeans is projected at $8.07 per bushel with a monthly interest cost of $0.037/bushel. The implied basis from cash forward contract bids posted on DTN is used in forecasting the deferred spot prices. This implied basis is used as a conservative approach given the uncertainty in trade and the impact on basis. Figure 8 identifies that the realized spot price appreciation, less opportunity cost, for March has been $0.415/bushel. The projected returns in April and May are less than $0.415 which suggests little reward from further storage (Figure 8).

The return to commercial soybean storage is the deferred price less the harvest price, interest costs, and commercial storage fees. Commercial storage is assumed at $0.25/bushel from harvest to January 31, with an additional $0.04/bushel per month starting in February. The projections in Figure 8 suggest no opportunity for positive returns to commercial storage.

Topic 6. Pre-Harvest 2019 Corn, Soybean, and Wheat Risk Management Opportunities

Tables 6-9 analyze the effectiveness of using hedging with futures or put options in protecting revenue that covers total input costs, cash rent, overhead and family living for corn, soybeans, wheat, and double-crop soybeans in 2019.

Table 6 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 $3.58/bushel assuming a -$0.30/bushel harvest-time basis. The second is to lock in a cash price with a forward contract at $3.60/bushel. The third alternative is to establish a price floor at $3.36/bushel by buying a put option with a $3.90 strike price that costs $0.244.

Table 6. Risk Management Alternatives for 2019 Western Kentucky Corn for Various Yield Objectives.

Yield	160	170	180	190	200
TVC+Rent+Overhead+Family Living ($/acre)	$670	$670	$670	$670	$670
TVC+Rent+Overhead+Family Living ($/bu)	$4.19	$3.94	$3.72	$3.53	$3.35
Hedge @ $3.88+ -$0.30 basis = $3.58	-$0.60	-$0.36	-$0.14	+$0.06	+$0.24
Forward Contract at $3.60	-$0.59	-$0.34	-$0.12	+$0.07	+$0.25
Put: $3.90 strike @$0.244 = $3.36 floor	-$0.83	-$0.59	-$0.37	-$0.17	+$0.01
Strategies Evaluated on:	March 8, 2019				

Those farms that routinely produce 200-bushel corn may be able to lock-in a price floor that covers all of the budgeted costs by purchasing a put option (Table 6). A price floor at $3.36 locks in a $0.01/bushel return and allows farmers to benefit if the futures price increases.

Table 6 reminds managers that the corn market currently offers risk management opportunities for the 2019 crop if the farm routinely harvests corn yields above 180 bushels, as hedging with futures or cash forward contracts may lock in a positive return over input costs, rent, overhead, and family living.

Table 7 illustrates the potential of using risk management products to lock in a profitable return on input costs, cash rent, overhead and family living for 2019 soybeans if managers routinely obtain yields of 65 bushels/acre or more. Managers that are comfortable with hedging with futures or using HTA contracts may be able to lock in a profit of $0.68/bushel assuming a harvest-time basis of -$0.50/bushel under the November 2019 contract. A forward contract could lock in a return of $0.75/bushel for a yield of 65 bushels/acre. Put options could be used to establish a price floor at $8.38/bushel. The flexibility of options to establish a floor and to benefit from higher prices may be a good alternative for managers to consider for bushels planned to be sold at harvest (Table 7).

Table 7. Risk Management Alternatives for 2019 Western Kentucky Soybeans for Various Yield Objectives.

Yield	45	50	55	60	65
TVC+Rent+Overhead+Family Living ($/acre)	$528	$528	$528	$528	$528
TVC+Rent+Overhead+Family Living ($/bu)	$11.73	$10.56	$9.60	$8.80	$8.12
Hedge @ $9.31 + -$0.50 basis = $8.81	-$2.93	-$1.76	-$0.80	+$0.00	+$0.68
Forward Contract at $8.87	-$2.86	-$1.69	-$0.73	+$0.07	+$0.75
Put: $9.40 strike @$0.517 = $8.38 floor	-$3.35	-$2.18	-$1.22	-$0.42	+$0.26
Strategies Evaluated on:	March 8, 2019				

The soybean market is not offering risk management opportunities for yields less than 65 bushels/acre. Given the uncertainty in the soybean market, managers should monitor opportunities to manage risk when they are available.

Table 8. Risk Management Alternatives for 2019 Western Kentucky Wheat for Various Yield Objectives.

