

## EXPANDED RISK MANAGEMENT CASE FARM WORKSHOP

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## EXPANDED RISK MANAGEMENT CASE FARM WORKSHOP

- **Participants make a decision on the type and level of crop insurance.**
- **Participants draw their yield from a hat at harvest time. Based on the yield they draw the computer draws the county yield for GRIP/GRP.**



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## **EXPANDED RISK MANAGEMENT CASE FARM WORKSHOP**

- **Computer drawn county yields are based on a farm yield-county yield correlation that is greater than 0.80.**
- **There is a 5% chance built in to the county yield draws that generate no GRIP/GRP payment. There is also a 5% chance that participants drawing an average farm yield will receive a “large” GRIP/GRP payment. Participants are told about this risk before they make their crop insurance decision.**



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## **EXPANDED RISK MANAGEMENT CASE FARM WORKSHOP**

- **Participants who draw a low farm yield caused by hail damage are assumed to be in a county with normal yields, i.e. no GRIP/GRP indemnity payments. However, participants are given the option to buy private hail insurance.**
- **All grain produced is sold at harvest. All options, futures, and forward cash contracts are settled at harvest.**
- **Net farm incomes are then compared across participants and the highest net income for each of 4 farm level yield draws are compared.**



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## EXPANDED RISK MANAGEMENT CASE FARM WORKSHOP

- **All farm market plans assume production.**
- **Requires bushels to offset hedge, forward contract, or on farm feeding.**
- **There is little risk protection in the FSA farm program with current higher market prices.**



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## Example Case Farm

### Summary

You are John or Mary Sample. With your spouse, you manage a crop farm with corn and other crop enterprises.

Presently the acreage is split between corn and other crops. However, your landlords are demanding a cash rent increase but you intend to retain those corn acres. There are several bank notes outstanding for land and machinery. You have budgeted out your corn and other crop operations and you expect to have sufficient income to cover production costs, scheduled principal and interest payments, and living expenses.

Your financial situation, however, is sensitive to changes in crop yields and market prices. So you are willing to consider some alternative pricing strategies to manage your price risk exposure. You are also considering the purchase of crop and/or hail insurance. You may purchase MPCI, CRC\RA-HPO, RAIP, GRP, GRIP-HRO or Catastrophic crop insurance. If you wish, you may add supplemental hail coverage to your crop insurance purchase.



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## Example Case Farm

Your assignment is to manage the production and marketing risk for the 2008 corn crop. Beginning in April 2008, you will have 4 opportunities to forward price any portion of your expected crop by forward cash contracts, hedging with futures, or by purchasing put options (a form of "price insurance"). The dates on which you may price the crop are April 8, June 12, July 12, and August 21. You may not sell more than 100,000 bushels of corn before harvest using any combination of the various marketing alternatives offered.

If you change your mind, you may buy back futures you sold and/or sell back any put options you purchased -- in effect "cancel" your "price" insurance. However, you may not cancel forward cash contracts. All corn sales will be completed before or by October 21, 2008 (harvest). Also at harvest, all forward contracts will be met even if you have to buy grain on the cash market and any futures contracts and/or put options will be offset.

If an LDP is available at harvest, you will be required to take it at that time. There will be no post-harvest storage or ownership and you will not be able to take any actions to "hedge" the counter-cyclical payment (CCP). All participants will receive the same direct payment and the same CCP if a CCP is paid during the 2008/09 marketing year.

You will not know what your "actual" yield will be until harvest. At that time you will "draw" one of four possible yields. If you suffer a crop loss it will be due either to "other causes" (insured under MPC1, CRC, RA, RA-HPO, GRP, GRIP-HRO or CAT) or to "hail". You will receive no GRP or GRIP-HRO payment if cause of loss is hail. The probability of suffering a crop loss will be provided at the time crop insurance is to be purchased (March 15, 2008).



## Example Case Farm

### COST/RETURNS OF Kansas Irrigated CORN ENTERPRISE

	Cost / Returns	
	Expected	
	\$/ Ac	\$/Farm
Planted Acres	1	625.0
A. Insurance Premium Costs	\$40	\$25,000
B. Other Pre-Harvest Variable Costs	\$209	\$130,431
C. Harvest, Storage & Trucking Cost ( $\$19.50/\text{ac} + \$0.326/\text{Bu} + \$0.13X$ over 100 Bu )	\$79	\$49,375
D. Fixed Costs	\$138	\$86,475
E. Total Costs per Planted Acre	\$466	\$291,281
F. Yield per Acre (bu. )	160.0	100,000
G. Variable Cost/Bu [A+B+C/F]	\$2.05	
H. Fixed Cost/Bu [D/F]	\$0.86	
I. Total Cost/Bu [E/F]	\$2.91	
J. Market Price/bu.	\$3.00	\$3.00
K. Market Income/Acre [J X F]	\$480	\$300,000
L. Net Returns/Ac [L-E]	\$14	\$8,719
Returns/Bu	\$0.09	
N. Direct Payment \$0.28 X 85% X 130 Bushel Program Yield	\$31	\$19,000
M. Counter Cyclical Payment Strike- Max (Market, Loan) X 85% X 150 Bushel Program Yield	\$0.00	\$0
O. Net Return Plus Gov Payment	\$45	\$28,056



## Example Case Farm

July 12, 2008

**MARKET INDICATORS:** The June 1 Stocks Report was 105 million bushels larger than industry expectations, indicating U.S. feed usage was lower than anticipated. The June Acreage Report indicated 1% (845 thousand ac.) more acres were planted to corn than reported by the March Planting Intentions Report and is a record for corn acreage. Ending stocks are projected at 1.334 billion bushels and suggests an 11.2% stocks to use ratio.

