

Agricultural Marketing Guide >>



Using Hedging to Protect Farm Product Prices

Introduction

Prices for farm products rise and fall due to changes in the supply or demand fundamentals (real or perceived) for that product. Periods of tight supplies usually cause high prices. Farmers do not often have stored grain or marketable livestock on hand at a time when the price is high. Hedging using futures contracts is an alternative way to lock in prices in higher priced periods.

What is a Hedge?

To understand what a hedge is, first recognize that there are two markets: the cash market and the commodity futures market. The cash market is the physical market where farm production is actually bought and sold. The commodity futures market is the paper market where futures contracts are bought and sold.

Hedging, by strict definition, is the act of taking opposite positions in the cash and futures markets.

Let's look at the example of a farmer who intends to plant a field of canola. Even before seeding, he acquires, or buys, canola production with inputs of fuel, fertilizer, seed and chemicals, and his land and labor. When he buys these inputs, he has bought a canola crop. In other words, he has bought a piece of the cash canola market. If, at some time during the growing season, he hedges the crop by selling futures contracts, he then has an opposite position in the cash market (bought production) and the futures market (sells futures). The hedge locks in the price by taking the opposite position in the futures market (sell) to what he has (buy) in the cash market. If the sell hedge is in place, a drop in the price of canola futures (and the value of cash canola) will make the growing or cash grain worth less, but the sell or "short" futures hedge will be worth more. The money lost in one market and the money made in the other will balance each other off very closely.

Note that there are two types of hedges: a "sell" hedge (also known as a "short" hedge) and a "buy" hedge (also known as a "long" hedge). Most grain producers would use a sell or "short" hedge to protect against falling prices.

A buy hedge might be used by a canola crusher to lock in the forward price of raw canola seed, or by a feedlot operator who wishes to lock in a price for barley that will be needed in the future. Another user of a buy hedge would be a grain exporter who has sold grain to a foreign buyer but still has not purchased it in the cash market. In this instance, the grain exporter would use a buy hedge to protect against a price rise in the cash market. From here on, sell hedges will be the focus, because they are the kind of hedge used most often by crop producers.

Although buy and sell hedges can control the chance of adverse price changes, known as price risk, there are direct costs associated with using a hedging strategy. These costs are the exchange fees and commissions charged by commodity brokers for their services. The costs vary with futures exchange, the futures contract being traded and the brokerage firm.

How Hedges Work

Example 1 below, shows a hedge using a canola crop. In the spring, a producer decides to target a local cash canola price of \$450/tonne for 100 tonnes of canola that he expects to have on hand to sell in November. He decides to use a hedge to protect that target, if the opportunity occurs. He knows that a typical basis (the difference between the cash price and the canola futures price) in November for his location is \$20/tonne under January futures. Therefore, if he wants a \$450/tonne (or better) cash price with a \$20 basis, he needs January canola futures to be at least \$470/tonne.

On May 3, next January's canola futures are trading at around \$470/tonne and the hedge opportunity occurs. To hedge, the producer instructs his commodity broker to sell five 20-tonne, January canola futures contracts. The actual sell price of the futures contract is \$470.00 when the futures contracts are sold on ICE Canada Futures.

On November 23, the producer decides to sell 100 tonnes of canola to a local crusher for \$400/tonne, which is the highest local price, reflecting the best basis available from any buyer. The actual basis that he sells the cash canola at is \$20 under January canola futures.

At the same time as he prices his physical canola, the producer offsets his canola hedge. He does that by calling his broker and buying back five January canola futures contracts. The buy order is "filled" at \$420/tonne. The calculation looks like this:

Example 1

Date	Cash Market Price	Basis	Futures Action	Futures Price
at Spring Planting	\$450/t (target cash price)	\$20/ton under (expected fall basis)	Sell Order (hedge)	Target futures at \$470/t or better
May 3			Sell (filled)	\$470/t
November 23	\$400 (cash price received)	\$20/t under (actual)	Buy (offset)	\$420
November 23 Result	Lower Cash Income \$50/t			Futures Gain \$50/t

$$\text{Final Canola Sale Price} = \text{Cash Received} + \\ \text{Futures Gain } \$450/t = 400/t + \$50/t$$

He sold his canola to the highest local cash price at the time he wanted to sell. The farmer received \$400/tonne from the cash sale and an additional \$50/tonne in profits from the hedged or short futures contract. In this example, the combined price totalled \$450/tonne -

right at the target price hoped for in the spring.

This is what is called a "perfect" hedge because the final return matched the grower's original target price. Hedging lets a producer lock in a price and still deliver to the any buyer he chooses.

