



ARC-CO and PLC Payment Indicator Using August WASDE U.S. Yield and Price

Carl Zulauf

Department of Agricultural, Environmental and Development Economics
Ohio State University

Gary Schnitkey

Department of Agricultural and Consumer Economics
University of Illinois

August 13, 2014

farmdoc daily (4):151

Recommended citation format: Zulauf, C., and G. Schnitkey. "[ARC-CO and PLC Payment Indicator Using August WASDE U.S. Yield and Price.](#)" *farmdoc daily* (4):151, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 13, 2014.

Permalink URL <http://farmdocdaily.illinois.edu/2014/08/arc-co-and-plc-payment-indicator.html>

The 2014 farm bill gives Farm Service Agency (FSA) farm owners the option to choose their crop program for the 2014 through 2018 crop years. A factor, perhaps key factor that will influence this decision is the payment by the program choices for the 2014 crop year. This article uses the just released U.S. yield and price estimates in the August 2014 *World Agricultural Supply and Demand Estimates* (WASDE) to calculate an indicator of potential payments by the Agriculture Revenue Coverage – county program (ARC-CO) and the Price Loss Coverage (PLC) program. The indicator estimates are for the 2014 crop year for barley, corn, oats, long grain rice, medium (and short) grain rice, sorghum, soybeans, and wheat. These are indicator estimates because they use U.S. yield not county yield or farm payment yield, as ARC-CO and PLC use, respectively. ARC-CO payments, for example, will vary across counties, with some counties having no payments due to high yields and some counties having large payments due to low yields. Thus, this article is not estimating payments that an individual FSA farm owner would receive. Nevertheless, the indicator estimates using U.S. yields should help frame questions and perspectives for FSA farm owners regarding program choices.

Calculation of Estimated Indicator Program Payments

ARC-CO makes payments when county revenue for the crop year is less than 86% of the county's benchmark revenue. ARC-CO pays when actual revenue is between 76% and 86% of benchmark revenue. PLC makes payments when the U.S. crop year average price is less than the crop's reference price. The reference price is specified by Congress in the 2014 farm bill. The various formulas used to determine the ARC-CO and PLC payments are presented at the end of the article. An initial comparative summary of these two programs is that ARC-CO is a market-oriented multiple year shallow loss

We request all readers, electronic media and others follow our citation guidelines when re-posting articles from *farmdoc daily*. Guidelines are available [here](#). The *farmdoc daily* website falls under University of Illinois copyright and intellectual property rights. For a detailed statement, please see the University of Illinois Copyright Information and Policies [here](#).

assistance program and PLC is a low price assistance program where low price is defined by Congress, not the market.

Calculation of Yield per Planted Acre

Both programs use yield per planted, not harvested acre. Yield per planted acre is calculated as production divided by acres planted to the crop, except for corn and sorghum. For these two crops, acres harvested for silage are subtracted from planted acres. No estimate is available for corn and sorghum silage acres for 2014. For simplicity, we assume that corn and silage acres will be the same in 2014 as in 2013. The one exception to the use of yield per planted acre is oats. For oats, yield is per harvested acre because a large share of acres planted to oats is for a cover crop to establish hay production.

