

# **Price, Yield and Enterprise Revenue Risk Management Analysis Using Combo Insurance Plans, Futures and/or Options Markets**

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## **Introduction:**

This user's manual provides a brief overview of software that analyzes possible combinations of risk management strategies to protect price, yield or enterprise revenue with the new Combo Insurance Policy Plans, the Futures and/or the Options markets.

The first portion of this manual is a tutorial using screen captures from the software with a "text book" hedge example, i. e. after the fact, everything works out exactly as you (and the markets) expected at the time the insurance policy and/or Futures/Options were purchased.

This software allows comparison of multiple levels of yield, price and revenue protection offered by futures and options contracts in combination with the new Combo Policy Plans offered by RMA. The second portion of this manual provides examples of specific risk management strategies and how the available tools can be combined to implement effective strategies for "typical" situations to the worst case scenario.

The Combo Policy consolidated several previous insurance policies into one policy. The Combo Policy uses the Futures and Options markets when establishing the RMA Projected Harvest Price and Harvest Price. Familiarity with all three of these risk protection tools will help evaluate possible risk protection strategies offered by any combination of these alternatives. For comparative analysis, this software includes adjustments for the differences in the way futures, options and Combo Policy "plans" are implemented and the transactions cost incurred for each product so the bottom line provides an accurate comparison.

To complete this analysis, use the tabs across the top of the screen, Figure 1, going from left to right, and enter requested information on each tab in the software. You are asked to enter the initial values for all the variables used in this software on the General Inputs tab. After entering these values, they also appear, and can be changed, on some of the other tabs. Once a value is entered for any variable, it does not have to be reentered in other locations within the software, if that value does not change. Changing a value that appears on any of the tabs changes that value everywhere it appears. This allows you to change numbers in "What If" analysis on the Summary Results tab to see how yield/price/revenue protection levels vary by alternative and how different factors affect yield/price/revenue protection strategies.

Each individual page (tab) may have several data entry steps. Enter all necessary information for the comparison you wish to make. The Summary Results tab allows changing key values

previously entered to see how a value change impacts the relative yield/price/revenue protection levels for futures, options and Combo Policy Plans or for various combinations of these alternatives.

The Cost of Production tab allows estimations for the cost of production for up to two different crop enterprises. The cost of production per bushel calculation can be then entered on the General Inputs tab. The software uses this to estimate net returns per acre under different strategies. Using the cost of production estimation part of the software is optional. You can enter your own estimated cost of production if available, or leave it blank.

### **Getting Started:**

This software runs inside the Internet Explorer web browser. Other possible browsers may also run this software, but they have not been tested with this software. The software will run from the web, <http://www.montana.edu/softwaredownloads/financialmgtdownloads.html> where it is located, or it can be downloaded to your computer and run for your local computer, without being connected to the web. Follow the instructions at the link above to download and run this software.

Figure 1 is a screen capture of the Introduction page (tab) of this software. This tab includes text with a brief explanation of the software and the types of “components” you can interact with while using this software.

These components include Scrolling text windows, Toggle Buttons, URL Link Buttons, Check Boxes, and data input cells highlighted with a blue background. Text windows that scroll use the typical scroll bar to move up or down to view text. Toggle Buttons are activated by clicking on the button with your mouse pointer, or moving your mouse pointer over the top of the button without clicking, a mouse over. A Toggle Button works as an On/Off button. The first click, or mouse over will, display a message or other information and the second click, or moving the mouse pointer off the button, will hide the information displayed. A Toggle Button may or may not be labeled as a mouse over activation, depending on the screen space that was available in the software to insert the button. Some Buttons look similar to Toggle buttons but activate a link to resources located on the web that may be useful while operating this software. These buttons are clearly labeled as Get....From the Web, or something similar. When you click on one of these buttons, a new browser window is opened and the link takes you to resources located on the web. In order for these web linked buttons to work, your computer must be connected to the web via cable modem, high speed wireless connection, LAN, or if you have dial up internet service, that service must be connected.

Cells highlighted with a blue background can be changed in two ways. Move the mouse pointer over the top of a cell with a blue background, then click and hold the left mouse button and drag the mouse pointer up to increase the cell value, or down to decrease the cell value. Each data input cell has built in limits for high and low values and the size in which the cell value is incremented. Some cells can have both negative and positive values. ***If you computer is an***

***older model with a slow processor speed, it may be relatively slow to change the values while dragging the mouse pointer up or down. You can also double click on a cell with a blue background and type in a new number, but you must delete the existing number first.***

Check Boxes are also used to control what is being displayed on the screen. Check boxes are used in several locations to select the type of information displayed, or the calculations being performed. Check boxes are always used to toggle (display/hide) information as needed throughout the software. The information displayed or hidden can be help messages, required input data or calculated results.

### **Familiarize Yourself With This Software:**

This software is intended to compare and contrast different marketing and risk protection strategies for farmers. Available strategies include downside risk protection for yields, prices and total revenue for a given crop. Downside protection can be provided by using the futures and/or options markets to protect price, using price and/or yield protection alternatives available with the new “Combo” policy insurance product for an insurable crop, or using some combination of all of these alternatives to protect price, yield and total crop revenue.

The software, as distributed, shows an example of a text book world, i.e., everything works out exactly as planned. In this example, expected production equals actual production and the Hedge in the futures market works out exactly as anticipated when the hedge is implemented. This example allows you to follow the numbers through the various alternatives and see before and after results. Using this example helps understand how the software works and simplifies the inherent complexity of comparing Combo Policy Plans side-by-side with Futures and Options in a comprehensive risk protection strategy. Real world scenarios are also provided.

There are three distinct periods of time covered by the analysis in this software. In order to get accurate comparisons of the alternative strategies, the user must enter information relevant for a possible alternative risk protection strategies available at the time that strategy is implemented.

The first time period is just before the sales closing date for a particular crop. At this time, the RMA Projected Harvest Price for the Combo Insurance Plans is known. Once the published RMA Projected Harvest Price is entered it should not be changed unless an analysis of a different crop or location, causes the RMA Projected Harvest Price to change.

The second time period covers several months after the sales closing date for the crop being analyzed. Futures and Options market prices can vary a great deal during this time period. This variation can provide opportunities for implementation of risk management strategies utilizing Futures or Options contracts in addition to the purchased Combo Policy Plan. Remember that the Revenue Protection Plan (RP) offered with the Combo Policy also allows participation in upward trending prices up to 200% of the Projected Harvest Price available prior to the sales

closing date. The second time period allows the flexibility to implement strategies for multiple layers of risk management protection, if the markets provide this opportunity.

The third time period is around harvest time. Typically the ending date for insurance coverage and the dates that futures contracts must be offset or options contracts are either exercised or expire worthless will differ by as much as a month, and possibly longer. In addition to the variation in the time periods for the Combo Policy, Futures and Options alternatives, producers can add another time period as they do not always sell the crop at harvest time, however, *this software assumes the crop is sold at harvest time.*

If you are using this software prior to knowing price levels set by the RMA Combo Policy or alternative price levels offered by the Futures and Options markets, we strongly recommend the you set all prices at the same level. After a risk management strategy is implemented and the production process and insurance period is over, it is highly unlikely that all price levels will be as predicted, before the fact. We caution you to make sure the set of variables entered have a relatively high probability of being achieved or the results will not be accurate.

Figure 1. Screen capture of the Introduction Tab for Combo Policy, Futures and Options Risk Protection Analysis Software while running inside Internet Explorer (IE) version 8.

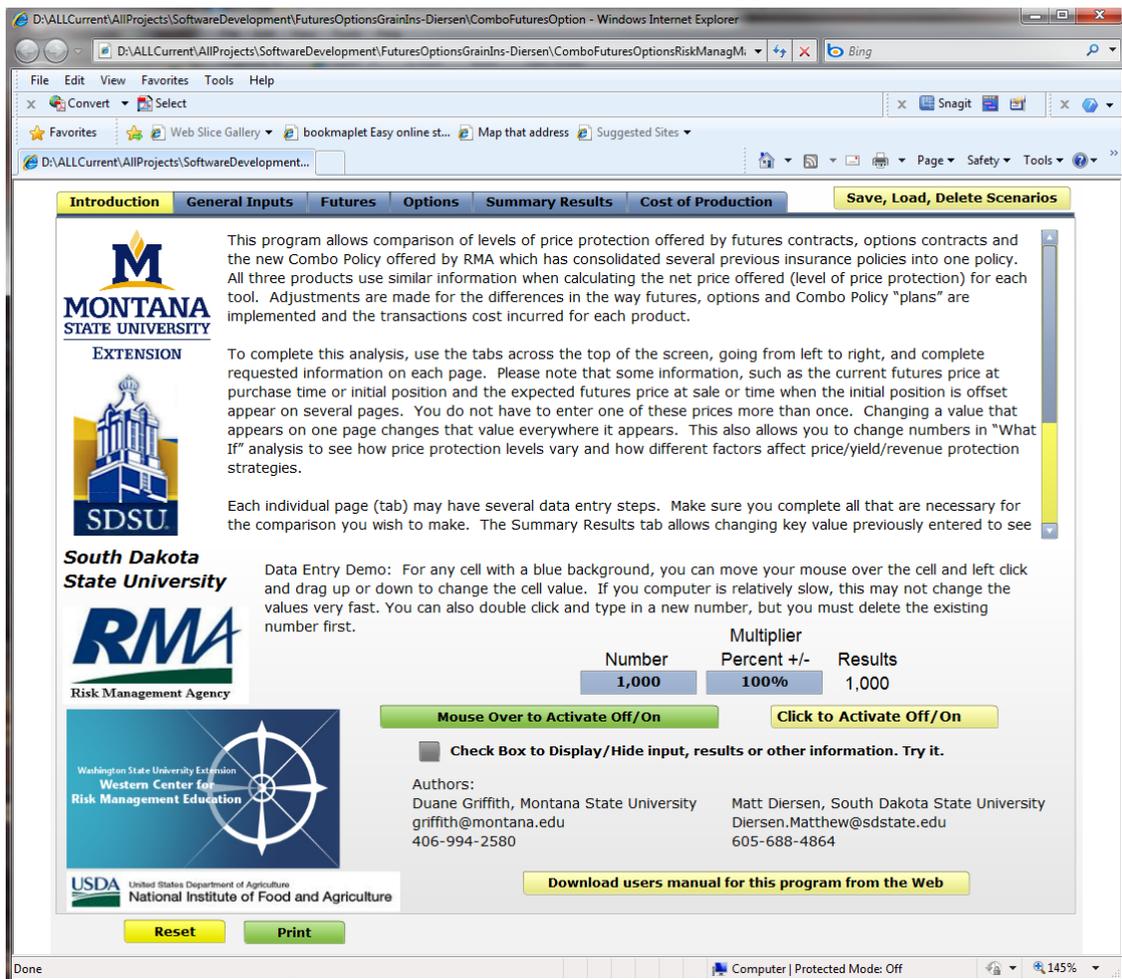


Figure 2. Screen capture of the *Introduction* tab of the software, without the browser.

**Introduction**    General Inputs    Futures    Options    Summary Results    Cost of Production    Save, Load, Delete Scenarios

**MONTANA STATE UNIVERSITY**  
EXTENSION  
**SDSU**

This program allows comparison of levels of price protection offered by futures contracts, options contracts and the new Combo Policy offered by RMA which has consolidated several previous insurance policies into one policy. All three products use similar information when calculating the net price offered (level of price protection) for each tool. Adjustments are made for the differences in the way futures, options and Combo Policy "plans" are implemented and the transactions cost incurred for each product.

To complete this analysis, use the tabs across the top of the screen, going from left to right, and complete requested information on each page. Please note that some information, such as the current futures price at purchase time or initial position and the expected futures price at sale or time when the initial position is offset appear on several pages. You do not have to enter one of these prices more than once. Changing a value that appears on one page changes that value everywhere it appears. This also allows you to change numbers in "What If" analysis to see how price protection levels vary and how different factors affect price/yield/revenue protection strategies.

Each individual page (tab) may have several data entry steps. Make sure you complete all that are necessary for the comparison you wish to make. The Summary Results tab allows changing key value previously entered to see

**South Dakota State University**

**RMA**  
Risk Management Agency

Washington State University Extension  
Western Center for Risk Management Education

USDA United States Department of Agriculture  
National Institute of Food and Agriculture

Data Entry Demo: For any cell with a blue background, you can move your mouse over the cell and left click and drag up or down to change the cell value. If your computer is relatively slow, this may not change the values very fast. You can also double click and type in a new number, but you must delete the existing number first.

Number	Multiplier Percent +/-	Results
1,000	100%	1,000

Mouse Over to Activate Off/On    Click to Activate Off/On

Check Box to Display/Hide input, results or other information. Try it.

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Download users manual for this program from the Web

Reset    Print

This software requires a browser to run. The screen capture in Figures 2 is shown without the browser just to maximize the image size in this document. All of the remaining figures are also shown without a browser to maximize the image size.

Figure 3. Screen capture of the *General Inputs* tab in the software.

Introduction	General Inputs	Futures	Options	Summary Results	Cost of Production	Save, Load, Delete Scenarios
<b>Insurance related information at the time of purchase.</b>						
RMA Projected Harvest Price @ Time of Purchase					\$7.15	
Upper Limit-200% of Projected Harvest Price					\$14.30	
APH Yield					40.0	
Acres Insured/Price/Revenue Protected					1,000	
<b>Combo Plans Available</b>						
Revenue Protection (RP)	Yield Election	Price Election	Premium	Bushels Protected by Ins.	No. Contracts To Equal Ins. Coverage	
RP With Harvest Price Excl.	70%	100%	\$11.60	28,000	5.60	
Yield Protection	70%	100%	\$9.80	28,000	5.60	
	70%	100%	\$7.50	28,000	5.60	
<b>Insurance related information at the Harvest/Sale/Offset</b>				<b>Visit RMA Cost Calculator Web Site for Estimated Premiums</b>		
RMA Avg. Futures Price at Harvest-RMA (Harvest Price)					\$15.00	
Actual Yield at Harvest					2.0	
<b>Futures and Options pricing information when price protection implemented.</b>						
Spot Harvest Time Futures-Preproduction-NOT RMA Avg.					\$8.40	
Expected Basis at Harvest/Sale/Offset (cash-futures)					(\$0.70)	Help Off/On
Put Strike Price Selected					\$6.50	
Put Premium Paid					\$0.27	
Call Strike Price Selected					\$10.00	
Call Premium Paid					\$0.15	
Marketing Costs-- Brokerage, Interest & Other Misc. Expense					\$0.02	
Acres Insured/Price/Revenue Protected					1,000	
Total Expected Production, Using APH Yield					40,000	
Number of contracts to cover expected production					8.00	
Number of Futures/Options Contracts Purchased					8	
<b>Futures and Options pricing information at Harvest/Sale/Offset</b>						
Actual Cash Price Received at Harvest/Sale Time					\$14.30	
Spot Futures Price at Harvest/Sale/Offset (not RMA Harvest Price)					\$15.00	
Actual Basis at Harvest					(\$0.70)	
Cost of Production Per Bushel					\$4.50	
<input type="button" value="Reset"/> <input type="button" value="Print"/>						

The General Inputs tab, Figure 3, in this software contains the information needed to start an analysis. This information is broken into two groups. The first group is related to the Combo Insurance Policy. This information is collected for the three time periods described earlier. The first is sometime just prior to the sales closing date for a given commodity when the RMA Projected Harvest Price is known for that commodity. The APH Yield and the Acres Insured will also be known. The user can select a Yield Election percentage for each Combo Plan. The price election percentage for the Yield Protection plan can also be specified. A premium for each type of Combo Insurance Plan must also be specified. Premiums can be estimated for any crop and location using the RMA "Cost Estimator". This calculator is located at:

<http://ewebapp.rma.usda.gov/apps/costestimator/>

To evaluate Futures and Options contracts on their own or in conjunction with a particular Combo Policy Plan, you can enter the Strike Prices and Premiums for Puts and Calls. While Combo Policy plans must be purchased prior to specific sales closing dates, which vary by crop and location, initiating an additional level of price protection with Futures or Options can happen up to several months after a Combo Insurance Policy is purchased. This time period is the second time period. At the time a second level of price/revenue protection is put in place,

futures/options prices may differ substantially from the RMA Projected Harvest price, which is also based on the Futures/Options markets at the time it is specified.

