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Weekly Farm Economics: Crop Insurance Premium in 2023

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The 2023 Crop Insurance Decision Tool has been released and can be used to calculate premiums (click here for download). We used the 2022 and 2023 versions of the tool to evaluate how rate changes will impact premiums in 2023. Overall, rate changes increase premiums for corn and soybeans in many counties if projected price and volatilities are the same as last year. Projected prices and volatilities in 2023 will influence premiums.

2023 Crop Insurance Decision Tool

Figure 1 shows the 2023 Premium Calculator, which gives farmer-paid premiums for a user-specified state, county, and crop. In Figure 1, premiums are shown for soybeans in DeKalb County, Illinois (see the top left corner of Figure 1). Once a state and crop are selected, default values come in for all parameter items, which have blue lettering on yellow background. Defaults represent a typical case for the county and can be changed.

State:	Illinois
County:	DeKalb
Crop:	Soybeans

2023 iFARM Premium Calculator
Date Printed: 1/7/23

Individual Farm Level Policies

Quote input --> APH Yield: 63.0 | TA/YE adjustment: TA | TA Yield: 65.0 | Rate Yield: 63.0 | Risk class: None
Acres: 100 | Type: No Type Specified | Practice: Nfac (Non-Irrigated) | Prevented planting: Standard

Coverage Level	Revenue Protection (RP) Enterprise	Basic	Optional	Minimum Revenue Guarantee	Revenue Protection with Harvest Price Exclusion (RPhpe) Enterprise	Basic	Optional	Revenue Guarantee	Yield Protection (YP) Enterprise	Basic	Optional	Yield Guarantee
	$ per Acre			$/acre	$ per Acre			$/acre	$ per Acre			Bu./acre
50%	0.38	0.62	0.88	466	0.28	0.46	0.65	466	0.30	0.50	0.69	32.5
55%	0.57	1.02	1.35	512	0.39	0.70	0.93	512	0.40	0.72	0.99	35.8
60%	0.92	1.66	2.12	559	0.59	1.05	1.34	559	0.57	1.03	1.37	39.0
65%	1.52	3.12	3.80	605	0.91	1.86	2.27	605	0.84	1.72	2.19	42.3
70%	2.41	4.94	5.76	652	1.39	2.85	3.33	652	1.21	2.48	3.07	45.5
75%	4.19	8.20	9.22	699	2.35	4.60	5.20	699	1.97	3.87	4.66	48.8
80%	8.98	14.70	16.03	745	4.94	8.12	8.88	745	4.02	6.63	7.74	52.0
85%	18.76	24.89	26.55	792	10.30	13.73	14.71	792	7.84	10.56	12.05	55.3

Parameters | Projected Price: $14.33 | Volatility (revenue): 0.19 | Parameters

Supplemental Coverage Option (SCO) and Enhanced Coverage Option (ECO)

Underlying Farm Policy: RP | Unit: Enterprise | Type: No type specified | Practice: Non-irr (NFAC)

Coverage Level	SCO		ECO ECO-90%	ECO-95%	Coverage Level	Combined Policy Premiums RP	RP SCO	RP SCO ECO-90%	RP SCO ECO-95%	RP ECO-90%	RP EC0-95%	
	$ per acre		$ per acre			$ per acre						
50% - 86%	9.47	ECO	8.7	23.94	50%	0.38	9.85	18.55	33.79	9.08	24.32	Premiums in green box add together the 1. underlying policy 2. SCO 3. ECO Column headings indicated combinations
55% - 86%	9.47	from 86%	8.7	23.94	55%	0.57	10.04	18.74	33.98	9.27	24.51	
60% - 86%	9.43	to either	8.7	23.94	60%	0.92	10.35	19.05	34.29	9.62	24.86	
65% - 86%	9.24	90% or	8.7	23.94	65%	1.52	10.76	19.46	34.70	10.22	25.46	
70% - 86%	8.80	95% as	8.7	23.94	70%	2.41	11.21	19.91	35.15	11.11	26.35	
75% - 86%	7.54	indicated	8.7	23.94	75%	4.19	11.73	20.43	35.67	12.89	28.13	
80% - 86%	5.04	in column	8.7	23.94	80%	8.98	14.02	22.72	37.96	17.68	32.92	
85% - 86%	1.06	heading	8.7	23.94	85%	18.76	19.82	28.52	43.76	27.46	42.70	

