



## ARC-CO / PLC Decision Tool User's Guide

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The Agricultural Act of 2014, also referred to as the 2014 farm bill, provides farm owners and operators with multiple decisions that must be made for the 2014 through the 2018 crop years. Decisions that rest with the owner of a farm involve the opportunity to either retain or reallocation base acres and the opportunity to update counter-cyclical program yields (now called PLC program yields) on a covered commodity-by-covered commodity basis. All producers that operate on a farm must unanimously agree on the program choice between the agriculture risk coverage program (ARC) or the price loss coverage program (PLC). The ARC program contains two coverage options- county (CO) and individual coverage (IC). Similar to the yield update decision, this decision between ARC-CO and PLC can be made on covered commodity-by-covered commodity basis. In the likelihood that producers on a farm select the ARC-IC (individual) coverage option, the ARC-IC decision applies to all covered commodities that are produced on the farm; i.e. it functions as a whole-farm revenue program. The web-based decision tool developed by the authors focuses on the impact that alternative projected MYA prices and county-level yield anticipations have on potential program payments made per base acre of covered commodities common to the state of Louisiana. ARC-CO and the PLC program are evaluated subject to the user-specified MYA price and county-level yield expectations for the next five years of the farm bill. Results are presented as the projected farm program payment (dollars) per base acre.

Projecting future program payments under either the ARC-CO or PLC program can prove to be a difficult task. Multiple variables such as determinants of what the final MYA price will be, weather conditions, national planting intentions, and projected demand usage of a commodity from one crop to the next collectively add uncertainty into what these projects might resemble. Therefore, it is important that farm operators preform their own economic analysis and compare ARC-CO and PLC under multiple price and yield scenarios subject to their risk management strategy.

Relevant data was made available through USDA NASS and FSA for Louisiana parish-level yield data (unit per acre). Covered commodities such as corn, grain sorghum, long grain rice, soybeans, and wheat are presented for support program comparison. National MYA prices are obtained via USDA NASS for the 2009 through 2013 crop years for the aforementioned commodities. Projected MYA prices for the 2014 through 2018 crop years were obtained through the monthly University of Missouri Food and Agricultural Research Policy Institute (FAPRI) U.S. Crop Price Update Report. Table 1. The operational mechanics and revenue calculations of the ARC-CO and PLC programs are embedded into spreadsheet, removing that responsibility from the user. Farm operator(s) have the ability to enter their individual farm yield per planted acre coupled with the anticipated MYA price and expected parish-level yield for the 2014 through 2018 crop years. These numerical values will appear in blue type face on the spreadsheet. Each spreadsheet is parish and commodity specific. For example, a comparison of the ARC-CO and PLC

for corn produced on Avoyelles Parish is performed in one file. A comparison of ARC-CO and PLC for soybeans produced in Avoyelles Parish is performed on a separate spreadsheet, which are both available for download. A full list of commodity-specific spreadsheets that are available by parish, refer to Table 2.

Table 1. University of Missouri FAPRI U.S. Crop Report – October MYA Price Forecasts

| <b>Covered Commodity</b>   | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|----------------------------|-------------|-------------|-------------|-------------|-------------|
| Corn (\$/bu)               | \$3.40      | \$3.74      | \$3.98      | \$4.19      | \$4.20      |
| Soybeans (\$/bu)           | \$9.95      | \$8.93      | \$9.55      | \$10.26     | \$10.50     |
| Winter Wheat (\$/bu)       | \$5.80      | \$5.28      | \$5.51      | \$5.73      | \$5.84      |
| Grain Sorghum (\$/bu)      | \$3.33      | \$3.54      | \$3.71      | \$3.88      | \$3.92      |
| Long Grain Rice (\$/cwt)   | \$12.97     | \$12.48     | \$12.35     | \$12.43     | \$12.56     |
| Medium Grain Rice (\$/cwt) | \$14.72     | \$13.83     | \$13.73     | \$13.84     | \$14.02     |

