



Ag Policy Update: PLC and ARC Program Projections

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Introduction

With the marketing year for 2013 crops coming to an end, the USDA has begun to release projections for several program variables for the Price Loss Coverage (PLC) and Agricultural Risk Coverage (ARC) programs. Both programs were created as part of the 2014 Farm Bill and are designed to provide protection to producers from falling prices or revenue. USDA has recently released projections of yield and prices that are expected to be used in calculating payments under both the PLC and ARC programs.

Since PLC and ARC are the two new safety net payment programs options for producers, there is going to be a high level of anticipation surrounding them. The release of any information regarding these programs is likely to create a significant amount of attention. Producers have likely seen recent projections for program variables from one news source or another. And while many of these projections look very attractive as compared to current market conditions, the projections themselves tell us only a small portion of the story regarding how these programs will work and what level of coverage they will provide. For example, the benchmark price for the ARC program for corn is currently projected at around \$5.30 per bushel. With current new crop corn prices currently in the \$3.00 per bushel range, the \$5.30 per bushel price is certainly an attractive level. However, this price projection alone does not provide a clear picture of what it may mean in regards to the level of protection that will be afforded to a producer with corn base acres and production.

How Does ARC And PLC Work?

To get a better understanding of what these price and yield projections mean in terms of either the PLC or ARC programs, there must be a solid understanding of how these programs will operate. It should be noted that the final rules and regulations for both the PLC and ARC have not yet been released by USDA. While there is a general consensus of how these programs will function, there is always a possibility that some program details could be modified slightly once the final rules and regulations are released.

Price Loss Coverage (PLC)

Producers will have to make a decision between enrolling covered commodity base acres on a farm in either the PLC or ARC programs. The PLC program offers protection from falling market prices in a similar fashion to how the Counter-Cyclical program worked under the previous farm bill. As the national average marketing year price for a commodity falls below a reference price, producers would become eligible for payments under the PLC program. The PLC payment rate would increase as the marketing year price continued to fall below the reference price up to a maximum level where the marketing year price equals the national loan rate for the commodity. The PLC payment rate for a covered commodity is calculated as:

$$\text{PLC Payment Rate} = \text{Reference Price} - \text{Higher of (Marketing Year Price or National Loan Rate)}$$

If a PLC payment is available, the exact amount that a producer would be eligible to receive is dependent on the payment rate, the producer's program payment yield on the farm, and the number of base acres on the farm. Producers will be given the option to update program payment yields from levels in the previous farm bill to 90 percent of the average yield per planted acre on the farm from 2008 to 2012. Producers will also be

given the option to reallocate base acres based on the farm's actual plantings from 2009 to 2012. PLC payments are, however, only paid on 85 percent of the farm's base acres for the commodity. The total PLC payment a producer would receive for a covered commodity is calculated as:

$$TOTAL\ PLC\ PAYMENT = PLC\ Payment\ Rate * Program\ Payment\ Yield * 85\% * Base\ Acres$$

As shown, the PLC program only provides protection from falling market prices. Producers who choose to enroll in the PLC program can choose to obtain additional protection coverage by purchasing Supplemental Coverage Option (SCO). SCO is a new insurance policy that is only available for those producers that enroll in the PLC program. SCO provides revenue coverage protection by providing indemnities when parish revenue levels fall below an expected or guaranteed level. While there is no cost for enrolling in the PLC program, there is a cost (premium) associated with purchasing SCO.

Producers will be given a one-time opportunity to decide to enroll in the PLC or ARC programs. Once the decision is made, it remains set for the remainder of the 2014 Farm Bill or through the 2018 crop year. If a producer fails to enroll during the signup period, the farm forfeits its opportunity to participate in either the PLC or ARC program for the 2014 crop year and will automatically be enrolled in the PLC for the 2015 crop year and beyond.

