

Grain Pricing Tools and Strategies

Year 2000 Master Marketer Program  
Moorhead, MN

February 16, 2000

*presented by*

Edward C. Usset

# Grain Pricing Tools and Strategies

## Table of Contents

<u>Section</u>		<u>Page</u>
I.	Introduction	2
II.	A Review and Discussion of Grain Pricing Tools and Strategies	5
	1. Store and hold grain for later sale	6
	2. Sell grain at harvest then buy a call option or futures to benefit from a potential rally in the market (paper farming)	6
	3. Vertical Call Spread	7
	4. Futures Hedge	10
	5. Forward Cash Contract	10
	6. Hedge To-Arrive or Basis not Established Contract	11
	7. Buy Put Options (Minimum Price Contract)	13
	8. “Fence” in a Price with Options	14
	9. Write (Sell) Call Options to Achieve a Higher Effective Price	18
	10. Delayed Price Contract	19
III.	Review of Carrying Charges and Basis	20
IV.	Summary of Grain Pricing Tools	25

## **I. Introduction**

---

For the opening day workshop of the Year 2000 Master Marketer Program, we have three main objectives:

- 1. Review a number of different grain pricing tools using examples, while discussing the pros and cons of each tool.**
- 2. Discuss carrying charges, basis, and the current farm program as critical factors to consider in selecting the “right” pricing tool.**
- 3. Break into groups to work through a price situation, working to select the right tool for the current situation.**

Before we begin our discussion of grain pricing tools, let’s ask a fundamental question: Does marketing matter? I will try to answer that question with “A Tale of Two Strategies” (and apologies to Charles Dickens).

The supply and price situation during the harvest of 1999 was very similar to the year before. In 1999, as in 1998, free stocks of all grains were large while storage availability was scarce. Carrying charges were sizable in the futures markets, while the scarcity of storage capacity shows itself in weaker than normal basis levels throughout the grain belt.

Let's compare the results of two different grain marketing strategies, both of which are quite common and often used by grain growers and merchandisers. The first strategy involves the executing a storage hedge with futures. The second strategy involves the trendy and tempting use of call options for paper farming.

Marshall, MN 1998/99

(Actual Prices!)

**Strategy #1: Executing a Storage Hedge with Futures**

Date	Cash Market	Futures Market	Basis	Action
October 29, 1998	Local corn bid at \$1.66.	\$2.19 December \$2.30 March \$2.40 July	Harvest basis is 53 under the Dec, 64 under the March. A "normal" basis is 45-50 under the Dec at harvest.	Let's take an LDP of about 10 cents, place the crop in storage, and sell March futures.
January 22, 1999	Local bid for corn at \$1.86	March futures trading at \$2.16.	30 cents under the March - the basis has narrowed 34 cents in just 3 months!	Unwind the hedge by selling corn in storage and buy back futures.

Net Result: \$2.10 per bushel and I was hedged against any further price erosion!

I executed a strategy that takes advantage of the large carry in the market. In the end I received \$2.00 per bushel for my corn (\$2.30 March futures sale less 30 under basis, or \$1.86 cash sale plus a 14 cent futures gain) plus another 10 cents in an LDP payment.

Using a forward contract with a local elevator probably would not have yielded as good a net price. But even a bid of 50 under the March would have resulted in a net price of \$1.90 per bushel. Either way, my strategy resulted in a price 15-35 cents over the loan rate.

Two dollars for a bushel for corn! That's not enough to cover my costs and earn a decent living. My broker says paper farming can get cash into my hands today, halt any further storage costs, plus allow me to benefit from the price rally that is sure to come in the months ahead.

Marshall, MN 1998/99

(Actual Prices!)

**Strategy #2: "Paper Farming" with Call Options**

Date	Cash Market	Options Market	Basis	Action
October 29, 1998	Local corn bid at \$1.66.	\$2.19 December \$2.43 July July 240 calls cost 18 1/4 cents	Harvest basis is 53 under the Dec, 77 under the July.	Let's take an LDP of about 10 cents, sell corn for \$1.66, and buy July 240 calls for 18 1/4 cents (July futures trading at \$2.43).
January 22, 1999	not applicable, but \$1.86.	July futures trading at \$2.16.	not applicable	Still waiting for July futures to catch fire!
March 12, 1999	not applicable, but \$1.87.	July futures trading at \$2.29 July 240 calls are at 8 1/4 cents.	not applicable	Still waiting for the bull market.
May 14, 1999	not applicable	July futures trading at \$2.22. July 240 calls are at 8 1/4 cents.	not applicable	....waiting
June, 1999	not applicable, but \$1.87.	July futures trading at \$2.21. July 240 calls are at <b>1/8</b> cent.	not applicable	ouch

Net Result: \$1.58 per bushel. I received \$1.66 for my corn at harvest plus another 10 cents in an LDP. But I also chose to spend 18 cents per bushel on July call options that eventually expired worthless. I have successfully taken a guaranteed \$1.75 per bushel (the local loan rate) and, through savvy marketing decisions, deftly turned it into \$1.58.

Consider a farmer with 500 acres of corn, yielding 130 bushels per acre for a total production of 65,000 bushels. The 52 cent per bushel difference in the two strategies is equal to \$33,800. Conclusion – marketing matters!

## II. A Review and Discussion of Grain Pricing Tools and Strategies

Farmers have many different methods to price their grain. While the futures markets play a central role in grain pricing, futures and options need not be employed directly as there often exists a cash market equivalent in the pricing tools. The following is a list of pricing tools - some simple, some sophisticated - available to grain growers. These pricing tools are categorized into three groups of related tools: (1) “the market must go higher” pricing tools, (2) forward pricing tools, and (3) minimum price contracting tools

### Grain Pricing Tools

Cash Market Alternative	Futures/Options Market Alternative
<p><u><i>“The market must go higher” pricing tools</i></u></p> <p><b>Store and hold grain for later sale.</b></p>	<p><b>"Paper farming" with futures contracts:</b> Sell cash grain, buy futures.</p> <p><b>"Paper farming" with call options:</b> Sell cash grain, buy call options.</p> <p><b>Vertical call spread:</b> Sell cash grain, buy a call option, and sell a higher strike price call.</p>
<p><u><i>Forward pricing tools</i></u></p> <p><b>Forward contract:</b> Cash contract with local elevator for forward delivery.</p> <p><b>Hedge-to-Arrive or “Basis not Established” contract:</b> Contract with local elevator, who in turn sells futures against anticipated production or grain held in storage.</p>	<p><b>Futures hedge:</b> Sale of futures against anticipated production or grain held in storage.</p>
<p><u><i>Minimum price contracting tools</i></u></p> <p><b>Minimum price contract:</b> Contract with local elevator, who in turn buys a put option.</p>	<p><b>Buy put options:</b> Purchase of a put option to establish a minimum price while retaining the upside price potential.</p> <p><b>“Fence” in a price with options:</b> Purchase of a put option, sale of a higher strike price call.</p> <p><b>"Paper farming" with call options:</b> Sell cash grain, buy call options.</p>

In addition to the pricing tools noted in the previous table, there are several more special situation pricing tools that must be considered. Unlike the previous three groups of tools, these pricing tools do not have a counterpart in the cash or futures market.

