



## Consider Using ARP for Soybeans

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This year, downside price risk on soybeans is a larger concern than usual. For those farmers who are particularly concerned about downside price risk, Area Risk Protection (ARP) at the 90% coverage level may be a good alternative. For most farmers, this would result in a shift from Revenue Protection (RP) to ARP. Using ARP allows moving to a higher coverage level than RP. However, ARP uses county yields in its indemnification process rather than farm yields.

### Example for Warren County, Illinois

For soybeans, most farmers are purchasing Revenue Protection (RP) at relatively high coverage levels. To illustrate, Figure 1 shows 2016 crop insurance use for Warren County, Illinois. Warren County is in west central Illinois and is a high producing county. As can be seen in Figure 1, RP was used on 86.4% of the insured acres in 2016, with 11.0% insured at the 75% coverage level, 32.5% at the 80% coverage level, and 36.8% at the 85% coverage level. Figure 1 can be produced for other counties and crops in the "Product Use" section of the [2017 Crop Insurance Decision Tool](#). Doing so for other counties in northern and central Illinois will show similar usage to Warren County.

Few payments have been received on RP policies in the past ten years, as can be seen in the "Product Performance" section of the [2017 Crop Insurance Decision Tool](#), which presents historical loss data from the Risk Management Agency (RMA). From 2005 to 2015, the loss ratio on RP policies for soybeans in Warren County averaged .18. A loss ratio equals insurance payments divided by total premium. The .18 value over the 2005-2015 period means that payments equaled .18 of the total premium. Loss ratios did not vary much with coverage level: .17 for RP 75%, .16 for RP at the 80% coverage level, and .27 for RP at the 85% coverage level. These are relatively low loss ratios indicating that farmers have received few crop insurance payments from soybean policies since 2005.

### Consider Purchasing ARP

ARP is the county alternative to RP. Rather than using farm yields, ARP uses county yields in its calculations of guarantees and payments. ARP's highest coverage level is 90% compared to 85% for RP. Use of a 90% coverage level offers the ability to increase the guarantee, thereby obtaining additional protection against low prices. Obtaining additional protection seems prudent in 2017 as risks of downward movements in soybeans seem more of a concern than in a typical year (see [farmdoc daily, January 23, 2017](#)).

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**Figure 1. 2016 Crop Insurance Use for Soybeans in Warren County, Illinois**

Coverage Level	Insurance Plan <sup>1</sup>					
	RP	RPwHPE	YP	ARP	ARPwHPE	AYP
50%	2.3%	0.1%	2.0%			
55%	0.0%	0.0%	0.0%			
60%	1.1%	0.0%	0.2%			
65%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%
70%	2.5%	0.0%	2.2%	0.0%	0.0%	0.0%
75%	11.0%	0.3%	0.8%	0.0%	0.0%	0.0%
80%	32.5%	1.5%	0.1%	0.0%	0.0%	0.0%
85%	36.8%	0.7%	0.8%	0.0%	0.0%	0.0%
90%				2.7%	0.0%	2.2%
<b>Total</b>	<b>86.4%</b>	<b>2.5%</b>	<b>6.2%</b>	<b>2.7%</b>	<b>0.0%</b>	<b>2.2%</b>

<sup>1</sup> Product names are Revenue Protection (RP), RP with harvest Price Exclusion (RPwHPE), Yield Protection (YP), Area Risk Protection (ARP), ARP with harvest price exclusion (ARPwHPE), Area Yield Protection). The above COMBO products did not exist prior to 2010. Actual Production History policies are categorized as YP, Crop Revenue Coverage and Revenue Assurance policies as RP, Income Protection policies as RPwHPE. The above APRI products did not exist prior to 2013. Group Risk Plan policies are categorized as AYP and Group Risk Income Plan as ARP.



Settlement prices during the month of February of the November CME contract will be used to set the projected price. Chicago Mercantile Exchange (CME) soybean contract for November 2017 delivery currently is trading around \$10.20 per bushel. A \$10.20 per bushel projected price would be \$1.35 higher than last year's projected price of \$8.85 per bushel. In and of itself, a higher projected price will offer additional revenue protection on soybeans.

Moving up to a 90% coverage level increases the price below which crop insurance payments occur. Given a \$10.20 projected price and a 90% coverage level, harvest prices below \$9.18 ( $\$10.20 \times .90$ ) would generate payments, given that the harvest yield equals the guarantee yield. The \$9.18 price compares to an \$8.67 break-even price at an 85% coverage level, and an \$8.16 break-even at an 80% coverage level.