Agricultural Risk Coverage (ARC)

Instead of participating in the PLC program, the producer may decide to enroll in the ARC program. A producer choosing to enroll in the ARC program will have to choose between two ARC options. The ARC at the county coverage level (ARC-CO) provides payments when parish revenue levels fall below a guaranteed level. The ARC at the individual coverage level (ARC-IC) provides payments when the weighted average revenue across all commodities on the farm falls below a guaranteed level. The ARC-CO program, as well as the PLC program, can be selected on a commodity by commodity basis. In other words, a producer can enroll corn base acres on the farm in the ARC-CO program and then enroll the soybean base acres on that farm in PLC. If the ARC-IC program is selected for a farm, however, then all commodities on that farm must be enrolled. Choosing the ARC-IC eliminates the flexibility of choosing one program for one commodity and another for a different commodity.

As mentioned, the ARC-CO provides payments when the parish revenue (parish yield times the national marketing year price) falls below a guaranteed level. The ARC-CO guaranteed level is set at 86% of a parish's benchmark revenue. The ARC-CO benchmark revenue for a parish is calculated as the 5 year olympic average of parish yields (benchmark or guaranteed yield) times the 5 year olympic average of the national marketing year price (benchmark or guaranteed price) during the previous 5 year period. Since the benchmark yield and benchmark price is based on the previous 5 years, these values will change annually as one year is added and one year is removed from the calculation.

As actual parish revenue falls below the ARC-CO guaranteed level, ARC-CO begins to provide program payments to producers. These program payments increase as actual parish revenue continues to fall below the ARC-CO guaranteed level until they reach a maximum of 10 percent of the ARC-CO benchmark revenue. The ARC-CO payment rate is calculated as:

$$ARC-CO\ Payment\ Rate = Higher\ of\ (Actual\ Parish\ Revenue - ARC-CO\ Guaranteed\ Revenue)\ or\ (ARC-CO\ Benchmark\ Revenue * 10\%)$$

where = Actual Parish Revenue is the set at USDA's estimate of parish yield times the national marketing year price;

ARC-CO Guaranteed Revenue is ARC-CO Benchmark Revenue times 86 percent; and,

ARC-CO Benchmark Revenue is the 5 year olympic average of parish yield times the 5 year olympic average of national marketing year price.

If an ARC-CO payment is available, the exact amount that is available to a producer is dependent on the ARC-CO payment rate and the number of base acres on the farm. ARC-CO payments are paid on 85 percent of the farm's base acres for the commodity. The total ARC-CO payment a producer would receive for a covered commodity is calculated as:

$$\text{Total ARC-CO Payment} = \text{ARC-CO Payment Rate} * 85\% * \text{Base Acres}$$

An alternative to the ARC-CO program is the ARC program at the individual coverage level (ARC-IC). While there is more uncertainty surrounding how the ARC-IC will operate than the other programs, it appears that the ARC-IC will have similar characteristics to the Supplemental Revenue Assistance Payments (SURE) disaster program from the 2008 Farm Bill. The ARC-IC will provide payments when the actual average revenue across all commodities on the farm falls below a guaranteed level. As with the ARC-CO, the ARC-IC will calculate a benchmark revenue level and have a guaranteed revenue level set at 86 percent of that benchmark. In addition, the maximum payment rate under the ARC-IC will also be set at 10% of the benchmark revenue. The major difference between the two ARC options is that rather than having a benchmark revenue for a specific covered commodity under ARC-CO, the benchmark revenue for ARC-IC appears to be the weighted average of revenue levels for all commodities on the farm. For the ARC-IC, the farm is defined as the sum of the producer's interest in all ARC-IC farms located in the state. So, it appears that a producer with multiple farms and farm numbers would have a single benchmark revenue across all commodities on all farms enrolled in ARC-IC. A final difference between ARC-CO and ARC-IC is that payments are paid on 65 percent of the producer's base acres under the ARC-IC versus 85 percent under the ARC-CO.

What Does USDA Projections Mean for Producer's Level of Protection?

To get a better understanding of what USDA's projections for PLC and ARC program variables means for the amount of protection these programs will provide producers, consider an example farm operation that has base acres of corn, grain sorghum, soybeans, wheat, and long grain rice. This example will only consider PLC and ARC-CO programs. Given the uncertainty still surrounding the ARC-IC program, it is left out of this analysis.

