



2022 Crop Insurance Prices Announced *Highlighting Revenue Protection Policy Examples for Corn, Soybeans, and Cotton*

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There are multiple factors to consider when deciding whether to purchase a crop insurance policy or not. One such factor to keep in mind is that while risk protection is needed, the level of risk protection desired depends upon one's attitude regarding risk exposure (i.e. risk preference). A second factor one needs to examine when contemplating the purchase of crop insurance is crop mix diversification on the farm and the existence (if any) of off-farm income. Selecting a coverage level involves weighing a tradeoff between a higher level of protection and a higher total premium or electing for a lower level of protection with a lower total premium. Additionally, the decision to purchase crop insurance may be influenced by the portion (amount) of the premium that is subsidized. As the coverage level increases, the crop insurance premium subsidy decreases. The level of coverage chosen is mainly influenced by an individual producer's perception toward risk and their ability (willingness) to withstand risk. Also, the financial position of the operation is another key factor to consider when evaluating what level of coverage is preferable. Different types of crop insurance policies have different unit structures. The unit structure impacts the size of the premium a producer pays for a specific level of coverage.

The sales closing date for most crop insurance products in Louisiana is February 28, 2022. Projected prices have been announced and appear in Table 1.

Table 1. Crop insurance projected prices, 2022 crop year.

CROP	PROJECTED PRICE	DISCOVERY DATES	PRICE VOLATILITY	CONTRACT
CORN	\$5.87	1/15/22-2/14/22	0.22	CBOT SEPT 2022
COTTON	\$1.02	1/15/22-2/14/22	0.22	ICE DEC 2022
SORGHUM	\$5.73	1/15/22-2/14/22	0.21	CBOT SEPT 2022
RICE (LG)	\$0.1450	1/15/22-2/14/22	0.09	CBOT SEPT 2022
SOYBEANS	\$13.69	1/15/22-2/14/22	0.20	CBOT NOV 2022

Insurance harvest prices, specific to the contracts listed in Table 1, will be announced by the USDA-RMA on a later date. The harvest price discovery period for both corn and long grain (LG) rice begin August 1st. For grain sorghum, the harvest price discovery period begins September 1st. For soybeans and cotton, the harvest price discovery period begins October 1st.

To many in the industry, crop insurance premiums for all products will be higher in 2022. Analysts say this is because 1.) commodity prices are projected to be higher in 2022; and 2.) market volatility is projected to be greater in 2022. These two elements, when combined, serve to put upward pressure on crop insurance premiums (Schnitkey et al.). The market's definition of volatility is basically the market's take on the potential for market price variability for a particular commodity in a given year. The higher

the projections for crop prices are, the greater the measure of uncertainty or variability will be. Since higher variability intimates the increased possibility of crop insurance payments, those crops where insurers purchase higher coverage levels will see a greater increase in their crop insurance premium for that covered commodity as compared with relatively little change for premiums at lesser coverage levels.

Corn has a projected price of \$5.87 per bushel with a volatility factor of 0.22 for 2022. This is the highest level of volatility for corn for the period 2018-2022. Figure 1. Cotton has a projected price of \$1.02 per pound with a volatility factor of 0.22 for 2022. This too, like in the case of corn, is the highest level of volatility for cotton for the period 2018-2022. Figure 2. Soybeans have a projected price of \$13.69 per bushel with a volatility factor of 0.20 for 2022. This is the highest level of volatility for soybeans for the period 2018-2022. Figure 3.

Figure 1. Louisiana Corn Crop Insurance Prices/Price Volatility: 2018-2022.

