



# FARM BILL CROP SUPPORT PROGRAMS: A FARMER PERSPECTIVE – PART 1

---

**AAE 320**

**Paul D. Mitchell**

**Agricultural and Applied Economics**



**AGRICULTURAL & APPLIED ECONOMICS**  
College of Agricultural & Life Sciences

# Learning Goals

- To understand how specific commodity support programs operate for an individual farmer
- Part 1
  - Price Loss Coverage (PLC)
  - Agricultural Risk Coverage (ARC)
- Part 2
  - Marketing Assistance Loans (MAL)
  - Dairy Margin Coverage (DMC)
  - Briefly
    - Market Facilitation Program (MFP)
    - Coronavirus Food Assistance Program (CFAP, CFAP2)

# Commodity Support Programs and the USDA Farm Service Agency (FSA)

- Programs administered by the USDA Farm Service Agency (FSA)
  - PLC, ARC, MAL, DMC (plus MFP, CFAP, CFAP2)
- Each county has a county FSA office
- Farmers/landowners sign up each year: file specific forms for each program by specific dates
- Programs often have reporting requirements: acres of each crop planted, where planted, production (yield) reports
- Payments typically electronically deposited

# Eligibility for Commodity Support

- Farmer must operate Base Acres to be eligible for PLC/ARC (commodity support) subsidies
  - Do not need Base Acres for MAL or DMC (or MFP or CFAP)
- Officially designated by FSA Farm Serial Number
  - Farms often farm more than one FSA farm
  - Registered with FSA office in each county
  - Stays with the land, not the farmer
- Each FSA farm has Base Acres for each Program Crop with Program Yields used for PLC
  - That 60-acre FSA farm has 40 corn base acres with a 130 bu/ac yield

# Base Acres

- Average acres of each program crop historically grown on a “farm” at first enrollment in early 1980s
  - “50 base acres of corn and 30 base acres of soybean”
- Have not added Base Acres since early 1980s, but have allowed changing the mix of crops based on historical shares of crops planted on that FSA farm
  - Crops update in 2003 using 1998-2001 average planted acres
  - Crops updated in 2014 using 2009-2012 average planted acres
- Base Acres do not necessarily equal what is actually planted now
- Payments are “Decoupled” – not tied to how many acres and which crops are planted now, but to historical plantings

# Payment Yield (or Program Yield or PLC Yield)

- Historical average yield for program crops grown on an FSA farm
  - Updated in 2020: 90% of 2013-2017 average yields
  - Updated in 2014: 90% of 2008-2012 average yields
  - Updated in 2003: 90% of 1997-2001 average yields
- Payment Yields lower than farm's average yields
- Final outcome for each FSA farm: Base Acres for each Program Crop and associated Payment Yield
  - **Example: a 100-acre FSA farm has 50 corn base acres with a 155 bu/ac payment yield and 25 soybean base acres with a 38 bu/ac payment yield**

# Base Acres and Payment Yields

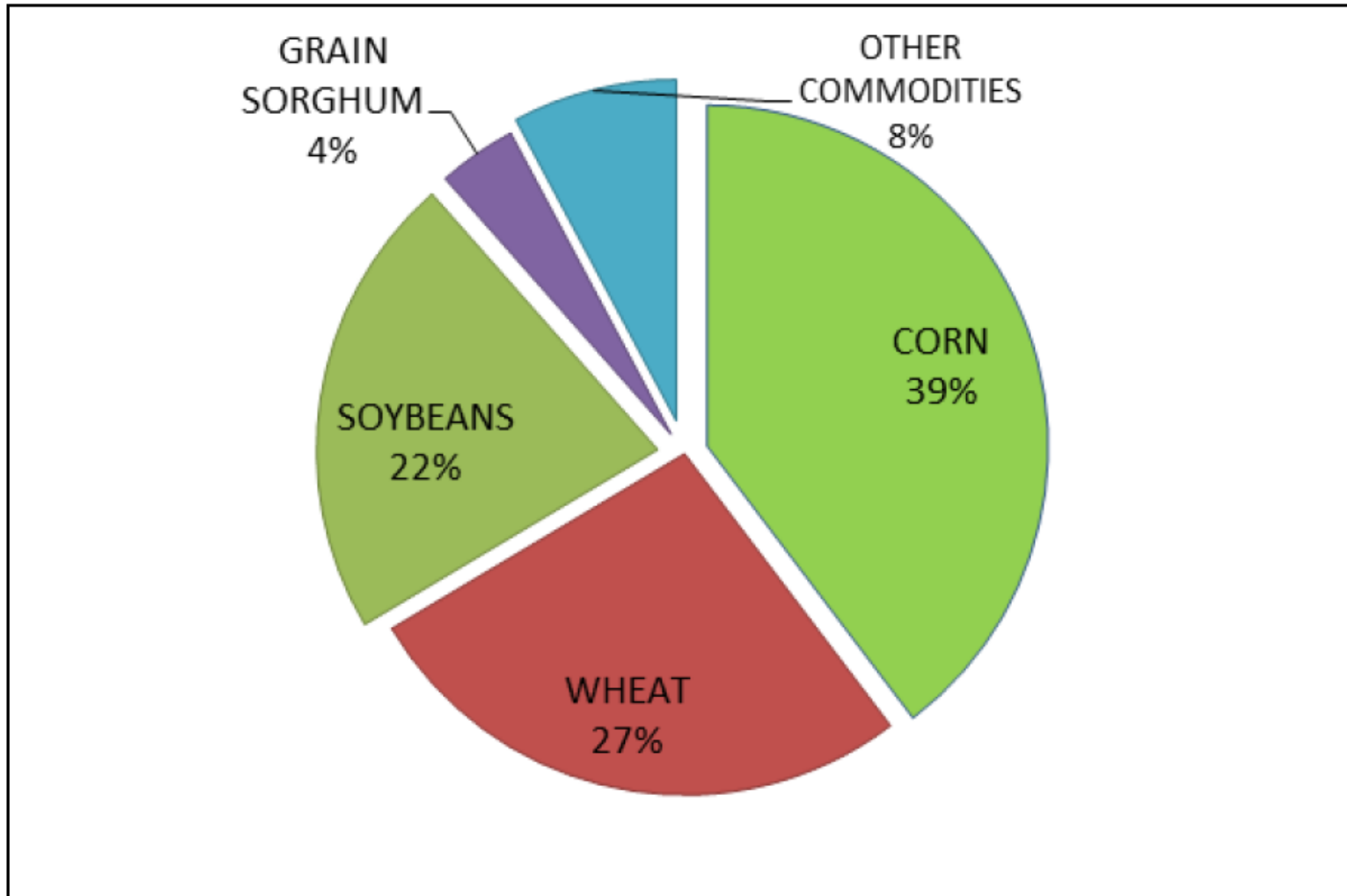
- Over the years, Farm Bill commodity support has used Base Acres and Payment Yields
- The programs and acronyms have changed, but not use of Base Acres and Payment Yields
- Deficiency Payments, Direct Payments (DP), Counter Cyclical Payments (CCP), Average Crop Revenue Election (ACRE) payments
- 2014 Farm Bill created ARC and PLC, again using Base Acres and Payment Yields
- Part of property characteristics, like soil quality, road access, etc.
- Part of the land's price when sold or rented