Table 1 shows assumptions and projections for various PLC and ARC-CO program variables. The example farm is assumed to have the following program payment yields: 140 bushels for corn, 95 bushels for grain sorghum, 42 bushels for soybeans, 50 bushels for wheat, and 65 hundredweights for long grain rice. The PLC reference prices and national loan rates are set by the 2014 Farm Bill and are fixed for the entire length of the farm bill. The projected 2014/15 marketing year price is the mid-point of USDA's price projection range in its September 2014 World Agricultural Supply and Demand Estimates (WASDE) report. The projected parish yield for 2014 is based on USDA's September 2014 projection for state and national yields. St. Landry parish was assumed to be the parish in which the example operation was located. With USDA's September 2014 yield projections as the basis, estimates for St. Landry parish yields were estimated using the historical relationship between St. Landry parish yields with state and national yields.

Table 1. Projected 2014 PLC and ARC-CO Program Variables

Commodity	Units	Example	PLC Reference Price ^B	National Loan Rate ^C	Projected	Projected
		Program Payment Yields ^A			2014/15 Mkting Year Price ^D	2014 Parish Yield ^E
Corn	Bu.	140	\$3.70	\$1.95	\$3.50	163.3
Sorghum	Bu.	95	\$3.95	\$1.95	\$3.30	96.5
Soybeans	Bu.	42	\$8.40	\$5.00	\$10.00	45.3
Wheat	Bu.	50	\$5.50	\$2.94	\$5.90	54.4
Rice - Long Grain	Cwt.	65	\$14.00	\$6.50	\$13.00	68.1

^A These are program payment yields for the hypothetical or example farm.

^B These are the prices established by the 2014 Farm Bill for the 2014 - 2018 crop years.

^C These are the loan rates established by the 2014 Farm Bill for the 2014 - 2018 crop years.

^D These are set at the midpoint of USDA's September 2014 price projection range.

^E These are estimated parish yields for the hypothetical or example farm. These were set using USDA's September 2014 projections for state and national yields and adjusts them to parish yields based on historical relationships between parish, state, and national yields.

The ARC-CO benchmark prices are the 5 year olympic averages of national marketing year prices during the previous 5 years (2009 – 2013). The ARC-CO benchmark yield is the 5 year olympic average of St. Landry parish yields during the previous 5 years. The ARC-CO benchmark revenue is simply the ARC-CO benchmark price times the ARC-CO benchmark yield. The ARC-CO guaranteed level is simply the ARC-CO benchmark revenue times 86 percent.

Table 1. Projected 2014 PLC and ARC-CO Program Variables (Continued)

Commodity	ARC-CO	ARC-CO	ARC-CO	ARC-CO	Maximum
	Benchmark Price ^A	Benchmark Yield ^B	Benchmark Revenue ^C	Guaranteed Revenue ^D	ARC-CO Payment Per Base Acre ^E
Corn	\$5.28	125.7	\$663.94	\$570.99	\$56.43
Sorghum	\$5.09	97.5	\$495.77	\$426.36	\$42.14
Soybeans	\$12.27	37.5	\$460.41	\$395.95	\$39.13
Wheat	\$6.60	54.7	\$360.98	\$310.44	\$30.68
Rice - Long Grain	\$13.60	61.2	\$832.77	\$716.19	\$70.79

^F The projected ARC-CO benchmark prices are the 5 year Olympic average of national marketing year prices during the previous 5 years (2009 to 2013).

^G The projected ARC-CO benchmark yield are the 5 year Olympic average of parish yields during the previous 5 years (2009 to 2013). The parish used in this example was St. Landry parish.