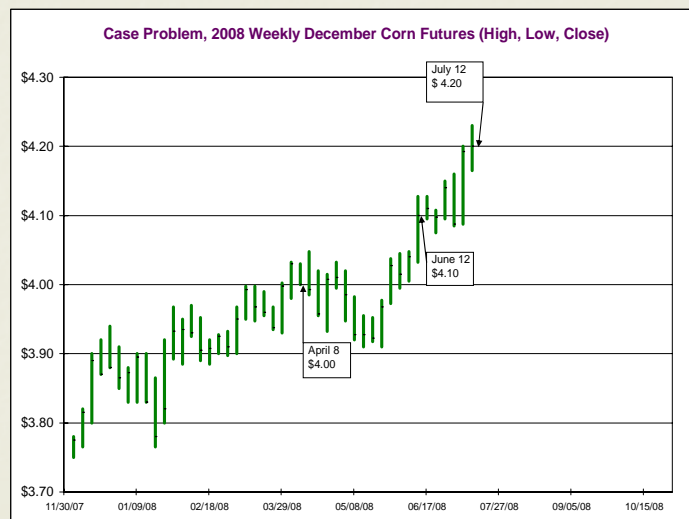
Central Illinois, just west of Chicago, is the center of a drought. It is not a record-breaking drought, but Central Illinois has been abnormally dry since March 1st. Tom Skilling on his WGN noon weather report forecasted no rain for the next 10 days. Following the broadcast, corn traded near the limit. At about 1:00 pm CST, a private weather forecaster, who consults with the grain industry, said there would be a chance for thunderstorms and slightly cooler temperatures later in the week. His weather models are forecasting a system to move into Illinois later in the week and stall over most of the Corn Belt and produce widespread beneficial rains, with locally damaging winds and hail. This forecast was enough to cause fund speculators to start liquidating their positions and taking their profits.

Campaigning for 2008 Presidency, Senator Hillary Clinton declared the drought-stricken Corn Belt region would receive federal disaster aid under her administration. The Bush administration countered that farmers should depend on crop insurance and there would be no disaster aid program and the Senator's comments were irresponsible election year politics.



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## Example Case Farm



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## Example Case Farm

### Pricing Opportunities for Corn on 07/12/08 To Be Delivered at Harvest

CBOT Futures or Put Option Strike Price	Expected + Harvest Basis	Put - Option Premium	Expected = Net Price
_____	+ _____	- _____	= _____
SHOULD I SELL SOME Corn TODAY? (Y/N)			WHAT QTY? _____

HOW? \_\_\_\_\_  
 WHY? \_\_\_\_\_  
 SHOULD I BUY BACK ANY Corn SOLD PREVIOUSLY? \_\_\_\_ (Y/N)  
 WHAT QTY? \_\_\_\_\_ HOW? \_\_\_\_\_ WHY? \_\_\_\_\_

CBOT Dec Corn Futures = \$4.20

CBOT			CBOT		
Dec Option	CALL	Put	Dec Option	CALL	Put
Strike Price	Premium	Premium	Strike Price	Premium	Premium
----- (\$/Bu.) -----					
5.00	0.20	0.99	4.10	0.50	0.40
4.40	0.37	0.57	4.00	0.55	0.35
4.30	0.41	0.51	3.80	0.60	0.30
4.20	0.45	0.45	3.90	0.66	0.26

Forward Contract Bid = \$3.90 for Oct 21 Delivery (Avg Basis -\$0.25/bu.)



## Example Case Farm

**Corn: March 15**  
 Number of Acres 625.0  
 Please Circle only ONE Dollar Amount ! (Rounded to \$100)

	CRC RA-			GRP HRO	
	MPCI \$3.50	HPO \$3.90	RA/JP \$3.80	GRP \$512	HRO \$571
Coverage	P Election	CBOT	CBOT	Coverage	CBOT
1. 80% MPCI/CRC/RA	<b>\$15,200</b>	<b>\$29,000</b>	<b>\$27,000</b>	90% GRP/	<b>\$15,600 \$25,100</b>
2. 75% MPCI/CRC/RA	<b>\$10,200</b>	<b>\$19,200</b>	<b>\$17,800</b>	85% GRP/	<b>\$6,300 \$19,700</b>
3. 70% MPCI/CRC/RA	<b>\$7,200</b>	<b>\$14,800</b>	<b>\$12,100</b>	80% GRP/	<b>\$4,800 \$17,100</b>
4. Catastrophic	<b>\$100</b>	<b>NONE</b>	\$ XXXXX		\$ XXXXX \$ XXXXX

In early summer, your crop's development is about 7-10 days behind average. It's been hot and dry but your crop has benefited from locally cooler temperatures. Based on the condition of the crop today, you think your yield could be higher than your APH. The weather forecast includes widely scattered thunderstorms, with locally damaging wind and hail. You are considering purchasing additional private hail insurance.

