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## Weekly Farm Economics: The 2022 PLC and ARC Decision

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Farmers will again have until March 15 to make commodity title program selections. Given the current high prices, commodity title payments are not expected from any program option for the 2022 marketing year. If a change in conditions resulted in payments, those would be received in October 2023, after the close of the 2022 marketing year. Farmers wishing to purchase the Supplemental Coverage Option (SCO) crop insurance policy must select Price Loss Coverage (PLC) as the commodity title choice. Based on current price projections, Agriculture Risk Coverage at the county level (ARC-CO) will maximize the chance of payment for soybeans, although that chance will be small. The probability of payments is roughly the same for corn and soybeans.

### Decision Overview

Farmers have three program options when making their election decisions.

- Price Loss Coverage (PLC) is a crop-specific fixed price support program that triggers payments if the marketing year average (MYA) price falls below the commodity's effective reference price. Payments are made on 85% of historical base acres.
- Agricultural Risk Coverage at the county level (ARC-CO) is a crop-specific county revenue program. ARC-CO triggers payments if actual revenue (MYA price times county yield) falls below 86% of the benchmark revenue (product of benchmark price and trend-adjusted historical yield for the county). Payments are made on 85% of historical base acres.
- Agricultural Risk Coverage at the individual level (ARC-IC) is a farm-level revenue support program. Like ARC-CO, payments are triggered if actual revenue falls below 86% of the benchmark. If an FSA farm unit is enrolled in ARC-IC, information for all commodities planted in 2022 are combined together in a weighted average to determine benchmark and actual revenues. If a farmer enrolls multiple FSA farms in the same state, all farm units are combined in

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determining the averages for actual and benchmark revenues. Payments are made on 65% of historical base acres.

Decisions are made for each FSA farm unit. PLC and ARC-CO are commodity-specific and can be mixed and matched on the same FSA farm or across different FSA farms (i.e. PLC for one commodity, ARC-CO for another on the same FSA farm, or using different programs for the same crop on different FSA farms).

The following sub-section will discuss the PLC and ARC-CO decision for corn, soybeans, and wheat in 2022. This focus is taken as most individuals choose between PLC and ARC-CO. Not many farms are enrolled in ARC-IC. Even if enrolling in ARC-IC, having some understanding of the PLC and ARC-CO alternatives will be valuable in making decisions.

## **Corn**

The effective reference price for corn in 2022 is \$3.70 per bushel. If the 2022 Market Year Average (MYA) price falls below \$3.70, PLC will make a payment. The 2022 market year for corn will begin in September 2022 and end in August 2023.

Currently, expectations are for much higher MYA prices than the reference price. Evaluations of prices of the Chicago Mercantile Exchange (CME) contract, as well as fall delivery bids, suggest an expected 2022 MYA price around \$5.00 per bushel, well above the effective reference price. Based on current market expectations, there is about a 10% chance that the 2022 market year average price for corn would fall low enough to trigger a PLC payment.

ARC-CO makes payments when county revenue is below a county guarantee. County revenue equals county yields times the MYA price, the same price used to determine PLC payments. For corn, the county guarantee equals:

$$.86 \text{ coverage level} \times \text{MYA benchmark price} \times \text{county benchmark yield}.$$

The county guarantee and county revenue equations are used to define break-even MYA prices below which ARC-CO will make 2022 payments, given county yield as a percent of benchmark yield (county yield percent). At a 100% county yield percent, county yield equals benchmark yield. At this stage, a 100% county yield percent is a reasonable projection for county yields in 2022.

At a 100% county yield percent, the 2022 MYA price would need to be below the \$3.18 break-even price to trigger an ARC-CO payment for corn. This is lower than the \$3.70 effective reference price that would trigger PLC payments because of the 86% coverage level used to set the ARC-CO guarantee.

The break-even prices are illustrated for non-irrigated corn in Champaign County, Illinois. Champaign County's benchmark yield is 222.2 bushels per acre. If Champaign County's 2022 yield is 222.2 bushels per acre — causing the county yield percent to be 100% — ARC-CO will make payments at MYA prices below \$3.18. At a 100% county yield percent, PLC will trigger payments equal to or greater than ARC-CO, at least for reasonably high PLC yields.