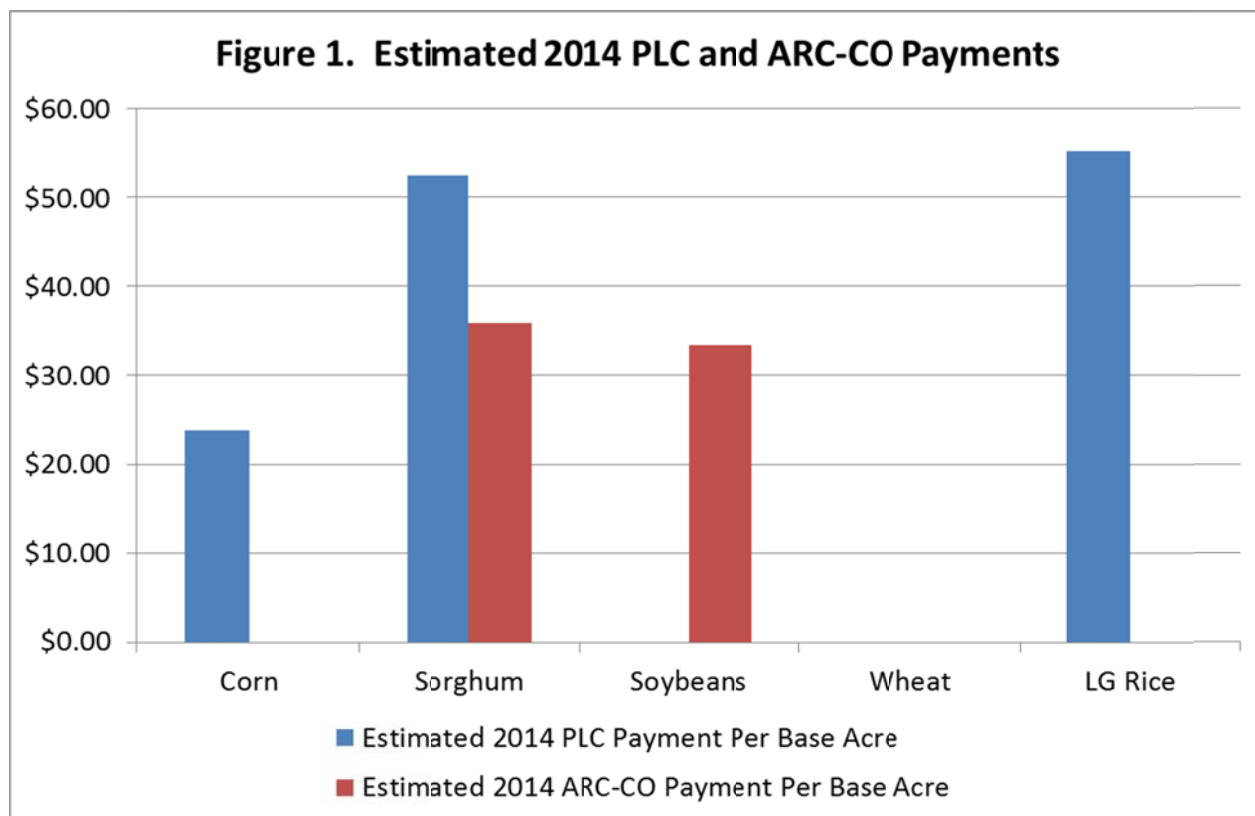
^H The projected ARC-CO benchmark revenue is simply the ARC-CO benchmark price times the ARC-CO benchmark yield.

^I The projected ARC-CO guaranteed revenue is simply the ARC-CO benchmark revenue times 86%. The 86% level is set by the 2014 Farm Bill.

^J The maximum ARC-CO payment per base acre is calculated as the ARC-CO benchmark revenue times 10% times 85%. The 10% level is set by the 2014 Farm Bill. The 85% level is also set by the 2014 Farm Bill and represents that ARC-CO payments are paid on 85% of the farm's base acres.

Given the estimates for benchmark prices, yields, and revenues, a maximum ARC-CO payment per base acre was calculated. Under the ARC-CO program, the payment rate is limited to 10 percent of the benchmark revenue. And since ARC-CO payments are paid on 85 percent of the farm's base acres, the maximum ARC-CO payment per base acre was calculated as the benchmark revenue times 10 percent times 85 percent. So, for example, the maximum payment the example farm operation could expect for corn would be \$56.43 per base acre with a benchmark price of \$5.28 per bushel and a benchmark yield of 125.7 bushels.