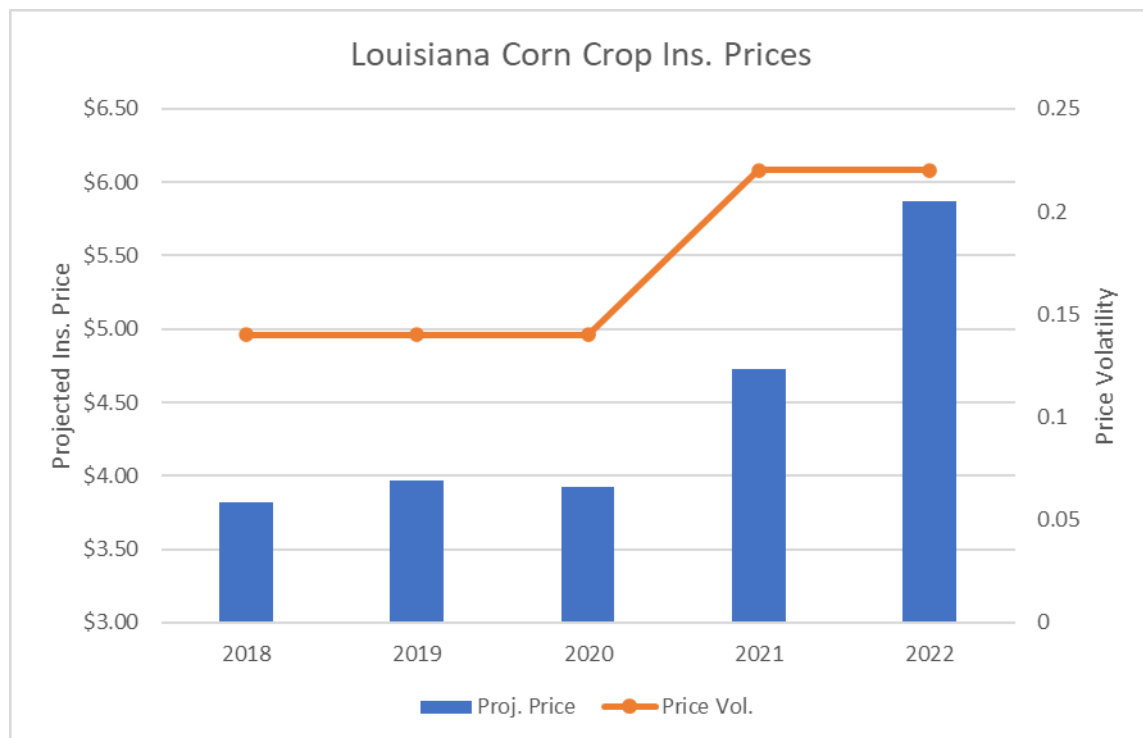


Figure 2. Louisiana Cotton Crop Insurance Prices/Price