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***Clemson University Marketing Strategy  
Analyzers (MSA's): A Primer***



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# ***Clemson University Marketing Strategy Analyzers (MSA's): A Primer***

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# **Clemson University Marketing Strategy Analyzers (MSA's): A Primer**

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## **INTRODUCTION**

The purpose of this report is to provide an introduction to the use of marketing strategy analyzers developed to help agribusinesses better understand their available marketing strategies and the effects these strategies would have in various market situations. Many of the complex computations that are normally required in analyzing marketing alternatives are completed automatically by the spreadsheets. With these calculations taken care of, the user should be able to focus on the bigger picture of what the market is offering and risk reduction provided by alternative strategies. This helps in choosing the marketing strategy that best fits the user's current needs. Further, comparing two markets or playing "what if?" is automated by the spreadsheets.

## **BACKGROUND**

A basic understanding of terminology will be necessary to understand and utilize the spreadsheets. Listed below are basic definitions of the terms that will be used throughout this paper. *Local price* is the price available from your local market. It is the price you could sell your production locally and is not a national price. The *futures price* is the price determined through the trading of contracts on commodity exchanges such as

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the Chicago Board of Trade. The futures price may be considered the best indication of harvest time prices that are expected to prevail. Futures price is a national or even world price that is not adjusted for your local market conditions. The difference between the futures price and the local cash price is referred to as the basis. The *basis* is the difference between your local market and the prevailing futures price. A large component of the basis is usually transportation cost difference due to different delivery points. However localized supply and demand conditions as well as available storage also affect basis. Actual or current basis is the difference between the current local price and the current futures price for a given contract month. Expected basis is what is expected to prevail at delivery. This is often modeled by the historical basis which is the average of the basis that has occurred in the past for contracts in a given month. Many universities publish local basis information. For basis in the Southeastern (GA, NC and SC) region as well as a detailed explanation of marketing grains, see Piggott, Shumaker and Curtis at:

<http://www.ag-econ.ncsu.edu/faculty/piggott/handbook.htm>

The options market is similar to the futures market in that options are traded on commodity exchanges with option contracts available for the same futures contracts. *Options* are the right, but not the obligation, to purchase a futures contract. While this may seem confusing, it can be viewed as similar to an insurance policy. If a future situation is such that it is preferred to hold a position in a futures contract, you can then accept the position and “cash in” the option. If you don’t need the insurance, then you simply let the option expire. The only thing you have to lose is the premium paid for the option. The *premium* is the price you pay to purchase the option. Similar to insurance, you must pay a premium per bushel for the right to use the option. Options premiums and

educational materials on options may be obtained at the web site of the relevant futures exchange such as:

[www.cbot.com](http://www.cbot.com) or [www.nybot.com](http://www.nybot.com) or [www.cme.com](http://www.cme.com)

There are two types of options: puts and calls. For simplicity it will always be assumed that you are buying, not selling, the put or call options. *Put options* are for the ability to short the market. This is useful if the market price decreases. Put options give you the right, but not the obligation, to sell a futures contract at the specified price and buy back the futures contract at a lower price in the future. *Call options* are for the ability to go long in the market. This is useful in situations where market prices are increasing. Call options give you the right, but not the obligation, to buy a futures contract at a specified price and sell at a higher price in the future. The call option gives you the ability to “buy low, sell high” while a put option gives you the ability to “sell high and buy low”.

There are three actions possible with an option contract. You can *Exercise* the option, which means to “cash in” or convert it to a futures position. If the option is not going to be profitable, you can allow the option to *Expire* or “do nothing”. The third choice is to sell the option to someone else known as “*Offsetting*.” It should also be noted that both futures contracts and option contracts require a broker that will charge some commission fee.

### **AVAILABLE MARKETING STRATEGIES**

Six marketing strategies are evaluated by the marketing strategy analyzer. They are: Cash sale at harvest, Basis contract now and sell at harvest, Futures Hedge, Cash Forward Contract (CFC), Put option purchase, and Call option purchase with a Cash Forward Contract. The cash sale at harvest strategy is the simplest strategy. It is

sometimes called the “does nothing” approach to marketing and does not require upfront marketing costs. The cash sale at harvest strategy is to not use any price risk management tools and to simply sell the commodity on the cash market at harvest. Under certain circumstances’ this strategy can provide the greatest returns for your crops. However, the cash sale at harvest is a risky strategy. You have no protection against negative moves in futures price, basis, and ultimately local price. You must take what the market gives you at harvest. There is no protection against prices falling below your break-even costs of production.

Figure 1 is a graph showing revenue per unit across the relevant range of possible market prices for the cash sale at harvest strategy. Notice with cash harvest at sale there are extreme risks associated with prices falling and extreme benefits from prices rising. There is no “price floor” or “price ceiling”.



Figure 1. “Cash Sale at Harvest Marketing Strategy without LDP”

The basis contract now and sell at harvest strategy is commonly referred to as a basis contract. This allows you to “lock in” a basis for when you sell your crop. This reduces the risk of the local basis moving down, thus driving local price down. This approach essentially ties your price to the futures price. This is useful when there is a favorable difference in the actual basis and the historical basis. If you believe that the basis is unusually strong and might weaken by harvest, then a basis contract might be appropriate. *For this approach to be the best choice you would need to expect the basis to weaken and the futures price to strengthen.* A disadvantage of a basis contract is that you must contract a specified amount of bushels at harvest and you are contractually obligated to deliver that specified amount of production to the buyer. If you do not harvest enough to fulfill the contract amount you must buy the difference in the cash market and still deliver to the buyer. Also, the basis contract protects you against negative moves in the basis, but does not protect you from a lower futures price. Since the basis makes up only a small portion of the local price, there is little protection against prices falling below your break-even production costs.

Figure 2 is a graph showing revenue per unit across the relevant range of possible market prices when using the basis contract. Notice the price received is tied to the futures price. There are still risks associated with prices falling and benefits from prices rising. Like the “cash sale at Harvest strategy”, the basis contract provides no “price floor” or “price ceiling”.



Figure 2. “Basis Contract Marketing Strategy without LDP”

The futures hedge involves purchasing futures contracts traded on the commodities futures exchanges. The futures hedge will allow you to effectively “lock in” a price similarly to the effect of a CFC (explained later). With the futures hedge a producer would sell futures contracts. Subsequently, you sell your crop on the local market for the local price. You then return to the futures market and buy back the contract(s) you sold. This clears you of having a market position and allows you to take the profits or losses from the futures market. The change in the local price will generally be offset by the change in the futures price, assuming the basis remains the same. This gives you assured net revenue, assuming basis remains unchanged. The advantage of this

strategy over a CFC is that no delivery to any specific location, in any specific amount is required. Therefore the risk of under producing and being forced to buy extra crops to cover cash contracts is eliminated.

There are some disadvantages of futures hedge. Basis risk is not eliminated. You are locked in to a futures price level and will not benefit if the price increases. Brokerage fees for the purchasing and selling of the futures contracts will be charged. A future hedge also exposes you to the risk of margin calls. Margin calls occur when the futures price increase; losses in your short position must be covered daily. You may have to deposit additional cash in the brokerage account during the year to meet margin calls, thus creating potential cash flow problems.

Figure 3 is a graph showing revenue per unit across the relevant range of possible market prices when using the “futures hedge”. Notice the flat line of the graph indicating that revenue will remain the same at all price levels. You effectively eliminate the risk associated with prices falling as well as eliminated the benefits of prices rising.

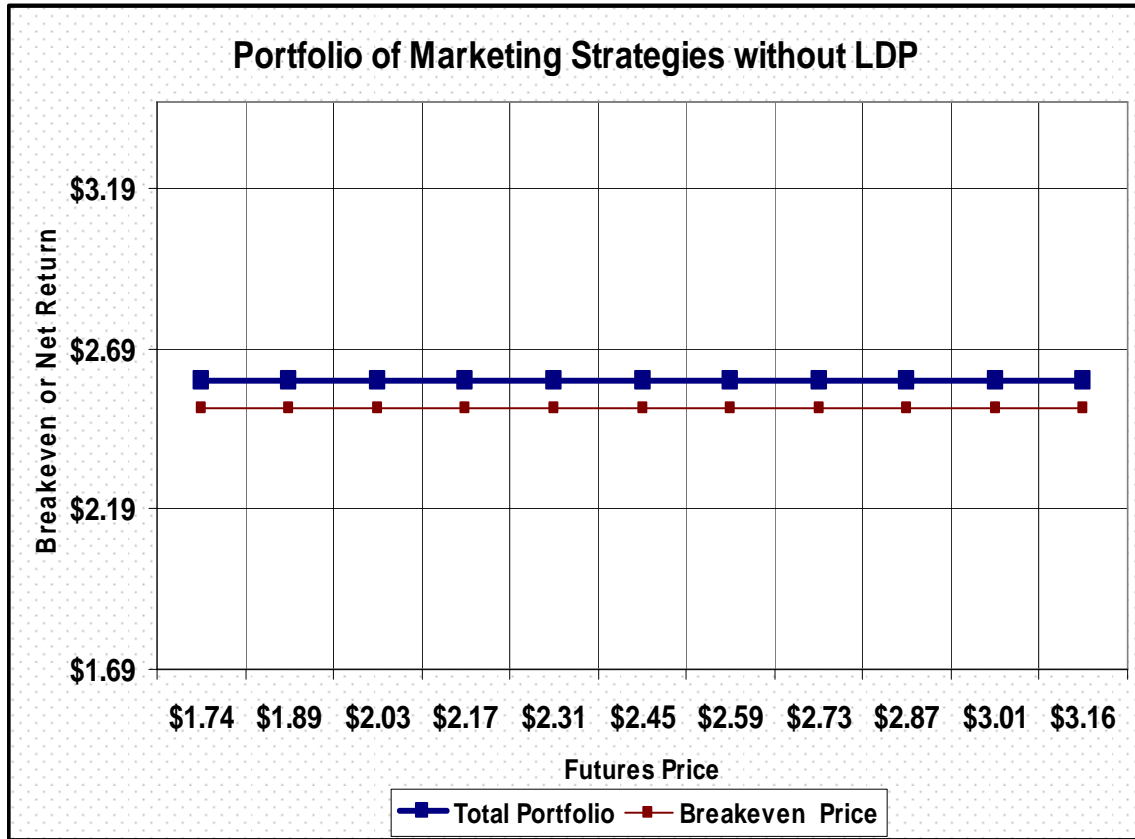


Figure 3. “Futures Hedge Marketing Strategy without LDP”

The Cash Forward Contract (CFC) strategy also allows you to “lock-in” a price before harvest. At any point before harvest, you can “lock in” your price with a contract from a local buyer. This usually has very little extra expense and allows for certainty in the selling prices. The cash forward contract protects against moves in the basis and futures prices. The down side to CFC is that it is for a specified number of bushels that you are contractually obligated to deliver regardless of the amount harvested. Also you are locked into a price and are not able to benefit from higher prices. You are guaranteed to receive the contract price no matter what the current local price is at harvest.