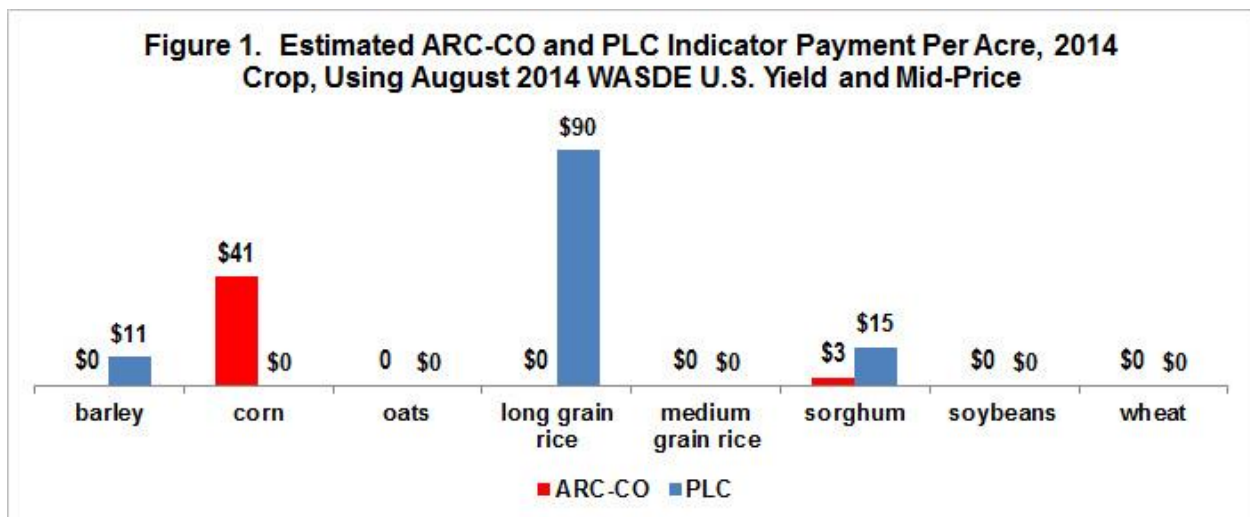
Source of Data

U.S. crop year yield, price, planted acres, and harvested acres are from U.S. Department of Agriculture (USDA) August 11, 2014 WASDE (<http://www.usda.gov/oce/index.htm>), except for planted and harvested acres of long grain and medium/short grain rice. The acre data for the rice varieties are from USDA, National Agricultural Statistics Service June 2014 Acreage report.

ARC-IC

A third program option exists --- the Agriculture Risk Coverage – Individual Farm option. The computations for this program are more difficult besides being farm specific. The ARC-CO estimates provide some indication of ARC-IC payments per acre but caution should be used since ARC-IC makes payments on the whole ARC-IC farm experience and thus is most akin to the average experience of all program crops on the farm. For an extensive discussion of ARC-IC, including the conditions under which it is most likely to be an option to consider ([farmdoc daily, June 6, 2014](#))

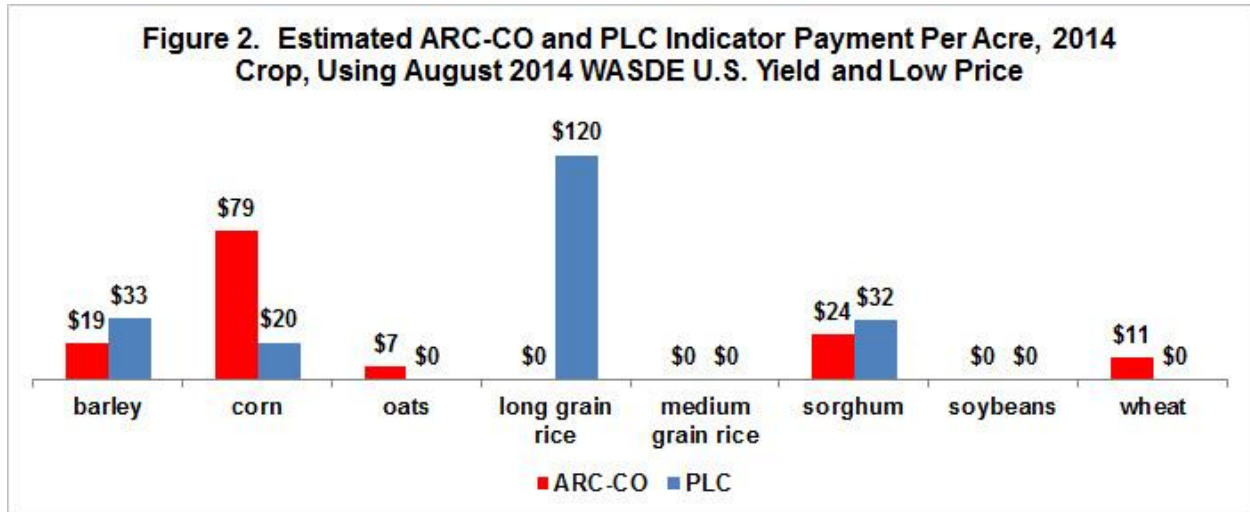
U.S. Per Acre Payment Indicator – August WASDE Mid Price (see Figure 1)



