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Choice of Revenue Products: Base and Harvest Prices

Farmers can choose revenue products with or without guarantee increases. Revenue products with guarantee increases were designed for individuals who market heavily pre-harvest as they offer higher payments in years in which yields are below average and price rise between spring and fall, typical drought years. The major disadvantage of revenue products with guarantee increases is that they cost more than revenue products without guarantee increases. In some cases, guarantee increase products cost 30% more than products without guarantee increases. This article provides perspective on the decision between revenue products by evaluating base and harvest prices for corn and soybeans from 1972 through 2005. Before this discussion, the two types of revenue products are described.

Revenue Products

Revenue products either have a guarantee increase or do not have a guarantee increase. Revenue products can also be divided into farm products - products that make payments based on yields on a farm, and county products - products that make payments based on county yields (see Figure 1)

Figure 1. Types of Revenue Products Offered In Illinois.

Guarantee Type	Farm/County	
	Farm Products	County Products
Without Guarantee Increase	Revenue Assurance with Base Price Option (RA-BP) Income Protection (IP)	Group Risk Income Plan without the Harvest Revenue Option (GRIP-NoHR)
With Guarantee Increase	Revenue Assurance with Harvest Price Option (RA-HP) Crop Revenue Coverage (CRC)	Group Risk Income Plan with the Harvest Revenue Option (GRIP-HR)

Revenue Assurance with the base price option (RA-BP) and Income Production (IP) have guarantees equal to:

$$\text{Base price} \times \text{APH yield} \times \text{coverage level.}$$

The base price is the average of settlement prices of Chicago Board of Trade (CBOT) contracts during the month of February (December contract for corn, November contract for soybeans). The Actual Production History Yield (APH) yield is based on a history of yields from a farm or unit. The coverage level is a farmer selection between 65% to 85% for RA-BP. A base price of \$2.40, an APH yield of 150 bu. and an 85 coverage level results in a \$306 per acre ($\$2.40 \times 150 \times .85$).

Farm products with a guarantee increase include Revenue Assurance with the harvest price option (RA-HP) and Crop Revenue Coverage (CRC). These products' guarantees equal

Higher of base or harvest price x APH yield x coverage level.

For guarantee increase products, the higher of the base or harvest price is used in calculating the guarantee. The harvest price is the average of settlement prices of CBOT contracts (December contract for corn, November for soybeans). CRC uses averages during the month of October for both corn and soybeans to determine the harvest price while RA-HP uses October for soybeans and November for corn. CRC limits how much the harvest price can exceed the base price. If the harvest price is above the base price by more than \$1.50 for corn, the base price plus \$1.50 is used in calculating the guarantee. The limit is \$3.00 for soybeans. RA-HP does not have these limits.

Revenue products make payments when harvest revenue (harvest price times yield) is below guarantees. Payments from guarantee increase products will always be as great as payments from products without the guarantee increase.

Group Risk Income Plan without the harvest revenue option (GRIP-NoHR) does not have the guarantee increase. Its guarantee equals:

Expected price x expected county yield x coverage level.

The expected price is the same as the base price for farm products (2005 is the first year they are the same). The expected county yield is set by the Risk Management Agency (RMA) to represent the most-likely yield in a county. The coverage level is a selection between 70% and 90% in 5% increments.

Group Risk Income Plan with the harvest revenue option (GRIP-HR) has a guarantee equal to:

Higher of expected or harvest price x actual county yield x coverage level.

Harvest prices are based on October settlement prices. GRIP-HR has limit moves on harvest prices (\$1.50 for corn and \$3.00 for soybeans). GRIP makes payments when harvest revenue (harvest price times county yield) is below the guarantee. Payment mechanisms are described in fact sheets on *farmdoc*.

Base and harvest prices for corn

Base and harvest prices for corn and soybeans are shown in Table 1 from 1972 through 2005. Revenue products did not exist prior to the mid 1990s. Hence, base and harvest prices prior to the mid 1990s were computed from settlement prices offered on the Chicago Board of Trade (CBOT).

Several points for corn can be made:

1. The harvest price when using October and November settlement prices can vary for a year. In 1993, for example, the October harvest price was \$2.49 per bu. while the November price was \$.25 higher at \$2.74. However, averages of the October and November prices are close having only a \$.02 difference between 1972 through 2005 (\$2.47 for October and \$2.45 for November). Therefore, harvest month is not a useful criterion in choosing between CRC and RA-HP.