Volatility: 2018-2022.

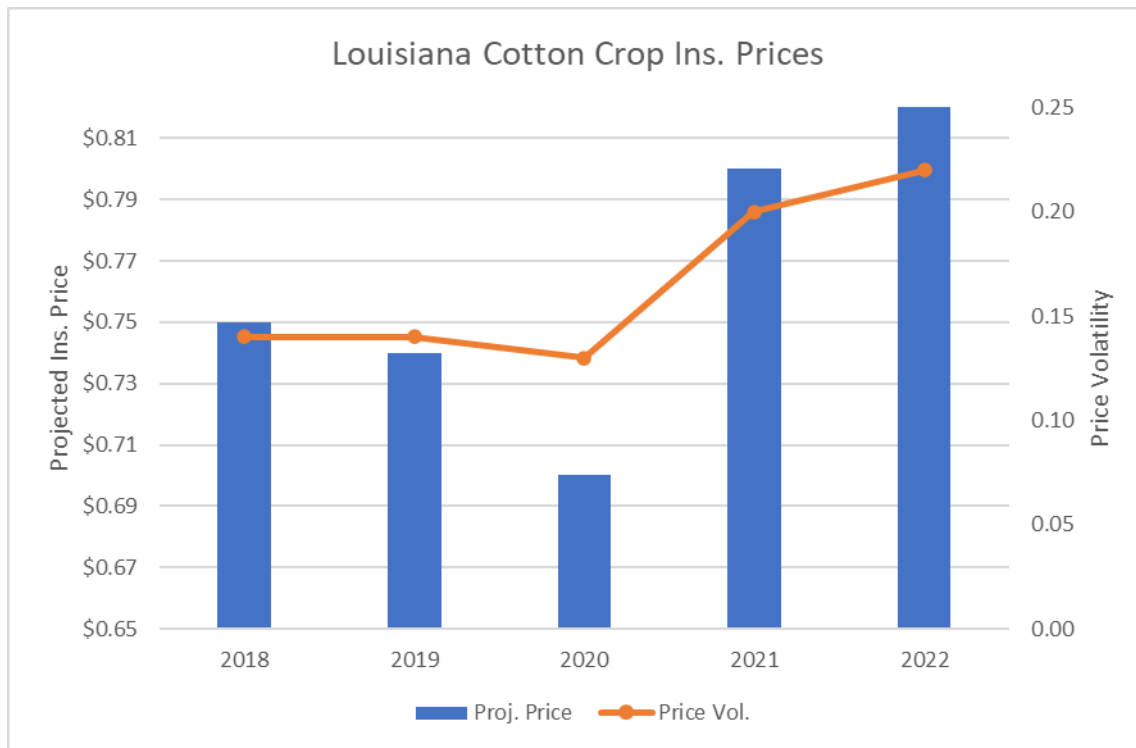
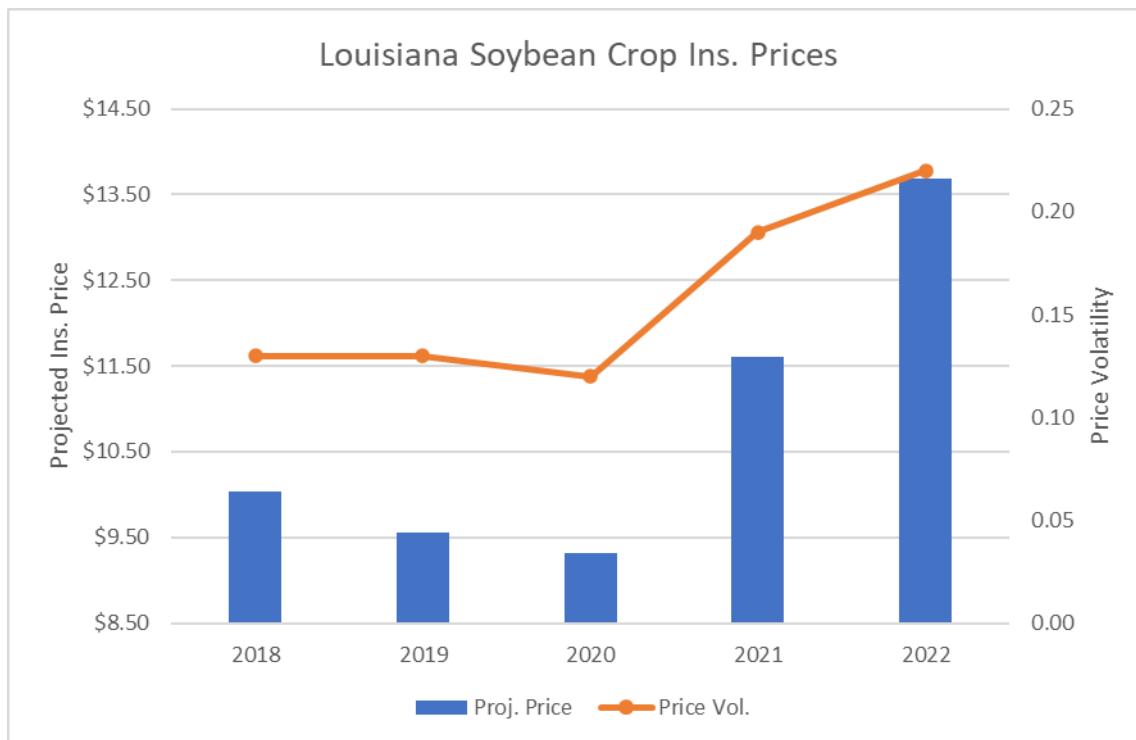


