

# Estimates for Agricultural Risk Coverage and Price Loss Coverage Payments

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Attention recently has been directed at trade assistance programs and the new farm bill for federal commodity programs during calendar year 2019, but the 2014 Farm Bill is still relevant. The federal commodity payments made to producers later this calendar year under the Agricultural Risk Coverage (ARC-CO) and Price Loss Coverage (PLC) programs are for program year 2018, covered under the 2014 Farm Bill. The National Agricultural Statistic Service (NASS) released county yields for crop year 2018 on March 21, 2019. County yields are the first of two components needed to calculate county payment estimates for 2018. The second is a Marketing Year Average (MYA) price, finalized at the end of the marketing year (corn & soybeans- August 31, 2019, wheat-May 31, 2019). With USDA-NASS county yields and eight months of the marketing year completed, it is possible to make fairly accurate estimates of program payments. This article presents Ohio county ARC-CO and PLC estimates for program year 2018, currently scheduled for delivery October 2019. This information will be important for producers and lenders wishing to calculate their autumn cash flow needs.

## Program Design Refresher and Information

The 2014 Farm Bill allowed producers a one-time choice between ARC-County, ARC-Individual, and PLC for commodities previously grown on land owned or rented by the operation. Program choices could differ for each individual commodity unless ARC-IC was the program of choice. Producers electing ARC-IC enrolled all commodities under the individual coverage option and could not elect PLC for individual commodities.. Enrollment information from the Farm Service Agency (FSA) showed that ARC-IC was unpopular with the majority of producers nation-wide (Table 1). Several possibilities explain individual producer election such as expected payout of programs, number of years a producer has been farming, the size of the operation, producer membership in commodity associations, previous enrollment in commodity programs, the producer risk preference, and timing of expected payouts during the lifetime of the 2014 Farm Bill. (Wilson, 2017) Percentages of producers enrolled in ARC-CO, ARC-IC and PLC in Ohio and nation-wide for the 2014 Farm Bill are presented in Table 1. Base acres reference historical plantings on those acres and do not necessarily match current planting intentions.

Table 1. Share of Base Acres Elected into the 2014 Farm Bill Programs						
	Ohio			United States		
Commodity	ARC-CO	ARC- IC	PLC	ARC-CO	ARC-IC	PLC
Corn	98%	0%	2%	93%	0%	7%
Soybeans	97%	0%	2%	97%	0%	3%
Wheat	82%	0%	18%	56%	2%	42%
Grain Sorghum	95%	0%	5%	33%	0%	66%
Barley	82%	0%	18%	22%	4%	75%

Table 1: Percentage of Base Acres for Select Commodities, Source: USDA-FSA

While the majority of producers in Ohio enrolled commodities in ARC-CO, PLC was a popular option for growers of rice and peanuts. A small portion of all producers chose ARC-IC. As we look ahead to the 2018 Farm Bill election, the same three programs exist with some formula changes and producers are afforded the opportunity to make program choices for their operations.

As a reminder, ARC-CO is a revenue protection program that triggers payments when current year revenue falls below a historical revenue benchmark. ARC-CO is the county revenue based version of ARC. The historical revenue benchmark is a combination of a 5-year Olympic average (removal of the largest and smallest values, then an average of the three remaining values) of prices and yields. Because ARC-CO is designed to be a shallow loss program, covering small changes in revenue, the historical benchmark is lowered to 86% and capped at a payment that cannot exceed 10% of the total revenue. This creates an effective coverage of 76% to 86% of historical revenue for producers. Revenue for the current year exceeding 86% of the historical benchmark does not trigger a payment and any value under 76% triggers the maximum payment.

### **ARC-CO**

Historical County Revenue:

- 1) The five-year Olympic average of the higher of the national Marketing Year Average (MYA) price or the fixed commodity reference price (Table 3) multiplied by the five-year Olympic average of the higher of county yield per planted acre or 70% of the transitional yield.

The ARC-CO Revenue Guarantee is set at 86% of the historical county revenue:

- 2) Expected Revenue (Formula 1) multiplied by 86%

Maximum Payment:

- 3) Formula 1 multiplied by 10%

Current Year Revenue:

- 4) 2018 County FSA Yield multiplied by 2018 MYA Price

ARC-CO Payment for each *base acre* enrolled under ARC-CO

- 5) Greater of (Zero or (Equation 2 minus Equation 4)), but never more than equation 3.