**Table 1. Base and Harvest Prices for Revenue Crop Insurance Products,
Corn and Soybean, 1972 - 2005.**

Year	Corn					Soybeans		
	Base Price ¹	Harvest Price		Change ⁴		Base Price ⁵	Harvest Price ⁶	Change ⁴
		Oct ²	Nov ³	Oct	Nov			
1972	\$1.24	\$1.35	\$1.37	\$0.11	\$0.13	\$3.01	\$3.41	\$0.40
1973	1.39	2.46	2.52	1.07	1.13	3.95	5.85	1.90
1974	2.91	3.80	3.65	0.89	0.74	6.30	8.59	2.29
1975	2.70	2.90	2.69	0.20	-0.01	5.79	5.25	-0.54
1976	2.72	2.65	2.43	-0.07	-0.29	5.08	6.41	1.33
1977	2.73	2.09	2.21	-0.64	-0.52	5.96	5.31	-0.65
1978	2.27	2.31	2.29	0.04	0.02	5.76	6.84	1.08
1979	2.59	2.78	2.68	0.19	0.09	6.97	6.70	-0.27
1980	3.12	3.61	3.81	0.49	0.69	7.29	8.57	1.28
1981	3.76	2.91	2.77	-0.85	-0.99	8.26	6.56	-1.70
1982	3.00	2.20	2.33	-0.80	-0.67	6.76	5.32	-1.44
1983	2.88	3.48	3.49	0.60	0.61	6.33	8.43	2.10
1984	2.86	2.78	2.73	-0.08	-0.13	7.11	6.14	-0.97
1985	2.66	2.23	2.38	-0.43	-0.28	6.06	5.05	-1.01
1986	2.10	1.69	1.70	-0.41	-0.40	5.15	4.82	-0.33
1987	1.69	1.83	1.83	0.14	0.14	4.71	5.38	0.67
1988	2.17	2.89	2.69	0.72	0.52	6.43	7.93	1.50
1989	2.71	2.39	2.38	-0.32	-0.33	7.24	5.62	-1.62
1990	2.47	2.30	2.26	-0.17	-0.21	5.95	6.12	0.17
1991	2.59	2.51	2.43	-0.08	-0.16	6.15	5.60	-0.55
1992	2.70	2.09	2.12	-0.61	-0.58	6.06	5.37	-0.69
1993	2.40	2.49	2.74	0.09	0.34	5.86	6.15	0.29
1994	2.68	2.16	2.16	-0.52	-0.52	6.48	5.41	-1.07
1995	2.57	3.23	3.28	0.66	0.71	5.85	6.56	0.71
1996	3.08	2.84	2.68	-0.24	-0.40	7.23	7.07	-0.16
1997	2.73	2.81	2.76	0.08	0.03	6.97	6.82	-0.15
1998	2.84	2.19	2.18	-0.65	-0.66	6.60	5.46	-1.14
1999	2.40	2.01	1.96	-0.39	-0.44	5.11	4.85	-0.26
2000	2.51	2.04	2.11	-0.47	-0.40	5.32	4.72	-0.60
2001	2.46	2.08	2.05	-0.38	-0.41	4.67	4.37	-0.30
2002	2.32	2.52	2.43	0.20	0.11	4.50	5.45	0.95
2003	2.42	2.26	2.37	-0.16	-0.05	5.26	7.32	2.06
2004	2.83	2.05	1.99	-0.78	-0.84	6.72	5.26	-1.46
2005	2.32	2.02	1.93	-0.30	-0.39	5.53	5.75	0.22
Average	\$2.55	\$2.47	\$2.45	-\$0.08	-\$0.10	\$5.95	\$6.01	\$0.06

¹ Average of settlement prices, Chicago Board of Trade (CBOT) December contract in February.

² Average of settlement prices, CBOT December contract in October. Used by CRC and GRIP.

³ Average of settlement prices, CBOT December contract in November. Used by RA.

