Area Risk Protection Insurance (ARPI)

Department of Agricultural Economics — *www.agmanager.info*

K-STATE Research and Extension

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Area Risk Protection Insurance (ARPI), which includes Area Revenue Protection (ARP), Area Revenue Protection with Harvest Price Exclusion (ARP-HPE) and Area Yield Protection (AYP), is available for wheat and grain sorghum in a limited number of Kansas counties.

The simplest description of AYP is that it is a "put option" on expected county yield. The ARP-HPE contract is a "put option" on expected county revenue. Like a price option, the grower carries the basis risk, which is the difference between the percent county yield loss and the percent farm level yield loss. Producers may reduce their basis risk by purchasing a lower deductible under ARPI and more dollars of protection to offset an expected lower variability in county yields.

ARPI provides "reasonable" protection for drought, freeze, and excess moisture. However, ARPI does not provide reasonable protection for hail, flood, prevented planting, replant, quality loss adjustment, or any other spot losses. Growers who purchase ARPI also may supplement their coverage with private hail insurance. Growers who purchase ARPI because of multiple disasters that have lowered their APH guarantees will need to maintain their production history so they have the option to switch back to an APH based contract.

Coverage: Coverage is set 70, 75, 80, 85, or 90 percent and 65 percent CAT (AYP only) of the expected county yield as set by RMA. The individual grower's yield history has no impact on the coverage or indemnity payments. Indemnity payments are based on National Agricultural Statistical Service (NASS) county yields, APH crop insurance dates, and other data sources. The grower's individual yield is not considered in the loss calculation.

Dollars of coverage: RMA sets the maximum dollars of coverage that may be purchased based on expected county yields times 120 percent times RMA's new common price that is based on futures markets' prices. The minimum coverage a grower may purchase is 60 percent of the maximum.

Premium rates and subsidy: The premium rates are based on historical county yields and futures prices. The subsidy rates are set at a higher level than Yield Protection, i.e. 85 percent ARPI coverage premium has a 49 percent subsidy.

Table 1. *Example AYP Calculations*	
Trigger Yield	Expected County Yield (49.1 bu.) × % Coverage (90%) = 44.2 bu.
Maximum Protection	GRP Price Election ($7.02) × Expected Yield (49.1 bu.) × 120% scalar = $413.62
GRP Indemnity	(Trigger Yield (44.2 bu.) - Current Year County Yield (24.0 bu.) ÷ Trigger Yield [(44.2 bu.) - (0.18 Loss Limiting Factor × Expected County Yield (49.1 bu.))] = 57.1% × selected $ protection ($413.62) = $236.18

Table 2. *Example ARP-HPE Calculations*	
Expected County Revenue	Expected County Yield (49.1 bu.) × Base Price ($7.02) = $344.68
Trigger Revenue	Expected County Revenue ($344.68) × Coverage (90%) = $310.21
Maximum Protection	Expected County Revenue ($344.68) × Scalar (120%) = $413.62
ARP-HPE Payment	(Trigger Revenue ($310.21) – Current Year County Revenue (24 bu. × $5.00 Harvest Price) ÷ [Trigger Revenue ($310.21) - (0.18 Loss Limiting Factor × Expected County Yield (49.1 bu.) × Base Price ($7.02))] = 76.6% × selected $ protection ($413.62) = $316.83

Table 3. *Example ARP Calculations*	
Expected County Revenue	Expected County Yield (49.1 bu.) × Max (Base Price ($7.02), Harvest Price ($10.00)) = $491.00
Trigger Revenue	Expected County Yield ($491.00) × Coverage (90%) = $441.90
Maximum Protection	Expected County Revenue ($441.90) × Scalar (120%) = $589.20
ARP Payment	(Trigger Revenue ($441.90) – Current Year County Revenue (24 bu. × $10.00 Harvest Price) ÷ [Trigger Revenue ($441.90) - (0.18 Loss Limiting Factor × Expected County Yield (49.1 bu.) × Max (Base Price ($7.02), Harvest Price ($10.00))] = 57.1% × selected $ protection ($589.20) = $336.43

Area Risk Protection Insurance (ARPI); includes Area Revenue Protection (ARP), Area Revenue Protection with Harvest Price Exclusion (ARP-HPE) and Area Yield Protection (AYP)
Analysis of Per Acre Net Cash Flow