County Level Product

Quote input --> Type: No type specified | Practice: Non-irr (NFAC) | Expected yield: 65.5 | Pro price: $14.33 | Volatility 0.19

Coverage Level	Area Revenue Protection (ARP) Protection Factor 120%	85%	80%	Minimum Revenue Guarantee	Area Revenue Protection with Harvest Price Exclusion (ARPhpe) Protection Factor 120%	85%	80%	Revenue Guarantee	Area Yield Protection (AYP) Protection Factor 120%	85%	80%	Yield Guarantee
	$ per Acre			$/acre	$ per Acre			$/acre	$ per Acre			Bu./acre
70%	2.49	1.76	1.66	657	1.89	1.34	1.26	657	1.48	1.05	0.99	45.9
75%	5.32	3.77	3.55	704	5.17	3.66	3.45	704	2.17	1.54	1.45	49.1
80%	11.15	7.90	7.43	751	10.39	7.36	6.93	751	3.09	2.19	2.06	52.4
85%	22.11	15.66	14.74	798	19.65	13.92	13.10	798	4.61	3.27	3.07	55.7
90%	38.85	27.52	25.90	845	32.36	22.92	21.57	845	8.00	5.67	5.33	59.0

The *iFARM Premium Calculator* was developed at the University of Illinois and is available downloads at famdoc (www.farmdoc.illinois.edu).Updated: January 4, 2023

The Premium Calculator is described in a January 19, 2021, *farmdoc daily* article. In the following, we will focus on Revenue Protection (RP) premiums with enterprise units. RP is used on over 90% of Illinois's acres for corn and soybeans (see *farmdoc daily*, November 17, 2020). Enterprise units are the most used unit structure. In the above example, farmer-paid premiums for enterprise units ranged from $.38 per acre for a 50% coverage level to $18.76 per acre for an 85% coverage level.

2023 Rates

Premiums shown in Figure 1 are calculated using 2023 rates released by the Risk Management Agency (RMA). These premiums are not final as projected prices and volatilities have yet to be set. Figure 1 uses the projected price and volatility for 2022. If the user wishes, the projected price and the volatility can be changed. When projected prices and volatilities are known at the end of February, premiums also will be known for 2023. By the March 15 deadline, farmers can change crop insurance choices from the previous year.

In 2022, the projected price for corn was $5.90 per bushel. The corn projected price is based on settlement prices of the Chicago Mercantile Exchange (CME) December contract during February. Current prices of the December 2023 contract are near $5.90 per bushel, roughly the same as the 2022 projected price.

In 2022, the projected price for soybeans was $14.33 per bushel. The average of the February settlement prices of the November contract is used to set the projected price for soybeans. Current prices of the November 2023 contract are near $14.00, slightly below the 2022 projected price. Premiums decrease with lower projected prices, and vice versa.

Volatilities are based on data from the last five days of February. In 2022, volatilities were .22 for corn and .19 for soybeans. Current trading data point to a .21 for corn and .16 for soybeans. Both volatility estimates are below 2022 volatilities. Lower volatilities will lower the premium and vice versa.

Table 1 shows farmer-paid premium estimates for corn and soybeans in three counties: DeKalb County is in northern Illinois, Champaign County is in central Illinois, and Saline County is in southern Illinois. Premiums are shown for 2022 and 2023, with details of the individual quotes given in the table's footnotes. In addition, the 2022 projected prices and volatilities are used for 2023. Using the same factors allows an assessment of how RMA rate changes impact premiums.