# Program Crops

- Barley, Canola, **Corn** , Cotton, Crambe, Dry Peas, Flaxseed, Grain Sorghum, Chick Peas (Large and Small), Lentils, Mustard Seed, **Oats**, Peanuts, Rapeseed, Rice (Long Grain and Medium/Short Grain), Safflower, Sesame Seed, **Soybeans**, Sunflower Seed, **Wheat**
- Major WI Program Crops
  - Corn, Soybeans, Oats, Wheat (Barley, Sorghum, Sunflower)
  - Corn Silage is a type of Corn
- **NOT** program crops
  - Alfalfa and Hay, fruits and vegetables (Potato, Sweet Corn, Snap Beans, Green Peas, Cranberry, Ginseng)

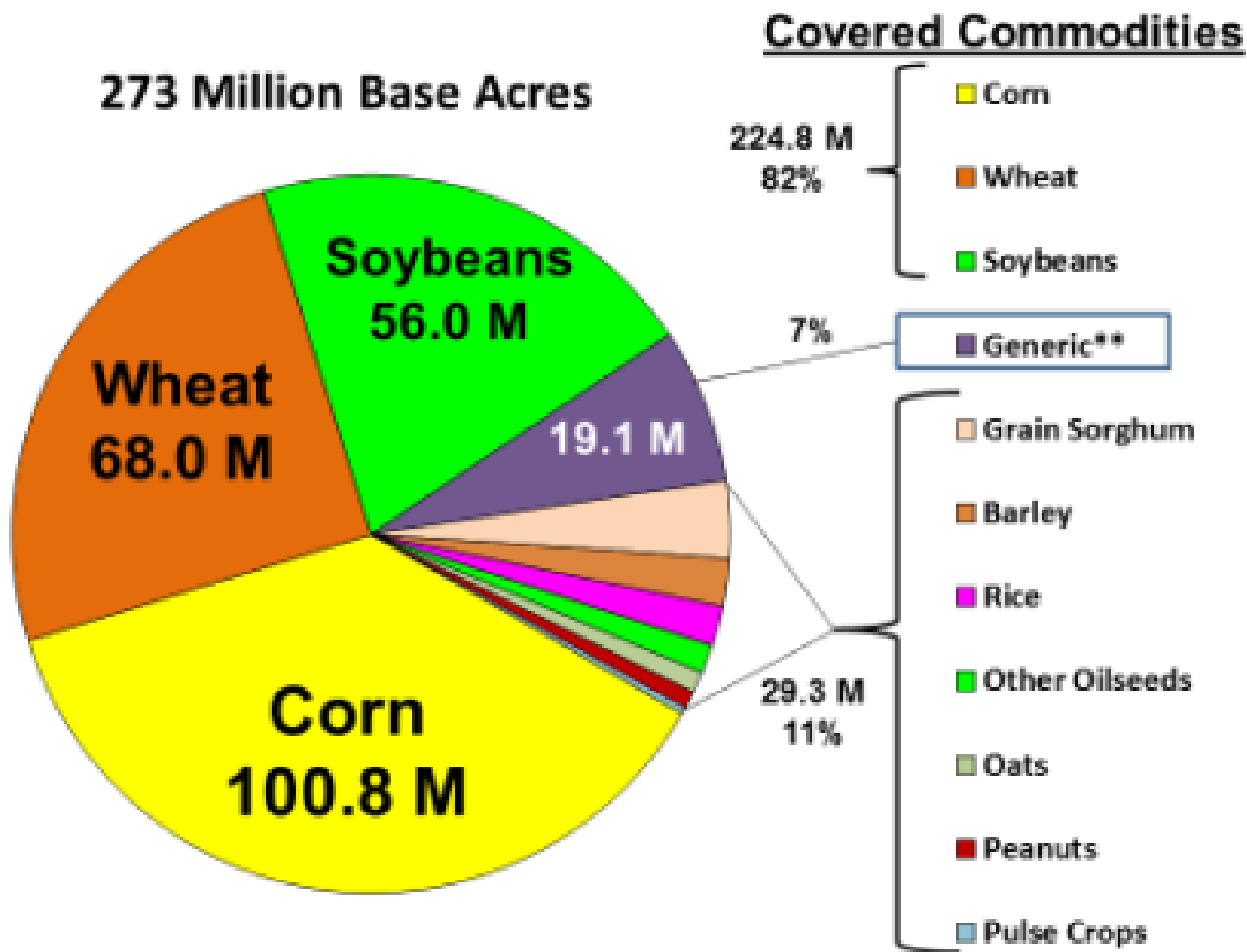


**Figure 1. Percent of Base Acres by Commodity**

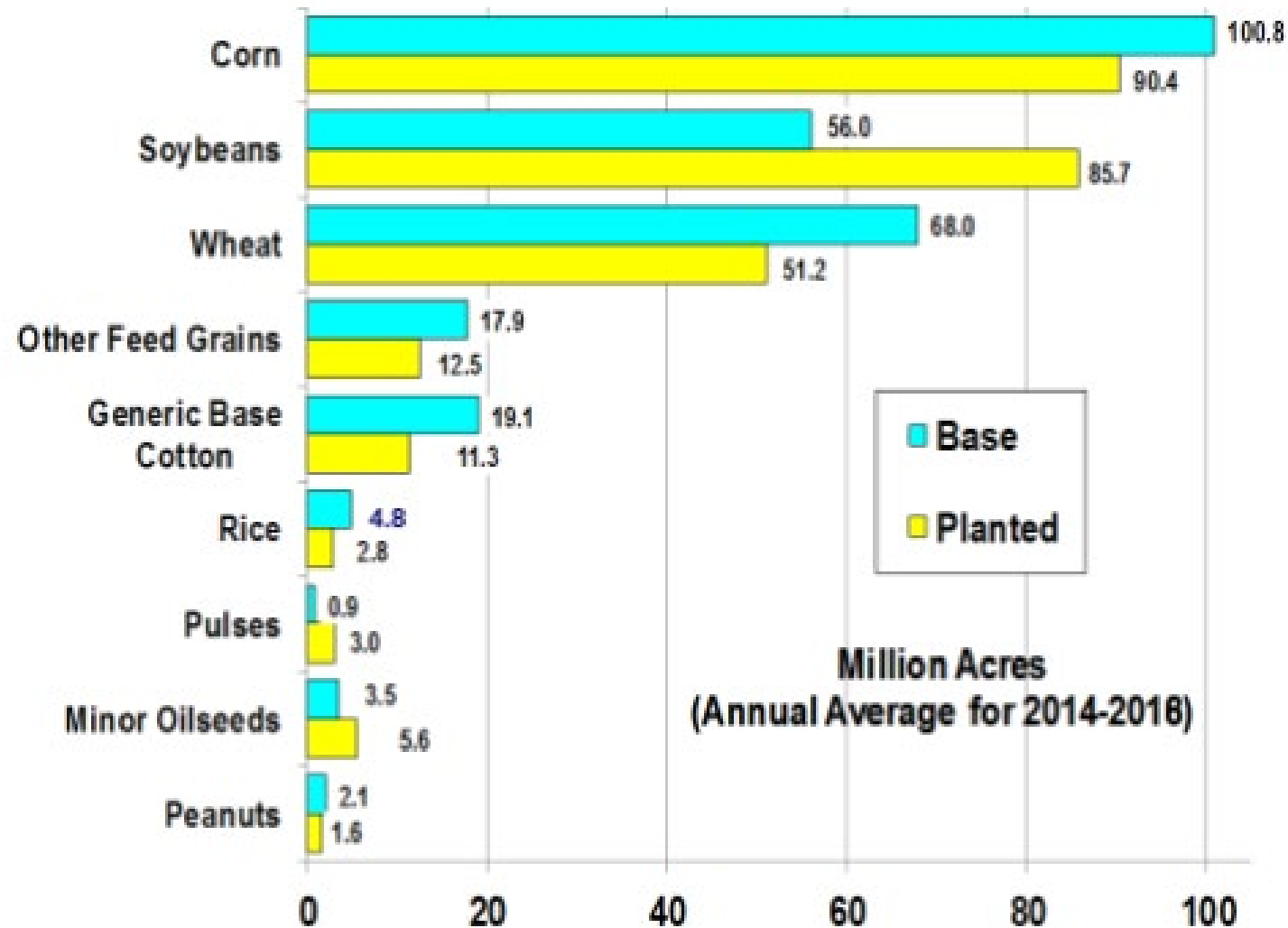


Source: <https://fas.org/sgp/crs/misc/R45165.pdf>

# Base Acres in 2015



# Base Acres vs Planted Acres, 2014-2018



# Commodity Support Programs in 2018 Farm Bill

- Price Loss Coverage (PLC)

- Establishes a price floor by crop based on the national marketing year average price

- Agriculture Risk Coverage (ARC)

- County ARC (ARC-CO): Establishes a revenue floor by crop based on county revenue
- Individual ARC (ARC-IC): Establishes a revenue floor for whole farm based on farm yields and national prices

# Commodity Support Programs in 2018 Farm Bill

- Farmers have 3 Options
  - 1) Price Loss Coverage (PLC) by crop
  - 2) County ARC (ARC-CO) by crop
  - 3) Individual ARC (ARC-IC) for whole farm
- Our Focus: PLC and County ARC (ARC-CO)  
[ARC-IC less used and fairly complicated]
- ARC/PLC sign up happening right now for the 2022 crop, deadline is March 15, 2022
- Farmers & landowners choosing which program to use for 2022 crop payments

# Price Loss Coverage (PLC)

- Each program crop has a set “Reference Price”
  - Corn \$3.70, Soybeans \$8.40, Wheat \$5.50, Oats \$2.40
- If the National Marketing Year Average Price is less than the Reference Price, PLC payments are made
  - $PLC\ PaymentRate = ReferencePrice - MYAPrice$
  - $PLC\ Payment = 85\% \times BaseAcres \times PaymentYield \times PLC\ PaymentRate$
- Corn/Soy marketing year: Sept 1 - Aug 31
- Wheat/Oats marketing year: June 1 - May 31

# Simple PLC Example

- Suppose USDA announced 2019 National Marketing Year Average Price of corn was \$3.56
- The corn Reference Price is \$3.70, so PLC Payment Rate =  $\$3.70 - \$3.56 = \$0.14/\text{bu}$
- If you have 100 corn Base Acres with a Payment Yield of 140 bu/ac, then your PLC payment would be
- $85\% \times 100 \text{ ac} \times 140 \text{ bu/ac} \times \$0.14/\text{bu} = \$1,666$
