

# **Options Tool to Enhance Price**

rice options for grain, when used in conjunction with cash sales, provide a set of marketing tools for farmers. One of these is the opportunity for price enhancement. This tool leaves you vulnerable to price declines and limits your upside potential, but it does add a fixed amount to your price.

For a review of options read:

- Grain Price Options Basics, File A2-66.
- Options Tools to Reduce Price Risk, File A2-67
- Grain Price Options Fence, File A2-69.

To use this tool, you must coordinate the use of options with cash sales of grain. Using options independently of cash sales results in speculation.

#### **Price enhancement strategy**

Writing or (selling) call options allow you to enhance your grain sale price by receiving the option premium in addition to the sale of your grain. However, this tool will establish a maximum or ceiling price for your grain while leaving you vulnerable to lower prices. Your decision is whether the options premium you receive is worth more than the income given up if prices rise above the ceiling price.

## Using the call option to enhance price

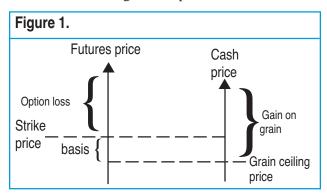
The basic tool for enhancing your selling price is to hold your grain unpriced and sell (write) call options. The discussion below shows how writing (selling) call options establishes a maximum or ceiling price for your grain.

If you write a call option, you will lose money if the futures price rises above the strike price because the exercise value increases the value of the premium. More specifically, when the futures price rises above the strike price, the option buyer may exercise the option. If the buyer exercises the option, you must

sell futures to the buyer at the strike price. To get out of the market you must buy futures at the current futures price to offset your position. By doing this you will incur a loss.

If the buyer does not exercise the option but you still want to get out of the market, you can buy an option to offset the one you previously sold. However, if you buy back the option before the option expiration date, the option premium will be larger than its exercise value (the option will contain time value). So the loss from the option may be larger if you buy the option back than if the option is exercised.

As shown in Figure 1, the farther the futures price rises above the strike price, the more the call option premium increases in value (exercise value). However, as the futures price increases, the cash price also increases. So, as the call option loss increases due to the increasing futures price, the value of the



grain increases due to the increasing cash price. A ceiling or maximum price is established because the loss on the option offsets the increase in the value of the cash grain.

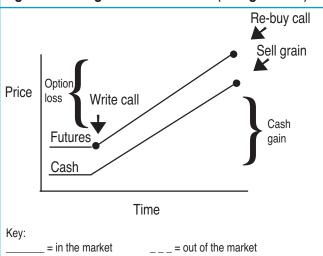
The strike price is the ceiling or maximum price because this is the point the option begins to accrue a loss (exercise value) which offsets the increased value of the cash grain. To compute an equivalent ceiling price for the cash grain you must estimate Page 2 File A2-68

what the cash price will be when the futures price reaches the strike price. Do this by subtracting the expected basis from the strike price. This is the basis you expect will exist when you close out the position by buying the option back and selling the cash grain.

#### **Implementation**

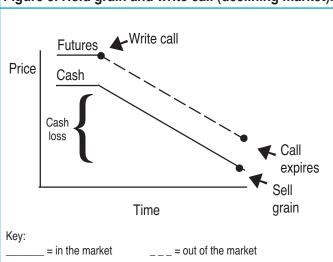
To implement this strategy you write (sell) the call option now. Later, when you are ready to sell the grain, you buy the option back or let it expire. If the

Figure 2. Hold grain and write call (rising market).



price has increased above the strike price, as shown in Figure 2, you buy the option back. What you lose on the option will be offset by what you make on the

Figure 3. Hold grain and write call (declining market).



cash grain assuming there is no time value remaining on the option premium. If the price has declined, as shown in Figure 3, the option will expire and you sell the grain at the lower price.

If the futures price is above the strike price, a maximum or ceiling price will be established.

#### Example.

In the example below a \$7 strike price call option is purchased for a premium of 40 cents. Subsequently, the futures price increases to \$8, (\$1 above the \$7 strike price) and the cash price increases to \$7.50 (50 cent basis).