Figure 4 is a graph showing revenue per unit across the relevant range of possible market prices when using the “cash forward contract”. Notice the flat line of the graph indicating that revenue will remain the same at all price levels. You effectively eliminate the risk associated with prices falling as well as eliminated the benefits of prices rising.

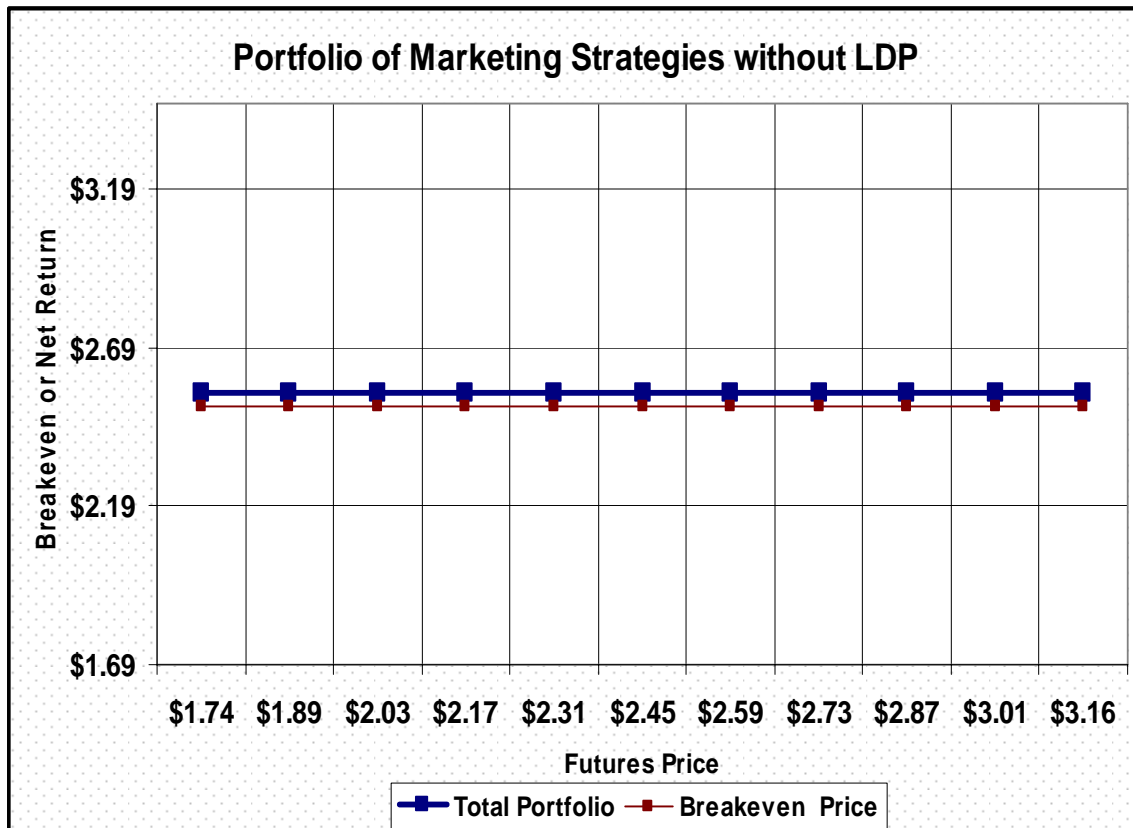


Figure 4. “Cash Forward Contract Marketing Strategy without LDP”

Purchasing put options can be a good strategy if prices are currently favorable but have a risk of falling before harvest. Put options protect against down side risk while still allowing you to participate in gains from price increases. This works by purchasing the *put options*, which essentially allows you to *short* the market. At harvest you sell your

crop on the local market. If prices have increased, you sell your crop for the high market price and simply let the option expire. Remember the put option is the right, but not the obligation, to go short in the market. If you do not use the option, the only thing you have lost is the premium paid for the purchase of the option. If the market goes down, you sell your crop at harvest and then exercise or offset the put option. The gains from the put option will offset the losses in the cash market. In effect, this allows you to create a price floor. You are guaranteed a minimum price but not limited by a maximum price. You are protected from lower prices and benefit from higher prices.

The drawback with purchasing put options is the costs associated with the option premium. Depending on which strike price you choose, the cost of the premium could be significant and will deduct from your bottom line. Put options are also for a specified amount. While delivery will not be required, you still must predict approximately the amount of yield to allow the strategy to work efficiently.

Figure 5 is a graph showing revenue per unit across the relevant range of possible market prices when using the “put option strategy”. Notice the flat line in the left portion of the graph indicating a “price floor”. As futures prices fall below the strike price, the put option has value and effectively creates a price floor. You effectively eliminate the risk associated with prices falling, but are still allowed to receive gains from price increases.

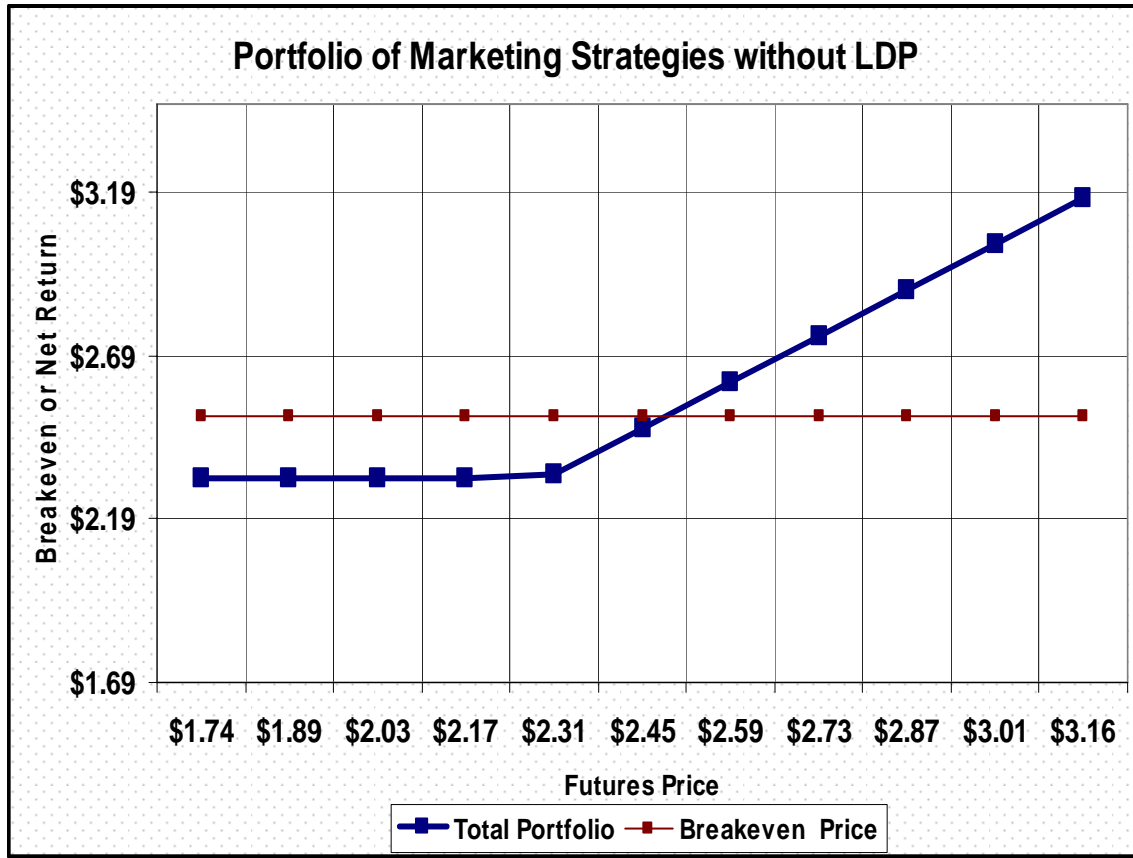


Figure 5. “Purchasing Put Options Marketing Strategy without LDP”

Another similar strategy is the use of a Call option purchase with a Cash Forward Contract. Like the put option approach, this allows you to create a price floor without limiting your upside potential. This is achieved by purchasing a cash forward contract as mention above as well as purchasing a call option. The call option gives you the right, but not the obligation, to go long in the market. At harvest, you sell your crop on the local market with the CFC. If prices go up, you also exercise your call option and take the gains from the futures contract. You still make extra money above the CFC price when the market goes up. If the market goes down, you sell your crop at harvest with the CFC

and simply let the option expire. You have established a minimum price from the CFC and only lose the premium from purchasing the call option.

Figure 6 is a graph showing revenue per unit across the relevant range of possible market prices when using the “CFC with call option”. Notice the flat line in the left portion of the graph indicating a “price floor” established by the CFC. As the futures prices moves above the call option strike price, revenue gains are represented by the upward sloping portion of the graph. You effectively eliminate the risk associated with prices falling, but are still allowed to receive gains from price increases.

