



www.agmanager.info
abarnaby@agecon.ksu.edu
(785) 532.1515 (phone)
(785) 532.6925 (fax)

G.A. "Art" Barnaby Jr.

Copyright 2005. All rights reserved. Contact Art to be added to e-mail list

Disclaimer: This web page is designed to aid farmers with their marketing and risk management decisions. The risk of loss in trading futures, options, forward contracts, and hedge-to-arrive can be substantial and no warranty is given or implied by the author or any other party. Each farmer must consider whether such marketing strategies are appropriate for his or her situation. This web page does not represent the views of Kansas State University.

Group Risk Income Protection Plan added in Kansas for 2006 Wheat (Updated)¹

The Risk Management Agency (RMA), an agency of USDA, has announced a new insurance product titled, Group Risk Income Protection plan (GRIP) for Kansas wheat and other Great Plains States. This is a revenue based insurance product that is built on the Group Risk Plan (GRP). The GRP plan has been available in Kansas for several years on wheat in most counties. There are now 99 out of 105 Kansas wheat counties that have GRP and GRIP available for 2006 (figure 1). The counties that do not have a GRP/GRIP offer are dominated by grazing or they are urban counties that do have sufficient wheat acres.

The simplest description of GRP is that it is a "put option" on expected county yield. The GRIP 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.

GRP and GRIP provide "reasonable" protection for drought, freeze, and excess moisture. However, GRP and GRIP do not provide reasonable protection for hail, flood, prevented planting, replant, quality loss adjustment, or any other spot losses.

Kansas wheat growers who have suffered several consecutive crop losses have discovered their Actual Production History (APH) has been reduced. Without the 60 percent of the T-yield cup, the actual APH yield would have declined even more. However, growers are charged premiums based on their "actual" or rated APH, while the guarantee is based on the higher APH that contains the cups. As a result many growers have discovered their coverage is so low they have

¹Prepared by G. A. (Art) Barnaby, Jr., Professor, Department of Agricultural Economics, K-State Research and Extension, Kansas State University, Manhattan, KS 66506, September 19, 2005, Phone 785-532-1515, e-mail – abarnaby@agecon.ksu.edu.

very little protection left in their APH based contract. Growers' guarantees have declined and their premium rates have increased. If coverage is so low there is "little" protection provided by the APH based products then a better alternative maybe either the GRP or the GRIP contract that are based on at least 30 years of county yield history. GRIP/GRP may offer better coverage at a lower premium then is available under APH based products because the APH has been beaten down caused by multiple year crop disasters.

Growers who elect to purchase GRIP/GRP must manage the basis risk that is retained by growers and is not covered by the contract. Growers can suffer a total crop loss and receive no payment under GRIP/GRP simply because the county yield did not decline sufficiently to trigger indemnity payments. GRIP/GRP will provide the most risk protection when the farm level yields are highly correlated with the county level yields. In other words, growers who have low yields in years when the county also suffers a low yield will be able to transfer risk better through these contracts than will growers whose yields do not follow county yields.

The greatest risk under GRIP/GRP is probably hail risk. In order to have hail in Kansas (Great Plains) it requires thunderstorms, so while an individual farm's crop acreage is being hailed out and yield is approaching zero, the rest of the county is likely receiving rain that is increasing county yields. The result is no farm level yield combined with a higher county yield causing no payments for either GRP or GRIP.

Producers can do things to manage the basis risk in GRIP/GRP. Growers who purchase GRIP/GRP may supplement their coverage with private hail insurance. Growers who chose not to buy private hail insurance will carry the basis risk created by hail damage under the GRIP/GRP contract.

Producers may also reduce their basis risk by purchasing a lower deductible under GRIP/GRP and will likely wish to do so simply because county yields will vary less under most conditions then farm yields. Producers may also purchase more dollars of protection and offset an expected lower variability in county yields. For example, assuming that the percent county yield loss is a smaller percentage than farm level yield loss, growers may reduce this basis risk by simply multiplying the smaller county percentage loss times a larger dollar protection amount. This protection multiplier may generate a similar indemnity payment as available under an APH based product. In most locations, it appears that GRIP will be preferred over GRP but GRIP does carry a higher premium cost.

GRIP/GRP has little or no moral hazard in the product. This is because growers who reduce their inputs or change management practices, in order to increase their chances of insurance payments will not be able to collect under the GRIP/GRP program unless most growers in the county follow a similar management practice.

The GRIP/GRP programs do not penalize growers who have historical yields that are greater than the county average yields. For example, if the county has a 40 bushel average yield and the grower has a 50 bushel average yield and in a loss year the grower raised 25 bushels but the county yield is 20 bushels then both the county and grower have suffered a 50 percent loss. Because GRP measures the loss in percentage terms in this example it would not make any difference if the grower had an individual APH guarantee or the GRP option type coverage based

on expected county yields.² Therefore, there is no penalty for growers that have above average county yields nor for growers who have below average county yields. GRIP/GRP provide risk protection only if farm level yields and county yields are correlated.

In most cases, one would not expect for the percent county loss to be the same percentage as the percent farm level yield loss. Under most conditions the farm level percent yield loss will be greater than the percentage county yield loss.

Example GRP Calculations. In order to understand GRIP one must first understand GRP. An example, of the calculations for the GRP program are presented in table 1. In this example, the trend adjusted expected county wheat yield was 47.7 bushels. Over the past 30 years, wheat yields in the higher producing counties have been trending up at a rate of about 1½ to 2 bushels per year caused by better technology. However, there are some counties where wheat yields are trending downward. Recent weather maybe masking the technology improvement. When one adjusts for trend yield it would not be uncommon for the expected county yield to be higher than the 10 year average yield. Also, if there have been recent crop disasters then the expected county yield based on 30 or more years of yield history could be substantially higher than the average yield based on 10 years or less.

