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# A New Pricing Alternative for Hog Producers -- Options

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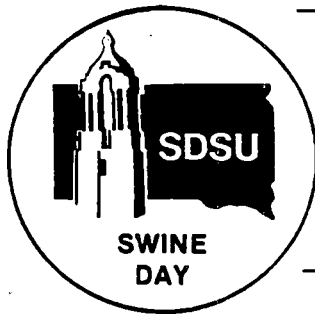
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## A NEW PRICING ALTERNATIVE FOR HOG PRODUCERS -- OPTIONS

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### Introduction

Hog producers have four basic methods which they can use to price their hogs -- the cash market, contracting for future delivery, the futures market and the options market. Although the principal objective of this presentation is to discuss the options market, the other pricing alternatives are discussed briefly so that comparisons can be made.

### Cash Market

Most producers are familiar with the cash market. That is the method they use most often. Essentially, a price is not determined for the producer's hogs until the "go to market". Most producers do "expect" certain price levels to be prevalent when they market their hogs, but when the cash method is used there are no guarantees. The producer is a price taker. The only decisions are when to market and which market outlet to use.

The cash market is used most by hog producers because they are familiar with it. Also, it is easier to use and requires fewer decisions. It is the method under which the producer maintains the greatest degree of price risk.

### Contracting for Future Delivery

Of the four methods noted, this pricing technique is second to the cash method in frequency of use. However, it is a very distant second. Essentially, this pricing technique involves the use of a written contract between the seller (producer) and the buyer. The contract involves not only price but a system whereby premiums can be added or discounts can be deducted from the initial price, quality factors, quantity factors and any other considerations deemed important. In this method of pricing, price is determined when the contract is made. Actual delivery of the hogs of the quality and quantity described in the contract occurs at a later date, also specified in the contract.

Most contract prices used in this pricing method are based upon the futures market. For example, if a producer decided today that he wanted to make a contract to deliver hogs in February, the contract price likely would be the February futures prices for hogs minus a set amount, such as \$3.00 or

\$4.00 per hundredweight. The details for a premium above that price, or a discount from it, would be outlined in the contract.

This method is fairly easy to use and has gained some acceptance among producers. Price risk is shifted from the producer to the buyer. However, the producer must accept the price as agreed upon --there is no opportunity to accept a higher price than the agreed upon price if actual cash prices are higher at the time the hogs are delivered.

This method of pricing generally yields a lower net price to the producer than do the other forward pricing methods. However, there are no margin calls and a broker is not needed. The main participants in the contract are the buyer and seller.

### Futures Market

Most producers have heard about the futures market, very few use it, and many would rather see it eliminated. This pricing method is a little more complicated than the first two methods discussed. Essentially, it involves the pricing of a commodity now with actual delivery of the product at a later date. The main difference from a forward contract is in the delivery process. In a forward contract, delivery of the product is expected. In a futures contract, delivery is possible but not expected. Prior to the delivery date, the seller buys back his contract, thereby relieving him of the responsibility to deliver. That repurchase generally occurs close to the time the hogs are sold on the cash market. However, the repurchase can be made at any time prior to the expiration of the contract. A quick example may show the mechanics. In the example, the basis is assumed to be zero.

	<u>Cash Market</u>	<u>Futures Market</u>
Oct 20	Buy 50# feeder pigs--\$40	Sell a Feb. futures--\$50
Oct 20-	Feed pigs--Cost \$70	Hold futures contract
Feb 15		
Feb 15	Sell hogs--\$40	Buy Feb. futures contract-- \$40

In the above example, the total cost of producing a 250 pound hog is \$110, or \$44.00 per hundredweight. If the cash price was only \$40, there would have been a \$4 loss on the cash side. But, the futures market showed a net gain of \$10 (sell for \$50 and buy for \$40). If one adds the \$10 futures market gain to the \$40 cash price, the total price is \$50, or a net of \$6 per hundredweight. In this case the futures market added to returns from the cash side because prices went down. If prices had gone higher, say \$60, the returns from the cash side would have been reduced by "losses" on the futures side. The net result, however, would still have been a \$50 price.

Producers do not make extensive use of the futures market for several reasons--they don't understand it, they don't trust it, or it doesn't fit their situation. Price risk is shifted to someone else, usually a speculator. However, the producer cannot take advantage of higher prices, should they occur. Therefore, this tool offers price protection if prices drop but not the ability to benefit if prices go higher.

The net price to the producer generally is higher than the forward contract price. However, there is an initial margin requirement and more may be required. Also, a broker must be used and that involves a commission charge.

### Options

This pricing alternative is the newest and probably least used of those available to hog producers. The program was initiated in mid-1985 has met with limited success. This alternative has been compared to an insurance policy--you pay a charge (premium) for price protection and use that protection only if circumstances warrant using it.

There are several basic definitions or concepts which must be understood before a producer should even consider using the options market.

**Options defined** -- The RIGHT to buy or sell a futures contract at a specific price on or before an expiration date.

**Call option** -- Right to BUY a Futures Contract. The Call Buyer pays the premium and has the right to exercise. The Call Seller collects the premium and has an obligation if the call is exercised.

**Put option** -- Right to SELL a Futures Contract. A Put Buyer pays the premium and the right to exercise. A Put Seller collects the premium and has an obligation if the put is exercised.

**Strike price** -- Price at which the Option Holder may buy or sell the underlying Futures Contract. This price is set by the exchange

**Premium** -- Price of an Option. This is negotiated by the buyer and seller. Major factors affecting the premium are 1) volatility of futures prices, 2) strike price compared to futures price, 3) time, 4) market expectations, and 5) interest rates.