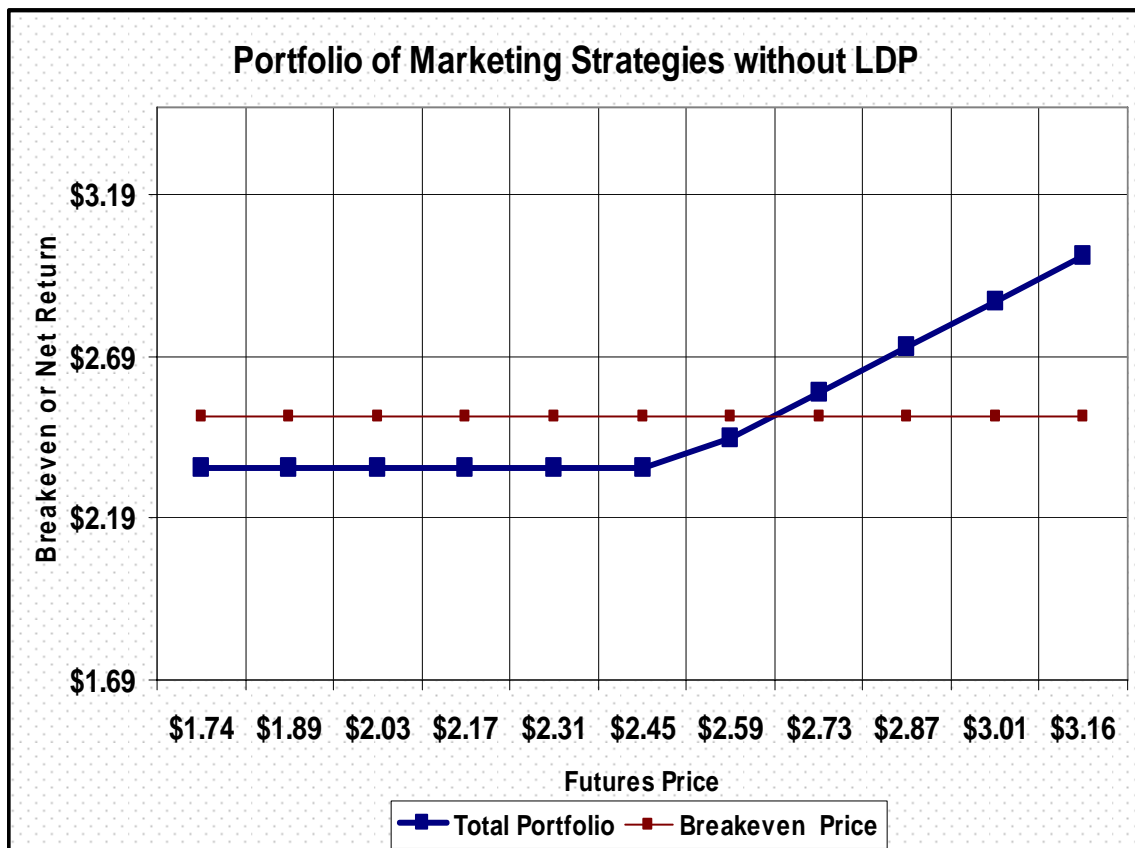


Figure 6. “Call Option Purchase with a CFC Marketing Strategy without LDP”

## **ABOUT THE SPREADSHEETS**

The Marketing Strategy Analyzer spreadsheet's intended purpose is to relieve the user from making tedious and time consuming calculations while considering different marketing strategies. The included graphs will help the user picture how each strategy would work in response to changes in price. The user will be required to input certain information into the spreadsheets. Listed below are detailed instructions on how and where to enter the current market data.

### **Input Tab**

The input tab of the spreadsheet allows the user to select the appropriate data for the farm's individual situation (figure 7). The cells that are formatted with red font and boxed require current market data to be entered. The projections found later in the spreadsheet will be based on this information. Listed below are the input fields and a brief description of the importance of the field and how to obtain the appropriated information.

#### **Firm:**

Enter the name of your business operation.

#### **Analysis Date:**

This will update automatically to the present date. No entry necessary.

#### **Crop:**

This identifies the commodity being analyzed. No entry necessary. Currently marketing strategy analyzers are available for corn, soybeans, wheat, cotton and feeder cattle.

**Futures & Options Contract Month:**

Enter the relevant futures month for the crop. It would be a month with a futures contract available directly after harvest. This may not directly correlate with harvest in the South. For example, the December contract is widely considered the new crop year for corn even though corn is harvested earlier in the year in many locations in the South. Not all months have a futures contract available. The limited amount of contract months available is to help with market liquidity, ensuring the best prices for both buyers and sellers. Typically the following harvest contract months are used: Corn – December, Wheat – July, Soybeans – November, and Cotton – December.

CORN MARKETING STRATEGY ANALYZER			
Clemson Cooperative Extension Service Clemson University Version 03.6			
Firm:	Southeastern Farms		
Analysis Date:	July 1, 2006		
Crop:	Corn		
Future & Option Contract Month:	12		
Future & Option Contract Year:	2006		
Sale Location:	Summer		
Item	Sale Location, Or Month	Price, Basis Or Cost	Units
<u>FORWARD PRICES</u>			
Future Price	Dec-06	\$2.4600	\$/Bu
Cash Forward Contract (CFC)	Summer	\$2.6600	\$/Bu
<u>BASIS INFORMATION</u>			
Expected Basis at Harvest	Summer	\$0.18	\$/Bu
Basis Contract Implied by CFC	Summer	\$0.10	\$/Bu
<u>OPTION PREMIUMS FOR PROBABILITIES</u>			
Nearest-to-the-Money Strike Price	Dec-06	\$2.50	\$/Bu
Nearest-to-the-Money Put Option Premium		\$0.2500	\$/Bu
Nearest-to-the-Money Call Option Premium		\$0.1800	\$/Bu
Interest Rate		6.0%	%
<u>OPTION PREMIUMS USED IN STRATEGIES</u>			
Put Option Strike Price	Dec-06	\$2.30	\$/Bu
Put Option Premium		\$0.1800	\$/Bu
Call Option Strike Price (Used with CFC)	Dec-06	\$2.50	\$/Bu
Call Option Premium		\$0.1800	\$/Bu
<u>LOAN DEFICIENCY PAYMENT INFORMATION</u>			
Pooled County Price Basis		-\$0.18	
Loan Rate		\$2.08	
Predicted PCP		\$2.27	
LDP Prediction at Current Futures		\$0.00	
<u>FUTURES &amp; OPTION COSTS</u>			
Future & Option Contract Size		6,000	\$/Contract
Acres per Contract		60	Acres/Contract
Hedging Commission		\$75.00	\$/Contract
Hedging Commission Cost		\$0.016	\$/Bu
Option Commission		\$60.00	\$/Contract
Option Commission Cost		\$0.010	\$/Bu
Total Put Option Cost		\$7.00	\$/Contract
Total Call Option Cost		\$1,000	\$/Contract
<u>BREAK-EVEN ANALYSIS</u>			
Expected Yield	Corn	100	Bu/Acre
Total Production Costs (or Variable Costs)		\$2.51	\$/Acre
Break-even Price		\$2.51	\$/Bu
Developed by: Charles Curtis, Jr. and Todd Davis, Extension Economists Department of Applied Economics & Statistics Clemson University, Clemson, S.C. (864) 656-3226			

Input

Figure 7. "Input Tab"

**Futures & Options Contract Year:**

Enter the year that corresponds to the futures contract you have selected. This is important for later calculations of options and risk associated with time.

**Sale Location:**

Enter the location of the local elevator or market where you expect to physically sell your crop. This market will be used latter in obtaining basis and cash contract information.

**FORWARD PRICES****Futures Price:**

Enter the futures price for the harvest time futures contract. The month and year should match the month and year you entered in the above cells. The futures price is established on the commodities futures market exchanges. These exchanges have web sites containing current contract prices. Some additional sources of contract prices are: [www.cbot.com](http://www.cbot.com) for corn, wheat, and soybeans; [www.nybot.com](http://www.nybot.com) for cotton; [www.cme.com](http://www.cme.com) for feeder calves; and [www.dtn.com](http://www.dtn.com) or <http://www.fbcountry.com> (for Farm Bureau members) for all commodities. Also, your local Land Grant University will have this information.

**Cash Forward Contract (CFC):**

Enter the price available for a cash forward contract from your local elevator. The CFC should be for the date and location entered above. A cash forward contract is similar to a futures contract in that it is a contractual obligation to deliver a specified quantity of

the commodity to a specified location at a specified time. The differences are that the cash forward contract is sold at the local level by individual elevators. Different elevators may offer different prices on their cash forward contracts. These cash forward contracts are adjusted for the local market. Several factors can cause the cash forward contract price to differ from the futures contract price. These include local supply and demand as well as transportation and storage costs. The variation in the cash forward price and the futures price is commonly referred to as the local basis.

## **BASIS INFORMATION**

### **Expected Basis at Harvest:**

The expected basis at harvest should be the historical average for the local basis in your area during the harvest month. This is the amount that you would expect the local cash forward price to differ from the futures price (based on historical averages). This information can be obtained from the USDA. Basis information for North Carolina, South Carolina, and Georgia is available at:

[www.ag-econ.ncsu.edu/faculty/piggott/handbook.htm](http://www.ag-econ.ncsu.edu/faculty/piggott/handbook.htm)

When using NC State's web site, click on the link for your state and commodity. Next select your location and click the excel link to open the spreadsheet for the nearby basis. An excel file will open that shows the historical basis by month and year for your area. Select the harvest month to find an average predicted basis.

### **Basis implied by CFC:**

The implied basis is automatically calculated by taking the difference in the CFC and the futures price. This may differ from the historical average. The spreadsheet will

calculate this for you and no entry is necessary. This calculation is useful in helping determine if the local market is acting outside of its historically normal range.

### **OPTION PREMIUMS FOR PROBABILITIES**

Option prices are available from [www.cbot.com](http://www.cbot.com) for corn soybeans and wheat; [www.nyce.com](http://www.nyce.com) for cotton; and [www.cme.com](http://www.cme.com) for feeder cattle. Be sure to select the month that is consistent with your crop harvest and futures prices. Remember that options can be classified as either “put” or “call” and be sure you are looking at the right option. The “strike price” is the designated price for which put and call options are traded.