Only at harvest time, the third time period, will the final results of a particular risk management strategy become clear. Insurance coverage for a Combo Policy Plan ends and any position(s) in the futures market are offset. Indemnity payments for Combo plan alternatives are determined by the relationship between the RMA Projected Harvest Price and the RMA Harvest Price. Indemnity payments may vary by the specific Combo Policy Plan selected. This software allows you to explore the values of variables where Combo Policy Plans provide the same payment and factors that cause indemnity payments between plans to diverge.

In addition to any indemnity payments received from RMA, if a second tier of price/revenue protection was implemented using Futures and/or Options contracts, additional profits, or losses, may have been incurred. This software allows analysis of possible combinations of Combo Plans with Futures and/or Options contracts to provide a comprehensive analysis of risk management strategies.

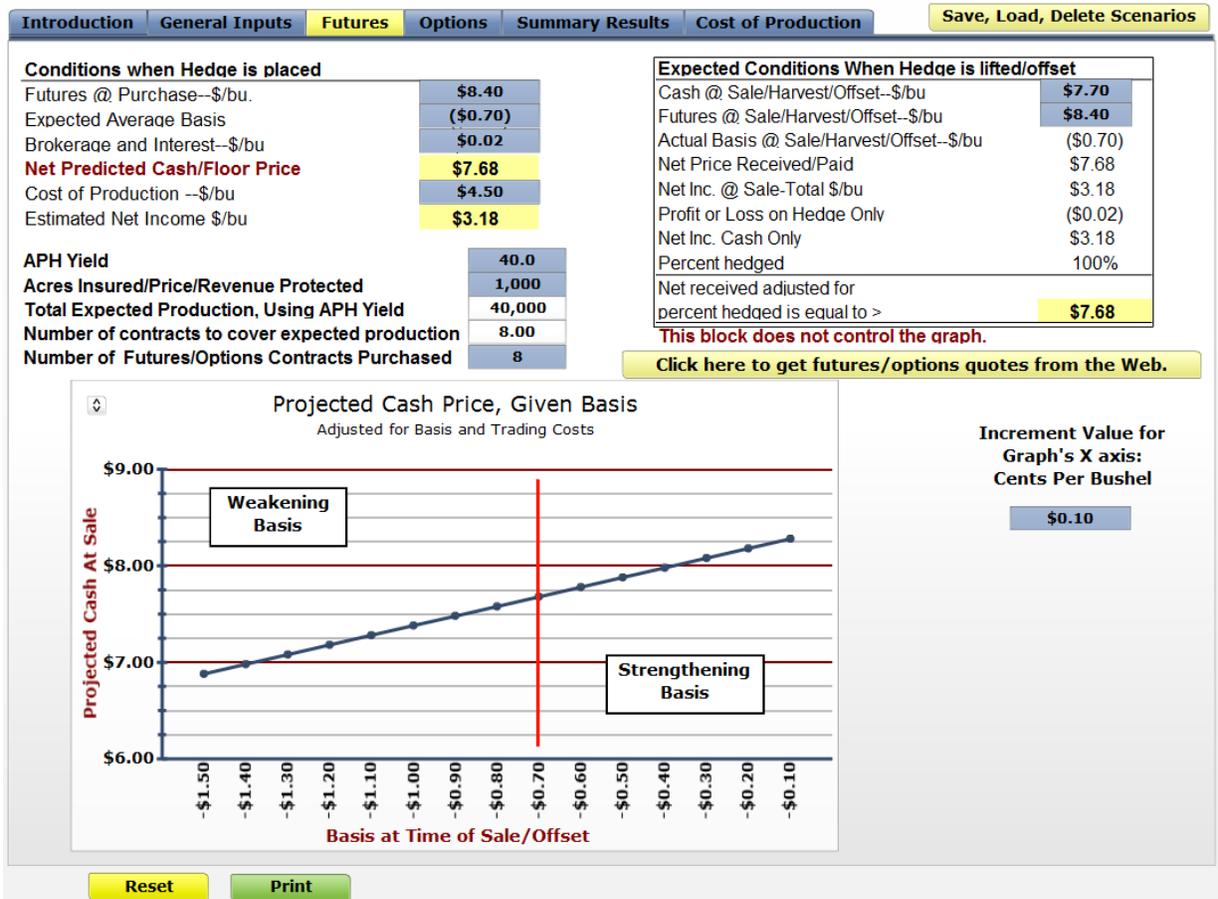
### **The Futures Tab:**

As previously indicated, this software is distributed with an example of a perfect Hedge. Data entered on the General Inputs tab is repeated on the Futures tab as well as other tabs in the software, Figure 4. The graph shows estimates of Projected Cash Price at sale time over a range of possible basis values at sale time. The graph is dynamic. As values are changed on the left edge of the display, the graph also changes. This page of the software calculates before and after results using values set by the user. On this page, in the upper right corner, the “after” results are calculated. Since the initial example is a perfect hedge, the predicted net price when the hedge was placed, \$7.68 is also the net price received after the hedge is lifted. The Futures price at purchase equals the Futures price at sale/offset and the cash price at sale results in a basis which equals the expected basis at purchase. In this example, if the hedge was not placed, the producer would have received the \$7.70 cash price at sale time. However, with the hedge, the net price at sale is \$7.68, adjusting for the \$.02 per bushel hedge transaction cost. In this example, expected production also allows purchasing an even number of contracts for 100% price protection coverage on the expected production. In short, everything works out as planned, a very rare occasion.

Since this is rare, the user can change any numbers with a blue background to get a feel for how the futures markets work. Changing a number in any location it is displayed, changes that number in every location in the software. For example, the initial value of “Spot Harvest Time Futures-Preproduction-NOT RMA Avg.” on the General Inputs tab is \$8.40. This is also the value shown on the Futures tab labeled “Futures @ Purchase--\$/bu.” If you change this value on the futures tab, it is also changed on the General Inputs tab. The futures price at harvest turned out to be \$8.405 and the cash price at harvest was \$7.70 which means the actual basis at harvest equaled the expected basis, -\$0.70. As expected, production also conveniently matches

an even number of contracts so the expected production is not over or under hedged in this example.

Figure 4. Screen capture of the **Futures** tab in the software.



Both the Futures and Options tabs in this software can be used independently from the rest of the program. The input variables necessary to estimate the beginning position and the ending variables at the time the hedge is offset are all on this page. The outcome of taking a position in the Futures markets and offsetting this position at the appropriate time, given the variables specified by the user, are shown on this page. While this tab can be used as a standalone tool, information on this tab is also carried forward to the Summary Results tab. On the Summary Results tab, the last three columns in the side-by-side comparison display the Futures and Options risk management alternatives. However, on this tab, the default position for the futures and options are Off, Figure 7. The row labeled Net Predicted Cash Floor (Ceiling) Price Per Bushel shows the Futures/Options expected net prices that would be in effect if a position was taken in the market. These net prices will always match the net prices on the Futures and Options tabs. The row labeled Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset does not show the same number for the ending result that is shown on the Futures and Options tab. On the Futures tab, this number is \$7.68. For Put Options tab, this number is \$7.41 and for the Call options this number is \$7.53. The reason these numbers are different on the Summary

Results tab is that these columns are *not active by default* on this tab while on the Futures and Options tabs, the ending result is displayed as if a “position” in the commodities markets had been established. When in the Off position, trading costs and profits or losses from the market transactions are ignored and the “Cash Price” at harvest is used. This creates a slightly different calculation for the beginning and ending net prices received for Futures, Puts and Calls on the Summary Results page than is shown on the Futures and Options tabs. *To make the results shown on the individual tabs match exactly, you must use the check boxes on the Summary Results page to activate those alternatives.* Once activated the ending net income figures will match those displayed on the Futures and Options tab, but only when the actual yield equals the expected yield. As trading costs and profits or losses from the futures and options are prorated over the actual yield to make the alternatives comparable, an actual yield that is different than the expected yield will also make the final results for the futures and options columns different than what is displayed on the Futures and Options tabs.

### **The Options Tab: Put Options**

The Options tab contains two sub tabs, one for Puts and the other for Calls. Calculations shown for Puts and Calls on the Options tab can also be used as a standalone application. All of the information necessary to estimate outcomes after taking a position in the Options markets is included on the Options tab. Results displayed estimate the outcome given the values of variables set by the user. Puts and Calls must be “turned on”, Figure 7, in order for information displayed on the Summary Results comparative analysis to match the results for Puts and Calls displayed on the Options tab.

Figure 5 is a screen capture of the display for the Puts sub tab. The Puts tab is the default display. Producers often shy away from Hedging in the Futures markets because that eliminates any upside price potential. Puts are Options contracts that allow producers to establish price floors for a given commodity that does not exclude upside potential in price movements. As with the Futures tab, users can change several parameters initially entered on the General Inputs tab. These include the Strike price and premium for a specific Put, the expected basis and the transactions costs (brokerage and interest) for trading in the Options markets. The graph on this page is also dynamic. When some of the variables are changed, the graph reflects the specific set of outcomes for each variable changed. Some variables do not affect the graph as they are specific to the conditions when the Put expires or is exercised. With the perfect hedge as our initial example, the Put expires worthless. The floor set by the Put was \$5.51 (Strike price of \$6.50 minus the premium, \$.27 and brokerage costs, \$.02 and expected basis, -\$ .70). The right hand column, “Conditions @ Option Exercise/Expire” shows the Profit or Loss from the Option to be a negative \$.29 (\$.27 premium plus \$.02 brokerage). The Futures price at the beginning and ending of the time period were identical, \$8.40. A \$7.70 cash price means the actual basis equaled the expected basis, -\$ .70. In short, a perfect world outcome for a Put option, which in reality would be very rare.

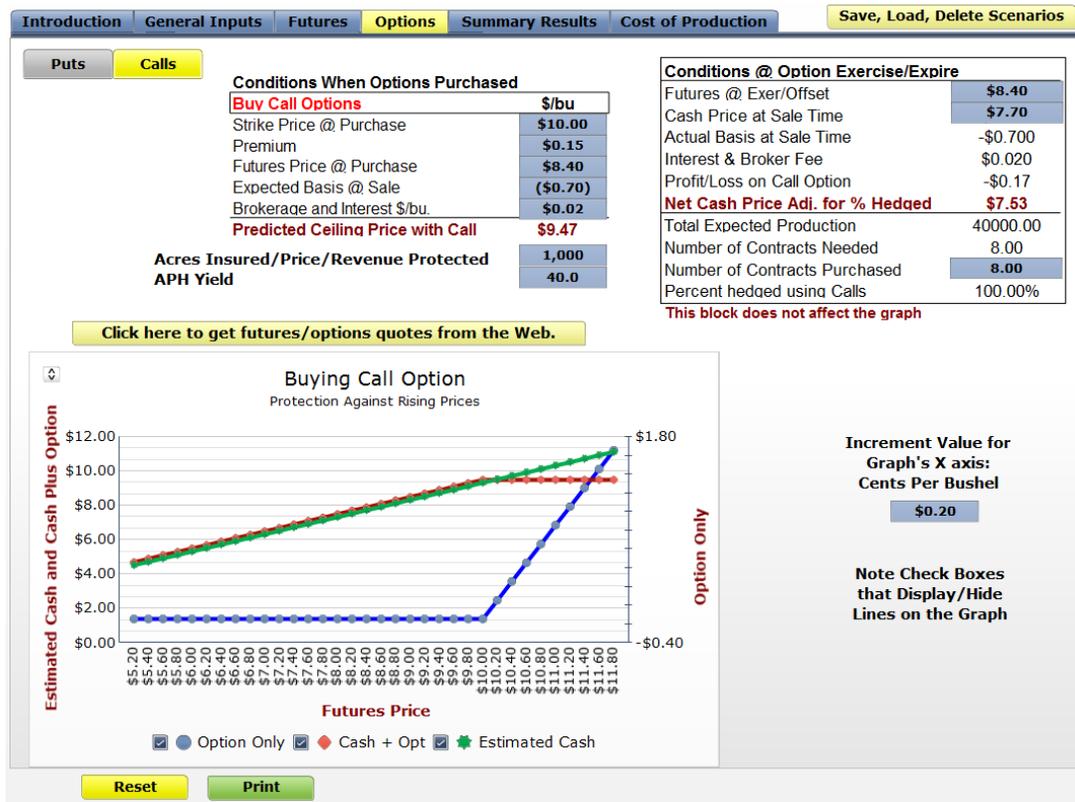
## The Options Tab: Call Options:

Figure 6 is a screen capture of the Call Options sub tab. Call options are used to establish price ceilings. Call options are typically used by producers that need to protect themselves against rising prices. An example would be a cattle feeder establishing a ceiling on both the feeder cattle they purchase and the corn they feed to these cattle. Grain producers can also use a Call option to protect themselves against sever losses in expected production that would result in rising market prices. This could be part of a strategy that forward contracts or otherwise pre-prices a portion of production and then uses a Call option to protect against yield losses. This is illustrated later in this publication when several risk management scenarios are demonstrated using this software. The graph on this page is also dynamic and will change as the user changes values for variables displayed on this tab. Profit/Loss on the Call option is  $-\$0.17$ .

Figure 5. Screen capture of the **Options** tab with the **Puts** sub tab display.



Figure 6. Screen capture of the **Options** tab with the **Calls** sub tab display.



### Summary Results:

The Summary Results tab brings all of the alternative risk management strategies together for a side-by-side comparison and also allows evaluation of potential combinations of these alternatives. There are several check boxes on this screen. These check boxes are used to toggle a particular display or make a column in the table active. Some of these check boxes are defaulted to the Off (not active) position. These check boxes are a medium gray color. Other check boxes are defaulted to the On (active) position, an orange color with a check mark inside the box. The default to the On position for the Combo plans means the row in the table labeled "Net Combo Indemnity Received Per Acre" displays a number other than zero and that number is included in the net income per acre calculations at the bottom of the table. This screen is initially displayed with the Futures and Options columns of the table hidden, Figure 7. You can unhide these columns by clicking on the check box in the upper right corner of the table, just to the right of the "Futures & Options" heading.

Figure 7. Screen capture of the **Summary Results** tab displaying the Base Case Scenario without Check Boxes selected and the Futures & Options calculations hidden (Check Box to the right of “Futures & Options” heading is checked).