5. 80% Basic Hail + CI Coverage	<b>\$19,900</b>	<b>\$33,700</b>	<b>\$31,700</b>	90% GRP/	<b>\$25,000 \$34,500</b>
6. 75% Basic Hail + CI Coverage	<b>\$14,900</b>	<b>\$23,900</b>	<b>\$22,500</b>	85% GRP/	<b>\$15,700 \$29,100</b>
7. 70% Basic Hail + CI Coverage	<b>\$11,900</b>	<b>\$19,500</b>	<b>\$12,300</b>	80% GRP/	<b>\$14,200 \$26,500</b>
8. CAT Basic Hail + CI Coverage	<b>\$9,500</b>	\$ XXXXX	\$ XXXXX		\$ XXXXX \$ XXXXX

#### WORKSHOP YIELD "DRAWS"

PROBABILITY OF YIELD AND CAUSE OF LOSSES (IF ANY)				Total	
Yield	Prob	Cause	Cause	% Loss	Production
32	15%	Other Causes	5% Hail Loss %	83.3%	20,000 Bu.
80	20%	Other Causes	10% Hail Loss %	58.3%	50,000 Bu.
160	25%	No Loss	5% Hail Loss %	16.7%	100,000 Bu.
192	20%	No Loss	No Loss	-----	120,000 Bu.

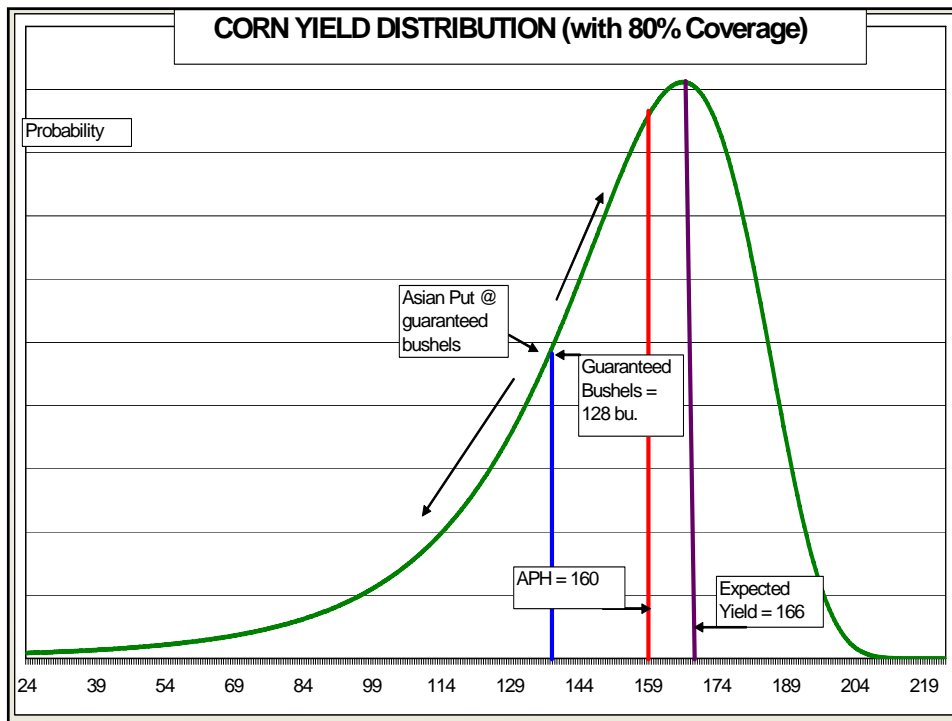


## Revenue Insurance, Yield Adjusted Options

- American options can be exercised;  
European/Asian options can not be exercised.
- American options are settled on a spot market;  
Asian options are settled on an average price.
- American, European, and Asian options are based on fixed yields; in CRC/RA yield adjusted options lose value with change in yield.
- Most of the CRC & RA risk is yield. Price risk is probably a greater share of the revenue risk in GRIP than in RA/CRC because of the aggregate yield is less variable.



