

Risk Management Workshop

- Dr. G. A. "Art" Barnaby, Jr
- Kansas State University

- Phone: (785) 532-1515
- Email: abarnaby@agecon.ksu.edu

- Check out our WEB at:
 - AgManager.info

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Survey on Farmers Ranking risk

1. Marketing
2. Production
3. Institutional
4. Personal
5. Financial
6. Human resources
7. Legal

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Courteous of Rodney Jones, Ag Economist, KSU



Indemnity for MPC1, RA, and CRC with a Price Increase

Indemnity Payment	MPCI	CRC	RA-HPO	RA
APH	133.3	133.3	133.3	133.3
Coverage Level \Deduct	75%	75%	75%	75%
Bushels Guaranteed	100			
Enter MPC1 Price Election	\$2.10	\$2.40	\$2.40	\$2.40
\$ of Coverage \ Acre	\$210			
Min Revenue Guarantee		\$240	\$240	\$240
Max Revenue Guarantee		\$390	No Limit	No Limit
Harvest Average Price		\$3.60	\$3.60	\$3.60
Final Guarantee		\$360	\$360	\$240
Current Year's Crop (bu)	66.7	66.7	66.7	66.7
Lost Bushels	33.3			
Revenue to Count		\$240	\$240	\$240
Indemnity Payment	\$70	\$120	\$120	\$0

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Posted County Price

- **The terminal price (TP)** is the average cash offerings for a commodity in a specified terminal market on a particular day. USDA employees analyze data from DTN, AMS, commodity exchanges and cash offers.
- **The county differential (CD)** is an assigned value based on historical price relationships between local county market prices and assigned terminal prices for that commodity.
- **The terminal adjustment (TA)** is a value assigned by USDA employees and is used to minimize marketing assistance loan benefit differences between state and county boundaries and to reflect current market relationships.

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PCP Calculation Example

Corn Belt County, Illinois - Corn

	GLF (Gulf Coast)	TKO (Decatur, IL)
Terminal Price	\$241 per bu.	\$208 per bu.
County Differential	-0.46 per bu.	-0.7 per bu.
Terminal Adjustment	-0.43 per bu.	-0.25 per bu.
Posted County Price	\$1.52 per bu.	\$1.66 (PCP)

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Marketing With the Marketing Loan

Loan Rate	\$1.95
PCP	\$1.90
LDP	\$0.05
Cash Sale	\$1.90
Lock in Loan Repayment Rate	
Repay Loan	
Marketing Loan Gain	
Cash Sale 60 Days Later	
Total Revenue	\$1.95

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Marketing With the Marketing Loan

Loan Rate	\$1.95	\$1.95
PCP	\$1.90	
LDP	\$0.05	
Cash Sale	\$1.90	
Lock in Loan Repayment Rate		\$1.90
Repay Loan		\$1.90
Marketing Loan Gain		\$0.05
Cash Sale 60 Days Later		\$2.10
Total Revenue	\$1.95	\$2.15

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Does GRP & GRIP Fit Your Farm?

- GRP is a “put option” on expected county yield
- GRIP is a “put option” on county revenue
- Farmer has the basis risk, difference between county yield % change and farm yield % change

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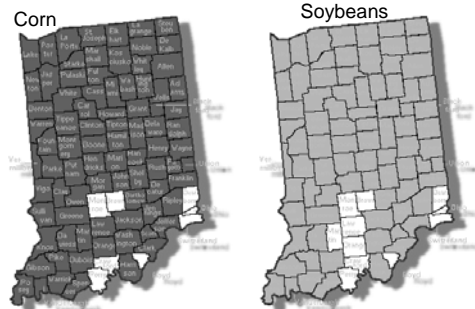
Where is GRIP & GRP Selling?

- Eastern Corn Belt
- Drought or excess moisture (tiled drained?) are major risk
- Very little hail risk with rates under a dollar
- APH maybe over rated?