#### **Nearest-to-the Money Strike Price:**

“Nearest to the Money” strike price is a trading term for the option strike price that is closest to the current futures price. In this cell, enter the contract price of the available option that is closest to current futures price. For example, in Figure 7 the current futures price is \$2.45. The nearest to the money strike price would be \$2.50. When viewing the website and selecting the options, make sure you select month that corresponds with the harvest month that you have chosen for the futures price and the cash forward price. It is very important that the month selected for all three contracts be the same.

#### **Nearest-to-the Money Put Option Premium:**

Enter the premium price for the put option at the strike price that was selected above. Select the **put options** for the appropriate contract month. In the table, find the

strike price that you have entered above. To the right of the strike price you will find the current premium for the put options.

**Nearest-to-the Money Call Option Premium:**

Enter the premium price for the call option at the strike price that was selected above. Select the **call options** for the appropriate contract month. In the table, find the strike price that you have entered above. To the right of the strike price you will find the current premium for the call options.

**Interest Rate:**

Enter the current rate of interest you expect to pay over the time period. This does not have to directly correspond to market rates. It should be your opportunity cost of capital. Generally a range of 6% to 12% is used.

**OPTION PREMIUMS USED IN STRATEGIES**

Option information is available from the same sources as the futures contract prices. Be sure to select the month that is consistent with your crop harvest and futures prices. You may select any Put or Call option that is available for that month. Remember that you should evaluate the price of the premiums and your personal needs and expectations of the future.

**Put Option Strike Price:**

Enter the strike price of the put option you have selected. This put option does not have to be the same strike price as was selected for the “nearest-to-the-money strike price” used above. This put option strike price could be somewhat lower or higher than the “Nearest to the money strike price”. How much lower or higher depends on the

amount of “insurance” you want to purchase to protect against the price falling. However, the cost of the option increases at higher strike prices. You may explore many different strike prices to evaluate the effectiveness in managing risk.

**Put Option Premium:**

Enter the premium of the put option you have selected. In the table for put options, find the strike price that you have entered directly above. You will see to the right of the strike price what premium the options have been trading for.

**Call Option Strike Price (Used with CFC):**

Enter the strike price of the call option you have selected. This call option does not have to be the same option as was selected for the “Nearest to the money strike price” used above. This call option may be somewhat higher or lower than the “Nearest to the money strike price”. How much higher or lower depends on how strongly you feel that the market could go even higher. Purchasing a call option along with a CFC will later be used to allow you to receive gains from price increases even if you have “locked in” a price with a cash forward contract.

**Call Option Premium:**

Enter the premium of the call option you have selected. In the table for call options, find the strike price that you have entered directly above. You will see to the right of the strike price what premium the options have been trading for.

**LOAN DEFICIENCY PAYMENT INFORMATION**

Loan Deficiency payments are based on government programs and are subject to change year to year. Current information can be obtained from:

<http://www.fsa.usda.gov/pas/default.asp>

## **What are Loan Deficiency Payments?**

The 2002 Farm Bill continued the loan deficiency payment (LDP) program for corn, cotton, and wheat and expanded the program to include soybeans. Loan deficiency payments compensate producers for low prices and are similar to a put option. Like a put option, LDP's place a floor on price. However, the LDP is based on actual production and does not protect against yield risk.

## **How are Loan deficiency Payments Calculated?**

The LDP is the difference between the county loan rate and the posted county price for a commodity. Whenever the posted county price is lower than the loan rate, the difference is paid as a loan deficiency payment. However, there is no LDP when the posted county price is greater than the loan rate. The county loan rate is similar to the strike price for the put option; it is the floor on the total price you can receive by selling in the cash market and participating in the LDP program. The county loan rate for each program commodity for your county can be found at [www.fsa.usda.gov](http://www.fsa.usda.gov). Look under the price support menu to find the list of county loan rate by commodity.

The posted county price is also determined by the USDA and changes daily for corn, soybeans, and wheat. The posted county price for cotton is determined once a week, on Thursday, and is in effect from Friday through the following Thursday. You can find the current posted county price for your county from your local USDA-FSA office or from [www.fsa.usda.gov](http://www.fsa.usda.gov) under the price support menu.

The marketing strategy analyzer uses historical posted county price basis data to predict a harvest-time posted county price. The North Carolina State University website

also has basis data that can be used to predict the posted county price. Remember to use the harvest-time futures contract for your commodity. The decision spreadsheet uses the posted county price basis data to forecast potential loan deficiency payments for a range of potential harvest-time futures prices. Since the loan deficiency program is another risk management tool, producers need to consider how they can incorporate LDP's into their marketing strategies.

**Posted County Price Basis:**

Enter the expected amount for your area. The posted county prices basis information for North Carolina, South Carolina, and Georgia is available at:

[www.ag-econ.edu/faculty/Piggott/handbook.htm](http://www.ag-econ.edu/faculty/Piggott/handbook.htm).

The data are organized by commodity and by state.

**Loan Rate:**

Enter the expected amount for your county. The county loan rates for each program commodity are set by the USDA. The information is available from your county USDA FSA office. You can also find this information online at [www.fsa.usda.gov](http://www.fsa.usda.gov) under the price support menu.

**Predicted PCP:**

No entry necessary.

**LDP Prediction at Current Futures:**

No entry necessary.

## **FUTURES & OPTION COSTS**

There are costs involved with trading futures and options. Trading futures and options requires a broker who will charge commission fees. These fees are usually only a very small percentage of the total cost, but they must be included to analyze the potential benefits of using futures or options. Commission fees will vary by broker but are typically \$50 to \$75 per contract.

### **Futures & Option Contract Size:**

Enter the appropriate amount of units that are in the futures contract you used above. For example, a full contract for corn, soybeans, and wheat will be for 5000 bushels or a mini contract may be available for 1000 bushels. Feeder cattle contracts and cotton contracts are for 50,000 lbs. The exact amount of units per contract will be listed on the website with the futures contract.

### **Acres per Contract:**

No entry necessary. The marketing strategy analyzer will calculate this based on expected yield, which will be entered below. This will allow you to predict how many contracts you will need to cover your acres based on predicted yields.

### **Hedging Commission:**

Enter the amount of commission the brokerage will charge you for one futures contract. The assumed cost in figure 7 is \$75 per contract. However this may vary between brokers.

### **Hedging Commission Cost:**

No entry necessary. The spreadsheet will calculate it based on the commission charged and the number of units in the contract.

**Option Commission:**

Enter the amount of commission the brokerage will charge you for purchasing an options contract. This may be different from the price for a futures contract. The assumed price in figure 7 is \$50 per contract. However this may vary between brokers.

**Option Commission Cost:**

No entry necessary. The marketing strategy analyzer will calculate it based on the commission charged and the number of units in the contract.

**Total Put Option Cost:**

No entry necessary. The spreadsheet will calculate it based on the commission charged, the number of bushels in the contract, and the put option premium.

**Total Call Option Cost:**

No entry necessary. The spreadsheet will calculate it based on the commission charged, the number of bushels in the contract, and the call option premium.

**BREAKEVEN ANALYSIS**

This section will help you determine what you need from the market to effectively cover your variable cost of production.

**Expected Yield:**

Enter the average amount of bushels per acre you expect to harvest from your farm. This number may not be precise because of weather variability during the growing season. However, you should do your best to predict this accurately because it will affect the number of contracts needed to manage risks.

**Costs per Acre:**

Enter the relevant expected cost of production per acre for your farm. This may be your total cost of production, variable costs, cash flow costs or a cost-plus target. Variable costs are those which increase with greater production such as fertilizer, seed, chemicals, repairs, etc. If you need assistance with this calculation, enterprise budgets are a great starting point for your estimates and are available from Clemson Extension (or your local land grant University). Clemson's budgets may be found at:

<http://cherokee.agecon.clemson.edu/extindex.htm>

**Breakeven Price:**

No entry necessary. The spreadsheet will automatically calculate the break-even price based on the per-acre cost provided and the expected yield. This will represent the minimum price that could be accepted that will *cover your costs* assumed in the analysis. If, for example, you entered the total cost of production in the preceding cell, then this price is the minimum needed to cover your total costs.

**“STRATS” TAB**

The “Strats” tab shows a table with columns indicating the possible relevant range that the market could likely cover (figure 8). This information is calculated automatically from the data entered in the “Input Tab” and no information needs to be manually entered. The marketing strategy analyzer calculates a relative range of plus or minus two standard deviations which is about 95% of the current expected price movement. It is possible for the market to move outside this range, but it would likely take an extraordinary event that would alter the market fundamentals.

### Corn Marketing Strategy Analysis Results without LDP

Pricing Strategy	Item	Futures Decline					Futures Stays the Same	Futures Increase				
Firm Name:	Southeastern Farms											
Analysis Date:	01-Jul-05											
Sale Location:	Sumter											
Futures Price:	Dec-05	\$1.74	\$1.89	\$2.03	\$2.17	\$2.31	\$2.45	\$2.59	\$2.73	\$2.87	\$3.01	\$3.16
Prob Futures <= Price:		0.73%	3.14%	9.11%	19.64%	34.00%	50.00%	65.15%	77.65%	86.80%	92.80%	96.37%
Harvest Basis		\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16
<u>NO PRICING ON:</u>	01-Jul-05											
Cash Sale at Harvest	\$/Bu	\$1.90	\$2.05	\$2.19	\$2.33	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.17	\$3.32
Basis Contract	\$/Bu	\$1.84	\$1.99	\$2.13	\$2.27	\$2.41	\$2.55	\$2.69	\$2.83	\$2.97	\$3.11	\$3.26
<u>PRICE FIXED ON:</u>	01-Jul-05											
Futures Hedge	\$/Bu	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60
Net Futures Profit	\$/Bu	\$0.69	\$0.55	\$0.41	\$0.27	\$0.13	-\$0.02	-\$0.16	-\$0.30	-\$0.44	-\$0.58	-\$0.72
Margin Account Balance	\$/Contract	\$3,454	\$2,748	\$2,042	\$1,336	\$631	-\$75	-\$781	-\$1,486	-\$2,192	-\$2,898	-\$3,604
Forward Contract (CFC)	\$/Bu	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55
<u>PRICE FLOOR SET ON:</u>	01-Jul-05											
Put Option	Strike Price	\$2.30										
Buy Put Option	\$/Bu	\$2.32	\$2.32	\$2.32	\$2.32	\$2.33	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.18
Net Put Profit	\$/Bu	\$0.42	\$0.27	\$0.13	-\$0.01	-\$0.14	-\$0.14	-\$0.14	-\$0.14	-\$0.14	-\$0.14	-\$0.14
Call Option	Strike Price	\$2.50										
Buy Call Option with CFC		\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.44	\$2.58	\$2.72	\$2.86	\$3.00
Net Call Profit		-\$0.20	-\$0.20	-\$0.20	-\$0.20	-\$0.20	-\$0.20	-\$0.11	\$0.03	\$0.17	\$0.31	\$0.46
<u>BREAK-EVEN ANALYSIS:</u>												
	Yield	100										
Breakeven Price		\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51

