2018 Seed Cotton ARC-CO and PLC Programs for Upland Cotton[1]
Beginning with the 2018 Crop
Draft Updated November 15, 2018

Program:

Seed cotton is designated as a covered commodity eligible for Title I Price Loss Coverage (PLC) and Agriculture Risk Coverage (ARC) programs in the 2014 Farm Bill beginning with the 2018 crop. The reference price is set at $0.367 per lb. Seed Cotton refers to unginned upland cotton that includes both lint and cottonseed. The deadline for producers/landowners to complete the generic base conversion, yield update, and the PLC/ARC election for the 2018 Seed Cotton program is December 7, 2018. The current PLC/ARC election for seed cotton is expected to be a one-time election for the 2018 crop year, but producers should be aware that there is uncertainty regarding the election in the event that there is an extension of the current farm bill[2].

Seed Cotton PLC Program

PLC program payments are issued when the Seed Cotton Reference Price exceeds the higher of the Seed Cotton MYA price and the Price Floor.

Seed Cotton Payment Yield will be based on the upland cotton lint payment yield.
Seed Cotton Payment Yield = 2.4 * Upland Cotton Lint Payment Yield
- Upland Cotton Lint Payment Yield = Higher of CCP lint yield or updated lint yield
- One-time opportunity in 2018 to update the payment yield for upland cotton based on 90% of the average of 2008-2012 actual yields, not counting years in which cotton was not grown

  Seed Cotton Payment Yield Example (assuming an 800 lb/acre upland cotton lint payment yield)**:**
- Seed Cotton Payment Yield (lbs/acre) = 2.4 * 800 = 1,920

Seed Cotton Reference Price is set at $0.367 per lb. The **Seed Cotton Price Floor** is set at $0.250 per lb.

Seed Cotton PLC Payment Rate is the difference between the Reference Price and the higher of the MYA Price and the Price Floor.
Seed Cotton PLC Payment Rate ($/lb) = Reference Price – the higher of (MYA Price, Price Floor)
- Seed Cotton Payment = $0 if Seed Cotton MYA Price is greater than the Reference Price

Seed Cotton PLC/ARC Payments will be made on 85% of the farm's decoupled seed cotton base.
Seed Cotton PLC Payment ($/base acre) = PLC Payment Rate * Payment Yield * 0.85

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[1] Information based on NCC's review of the legislative language. Final details are subject to change based on USDA's interpretation of language and implementation.

[2] Based on current language in the respective versions of the 2018 Farm Bill approved by the House and the Senate, producers will make a new one-time election beginning with the 2019 crop if the 2018 Farm Bill is enacted for the 2019 crop. Should there be a one-year extension of the 2014 Farm Bill, a new election would be either at the discretion of USDA or could be specified in legislation. As a possible precedent under the 2008 Farm Bill extension, producers were given the opportunity to re-elect between the ACRE and CCP programs.

Calculation of the Seed Cotton Marketing Year Average (MYA) Price

Seed Cotton MYA Price = weighted average of the upland cotton lint price and the cottonseed price.
$$= \text{(U.S. Upland Cotton Lint Production * U.S. Upland Cotton Lint MYA Price}$$
$$+ \text{U.S. Cottonseed Production * U.S. Cottonseed MYA Price)}$$
$$/ \text{(U.S. Upland Cotton Lint Production + U.S. Cottonseed Production)}$$

- USDA/NASS data are used for price and production
- Production is measured in pounds
- Lint and cottonseed prices are weighted based on annual shares of production
- The 2018/19 MYA Price is not final until the end of the marketing year (Aug. 1, 2018 – July 31, 2019) and is generally published in late September or early October
- USDA publishes monthly estimates throughout the marketing year which can be used to calculate an estimated MYA Price

2018/19 Seed Cotton MYA Price Example (based on USDA November 2018 estimates[3]):
- U.S. Upland Cotton Lint MYA Price ($/lb) = $0.74
- U.S. Cottonseed MYA Price ($/lb) = $0.0675 (or $135/ton)
- U.S. Upland Cotton Lint Production (lbs) = 17,637,000 bales * 480 lbs/bale = 8,465,760,000 lbs
- U.S. Cottonseed Production (lbs) = 5,799,000 tons * 2,000 lbs/ton = 11,598,000,000 lbs
- Total U.S. Cotton Lint and Cottonseed Production (lbs) = 8,465,760,000 + 11,598,000,000
$$= 20,063,760,000 \text{ lbs}$$

