ADVANCED COTTON FUTURES AND OPTIONS STRATEGIES

Blake K. Bennett
Extension Economist/Management
Texas Cooperative Extension, The Texas A&M University System

INTRODUCTION

Cotton producers have used futures and options contracts as a price risk management tool for many years. These contracts, when used in their simplest form, provide the opportunity for producers to "lock-in" their price well ahead of harvest. "Locking-in" the price using futures contracts will involve selling a contract while the cotton is still growing. The producer choosing this strategy is required to make a margin deposit that will help to prevent contract default. Margin money also helps to ensure the integrity of the contract. The established margin account will fluctuate on a daily basis depending on the futures price level. If the margin account falls below a specified amount, an additional margin deposit must be made by the producer.

Margin deposits and the concern of additional margin calls are a concern of some producers attempting to hedge price risk. For those producers, commodity option contracts have become popular. Cotton producers choosing to purchase commodity option contracts are not required to deposit money into a margin account prior to taking a position. When an option contract is purchased, the producer must only pay the associated premium. After this initial premium is paid, no other money is required.

After a futures contract is sold or a commodity option is purchased, producers are protected from negative price fluctuations. This does not mean however, that all risk is eliminated as basis (the difference between the local cash price and futures price) can still fluctuate (Anderson, et al., 1999). For some, this amount of risk is unacceptable. For others, margin calls or high premium values make the basic futures and option contracts strategies undesirable. Thus, some producers look for more advanced strategies that will help to reduce or eliminate these characteristics. The information provided below will provide a detailed description of more advanced strategies that can be used. It should be noted, however, that any strategy deviating from the basic approach described above may not be viewed as a true hedge for tax purposes. Therefore, any strategy gains or losses should be discussed with a tax professional prior to reporting.

ROLLING UP A PUT OPTION AS PRICE INCREASES

Many cotton producers use put options as a means of protecting price against adverse price movements for the life of the contract. If the price falls below the strike price of the purchased put option, the buyer of the contract will realize a gain equal to the difference between the strike price and the current underlying futures price (less the premium cost and commissions).

If the price does not fall below the strike price of the purchased put option before the end of the contract, the contract will expire worthless. Rather than letting this scenario occur, producers could improve their minimum expected selling price while retaining the potential to benefit from further price increases. The strategy used to achieve this goal is called "rolling up" a put option.

"Rolling up" a put option can be defined as trading action in which the trader simultaneously closes an open option position and creates a new option position at a different strike price, different expiration, or both (Johnson and Polk, 2002). Simply put, a producer choosing to "roll up" a put option is attempting to take advantage of a price increase that has occurred after protection was already taken in the market. This action effectively raises the price floor (or minimum expected selling price) of a put option.

ADVANTAGES AND DISADVANTAGES OF ROLLING UP A PUT OPTION

Due to the nature of this strategy (liquidating a previously purchased put option and simultaneously purchasing a put option with either a higher strike price or different expiration date or both), the advantages and disadvantages of rolling up a put option are similar to those of the outright purchase of a put option. For instance, rolling up a put option includes limited financial risk (the premium paid for the put option). There are also no margin calls associated with rolling up a put option. The main disadvantage of rolling up a put option lies in the additional premium that will have to generally be paid for the newly purchased put option.

STEPS TO EVALUATING ROLLING UP A PUT OPTION

Let's assume it is currently June. A producer expects to harvest cotton in mid-December. The current December futures price is 75.00 cents per pound. Wanting to gain price protection while retaining the ability to take advantage of upwards price movements, the producer decides to purchase an at-the-money put option with an associated premium equaling 2.00 cents per pound. The commission costs associated with this transaction equal $50 per contract which equates to 0.1 cents per pound ($50 per contract divided by 50,000 pounds per contract). Thus, the effective price floor is found below (assuming a zero basis).

> *Price Floor = Purchased Put Option Strike Price – Premium – Commission +/- Basis*
>
> *Price Floor = 75.00 – 2.00 – 0.10*
> *Price Floor = 72.90 cents per pound*

As time goes by, the underlying futures market contract price changes. If a major weather problem developed over a large portion of the cotton producing area, the price can increase dramatically. For example, let's assume the December futures price discussed above increased to 82.00 cents per pound. This would suggest the purchased put option with a 75.00 strike price would be 7.00 cents out-of-the-money. In this case, the producer may be tempted to liquidate the current position (the put option with the 75.00 strike price) and reenter the market by purchasing a put option near the current futures price at 82.00 cents per pound.