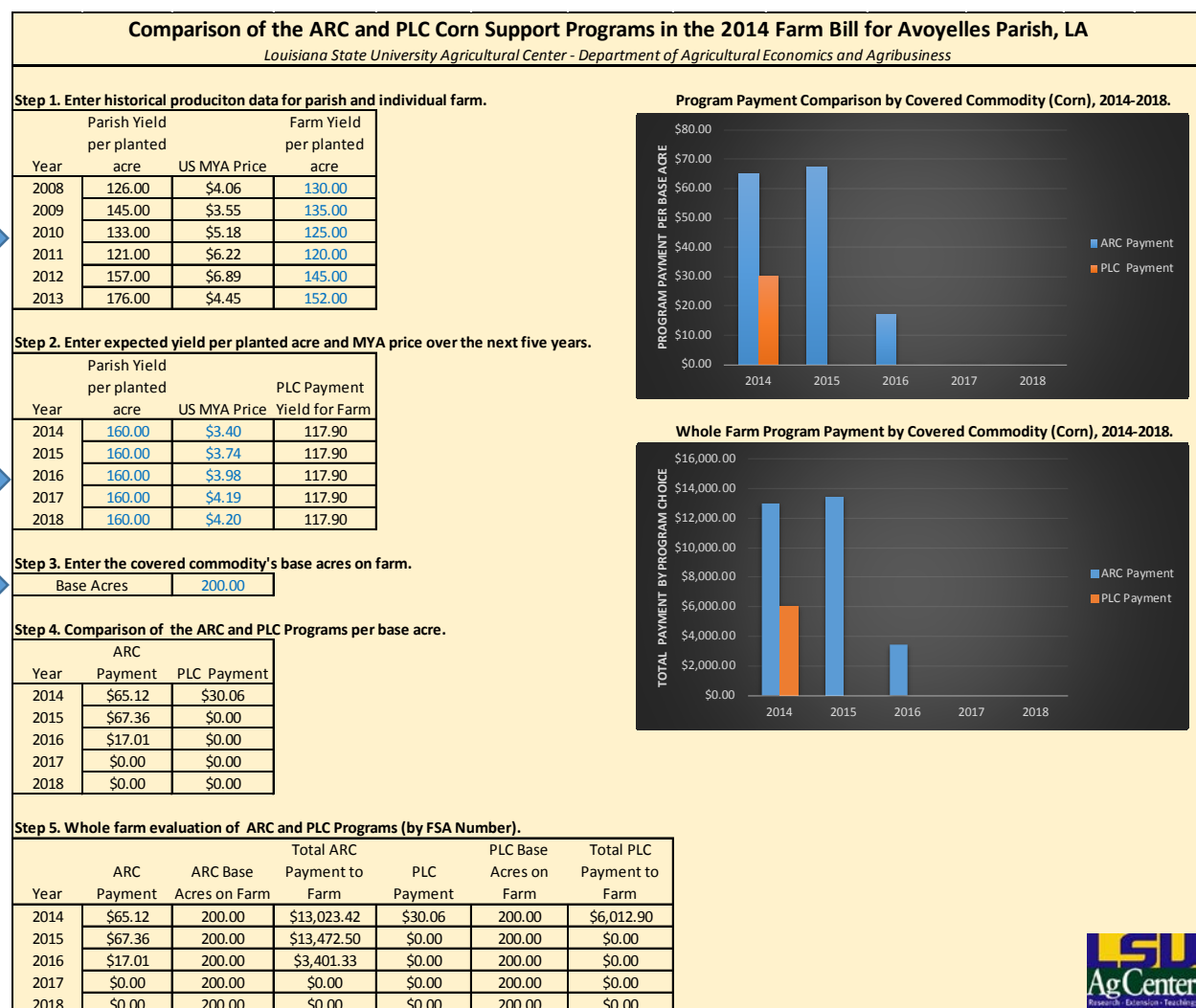
Table 2. ARC-CO / PLC program comparison available for the following parishes and commodities (table to be continued on the next page).