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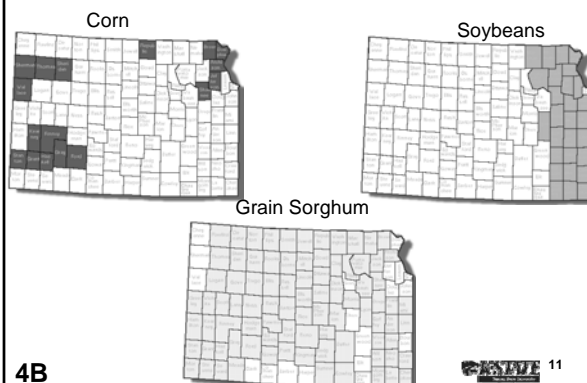
Indiana GRIP, provided by NCIS



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Kansas GRIP, provided by NCIS



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Does GRP & GRIP Fit Your Farm?

- GRP/GRIP Does Provide “Reasonable” Protection for:
 - Drought
 - Freeze
 - Excess Moisture

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Does GRP & GRIP Fit Your Farm?

- GRP/GRIP Does NOT Provide "Reasonable" Protection for:
 - Hail
 - Flood
 - No Prevented planting
 - No Re-plant
 - No Quality Loss adjustment
 - Any "spot" Loss

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Does GRP & GRIP Fit Your Farm?

- If APH is low caused by multiple year crop losses
- Low APH causes low guarantees and higher premium costs
- If the APH is real low then there is very little protection. GRP is based on at least a 30 year history, so coverage maybe much higher with lower premium.

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GRP Yield Basis Risk

- No moral hazard but what about adverse selection?
- What if farm average yield is greater than county average yield?
- If the GRP measures a 50% loss and the farmer suffers a 50% loss then the loss is covered.
- Works for farmers with average yields above or below county average.

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Growers electing GRP probably should consider the following

- Purchase hail insurance?
- Purchase a lower GRP deductible because county yields vary less than farm yields
- Purchase more liability (\$ protection)
- GRIP will probably be preferred to GRP

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GRP "Math 101"

- Trend adjust county yield
- Expected county yield was 127 bu.
- 10 year average yield was 122 bu.

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GRP "Math 101"

- Trigger Yield = Expected County yield * % coverage
- 115 bu. Trigger yield = $127.8 * 90\%$
- Liability = GRP Price Election * Expected Yield
- $\$293.94 = \$2.30 * 127.8 \text{ bu.}$
- Maximum Protection = Exp. Co. Liability * max 150%
- $\$441 = \$293.94 * 150\%$
- Max = 100% or \$441; Min 60% or \$265

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GRP "Math 101"

- GRP payment = (Trigger yield- current year county yield/ trigger yield) * Liability (selected \$ protection)
- County has a 25.3% loss from 127.8 expected bu. and farmer suffers a 51% yield loss
- GRP = (115 - 95.5) / 115 = 17% * \$265 = \$45.05
- MPCl = 125 * 75% bu. Guarantee - 61.2 bu. production = 32.6 bu. * \$2.30 = \$74.98

GRP "Math 101"

- The increase coverage up to 150% and lower deductible can be used to manage basis risk.
- GRP = (115 - 95.8) / 115 = 17% * \$294 * 150% = \$441 = \$74.97
- MPCl = 125 * 75% bu. Guarantee - 61.2 bu. production = 32.6 bu. * \$2.30 = \$74.98

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GRIP "Math 101"

- Group Risk Income Protection price based on the last 5 trading days in February for December corn but will be changed to the CRC prices in 2006.
- Harvest price is the November average of December corn; October average for grain sorghum
- Grain sorghum prices adjusted by USDA's GS/corn price ratio
- GRIP uses the GRP expected county yield for expected county revenue.
- Like GRP, farmer can suffer a total loss and receive no payment, maybe a lender concern.