- USDA Announces MYA prices in Sep, payments made in Oct

Crop	2014	2015	2016	2017	2018	2019	2020
Corn	\$3.70	<b>\$3.61</b>	<b>\$3.36</b>	<b>\$3.36</b>	<b>\$3.61</b>	<b>\$3.56</b>	\$4.53
Soybean	\$10.10	\$8.95	\$9.47	\$9.33	\$8.48	\$8.57	\$10.80

# Think Break #12

- You have a farm with
  - a) 30 corn base acres with a 130 bu/ac payment rate
  - b) 20 soybean base acres with a 30 bu/ac payment rate
- You signed up for PLC and the national marketing year average price is \$3.55 for corn and \$8.50 for soybeans
- **What is your PLC payment?**
- Reference Prices: Corn = \$3.70, Soybeans = \$8.40
- $\text{PLC PaymentRate} = \text{ReferencePrice} - \text{MYAPrice}$
- $\text{PLC Payment} = 85\% \times \text{BaseAcres} \times \text{PaymentYield} \times \text{PLC PaymentRate}$



# Think Break #12 Answer

- Corn PLC Payment Rate =  $3.70 - 3.55 = 0.15$
- Soybean PLC Payment Rate =  $8.40 - 8.50 = -0.10$ 
  - $< 0$ , so no PLC payment for Soybeans
- PLC Payment =  $85\% \times \text{BaseAcres} \times \text{PaymentYield} \times \text{PLC PaymentRate}$
- $= 85\% \times 30 \times 130 \times 0.15 = \$497.25$

# PLC Comment: Decoupling

- Notice: PLC payments based on national marketing year average price, base acres, payments yields
- Not on the actual prices you sell crops for, your actual acres planted or yields
- Farmer could sell corn for \$4.00/bu (or \$3.00/bu), but would still get a corn PLC payment using the national price of \$3.55/bu
- Farmer could harvest 200 bu/ac (or 100 bu/ac), but would still get PLC payment using 130 bu/ac Payment Yield
- Farmer could plant 50 acres (or 10 acres) of corn, but would still get PLC payment using 30 corn Base Acres
- Payments are decoupled to reduce market distortions of farm programs
- Part of WTO/GATT requirements, to prevent “unfair” trade practices

# 2018 Farm Bill Changes

- PLC first started with the 2014 Farm Bill, small changes for 2018 Farm Bill
- “Effective” Reference Price used to calculate payments, not Reference Price
- “Effective” Reference Price can go higher, based on historical average prices
- Use 85% of the 5-year Olympic average of marketing year average price, but with a floor and cap
  - Floor: current Reference Price
  - Cap: 115% of Reference Price
- Olympic Average: drop the high and the low
- For “Effective” Reference Price to increase for corn and soybeans, the 5-year Olympic average has to exceed  $\$3.70 / 85\% = \$4.35$  for corn and  $\$8.40 / 85\% = \$9.88/\text{bu}$  for soybeans