- Seed Cotton Price ($/lb) $= \dfrac{8,465,760,000 * \$0.74 + 11,598,000,000 * \$0.0675)}{(8,465,840,000 + 11,598,000,000)}$

$$= \frac{(8,565,760,000 * \$0.74 + 11,598,000,000 * \$0.0675)}{20,063,760,000}$$

$$= \frac{8,465,760,000}{20,063,760,000} * \$0.74 + \frac{11,598,000,000}{20,063,760,000} * \$0.0675$$

$$= (0.42194 * \$0.74) + (0.57806 * \$0.0675)$$

$$= \$0.31224 + \$0.03902 = \textbf{\$0.3513}$$

[3] Upland cotton and cottonseed production estimates published at:
https://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1046. Upland cotton price estimates published at:
https://www.usda.gov/oce/commodity/wasde/. Cottonseed price estimates published at: https://www.ers.usda.gov/webdocs/publications/90326/ocs-18j.pdf?v=2827. Seed cotton price estimates published at: https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/arc-plc/pdf/2018_plc.pdf.

Seed Cotton ARC-CO Program

The ARC-CO program provides revenue loss coverage at the county level. ARC-CO payments are issued when the actual county seed cotton revenue is less than the ARC-CO guarantee. Most counties will only have one ARC-CO payment calculation that combines the irrigated and non-irrigated data, while others will have separate irrigated/non-irrigated ARC-CO payment calculations.

Counties that meet the threshold of having at least 25% of the seed cotton acres irrigated and 25% of the seed cotton acres non-irrigated between 2009-2012 have both irrigated and non-irrigated yields under ARC-CO (Figure 1 & Appendix A).

Figure 1. Counties with Irrigated and Non-Irrigated ARC-CO Seed Cotton Yields
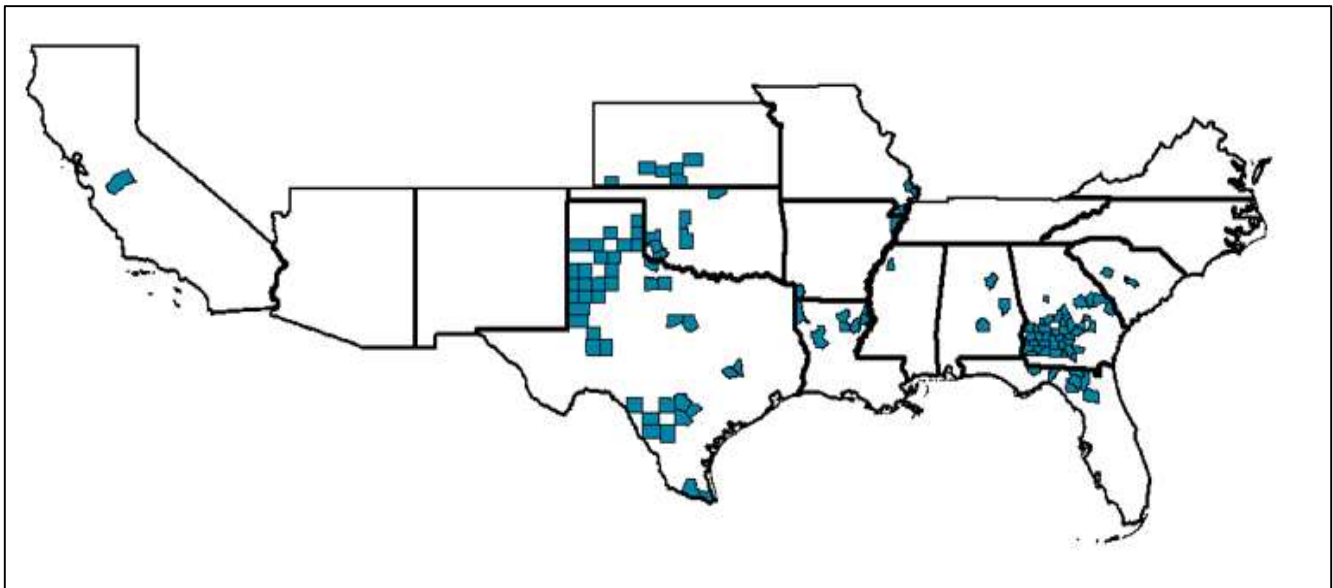
In counties with an irrigated and non-irrigated ARC-CO seed cotton yield, a farm's ARC-CO payments will be calculated by applying an Historical Irrigated Percentage (HIP) payment factor to the seed cotton base acres. The farm HIP factor is calculated by dividing the 2009–2012 planted (and considered planted) irrigated seed cotton acres by the total 2009-2012 planted (and considered planted) irrigated and non-irrigated seed cotton acres.