Cash Market Alternative	Futures/Options Market Alternative
<i>Special situation pricing tools</i>	
none	<b>Write a covered call:</b> Write call options against grain held in storage.
<b>Basis contract:</b> Fix the basis in a contract with local elevator, either for grain in storage or anticipated harvest.	none
<b>Delayed price contract:</b> Contract with local elevator, who takes grain and title in for free storage.	none

#### “The Market Must Go Higher” Pricing Tools

---

##### **1. Store and hold grain for later sale.**

This is quite possibly the most common grain pricing strategy employed today – it is also a very risky strategy. The farmer will benefit from a market rally. On the other hand, they have no protection against a falling market. A producer could conceivably end up with a net price substantially less than the loan rate.

##### **2. Sell grain at harvest then buy a call option or futures to benefit from a potential rally in the market (paper farming).**

More and more farmers are examining the possibility of "paper farming". Paper farming is the term used to describe the strategy of selling your harvested grain and replacing the sale with the purchase of futures or call options. The advantages of this strategy are two-fold. First, the farmer is able to generate cash from the sale of grain. Second, the costs (mainly shrink and interest) and hazards of storing grain are avoided. *This alternative makes some sense when the basis is strong and carrying charges are very small or negative.*

- eliminates storage costs
- the price risk remains, transferred from the cash market to the futures
- some would argue strongly that this is not hedging but speculating
- sell when the basis is *high*

Let's examine this idea further by taking into consideration the local basis. As an example, consider the logic of this strategy when the basis is "weak". A weak basis simply means that

your cash price is lower than normal relative to the futures market. In this situation does it make sense to sell low (sell the depressed cash market) and buy high? **Sell low and buy high?** That doesn't seem to make sense. On the other hand, if the basis is strong - cash prices are high relative to futures - this strategy may make very good sense. Paper farming in this situation involves selling the high priced market and buying the low priced market. This one example serves as an excellent reminder of the importance of basis as one more factor in your marketing decisions.

Paper Farming Examples:

A corn farmer in Marshall needs to sell his crop for cash, but wants to "stay in the market" because of tight supplies and the possibility of a sharp price rise between now and spring.

<b>"Paper Farming" with Call Options</b>			
Date	Cash Market	Options Market	Basis
October 22, 1999 (actual market prices)	Sell corn at harvest for \$1.51 (Dec futures trading at \$2.00).	Buy July 220 calls for 17 1/4 cents (July futures trading at \$2.23).	Harvest basis is 49 under the Dec, 72 under the July.
Net Result		Stay tuned, but July futures must rise over \$2.37 1/4 before the trade is profitable.	

A soybean farmer in Pipestone needs to sell his crop for cash, but wants to stay in the market because of the possibility of a sharp price rise between now and spring.

<b>"Paper Farming" with Call Options</b>			
Date	Cash Market	Options Market	Basis
October 22, 1999 (actual market prices)	Sell corn at harvest for \$4.04 (Nov futures trading at \$4.73).	Buy July 500 calls for 36 5/8 cents (July futures trading at 5.05).	Harvest basis is 69 under the Dec, 101 under the July.
Net Result		Stay tuned, but July futures must rise over \$5.36 5/8 before the trade is profitable.	

### 3. Vertical call spread

The most common complaints about options based pricing strategies focus on their high cost of execution. The previous two examples called for out of pocket expenditures of 17 and 36 cents per bushel, respectively, for corn and soybean options. For someone wishing to paper farm with 25,000 bushels (5 contracts), 17 and 36 cents per bushel translates into \$4,000 to \$9,000 in out of pocket expenses, not including brokerage fees!

For many people this is too high a cost to pay to “stay in the market”. The alternative is a vertical call spread. To execute a vertical call spread by simultaneously purchasing call options and selling higher strike price call options.

Vertical Call Spread			
Date	Cash Market	Options Market	Basis
October 22, 1999 (actual market prices)	Sell corn at harvest for \$1.51 (Dec futures trading at \$2.00).	Buy July 220 calls for 17 1/4 cents (July futures trading at \$2.23).  <b>Sell July 240 calls for 10 1/4 cents.</b>  Net cost of 7 cents per bushel, plus brokerage fees. Margins must be posted on all option sales.	Harvest basis is 49 under the Dec, 72 under the July.
Net Result		Stay tuned, but July futures now only need to rise over \$2.27 before the trade is profitable. But my upside is also limited at \$2.40, by the sale of the 240 July call.	

Your response to these examples is ... “The cost of paper farming with call options is high – even using the vertical call spread - but it still appeals to me.” Let’s explore one more way of buying calls that is less expensive but keeps you in the market. Let’s buy “out-of-the-money” call options. Where the vertical call spread gave you a lower cost way to profit from a modest price rise (with a limited upside), buying “OTM” call options give you a lower cost way to profit from a large price rise, with no upside limit. The problem? Modest price rises will not result in a profitable trade.

<b>Paper Farming with “OTM” Call Options</b>			
<b>Date</b>	<b>Cash Market</b>	<b>Options Market</b>	<b>Basis</b>
October 22, 1999 (actual market prices)	Sell corn at harvest for \$1.51 (Dec futures trading at \$2.00).	With July futures trading at \$2.23, <b>buy July 280 calls for 4 cents</b> . These calls are currently 57 cents out-of-the-money.	Harvest basis is 49 under the Dec, 72 under the July.
Net Result		Stay tuned, but <b>July futures must rise over \$2.84</b> before the trade is profitable.  A 30-50 cent rally will not help you much!	

## Forward Pricing Tools

---

The futures market can be used by farmers to establish a forward price for grain either directly with a futures hedge, or indirectly through forward contracting or through a hedge-to-arrive contract.

### **4. Futures Hedge**

A soybean grower in Fergus Falls is harvesting a good size crop. He would like to sell futures to earn a return to storage. This is called a storage hedge because the producer knows, from studying the local basis, that the basis narrows from harvest into the new year.

<b>Storage Hedge - Selling Futures to Earn a Return to Storage</b>			
Date	Cash Market	Futures Market	Basis
October 30, 1998 (actual market prices)	Take the LDP and put soybean crop into storage. Current local price is \$4.93 and Nov. futures are \$5.59.	Sell May soybean futures at \$5.86. Note the 27 cent carry from Nov to May.	Local basis is 66 "under" the Nov. The May basis is 93 under. You expect the basis to narrow to 60 under.
January 15, 1999	The cash market has declined since harvest to \$4.77. Sell beans to local elevator.	"Unwind the hedge" - buy May futures trading at \$5.32.	Selling basis is 55 under, stronger than expected (earlier than expected too).
Net Result	16 cent loss on grain held in storage	Futures position gain of 54 cents.	Net price received is \$5.31 (\$4.93 harvest price plus 38 cent basis gain), plus the LDP.