GRP defines the payment trigger yield as being equal to the trend adjusted expected county yield times the percent coverage. In the example, one would multiple the expected county yield of 47.7 bushels times 90 percent generating a trigger yield of 42.9 bushels (table 1). The liability in a GRP contract equals the GRP price election³ times the expected yield. In the example calculations it was assumed that the GRP price election was \$2.80. This year's 2006 GRP price election for wheat is \$2.80.

In our example one multiplies the \$2.80 GRP price election times the expected county yield of 47.7 bushels generating a liability amount of \$133.56. The producer may increase the coverage by selecting up to 150 percent of the liability amount defined above generating the maximum dollars of protection offered under GRP. If one multiplies the expected county liability of \$133.56 times 150 percent the result is \$200 of maximum available protection under GRP. In addition, RMA sets a minimum that equals 60 percent of the maximum or \$120 in this example.

Calculating a GRP payment requires one to subtract the current county yield from the trigger yield and then divide by the trigger yield times the dollars of protection. For example, if the county has a 26.8 percent loss below the expected county yield of 47.7 bushels and a grower in that county suffers a 50% yield loss below the example grower's APH, then the results are as

²GRIP uses the same county yield measurement as GRP. GRIP defines the base price using the CRC method based on futures prices to convert GRP to a revenue insurance product but the yield measurements are based on county yields not farm level yields. Like CRC there is also a \$2 per bushel cap/cup on the price change.

³GRP price election is set by RMA and is not necessarily the same price election used for the APH product, which is the renamed MPCCI product.

follows for GRP and MPCl-APH.⁴ Under GRP the producer would be paid based on a trigger yield of 42.9 bushels minus the current county yield of 34.9 bushels divided by the 42.9 bushel trigger yield equaling 18.6 percent times the selected dollars of protection of \$133.56 generating an indemnity payment of \$24.84 (table 2).

If this grower selected 75 percent MPCl-APH coverage then the following calculations would be completed to generate the indemnity payment. One would multiply 53.4 bushel APH times 75 percent minus the current farm level production of 26.7 bushels (this represents a 50 percent loss below the 53.4 bushel APH) that would equal 13.4 indemnity bushels. One multiplies the 13.4 indemnity bushels times the \$2.80 assumed price election equaling \$37.52 (table 2).

It would appear that this is not a great deal from the grower's perspective because the grower's loss at the farm level is \$37.52 but GRP only paid \$24.84. So the question is can growers do anything to manage this basis risk where the farm loss is greater than the loss measured by the county index? While one cannot eliminate all of the basis risk, growers can certainly reduce the basis risk. The two ways to reduce the basis risk is to reduce the deductible on the contracts and to select a higher protection multiplier. In this example, GRP is at the lowest deductible 10 percent or 90 percent coverage. This 90 percent GRP contract is being compared to a 75 percent MPCl-APH contract. The reason these coverage levels were selected is because both of these contracts would receive a 55 percent premium subsidy suggesting that RMA considers these two coverages to provide "similar" protection.

In most cases the farm level yield variability will be greater than the county yield variability. Therefore, even if the farm level yields are correlated with the county yield there is a basis risk that is created if the county yield loss is less than the farm level yield loss. Growers can reduce their exposure to this basis risk by increasing their protection multiplier by up to 150 percent, combined with the lower deductible.

In this example, with a 42.9 bushel trigger yield minus 34.9 bushel current county yield divided by the 42.9 bushel trigger yield equals 18.6 percent or the same previous GRP payment rate calculation. The growers may select a protection multiplier up to 150 percent times the expected county liability of \$133.56 generating \$200 of protection in this example (table 3). The \$200 of protection is multiplied times the 18.6 percent GRP payment rate generating an indemnity payment of \$37.20 (table 3). Notice that by increasing the dollars of protection using the 150 percent multiplier the indemnity payment is nearly the same for MPCl-APH as it is for GRIP. As stated earlier, growers may select any amount of coverage between the minimum and the maximum dollars of protection as set by RMA. By selecting the higher dollar protection amount the grower was able to offset some, in this case, all of the basis risk even though the percent county loss was smaller than the percent farm level loss, i.e. 26.8 percent versus 50 percent. Multiplying the smaller percent county loss times a larger dollar amount of protection generated an indemnity payment that was nearly the same under both contracts.

The maximum dollars of protection of \$200, in this example, is probably a little misleading because it is very unlikely that producers would be able to collect all \$200 of coverage. That

⁴The Multiple Peril Crop Insurance (MPCI) was renamed APH, but Actual Production History (APH) is also the term for the proven yield that is used by the Revenue Assurance, Crop Revenue Coverage and Income Protection products. To avoid confusion over the terms, MPCl-APH in this paper refers to the insurance product and APH refers to the proven individual farm level yield.

would require a county yield loss of 100 percent. It is very unlikely that county yields will drop below 50 percent of the expected county yield. Probably a more realistic percent decline in county yields is in the 25-35 percent range when crop yields are poor.

Example GRIP Calculations. Growers in Kansas who produce crops in the counties eligible for GRP are also eligible for the Group Risk Income Protection (GRIP) contract on those same crops. The Kansas GRIP prices are the same prices used to settle Crop Revenue Coverage (CRC) subject to a \$2.00 increase/decrease in price. The GRIP and CRC Kansas wheat price election set at signup time is based on the August 15 – September 14 average price of new crop KCBOT July wheat. In order to remove the effect of the price elections on the analysis, the same price election of \$2.80 was used for all contracts.

GRIP uses the same definition for the Kansas harvest price as CRC or the June average closing price of the nearby July wheat KCBOT futures contract. In other states GRIP does not use exactly the same prices as CRC, for example Nebraska.

