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Weekly Farm Economics: Commodity Title Choices and Payment Expectations

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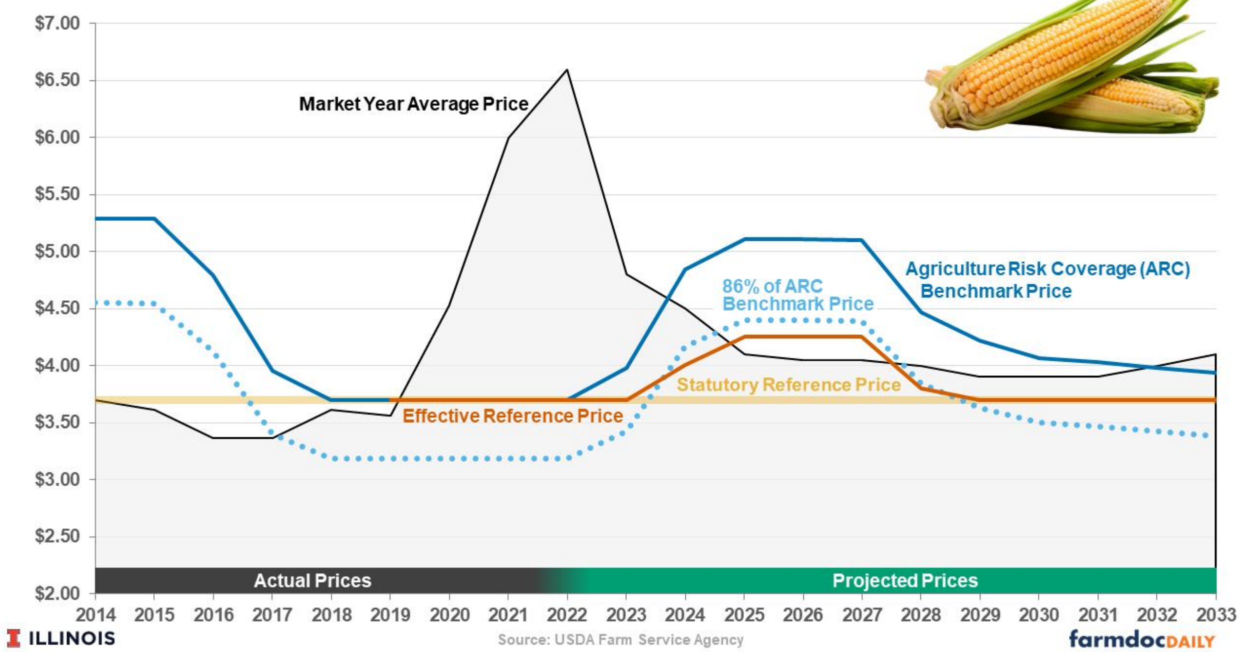
Program crops have dramatically different enrollments in the two major commodity title choices: Price Loss Coverage (PLC) and Agricultural Risk Coverage at the county level (ARC-CO). Soybeans has a high enrollment in ARC-CO, while peanuts, rice, and seed cotton have almost all their acres enrolled in PLC. Corn and wheat have switched back and forth between the programs over the lives of the 2014 and 2018 Farm Bills. Much of the differences in enrollment are related to expected payments from the two commodity title programs, with statutory reference prices impacting the likelihood and size of those payments. Some commodity program crops have high statutory reference prices relative to market year average (MYA) prices (e.g., peanuts and rice) while other crops have relatively low reference prices (e.g., soybeans).

Analysis

We conduct our analysis of expectations using a figure for each crop. These figures show Market Year Average (MYA) prices, statutory and effective reference prices, and ARC benchmark prices. These prices are instrumental in determining payments from the two programs. Figure 1 shows these prices for corn. Later sections have figures for soybeans, wheat, peanuts, rice, and seed cotton.

Figure 1. Corn Prices in Dollars per Bushel



Before a marketing year begins, a reasonable way to form expectations is to compare the applicable reference price to 86% of the ARC benchmark price. The applicable reference price is the statutory reference price under the 2014 Farm Bill (2015 to 2018) and the effective reference price under the 2018 Farm Bill (2019 and after). Generally, PLC has higher expected payments than ARC-CO when the applicable reference price is above 86% of the ARC benchmark price (see *farmdoc daily*, September 24, 2019 for more discussion of PLC). Conversely, ARC-CO has higher expected payments when 86% of the reference price exceeds the applicable reference price (see farmdoc Daily, September 17, 2019, for more discussion of PLC). The greater the distance between those prices, the more one of the commodity programs will be favored over the other. This relationship will become more evident as each price series in the figure is explained.