### **ARC-CO Example**

Table 2 illustrates an example of how ARC-CO payments are calculated in Adams County Ohio for Program Year 2018. The previous five MYA prices are included in column 2 with the previous five county FSA yields in column 3. The highest and lowest values are removed for both: \$13.00 and \$8.95 for price then 44 and 53 for yield. The remaining three values are averaged to get a mean price and yield of \$8.55 and 47 bu. respectfully. Historical revenue equals the product of the two at \$462.24 and the revenue benchmark is set at 86%, which is \$397.53. Because the actual year revenue of \$401.85 is higher than the Revenue Benchmark of \$397.53, no payment triggers for Adams County from the 2018 Program Year in autumn of 2019.

<b>Table 2. 2018 (Payment 2019) ARC-CO Example: Adams Co., OH for Soybeans</b>	<b>Max of (MYA Price or Reference Price) \$/Bu.</b>	<b>County Yield (Bushels)</b>	<b>Revenue</b>
2013/2014	\$13.00	44	
2014/2015	\$10.10	46	
2015/2016	\$8.95	53	
2016/2017	\$9.47	50	
2017/2018	9.33	47	
Olympic Average	\$9.63	48	
Historical Revenue Benchmark (Equation 1)			\$462.24
86% of Revenue Benchmark (Equation 2)			\$397.53
Actual Year Revenue (Equation 4)	\$8.55	47	\$401.85
Because \$401.85 is greater than \$397.53 no payment is made for Adams Co.			

Table 2: ARC-CO Example

The PLC program, chosen by fewer Ohio producers than the ARC-CO program, is available under the 2018 Farm Bill. The PLC program makes a payment when the current year MYA price for the U.S. falls below a reference price set by Congress (Table 2). In the case that the MYA price also falls below the federal commodity loan rate, the MYA price is replaced with the commodity loan rate, effectively creating a cap on PLC payments. The difference of the two prices are multiplied by PLC yields for each operation. PLC yields are specific to individual farms registered through FSA and vary by farm.

## PLC

### Payment Rate

- 6) The greater of (Zero or the Fixed Reference Price (Table 3) minus the greater of MYA price or the federal commodity loan rate (Table 3))

### PLC Payment

- 7) Formula 6 multiplied by the FSA farm's PLC yields

<b>Table 3. Commodity Reference Prices as Set by Congress in the 2014 Farm Bill</b>			
	<b>Fixed Reference Price</b>	<b>Marketing Loan Rates</b>	<b>Maximum Price Difference</b>
Corn	\$3.70/ bushel	\$1.95/ bushel	\$1.75/ bushel
Soybeans	\$8.40/ bushel	\$5.00/ bushel	\$3.40/ bushel
Wheat	\$5.50/ bushel	\$2.94/ bushel	\$2.56/ bushel
Grain Sorghum	\$3.95/ bushel	\$1.95/ bushel	\$2.00/ bushel
Barley	\$4.95/ bushel	\$1.95/ bushel	\$3.00/bushel

Table 3: Fixed Reference Prices set by Congress, Source USDA-FSA

Because yields can and do vary across counties, ARC-CO payment rates for neighboring counties can be different- one might trigger a payment and the neighbor does not; whereas, the payment rate for PLC is the same across the country and if PLC triggers a payment in one county it will trigger one in all others. Per acre PLC payments vary for each producer due to the PLC yields established through the local FSA office for each individual FSA farm, but the payment rate per bushel outlined in formula 6 is the same for all producers. Soybean have never triggered a PLC payment because the MYA has been above \$8.40 every year of the programs existence.

### **Data Source and Calculation**

USDA has discretion in how yields for ARC-CO are set. The county yields they use to calculate payments are usually released with the payment rates in October of the following year. These yields are critical in setting both the historical benchmark and the actual benchmark. FSA yields for 2013-2017 are currently available, but 2018 yields are not yet known to the public.

FSA prioritizes the use of different yield data sources in the following order:

- National Agricultural Statistics Service (NASS) county data
- Risk Management Agency (RMA) county data
- If neither NASS or RMA yield data exists for an individual county then yields are determined by the FSA state committees.

It is important to note that this was the order used for the 2014 farm bill. The 2018 farm bill made RMA yield data first priority to determine ARC-CO payments.