Yield	60	70	80	90	100
TVC+50% Rent+Overhead+Family Living ($/acre)	$476	$476	$476	$476	$476
TVC+50% Rent+Overhead+Family Living ($/bu)	$7.93	$6.80	$5.95	$5.29	$4.76
Hedge @ $4.48 - $0.10 basis = $4.38	-$3.56	-$2.43	-$1.58	-$0.91	-$0.39
Forward Contract at $4.36	-$3.57	-$2.44	-$1.59	-$0.93	-$0.40
Put: $4.50 strike @$0.241 = $4.16 floor	-$3.77	-$2.64	-$1.79	-$1.13	-$0.60
Strategies Evaluated on:	March 8, 2019				

Table 8 reports the potential of using risk management to lock in a profitable return on inputs, one-half of cash rent, overhead, and family living expense for 2019 winter wheat. The decline in the July 2019 futures contract has removed any potential of using risk management tools to protect positive returns on a percentage of production.

Table 9. Risk Management Alternatives for 2019 Western Kentucky Double-Crop Soybeans for Various Yield Objectives.

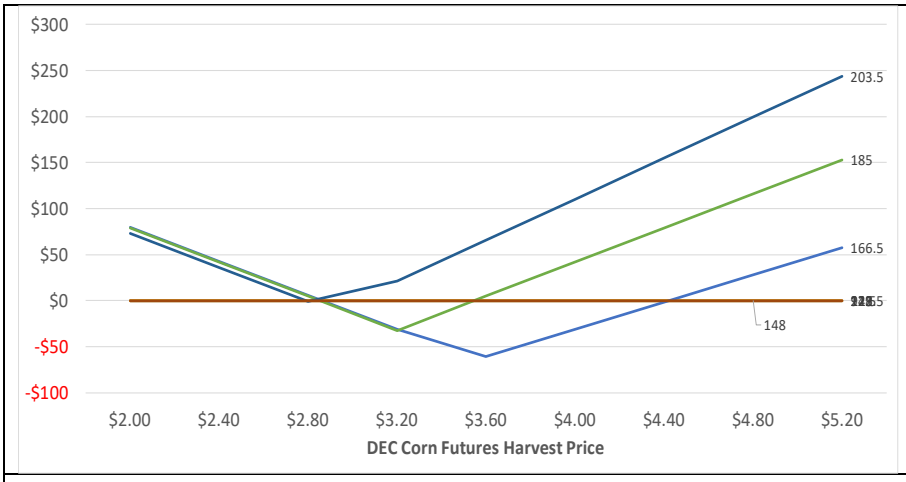
Yield	35	40	45	50	55
TVC+Rent+Overhead+Family Living ($/acre)	$393	$393	$393	$393	$393
TVC+Rent+Overhead+Family Living ($/bu)	$11.21	$9.81	$8.72	$7.85	$7.14
Hedge @ $9.31 + -$0.50 basis = $8.81	-$2.41	-$1.01	+$0.08	+$0.96	+$1.67
Forward Contract at $8.87	-$2.34	-$0.94	+$0.15	+$1.02	+$1.73
Put: $9.40 strike @$0.517 = $8.38 floor	-$2.83	-$1.43	-$0.34	+$0.53	+$1.25
Strategies Evaluated on:	March 8, 2019				

The soybean market is offering risk management opportunities for double-crop yields of 45 bushels/acre or larger. Given the uncertainty in the soybean market, managers should monitor opportunities to manage risk when they are available.

Topic 7. Combining Crop Insurance and Forward Contracts to Reduce Revenue Risk: Preliminary Game Plans for 2019 Corn, Soybeans, and Wheat

The final topic evaluates the potential risk protection provided by combining crop insurance with forward contracts to manage revenue risk for corn (Figure 9) and full-season soybeans (Figure 10). The RP crop insurance projected price is $4.00 per bushel and coverage at the 80% level. The marketing plan is to forward contract 50% of expected production (assuming the expected yield of 185-bushels) at a cash price of $3.80 per bushel. At a harvested

yield of 185-bushel (Figure 9 – green line), the return over budgeted costs is $-32/acre at a DEC 19 futures price of $3.20/bushel ($2.90/bushel cash). If there is a 10% yield loss (Figure 9 – light blue line), the maximum loss is -$61/acre at the DEC 19 futures price of $3.60/bushel ($3.30/bushel cash). The lines form a "v-shape" which reflects crop insurance indemnities paid from lower prices or yields.