Market Year Average (MYA) Prices: MYA prices are used in the determination of both PLC and ARC-CO payments. MYA prices are an average cash price over the U.S. for a marketing year. For corn and soybeans, the marketing year begins in September and ends in August. For example, the 2022 marketing year runs from September 2022 to August 2023.

Figure 1 shows actual MYA prices from 2014 to 2021. Entries began in 2014, as that was the first year of implementation of PLC and ARC-CO under the 2014 Farm Bill. For corn, actual prices were $3.70 in 2014, reached a low of $3.36 in 2016 and 2017, and then increased to $6.00 in 2021.

Projected MYA prices are shown from 2022 to 2033. The 2022 and 2023 projections come from the May 2023 World Agricultural Supply and Demand Estimates (WASDE) report: $6.60 for 2022 and $3.80 for 2023. Forecasts for 2024 through 2032 come from the May 2023 Congressional Budget Office (CBO) baseline. CBO will use these forecasts to estimate Federal outlays for any program changes made to farm bill programs. CBO uses stochastic methods in which many prices are used to represent possible conditions in the future. Values in Figure 2 illustrate yearly averages of those prices.

Statutory Reference Price: As its name implies, the statutory reference price is set in the farm bill. For all program crops, statutory reference prices did not vary from the 2014 and 2018 Farm Bills. For corn, the statutory reference price is $3.70. In Figure 1, we assume that reference and ARC prices continue from 2024 to 2033 using specifications in the 2018 Farm Bill. As a result, the statutory reference price for corn continues at $3.70 from 2024 to 2033.

The 2014 Farm Bill applied to the years from 2014 through 2018. Under the 2014 Farm Bill, Price Loss Coverage (PLC) makes payments when the MYA price is below the statutory reference price. PLC made payments in each year from 2015 to 2019 for corn (see Figure 1).

Effective Reference Price: The effective reference price was introduced in the 2018 Farm Bill, which applies from 2019 to 2023. Under the 2018 Farm Bill, PLC provides payments when the market year average (MYA) price is below the effective reference price.

The effective reference price is the maximum of the statutory reference price ($3.70 per bushel for corn), and 85% of the five-year Olympic average of MYA prices lagged one year. The effective reference price is never below the statutory reference price. The effective reference price is capped at 115% of the statutory reference price or $4.26 for corn ($3.70 x 1.15 = $4.26).

From 2019 to 2023, the effective reference price equaled the statutory reference price (see Figure 1). However, if MYA price projections hold, the effective reference price will be above the statutory reference price in 2024. Estimates are for a $4.01 effective reference price in 2024 and a $4.26 effective reference price in 2025.

ARC-CO Benchmark Price: ARC-CO makes payments when county revenue is below:

.86 x ARC benchmark price x ARC benchmark yield.

Both ARC benchmark price and ARC benchmark yield are Olympic averages of five previous values. Under the 2014 Farm Bill, the benchmark price and yield were not lagged a year (e.g., the 2019 benchmark price is the Olympic average of the five prices from 2014 to 2018). However, the benchmarks under the 2018 Farm Bill lagged by a year (e.g., the 2020 benchmark yield used 2014 to 2018 prices). The price used in the calculation of the benchmark price is cupped at the applicable reference price (statutory reference prices under the 2014 Farm Bill, effective reference price under the 2018 Farm Bill). As a result, the ARC-CO benchmark price must stay at or above the effective reference price.

For corn, the ARC-CO benchmark price began at $5.29 in 2014. The ARC benchmark price then declined to $3.70 by 2018 and remained cupped at the reference price through 2022. The ARC benchmark price rose to $3.98 for 2023 and will continue to increase to a projected $4.85 for 2024.

86% of ARC Benchmark Price: We also report 86% of the ARC benchmark price. The 86% value is selected because the ARC-CO guarantee begins at an 86% coverage level. Therefore, if county yield equals benchmark yield, ARC-CO will make payments when the MYA price is below 86% of the ARC benchmark price. At the beginning of the growing season, the benchmark yield is a reasonable expectation of county yield for the upcoming season, particularly after the 2018 Farm Bill introduced yield trend adjustments for the historical yields in the benchmark.