The payment estimates in this report use NASS yield data from March 21 as the source for 2018 county yields. NASS does not provide county yields for all counties to either protect privacy of an individual grower or due to low survey response rates. Counties with a NASS yield are included in the figures below. Blackened counties represent those with no ARC-CO acres or missing NASS yields.

As mentioned above, the marketing year for corn, soybeans and wheat is not complete meaning final MYA prices won't be known for several more months. World Agricultural Supply and Demand Estimates (WASDE) average prices from May 10, 2019 are applied; Corn- \$3.50/bu., Soybeans- \$8.55/bu., and Wheat- \$5.20/bu. Higher price results in a smaller PLC payment, similarly, a lower price results in a larger PLC payment. There are 15 days left in the wheat marketing year and a little over 3 months in the marketing years for corn and soybeans making changes in price possible. As the marketing year progresses, it is possible and likely these estimates will fluctuate as planting is challenged by weather and speculation relating to trade resolutions. .

For PLC, we use PLC county yield averages reported by FSA. Actual payments use individual FSA farm PLC yields not the county average.

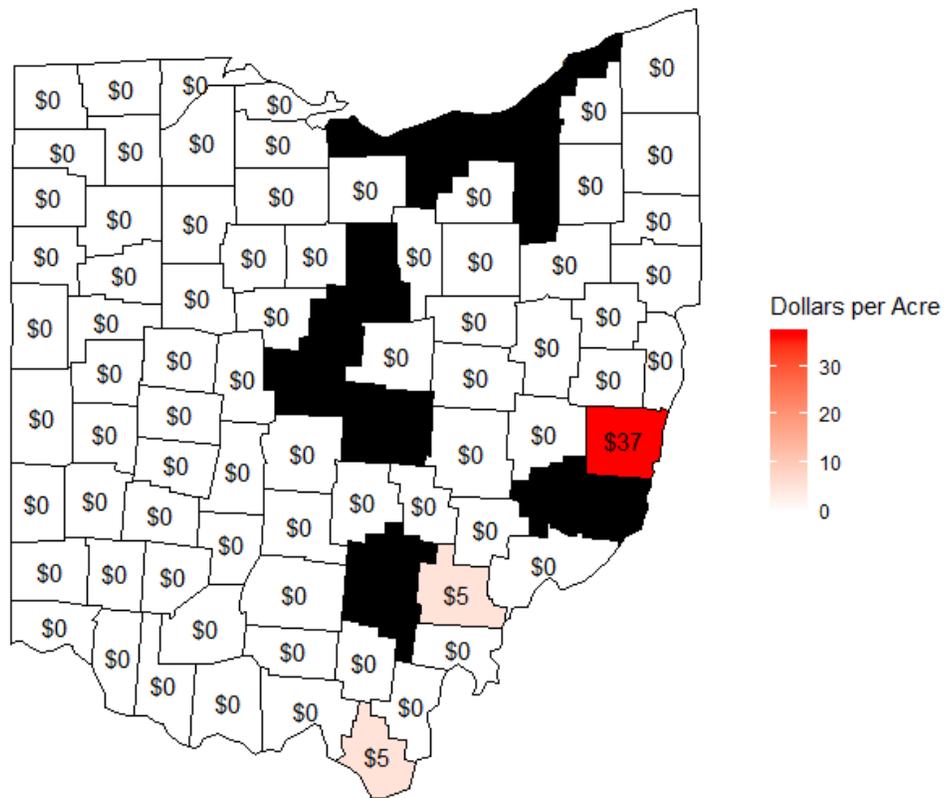
Payments for both programs are limited to 85% of base acres. A 0.85 adjustment has been applied to each payment below.

Also each value has been adjusted for a government sequestration amount outlined under the Budget Control Act of 2011. A 6.8% sequestration has been used; although the sequestration rate could change.

### Estimated Corn ARC-CO Payments

Only 3 of Ohio's 88 counties are estimated to trigger an ARC-CO payment for program year 2018. This is consistent with other Eastern Corn-Belt States. Due to dry weather causing low 2018 yields in Missouri and Kansas county payments are more frequent in the Western Corn-Belt.

Ohio Corn ARC Payment Estimates: Program Year 2018  
Rounded to Nearest Dollar



Data Source: Author Calculation

Similar to program year 2017, fewer counties are expected to trigger ARC-CO county payments than the year prior. Six Ohio counties triggered payments in October of 2017 vs 87 in October of 2016.