# 5-Year Olympic Average of Prices

Crop	2016	2017	2018	2019	2020
Corn	<del>\$3.36</del>	\$3.36	\$3.61	\$3.56	<del>\$4.53</del>
Soybean	\$9.47	\$9.33	<del>\$8.48</del>	\$8.57	<del>\$10.80</del>

- Corn: Drop \$4.53 (hi) and \$3.36 (lo), put \$3.70 floor on remaining prices
  - Average (\$3.70, \$3.70, \$3.70) = \$3.70
  - 85% of \$3.70 = \$3.15 < \$3.70, so
  - Corn Effective Reference price stays at \$3.70
- Soybean: Drop \$10.80 (hi) and \$8.48 (lo), none need \$8.40 floor
  - Average (\$8.57, \$9.33, \$9.47) = \$9.12
  - 85% of \$9.12 = \$7.75 < \$8.40, so
  - Soybean Effective Reference price stays at \$8.40

# Agriculture Risk Coverage (ARC)

- County ARC payments made if Actual County Revenue is less than the County Guarantee
- County Benchmark = 5-Year Olympic Average County Yield x 5-Year Olympic Average National MYA Price
  - Use Effective Reference Price if higher than MYA Price
  - Use 70% County T Yield if higher than County Yield
- County Guarantee = 86% of County Benchmark
- Actual Revenue = County Average Yield x MYA Price
- ARC Payment Rate = County Guarantee – Actual County Revenue, up to 10% of County Benchmark
- ARC Payment = 85% x Base Acres x ARC Payment Rate

# Farmer Perspective

- Your county has county revenue guarantee for each crop
  - Complicated process to get county guarantee, based on 5-year Olympic averages of county yields with caps and cups and national MYA prices, times 86%
- If actual county revenue falls below this guarantee, you receive payments =  $85\% \times \text{Base Acres} \times \text{Revenue Loss}$ , where the Revenue Loss = Guarantee – Actual
- Actual also uses average county yield and national MYA price
- Maximum ARC payment based on % of county guarantee

# Old Example: Corn in 2021 for Dane County

Year	Yield	Price
2019	204.93	3.56
2018	<del>218.41</del>	3.61
2017	198.32	3.36
2016	195.17	<del>3.36</del>
2015	<del>195.16</del>	<del>3.61</del>

- **Notice years: do not have 2020 yields or prices when make 2021 decision**
- Olympic Average Yield = 199.47
- Olympic Average Price = \$3.70, as the remaining are all < \$3.70
- ARC County Benchmark =  $\$3.70 \times 199.47 = \$738.04$
- ARC Guarantee =  $86\% \times \$738.04 = \$634.71$
- Maximum ARC Payment =  $10\% \times \$738.04 = \$73.80$

# Unofficial Corn 2021 Example for Dane County

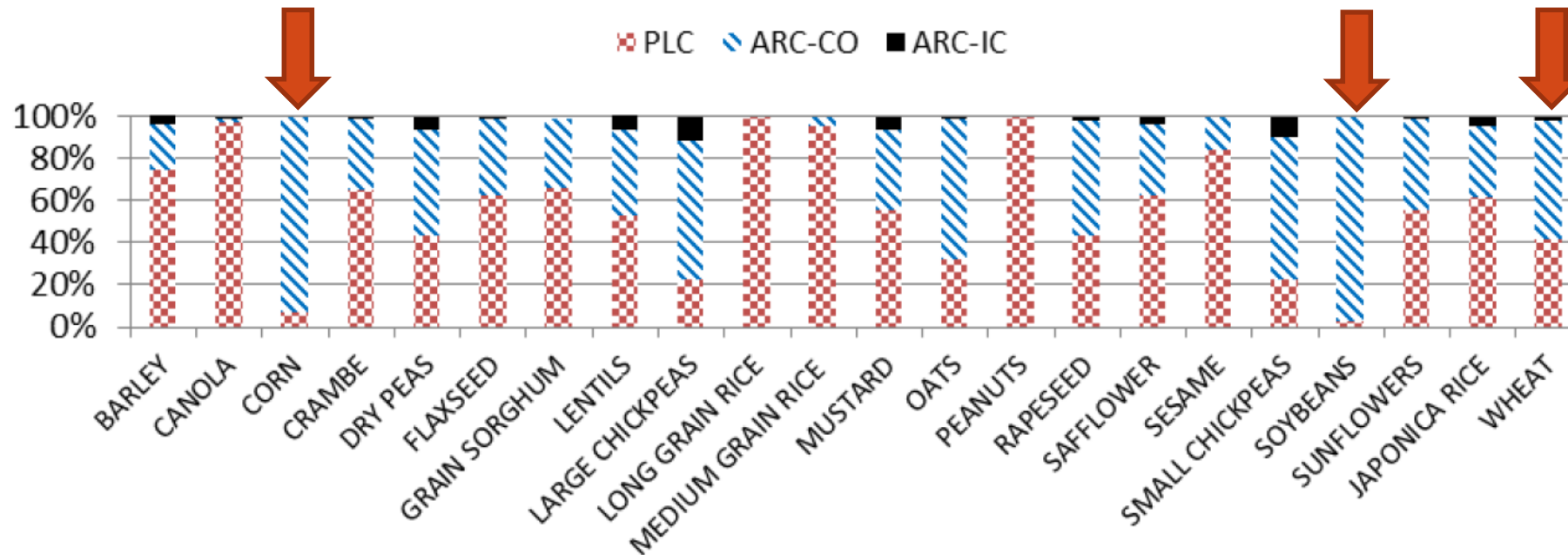
- Suppose 2021 County ARC Guarantee is \$634.71 for corn in Dane County
- Suppose 2021 actual USDA yield in Dane County is 165 bu/ac and 2021 MYA corn price is \$3.75 (Aside: when will we know the 2021 price?)
- Actual revenue =  $165 \times 3.75 = \$618.75/\text{ac} < \$634.71$ , so triggers payment
- ARC Payment Rate =  $\$634.71 - \$618.75 = \$15.96/\text{ac}$ , well below max payment rate of \$73.80, so ARC Payment Rate = \$15.96
- If farmer has 50 corn base acres on an FSA farm, then
- **ARC Payment = 85% x Base Acres x ARC Payment Rate**
- ARC Payment =  $85\% \times 50 \times \$15.96 = \$678.30$
- Decoupled Payments: Farmer paid regardless of the price they actually sell their corn for, what their actual yields are and how many corn acres they plant



