Options on Futures

Options on futures were introduced to the Winnipeg Commodity Exchange in the fall of 1991. Options offer farmers a method of using the futures market for price protection without the risk of margin calls. Options on futures are a marketing tool which you can use to capture pricing opportunities and reduce risk while maintaining the ability to take advantage of market price changes.

Purchasing an option is sometimes described as being similar to purchasing an insurance policy. The cost of the option is referred to as a premium and the premium varies with the amount of price protection you want. As with an insurance policy, you man not necessarily "collect" or exercise your option. If you do not exercise your option, it expires at the end of a specified period. Options on canola futures expire on the third Friday on the month prior to the underlying futures month. On that day you lose your right to exercise your option.

There are some basic definitions you will need in order to understand how options work. These are described in the following section. More comprehensive definitions can be found in the glossary. The following is excerpted from publications of the Winnipeg Commodity Exchange. For more complete details regarding options on canola futures, contact:

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There are two types of options - put and **call** options. Buyers of options are not obligated to take any action if it is not profitable. The total risk in buying the option is the cost of the premium .

Put Options provide the buyer with the right to sell a futures contract at a specified price. You may wish to buy a put option if you think the market is likely to go down and you want to protect yourself against a price decline. Others may buy a put options as a low-risk speculation to take advantage of a market move lower.

Call Options give the buyer the right to buy a futures contract at a specific price in a defined time period. Canola crushers may buy a call option if they think there is a good chance that the market will move higher and they want to protect themselves against this upward shift in prices. Others may buy calls as a low-risk speculation to take advantage of a higher market.

All option contracts are controlled by the buyer (holder). The buyer decides what to do with the option as follows:

1) Exercise: The buyer can exercise the option to produce a short (put) or long (call) futures position at the strike price specified in the options contract. Writers of options receive the premium from the buyer. In return, they assume the risk of any adverse price movement. (Buyers of options are reducing risk, while writers of options are accepting risk.) If an options buyer chooses to exercise his right, he receives a futures position and a writer must take the opposite futures position at the designated strike price.

Exercising an option places the holder in the futures market. If you choose to exercise an option you are moving from a position with limited risk (the options market) to a position that may have unlimited risk (the futures market). Margin calls would now apply. To capture the intrinsic value that the option had, you would have to place an offsetting futures order to get out of this new futures position. If an option still had some time value, it would normally be more profitable to offset it in the options market and take advantage of the remaining option premium.

2) Offset: The options buyer can sell the option, offsetting the original purchase. An options buyer may want to offset his position and capture any value remaining in the premium. This allows the buyer to benefit from an increase in the option premium without actually moving into the futures market. (If the premium has shrunk, offsetting can reduce the cost of owning the option by regaining some of the premium.) In effect when you are trading options you are trading the value of the premium, so as futures prices change so will the value of the option's premium. Offsetting an option allows you to capture that change in value.

3) Expiry: The buyer can allow the option to expire. When there is very little time left before the option is to expire, and there is no economic benefit in exercising the option, the option has little remaining value. In this case the holder of the option can simply allow the option to expire.

Trading Options

Option contracts are traded on The Winnipeg Commodity Exchange by open outcry of competitive bids and offers - in the same manner as futures contracts.

Options on canola futures are offered on the five delivery months of canola futures - January, March, June, September, November. Strike prices are in $10.00 per tonne increments. Strike prices are made available in a range above and below the current futures contract price, for each month. As the futures contract price moves up or down over time, additional strike prices are added as required, but are not removed once they are made available. For example, if November canola is trading at $322.00 per tonne, strike prices for both call and put options might be listed as follows:

```
        Calls           Puts
------------------------------
        350             350
        340             340
        330             330
                                          November canola
        320             320               futures at $322.00
        310             310
        300             300
        290             290
```

For each futures contract trading there are at least seven option strike prices (series) quoted. Buyers and sellers will call out their bids and offers for each contract. Call options and put options are completely separate and distinct contracts. If you bought a November canola 320 put option, and you later wished to liquidate it, you would sell a November 320 put option.

Option premiums

An option premium is made up of two components:

Intrinsic value + Time value (also called extrinsic value)

Intrinsic value is the positive difference between the option's strike price and the current futures price (a premium cannot have a negative intrinsic value). For a call option the strike price must be below the current futures price for the option to have any intrinsic value. For a put option, the strike price must be above the current futures price for the option to have any intrinsic value.

Time value (or extrinsic value) is the amount a buyer pays to a writer in return for the writer assuming the risk of an adverse futures price movement. Everything in the premium of an option that is over and above the intrinsic value is considered time value.

