INTRODUCTION TO COTTON OPTIONS

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INTRODUCTION

For well over a century, industry representatives have joined traders and investors in the New York Board of Trade futures markets to engage in price discovery, price risk transfer and price distribution of cotton. In fact, the first cotton futures market contracts were traded in New York in 1870. From that time, the cotton futures market has grown in use, but still provides the same services it did when trading began.

While futures contracts have been widely used, commodity option contracts have a history of controversy. In 1936, Congress prohibited the trading of all commodity options that were regulated under the Commodity Exchange Act. The reasoning behind the ban was a history of manipulation and price disruption in the futures markets which were linked to options trading. The Commodity Futures Trading Commission (CFTC) was later created by Congress in 1974. This agency was given authority over futures trading in all commodities as well as the right to ban or allow option trading. In 1981, the Commission allowed a pilot program for exchange-traded options in the non-agricultural commodities. Due to the success of this pilot program, Congress lifted the ban on agricultural options in 1982 (Dial, 2005).

WHO ARE THE MARKET PARTICIPANTS?

Any one person, group of persons, or firm can trade options contracts. Generally option market participants fall into two categories. These categories are hedgers and speculators. While each serves a purpose, the goal of the two very different types of traders are not the same.

HEDGERS

Options market participants who either own or will own the physical commodity and use the futures market to protect against adverse price movements can be classified as *Hedgers*. These participants attempt to shift price risk to other participants. *Hedgers* can be defined as: the purchaser of an option, either a call option or put option (McCafferty, 1998). For example, cotton producers can use the options market to ensure a minimum selling price for their cotton at harvest. The act of hedging will be further discussed later.

Aside from producers, other hedgers using the futures market are those who wish to lock in an acceptable margin between their purchase cost and their selling price. For example, a cotton buyer may use the options market to ensure a minimum buying price for cotton that will be purchased later in the year.

SPECULATORS

Any person or firm that attempts to anticipate commodity price changes and make profits through the sale or purchase of commodity options contracts is referred to as a *Speculator* (McCafferty, 1998). Any person at any point in time can be considered a speculator. The one criteria that sets speculators apart from hedgers is that speculators do not have ownership of a commodity (such as cotton) either growing or in storage. For example, a person who does not grow, purchase for resale, or purchase for manufacturing cotton but sells cotton options market contracts would be considered to be a speculator in the cotton market.

ROLE OF HEDGERS AND SPECULATORS

Commodity markets would not operate effectively if the only participants involved were hedgers. Speculators are essential to the efficiency of both the futures and options markets because they assume the risk of price movements in pursuit of profit. Because producers want only the highest price for a commodity and users of the commodity only want the lowest price, it would be difficult, if not impossible for hedgers to agree on a price. Therefore, speculators help to bridge the gap between the price producers want to sell their commodity and the price users want to buy the commodity. When speculators are present in the market, the number of buyers and sellers increases. Hedgers are no longer limited by the hedging needs of other hedgers. Because speculators assume risk and provide liquidity and capital, they provide the keys to effective futures markets. Table 1 provides a reason for trading futures contracts for both hedgers and speculators.

Table 1. Reasons for trading futures contracts for hedgers and speculators.

Market Participant	Reasons for Buying Options Contracts	Reasons for Selling Options Contracts
Hedgers	To protect against falling or rising prices by locking in a price.	None[1]
Speculators	To profit from falling or rising prices.[2]	To profit from falling or rising prices.

[1] Some hedgers may choose to sell commodity options when implementing an advanced options trading strategy.
[2] Due to the nature of options trading, most speculators will not purchase option contracts.

UNDERSTANDING HOW PRICE IS REPORTED

To understand how cotton option contract prices are reported, cotton futures contract pricing must first be understood. The discussion below will first concentrate on the cotton futures price reporting, then on the cotton options price reporting.

COTTON FUTURES PRICE REPORTING

Cotton futures contracts, traded at the New York Board of Trade, are first distinguished by the month associated with the contract. The futures contract months for cotton are: March, May, July, October, and December. These months represent separate cotton contracts. The month associated with each contract indicates which month the contract will expire.

Each cotton contract will have a separate price reported in cents and hundredths of a cent per pound. While there is one location where these prices are discovered (New York Board of Trade), there are several outlets to receive the price. These outlets can range from the World Wide Web to newspapers. The format of the price reports may differ, but all outlets generally provide similar information. For instance, all sources provide the contract month and year, opening price, high and low price recorded for the day, settlement price, and change from the previous day. The order in which these prices are reported may differ, as well as the way in which the price is reported. For example, some reported prices use a decimal point to distinguish between whole cents and fractions of cents while some do not use a decimal point (example: 46.40 and 4640 represent 46.40 cents per pound). Recognizing these two ways in which price is reported is important to prevent confusion.

Reporting Cotton Futures Market Prices on the World Wide Web

Cotton futures market prices can be found at various locations on the World Wide Web. These locations provide similar information to what is found in newsprint, although space requirements are not limited as it is in newspapers. Therefore, much more information regarding the daily activities of the futures market contracts is made available. An example of how the cotton price is reported on the World Wide Web is presented in Table 2.

Table 2. Cotton futures price as reported by Farms.com.

Cotton - #2 (CEC)							Contract	
Contract Mth	Symbol	Open	High	Low	Last	Change	High	Low
MAR Cotton - #2	(CT6H)	53.50	53.65	53.40	53.45	**+0.06**	70.150	48.30
MAY Cotton - #2	(CT6K)	54.40	54.55	54.20	54.25	**+0.02**	61.200	49.25
JUL Cotton - #2	(CT6N)				55.10	**0.00**	62.130	50.40
OCT Cotton - #2	(CT6V)				56.15	**0.00**	59.500	54.90
DEC Cotton - #2	(CT6Z)	57.00	57.40	57.00	57.25	**0.00**	63.500	54.90
MAR Cotton - #2	(CT7H)				58.95	**0.00**	62.100	57.50
MAY Cotton - #2	(CT7K)				59.55	**0.00**	62.000	59.00
JUL Cotton - #2	(CT7N)				59.50	**0.00**	60.100	58.45
OCT Cotton - #2	(CT7V)				59.45	**0.00**		

Source: Farms.com (2005).

Contract Month

The "Contract Mth" column of the price report in Table 2 lists the month for each futures market contract. For instance, MAR Cotton - #2 represents the cotton futures market contract that will expire in March. DEC Cotton - #2 represents the cotton futures market contract expiring in December.

Symbol

As on any stock exchange, cotton futures market contracts are distinguished by specific symbols. These symbols help distinguish and summarize different contracts. For instance, the symbol used for the cotton futures market contract is CT. To further distinguish different cotton futures market contracts, symbols are also used for the different contract months. Table 3 provides the various symbols for a cotton futures market contract by month.

Table 3. Cotton futures market contract and month symbols.

Contract/Month	Symbol
Cotton Futures Market Contract	CT
March	H
May	K
July	N
October	V
December	Z

From Table 3, it can be seen that the contract symbol for cotton is "CT". Each specific contract month are: "H" for March, "K" for May, "N" for July, "V" for October, and "Z" for December. As an example the following represents a way in which a cotton contract may be written.

CTZ06 represents the December (Z),
Cotton (CT), 2006 (06) futures market contract

It is essential that the symbols used for each specific contract, contract month, year as well as other specifications of the contract be understood by anyone trading futures contracts. The specifications of the New York Board of Trade cotton futures contract are provided in the Appendix.

Open

Open in a price report stands for the first price recorded of the day's trading. For instance, the December 2006 cotton futures contract opened at 57.00 cents per pound. In some instances, two prices are reported. This represents a time when futures prices opened within a range of prices. It should also be noted that some price reports list a superscript "B" and "A" with reported opening prices. The "B" represents the *bid price*, and the "A" the *ask price*. The bid price stands for an attempt to buy a futures contract that was not sold. The ask price, on the other hand represents an attempt to sell a futures contract that was not bought. Therefore, an open which only has a bid and ask reported indicates that no trade was made for this contract at the open of the market.

