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# Cornhusker Economics

## Farm Program Payments and Protection Under ARC and PLC

Market Report	Year Ago	4 Wks Ago	7/31/15
<b>Livestock and Products, Weekly Average</b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight. . . . .	163.42	153.30	148.00
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. . . . .	280.44	287.00	275.55
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. . . . .	249.41	*	224.88
Choice Boxed Beef, 600-750 lb. Carcass. . . . .	262.07	252.09	232.73
Western Corn Belt Base Hog Price Carcass, Negotiated. . . . .	NA	75.51	75.12
Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean. . . . .	128.29	80.87	85.67
Slaughter Lambs, woolled and shorn, 135-165 lb. National. . . . .	157.75	NA	156.44
National Carcass Lamb Cutout FOB. . . . .	364.44	360.80	352.47
<b>Crops, Daily Spot Prices</b>			
Wheat, No. 1, H.W. Imperial, bu. . . . .	5.61	5.42	4.35
Corn, No. 2, Yellow Nebraska City, bu. . . . .	3.36	3.98	3.48
Soybeans, No. 1, Yellow Nebraska City, bu. . . . .	11.84	10.18	9.50
Grain Sorghum, No.2, Yellow Dorchester, cwt. . . . .	5.86	7.93	6.18
Oats, No. 2, Heavy Minneapolis, Mn, bu. . . . .	3.75	2.85	2.72
<b>Feed</b>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. . . . .	212.00	*	195.00
Alfalfa, Large Rounds, Good Platte Valley, ton. . . . .	100.00	72.50	85.00
Grass Hay, Large Rounds, Good Nebraska, ton. . . . .	100.00	90.00	95.00
Dried Distillers Grains, 10% Moisture Nebraska Average. . . . .	108.00	126.75	135.00
Wet Distillers Grains, 65-70% Moisture Nebraska Average. . . . .	42.00	42.50	41.00
* No Market			

Earlier this year, Nebraska crop producers and local USDA Farm Service Agency (FSA) offices worked through countless meetings, visits, and analyses to make farm program enrollment decisions regarding base acreage, payment yields, and the election between Agriculture Risk Coverage at the county level (ARC-CO), Agriculture Risk Coverage at the individual level (ARC-IC), or Price Loss Coverage (PLC). The decisions involved deciphering a complex set of farm programs and related crop insurance choices and relied at least in part on producer perceptions of yield and price directions and volatility through the 2018 crop year.

### Farm Program Decisions

Enrollment results from USDA-FSA provide an interesting perspective on how producers made decisions under the new farm program. The first two decisions for producers were the choice of whether to keep or update their program payments yields and whether to keep or update the program base acreage.

The yield update decision seemed to be the most straightforward decision, since all producers would presumably benefit from updating payment yields that are used for calculating PLC payments. Even producers that chose ARC would benefit from updating payment yields that might affect farm program payments beyond 2018 when the PLC and ARC programs are set to expire. But, FSA enrollment data show that only about 43 percent of the crops yields on farms that enrolled in new farm programs were updated nationally. It is difficult to conclude that 57 percent of producers didn't make their best choice, so perhaps the data is greatly impacted by farms where yield histories or evidence was poor (and existing payment yields were the optimal choice) or by farms with minimal base acreage to the extent that changes in payment yields (and thus PLC payments) have negligible effects on the overall operation.

The base acreage update was more complex and could have involved a tradeoff between expected payments and risk protection. Some farms would have found obvious advan-

tages in updating base acres to increase expected program payments or better reflect their current crop mix and provide more effective risk protection for what they currently grow. However, other farms would have found their existing base acreage generated higher expected program payments than a new, reallocated base would have and may have chosen to forego the base acreage update. While data on specific farm decisions regarding base acreage aren't readily available, USDA-FSA data on base acres by state and by crop show that there were substantial base acreage updates effective for the 2014 crop year relative to the base that existed for the 2013 crop year.

Table 1 summarizes the enrolled base acreage numbers for the primary program crops in Nebraska (by base acreage). The data show a sizable shift of base acreage toward corn and soybeans and away from grain sorghum and wheat and also smaller grains like oats and barley. This is consistent with a large number of producers choosing to update base acreage and establish a program base tied to their crop acreage mix from 2009-2012 as opposed to keeping an existing base that had been fixed since at least 2002 and for some, since 1985.