GRIP uses the GRP expected county yield for generating the expected county revenue. Like GRP, GRIP is a “put option” on expected county revenue and growers carry the basis risk between county revenue and farm level revenue. It is possible for growers with a GRIP contract to suffer a total crop loss and receive no payment causing a concern by their lender. However, the reverse is also true; growers can also suffer no crop loss and still receive a GRIP or GRP payment.

Under GRIP one first calculates the expected county revenue that is equal to the expected county yield as defined above under GRP times the base price, which is the same as the CRC base price in Kansas. The expected county revenue, in this example, will equal 47.7 bushel expected county yield times an assumed GRIP price election of \$2.80 equaling \$133.56. The maximum liability or protection equals the expected county revenue times a maximum of 150 percent. Multiplying the expected county revenue of \$133.56 times 150 percent equals \$200 of maximum GRIP protection assuming a \$2.80 futures price election and a 47.7 bushel expected county yield. Growers may purchase from 60 to 100 percent of the maximum dollars of protection (table 4).

GRIP defines the payment trigger revenue as being equal to the trend adjusted expected county yield times the price election based on the August 15 – September 14 average price of new crop KCBOT July futures times the grower’s selected percent coverage. The GRIP indemnity payment will equal the trigger revenue minus current year county revenue divided by trigger revenue times the growers selected dollars of protection.

Again, assuming the county has a 26.8 percent yield loss from the 47.7 bushel expected county yield and the grower suffers a 50 percent farm level yield loss. The GRIP payment, under this scenario, would equal the expected county yield of 47.7 bushels times \$2.80 times 90 percent minus the current county revenue that equals the current year’s county yield of 34.9 bushels times the June average price of July KCBOT wheat assumed to be \$3.30 in this example. The product of the previous calculation is divided by the trigger revenue of \$120.20 equaling a 4.19 percent GRIP payment rate (table 5). The GRIP payment rate is multiplied by the grower’s selected dollars of protection, assumed to be \$133.56 in this example generating a GRIP indemnity payment of \$5.59. By contrast the MPC-I-APH contract for this same farm under this same scenario generated an indemnity payment of \$37.52 as described above. Under these conditions, GRIP does not look like a very good deal compared to MPC-I-APH. In fact, GRIP paid a smaller indemnity payment than the GRP contract under the same scenario.

GRIP is like RA without the harvest price option, when harvest prices increase it has the effect of reducing any indemnity payment and requiring a larger county yield loss to trigger payments. However, GRIP also allows growers to buy a Harvest Revenue Option (GRIP-HRO) that is a similar concept to buying the harvest price option on an RA contract. Instead of a GRIP contract, if we assume our example grower purchased a GRIP-HRO contract then the first step in calculating an indemnity payment is to calculate the harvest revenue option factor that is equal to the greater of the harvest price divided by the fall signup price election or 1.0. In our example, one would divide the harvest price of \$3.30 by the fall signup price election of \$2.80 generating a factor of 1.18 that is greater than the minimum factor of 1.0 (table 6).

If our example grower had purchased GRIP-HRO under this same scenario the county yield would have been 26.8 percent below the expected county yield, while the grower suffered a farm level yield loss that is 50 percent below the grower's APH. The GRIP-HRO indemnity payment would equal the expected county yield of 47.7 bushels times the harvest price of \$3.30 times 90 percent coverage minus the current county yield of 34.9 bushels times the harvest price of \$3.30. That product is divided by the expected county harvest revenue of \$141.67 equaling 18.7 percent times dollars of protection of \$133.56 times our harvest price adjustment factor of 1.18 equals a GRIP indemnity payment of \$29.47. If this grower had purchased an additional 127 percent protection multiplier (maximum 150%); GRIP would have generated an indemnity payment of \$37.43. Now the GRIP indemnity payment nearly equals the MPCI-APH indemnity payment of \$37.52 as described for this same farm under this same yield scenario.

If this same grower had purchased the maximum additional multiplier of 150 percent rather than 127 percent the result would have been an indemnity payment of \$44.21 and would have exceeded the MPCI-APH indemnity payment under the same yield loss scenario. In summary, similar to GRP the GRIP insured growers can minimize their basis risk by purchasing lower deductibles and increasing their coverage by up to 150 percent. The harvest revenue option provides GRIP insured growers an additional tool for managing basis risk. The harvest revenue option will likely be more valuable in areas where county yields are negatively correlated with market prices. This is likely the case on Kansas wheat but doubtful on Kansas corn or grain sorghum.

Analysis of Selected Kansas Counties. In some cases, people have not correctly analyzed GRIP/GRP because they simply subtracted historical county yields from the RMA set trend adjusted 2006 county yield and generated historical payments. They have concluded GRIP/GRP will make large indemnity payments based on historical county yields. This is simply not correct.

The incorrect procedure was applied in the analysis and presented in table 7. One can not compare a 1989 yield that occurred 17 years ago with a 2006 trend adjusted yield. If one does make that calculation the GRP payment rate would be 60.2% in 1989 (table 7). This procedure would greatly over estimate the expected losses because RMA takes the raw NASS county yields and trend adjusts those yields. RMA recognizes wheat yields have been trending up at about 1-1 ½ bushels per year in many counties and adjust for trend yield before setting the expected 2006 county yield. If the trend adjustment were applied to the 1989 expected county yield it would have been substantially lower than the 47.7 bushel trend adjusted expected county yield for 2006.