High

The highest price traded for each contract during the day's trading is reported in the "High" column. For example, the highest price traded during the day for the December 2006 contract in Table 2 was 57.40 cents per pound. If no contracts were traded (bought and sold) during the day's activities, there is no reported high price for the day. The October 2006 contract reported in Table 2 is an example where no trades occurred during the day.

Low

The "Low" column of price reports indicate the lowest traded price for each contract during the day's trading. Examining the December 2006 contract in Table 2 again indicates that the lowest price traded during the day was 57.00 cents per pound. As with the highest price, in instances where no contracts were traded during the day, there is no reported low price for the day.

Last

The last price traded for the day (usually the final closing price recorded for the day) is reported in the "Last" column. For instance, the December 2006 cotton futures contract closed at 57.25 cents per pound. As with the open, there are instances where two prices are reported in this column. This represents a time when futures prices closed within a range of prices. Some price reports make use of the bid and ask associated with the closing price (denoted by a superscript "B" and "A" with reported closing prices). The representation of the bid and ask are identical to those found with the Open.

Change

The change in the settlement price from the previous day's settlement is reported in the "Change" column. A plus sign (+) or no sign at all in front of a reported price indicates a price increase. A decrease in price will be reported with a negative (-) sign. No change in the settlement price will be represented by either a zero (0), dashed line (--) or by NC. For example, the December 2006 contract in Table 2 showed no change from the previous day's trading.

Contract High/Low

The "High" and "Low" columns represent the highest and lowest prices each specific cotton futures market contract has traded over the life of the contract. These columns do not suggest when the highest and lowest price occurred.

Reporting Cotton Futures Market Prices In Newspapers

As mentioned earlier, prices can also be obtained from local newspapers. While prices reported in newspapers are generally accurate and useful, it should be noted that these prices are normally from the previous day's trading. Furthermore, the amount of information reported in newsprint is usually less than other sources reports. Figure 1 provides an example of cotton prices reported in a news paper.

	Open	Settle	Chg
Cotton NYBT			
50,000 lbs.- cents per lb.			
Mar 06	54.15	53.54	-.60
May 06	54.60	54.14	-.50
Jul 06	55.60	54.95	-.86
Est. Sales			8,799
Thu's sales			18,797
Thu's open int.			103,125
Chg.			+848

Figure 1. Cotton futures prices as reported in the newspaper.
Source: Dallas Morning News

As with other cotton futures market price reporting sources, newspapers generally report the contract month in the first column. For example, Mar 06 represents the March 2006 cotton futures market contract. Depending on the specific newspaper, the amount of information, the order as well as how the price is reported may differ. Here the opening price for the day is reported first (in the "Open" column). The next column (Settle) represents the settlement price for the day. Finally the change in price from the previous day (either positive or negative) is reported in the last column (Chg). The estimated sales (volume) for the previous day are reported below the prices followed by the actual sales (volume) two days ago. The actual open interest two days ago is reported next followed by the change in open interest.

As mentioned earlier, some price reporting outlets specify the price of cotton using a decimal point as in Figure 1. With this in mind, the information reported in Figure 1 can be interpreted as follows. The newspaper was printed on December 24, 2005. Therefore, the prices reported are for activity that occurred on December 23, 2005. The March 2006 cotton contract opened trading at 54.15 cents per pound and settled at 53.54 cents per pound. The settlement price was 0.60 cents per pound lower than the March 2006 cotton futures settlement price on December 22, 2005. The estimated number of sales (volume) for December 23, 2005 equaled 8,799 contracts. The actual number of sales (volume) for Thursday December 22, 2005 equaled 18,797 while the actual open interest equaled 103,125. The last row of Figure 1 suggests that open interest on December 22, 2005 was 848 less than open interest on December 21, 2005.

COTTON OPTIONS PRICE REPORTING

To first understand the manner in which option contract prices are reported, it is important to know that each option contract is tied directly to a futures market contract. The trading cycles for cotton option contracts will be discussed first below followed by a discussion of cotton option contract price reporting.

Trading Cycles for Cotton Option Contracts

Each option contract is linked to the futures market contract that will expire closest to the designated option contract month. A closer look at Table 4 will help provide a clear understanding of the various cotton option contracts, their underlying futures contract, and when the option contracts expire.

Table 4. Trading Cycles for Cotton Option Contracts.

Trading Cycles		
Serial options (listed in italics) are short-life options providing additional option expirations on existing futures contracts. All options are designated by the month following the expiration of the option contract.		
Option Name	**Underlying Futures**	**Expiration Month**
*January	March	December
March	March	February
May	May	April
July	July	June
October	October	September
*September	December	August
*November	December	October
December	December	November

Source: New York Board of Trade (2005).

Currently eight cotton option contracts are traded on the New York Board of Trade. The months corresponding to the name of the cotton options contracts are: January, March, May, July, October, September, November, and December (first column of Table 4). The second column indicates the underlying futures market contract for each options market contract. Finally, the last column of Table 4 specifies the month that each options contract will expire (which is always one month prior to the month designated in the option contract name). Given this information, the March cotton options contract is tied directly to the March cotton futures contract and will expire in February. Similarly, the December cotton options contract is tied directly to the December cotton futures market contract and will expire in November.

It should be noticed that there the cotton options contracts of January, September, and November are not tied to a cotton futures contract of that same month. This is due to the fact that cotton futures contracts are not available during those months. Therefore, these three cotton option contracts are tied to the next cotton futures market contract that will expire. For instance, the January cotton options contract is tied to the March cotton futures contract and will expire in December.

Cotton Option Contract Price Reporting

Reporting of commodity option contract prices are much different from futures contract prices. The reason for this difference is due to the large number of alternative trades (which will be discussed later) that can be made for each contract. Unlike futures contracts, option contract reporting is generally viewed only via World Wide Web. When reporting option prices, each option contract price report is usually reported separately. Generally both prices for puts and calls (discussed later) are provided together. Below is a small sample of the option contract prices reported for the March 2006 cotton option contract.

Table 5. March 2006 Cotton Options Contract Price Report.

CT6H - CEC				
Strike Price	**Put**	**Put Traded**	**Call**	**Call Traded**
43	3.00	11/08/2005 14:20:55	1,040.00	09/09/2004 14:20:55
44	4.00	12/09/2005 14:20:57	940.00	09/10/2004 14:20:56
45	7.00	12/15/2005 14:20:58	843.00	09/10/2004 14:20:57
46	11.00	12/13/2005 14:20:59	748.00	12/01/2004 14:20:59
47	16.00	12/19/2005 09:32:00	655.00	09/10/2004 14:21:02
48	28.00	12/15/2005 14:21:05	565.00	11/03/2005 14:21:04
49	35.00	12/19/2005 09:32:56	480.00	01/01/1970 14:21:05
50	50.00	12/16/2005 14:21:12	401.00	12/14/2005 14:21:10
51	70.00	12/19/2005 09:34:22	330.00	12/14/2005 14:21:12
52	105.00	12/15/2005 14:21:15	266.00	12/14/2005 14:21:14
53	150.00	12/19/2005 09:39:22	208.00	12/16/2005 14:21:15
54	223.00	12/15/2005 14:21:16	150.00	12/19/2005 09:50:08
55	284.00	12/13/2005 14:21:17	124.00	12/16/2005 14:21:16
56	353.00	12/16/2005 14:21:18	110.00	12/16/2005 14:21:18
57	428.00	12/08/2005 14:21:19	68.00	12/16/2005 14:21:19
58	509.00	11/09/2005 14:21:20	50.00	12/16/2005 14:21:20
59	595.00	10/17/2005 14:21:23	36.00	12/15/2005 14:21:21
60	684.00	12/05/2005 14:21:24	25.00	12/16/2005 14:21:24
61	777.00	06/03/2004 14:21:26	18.00	12/14/2005 14:21:25
62	871.00	01/01/1970 14:21:27	13.00	12/15/2005 14:21:27
63	968.00	05/06/2004 14:21:28	10.00	12/12/2005 14:21:28

Source: Farms.com (2005).