Step 1 - Sell the previously purchased put option. If the put option that was purchased earlier is still trading, it may be sold. It should be noted, however, that the selling price will be lower than the initial purchase price if the underlying futures value has increased over time. For example, let us assume the 75.00 cent put option purchased earlier for 2.00 cents per pound is now trading for 0.25 cents per pound. In this case, the producer would sell previously purchased put option for 0.25 cents per pound. This would yield a net loss of 1.65 cents per pound (2.00 ¢/lb premium paid + 0.01 ¢/lb commission paid – 0.25 ¢/lb premium received).

Step 2 - Purchase the new put option. The second step is to purchase the new put option at the higher strike price. Returning to our example, the producer would now purchase a put option with an 82.00 strike price. The producer would have to pay the new premium (let us assume this premium equals 3.00 cents per pound) and more commission costs (let's again assume $50 per contract). Thus, the producer would have to pay 3.10 cents per pound (3.00 ¢/lb premium + 0.10 ¢/lb commission) for the put option with an 82.00 cent strike price.

Step 3 – Calculate the new floor price. Calculating the new floor price involves a little more than before. The floor price is still found by first starting with the strike price and subtracting the premium and commissions. However, the loss associated with selling the put option in Step 1 should also be taken into consideration. Thus, combining information from our example presented in Steps 1 and 2, finds the new floor price equal 77.25 cents per pound (82.00 ¢/lb strike price – 1.65 ¢/lb strategy cost from Step 1 – 3.10 ¢/lb strategy cost from Step 2).

By following these steps, a producer can evaluate whether it is worth the additional cost to increase their floor price or not. In some instances, it may be advantageous to roll up a put option as prices increase. In other cases, it may not be. The key is to allow the price of the underlying commodity to increase more than the net premiums required to roll up the put option plus the added commission.

BEAR PUT SPREAD

Option premiums fluctuate on a daily basis. These fluctuations are due to many factors, however, the main two include the volatility of the futures market and the time remaining until the contract expires (Fincham, 1999). The daily fluctuation of these premiums can be viewed as a disadvantage to producers wishing to purchase option contracts if the price is

viewed as being too expensive. To reduce the premium cost, a producer might consider selling (writing) an option at the same time they purchase an option (Bevers, 1999). The premium is still paid by the producer when the option is purchased, however, the producer also receives the premium for the sold option contract. The simultaneous buying and writing of options reduces the total amount that is paid for the strategy.

It should be noted that writing options does have risks. These risks should be fully understood prior to implementation. The primary risk associated with selling options is option exercise risk. Furthermore, because the producer faces option exercise risk, a margin account will most likely have to be established and maintained. These will be discussed in more detail below.

HOW A BEAR PUT SPREAD WORKS

The cotton producer would purchase a put option at a particular strike price and simultaneously sell a put option at a lower strike price. These option contracts are typically purchased and sold during the same contract month. This creates a spread between the two strike prices. Figure 1 below demonstrates this spread.

Figure 1. Spread created when a Bear Put Spread strategy is implemented.

Due to the nature of options, if the underlying futures price falls below the strike price of the purchased put option, this option is said to be "in-the-money". The further the underlying futures price falls, the more valuable the purchased put option becomes. This value continues to increase regardless of how far the underlying futures price falls. However, the