Figure 8. "Strats Tab"

The first row shows the harvest time price range based on current futures market prices (figure 8). The second row lists the probability that the futures prices will fall below the corresponding price. For example, there will be approximately a .73% chance that the futures price will fall below \$1.74 and will be at least a 96% chance that the futures price will fall below the \$3.16 listed in the far right column (figure 8). Note that the most likely price is the current futures price indicated by the 50% at \$2.45. This is the current best indication of prices at harvest. However there is a 50% chance that the market will not remain exactly at this price on the day of closing (figure 8). Small moves up or down should be expected. Larger price moves are unlikely without the introduction of new information that would fundamentally shift the market.

The row labeled “No Pricing On” shows the effects of price changes when risk management tools are not used. Notice that the row “cash sale at harvest” indicates the futures price plus basis. This is the price range the farm could expect if it simply took the market price at the time of harvest and used no risk strategies. Notice the large range of price possibilities. Any change in the market will directly affect the price received for the crop. This assumes the basis entered in the “Input Tab” does not change.

The next row labeled “basis contract” shows the range of potential prices if a basis contract was signed that tied the price received to the futures price on delivery plus the indicated basis (figure 8). For example, if the basis contract was for +\$.10, the price received would be \$.10 above the futures price predicted at harvest (figure 8). This strategy also allows for a very wide range of price outcome possibilities and does not protect against negative moves in the futures price. It does however protect against negative moves in the local basis. This can be very helpful when the local basis available

is significantly above the historic or expected basis. It allows you to capture the extra basis in your local market.

The row labeled “Price fixed on” illustrates the ability to “lock in” or fix the price received at harvest (figure 8). Both cash forward contracting and futures hedging allow for a price to be “locked in”. While these strategies eliminate the risk associated with adverse price movements, they also eliminate the benefits of higher price.

The futures hedge allows you to “lock in” a price by selling the appropriate number of bushels in the futures market (figure 8). At harvest, the crop is sold in the cash market and the futures contracts are then bought back clearing the position held in the futures market. Loss in the cash market is off-set by a gain in the futures market. In net, you receive the amount of the original futures contract you sold at planting. The disadvantage of hedging with futures is the exposure to margin calls. Also futures hedge does not prevent changes in the local basis. However the change in basis is relatively small compared to changes in the futures market.

Cash Forward Contracting is another way to “lock in” a price by effectively pre-selling the crop (figure 8). Price, quantity, and the delivery date are fixed and only yield risk remains. If your harvested yield is less than the contracted amount you are responsible for providing the contracted number of units on the contract date. You will have to purchase additional production in the cash market, often at a higher price.

The row labeled “Price Floor Set On” shows the effective use of options contracts to reduce downside risk and still allow for upside gains (figure 8). For the cost of the option premium, essentially a price floor can be established. An advantage of options is the protection against lower prices with the benefit of price increases.

The last row of the spreadsheet displays the minimum price needed to break even (cover variable cost of production or total cost depending on what was entered in the “input tab”) based on the predicted yields and cost previously entered (figure 8). This allows you to contrast which strategies performance will allow you to break even at any point in the possible price range.

### **“S-GRAPH” TAB**

The graphs on the next tab labeled “s-graph” give a visual representation of each strategy over the given price range (figure 9). Figure 9 illustrates how each strategy offers different possible returns. There is no one best strategy that works best in all situations. The graph should help you identify which strategy would work best in accordance with your personal situation and expectations.

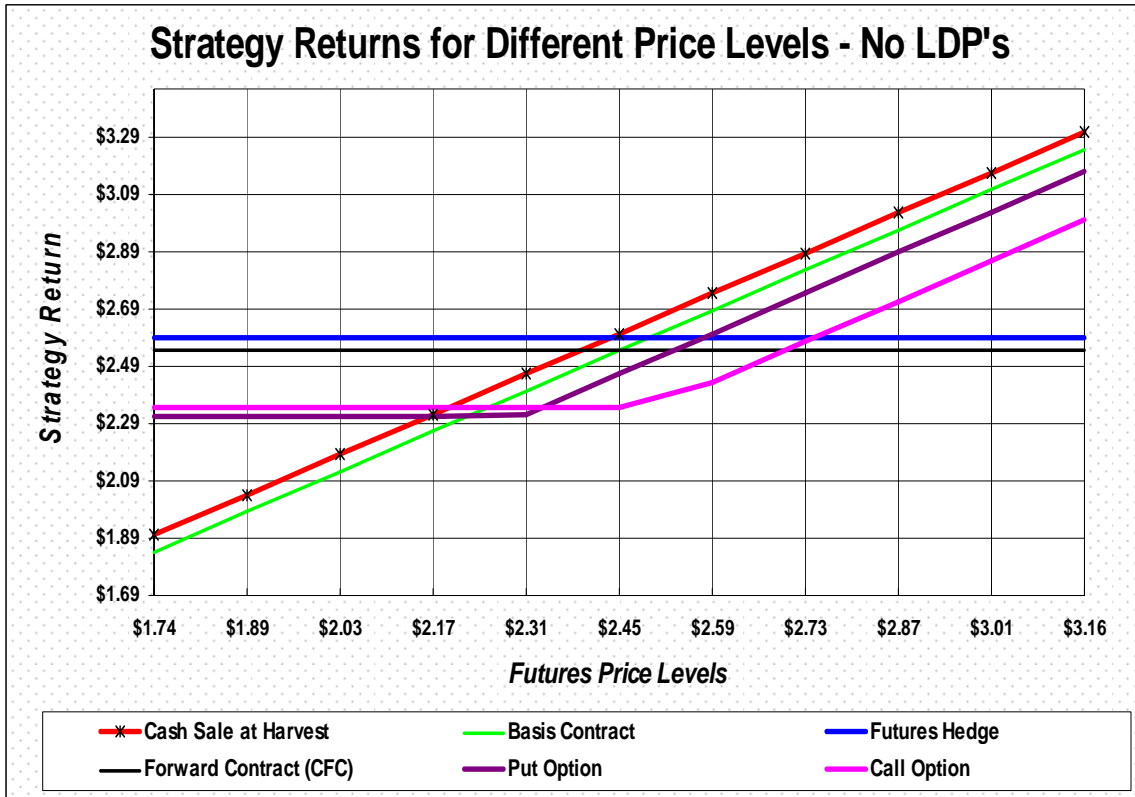


Figure 9. "S-Graph Tab"

### "PROB" TAB

The Futures Price Probability Graph is located on the "Prob tab". This tab uses the information entered on the input sheet to calculate the statistically relevant price range and the current probability of each price occurring. It takes into account the time until harvest, interest rates, the current futures price, and the premiums for the put and call options. The relevant range is considered to be plus or minus two standard deviations which will cover about 95% of the expected prices. In other words, there is a 2.5% chance of prices moving above and a 2.5% chance of prices moving below the relevant range. See Figure 10.

<b>FUTURES PRICE PROBABILITY GENERATOR</b>		
<small>Version 03.4 -- By Charles Curtis -- Clemson University</small>		
VARIABLES	VALUE	
OPTION EXAMINED:	COMMODITY -	<input type="text" value="Corn"/>
DATE OF LATEST PRICE INFORMATION:	MONTH - DAY - YEAR -	<input type="text" value="11"/> <input type="text" value="10"/> <input type="text" value="2005"/> November 10, 2005
OPTION MONTH & YEAR:	MONTH - YEAR -	<input type="text" value="12"/> <input type="text" value="2005"/>
OPTION EXPIRATION:	MONTH - DAY - YEAR -	<input type="text" value="11"/> <input type="text" value="20"/> <input type="text" value="2005"/> November 20, 2005
	FUTURES PRICE =	<input type="text" value="\$2.4000"/>
	NEAREST STRIKE PRICE =	<input type="text" value="\$2.40"/>
	PUT PREMIUM =	<input type="text" value="\$0.2050"/>
	CALL PREMIUM =	<input type="text" value="\$0.2063"/>
	INTEREST RATE =	<input type="text" value="6.0%"/>
	LOWER PRICE BOUND =	<input type="text" value="\$2.23"/> (Minus 2 Standard Deviations)
	UPPER PRICE BOUND =	<input type="text" value="\$2.57"/> (Plus 2 Standard Deviations)
	IMPLIED VOLATILITY (Remaining) =	<input type="text" value="3.47%"/> (Standard Deviation)
	DAYS TO EXPIRATION =	<input type="text" value="9"/>
<b>CALCULATION OF DIRECT IMPLIED VOLATILITY *</b>		
ITEM	VALUE	
Z PUT - NORMALIZED ( $S \cdot T^{0.5}$ ) =	0.5428	
Z CALL - NORMALIZED ( $S \cdot T^{0.5}$ ) =	0.5430	
PUT DIRECT IMPLIED VOLATILITY =	133.53%	
CALL DIRECT IMPLIED VOLATILITY =	134.35%	
AVERAGE DIR. IMPLD VOLATILITY (\$)	133.94% annualized	
	3.47% remaining	
Percent of Year Remaining =	2.59%	
<small>* Reference: Curtis, C.E. &amp; G.L. Carriger, "Estimating Implied Volatility Directly from "near-at-the-money" Commodity Options Premiums." WPS81555, Dept of Ag &amp; Applied Economics, Clemson University, Aug 1988</small>		

Prob

Figure 10. "Prob Tab"

## “PDF” TAB

The next tab is labeled “PDF” (Probability Density Function) which is a graph that shows the probability of any specific price occurring. Notice that the current price represents the highest probability, but that it is still highly probable that prices will be greater than or less than the expected price (figure 10). We calculate the PDF is to calculate the CDF as the CDF is more useful in formulating reasonable price expectations given current market information.