Using the midpoint of the WASDE range of prices for the 2014 crop year, ARC-CO payments are indicated for corn and sorghum. PLC payments are indicated for barley, long grain rice, and sorghum. The highest indicated payment is long grain rice from PLC at \$90 per acre, with the second highest being corn from ARC-CO at \$41 per acre. The only crop with indicated payments from both programs is sorghum at \$3 from ARC-CO and \$15 from PLC. Remember, actual payments depend upon county yield

for ARC-CO and FSA farm payment yield for PLC, and payment is made on only 85% of base acres (65% for ARC-IC).

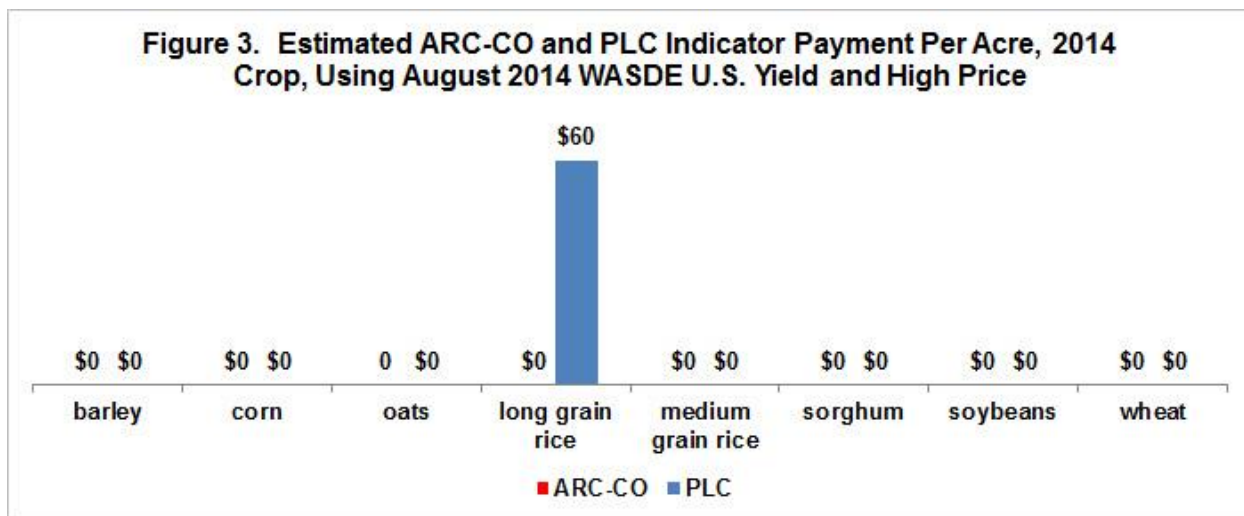
U.S. Per Acre Payment Indicator – August WASDE Low Price (see Figure 2)



When the low price in the range of crop year prices projected by WASDE is used, only medium/short grain rice and soybeans have no payment indicated. ARC-CO has no payment indicated for long grain rice. PLC has no payment indicated for oats and wheat. Both programs have payments indicated for barley, corn, and sorghum. ARC has the higher payment indicated for corn, oats, and wheat. PLC has the higher payment indicated for barley and sorghum. The highest per acre payment indicated is \$120 for long grain rice by PLC, with the next highest being \$79 for corn by ARC-CO.

A potentially important piece of information conveyed by comparing Figures 1 and 2 is how close ARC-CO is to making a payment if county yield is relatively poor compared to its benchmark yield and the 2014 U.S. crop year price is the WASDE midpoint price. This comparison suggests that ARC-CO might make payments if the midpoint-price is realized and if county yield is relatively poor for barley, oats, and wheat. This situation could be a particular consideration for wheat producers in the southern plains given their relatively poor 2014 wheat yields due to drought. A related point is that if the low projected price for soybeans emerges as the market price for 2014, ARC-CO could make payments for those counties with relatively poor yield. The reason for this observation is that actual U.S. revenue at the low WASDE price is only 1.3% higher than 86% of the U.S. benchmark revenue. Note, consideration of the role that yield plays in determining payment by ARC-CO does not apply to PLC. Whether PLC makes a payment depends solely on how U.S. crop year price compares to its reference price. In other words, PLC payment yield is fixed and thus not a determinant of whether payment is made.

