How to Make an Early Prediction of Whether Your Farm Will Receive an SCO Indemnity

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Background

A type of crop insurance policy, the Supplemental Coverage Option (SCO) provides added coverage for a portion of a producer's underlying policy deductible. Traditional policies determine compensation based on whether an individual unit with insurance coverage reports a loss. On the other hand, whether SCO payments are triggered depends on the local area's conditions — specifically, when county-level yield or revenue falls below 86% of expectations. Producers might face personal losses but not receive SCO payments. Alternatively, they may receive SCO indemnifications without experiencing personal losses. Find more SCO policy details from the USDA Risk Management Agency.

An SCO policy's unique features mean SCO indemnities are calculated differently from other crop insurance indemnities, and SCO payments are determined after the April 29 production reporting deadline in the year following coverage. As a result, producers with SCO coverage for a given year (e.g., 2023) must wait until after April of the following year (e.g., 2024) to ascertain whether their policy triggered an indemnity and collect any payments. This contrasts with the more immediate settlements provided by underlying policies, which are reported regularly by the RMA and can assist producers in forecasting potential SCO indemnities.

More than 1.18 million insured acres in Kansas had an SCO endorsement in 2023. Estimating the likelihood of an SCO payout can help producers develop cash flow projections or shape their financial and risk management decisions. This analysis outlines two approaches producers can use to approximate SCO outcomes before the April 29 deadline. The first examines the effect of harvest prices, and the second focuses on the correlation between historical loss ratios of underlying policies and subsequent SCO indemnities.

Approach 1: Estimate Yield Necessary to Trigger SCO-RP Indemnity Using Harvest Prices

Under revenue protection policies, the SCO endorsement begins to pay when the county's average revenue falls below 86% of its expected level. Given that revenue is a product of harvest price and yield, examining shifts in reported harvest prices relative to the projected insurance price allows for estimating the county yield necessary to trigger a payout — referred to as the "trigger yield" in this analysis.

The datapoints needed to estimate a trigger yield are as follows.

- **Commodity Prices**: To account for departures from expected county revenue, the differences in a projected insurance price and harvest price are considered. Table 1 reports 2023 RMA projected and harvest prices for major crops grown in Kansas. Note, all prices declined from the time of crop insurance purchase to harvest in 2023.
- **RMA-Reported Expected County Yield:** Access RMA-reported expected county yields from AgManager, USDA or local crop insurance agents.

The following datapoints can be calculated using commodity prices and RMA-reported expected county yield. *These calculations apply only to 2023 SCO endorsements for underlying RP policies with the harvest price option, for the commodities in Table 1 in Kansas or states with the same price discovery periods.*

- **Trigger Yield Factor**: When multiplied by an RMA-reported expected county yield, the trigger yield factor helps to estimate the yield threshold that would trigger SCO payments. Its calculation reflects that payments trigger when actual revenue is 86% of expected revenue. Thus, the trigger yield factor computation is *0.86 X projected price / harvest price*.
- **Trigger Yield**: The trigger yield — the county yield necessary to trigger a payout — equals *trigger yield factor X expected county yield*.

The following example illustrates how to compute a trigger yield.

- For Finney County, 2023 irrigated corn expected yields were 205 bushels per acre.
- Calculate the trigger yield factor as 0.86 X $5.91 (projected price) / $4.88 (harvest price) = 1.04.
- To find the SCO trigger yield, multiply the 205-bushel expected yield by the 1.04 trigger yield factor. In this case, the trigger yield is 213 bushels.
- If Finney County's actual irrigated corn yields are less than 213 bushels, then producers with SCO coverage will likely receive SCO indemnities. If farm yields are highly correlated with county yields, then an individual farm's yields may serve as a rough proxy for actual county yields.