futures price could fall far enough that is passes the strike price of the sold put option. At this point, the sold put option becomes a burden on the strategy. As the futures price continues to fall, the sold put option loses more and more. Thus, there will be a maximum gain the strategy can achieve. Figure 2 provides a graphical representation of the maximum gain that can be realized for a Bear Put Spread strategy.
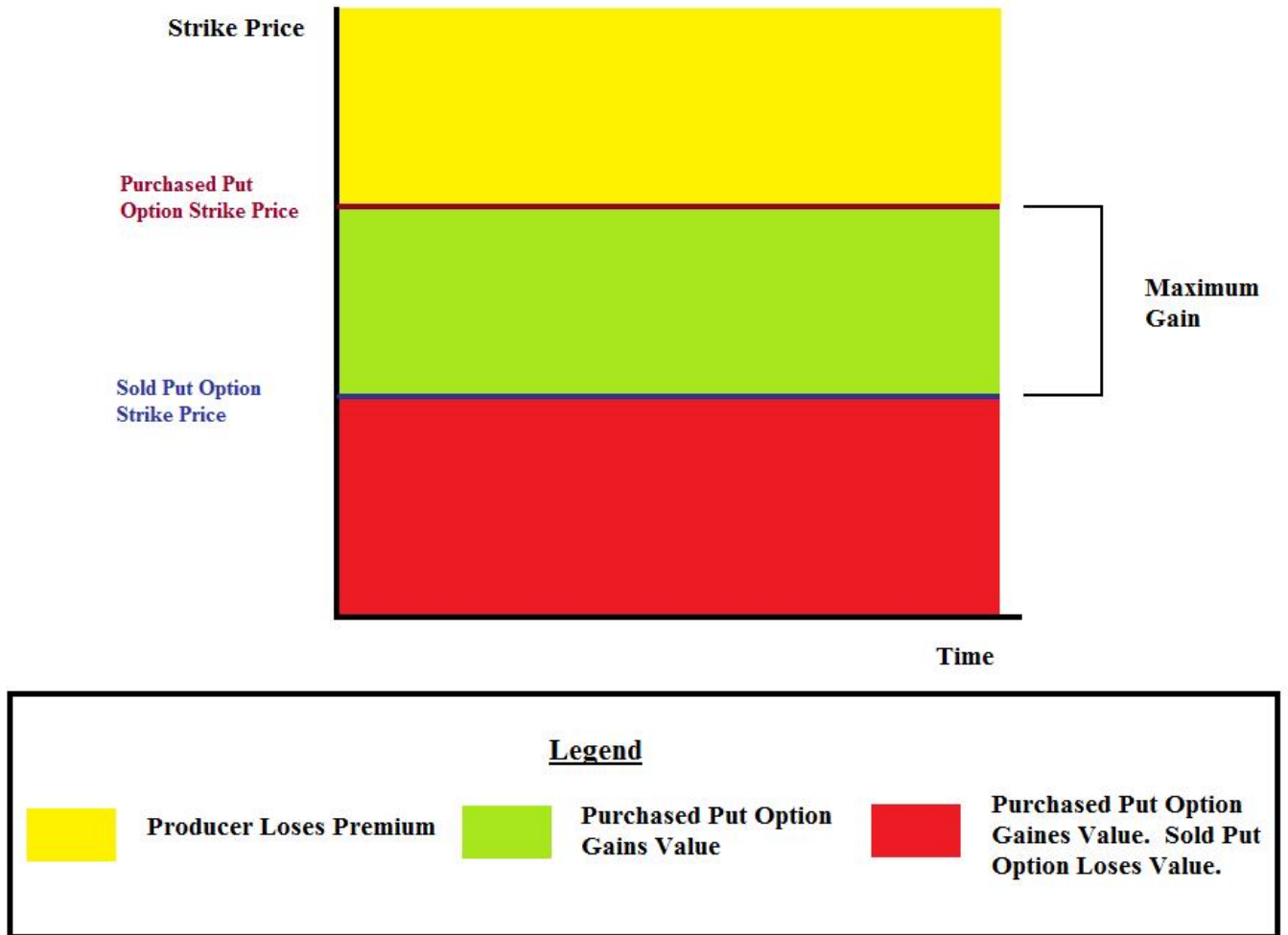

Figure 2. Maximum gain that can be realized for a Bear Put Spread strategy.

From Figure 2, it can be seen that the maximum gain that can be obtained from implementing a Bear Put Spread strategy will be the difference between the strike price of the purchased put option and the strike price of the sold put option (plus the commission and interest associated with this strategy).

PRACTICAL EXAMPLE OF A BEAR PUT SPREAD

As an example, let's consider a cotton producer wanting limited pre-harvest price protection. It is currently June 1 and the goal is to protect a price on a portion of the cotton. The

expectation is that the price will fall from now through harvest. Using futures to protect the price is not desired because of the upside price risk associated with this type of strategy. The premiums for at-the-money put options are also expensive due to the amount of time until harvest. In this case, the producer could use a Bear Put Spread. For the purposes of this example, let us assume the New York Board of Trade December cotton futures contract is currently trading at 75 cents per pound. The associated December put option strike prices and premiums are presented in Table 1.

Table 1. Strike Prices and Associated Premiums.