Farm Historical HIP Factor Example:

Seed cotton base acres = 500

2009-2012 planted irrigated upland cotton acres = 100

2009-2012 planted non-irrigated upland cotton acres = 300

2009-2012 planted total irrigated and non-irrigated upland cotton acres = 400

HIP Factor = 100 / 400 = 0.25

Irrigated seed cotton base acres = 500 * 0.25 = 125

Non-irrigated seed cotton base acres = 500 * 0.75 (1.00 – HIP Factor) = 375

If a seed cotton irrigated ARC-CO payment is triggered for the county, the farm would receive the payment on 85% of the irrigated seed cotton base acres. If a seed cotton non-irrigated ARC-CO payment is triggered for the county, the farm would receive the payment on 85% of the non-irrigated seed cotton base acres. The irrigated and non-irrigated seed cotton base acres are treated as two separate crops. The HIP factor only applies in counties with an irrigated and non-irrigated ARC-CO seed cotton yield. If the county has a combined irrigated/non-irrigated ARC-CO seed cotton yield, the ARC-CO payment is paid on 85% of total seed cotton base acres on the farm. If the county has an irrigated and non-irrigated ARC-CO seed cotton yield, but the farm HIP factor is 0, the non-irrigated ARC-CO payment is paid on 85% of total seed cotton base acres on the farm. The HIP factor is not used in the PLC or ARC-IC programs. The percentage of irrigated and non-irrigated seed cotton acres planted on the farm in 2018 is not relevant in the ARC-CO calculation.

Calculation of ARC-CO Seed Cotton Payments

ARC-CO Guarantee = 86% * Benchmark Seed Cotton MYA Price * Benchmark Seed Cotton Yield

Benchmark Seed Cotton MYA Price = average of the previous five years Seed Cotton MYA price, excluding the years with the highest and lowest price (Olympic Average)

- If the MYA price in any of the five years is below the reference price, the reference price is substituted for the MYA price in each year the MYA price is less than the reference price.

Benchmark Seed Cotton Yield = average of the previous five years county Seed Cotton Yield, excluding the years with the highest and lowest yield (Olympic Average)

- If the county yield in any of the five years is below 70% of the county transitional yield (T yield), then 70% of the T yield is substituted for each year the county yield is less than 70% of the T yield.

Benchmark Revenue = U.S. Benchmark Seed Cotton MYA Price * Benchmark Seed Cotton Yield

ARC-CO Guarantee = Benchmark Revenue * 86%

Actual Revenue = U.S. Seed Cotton MYA Price * Seed Cotton Yield

Maximum ARC-CO Payment = 10% * Benchmark Revenue

Revenue Shortfall = ARC-CO Guarantee – Actual Revenue

ARC-CO Payment per Base Acre = minimum of (maximum ARC-CO Payment, Revenue Shortfall) * 0.85

SOUTHEAST EXAMPLES

ARC-CO Southeast Example 1: County with Combined Irrigated/Non-Irrigated ARC-CO Yield

| Marketing Year | Seed Cotton MYA Price ($/lb) | Assumed County Yields | |
		Lint Yield (lbs/acre)	Seed Cotton Yield (lbs/acre)
2013/14	$0.3933	886	2,126
2014/15	~~$0.3161~~ $0.3670	858	2,059
2015/16	~~$0.3254~~ $0.3670	900	2,160
2016/17	~~$0.3456~~ $0.3670	875	2,100
2017/18	~~$0.3323~~ $0.3670	950	2,280
2013-17 Oly Avg	$0.3670	887	2,129
2018/19	$0.3513	See Figure 1.	