	Projected Insurance Price Reported by RMA	Harvest Price Reported by RMA	% Change in Projected and Harvest Prices	Trigger Yield Factor	Trigger Yield, Irrigated Crops – Finney County (bu. per acre)	Trigger Yield, Non-irrigated Crops – Nehama County (bu. per acre)
Corn	$5.91	$4.88	-17%	1.04	213	154
Grain Sorghum*	$5.84	$4.83	-17%	1.04	115	106
Soybeans**	$13.76	$12.84	-7%	0.92	54	47
Wheat**	$8.79	$8.20	-7%	0.92	37	45

Table 1. Trigger Yield Examples Using 2023 Crop Projected Insurance and Harvest Prices

* Sorghum prices are calculated based on corn prices.

** The similar declines in soy and wheat prices are incidental.

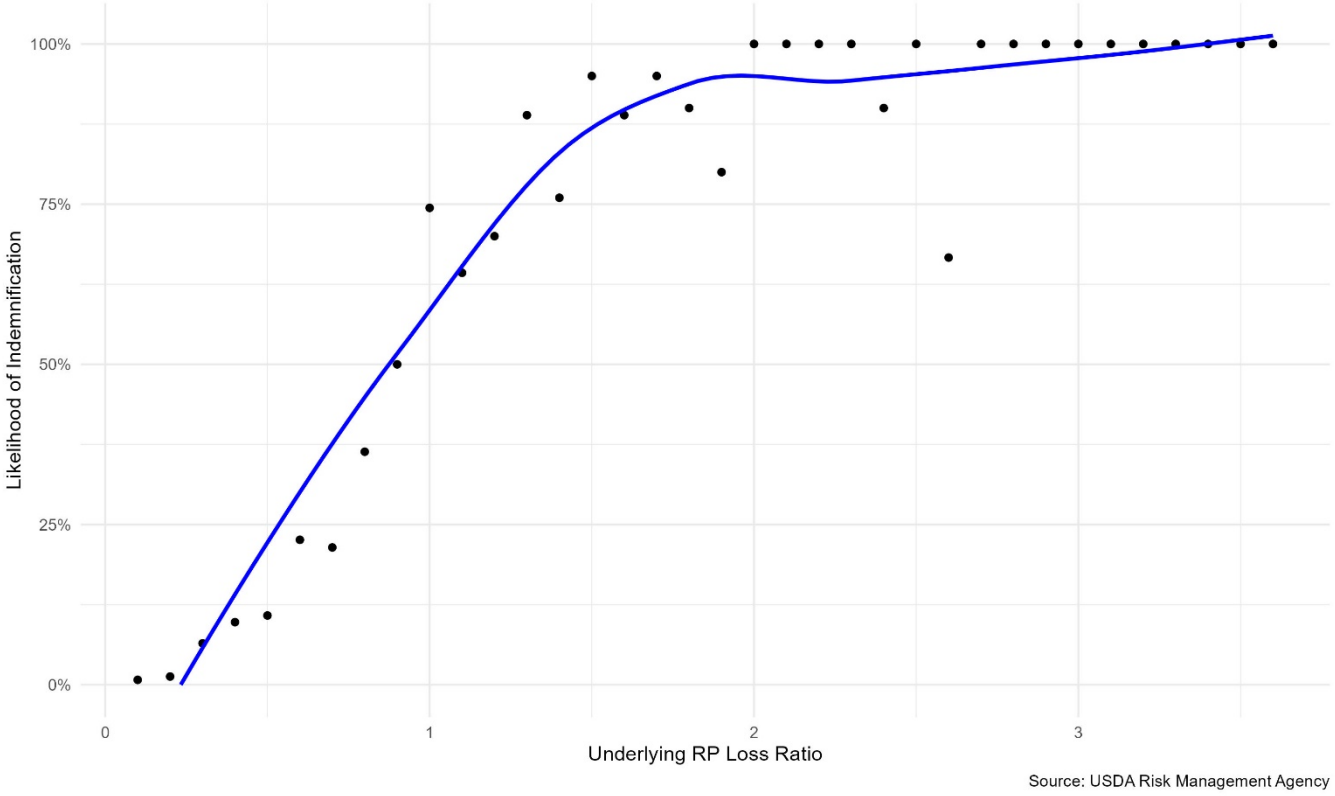
Approach 2: Gauge SCO Indemnity Likelihood Based on Correlation with Underlying Loss Ratios