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios	
Bushel Buy-Up Calc.		MouseOver for Help Off/On		Cash		Combo Policy		Futures & Options <input checked="" type="checkbox"/>		The columns of information about futures and Options can be displayed/hidden by clicking the Check Box to the right of the “Futures & Options” heading above.  These columns are initially hidden/covered.			
<input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection								
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b>		Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash	\$7.70	\$7.15	\$7.15	\$7.15							
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium			\$7.50	\$9.80	\$11.60								
Expected Basis -- Preproduction			(\$0.70)	NA	NA	NA							
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>			\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>							
Percent of Production Insured/Price Protected & Yield Insured				70%	70%	70%							
Price Election on Combo Insurance				100%	100%	100%							
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction			\$308.00	\$278.50	\$274.40	\$276.20							
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>													
Spot Futures Price for Futures & Options Markets at Sale				NA	NA	NA							
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset				\$8.40	\$8.40	\$8.40							
<b>Net Combo Indemnity Received Per Acre</b>				<b>(\$7.50)</b>	<b>(\$9.80)</b>	<b>(\$11.60)</b>							
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>													
Cash Price at Sale Time			\$7.70	\$7.70	\$7.70	\$7.70							
Actual Basis @ Harvest--Per Bushel				NA	NA	NA							
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.				NA	NA	NA							
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)		<b>Hedge</b>	\$0.00	\$0.00	\$0.00	\$0.00							
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)		<b>Puts</b>	\$0.00	\$0.00	\$0.00	\$0.00							
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Calls</b>	\$0.00	\$0.00	\$0.00	\$0.00							
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>			\$7.70	\$7.51	\$7.46	\$7.41							
Net Revenue Per Acre Based on Actual Bushels Harvested			\$308.00	\$300.50	\$298.20	\$296.40							
Cost of Production Per Bushel -- Based on APH Yield			\$4.50	\$4.50	\$4.50	\$4.50							
Expected Net Income Per Acre--Preproduction			\$128.00	\$98.50	\$94.40	\$96.20							
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>			<b>\$128.00</b>	<b>\$120.50</b>	<b>\$118.20</b>	<b>\$116.40</b>							

There are two check boxes in the upper left corner of Figure 7. These are used to display/hide a set of input data related to specific action or time period. These check boxes act as a toggle. When you click one of these boxes it turns a display on or off and the display stays on or off until you click on the check box again. *As some hidden displays use the same screen space, in some instances, one display must be turned off before turning on another display.*

Figure 8 shows all columns in the table displayed and variables related to the Combo Policy Plans displayed at the bottom of the screen. These variables were entered on the General Inputs tab and are repeated here. Changing a value here changes it throughout the entire software. Figure 9 shows the variable values related to the Futures and Options markets.



Figure 9. Screen capture of the **Summary Results** tab with the Check Box for the display of marketing tools variables selected and the Futures & Options calculations.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash		Combo Policy		Futures & Options								
		Cash Sale	(YP) Yield Protection	Revenue W/Harvest Price Excl.	(RP) Revenue Protection	Results are based on No. of Bu. in a Futures/Options contract								
						Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling						
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b>														
Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00						
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium			\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17						
Expected Basis -- Preproduction		(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)						
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>		\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>						
Percent of Production Insured/Price Protected & Yield Insured			70%	70%	70%	100.00%	100.00%	100.00%						
Price Election on Combo Insurance			100%	100%	100%									
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80						
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>														
Spot Futures Price for Futures & Options Markets at Sale			NA	NA	NA	\$8.40	\$8.40	\$8.40						
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset			\$8.40	\$8.40	\$8.40	NA	NA	NA						
<b>Net Combo Indemnity Received Per Acre</b>			<b>(\$7.50)</b>	<b>(\$9.80)</b>	<b>(\$11.60)</b>	NA	NA	NA						
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Cash Price at Sale Time		\$7.70	\$7.70	\$7.70	\$7.70	\$7.70	\$7.70	\$7.70						
Actual Basis @ Harvest--Per Bushel			NA	NA	NA	-\$0.70	-\$0.70	-\$0.70						
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.			NA	NA	NA	\$0.00	\$0.00	\$0.00						
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)		<b>Hedge</b>	\$0.00	\$0.00	\$0.00	\$0.00								
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)		<b>Puts</b>	\$0.00	\$0.00	\$0.00		\$0.00							
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Calls</b>	\$0.00	\$0.00	\$0.00			\$0.00						
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>		\$7.70	\$7.51	\$7.46	\$7.41	\$7.70	\$7.70	\$7.70						
Net Revenue Per Acre Based on Actual Bushels Harvested		\$308.00	\$300.50	\$298.20	\$296.40	\$308.00	\$308.00	\$308.00						
Cost of Production Per Bushel -- Based on APH Yield		\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50						
Expected Net Income Per Acre--Preproduction		\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80						
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		<b>\$128.00</b>	<b>\$120.50</b>	<b>\$118.20</b>	<b>\$116.40</b>	<b>\$128.00</b>	<b>\$128.00</b>	<b>\$128.00</b>						
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>						<b>Information at Harvest/Sale/Offset</b>								
Spot Harvest Time Futures--Preproduction--NOT RMA Avg.		\$8.40					<b>RMA Harvest Price @ Harvest/Sale/Offset</b>		\$8.40					
Expected Basis at Harvest/Sale/Offset		(\$0.70)					<b>Actual Cash Price Received at Harvest/Sale</b>		\$7.70					
Put Strike Price Selected		\$6.50					<b>Spot Futures Price at Harvest/Sale/Offset</b>		\$8.40					
Put Premium Paid		\$0.27					<b>Actual Basis at Harvest</b>		(\$0.70)					
Call Strike Price Selected		\$10.00					<b>Cost of Production Per Bushel</b>		\$4.50					
Call Premium Paid		\$0.15					<b>Actual Yield at Harvest</b>		40.0					
Number of Futures/Options Contracts		8												

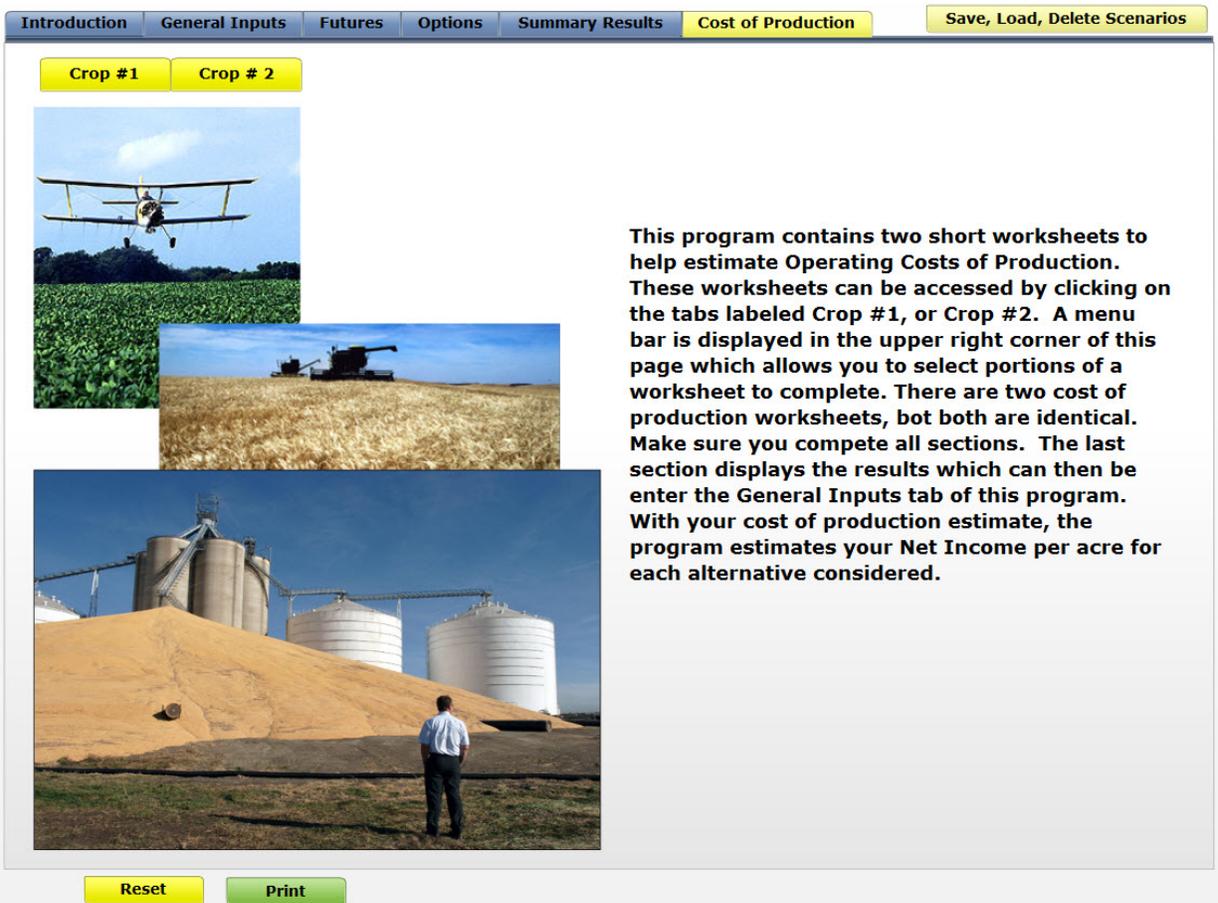
### Following the Numbers:

Note that in Figure 9, the Cash column and the columns for Futures, Puts and Calls all have a value of \$7.70 for "Net Cash Price Per Bushel Harvest Yield @ Harvest/Sale/Offset." Since the Futures, Puts and Calls are not active, check box is gray, no profit or loss is displayed in these columns for contracts traded, i.e. these three columns all display results as if all market factors fit the perfect hedge, but without actually establishing a position in the Futures/Options market, all alternatives displayed act as if it was a Cash market. This also means that if you unchecked the check boxes in the Combo plans, these columns would also display a \$7.70 price for the Net Cash Price... Try it. The reason the row labeled Net Cash Price... shows a different number on the Summary Results tab is the premiums paid for each Combo plan are prorated over the bushels harvested for every set of circumstances. All alternatives use bushels harvested so calculated results can be compared using a common denominator for all alternatives. As soon as you start changing the base case scenario values with *what if* analysis, the comparative values for these numbers per bushel and per acre illustrate the effectiveness of each risk management alternative considered.

## Cost of Production:

This software also allows the user to estimate **operating cost** of production for up to two crops. Figure 10 is a screen capture of the introductory screen for estimating costs of production. The Crop #1 and Crop #2 sub tabs, are identical in their content and procedures, except that two different sets of example data have been entered in the base case scenario. The two sub tabs entering relevant operating inputs and costs for two different crops. Operating costs of production are those incurred during a single production cycle for a particular crop. These costs are also referred to as variable costs as they vary with the level of production, even though they are typically fixed on a per unit basis. For example, a per unit cost is incurred for each additional acre produced, \$10.00 per bushel of seed, at one bushel per acre, or \$5.00 per acre of herbicide. On a per unit basis, these costs typically remain the same and each additional acre planted incurs the same per acre cost. Cost of Production estimates included in this software ignores fixed costs such as depreciation and land charges. These costs do not vary with the level of production, hence they are not relevant for decision making in the short run.

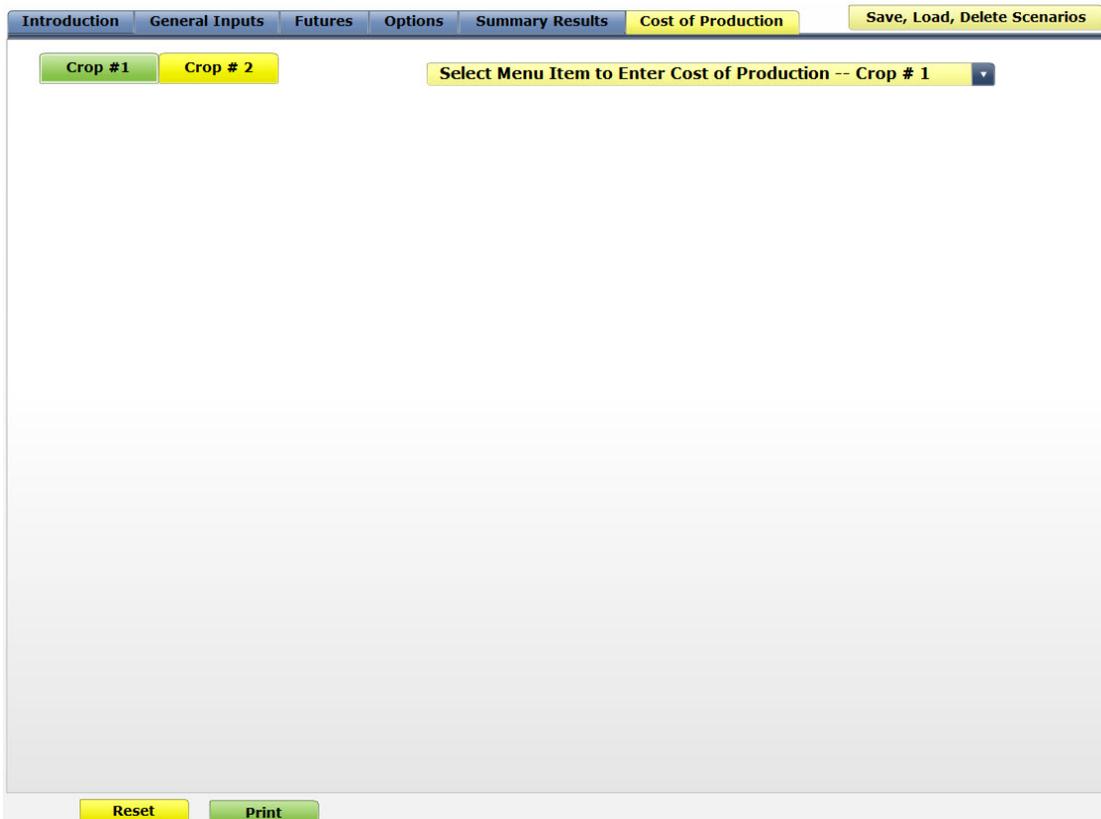
Figure 10. Screen capture of the **Cost of Production** screen tab.



Cost of production information is entered in this software in four parts. To start the process, click on the Crop #1 sub tab. The screen clears, Figure 11, and a menu is displayed in the upper right corner. Click anywhere on this drop down menu bar to display the menu items. There are six items total in the drop down menus for Crop #1 and Crop #2, but the first and last menu on each of these lists acts as a label for the menu and also clears the screen, as shown in Figure 11. Click on the second menu item, "Production and Revenue." Figure 12 is a screen capture of the information requested for the expected revenue for Crop #1. After completing these entries, click on the drop down menu again and choose each menu item in sequence. The third and fourth menu items allow entry of pre-harvest operating inputs. Figures 13 and 14 are screen captures when the third and fourth menu items are selected. The last screen, Figure 15, allows the user to enter harvest operating costs and estimates total operating costs per acre and the breakeven cost of production on a per bushel basis. After entering appropriate data in each of these screens, the user can then enter the estimated cost of production, Figure 15, on the General Input tab. The software uses this data to estimate Net returns per acre for the commodity and risk management strategy being analyzed.

This software does not require you estimate a cost of production. You can enter your own estimate or set the cell for the cost of production value to a zero.

Figure 11. Screen capture of the first screen in **Cost of Production** for the **Crop #1** sub tab.



Click on the menu bar for ... -- Crop #1 and select the second menu item "Production and Revenue." Figure 12 is displayed.