Many farmers in Warren County can purchase ARP at 90% coverage levels for less than RP at an 85% coverage level. Figure 2 shows 2017 quotes for RP and ARP. The 85% RP policy at the enterprise level has a farmer-paid premium of \$13.04 per acre. ARP's premiums at the 90% coverage level range from \$12.37 for the 80% protection level to \$18.56 for the 120% protection level.

Farmers can select the protection level from the range between 80% and 120%, with premium increasing with higher protection levels. When insurance payments occur, they will be higher with higher protection levels. At a 57.5 bushel per acre harvest yield and an \$8.80 harvest price, a payment of \$24 per acre is received for an 80% protection level and a \$36 per acre payment is received at a 120% protection level (see Table 1).

**Figure 2. Farmer-Paid Premiums for Warren County, Illinois,  
2017 Quotes for Revenue Protection (RP) and Area Revenue Protection\***

Coverage Level	Revenue Protection			Minimum Revenue Guarantee	Coverage Level	Area Revenue Protection			Minimum Revenue Guarantee
	Enterprise	Basic	Optional			Protection Factor			
	\$ per Acre			\$/acre		120%	95%	80%	
50%	0.24	0.40	0.61	296					
55%	0.38	0.68	0.99	325					
60%	0.62	1.12	1.54	355					
65%	1.14	2.34	3.01	385					
70%	1.77	3.62	4.39	414					
75%	2.99	5.84	6.72	444	70%	2.14	1.69	1.43	411
80%	5.97	9.71	10.73	473	75%	3.39	2.68	2.26	440
85%	13.04	17.21	18.17	503	80%	5.48	4.34	3.65	469
					85%	11.31	8.95	7.54	499
					90%	18.56	14.69	12.37	528
					Parameters Exp. Yield: 57.5 Proj Price: \$10.20				

\*Quotes are for a 55 bushel per acre APH yield and a 58.0 bushel per acre Trend-Adjusted APH yield. The projected price is \$10.20 per bushel and the volatility is .17. These parameters will change as the projected price and volatility determination periods have not begun. Quotes are generated by the 2017 Crop Insurance Decision Tool.



**Table 1. 2017 ARP payments for a Warren County, Illinois Soybean Policy<sup>1</sup>**

Harvest Price	County yield = 57.5		County yield = 60.0	
	Protection Level		Protection Level	
	80%	120%	80%	120%
	\$/acre	\$/acre	\$/acre	\$/acre
\$8.40	50	75	20	40
\$8.60	37	55	13	20
\$8.80	24	36	0	0
\$9.00	12	17	0	0

<sup>1</sup> Payments are given for a 57.5 bushel expected yield and a \$10.20 projected price. The projected price for 2017 has not been set and can vary from \$10.20.

Harvested yield also has an impact on payments, as is illustrated in Table 1. The final two columns are given for a 60 bushel per acre county yield, which is one bushel lower than the 2015 yield. At a 60 bushel per acre county yield, payments do not occur at the \$8.80 and higher harvest prices (see Table 1).

**Caveats**

Other factors to consider if switching to ARP include:

- ARP does not have prevented planting or replant payments while RP does. The coverage on ARP begins when the crop is planted.
- Because ARP used county yields in its calculations, a farm may not receive a payment if the farm has a poor yield and the county does not.

- Like RP, ARP has made few payments in the last ten years. From 2005 to 2015, the loss ratio on ARP 90% in Warren County is .18 compared to .17 for RP. Given comparable loss history, moving to ARP should be viewed as increasing loss performance.
- The relative premiums on RP and ARP vary across counties. Not all counties will have a 90% ARP premium that is lower than the 85% RP policies.
- The quotes above are made using a .17 volatility. The 2017 volatility is not known yet and has a large influence on premiums. As volatilities increase, ARP tends to cost more relative to RP. Premium comparisons will be influenced by the 2017 volatility, which will be known at the end of February.

### **Summary**

ARP may be an attractive alternative to RP this year for some farmers who are concerned with downside price moments on soybeans. Switching to ARP offers a higher coverage level. To obtain this higher coverage level, farmers will need to give up farm-level coverage.

### **Reference**

Hubbs, T. "[Weekly Outlook: Is it Time to Sell Some 2017 Soybeans?](#)" *farmdoc daily* (7):11, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 23, 2017.