2018/19 Benchmark Revenue ($/acre) = $0.3670 * 2,129= $781
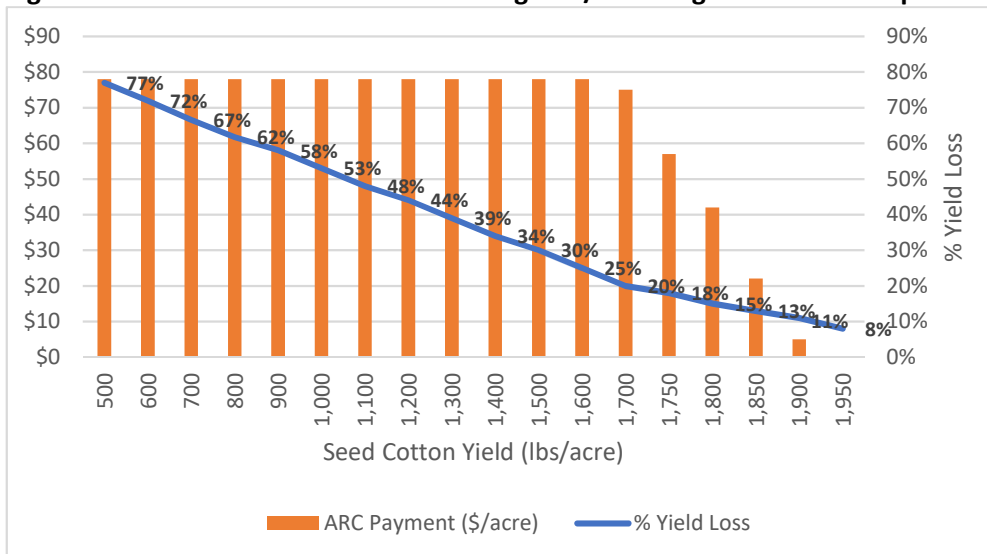
2018/19 ARC-CO Guarantee ($/acre) = $781 * 0.86 = $672

2018/19 Maximum ARC-CO Payment ($/acre) = 0.10 * $781 = $78 (paid on 85% of seed cotton base acres).

500 seed cotton base acres on the farm

2018/19 Maximum ARC-CO Payment ($/farm) = $78 * 500 * 0.85 = $33,150

Potential ARC-CO payments are represented in Figure 1 based on a range of outcomes for the actual county yield. For each yield scenario, the seed cotton MYA price of $0.3513 is held constant.

Figure 1: ARC-CO Southeast Combined Irrigated/Non-Irrigated Yield Example

ARC-CO Southeast Example 2: County with Separate Irrigated/Non-Irrigated ARC-CO Yields

| Marketing Year | Seed Cotton MYA Price ($/lb) | Assumed County Yields | | | |
| | | Irrigated | | Non-Irrigated | |
		Lint Yield (lbs/acre)	Seed Cotton Yield (lbs/acre)	Lint Yield (lbs/acre)	Seed Cotton Yield (lbs/acre)
2013/14	$0.3933	923	2,215	703	1,687
2014/15	~~$0.3161~~ $0.3670	738	1,771	812	1,949
2015/16	~~$0.3254~~ $0.3670	1,156	2,774	905	2,172
2016/17	~~$0.3456~~ $0.3670	1,044	2,506	750	1,800
2017/18	~~$0.3323~~ $0.3670	1,042	2,500	792	1,900
2013-17 Oly Avg	$0.3670	1,003	2,407	785	1,883
2018/19	$0.3513	See Figure 2.		See Figure 3.	