When 86% of the ARC benchmark price is below the applicable reference price, lower prices are needed for ARC-CO to trigger payments than PLC, given that county yields are at or above the ARC benchmark yield. The reverse is true as well. If 86% of the ARC benchmark price is equal to the applicable reference price, there are roughly equal chance of the programs making payments. When PLC has a higher chance of making a payment, PLC typically has higher payments (A farm's PLC yield will matter in this determination. However, when PLC yields are near average, the above relationship holds).

Program choice decisions: Under the 2014 Farm Bill, farmers had to make a one-time decision on whether to enroll in PLC and ARC-CO, which applied to the marketing years from 2014 to 2018. The relationships between the statutory reference price and 86% of the ARC-CO benchmark price in the early years of the Farm Bill had a large influence on program choices.

Under the 2018 Farm Bill, farmers could make periodic decisions on whether to enroll in PLC and ARC-CO:

- By March 15, 2020, farmers had to decide for the 2019 and 2020 marketing years.
- By March 15 of each year from 2021 to 2023, a farmer could change the decision for the upcoming year.

The effective reference prices and ARC benchmark prices were known at the time of the decisions. We will make enrollment comparisons up to the 2022 program year, the last year for which aggregate level data has been made available by FSA (Enrollment data is available from FSA website).

Corn

At the beginning of the 2014 Farm Bill, 86% of the ARC benchmark price was $5.29 per bushel, exceeding the $3.70 reference price, and 86% of the ARC-CO benchmark price remained above the statutory reference price until 2017 (see Figure 1). As a result, expectations were that the ARC-CO payments exceeded those of PLC during the program's early years. Under the 2014 Farm Bill, 93% of the corn base acres were enrolled in ARC-CO and 6% in PLC.

From 2019 to 2022, the ARC benchmark price was at the reference price, meaning that 86% of the benchmark price was $3.18, well below the $3.70 effective reference price. As a result, ARC-CO was expected to make higher payments in most situations. Yearly enrollments then swung predominately to PLC:

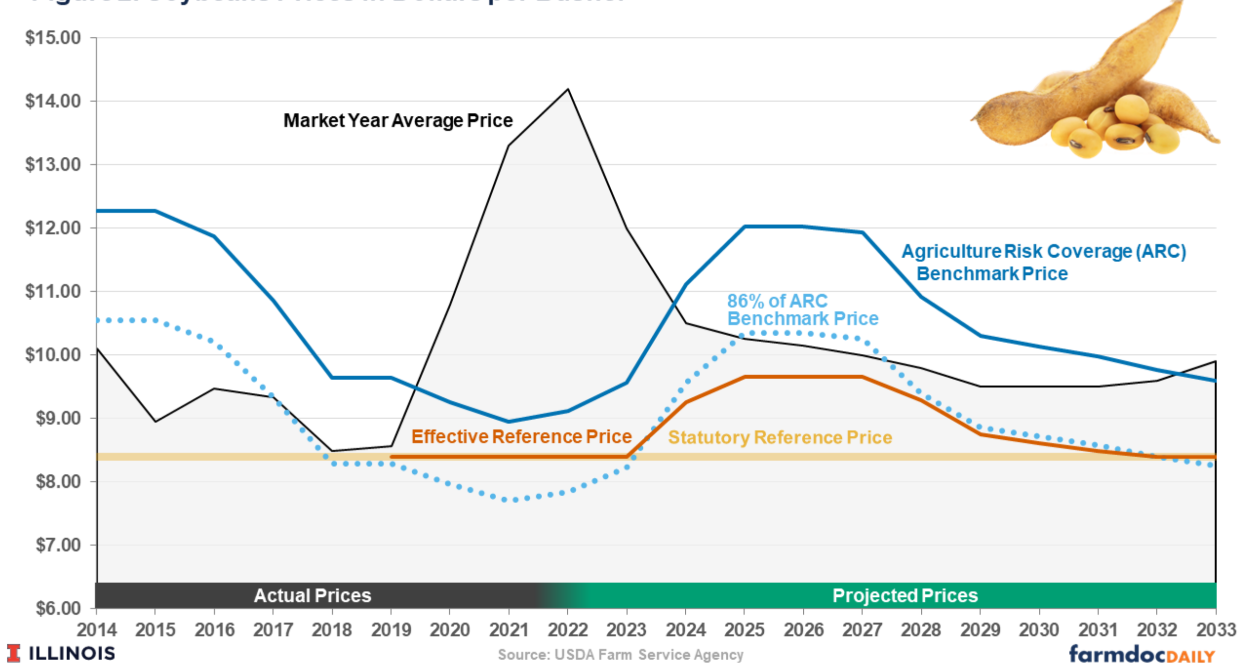
- 2019 and 2022: 75% in PLC, 19% in ARC-CO.
- 2021: 51% in PLC, 47% in ARC-CO.
- 2022: 39% in PLC, 60% in ARC-CO.