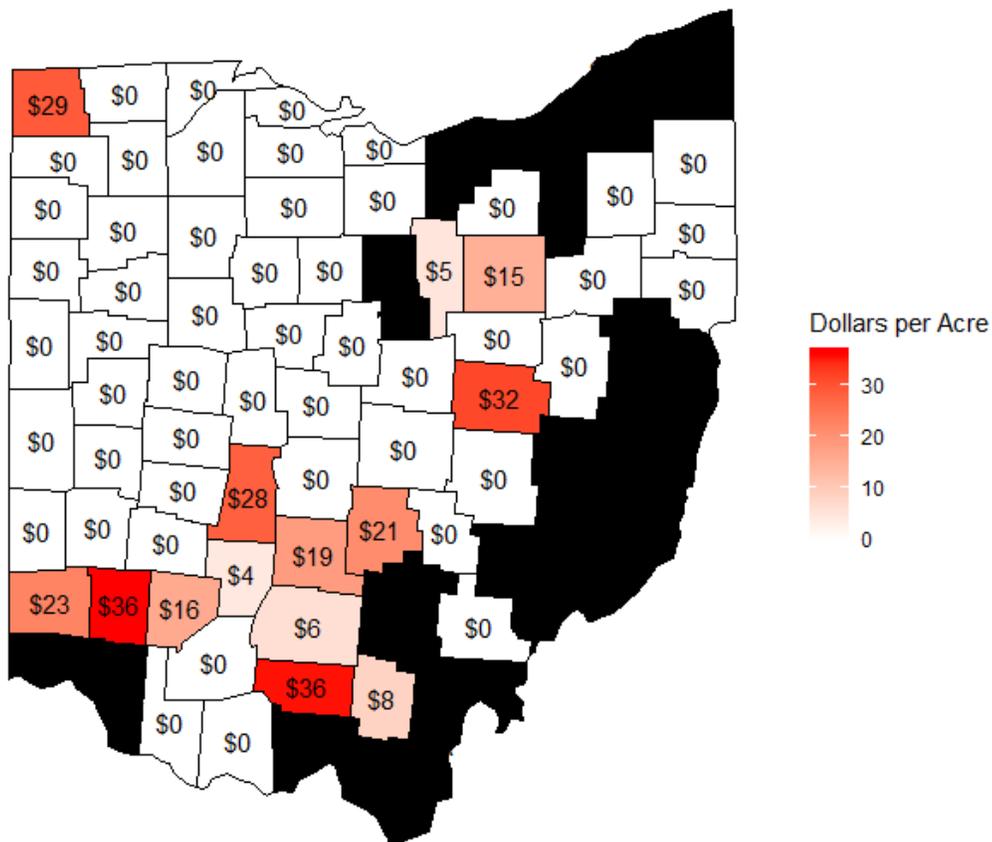


\$10.86 vs \$9.63 in 2018. Unlike corn, the soybean benchmark still has room to decrease since soybeans reference price is \$8.40.

**Estimated Wheat ARC-CO Payments**

In Ohio, 13 counties are estimated to trigger a wheat ARC-CO payment. Similar to corn and soybeans the wheat benchmark price decreased from previous years: 2014- \$6.60, 2015- \$6.70, 2016-\$6.70, and 2017- \$6.12 vs \$5.66 in 2018. Wheat’s reference price and therefore the floor on ARC-CO benchmark price is \$5.50, just slightly below the 2018 benchmark price.

**Ohio Wheat ARC Payment Estimates: Program Year 2018**  
Rounded to Nearest Dollar



Data Source: Author Calculation

**PLC Estimates**

As mentioned earlier, both programs use the MYA prices to calculate payments. The current corn and soybean marketing years still contains three more months, leaving the opportunity for prices to fluctuate from the results illustrated in this report. Because of price sensitivity of the PLC program it is important to consider historical changes between the May WASDE and the Final MY. Over the last twenty years, corn has averaged a \$0.03 decrease from May to the final price