Figure 12. Screen capture of the *second* screen after selecting the *Production and Revenue* item off of the drop down menu in the upper right corner of *Cost of Production* for the *Crop #1* sub tab.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios	
Crop #1		Crop #2		Production and Revenue									
Crop Name		Winter Wheat											
Acres Planted		1000.0											
Expected Yield Per Acre		40.0											
Expected Price Per Unit		\$7.50											
Expected Crop Revenue		\$300.00											
Secondary Revenue Per Acre -This Crop		\$0.00											
Total Revenue Per Acre for this crop		\$300.00											
Average Annual Operating Loan Interest Rate		7.00%											
Reset		Print											

Figure 13. Screen capture of the *third* screen after selecting the *Preharvest Operating Costs – First Screen* item off of the drop down menu in the upper right corner of *Cost of Production* for the *Crop #1* sub tab.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios	
Crop #1		Crop # 2		Preharvest Operating Costs- First Screen									
Preharvest Costs		Units of Measure	Price Per Unit	Number of Units Used	Percent Tenants Share	Value Tenants Share	Value Landlords Share						
Seed		Bushel	\$10.75	1.000	100.0%	10,750	-						
Chemicals		Per Acre	\$24.50	1.000	100.0%	24,500	-						
Enter Description Here		Per Acre	\$0.00	1.000	100.0%	-	-						
Enter Description Here		Per Acre	\$0.00	1.000	100.0%	-	-						
Custom Chemical Application		Per Acre	\$0.00	1.000	100.0%	-	-						
Fertilizer		ton	\$0.00	1.000	100.0%	-	-						
11-52-0		ton	\$400.00	0.024	100.0%	9,600	-						
46-0-0		Lbs-Active	\$0.38	105.000	100.0%	39,900	-						
Custom Fertilizer Application		Per Acre	\$4.00	1.000	100.0%	4,000	-						
Insurance (Crop)		Per Acre	\$17.00	1.000	100.0%	17,000	-						
Hired Labor													
Wages		Hours	\$0.00	0.000	100.0%	-	-						
Social Security		Hours	\$0.00	0.000	100.0%	-	-						
Workman's Comp.		Hours	\$0.00	0.000	100.0%	-	-						
Unpaid Labor													
Owner/Landlord		Hours	\$0.00	1.000									
Operator/Tenant		Hours	\$10.00	0.400		4,000							
Tenant's Spouse		Hours	\$0.00	0.250		-							
Tenant's Children		Hours	\$0.00	1.000		-							

Reset

Print

Figure 14. Screen capture of the *fourth* screen after selecting the *Preharvest Operating Costs – Second Screen* item off of the drop down menu in the upper right corner of *Cost of Production* for the *Crop #1* sub tab.

Introduction   General Inputs   Futures   Options   Summary Results   **Cost of Production**   Save, Load, Delete Scenarios

Crop #1   Crop #2   Preharvest Operating Costs- Second Screen

	Units of Measure Area/Dry/Liquid	Price Per Unit	Number of Units Used	Percent Tenants Share	Value Tenants Share	Value Landlords Share
<b>Preharvest Costs</b>						
<b>Tractor/Powered Equip. Operating Cost</b>						
(Fuel and Oil)	Per Acre	\$3.87	1.000	100.0%	3,868	-
(Repairs)	Per Acre	\$1.21	1.000	100.0%	1,211	-
<b>Machinery Operating Costs</b>						
(Fuel and Oil)	Per Acre	\$2.71	1.000	100.0%	2,708	-
(Repairs)	Per Acre	\$3.63	1.000	100.0%	3,627	-
<b>Custom Machinery Work</b>	Per Acre	\$0.00	1.000	100.0%	-	-
<b>Other Misc.</b>	Per Acre	\$0.00	1.000	100.0%	-	-
<b>Interest On Preharvest Costs</b>	Dollars				4,101	-
Avg. Months Loan Outstanding		6.0				

Reset   Print

Figure 15. Screen capture of the *fifth* screen after selecting the **Harvest Operating Costs & Results** item off of the drop down menu in the upper right corner of **Cost of Production** for the **Crop #1** sub tab.

Introduction    General Inputs    Futures    Options    Summary Results <b>Cost of Production</b> Save, Load, Delete Scenarios						
Crop #1    Crop #2		<b>Harvest Operating Costs &amp; Results</b>				
	Units of Measure Area/Dry/Liquid	Price Per Unit	Number of Units Used	Percent Tenants Share	Value Tenants Share	Value Landlords Share
<b>Harvest Costs</b>						
<b>Combine Operating Costs Only</b>						
(Fuel and Oil)	Per Acre	\$2.52	1.000	100.0%	2,522	-
(Repairs)	Per Acre	\$3.29	1.000	100.0%	3,289	-
Custom Combine	Per Acre	\$0.00	0.000	100.0%	-	-
<b>Truck Operating Costs Only</b>						
(Fuel and Oil)	Per Acre	\$4.06	1.000	100.0%	4,060	-
(Repairs)	Per Acre	\$0.71	1.000	100.0%	706	-
Custom Haul	Units	\$0.00	0.000	100.0%	-	-
<b>Interest On Harvest Costs</b>						
Avg. Months Loan Outstanding	Dollars	1.0			61.70	-
<b>Total Operating Costs For 1000.0 Acres</b>					<b>\$135,903.11</b>	<b>\$0.00</b>
<b>Total Operating Costs Per Acre for Tenant &amp; Landlord</b>					<b>\$135.90</b>	<b>\$0.00</b>
<b>Total Operating Costs Per Acre</b>					<b>\$135.90</b>	<b>\$135.90</b>
<b>Breakeven to Cover Operating Costs Per Unit of Production</b>						<b>\$3.40</b>
<b>Percent of expected production necessary to cover cash flow for this crop.</b>						<b>45.3%</b>

Reset    Print

**Pop up Caution Messages:**

To this point, the examples have stuck with our perfect world base case scenario. This is rarely the case and this software has a couple of cautions that “pop up” if certain conditions are met. There are three instances where these occur. Two deal with divergence of prices from the RMA Harvest Price. The user must enter the “RMA Harvest Price @ Harvest/Sale/Offset,” the “Spot Futures Price at Harvest/Sale/Offset” and the “Actual Cash Price Received at Harvest/Sale/Offset.” Theoretically, if the markets are efficient providers of price signals, these three prices should all maintain a “normal” relationship. However, normal means different price levels for different crops and regions within the U.S. Since the timing of calculations for the RMA Harvest Price and selecting a Spot Futures at harvest can differ, these two prices can also differ. We would not expect these two prices to differ by a large amount. If so, it means that there were large moves in the futures markets up or down shortly after the time period RMA used to calculate the average for the RMA Harvest price. If there were large moves, the

spot futures could be significantly different than the average. This type of volatility would almost impossible to predict. While if is possible, this is unlikely.

Figure 16 is a screen capture which shows two pop up “caution” messages when the user enters a Spot futures at harvest time that differs by more than 10% (+/-) of the RMA Harvest Price and/or the Actual Cash Price at harvest differs by more than 20% (+/-) of the RMA Harvest Price. If these messages appear as you enter data, it **does not mean something is definitely wrong**, it means the price relations may be unusual. If the price relationships reflect typical conditions for the crop and region, or if current conditions are unusual for a variety of reasons, ignore these pop up cautions. A similar set of messages is also displayed on the Summary Results tab when one or both of these caution messages is triggered.

Figure 16. Sample data that trigger the caution pop up messages on the General Inputs tab.

The screenshot shows a software interface with several tabs: Introduction, General Inputs (active), Futures, Options, Summary Results, and Cost of Production. A yellow button 'Save, Load, Delete Scenarios' is in the top right.

**Insurance related information at the time of purchase.**

RMA Projected Harvest Price @ Time of Purchase	\$7.15
Upper Limit-200% of Projected Harvest Price	\$14.30
APH Yield	40.0
Acres Insured/Price/Revenue Protected	1,000

**Combo Plans Available**

	Yield Election	Price Election	Premium	Bushels Protected by Ins.	No. Contracts To Equal Ins. Coverage
Revenue Protection (RP)	70%	100%	\$11.60	28,000	5.60
RP With Harvest Price Excl.	70%	100%	\$9.80	28,000	5.60
Yield Protection	70%	100%	\$7.50	28,000	5.60

**Insurance related information at the Harvest/Sale/Offset**

RMA Avg. Futures Price at Harvest-RMA (Harvest Price)	\$7.15
Actual Yield at Harvest	28.0

**Futures and Options pricing information when price protection implemented.**

Spot Harvest Time Futures-Preproduction-NOT RMA Avg.	\$8.40
Expected Basis at Harvest/Sale/Offset (cash-futures)	(\$0.70)
Put Strike Price Selected	\$6.50
Put Premium Paid	\$0.27
Call Strike Price Selected	\$10.00
Call Premium Paid	\$0.15
Marketing Costs-- Brokerage, Interest & Other Misc. Expense	\$0.02
Acres Insured/Price/Revenue Protected	1,000
Total Expected Production, Using APH Yield	40,000
Number of contracts to cover expected production	8.00
Number of Futures/Options Contracts Purchased	8

**Futures and Options pricing information at Harvest/Sale/Offset**

Actual Cash Price Received at Harvest/Sale Time	\$7.70
Spot Futures Price at Harvest/Sale/Offset (not RMA Harvest Price)	\$8.40
Actual Basis at Harvest	(\$0.70)
Cost of Production Per Bushel	\$4.50

A red warning box contains the text: "Caution, your Spot Futures Price at Harvest Times is greater than 10% different (+/-) than The RMA Harvest Price entered." A blue line connects this box to the 'Spot Futures Price at Harvest/Sale/Offset' field.

Buttons at the bottom: Reset, Print, and a 'Help Off/On' button.

## **Risk Management Scenarios:**

Risk management strategies for crop producers fall into three categories, government, insurance, and marketing tools. Government programs provide a minimal amount of price/revenue protection with the loan rate or loan deficiency payment (LDP). Crop insurance products may or may not include price protection, but cover yield risk. Formal price risk management tools exist that may or may not include standardized futures and options contracts. Weather and other environmental conditions, insects, diseases, etc., eventually determine grains supplies on a local and national level and when combined with market forces, determine prices for a given commodity.

Crop insurance underwent major changes prior to the 2011 crop year. Most of the major crops with multiple insurance products available were affected by implementation of the new Common Crop Insurance Policy basic provisions, commonly referred to as the “Combo” policy. The Combo policy combines existing insurance products (APH, CRC, RA, and IP) into one policy with separate plans. The Combo policy also standardizes various methods of calculating premium rates and coverage levels used for the insurance policies it replaces.

Winter wheat is the first primary small grains crop affected by the Combo Policy in Montana. Other crops with a fall insurance deadline, September 30<sup>th</sup>, (alfalfa seed, apiculture, forage production, and pasture, rangeland, and forage (PRF), Rainfall Index) are not affected by the Combo changes.

The Combo policy uses yield coverage levels and two price points to determine indemnity payments for the YP, RP-HPE and RP plans. The two price points are the RMA Projected Harvest Price and the RMA Harvest Price.

In addition to standardizing the beginning base price for yield and revenue protection plans, basis is no longer factored into the projected price for Combo plans. As such, the RMA Projected Harvest Price and the RMA Harvest Price will likely be larger than the expected local cash price at harvest. The premium for yield protection will also likely be higher than what would otherwise be expected because of the higher price level used for the guarantee calculation.

## **Comparative Risk Management Analysis: Combo Plans, Futures and Options**

The base case scenario built into this software is for a Montana dry land small grain operation. This scenario is built around a perfect world example and includes a perfect hedge and production outcomes that exactly match expected production for winter wheat in Hill County Montana. The base case is intended to make it easy to follow numbers and calculations throughout the software before more complicated scenarios are run. Additional scenarios are presented below which deviated from the base case. These scenarios help analyze the effectiveness of the Combo plans, marketing tools and combinations of these risk management

tools to protect the bottom line, Net Revenue after all marketing costs and cost of production for the crop. Figure 17 is a screen capture of the base case scenario.

The first alternative in the Summary Results table, Figure 17, is “Cash.” This alternative assumes no risk management tools of any type are used to mitigate risk. Post production net income per acre is calculated using the actual cash price and yields at harvest time entered by the user. Expected total revenue per acre is also calculated using the APH yield, spot futures (pre-production or pre-harvest) entered by the user and the expected basis. In our perfect world example, the *predicted* local cash price at harvest equals the actual cash price at harvest, expected yield equals harvest yield so expected total revenue equals actual total revenue.

In the base case, all Combo Policy Plans columns are active, (check boxes are checked) so the results shown in these columns show how each plan performs as the relevant variables change. Note also that each of these three columns includes the rows labeled *Profits/Losses From market tool name Prorated Over Actual Production (per Bu.)* for Hedges, Puts and Calls. The Base Case scenario shows these rows for all columns on the Summary Results tab as zeros. These values will always display zero unless you activate the Hedge, Puts, Calls using the check boxes shown in Figure 17. By turning one or more of the Hedge, Puts, or Calls columns on, it will then display the effectiveness of that individual tool in the last three columns, and the results of each of these tools, when turned on, is also shown in the Combo columns. This allows you to evaluate possible combinations of available tools. The Profit/Losses... for all Combo plans and marketing tools is prorated over the actual yield so the side-by-side comparison of these alternatives is valid. If the Hedge, Puts, or Calls have no value given harvest time conditions, then the transactions cost, a negative number, for each of these alternatives are prorated over actual yield. This flexibility is demonstrated in the risk management scenarios provided below.

### **Combo Policy Plan Parameters Established in the Base Case Scenario:**

A brief summary of the base case scenario is provided for each Combo Policy Plan. This summary includes the revenue protection levels established when a plan is purchased and discusses the key parameters that will vary the final level of Price/Yield/Revenue protection provided by each plan.

#### **1. Combo Yield Protection Plan: (YP)**

- The **maximum** revenue guarantee established in the base case scenario is \$200.20 per acre ( $40 * 70\% = 28$  bu. yield protection level times the \$7.15 RMA Projected Harvest Price).
- Only yields below the selected protection level will affect the final indemnity paid.
- Changing the RMA Harvest Price has no effect on potential indemnities under this plan.

## 2. Combo Revenue Protection with Harvest Price Exclusion: (RP-HPE)

- The revenue guarantee established with this plan is the APH yield times the coverage level times the RMA Projected Harvest Price. In this example, the revenue guarantee would be \$200.20 (40 bu. \* 70% \* \$7.15), the same as YP
- The difference between this plan and the Yield Protection plan is that any combination of actual yield and RMA Harvest Price that is below the revenue guarantee will result in an indemnity, i.e., it is not just yield driven.
  - When **RMA Harvest Price** is below the RMA Projected Harvest Price
  - Actual yield, may be above or below, the yield coverage level selected, 70% = 28 bushels in our base case,
  - RP\_HPE plan pays the same indemnity as the RP plan, however the net indemnity will differ due to the premium difference between the plans.

## 3. Combo Revenue Protection: (RP)

- This plan allows a producer to take advantage of increasing prices after the sales closing date.
- The revenue guarantee established with this plan is the higher of the RMA Projected Harvest Price established before the sales closing date or the **RMA Harvest Price** at the end of the insurance period, capped at 200% of the RMA Projected Harvest Price, times the APH yield times the yield coverage level selected.
- In the base case scenario, the minimum revenue guarantee is  $\$7.15 * 40 * 70\%$  yield election = \$200.20.
- The maximum possible indemnity using the base case parameters is \$400.40 per acre ( $\$7.15 * 200\% * 40 * 70\%$ ).
- This software displays the Net Combo Indemnity Received for each plan, not the total indemnity. The RP premium of \$11.60 per acre in this example results in a net indemnity of \$388.80 (\$400.40 minus \$11.60) if the maximum indemnity is reached.
- If you set yield to zero and the RMA Harvest Price to \$14.30, the RP indemnity will display \$388.80.
- Increasing the RMA Harvest Price above \$14.30, for this example, does not increase the RP indemnity as \$14.30 is 200% of the RMA Projected Harvest Price.
- Any combination of actual yield and **RMA Harvest Price**, capped at 200% of RMA Projected Harvest Price that results in a revenue estimate above the minimum and below the maximum will result in an indemnity payment.
- When the **RMA Harvest Price** is at or below the RMA Projected Harvest Price, the RP plan pays the same indemnity as the RP-HPE plan.