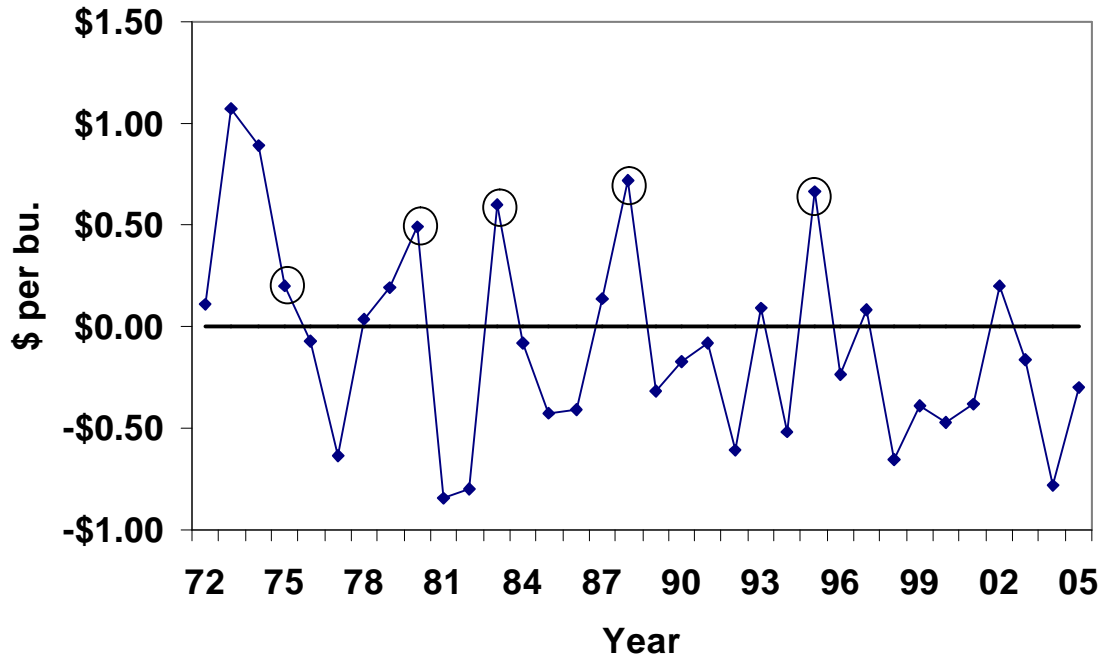
⁴ Base price minus harvest price.

⁵ Average of settlement prices, CBOT November contract in February.

⁶ Average of settlement prices, CBOT November contract in October.

- Harvest prices were never \$1.50 higher than the base price between 1972 and 2005. This suggests that the \$1.50 limit in CRC and GRIP will come into play rarely (see figure 2).

Figure 2. Harvest Price (October) Minus Base Price, Corn, 1972 - 2005.



- From 1972 through 2005, the base price averaged \$2.55 per bu. (see Table 1). The October harvest price averaged \$2.47 and the November price averaged \$2.45. On average, the October harvest price was \$.08 below the base price while the November price was \$.10 below the base price. While harvest prices were below the base price, statistical tests did not find significant difference between base and harvest prices.
- Differences between base and harvest prices varied by whether a year was a short-crop or normal year. Short-crop years had production shortfalls due to weather and were identified as 1975, 1980, 1983, 1988, 1993, and 1995. The remaining years were classified as normal years. In normal years, the October harvest price was \$.25 below the base price while the October harvest price was \$.48 above the base price in short-crop years (see Figure 1, circle years are short-crop years).
- The last short-crop year was 1995. In recent years, the harvest price has been below the base price. Some confusion may exist concerning why GRIP made large payments in many counties in 2004 and 2005. GRIP-HR became available in 2004 and some may attribute the large payments to GRIP-HR. Given the same coverage level, GRIP-NoHR has made the same payments as GRIP-HR in 2004 and 2005 because the harvest price was below the base price. Large payments associated with GRIP-HR should not be attributed to the guarantee increase. Rather the payments are in part due to price declines in 2004 and 2005.
- Between 1972 through 2005 harvest prices exceeded base prices in thirteen years: 1972, 1973, 1974, 1975, 1978, 1979, 1980, 1983, 1987, 1988, 1993, 1995, and 1997. Between 1972 through 2005, 38% of the years had harvest prices above base prices. In these years, there was a potential for guarantee increase revenue products resulted in higher insurance payments than the no guarantee increase

