Ag Decision Maker

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Livestock Options Market

Options are often referred to as price insurance. The concept and terminology are similar to insurance you might buy on your house.

With an option, a floor or ceiling price can be established without locking in a price. The option holder can still benefit from favorable price changes in the market. Like insurance, you are protected from an unfavorable event if it occurs. The discussion below focuses on lean hog options, but the concepts apply to other livestock.

For hog producers, hog options set a minimum selling price on hogs. And on the input side, corn options can be used to set a maximum price for purchased corn.

What is a lean hog option?

A live hog option is the right to buy or sell a lean hog futures contract at a specified price within a given time period. A *put* option is the right to *sell* a futures contract and a *call* option is the right to *buy* a futures contract. As option buyer you have the *right* to buy or sell but there is no *obligation* to do so. It's important to recognize that lean hog options are in underlying lean hog futures contracts, rather than the physical commodity.

The put option market and the call option market are separate markets. They are not opposite sides of the same market. So you can buy or sell puts and you can buy or sell calls. The seller of an option (either put or call) is an option writer. As a hog producer, you are most likely to be an option buyer, but in some situations you might also consider selling (writing) an option.

Strike prices

Options are traded on *strike prices.* Strike prices are the level of coverage you buy. For hog options there is a $2 per cwt. interval between strike prices and a $1 interval on the nearby contract. For example, options might be offered on June lean hogs at strike prices ranging from $74 to $86 per cwt., when the June hog contract is trading at $80 per cwt.

Premiums

Like insurance, the cost of buying an option is the *premium*. This is paid up-front and is the cost of the option transaction—except for commission costs. It is also the maximum loss that an option *buyer* can experience. There are no margin deposits or margin calls for buying an option—unless an option is exercised and a futures contract is bought or sold.

The exposure for an option *writer* (or seller) is quite different than for an option buyer. The option writer receives the premium paid by the buyer in the initial transaction (similar to insurance). But, since the option writer is guaranteeing the option buyer the right to buy or sell a futures contract at a specified price, the loss potential is unlimited. As a result, margin deposits are required for writers of options.

The premium value for a specific hog option is determined in the options market by the interaction of buyers and sellers. It will be influenced primarily by three factors: the strike price in relation to the price of the underlying futures contract, the volatility of the market, and the time remaining before the option expires. A thorough discussion of options premiums is given in **Grain Price Options Basics**, **File A2-66**.

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Table 1 shows strike prices and premiums for put and call options for a hog futures contract.

Table 1. June hogs.

Current futures price is $78

Strike price	Premium	
	Call	Put
$74	$5.40	$.75
76	3.35	1.30
78	2.15	2.30
80	1.25	3.40
82	.75	5.40
84	.40	6.35
86	.02	8.30

You can buy a $76 strike price *put* option at a cost of $1.30 per cwt. for a total cost of $520 on a 40,000 lb. contract (400 cwt. x $1.30). You can buy an $80 strike price *put* option for $3.40. If you exercised the $80 put option, it will place you in the futures market, *selling* futures for $80. Then you can offset your position by *buying* futures at the current market price of $78 for a $2 gain.

You can buy a $76 strike price *call* option for $3.35. If you exercise the option it will place you in the futures market, *buying* futures for $76. Then you can offset your position by *selling* futures at the current market price of $78 for a gain of $2.

In both examples, the premium is greater than the current value of the option ($3.40 or $3.35 vs. $2). The difference is "time value" to reflect the risk of price changes between now and expiration. Time value will decline as the contract approaches the expiration date.

Choices in completing an option trade

Once you have taken a hog options position, three choices or alternatives are available to you. You can exercise the option if it appears to be advantageous, you can let the option expire, or you can offset the option with an opposite position in the option market. For example, if you bought a put option, you can re-sell the put.

Exercising the option means establishing a futures market position at the strike price specified by the option. You would consider doing this if price movements in the market had made this a profitable choice. And you could do this any time before the expiration date of the option. Hog options expire on the last trading day of the delivery month of the underlying futures contract.

You might, however, choose to sell (offset) the option instead. The option proceeds are usually greater if you re-sell (offset your position) rather than exercise the option. Also, selling the option would avoid the costs of being in the futures market (commission charges and margin costs).

The other alternative, letting the option expire, would be the logical choice if the option had lost all of its value because the market price was higher than the strike price.

Some ways to use options

Below are four ways that options can be used in a marketing plan.

Place a floor on selling prices

The most common way for a hog producer to use options would be to place a floor on the price of hogs to be marketed in the future. You could do this by purchasing a put option for the appropriate contract month.

The strike price selected will be influenced by the level of price protection desired. It might be a level that would cover variable costs, total costs, or some specified profit above all costs. The premium cost in relation to the price protection received or desired should also be considered.