| <b>Parish</b>   | <b>Covered Commodities</b>                                                                       |
|-----------------|--------------------------------------------------------------------------------------------------|
| Acadia          | Rice (LG), Soybeans                                                                              |
| Allen           | Rice (LG), Soybeans                                                                              |
| Avoyelles       | Corn, Grain Sorghum, Rice (LG), Soybeans, Wheat                                                  |
| Beauregard      | Rice (LG), Soybeans                                                                              |
| Bossier         | Corn, Soybeans                                                                                   |
| Caddo           | Corn, Soybeans                                                                                   |
| Calcasieu       | Rice (LG), Soybeans                                                                              |
| Caldwell        | Irrigated Corn, Non-irrigated Corn, Irrigated Soybeans, Non-irrigated Soybeans                   |
| Cameron         | Rice (LG), Soybeans                                                                              |
| Catahoula       | Irrigated Corn, Non-irrigated Corn, Grain Sorghum, Soybeans, Wheat                               |
| Concordia       | Corn, Grain Sorghum, Rice (LG), Soybeans, Wheat                                                  |
| De Soto         | Corn, Soybeans                                                                                   |
| East Carroll    | Irrigated Corn, Non-irrigated Corn, Rice (LG), Irrigated Soybeans, Non-irrigated Soybeans, Wheat |
| Evangeline      | Corn, Grain Sorghum, Rice (LG), Soybeans                                                         |
| Franklin        | Corn, Grain Sorghum, Irrigated Soybeans, Non-irrigated Soybeans, Wheat                           |
| Grant           | Corn, Grain Sorghum, Soybeans                                                                    |
| Iberia          | Rice (LG), Soybeans                                                                              |
| Iberville       | Soybeans                                                                                         |
| Jefferson Davis | Rice (LG), Soybeans                                                                              |
| Lafayette       | Rice (LG), Soybeans                                                                              |

|                  |                                                                                                                                                |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| La Salle         | Soybeans                                                                                                                                       |
| Madison          | Irrigated Corn, Non-irrigated Corn, Grain Sorghum, Irrigated Soybeans, Non-irrigated Soybeans, Wheat                                           |
| Morehouse        | Corn, Irrigated Grain Sorghum, Non-irrigated Grain Sorghum, Rice (LG), Soybeans, Wheat                                                         |
| Natchitoches     | Irrigated Corn, Non-irrigated Corn, Rice (LG), Soybeans, Wheat                                                                                 |
| Ouachita         | Irrigated Corn, Non-irrigated Corn, Irrigated Soybeans, Non-irrigated Soybeans                                                                 |
| Pointe Coupee    | Corn, Grain Sorghum, Soybeans, Wheat                                                                                                           |
| Rapides          | Corn, Grain Sorghum, Rice (LG), Soybeans, Wheat                                                                                                |
| Red River        | Corn, Soybeans                                                                                                                                 |
| Richland         | Corn, Grain Sorghum, Rice (LG), Irrigated Soybeans, Non-irrigated Soybeans, Wheat                                                              |
| St. Landry       | Corn, Grain Sorghum, Rice (LG), Soybeans, Wheat                                                                                                |
| St. Martin       | Rice (LG), Soybeans                                                                                                                            |
| St. Mary         | Soybeans                                                                                                                                       |
| Tensas           | Irrigated Corn, Non-irrigated Corn, Grain Sorghum, Rice (LG), Irrigated Soybeans, Non-irrigated Soybeans, Irrigated Wheat, Non-irrigated Wheat |
| Vermilion        | Rice (LG), Soybeans                                                                                                                            |
| Washington       | Corn                                                                                                                                           |
| West Baton Rouge | Corn, Soybeans                                                                                                                                 |
| West Carroll     | Corn, Rice (LG), Irrigated Soybeans, Non-irrigated Soybeans, Wheat                                                                             |