Strike Price (Cents Per Pound)	Premium (Cents Per Pound)
75	3.50
74	3.25
73	3.00
72	2.75
71	2.50
70	2.25
69	2.00
68	1.75

The producer begins the Bear Put Strategy by selecting the strike price at which to purchase a put option, say at the money (a 75 cent strike price). This would suggest the producer must pay 3.50 cents per pound premium for this option contract. The next step would be for the producer to sell an option contract at a lower strike price (say a 70 cent put option). The producer would receive 2.25 cents per pound for selling this contract. The net cost (ignoring commission and interest) would be 1 ¼ cents per pound (3 ½ cents per pound – 2 ¼ cents per pound). The producer is also assured the most that can be lost from implementing this strategy will be 1 ¼ cents per pound

Because the strategy involves both purchasing and selling put options, various outcomes are obtained at different futures market prices. Table 2 presents potential outcomes of the Bear Put Spread strategy. The first column (A) of Table 2 presents a range of December cotton futures contract prices at the time the option contracts expire. The second (B) and third (C) column present the value of the purchased and sold put options, respectively. The fourth column (D) presents the initial cost of the strategy, and the last column (E) presents the overall gain or loss for the strategy.

Table 2. Bear Put Spread Results

A	B	-	C	-	D	=	E
December Futures Contract Settlement Price	Value of the 75.00 Cent Purchased Put Option		Value of the 70.00 Cent Sold Put Option		Initial Cost		Gain/Loss (B –C - D)
			Cents per Pound				
77	0.00		0.00		1.25		-1.25
76	0.00		0.00		1.25		-1.25
75	0.00		0.00		1.25		-1.25
74	1.00		0.00		1.25		-0.25
73	2.00		0.00		1.25		0.75
72	3.00		0.00		1.25		1.75
71	4.00		0.00		1.25		2.75
70	5.00		0.00		1.25		3.75
69	6.00		1.00		1.25		3.75
68	7.00		2.00		1.25		3.75
67	8.00		3.00		1.25		3.75
66	9.00		4.00		1.25		3.75
65	10.00		5.00		1.25		3.75
64	11.00		6.00		1.25		3.75
63	12.00		7.00		1.25		3.75

To determine the gain/loss of the strategy, first determine if the purchased put option has value (if the strike price associated with the put option is greater than the futures contract price. These gains are recorded in column B in Table 2. For instance, the strike price in this example equals 75.00 cents per pound. If the futures contract price in column A equals 77.00 cents per pound, the put option value would equal 0.00 cents per pound. If the futures contract price in column A equals 63.00 cents per pound, the put option value would equal 12.00 cents per pound.

Next, determine if the sold put option with a corresponding 70.00 strike price (column C) would have value at the various futures contract prices. For example, if the futures price in column A equals 77.00 cents per pound, the 70.00 cent put option would have a value of 0.00 cents per pound. If the futures price in column A equals 63 cents per pound, the 70.00 cent put option would have a value of 7.00 cents per pound.

The initial cost of the strategy (column D) is constant for the entire table. In this case, the initial cost equals 1.25 cents per pound. This was determined by subtracting the cost of purchasing the put option less the amount made from selling the put option and is discussed earlier.

Finally, the gain/loss of the strategy is determined by subtracting the value of the sold put option and the initial cost of the strategy from the value of the purchased put option.

In the example above, if the December futures price is above 75.00 cents per pound when the options expire, both put options will expire worthless. Taking into consideration the producer paid 1.25 cents per pound for the strategy, the loss would equal the initial cost. If the futures price equals 74 cents per pound when the put options expire, the purchased put option would have a positive return of 1.00 cents per pound while the sold put option would still expire worthless. Taking the initial cost of 1.25 cents per pound to implement the strategy into consideration, the strategy would still lose money. However, the loss would only equal 0.25 cents per pound. If the futures price equals 71.00 cents per pound, the 75.00 cent put option would be worth 4.00 cents per pound. The 70.00 cent put option would still be worthless. With an initial cost of 1.25 cents per pound to initiate the strategy, the producer would gain 2.75 cents per pound. If the futures price equals 63.00 cents per pound, the 75.00 put option would be worth 12.00 cents per pound while the 70.00 cent strike price would cost 7.00 cents per pound. The initial cost of the strategy would still equal 1.25 cents per pound. This would translate to a gain of 3.75 cent per pound.

It should be noted that 3.75 cents per pound is the most that can be gained from this specific strategy. The maximum gain for a Bear Put Spread will be reached when the futures price equals the strike price of the sold put option. After this point, the gain realized for the purchased put option will equal the loss realized for the sold put option.

IMPACT OF A BEAR PUT SPREAD ON NET CASH PRICE

Translating the potential gains/losses of a Bear Put Spread to the price received for cotton is the next step in the process. To determine the net price (cash sales price of cotton plus the gain/loss from the strategy), the basis must first be determined. For the purpose of this example, it is assumed the local cash price for cotton is 2.0 cents per pound under futures. Using a basis of -2.0 cents per pound with the information provided in Table 2, the impact on the net sales price of a Bear Put Spread is presented in Table 3 below.