Table 1. Primary Grain and Oilseed Program Crops and Base Acreage in Nebraska

Program Crop	Enrolled Base Acreage		
	2013	2014	Change
Barley	72,860	16,661	-56,198
Corn	9,360,900	10,579,073	1,218,173
Grain Sorghum	1,427,332	518,540	-908,791
Oats	156,714	75,547	-81,167
Soybeans	2,523,303	3,112,125	588,822
Sunflowers	38,755	39,589	834
Wheat	2,451,162	1,878,792	-572,370

Source: USDA Farm Service Agency

Table 2 summarizes the percentage of base acreage enrolled in each program by crop for the primary program crops in Nebraska. For all of the discussion and analysis of the economics of choosing between ARC vs. PLC, it seems the final decision strongly favored ARC-CO. Corn and soybean producers chose enrollment in ARC-CO on more than 90 percent of FSA farms in Nebraska. While that was expected for soybeans, given market price projections for 2014-2018 that were well above the level of support provided by the PLC program, it was less certain for corn. By the time enrollment decisions were finalized this spring, market prices had dropped to levels where PLC payments would have been triggered on the 2014 crop, increasing both the expected payments and the downside price risk protection provided by PLC through 2018. But, the same drop in market prices also meant that ARC payments were projected to be larger for the 2014 and 2015 crops before the ARC guarantees would decline and potential payments would shrink in later years through 2018. While producers may have favored the moving-average revenue protection of ARC relative to the fixed-price protection of PLC, the results suggest producers may have ultimately weighed the expected payments across programs in the early years among the most important factors in making a decision.

Table 2. Percentage of Base Acreage Enrolled in PLC, ARC-CO, and ARC-IC by Primary Grain and Oilseed Program Crop in Nebraska

Program Crop	PLC	ARC-CO	ARC-IC
Barley	72%	28%	0%
Corn	4	96	0
Grain Sorghum	43	57	0
Oats	20	79	0
Soybeans	2	97	1
Sunflowers	65	34	1
Wheat	55	44	1

Source: USDA Farm Service Agency

Grain sorghum, wheat, and barley much more strongly favored PLC, as would have been predicted by the greater PLC reference prices for those commodities relative to market price projections than with corn and soybeans. But, even for these crops, the enrollment in PLC was less than may have been expected, suggesting many of the decisions for ARC-CO in corn and soybeans carried over to other crops on the same farms regardless of the specific analysis for each crop.

Nationally, the sign-up for these crops looked similar to Nebraska, except for grain sorghum, where the national sign-up (influenced by Southern Plains grain sorghum producers) slightly favored PLC over ARC-CO. PLC overwhelmed ARC-CO primarily for rice and peanuts as was expected given the strong reference prices established for each of those crops in the PLC program relative to their market price projections. The other overwhelming result nationwide was the relative lack of enrollment in ARC-IC. While ARC-IC was promoted largely by groups in the Northern Plains as a more effective alternative than ARC-CO for producers in large, variable counties (particularly in Montana), enrollment in ARC-IC was primarily limited to a small group of Northern Plains crops (chickpeas, dry peas, lentils, and mustard), but even then was limited to about 10 percent or less of base acreage of those crops.

### Projected Farm Program Payments

Now that the enrollment decisions are complete, the attention on farm programs is focused on expected payments each year. The ARC program incorporates both national price and county or individual farm yield results from each crop year into the calculation of payments while the PLC program incorporates national price results. Any payments are due to producers in October of the year following harvest after the marketing year is finally complete. Thus, program payments for the 2014 crop year will be paid to producers in October 2015. While those payments are still about two months away, the projected payments can be calculated from currently available data and can be used to estimate potential impacts on cash flow for producers this fall.

PLC payments can be projected directly from current estimates of the 2014 crop marketing year national average market price. That price can be inferred from monthly supply and demand estimates published by USDA that include a projected price range for the national marketing year average

price. While the price range initially starts out quite wide, as the marketing year progresses, the range narrows as some of the year's production has already been marketed and as projections for prices over the rest of the marketing year become more confident. Using the midpoint of the price ranges published in USDA's July supply and demand reports and the corresponding data published by USDA-FSA, one can compare market price projections with PLC reference prices to see if any PLC payments will be made for the 2014 crop. Table 3 shows the calculations for the same primary Nebraska program crops as in previous tables and shows a \$0.00 projected payment rate for all listed crops under the PLC program.