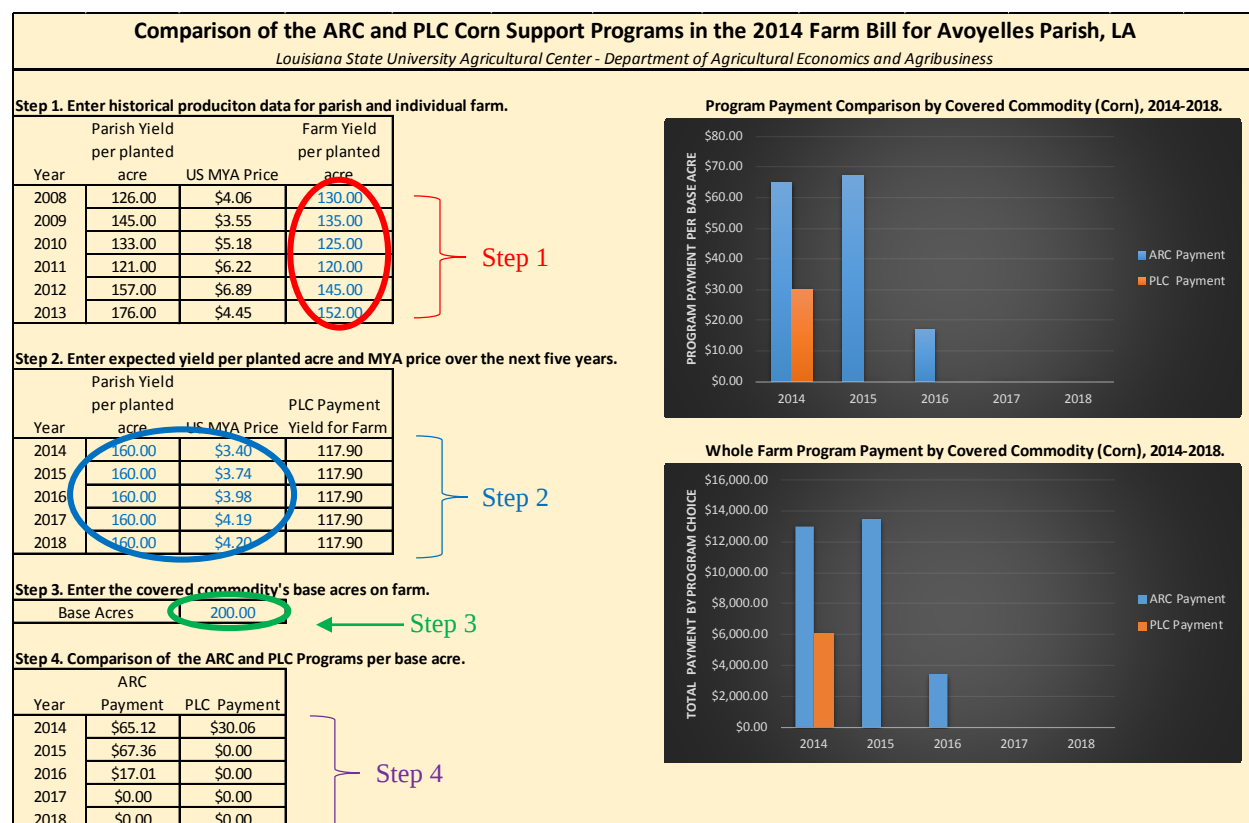
Once the farm operator enters their historical farm production and a series of anticipated MYA price and parish-yield scenarios (cells in the spreadsheet that contain blue type face and denoted by the blue arrows in Figure 1), an ARC-CO to PLC projected payment comparison is made. Also included in the spreadsheet is a feature that will enable the operator to enter the number of base acres of the enrolled covered commodity so that ARC-CO and PLC can be presented in a cumulative whole-farm approach. The example illustrated in Figure 1 presents the potential corn support payment(s) per base acre for Avoyelles Parish, LA under both commodity programs contained in the new farm bill. Here, MYA prices from the FAPRI October price report are used.

Figure 1. Screen-shot view of the ARC-CO/PLC decision tool for corn produced in Avoyelles Parish.



Output on the right-side of the spreadsheet graphically presents a program comparison on the basis of projected farm payments per base acre of corn in the selected parish for the 2014-2018 crop years. Projected ARC-CO payments per base acre are depicted by blue bars, while projected PLC payments per base acre are depicted by orange bars. This is presented on a yearly basis for the 2014-2018 crop years. The bottom graph provides a whole-farm comparison of ARC-CO and PLC relative to the number of specified base acres on the farm for the enrolled covered commodity. Figure 2 provides an in-depth view of the producer-specified data.

Figure 2. Focused view of producer-entered data of their individual farm yield per planted acre for the selected covered commodity.



In Step 1 of this example, the producer has indicated the yield per planted acre (bushels) for corn across their FSA farm number (highlighted with a red circle). This information is used for purposes of calculating the updated PLC program yield, should the producer elect to participate in the PLC program. Yields on the farm from 2008 to 2012 averaged 131.0 bushels. Applying 90% to this simple average results in an updated PLC program yield of 117.9 bushels. Since the yield update is a farm owner decision, as this yield will remain fixed to the land, it does not negate its importance in evaluating the operator choice of which commodity support program to select. An underlying assumption to this decision tool is that the farm owner will elect to update the PLC program yield for the purposes of evaluating any potential PLC program payment. Parish-level data and previous MYA prices are embedded into the program to calculate the ARC-CO guarantee and benchmark revenues in addition to the maximum ARC-CO payment threshold (10% of the ARC-CO benchmark revenue).