If a farmer elects to use the futures market, they will need to pay for the services of a broker and maintain a margin account. There is also some degree of basis risk – the idea that, while basis does tend to follow a seasonal pattern, it is still not completely predictable. However, using futures directly to forward price has some advantages, including greater flexibility and the average price is usually higher.

### **5. Forward Cash Contract**

Grain elevators use their knowledge of basis to offer producers new crop prices for a crop just planted, or forward prices for a crop held in storage. These contracts can be very flexible and

the farmer need not worry about margins, but the elevator typically has a "cushion" built into the buying basis - the grower can usually get a better net price by hedging directly with futures. It is not known exactly what forward price the elevator would bid for soybeans at harvest. An educated guess might be 65 cents under the May futures for March/April delivery, or \$5.21 per bushel. This price was 10 cents lower than the price received by the farmer who used futures directly. But forward cash contracts have their own advantages:

- exact price is known (i.e. the basis is fixed)
- quantity contracted can differ by less than a full contract unit
- no brokerage fees
- no margin accounts or margin calls

#### ***6. Hedge To-Arrive or Basis not Established Contract***

The hedge-to-arrive contract is hybrid created to give growers some of the best advantages of both the forward contract and pricing with futures. The producer locks in the futures price with the elevator, but not the basis. These contracts are popular when the futures prices looks favorable but the basis is weak (the forward contract locks in both the futures and the basis). This contract is backed up by the elevator through the sale of futures.

- advantage to growers? - no need to deal with margins!
- the elevator takes a risk on contract performance (what if the grower defaults?)

**Pre-Harvest Grain Pricing:** Too many grain producers approach marketing as a task to be dealt with after harvest. For many, this is the only certain way to deal with production risks. However, in today's environment of increased price volatility, pricing opportunities can develop any time, sometimes well before the crop is harvested. Weather scares and new crop uncertainty can push prices higher in a developing crop. Many research studies have shown that *pre-harvest* pricing strategies that take advantage of these market bulges are more profitable than post-harvest strategies.

The same tools used to earn a return to storage - the **forward contract**, **futures hedge**, and the **hedge-to-arrive** contract – can also be used to establish prices before harvest. To sell futures against your developing crop, you will need to open an account with a broker and post margins. With the hedge-to-arrive contract, your local elevator sells futures for you, relieving you of any margin issues. The forward contract is the simplest way is to establish a price for your soybeans. With the forward contract, you can establish a price for your grain with your local elevator well in advance of harvest, with no worry about margin calls. The following is an example of how a farmer could have used the futures market in January of 1998 to establish a favorable price for soybeans.

<b>Selling Futures to Establish a Price on the Crop Prior to Harvest</b>			
Date	Cash Market	Futures Market	Basis
January 30, 1998	Local elevator is bidding \$6.06 for new crop.	Sell November futures trading at \$6.61.	The expected harvest basis for beans is 60 under. <b>Your expected price is \$6.01.</b> (\$6.61-.60).
Harvest time October 20, 1998	Sell soybeans to local elevator for \$4.87/bu.	November futures trading at \$5.57, buy back futures for 104 cent gain.	Actual selling basis is 70 cents under the November, much weaker than expected.
Net Result	Soybeans sold for \$4.87/bu.	Net futures gain of \$1.04.	<b>Net price received is \$5.91/bu.</b>

\* All quotes are for Fergus Falls, MN, per AgWeek magazine.

**Which forward pricing tool is best?** Using futures directly? Forward contracting? The hedge-to-arrive contract? Each tool boasts several advantages.

With a **forward price contract**, the grain elevator uses their knowledge of basis to offer producers new crop prices for a crop just planted (or forward prices for a crop held in storage). These contracts can be very flexible and the farmer need not worry about margins and brokers, but the elevator typically has a "cushion" built into the buying basis, i.e. the grower can usually get a better net price by hedging directly. The advantages of a forward cash contract to the farmer include (1) exact price is known (i.e. the basis is fixed), (2) quantity contracted can differ by less than a full contract unit, and (3) it is not necessary to maintain a margin deposit with an FCM.

Pricing with **futures** will require a broker and opening a margin account. Margin calls will result if the market moves against your position. But using futures directly to forward price has it's own advantages, including (1) the average price is usually higher, and (2) greater flexibility.

With a **hedge to-arrive** contract, the producer locks in the futures price with the elevator, but not the basis. These contracts are popular when the futures prices looks favorable but the basis is weak (the forward contract locks in both the futures and the basis). This contract is backed up by the elevator through the sale of futures. The advantage to growers is simple - no need to deal with margins! The elevator may charge a service fee but producers may find that fee well worth the trouble of avoiding margin calls.

## Minimum Price Contracting Tools

Hedging with futures contracts is used to lock-in a certain price level, leaving only the basis risk to manage. But because hedging involves holding opposite positions in the cash and futures markets, the benefit of favorable price moves are taken away. Too often, hindsight leaves hedgers wishing they had not offset the risk of a cash position when prices continued to move in their favor. This leads to the appeal of options: **Buying options on futures contracts affords the hedger protection against an unfavorable price move, while at the same time offering the opportunity to benefit from a favorable price move.** In addition, option buyers do not have to deposit margins, and can avoid the dreaded "margin call".

### 7. Buy put options (*Minimum Price Contract*)

This strategy limits downside price risk while keeping open the opportunity to benefit from a market rally. Let's explore the execution of this strategy, which can be accomplished through the direct purchase of put options, or the use of a minimum price contract at the local elevator. To calculate your minimum price established using options, use the following formula:

$$\text{Minimum Price} = \text{Strike price} + \text{local basis} - \text{premium} - \text{brokerage costs}$$

A soybean grower in Fergus Falls is harvesting a good size crop. He would like to hold the crop in storage in anticipation of price increase. He can buy put options for downside price protection, in effect locking in a minimum price.

<b>Buying Put Options to Establish a Minimum Price on a Crop in Storage*</b>			
Date	Cash Market	Options Market	Benefit
October 30, 1998 <b>(actual market prices)</b>	Take the LDP and put soybeans into storage. Current price is \$4.93 and Nov. futures are \$5.59	With May futures trading at \$5.86, pay a premium of 22 cents to buy May 575 puts.	Locked in a minimum price of \$4.93 (575 put, less 60 cent basis, less 22 premium), not counting the LDP.
January 15, 1998 <b>(actual market prices)</b>	Sell beans to local elevator for \$4.77.	May futures trading at \$5.32. Exercise 575 May put options, buy futures for a 43 cent gain.	No gain in futures or options. Note the basis reached 55 cents under.