Strike Price

The first column of the March 2006 cotton options contract price report ("Strike Price"), represents the various strike prices which are available for this contract. These strike prices are reported in one cent increments for a cotton options contract as specified in the cotton options contract specifications. The specifications of the New York Board of Trade cotton options contracts are provided in the Appendix. Table 5 presents the March 2006 cotton option contract ranging in from a $0.43 to a $0.63 cent per pound strike price.

Put
The second column of Table 5 represents the premium (price) associated with the March 2006 put option contracts (put options will be discussed later). The reported price is in cents and hundredths of a cent. For example, a March 2006 cotton options contract with a $0.53 per pound strike price has an associated $0.015 per pound premium.

Put Traded
The "Put Traded" column provides information regarding the date and time the trade that resulted in the price reported in the "Put" column was made. It should be noted that some strike prices are not traded every day. Therefore, the dates provided in the "Put Traded" column can differ.

Call
The fourth column titled "Call" reports the prices associated with the March 2006 call option contracts (call options will be discussed later). As with the prices in the "Put" column, prices in the "Call" column are reported in cents and hundredths of a cent. For example a March 2006 cotton options contract with a $0.53 per pound strike price has an associated $0.0208 per pound premium.

Call Traded
The last column of Table 5 represents the date and time the trade that resulted in the price reported in the "Call" column was made. As with the information provided in the "Put Traded" column, not all strike prices are traded every day. Therefore, the dates provided in the "Call Traded" column can differ.

HOW A HEDGE USING OPTION CONTRACTS WORK

Understanding how option market contracts can be used to hedge price risk first requires that the basic terms used are understood. After the terms are familiar, using option contracts to protect against changing prices becomes much easier. The discussion below introduces the terms used in trading option contracts followed by a discussion of the basics behind an options market hedge.

TERMS ASSOCIATED WITH COMMODITY OPTION CONTRACTS

It is absolutely necessary that those wishing to use commodity option contracts as a means of hedging price risk become familiar with the terminology used. Below are a few basic terms commonly used with option contracts.

Commodity Option Contract
A commodity option gives the buyer the right, but not the obligation, to purchase or sell an underlying futures contract at a specific price within a specified period of time (Murphy, 1986). Often times commodity option contracts are compared to automobile insurance. Purchasing automobile insurance gives the buyer the right to make a claim. In other words, if the buyer of the automobile insurance is involved in an accident, a claim can be made. However, the buyer does not have the obligation to make a claim. If the buyer of the insurance does not have a wreck, they are not required to make an accident claim. The same holds true for those purchasing a commodity option. If prices change so that the option gains in value, the buyer can exercise their right to claim the additional value. If prices change so that the option does not gain additional value, the buyer is not obligated to exercise their right.

The "right, but not the obligation" aspect of commodity option contracts is one thing that is attractive to some hedgers. Because the buyer can *choose* when to exercise the right to take action, they can take advantage of favorable price movements while still being protected against unfavorable ones.

Put Option

A put option can be defined as an option that gives the option buyer the right but not the obligation to sell the underlying futures contract (McCafferty, 1998). Because a put option gives the buyer the right, but not the obligation, to **sell** the underlying futures contract, it can be used to protect against falling prices. In effect, put options can be purchased to establish a floor price.

Call Option

The buyer of a call option acquires the right but not the obligation to purchase a particular futures contract at a specific price on or before a particular date. Buyers of call options are generally either trying to protect against rising prices (hedgers) or in an attempt to profit from rising prices (speculators) in the underlying futures contract (McCafferty, 1998). In effect, call options can be used to establish ceiling prices.

Strike Price (Exercise Price)

The strike price (sometimes referred to as the exercise price) represents the price at which the buyer of a put or call option may choose to exercise the right to purchase or sell the underlying futures contract (McCafferty, 1998). Referring back to Table 5, several strike prices were reported for the March 2006 cotton options contract. The buyer may choose any of these strike prices to purchase either a put or a call. Thus, option contracts provide buyers the opportunity to determine the level of price protection they choose to use.

Premium

The premium associated with commodity option contracts represents the amount that will be paid by the buyer for the purchase of an options contract. This premium is paid when the option contract is purchased and represents the maximum amount of money that the purchaser of the option stands to lose on that contract. Following the automobile insurance example, the premium paid for the purchase of an options contract is similar to the premium paid for insurance. When purchasing automobile insurance, buyers must pay a premium. If no claims are made, the buyer of the insurance only stands to lose the premium.

While buyers of option contracts are provided the ability to choose the level of price protection (through being able to choose the strike price), they must pay higher premiums for higher levels of price protection. This is evident through an examination of premium prices associated with both puts and calls at various strike prices. Premiums associated with put options increase as the strike price increases. This is due to the fact that higher strike prices suggest higher floor prices. Since a put option can be purchased to establish a floor price, higher prices will be charged (premiums) to establish higher floor prices.

On the other hand, higher strike prices result in lower premiums associated with call options. Because call options can be used to establish ceiling prices, lower prices will be charged to establish higher ceiling prices.

Out-of-the-Money

Whether an options contract is "Out-of-the-Money" depends on two separate factors, whether the contract is a put or a call, and the current underlying futures price. Put options are said to be "Out-of-the-Money" if the current underlying futures price is above the contract strike price. On the other hand, call options are "Out-of-the-Money" if the current underlying futures price is below the contract strike price. For example, a March 2006 put option contract with a $0.50 strike price is said to be "Out-of-the-Money" if the underlying futures price is above $0.50 per pound.

At-the-Money

At-the-money options suggest the option strike price is equal to (or very near equal to) to current underlying futures price (McCafferty, 1998). This term is the same regardless of whether the option contract is a put or a call. For instance, if the March 2006 cotton futures price is equal to $0.5345, an option contract with a strike price very near to this futures price is said to be "At-the-Money". This term can also be used when placing an options market order to either buy or sell. For instance, a buyer of an options contract could tell a broker to:

"Buy 5 March 2006 Option Contracts At-the-Money"

In-the-Money

The theory behind whether an option contract is "In-the-Money" is opposite of option contracts that are "Out-of-the-Money" discussed above. A put option contract is said to be "In-the-Money" if the current futures price is below the contract strike price. On the other hand, a call option contract is "In-the-Money" if the current futures price is above the contract strike price.

BASICS BEHIND AN OPTIONS MARKET HEDGE

The strike price is the main link between the option contract and the underlying futures market contract. When a put option is purchased, the buyer must specify the strike price. This strike price becomes the minimum price that the contract will allow the futures price to reach. If the futures price falls below the specified strike price, the contract begins gaining in value. Therefore the strike price effectively becomes the floor price for the commodity. Figure 2 represents a graphical illustration of the basics behind an options hedge.

Figure 2. Protected price area when purchasing a March 2006 put option contract with a $0.56 per pound strike price.
Source: barchart.com

If a producer purchased a March 2006 cotton options contract with a corresponding $0.56 per pound strike price (red line), then the options contract would gain in value as the March 2006 cotton futures price falls further and further below $0.56 per pound. The grey shaded area of Figure 2 represents the area of price protection that the cotton producer has by purchasing the put option.

On the other hand, a cotton buyer can obtain a similar type of price protection. In this case, the buyer would purchase a call option at a specific strike price. The further the underlying futures price rises above the strike price, the more the option contract gains in value.

Components of the Option Contract Premium

The option contract premium has two basic components. These components are called "Intrinsic Value" and "Time Value". The discussion below discusses each of these.