Irrigated

2018/19 Benchmark Revenue ($/acre) = $0.3670 * 2,407 = $883
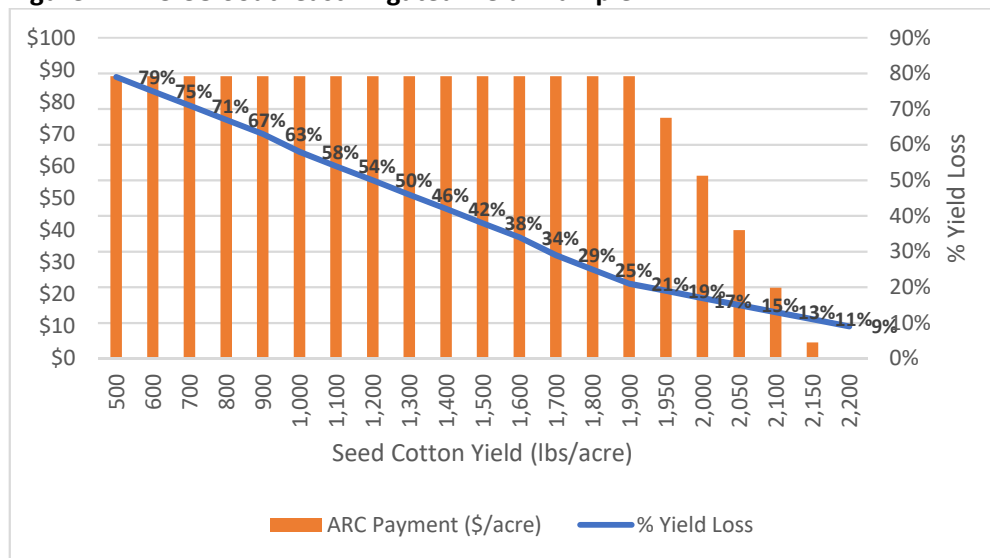
2018/19 ARC-CO Guarantee ($/acre) = $883 * 0.86 = $760

2018/19 Maximum ARC-CO Payment ($/acre) = 0.10 * $883 = $88 (paid on 85% of irrigated seed cotton base acres).

500 seed cotton base acres on the farm * 0.25 Historical HIP Factor (calculated in example on Page 1) = 125 irrigated seed cotton base acres

2018/19 Maximum Irrigated ARC-CO Payment ($/farm) = $88 * 125 * 0.85 = $9,350

Potential ARC-CO irrigated payments are represented in Figure 2 based on a range of outcomes for the actual county yield. For each yield scenario, the seed cotton MYA price of $0.3513 is held constant.

Figure 2: ARC-CO Southeast Irrigated Yield Example

Non-Irrigated

2018/19 Benchmark Revenue ($/acre) = $0.3670 * 1,883 = $691

2018/19 ARC-CO Guarantee ($/acre) = $691 * 0.86 = $594
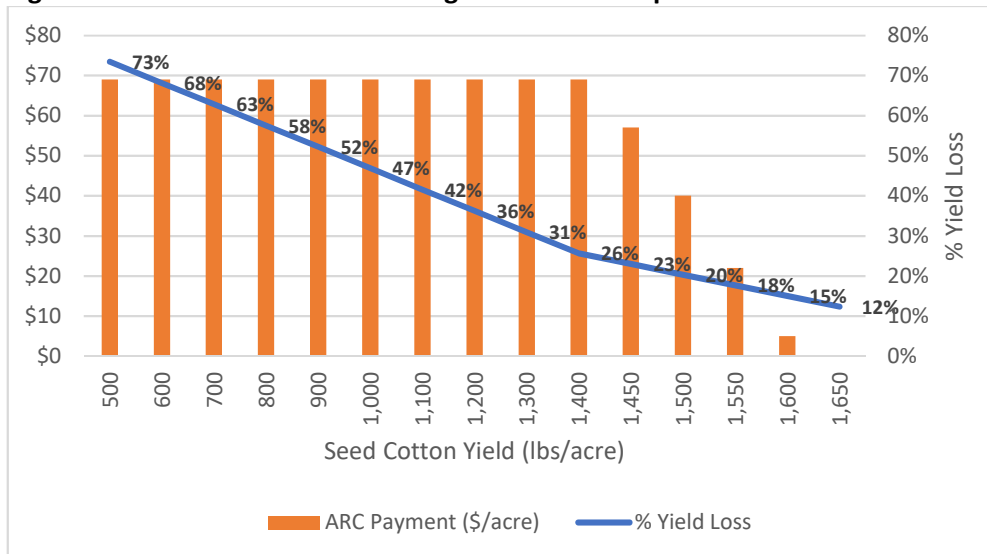
2018/19 Maximum ARC-CO Payment ($/acre) = 0.10 * $691 = $69 (paid on 85% of non-irrigated seed cotton base acres).