Net Result	16 cent loss on grain held in storage	Net futures/options gain of 21 cents (43 cent futures gain less 22 cent option cost).	Net price received is \$4.98 (\$4.77 cash price plus 21 cent net gain), not counting the LDP.
------------	---------------------------------------	---	---

- \* This strategy could also be used to establish a minimum price *before* harvest. A **minimum price contract** from the local elevator works the same way, but the elevator may charge service fees for executing the trades.

Consider how this options transaction would have worked out in different circumstances, namely a rising or flat market.

January 15, 1999 <b>(higher market scenario)</b>	The market has risen 125 cents since harvest. Sell beans in storage to local elevator for \$6.18	May futures trading at \$6.73, let options expire worthless. (Note the 55 under basis).	No gain in futures or options.
Net Result	125 cent gain on grain held in storage	Net futures/options cost of 22 cent premium.	Net price received is \$5.96 (6.18 price less 22 cent premium), not counting the LDP.

<b>April 20, 1999 (flat market scenario)</b>	The market has risen 37 cents since harvest. Sell beans in storage to local elevator for \$5.30	May futures trading at \$5.85 (note the 55 under basis), the 575 May put options expire without exercise.	No gain in futures or options.
Net Result	37 cent gain on grain held in storage	Net futures/options cost of 22 cent premium.	Net price received is \$5.18 (\$5.30 price less 22 cent option cost), not counting the LDP.

Note that the regular futures storage hedge gave better results in two of the three market scenarios (flat or lower prices). Only if the market rose sharply would the options strategy be preferred. Why? Buying options cost money, and this cost cuts into your net price received. The desire to cut the cost of a minimum price trade leads to the use of an options price “fence”.

8. ***“Fence” in a Price with Options***

The most common complaints about options based pricing strategies focus on their high cost of execution. The previous examples called for out of pocket expenditure of 22 cents for soybean options. For someone wishing to paper farm with 25,000 bushels (5 contracts), 22 cents per bushel translates into \$5,500 in out of pocket expenses, not including brokerage fees!

For many people this is too high a cost to pay to maintain upside price potential. The alternative is to build a price fence by simultaneously purchasing put options and selling higher strike price call options.

<b>“Fence” in a Minimum Price with Options</b>			
Date	Cash Market	Options Market	Benefit
October 30, 1998 <b>(actual market prices)</b>	Take the LDP and put soybean crop into storage. Current local price is \$4.93 and Nov. futures are \$5.59. Local basis is 66 "under".	With May futures trading at \$5.86, pay a premium of 22 cents to buy May 575 puts.  <b>Sell May 650 calls for 18 cents.</b>  Net cost of 4 cents per bushel, plus brokerage fees. Margins must be posted on all option sales.	Locked in a <b>higher</b> minimum price of <b>\$5.11</b> (575 put, less 60 cent basis, less 4 net premium cost), not counting the LDP.  Due to the sale of 650 calls, my upside is also limited to <b>\$5.86</b> (650 call, less 60 cent basis, less 4 net premium cost), not counting the LDP.
Net Result			This strategy has fenced in a net cash price between <b>\$5.11 and \$5.86</b> per bushel, not counting the LDP.

**Options as Effective Pre-Harvest Pricing Tools**

Options can also be employed as effective **pre-harvest pricing** tools. There are two ways to establish a minimum price using options. The first way is to purchase put options in the same manner outlined in the previous examples. An alternative way to establish a minimum price is to combine some form of a forward price (cash contract, futures, or hedge-to-arrive) with the purchase of a call option. Let's consider one example of each.

To calculate your minimum price established using put options, use the following formula:

$$\text{Minimum Price} = \text{Strike price} + \text{local basis} - \text{premium} - \text{brokerage costs}$$

<b>Buying Put Options to Establish a Minimum Price*</b>			
Date	Cash Market	Options Market	Benefit
January 30, 1998 (actual market prices)	Local elevator is bidding \$6.06 for 1999 new crop soybeans.	Buy November 650 soybean puts for 38 cents. (November futures trading at \$6.61).	The expected harvest basis for beans is 60 under. <b>\$5.52</b> minimum expected price. (\$6.50-.60-.38).
Harvest time October 20, 1998	Sell soybeans to local elevator for \$4.87 (Nov beans trading at \$5.57).	November futures trading at \$5.57, exercise option and buy back futures for 93 cent gain.	Actual selling basis is 70 cents under the November, much weaker than expected.
Net Result	Soybeans sold for \$4.87.	Net futures gain of 55 cents (93-38).	<b>Net price received is \$5.42.</b>

\* All quotes are for Fergus Falls, MN per AgWeek magazine.

An alternative way to establish a minimum price would be to combine a forward contract with a call purchase. To calculate your minimum price established using call options, use the following formula:

$$\text{Minimum Price} = \text{Forward cash price} - \text{premium} - \text{brokerage costs}$$

<b>Forward Price and Buy Call Options to Establish a Minimum Price</b>			
Date	Cash Market	Options Market	Benefit

January 30, 1998 (actual market prices)	Sell new crop soybeans to local elevator for \$6.06.	Buy November 675 soybean <b>calls</b> for 39 cents. (November futures trading at \$6.61).	Because you used a cash contract, basis is not an issue. <b>\$5.67</b> minimum expected price. (\$6.06-.39).
Harvest time October 20, 1998	Deliver soybeans to local elevator.	November futures trading at \$5.57, let call option expire without exercise.	
Net Result	Soybeans sold for \$6.06.	Options loss of 39 cents.	<b>Net price received is \$5.67.</b>

#### Futures vs. Options – Which Tool for the Hedger?

Both futures and options can be employed as effective risk management tools. But which tool is best for the hedger? No simple answer exists, but a simple **rule of thumb** may help. For short hedgers (e.g. farmers with grain stocks, or farmers looking to forward price grain), **buying put options (or selling cash grain and buying call options) offer the best alternative in a market that is trending higher.** Hedging with **futures will work best in markets that are trending lower.**

The advantages of buying options include (1) limited risk, (2) no margin calls, and (3) the potential to benefit from a favorable price move. The disadvantage? You must pay a premium - and options can be expensive!

The high cost of options can be illustrated with the corn market. For corn in a normal "market" (not particularly volatile), at-the money call options cost nearly 3 cents per month, i.e. it costs about 3 cents each month just to keep yourself in the market. That is equivalent to 36 cents a year, about 10-20% of the value of corn, just to maintain a position.

Special Situation Pricing Tools

**9. Write (Sell) Call Options to Achieve a Higher Effective Price**

A corn farmer in Pipestone, Minnesota chooses to sell options to achieve a higher effective price for grain held in storage. This strategy will allow him to achieve a higher effective price for his grain, but will also limit his "upside" price potential.