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## Yield Adjusted Asian Put vs. American Put

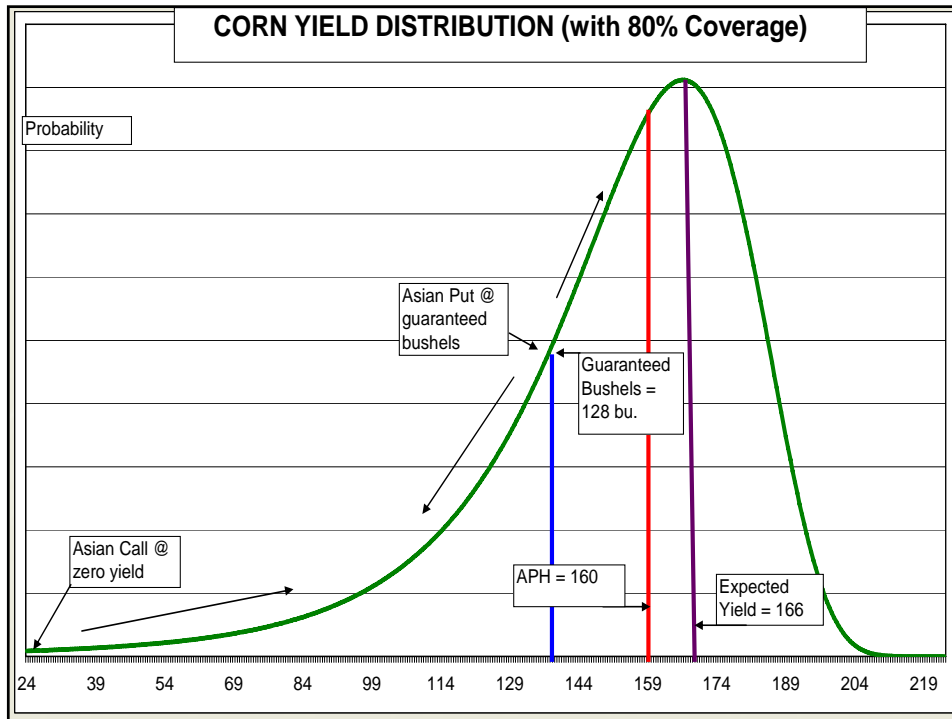
Set APH and RA Price Election equal at: \$4.06  
 American Put Option Strike set a: \$4.06  
 Harvest Price Declines by \$1.00 \$3.06  
 80% Crop Insurance Coverage Insurable Yield 128

(All values are Gross with no premium deduction and no basis adjustment for cash price)

Yield	Adjusted Sales	Adjusted APH Indemnity	American Put Gain	Combined Revenue	Yield Indemnity	Yield Adjusted Asian Put	Combined Yield & Put RA Indemnity	Combined Revenue	American Put Gain per Guaranteed Bu.	Adjusted Asian Put Gain per Guaranteed Bu.
168	\$514.08	\$0.00	\$128.00	\$642.08	\$0.00	\$5.60	\$5.60	\$519.68	\$1.00	\$0.04
158	483.48	0.00	128.00	611.48	0.00	36.20	36.20	519.68	1.00	0.28
148	452.88	0.00	128.00	580.88	0.00	66.80	66.80	519.68	1.00	0.52
138	422.28	0.00	128.00	550.28	0.00	97.40	97.40	519.68	1.00	0.76
128	391.68	0.00	128.00	519.68	0.00	128.00	128.00	519.68	1.00	1.00
118	361.08	40.60	128.00	529.68	40.60	118.00	158.60	519.68	1.00	0.92
108	330.48	81.20	128.00	539.68	81.20	108.00	189.20	519.68	1.00	0.84
98	299.88	121.80	128.00	549.68	121.80	98.00	219.80	519.68	1.00	0.77
88	269.28	162.40	128.00	559.68	162.40	88.00	250.40	519.68	1.00	0.69
78	238.68	203.00	128.00	569.68	203.00	78.00	281.00	519.68	1.00	0.61
68	208.08	243.60	128.00	579.68	243.60	68.00	311.60	519.68	1.00	0.53
58	177.48	284.20	128.00	589.68	284.20	58.00	342.20	519.68	1.00	0.45
48	146.88	324.80	128.00	599.68	324.80	48.00	372.80	519.68	1.00	0.38
38	116.28	365.40	128.00	609.68	365.40	38.00	403.40	519.68	1.00	0.30
28	85.68	406.00	128.00	619.68	406.00	28.00	434.00	519.68	1.00	0.22
18	55.08	446.60	128.00	629.68	446.60	18.00	464.60	519.68	1.00	0.14
8	24.48	487.20	128.00	639.68	487.20	8.00	495.20	519.68	1.00	0.06
0	0.00	519.68	128.00	647.68	519.68	0.00	519.68	519.68	1.00	0.00



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## Yield Adjusted Asian Call vs. American Call

Set APH and RA Price Election equal at: \$4.06  
 American Call Option Strike set a: \$4.06  
 Harvest Price Increases by \$1.00 \$5.06  
 80% Crop Insurance Coverage Insurable Yield 128

(All values are Gross with no premium deduction and no basis adjustment for cash price)

