Ag Decision Maker

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Using Hedging in a Marketing Program

Hedging is a valuable tool to use in implementing a grain marketing program. Additional information on hedging can by obtained from Grain Price Hedging Basics, File A2-60 and Forward Cash Contracting, File A2-62.

There are three general ways to use hedging as a grain marketing tool:

- Establishing the price before harvest,
- Establishing price after harvest, and
- Earning a storage return.

Establishing price before harvest

The future market allows a producer to establish prices as much as one year before harvest. Example 1 provides an illustration of how the futures price can be established several months before harvest. On May 10, new crop December futures are trading at $3.00 per bushel. The producer decides this is an acceptable futures price level and sells 5,000 bushels of December futures at $3.00. This is a hedged position, since at least 5,000 bushels of corn are expected to be produced in the fall and 5,000 bushels of futures are sold as a substitute for selling the 5,000 bushels to the local elevator. The expected basis at fall delivery is 30 cents under the December futures contract, yielding an expected net price of $2.70 per bushel for fall delivery.

On Oct. 20, the corn is delivered to the elevator and the hedge is converted to a cash sale (see Example 1). The conversion is made by the two-stop process of selling 5,000 bushels of cash corn to the local elevator at $2.50 and then buying 5,000 bushels of December futures at $2.80. This action offsets the futures sale and converts it to a cash sale.

In this example, both the cash price and the futures price move down 20 cents per bushel after the hedge is placed on May 10. The loss of 20 cents in the cash market is compensated by the 20 cent profit in the futures market.

A pricing summary is included in Example 1. In this example, the producer prices 5,000 bushels of futures at $3.00 and establishes the basis of 30 cents for a net price of $2.70 per bushel. In the futures summary, futures are sold for $3.00 and bought back for $2.80 for a 20 cent gain. The hedging summary shows that the corn is actually sold to the elevator at $2.50. With a 20 cent gain in futures, the net price is $2.70.

Example 1. Using futures to price before harvest. [1/]

	Futures	Basis	Cash
May 10	Sell 5,000 bushels of December futures at $3.00.	Expected basis is 30¢ under the December futures.	Expected net price is $2.70 for fall delivery.
Oct. 20	Buy 5,000 bushels of December futures at $2.80.	Basis is 30¢ under the December futures.	Sell 5,000 bushels of cash corn at $2.50.

Pricing Summary		Futures Summary		Hedging Summary	
Futures price	$3.00	Sell futures	$3.00	Cash selling price	$2.50
Local basis	-.30	Buy futures	-2.80	Gain in futures	+.20
Net price	$2.70	Futures gain	$+.20	Net price	$2.70

[1/] Hedging cost of about 1 to 2 ½ cents per bushel not included.

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Hedging *locks-in* the futures price component of the local corn price. Thus, only changes in the expected local basis will influence the final price received for the hedged corn.

Example 2 illustrates what happens when futures price rises and the basis is wider than expected. Assume the same hedging occurs on May 10 as in Example 1. By Oct. 20, however, futures have risen to $3.20 and the basis has widened to 35 cents.

The pricing summary shows futures established at $3.00. A 35 cent basis yields a net price of $2.65 per bushel. In the futures summary, futures are sold for $3.00 and bought back for $3.20 – a 20 cent loss.

The hedging summary shows that cash grain is sold to the elevator for $2.85 per bushel, but 20 cents is lost in the futures. So the net price is $2.65. You will note that while hedging protects against declines in futures prices, it also eliminates potential financial gains from futures price increases.

In this hedge example, the final price is 5 cents lower than in Example 1. This is because the basis is 35 cents rather than 30 cents. In both examples, the futures price is *locked-in* at $3.00, but the basis is not established until the cash grain is sold. Thus, corn hedgers still face the risk of basis change, and the actual net price will not be known until the actual basis is known.

Example 2. Pricing before harvest – with widening basis. [1/]

	Futures	Basis	Cash
May 10	Sell 5,000 bushels of December futures at $3.00.	Expected basis is 30¢ under the December futures.	Expected net price is $2.70.
Oct. 20	Buy 5,000 bushels of December futures at $3.20.	Basis is 35¢ under the December futures.	Sell 5,000 bushels of cash corn at $2.85.

Pricing Summary		Futures Summary		Hedging Summary	
Futures price	$3.00	Sell futures	$3.00	Cash selling price	$2.85
Local basis	-.35	Buy futures	-3.20	Loss in futures	-.20
Net price	$2.65	Futures loss	$.20	Net price	$2.65

[1/] Hedging cost of about 1 to 2 ½ cents per bushel not included.

Establishing price after harvest

The same concept applies to pricing corn that is in storage but not yet priced. This hedging situation is shown in Example 3. For example, a producer with 15,000 bushels of corn in storage during January may want to establish the future price for early march delivery. On Jan. 10, the March corn futures price is $2.80 per bushel. The expected basis for March 1 delivery is 10 cents under the March futures. Thus, when the hedge is placed in January by selling March futures, a $2.70 net price is expected.

On March 1 the hedge is lifted by selling 15,000 bushels in the cash market and buying back the futures. The final price received is $2.68 per bushel, which results from selling futures at $2.80 and converting the hedge to a cash sale at a 12 cent basis. The price is 2 cents lower than the $2.70 expected on Jan. 10 because the actual basis was 12 cents instead of the expected 10 cents.