INTRINSIC VALUE

Intrinsic value is equal to the gross profit an option buyer could earn if the option was exercised (Fincham, 1999). For example, if a December cotton put option is purchased with a 75 cent per pound strike price, and the current December futures price equals 70 cents per pound, the intrinsic value would equal 5 cents per pound. In this example, the put option buyer could exercise the option (which would

mean that cotton futures were sold at 75 cents per pound), then buy the futures contract back at 70 cents per pound. This would result in a 5 cents per pound gain. If the current futures price is greater than the strike price of a put option, the option contract is said to have an intrinsic value of zero. On the other hand, if the current futures price is less than the strike price associated with a call option, the call option is said to have an intrinsic value of zero.

Taking the information provided in Table 5, the intrinsic value is calculated for the various put options presented in Table 6 below.

Table 6. March 2006 Cotton Options Contract Intrinsic Values.

Strike Price		Current Futures Price		Intrinsic Value
48	-	53.45	=	0
49	-	53.45	=	0
50	-	53.45	=	0
51	-	53.45	=	0
52	-	53.45	=	0
53	-	53.45	=	0
54	-	53.45	=	0.55
55	-	53.45	=	1.55
56	-	53.45	=	2.55
57	-	53.45	=	3.55
58	-	53.45	=	4.55
59	-	53.45	=	5.55
60	-	53.45	=	6.55
61	-	53.45	=	7.55
62	-	53.45	=	8.55
63	-	53.45	=	9.55

TIME VALUE

The time value associated with an options contract premium is equal to the option premium less the intrinsic value (Fincham, 1999). For example, let's examine the purchase of a 75 cent per pound December cotton put option, and the current December cotton futures price equals 70 cents per pound. Let us also assume that the 75 cent per pound put option has an associated premium that equals 7 cents per pound. Given this information, the time value associated with this put option would equal 2 cents per pound (7 cents per pound premium minus 5 cents per pound intrinsic value equals a 2 cent per pound time value). This time value will generally decrease as the contract nears expiration.

The time values are calculated for the option contracts presented in Table 6 above and can be found in Table 7. It should be noted that, due to the manner which cotton option contract prices are reported, premiums associated with option contracts should be divided by 100 before the time value can be calculated.

Table 7. March 2006 Cotton Options Contract Intrinsic and Time Values.

Strike Price		Put		Intrinsic Value		Time Value
48	-	0.28	-	0	=	0.28
49	-	0.35	-	0	=	0.35
50	-	0.50	-	0	=	0.50
51	-	0.70	-	0	=	0.70
52	-	1.05	-	0	=	1.05
53	-	1.50	-	0	=	1.50
54	-	2.23	-	0.55	=	1.68
55	-	2.84	-	1.55	=	1.29
56	-	3.53	-	2.55	=	0.98
57	-	4.28	-	3.55	=	0.73
58	-	5.09	-	4.55	=	0.54
59	-	5.95	-	5.55	=	0.40
60	-	6.84	-	6.55	=	0.29
61	-	7.77	-	7.55	=	0.22
62	-	8.71	-	8.55	=	0.16
63	-	9.68	-	9.55	=	0.13

HOW TO USE OPTION CONTRACTS TO HEDGE PRICE RISK

Using commodity options to hedge price risk generally involves buying either a put or a call option. The decision of which to use (either a put or a call option) depends on your price risk management goals. These price risk management goals depend on whether increases in the price of cotton are viewed as favorable or not. Producers of cotton obviously would like to receive the highest possible price for their cotton. Those in the industry that purchase cotton either for re-sale or to be used would like to pay the lowest possible price. Both of these cotton market participants face price risk. One does not like to see prices fall while the other does not like to see prices rise. To combat this price risk, cotton producers can purchase a put option while cotton buyers can purchase a call option.

DETERMINING WHICH CONTRACT TO USE

Before a producer or user of cotton can purchase a put or call option, several steps should be completed to ensure the strategy will provide the best protection for the operation or firm. None of these steps should be overlooked. Furthermore, each should be reviewed from time to time as they can change quickly.

Step 1: Estimate Production

A cotton producer should first estimate the total amount of cotton (in bales) that will be produced during the year. This will determine the total number of option contracts that can be used to hedge price risk. Since one cotton option contract represents approximately 100 bales (with each bale weighing about 500 lbs.), the estimated total number of bales that will be produced can be divided by 100. The result will be the estimated total number of option contracts that can be used to hedge price risk. For example, if a producer estimates that 1,000 bales will be produced, a maximum of 10 contracts (1,000 bales /100 bales per contract = 10 contracts) could be used to hedge price risk. It should be noted, however, that producers are usually not encouraged to hedge 100 percent of their expected production. Hedging 100 percent of expected production may result in producers being "over hedged" in years that actual production is less than what is expected.

A similar approach can be used if cotton will be purchased in the future. First determine how many bales of cotton will be purchased, then divide this number by 100. This will indicate how many total options contracts will be required to hedge 100 percent of the expected future purchase.

Step 2: Know Your Cost of Production

Opportunities to take advantage of profitable cotton prices can occur several times during a year. These opportunities may come before the crop is planted, during the growing season, or even after the cotton is in storage. However, in order to identify these opportunities, cotton producers must first determine what it costs to produce (break-even price). Without knowing the cost of production, opportunities may be lost or prices may be "locked-in" below the break-even price.

Step 3: Determine Which Options Market Contract to Use

As mentioned earlier, there are eight separate cotton option contracts traded. These contracts are the January, March, May, July, October, September, November and December contracts. Producers will first estimate when the cotton will be sold, in order to determine which options contract to use to hedge price risk. Producers will use the contract which is nearest in time to when the cotton will be sold. If for example, a producer estimates that cotton will be sold in December, the December contract will be used to hedge price risk. Cotton that sold during months with no corresponding options contract, requires the producer to decide which contract to use. Generally, the next contract in time order is used in this case. For example, if a producer will harvest and sell cotton in February, the March options contract is generally used. A similar approach can be taken for those that will be buying cotton in the future. If it is anticipated that cotton will be purchased in July, the July options contract will be used.

Step 4: Estimate Local Basis

The local basis must then be estimated before a producer can accurately determine if an options contract opportunity will be beneficial or not. Basis refers to the difference between the futures price and local

cash price for cotton at the time the cotton will be sold. This basis may either be positive (local basis is *over* the futures price) or negative (local basis is *under* the futures price), depending on location and local demand for the cotton. To estimate local basis at the time of sale, historical records of local prices should be compared to historical futures prices. Subtracting the historical futures price from the historical local cash price of the same year will provide an estimate of local basis. Several years of historical prices should be used and averaged to get a true estimate of local basis. An example of calculating historical basis is presented in Table 8.

Table 8. Estimate of Historical Local Basis

Year	Historical Local December 1st Cash Price (Cents/lb.)		Historical December 1st Futures Price for the December Cotton Futures Market Contract (Cents/lb.)		Local December 1st Basis (Cents/lb.)
2005	45.90		48.30	=	- 2.40
2004	47.58		47.88	=	- 0.30
2003	66.50	-	68.25	=	- 1.75
2002	46.25	-	47.30	=	- 1.05
2001	32.35	-	35.41	=	- 3.06
		-			
Average (Local December 1st Basis Estimate in cents/lb.)					**- 1.71**

Step 5: Hedge Price Risk

Producers of cotton will ultimately sell their cotton at some point after harvest. As stated earlier, before cotton is planted, while it is growing, or while being stored after harvest, there exists the potential for the price of cotton to decrease (market price risk). One way to protect against a price decrease is through the use of an options contract. To protect against falling prices, cotton producers who will plant, are currently growing or are currently storing cotton (often referred to as the cash market) will *buy* the number of *put* option contracts that will protect the cotton from falling market prices.