An option strike price must be adjusted for the premium, commission cost, and an estimate of the basis to obtain an estimate of the net cash price floor or ceiling that is set.

For example, assume a June hog put option at a strike price of $78 has a premium of $2.30 per cwt.

The expected basis for the June futures contract is -$2.50 per cwt. and the commission cost for the options transaction is 10 cents per cwt. ($40 per contract). In this case, the $78 strike price would indicate a net price floor of about $73.10 as shown in Example 1. The only uncertainty is in the basis estimate. If actual basis turns out to be different than estimated, the net price floor will be different.

By using options this way, you can set a minimum price but leave the upside price potential open if prices rise. The option would be exercised or re-sold if the futures price drops below the strike price level. A minimum price is established because, if prices decline, the gain on the option offsets the decline in the cash price. You would let it expire if the cash price stayed above the minimum.

Example 1. Buy put option.

Estimated Minimum Selling Price

Strike price	$78.00
Premium	-2.30
Est. Basis	-2.50
Transaction Cost	-.10
Minimum Price	$73.10

Hedge a hedge (synthetic put)

This option strategy combines an option position with a forward pricing strategy such as a cash contract or futures hedge. You would establish an approximate selling price with a hedge or a cash forward contract. The companion step would be to buy a call option granting the right to buy hog futures at the strike price. If the market goes up, the premium value of the call option will rise and can be sold at a profit. If the market goes down, the value of the call option will drop and it will be left to expire. In this way, the hedge or cash contract provides floor price protection. But you can benefit from a rising market through the gain in premium value of the call option. (See Example 2.)

This strategy can be used as an alternative to simply buying a put option if put premiums are too costly or not trading at the desired strike price.

Establishing a floating price

In this strategy, an initial price floor is set by buying a put option. If the price does not go up, you remain with that option position. If the price does go up,

Example 2. Synthetic put (disregarding transaction cost).

Assume (carcass weight costs and prices):
Sell April hog futures for $75.42 per cwt.
Buy an April call option ($78 strike price) for $1.40 per cwt.
April futures rise to $82 per cwt. by late March.

Futures market transactions (hedge):
Sell April hogs for $75.42 per cwt.
Buy April futures in late March for $82 per cwt.

$82.00	Buy futures
75.42	Sell futures
$6.58	Futures loss

Cash market transaction:
Sell hogs in late May on the cash market for $79.35 per cwt.

$82.00	Futures
-2.65	Basis
$79.35	Cash price

Options market transaction:
Buy April call ($78 strike price) at premium of $1.40 per cwt. Market rises to $82 and the call option premium increases to $4.75.

$1.40	Buy option
4.75	Sell option
$3.35	Options gain

Net return from hedge and option:

$79.35	Cash price
-6.58	Futures loss
+3.35	Options gain
$76.12	Net return

Example 3. Fence or window strategy (disregarding transaction cost).

Assume
April hog futures at $76 per cwt.
Buy an April hog put option ($72 strike price) at 25¢ per cwt. premium
Sell (write) an April hog call option, ($78 strike price), at 60 cents per cwt. premium

Minimum price

$72.00	Put strike price
-.25	Put premium
+.60	Call premium
-2.40	Estimated basis
$69.95	Minimum price

Maximum price

$78.00	Call strike price
-.25	Put premium
+.60	Call premium
-2.40	Estimated basis
$75.95	Maximum price

Price increase
If the market rises to $82, the premium value of the call option would rise to $4 per cwt. (margin call). The put option premium would drop to zero and the option left to expire.

$82.00	Futures price
-2.40	Basis
$79.60	Cash price

$79.60	Cash price
-.25	Put premium
+.60	Call premium bought
-4.00	Call premium sold
$75.95	Net price

you sell the initial put option (at a loss) and buy another put at a higher strike price. Consider using this procedure if the loss from the put option sale is less than the initial additional cost of the higher strike price.

Options fence
This strategy is designed to set both lower and upper price limits (to set a range of possible net prices). This is done by purchasing a put option (probably at a strike price below the current futures price) to set a price floor. Also, you sell (write) a call option to set a ceiling price (at a strike price above the current futures price). Overall exposure to risk will be reduced and a range of possible prices will be set as shown in Example 3. The income from the call premium will at least partially offset the cost of the put premium. If the market goes up, there will be margin calls on the call option, but the increased value of the cash commodity will offset the margin calls. If the price declines, the premium value of the put option will increase and offset the decline in the cash price.

Example 3, cont.

Price decrease
If the market drops to $70, the premium value of the put option would rise to $2 per cwt.
The call option premium would drop to zero and the option left to expire.

$70.00	Futures price
-2.40	Basis
$67.60	Cash price

$67.60	Cash price
-.25	Put premium bought
+2.00	Put premium sold
+.60	Call premium
$69.95	Net price