# Farmers have to choose: ARC or PLC?

- 2014 Farm Bill required farms to make an irrevocable choice, ARC or PLC, by crop for 5 years (2014-2018)
  - Farmers found this decision very stressful
- 2018 Farm Bill: made it an annual election by crop and FSA farm
- ARC/PLC signup for 2022 currently going on now until Mar 15, 2022
- Each crop on each FSA farm a farmer manages can differ for the same farmer: ARC for soybeans on one farm and PLC for soybean on another
- Major extension outreach (and media) efforts offering guidance on how to decide and what to decide each year for each crop
- Note that in October of 2021, they could receive ARC/PLC payments for the 2020 crop (if triggered) and make their 2022 decision

# ARC vs PLC: 2014 Farm Bill

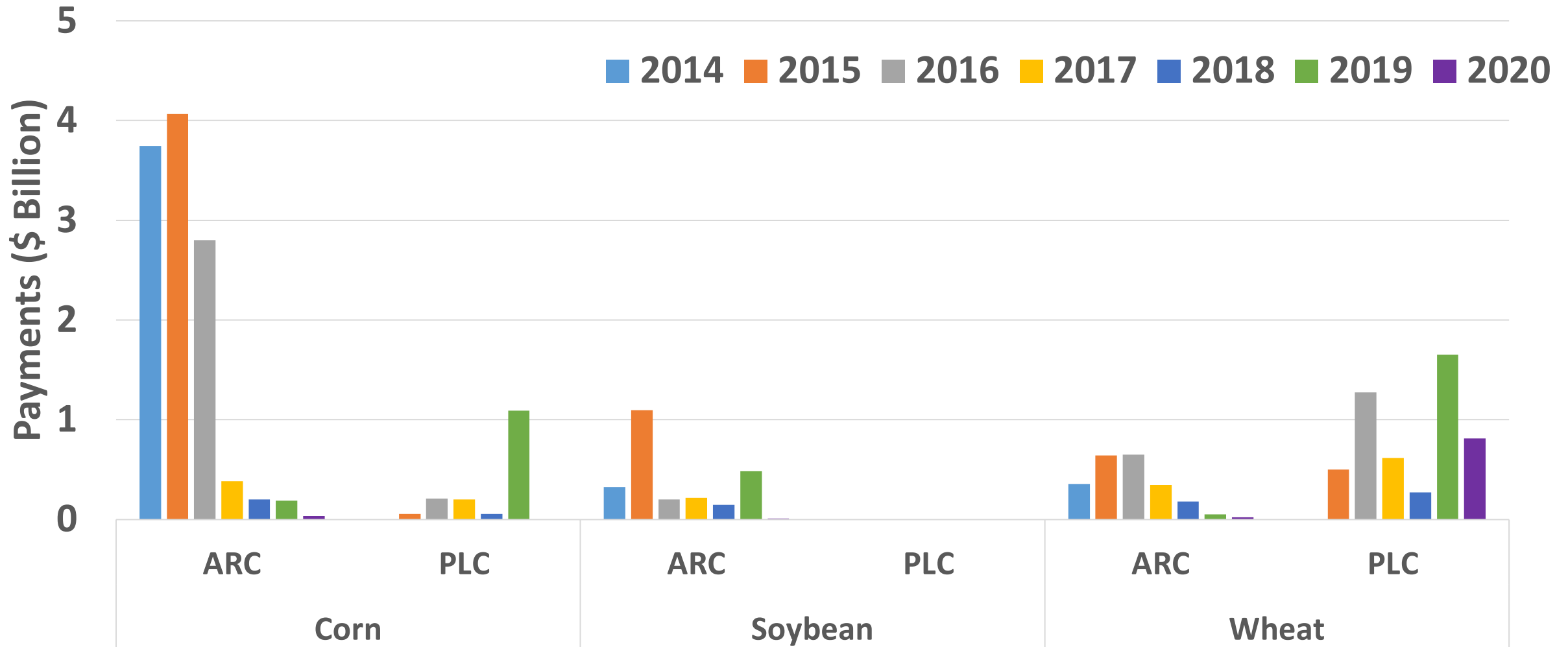


- Farmers and landowners had to choose ARC or PLC at signup in 2014 for all crop years for 2014 to 2018 (same program for all 5 years)
  - Could differ by crop, e.g., ARC for Corn, PLC for Wheat
- 95%+ farmers chose ARC for Corn and Soybean
- About 1/3 farmers chose PLC for Wheat

# Total ARC and PLC Payments (\$ Billion)

Crop Year	Year Paid	Corn		Soybean		Wheat	
		ARC	PLC	ARC	PLC	ARC	PLC
2014	2015	3.745	---	0.325	---	0.353	---
2015	2016	4.066	0.053	1.093	---	0.642	0.500
2016	2017	2.801	0.208	0.201	---	0.651	1.273
2017	2018	0.382	0.199	0.216	---	0.345	0.618
2018	2019	0.200	0.053	0.147	---	0.180	0.270
2019	2020	0.189	1.090	0.484	---	0.049	1.654
2020	2021	0.036	---	0.009	---	0.022	0.819