In future years, ARC-CO may continue to be preferred over PLC as 86% of the ARC-CO benchmark price is projected to exceed the effective reference price between 2024 and 2027 (for a more detailed discussion of corn, see *farmdoc daily*, April 18, 2023).

Soybeans

Unlike the other crops shown in this article, the MYA price has been above the statutory and effective reference price in every year, meaning that PLC has not triggered a payment for soybeans (see Figure 2). Moreover, 86% of the ARC benchmark price was well above the statutory reference price from 2014 to 2018. In the early years of the 2014 Farm Bill, expectations were for ARC-CO payments to make higher payments than PLC. Program decisions reflect this expectation, as 96% of the soybean base acres were enrolled in ARC-CO under the 2014 Farm Bill.

Figure 2. Soybeans Prices in Dollars per Bushel



From 2019 through 2021, the effective reference price has been slightly above 86% of the ARC benchmark price. As a result, a slight movement from ARC-CO to PLC has occurred:

- 2019 and 2022: 14% in PLC, 80% in ARC-CO.
- 2021: 12% in PLC, 86% in ARC-CO.
- 2022: 14% in PLC, 84% in ARC-CO.

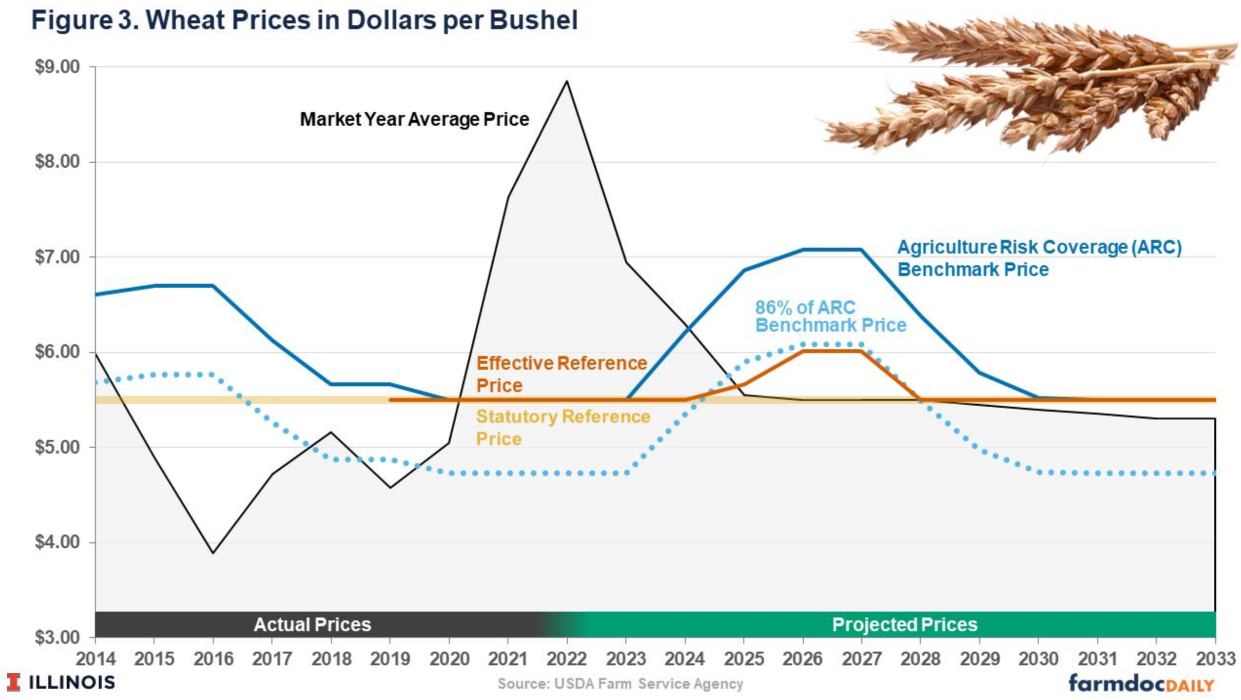
In future years, ARC-CO will likely be preferred over PLC as 86% of the ARC benchmark price is projected to exceed the effective reference price (for a more detailed discussion, see *farmdoc daily*, April 25, 2023)