Yield	Adjusted			Combined Revenue	Yield Indemnity	Yield Adjusted Asian Call	Combined Yield & Call RA-HPO Indemnity	Combined Revenue	American Call Gain per Guar-anteed Bu.	Asian Call Gain per Guar-anteed Bu.
	Sales	APH Indemnity	American Call Gain							
168	\$850.08	\$0.00	\$128.00	\$978.08	\$0.00	\$0.00	\$0.00	\$850.08	\$1.00	\$0.00
158	799.48	0.00	128.00	927.48	0.00	0.00	0.00	799.48	1.00	0.00
148	748.88	0.00	128.00	876.88	0.00	0.00	0.00	748.88	1.00	0.00
138	698.28	0.00	128.00	826.28	0.00	0.00	0.00	698.28	1.00	0.00
128	647.68	0.00	128.00	775.68	0.00	0.00	0.00	647.68	1.00	0.00
118	597.08	40.60	128.00	765.68	40.60	10.00	50.60	647.68	1.00	0.08
108	546.48	81.20	128.00	755.68	81.20	20.00	101.20	647.68	1.00	0.16
98	495.88	121.80	128.00	745.68	121.80	30.00	151.80	647.68	1.00	0.23
88	445.28	162.40	128.00	735.68	162.40	40.00	202.40	647.68	1.00	0.31
78	394.68	203.00	128.00	725.68	203.00	50.00	253.00	647.68	1.00	0.39
68	344.08	243.60	128.00	715.68	243.60	60.00	303.60	647.68	1.00	0.47
58	293.48	284.20	128.00	705.68	284.20	70.00	354.20	647.68	1.00	0.55
48	242.88	324.80	128.00	695.68	324.80	80.00	404.80	647.68	1.00	0.63
38	192.28	365.40	128.00	685.68	365.40	90.00	455.40	647.68	1.00	0.70
28	141.68	406.00	128.00	675.68	406.00	100.00	506.00	647.68	1.00	0.78
18	91.08	446.60	128.00	665.68	446.60	110.00	556.60	647.68	1.00	0.86
8	40.48	487.20	128.00	655.68	487.20	120.00	607.20	647.68	1.00	0.94
0	0.00	519.68	128.00	647.68	519.68	128.00	647.68	647.68	1.00	1.00



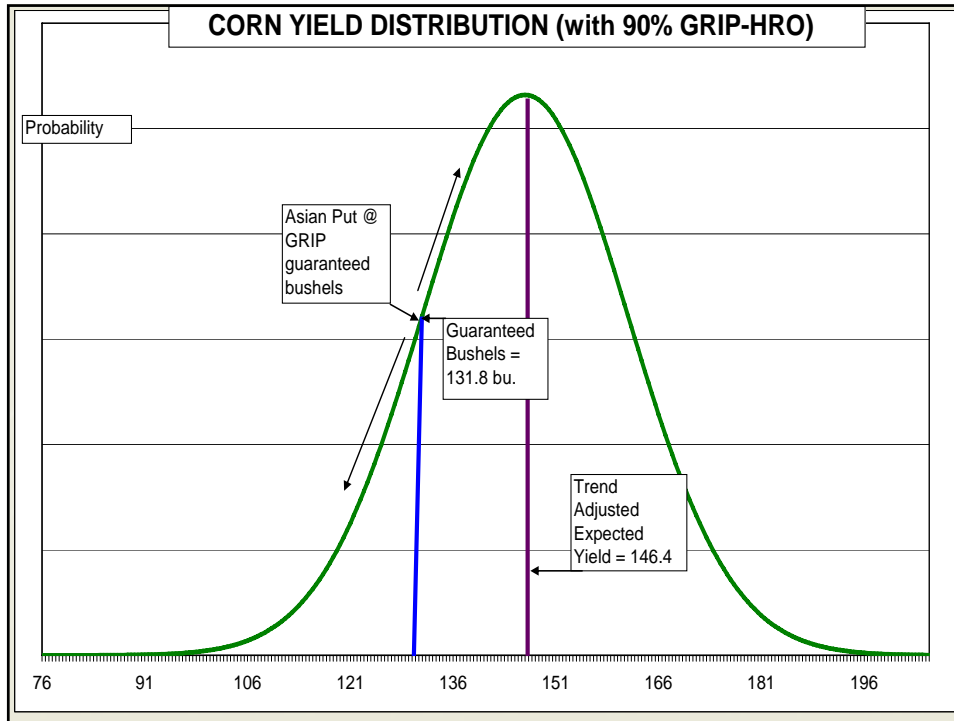
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## Define Yield for GRIP/GRP

- <http://www.rma.usda.gov/FTP/Policies/2005/ra/PDF/05102co.pdf>
- **“Expected county yield - The yield contained in the actuarial documents, on which your coverage for the crop year is based. This yield is determined using historical NASS county average yields, as adjusted by FCIC.”**
- **“Payment yield - The yield determined by FCIC based on NASS yields for each insurable crop’s type and practice, as adjusted by FCIC, and used to determine whether an indemnity will be due.”**