In Step 2, the operator-inputted data comes via the MYA price and parish-level yield projections for the next five years (highlighted with a blue circle). These estimates should be based on multiple scenarios deemed important by the operator. As indicated in this example, the farm operator has assumed a single parish yield scenario that considers a constant yield of 160 bushels per acre over the next five years paired with MYA price projections released in October by the University of Missouri FAPRI for the 2014 to 2018 crop years. Next, in Step 3, the operator can input the total number of base acres for this enrolled covered commodity on their farm (highlighted by the green circle). In this example, the operator has indicate that this farm consist (in part) of 200 corn base acres.

Step 4 presents a side-by-side comparison of the projected ARC-CO and PLC payments per base acre, respectively. Output from this decision tool indicate that the ARC-CO program has the potential to generate a farm program payment in the first three years of the five year farm bill; subject to the MYA price and yield scenario inputted by the farm operator. In comparison to the PLC program for corn in Avoyelles Parish, a PLC payment occurs only in the first year of the farm bill. It should be noted that output (program payment per base acre) is subject to a 100% likelihood that the MYA price and county-level yield parameters inputted by the operator will occur for the 2014, 2015, 2016, 2017, and 2018 crop years. In actuality, this is a far-reaching economic assumption, but it provides a starting point in the producer's evaluation process.

Based on the amount of base acres of the enrolled covered commodity on the farm, results presented in Figure 3 and contained in Step 5, indicate the amount of the potential payment under both programs (columns under the red circles). Note that the ARC-CO and PLC projected farm payment amounts are duplicated from Step 4. In the case of 200 base acres of corn produced in Avoyelles Parish, the cumulative ARC-CO payment, subject to the farm operator-specified MYA price and county-level yield assumptions, is \$29,897.25 (expressed as a projected yearly program payment of \$13,023.42 + \$13,472.50 + \$3,401.33 + \$0 + \$0). The cumulative PLC payment over the five year period is \$6,012.90 (expressed as a projected yearly program payment of \$6,012.90 + \$0 + \$0 + \$0 + \$0).

Figure 3. Focused view of corn ARC-CO and PLC payments per base acres as well as in the context of a whole farm evaluation.

| Step 5. Whole farm evaluation of ARC and PLC Programs (by FSA Number). |             |                        |                           |             |                        |                           |
|------------------------------------------------------------------------|-------------|------------------------|---------------------------|-------------|------------------------|---------------------------|
| Year                                                                   | ARC Payment | ARC Base Acres on Farm | Total ARC Payment to Farm | PLC Payment | PLC Base Acres on Farm | Total PLC Payment to Farm |
| 2014                                                                   | \$65.12     | 200.00                 | \$13,023.42               | \$30.06     | 200.00                 | \$6,012.90                |
| 2015                                                                   | \$67.36     | 200.00                 | \$13,472.50               | \$0.00      | 200.00                 | \$0.00                    |
| 2016                                                                   | \$17.01     | 200.00                 | \$3,401.33                | \$0.00      | 200.00                 | \$0.00                    |
| 2017                                                                   | \$0.00      | 200.00                 | \$0.00                    | \$0.00      | 200.00                 | \$0.00                    |
| 2018                                                                   | \$0.00      | 200.00                 | \$0.00                    | \$0.00      | 200.00                 | \$0.00                    |

In conclusion, this producer evaluation tool should be used to evaluate multiple MYA price and parish yield scenarios so that varying degrees of program impact (in terms of program payment amount) can be accessed. The potential exists that the ARC-CO and/or PLC may not trigger a payment in every year of the farm bill subject to the price and yield conditions imposed into the tool by the producer.

*Note: this ARC-CO/PLC farm bill decision tool is intended for educational purposes. Worksheets contain the November FAPRI MYA price estimates as the default option. It is strongly suggested that multiple price and yield scenarios be included in your program evaluation.*



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