Figure 3. Louisiana Soybean Crop Insurance Prices/Price Volatility: 2018-2022.



When making a crop insurance purchase decision, several factors should be considered. Table 2 presents a basic overview of the revenue protection policy structure for corn. Buy-up coverage varies between

65% to 85% for a farm with an APH of 180 bushels. A graphical illustration of the amount of revenue (per acre) protected via a revenue protection insurance is shown in Figure 4.

A “*what if analysis*” is also included in Table 2 that models the actual sustained yield at harvest and the projected insurance harvest price. These parameters are held constant for each coverage level.

Figure 4. Corn Corp Buy-up Revenue Protection Coverages for levels 65-85%.

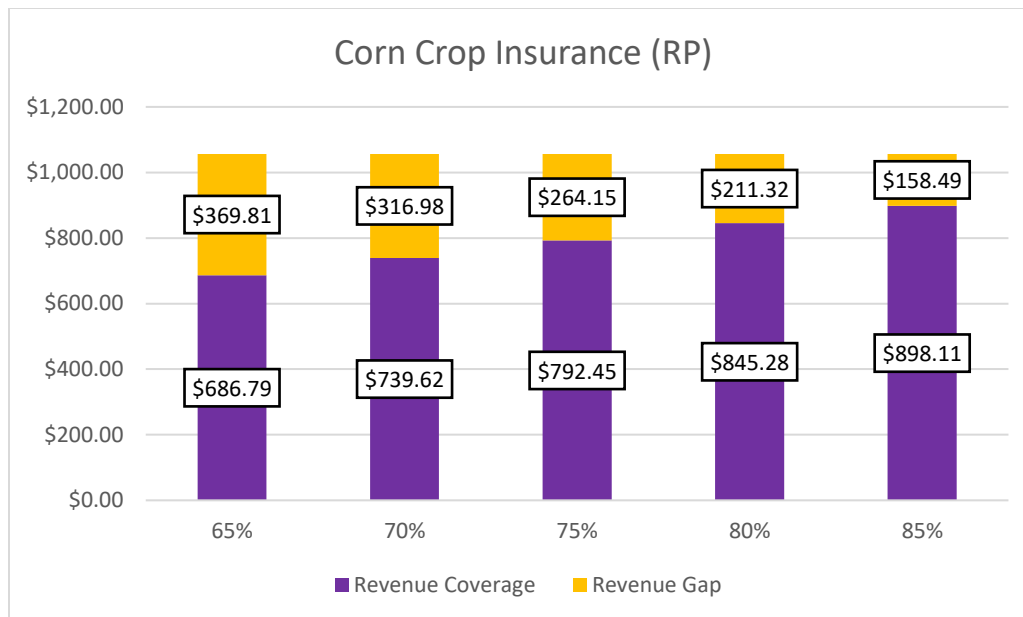


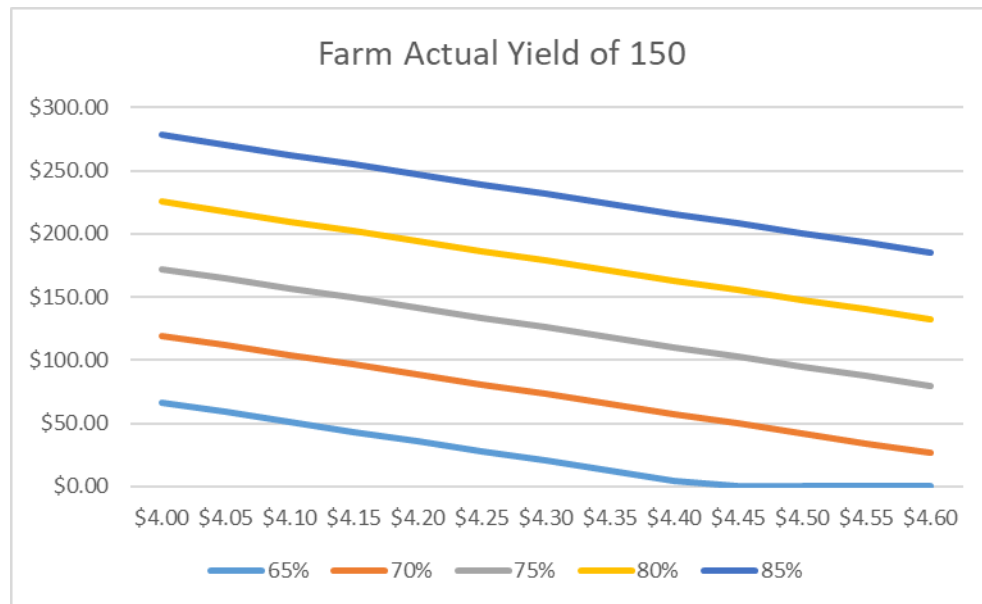
Table 2. Projected insurance policy parameters for corn, 2022 crop year.

CORN	(1)	(2)	(3)	(4)	(5)
PROJECTED PRICE	\$5.87	\$5.87	\$5.87	\$5.87	\$5.87
FARM APH	180	180	180	180	180
REVENUE LEVEL	\$1,056.60	\$1,056.60	\$1,056.60	\$1,056.60	\$1,056.60
COVERAGE LEVEL	65%	70%	75%	80%	85%
REVENUE COVERAGE	\$686.79	\$739.62	\$792.45	\$845.28	\$898.11
REVENUE GAP	\$369.81	\$316.98	\$264.15	\$211.32	\$158.49
WHAT IF ANALYSIS?					
ACTUAL YIELD	155	155	155	155	155
PRICE TO TRIGGER	\$4.43	\$4.77	\$5.11	\$5.45	\$5.79
WHAT IF ANALYSIS?					
HARVEST PRICE	\$4.80	\$4.80	\$4.80	\$4.80	\$4.80
YIELD TO TRIGGER	143.1	154.1	165.1	176.1	187.1

Information contained in the bottom half of the Table 2 suggest that at a sustained farm yield of 155 bushels per acre, the harvest price needed to trigger an insurance indemnity varies between \$4.43 and \$5.79 per bushel across average levels. As an alternative approach, the harvest price is estimated at \$4.80 and the yield threshold is estimated for each coverage level. The required yield needed to trigger an indemnity is between 143.1 and 187.1 bushels per acre depending upon the buy-up coverage level

selected. However, it is often difficult to estimate the exact harvest price and the farm's yield. Assuming that one parameter (yield) is held constant, the insurance harvest price is varied. This information is presented in Figure 5.

Figure 5. Projected indemnities for corn under specified insurance policy parameters, 2022 crop year.



Results that appear in Figure 5 indicate that all coverage levels produce an indemnity once corn prices fall below \$4.45 per bushel. Tabular results are presented in Table 3.

Table 3. Estimated crop insurance indemnities across varying price levels at 150 bu/acre actual yield.