Table 3. Impact of a Bear Put Spread on Net Sales Price.

A	B	+	C	=	D
December Futures Contract Settlement Price	Local Cash Price		Strategy Gain/Loss		Net Sales Price (B + C)
		Cents per Pound			
77	75		-1.25		73.75
76	74		-1.25		72.75
75	73		-1.25		71.75
74	72		-0.25		71.75
73	71		0.75		71.75
72	70		1.75		71.75
71	69		2.75		71.75
70	68		3.75		71.75
69	67		3.75		70.75
68	66		3.75		69.75
67	65		3.75		68.75
66	64		3.75		67.75
65	63		3.75		66.75
64	62		3.75		65.75
63	61		3.75		64.75

The Net Sales Price (Table 3, Column D) of a Bear Put Spread is determined by adding the Strategy Gain/Loss (Table 3, Column C) to the Local Cash Price (Table 3, Column B). Thus, a cotton producer implementing a Bear Put Spread by purchasing a put option with an associated 75.00 cent strike price and selling a put option with an associated 70.00 cent strike price will establish a floor price within a given range. Specifically, as long as the futures price remains equal to or above the strike price of the sold put option, the cotton price will have a minimum price. In this case, the price floor equals 71.75 cents per pound. For every one cent the futures price falls below the strike price of the sold put option, the net sales price will decrease by one cent.

SUMMARY OF A BEAR PUT SPREAD

A Bear Put Spread is implemented by simultaneously purchasing and selling put options. The strike price associated with the purchased put option is greater than the strike price associated with the sold put option. This strategy offers only limited price protection. If the futures price remains equal to or above the strike price of the sold put option, a floor price is established. Once the futures price falls below the strike price of the sold put option, the strategy will provide only a set gain but will also ensure a fixed expense for the strategy.
   1.

SYNTHETIC BASIS CONTRACTS

Many futures and/or option contract strategies provide a means of managing price risk. These strategies provide cotton producers the means of "locking in" the price of their commodity ahead of harvest. While these strategies remove the risk of falling prices, basis (the difference between a cash price and the futures price of a particular commodity on a given futures exchange) is still at risk. If basis contracts are not available, cotton producers can still manage basis risk through the use of synthetic basis contracts. Creating a synthetic basis contract involves forward contracting the cotton and taking a long position in the futures market at the same time (Amosson et. al., 1999). By forward contracting the cotton, the price and basis are "locked in". Buying the futures contract allows the price to once again vary.

WHEN TO USE A SYNTHETIC BASIS CONTRACT

A producer's perception of what is an acceptable or unacceptable basis depends on many factors such as the relationship of the current basis to the historical five year average, individual production estimates, as well as market conditions (Amosson et. al., 1999). For instance, a producer may decide a slightly below normal basis offer is attractive because a potentially excellent crop suggests basis will widen as harvest begins. These decisions are not unlike those encountered with pricing cotton through a forward contract or using futures or option contracts to lower price risk. In general, these decisions can be made using the information presented in Figure 3.

		Basis	
		Acceptable	Unacceptable
Futures Price	Acceptable	Forward Contract	Hedge
	Unacceptable	Basis Contract Or Synthetic Basis Contract	Do Nothing

Figure 3. Making basic pricing decisions.
(Source: Amosson et al., 1999)

The box in Figure 3 is divided into four separate quadrants. These quadrants correspond to the four possible combinations of price and basis (whether acceptable or unacceptable). If the futures price and basis are considered to be acceptable, the best general alternative is to forward contract the cotton. If the futures price is unacceptable but the basis is considered to be acceptable, it may be advantageous to basis contract the cotton and wait for a price rally. An acceptable futures price but an unacceptable basis generally leads to the solution of hedging the cotton hoping basis will recover. Finally, if both the futures price and basis are unacceptable, the only alternative is to do nothing and hope the situation improves over time.

If a producer finds that the current situation mirrors that of the lower left hand quadrant (unacceptable futures price but acceptable basis) and there are no basis contracts offered in the local area (or the basis contracts are unattractive), the producer should evaluate initiating a synthetic basis contract.

PRACTICAL EXAMPLE OF A SYNTHETIC BASIS CONTRACT

The information below provides an example of initiating a synthetic basis contract and how this strategy performs over time. First, the process of tracking basis over time and evaluating whether the current basis is acceptable or unacceptable is addressed. This information is then used to demonstrate the creation and performance of a synthetic basis contract.