<b>Write (Sell) Call Options to Achieve a Higher Effective Price</b> (a.k.a. Writing a Covered Call)			
Date	Cash Market	Options Market	Basis
December 10, 1999 (actual prices)	Local cash market is \$1.52. Holding corn in storage. March futures are \$1.98.	Sell March 200 corn calls for 6 1/2 cents.  Margins must be posted on all option sales.	Currently 46 under the March. Basis is expected to reach 40 under the March by mid February.
mid February (flat price scenario)	Sell grain to local elevator for \$1.58.	March futures trading at \$1.98, options expire worthless.	Cash price gets to 40 under, as expected.
Net Result	Corn sold for \$1.58.	Net options gain of 6 1/2 cents, not including brokerage costs.	Total price received is \$1.64 1/2, not including LDP.

mid February (higher price scenario)	Sell grain to local elevator for \$2.10.	March futures trading at \$2.50, options were exercised making you short March at \$2.00. Buy back futures at \$2.50.	Cash price gets to 40 under, as expected.
Net Result	Corn sold for \$2.10.	Net futures loss of 43 1/2 cents (50 cent futures loss plus 6 1/2 cent premium).	Total price received is \$1.66 1/2, not including the LDP

mid February (lower price scenario)	Sell grain to local elevator for \$1.40.	March futures trading at \$1.80, options expire without exercise.	Cash price gets to 40 under, as expected.
Net Result	Corn sold for \$1.40.	Net options gain of 61/2 cents, not including brokerage costs.	Total price received is \$1.461/2, not including the LDP.

This is the ideal “flat price” pricing strategy. It is not, however, a true hedge because your downside price protection is limited to the premium received. Nevertheless, for those who understand its limitations, writing calls offers an imaginative way to squeeze a little more money out of the market.

### ***10. Delayed Price Contract***

The producer delivers grain to the elevator, giving up ownership (title) but does not set a price. The producer often gets free storage for up to two months. These contracts gained popularity early in the 1980's when storage space was full in the country. They reappeared in recent years as farmers resisted pricing newly harvested grain in a sharply lower market. Farmers with limited storage capacity need to move the grain off farm at harvest. The "DP" contract allows them to sell without setting a low price at harvest time.

Warning! When merchandisers (buyers of DP grain) have financial difficulties, the grower will soon discover they are an *unsecured* lender. Too often the DP contract becomes the alternative for people with no other alternatives (the "Hail Mary" pass of grain marketing), but it may make sense only if the basis and futures prices are exceedingly weak at harvest.

The availability of DP contracts varies from region to region, and depends on the amount of commercial storage space available. DP contracts have been used most effectively in the springtime, allowing growers to move grain off the farm before weight restrictions go into affect.

### III. Review of Carrying Charges and Basis

---

In seasonally produced crops (i.e. crops that must be stored such as wheat, beans, and corn, etc.), the spreads between futures prices in different delivery months are known as **carrying charges**.

The following is an example of a carrying charge market, or storage market, in corn (marketing year of Oct. 1 - Sept. 30):

		Market Closes		
		August 20, 1999		
				July \$2.42
			<u>May \$2.38</u>	
		<u>March \$2.33</u>		
	(new crop)	<u>Dec. \$2.22</u>		
(transition)				
<u>Sep. \$2.10</u>				

Most people believe that these price differences reflect expectations about future price direction - they do not. The principle reason for the price differences are *storage costs* (a.k.a. carrying charges). Carrying charges are common when free supplies are large, and they tell traders what the market will pay for storage. The market says "*we don't want your grain now, but we will pay you to store it for sale later in the year!*".

To the individual who does not own a facility, actual carrying charges include the cost of commercial storage, interest on funds invested, and insurance. It is possible to calculate a *full carrying charge* in the futures market, using the following formula:

$$\text{full carry} = (\text{cash price} * \text{int. rate})/12 + (\text{monthly storage rate} * \# \text{ of months})$$

As an example, let's calculate the full carrying charge in the corn market, assuming a corn price of \$2.50 per bushel, 8% interest, and a 4 cent per month commercial storage rate.

Full carrying charge between March and May corn futures...

(\$2.20 \* .08)/12 = \$.015 or

1.5 cents per month interest
+ 4 cents per month storage rate
<hr/>
5.5 cents per month
* 2 months
<hr/>
11 cents, full carry between March and May

The *possibilities of arbitrage* defines the full carrying charge, or the maximum amount by which the price of distant futures may exceed the nearby futures. To illustrate the possibilities of arbitrage, consider the following example in corn, where we assume that on February 1 the May corn contract is trading at a 14 cent premium to the March contract. Also assume a "full carry" of 5.5 cents per month.

current date <u>1</u> February	...then on <u>1</u> March	...and on <u>1</u> May
Simultaneously buy March futures @ \$2.74 and sell May futures @ \$2.88	take delivery of March and pay storage costs (11 cents cost to May 1)	deliver on May, take a 3 cent profit

This sort of "no brainer" trading opportunity does not happen because market spreaders would quickly take advantage of the situation, and their collective action of bidding for March corn and offering to sell May corn would narrow the spread to the maximum carrying charge.

Futures price spreads rarely reflect the full carrying charge for two reasons. First, warehousemen are willing to store grain for their account for less than the commercial warehouse fee. The elevator owner considers the variable cost of running the elevator, plus interest, insurance, and grain shrinkage. Second, there is a convenience yield to stock ownership - having stocks on hand is a necessary part of operating an elevator or a processing plant (how can you participate in the market without stocks?).

**Inverse Carrying Charges:** An inverted market occurs when distant futures are priced lower than the near futures. The following is an example of an *inverted market* in wheat at the Kansas City Board of Trade (KCBOT), with a carrying charge market resuming at new crop (marketing year of June 1 - May 31):

Market Closes  
November 14, 1996

(old crop)  
Dec. \$4.33

March \$4.03

May \$3.75

(new crop)  
July \$3.57      Sep. \$3.57

Inverted markets prevail when *supplies are small* - a scarcity of stocks. The market says "we will pay a premium if you deliver now!". An inverted market reflects a negative carrying charge, or negative price of storage. Unlike a carrying charge market, no theoretical maximum of an inverted market can be defined.

Why is some grain stored when the price of storage is negative?

- many costs are fixed in storage - marginal costs are the relevant costs
- grain storage is a necessary adjunct for merchandising and processing firms - for these firms there is a convenience yield

Hence, firms will carry some stocks, even at an apparent loss, but they will work very hard to *keep inventories to a minimum* when the storage price is negative.

**Carrying Charges in the Current Market:** What is the market telling us today, as farmers prepare for the 1999 grain harvest? Carrying charges are positive and large in all major grain markets, indicating ample free supplies of corn, wheat, and soybeans.

What will happen to the price of deferred contracts as time marches forward? While future price direction always involves a high degree of uncertainty, studies have indicated that futures prices are "unbiased" (That is, prices determined in the futures market do not, over time, consistently overestimate or underestimate future price.) However, in strong bear markets, **carrying charges collapse**, i.e. a downward shift in all futures prices as the nearby contract expires.