### Scenario Descriptions:

Several scenarios are provided below to explore how these marketing tools manage risk individually or when combined. A few of the values used for different variables in the base case were held constant throughout the scenarios presented below. This helps simplify the number of scenarios presented here, but we encourage you to explore how these variables may affect

your decisions. Screen captures from the software show results for most scenarios, but in some instances the user is encouraged to explore particular situations. Screen captures show values of key variables used in most scenario.

**Variables held constant across scenarios are:**

- APH yield equals expected yield and is 40 bushels.
- Yield election level is held at 70%.
- Price election level is held at 100%.
- Premium costs for YP, RP-HPE and RP are constant for the coverage levels selected.
- The Put strike price and premium are constant at \$6.50 and \$.27 respectively.
- The Call strike price and premium are constant at \$10.00 and \$.15 respectively.
- Cost of production is constant at \$4.50 per bushel.

Scenarios presented are divided into three categories. The first include scenarios related only to the Combo Policy Plans. The second are those related only to the Futures and Options marketing tools. The third are those that combine Combo plans and marketing tools into an overall risk management strategy.

**First Category of Scenarios: Combo Policy Plans**

**Scenario #1:** Figure 17 is a screen capture of the Summary Results using the base case scenario values. This scenario is our perfect world scenario with a text book hedge example and a perfect production year as previously shown in Figures 3 and 8. Figure 17 indicates that Hedging, Puts, and Calls are not active, they are set to *Off*. The actual yield also equals our expected and APH yield. This scenario also assumes a level of production (acres times yield per acre) that matches an even number of Futures/Options contracts, in this case, 8 contracts at 5,000 bushels each. This eliminates over or under hedged positions with respect to expected total production.

There are several rows of estimated results on the Summary Results tab. We encourage you to familiarize yourself with this table before working through all of the scenarios. For the purpose of comparative analysis, two rows serve as **the bottom line**. The first is the Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset and the second is the Actual Net Income Per Acre (Actual Yield \* Actual Net Price). For comparative analysis purposes, the net price per bushel row is based on harvested yield per acre, unless the actual yield is set to zero. If actual yield is zero, the results displayed for the Net Cash Price Per Bushel... shows the Net revenue received per acre for each plan. In this instance, the Net Combo Indemnity Received Per Acre and the Net Cash Price Per Bushel... are the same number. A pop up message also alerts you to this circumstance. Using actual yield as a common denominator across alternatives allows an apples to apples comparison of protection levels, even though by their design, the Combo plans and futures and options markets provide different levels of protection.

The cash result is the highest at \$128 per acre because there were no production problems and no crop insurance expenses. The three COMBO choices have a net income that reflects the different costs of insurance coverage for each plan. The premium for each plan is prorated over the bushels harvested, which reduces the net price received per bushel harvested and the net income per acre. Thus, the most expensive product, Revenue Protection, has the lowest net income in our base case scenario. While the base scenario is illustrative of how the software works for analysis purposes, the software was designed to help analyze more real world examples, reflecting what happens under different price and yield scenarios using different combinations of risk management tools and strategies.

Figure 17. Base case scenario.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios	
Bushel Buy-Up Calc. Off/On		MouseOver for Help Off/On		Cash		Combo Policy		Futures & Options					
<input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset				Cash	(YP)	Revenue	(RP)	Results are based on No. of Bu. in a Futures/Options contract					
Conditions at Time Price/Yield/Revenue Risk Protection Purchased				Cash Sale	Yield Protection	Protection W/Harvest Price Excl.	Revenue Protection	Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling			
Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash				\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00			
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium					\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17			
Expected Basis -- Preproduction				(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)			
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>				<b>\$7.70</b>	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>			
Percent of Production Insured/Price Protected & Yield Insured					70%	70%	70%	100.00%	100.00%	100.00%			
Price Election on Combo Insurance					100%	100%	100%						
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction				\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80			
Conditions at Time of Harvest/Sale/Offset/Exercise													
Spot Futures Price for Futures & Options Markets at Sale					NA	NA	NA	\$8.40	\$8.40	\$8.40			
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset					\$8.40	\$8.40	\$8.40	NA	NA	NA			
<b>Net Combo Indemnity Received Per Acre</b>					<b>(\$7.50)</b>	<b>(\$9.80)</b>	<b>(\$11.60)</b>	NA	NA	NA			
Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
Cash Price at Sale Time				\$7.70	\$7.70	\$7.70	\$7.70	\$7.70	\$7.70	\$7.70			
Actual Basis @ Harvest--Per Bushel					NA	NA	NA	-\$0.70	-\$0.70	-\$0.70			
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.					NA	NA	NA	\$0.00	\$0.00	\$0.00			
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)				Hedge	\$0.00	\$0.00	\$0.00	\$0.00					
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)				Puts	\$0.00	\$0.00	\$0.00		\$0.00				
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)				Calls	\$0.00	\$0.00	\$0.00			\$0.00			
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>				<b>\$7.70</b>	<b>\$7.51</b>	<b>\$7.46</b>	<b>\$7.41</b>	<b>\$7.70</b>	<b>\$7.70</b>	<b>\$7.70</b>			
Net Revenue Per Acre Based on Actual Bushels Harvested				\$308.00	\$300.50	\$298.20	\$296.40	\$308.00	\$308.00	\$308.00			
Cost of Production Per Bushel -- Based on APH Yield				\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50			
Expected Net Income Per Acre--Preproduction				\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80			
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>				<b>\$128.00</b>	<b>\$120.50</b>	<b>\$118.20</b>	<b>\$116.40</b>	<b>\$128.00</b>	<b>\$128.00</b>	<b>\$128.00</b>			
Information @ Time Yield/Price/Revenue Protection Implemented										Information at Harvest/Sale/Offset			
Spot Harvest Time Futures-Preproduction-NOT RMA Avg.				\$8.40						RMA Harvest Price @ Harvest/Sale/Offset			
Expected Basis at Harvest/Sale/Offset				(\$0.70)						\$8.40			
Put Strike Price Selected				\$6.50						Actual Cash Price Received at Harvest/Sale			
Put Premium Paid				\$0.27						\$8.40			
Call Strike Price Selected				\$10.00						Actual Basis at Harvest			
Call Premium Paid				\$0.15						(\$0.70)			
Number of Futures/Options Contracts				8						Cost of Production Per Bushel			
										\$4.50			
										Actual Yield at Harvest			
										40.0			

**Scenario #2:** Actual yield at harvest is reduced to coverage levels of 28 bu. per acre (40 APH \* 70% coverage election). Lower the **RMA Harvest Price** and the Spot Futures Price at Harvest to \$7.15 so they both match the RMA Projected Harvest Price. Set the Actual Cash Price Received at Harvest/Sale to \$6.45, which keeps the expected and actual equal at -\$0.70. With these parameters, no Combo plan pays an indemnity. Actual yield is at, not below, the 70% coverage level selected and the **RMA Harvest Price** equals the RMA Projected Harvest Price. Figure 18

shows the results with these parameter values. Actual net income per acre has fallen due to the decrease in the actual price from \$7.70 to \$6.45. The Cash column net income per acre is positive, but only \$.60. The net income per acre for all of the Combo plan is negative due to their premium values being larger than the Cash net income per acre.

Figure 18. RMA price and yield levels at the trigger points for an indemnity payments.

Introduction	General Inputs	Futures	Options	Summary Results	Cost of Production	Save, Load, Delete Scenarios				
Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/>		<input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset			Cash	Combo Policy		Futures & Options		
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b>				Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Results are based on No. of Bu. in a Futures/Options contract		
								Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling
Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash				\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium					\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17
Expected Basis -- Preproduction				(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>				\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>
Percent of Production Insured/Price Protected & Yield Insured					70%	70%	70%	100.00%	100.00%	100.00%
Price Election on Combo Insurance					100%	100%	100%			
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction				\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>										
Spot Futures Price for Futures & Options Markets at Sale					NA	NA	NA	\$7.15	\$7.15	\$7.15
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset					\$7.15	\$7.15	\$7.15	NA	NA	NA
<b>Net Combo Indemnity Received Per Acre</b>					<b>(\$7.50)</b>	<b>(\$9.80)</b>	<b>(\$11.60)</b>	NA	NA	NA
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Cash Price at Sale Time				\$6.45	\$6.45	\$6.45	\$6.45	\$6.45	\$6.45	\$6.45
Actual Basis @ Harvest--Per Bushel					NA	NA	NA	-\$0.70	-\$0.70	-\$0.70
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.					NA	NA	NA	\$0.00	\$0.00	\$0.00
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)				Hedge	\$0.00	\$0.00	\$0.00	\$0.00		
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)				Puts	\$0.00	\$0.00	\$0.00		\$0.00	
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)				Calls	\$0.00	\$0.00	\$0.00			\$0.00
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>				\$6.45	<b>\$6.18</b>	<b>\$6.10</b>	<b>\$6.04</b>	<b>\$6.45</b>	<b>\$6.45</b>	<b>\$6.45</b>
Net Revenue Per Acre Based on Actual Bushels Harvested				\$180.60	\$173.10	\$170.80	\$169.00	\$180.60	\$180.60	\$180.60
Cost of Production Per Bushel -- Based on APH Yield				\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50
Expected Net Income Per Acre--Preproduction				\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>				<b>\$0.60</b>	<b>(\$6.90)</b>	<b>(\$9.20)</b>	<b>(\$11.00)</b>	<b>\$0.60</b>	<b>\$0.60</b>	<b>\$0.60</b>
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>				<b>Information at Harvest/Sale/Offset</b>						
Spot Harvest Time Futures--Preproduction--NOT RMA Avg.				\$8.40	RMA Harvest Price @ Harvest/Sale/Offset					\$7.15
Expected Basis at Harvest/Sale/Offset				(\$0.70)	Actual Cash Price Received at Harvest/Sale					\$6.45
Put Strike Price Selected				\$6.50	Spot Futures Price at Harvest/Sale/Offset					\$7.15
Put Premium Paid				\$0.27	Actual Basis at Harvest					(\$0.70)
Call Strike Price Selected				\$10.00	Cost of Production Per Bushel					\$4.50
Call Premium Paid				\$0.15	Actual Yield at Harvest					28.0
Number of Futures/Options Contracts				8						

**Scenario #3:** Leave the actual yield at 28 bushels and decrease the **RMA Harvest Price** and the Spot futures price at harvest to \$6.00 per bushel. Lower the Actual Cash price received to \$5.30 to maintain a -\$0.70 basis. The RP-HPE and the RP Combo Plans pay the same indemnity as the **RMA Harvest Price** falls below the **RMA Projected Harvest Price** of \$7.15 per bushel. This software displays the "Net Indemnity" which is the total indemnity minus the premium paid per Combo Plan, so the net indemnities are not the same. For the sake of illustrating that these two plans pay the same indemnity, zero out the premiums for the RP-HPE and RP plans on the General Inputs tab. The net indemnity then becomes the total indemnity and the Summary Results tab shows the RP-HPE and RP indemnities are identical. With the actual yield set at 28 bushels, YP does not pay an indemnity regardless of how low the **RMA Harvest Price** is set.





Harvest Price. Once this cap is reached, for the **RMA Harvest Price**, the RP indemnity is maxed out for any given yield below 28 bushels in this scenario.

**Scenario #5:** Click on the **Reset** button. This resets all values you have changed to the original values that were loaded when you first opened the program, including changing back to the Introduction screen tab. Click on the *Summary Results* tab and then on the *Display/Hide Market variables at harvest/sale/offset* checkbox. Set the actual yield to 20 bushels. Go to the general inputs tab and set all three insurance premiums to zero. Go back to the Summary Results tab. Note that YP and RP-HPE now pay the same indemnity but RP is higher as the RMA Harvest price is set at \$8.40, Figure 21. The reason for this is that YP and RP-HPE are both limited by the \$7.15 RMA Projected Harvest Price. RP allows the insurance coverage to increase as the **RMA Harvest Price** varies between \$7.15 and \$14.30, in this scenario. Change the **RMA Harvest Price** to \$7.15. Now all three combo plans pay the exact same indemnity.

**Figure 21.** Zero premium payments, YP and RP-HPE have the same indemnity, RP higher.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <b>Use Check Boxes to display input options.</b> <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset														
		<b>Cash</b>		<b>Combo Policy</b>						<b>Futures &amp; Options</b>				
		Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Results are based on No. of Bu. in a Futures/Options contract		Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling				
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b> Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00	\$0.02	\$0.29	\$0.17			
		(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)						
		\$7.70	<b>\$7.15</b>	<b>\$7.15</b>	<b>\$7.15</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>						
			70%	70%	70%	100.00%	100.00%	100.00%						
		\$308.00	\$286.00	\$286.00	\$286.00	\$307.20	\$220.40	\$378.80						
		<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>												
Spot Futures Price for Futures & Options Markets at Sale			NA	NA	NA	\$8.40	\$8.40	\$8.40						
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset			\$8.40	\$8.40	\$8.40	NA	NA	NA						
<b>Net Combo Indemnity Received Per Acre</b>			<b>\$57.20</b>	<b>\$57.20</b>	<b>\$67.20</b>	NA	NA	NA						
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Cash Price at Sale Time		\$7.70	\$7.70	\$7.70	\$7.70	\$7.70	\$7.70	\$7.70						
Actual Basis @ Harvest--Per Bushel			NA	NA	NA	-\$0.70	-\$0.70	-\$0.70						
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.			NA	NA	NA	\$0.00	\$0.00	\$0.00						
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)		<b>Hedge</b>	\$0.00	\$0.00	\$0.00	\$0.00								
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)		<b>Puts</b>	\$0.00	\$0.00	\$0.00		\$0.00							
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Calls</b>	\$0.00	\$0.00	\$0.00			\$0.00						
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>		<b>\$7.70</b>	<b>\$10.56</b>	<b>\$10.56</b>	<b>\$11.06</b>	<b>\$7.70</b>	<b>\$7.70</b>	<b>\$7.70</b>						
Net Revenue Per Acre Based on Actual Bushels Harvested		\$154.00	\$211.20	\$211.20	\$221.20	\$154.00	\$154.00	\$154.00						
Cost of Production Per Bushel -- Based on APH Yield		\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50						
Expected Net Income Per Acre--Preproduction		\$128.00	\$106.00	\$106.00	\$106.00	\$127.20	\$40.40	\$198.80						
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		<b>(\$26.00)</b>	<b>\$31.20</b>	<b>\$31.20</b>	<b>\$41.20</b>	<b>(\$26.00)</b>	<b>(\$26.00)</b>	<b>(\$26.00)</b>						
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>		<b>Information at Harvest/Sale/Offset</b>												
Spot Harvest Time Futures--Preproduction--NOT RMA Avg.		\$8.40			<b>RMA Harvest Price @ Harvest/Sale/Offset</b>						<b>\$8.40</b>			
Expected Basis at Harvest/Sale/Offset		(\$0.70)			<b>Actual Cash Price Received at Harvest/Sale</b>						<b>\$7.70</b>			
Put Strike Price Selected		\$6.50			<b>Spot Futures Price at Harvest/Sale/Offset</b>						<b>\$8.40</b>			
Put Premium Paid		\$0.27			<b>Actual Basis at Harvest</b>						<b>(\$0.70)</b>			
Call Strike Price Selected		\$10.00			<b>Cost of Production Per Bushel</b>						<b>\$4.50</b>			
Call Premium Paid		\$0.15			<b>Actual Yield at Harvest</b>						<b>20.0</b>			
Number of Futures/Options Contracts		8												
<b>Reset</b>		<b>Print</b>												

**Scenario #6:** Work back through each of the previous scenarios and use the

**Bushel Buy-Up Calc. Off/On** button with each scenario. This may add some additional understanding of the Combo plans and the protection they provide under various price and yield combinations. Click on the **Reset** button before you start.