TRACKING LOCAL BASIS

If no basis contracts are available in the local area, the first step in determining whether or not to use a synthetic basis is to know what is a "good" and "bad" basis level. This will involve tracking basis over time. To track basis over time, a producer will need two pieces of basis information at all potential local outlets. First, the relationship of the local cash offer to the nearby futures contract will provide estimates of basis for cotton delivery at any time of the year. This can be used to evaluate storage decisions. The second piece of information that needs to be tracked is forward cash contract offers for cotton delivered at harvest. Both of these can be tracked by completing the information required in Table 4 below.

Table 4. Cotton Basis Tracking Form.

Commodity _____   Location _____

	Nearby Futures Contract					Harvest Delivery		
Date	Cash Price	Futures Contract Month	Futures Contract Price	Basis		Forward Cash Contract Offer	Harvest Contract Futures Price	Implied Basis

Once the information required for Table 4 above is completed, a producer can compare the current basis level to a historical five year average. The relationship between the historical basis as it compares to the current level will aid in the decision of whether or not to create a synthetic basis contract. An example of a comparison of the current basis estimate to the historical five year average basis is presented in Table 5.

Table 5. Example Cotton Basis Tracking Form.

Commodity		Cotton			Location		Anytown, USA

Nearby Futures Contract					Harvest Delivery		
Date	Cash Price	Futures Contract Month	Futures Contract Price	Basis	Forward Cash Contract Offer	Harvest Contract Futures Price	Implied Basis
7/20/XX	61.25	Oct	62.25	-1.00	63.00	65.75	-2.75
7/27/XX	62.00	Oct	64.35	-2.35	63.50	66.50	-3.00
8/3/XX	62.50	Oct	65.50	-3.00	64.25	66.75	-2.50
8/10/XX	61.25	Oct	62.00	-0.75	63.25	65.15	-1.90

5 Year Avg. Basis (8/10/XX) = - 2.25	5 Year Avg. Basis (8/10/XX) = -3.25

The information provided in Table 5 indicates that on July 20th, the local cash price equaled 61.25 cents per pound. The nearby futures (October) contract closed at 62.25 cents per pound. Subtracting the nearby futures contract price from the local cash price suggests a basis for this date equaling -1.00 cents per pound. Three weeks later (August 10th), the local cash price as well as the nearby futures price had changed. The basis for this date equaled -0.75 cents per pound. Comparing the current basis (-0.75 cents per pound) to the historical five year average basis on August 10th (-2.25 cents per pound), it can be concluded that the current basis is much stronger than what has been observed historically.

The second part of Table 5 calculates the implied basis. This is done by subtracting the harvest contract futures price on a specified date from the forward cash contract offer on the same date. For instance, on July 20th, the implied basis is -2.75 cents per pound (63.00 – 65.75). On August 10th, this implied basis has changed to -1.90 cents per pound (63.25 – 65.15). The historical five year average basis on August 10th equaled -3.25 cents per pound. As before, this suggests the current basis of -1.90 cents per pound is much stronger than the historical basis.

CREATION AND PERFORMANCE OF A SYNTHETIC BASIS CONTRACT

Assuming the harvest delivery basis calculated above on August 10th (-1.90 cents per pound) is acceptable but the current futures price (65.15 cents per pound) is not, a synthetic basis contract can be initiated. As mentioned above, this strategy is initiated by simultaneously

forward contracting the cotton and buying a futures contract. Thus in this example the producer would forward contract the cotton at 63.25 cents per pound and buy a futures contract at 65.15 cents per pound. An example of the performance of this strategy over time is provided in Table 6 below.

Table 6. Performance of a Synthetic Basis Contract Over Time.

Date	A Forward Cash Contract Price	B Purchased Futures Contract Price	C Current Futures Contract Price	D Futures Contract Gain/Loss (C - B)	E Net Cash Price (A + D)	F Basis (E – C)
				Cents Per Pound		
8/10/XX	63.25	65.15	65.15	0.00	63.25	-1.90
8/17/XX	63.25	65.15	68.50	3.35	66.60	-1.90
8/24/XX	63.25	65.15	69.25	4.10	67.35	-1.90
8/31/XX	63.25	65.15	67.15	2.00	65.25	-1.90
9/7/XX	63.25	65.15	65.35	0.20	63.45	-1.90
9/14/XX	63.25	65.15	64.00	-1.15	62.10	-1.90
9/21/XX	63.25	65.15	63.25	-1.90	61.35	-1.90
9/28/XX	63.25	65.15	61.25	-3.90	59.35	-1.90
10/5/XX	63.25	65.15	64.50	-0.65	62.60	-1.90
10/12/XX	63.25	65.15	66.75	1.60	64.85	-1.90
10/19/XX	63.25	65.15	67.50	2.35	65.60	-1.90
10/26/XX	63.25	65.15	68.75	3.60	66.85	-1.90
11/2/XX	63.25	65.15	69.25	4.10	67.35	-1.90
11/9/XX	63.25	65.15	70.25	5.10	68.35	-1.90
11/16/XX	63.25	65.15	71.50	6.35	69.60	-1.90
11/23/XX	63.25	65.15	73.25	8.10	71.35	-1.90
11/30/XX	63.25	65.15	74.75	9.60	72.85	-1.90
12/7/XX	63.25	65.15	75.50	10.35	73.60	-1.90