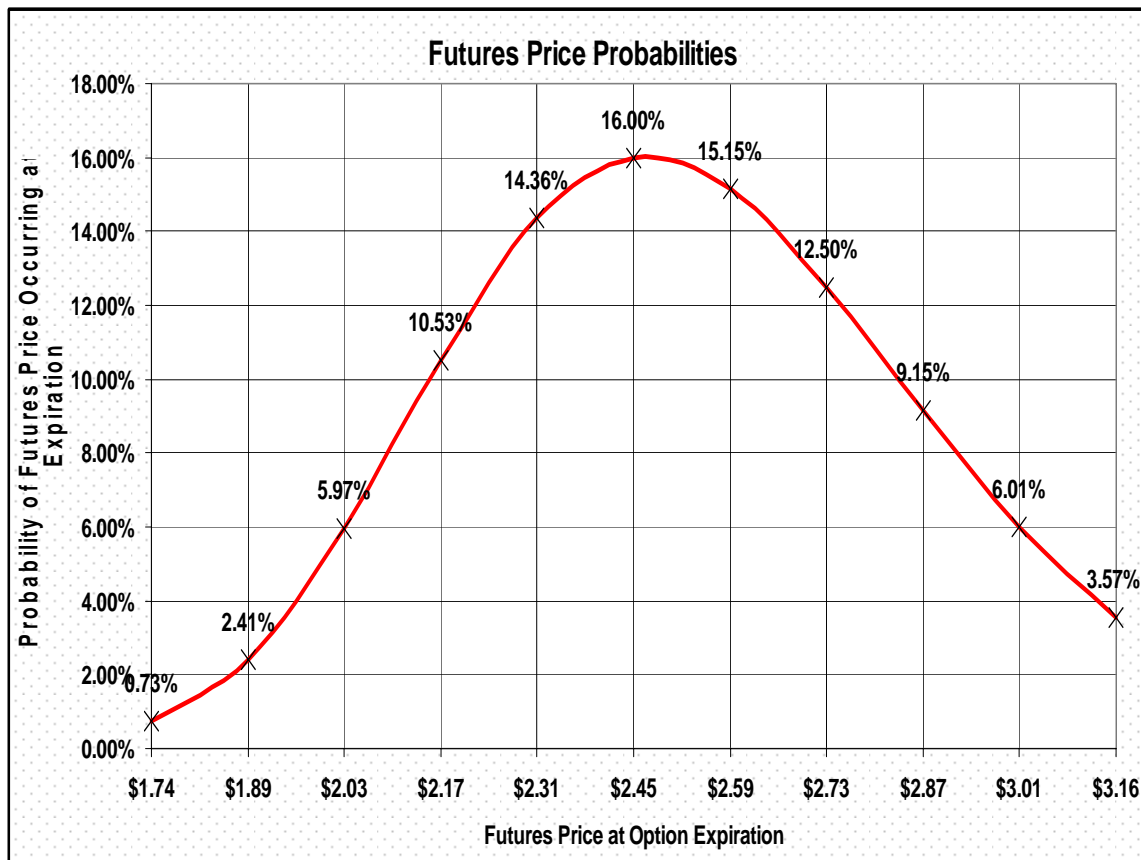


Figure 11. “PDF Tab”

## “CDF” TAB

The next tab is labeled “CDF” (cumulative distribution function) which shows the probability of a price being at a certain level or less. In the example, there is a 65% probability of corn futures being \$2.59 or less at harvest (figure 12). This is useful when comparing your break-even price to what prices may be at harvest. If there is a very low probability of prices falling below your break even price, then it may not be necessary to spend money establishing a price floor. This graph is derived from the amount of risk the active market traders have put on price changes based on option premiums and reflects all of the current information in the market.

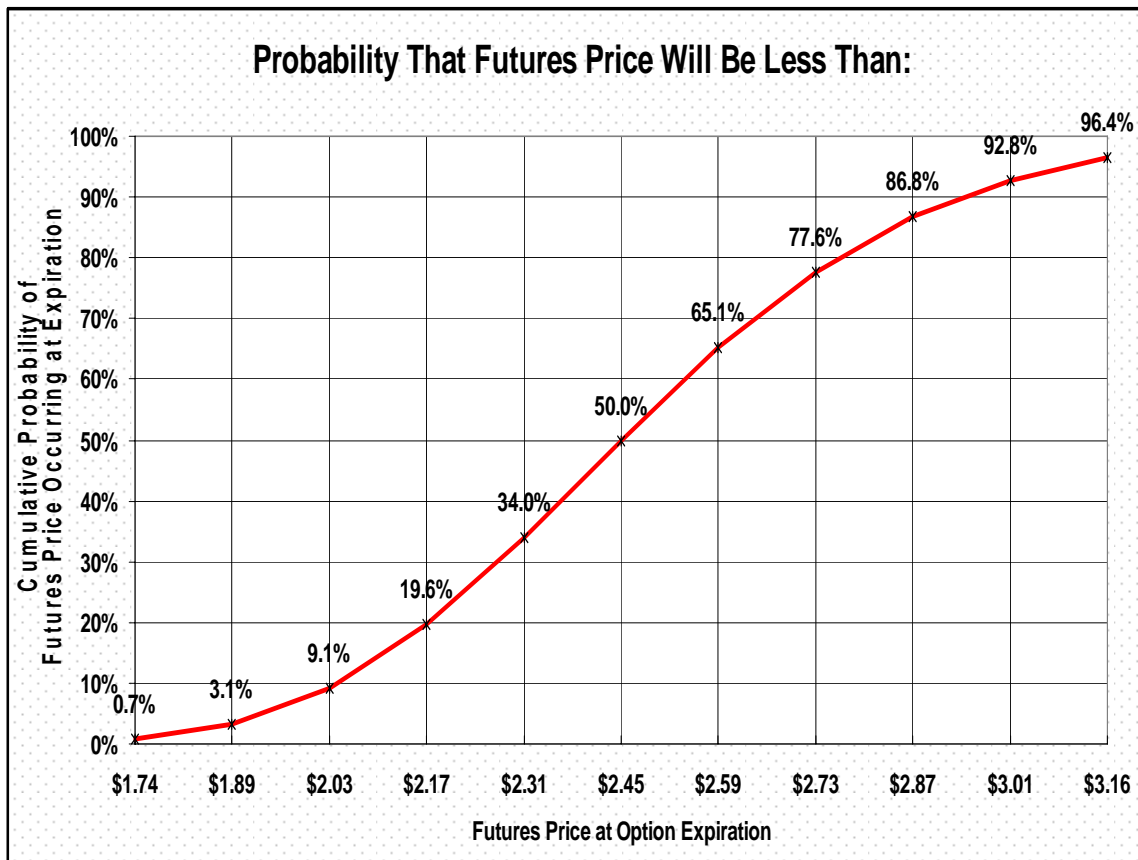


Figure 12. “CDF Tab”

## **PORTFOLIO TAB**

The portfolio tab allows the user to evaluate a combination of alternative marketing strategies. The portfolio can represent a mix of strategies that would likely be used. Since each marketing strategy works best in certain situations, it is likely that multiple strategies would be used in a given year. Some strategies like cash forward contracting require delivery of a specified number of bushels. Since it is impossible to predict your exact yield, it is unlikely that you would book 100% of your crop with a CFC. The portfolio options allow you to experiment with using multiple strategies. For example, you could CFC 50% of the crop and simply leave 50% open for cash sale at harvest (figure 13). The spreadsheet will calculate the costs and benefits of each combination over the range of expected prices. Any combination of strategies can be used but the sum of the percentages must equal 100%.

Portfolio Without LDP												
Pricing Strategy	Portfolio Percent Used	Futures Decline					Futures Stays the Same	Futures Increase				
Futures Price		\$1.74	\$1.89	\$2.03	\$2.17	\$2.31	\$2.45	\$2.59	\$2.73	\$2.87	\$3.01	\$3.16
Cash Sale at Harvest	50%	\$0.95	\$1.02	\$1.09	\$1.16	\$1.23	\$1.31	\$1.38	\$1.45	\$1.52	\$1.59	\$1.66
Basis Contract	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Futures Hedge	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Forward Contract (CFC)	50%	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28
Buy Put Option	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Buy Call Option with CFC	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Portfolio	Mix Value	\$2.23	\$2.30	\$2.37	\$2.44	\$2.51	\$2.58	\$2.65	\$2.72	\$2.79	\$2.86	\$2.93
Breakeven Price	100	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51

Pricing Strategy	From Strats Item	Futures Decline					Futures Stays the Same	Futures Increase				
Futures Price	Dec-05	\$1.74	\$1.89	\$2.03	\$2.17	\$2.31	\$2.45	\$2.59	\$2.73	\$2.87	\$3.01	\$3.16
Cash Sale at Harvest	\$/Bu	\$1.90	\$2.05	\$2.19	\$2.33	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.17	\$3.32
Basis Contract	\$/Bu	\$1.84	\$1.99	\$2.13	\$2.27	\$2.41	\$2.55	\$2.69	\$2.83	\$2.97	\$3.11	\$3.26
Futures Hedge	\$/Bu	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60
Forward Contract (CFC)	\$/Bu	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55
Buy Put Option	\$2.30	\$2.32	\$2.32	\$2.32	\$2.32	\$2.33	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.18
Buy Call Option with CFC	\$2.50	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.44	\$2.58	\$2.72	\$2.86	\$3.01
Breakeven Price	100	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51

Max =	\$3.32
Max + .15 =	\$3.47
Min =	\$1.84
Min - .15 =	\$1.69

Figure 13. "Portfolio Tab"

### PORT GRAPH TAB

The following tab shows graphs of the combination of strategies you chose and the break-even price you need from the market. The graph shows the price received from the portfolio compared to the break-even price within a relevant range of potential

harvest time prices. By comparing the price received line with the break-even line you can decide what portfolio best protects your business from price changes and reduces the risk of not covering the cost objective defined on the input tab.