Wheat

Wheat's reference price and 86% of the ARC benchmark price were near one another in the early years of the 2014 Farm Bill (see Figure 3). Enrollment acres under the 2014 Farm Bill were equally divided: 55% in PLC and 42% in ARC-CO.

From 2019 to 2023, 86% of the ARC benchmark price was below the effective reference price. More base acres were enrolled in PLC:

- 2019-2020: 93% in PLC, 6% in ARC-CO.
- 2021: 83% in PLC, 16% in ARC-CO.
- 2022: 51% in PLC, 47% in ARC-CO.



Peanuts

MYA prices have been below statutory and effective reference prices in all years, and 86% of the ARC-CO benchmark price has been below the applicable reference price (see Figure 4). In all years, PLC was expected to pay more than ARC-CO. As a result, most base acres were enrolled in PLC.

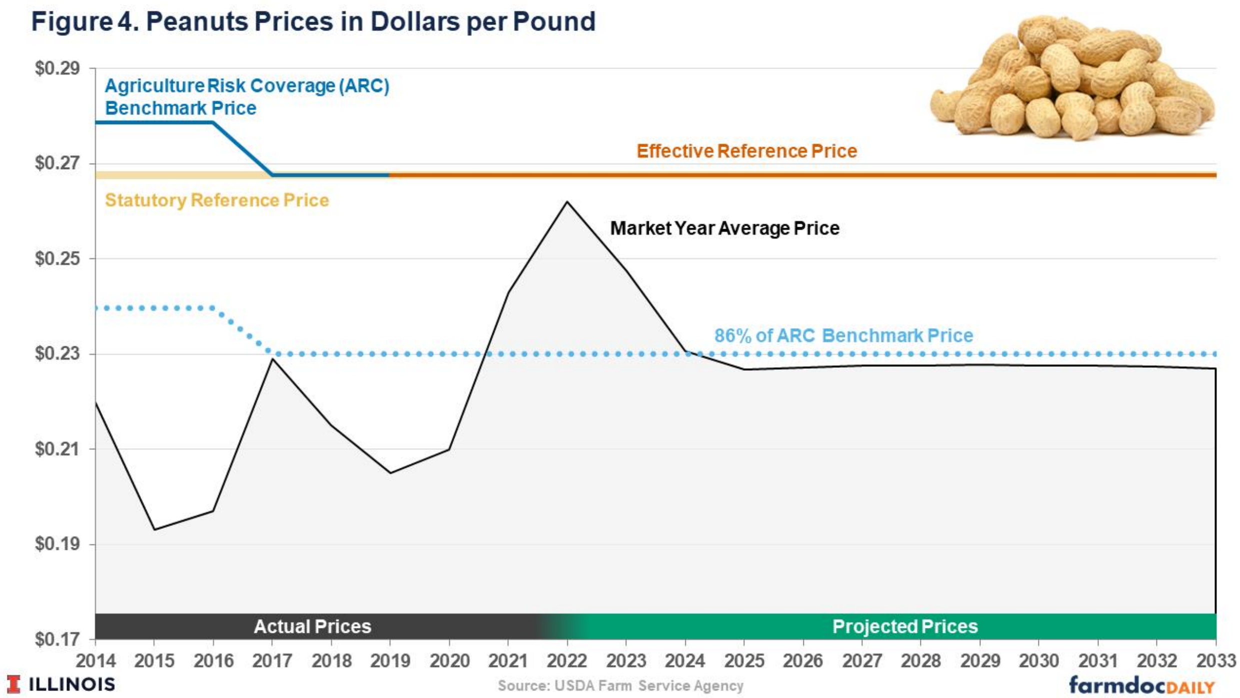
- 2014 to 2019: 99% in PLC.