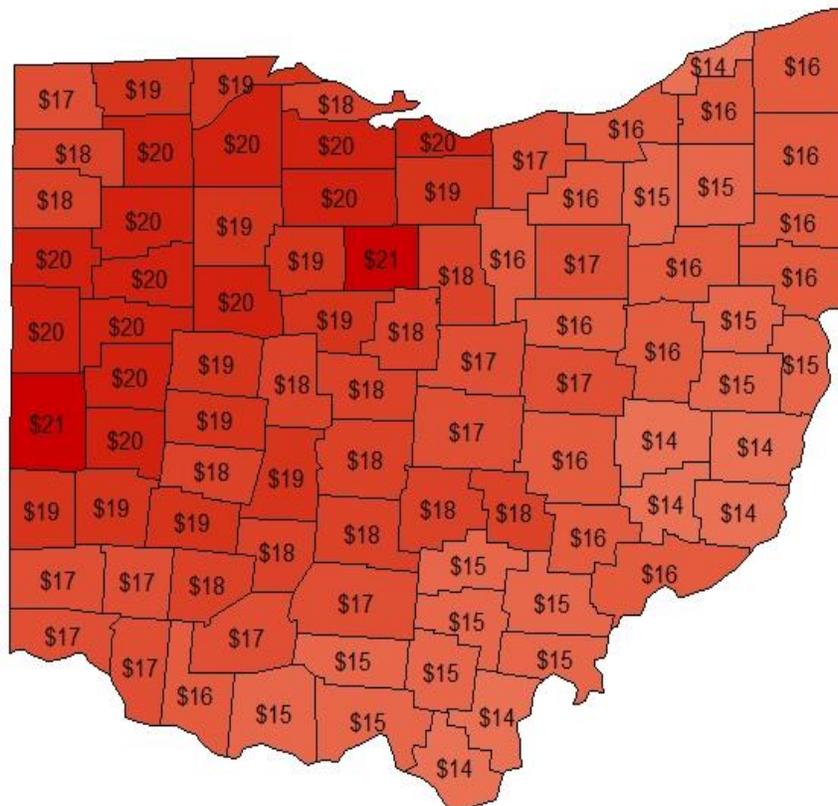
on in September with a range of a decrease of 19 cents in 2013 and an increase of 12 cents in 2011. Conversely, soybeans have seen an average increase of \$0.02 from the May WASDE to the end of August with a range of an increase of 15 cents in 2015 and a decrease of 31cents in 2003. Wheat saw almost no change, as May is the last month of the Wheat MY. There was an average decrease of 1 cent over the past twenty years with a 5-cent increase in 2010 and a 7-cent decrease in both 2008 and 2007. To drive home the point, the 12 cent increase in corn price, as experienced in 2011, is equal to a \$13.44 decrease in the per acre payment for PLC base acres in Ohio assuming the price before and after the change is below \$3.70/bushel. While this might seem like much, the largest decrease of 19 cents in 2013 would equal an increase of \$21.28 per acre to the PLC per acre payment.

### Estimated Corn PLC Payments

Using the current mid-point of the May WASDE, corn PLC payments for Ohio are included in the figure below. All Ohio counties are expected to trigger a corn PLC payment for program year 2018 because the price remains below the fixed reference price of \$3.70/bu. The different in payments per acre are a result of the varying PLC yields for each county. Payments are adjusted for the 85% of base acres and a government sequestration of an estimated 6.8%.

Ohio Corn PLC Payment Estimates: Program Year 2018

Rounded Down to Nearest Dollar



Data Source: Author Calculation

## Estimated Soybean PLC Payments

Based off the midpoint of the May 2019 WASDE for 2018/19 soybeans, there are zero PLC payments expected for Ohio, because the MYA of \$8.55/bu. is above the \$8.40 reference price for the program. Soybean prices have decreased throughout 2019 on large stocks of soybeans and the possibility of fewer corn acres due to sustained periods of rain during the corn-planting window resulting in a potential increase of soybean acres.

### Ohio Soybean PLC Payment Estimates: Program Year 2018

Rounded Down to Nearest Dollar



Data Source: Author Calculation



## Conclusion

These estimates for ARC-CO and PLC payments for the current 2018 crop year are presented using yields provided by NASS and marketing year prices estimated in the May 2019 WASDE. Final payments per acre may differ based on a deviation of the FSA yield from the NASS yield, a change in the marketing year price or a change in the government sequestration amount of 6.8% used in this report. A decreasing revenue benchmark and strong yields in Ohio for 2018 trigger fewer ARC-CO commodity payments under the ARC-CO program than previous years even with continued low farm incomes. However low prices increase the likelihood of PLC payments for corn and soybeans. Similar, wheat shows that increasing MYA prices reduce PLC payments. Very Ohio producer had base acres of commodities in PLC and therefore are likely to see large government payments from the commodity title of the 2014 Farm Bill in the autumn of 2019.