On the other hand, those that will be purchasing cotton at a later date also stand the risk of prices changing. However this market participant is at risk of prices increasing. To combat rising prices, this group can *purchase* the number of *call* option contracts that will protect the cotton from rising market prices.

Step 6: Completing the Trade

There are two different ways an option buyer can realize a gain in value of an options contract. The way that is used depends on the market itself.

Exercising the Option

The first way to realize the gain is to first take the futures market position. This action is often referred to as "exercising" the option. The futures market position can then be offset. For example, let's assume a cotton producer purchased three March 2006 put options with a 56 cent per pound strike price. If the

March 2006 futures price falls to 50 cents per pound, the producer could then "exercise" the option. Since three put options were purchased with a 56 cent per pound strike price, by exercising the option the producer would essentially sell three cotton futures contracts at 56 cents per pound. The second step would be to purchase three futures market contracts at 50 cents per pound.

Offsetting the Option

In some cases, an option strike price that was purchased at an earlier date is still being traded. If the strike price is still being traded, the buyer of the option can "offset" the option. This suggests that the option that was ***purchased*** at an earlier date is now simply ***sold***. For example, let's assume a cotton producer purchased three March 2006 put options with a 56 cent per pound strike price. Currently the March 2006 futures price equals 50 cents per pound, and the March 2006 put options contract with a 56 cent per pound strike price is still trading. The producer could simply ***sell*** the put option that was previously ***purchased***.

Letting the Option Expire Worthless

Because a buyer of a commodity option has the right, but not the obligation, to take a futures market position, there are two different scenarios that can result from using commodity option contracts to hedge price risk. The first scenario is that prices did not move in a direction that was unfavorable (the underlying futures price did not fall below a put option strike price or above a call option strike price). In this case, the buyer of the option can let the option expire worthless. In this case, the buyer only had to pay the premium plus any commission charged by the broker to purchase the option. For example, let's assume a cotton producer purchased a March 2006 put option with a 56 cent per pound strike price. If the March 2006 futures price never fell below 56 cents per pound, the producer could let the option expire worthless.

Example Scenarios

Four separate example scenarios are provided below to assist in explaining how an options market hedge can protect a cotton producer and buyer from market price risk. The first two examples show the net realized price if a put option is purchased by a cotton producer when prices either increase or decrease. The last two examples show the net realized price if a cotton buyer purchases a call option with both increasing and decreasing prices.

Example Scenario 1: Producer Purchases a Put Option and Prices Decrease

Let us assume that a producer has estimated a break-even price (price required to cover all costs of production) of 68 cents per pound. It is currently May and it is estimated that 2,000 bales of cotton will be harvested in December (therefore, the producer use the December cotton options contract). The producer would like to hedge price risk for 50 percent of the estimated production. The December futures contract is currently trading at 75.50 cents per pound. An "At-the-Money" put option has an associated premium of 1.50 cents per pound. The estimated local December price is 1.74 cents per pound less than December futures price (local basis is 1.74 cents per pound under).

Relevant Information

Date =	May
Cotton Harvest & Sales Date =	December
Break-Even Price =	68 Cents Per Pound
Estimated Production =	1,000 bales
Number of Contracts Needed =	5 Contracts ([1,000 bales x 50%]/100 bales per contract)
Options Contract to Consider =	December Cotton Options Contract
Current December Futures Price =	75.50 Cents Per Pound
At-the-Money Put Option Premium =	1.50 Cents Per Pound
Estimated Local December Basis =	- 1.74 Cents Per Pound

	Options Market Positions		Cash Market Positions
May:	Buy 5 December Cotton Options Contracts at a 75.00 cents per pound strike price for 1.50 cents per pound premium.	Objective:	Realize at least 71.52 cents per pound on 50% of total estimated production.
December:	Current December futures price equals 65.00 cents per pound. Exercise the December put options (sell 5 December futures contracts at 75.00 cents per pound. Then buy 5 December futures contracts at 65.00 cents per pound.	December:	Sell Cash Cotton for 63.26 cents per pound.

Actual Local December Basis: - 1.74 cents per pound (63.26 - 65.00 = - 1.74)

Results:

Local Cash Cotton Price		63.26 ¢/lb
Futures Profit (75.00 – 65.00)	+	10.00 ¢/lb
Less Put Option Premium	-	1.74 ¢/lb
Realized Price**		71.52 ¢/lb*

* Less commission and interest costs.

** Realized price for 50 percent of production.

The producer was able to ensure a minimum selling price of at least 71.52 cents per pound for 50 percent of the estimated total production by estimating local basis correctly and buying option contracts.

Example Scenario 2: Producer Purchases a Put Option and Prices Increase

Let us assume that a producer has estimated a break-even price (price required to cover all costs of production) of 68 cents per pound. It is currently May and it is estimated that 2,000 bales of cotton will be harvested in December (therefore, the producer use the December cotton options contract). The producer would like to hedge price risk for 50 percent of the estimated production. The December futures contract is currently trading at 75.50 cents per pound. An "At-the-Money" put option has an associated premium of 1.50 cents per pound. The estimated local December price is 1.74 cents per pound less than December futures price (local basis is 1.74 cents per pound under).

Relevant Information

Date =	May
Cotton Harvest & Sales Date =	December
Break-Even Price =	68 Cents Per Pound
Estimated Production =	1,000 bales
Number of Contracts Needed =	5 Contracts ([1,000 bales x 50%]/100 bales per contract)
Options Contract to Consider =	December Cotton Options Contract
Current December Futures Price =	75.50 Cents Per Pound
At-the-Money Put Option Premium =	1.50 Cents Per Pound
Estimated Local December Basis =	- 1.74 Cents Per Pound

	Options Market Positions		Cash Market Positions
May:	Buy 5 December Cotton Options Contracts at a 75.00 cents per pound strike price for 1.50 cents per pound premium.	Objective:	Realize at least 71.52 cents per pound on 50% of total estimated production.
December:	Current December futures price equals 80.00 cents per pound. Allow the December put options with a 75.00 cent per pound strike price to expire worthless.	December:	Sell Cash Cotton for 78.26 cents per pound.

Actual Local December Basis: - 1.74 cents per pound (78.26 - 80.00 = - 1.74)

Results:

Local Cash Cotton Price		78.26 ¢/lb
Futures Profit (zero, the option was worthless)	+	0.00 ¢/lb
Less Put Option Premium	-	1.74 ¢/lb
Realized Price**		76.52 ¢/lb*

* Less commission and interest costs.
** Realized price for 50 percent of production.

In this example, the highest price possible was not received, but the producer did take advantage of the favorable price movement. Also, the objective of realizing at least 71.52 cents per pound was met (which is greater than the estimated cost of production).

Why are Commodity Options Attractive?

Commodity options have become an attractive means of hedging price risk throughout production agriculture due to the nature of the contracts. There are several advantages provided by commodity options that make them attractive to both producers as well as users of agricultural commodities. However before beginning to use options as a price risk management tool, one should be aware of the disadvantages as well. After considering both, a decision can be made as to whether these contracts fit the marketing plan of the operation. The discussion below will first concentrate on the advantages followed by the disadvantages of using commodity options to hedge price risk.

ADVANTAGES OF USING COMMODITY OPTIONS

Price Protection While Still Taking Advantage of Favorable Prices

Because options provide buyers the "right, but not the obligation, to purchase or sell an underlying futures contract at a specific price within a specified period of time", buyers can take advantage of favorable price movements while being protected against unfavorable prices. As seen in Example Scenario 1, the cotton producer was able to ensure a minimum price for a fee (the price of the premium). Example Scenario 2 showed that a producer was still able to take advantage of a price increase. This advantage of commodity options is the main reason they are such a popular tool to use when trying to attain price protection.