- 2019 and 2020: 99% in PLC.

- 2021: 99% in PLC.

- 2022: 99% in PLC.

Current projections suggest that PLC will make payments in most years in the future. Therefore, it is reasonable to expect an almost 100% enrollment in PLC.



Long-Grain Rice

From 2014 to 2022, 86% of the benchmark price has been well below either the statutory or effective reference price (see Figure 5). The high enrollment in PLC reflects these price relationships:

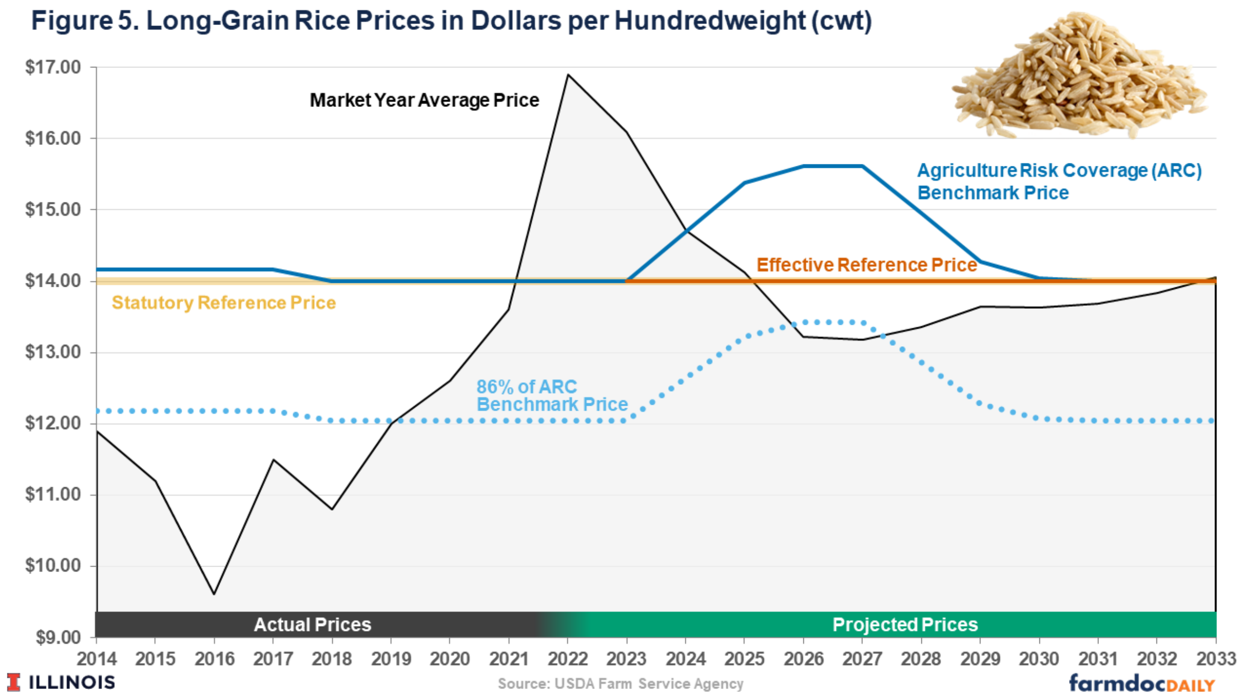
- 2014 to 2019: 96% in PLC.

- 2019 and 2020: 99% in PLC.

- 2021: 99% in PLC.