While the maximum ARC-CO payment provides the maximum level of protection under the ARC-CO program, the actual payment that the example farm operation would receive is dependent on actual parish revenues for the 2014 crop. Based on the assumptions of 2014 parish yields and marketing year prices shown in Table 1, Figure 1 shows the estimated payment per base acre under both the PLC and ARC-CO program for the 2014 crop.



As shown, 2014 PLC payments would be available for corn, grain sorghum and rice as the 2014 marketing year price for these commodities are lower than their reference prices. PLC payments would range from \$23.80 per base acre for corn to \$55.25 per base acre for long grain rice. Grain sorghum would also be eligible for a 2014 ARC-CO payment as both its projected 2014 marketing year price and parish yield are lower than the 2014 benchmark price and yield. Similarly, soybeans would be eligible for an ARC-CO payment for 2014. While the 2014 projected parish yield for soybean was higher than its benchmark yield, the 2014 projected marketing year price was significantly lower than its benchmark price. As such, the actual parish revenue for soybeans in 2014 was low enough to generate an ARC-CO payment of roughly \$33 per base acre. Corn and rice would not be eligible for an ARC-CO payment in 2014 despite having projected 2014 marketing year prices significantly lower than their benchmark prices. In both cases, their 2014 projected parish yields more than offset the lower price and resulted in parish revenues levels above the revenue guarantee.

As mentioned earlier, a producer will have to decide between the PLC and ARC-CO programs. Logically, a producer would want to choose that program that offers the greatest level of protection for his own operation. If our example farm operation were to make this decision based on 2014 projections for PLC and ARC-CO

payments, it would likely choose PLC for corn, grain sorghum and long grain rice and ARC-CO for soybeans. For wheat, the example farm operation would be indifferent since there would be no expected payment in 2014 under either program. However, the decision between the PLC and ARC-CO programs is not a single year decision. Whichever program a producer chooses is not only the program they will participate in for the 2014 crop year but also will be the program they will have to participate in for the remaining life of the 2014 Farm Bill. As such, the decision should not only consider the level of protection that these programs provide for 2014 but also the level of protection these programs will provide over the next 5 years.

To see how the decision between PLC and ARC-CO might change if additional years were considered in the analysis, additional projections for prices and parish yields were developed for the 2015/16 through 2018/19 marketing years (Tables 2 and 3). Price projections for the 2015/16 through 2018/19 marketing years were set at the Food and Agricultural Policy Research Institute's August 2014 baseline projections. These baseline projections are used universally by academic and governmental agencies in forecasting.

Table 2. Price Projections for 2014 through 2018 Crop Years^A

Covered					
Commodity	2014/15	2015/16	2016/17	2017/18	2018/19
Corn	\$3.50	\$4.09	\$4.09	\$4.12	\$4.21
Sorghum	\$3.30	\$3.90	\$3.93	\$3.96	\$4.04
Soybeans	\$10.00	\$9.64	\$10.11	\$10.29	\$10.54
Wheat	\$5.90	\$5.73	\$5.72	\$5.79	\$5.87
Rice - Long Grain	\$13.00	\$12.35	\$12.13	\$12.16	\$12.24

^A The projected prices for 2014/15 are the midpoint of USDA's August 2014 price

projection range. For other years, the projected prices are the Food & Agricultural Policy Research Institute (FAPRI) August 2014 projections.

Parish yield projections for St. Landry parish were also developed for the 2015/16 through 2018/19 marketing years. These projections were developed by simulating 500 parish yields for each commodity. These simulated yields were generated using historical USDA data and yield distributions for St. Landry parish. The values provided in Table 3 were the average of those 500 simulated parish yields.