One example for the Bushel Buy-Up Calculator is illustrated here. In our Base Case, the premiums for the three plans are \$7.50 (YP), \$9.80 (RP-HPE), \$11.60 (RP). The premium difference from YP to RP-HPE is \$2.10. Using the expected cash price estimate at harvest time of \$7.70 (\$8.40 spot futures plus a negative -\$0.70 basis), the buy up in bushels of grain is .2987 of one bushel (\$2.30 divided by \$7.70 = .2987). The buy up from YP to RP is an extra \$4.10 premium per acre. This converts to .5324 of one bushel (\$4.10 divided by \$7.70). The cost to buy up from RP-HPE to RP is .2337 of one bushel (\$11.60 minus \$9.80 = \$1.80 divided by \$7.70). Once the premiums are estimated and entered in this software for any given level of coverage selected, they will not change unless the coverage level changes.

Figure 22. Bushel Buy up calculations pop-up.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios					
Bushel Buy-Up Calc. Off/On		MouseOver for Help Off/On		Cash		Combo Policy		Futures & Options									
<p>The this table shows the dollar difference in premiums and potential indemnity payment for each Combo Plan. It also lists the number of bushels per acre, at the expected local cash price, that it would take to "Buy Up" your coverage level from one plan to another.</p>				Expected Local Cash Price Per Bushel		<b>\$7.70</b>		<b>Combo Insurance Plans</b>		Results are based on No. of Bu. in a Futures/Options contract							
												<b>Hedge</b>		<b>Puts</b>		<b>Calls</b>	
				Estimated Premium Cost by Combo Plan								Locks Price		Sets Floor		Sets Ceiling	
				Per Acre Premium Difference YP to RP-HPE								\$8.40		\$6.50		\$10.00	
				Bushels Per Acre YP to RP-HPE								\$0.02		\$0.29		\$0.17	
				<b>Change in Idemnity Received (YP to RP-HPE)</b>								(\$0.70)		(\$0.70)		(\$0.70)	
				Per Acre Premium Difference YP to RP								<b>\$7.68</b>		<b>\$5.51</b>		<b>\$9.47</b>	
				Bushels Per Acre YP to RP								100.00%		100.00%		100.00%	
				<b>Change in Idemnity Received (YP to RP)</b>								\$307.20		\$220.40		\$378.80	
				Per Acre Premium Difference RP-HPE to RP													
Bushels Per Acre RP-HPE to RP																	
<b>Change in Idemnity Received (RP-HPE to RP)</b>																	
<b>Net Combo Indemnity Received Per Acre</b>																	
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>																	
Cash Price at Sale Time		\$7.70		\$7.70		\$7.70		\$7.70		\$7.70		\$7.70					
Actual Basis @ Harvest--Per Bushel				NA		NA		NA		-\$0.70		-\$0.70					
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.				NA		NA		NA		\$0.00		\$0.00					
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)		<b>Hedge</b>		\$0.00		\$0.00		\$0.00		\$0.00							
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)		<b>Puts</b>		\$0.00		\$0.00		\$0.00				\$0.00					
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Calls</b>		\$0.00		\$0.00		\$0.00				\$0.00					
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>		<b>\$7.70</b>		<b>\$7.51</b>		<b>\$7.46</b>		<b>\$7.41</b>		<b>\$7.70</b>		<b>\$7.70</b>					
Net Revenue Per Acre Based on Actual Bushels Harvested		\$308.00		\$300.50		\$298.20		\$296.40		\$308.00		\$308.00					
Cost of Production Per Bushel -- Based on APH Yield		\$4.50		\$4.50		\$4.50		\$4.50		\$4.50		\$4.50					
Expected Net Income Per Acre--Preproduction		\$128.00		\$98.50		\$94.40		\$96.20		\$127.20		\$40.40					
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		<b>\$128.00</b>		<b>\$120.50</b>		<b>\$118.20</b>		<b>\$116.40</b>		<b>\$128.00</b>		<b>\$128.00</b>					
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>				<b>Information at Harvest/Sale/Offset</b>													
Spot Harvest Time Futures-Preproduction-NOT RMA Avg.		\$8.40		RMA Harvest Price @ Harvest/Sale/Offset		\$8.40											
Expected Basis at Harvest/Sale/Offset		(\$0.70)		Actual Cash Price Received at Harvest/Sale		\$7.70											
Put Strike Price Selected		\$6.50		Spot Futures Price at Harvest/Sale/Offset		\$8.40											
Put Premium Paid		\$0.27		Actual Basis at Harvest		(\$0.70)											
Call Strike Price Selected		\$10.00		Cost of Production Per Bushel		\$4.50											
Call Premium Paid		\$0.15		Actual Yield at Harvest		40.0											
Number of Futures/Options Contracts		8															

## Futures and Options Markets scenarios:

This set of scenarios explores using a Hedge, Put and/or Call Option as a standalone means of protecting price and revenue risk. It may be useful to cover up the Combo Policy Plan columns before you start these scenarios, Figure 23. This allows you to evaluate just the Futures and Options marketing tools as standalone tools. Click on the grey colored check box to the right of the Combo Policy column heading (  ) on the Summary Results page. Use the check boxes in the “Futures & Options” columns as necessary to activate one or more of these marketing alternatives. When you click on any of the gray check boxes, they turn orange and a check mark is displayed to let you know that alternative is active. Figure 23 is a screen capture of the starting setup for the futures and options scenarios. This is the base case with the combo columns covered and Hedging and Put options activated. When activated, these columns show the results of each of these individual alternatives. ***Activating the Hedge and Put marketing alternatives also includes the profit or loss from each marketing alternative in each of the Combo plans.*** This allows analyzing risk management strategies that combine the Combo insurance plans with the marketing alternatives. The portion of the screen that is outlined in blue contains the profit or loss from the marketing alternatives and the interaction affects for the marketing alternatives with the Combo plans. This is another reason to cover up the Combo Plan options if you wish to look at just the marketing alternatives.

One of the considerations necessary to get an apples to apples comparison of the marketing alternatives is the lumpy nature of commodities contracts. Wheat contracts are 5,000 bushels per contract. The transaction costs of trading commodity contracts are typically stated in cents per bushel traded. Premium costs of Options contracts are also stated in cents per bushel traded. This makes calculating estimated net price per bushel for the futures or options contract straight forward. In our perfect world scenario with actual production equaling expected production which equals an even number of commodity contracts, the per bushel calculation follows all the way through to the end. However, if actual yield is less than expected yield or the number of contracts used to protect price does not exactly equal production levels due to the lumpy 5,000 contract size, adjustments are made before comparing the outcomes from market alternatives to those of the Combo policy plans. Adjustment is made on the Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset row. All costs of trading contracts, gains or losses on the marketing alternatives, premiums paid for insurance or commodities contracts and indemnities received from each Combo policy are prorated over the actual harvested bushels. ***All of the information for the marketing alternatives down to that row are based on contract bushels, and are not completely comparable to the Combo policy alternatives.***

For the Futures & Options columns, the row labeled Percent of Production Insured/Price Protected & Yield Insured indicates 100% coverage level for the marketing alternatives, in our perfect world scenario.

Figure 23. Starting Point for marketing scenarios.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash		Combo Policy		Futures & Options			Results are based on No. of Bu. in a Futures/Options contract					
Conditions at Time Price/Yield/Revenue Risk Protection Purchased Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling						
		\$7.70				\$8.40	\$6.50	\$10.00						
		(\$0.70)				\$0.02	\$0.29	\$0.17						
		\$7.70				<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>						
						100.00%	100.00%	100.00%						
		\$308.00				\$307.20	\$220.40	\$378.80						
Conditions at Time of Harvest/Sale/Offset/Exercise Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b> Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
Cash Price at Sale Time		\$7.70				\$7.70	\$7.70	\$7.70						
Actual Basis @ Harvest--Per Bushel						-\$0.70	-\$0.70	-\$0.70						
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.						\$0.00	\$0.00	\$0.00						
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)			Hedge			-\$0.02								
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)			Puts				-\$0.29							
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)			Calls					\$0.00						
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>		\$7.70				<b>\$7.68</b>	<b>\$7.41</b>	<b>\$7.70</b>						
Net Revenue Per Acre Based on Actual Bushels Harvested		\$308.00				\$307.20	\$296.40	\$308.00						
Cost of Production Per Bushel -- Based on APH Yield		\$4.50				\$4.50	\$4.50	\$4.50						
Expected Net Income Per Acre--Preproduction		\$128.00				\$127.20	\$40.40	\$198.80						
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$128.00				<b>\$127.20</b>	<b>\$116.40</b>	<b>\$128.00</b>						
Information @ Time Yield/Price/Revenue Protection Implemented Spot Harvest Time Futures-Preproduction-NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8	Information at Harvest/Sale/Offset RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest		\$8.40 \$7.70 \$8.40 (\$0.70) \$4.50 40.0									

For marketing alternatives, variables that will affect the results are the Spot Harvest Time Futures-Preproduction-NOT RMA Avg., the Put and Call Strike prices and premiums, the Spot Futures Price at Harvest/Sale/Offset and the Actual Basis at Harvest. This program allows the user to select values for both the Spot futures at harvest and the local cash price at harvest. The difference in these two values, cash minus futures, is the basis. Changing either of these two price inputs changes the basis. However, the price a producer receives is determined when the Actual cash price at harvest time is set. Adjustments are made to the actual cash price if appropriate. An example would be prorating Hedge gains or loss over harvested bushels and adjusting the actual cash price by the prorated amount.

Due to the flexibility of implementing price protection strategies, using Futures and Options can occur anytime from prior to the start of the production process through harvest. This means that the Spot Futures prices can be significantly different than the RMA Projected Harvest Price or the RMA Harvest Price. While this is unlikely, this actually happened within a few weeks of the fall sales closing date for wheat in Montana. The flexibility to implement the futures and options marketing tools throughout the production cycle provides a much greater selection of price levels to choose from than is offered by the RMA average prices on the fixed sales closing dates by commodity for the Combo policy. However, the commodities markets only provides

price protection, just one component of total revenue and the producer is still subject to basis risk when using the commodity marketing alternatives.

**Scenario #7:** The scenario starts with all the parameter values of our base case. The Hedge and Put columns are checked (active) but the bottom line for these columns indicates a net income less than the cash market, Figure 23. The portion of the table outlined in blue shows the profit or loss for each futures market alternative. In this scenario, the Spot Futures Price at Harvest/Sale/Offset is a negative two cents a bushel. This is the brokerage and interest costs, entered by the user, for trading the futures contracts. The Puts column shows a negative \$.29 cents per bushel loss (\$.27 per bushel premium plus \$.02 per bushel brokerage and interest cost). Calls are not active in this scenario. The bottom row of the table shows the net income on a per acre basis. Both the Hedge and Puts columns are less than the Cash column due to the trading costs incurred for the eight contracts necessary to cover expected production. In this scenario, both the Hedge and the Puts have acted just like insurance. They were implemented to protect against down side price risk and they were not needed, so the loss is the comparable to an insurance premium.

**Scenario #8:** Starting with the parameters of the base case, Scenario #7, lower the Spot Futures as harvest to \$6.00. As you lower the price, the basis changes to a positive \$1.70 because the Actual Cash Price Received at Harvest/Sale is still \$7.70. For now set the Actual Cash price received to \$5.30 so the basis remains as at our expected  $-.70$ . As you lower these prices, two messages appear on the screen to caution you that the price relationships between the **RMA Harvest Price**, the Spot futures and the local cash price may not be representative of what you might expect, however it does not mean there is something wrong, Figure 24.

At this point, only the Spot futures and local cash price have changed, but the RMA Harvest price remains at \$8.40. These messages will disappear if the RMA Harvest Price is lowered to within 10% (+/-) of the Spot futures price, Figure 25. There is a wider margin on the cash price caution message, 20% (+/-) of the RMA Harvest Price, to account for basis. Lower the RMA Harvest Price to \$6.00 so it matches the Spot futures at harvest. Note that lowering the RMA Harvest Price has no effect on the results calculated for the Hedge or Put columns, Figure 24 and 25.

With a Spot futures at harvest of \$6.00 and a Spot Harvest Time Futures-Preproduction... of \$8.40, the Hedge shows a profit of \$2.38 per bushel. Net income per acre is \$127.20 while the Cash net income is only \$32.00 per acre. As a marketing tool, the Hedge maintained the net income per acre to within \$3.00 per acre of our base case scenario for Cash, Figure 17. Put options do not provide as much down side price protection due to the premium paid for the Put option. In this scenario, the Put option strike price is \$6.50 and results in a Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset of \$5.51, which provides a higher net income per acre, \$40.40, than just cash marketing, \$32 per acre, when the cash price per bushel is \$5.30.

Figure 24. Caution messages when price relationships may be suspect.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		<b>Cash</b> Cash Sale		<b>Combo Policy</b> (YP) Yield Protection		<input checked="" type="checkbox"/> Revenue Protection W/Harvest Price Excl. (RP) Revenue Protection		<b>Futures &amp; Options</b> Results are based on No. of Bu. in a Futures/Options contract Hedge Locks Price    Puts Sets Floor    Calls Sets Ceiling						
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b> Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$7.70 (\$0.70) \$7.70 \$308.00						\$8.40    \$6.50    \$10.00 \$0.02    \$0.29    \$0.17 (\$0.70)    (\$0.70)    (\$0.70) <b>\$7.68    \$5.51    \$9.47</b> 100.00%    100.00%    100.00% \$307.20    \$220.40    \$378.80						
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b> Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b>								<b>Spot Futures @ harvest &gt; 10% different (+/-) than RMA</b> \$6.00    \$6.00    \$6.00 NA    NA    NA NA    NA    NA						
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b> Cash Price at Sale Time Actual Basis @ Harvest--Per Bushel Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.		\$5.30						<b>Caution: Cash Price at harvest is greater than 20% different (+/-) than RMA Harvest Price.</b> <input checked="" type="checkbox"/> \$5.30    \$5.30    \$5.30 <input checked="" type="checkbox"/> -\$0.70    -\$0.70    -\$0.70 <input type="checkbox"/> \$0.00    \$0.00    \$0.00						
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.) Profits/Losses From Puts Prorated Over Actual Production (Per Bu.) Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Hedge</b> <b>Puts</b> <b>Calls</b>						\$2.38 \$0.21 \$0.00						
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b> Net Revenue Per Acre Based on Actual Bushels Harvested Cost of Production Per Bushel -- Based on APH Yield Expected Net Income Per Acre--Preproduction <b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$5.30 \$212.00 \$4.50 \$128.00 \$32.00						<b>\$7.68    \$5.51    \$5.30</b> <b>\$307.20    \$220.40    \$212.00</b> <b>\$4.50    \$4.50    \$4.50</b> <b>\$127.20    \$40.40    \$198.80</b> <b>\$127.20    \$40.40    \$32.00</b>						
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b> Spot Harvest Time Futures-Preproduction-NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8		<b>Information at Harvest/Sale/Offset</b> RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest		\$8.40 \$5.30 \$6.00 (\$0.70) \$4.50 40.0								
<input type="button" value="Reset"/> <input type="button" value="Print"/>														

The relative performance of a Hedge and Put alternatives will depend on the strike price selected and the premium paid to obtain a particular strike price. The lower the Put strike price relative to the hedge price, the less price protection offered when using a Put option.