By going back to the portfolio tab and changing the percentages you can see the different effects of each strategy on managing risk. You can evaluate the strategies over a price range you expect to see at harvest. Some combinations will offer price floors at various price levels. Other combinations will allow more volatility. You can custom match your expectations with your needs and tolerance to risk.

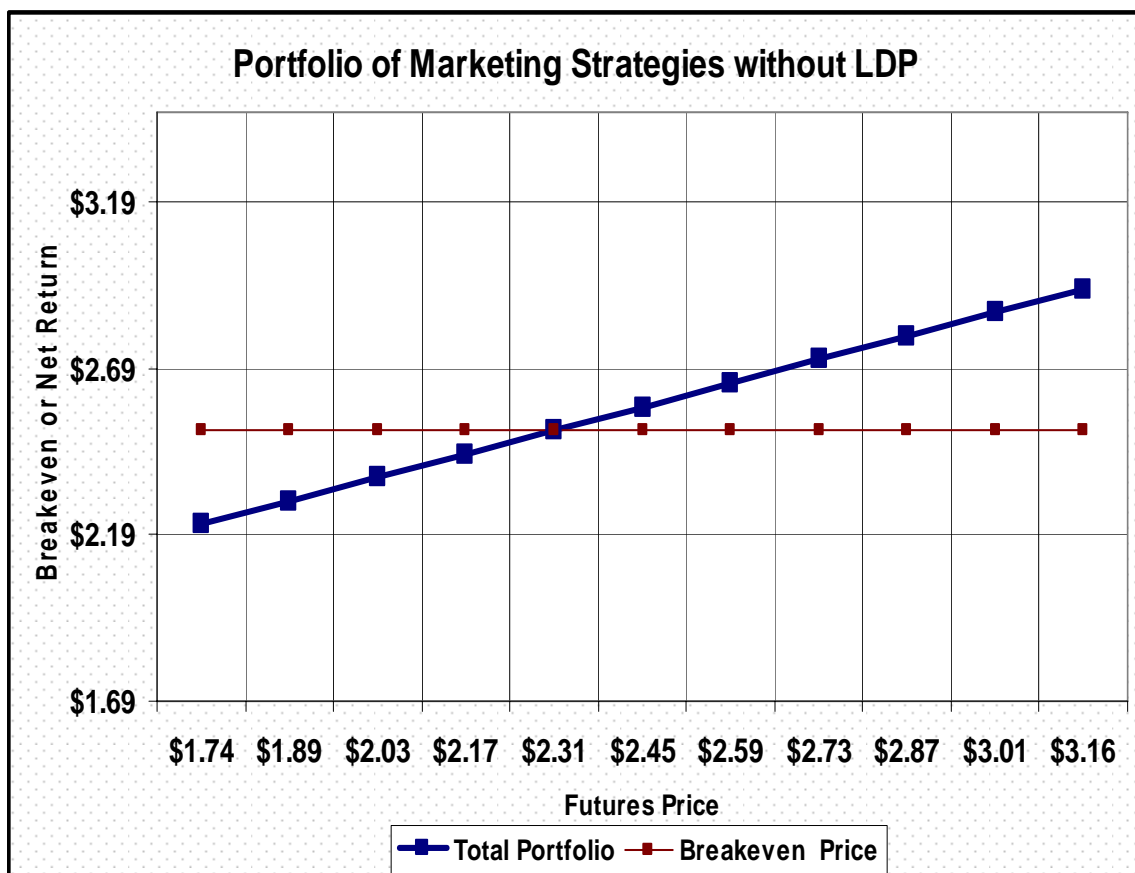


Figure 14. "Portfolio Tab without LDP"

## LDP Tab

The LDP tab shows a chart of possible futures prices and their corresponding predicted loan deficiency payments.

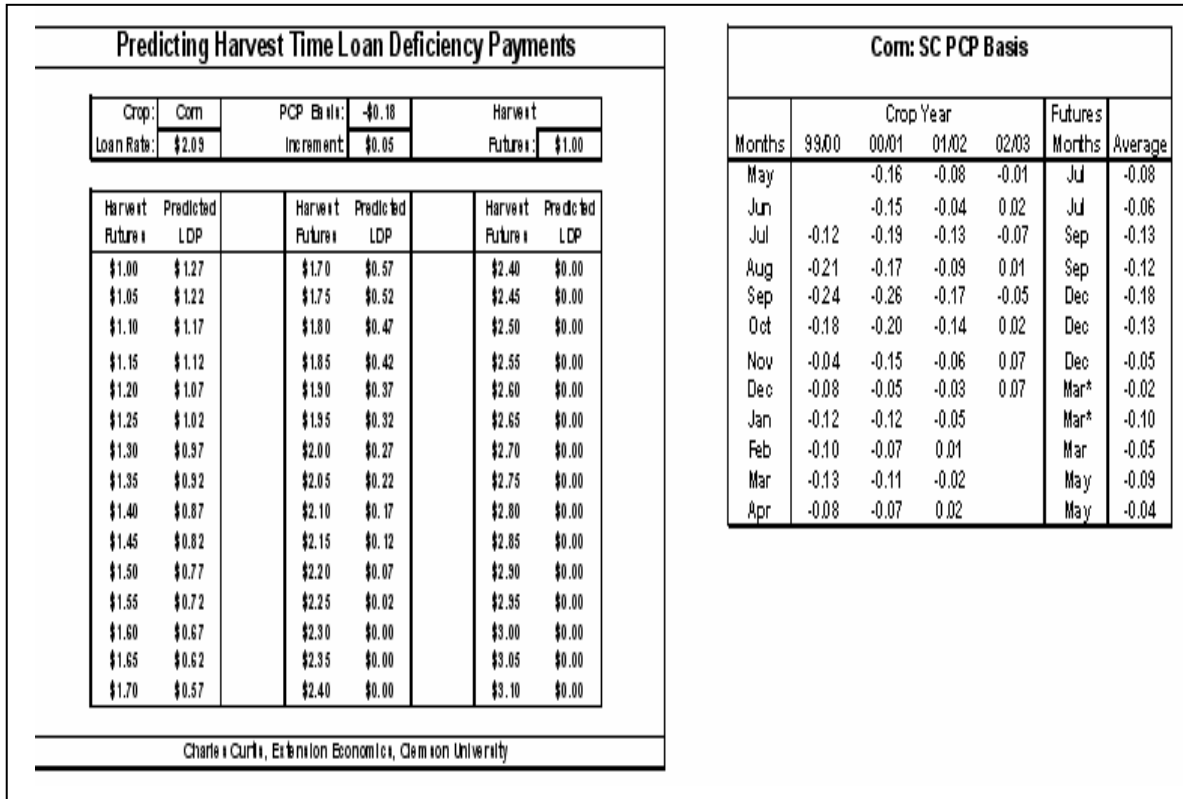


Figure 15. "LDP Tab"

For example, if the loan rate was \$2.09 and the PCP Basis was -\$0.18 then the Predicted LDP will be shown for each of the possible harvest time prices.

## **STRATS + LDP TAB**

Similar to the “Strats” tab, the “Strats + LDP” shows a table with columns indicating the possible relevant range that the market could likely cover (figure 16). However, this tab factors in the effects of government LDP’s on the marketing strategies. This information is calculated automatically from the data entered in the “Input Tab” and the “LDP Tab”, no additional information needs to be manually entered.

The inclusion of the LDP changes the revenue provided by each marketing strategy. The LDP essentially creates a price floor for the “cash sale at harvest” and the “basis contract” strategies (figure 16). The risk associated with these strategies is fundamentally reduced. The “cash forward contract” and the “futures hedge” are actually able to provide increased revenue above the “locked in” price when a price decrease occurs (figure 16). It actually becomes beneficial to producers using these two strategies for prices to decrease at harvest. The greater the price decrease, the more revenue increases. The final two strategies of “put option” and “call option” show benefits from price changes in either direction. As prices move down they are protected by their “price floor” and still receive the benefit of the LDP. Thus revenue increases as prices move lower. Also because of the nature of the options, gains from price increases are still available. There is the upfront cost of the option, but benefits are received from both price increases and decreases.