500 seed cotton base acres on the farm * 0.75 (1.00 – HIP Factor) = 375

2018/19 Maximum ARC-CO Payment ($/farm) = $69 * 375 * 0.85 = $21,994

Potential ARC-CO non-irrigated payments are represented in Figure 3 based on a range of outcomes for the actual county yield. For each yield scenario, the seed cotton MYA price of $0.3513 is held constant.

Figure 3: ARC-CO Southeast Non-Irrigated Yield Example

Total

2018/19 Maximum Irrigated and Non-Irrigated ARC-CO Payments on the farm = $9,350 + $21,994 = $31,344

PLC Southeast Example:

    2018/19 Projected Seed Cotton MYA Price = $0.3513
    Seed Cotton PLC Payment Rate ($/lb) = $0.367 – higher of ($0.3513, $0.250) = $0.0157
    Seed Cotton PLC Payment Yield = 1,920 lbs/acre
    Seed Cotton PLC Max Payment ($/base acre) = ($0.367 - $0.25) * 1,920 = $225 (paid on 85% of base acres)
    Seed Cotton PLC Projected Payment ($/base acre) = $0.0157 * 1,920 = $30 (paid on 85% of base acres)
    500 seed cotton base acres on the farm
    $30 * 500 * 0.85 = $12,750

SOUTHWEST EXAMPLES

ARC-CO Southwest Example 1: County with Combined Irrigated/Non-Irrigated ARC-CO Yield

Marketing Year	Seed Cotton MYA Price ($/lb)	Assumed County Yields	
		Lint Yield (lbs/acre)	Seed Cotton Yield (lbs/acre)
2013/14	$0.3933	946	2,270
2014/15	~~$0.3161~~ $0.3670	1,073	2,575
2015/16	~~$0.3254~~ $0.3670	678	1,627
2016/17	~~$0.3456~~ $0.3670	620	1,488
2017/18	~~$0.3323~~ $0.3670	583	1,400
2013-17 Oly Avg	$0.3670	748	1,795
2018/19	$0.3513	See Figure 4.	

2018/19 Benchmark Revenue ($/acre) = $0.3670 * 1,795= $659

2018/19 ARC-CO Guarantee ($/acre) = $659 * 0.86 = $567
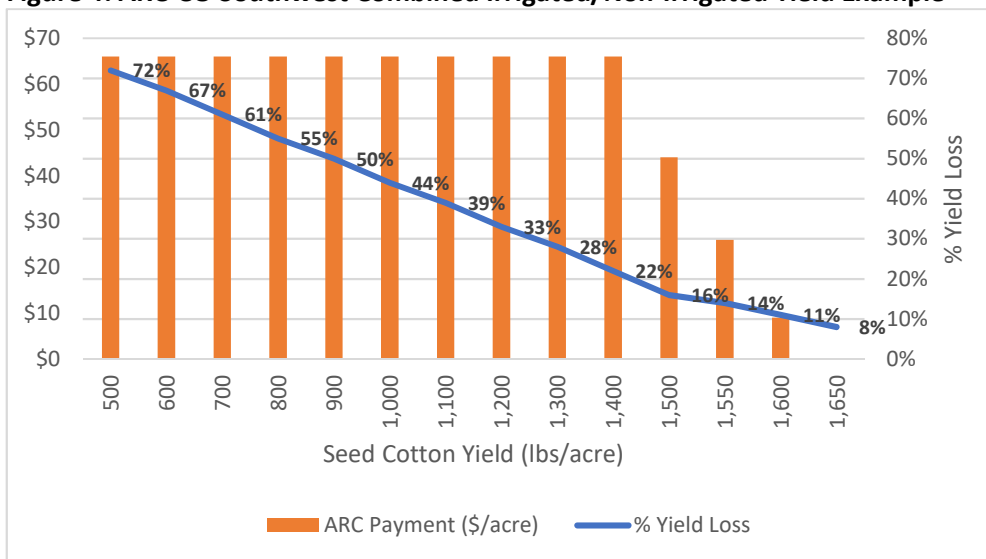
2018/19 Maximum ARC-CO Payment ($/acre) = 0.10 * $659 = $66 (paid on 85% of seed cotton base acres).