Why Hedges Are Not Always Perfect

Hedges usually do not work out to exactly the target price the way Example 1, above, did. The usual reason is that the basis at the time of the cash sale differs from the estimate done when the futures hedge was placed. Again, basis is the difference between the futures price and the local cash price on any particular day. In general, a strengthening (or narrowing) basis is good news to the hedger. (See Basis - How Grain Prices are Established for more information)

Example 2, below, looks at the same canola example but with a strengthening (narrowing) basis:

Example 2

Date	Cash Market Price	Basis	Futures Action	Futures Price
at Spring Planting	\$450/t (target cash price)	\$20/ton under (expected fall basis)	Sell Order (hedge)	Target futures at \$470/t or better
May 3			Sell (filled)	\$470/t
November 23	\$405 (cash price received)	\$15/t under (actual)	Buy (offset)	\$420
November 23 Result	Lower Cash Income \$45/t			Futures Gain \$50/t

Final Canola Sale Price = Cash Received +

Futures Gain \$455/t = \$405/t + \$50/t

In this case, the combination of cash selling plus futures hedging returned \$5/tonne above the target set in the Spring. The cash price was \$405/tonne even though the futures price at the time of the sale was no different than in Example 1. The actual basis was \$5/t stronger (or narrower) than estimated when the hedge was placed.

Example 3, below, looks at the effect of a weakening (or widening) basis.

Example 3

Date	Cash Market Price	Basis	Futures Action	Futures Price
at Spring Planting	\$450/t (target cash price)	\$20/ton under (expected fall basis)	Sell Order (hedge)	Target futures at \$470/t or better
May 3			Sell (filled)	\$470/t
November 23	\$390 (cash price)	\$30/t under (actual)	Buy (offset)	\$420

	(received)			
November 23 Result	Lower Cash Income \$60/t			Futures Gain \$50/t

Final Canola Sale Price = Cash Received +
Futures Gain \$440/t = \$390/t + \$50/t

In Example 3, the basis, which weakened (widened) from an expected \$20/t to \$30/t, reduced some of the effectiveness of the hedge. The final price is \$10 less than the target price of \$450 because the basis weakened by \$10/t.

Keep in mind that, for grains, the basis risk (i.e., the odds that basis will change) is less than the overall price risk. Historically, in Alberta, canola basis levels at a given location have varied by approximately \$20 to \$40/tonne within a crop year. The actual cash price variation for canola may range by \$150/tonne or more over the same time period. Cash price risk is about five times greater than basis risk!

Producers who hedge livestock or grains must stay aware of both cash and futures market price moves as well as basis levels. Watching only basis levels can mean missed opportunities in the cash or futures market.

Choosing the Right Futures Month for a Hedge

Futures contracts are traded for specific contract months. (See Commodity Futures Markets for an explanation of contract months.) For the majority of "sell" or "short" hedges, the commodity is not actually delivered to the futures contract. However, choosing which futures contract month to use for a hedge is still important. The choice of futures month to use for a hedge depends on:

1. when the cash commodity will be available for sale,
2. the amount of buying and selling of a contract month (volume), and
3. the planned delivery time for the cash grain, the main factor to consider when selecting a futures contract month.

The rule of thumb is to select a futures contract month just after the product is expected to be sold. For example, if the plan is to sell cash canola in February, then use a March or, possibly, a May canola futures contract.

Choosing a month close to the time of the expected cash sale ensures that the futures price and the cash price will closely follow each other. Using a month just after the planned cash sale will simplify the hedging process and eliminate the need to buy back (or offset) the hedge before the cash grain is sold.

A good guideline is to never hold a futures contract into the delivery month. For example, don't hold a March futures contract into March. Prices of futures contracts can have unpredictable price swings during trading within a delivery or expiry month. Also, holding a futures contract into the delivery or expiry month can mean being forced to make delivery of the commodity to the futures contract (for "short" hedgers) or having to take delivery of the commodity (for "long" hedgers). Making or taking physical delivery to offset a futures position can be complex and costly.

The second reason to "lift" a hedge before the expiry month is that trade of a futures contract in its expiry month is often very "thin". A "thin" market means there are few buyers and sellers and very little trading. A hedger has better success trading contracts with lots of buyers and sellers actively trading. There are two reasons for avoiding a "thin" market:

1. It is easier to buy and sell contracts in an actively trading market.
2. Pricing accuracy is improved in active markets. The accuracy or effectiveness of a hedge depends on the ability to sell a futures contract immediately when the price is favourable, and the ability to buy back the contract (lift the hedge) immediately when the cash grain is sold. If there is no buying and selling activity in a futures month, a hedger may not be able to "lift" the hedge. "Thin" markets may not closely follow prices in the cash market.