Time value has several components. It is determined largely by the following factors:

1. Time remaining to expiration: Normally options with a long time remaining to expiration (e.g. - nine months) will be higher priced than options with a shorter amount of time remaining (e.g. - six weeks). The more time remaining on an option, the greater the number of market unknowns. Thus the possibility is greater that the futures price will move in favour of the options buyer. Additionally, the interest cost of putting up margin money from the point of view of the option writer is also reflected in the time value of an option's premium.

   This time component of the premium will decline over the life of the option. At expiration, an option has no time value.

   Volatility of the underlying futures price: Volatility is the degree to which the market price fluctuates. Generally, options on futures with high volatility have higher premiums than options on futures with lower volatility. Higher volatility means higher risk to the writer.

   Since the canola futures market has a strong seasonal influence - related to the growth and harvest of the crop - the volatility reflects this seasonality. In the spring, the number of unknowns over the growing season is large, and therefore the potential volatility is significant. In the winter months unknowns still exist, but are generally fewer, thus potential volatility is lower. When the volatility of the underlying futures contracts is perceived to be high, option premiums will be higher. When the volatility is low, the option premium will also be lower.

Option premiums and futures prices

Assume it is spring and November canola is trading at $320 per tonne. The following options quotes might be displayed:

Strike Price	Premiums Puts	Premiums Calls
290	1.90	31.90
300	3.90	23.90
310	6.60	16.60

320	11.20	11.20
330	17.30	7.30
340	24.50	4.50
350	32.60	2.60

The above table shows theoretical option premiums for 14 separate option contracts (seven puts and seven calls). Call premiums are higher for those options with strike prices below the futures price, because the buyer is purchasing the opportunity to buy futures at a lower price than the current market (the option has intrinsic value). Put premiums are higher for those options with strike prices above the current futures price. The buyer is purchasing the opportunity to sell at a higher price than the current market.

An option is said to be **in-the-money** if exercising it would yield a profitable futures position. An option is said to be **out of-the-money** if exercising the contract would yield an unprofitable futures position.

Call options with strike prices lower than the current futures price are in-the-money. Put options with strike prices higher than the current futures prices are also in-the-money.

Call options with strike prices above the current futures price are out-of-the-money, and put options with strike prices below the current futures are also out-of-the-money. (An option is out-of-the-money if exercising it would yield an unprofitable futures position.)

The term **at-the-money** refers to those options with strike prices equal or very close to the current futures price.

Using Options on Canola Futures

When using futures contracts or option contracts as pricing vehicles, the time frame of delivery or purchase of the product normally determines which futures month is chosen. A grower looking to price his currently seeded canola crop in the spring for fall delivery, would likely use the November futures or options contract. An exporter who sold canola in March to a Japanese buyer, for delivery in the first week of May, would likely use June canola futures as the pricing contract because it is the closest futures month after his date of delivery.

Once the month is selected, if options will be used, an appropriate strike price must be chosen. Since options can be viewed as a form of price insurance, the relevant question is how much insurance does the buyer want to purchase?

Assume that November canola futures are trading at $330 per tonne, and a canola grower is evaluating the following three put options:

Strike	+	Put Premium	=	Minimum Selling Price
320	out-of-the-money	7.00		313.00
330	at-the-money	11.50		318.50
340	in-the-money	17.00		323.00

An out-of-the-money put option has relatively low premiums, but locks in a selling price below current market levels. However, if prices move higher, the net profit may be higher than if an at-the-money option had been bought because the cost of the option is lower. An in-the-money option will cost significantly more than an out-of-the-money option, but it locks in a higher overall price if the market price falls. Which strike price to choose depends on the market out-look, the current price level relative to historical price levels, and the individual's assessment of what will service his needs.

Option Strategies for Canola Growers

Buying put options to establish a minimum selling price (hedge)

Assume it is spring and you have just finished seeding your canola crop. November canola futures are quoted at $326.00 per tonne and your normal basis level at harvest time is about $44.00 per tonne under the November futures contract. This futures price represents a potential cash price to you of $282.00 per tonne.

