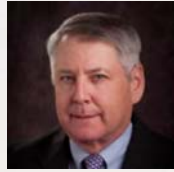


## Splitting Crop Insurance Payments by Yield and Price Loss



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Art was raised on a diversified farm, located in Elk County, Kansas. Art received his Ph.D. in Agricultural Economics from Texas A&M University. Art joined the Kansas State University Ag. Economics faculty in 1979 and recently retired with the rank of professor. Art continues to conduct national and international education programs on market risk, USDA commodity programs, crop insurance and public policy. His research work with the private sector was the basis for the first revenue insurance contract. He has won several National awards including the National Association of Public & LG Universities Excellence in Extension Award; that included a \$5,000 honorarium. Art was named on the Top Producer Editors' list of "Brave Thinkers and 1 of "7 Economists, Bankers Who Challenged the Status Quo". In "retirement", Art enjoys managing price & yield risk for his small farm. While missing his dear wife, Nancy, Art enjoys time with his 5 granddaughters. Art is the owner of 4B Agricultural Consultants, LLC, and he continues to provide educational speeches-seminars and other services.

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## Yield Protection Provided by Crop Insurance

1. YP "Yield" insurance = (% coverage X APH) - production  
= indemnified bu. X projected price.

s.t indemnified bushels greater than zero

## Yield Protection Provided by Crop Insurance

1. **YP** "Yield" insurance = (% coverage X APH) - production = indemnified bu. X **projected price**.

s.t indemnified bushels greater than zero

2. **RP** Yield Replacement insurance = (% coverage X APH) - production = indemnified bu. X **harvest price**.

s.t. indemnified bushels greater than zero

## Price Increase from \$4 to \$5

### Example Guarantee

80% Coverage X 200 bushel APH = 160 bu.  
Guarantee - 100 bu. Production = 60 bushel  
indemnified.

1. **YP** pays 60 bushel indemnified @ \$4 = \$240.
2. **RP** Yield replacement pays 60 bushel indemnified @ \$5.00 = \$300.

s.t. indemnified bushels greater than zero and Harvest Price is less than 2 times projected price

## Price Decrease from \$4 to \$3

### Example Guarantee

80% Coverage X 200 bushel APH = 160 bu.  
Guarantee - 100 bu. Production = 60 bushel indemnified.

1. YP pays 60 bushel indemnified @ \$4 = \$240.
2. RP Yield replacement pays 60 bushel indemnified @ \$3.00 = \$180.
3. Plus \$1.00 price loss.

## Price Decrease from \$4 to \$3 (Continued)

### Example Guarantee

80% Coverage X 200 bushel APH = 160 bu.  
Guarantee - 100 bu. Production = 60 bushel indemnified.

4. Plus price loss = \$4 - \$3 = \$1 X guaranteed 160 bu. = \$160 price loss
5. RP yield loss payment = \$180 + price loss payment \$160 - \$0 Excess Yield = \$340 total RP payment

## Price Decrease from \$4 to \$3 & No Yield Loss

### Example Guarantee

80% Coverage X 200 bushel APH = 160 bu. Guarantee - 200 bu.  
Production = 40 bushel over guaranteed bushels.

1. No yield loss if production exceeds bu. guarantee
2. Plus price loss =  $\$4 - \$3 = \$1 \times$  guaranteed 160 bu. = \$160 price loss
3. Plus Excess Yield = (160 bu. guaranteed - 200 bu.) = -40 bu. X \$3 HP = -\$120 (only negative values included)
4. RP payment =  $\text{Max}\{\$0 \text{ yield loss} + \$160 \text{ price loss} + (-\$120 \text{ excess yield}), 0\} = \$40$
5. 214 bu. Crop will eliminate RP price loss payment.

## Summary

1. A corn farmer with an average crop, \$4 projected price, and 80% coverage will need a harvest price below \$3.20 (80 cent price decline) to trigger 1 penny in RP price loss payments. ( $80\% \times \$4$ )
2. RMA measures crop yield losses and price loss in dollars making the math easier to understand vs. splitting the payment between yield losses and price loss.
3. Splitting indemnity payments by cause of loss, allows one to evaluate RP payments for price loss requiring farmers to cover remaining price risk.
4. Cover the remaining price risk with FSA commodity programs, forward contracts, minimum price contracts, etc. Futures/options requires cash and some marketing skills.

## Summary (continued)

5. The indemnity payments in most cases requires a yield below the guaranteed bushels. Farmers will need to self insure the yield deductible.
6. RP does not over insure the crop. In most cases yields will need to be below the APH (average yield) to trigger indemnities, and then only if the price declines.
7. In a disaster year, the largest share of the indemnity payment will be caused by yield loss.
8. Yield adjusted Asian "put" in RP can take on negative values vs. market traded options. RP includes no call options.
9. Cheapest price protection with a good crop is the PLC in the commodity title ("free" put).

## Other Risk Considerations

1. Farmers who select ARC can't buy SCO. SCO covers all planted acres, but coverage is based on county yields, not farm level yields.
2. Buy additional private insurance coverage. However, most private coverages are tied to an area yield (county) rather than farm level yields.
3. The National Marketing Year Average (MYA) price is used to calculate PLC and ARC payments with payment limits.

## Other Risk Considerations (continued)

4. Does the MYA price reflect your farm's price? How is the MYA calculated?
5. Crop insurance prices assume a zero basis.
6. Futures prices determine insurance payments. Are futures efficient? Do futures meet the test of a free market? Do futures reflect your cash price?

**Thank You**

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