	65%	70%	75%	80%	85%
\$4.00	\$66.79	\$119.62	\$172.45	\$225.28	\$278.11
\$4.05	\$59.04	\$111.87	\$164.70	\$217.53	\$270.36
\$4.10	\$51.29	\$104.12	\$156.95	\$209.78	\$262.61
\$4.15	\$43.54	\$96.37	\$149.20	\$202.03	\$254.86
\$4.20	\$35.79	\$88.62	\$141.45	\$194.28	\$247.11
\$4.25	\$28.04	\$80.87	\$133.70	\$186.53	\$239.36
\$4.30	\$20.29	\$73.12	\$125.95	\$178.78	\$231.61
\$4.35	\$12.54	\$65.37	\$118.20	\$171.03	\$223.86
\$4.40	\$4.79	\$57.62	\$110.45	\$163.28	\$216.11
\$4.45	\$0.00	\$49.87	\$102.70	\$155.53	\$208.36
\$4.50	\$0.00	\$42.12	\$94.95	\$147.78	\$200.61
\$4.55	\$0.00	\$34.37	\$87.20	\$140.03	\$192.86
\$4.60	\$0.00	\$26.62	\$79.45	\$132.28	\$185.11

A graphical illustration of the amount of cotton insurance revenue (per acre) protected via a revenue protection insurance is shown in Figure 4. Figure 6. Illustration of a revenue protection policy for cotton, 2022 crop year.

Figure 6. Cotton Crop Buy-up Revenue Protection Coverages for levels 65-85%.

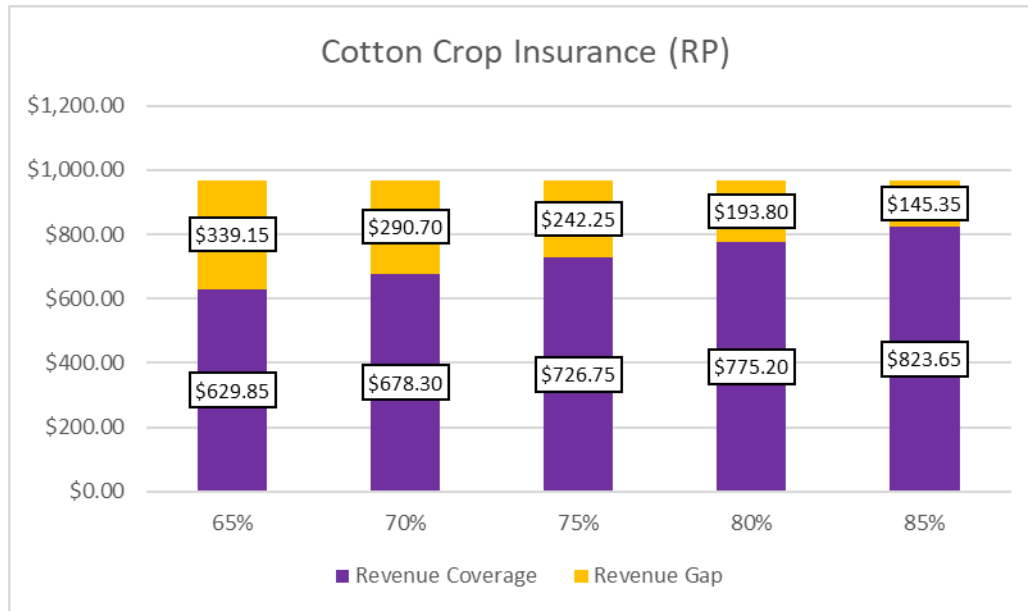


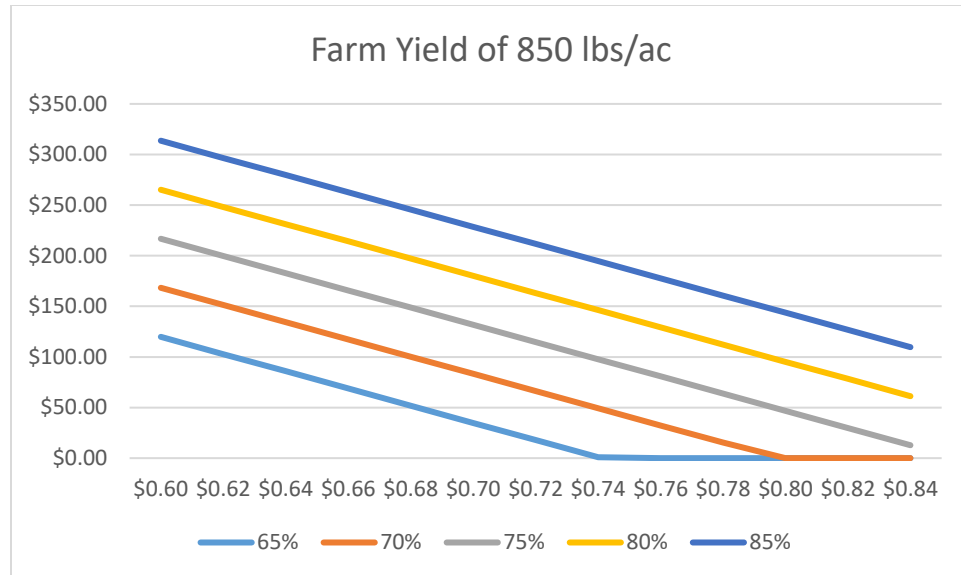
Table 4. Estimated crop insurance indemnities across varying price levels at 850 lbs/acre cotton lint yield.