Earning a storage return

Hedging is regularly used by grain elevators to *lock-in* a carrying charge or storage return in the futures market. A carrying charge market exists when the futures price for each subsequent contract month is higher than the previous contract. In this situation the December contract is the lowest price, March is a higher price than December, May is a higher price than March, etc.

The use of the storage hedge is illustrated in Example 4. At harvest time (Oct. 20) the December futures price is $2.65, the basis for current delivery is 40 cents, so the cash big price is $2.25. On the same day, the May futures price is $2.80. The expected basis for early May delivery is 10 cents under May futures, so the expected May hedge price is $2.70 ($2.80 - .10 = $2.70). Thus, the expected gross storage return is the expected $2.70 May hedging price less the $2.25 harvest price, or 45 cents per bushel.

Example 3. Establishing price after harvest. [1/]

	Futures	Basis	Cash
Jan. 10	Sell 15,000 bushels of March futures at $2.80.	Expected basis for March 1 delivery is 10¢ under the March futures.	Expected net price is $2.70 for early March delivery.
March 1	Buy 15,000 bushels of March futures at $2.65.	Basis is 12¢ under the March futures.	Sell 15,000 bushels of cash corn at $2.53.

Pricing Summary		Futures Summary		Hedging Summary	
Futures price	$2.80	Sell futures	$2.80	Cash selling price	$2.53
Local basis	-.12	Buy futures	-2.65	Gain in futures	+.15
Net price	$2.68	Futures gain	$.15	Net price	$2.68

[1/] Hedging cost of about 1 to 2 ½ cents per bushel not included.

The storage hedge is initiated by selling the May futures at $2.80 on October 20. The producer's market position in this example is long (owns) 10,000 bushels of corn in storage and short (sold) 10,000 bushels of May futures. The hedge is converted to a cash sale on May 5. The basis on that date is 5 cents under the May futures.

The pricing summary shows a futures price established in October at $2.80 with an actual basis of 5 cents, giving a net price of $2.75 per bushel. The hedging summary shows that the cash corn was sold to the elevator at $3.15 but a 40 cent futures loss ($3.20 - $2.80) resulted in a $2.75 net price.

The gross return to hedged storage (before deducting storage costs) is 50 cents per bushel. This is shown in the gross storage return summary. Selling the May futures *locked-in* the 15 cents December to May carrying charge (also called the spread). The basis appreciated from 40 cents under at harvest to 5 cents under in May for a gain of 35 cents. The 15 cent spread plus the 35 cent basis appreciation result in a gross storage return of 50 cents.

The 50 cent gross storage return must be compared with the cost of storing corn from October 20 to May 5 to determine if storage is profitable.

While the expected basis appreciation in October was 30 cents, it actually gained 35 cents. This helps illustrate that with a storage hedge, as with the other hedges local basis changes will influence the net price and the gross storage return.

Example 4. Storage hedge. [1/]

	Futures	Basis	Cash
Oct. 20	December futures is $2.65	Basis for current harvest delivery is 40¢ under December futures.	Cash big for current delivery is $2.25
Oct. 20	Sell 10,000 bushels of may futures at $.280	Expected early may basis is 10¢ under May futures.	Expected net price is $2.70 for early May.
May 5	Buy 10,000 bushels of May futures at $3.20.	Basis is 5¢ under May futures.	Sell 10,000 bushels of cash corn at $3.15

Pricing Summary		Hedging Summary		Gross storage return-summary	
Futures price	$2.80	Cash selling price	$3.15	December-May futures spread	$.15
Local basis	-.05	Loss in futures	-.40	December-May basis gain	$.35
Net price	$2.75	Net price	$2.75	Total gross Storage return	$.50

[1/] Hedging cost of about 1 to 2 ½ cents per bushel not included.

Selecting the appropriate delivery month

Commodity exchanges have established five corn and seven soybean delivery months in each crop year. These are December, March, May, July, and September for corn. Delivery months for soybeans are November, January, March, May, July, August, and September.

The contract month which is closest to the time a producer normally delivers corn or soybeans should usually be the contract month selected for hedging. If storage is not available grain must be sold at harvest, the December contract should generally be used to price new crop corn and the November contract for soybeans, For corn normally delivered from storage in late February, the March contract would normally be sold, etc.

For a storage hedge, the short futures position usually should be placed in the contract delivery month that provides the maximum net storage returns. Net storage returns are the gross storage returns less storage costs such as interest, storage fees, quality deterioration, etc. The expected gross storage returns are composed of the futures carrying charge or spreads and the expected basis gain. Hedging can *lock-in* the futures carrying charge, as seen in Example 4.

For example, if the expected gross storage return from March to May is greater than the cost of storage from March to May, additional net storage earnings can likely be earned by placing the hedge in the May contract rather than the March contract. However, if the expected gross storage returns do not cover the March to May storage cost, the hedge should generally be placed in the March contract. Factors such as:

- concern over maintenance of quality,
- labor and equipment to move grain,
- need to use storage facilities for other crops,
- cash flow needs, and
- outlook for changes in the basis or spreads may all influence which contract month should be used for hedging.