\$8.00 futures price7.00 strike price.40 premium7.50 cash price

The net price is the \$7.50 cash price, less the \$1 option loss (\$7 - \$8), plus the 40 cent premium, for a total of \$6.90 (not including the trading cost).

\$7.50 cash price - 1.00 option loss + .40 premium \$6.90 net price

Next assume the futures price increases to \$9 or \$2 above the strike price. The cash price increases to \$8.50 (50 cent basis). The cash price of \$8.50, less the option loss of \$2, plus the premium of 40 cents results in a price of \$6.90.

\$8.50 cash price
- 2.00 option loss
+ .40 premium
\$6.90 net price

As shown in these examples, whenever the futures price is at or above the strike price, the ceiling price is \$6.90. However, if the basis is different than expected, the ceiling price will also change.

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## Example.

Assume the futures price increases to \$9.00 or \$2.00 above the strike price. The cash price is \$8.40 (60 cent basis).

The cash price of \$8.40, less the option loss of \$2.00, plus the premium of 40 cents, results in a net price of \$6.80.

\$8.40 cash price
- 2.00 option loss
+ .40 premium
\$6.80 net price

Because the basis is 10 cents wider, the cash price is 10 cents lower, resulting in a 10 cent lower ceiling price. If the basis is narrower the ceiling price will be higher.

Also, if there is time value remaining in the option premium when you buy the option back, the ceiling price will be lower.

If the futures price is below the strike price, the cash grain is sold for the lower price and the option is allowed to expire.

## Example.

Assume the futures price declines to \$6 and the cash price to \$5.50 (50 cent basis.)

\$7.00 strike price .40 premium 6.00 futures price 5.50 cash price

The cash price of \$5.50, plus the premium of 40 cents, results in a net price of \$5.90. The option expires worthless.

\$5.50 cash price + .40 premium \$5.90 net price

# **Estimating the ceiling price**

An estimate of the maximum price or ceiling price can be made in advance. It can be computed by adding the premium and subtracting the expected basis and trading cost from the strike price.

#### Example.

Assume the strike price is \$7, the premium is 40 cents, and the estimated basis is 50 cents (assume no trading cost.) The estimated ceiling price is \$6.90.

\$7.00 strike price
+ .40 premium
- .50 estimate basis
\$6.90 est, ceiling price

The accuracy of the ceiling price estimate will depend on how closely the estimated basis approximates the actual basis and whether the option premium has any time value remaining when you buy back your position.

# Raising the ceiling

One of the complaints of using options to enhance price is the low ceiling price that it establishes on your grain. One way to increase the ceiling price is to write *out-of-the-money* call options. *Out-of-the-money* options will increase the ceiling price but will reduce the size of the premium you receive.

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## Example.

In the example below the futures price is \$7.00 and the basis is 30 cents.

\$7.00 futures price .30 basis

Call strike prices ranging from \$7.00 (at-the-money) to \$7.75 (75 cents out-of-the-money) and their respective premiums are shown below.

Strike price \$7.00 \$7.25 \$7.50 \$7.75 Premium .40 .30 .25 .22

The maximum selling price is \$7.10 for the at-themoney option and rises to \$7.67 for the 75 cent out-ofthe-money option.

#### Maximum price

Strike price	\$7.00	\$7.25	\$7.50	\$7.75
Expected basis	30	30	30	30
Premium	+ .40	<u>+ .30</u>	+ .25	+ .22
Net price	\$7.10	\$7.25	\$7.45	\$7.67

However, the net price decreases from \$6.10 for the at-the-money option to \$5.92 for the 75 cent out-of-the-money option if the futures price decreases to \$6.00.

#### Price decline (\$6.00 futures price)

Futures price	\$6.00	\$6.00	\$6.00	\$6.00
Expected basis	30	30	30	30
Premium	+ .40	+ .30	+ .25	+ .22
	\$6.10	\$6.00	\$5.95	\$5.92

So *out-of-the-money* options result in a higher ceiling price but a lower enhanced price if prices decline.