If one were to trend adjust the county yield for 1989, the expected 1989 McPherson county yield would have been about 34.1 bushels (table 8). Subtracting the 1989 county yield from the trend adjusted 1989 expected county yield would generate a GRP payment rate of 42.2% and not 60.2% based on a 2006 expected county yield. If one does the analysis using the 2006 expected county yield the resulting industry loss ratio is \$3.89, i.e. for every dollar (about half from USDA

and the other half paid by farmers) paid in premiums, growers would collect about \$3.89 or an underwriting loss equal to \$2.89. At the 90% coverage level growers would expect to pay a dollar in premiums and collect \$8.65! If the analysis is done correctly and the historical county yields are compared with the historical trend adjusted expected county yields, then the expected loss ratio falls to \$0.85 or a 15 cent underwriting gain, not a loss.

GRIP without the harvest revenue option generated underwriting losses of 17 cents over the past 32 years. Farmers would have paid in a dollar and received \$2.60. In spite of this underwriting loss there were no payments over the last 10 years. The last claim would have occurred in 1994-95. NASS has not reported a county yield for the 2004-05 crop, so it is possible there would be a payment in April of 2006. While one would expect some GRP claims on the 2004-05, it is unlikely there will be claims on the central Kansas wheat crop.

An analysis of wheat was also completed in a higher risk county that has no practice specified under GRIP or GRP (table 9). GRIP generated an industry loss ratio of \$1.29 and \$1.35 for GRIP-HRO in Rawlins County. The GRP contract generated nearly the same loss ratio (\$1.37) for Rawlins county wheat. GRIP-HRO insured wheat growers would have paid in a dollar and collected \$3.00 and the industry would have suffered an underwriting loss. A large amount of the underwriting loss was generated in a single year, 2004. The harvested yield was 16.3 bushels but the planted yield was a substantially lower 5.5 bushels that generated a substantially larger indemnity payment.

Summary. Growers who are farming in counties who are mostly dryland but they have irrigation and there is no practice specified in the GRP/GRIP contract may find this product superior to APH based products. Because the county yield will be dominated by dryland yields under a drought scenario it is quite possible the county would suffer a yield loss but the irrigated grower would suffer little or no yield loss. One must remember this grower probably does suffer financial losses in the form of increased production costs caused by increased water pumping costs. However, because there is no farm level yield loss growers would not receive an APH based payment while they may receive payments under either GRP or GRIP.

Kansas growers who have been farming for over 20 years and never collected from crop insurance probably should consider GRIP/GRP. However, this describes very few crop producers in Kansas and most of the State is insured.

Growers that have suffered multiple year crop losses that have caused their APH to decline while increasing their APH may find the GRIP/GRP a better offer. If the grower's APH has been beaten down to the point where there is little protection left one has little to lose by switching to GRIP/GRP. If one does switch, then one should also maintain the crop production records because one may want to switch back to APH once their APH improves.

The GRIP/GRP will provide the best protection for drought, freeze, and excessive moisture. The GRIP/GRP contracts may also be preferred if the APH based products are overrated but this is not the case for most Kansas' producers but overrated APH products might be true for some growers in Corn Belt States. It is also possible that if the farm is spread out across the county, the farm level yields will track closely with the county yield. Under these conditions GRIP/GRP products will provide similar protection to an enterprise unit APH based product.

Growers must also remember GRIP/GRP provide very little or no protection for hail, wind damage, flood damage, or other spot losses. GRIP/GRP provides no prevented planting protection or replant protection or quality loss adjustment. Also growers are not paid for a loss

until after NASS releases the county yield, normally in April. Wheat growers will not receive an indemnity payment until 9-10 months after harvest, and they will likely have little information about the size of the payment. One will have to cover the cash flow requirement caused by the delay in the payment prior to payment. **Finally, growers must remember it is possible to suffer a total crop loss under either GRIP/GRP contracts and receive no indemnity payment.**

Table 1. Example Calculations of GRP Protection Dollars

County yield is trend adjusted to generate expected county yield

Trigger Yield = Expected County yield * % coverage

42.9 bu. Trigger yield= 47.7 * 90%

Liability = GRP Price Election* Expected Yield
\$133.56 = \$2.80 * 42.9 bu.

Maximum Protection = Expected County Liability * max 150%
\$200 = \$133.56 * 150%

Max = 100% or \$200; Min 60% or \$120

Table 2. Example Calculations of GRP Indemnity Payments

GRP payment = (Trigger yield- current year county yield/ trigger yield) * Liability (selected \$ protection)

County has a 26.8% loss from 47.7 expected bu. and the farmer suffers a 50% yield loss

GRP = (42.9 – 34.9) / 42.9 = 18.6% * \$133.56 = \$24.84

MPCI = 53.4 * 75% bu. Guarantee – 26.7 bu. production = 13.4 bu. * \$2.80 = \$37.52

Table 3. Example GRP Calculations with 150% Multiplier

The increased protection multiplier up to 150% and lower deductible can be used to manage basis risk

GRP = (42.9 – 34.9) / 42.9 = 18.6% * \$133.56 * 150% = \$37.20

MPCI = 53.4 * 75% bu. Guarantee – 26.7 bu. production = 13.4 bu. * \$2.80 = \$37.52

Table 4. Example Calculations of GRIP Protection Dollars

Group Risk Income Protection (GRIP) price for Kansas is based on the August 15 – September 14 average price of new crop Kansas City July futures.

The GRIP wheat harvest price is the June average of the nearby July KCBOT wheat futures, subject to a \$2 up or down limit move. This is the same wheat price used to settle Crop Revenue Coverage (CRC) Kansas wheat claims.

GRIP uses the GRP expected county yield for expected county revenue

Expected County Revenue = Expected County yield * Base Price

$$ECR = 47.7 * \$2.80^1 = \$133.56$$

Maximum Liability = Expected County Revenue * maximum 150%

$$\$200 = \$133.56 * 150\%$$

Max = 100% or \$200; Min 60% or \$120

¹Current base price is about \$3.51 for July 06 wheat. Check RMA WEB page for current GRIP prices and GRIP prices for other states.