The dark blue-line reflects a 10% higher yield of 203.5 bushels/acre that has the lowest return at -$1/acre at a DEC 19 futures price of $2.80/bushel ($2.50/bushel cash) (Figure 9). While not shown, a 20% yield loss would have a maximum loss of -$104/acre at a futures price of $4.00/bushel futures ($3.70/bushel cash). A loss of over $100 per acre would strain working capital and likely exacerbate liquidity problems.

Figure 9. Return over Total Inputs, Land, and Overhead Costs for 2019 Western Kentucky Corn.

The return over total budgeted soybean costs for full-season soybeans is shown in Figure 10. The risk management plan is to purchase RP insurance at the 75% coverage level at a projected price of $9.54/bushel. The marketing plan is to forward contract 50% of expected production (assuming an expected yield of 55 bushels) at a cash price of $9.20 per bushel. Assuming a -$0.50/bushel basis, the November 2019 futures price would be $9.70/bushel to fulfill this marketing objective.

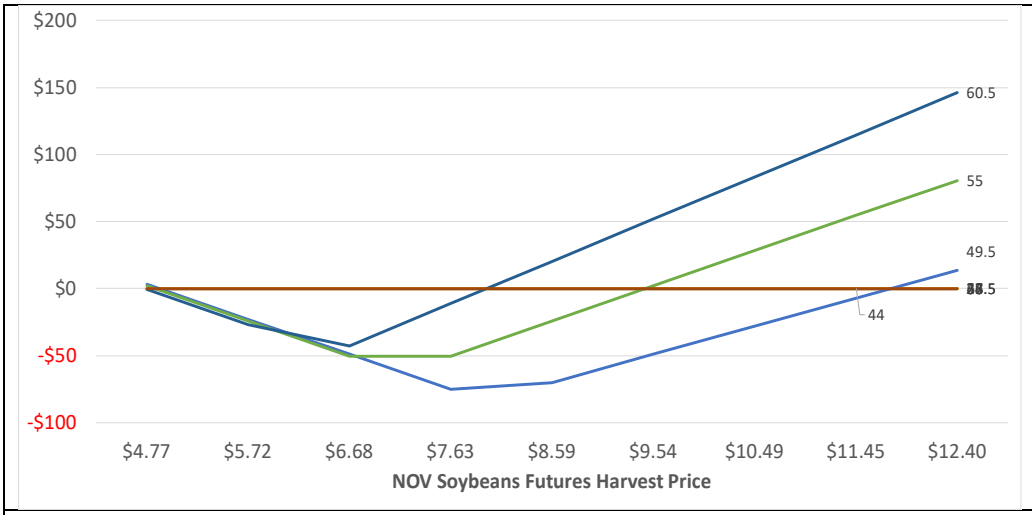


Figure 10. Return over Total Inputs, Land, and Overhead Costs for 2019 Western Kentucky Full Season Soybeans.

For the planned yield of 55 bushels/acre (Figure 10 -- green line), the returns are positive until the futures price of $8.59/bushel ($8.09/bushel cash). If the yield is 60.5 bushels (10% higher, dark-blue line), the returns are positive until the futures price is $7.63/bushel ($6.13/bushel cash). If yields are 10% lower at 49.5 bushels/acre (Figure 10 – light blue), then returns are negative for most future prices. Figure 10 demonstrates that soybean margins are thin and risk management tools are not as effective as in corn in protecting the profit margins from a 10% yield loss.

If soybeans experienced a 10% yield loss, the budgeted return would be -$49/acre at a cash price of $9.04/bushel. At a cash price of $8.09/bushel, the loss would be -$70/acre. A 10% yield loss given the budgeted costs would contribute to liquidity problems for this cash grain farm.

The purpose of this article is to demonstrate how risk management tools can be combined to protect revenue. Unfortunately, there is not a silver bullet cure to provide 100 percent risk protection. Managers should calculate how much working capital is available and gauge how much risk can be absorbed by the farm business. The risk that cannot be absorbed by the farm business should be passed to the insurance market and price risk tools.

Topic 8. 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.

College of Agriculture, Food and Environment
Agricultural Economics

Todd D. Davis
Assistant Extension Professor
Extension Economist
Crop Economics Marketing & Management

University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service