### The Importance of Basis

---

In our discussion of carrying charges and the price of storage, we explored the price relationship between different delivery months in the futures market. Now we will explore the difference between cash and futures prices.

In the grain trade, cash prices are usually quoted as so many cents "under" or "over" the futures price. This difference between cash and futures prices is commonly known as the "*basis*". The basis is defined as follows...

Basis is the difference between a cash price at a specific location and the price of a particular futures market.

Stated mathematically (using corn prices in the example),

$$\begin{aligned} \text{cash price} - \text{futures price} &= \text{basis} \\ \$1.45 - \$2.08 &= \quad \quad \quad -\$0.63 \text{ (or 63 "under")} \end{aligned}$$

alternatively...

$$\begin{aligned} \text{cash price} &= \text{futures price} + \text{basis} \\ \$1.45 &= \quad \quad \$2.08 + (-\$0.63) \end{aligned}$$

Basis is the link between the general price level (the futures market) and the cash price at some specific location. Local cash prices reflect not only the general price level but also *local economic conditions*, including transportation costs and availability, local supply and demand for the commodity, and the availability of local storage.

Numerous factors influence the general price level of commodities. Hence, prices are very difficult to forecast. *Basis is more predictable because cash and futures prices must come together in the delivery month* (a process known as **convergence**). Grains are traded by the basis rather than the flat price.

Basis trading is so entrenched in grain marketing system, that it has developed it's own set of terms unique to the industry. For example, consider basis terminology for markets where cash prices are **under** futures prices, i.e. the cash price is less than the futures price and the basis is a negative number. This situation is the norm for areas far from the central grain markets. Consider these examples of negative basis, using November 23, 1998 cash and futures prices.

**Selected Rural Minnesota Basis, November 23, 1998**

Fergus Falls bid for soybeans	\$5.11	
January soybean futures	<u>\$5.81</u>	
Fergus Falls basis	-\$0.70	or 70 "under"
Marshall bid for corn	\$1.79	
December corn futures	<u>\$2.20</u>	
Marshall basis	-\$0.41	or 41 "under"
Alvarado bid for spring wheat	\$3.37	
December spring wheat futures	<u>\$3.77</u>	
Alvarado basis	-\$0.40	or 40 "under"

In these examples, if the basis were to increase, e.g. Fergus Falls soybeans move from -\$0.70 to -\$0.63, or 70 under to 63 under, we would say that the basis *narrowed* or *strengthened* by 7 cents.

If the basis were to decrease, e.g. the Marshall corn basis falls from -\$0.41 to -\$0.46, or 41 under to 46 under, we would say that the basis *widened* or *weakened* by 5 cents.

Now let's consider basis terminology for markets where cash prices are **over** futures prices. The basis for grains in key export markets or some large terminal markets is often a positive number, i.e. the delivered cash price is higher than the futures price. Consider these examples of positive basis, using November 18, 1998 cash and futures prices.

**Selected Basis Levels, November 23, 1998**

Gulf exporter bid for soybeans	\$6.11	
January soybean futures	<u>\$5.79</u>	
Gulf soybean basis	+\$0.32	or 32 "over"

PNW exporter bid for corn	\$2.62	
December corn futures	<u>\$2.21</u>	
Marshall basis	+\$0.41	or 41 "over"
Duluth exporter bid for wheat	\$4.18	
December spring wheat futures	<u>\$3.76</u>	
Alvarado basis	+\$0.42	or 42 "over"

At these export markets, if the basis were to increase, e.g. the gulf soybean basis increased from +\$.32 to +\$.40, or 32 over to 40 over, we would say the basis **strengthened** or **increased** by 8 cents. If the basis were to decrease, e.g. the PNW corn basis falls from +\$.41 to +\$.38, or 41 over to 38 over, we would say that the basis **weakened** or **declined** by 3 cents. Notice that the commonly used trade terms of a *wider* or *narrower* basis are reserved for basis levels that are under - cash prices under futures prices.

In the delivery month, *at the delivery point*, the basis should be close to zero due to **convergence** - cash and futures prices converge because of the privilege to make or take delivery of futures contracts. At a local point (e.g. Southern Minnesota), the basis varies with transportation costs, local supply and demand, and storage.

Many market observers mistakenly attribute *transportation costs alone* as the *sole* difference between a local and delivery point basis. This oversimplifies the price relationship. While transportation costs have a direct influence on the local basis, other factors can be important, such as local supply and demand for the commodity and the availability of local storage.

To illustrate the impact of local grain demand and storage availability, consider these questions.

- What would happen to the corn basis in your area if a new ethanol plant went into operation?
- What would happen to your local soybean basis if a nearby crushing plant closed?
- An elevator manager has 100 rail cars ready for loading today, but only enough grain for 50 cars. What would happen to basis?
- It's harvest time and the local grain elevators are full. Grain is piling on the ground in costly temporary storage. What would happen to basis?

### **Basis - A Summary**

- Basis patterns *in storable commodities* (i.e. grains) are broadly similar from one year to the next.
- Different grains have different amounts of basis regularity - corn and soybean basis patterns are generally more regular than those for wheat.
- One of the principal factors causing year to year variation in basis is the supply and demand for storage.
- Variability in the "local" basis for grains is heavily influenced by the supply and cost of transportation.
- Basis for grains is more erratic in inverted markets.
- ***Judgment and skill in forecasting the basis is the guts of making money in the grain business under a hedging operation.***

#### **IV. Summary of Grain Pricing Tools**

Many observers of agriculture believe that crop marketing is the largest current challenge facing farmers today. Recent changes in farm legislation created a number of opportunities for farmers, and also posed new challenges as grain and oilseed prices are now fully exposed to world events. Success in the future will demand new efforts in marketing that rival the current efforts placed on production. Understanding your local basis and futures carrying charges will be key building blocks in your successful use of new marketing tools. The following two tables summarize the pricing tools, which are most effective under different basis and carrying charge conditions.

### **"Weak" Basis/Large Carry Grain Pricing Tools**

(local cash prices are very low relative to futures, and are expected to rise)

<b>Cash Market Alternative</b>	<b>Action</b>	<b>Benefit/Cost</b>
Hedge-to-Arrive	Contract with local elevator, who in turn sells futures.	Same as storage hedge but the elevator manages the futures position (margins, etc.). Works particularly well when the market reflects large carries.
Minimum Price Contract	Contract with local elevator, who in turn buys a put option.	Same as a put option, possibly more costly.
Delayed Price Contract	Contract with local elevator, who takes grain and title in for free storage.	No downside price protection. Makes sense only if the basis is <i>exceedingly weak</i> .
<b>Futures/Options Alternative</b>	<b>Action</b>	<b>Benefit/Cost</b>
Futures Hedge	Sale of futures against grain held in storage.	Protects grower from price declines. Earn a return to storage from predictable strengthening of the basis. Works particularly well when the market reflects large carries. No "upside" potential.
Put Option	Purchase of a put option (the right to sell futures).	Protects grower from price declines, but upside price potential remains. Makes good sense where price and production uncertainty are great. Costly.
"Fence" in a price with options	Purchase of a put option, sell a higher strike price call.	A simple variation on using put options to establish a minimum price. Simultaneously selling higher strike price calls lowers the cost of the transaction, but also limits the upside potential.
Write a covered call	Write call options against grain held in storage.	Very limited downside price protection. An appealing strategy for someone willing to examine the risks and deal with brokers and margins.