Table 5. Example Calculations of GRIP Indemnity Payments

GRIP payment = (Trigger revenue- current year county revenue/ trigger revenue) * selected \$ protection

County has a 26.8% loss from the 47.7 expected county bushel yield and the farmer suffers a 50% farm level yield loss and harvest price increases to \$3.30

$$GRIP = ((47.7 * \$2.80 * 90\%) - (34.9 * \$3.30)) / \$120.20 = 4.19\% * \$133.56 = \$5.59$$

$$MPCI = 53.4 * 75\% \text{ bu. Guarantee} - 26.7 \text{ bu. production} = 13.4 \text{ bu.} * \$2.80 = \$37.52$$

Table 6. Example GRIP Calculations with 150% Multiplier and Harvest Revenue Option (HRO)

Harvest Revenue Option (GRIP-HRO) factor = Greater of Harvest price/Spring Price, 1.0

$$1.18 = \$2.80/\$3.30$$

County has a 26.8% loss from the 47.7 expected county bushel yield and the farmer suffers a 50% farm level yield loss

$$GRIP-HRO = ((47.7 * \$3.30 * 90\%) - (34.9 * \$3.30)) / \$141.70 = 18.70\% * \$133.56 * 127\% * 1.18 = \$37.43$$

$$MPCI = 53.3 * 75\% \text{ bu. Guarantee} - 26.7 \text{ bu. production} = 13.4 \text{ bu.} * \$2.80 = \$37.52$$

Table 7. McPherson County Wheat GRP Indemnity Payments based on Non-Trend Adjusted versus Trend Adjusted Yields

Plan Year	Havst Year	County ¹	Planted Yield	No Trend Adjusted Yield					No Trend Adjusted Yield						
				RMA Set	90% Cov	2006 Epect Yield	2006 Pymt Rate	2006 APH ² Price	2006 GRP Pymt	2006 GRP Prem	Trend Adj. Yield	Trend Pymt Rate	Trend APH ² Price	Trend GRP Pymt	Trend GRP Prem
				2006	GRP										
1972	1973	40	38.9	47.7	9.5%	2.00	13.58	7.58	31.9	0.0%	2.00	0.00	5.07		
1973	1974	28	27.3	47.7	36.4%	2.00	52.14	7.58	33.4	9.3%	2.00	9.29	5.31		
1974	1975	30	29.3	47.7	31.9%	2.50	56.99	9.48	33.5	2.9%	2.50	3.63	6.65		
1975	1976	29	27.5	47.7	35.9%	2.50	64.24	9.48	33.8	9.6%	2.50	12.11	6.72		
1976	1977	23	21.5	47.7	50.0%	2.50	89.35	9.48	33.9	29.6%	2.50	37.58	6.74		
1977	1978	30	27.2	47.7	36.7%	2.50	65.58	9.48	33.1	8.8%	2.50	11.00	6.59		
1978	1979	39	38.2	47.7	11.1%	3.00	23.77	11.38	33.1	0.0%	3.00	0.00	7.90		
1979	1980	35	33.2	47.7	22.6%	3.50	56.65	13.27	33.8	0.0%	3.50	0.00	9.41		
1980	1981	27	24.7	47.7	42.5%	3.50	106.49	13.27	34.6	20.7%	3.50	37.64	9.62		
1981	1982	35	34.3	47.7	20.1%	4.50	64.76	17.06	33.5	0.0%	4.50	0.00	11.99		
1982	1983	37	30.9	47.7	28.0%	4.00	80.02	15.17	34.2	0.0%	4.00	0.00	10.89		
1983	1984	35	30.5	47.7	29.0%	4.00	83.02	15.17	33.8	0.0%	4.00	0.00	10.76		
1984	1985	37	34.2	47.7	20.3%	3.75	54.36	14.22	33.8	0.0%	3.75	0.00	10.07		
1985	1986	36	32.9	47.7	23.3%	3.30	54.98	12.51	33.6	0.0%	3.30	0.00	8.82		
1986	1987	35	33.6	47.7	21.8%	2.60	40.51	9.86	33.6	0.0%	2.60	0.00	6.94		
1987	1988	35	32.9	47.7	23.4%	2.60	43.51	9.86	33.5	0.0%	2.60	0.00	6.93		
1988	1989	20	17.1	47.7	60.2%	3.00	129.14	11.38	34.1	44.2%	3.00	67.77	8.12		
1989	1990	39	37.5	47.7	12.6%	3.45	31.16	13.08	32.1	0.0%	3.45	0.00	8.81		
1990	1991	34	32.5	47.7	24.2%	3.00	51.96	11.38	32.5	0.0%	3.00	0.00	7.75		
1991	1992	40	37.5	47.7	12.7%	3.00	27.32	11.38	32.9	0.0%	3.00	0.00	7.84		
1992	1993	29	27.6	47.7	35.7%	3.00	76.53	11.38	33.3	7.8%	3.00	11.67	7.94		
1993	1994	42	40.7	47.7	5.2%	3.25	12.13	12.32	32.8	0.0%	3.25	0.00	8.46		
1994	1995	24	23.1	47.7	46.2%	3.35	110.82	12.70	33.9	24.4%	3.35	41.69	9.04		
1995	1996	35	33.1	47.7	22.9%	3.55	58.29	13.46	33.0	0.0%	3.55	0.00	9.31		
1996	1997	62	59.8	47.7	0.0%	3.85	0.00	14.60	32.1	0.0%	3.85	0.00	9.83		
1997	1998	48	46.2	47.7	0.0%	3.65	0.00	13.84	32.2	0.0%	3.65	0.00	9.34		
1998	1999	48	46.9	47.7	0.0%	3.30	0.00	12.51	32.4	0.0%	3.30	0.00	8.50		
1999	2000	40	39.7	47.7	7.5%	3.15	16.85	11.95	36.9	0.0%	3.15	0.00	9.24		
2000	2001	41	38.2	47.7	11.1%	2.80	22.15	10.62	37.2	0.0%	2.80	0.00	8.28		
2001	2002	45	43.9	47.7	0.0%	3.15	0.00	11.95	37.4	0.0%	3.15	0.00	9.37		
2002	2003	57	54.3	47.7	0.0%	3.15	0.00	11.95	40.3	0.0%	3.15	0.00	10.09		
2003	2004	48	46.6	47.7	0.0%	3.35	0.00	12.70	40.7	0.0%	3.35	0.00	10.84		
2004	2005			47.7		3.50		13.27	44.8		3.50	0.00	12.47		
2005	2006			47.7		2.80		10.62	47.7		2.80	0.00	10.62		
Total Farmer Paid Premium; Indemnity Payment				1,486.3				171.9				232.4	122.9		
Farmer Paid Loss Ratio								8.65					1.89		
Frequency of Claim								78%					28%		
Total Premium Including Subsidizes								382.1					273.2		
Industry Loss Ratio								3.89					0.85		
Break Even Premium Rate								20.62%					4.51%		