Com Marketing Strategy Analysis Results with LDP												
Pricing Strategy	Item	Futures Decline					Futures Stays the Same	Futures Increase				
Firm Name:	Southeastern Farms											
Analysis Date:	01-Jul-05											
Sale Location:	Sunter											
<u>Futures Price</u>	Dec-05	\$1.74	\$1.89	\$2.06	\$2.17	\$2.31	\$2.45	\$2.59	\$2.73	\$2.87	\$3.01	\$3.16
Prob Futures <= Price		0.73%	3.14%	9.11%	19.64%	34.00%	50.00%	65.15%	77.65%	86.80%	92.80%	96.37%
Harvest Basis		\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16
<u>NO PRICING ON:</u>	01-Jul-05											
Cash Sale at Harvest	\$/Bu	\$2.43	\$2.43	\$2.43	\$2.43	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.17	\$3.32
Basis Contract	\$/Bu	\$2.37	\$2.37	\$2.37	\$2.37	\$2.41	\$2.55	\$2.69	\$2.83	\$2.97	\$3.11	\$3.26
<u>PRICE FIXED ON:</u>	01-Jul-05											
Futures Hedge	\$/Bu	\$3.12	\$2.98	\$2.84	\$2.70	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60
Net Futures Profit	\$/Bu	\$0.69	\$0.55	\$0.41	\$0.27	\$0.13	-\$0.02	-\$0.16	-\$0.30	-\$0.44	-\$0.58	-\$0.72
Margin Account Balance	\$/Contract	\$3,454	\$2,748	\$2,042	\$1,336	\$631	-\$75	-\$781	-\$1,486	-\$2,192	-\$2,898	-\$3,604
Forward Contract (CFC)	\$/Bu	\$3.08	\$2.93	\$2.79	\$2.65	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55
<u>PRICE FLOOR SET ON:</u>	01-Jul-05											
Put Option	Strike Price	\$2.30										
Buy Put Option	\$/Bu	\$2.85	\$2.70	\$2.56	\$2.42	\$2.33	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.18
Net Put Profit	\$/Bu	\$0.42	\$0.27	\$0.13	-\$0.01	-\$0.14	-\$0.14	-\$0.14	-\$0.14	-\$0.14	-\$0.14	-\$0.14
Call Option	Strike Price	\$2.50										
Buy Call Option with CFC	\$/Bu	\$2.88	\$2.73	\$2.59	\$2.45	\$2.35	\$2.35	\$2.44	\$2.58	\$2.72	\$2.86	\$3.01
Net Call Profit	\$/Bu	-\$0.20	-\$0.20	-\$0.20	-\$0.20	-\$0.20	-\$0.20	-\$0.11	\$0.03	\$0.17	\$0.31	\$0.46
<u>BREAKEVEN ANALYSIS:</u>	Yield 100											
Breakeven Price	\$/Bu	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51
<u>LOAN DEFICIENCY PMT:</u>												
Loan Rate	\$/Bu	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09
PCP	\$/Bu	\$1.56	\$1.71	\$1.85	\$1.99	\$2.13	\$2.27	\$2.41	\$2.55	\$2.69	\$2.83	\$2.98
LDP	\$/Bu	\$0.53	\$0.38	\$0.24	\$0.10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Figure 16. "Strats+LDP Tab"

## S + LDP GRAPH

Figure 17 shows a graphical representation of how each strategy responds to varying price levels when LDP's are included with the marketing strategies. Each strategy has advantages at certain price levels. While no one strategy appears best at all prices this does visually represent the reaction to prices changes of each strategy when combined with government LDP programs.

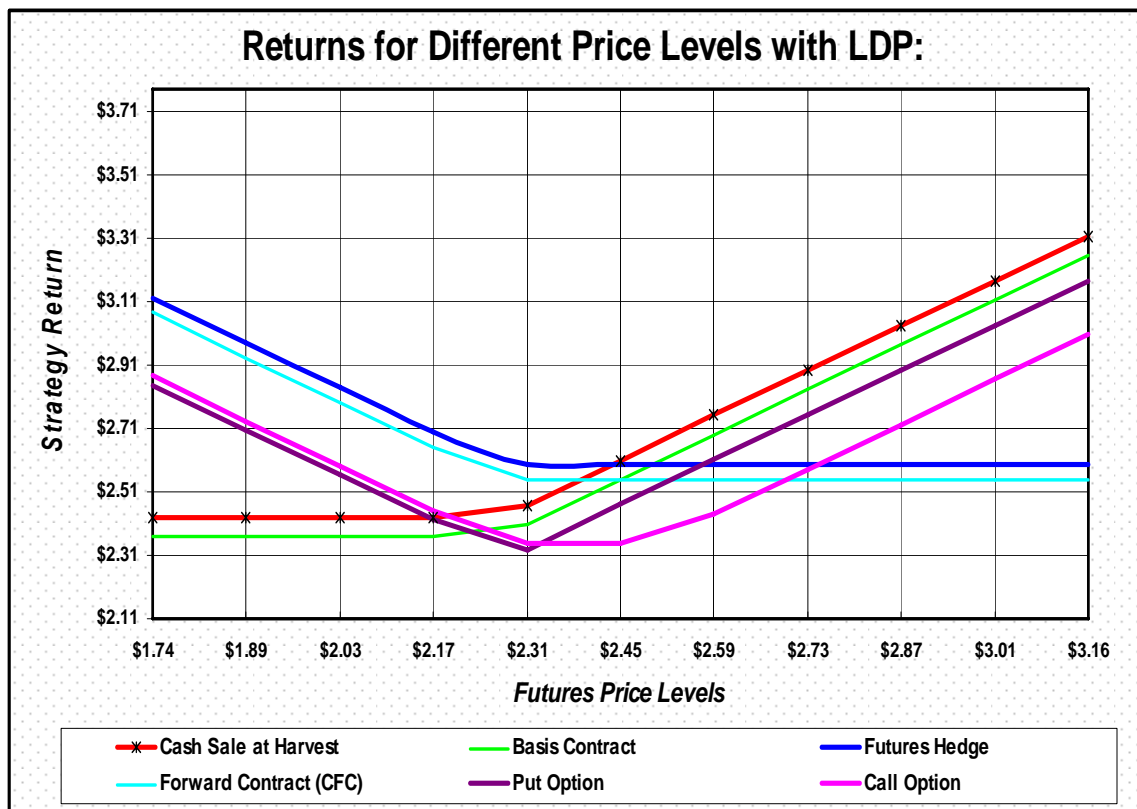


Figure 17. "Returns for Different Price Levels with LDP"

## PORTFOLIO W LDP

The “portfolio w LDP” tab allows the user to evaluate a combination of alternative marking strategies in conjunction with loan deficiency payments (figure 18). The portfolio can represent any mix of strategies that would likely be used. Since each marketing strategy works best in certain situations, it is likely that multiple strategies would be used in a given year. Any combination of strategies can be used but the sum of the percentages must equal 100%.

Portfolio With LDP													
Pricing Strategy		Portfolio Percent Used	Futures Decline					Futures Stays the Same	Futures Increase				
Futures Price			\$1.74	\$1.89	\$2.08	\$2.17	\$2.31	\$2.45	\$2.59	\$2.73	\$2.87	\$3.01	\$3.16
Cash Sale at Harvest	50%	\$1.22	\$1.22	\$1.22	\$1.22	\$1.23	\$1.31	\$1.38	\$1.45	\$1.52	\$1.59	\$1.66	
Basis Contract	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Futures Hedge	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Forward Contract (CFC)	50%	\$1.54	\$1.47	\$1.40	\$1.33	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	\$1.28	
Buy Put Option	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Buy Call Option with CFC	0%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total Portfolio With LDP		Mix Value	\$2.75	\$2.68	\$2.61	\$2.54	\$2.51	\$2.58	\$2.65	\$2.72	\$2.79	\$2.86	\$2.93
Breakeven Price		100	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51
LDP			\$0.58	\$0.38	\$0.24	\$0.10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Pricing Strategy	From Strats Item	Futures Decline					Futures Stays the Same	Futures Increase				
Futures Price	Dec-05	\$1.74	\$1.89	\$2.08	\$2.17	\$2.31	\$2.45	\$2.59	\$2.73	\$2.87	\$3.01	\$3.16
Cash Sale at Harvest	\$/Bu	\$2.48	\$2.43	\$2.48	\$2.43	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.17	\$3.32
Basis Contract	\$/Bu	\$2.37	\$2.37	\$2.37	\$2.37	\$2.41	\$2.55	\$2.69	\$2.83	\$2.97	\$3.11	\$3.26
Futures Hedge	\$/Bu	\$3.12	\$2.98	\$2.84	\$2.70	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60
Forward Contract (CFC)	\$/Bu	\$3.08	\$2.93	\$2.79	\$2.65	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55	\$2.55
Buy Put Option	\$2.30	\$2.85	\$2.70	\$2.56	\$2.42	\$2.33	\$2.47	\$2.61	\$2.75	\$2.89	\$3.03	\$3.18
Buy Call Option with CFC	\$2.50	\$2.88	\$2.73	\$2.59	\$2.45	\$2.35	\$2.35	\$2.44	\$2.58	\$2.72	\$2.86	\$3.01
Breakeven Price		100	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51	\$2.51

Max =	\$3.32
Max + .15 =	\$3.47
Min =	\$2.33
Min - .15 =	\$2.18

Figure 18. “Portfolio with LDP”

## PORT W LDP GRAPH

The “LDP graph” tab gives a graphical representation of how the strategy mix performs across an array of prices (figure 19). The presence of the LDP should give greater support to the left side of the graph which represents lower prices. It may be possible to find a strategy mix that has a bowl shaped graph. The bowl shaped graph should allow the producer to benefit from both price increases and price decreases.



Figure 19. “Portfolio of Marketing Strategies with LDP graph”

## **CONCLUSION**

Today's producers have a wide range of marketing options available to them. Unfortunately there is no one best strategy that works for all situations. The spreadsheet helps show the effects each strategy, or mix of strategies will have given different price ranges. If the market strategy analyzer is used properly it should help to producer to reduce the risk associated with price decreases that occurred between planting and harvesting. The market strategy analyzer will not help you make unusually large profits. Each strategy comes with some extra cost. However, it will allow the producer to eliminate some market risk by showing the potential consequences of the available marketing strategies.

## REFERENCES:

Piggott, Nicholas E., George A. Shumaker, and Charles E. Curtis Jr.  
A Guide to Price-Risk Management in Grain Marketing  
(North Carolina Cooperative Extension, North Carolina State University, 2005)

Purcell, Wayne D., and Stephen R. Koontz. Agricultural Futures and Options.  
(New Jersey: Prentice Hall, 1999)

Clemson University Extension Service, October 28, 2005  
[Http://Cherokee.agecon.clemson.edu](http://Cherokee.agecon.clemson.edu)

North Carolina State University Extension Service, October 28, 2005  
<http://www.ag-econ.ncsu.edu/faculty/piggott/handbook.htm>

The Chicago Board of Trade, October 28, 2005  
[www.cbot.com](http://www.cbot.com)

The New York Board of Trade, October 28, 2005  
[www.nybot.com](http://www.nybot.com)

The Chicago Mercantile Exchange, October 28, 2005  
[www.cme.com](http://www.cme.com)

DTN News Service, October 28, 2005  
[www.dtn.com](http://www.dtn.com)

Farm Bureau Agency, October 28, 2005  
<http://www.fbcountry.com>

The United States Department of Agriculture Farm Services Agency, October 28, 2005  
<http://www.fsa.usda.gov/pas/default.asp>