500 seed cotton base acres on the farm

2018/19 Maximum ARC-CO Payment ($/farm) = $66 * 500 * 0.85 = $28,050

Potential ARC-CO payments are represented in Figure 1 based on a range of outcomes for the actual county yield. For each yield scenario, the seed cotton MYA price of $0.3513 is held constant.

Figure 4: ARC-CO Southwest Combined Irrigated/Non-Irrigated Yield Example

ARC-CO Southwest Example 2: County with Separate Irrigated/Non-Irrigated ARC-CO Yields

| Marketing Year | Seed Cotton MYA Price ($/lb) | Assumed County Yields | | | |
| | | Irrigated | | Non-Irrigated | |
		Lint Yield (lbs/acre)	Seed Cotton Yield (lbs/acre)	Lint Yield (lbs/acre)	Seed Cotton Yield (lbs/acre)
2013/14	$0.3933	625	1,500	248	595
2014/15	~~$0.3161~~ $0.3670	757	1,817	248	595
2015/16	~~$0.3254~~ $0.3670	886	2,126	508	1,219
2016/17	~~$0.3456~~ $0.3670	1,164	2,794	609	1,462
2017/18	~~$0.3323~~ $0.3670	1,000	2,400	583	1,400
2013-17 Oly Avg	$0.3670	881	2,114	446	1,071
2018/19	$0.3513	See Figure 5.		See Figure 6.	

Irrigated

2018/19 Benchmark Revenue ($/acre) = $0.3670 * 2,114 = $776
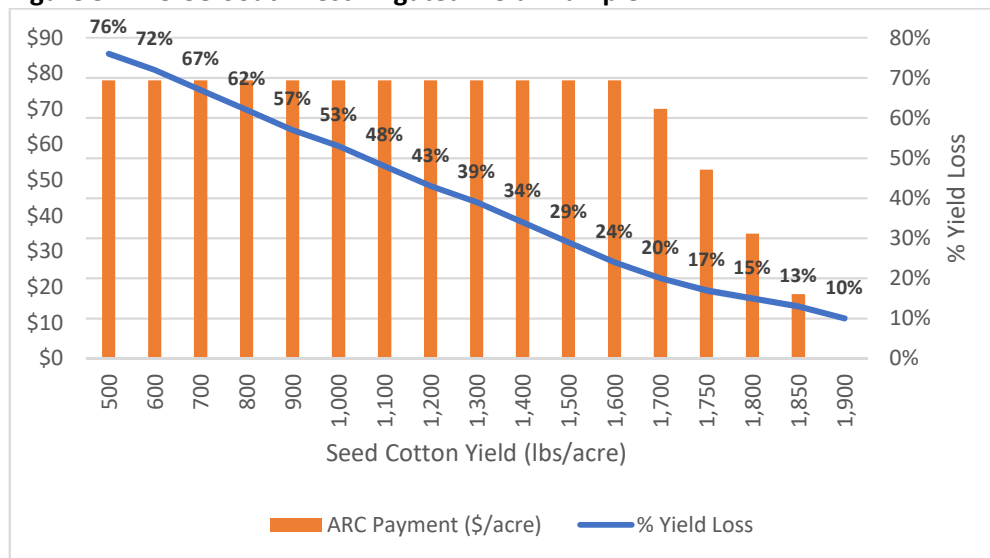
2018/19 ARC-CO Guarantee ($/acre) = $776 * 0.86 = $667

2018/19 Maximum ARC-CO Payment ($/acre) = 0.10 * $776 = $78 (paid on 85% of irrigated seed cotton base acres).