The concept of options seems confusing to those who have not used it. A producer who wants to use the options for hogs can use either of two basic strategies: (a) buy a put option or (b) sell a call option. Each strategy will be discussed briefly. A short discussion of the comparison of using options and futures will conclude this presentation.

Buying a put option -- In this strategy (buying a put), the buyer (or producer) really is paying a premium for the right (not obligation) to sell a hog futures contract. Since it is not an obligation, there are no margin calls. The only costs involved are the initial premium and a broker's commission (generally in the \$50 to \$100 range per contract).

In this alternative, the buyer has unlimited upside price potential and also sets a floor price for his hogs. The procedure used to compute the minimum expected net price is as follows:

$$\text{Strike Price} - \text{Premium} - \text{Basis} = \text{Minimum expected Net Price}$$

This means that basis, the same basis used in the futures market, is critical in arriving at a final expected price.

An example of this strategy might best illustrate what happens under various price changes. In the example, the basis is assumed to be \$1.00, the premium is assumed to be \$3.00 and the strike price is assumed to be \$50.00 (all on a hundredweight basis). Therefore, the expected minimum price is \$46 (\$50-\$3-\$1). Also, assume it is now October 15 and the hogs will be ready for market in February. That means the initial action would be to buy a live hog February option in October at a strike price of \$50 and the cost of the option (premium) would be \$3.00. The results of the action are shown in the table below under various assumptions about hog prices in February.

Cash Hog Prices In February	Action	Net Price
\$60	Sell hogs and not exercise option	\$60-3-1 = \$56
\$55	Sell hogs and not exercise option	\$55-3-1 = \$51
\$50	Sell hogs and not exercise option	\$50-3-1 = \$46
\$45	Sell hogs and offset option-gather in \$5	\$45-3-1+5 = \$46
\$40	Sell hogs and offset option-gather in \$10	\$40-3-1+10 = \$46

The example is used to illustrate that the producer has set a floor for his hogs through the use of options but that the producer also can take advantage of higher prices should they occur. That was not possible in the future market.

In the above example, the original premium is forfeited if prices move higher or stay at the strike price level. If cash prices move lower, the producer can gather in money by offsetting his option. In this case, originally a \$50 put option was purchased for \$3. When cash price is only \$45, the option has a value of \$5 (\$50 - \$45). If the cash price is only \$40, the \$50 put option has a value of \$10.

Selling a Call Option--Another option for the producer is to sell a hog call option for February. Assuming the values are the same as in the previous example, the seller (or producer),

gathers in a premium (\$3) for the obligation (not the right) to fulfill the rights of the buyer should that buyer choose to exercise his option. The buyer's rights in this case are to buy a future's contract at the strike price of \$50. The buyer paid the \$3 premium which the seller received. If the buyer exercises his option, the seller (or producer) must either sell a contract to the buyer for \$50, or take offsetting action (buy a call), and that may involve additional expenditures.

The seller of any option (put or call) does not pay a premium. Rather, the seller gathers in the premium. However, the seller may have to pay margin money if the "market moves against him". The seller has limited upside price potential and has unlimited risk. The seller does, however, generate additional income from the premium received. If nothing happens, the seller pockets the premium.

A table similar to the one used for buying a put can be used to illustrate the results of a higher, lower or unchanged price. The assumptions used are the same as for the previous strategy--the strike price is \$50, the basis is \$1 and the initial premium is \$3.

Cash Hog Prices In February	Action	Net Price
\$60	Sell hogs and pay to offset option	$\$60+3-1-10 = \$52$
\$55	Sell hogs and pay to offset option	$\$55+3-1-5 = \$52$
\$50	Sell hogs and keep premium	$\$50+3-1 = \$52$
\$45	Sell hogs and keep premium	$\$45+3-1 = \$47$
\$40	Sell hogs and keep premium	$\$40+3-1 = \$42$

A quick comparison of the two strategies points out the following.

(1) If prices move sharply higher or lower than the original strike price, buying a put will result in a higher net price.

(2) If prices don't deviate significantly from the strike price, selling a call option will result in a higher net price.

### Which Alternative is Best?

There is no one strategy which results in the highest net price at all times. In fact, the knowledge of which strategy is best is known only after the fact. That, however, does not mean that producers merely must take their chances and hope they pick the best strategy. A great deal depends on the producer's goals and objectives.

For producers who are risk seekers and have no real problem maintaining all of their own price risk, the cash market likely will suit them best. As noted earlier, it is the easiest to use

and requires little or no knowledge of the other alternatives which could be used.

The other alternatives -- forward contracting, futures market and options -- all provide a floor to prices. However, both the forward pricing techniques and the futures market also provide a ceiling. Only the options market (buying a put), also provides upward price potentials.

In general, when the futures price is significantly higher than the original strike price at expiration of the option, having bought a put would have resulted in the highest net price. When the futures price is approximately equal to the original strike price at expiration of the option, having sold a call would have resulted in the highest net price. When the futures price is significantly lower than the original strike price at expiration of the option, selling a futures contract would have resulted in the highest net price.

### Conclusion

If the above discussion seems unclear, or if you feel you need more exposure before using the options market (or even the futures market or forward contracting), you probably are in the majority. The forward pricing alternatives are more complicated than the cash market. More knowledge and work are required. Generally, however, the rewards are worth it.



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