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Clay County, IN. Corn GRP and GRIP Historical Simulated Indemnity Payments based on 30 Years of Trend Adjusted Yields (No Practice Specified)

County		Trend Adj. GRP		90% Cov		3.74% Rate		Coverage		90% GRIP		5.54% GRIP		7.96% Rate	
Year	Yield	Planted Yield	Expect Yield	Pymt Rate	APH ³ Price	GRP Prem	Plant ¹ Price	Harvest Price	GRP Pymt	GRP Rate	GRP Pymt	GRP Rate	GRP Pymt	GRP Rate	GRP Pymt
1973	96	92.6	98.1	0.0%	1.20	0.00	6.61	1.44	2.52	0.0%	0.00	11.71	0.0%	0.00	16.82
1974	71	66.5	100.3	26.3%	1.20	47.5	6.76	3.12	3.65	13.9%	65.0	25.99	26.3%	144.3	37.34
1975	98	93.9	98.3	0.0%	1.40	0.00	7.73	2.54	2.69	0.0%	0.00	20.75	0.0%	0.00	29.81
1976	101	99.4	99.6	0.0%	1.70	0.00	9.51	2.75	2.43	2.1%	54.4	22.71	2.1%	64.9	32.63
1977	102	99.6	102.1	0.0%	1.70	0.00	9.75	2.75	2.22	12.7%	53.5	23.93	12.7%	53.5	33.51
1978	115	113.2	103.8	0.0%	2.00	0.00	11.66	2.28	2.29	0.0%	0.00	19.61	0.0%	0.00	28.17
1979	104	100.5	107.8	0.0%	2.00	0.00	12.11	2.62	2.68	0.0%	0.00	23.46	0.0%	0.00	33.71
1980	101	98.7	109.0	0.0%	2.25	0.00	13.77	3.11	3.81	0.0%	0.00	28.14	0.0%	0.00	40.44
1981	101	95.5	109.3	2.9%	2.70	2.30	16.57	3.75	2.77	28.2%	174.7	34.00	28.2%	173.3	49.85
1982	115	112.9	109.2	0.0%	3.00	0.00	18.41	2.93	2.33	8.7%	114.9	26.60	8.7%	114.9	38.22
1983	64	61.0	110.7	38.8%	2.70	173.8	16.78	2.87	3.49	25.5%	121.4	26.37	38.8%	224.8	37.88
1984	111	109.8	105.5	0.0%	2.90	0.00	17.19	2.84	2.73	0.0%	0.00	24.85	0.0%	0.00	35.71
1985	135	133.5	106.9	0.0%	2.85	0.00	17.12	2.63	2.38	0.0%	0.00	23.40	0.0%	0.00	33.61
1986	136	128.8	115.5	0.0%	2.35	0.00	14.72	2.08	1.70	0.0%	0.00	19.30	0.0%	0.00	27.73
1987	142	139.3	115.2	0.0%	2.00	0.00	12.95	1.67	1.83	0.0%	0.00	16.02	0.0%	0.00	23.01
1988	92	89.5	118.7	16.2%	2.00	47.5	13.33	2.18	2.69	0.0%	0.00	21.44	16.2%	47.5	30.81
1989	140	138.3	115.4	0.0%	2.60	0.00	16.86	2.70	2.38	0.0%	0.00	25.90	0.0%	0.00	37.22
1990	130	127.9	119.3	0.0%	2.30	0.00	15.42	2.53	2.27	0.0%	0.00	25.09	0.0%	0.00	36.04

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Clay County, IN. Corn GRP and GRIP Historical Simulated Indemnity Payments based on 30 Years of Trend Adjusted Yields (No Practice Specified)