Table 3. Parish Yield Projections for 2014 through 2018 Crop Years^A

Covered					
Commodity	2014/15	2015/16	2016/17	2017/18	2018/19
Corn	163.3	133.1	137.9	137.6	138.4
Sorghum	96.5	92.3	95.1	93.4	95.2
Soybeans	45.3	34.5	36.7	37.0	37.2
Wheat	54.4	55.3	55.5	55.3	55.7
Rice - Long Grain	6,807.9	5,898.4	6,074.2	6,072.4	6,131.2

^A The projected yields for 2014/15 were established based on USDA's August 2014 projection for 2014 state average yields and using historical relationships between state and parish yields. The projected yields for the remaining years was the average of 500 simulated yields for the parish.

With the projections for prices and yields, estimates of various program variables could be calculated for each commodity over the next 5 years. Table 4 provides ARC-CO benchmark prices and yields as well as the ARC-CO revenue guarantee levels and maximum payment rates per base acre for each commodity. As shown, these variables change over time as years are eliminated and added to the 5 year olympic average calculations for both prices and yields.

Table 4. Projected ARC-CO Program Variables

Marketing Year	Corn				Sorghum			
	ARC-CO Benchmark Price	ARC-CO Benchmark Yield	ARC-CO Revenue Guarantee	ARC-CO Maximum Payment	ARC-CO Benchmark Price	ARC-CO Benchmark Yield	ARC-CO Revenue Guarantee	ARC-CO Maximum Payment
2014/15	\$5.28	125.7	\$570.99	\$56.43	\$5.09	97.5	\$426.36	\$42.14
2015/16	\$5.28	144.8	\$657.83	\$65.02	\$5.09	98.7	\$431.55	\$42.65
2016/17	\$4.92	146.8	\$621.08	\$61.39	\$4.71	96.8	\$392.24	\$38.77
2017/18	\$4.21	148.4	\$537.23	\$53.10	\$4.03	97.5	\$337.64	\$33.37
2018/19	\$4.10	146.3	\$515.80	\$50.98	\$3.93	95.0	\$321.05	\$31.73

Table 4. Projected ARC-CO Program Variables (Continued)

Marketing Year	Soybeans				Wheat			
	ARC-CO Benchmark Price	ARC-CO Benchmark Yield	ARC-CO Revenue Guarantee	ARC-CO Maximum Payment	ARC-CO Benchmark Price	ARC-CO Benchmark Yield	ARC-CO Revenue Guarantee	ARC-CO Maximum Payment
2014/15	\$12.27	37.5	\$395.95	\$39.13	\$6.60	54.7	\$310.44	\$30.68
2015/16	\$12.27	39.9	\$421.27	\$41.64	\$6.67	54.1	\$310.58	\$30.70
2016/17	\$11.83	38.1	\$387.58	\$38.31	\$6.67	55.9	\$320.66	\$31.69
2017/18	\$11.04	38.8	\$368.62	\$36.43	\$6.17	55.1	\$292.03	\$28.86
2018/19	\$10.13	37.5	\$326.38	\$32.26	\$5.81	55.4	\$276.47	\$27.33

Table 4. Projected ARC-CO Program Variables (Continued)