Cash Outlay to Implement the Strategy is Fixed and Known

When a commodity option is used as a hedge, typically the option is purchased (advanced option strategies used for hedging may include the sale of a contract but is beyond the scope of this booklet). When the option is purchased, the buyer must pay the premium as well as any brokerage fees. Once these expenses have been paid, the buyer of the option is not obligated to pay any additional fees. If the price does not move in an unfavorable way (as in Example Scenario 2), the option buyer does not have any additional expenses. If prices do happen to move in an unfavorable direction (as in Example Scenario 1), the option buyer still does not have any additional expenses.

It should be noted that some brokerage firms will charge one fee when the option contract(s) are purchased for the initial purchase and later sale or exercise of the option. Some brokerage firms, however, charge a fee to purchase the option. If the option is either sold or exercised, the firm may then charge the buyer the additional fee for that transaction. Also, some brokerage firms may have different charges for purchasing and selling option contracts versus purchasing, exercising, and offsetting the futures market position. You should check with your brokerage firm prior to entering into a contract to ensure you know all costs that you must pay.

No Initial Margin Requirements or Margin Calls if Options are Purchased

Due to the definition of an option contract, buyers are usually not required to make an initial margin deposit or make margin calls. This is much different from hedging price risk with futures contracts. When option contracts are purchased, favorable price movements will result in the buyer not exercising their right to take a futures market position. Thus, the need for a margin account or maintenance margin deposits are also not needed.

Hedgers can Choose the Level of Price Protection

When an option contract is purchased, the buyer may choose the level of price protection. This is done when the buyer specifies the strike price for the option. If the option buyer wishes to purchase more price protection, either a higher or lower strike price (depending whether protection is for lower or higher price movements are unfavorable) can be purchased. However it should be remembered that as the strike prices for puts move higher, premiums increase. Likewise as the strike prices for calls move lower, premiums increase.

DISADVANTAGES OF USING COMMODITY OPTIONS

Hedgers Do Not Realize the Greatest Price if Favorable Prices Occur

While commodity options can be used to protect against unfavorable prices while taking advantage of favorable ones, hedgers using option contracts will never realize the greatest potential price when favorable prices do occur. This is due to the premium and brokerage fees that must be paid by the option buyer. As seen in Example Scenario 2, prices increased after the option contracts were purchased. If the option buyer had not entered into the contracts, the higher cash price would have been received. However because the option contracts were purchased, the premium and brokerage fees were subtracted from the cash price. The result was a net price that was lower than if no action were taken at all.

The Price Paid for the Premium May Offset Any Gain

Because option contract buyers must pay a premium for the price protection, this cost must be taken into account when prices begin to move unfavorably. For instance, if a 75 cent December cotton put option is purchased for 2 cents, the December futures price must fall below 73 cents per pound before a gain can be realized (75 cent per pound strike price minus 2 cent per pound premium equal 73 cents per pound). If the futures price never falls below the difference between the strike price of the put option and the premium paid for the put option, a gain will not be realized. The opposite is true for a purchased call option.

A Purchased Option Contract is an Eroding Asset

When the option is first purchased it has a given amount of time value associated with the premium. As the contract gets closer to expiration, this time value decreases. Because of this, purchased option contracts are considered to be an eroding asset.

The Role of Local Basis in Options Market Hedging

As mentioned earlier, basis is the difference between the local cash price of a commodity and the price of a specific futures contract of the same commodity at any given point in time. Therefore basis is determined by the following:

Basis = Local Cash Price – Futures Price

The local basis changes as the factors affecting cash and/or futures markets change. Strengthening and weakening are two terms used to describe a changing basis. The local basis is said to be strengthening if basis becomes more positive or less negative. If basis becomes less positive or more negative, the basis is said to be weakening. An example of scenarios when basis is strengthening and weakening is presented in Table 9.

Table 9. Examples of strengthening and weakening local basis.

Date	Local Cash Cotton Price (Cents/lb.)	-	December Cotton Futures Price (Cents/lb.)	=	Local Basis (Cents/lb.)	Basis Strengthening or Weakening	Why the Basis Strengthened or Weakened
May 1	75.00	-	73.00	=	+ 2.00	Strengthening	Local cash price decreased by 10 cents while futures decreased by 9 cents.
June 1	65.00	-	62.00	=	+ 3.00		
June 1	65.00	-	62.00	=	+ 3.00	Weakening	Local cash price increased by 5 cents while futures increased by 6 cents.
July 1	70.00	-	68.00	=	+ 2.00		
July 1	70.00	-	68.00	=	+ 2.00	Weakening	Local cash price increased by 5 cents while futures increased by 11 cents.
Aug 1	75.00	-	79.00	=	- 4.00		
Aug 1	75.00	-	79.00	=	- 4.00	Strengthening	Local cash price increased by 3 cents while futures increased by 1 cent.
Sept 1	78.00	-	80.00	=	- 2.00		
Sept 1	78.00	-	80.00	=	- 2.00	No Change	Local cash price and futures decreased by 3 cents.
Oct 1	75.00	-	77.00	=	- 2.00		

Basis can be viewed as "localizing" a futures market price. Since the cotton futures market price represents the world price for cotton, it can be used as a benchmark in determining the value of cotton at the local level. This benchmark becomes vital in determining the acceptability of a futures market hedge. As shown in Example Scenario 1: Price Decrease and Example Scenario 2: Price Increase, knowledge and a correct estimate of local basis allows those wishing to hedge cotton price risk to accurately calculate the hedge outcome. While its estimation may seem to be an easy task, several factors can potentially influence the local basis. Since these factors vary depending on location, basis will also vary from one location to the next. These factors include:

- Transportation costs
- Local supply and demand conditions, such as cotton quality, availability, need, local weather
- Interest/storage costs
- Handling costs and profit margins

Those in the cotton industry should track two pieces of basis information weekly at all potential local outlets. First is the relationship of the current cash price to the nearby futures contract (the nearby futures contract refers to the contract that is closest to expiration). This provides estimates of basis for delivery of grain during any time of the year and can be used in evaluating storage decisions. The second piece of basis information that should be recorded by producers is the basis level at the time of harvest. This basis information will assist in determining whether a futures hedge is a favorable alternative or not.

Basis Risk

If a producer hedges cotton price risk through the use of an options contract, there still remains the chance that basis will vary from what is estimated. This uncertainty about the basis at the time a hedge may be lifted is referred to as *Basis Risk*. By placing a hedge using the options market, cotton producers are substituting basis risk for price risk. Table 9 illustrates the importance of correctly estimating the basis at the time the hedge will be lifted.

Table 9. Differences in outcomes when basis is correctly and incorrectly estimated.

Relevant Information

Date =	May
Cotton Harvest & Sales Date =	December
Break-Even Price =	68 Cents Per Pound
Estimated Production =	1,000 bales
Hedge Percentage =	50 percent of production
Number of Contracts Needed =	5 Contracts ([1,000 bales x 50%]/100 bales per contract)
Options Contract to Consider =	December Cotton Options Contract
Current December Futures Price =	70.00 Cents Per Pound
At-the-Money Put Option Premium =	1.50 Cents Per Pound
Estimated Local December Basis =	- 1.74 Cents Per Pound

Basis is Correctly Estimated				**Basis is Incorrectly Estimated**			
Futures Market Positions		Cash Market Positions		Futures Market Positions		Cash Market Positions	
May	Buy 5 Dec. Cotton Put Option Contracts with a 75 ¢/lb. strike price for 1.5 ¢/lb.	Obj	Realize at least 71.76 ¢/lb for 50% of total estimated production	May	Buy 5 Dec. Cotton Put Option Contracts with a 75 ¢/lb. strike price for 1.5 ¢/lb.	Obj	Realize at least 71.76 ¢/lb for 50% of total estimated production
Dec	Exercise 5 Dec. Cotton Put Option Contracts (Sell 5 Futures Contracts at 75 ¢/lb.) Then Buy 5 Cotton Futures at 65.00 ¢/lb.		Sell Cash Cotton for 63.26. ¢/lb.	Dec	Exercise 5 Dec. Cotton Put Option Contracts (Sell 5 Futures Contracts at 75 ¢/lb.) Then Buy 5 Cotton Futures at 65.00 ¢/lb.		Sell Cash Cotton for 60.26. ¢/lb.
Actual Local Dec. Basis: - 1.74 ¢/lb.				Actual Local Dec. Basis: - 4.74 ¢/lb.			
Results:				Results:			
Local Cash Price			63.26 ¢/lb.	Local Cash Price			60.26 ¢/lb.
Options Profit	+		10.00 ¢/lb.	Futures Profit	+		10.00 ¢/lb.
Less Put Option Premium	-		1.5 ¢/lb.	Less Put Option Premium	-		1.5 ¢/lb.
Realized Price**			71.76 ¢/lb.*	Realized Price**			68.76 ¢/lb.*

* Less commission and interest costs.