COTTON	(1)	(2)	(3)	(4)	(5)
PROJECTED PRICE	\$1.02	\$1.02	\$1.02	\$1.02	\$1.02
FARM APL	950	950	950	950	950
REVENUE LEVEL	\$969.00	\$969.00	\$969.00	\$969.00	\$969.00
COVERAGE LEVEL	65%	70%	75%	80%	85%
REVENUE COVERAGE	\$629.85	\$678.30	\$726.75	\$775.20	\$823.65
REVENUE GAP	\$339.15	\$290.70	\$242.25	\$193.80	\$145.35
WHAT IF ANALYSIS?					
ACTUAL YIELD	850	850	850	850	850
PRICE TO TRIGGER	\$0.74	\$0.80	\$0.86	\$0.91	\$0.97
WHAT IF ANALYSIS?					
HARVEST PRICE	\$0.79	\$0.79	\$0.79	\$0.79	\$0.79
YIELD TO TRIGGER	797.3	858.6	919.9	981.3	1042.6

Information contained in the bottom half of the Table 4 suggest that at a sustained farm yield of 850 lbs. cotton lint per acre, the harvest price needed to trigger an insurance indemnity varies between \$0.74 and \$0.97 per pound across average levels. As an alternative approach, the harvest price is estimated at \$0.79 per pound and the yield threshold is estimated for each coverage level. The required yield needed to trigger an indemnity is between 797.3 and 1042.6 pounds per acre depending upon the buy-up coverage level selected. However, it is often difficult to estimate the exact harvest price and the farm's yield.

Assuming that one parameter (yield) is held constant, the insurance harvest price is varied. This information is presented in Figure 7.

Figure 7. Projected indemnities for cotton under specified insurance policy parameters, 2022 crop year.



Results that appear in Figure 7 indicate that all revenue protection policies (65%, 70%, 75%, 80%, and 85%) do produce an indemnity under the model parameters once cotton lint prices fall below \$0.76 per lb. for the 65% coverage level, \$0.80 per lb. for the 70% level, and \$0.84 per lb. for the 80% and 85% coverage levels. Tabular results are presented in Table 5.

Table 5. Estimated crop insurance indemnities across varying price levels at 850 lbs/acre actual yield.

	65%	70%	75%	80%	85%
\$0.60	\$119.85	\$168.30	\$216.75	\$265.20	\$313.65
\$0.62	\$102.85	\$151.30	\$199.75	\$248.20	\$296.65
\$0.64	\$85.85	\$134.30	\$182.75	\$231.20	\$279.65
\$0.66	\$68.85	\$117.30	\$165.75	\$214.20	\$262.65
\$0.68	\$51.85	\$100.30	\$148.75	\$197.20	\$245.65
\$0.70	\$34.85	\$83.30	\$131.75	\$180.20	\$228.65
\$0.72	\$17.85	\$66.30	\$114.75	\$163.20	\$211.65
\$0.74	\$0.85	\$49.30	\$97.75	\$146.20	\$194.65
\$0.76	\$0.00	\$32.30	\$80.75	\$129.20	\$177.65
\$0.78	\$0.00	\$15.30	\$63.75	\$112.20	\$160.65
\$0.80	\$0.00	\$0.00	\$46.75	\$95.20	\$143.65
\$0.82	\$0.00	\$0.00	\$29.75	\$78.20	\$126.65
\$0.84	\$0.00	\$0.00	\$12.75	\$61.20	\$109.65

Figure 8. Illustration of a revenue protection policy for soybeans, 2022 crop year.