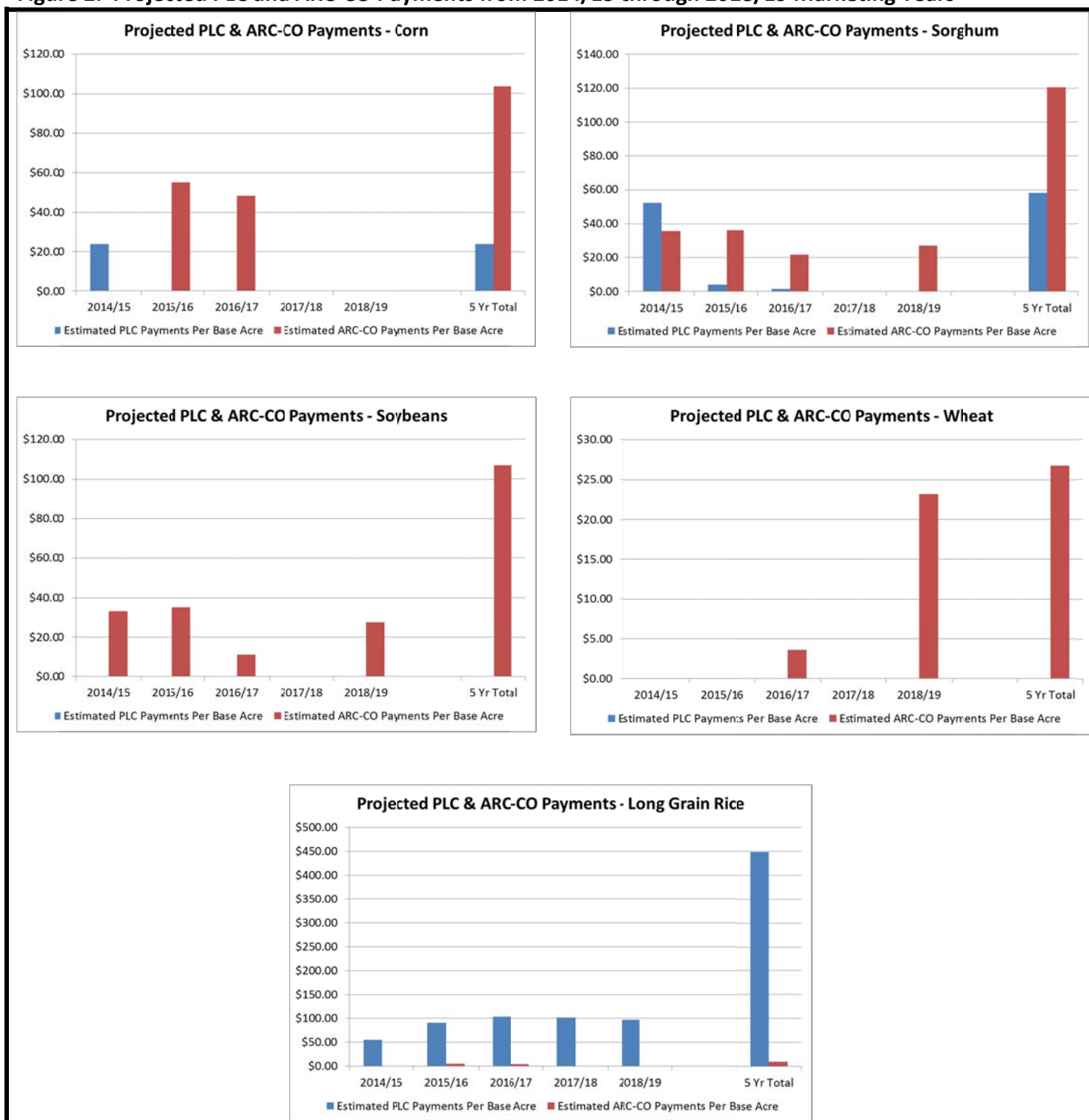
Marketing Year	Long Grain Rice			
	ARC-CO Benchmark Price	ARC-CO Benchmark Yield	ARC-CO Revenue Guarantee	ARC-CO Maximum Payment
2014/15	\$13.60	61.2	\$716.19	\$70.79
2015/16	\$13.63	62.7	\$734.67	\$72.61
2016/17	\$13.63	63.3	\$742.42	\$73.38
2017/18	\$13.28	63.9	\$730.05	\$72.16
2018/19	\$12.50	63.2	\$679.39	\$67.15

There appears to be a common theme in the projections found in Table 3 for most commodities. The ARC-CO revenue guarantee for the example farm operation increases for 2015/16 but then slowly decreases over the remaining years for most commodities. To understand why this trend develops, we must remember that the benchmark price and yields are 5 year olympic averages for the previous 5 years. So, for example, the previous 5 years for the 2014/15 marketing year would be from 2009 to 2013. During that period, prices for many of these commodities were at historic levels. This compares to the price projection for the years 2014/15 through 2018/19 which are at significantly lower levels. So, years with extremely high prices are being removed and replaced with years much lower prices when the benchmark prices are calculated for years at the end of the time period considered. The end result is that benchmark prices decrease over time which, in turn,

causes the ARC-CO revenue guarantee levels to also fall. This happens despite the fact that benchmark yield levels remain relatively stable throughout the time period.