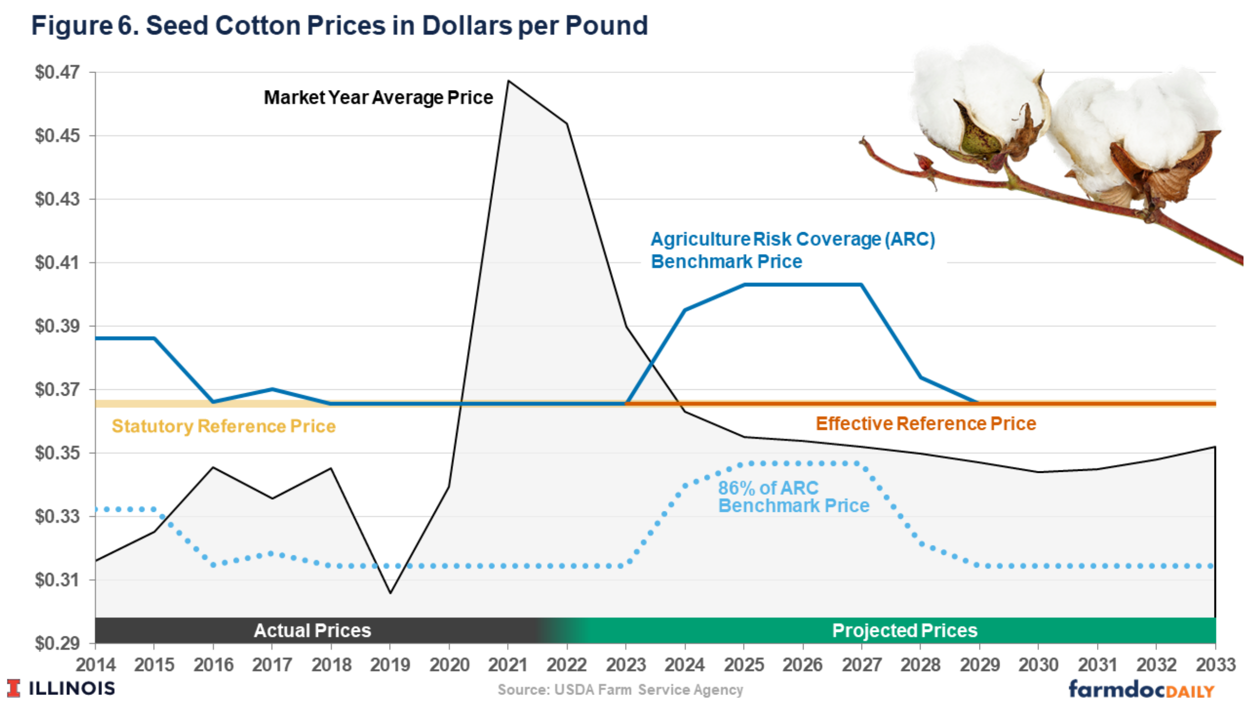
- 2022: 99% in PLC.

If commodity title provisions do not change, current CBO projections suggest that PLC will make payments in most years in the future. Similar to peanuts, it is reasonable to expect an almost 100% enrollment in PLC.



Seed Cotton

Prior to passage of the 2014 Farm Bill, Federal support for cotton was found to be trade distorting in a case brought by Brazil against the U.S. at the World Trade Organization. As a result, the 2014 Farm Bill did not include commodity title programs for cotton. In 2018, the seed cotton program was introduced. We include prices for 2014 to 2017 as if the seed cotton program had existed.



86% of the ARC benchmark price for seed cotton has been below the effective reference price. Most cotton base acres are enrolled in PLC, but a trend exists toward PLC ad MYA prices have risen:

- 2019 and 2020: 99% in PLC.

- 2021: 91% in PLC, 9% in ARC-CO.
- 2022: 74% in PLC, 26% in ARC-CO.

Summary Comments

As illustrated in this article, expectations of payments from PLC and ARC-CO at the time of enrollment greatly impact commodity title decisions. As expected, economically rational farmers will select the option with the largest expected payment.

To a large extent, relative commodity program payments are impacted by the statutory reference prices and how they compare with actual marketing year prices for each program crop. Soybeans statutory reference price has not triggered payments since 2014. Given the statutory reference prices for peanuts and long-grain rice, payments have been triggered in the majority of years since 2014.

In future years, CBO price expectations suggest that soybeans and corn will continue to trigger few PLC payments. Wheat and seed cotton will have a roughly 50% chance of triggering PLC payments. Peanuts and long-grain rice are expected to trigger PLC payments in the majority of years.

Statutory reference prices likely will be examined in upcoming farm bill debates. Changes to statutory reference prices will impact the attractiveness of PLC and ARC-CO. Overall, a proportional increase in the statutory reference price (e.g., 5% increase all crops) will increase PLC's expected payments relative to ARC-CO; however, some crops will gain more than others. An increase in the statutory reference price will have little impact on soybeans (see *farmdoc daily*, April 25, 2023), and large impacts on peanuts and rice. The statutory reference price relative to MYA price expectations matter in Federal outlays. If moving towards relative parity across crops is a policy objective, differential changes or adjustments to the statutory reference price levels or effective reference price calculation may be needed. Such changes will likely face political barriers.

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