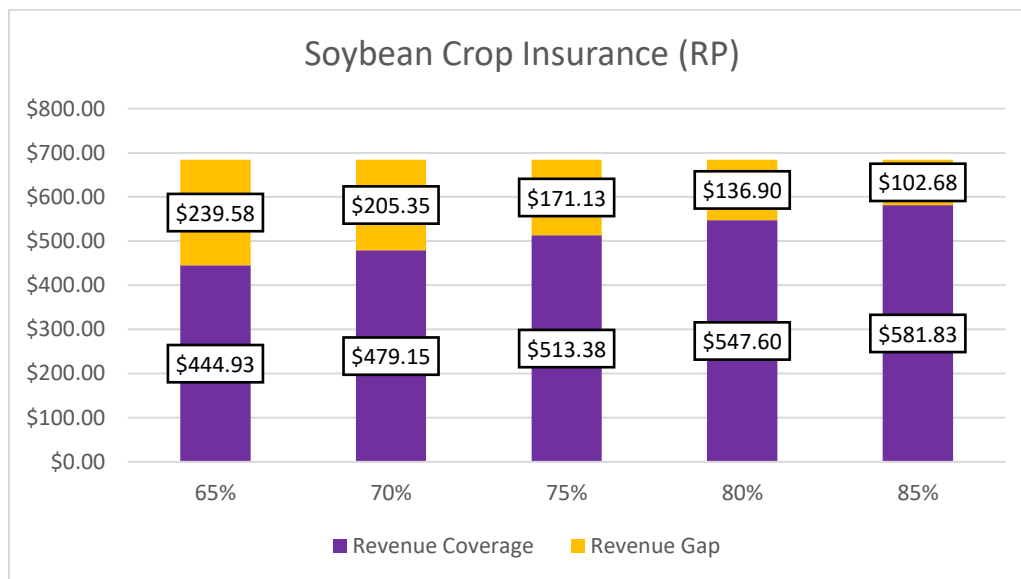
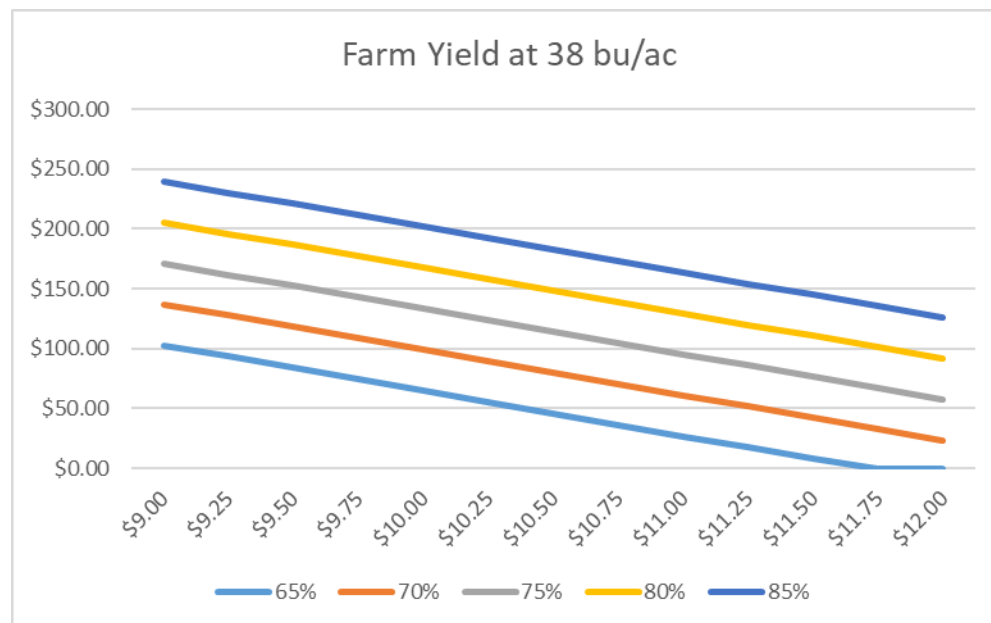


Table 6. Estimated crop insurance indemnities across varying price levels at 50 bu. actual yield.

SOYBEANS	(1)	(2)	(3)	(4)	(5)
PROJECTED PRICE	\$13.69	\$13.69	\$13.69	\$13.69	\$13.69
FARM APH	50	50	50	50	50
REVENUE LEVEL	\$684.50	\$684.50	\$684.50	\$684.50	\$684.50
COVERAGE LEVEL	65%	70%	75%	80%	85%
REVENUE COVERAGE	\$444.93	\$479.15	\$513.38	\$547.60	\$581.83
REVENUE GAP	\$239.58	\$205.35	\$171.13	\$136.90	\$102.68
WHAT IF ANALYSIS?					
ACTUAL YIELD	38	38	38	38	38
PRICE TO TRIGGER	\$11.71	\$12.61	\$13.51	\$14.41	\$15.31
WHAT IF ANALYSIS?					
HARVEST PRICE	\$9.75	\$9.75	\$9.75	\$9.75	\$9.75
YIELD TO TRIGGER	45.6	49.1	52.7	56.2	59.7

Information contained in the bottom half of the Table 6 suggest that at a sustained farm yield of 38 bu. of soybeans per acre, the harvest price needed to trigger an insurance indemnity varies between \$11.71 and \$15.31 per bushel across average levels. As an alternative approach, the harvest price is estimated at \$9.75 per bushel and the yield threshold is estimated for each coverage level. The required yield needed to trigger an indemnity is between 45.6 and 59.7 bushels per acre depending upon the buy-up coverage level selected. However, it is often difficult to estimate the exact harvest price and the farm's yield. While holding one parameter (yield) constant, the insurance harvest price is varied. This information is presented in Figure 8.