¹NASS county yields for the 2005 wheat harvest will not be released until about April of 2006. Any GRP/GRIP claims will only be paid after the NASS county yield is published. Kansas GRP/GRIP claims will be paid approximately 10 months after harvest.

²MPCI-APH and GRP in the past used different price elections. This year GRP will use the MPCI-APH announced price but not the market price if one is offered. In future years GRP price elections will be higher in some years and lower in other years. Therefore the best estimated price used to calculate the simulated GRP indemnity payment is the maximum RMA set price election for MPCI-APH.

Table 8. McPherson County, KS Wheat GRP and GRIP Historical Simulated Indemnity Payments based on 30 Years of Trend Adjusted Yields (No Practice Specified)

		RMA's 2005 Expected County Yield										44.8					
		KSU's 2005 Expected County Yield										45.8					
		150% Maximum Liability															
Plan Year	Harvest Year	County ¹ Planted Yield	County ¹ Expect Yield	KSU Trend Adj. Yield	RMA Set Adj. Yield	90% Cov GRP	APH ² Price	5.30% GRP Pymt	5.30% GRP Prem	Plant ³ Price	Harvest Price	90% Coverage GRIP		90% GRIP- HRO		8.62% GRIP- HRO ³	
												Pymt	GRIP	GRIP ⁴ Prem	Pymt	HRO Pymt	HRO ³ Prem
1972	1973	40	38.9	31.9		0.0%	2.00	0.00	5.07	1.88	2.59	0.0%	0.00	6.24	0.0%	0.00	7.74
1973	1974	28	27.3	33.4		9.3%	2.00	9.29	5.31	3.75	4.05	1.9%	3.66	13.07	9.3%	18.83	16.21
1974	1975	30	29.3	33.5		2.9%	2.50	3.63	6.65	4.38	3.15	30.1%	66.19	15.29	30.1%	66.19	18.96
1975	1976	29	27.5	33.8		9.6%	2.50	12.11	6.72	4.28	3.76	20.6%	44.60	15.07	20.6%	44.60	18.70
1976	1977	23	21.5	33.9		29.6%	2.50	37.58	6.74	3.56	2.36	53.4%	96.63	12.58	53.4%	96.63	15.60
1977	1978	30	27.2	33.1		8.8%	2.50	11.00	6.59	2.50	3.05	0.0%	0.00	8.62	8.8%	13.42	10.70
1978	1979	39	38.2	33.1		0.0%	3.00	0.00	7.90	3.06	4.09	0.0%	0.00	10.56	0.0%	0.00	13.10
1979	1980	35	33.2	33.8		0.0%	3.50	0.00	9.41	4.25	4.09	0.0%	0.00	15.00	0.0%	0.00	18.60
1980	1981	27	24.7	34.6		20.7%	3.50	37.64	9.62	4.88	4.22	31.4%	79.62	17.60	31.4%	79.62	21.82
1981	1982	35	34.3	33.5		0.0%	4.50	0.00	11.99	4.56	3.64	9.2%	21.03	15.93	9.2%	21.03	19.75
1982	1983	37	30.9	34.2		0.0%	4.00	0.00	10.89	3.92	3.58	8.4%	16.97	14.01	8.4%	16.97	17.38
1983	1984	35	30.5	33.8		0.0%	4.00	0.00	10.76	4.05	3.65	9.8%	20.15	14.28	9.8%	20.15	17.72
1984	1985	37	34.2	33.8		0.0%	3.75	0.00	10.07	3.54	3.20	0.0%	0.00	12.46	0.0%	0.00	15.45
1985	1986	36	32.9	33.6		0.0%	3.30	0.00	8.82	2.74	2.44	3.3%	4.57	9.61	3.3%	4.57	11.92
1986	1987	35	33.6	33.6		0.0%	2.60	0.00	6.94	2.39	2.64	0.0%	0.00	8.36	0.0%	0.00	10.37
1987	1988	35	32.9	33.5		0.0%	2.60	0.00	6.93	2.78	3.79	0.0%	0.00	9.72	0.0%	0.00	12.05
1988	1989	20	17.1	34.1		44.2%	3.00	67.77	8.12	3.65	4.14	36.7%	68.31	12.95	44.2%	93.52	16.06
1989	1990	39	37.5	32.1		0.0%	3.45	0.00	8.81	3.69	3.29	0.0%	0.00	12.35	0.0%	0.00	15.32
1990	1991	34	32.5	32.5		0.0%	3.00	0.00	7.75	3.07	2.86	0.0%	0.00	10.40	0.0%	0.00	12.90
1991	1992	40	37.5	32.9		0.0%	3.00	0.00	7.84	3.05	3.59	0.0%	0.00	10.45	0.0%	0.00	12.96
1992	1993	29	27.6	33.3		7.8%	3.00	11.67	7.94	3.20	2.87	17.3%	27.57	11.10	17.3%	27.57	13.77
1993	1994	42	40.7	32.8		0.0%	3.25	0.00	8.46	3.00	3.37	0.0%	0.00	10.26	0.0%	0.00	12.73
1994	1995	24	23.1	33.9		24.4%	3.35	41.69	9.04	3.52	4.24	9.0%	16.17	12.47	24.4%	52.79	15.46
1995	1996	35	33.1	33.0		0.0%	3.55	0.00	9.31	3.91	5.76	0.0%	0.00	13.43	0.0%	0.00	16.66
1996	1997	62	59.8	32.6	32.1	0.0%	3.85	0.00	9.83	4.13	3.64	0.0%	0.00	13.81	0.0%	0.00	17.12
1997	1998	48	46.2	35.4	32.2	0.0%	3.65	0.00	9.34	3.95	3.04	0.0%	0.00	13.26	0.0%	0.00	16.45
1998	1999	48	46.9	37.3	32.4	0.0%	3.30	0.00	8.50	3.16	2.84	0.0%	0.00	10.66	0.0%	0.00	13.22
1999	2000	40	39.7	38.7	36.9	0.0%	3.15	0.00	9.24	3.34	3.02	0.0%	0.00	12.86	0.0%	0.00	15.94
2000	2001	41	38.2	39.6	37.2	0.0%	2.80	0.00	8.28	3.31	3.07	0.0%	0.00	12.84	0.0%	0.00	15.92
2001	2002	45	43.9	40.0	37.4	0.0%	3.15	0.00	9.37	3.34	3.09	0.0%	0.00	13.02	0.0%	0.00	16.15
2002	2003	57	54.3	41.7	40.3	0.0%	3.15	0.00	10.09	3.73	3.14	0.0%	0.00	15.67	0.0%	0.00	19.44
2003	2004	48	46.6	44.8	40.7	0.0%	3.35	0.00	10.84	3.40	3.77	0.0%	0.00	14.43	0.0%	0.00	17.89
2004	2005			45.8	44.8		3.50			3.56	3.28						
2005	2006				47.7		2.80										
Total Farmer Paid Premium; Indemnity Payment							232.4	122.9				465.5	179.24		555.9	222.3	
Farmer Paid Loss Ratio								1.89					2.60			2.50	
Frequency of Claim								28%					38%			41%	
Total Premium Including Subsidizes								273.2					398.32			494.0	
Industry Loss Ratio								0.85					1.17			1.13	
Break Even Premium Rate								4.51%					8.12%			9.70%	