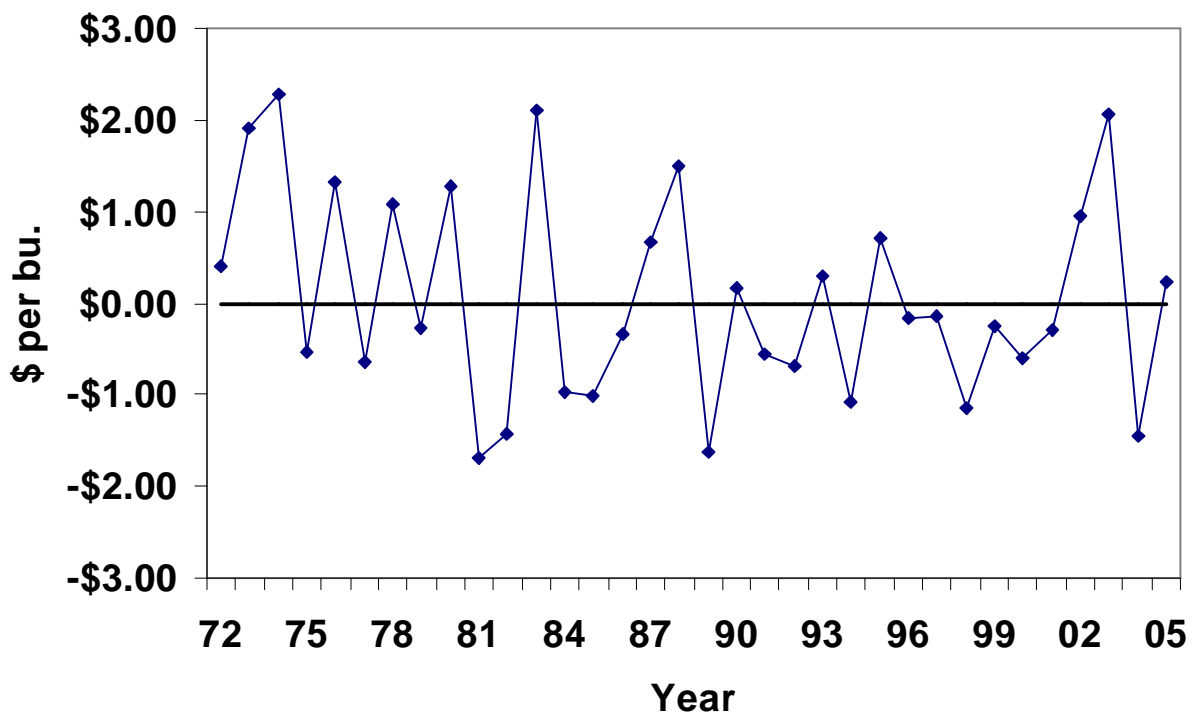
products. However, there must be a yield loss before a payment occurs in years in which the harvest price is above the base price. Hence, revenue products with guarantee increases will not have different payments than no guarantee increase products in each of the thirteen years.

Base and Harvest Prices for Soybeans

Points are:

1. Between 1972 through 2005, the harvest price did not exceed the base price by more than \$3.00 per bu. This suggests that the \$3.00 limit on CRC and GRIP harvest price will come into infrequently (see Figure 3).

Figure 3. Harvest Price Minus Base Price, Soybeans, 1972 - 2005.



2. From 1972 through 2005, the base price averaged \$5.95 per bu. while the harvest price averaged \$6.01 (see Table 1). Statistical tests did not find significant differences between base and harvest prices.
3. Short-crop years were identified as 1975, 1980, 1983, 1988, 1993, 1995, and 2003 (see Figure 2). The remaining years were classified as normal years. In normal years, the harvest price was \$.25 below the base price. In short-crop years, the harvest price was \$.48 higher than the base price.
4. Harvest prices were above base prices in 1972, 1972, 1974, 1976, 1978, 1980, 1983, 1987, 1988, 1993, 1995, 2002, 2003, and 2005. The harvest price exceeded the base price in 41% of the years.

Revenue Product Choice

In both corn and soybeans, many short-crop years were associated with increasing prices. Increasing prices in short-crop years suggests that farmers who aggressively hedge pre-harvest should consider a revenue product with a guarantee increase. Aggressive hedging often is defined as forward contracting or selling futures contracts for more than 30% of expected production. Revenue products with guarantee increases may make larger payments in years in which price rise and yields are low, typically short-crop years. These are also the years in which losses from pre-harvest hedging will occur. Hence, the revenue products may provide larger payments which will cover hedging losses.

This recommendation, however, should be tempered with coverage level choice. Often, farmers do not take the maximum coverage level. Many farmers, for example, purchase products at a 75% level. Often, the premium on a revenue product with a guarantee increase at a 75% level will cost as much as a revenue product without a guarantee increase at an 80% coverage level. From a risk standpoint, it will often be better to take the revenue product without the guarantee increase at the 80% level than the guarantee increase product at the 75% level.

Within the guarantee increase category, farmers can either choose CRC or RA-HP. Choices between these two products should be made based on premium. CRC does have price limits; however, the limit has not been exceeded between 1972 through 2005, suggesting that limits will not occur often. Differences in month for determining the harvest period are difficult to access at the time crop insurance decisions are made.

For county products, the recommendation would be to always purchase the product at the 90% coverage level. Premiums and payments can be lowered by reducing the protection level. Aggressive hedgers may wish to consider GRIP-HR while non-aggressive hedgers may consider GRIP-NoHR.

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