Once a synthetic basis contract has been initiated, the forward cash contract price is held constant (Column A) as is the purchased futures contract price (Column B) over time. However, between the time the synthetic basis contract is initiated in the example presented in Table 6 (August 10th) and the time it is lifted at harvest (November 11th), the futures contract price does vary (Column C). This produces a gain/loss in the futures contract (Column D). Adding this gain/loss in the futures contract to the forward contract price (Column A + Column D) results in the net cash price of the strategy (Column E). The basis (Column F), is now calculated by subtracting the current futures contract price from the net cash price (Column E – Column C). This basis is held constant over time which is the goal of a synthetic basis contract.

MINIMUM PRICE CONTRACT

Dealing with decreases in farm support programs, increased price variability, and growing needs to be competitive globally has made it a necessity for producers to find new marketing tools. A minimum price contract is one such tool. To implement such a strategy, a cotton producer will enter into a forward contract for the cotton that will be harvested later in the year. Call options will then be purchased to offset the sale. The minimum price is determined by subtracting the cost of the call options per pound of cotton from the forward contract sales price per pound of cotton.

EXAMPLE OF A MINIMUM PRICE CONTRACT

Let us consider a situation where it is currently February, and a producer will harvest cotton about mid-November. The producer looks at the market and finds the December futures price is trading at 67.50 cents per pound (Table 7). While this price is above the cost of production, it does not meet the price objectives set by the producer. Inquiries have also suggested that forward contracts for November delivery are currently at 65.50 cents per pound (Table 7). Further analysis finds 67 cent call options are trading for 3.27 cents per pound (Table 7).

Table 7. Current Market Information.

Current Month =	February
December Cotton Futures =	67.50 ¢/lb.
Forward Contract for November delivery =	65.50 ¢/lb.
December 67 cent call premium =	3.27 ¢/lb.

To lock in a floor price before the crop is even planted the producer can forward contract the cotton that will be harvested in mid-November and simultaneously purchase call options to "re-own" the cotton. If this strategy is implemented, the floor price the producer will establish is determined by subtracting the cost of the call option premium and any commission and interest from the forward contract price (Table 8).

Table 8. Determining the Floor Price.

Forward Contract Price	65.50 ¢/lb.
December 67 cent call premium	-3.27 ¢/lb.
Commission and interest	-1.00 ¢/lb.
Minimum/floor price	61.23 ¢/lb.

Entering into this minimum price contract will produce a 61.23 cent per pound floor price. While this is lower than the 65.50 cent per pound forward contract price, the producer could still take advantage of upward price movements from the time the minimum price contract is initiated until the call options are either liquidated or expire.

RESULTS OF A PRICE INCREASE

If by harvest, the December futures price has increased to 75.00 cents per pound, the December 67.00 cent call option premium should be worth at least 9.00 cents per pound. This increase in the value of the call option will then be added to the forward contract price and yield the final price of the cotton (Table 9).

Table 9. Final Price when Prices Increase.	
Current Month	November
December Futures Price	75.00 ¢/lb.
December 67 cent call premium	9.00 ¢/lb.
Cash Price	73.00 ¢/lb.
Final Result	
Minimum Price	61.23 ¢/lb.
December 67 cent call premium	9.00 ¢/lb.
Final Price	70.23 ¢/lb.

RESULTS OF A PRICE DECREASE

If by harvest the December futures price has fallen to 49.00 cents per pound (Table 10) and the cash price is 47.00 cents per pound, the 67.00 cent call option would be close to worthless. In this case, the producer would receive the 61.23 cents per pound minimum price for the cotton. This is much better than the 47.00 cents per pound that would have been received had the minimum price contract not been in place.