Figure 9. Projected indemnities for soybeans under specified insurance policy parameters, 2022 crop year.



Results that appear in Figure 9 indicate that all revenue protection policies produce an indemnity under the model parameters once soybean prices fall below \$11.75 per bushel. Tabular results are presented in Table 7.

Table 7. Estimated crop insurance indemnities across varying price levels at 38 bu. actual yield.

	65%	70%	75%	80%	85%
\$9.00	\$102.93	\$137.15	\$171.38	\$205.60	\$239.83
\$9.25	\$93.43	\$127.65	\$161.88	\$196.10	\$230.33
\$9.50	\$83.93	\$118.15	\$152.38	\$186.60	\$220.83
\$9.75	\$74.43	\$108.65	\$142.88	\$177.10	\$211.33
\$10.00	\$64.93	\$99.15	\$133.38	\$167.60	\$201.83
\$10.25	\$55.43	\$89.65	\$123.88	\$158.10	\$192.33
\$10.50	\$45.93	\$80.15	\$114.38	\$148.60	\$182.83
\$10.75	\$36.43	\$70.65	\$104.88	\$139.10	\$173.33
\$11.00	\$26.93	\$61.15	\$95.38	\$129.60	\$163.83
\$11.25	\$17.43	\$51.65	\$85.88	\$120.10	\$154.33
\$11.50	\$7.93	\$42.15	\$76.38	\$110.60	\$144.83
\$11.75	\$0.00	\$32.65	\$66.88	\$101.10	\$135.33
\$12.00	\$0.00	\$23.15	\$57.38	\$91.60	\$125.83

Appendix 1 below compares revenue buy-up coverage levels against expected production costs per acre for corn, cotton, and soybeans in Louisiana. Production cost represents the midpoint of the variable costs per acre for non-irrigated and irrigated production systems as contained within the 2022 LSU AgCenter's Enterprise Budgets (corn = \$593; cotton = \$714; and soybeans = \$441). The farm's APH is set to vary across all coverage levels. The cells in the following tables represent the amount of revenue insurance

(protected) in relation to the aforementioned variable cost estimate. Highlighted cells represent the dollar amount of revenue that is protected if it is greater than the production costs estimate.

Appendix 1. Revenue Insurance Protected in Relation to Cost, by Commodity.

<u>Corn APH</u>	65%	70%	75%	80%	85%
140	\$534.17	\$575.26	\$616.35	\$657.44	\$698.53
145	\$553.25	\$595.81	\$638.36	\$680.92	\$723.48
150	\$572.33	\$616.35	\$660.38	\$704.40	\$748.43
155	\$591.40	\$636.90	\$682.39	\$727.88	\$773.37
160	\$610.48	\$657.44	\$704.40	\$751.36	\$798.32
165	\$629.56	\$677.99	\$726.41	\$774.84	\$823.27
170	\$648.64	\$698.53	\$748.43	\$798.32	\$848.22
175	\$667.71	\$719.08	\$770.44	\$821.80	\$873.16
180	\$686.79	\$739.62	\$792.45	\$845.28	\$898.11

<u>Cotton APH</u>	65%	70%	75%	80%	85%
900	\$596.70	\$642.60	\$688.50	\$734.40	\$780.30
925	\$613.28	\$660.45	\$707.63	\$754.80	\$801.98
950	\$629.85	\$678.30	\$726.75	\$775.20	\$823.65
975	\$646.43	\$696.15	\$745.88	\$795.60	\$845.33
1000	\$663.00	\$714.00	\$765.00	\$816.00	\$867.00
1025	\$679.58	\$731.85	\$784.13	\$836.40	\$888.68
1050	\$696.15	\$749.70	\$803.25	\$856.80	\$910.35
1075	\$712.73	\$767.55	\$822.38	\$877.20	\$932.03
1100	\$729.30	\$785.40	\$841.50	\$897.60	\$953.70

<u>Soybean APH</u>	65%	70%	75%	80%	85%
30	\$266.96	\$287.49	\$308.03	\$328.56	\$349.10
35	\$311.45	\$335.41	\$359.36	\$383.32	\$407.28
40	\$355.94	\$383.32	\$410.70	\$438.08	\$465.46
45	\$400.43	\$431.24	\$462.04	\$492.84	\$523.64
50	\$444.93	\$479.15	\$513.38	\$547.60	\$581.83
55	\$489.42	\$527.07	\$564.71	\$602.36	\$640.01
60	\$533.91	\$574.98	\$616.05	\$657.12	\$698.19
65	\$578.40	\$622.90	\$667.39	\$711.88	\$756.37
70	\$622.90	\$670.81	\$718.73	\$766.64	\$814.56



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