An alternate approach examines the degree to which historical county-level loss ratios on underlying policies predict SCO indemnities. The loss ratio is the ratio of indemnities to total premiums paid, including premiums paid by the producer and government (i.e., premium subsidy). RMA publishes current county-level loss ratios, which include all premiums paid and indemnities paid to date. We expect 2022 and earlier loss ratios to be final or near final. 2023 loss ratios may not currently include all indemnities, but most indemnities should have been reported by mid-February.

Figure 1 estimates the likelihood of SCO indemnification across four crops — wheat, corn, soybeans and grain sorghum — within each Kansas county from 2015 to 2022. This analysis accounts for any degree of SCO indemnification, not solely the full indemnity level.

The likelihood of SCO indemnification is inferred from the ratio of total indemnified SCO policies against the aggregate of SCO policies earning a premium within each defined interval of the underlying revenue protection (RP) policy's loss ratio. For instance, among 41 SCO policies earning premium, seven reported SCO indemnities where the RP loss ratio in that county, crop and year was between 0.5 and 0.55, indicating a 17% likelihood of SCO indemnification at this loss ratio range for the specified commodity, county, and year.

Figure 1. Likelihood of SCO-RP Indemnification by Underlying RP Loss Ratio, Kansas (2015-2022)



Higher loss ratios correspond with a higher likelihood of an SCO indemnity, but they do not perfectly predict SCO indemnities. In some cases, high yields on some farms may counterbalance low yields on other farms. Consider the following statistics for context:

- 4% of Kansas counties with a RP loss ratio between 0 and 0.5 had an SCO-RP indemnity.
- 36% of Kansas counties with a RP loss ratio between 0.5 and 1 had an SCO-RP indemnity.
- 77% of Kansas counties with a RP loss ratio between 1 and 1.5 had an SCO-RP indemnity.
- 95% of Kansas counties with a RP loss ratio greater than 1.5 had an SCO-RP indemnity.

In short, high county loss ratios indicate an SCO indemnity is more likely but *should be used with caution.*

Next Steps

Future research will explore using prices, county-level loss ratios and yield distribution assumptions to predict county yields and/or SCO and Enhanced Coverage Option (ECO) indemnities.

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Additional Resources

There are several SCO and ECO resources available on AgManager.info to inform the decision whether to use a high-coverage policy.

Supplemental Coverage Option (SCO) and Enhanced Coverage Option (ECO): 2024 Considerations and 2023 Update

https://agmanager.info/crop-insurance/crop-insurance-papers-and-information/supplemental-coverage-option-sco-and-enhanced

Webinar on Managing Risk with ARC, PLC, and SCO in 2023

https://agmanager.info/news/recent-videos/managing-risk-arc-plc-and-sco-webinar-slides-and-recording

Study on Kansas ARC, PLC, and SCO payouts from 2015-2022

https://agmanager.info/events/risk-and-profit-conference/previous-conference-proceedings/2023-risk-and-profit-conference/7

Kansas Crop Insurance Maps

https://agmanager.info/crop-insurance/kansas-crop-insurance-maps

Kansas County Yield Correlation Tool

https://agmanager.info/crop-insurance/crop-insurance-papers-and-information/kansas-yield-correlation-tool

SCO and ECO Payment Calculator

https://agmanager.info/crop-insurance/crop-insurance-papers-and-information/2022-supplemental-coverage-option-sco-and

SCO and ECO Webinar

https://agmanager.info/news/recent-videos/2021-crop-insurance-choices-sco-and-eco