Table 10. Final Price when Prices Increase.	
Current Month	November
December Futures Price	49.00 ¢/lb.
December 67 cent call premium	0.00 ¢/lb.
Cash Price	47.00 ¢/lb.
Final Result	
Minimum Price	61.23 ¢/lb.
December 67 cent call premium	0.00 ¢/lb.
Final Price	61.23 ¢/lb.

CHOICE OF PROTECTION LEVEL

A producer may be able to customize their protection level because several strike prices are traded at a given time. The ability to choose different strike prices for the purchased call will enable the producer to have some control over the minimum price received as well as the amount of upside potential if the market rallies.

The minimum price can be slightly higher if call options with higher strike prices are used. This happens because as strike prices for calls increase, the associated premiums decrease. An example of selecting various strike prices and the impacts on the minimum price are presented in Table 11 below.

Table 11. Impacts of Selecting Various Call Strike Prices on the Minimum Price.

Current Month = February			
Futures Price =	67.50 ¢/lb.		
Strike Price =	67.00 ¢/lb.	69.00 ¢/lb.	71.00 ¢/lb.
Forward Contract Price =	65.50 ¢/lb.	65.50 ¢/lb.	65.50 ¢/lb.
Call Premium =	- 3.27 ¢/lb.	- 2.52 ¢/lb.	- 1.97 ¢/lb.
Commission and Interest =	- 1.00 ¢/lb.	- 1.00 ¢/lb.	- 1.00 ¢/lb.
Minimum Price Floor =	61.23 ¢/lb.	61.98 ¢/lb.	62.53 ¢/lb.
Harvest Month = November			
Price if futures market rallies to 79.00 ¢/lb.			
Minimum Price	61.23 ¢/lb.	61.98 ¢/lb.	62.53 ¢/lb.
+ Gain on Call	12.00 ¢/lb.	10.00 ¢/lb.	8.00 ¢/lb.
= Final Price	73.23 ¢/lb.	71.98 ¢/lb.	70.53 ¢/lb.

As the strike price associated with the purchased call option increase (as presented in Table 11), the minimum price that will be received will increase. This is due to the call premiums decreasing as the strike price increases. However, the ability to take advantage of upward movements in price also decreases as the call option strike prices are increased.

TIMES TO USE A MINIMUM PRICE CONTRACT

A minimum price contract allows a cotton producer to lock in a price floor but still have potential to benefit from positive swings in price. This strategy is attractive when the producer is concerned about protecting break-even costs of production and needs some price protection but the market is not offering enough potential to meet profit objectives (Waller et al., 1999). With a minimum price contract, a floor price is set offering some security for covering costs and falling prices. A minimum price contract may also be used when prices are trending higher. In such a case, a producer may find it difficult to sell in a rising market. A minimum price contract will allow this producer facing a rising market to set a price floor while still retaining upside potential.

SUMMARY OF A MINIMUM PRICE CONTRACT

A minimum price contract allows a cotton producer to lock in a price floor but still have potential to benefit from positive swings in price. This is accomplished by forward contracting the cotton that will be harvested and purchasing call options. If the market rallies, the call options increase in value. If the market falls, the call options will expire worthless, but the producer will be protected with the forward contract.

As with any strategy, there are both advantages and disadvantages of using minimum price contracts. These advantages and disadvantages are taken from Waller et al., 1999 and are outlined below.

ADVANTAGES OF A MINIMUM PRICE CONTRACT

1. Locks in a minimum price but has upside potential.
2. Provides some leverage in obtaining credit.
3. Establishes a price floor and helps in production management decisions.
4. No need to deal directly in futures or options markets if the entity providing the forward contract will handle the purchase of the call.
5. Limited risk, no margin calls.

DISADVANTAGES OF A MINIMUM PRICE CONTRACT

1. Must pay premium and any transaction costs.
2. Cotton must be delivered to a specified location.
3. May lose option time value.

CONCLUSION

This publication addresses advanced futures and option market strategies that include: Rolling Up A Put Option As Price Increases, a Bear Put Spread, Synthetic Basis Contracts, and a Minimum Price Contract. These strategies go beyond simply selling futures contracts or purchasing put options as a means of protecting against adverse cotton price movements. While these are only but a few advanced strategies that can be used with the futures and options contract markets, they do represent the most common. Before any of these strategies are implemented, they should be well understood and the potential risks evaluated against returns. It is also cautioned that any strategy more advanced than simply selling futures contracts or purchasing put options may not be viewed as a hedge from a tax standpoint. Therefore, prior to engaging in such strategies should be discussed with a tax professional to ensure the correct reporting of gains and losses.

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