## References

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## Ohio ARC-CO Payments Estimates Per Base Acre- Program Year 2018\* Paid October 2019

\*Payments are Adjusted for 85% base acre limit

\*A 6.8% sequester was also added in regards to The Budget Control Act of 2011

	Corn	Soy	Wheat		Corn	Soy	Wheat		Corn	Soy	Wheat
Adams	\$0	\$0	\$0	Hamilton	\$0	\$1	N/A	Muskingum	\$0	\$0	\$0
Allen	\$0	\$0	\$0	Hancock	\$0	\$0	\$0	Noble	N/A	N/A	N/A
Ashland	\$0	N/A	\$5	Hardin	\$0	\$0	\$0	Ottawa	\$0	\$0	\$0
Ashtabula	\$0	\$0	N/A	Harrison	\$0	\$0	N/A	Paulding	\$0	\$0	\$0
Athens	\$5	\$0	\$0	Henry	\$0	\$0	\$0	Perry	\$0	N/A	\$0
Auglaize	\$0	\$0	\$0	Highland	\$0	\$0	\$0	Pickaway	\$0	\$0	\$19
Belmont	\$37	N/A	N/A	Hocking	N/A	N/A	N/A	Pike	\$0	\$0	\$36
Brown	\$0	\$0	\$0	Holmes	\$0	\$0	\$0	Portage	\$0	\$0	\$0
Butler	\$0	\$0	\$23	Huron	\$0	\$0	\$0	Preble	\$0	\$0	\$0
Carroll	\$0	\$0	N/A	Jackson	\$0	\$0	\$8	Putnam	\$0	\$0	\$0
Champaign	\$0	\$0	\$0	Jefferson	\$0	N/A	N/A	Richland	N/A	N/A	N/A
Clark	\$0	\$0	\$0	Knox	\$0	\$0	\$0	Ross	\$0	\$0	\$6
Clermont	\$0	\$0	N/A	Lake	N/A	N/A	N/A	Sandusky	\$0	\$0	\$0
Clinton	\$0	\$0	\$16	Lawrence	\$5	\$0	N/A	Scioto	\$0	\$0	N/A
Columbiana	\$0	\$0	\$0	Licking	N/A	\$0	\$0	Seneca	\$0	\$0	\$0
Coshocton	\$0	\$0	\$32	Logan	\$0	\$0	\$0	Shelby	\$0	\$0	\$0
Crawford	\$0	\$0	\$0	Lorain	N/A	\$0	\$0	Stark	\$0	\$0	\$0
Cuyahoga	N/A	N/A	N/A	East Lucas	\$0	\$0	\$0	Summit	N/A	N/A	N/A
Darke	\$0	\$0	\$0	West Lucas	\$0	\$0	\$0	Trumbull	\$0	\$0	\$0
Defiance	\$0	\$0	\$0	Madison	\$0	\$0	\$28	Tuscarawas	\$0	\$0	\$0
Delaware	N/A	\$0	\$0	Mahoning	\$0	\$0	\$0	Union	\$0	\$0	\$0
Erie	N/A	N/A	\$0	Marion	\$0	\$0	\$0	Van Wert	\$0	\$0	\$0
Fairfield	\$0	\$0	\$21	Medina	\$0	\$0	\$0	Vinton	N/A	\$36	N/A
Fayette	\$0	\$0	\$4	Meigs	\$0	N/A	N/A	Warren	\$0	\$0	\$36
Franklin	\$0	NA	\$0	Mercer	\$0	\$0	\$0	Washington	\$0	\$8	N/A
Fulton	\$0	\$0	\$0	Miami	\$0	\$0	\$0	Wayne	\$0	\$0	\$15
Gallia	\$0	\$12	N/A	Monroe	N/A	N/A	N/A	Williams	\$0	\$0	\$29
Geauga	\$0	\$11	N/A	Montgomery	\$0	\$0	\$0	Wood	\$0	\$0	\$0
Greene	\$0	\$0	\$0	Morgan	\$0	\$36	\$0	Wyandot	\$0	\$0	\$0
Guernsey	\$0	N/A	N/A	Morrow	N/A	\$0	\$0	*N/A values signify that county yields were not available.			