### **"Strong" Basis/Small Carry Grain Pricing Tools**

(local cash prices very high relative to futures, and are susceptible to declines)

<b>Cash Market Alternative</b>	<b>Action</b>	<b>Benefit/Cost</b>
<b>Sell Cash Grain</b>	Sale of grain held in storage.	Common sense response to a strong market. Eliminate storage costs. No "upside" potential.
<b>Forward contract</b>	Contract with local elevator, who in turn sells futures.	Protection from price declines. No "upside" potential.
<b>Basis Contract</b>	Fix the basis in a contract with local elevator, either for grain in storage or anticipated harvest.	No price protection. Makes sense only if the basis is <i>exceedingly strong</i> .
<b>Futures/Options Alternative</b>	<b>Action</b>	<b>Benefit/Cost</b>
<b>"Paper farming" with futures contracts.</b>	Sell cash grain, buy futures.	Eliminate storage costs and keep the upside potential. But have we crossed the line between hedging and speculating?
<b>"Paper farming" with call options.</b>	Sell cash grain, buy call options.	A limited risk form of paper farming. Eliminate storage costs and keep the upside potential. Makes sense when the market reflects small carries. Costly.
<b>Vertical Call Spread</b>	Sell cash grain, buy a call option, and sell a higher strike price call.	A simple variation of paper farming with call options. Simultaneously selling higher strike price calls lowers the cost of the transaction, but also limits the upside potential. Makes sense when the market reflects small carries.

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Corn Situation #1**

It is late October and you just harvested 50,000 bushels of corn. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$2.85 for corn delivered today.
- The elevator bid for May delivery is \$2.91.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	\$3.29
March	\$3.35
May	\$3.34
July	\$3.32

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
310	28 1/2	7 1/2
320	23	11 1/2
330	18 3/4	16 1/2
340	14 1/4	22
350	11	no quote

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Corn Situation #1, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October , 1995 in Marshall, MN and at the Chicago Board of Trade.*

Assessment: Harvest basis was very strong and carrying charges in the market were non-existent. The forward cash price does not warrant storing grain. This situation calls for paper farming with options or establishing a minimum price using put options.

Mid-May: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$4.94 for corn delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$5.05

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
310	194 1/2	1/8
320	184 1/2	1/8
330	174 1/2	1/8
340	164 1/2	1/8
350	154 1/2	1/8

	Store and hold #	Forward cash contract	July futures hedge/HTA	Min. price with puts*	Sell grain, buy calls*
Net result	\$4.94	\$2.91	\$3.21	<b>\$4.77 1/2</b>	<b>\$4.58 1/4</b>

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Corn Situation #2**

It is late October and you just harvested 50,000 bushels of corn. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$2.41 for corn delivered today.
- The elevator bid for May delivery is \$2.64.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	\$2.80
March	\$2.86
May	\$2.92
July	\$2.94

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
280	19 1/2	13
290	15 1/4	18 1/2
300	12	25
310	9	32
320	7	40

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Corn Situation #2, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October , 1996 in Marshall, MN and at the Chicago Board of Trade.*

Assessment: This was a difficult situation as there were no strong signals given. Harvest basis levels and carrying charges in the market were average. However, note the strength of the forward cash price – a fairly aggressive bid for a market with so-so carry and basis gain prospects. This situation calls for a diversified approach, but maybe a little more emphasis on the forward cash contract.

Mid-May: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$2.60 for corn delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$2.85

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
280	10 3/4	4 3/4
290	6 1/2	11
300	3 1/2	18
310	2 1/4	26 1/2
320	1 1/4	36

	Store and hold #	<b>Forward contract*</b>	July futures hedge/HTA	Min. price with puts	Sell grain, buy calls
Net result	\$2.60	<b>\$2.64</b>	\$2.69	\$2.52 1/2	\$2.33 1/2

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!



Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Corn Situation #3**

It is late October and you just harvested 50,000 bushels of corn. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$2.34 for corn delivered today.
- The elevator bid for May delivery is \$2.64.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	\$2.80
March	\$2.89
May	\$2.95
July	\$2.99

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
280	33 1/2	14
290	28	18 3/4
300	23	24 1/2
310	18 1/2	30 3/4
320	14	37 1/2

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Corn Situation #3, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October , 1997 in Marshall, MN and at the Chicago Board of Trade.*

Assessment: The basis is weaker than average and carry to July are fairly large. This certainly does not warrant paper farming. We should be looking to grab that carry either with a forward cash contract (which at a 30 cent premium to harvest prices looks attractive) or with a futures hedge or HTA contract.

Mid-May: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$2.34 for corn delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$2.46

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
280	1 3/8	35
290	1	44 1/2
300	5/8	54 1/8
310	3/8	63 7/8
320	1/4	73 3/4

	Store and hold #	<b>Forward contract*</b>	<b>July futures hedge/HTA*</b>	Min. price with puts	Sell grain, buy calls
Net result	\$2.34	<b>\$2.64</b>	<b>\$2.87</b>	\$2.63 5/8	\$2.11

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Corn Situation #4**

It is late October and you just harvested 50,000 bushels of corn. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$1.66 for corn delivered today.
- The elevator bid for May delivery is \$1.87.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	\$2.19
March	\$2.30
May	\$2.37
July	\$2.42

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
220	29	7
230	23	10 3/4
240	18	15 1/2
250	14	21 1/4
260	11	no quote

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Corn Situation #4, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October 29, 1998 in Marshall, MN and at the Chicago Board of Trade.*

Assessment: The basis is very weak and carrying charges to July are very large. This certainly does not warrant paper farming. We must grab that carry either with a forward cash contract (which at a 21 cent premium to harvest price is not very attractive) or with a futures hedge or HTA contract.