Crop: _____

Situation: _____

Insurance Contract (Central Kansas Wheat)	AYP	AYP	ARP-HPE	ARP-HPE	ARP	ARP	Your	Your
Harvest Price Scenario	Low Price	High Price	Low Price	High Price	Low Price	High Price	Farm	Farm
Projected Crop Sales and Other Cash Inflows								
1. Enter Yield per Planted Acre	10.0	10.0	10.0	10.0	10.0	10.0	_____	_____
2. Expected Market Price + LDP	$7.02	$7.02	$7.02	$7.02	$7.02	$7.02	$_____	$_____
3. Expected Sales: (Line 1 × Line 2)	$70.20	$70.20	$70.20	$70.20	$70.20	$70.20	$_____	$_____
4. Counter Cyclical or ACRE Payment	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$_____	$_____
5. Direct FSA Payment & Other Receipts, No LDP[1]	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$_____	$_____
6. Total Receipts: (Line 3 + Line 4 + Line 5)	$70.20	$70.20	$70.20	$70.20	$70.20	$70.20	$_____	$_____
Maximum $ of Coverage & Premium								
7. Expected County Yield	49.1	49.1	49.1	49.1	49.1	49.1	_____	_____
8. 120% Coverage Scalar	120%	120%	120%	120%	120%	120%	_____%	_____%
9. Price Election/Expected Price[2]	$7.02	$7.02	$7.02	$7.02	$7.02	$7.02	$_____	$_____
10. Maximum Dollars of Coverage (Line 7 × Line 8 × Line 9)	$413.62	$413.62	$413.62	$413.62	$413.62	$589.20	$_____	$_____
11. Farmer Premium Rate[3]	2.10%	2.10%	4.44%	4.44%	5.53%	3.88%	$_____	$_____
12. Premium (Farmer Paid)[3]	$8.69	$8.69	$18.37	$18.37	$22.86	$22.86	$_____	$_____
Projected Crop Cash Requirements								
13. Enter Preharvest Cash Operating Expense[4]	$104.54	$104.54	$104.54	$104.54	$104.54	$104.54	$_____	$_____
14. Enter Harvest Cash Expense per Acre	$22.27	$22.27	$22.27	$22.27	$22.27	$22.27	$_____	$_____
15. Enter Expenses/Bushel ($0.26 × Line 1)[5]	$2.60	$2.60	$2.60	$2.60	$2.60	$2.60	$_____	$_____
16. Debt Service, Other Fixed Cash, Needs Family Living[6,7]	$156.35	$156.35	$156.35	$156.35	$156.35	$156.35	$_____	$_____
17. Total Cash Requirements: (Sum Line 13 to Line 16)	$285.76	$285.76	$285.76	$285.76	$285.76	$285.76	$_____	$_____
Indemnity Payment & Premium								
18. Current County NASS Yield reported after harvest	24	24	24	24	24	24	_____	_____
19. Coverage Level (70% 75% 80% 85% 95%)	90%	90%	90%	90%	90%	90%	_____%	_____%
20. Harvest Market Price			$5.00	$10.00	$5.00	$10.00	$_____	$_____
21. Trigger Yield; Rev. (Line 7 × Line 19); × Line 9; × Max (Line 9,20)	44.2	44.2	$310.21	$310.21	$310.21	$441.90	$_____	$_____
22. % Co. Yield Loss (Line 21 - Line 18) ÷ Line 21 - Line 7 × .018	57.1%	57.1%					_____%	_____%
23. % Co. Revenue Loss (Line 21 - (Line 18 × Line 20)) ÷ Line 21- [(.018 × Line 7 × Line 9); or (.018 × Line 7 × Max (Line 9, Line 20)			76.6%	28.3%	76.6%	57.1%	_____%	_____%
24. Indemnity per Acre (Line 10 × Line 22, Line 23 × Line 24)	$236.18	$236.18	$316.83	$117.05	$316.83	$336.43	$_____	$_____
25. Net Insurance Indemnity Received: (Line 25 – Line 12)	$227.49	$227.49	$298.46	$98.68	$293.97	$313.57	$_____	$_____
26. Net Cash Flow: (Line 6 – Line 17 + Line 26)[8]	$11.93	$11.93	$82.90	-$116.88	$78.41	$98.01	$_____	$_____

[1] Direct payments are expected to be eliminated and the replacement program is unknown at the date of this writing.

[2] All crop insurance policies have the same Price Elections.

[3] Premium rates for a specific farm and proven yield can be obtained from insurance agents.

[4] Obtain crop expense estimates from your records or KSU Farm Management Association Summary. Use only cash expenses because this is a cash flow analysis.

[5] With a low yield, some cash expenses per acre decline, such as trucking and storage.

[6] Debt load, off farm income and/or livestock enterprises will affect cash requirements.

[7] Assumes $68,256 for family living cost and 1,800 acres of crop land (Source: KSU Farm Management Association Summary).

[8] Net cash flow was used for the analysis because normally a farm will not be profitable when a crop disaster occurs. The farmer's short-term strategy is to cover cash flow requirements.

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