If a good canola crop develops in Canada, prices will likely decline by harvest. On the other hand, if weather conditions are dry and the market outlook uncertain, higher prices will probably develop. Buying a put option can lock in a floor price and still allow you to benefit from higher prices in the cash market (if you don't have your crop sold already.) If you were to purchase ten November canola 330 put option contracts at $14.00 per tonnes, you would establish a minimum selling price on 200 tonnes of your canola crop as follows:

Strike Price	$330.00
Option Premium	-$14.00
Expected basis	-$44.00
Cash price	$272.00
(Floor price)	

If prices fall: If by early September prices have fallen to $294.00 per tonne for November canola futures, your November canola 330 puts would be worth $37.00 per tonne ($330 - $294 = $36.00 intrinsic value, plus $1.00 time value) estimated for the purposes of this example. At the same time, the cash price would be $250.00 per tonne ($294 - $44 = $250) assuming the basis was indeed $44.00 per tonne. You could sell your cash canola and offset your option position to get the following results on the portion of the crop "protected" by options:

Cash Market	Nov Canola Futures Price	Options Market	Basis	Action
Spring	$326	Buy Nov 330 puts	$44	Bought put

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                                at$14

   Sept. Sell   $294            Sell Nov   $44    Sold cash &
   Cash at $250                 330 puts          sold puts
                                at $37
                                Gain = $23
                                per tonne

     Net selling price =        $294.00    Futures
                                less 44.00 Basis
                                less 14.00 Premium
                                plus 37.00 Profit on sold options
                                $273.00 per tonne
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(Note: This price is $1/tonne above above the targeted minimum selling price, because the options were sold with 51/tonne of time value remaining in the premium.)

If prices rise: If November futures had risen to $368 per tonne by harvest, the net selling price would be:

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   Cash         Nov Canola      Options
   Market       Futures Price   Market     Basis   Action
-------------------------------------------------------------
   Spring       $326            Buy Nov     $44    Bought put
                                330 puts
                                at$14

   Sept. Sell   $368            Nov 330     $44    Sold cash &
   Cash at $324                 puts are           Puts expire
                                left to expire
                                Loss = $14
                                per tonne (premium)

   Net selling price =          $368.00     Futures
                                less 44.00  Basis
                                less 14.00  Premium
                                $310.00 per tonne
```

Another benefit of using put options to hedge a growing crop is the reduction of risk. If your crop is reduced by adverse growing conditions, you will not be forced to "buy back" your hedge (potentially at a loss) as you would with other marketing alternatives. The option would simply be allowed to expire with no remaining value.

Buying call options as an alternative to storing the crop, or to replace lost crop potential during the growing season (speculating).

Rather than speculate on rising prices with stored canola, a grower may choose to sell his cash canola and buy call options. As the price of the futures contract increases, the premium of the call option should also increase (especially if the option has intrinsic value - when it is in-the-money). Since the grower is no longer holding the physical canola, he may choose to buy a call option with the objective of taking advantage of an increase in the premium.

For example, if you buy an at-the-money 310 call (futures are also around 310) for $10.00 per tonne, and the futures price increases to $350 per tone, the call option premium should increase to, say for example, $45.00 per tonne ($40.00 intrinsic value plus $5.00 time value). Your net profit would be ($45 $10 = $35 per tonne) - the difference between the Purchase price and the selling price of the option premium.

Buying call options may offer greater price risk management than a long futures position, because your maximum loss with an option is always limited to the cost of the original premium paid.

The following is an example comparing buying futures contracts with buying calls. Assume it is November, you have just sold your canola crop, and the market shows the following prices:

March canola futures at $310.00 per tonne

March canola call options:

Strike	+ Premium	= Breakeven with futures at
320	5.50	325.50
310	10.00	320.00
300	15.00	315.50

The choice of strike price will depend on premium values and market outlook. Assume you choose to buy an at-the-money 310 call for $10.00. The following chart compares the potential of this options position to a long futures position, given various market prices that might exist by February:

	Gain/loss if you:	
March futures in February	Bought 310 calls	Bought futures
350	$30.00	$40.00
340	$20.00	$30.00
330	$10.00	$20.00
320	0	$10.00
310	($10.00)	0
300	($10.00)	($10.00)
290	($10.00)	($20.00)
280	($10.00)	($30.00)

The call option allows you to profit from increases in the premium's value if the futures market rallies. It also limits your loss to the $10.00 per tonne original premium paid if the futures market declines. If you had bought a futures contract at $310.00 per tonne, this would also be profitable if the futures market rallies. However your loss would be unlimited if the futures price declined. You would also be required to deposit initial margin money to hold a futures position, and you would have to meet margin calls as the market moved against your position.

The same approach of buying call options to replace sold inventory can be applied to a growing crop. If the western Canadian canola crop is deteriorating due to poor growing conditions, you can buy call

options to replace your lost crop potential. Generally deteriorating crop conditions will lead to rising market prices, and buying the call options allows you to participate in the rising market.