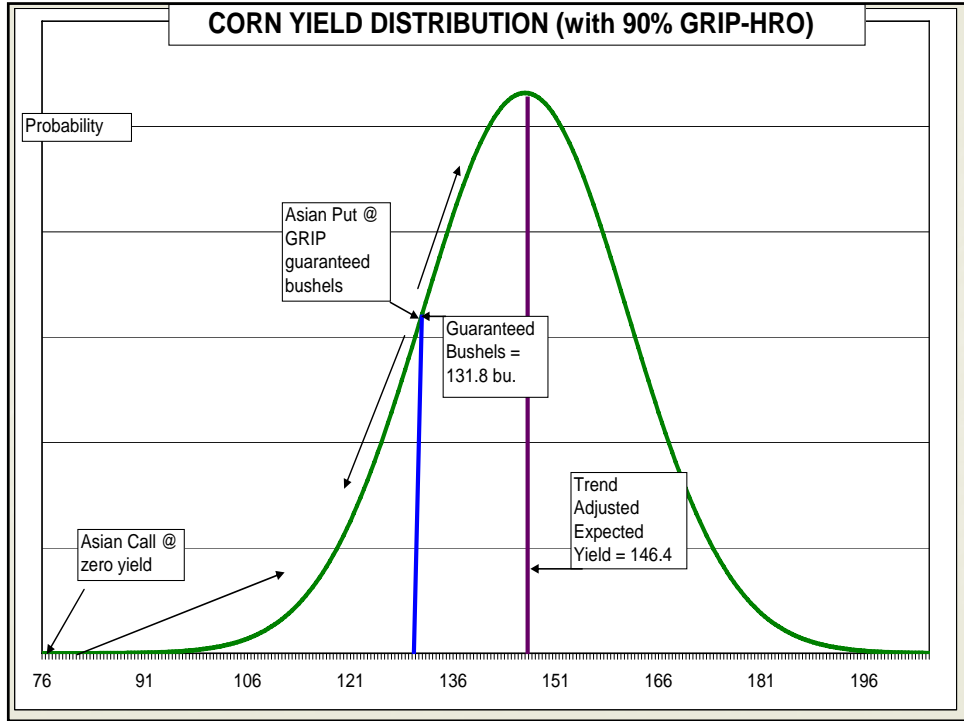
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### Yield Adjusted Asian Put vs. American Put In GRIP

Set GRP and GRIP Price Election equal at: \$4.06  
 American Put Option Strike set at: \$4.06  
 Harvest Price Declines by \$1.00 \$3.06  
 Expected County Yield 146.4  
 90% Crop Insurance Coverage Trigger Yield 131.8  
 (All values are Gross with no premium deduction and no basis adjustment for cash price)

County	Price Adjusted GRP		American Put Gain	Combined Revenue	Yield Indemnity	Yield Adjusted Asian Put	Combined Yield & Put GRIP		American Put Gain per Guaranteed Bu.	Yield Adjusted Asian Put Gain per Guaranteed Bu.
	Sales	Indemnity					Indemnity	Revenue		
172	\$525.71	\$0.00	\$146.40	\$672.11	\$0.00	\$10.44	\$10.44	\$536.15	\$1.00	\$0.07
162	495.11	0.00	146.40	641.51	0.00	44.43	44.43	539.54	1.00	0.30
152	464.51	0.00	146.40	610.91	0.00	78.42	78.42	542.93	1.00	0.54
142	433.91	0.00	146.40	580.31	0.00	112.41	112.41	546.32	1.00	0.77
<b>132</b>	<b>403.31</b>	<b>0.00</b>	<b>146.40</b>	<b>549.71</b>	<b>0.00</b>	<b>146.40</b>	<b>146.40</b>	<b>549.71</b>	<b>1.00</b>	<b>1.00</b>
122	372.71	45.10	146.40	564.21	45.10	135.29	180.39	553.10	1.00	1.03
112	342.11	90.19	146.40	578.70	90.19	124.18	214.38	556.49	1.00	0.94
102	311.51	135.29	146.40	593.20	135.29	113.08	248.37	559.88	1.00	0.86
91.8	280.91	180.39	146.40	607.70	180.39	101.97	282.36	563.27	1.00	0.77
81.8	250.31	225.49	146.40	622.20	225.49	90.86	316.35	566.66	1.00	0.69
71.8	219.71	270.58	146.40	636.69	270.58	79.75	350.34	570.05	1.00	0.61
61.8	189.11	315.68	146.40	651.19	315.68	68.65	384.33	573.44	1.00	0.52
51.8	158.51	360.78	146.40	665.69	360.78	57.54	418.32	576.83	1.00	0.44
41.8	127.91	405.88	146.40	680.18	405.88	46.43	452.31	580.22	1.00	0.35
31.8	97.31	450.97	146.40	694.68	450.97	35.32	486.30	583.60	1.00	0.27
21.8	66.71	496.07	146.40	709.18	496.07	24.21	520.29	586.99	1.00	0.18
11.8	36.11	541.17	146.40	723.68	541.17	13.11	554.28	590.38	1.00	0.10
0	0.00	594.38	146.40	740.78	594.38	0.00	594.38	594.38	1.00	0.00



### Yield Adjusted Asian Call vs. American Call In GRIP

Set GRP and GRIP Price Election equal at: \$4.06  
 American Call Option Strike set at: \$4.06  
 Harvest Price Increases by \$1.00: \$5.06  
 HRO Adjustment Factor: 1.25  
 Expected County Yield: 146.4  
 90% Crop Insurance Coverage Insurable Yield: 131.8  
 (All values are Gross with no premium deduction and no basis adjustment for cash price)