# ARC and PLC Payments by Crop and Year



# ARC and PLC Payments by Year in Wisconsin

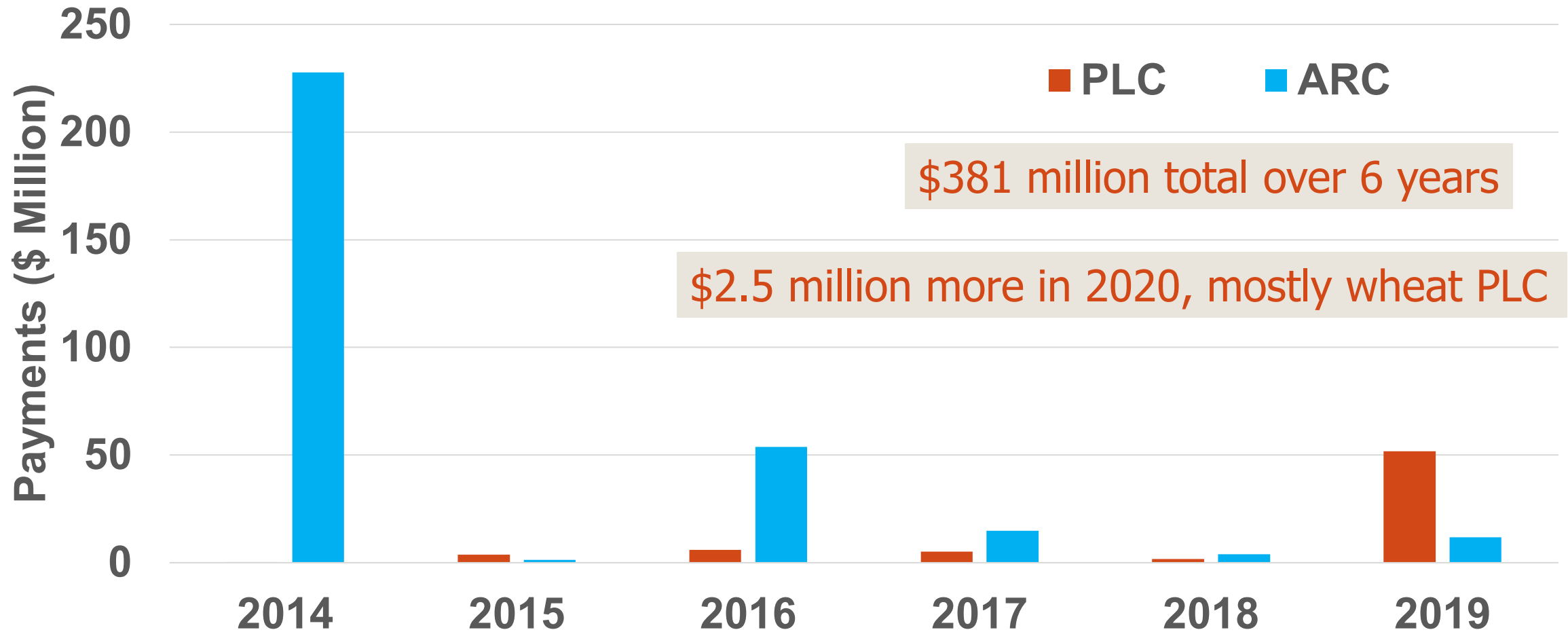
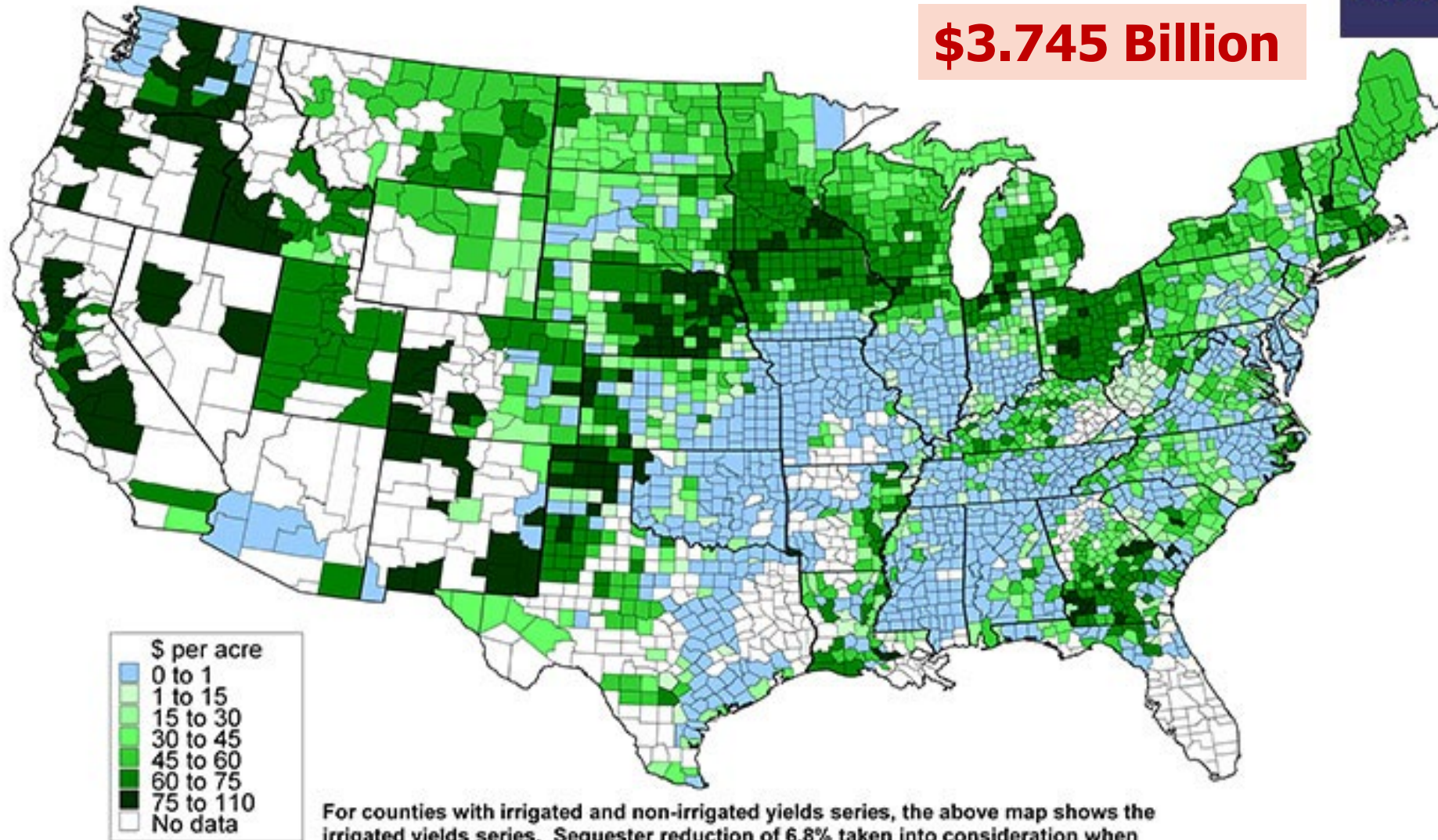


Figure 2. 2014 ARC-CO County Payments for Corn Per Base Acre

fdd

**\$3.745 Billion**



For counties with irrigated and non-irrigated yields series, the above map shows the irrigated yields series. Sequester reduction of 6.8% taken into consideration when calculating payments.

