



## Weekly Farm Economics: Consider Hedging RP Guarantee before Harvest

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During short crop years, corn and soybeans prices often peak early and then decline throughout the remainder of the marketing year (see [here](#) for more detail). This suggests that producers may wish to consider pricing some grain before harvest. This is particularly true for farmers who insured using Revenue Protection (RP) insurance, as there may be concern that the harvest-time contracts will peak before the harvest price determination period during October, leading to lower crop insurance payments than implied by current levels of futures prices. Futures markets can be used to hedge up to the yield guarantee implied in RP policies.

### Mechanics of RP Insurance

RP is a revenue product that uses the higher of the projected or harvest price in setting its guarantee. The RP guarantee equals the Trend-Adjusted Actual Production History (TA APH) yield times the higher of the projected or harvest price times the coverage level. Payments occur when revenue is below the revenue guarantee, where revenue equals actual yield times harvest price. When revenue is below the guarantee, payment equals the revenue guarantee minus actual revenue.

Projected prices in 2012 are \$5.68 per bushel for corn and \$12.55 per bushel for soybeans. Harvest prices are averages of settlement prices during the month of October using the December 2012 contract for corn and the November 2012 contract for soybeans. Currently, prices on these contracts are higher than projected prices. In mid-July, the December corn contract is trading between \$7.50 and \$8.00 per bushel and the November soybean contract is trading between \$16.50 and \$17.00 per bushel. Harvest prices most likely will be above projected prices and RP's guarantees will be based on harvest prices.

When harvest price is above the projected price, RP essentially becomes yield insurance that makes payment when actual yield is below the TA APH yield times the coverage level. In these cases, the insurance payment equals the yield shortfall times the harvest price. Take, for example, a farm with a 175 TA APH yield and an 80% coverage level RP policy. This farm essentially has a yield guarantee of 140 bushels per acre (175 TA APH yield x .80 coverage level). If yield is 100 bushels per acre, this farm will get paid on 40 bushels, with the payment equal to 40 bushels times the harvest price. As long as futures

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price remain above the projected price, reductions in futures prices from current levels will result in lower insurance payments and vice versa. The possibility of lower prices leads to incentives to hedge up to the yield guarantee.

### Hedging Using Futures Markets

With RP insurance, futures contracts can be used to hedge up to the TA APH yield times the coverage level, with the offset for hedging changes coming from a combination of changes in crop revenue and insurance payments. This will be illustrated in the following situation:

- RP crop insurance for corn has been purchased at an 80% coverage level,
- The TA APH yield is 175 bushels,
- The cash price in October will be \$.10 below the October futures price,
- The October's futures price will be the harvest price for the RP product,
- Hedging will occur at 140 bushels (175 bushel TA APH yield x .80 coverage level),
- The current December contract price is \$7.80, and
- Actual yield will equal 100 bushels.

December corn contracts are sold now so that 140 bushels per acre are hedged at \$7.80 per bushel. These futures contracts will be purchased in October. Gains and losses are illustrated for a case in which the December contract is \$1.00 lower at \$6.80 per bushel and \$1.00 higher at \$8.80 per bushel.

\$6.80 futures price: At a \$6.80 futures price, revenues from cash sales, crop insurance, and hedging gains or losses are:

- Crop revenue equals \$670 per acre (100 yield x \$6.70 cash price (\$.10 below futures price)),
- RP payments equal \$272 per acre (40 bushel shortfall x \$6.80 settlement price),
- Hedging gain equals \$140 per acre (140 bushels x (\$7.80 sale – \$6.80 purchase)), and
- Total revenue is \$1,082 per acre (\$670 crop revenue + \$272 RP payment + \$140 hedging gain).

\$8.80 futures price: At an \$8.80 futures price, the following revenues occur:

- Crop revenue equals \$870 per acre (100 yield x \$8.70 cash price (\$.10 below futures price)),
- RP payments equal \$352 per acre (40 bushel shortfall x \$8.80 settlement price).
- Hedging gain equals -\$140 per acre (140 bushels x (\$7.80 sale – \$8.80 purchase)), and
- Total revenue is \$1,082 per acre (\$870 crop revenue + \$272 RP payment – \$140 hedging loss).

In both cases, revenue is that same at \$1,082. Hedging the entire APH now will lock in the sum of crop revenue and the insurance guarantee. Note that the actual yield does not have much impact on total revenue. Lower yields than those illustrated above will result in lower crop revenue and higher RP payments and vice versa. Slight differences in revenue as yields are lowered exist because of the basis between the cash and futures prices.

### Risks of this Strategy

While usual short crop price patterns suggest that prices will peak early, this may not be the case this year. Futures prices could peak after the October settlement period, as occurred in 1993 and 1995 (see [here](#)). This would result in hedging losses and lower incomes than would be the case had hedging not occurred.

Margin calls could occur if futures prices rise after setting the hedge. For example, an increase in corn price by \$1.00 per bushel, something that is conceivable, would result in roughly a \$140 per acre margin call if 140 bushels per acre are hedged. Margin calls due to rising prices could occur at any time between placing and lifting the hedge.

Harvest prices used to set crop insurance guarantees cannot exceed two times the projected price. This means that the 2012 harvest price for corn cannot exceed \$11.36 (\$5.68 x 2) and for soybeans cannot

exceed \$25.10 ( $\$12.55 \times 2$ ). It is unlikely futures prices will be above these levels; however, settlement prices above those levels would cause crop insurance payments not to cover all of hedging losses.

The above examples assume that the harvest price is the same as the futures price at which hedges are lifted. In practice, this will be difficult to do, as the settlement price is based on an average of October settlement prices. If multiple futures contracts are needed to implement the hedge, lifting those contracts throughout October would minimize difference between the lift prices in hedges and the crop insurance settlement price. Basis could change from those used in the examples.

### **Variations of this Hedge**

1. The above examples assume that the entire yield guarantee is hedged. A farmer could choose to hedge only a portion of the yield guarantee. For example, choosing to hedge 50% results in a price equaling half the current futures price and half the harvest price in October.
2. Hedging could be accomplished in stages over the next month. For example, one-fourth could be hedged in each of the next four weeks, thereby providing more of an average price for placing the hedge.
3. A farmer could accomplish this hedge through a combination of forward contracting and hedging using futures markets. Forward contracting could be done at a level where there is relative certainty that harvested bushels will cover the contracted amount.
4. For producers who have already forward contracted or hedged 2012 production, the difference between the yield guarantee and amount hedged could still be hedged using the approach described above.

### **Summary**

Producers may want to hedge all or a portion of their yield guarantees to take advantage of high prices that currently exist for harvest-time futures contracts. While prices could move higher, current prices would allow many farms to lock in profits, a situation that may exist later in the year.