** Realized price for 50 percent of production.

The example presented in Table 9 demonstrates the risk that producers still face in terms of basis risk when an options hedge is made. In the case where basis was correctly estimated, the objective of realizing at least 71.76 cents per pound of cotton was achieved. In the second case where basis was not correctly estimated, the objective was not realized. In fact, the realized price was three cents lower per pound than the objective.

While an exact estimate of basis is often difficult to accomplish, anyone wishing to use the options market to hedge price risk should attempt to estimate the local cash price relative to the futures price and understand basis risk. The producer is trading price risk for basis risk when an options contract is purchased.

Worksheets are provided in the Appendix to assist in tracking local basis.

How To Get Started Trading Futures Contracts?

To begin trading futures contracts, only a few steps must be completed. The information presented below gives a step-by-step explanation of what is required to trade futures contracts.

Step 1 Choose a futures broker. An options broker may or may not also be a stock broker. Participants in the options market may also choose to use an online trading service.

Step 2 Enter into an agreement with the broker and set up an account.

Step 3 Make a trade. Call the broker and indicate which contract(s) you would like to trade. The broker will then contact the commodity exchange. The order will be taken to the trading floor where the transaction will be completed. The order confirmation will then be sent back to you.

Special Note: The broker will charge you a commission for making the transaction. These commission charges vary by brokerage firm and even by the level of service you receive.

Selling Options: Caution

Similar to futures contracts, traders can buy or sell option contracts. When an option is sold, the seller receives the premium (they must still pay the brokerage fees associated with selling the option). Options are sold with the expectation that the market will move in a way that the option will not be exercised. Thus, the seller will keep the premium. However, as mentioned above, when a trader buys an option contract, they have the right, but not the obligation to take a futures market position. This is similar to purchasing automobile insurance. On the other hand, if a trader chooses to sell an option, they do not

have the right to choose to take a futures market position. It is their obligation to take the futures market position if a buyer of that option chooses to exercise their right. To put it simply, the seller of an option is selling the buyer price insurance. This is similar to selling automobile insurance. If the buyer has a wreck in prices, then the seller of the option must pay the buyer by taking a position in the futures market that is generally a losing position.

Producers should, therefore, be extremely careful before selling option contracts. Extensive research and education is necessary before a price risk management strategy is implemented that involves selling option contracts.

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APPENDIX

Cotton No. 2 Futures Contract Specifications

New York Board of Trade

Contract specifications are current as of 6/23/05
and may be subject to change. Verify information with your broker.

Trading Hours
10:30 a.m. to 2:15 p.m.; closing period commences at 2:14 p.m.

Ticket Symbol
CT

Trading Months
Current month plus one or more of the next 23 succeeding months. Active trading months: March, May, July, October, December.

Price Quotation
Prices are quoted in cents and hundredths of a cent per pound.

Minimum Price Fluctuation
1/100 of a cent (one "point") per pound below 95 cents per pound. 5/100 of a cent (or five "points") per pound at prices of 95 cents per pound or higher. Spreads may always trade and be quoted in one point increments. (point value of $5/contract)

Daily Limit on Price Movement
3 cents above or below previous day's settlement price. However, if any contract months settles at or above $1.10 per pound, all contract months will trade with 4 cent price limits. Should no month settle at or above $1.10 per pound, price limits stay (or revert) to 3 cents/lb. Spot month - no limit on or after first notice day.

Last Trading Day
Seventeen business days from the end of spot month.

Delivery/Settlement Terms:

Deliverable Origins	Non-origin specific
Delivery Points	Galveston, TX; Houston, TX; New Orleans, LA;. Memphis, TN; Greenville/Spartanburg, S.C

Basis Grade	
Quality:	Strict Low Middling
Staple Length:	1 2/32nd inch

Cotton No. 2 Futures Contract Specifications

New York Board of Trade

Contract specifications are current as of 6/23/05
and may be subject to change. Verify information with your broker.

Trading Hours
10:30 a.m. to 2:15 p.m.; closing period commences at 2:14 p.m.

Ticket Symbol
CT

Trading Months
Contract months March, May, July, October & December. Additionally there is a September contract expiring in August and settled in December futures and a November contract expiring in October and settled in December futures. (see chart below)

Price Quotation
Prices are quoted in cents and hundredths of a cent per pound.

Minimum Price Fluctuation
1/100 of a cent. ($5.00 / Contract)

Last Trading Day
In most cases, the last Friday which precedes first notice day for the underlying future by at least five business days. *As noted below, for three contract months, the last trading day is the 3rd Friday of the prior calendar month.

Expiration
Until 5 p.m.(NY time) on any trading day including last trading day. Automatic exercise at one tick or more in-the-money at expiration on last trading day.

Trading Cycles		
Serial options (listed in italics) are short-life options providing additional option expirations on existing futures contracts. All options are designated by the month following the expiration of the option contract.		
Option Name	**Underlying Futures**	**Expiration Month**
*January	March	December
March	March	February
May	May	April
July	July	June
October	October	September
*September	December	August
*November	December	October
December	December	November

Exercise Worksheets

Answers to the exercises can be found starting on page 35.

Worksheet Exercise #1

Let us assume that a producer has estimated a break-even price (price required to of 64 cents per pound. It is currently May and it is estimated that 800 bales of cotton will be harvested in December. The producer would like to hedge price risk for 50 percent of the estimated production. The current harvest futures contract (December contract) is trading at 68.75 cents per pound. An "At-the-Money" put option has an associated premium of 1.50 cents per pound. The estimated local December price is 1.74 cents per pound less than December futures price (local basis is 1.74 cents per pound under). It is assumed that basis at harvest will equal estimated basis.

Relevant Information

Date =	
Cotton Harvest & Sales Date =	
Break-Even Price =	
Estimated Production =	
Number of Contracts Needed =	
Futures Contract to Consider =	
Current Futures Price =	
At-the-Money Put Option Premium =	
Estimated Local Harvest Time Basis =	
Futures Price at Harvest =	58.25 ¢/lb

Futures Market Positions	**Cash Market Positions**
May:	Objective:
December:	December:

Actual Local Harvest Basis:

Results:

Local Cash Cotton Price		¢/lb
Options Profit	+/-	¢/lb
Less Put Option Premium	-	¢/lb
Realized Price**		¢/lb*

* Less commission and interest costs.
** Realized price for 50 percent of production.

Worksheet Exercise #2

Let us assume that a producer has estimated a break-even price (price required to cover all costs of production) of 68 cents per pound. It is currently May and it is estimated that 1,000 bales of cotton will be harvested in December. The producer would like to hedge price risk for 40 percent of the estimated production. The current harvest futures contract is trading at 78.00 cents per pound. An "At-the-Money" put option has an associated premium of 1.50 cents per pound. The estimated local December price is 1.00 cent per pound less than December futures price (local basis is 1.00 cents per pound under). It is assumed that basis at harvest will equal estimated basis.