Figure 1. 2019 ARC-CO Payments on Corn Base Acres, US Counties

**\$0.189 Billion**

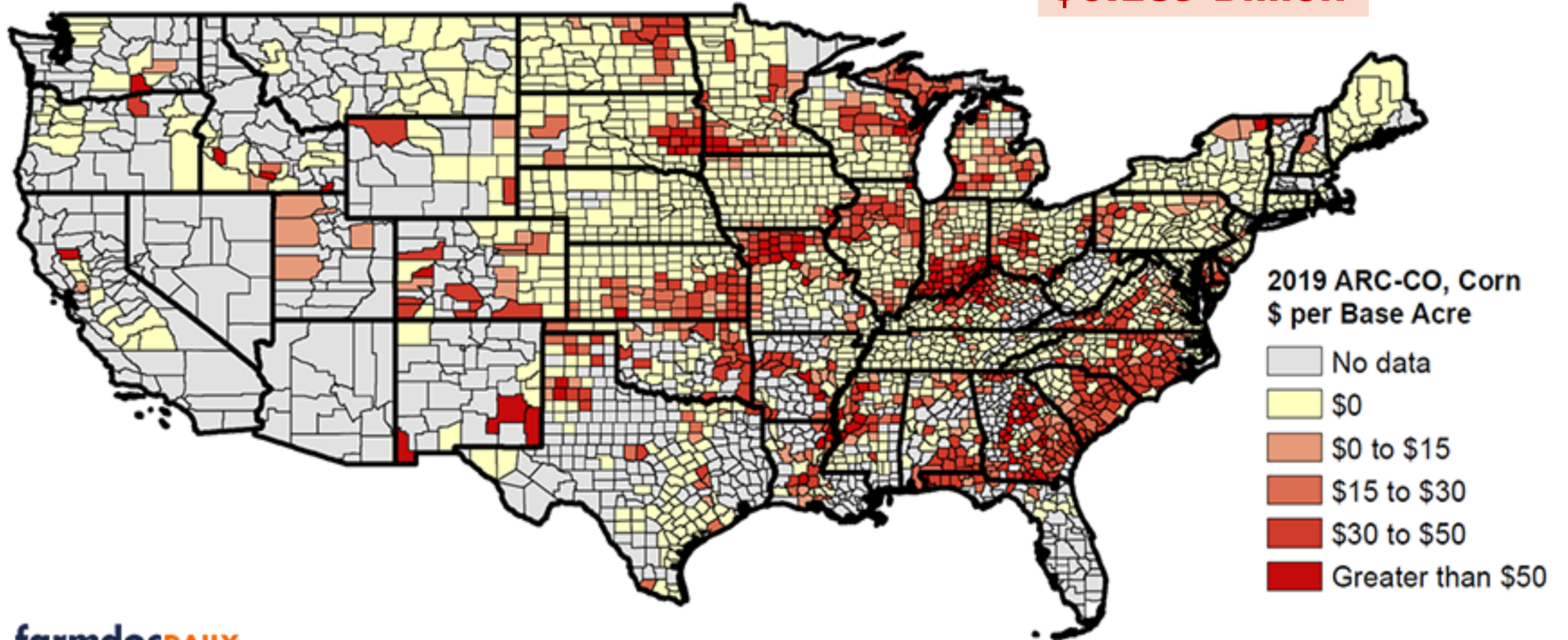
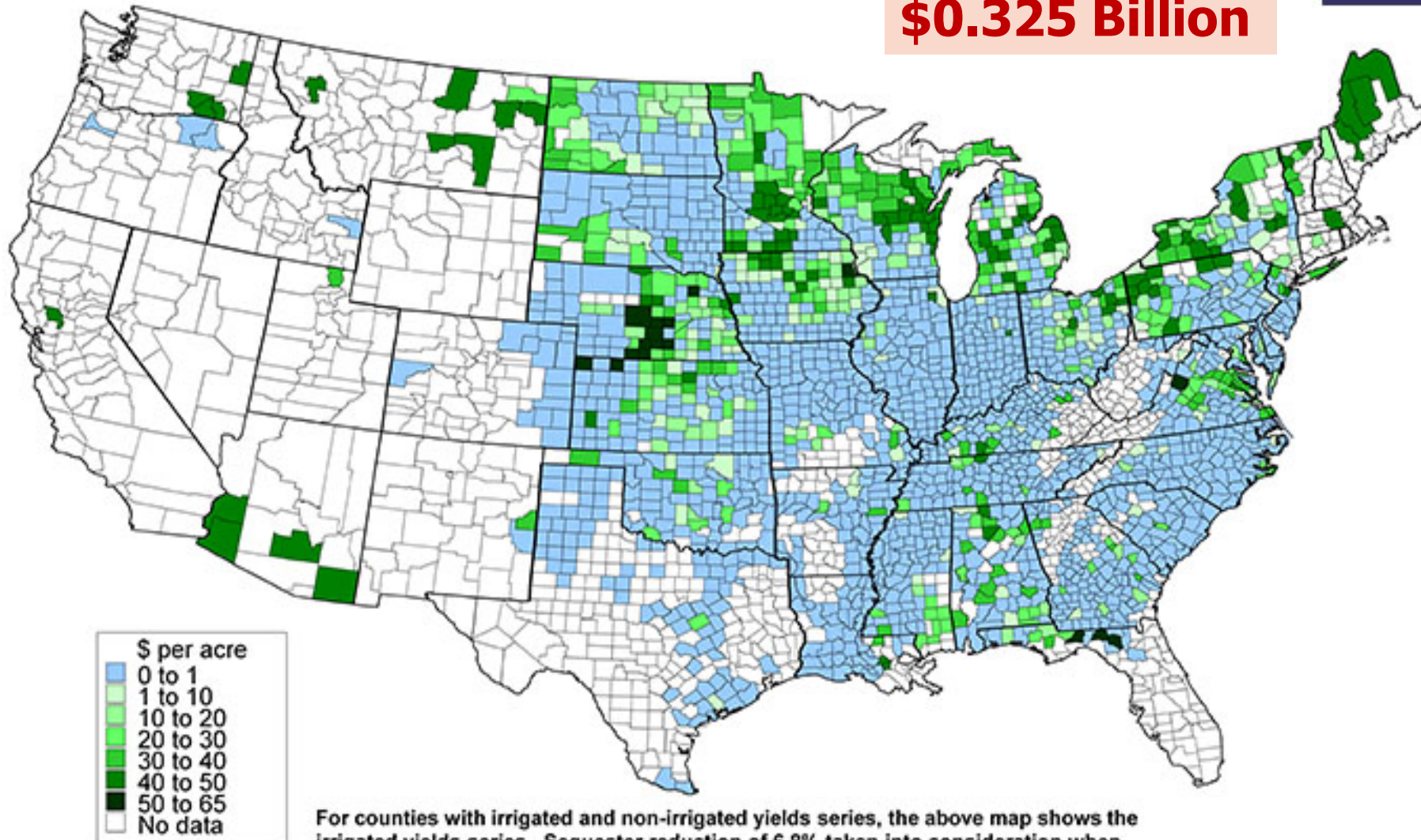