500 seed cotton base acres on the farm * 0.25 Historical HIP Factor (calculated in example on Page 1) = 125 irrigated seed cotton base acres

2018/19 Maximum Irrigated ARC-CO Payment ($/farm) = $78 * 125 * 0.85 = $8,288

Potential ARC-CO irrigated payments are represented in Figure 2 based on a range of outcomes for the actual county yield. For each yield scenario, the seed cotton MYA price of $0.3513 is held constant.

Figure 5: ARC-CO Southwest Irrigated Yield Example

Non-Irrigated

2018/19 Benchmark Revenue ($/acre) = $0.3670 * 1,071 = $393

2018/19 ARC-CO Guarantee ($/acre) = $393 * 0.86 = $338

2018/19 Maximum ARC-CO Payment ($/acre) = 0.10 * $393 = $39 (paid on 85% of non-irrigated seed cotton base acres).

500 seed cotton base acres on the farm * 0.75 (1.00 – HIP Factor) = 375

2018/19 Maximum ARC-CO Payment ($/farm) = $39 * 375 * 0.85 = $12,431

Potential ARC-CO non-irrigated payments are represented in Figure 3 based on a range of outcomes for the actual county yield. For each yield scenario, the seed cotton MYA price of $0.3513 is held constant.

Figure 6: ARC-CO Southwest Non-Irrigated Yield Example
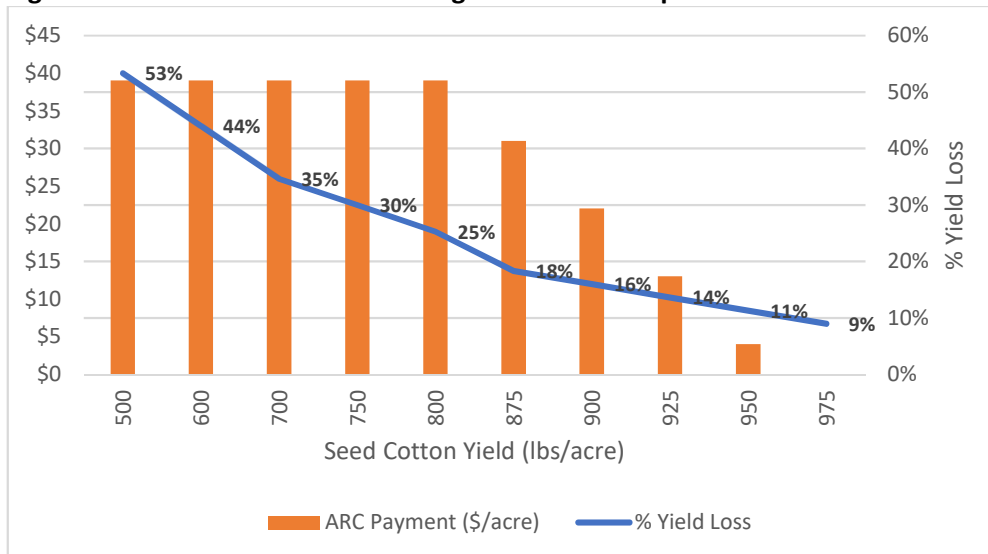
Total

2018/19 Maximum Irrigated and Non-Irrigated ARC-CO Payments on the farm = $8,288 + $12,431 = $20,719

PLC Southwest Example:

2018/19 Projected Seed Cotton MYA Price = $0.3513
Seed Cotton PLC Payment Rate ($/lb) = $0.367 – higher of ($0.3513, $0.250) = $0.0157
Seed Cotton PLC Payment Yield = 1,400 lbs/acre
Seed Cotton PLC Max Payment ($/base acre) = ($0.367 - $0.25) * 1,400 = $164 (paid on 85% of base acres)
Seed Cotton PLC Payment ($/base acre) = $0.0157 * 1,400 = $22 (paid on 85% of base acres)
500 seed cotton base acres on the farm
$22 * 500 * 0.85 = $9,350