Figure 25. RMA Harvest Price set to \$6.00 to eliminate caution messages.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios	
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash		Combo Policy		Futures & Options							
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b> Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		Cash Sale \$7.70 (\$0.70) \$7.70 \$308.00		(YP) Yield Protection Revenue Protection W/Harvest Price Excl. (RP) Revenue Protection		Results are based on No. of Bu. in a Futures/Options contract <b>Hedge</b> <b>Puts</b> <b>Calls</b> Locks Price      Sets Floor      Sets Ceiling \$8.40      \$6.50      \$10.00 \$0.02      \$0.29      \$0.17 (\$0.70)      (\$0.70)      (\$0.70) <b>\$7.68</b> <b>\$5.51</b> <b>\$9.47</b> 100.00%      100.00%      100.00% \$307.20      \$220.40      \$378.80							
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b> Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b>						\$6.00      \$6.00      \$6.00 NA      NA      NA NA      NA      NA							
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b> Cash Price at Sale Time Actual Basis @ Harvest--Per Bushel Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.		\$5.30 -\$0.70 \$0.00				<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> \$5.30      \$5.30      \$5.30 -\$0.70      -\$0.70      -\$0.70 \$0.00      \$0.00      \$0.00							
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.) Profits/Losses From Puts Prorated Over Actual Production (Per Bu.) Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Hedge</b> <b>Puts</b> <b>Calls</b>				\$2.38 \$0.21 \$0.00							
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b> Net Revenue Per Acre Based on Actual Bushels Harvested Cost of Production Per Bushel -- Based on APH Yield Expected Net Income Per Acre--Preproduction <b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$5.30 \$212.00 \$4.50 \$128.00 \$32.00				<b>\$7.68</b> <b>\$5.51</b> <b>\$5.30</b> \$307.20      \$220.40      \$212.00 \$4.50      \$4.50      \$4.50 \$127.20      \$40.40      \$198.80 <b>\$127.20</b> <b>\$40.40</b> <b>\$32.00</b>							
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b> Spot Harvest Time Futures-Preproduction-NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8		<b>Information at Harvest/Sale/Offset</b> RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest		\$6.00 \$5.30 \$6.00 (\$0.70) \$4.50 40.0							
<input type="button" value="Reset"/> <input type="button" value="Print"/>													

**Scenario #9:** For illustrative purposes and to gain understanding of the relative price protection levels offered by the futures and options markets with respect to cash markets, find the prices the futures and options markets would have to offer to provide an equivalent net income per acre to cash marketing. In our base case scenario, the actual cash price received at harvest is \$7.70. In order for the net income per acre for the futures and option alternatives to be equivalent to the cash market alternative, the futures and options Net Predicted Cash Floor (Ceiling) Price per Bushel must equal \$7.70. For the base case scenario, a Hedge at \$8.42 with a \$.02 trading cost and a negative -\$0.70 basis makes the Net Predicted Cash Floor (Ceiling) Price per Bushel equal to \$7.70. The actual net income per acre is then \$128.00 for both the Cash and the Hedge alternative. Any combination of a strike price, minus a premium and trading costs for a Put that equaled \$7.70 would also make the net income per acre, using a Put, equal \$128.00.

**Scenario #10:** This scenario looks at the effectiveness of the futures and options markets with low prices and yields that fall below expectations. Figure 26 shows the starting point for this scenario. The RMA Harvest Price and Spot futures price are at \$6.00 per bushel. Actual cash price is \$5.30 per bushel which maintains the basis at \$-.70. With actual yield at 20 bushels per acre, the Hedge performs significantly better than the Cash market alternative. With a Put option strike price of \$6.50, the option still makes enough money to make it more attractive than the Cash alternative. As you would expect, with prices held constant at the levels indicated, the relative ranking for net income per acre does not change, even if yield is reduced to zero.

Figure 26. Effectiveness of marketing tools with low prices and yields.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios				
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		<b>Cash</b> Cash Sale Expected Basis -- Preproduction Net Predicted Cash Floor (Ceiling) Price Per Bushel Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		<b>Combo Policy</b> (YP) Yield Protection Revenue Protection W/Harvest Price Excl. (RP) Revenue Protection		<b>Futures &amp; Options</b> Results are based on No. of Bu. in a Futures/Options contract Hedge Locks Price Puts Sets Floor Calls Sets Ceiling			\$7.70 (\$0.70) \$7.70 \$308.00		<input checked="" type="checkbox"/> \$8.40 \$0.02 (\$0.70) <b>\$7.68</b> 100.00% \$307.20		\$6.50 \$0.29 (\$0.70) <b>\$5.51</b> 100.00% \$220.40		\$10.00 \$0.17 (\$0.70) <b>\$9.47</b> 100.00% \$378.80	
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b> Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b>		<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b> Cash Price at Sale Time Actual Basis @ Harvest--Per Bushel Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu. Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.) Profits/Losses From Puts Prorated Over Actual Production (Per Bu.) Profits/Losses From Calls Prorated Over Actual Production (Per Bu.) <b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b> Net Revenue Per Acre Based on Actual Bushels Harvested Cost of Production Per Bushel -- Based on APH Yield Expected Net Income Per Acre--Preproduction <b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$6.00 NA NA <input checked="" type="checkbox"/> \$5.30 -\$0.70 \$0.00 <b>Hedge</b> \$4.76 <b>Puts</b> \$0.42 <b>Calls</b> \$0.00 \$5.30 \$106.00 \$4.50 \$128.00 (\$74.00)		<input checked="" type="checkbox"/> \$6.00 NA NA <input checked="" type="checkbox"/> \$5.30 -\$0.70 \$0.00 \$4.76 \$0.42 \$0.00 <b>\$10.06</b> <b>\$5.72</b> <b>\$5.30</b> \$201.20 \$114.40 \$106.00 \$4.50 \$4.50 \$4.50 \$127.20 \$40.40 \$198.80 <b>\$21.20</b> <b>(\$65.60)</b> <b>(\$74.00)</b>			\$6.00 \$6.00 NA NA <input checked="" type="checkbox"/> \$5.30 -\$0.70 \$0.00 \$0.00 \$0.00 <b>\$5.30</b> \$201.20 \$114.40 \$106.00 \$4.50 \$4.50 \$4.50 \$127.20 \$40.40 \$198.80 <b>\$21.20</b> <b>(\$65.60)</b> <b>(\$74.00)</b>							
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b> Spot Harvest Time Futures-Preproduction--NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		<b>Information at Harvest/Sale/Offset</b> RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8		\$6.00 \$6.00 \$6.00 (\$0.70) \$4.50 20.0										
<input type="button" value="Reset"/> <input type="button" value="Print"/>																

**Scenario #11:** The scenarios to this point have held the expected basis constant at -\$0.70 per bushel by changing both the Spot futures at harvest and the Actual cash price received. This software allows you to explore how basis variability can affect the final results across all alternatives. Set the variable values and check boxes as displayed in Figure 26. Now assume the basis changes from -\$0.70 to -\$1.00 (weakens) between the time a Hedge or Put is placed and harvest/sale/offset. To illustrate this, set RMA Harvest Price and the Spot futures at

harvest to \$6.30. The Actual Basis at Harvest will show -\$1.00. If the Actual Cash Price Received at Harvest/Sale is changed to reflect a change in the basis the net income per acre for all of the alternatives change. Net income per acre is driven off the Actual Cash Price Received at Harvest/Sale value, but adjusted when necessary. It is difficult to see the impact of basis variability on the various alternatives on the Summary Results page. Table 1, is included here to help illustrate the difference between the price change and a basis change. While the cash alternative absorbs the entire per bushel change in price, the Hedge alternative absorbs only the change in basis from -\$0.70 to -\$1.00. This change is a negative \$12.00 per acre (-\$0.30 basis change \* 40 bushels per acre). As a reminder, this scenario includes an exact match with expected and actual production and eight contracts exactly match total production of 40,000 bushels. If this was not the case, there is either an over hedged or under hedged position, and the net income per acre are adjusted accordingly with profits or losses from the marketing tools.

Table 1. Basis variability effects on net income per acre.

	Cash	Hedge
	Basis Example A – Base Case Scenario	
Basis is <u>-\$0.70</u> , Actual Cash \$7.70, RMA Harvest Price and Spot Futures are \$8.40, Yield is 40 bu.	\$128.00	\$127.20
	Basis Example B	
Basis is <u>-\$1.00</u> , Actual Cash \$5.30, RMA Harvest Price and Spot Futures are \$6.30, Yield is 40 bu.	\$32.00	\$115.20
Difference in Net Income (A – B)	(\$96.00)	(\$12.00)

### **Combinations of Combo Policy Plans and Futures and Options Markets:**

As indicated previously, this software allows evaluation of one or more of the Futures and Options alternatives in any combination with the Combo policy plans. The scenarios below help illustrate possible combinations of an overall risk management strategy.

**Scenario #12:** Figure 27 provides a starting point for this set of scenarios. Both the RMA Harvest Price and the Spot futures are \$6.00. The basis is held at -\$0.70, so the cash price is \$5.30. Yield is 40 bushels. Net income per acre for the Cash, and all of the futures and options columns is \$32.00. These values are the same because the Futures and Options columns are not active. The combo plans are all active and reflect a net income per acre that differs from the Cash column by the premiums paid for each Combo plan.

Figure 27.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash		Combo Policy			Futures & Options							
		Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Results are based on No. of Bu. in a Futures/Options contract								
						Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling						
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b>														
Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00						
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium			\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17						
Expected Basis -- Preproduction		(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)						
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>		\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>						
Percent of Production Insured/Price Protected & Yield Insured			70%	70%	70%	100.00%	100.00%	100.00%						
Price Election on Combo Insurance			100%	100%	100%									
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80						
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>														
Spot Futures Price for Futures & Options Markets at Sale			NA	NA	NA	\$6.00	\$6.00	\$6.00						
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset			\$6.00	\$6.00	\$6.00	NA	NA	NA						
<b>Net Combo Indemnity Received Per Acre</b>			<b>(\$7.50)</b>	<b>(\$9.80)</b>	<b>(\$11.60)</b>	NA	NA	NA						
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Cash Price at Sale Time		\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30						
Actual Basis @ Harvest--Per Bushel			NA	NA	NA	-\$0.70	-\$0.70	-\$0.70						
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.			NA	NA	NA	\$0.00	\$0.00	\$0.00						
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)		Hedge	\$0.00	\$0.00	\$0.00	\$0.00								
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)		Puts	\$0.00	\$0.00	\$0.00		\$0.00							
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		Calls	\$0.00	\$0.00	\$0.00			\$0.00						
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>		<b>\$5.30</b>	<b>\$5.11</b>	<b>\$5.06</b>	<b>\$5.01</b>	<b>\$5.30</b>	<b>\$5.30</b>	<b>\$5.30</b>						
Net Revenue Per Acre Based on Actual Bushels Harvested		\$212.00	\$204.50	\$202.20	\$200.40	\$212.00	\$212.00	\$212.00						
Cost of Production Per Bushel -- Based on APH Yield		\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50						
Expected Net Income Per Acre--Preproduction		\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80						
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		<b>\$32.00</b>	<b>\$24.50</b>	<b>\$22.20</b>	<b>\$20.40</b>	<b>\$32.00</b>	<b>\$32.00</b>	<b>\$32.00</b>						
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>		<b>Information at Harvest/Sale/Offset</b>												
Spot Harvest Time Futures-Preproduction-NOT RMA Avg.		\$8.40	RMA Harvest Price @ Harvest/Sale/Offset		\$6.00									
Expected Basis at Harvest/Sale/Offset		(\$0.70)	Actual Cash Price Received at Harvest/Sale		\$5.30									
Put Strike Price Selected		\$6.50	Spot Futures Price at Harvest/Sale/Offset		\$6.00									
Put Premium Paid		\$0.27	Actual Basis at Harvest		(\$0.70)									
Call Strike Price Selected		\$10.00	Cost of Production Per Bushel		\$4.50									
Call Premium Paid		\$0.15	Actual Yield at Harvest		40.0									
Number of Futures/Options Contracts		8												

**Scenario #13:** In our base case scenario, the Spot Harvest Time Futures – Preproduction –NOT RMA Avg. is \$8.40. This is a \$1.25 per bushel increase over the RMA Projected Harvest Price of \$7.15 and reflects what actually happened after the fall sales closing date in 2010 for wheat in Montana. This provides an opportunity to add another tier of price protection to try and capture some portion of the \$1.25 increase. Click on the check box in the Hedge column to activate the Hedge alternative. Figure 28 illustrates the addition of the Hedge at \$8.40 per bushel. The Hedge alternative shows a positive \$127.20 return per acre and all of the Combo plans show a big jump in net income per acre. This jump is due to the inclusion of the Hedge results in each of the Combo columns. Any time a Hedge, Put or Call alternative is checked, these columns become active and the results from any active alternative are included in each of the Combo plans. Note however, that none of the Combo plans paid an indemnity with this combination of prices and yields. The added revenue in the Combo columns comes entirely from profits per on the Hedge.

Figure 28. Addition of a Hedge to scenario 12.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios			
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset				Cash		Combo Policy		Futures & Options			Results are based on No. of Bu. in a Futures/Options contract				
		Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling							
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b>															
Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00							
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium			\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17							
Expected Basis -- Preproduction		(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)							
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>		\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>							
Percent of Production Insured/Price Protected & Yield Insured			70%	70%	70%	100.00%	100.00%	100.00%							
Price Election on Combo Insurance			100%	100%	100%										
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80							
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>															
Spot Futures Price for Futures & Options Markets at Sale			NA	NA	NA	\$6.00	\$6.00	\$6.00							
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset			\$6.00	\$6.00	\$6.00	NA	NA	NA							
<b>Net Combo Indemnity Received Per Acre</b>			<b>(\$7.50)</b>	<b>(\$9.80)</b>	<b>(\$11.60)</b>	NA	NA	NA							
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Cash Price at Sale Time		\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30							
Actual Basis @ Harvest--Per Bushel			NA	NA	NA	-\$0.70	-\$0.70	-\$0.70							
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.			NA	NA	NA	\$0.00	\$0.00	\$0.00							
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)		<b>Hedge</b>	\$2.38	\$2.38	\$2.38	\$2.38									
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)		<b>Puts</b>	\$0.00	\$0.00	\$0.00		\$0.00								
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		<b>Calls</b>	\$0.00	\$0.00	\$0.00			\$0.00							
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>		<b>\$5.30</b>	<b>\$7.49</b>	<b>\$7.44</b>	<b>\$7.39</b>	<b>\$7.68</b>	<b>\$5.30</b>	<b>\$5.30</b>							
Net Revenue Per Acre Based on Actual Bushels Harvested		\$212.00	\$299.70	\$297.40	\$295.60	\$307.20	\$212.00	\$212.00							
Cost of Production Per Bushel -- Based on APH Yield		\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50							
Expected Net Income Per Acre--Preproduction		\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80							
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		<b>\$32.00</b>	<b>\$119.70</b>	<b>\$117.40</b>	<b>\$115.60</b>	<b>\$127.20</b>	<b>\$32.00</b>	<b>\$32.00</b>							
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>		<b>Information at Harvest/Sale/Offset</b>													
Spot Harvest Time Futures-Preproduction-NOT RMA Avg.		\$8.40	RMA Harvest Price @ Harvest/Sale/Offset		\$6.00										
Expected Basis at Harvest/Sale/Offset		(\$0.70)	Actual Cash Price Received at Harvest/Sale		\$5.30										
Put Strike Price Selected		\$6.50	Spot Futures Price at Harvest/Sale/Offset		\$6.00										
Put Premium Paid		\$0.27	Actual Basis at Harvest		(\$0.70)										
Call Strike Price Selected		\$10.00	Cost of Production Per Bushel		\$4.50										
Call Premium Paid		\$0.15	Actual Yield at Harvest		40.0										
Number of Futures/Options Contracts		8													

**Scenario #14:** Change the actual yield to 20 bushels per acre leaving all other variables as in Figure 28. Figure 29 shows the results of the yield change. With yield at 20 bushels, the Combo plans all pay an indemnity and all show a positive net income per acre while Cash net income is a negative -\$74.00 per acre. The Hedge alternative is still active and profits from the Hedge are providing enough revenue to make all the Combo plans and the Hedge alternative show positive returns. If the Hedge was not active, the Combo plans would not show a positive net income per acre. To verify this, uncheck the Hedge alternative. Figure 30 shows the results when the Hedge is not active.