Table 1. Premiums for Revenue Protection using Enterprise Units in Select Counties in Illinois in 2022 and 2023

	DeKalb[1]			Champaign[1]			Saline[2]		
	2022	2023	Change	2022	2023	Change	2022	2023	Change
Panel A. Corn[3]									
50%	$0.69	$0.69	0.0%	$0.98	$0.99	1.0%	$6.83	$6.41	-6.1%
55%	$1.08	$1.09	0.9%	$1.50	$1.52	1.3%	$8.57	$7.99	-6.8%
60%	$1.65	$1.66	0.6%	$2.14	$2.20	2.8%	$10.58	$9.87	-6.7%
65%	$2.51	$2.54	1.2%	$3.07	$3.17	3.3%	$12.88	$12.09	-6.1%
70%	$3.93	$3.99	1.5%	$4.67	$4.84	3.6%	$15.52	$14.78	-4.8%
75%	$7.43	$7.59	1.5%	$8.55	$8.86	3.6%	$21.93	$21.34	-2.7%
80%	$15.32	$15.64	2.1%	$17.55	$17.78	1.3%	$36.79	$36.08	-1.9%
85%	$31.34	$31.93	1.9%	$34.50	$35.77	3.7%	$63.66	$62.85	-1.3%
Panel B. Soybeans[4]									
50%	$0.37	$0.38	2.7%	$0.19	$0.19	0.0%	$2.84	$2.91	2.5%
55%	$0.56	$0.57	1.8%	$0.30	$0.31	3.3%	$3.63	$3.72	2.5%
60%	$0.92	$0.92	0.0%	$0.52	$0.53	1.9%	$4.77	$4.88	2.3%
65%	$1.51	$1.52	0.7%	$0.90	$0.92	2.2%	$5.98	$6.12	2.3%
70%	$2.39	$2.41	0.8%	$1.51	$1.53	1.3%	$7.51	$7.68	2.3%
75%	$4.16	$4.19	0.7%	$2.85	$2.88	1.1%	$10.87	$11.11	2.2%
80%	$8.94	$8.98	0.4%	$6.49	$6.54	0.8%	$19.04	$19.44	2.1%
85%	$18.64	$18.76	0.6%	$14.14	$14.22	0.8%	$35.58	$36.29	2.0%

[3] The 2022 values are used for both 2022 and 2023: $5.90 for projected price and .23 for volatility.

[4] The 2022 values are used for both 2022 and 2023: $14.33 for projected price and .19 for volatility.

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[1] For corn, a 210 bushel per acre Actual Production History (APH) and 220 bushel per acre Trend Adjusted (TA) yield is used. For soybeans, a 63 APH yield and 65 TA yield is used.

[2] For corn, a 167 APH and 175 TA yield is used. For soybeans, a 48 APH yield and 50 bushel TA yield is used.

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Rate Changes from 2022 to 2023

For corn, both DeKalb and Champaign counties have premium increases if 2023 factors equal 2022 factors. In DeKalb County, the RP premium increases from $31.34 per acre to $31.93 per acre, a 1.9% increase. In Champaign County, the 85% premium increases by 3.7%. Saline County's 75% RP premium decreased from $21.93 per acre to $21.34 per acre, a 2.7% decrease.

For soybeans, RP premiums increases in all three counties. At the 85% coverage level, premiums increased by 0.6% in DeKalb County, 0.8% in Champaign County, and 2.0% in Saline County. Champaign County's premiums were $14.14 per acre in 2022 and $14.22 in 2023.

Rate changes occur as RMA adds another year of data to ratings. For 2023, data for 2021 are available for ratings. The rating increases are surprising as 2021 was a low-loss year in Illinois (see *farmdoc daily*, July 5, 2022). The loss ratio for corn was .24 and .28 for soybeans, well below the 1.0 statutory goal of RMA, and two of the lowest loss ratios in history.

Summary

The 2023 Crop Insurance Decision Tool has been released and is available for use. It can be downloaded here. Projected prices and volatilities will impact premiums, and February is the month for setting those values.

References

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