Relevant Information

Date =	
Cotton Harvest & Sales Date =	
Break-Even Price =	
Estimated Production =	
Number of Contracts Needed =	
Futures Contract to Consider =	
Current Futures Price =	
At-the-Money Put Option Premium =	
Estimated Local Harvest Time Basis =	
Futures Price at Harvest =	75.50 ¢/lb

Futures Market Positions	**Cash Market Positions**
May:	Objective:
December:	December:

Actual Local Harvest Basis:

Results:

Local Cash Cotton Price		¢/lb
Options Profit	+/-	¢/lb
Less Put Option Premium	-	¢/lb
Realized Price**		¢/lb*

* Less commission and interest costs.

** Realized price for 50 percent of production.

Worksheet Exercise #3

Let us assume that a producer has estimated a break-even price (price required to cover all costs of production) of 65 cents per pound. It is currently May and it is estimated that 1,000 bales of cotton will be harvested on November 28. The producer would like to hedge price risk for 50 percent of the estimated production. The current harvest futures contract is trading at 71.00 cents per pound. An "At-the-Money" put option has an associated premium of 2.00 cents per pound. The estimated local December price is 1.00 cent per pound less than December futures price (local basis is 1.00 cents per pound under). It is assumed that basis at harvest will equal estimated basis.

Relevant Information

Date =	
Cotton Harvest & Sales Date =	
Break-Even Price =	
Estimated Production =	
Number of Contracts Needed =	
Futures Contract to Consider =	
Current Futures Price =	
At-the-Money Put Option Premium =	
Estimated Local Harvest Time Basis =	
Futures Price at Harvest =	78.00 ¢/lb

Futures Market Positions	**Cash Market Positions**
May:	Objective:
December:	December:

Actual Local Harvest Basis:

Results:

Local Cash Cotton Price		¢/lb
Options Profit	+/-	¢/lb
Less Put Option Premium	-	¢/lb
Realized Price**		¢/lb*

* Less commission and interest costs.

** Realized price for 50 percent of production.

Worksheet Exercise #1: Answers

Let us assume that a producer has estimated a break-even price (price required to of 64 cents per pound. It is currently May and it is estimated that 800 bales of cotton will be harvested in December. The producer would like to hedge price risk for 50 percent of the estimated production. The current harvest futures contract (December contract) is trading at 68.75 cents per pound. An "At-the-Money" put option has an associated premium of 1.50 cents per pound. The estimated local December price is 1.74 cents per pound less than December futures price (local basis is 1.74 cents per pound under). It is assumed that basis at harvest will equal estimated basis.

Relevant Information

Date =	May
Cotton Harvest & Sales Date =	December
Break-Even Price =	68 ¢/lb
Estimated Production =	800 bales
Number of Contracts Needed =	4
Futures Contract to Consider =	December
Current Futures Price =	68.75 ¢/lb
At-the-Money Put Option Premium =	1.50 ¢/lb
Estimated Local Harvest Time Basis =	- 1.74 ¢/lb
Futures Price at Harvest =	58.25 ¢/lb

Futures Market Positions		Cash Market Positions	
May:	Buy 4 At-the-Money Dec. Cotton Put Options for 1.50 ¢/lb.	Objective:	Realize at least 66.75 ¢/lb
December:	Exercise 4 Dec. Cotton put options (Sell 4 Dec futures contracts at 68.75 ¢/lb). Then buy 4 Dec cotton futures contracts at 58.25 ¢/lb.	December:	Sell Cash cotton for 56.51 ¢/lb

Actual Local Harvest Basis: - 1.74 ¢/lb.

Results:

Local Cash Cotton Price		58.25	¢/lb
Options Profit (68.75 – 58.25)	+	10.00	¢/lb
Less Put Option Premium	-	1.50	¢/lb
Realized Price**		66.75	¢/lb*

* Less commission and interest costs.
** Realized price for 50 percent of production.

Worksheet Exercise #2: Answers

Let us assume that a producer has estimated a break-even price (price required to cover all costs of production) of 68 cents per pound. It is currently May and it is estimated that 1,000 bales of cotton will be harvested in December. The producer would like to hedge price risk for 40 percent of the estimated production. The current harvest futures contract is trading at 78.00 cents per pound. An "At-the-Money" put option has an associated premium of 1.50 cents per pound. The estimated local December price is 1.00 cent per pound less than December futures price (local basis is 1.00 cents per pound under). It is assumed that basis at harvest will equal estimated basis.

Relevant Information

Date =	May
Cotton Harvest & Sales Date =	December
Break-Even Price =	68 ¢/lb
Estimated Production =	1,000 bales
Number of Contracts Needed =	5
Futures Contract to Consider =	December
Current Futures Price =	78.00 ¢/lb
At-the-Money Put Option Premium =	1.50 ¢/lb
Estimated Local Harvest Time Basis =	1.00 ¢/lb
Futures Price at Harvest =	75.50 ¢/lb

Futures Market Positions		Cash Market Positions	
May:	Buy 5 Dec. At-the-Money Put options for 1.50 ¢/lb.	Objective:	Realize at least 75.50 ¢/lb.
December:	Exercise 5 Dec. cotton put options (sell 5 futures contracts at 78.00 ¢/lb). Then but 5 futures contracts at 75.50 ¢/lb.	December:	Sell cash cotton for 74.50 ¢/lb.

Actual Local Harvest Basis: -1.00 ¢/lb

Results:

Local Cash Cotton Price		74.50	¢/lb
Options Profit (78.00 – 75.50)	+/-	2.50	¢/lb
Less Put Option Premium	-	1.50	¢/lb
Realized Price**		75.50	¢/lb*

* Less commission and interest costs.
** Realized price for 50 percent of production.

Worksheet Exercise #3: Answers

Let us assume that a producer has estimated a break-even price (price required to cover all costs of production) of 65 cents per pound. It is currently May and it is estimated that 1,000 bales of cotton will be harvested on November 28. The producer would like to hedge price risk for 50 percent of the estimated production. The current harvest futures contract is trading at 71.00 cents per pound. An "At-the-Money" put option has an associated premium of 2.00 cents per pound. The estimated local December price is 1.00 cent per pound less than December futures price (local basis is 1.00 cents per pound under). It is assumed that basis at harvest will equal estimated basis.

Relevant Information

Date =	May
Cotton Harvest & Sales Date =	November 28
Break-Even Price =	65 ¢/lb
Estimated Production =	1,000 bales
Number of Contracts Needed =	5
Futures Contract to Consider =	December
Current Futures Price =	71.00 ¢/lb
At-the-Money Put Option Premium =	2.00 ¢/lb
Estimated Local Harvest Time Basis =	-1.00 ¢/lb
Futures Price at Harvest =	78.00 ¢/lb

Futures Market Positions		Cash Market Positions	
May:	Buy 5 Dec. At-the-Money cotton put options for 2.00 ¢/lb.	Objective:	Realize at least 70.00 ¢/lb.
December:	Let the 5 Dec. put options expire worthless (current futures = 78.00, strike price = 71.00)	December:	Sell cash cotton for 77.00 ¢/lb.

Actual Local Harvest Basis:

Results:

Local Cash Cotton Price		77.00	¢/lb
Options Profit (Expired Worthless)	+/-	0.00	¢/lb
Less Put Option Premium	-	2.00	¢/lb
Realized Price**		75.00	¢/lb*

* Less commission and interest costs.

** Realized price for 50 percent of production.

Local Cotton Basis at Harvest Worksheet

Date	Local Harvest Cash Price		Harvest Futures Price		Basis
Example: November 18, 2004	47.25 ¢/lb.	-	48.50 ¢/lb.	=	- 1.25 ¢/lb.

Local Cotton Continuous Basis Worksheet

Date	Current Local Cash Price		Nearby Futures Price		Basis
Example: April 23, 2004	63.25 ¢/lb.	-	63.95 ¢/lb. (May 2004 Futures)	=	- 0.70 ¢/lb.