Table 3. Projected 2014 PLC Payment Rates by Primary Grain and Oilseed Crop in Nebraska

Program Crop	Reference Price	Projected Marketing Year Average Price	Projected PLC Payment Rate
Barley (\$/bu)	4\$.95	\$5.30	\$0
Corn (\$/bu)	3.70	3.70	0
Grain Sorghum (\$/bu)	3.95	4.00	0
Oats (\$/bu)	2.40	3.21	0
Soybeans (\$/bus)	8.40	10.05	0
Sunflowers (\$/lb)	0.2015	0.2150	0
Wheat (\$/bu)	5.50	5.99	0

Source: USDA-WAOB and USDA-FSA, updated July 10, 2015

Only peanuts, long grain rice, and canola are currently projected to qualify for PLC payments nationally on the 2014 crop (consistent with the higher sign-up for PLC for these commodities). However, corn and grain sorghum are right on the cusp of potential PLC payments based on price projections from the July USDA supply and demand estimates. Within a week, the August supply and demand estimates will be published, and any changes in the final projected prices for the 2014 crop year could affect potential PLC payment rates.

While PLC payments seem to be off the table for Nebraska for the 2014 crop, there are projected to be substantial ARC-CO payments in Nebraska. Unlike PLC payments that are tied to a fixed reference price set in legislation, ARC-CO (and ARC-IC) payments are tied to price and yield results for the crop year compared to the five-year Olympic average price and yield for those crops by county and by practice for those crops where an irrigated and nonirrigated yield are calculated separately.

ARC-CO payments can be estimated from the same national marketing year average prices as used with PLC and from crop yields published by the USDA National Agricultural Statistics Service (NASS). The published yields from USDA-NASS are not the actual yields used by USDA-FSA in ARC-CO calculations as USDA-FSA must adjust these yields per harvested acre to account for planted and failed acreage and calculate an official yield per planted acre. But, the published USDA-NASS yields do provide an objective, conservative estimate of projected ARC-CO payments,

given that any yield adjustments would be down and resulting payments would be higher. One major limitation in estimating ARC-CO payments is the lack of published yield data from USDA-NASS for some counties, crops, and practices that are relevant to ARC-CO coverage. USDA-FSA will eventually publish the data that goes into its calculations of payments due in October, but for now, some county-crop-practice data is missing, limiting the availability of payment estimates.

Figures 1-8 show projected ARC-CO payments by county, crop, and practice where available. Figures 1-3 show projected ARC-CO payments for corn in counties with single combined yields or by practice in counties with separate irrigated and non-irrigated yields. Figures 5-7 similarly show projected ARC-CO payments for soybeans. Figure 4 shows the data for combined grain sorghum counties and Figure 8 shows the data for combined wheat counties. All of the graphs show a wide range of projected ARC-CO payments across counties for the 2014 crop, from \$0.00 per base acre to more than \$80.00 per base acre for several county-crop-practice combinations. Limited data on oats and on wheat by irrigated and non-irrigated practice is also available, but projected ARC-CO payments were \$0.00/base acre for all of the available county-crop-practice combinations and were not shown on a map.

Analyzing these projected payments and the variance across counties provides an important lesson in farm program payments and protection. Using corn as an example, the projected 2014 national marketing year average price of \$3.70/bushel is 30% below the 5-year Olympic average national price for the 2009-2013 crop marketing years of \$5.29/bushel. Given the ARC-CO guarantee based on the 5-year Olympic average national price multiplied by the 5-year Olympic average county yield multiplied by 90%, the large drop in market prices for the 2014 crop year would result in large ARC-CO payments if yields came in at average. It took substantially higher-than-average yields in 2014 to offset the price decline to the extent that potential ARC-CO payments disappeared. Or, if the 5-year Olympic average yield was artificially low due to multiple bad yield results in the 2009-2013 period, it would be possible for more average yields in 2014 to outperform the average enough to reduce or even eliminate potential ARC-CO payments. It appears all of those possibilities have contributed to the range of projected ARC-CO payments across counties, crops, and practices in Nebraska for 2014. ARC-CO payments for corn in Holt County are projected at \$81.07/base acre, but across the county line are projected at only \$8.87/base acre in Wheeler County. But, the Wheeler County corn yield estimate of 197.6 bushels/acre in 2014 was 21% above its 5-year Olympic average of 163 bushels/acre while the estimated Holt County corn yield of 169.6 bushels/acre in 2014 was 6% below its 5-year Olympic average of 180.3 bushels/acre.