¹NASS county yields for the 2005 wheat harvest will not be released until about April of 2006. Any GRP/GRIP claims will only be paid after the NASS county yield is published. Kansas GRP/GRIP claims will be paid approximately 10 months after harvest.

²MPCI-APH and GRP in the past used different price elections. This year GRP will use the MPCI-APH announced price but not the market price if one is offered. In future years GRP price elections will be higher in some years and lower in other years. Therefore the best estimated price used to calculate the simulated GRP indemnity payment is the maximum RMA set price election for MPCI-APH.

³The RMA has converted the GRIP price elections to the CRC price elections. There is also a \$2.00 price limit move up or down.

⁴The assumed price volatility factor of 0.20 was used to calculate GRIP and GRIP-HRO premiums. Like price elections the volatility is reset each year.

Table 9. Rawlins County, KS Wheat GRP and GRIP Historical Simulated Indemnity Payments based on 30 Years of Trend Adjusted Yields (No Practice Specified)

		RMA's 2005 Expected County Yield																36.4
		KSU's 2005 Expected County Yield																33.6
		150% Maximum Liability																
Plan Year	Harvest Year	County ¹ Planted Yield	County ¹ Expect Yield	KSU Trend Adj. Trend	RMA Set Adj. Trend	90% Cov GRP	90% APH ² Price	90% GRP Pymt	90% GRP Prem	90% Plant ³ Price	90% Harvest Price	90% Coverage		90% GRIP-		11.45%		
												GRIP Pymt	GRIP Prem	9.50% GRIP ⁴ Pymt	9.50% GRIP ⁴ Prem	HRO Pymt	HRO Prem	
1972	1973	36.9	36.3	28.6		0.0%	2.00	0.00	6.71	1.88	2.59	0.0%	0.00	7.67	0.0%	0.00	9.24	
1973	1974	30.1	29.2	30.4		0.0%	2.00	0.00	7.12	3.75	4.05	0.0%	0.00	16.24	0.0%	0.00	19.58	
1974	1975	34.5	32.5	30.6		0.0%	2.50	0.00	8.97	4.38	3.15	15.2%	30.63	19.12	15.2%	30.63	23.04	
1975	1976	37.2	36.2	31.9		0.0%	2.50	0.00	9.36	4.28	3.76	0.0%	0.00	19.47	0.0%	0.00	23.47	
1976	1977	32.7	29.3	33.6		3.1%	2.50	3.86	9.83	3.56	2.36	35.9%	64.28	17.03	35.9%	64.28	20.52	
1977	1978	32.0	28.7	34.3		7.0%	2.50	9.07	10.05	2.50	3.05	0.0%	0.00	12.21	7.0%	11.06	14.71	
1978	1979	37.1	29.2	34.5		6.1%	3.00	9.49	12.14	3.06	4.09	0.0%	0.00	15.06	6.1%	12.94	18.15	
1979	1980	40.5	38.3	33.9		0.0%	3.50	0.00	13.89	4.25	4.09	0.0%	0.00	20.53	0.0%	0.00	24.75	
1980	1981	22.2	18.2	35.4		42.9%	3.50	79.85	14.52	4.88	4.22	50.7%	131.35	24.63	50.7%	131.35	29.69	
1981	1982	34.7	34.2	33.4		0.0%	4.50	0.00	17.63	4.56	3.64	9.2%	21.04	21.72	9.2%	21.04	26.17	
1982	1983	45.0	40.1	34.6		0.0%	4.00	0.00	16.23	3.92	3.58	0.0%	0.00	19.37	0.0%	0.00	23.35	
1983	1984	38.2	23.1	35.6		27.9%	4.00	59.64	16.67	4.05	3.65	35.1%	75.85	20.53	35.1%	75.85	24.75	
1984	1985	57.2	53.5	33.9		0.0%	3.75	0.00	14.88	3.54	3.20	0.0%	0.00	17.07	0.0%	0.00	20.58	
1985	1986	39.5	37.1	37.0		0.0%	3.30	0.00	14.29	2.74	2.44	1.0%	1.56	14.44	1.0%	1.56	17.41	
1986	1987	41.7	39.8	36.5		0.0%	2.60	0.00	11.13	2.39	2.64	0.0%	0.00	12.44	0.0%	0.00	14.99	
1987	1988	36.2	30.7	37.2		8.3%	2.60	12.08	11.32	2.78	3.79	0.0%	0.00	14.73	8.3%	17.61	17.75	