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Year	Yield	Planted Yield	Expect Yield	Pymt Rate	APH ³ Price	GRP Prem	Plant ¹ Price	Harvest Price	GRP Pymt	GRP Rate	GRP Pymt	GRP Rate	GRP Pymt		
1991	108	106.5	120.9	2.1%	2.30	8.86	15.62	2.61	2.44	8.8%	41.48	26.23	8.8%	41.48	37.68
1992	148	145.7	120.3	0.0%	2.30	0.00	15.53	2.70	2.12	0.0%	0.00	26.92	0.0%	0.00	38.68
1993	134	133.0	125.5	0.0%	2.30	0.00	16.22	2.39	2.74	0.0%	0.00	24.86	0.0%	0.00	35.73
1994	145	143.8	129.1	0.0%	2.40	0.00	17.40	2.68	2.16	0.4%	1.96	28.73	0.4%	1.96	41.27
1995	123	121.7	133.0	0.0%	2.25	0.00	16.81	2.58	3.28	0.0%	0.00	28.53	0.0%	0.00	40.99
1996	108	105.8	134.5	12.6%	2.65	67.32	20.02	3.17	2.68	26.2%	167.67	35.46	26.2%	167.67	50.95
1997	112	109.2	136.90	11.4%	2.45	57.20	18.84	2.80	2.76	12.7%	74.09	31.87	12.7%	74.09	45.79
1998	106	103.1	134.20	14.7%	2.60	76.81	19.60	2.80	2.19	33.2%	187.15	31.18	33.2%	187.15	44.81
1999	149	146.7	135.70	0.0%	2.10	0.00	16.01	2.37	1.96	0.8%	4.06	26.70	0.8%	4.06	38.37
2000	157	152.9	137.20	0.0%	1.90	0.00	14.64	2.47	2.11	0.0%	0.00	33.35	0.0%	0.00	40.45
2001	159	156.3	132.40	0.0%	2.05	0.00	15.24	2.45	2.05	0.0%	0.00	27.44	0.0%	0.00	38.78
2002	136	132.8	132.40	0.0%	2.00	0.00	14.87	2.30	2.43	0.0%	0.00	23.01	0.0%	0.00	36.31
2003	154	150.5	134.00	0.0%	2.20	0.00	16.67	2.38	2.37	0.0%	0.00	24.28	0.0%	0.00	38.33
2004	175	172.7	143.80	0.0%	2.45	0.00	19.79	2.93	1.99	9.2%	58.26	34.14	9.2%	58.26	49.66
2005					2.35			2.38							

Total Farmer Paid Premium/ Indemnity Payment	502.01	213.52				997.44	369.62		1,257.69	530.69					
Farmer Paid Loss Ratio		2.70								2.37					
Frequency of Claim		25%					41%			44%					
Total Premium Including Subsidizes		474.49					821.38			1,179.32					
Industry Loss Ratio		1.06					1.21			1.07					

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Clay County, IN. Corn GRP and GRIP Historical Simulated Indemnity Payments based on 30 Years of Trend Adjusted Yields (No Practice Specified)

RMA's 2005 Expected County Yield 148.7
 KSU's 2005 Expected County Yield 150.0
 150% Maximum Liability

Year	Yield	Planted Yield	Trend Adj. GRP Yield	Cov APH ³ Rate	GRP Pymt	3.74% Rate	GRP ⁴ Prem	Plant ⁵ Price	Harvest Price	Coverage GRP Rate	GRP Pymt	5.54% Rate	GRIP ⁶ Prem	HRO Pymt	7.96% Rate	GRIP ⁶ HRO Pymt
1991	108	106.5	120.9	2.1%	2.30	8.86	15.62	2.61	2.44	8.8%	41.48	26.23	8.8%	41.48	37.68	
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Growers electing GRP probably should consider the following

- "Best farmers buy GRP because they will collect insurance but suffer no crop loss" Is that true?
- Farmers would need to have yields that are not correlated with the county
- Farmers would have less yield variable than an aggregated county yield
- Are APH based products over rated?

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GRP Yield Basis Risk

- Do farmers want a high correlation?
- If most of the county is dry land, then and irrigated grower may collect more than the loss
- Farm land is spread out across the county or if farm sits in multiple counties.
- Enough data to calculate a correlation between farm and county yields?

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GRP/GRIP Summary

- Little/no Protection for Hail, wind, flood or other spot losses
- If it rains on one side of the county only?
- No Prevented Planting or Re-plant Protection
- GRP insured growers worried about Rust may want to change to APH
- Farmer can suffer a total loss and receive no payment, maybe a lender concern.

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Policy Issues

- The Corn Belt has generated underwriting gains
- Those gains allow RMA to hit the targeted loss ratio
- If the those farmers shift from APH to GRIP, then RMA may (will ?) lose a major region with consistent underwriting gains

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Grain Sorghum Silage Index Yield

- Index yield is a hybrid between GRP and APH
- Farm yields are index against county yields
- Gives a long run average yield
- Spot loss lowers "APH" yield
- Spot bumper crop may not increase "APH" if county also has a large crop.

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Thank You

DR. G. A. "ART" BARNABY, JR.
KANSAS STATE UNIVERSITY



PHONE: 785-532-1515

EMAIL: abarnaby@agecon.ksu.edu

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<http://www.AgManager.Info>

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