A county yield percent of 80% would occur with a 177.76 yield in Champaign County in 2022. In this scenario, MYA prices would need to be below \$3.98 per bushel (see Table 1). Here ARC-CO would make payments for prices between \$3.98 to \$3.70, while PLC would not. At some price below \$3.70, PLC would make higher payments than ARC-CO. The exact level would depend on the size of an FSA farm yield.

In our analysis, PLC has a higher chance of making payments than ARC-CO, although both have a minimal chance of making payments. Overall, neither PLC nor ARC-CO payments should be expected for corn. Farmers who wish to purchase the Supplemental Coverage Option (SCO) for corn will need to elect PLC to remain eligible for the SCO coverage.

## **Soybeans**

For 2022, the effective reference price for soybeans is \$8.40, and the 2022 ARC-CO benchmark price is \$9.12 per bushel (see Table 1). Given current market prices, the 2022 expected MYA price is \$12.50. There is a 4% chance that the 2022 MYA price could fall below the \$8.40 reference price.

Table 2 shows break-even prices below which ARC-CO will make payments. The benchmark yield for non-irrigated soybeans in Champaign County is 69.0 bushels per acre. At a county yield percent of 100% — implying the county yield is 69.0 — the 2022 MYA price needs to be below \$7.84 per bushel before ARC-CO makes payments.

**Table 1. Parameters of the 2022 PLC and ARC-CO Programs, along with January 2022 Price Expectations**

Program Crop	Effective Reference Price	ARC-CO Benchmark Price	Expected 2022 MYA Price <sup>1</sup>	Probability of Being Below Reference Price <sup>2</sup>
Corn	3.70	3.70	5.00	10%
Soybeans	8.40	9.12	12.50	8%
Wheat	5.50	5.50	7.00	NA

<sup>1</sup> Based on market prices in first week of January

<sup>2</sup> Based on results from the Gardner Price Distribution Tool (<https://fd-tools.ncsa.illinois.edu>)

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**Table 2. 2022 Break-even Corn Prices for Different County Yield Percents<sup>1</sup>**

County Yield as a Percent of Benchmark Yield <sup>2</sup>	Corn	Soybeans	Wheat
60%	\$5.30	\$13.07	\$7.88
65%	\$4.90	\$12.07	\$7.28
70%	\$4.55	\$11.20	\$6.76
75%	\$4.24	\$10.46	\$6.31
80%	\$3.98	\$9.80	\$5.91
85%	\$3.74	\$9.23	\$5.56
90%	\$3.54	\$8.71	\$5.26
95%	\$3.35	\$8.26	\$4.98
100%	\$3.18	\$7.84	\$4.73
105%	\$3.03	\$7.47	\$4.50
110%	\$2.89	\$7.13	\$4.30
115%	\$2.77	\$6.82	\$4.11
120%	\$2.65	\$6.54	\$3.94

<sup>1</sup> Equals .86 times 2020 benchmark price divided by county yield percent.

<sup>2</sup> Equals the 2022 county yield divided by the 2022 benchmark yield

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An 80% county yield implies a county yield of 55.2 bushels per acre in Champaign County. At that yield, 2022 MYA prices need to be below \$9.80 before ARC-CO makes payments. The \$9.80 price is well above the \$8.40 reference price, indicating that ARC-CO could trigger payments at prices levels that would not trigger PLC payments if yield sufficient yield losses are experienced at the county level.

ARC-CO has a higher probability of making payments than PLC. Note that PLC has not made payments in the past as the MYA price for soybeans has never been below \$8.40 since 2014, when the current commodity programs began. Farmers may wish to consider ARC-CO for soybeans because of its higher probability. Still, the probability of payment is not high. Again, interest in SCO coverage for soybeans would require the use of PLC.

## Tools

Tools available to make commodity title decisions are:

- The 2022 Farm Bill What-If Tool. This Microsoft Excel spreadsheet shows payments given different user-entered values.
- The Gardner ARC/PLC Calculator (<https://fd-tools.ncsa.illinois.edu>) gives probabilities of payments and expected payment amounts for PLC and ARC-CO for different counties.

## Summary

Farmers have until March 15 to revise commodity title decisions. If choices are not changed, farmers will automatically be enrolled in the same option as last year. At this point, commodity title payments should not be expected for either PLC or ARC-CO. Given the low probability of payments with current price projections, farmers may wish to base program selection on risk perception, considering if there is greater price risk or yield risk for the 2022 crop and marketing year. PLC is intended to address price risk while ARC-CO provides revenue protection, which incorporates yield risk.