1988	1989	20.5	15.3	37.4		54.5%	3.00	91.78	13.16	3.65	4.14	48.3%	98.94	19.45	54.5%	126.65	23.45	
1989	1990	44.2	43.7	35.1		0.0%	3.45	0.00	14.20	3.69	3.29	0.0%	0.00	18.47	0.0%	0.00	22.26	
1990	1991	31.4	29.8	37.7		12.2%	3.00	20.62	13.25	3.07	2.86	18.2%	31.68	16.49	18.2%	31.68	19.88	
1991	1992	27.9	21.7	37.4		35.5%	3.00	59.65	13.14	3.05	3.59	23.9%	40.89	16.24	35.5%	71.44	19.57	
1992	1993	41.6	36.6	35.9		0.0%	3.00	0.00	12.61	3.20	2.87	0.0%	0.00	16.37	0.0%	0.00	19.73	
1993	1994	40.4	38.7	35.8		0.0%	3.25	0.00	13.64	3.00	3.37	0.0%	0.00	15.34	0.0%	0.00	18.49	
1994	1995	42.9	41.9	36.0		0.0%	3.35	0.00	14.14	3.52	4.24	0.0%	0.00	18.08	0.0%	0.00	21.79	
1995	1996	28.3	25.8	36.4		21.3%	3.55	41.33	15.16	3.91	5.76	0.0%	0.00	20.29	21.3%	67.06	24.46	
1996	1997	37.6	35.2	34.9	36.9	0.0%	3.85	0.00	16.64	4.13	3.64	6.4%	14.52	21.69	6.4%	14.52	26.15	
1997	1998	50.4	47.5	34.8	37.2	0.0%	3.65	0.00	15.91	3.95	3.04	0.0%	0.00	20.94	0.0%	0.00	25.24	
1998	1999	49.7	47.9	35.8	37.5	0.0%	3.30	0.00	14.50	3.16	2.84	0.0%	0.00	16.87	0.0%	0.00	20.33	
1999	2000	30.3	28.8	37.3	35.0	8.5%	3.15	14.05	12.92	3.34	3.02	17.3%	30.37	16.67	17.3%	30.37	20.09	
2000	2001	42.8	40.2	36.0	35.1	0.0%	2.80	0.00	11.51	3.31	3.07	0.0%	0.00	16.56	0.0%	0.00	19.95	
2001	2002	30.9	28.7	37.4	35.2	9.5%	3.15	15.85	12.99	3.34	3.09	16.3%	28.75	16.75	16.3%	28.75	20.19	
2002	2003	41.9	40.9	36.7	36.8	0.0%	3.15	0.00	13.58	3.73	3.14	0.0%	0.00	19.56	0.0%	0.00	23.58	
2003	2004	16.3	5.5	37.8	37.0	83.6%	3.35	155.45	14.52	3.40	3.77	81.8%	154.40	17.93	83.6%	174.94	21.61	
2004	2005			33.6	36.4		3.50			3.56	3.28							
2005	2006				33.3		2.80											
Total Farmer Paid Premium; Indemnity Payment								572.7	187.5				724.2	251.98		911.7	303.7	
Farmer Paid Loss Ratio									3.05					2.87		3.00		
Frequency of Claim									41%				41%		53%			
Total Premium Including Subsidizes									416.6				559.96		674.9			
Industry Loss Ratio									1.37				1.29		1.35			
Break Even Premium Rate									10.74%				12.29%		15.47%			

¹NASS county yields for the 2005 wheat harvest will not be released until about April of 2006. Any GRIP/GRP claims will only be paid after the NASS county yield is published. Kansas GRIP/GRP claims will be paid approximately 10 months after harvest.

²MPCI-APH and GRP in the past used different price elections. This year GRP will use the MPCI-APH announced price but not the market price if one is offered. In future years GRP price elections will be higher in some years and lower in other years. Therefore the best estimated price used to calculate the simulated GRP indemnity payment is the maximum RMA set price election for MPCI-APH.

³The RMA has converted the GRIP price elections to the CRC price elections. There is also a \$2.00 price limit move up or down.

⁴The assumed price volatility factor of 0.20 was used to calculate GRIP and GRIP-HRO premiums. Like price elections the volatility is reset each year.

Figure 1. Kansas Wheat Counties with NO GRIP/GRP Offer