Clay and Fillmore County corn provide an example of the impact of the yield history over 2009-2013. Clay County had two years of corn yields substantially below average (2012 and 2013) while Fillmore County had one year substantially below average (2012). The Olympic average excludes the high and low years in the calculation, meaning the Fillmore County guarantee could exclude the poor year, but Clay County had to count one of the poor years. As a result, the Clay County Olympic average of 174.3 bushels/acre was likely lower relative to yield expectations than the Fillmore County Olympic average of 183.7 bushels/acre. With both counties yielding close to 200 bushels/acre in 2014, Clay County outperformed its guarantee more than did Fillmore County and the resulting projected ARC-CO payments are \$35.58/base acre for Clay County versus \$82.60/base acre for Fillmore County.

Not all counties, crops, and practices as defined for ARC-CO coverage have published yield estimates available from USDA-NASS, thus the projections are not complete, but are the best available at present time. A full table of all counties, crops, and practices under the ARC-CO program in Nebraska is posted online along with these graphs at the <http://farmbill.unl.edu> website. Projections for counties with missing yield data will be added as it is released from USDA-FSA.

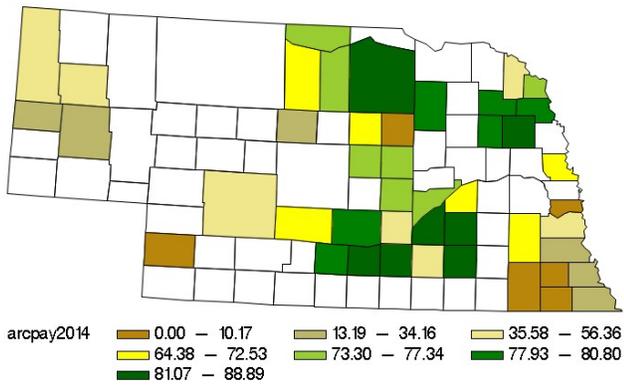
### **Summary**

With lower crop prices and lower farm income projections, cash flow is an important consideration for producers in 2015. Farm program payments on the 2014 crop that are due in October 2015 are projected to contribute significantly to cash flow this fall. But, those projected payments will vary significantly by program, county, crop, and practice.

None of the primary grain and oilseed crops in Nebraska are projected to qualify for 2014 PLC payments. In contrast, ARC-CO may provide 2014 payments in the hundreds of millions of dollars based on current projections, but those payments will vary substantially by county, crop, and practice. No projections have been developed for ARC-IC. While the same price declines that have led to projected ARC-CO payments could also lead to potential ARC-IC payments, the complexity and uniqueness of farm-level revenue guarantees yield results make state-level projections impossible to calculate. Additionally, given the minimal enrollment in ARC-IC, total potential payments in Nebraska under ARC-IC will be a fraction of whatever payments are received through ARC-CO.

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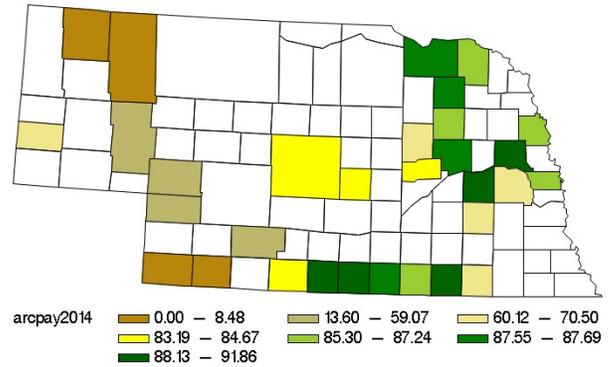
Estimated 2014 ARC-CO Payments per Base Acre  
Croptype= Corn All



\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 1. Corn All

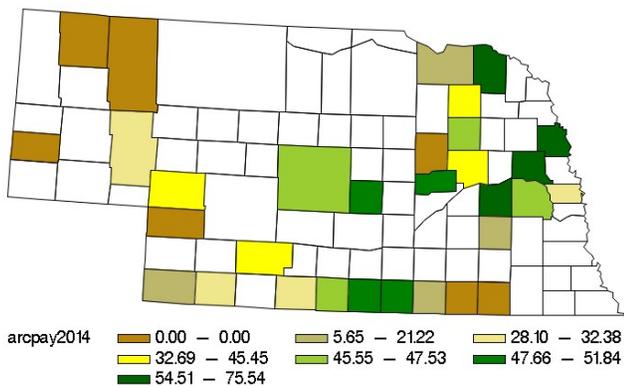
Estimated 2014 ARC-CO Payments per Base Acre  
Croptype= Corn Irrigated