While Table 4 provides a glimpse of how the revenue guarantee levels and the maximum payment rates for ARC-CO program change over time, it does not provide what the actual payment would be to the example farm operation. The actual payment that the example farm operation would be expected to receive is dependent on actual prices and actual parish yields and how they relate to the program variables. Assuming that the actual prices and yields were those shown in Tables 2 and 3, Figure 2 shows the projected PLC and ARC-CO annual program payments for each commodity as well as the 5 year total.

Figure 2. Projected PLC and ARC-CO Payments from 2014/15 through 2018/19 Marketing Years



Looking at the results shows that Figure 2 provides a strikingly different picture than Figure 1 in terms of which program offers the greatest level of protection for the example farm operation. When just examining 2014 the projected payments, the example operation would likely choose PLC for corn and grain sorghum. However, when examining projected payments over the entire 5 years, it clearly shows that ARC-CO would offer a much higher level of protection than the PLC program. For wheat, the example farm operation would have been indifferent between the two programs when just considering 2014. However, when the 5 year period is examined, it clearly shows a significant advantage for the ARC-CO program. For both soybeans and corn, Figure 2 reinforces what was seen when just considering 2014. For soybeans, ARC-CO looks to have advantages regardless if considering 2014 only or the entire 5 year period. Likewise, for long grain rice, PLC looks to be the better choice both for 2014 as well as the entire 5 year period.

Final Comments

Several points can be made about the PLC and ARC programs and the decisions that producers must make as part of the 2014 Farm Bill from the example farm operation considered in this report. First, just because projections for certain program variables are attractive relative to current market conditions does not mean that these programs will offer a high level of protection. Producers need to understand how these program variables fit within the structure of the program. For example, USDA's current projection for the 2014 benchmark price for corn is \$5.28 per bushel. While this is certainly an attractive price compared to current prices, the example farm operation showed that only minimal program payments would be available. With record or near record parish yields in 2014 offsetting the lower market prices, no ARC-CO payments are projected. And with the PLC reference price only at \$3.70 per bushel, the low corn price in 2014 only generates a PLC payment of around \$20 per base acre.

The second point related to this is that producers probably shouldn't make their cropping decisions based solely on these farm bill programs. While these programs should be one of the issues considered, market conditions should continue to be the major driver in planting and management decisions. For example, there is a high likelihood that the benchmark price for corn will once again be in the \$5.28 to \$5.30 per bushel range for the 2015 crop. Despite the high benchmark price, the example farm operation showed that there is no guarantee that it will translate into a high level of protection for the farm. So, making a planting decision based on the program rather than market signals and other factors could create significant difficulties for the operation. For example, an operation could experience low revenue from crop sales due to low yields or prices and still not receive significant support from farm bill programs. In that case, the operation would have been better to plant a crop that had high market potential versus planting one that simply had a high projected benchmark price.

A third point is that the choice between the PLC and ARC programs should not be made based on one year's projections. As shown in the example farm operation, the decision that would have been made between the PLC and ARC programs could be strikingly different if considering only 2014 or if considering the entire 5 year life of the farm bill. Having to consider the entire time period does, however, make this decision more difficult. Having to make projections for prices and yields beyond the current year undoubtedly increases the chance for error in the decision process.

The final point is that many of the decisions required by the 2014 Farm Bill are complex and can potentially have multi-year impacts. As such, producers must take more than a brief glimpse of their choices before making these decisions. While the example farm operation provides a glimpse of how these programs will function, the decision made by producers needs to be made based on their own specific situation. Producers will need to make a concentrated examination of their situation and the options available to them. Producers are encouraged to gather as much data and information as possible and to take advantage of all of the tools available to make as an informed and educated decision as possible.