Figure 3. 2014 ARC-CO County Payments for Soybeans Per Base Acre

fdd

**\$0.325 Billion**



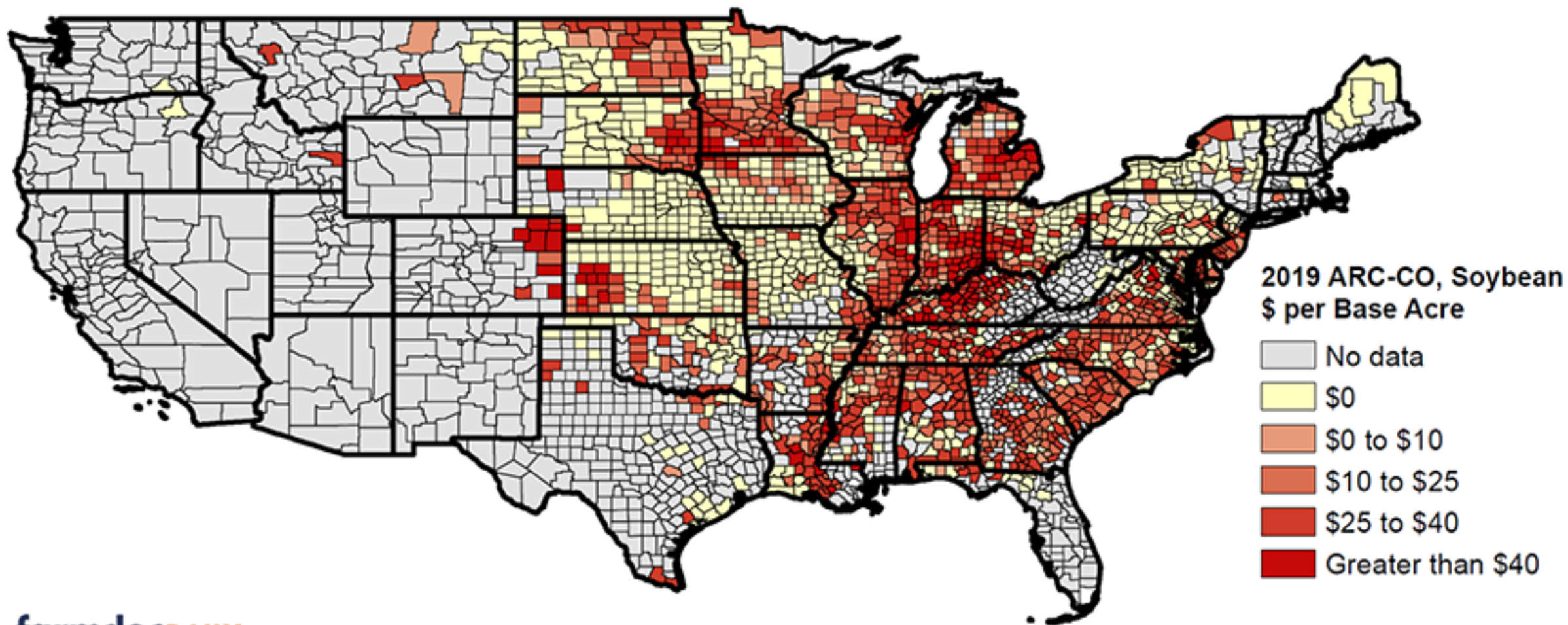
For counties with irrigated and non-irrigated yields series, the above map shows the irrigated yields series. Sequester reduction of 6.8% taken into consideration when calculating payments.

<http://farmdocdaily.illinois.edu/2015/11/2014-arc-co-payments-release-county-yields.html>



Figure 2. 2019 ARC-CO Payments on Soybean Base Acres, US Counties

**\$0.484 Billion**



# Main Point

- County ARC payments vary by county and year
  - Need low county yield and/or low national price
- Main idea: like county-level revenue insurance with an 86% coverage level
- Differences from Crop Insurance
  - Uses 5-Year Olympic Average of prices and yields to determine guarantee
  - Uses national marketing year average price for price history and as actual price
  - Uses county average yield for yield history and for actual yield

# Agriculture Risk Coverage (ARC)

- Individual ARC based on revenue from all program crops as a whole for an FSA farm, not crop by crop
- For a simple hypothetical example, assume 2 program crops: corn and soybeans
- Benchmark Revenue by Crop = 5-Year Olympic Average of (Yield per Planted Acre x MYA Price)
- Individual Benchmark Revenue =  
(Corn Acres/Total Acres) x Corn Benchmark Revenue +  
(Soy Acres/Total Acres) x Soy Benchmark Revenue
- Individual Guarantee = 86% of Farm Benchmark Revenue

# Agriculture Risk Coverage (ARC)

- Individual ARC Payment Rate = Farm Guarantee – Actual Farm Revenue, up to 10% of County Benchmark
- Individual ARC Payment = **65%** x Base Acres x Individual ARC Payment Rate
  - Maximum is 10% of County Benchmark
- Actual Revenue = (Corn Production x MYA Corn Price) + (Soy Production x MYA Soy Price) / Total Planted Acres
  - Use PLC Reference Price if higher than MYA Price
  - Use 70% County T Yield if higher than your Yield
- Almost no one signed up for ARC-IC for Corn & Soybeans for 2014 Farm Bill
- 2019 had greater ARC-IC signup due to extensive prevented plant and low farm yields expected for 2019 crops: Corn 5.9%, Soybean 6.2% of base acres

# 2017 Census of Agriculture: Wisconsin

64,793 Farmers in Wisconsin and 27,462 Received Government Payments (42%)

Farm Sales	% of Farms	% of Sales	% of Payments	Participation Rate
< \$5,000	37%	0.2%	6.5%	22%
\$5,000 to \$9,999	10%	0.3%	4.9%	30%
\$10,000 to \$24,999	12%	1.0%	7.8%	39%
\$25,000 to \$49,999	7.9%	1.5%	6.2%	48%
\$50,000 to \$99,999	8.7%	3.4%	8.2%	59%
\$100,000 to \$249,999	11%	10%	14%	67%
\$250,000 to \$499,999	6.7%	13%	13%	71%
\$500,000 to \$999,999	3.9%	15%	15%	80%
\$1,000,000 to \$2,499,999	2.3%	20%	14%	82%
\$2,500,000 to \$4,999,999	0.7%	13%	6.4%	81%
> \$5,000,000	0.4%	22%	4.3%	73%
<b>&lt;\$250,000</b>	<b>86%</b>	<b>16%</b>	<b>48%</b>	<b>37%</b>
<b>\$250,000 and above</b>	<b>14%</b>	<b>84%</b>	<b>52%</b>	<b>73%</b>

# Which Farms Receive Farm Bill Payments?

- These data include both ARC/PLC and other Farm Bill commodity support programs, as well as conservation programs
- Does not include crop insurance premium subsidies
- “Small” farms (less than \$250,000 in total sales)
  - Make up 86% of the farms, account for 16% of the sales, receive 48% of the payments, but only 37% participate
  - Remember, many of these farms are retired or have a different job besides farming, but some are “poor”
- Commercial farms (at least \$250,000 in total sales)
  - Make up 14% of the farms, account for 84% of the sales, receive 52% of the payments, but only 73% participate

# Summary of Farm Bill Crop Support Programs

- Learning Goal: To understand how specific commodity support programs operate for an individual farmer
- Part 1
  - Price Loss Coverage (PLC)
  - Agricultural Risk Coverage (ARC)
- Part 2
  - Marketing Assistance Loans (MAL)
  - Dairy Margin Coverage (DMC)
  - Briefly
    - Market Facilitation Program (MFP)
    - Coronavirus Food Assistance Program (CFAP, CFAP2)