## Ohio PLC Payment Estimates Per Base Acre- Program Year 2018\* Paid October 2019

\*Payments are Adjusted for 85% base acre limit

\*A 6.8% sequester was also added in regards to The Budget Control Act of 2011

	Corn	Soy	Wheat		Corn	Soy	Wheat		Corn	Soy	Wheat
Adams	\$15	\$0	\$7	Hamilton	\$17	\$0	\$10	Muskingum	\$17	\$0	\$9
Allen	\$20	\$0	\$14	Hancock	\$19	\$0	\$13	Noble	\$14	\$0	\$7
Ashland	\$16	\$0	\$10	Hardin	\$20	\$0	\$13	Ottawa	\$18	\$0	\$12
Ashtabula	\$16	\$0	\$11	Harrison	\$15	\$0	\$9	Paulding	\$19	\$0	\$12
Athens	\$15	\$0	\$8	Henry	\$20	\$0	\$14	Perry	\$18	\$0	\$10
Auglaize	\$20	\$0	\$15	Highland	\$17	\$0	\$10	Pickaway	\$18	\$0	\$13
Belmont	\$14	\$0	\$9	Hocking	\$15	\$0	\$9	Pike	\$15	\$0	\$8
Brown	\$16	\$0	\$8	Holmes	\$16	\$0	\$9	Portage	\$16	\$0	\$9
Butler	\$17	\$0	\$11	Huron	\$19	\$0	\$13	Preble	\$20	\$0	\$13
Carroll	\$15	\$0	\$9	Jackson	\$15	\$0	\$8	Putnam	\$21	\$0	\$14
Champaign	\$19	\$0	\$12	Jefferson	\$15	\$0	\$10	Richland	\$19	\$0	\$12
Clark	\$18	\$0	\$13	Knox	\$17	\$0	\$10	Ross	\$18	\$0	\$11
Clermont	\$17	\$0	\$11	Lake	\$14	\$0	\$9	Sandusky	\$21	\$0	\$13
Clinton	\$18	\$0	\$11	Lawrence	\$14	\$0	\$8	Scioto	\$16	\$0	\$9
Columbiana	\$16	\$0	\$10	Licking	\$17	\$0	\$10	Seneca	\$20	\$0	\$13
Coshocton	\$17	\$0	\$9	Logan	\$19	\$0	\$13	Shelby	\$20	\$0	\$14
Crawford	\$21	\$0	\$15	Lorain	\$17	\$0	\$10	Stark	\$16	\$0	\$10
Cuyahoga	\$16	\$0	\$9	East Lucas	\$19	\$0	\$13	Summit	\$15	\$0	\$9
Darke	\$21	\$0	\$14	West Lucas	\$20	\$0	\$14	Trumbull	\$17	\$0	\$12
Defiance	\$18	\$0	\$11	Madison	\$19	\$0	\$13	Tuscarawas	\$17	\$0	\$9
Delaware	\$18	\$0	\$12	Mahoning	\$16	\$0	\$10	Union	\$19	\$0	\$12
Erie	\$20	\$0	\$13	Marion	\$20	\$0	\$13	Van Wert	\$20	\$0	\$14
Fairfield	\$18	\$0	\$11	Medina	\$16	\$0	\$9	Vinton	\$16	\$0	\$8
Fayette	\$18	\$0	\$12	Meigs	\$16	\$0	\$8	Warren	\$18	\$0	\$11
Franklin	\$18	\$0	\$11	Mercer	\$20	\$0	\$15	Washington	\$16	\$0	\$8
Fulton	\$19	\$0	\$14	Miami	\$21	\$0	\$14	Wayne	\$17	\$0	\$10
Gallia	\$14	\$0	\$9	Monroe	\$14	\$0	\$8	Williams	\$18	\$0	\$12
Geauga	\$16	\$0	\$10	Montgomery	\$19	\$0	\$12	Wood	\$20	\$0	\$14
Greene	\$19	\$0	\$12	Morgan	\$16	\$0	\$8	Wyandot	\$20	\$0	\$13
Guernsey	\$14	\$0	\$7	Morrow	\$18	\$0	\$12				