County Yield	Price Adjusted GRP Sales	Price Adjusted GRP Indemnity	American Call Gain	Combined Revenue	Yield Indemnity	Yield Adjusted Asian Call	Combined Yield & Call GRIP Indemnity	Combined Revenue	American Call Gain per Guaranteed Bu.	Yield Adjusted Asian Call Gain per Guaranteed Bu.
172	\$869.31	\$0.00	\$146.40	\$1,015.71	\$0.00	\$0.00	\$0.00	\$869.31	\$1.00	\$0.00
162	818.71	0.00	146.40	965.11	0.00	0.00	0.00	818.71	1.00	0.00
152	768.11	0.00	146.40	914.51	0.00	0.00	0.00	768.11	1.00	0.00
142	717.51	0.00	146.40	863.91	0.00	0.00	0.00	717.51	1.00	0.00
132	666.91	0.00	146.40	813.31	0.00	0.00	0.00	666.91	1.00	0.00
122	616.31	45.10	146.40	807.81	45.10	\$11.11	\$56.21	672.51	1.00	0.08
112	565.71	90.19	146.40	802.30	90.19	\$22.22	\$112.41	678.12	1.00	0.15
102	515.11	135.29	146.40	796.80	135.29	\$33.32	\$168.62	683.72	1.00	0.23
91.8	464.51	180.39	146.40	791.30	180.39	\$44.43	\$224.82	689.33	1.00	0.30
81.8	413.91	225.49	146.40	785.80	225.49	\$55.54	\$281.03	694.93	1.00	0.38
71.8	363.31	270.58	146.40	780.29	270.58	\$66.65	\$337.23	700.54	1.00	0.46
61.8	312.71	315.68	146.40	774.79	315.68	\$77.75	\$393.44	706.14	1.00	0.53
51.8	262.11	360.78	146.40	769.29	360.78	\$88.86	\$449.64	711.75	1.00	0.61
41.8	211.51	405.88	146.40	763.78	405.88	\$99.97	\$505.85	717.35	1.00	0.68
31.8	160.91	450.97	146.40	758.28	450.97	\$111.08	\$562.05	722.96	1.00	0.76
21.8	110.31	496.07	146.40	752.78	496.07	\$122.19	\$618.26	728.56	1.00	0.83
11.8	59.71	541.17	146.40	747.28	541.17	\$133.29	\$674.46	734.17	1.00	0.91
<b>0</b>	<b>0.00</b>	<b>594.38</b>	<b>\$146.40</b>	<b>740.78</b>	<b>594.38</b>	<b>\$146.40</b>	<b>\$740.78</b>	<b>740.78</b>	<b>1.00</b>	<b>1.00</b>

## GRIP & Multiple Year Losses

- In a recent CARD paper, Dr. Babcock states; "Also, because GRIP bases its guarantee levels on long-term trend yields, two or three consecutive years of low yields in a county have no impact on a farmer's guarantees."
- Is that true?

Source: Bruce Babcock, "Farm Policy Amid High Prices: Which Direction Will We Take?", Iowa State University, [http://www.card.iastate.edu/iowa\\_ag\\_review/fall\\_06/article1.aspx](http://www.card.iastate.edu/iowa_ag_review/fall_06/article1.aspx)