\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 2. Corn Irrigated

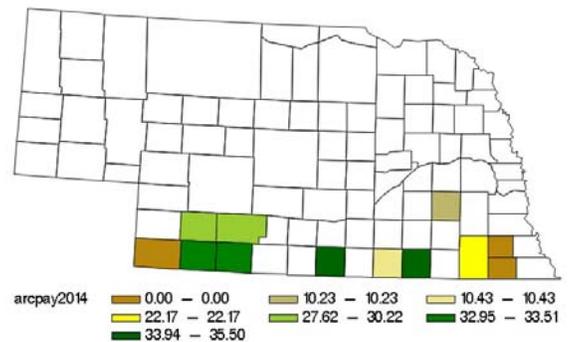
Estimated 2014 ARC-CO Payments per Base Acre  
Croptype= Corn Nonirrigated



\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

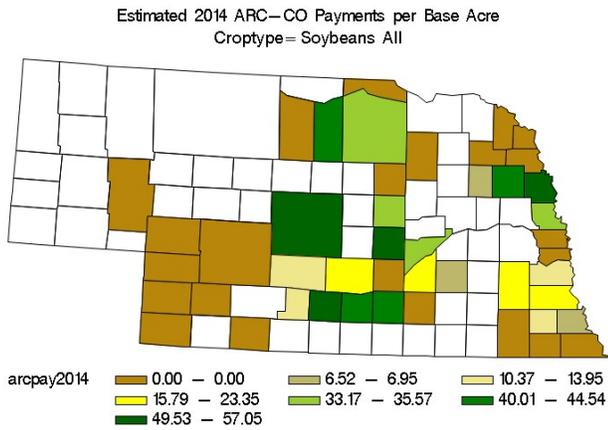
Figure 3. Corn Nonirrigated

Estimated 2014 ARC-CO Payments per Base Acre  
Croptype= Grain Sorghum All



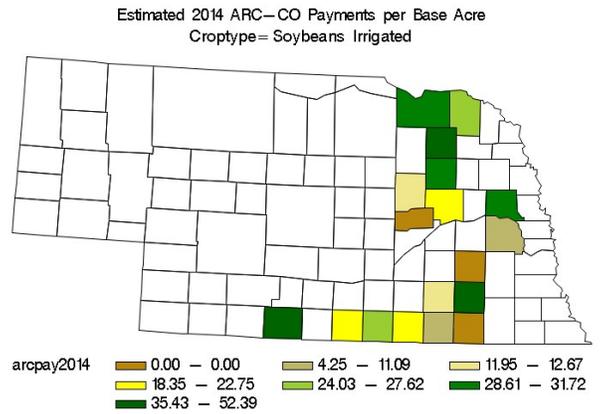
\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 4. Grain Sorghum All



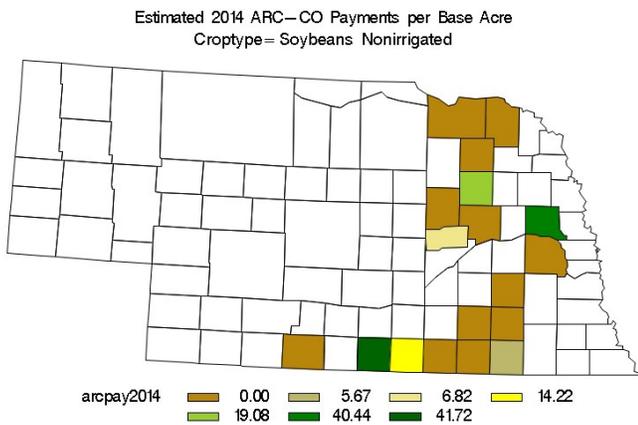
\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 5. Soybean All



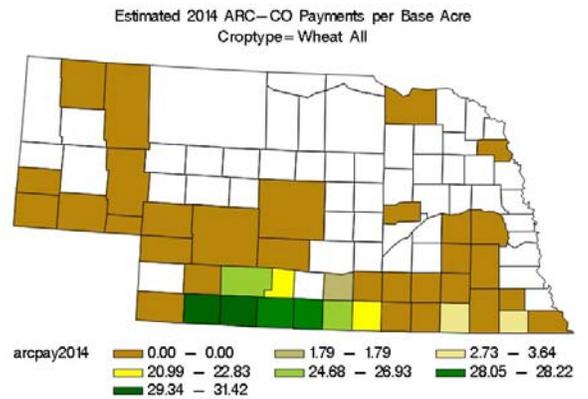
\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 6. Soybeans Irrigated



\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 7. Soybeans Nonirrigated



\* Projected from USDA-NASS harvested yield estimates and USDA-WAOB/USDA-FSA price projections as of July 27, 2015

Figure 8. Wheat All