U.S. Per Acre Payment Indicator – August WASDE high Price (see Figure 3)



Long grain rice and PLC is the only crop – program combination for which payment is indicated if the high price of the price range projected for 2014 in the August 2014 WASDE materializes.

Summary Observations

- As of August 12, 2014, it appears that, among the crops examined in this article, long grain rice is the most likely to receive a payment from the 2014 farm program options, specifically from PLC.
- As of August 12, 2014, it appears that above average chances for payments exist for corn from ARC-CO, barley from PLC, and sorghum from both programs.
- Lower prices increase the likelihood of payments, especially from ARC-CO.
- County yields that are below average will be a factor in determining payments by ARC-CO in 2014, given currently expected prices.
- Payments are far from certain if prices strengthen due to lower production or strength in demand.
- Unlike past crop counter-cyclical programs, ARC and PLC have a greater likelihood of not making payments. There was a high probability that prices and revenue would end up below the relevant payment support level between 1933 and 1990 with a few exceptions, such as the 1970s. Such is not the case now. Farmers and farm land owners need to adjust their understanding of how farm programs work in the 21st Century as opposed to the 20th Century. There appears to be an extra line at the bottom of this point, but it might be just one of those things that happens

Appendix 1: ARC-CO Calculation Formulas for 2014 Crop Year

- $ARC-CO\ payment/acre = \text{maximum (MAX)} (0, ((86\% * ARC\ revenue\ benchmark) - \text{MAX}(ARC\ actual\ revenue, or\ 76\% * ARC\ revenue\ benchmark)))$
- $ARC\ revenue\ benchmark\ for\ 2014 = (2009-2013\ Olympic\ average\ of\ county\ yield * 2009-2013\ Olympic\ average\ of\ U.S.\ crop\ year\ price)$
- Olympic average discards high and low values.
- $ARC\ actual\ 2014\ revenue = 2014\ county\ yield\ per\ planted\ acre * 2014\ U.S.\ crop\ year\ price$
- $ARC\ price\ for\ each\ year\ from\ 2009\ to\ 2013 = \text{MAX}(crop\ year\ price, PLC\ reference\ price)$
- NOTE: A maximum (MAX) operation means the higher/highest of the options separated by a comma is selected. Thus for example, 0 is selected if the calculated payment per acre is negative. In calculations for this article, U.S. average yield is used in place of county yield.

Appendix 2: PLC Calculation Formulas for 2014 Crop Year

- $\text{PLC payment/acre} = (\text{PLC payment yield} * \text{MAX}(0, \text{reference price} - \text{MAX}(\text{crop year price}, \text{loan rate})))$
- $\text{PLC payment yield} = (90\% * \text{average of FSA farm. yields for 2009-2013 crop years})$
- PLC reference prices and loan rates are specified in 2014 farm bill. Reference prices by crop are barley \$4.95; corn \$3.70; oats \$2.40; rice \$14.00; sorghum \$3.95; soybeans \$8.40; and wheat \$5.50. Loan rate by crop is barley \$1.95; corn \$1.95; oats \$1.39; rice \$6.50; sorghum \$1.95; soybeans \$5.00; and wheat \$2.94. Units are in \$/bushel except for rice, which is in \$/100 pounds. The rates for rice are for both long grain and medium/short grain.
- NOTE: A maximum (MAX) operation means the higher/highest of the options separated by a comma is selected. Thus for example, 0 is selected if the calculated payment per acre is negative. In calculations for this article, U.S. average yield is used in place of FSA farm yield.

References

USDA Office of the Chief Economist. "World Agricultural Supply and Demand Estimates (WASDE)." Released August 8, 2014. <http://www.usda.gov/oce/index.htm>

Zulauf, C., and G. Schnitkey. "[2014 Farm Bill: Making the Case for Looking at ARC-Individual Farm.](#)" *farmdoc daily* (4):105, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, June 6, 2014.

This publication is also available at <http://aede.osu.edu/publications>.