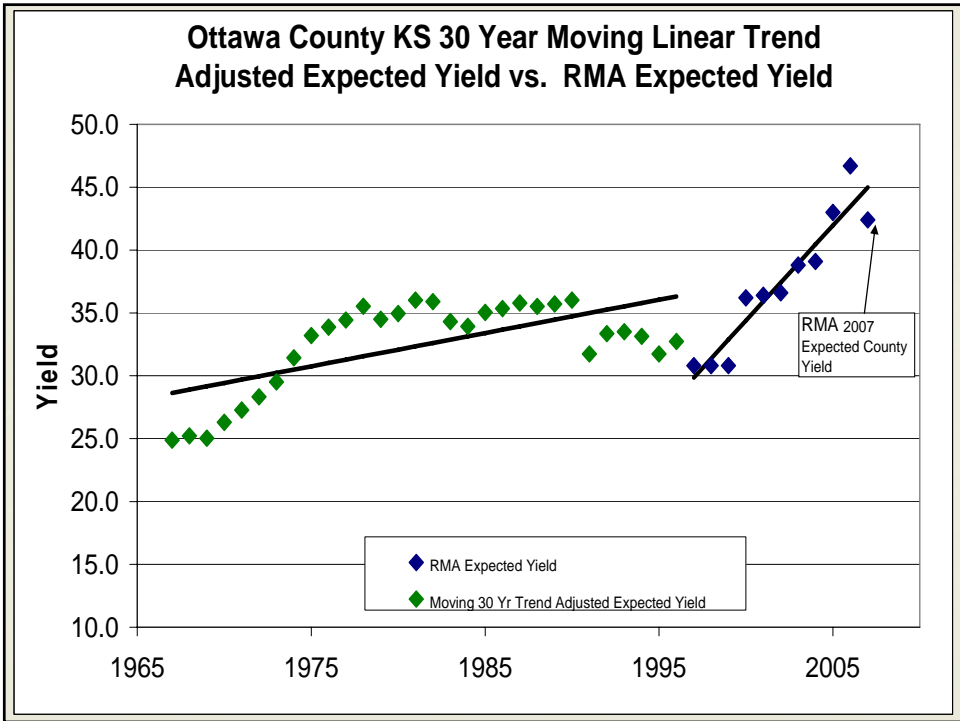
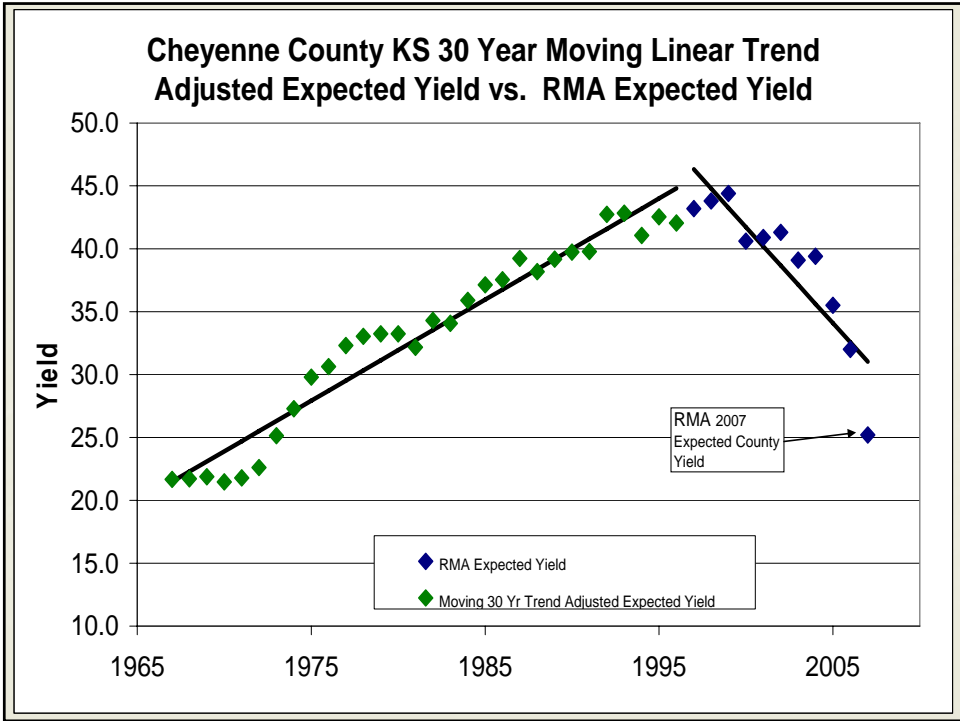
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## Compare Cheyenne & Ottawa

	Cheyenne	Ottawa
RMA Expected County Yield	25.2	42.4
Year with Largest Yield loss	2004	1989
Largest Disaster County Yield Loss	7.8	2.1
5 Year Average Percent of Planted Wheat Acres under Irrigation	5.1%	<1%
NASS 30 Years Simple Average Planted Yield	33.3	35.3
NASS 30 Yr Standard Deviation of Planted Yield	10.7	11.5
NASS 30Yr Coefficient of Variation	32.2%	32.5%
GRP Rate	8.1%	6.6%
GRIP Rate	14.6%	9.8%
GRIP-HPO Rate	16.1%	10.7%



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### Example Case Farm

90%	85%	80%	GRP
\$123,000	\$107,000	\$90,000	(20,000 Bu Yield)
\$44,000	\$24,000	\$0	(50,000 Bu Yield)
\$0	\$0	\$0	(100,000 Bu Yield)
90%	85%	80%	GRIP-HERO
\$207,000	\$194,000	\$178,000	(20,000 Bu Yield)
\$139,000	\$122,000	\$102,000	(50,000 Bu Yield)
\$19,000	\$0	\$0	(100,000 Bu Yield)



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### Example Case Farm

90%	85%	80%	GRP
\$140,000	\$125,000	\$108,000	(20,000 Bu Yield)
\$116,000	\$100,000	\$81,000	(50,000 Bu Yield)
\$0	\$0	\$0	(100,000 Bu Yield)
90%	85%	80%	GRIP-HERO
\$221,000	\$208,000	\$194,000	(20,000 Bu Yield)
\$201,000	\$187,000	\$171,000	(50,000 Bu Yield)
\$49,000	\$27,000	\$1,000	(100,000 Bu Yield)



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## Example Case Farm

90%	85%	80%	GRP
\$68,000	\$49,000	\$27,000	(20,000 Bu Yield)
\$0	\$0	\$0	(50,000 Bu Yield)
\$0	\$0	\$0	(100,000 Bu Yield)
90%	85%	80%	GRIP-HERO
\$76,000	\$54,000	\$30,000	(20,000 Bu Yield)
\$0	\$0	\$0	(50,000 Bu Yield)
\$0	\$0	\$0	(100,000 Bu Yield)



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## Summary

- Trend yield method that sets expected county yield is the key for GRP and GRIP.
- Yield basis risk, high correlation with farm yield reduces basis risk.
- A farm level yield variance that is less than county level yield variance reduces basis risk.
- Purchase of the 1.5 GRIP/GRP scalar reduces basis risk.



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