May 21, 1999: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$1.79 for corn delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$2.19

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
220	5 3/8	7
230	2 7/8	14 3/8
240	1 3/8	23
250	3/4	32 3/8
260	1/2	41 7/8

	Store and hold #	Forward contract	<b>July futures hedge/HTA*</b>	Min. price with puts	Sell grain, buy calls
Net result	\$1.79	\$1.87	<b>\$2.12</b>	\$1.86 1/2	\$1.48

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Corn Situation #5**

It is late October and you just harvested 50,000 bushels of corn. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$1.80 for corn delivered today.
- The elevator bid for May delivery is \$2.10.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	\$2.17
March	\$2.28
May	\$2.36
July	\$2.42

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
220	24 1/2	3 3/4
230	18 1/4	7 3/4
240	13 1/4	11 3/4
250	9 3/4	21 1/2
260	6 1/2	no quote

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Corn Situation #5, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October , 1994 in Marshall, MN and at the Chicago Board of Trade.*

Assessment: The basis is average relative to the nearby but carrying charges to July are very large. The forward price in this situation looks fairly attractive. I lean towards a more diversified approach – some forward cash contracting, some futures hedging, possibly buying a put option.

May 21, 1995: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$2.23 for corn delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$2.58

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
220	no quote	no quote
230	28	1/8
240	18 1/4	5/8
250	10 7/8	3
260	6	8 1/4

	Store and hold #	Forward contract*	July futures hedge/HTA*	Min. price with puts*	Sell grain, buy calls
Net result	\$2.23	<b>\$2.10</b>	<b>\$2.07</b>	<b>\$2.12</b>	\$1.85

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Soybean Situation #6**

It is late October and you just harvested 25,000 bushels of soybeans. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$4.96 for soybeans delivered today.
- The elevator bid for May delivery is \$5.33.
- Futures and options prices are shown below.

Chicago Soybean Futures Market

<u>Contract</u>	<u>Closing Price</u>
November	\$5.59
January	\$5.68
March	\$5.77
May	\$5.86
July	\$5.94

Chicago Soybeans Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
550	56 1/2	12
575	42	22
600	31 3/4	35 1/2
625	24	52 1/2
650	18	no quote

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Soybean Situation #6, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October 29, 1998 in Pipestone, MN and at the Chicago Board of Trade.*

Assessment: The basis is weak relative to the nearby and carrying charges to July are very large. The forward price in this situation does not look very attractive. This situation is screaming for the use of futures hedging or a hedge-to-arrive.

May 21, 1999: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$4.17 for soybeans delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$4.62

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
550	1/2	88 3/4
575	1/4	113 1/2
600	1/8	138 1/4
625	1/8	163 1/4
650	1/8	188 1/4

	Store and hold #	Forward contract	<b>July futures hedge/HTA*</b>	Min. price with puts	Sell grain, buy calls
Net result	\$4.17	\$5.33	<b>\$5.49</b>	\$5.08 1/2	\$4.61 1/2

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**Soybean Situation #7**

It is late October and you just harvested 25,000 bushels of soybeans. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$6.37 for soybeans delivered today.
- The elevator bid for May delivery is \$6.70.
- Futures and options prices are shown below.

Chicago Soybean Futures Market

<u>Contract</u>	<u>Closing Price</u>
November	\$6.91
January	\$6.96
March	\$7.02
May	\$7.07
July	\$7.12

Chicago Soybeans Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
650	79	18
675	63	27
700	50	38
725	40	52 3/4
750	32 1/2	69 1/2

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

**Year 2000 Master Marketer Program  
How Will You Price Your Grain?**

**Soybean Situation #7, Final Results**

*Cash, futures, and options quotes are as they really were on Friday, October 29, 1997 in Pipestone, MN and at the Chicago Board of Trade.*

Assessment: The basis is quite normal versus the nearby and carrying charges to July are positive but modest. The forward price in this situation looks reasonable. I prefer a diversified approach in this situation, leaning on some forward contracting, but also using some options.

May 22, 1998: Let's unwind all of our trades and look at the results.

- The local elevator is bidding \$5.95 for soybeans delivered today.
- Futures and options prices are shown below.

Chicago Corn Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	NA
March	NA
May	NA
July	\$6.35

Chicago Corn Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
650	7 1/4	22
675	3	42 5/8
700	1 1/2	66 1/8
725	3/4	90 1/4
750	1/2	115

	Store and hold #	<b>Forward contract*</b>	July futures hedge/HTA	Min. price with puts	Sell grain, buy calls
Net result	\$5.95	<b>\$6.70</b>	\$6.72	\$6.23 1/8	\$5.97

# Remember, this is an unhedged position!

\* Preferred pricing tools re market conditions at harvest!

**Year 2000 Master Marketer Program**  
**How Will You Price Your Grain?**

**Soybean Situation #8**

It is late October and you just harvested 25,000 bushels of soybeans. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$6.47 for soybeans delivered today.
- The elevator bid for May delivery is \$6.70.
- Futures and options prices are shown below.

Chicago Soybean Futures Market

<u>Contract</u>	<u>Closing Price</u>
November	\$7.01
January	\$
March	\$
May	\$
July	\$

Chicago Soybeans Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
650		
675		
700		
725		
750		

Key considerations in selecting your pricing decisions:

1. Is the basis strong, weak, or normal?
2. Are carrying charges in the futures market large or small?
3. Is the market trending higher or lower?

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**1999 Soybean Situation**  
**October 22, 1999**

It is late October and you just harvested 25,000 bushels of soybeans. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$4.04 for soybeans delivered today.
- The elevator bid for May delivery is \$4.36.
- Futures and options prices are shown below.

Chicago Soybean Futures Market

<u>Contract</u>	<u>Closing Price</u>
November	\$4.73
January	\$4.84
March	\$4.93
May	\$4.95
July	\$5.05

Chicago Soybeans Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
450	No quote	10 <sup>3</sup> / <sub>4</sub>
475	50	21
500	36 <sup>7</sup> / <sub>8</sub>	31 <sup>3</sup> / <sub>4</sub>
525	28	48
550	21	65

Key considerations in selecting your pricing decisions:

4. Is the basis strong, weak, or normal?
5. Are carrying charges in the futures market large or small?
6. Is the market trending higher or lower?

Year 2000 Master Marketer Program  
**How Will You Price Your Grain?**

**1999 Corn Situation**  
**October 22, 1999**

It is late October and you just harvested 25,000 bushels of soybeans. You need to make some pricing decisions. Should you sell now? Store for a later sale? Forward price for delivery in May with a contract? Sell July futures against grain held in storage to earn a return to storage? Buy puts and establish a minimum price? Sell grain and buy calls (paper farming)? Here is your current situation:

- The local elevator is bidding \$1.51 for soybeans delivered today.
- The elevator bid for May delivery is \$1.69.
- Futures and options prices are shown below.

Chicago Soybean Futures Market

<u>Contract</u>	<u>Closing Price</u>
December	\$2.00
March	\$2.11
May	\$2.17
July	\$2.23

Chicago Soybeans Options Market (cents per bushel)

<u>Strike Price</u>	<u>July Calls</u>	<u>July Puts</u>
200	27 1/2	5
210	22	9
220	17 1/4	14 1/4
230	13 1/2	20
240	10 1/4	26 3/4

Key considerations in selecting your pricing decisions:

7. Is the basis strong, weak, or normal?
8. Are carrying charges in the futures market large or small?
9. Is the market trending higher or lower?