The third consideration in choosing a futures month for a hedge is the expected basis at the time of delivery, since basis affects the net cash price received. Know what basis is currently offered for the expected delivery period. Know what a typical basis is for the crop for that time. Study how basis is likely to change over the lifetime of a hedge. If the basis is expected to strengthen, will it strengthen enough to cover the costs of interest and storage over that time period? In fact, a strong basis, offered for the expected delivery period, is an indicator to consider other price locking methods such as a deferred delivery contract or a basis contract.

Typical southern Alberta basis ranges are shown in Table 1, below.

Table 1

Crop	Typical Southern Alberta Basis Range
Barley	\$12.00 to \$15.00 per tonne over futures to \$16.00 to \$18.00 per tonne under futures at Lethbridge. Basis levels at other locations are usually weaker by the trucking cost to Lethbridge.
Canola	Par with futures to \$40 per tonne under futures, and occasionally \$5.00 to \$20.00 over futures

A strengthening (narrowing) basis during the time the hedge is in place (i.e., when the basis moves to the better end of the range mentioned above) will add profit to a hedge. A "short" or "sell" hedger may select futures months with a weaker (wider) than average basis in the hope that basis will strengthen by the time of delivery.

Rolling Futures Contracts and Hedges

"Rolling" a "short" hedge forward, which involves buying back the original sell contract, and at the same time selling a new contract in a more distant month, may be necessary for two reasons.

Rolling may be necessary when a hedger cannot use a futures month that follows the planned cash grain sale date. For example, in January 2013 a canola grower wants to hedge unseeded 2013 crop for delivery in April 2014. However, there is so little trading of the May 2014 contracts, a thin market, that he can't get a hedge order filled. Instead, he decides to place his sell orders on the January 2014 contract and then roll the hedge forward to the May 2014 contract in December, 2013.

Rolling may also be necessary if the decision is made to delay the cash grain sale beyond the futures month used when the original hedge was placed. For example, in December, a farmer plans to sell his grain in late February, so he hedges by selling a March canola contract. As February approaches, the basis is very weak (wide), and tighter supplies and stronger (narrower) basis is expected in late May or June. As a result, cash grain selling is delayed. In order to continue protecting the price with a hedge, the futures contract must be rolled. In late February, the original March sell contract is bought back and the July futures contract is sold. When the cash grain is sold in June, the July barley contract is bought back and the hedge is then complete.

The advantage of rolling futures contracts is that rolling can protect a local cash price for an extended period of time even if distant futures months are thinly traded or not being traded at all. By rolling a futures contract, a very good price can be carried forward for two or more years.

There are two disadvantages to rolling. First, every roll results in a commission charge. However, futures commission charges are very small. Second, the accuracy of the hedge may be affected slightly by differences in the basis between each of the futures months and the local cash price. This is referred to as the "spread" between the two futures months. Keep in mind that the risk that spreads will damage a hedge is very low compared to the risk of basis or futures prices changing.

Hedging Hints and Pitfalls

Hedging can be an efficient way to lock in favorable prices for later delivery. There are a few cautions that hedgers should be aware of:

- Do not hold a contract into the futures expiry month unless you intend to actually deliver against the contract. Lift hedges before the expiry month begins.
- Do not buy or sell contracts that are too far in the future or that are "thinly" traded. It is a good guideline not to trade some Canadian futures contracts more than a year in the future.
- Be sure to take the correct futures position when hedging: sell the futures contract when producing the commodity, then buy the futures contract back when selling the commodity.
- Avoid using today's basis, especially if it is a strong basis, as an indicator of what the basis will be at the expected time of delivery. It is very important that the hedger consider what the basis is likely to be when the cash grain is sold rather than use today's basis.
- Be sure to match as closely as possible the tonnages of futures contracts to the tonnages of the grain expected for sale. However, it is rarely possible to match tonnages exactly.

- Unless your production prospects and marketing plan change substantially, leave the hedge in place because the goal is to reduce risk and lock in favorable prices.

Summary

Hedging, used with common sense, allows a producer to lock in favourable prices until actual deliveries can be made. The mechanics of placing the hedge are simple. The difficulty lies in knowing when to place the hedge.

More Information

ICE Futures Canada - <https://www.theice.com/futures-canada>

CME group - <http://www.cmegroup.com/education/>

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