Figure 29. Change the actual yield to 20 bushels with all other variables as in Figure 28.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
Bushel Buy-Up Calc. Off/On		MouseOver for Help Off/On		Cash		Combo Policy		Futures & Options			Results are based on No. of Bu. in a Futures/Options contract			
<input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash Sale		(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Hedge	Puts	Calls	Locks Price	Sets Floor	Sets Ceiling		
Conditions at Time Price/Yield/Revenue Risk Protection Purchased		Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash	\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00					
		Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium	\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17						
		Expected Basis -- Preproduction	(\$0.70)	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)						
		<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>	\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>					
		Percent of Production Insured/Price Protected & Yield Insured		70%	70%	70%	100.00%	100.00%	100.00%					
		Price Election on Combo Insurance		100%	100%	100%								
		Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction	\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80					
Conditions at Time of Harvest/Sale/Offset/Exercise		Spot Futures Price for Futures & Options Markets at Sale		NA	NA	NA	\$6.30	\$6.30	\$6.30					
		RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset		\$6.30	\$6.30	\$6.30	NA	NA	NA					
		<b>Net Combo Indemnity Received Per Acre</b>		<b>\$49.70</b>	<b>\$64.40</b>	<b>\$62.60</b>	NA	NA	NA					
Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset		Cash Price at Sale Time	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30					
		Actual Basis @ Harvest--Per Bushel		NA	NA	NA	-\$1.00	-\$1.00	-\$1.00					
		Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.		NA	NA	NA	-\$0.30	-\$0.30	-\$0.30					
		Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)	Hedge	\$4.16	\$4.16	\$4.16	\$4.16							
		Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)	Puts	\$0.00	\$0.00	\$0.00		\$0.00						
		Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)	Calls	\$0.00	\$0.00	\$0.00			\$0.00					
		<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>	<b>\$5.30</b>	<b>\$11.95</b>	<b>\$12.68</b>	<b>\$12.59</b>	<b>\$9.46</b>	<b>\$5.30</b>	<b>\$5.30</b>					
		Net Revenue Per Acre Based on Actual Bushels Harvested	\$106.00	\$238.90	\$253.60	\$251.80	\$189.20	\$106.00	\$106.00					
		Cost of Production Per Bushel -- Based on APH Yield	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50					
		Expected Net Income Per Acre--Preproduction	\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80					
		<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>	<b>(\$74.00)</b>	<b>\$58.90</b>	<b>\$73.60</b>	<b>\$71.80</b>	<b>\$9.20</b>	<b>(\$74.00)</b>	<b>(\$74.00)</b>					
Information @ Time Yield/Price/Revenue Protection Implemented		Spot Harvest Time Futures-Preproduction-NOT RMA Avg.	\$8.40											
		Expected Basis at Harvest/Sale/Offset	(\$0.70)											
		Put Strike Price Selected	\$6.50											
		Put Premium Paid	\$0.27											
		Call Strike Price Selected	\$10.00											
		Call Premium Paid	\$0.15											
		Number of Futures/Options Contracts	8											
		<b>Information at Harvest/Sale/Offset</b>					<b>RMA Harvest Price @ Harvest/Sale/Offset</b>		<b>\$6.30</b>					
							<b>Actual Cash Price Received at Harvest/Sale</b>		<b>\$5.30</b>					
							<b>Spot Futures Price at Harvest/Sale/Offset</b>		<b>\$6.30</b>					
							<b>Actual Basis at Harvest</b>		<b>(\$1.00)</b>					
							<b>Cost of Production Per Bushel</b>		<b>\$4.50</b>					
							<b>Actual Yield at Harvest</b>		<b>20.0</b>					

Figure 30. Hedge alternative is not active, all other parameter values as in Figure 29.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
Bushel Buy-Up Calc. Off/On		MouseOver for Help Off/On		Cash		Combo Policy		Futures & Options			Results are based on No. of Bu. in a Futures/Options contract			
<input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash Sale		(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Hedge	Puts	Calls	Locks Price	Sets Floor	Sets Ceiling		
Conditions at Time Price/Yield/Revenue Risk Protection Purchased		Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash	\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00					
		Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium	\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17						
		Expected Basis -- Preproduction	(\$0.70)	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)						
		<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>	\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>					
		Percent of Production Insured/Price Protected & Yield Insured		70%	70%	70%	100.00%	100.00%	100.00%					
		Price Election on Combo Insurance		100%	100%	100%								
		Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction	\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80					
Conditions at Time of Harvest/Sale/Offset/Exercise		Spot Futures Price for Futures & Options Markets at Sale		NA	NA	NA	\$6.30	\$6.30	\$6.30					
		RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset		\$6.30	\$6.30	\$6.30	NA	NA	NA					
		<b>Net Combo Indemnity Received Per Acre</b>		<b>\$49.70</b>	<b>\$64.40</b>	<b>\$62.60</b>	NA	NA	NA					
Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset		Cash Price at Sale Time	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30					
		Actual Basis @ Harvest--Per Bushel		NA	NA	NA	-\$1.00	-\$1.00	-\$1.00					
		Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.		NA	NA	NA	-\$0.30	-\$0.30	-\$0.30					
		Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)	Hedge	\$0.00	\$0.00	\$0.00	\$0.00							
		Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)	Puts	\$0.00	\$0.00	\$0.00		\$0.00						
		Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)	Calls	\$0.00	\$0.00	\$0.00			\$0.00					
		<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>	<b>\$5.30</b>	<b>\$7.79</b>	<b>\$8.52</b>	<b>\$8.43</b>	<b>\$5.30</b>	<b>\$5.30</b>	<b>\$5.30</b>					
		Net Revenue Per Acre Based on Actual Bushels Harvested	\$106.00	\$155.70	\$170.40	\$168.60	\$106.00	\$106.00	\$106.00					
		Cost of Production Per Bushel -- Based on APH Yield	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50					
		Expected Net Income Per Acre--Preproduction	\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80					
		<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>	<b>(\$74.00)</b>	<b>(\$24.30)</b>	<b>(\$9.60)</b>	<b>(\$11.40)</b>	<b>(\$74.00)</b>	<b>(\$74.00)</b>	<b>(\$74.00)</b>					
Information @ Time Yield/Price/Revenue Protection Implemented		Spot Harvest Time Futures-Preproduction-NOT RMA Avg.	\$8.40											
		Expected Basis at Harvest/Sale/Offset	(\$0.70)											
		Put Strike Price Selected	\$6.50											
		Put Premium Paid	\$0.27											
		Call Strike Price Selected	\$10.00											
		Call Premium Paid	\$0.15											
		Number of Futures/Options Contracts	8											
		<b>Information at Harvest/Sale/Offset</b>					<b>RMA Harvest Price @ Harvest/Sale/Offset</b>		<b>\$6.30</b>					
							<b>Actual Cash Price Received at Harvest/Sale</b>		<b>\$5.30</b>					
							<b>Spot Futures Price at Harvest/Sale/Offset</b>		<b>\$6.30</b>					
							<b>Actual Basis at Harvest</b>		<b>(\$1.00)</b>					
							<b>Cost of Production Per Bushel</b>		<b>\$4.50</b>					
							<b>Actual Yield at Harvest</b>		<b>20.0</b>					

**Scenario #15:** Start with the same set of values shown in Figure 28. Click the check box for the Hedge to make it *inactive* and to prevent a doubling up of Hedge and Put alternatives. Click the check box for the Put to make it *active*, Figure 31. The Put option strike price is \$6.50 with a premium paid of \$.27 per bushel. Since this Strike price is much lower than the \$8.40 Spot futures price, the downside price protection provided by the Put is much less than the \$8.40 futures price. The Cash Market still shows a net income per acre of -\$74.00 and the YP column, and the Put columns are both negative. While the Put provided enough protection to keep the net income per acre for the RP-HPE and RP alternatives positive, they are much lower than with the Hedge alternative.

Figure 31. Effectiveness of Put option versus A Hedge.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash		Combo Policy		Futures & Options								
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b> Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Results are based on No. of Bu. in a Futures/Options contract								
						Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling						
		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00						
			\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17						
		(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)						
		\$7.70	\$6.96	\$6.86	\$6.91	\$7.68	\$5.51	\$9.47						
			70%	70%	70%	100.00%	100.00%	100.00%						
			100%	100%	100%									
		\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80						
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b> Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b>			NA	NA	NA	\$6.00	\$6.00	\$6.00						
			\$6.00	\$6.00	\$6.00	NA	NA	NA						
			\$49.70	\$70.40	\$68.60	NA	NA	NA						
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b> Cash Price at Sale Time Actual Basis @ Harvest--Per Bushel Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
		\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30						
			NA	NA	NA	-\$0.70	-\$0.70	-\$0.70						
			NA	NA	NA	\$0.00	\$0.00	\$0.00						
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.) Profits/Losses From Puts Prorated Over Actual Production (Per Bu.) Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		Hedge	\$0.00	\$0.00	\$0.00	\$0.00								
		Puts	\$0.42	\$0.42	\$0.42		\$0.42							
		Calls	\$0.00	\$0.00	\$0.00			\$0.00						
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b> Net Revenue Per Acre Based on Actual Bushels Harvested Cost of Production Per Bushel -- Based on APH Yield		\$5.30	\$8.21	\$9.24	\$9.15	\$5.30	\$5.72	\$5.30						
		\$106.00	\$164.10	\$184.80	\$183.00	\$106.00	\$114.40	\$106.00						
		\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50						
Expected Net Income Per Acre--Preproduction <b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80						
		(\$74.00)	(\$15.90)	\$4.80	\$3.00	(\$74.00)	(\$65.60)	(\$74.00)						
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b> Spot Harvest Time Futures--Preproduction--NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8	<b>Information at Harvest/Sale/Offset</b> RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest				\$6.00 \$5.30 \$6.00 (\$0.70) \$4.50 20.0							

**Scenario #16:** This scenario explores what might happen when an individual farm experiences very low yields. Start with the variable values shown in Figure 31. Change the yield to 5 bushels per acre. The results of these changes are shown in Figure 32. While the yield was very low for this farm, the relevant prices were also low. The net income per acre for the Combo policy plans are relatively the same, ranging from , \$3.45 with YP to \$6.90 with RP-HPE. Now click the check box in the Hedge column to active the Hedge. Figure 33 shows the results with the Hedge active. Even though the Hedge column now shows a -\$58.30 net income per acre,

when profits from the Hedge are combined with the Combo plans, all of the Combo plan columns show large positive numbers. The combination of using the hedge and a combo plan provides a significant safety net in this scenario. This management strategy only exists because the jump in futures prices after the sales closing date on Sept. 30<sup>th</sup>.

Figure 32. Very low yields with only the Combo plans active.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios	
<b>Bushel Buy-Up Calc. Off/On</b>		<b>MouseOver for Help Off/On</b>		<b>Cash</b>		<b>Combo Policy</b>		<b>Futures &amp; Options</b>		Results are based on No. of Bu. in a Futures/Options contract			
<input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset				Cash Sale	(YP) Yield Protection	Revenue Protection W/Harvest Price Excl.	(RP) Revenue Protection	Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling			
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b>													
Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash				\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00			
Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium					\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17			
Expected Basis -- Preproduction				(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)			
<b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b>				\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>			
Percent of Production Insured/Price Protected & Yield Insured					70%	70%	70%	100.00%	100.00%	100.00%			
Price Election on Combo Insurance					100%	100%	100%						
Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction				\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80			
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b>													
Spot Futures Price for Futures & Options Markets at Sale					NA	NA	NA	\$6.00	\$6.00	\$6.00			
RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset					\$6.00	\$6.00	\$6.00	NA	NA	NA			
<b>Net Combo Indemnity Received Per Acre</b>					<b>\$156.95</b>	<b>\$160.40</b>	<b>\$158.60</b>	NA	NA	NA			
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
Cash Price at Sale Time				\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30			
Actual Basis @ Harvest--Per Bushel					NA	NA	NA	-\$0.70	-\$0.70	-\$0.70			
Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.					NA	NA	NA	\$0.00	\$0.00	\$0.00			
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)				<b>Hedge</b>	\$0.00	\$0.00	\$0.00	\$0.00					
Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)				<b>Puts</b>	\$0.00	\$0.00	\$0.00		\$0.00				
Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)				<b>Calls</b>	\$0.00	\$0.00	\$0.00			\$0.00			
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b>				<b>\$5.30</b>	<b>\$36.69</b>	<b>\$37.38</b>	<b>\$37.02</b>	<b>\$5.30</b>	<b>\$5.30</b>	<b>\$5.30</b>			
Net Revenue Per Acre Based on Actual Bushels Harvested				\$26.50	\$183.45	\$186.90	\$185.10	\$26.50	\$26.50	\$26.50			
Cost of Production Per Bushel -- Based on APH Yield				\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50			
Expected Net Income Per Acre--Preproduction				\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80			
<b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>				<b>(\$153.50)</b>	<b>\$3.45</b>	<b>\$6.90</b>	<b>\$5.10</b>	<b>(\$153.50)</b>	<b>(\$153.50)</b>	<b>(\$153.50)</b>			
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b>								<b>Information at Harvest/Sale/Offset</b>					
Spot Harvest Time Futures-Preproduction-NOT RMA Avg.				\$8.40				RMA Harvest Price @ Harvest/Sale/Offset		\$6.00			
Expected Basis at Harvest/Sale/Offset				(\$0.70)				Actual Cash Price Received at Harvest/Sale		\$5.30			
Put Strike Price Selected				\$6.50				Spot Futures Price at Harvest/Sale/Offset		\$6.00			
Put Premium Paid				\$0.27				Actual Basis at Harvest		(\$0.70)			
Call Strike Price Selected				\$10.00				Cost of Production Per Bushel		\$4.50			
Call Premium Paid				\$0.15				Actual Yield at Harvest		5.0			
Number of Futures/Options Contracts				8									
Reset		Print											







**Scenario #19:** Our last scenario simulates the revenue protect provided by the RP Combo plan by purchasing the YP coverage plan and a Call option. Start with the variable values as shown in Figure 37. None of the marketing options are active. As you might expect for this scenario, the RP Combo plan provides the highest indemnity at \$130.40 per acre. This is due to the upside price protection provided with the RP plan. There is a way to simulate the RP coverage by using a Call option to provide protection against rising prices. To illustrate this, uncheck the RP-HPE and RP combo columns so they are not active. Leave the YP column checked. Now click the check box to activate the Call option column. Figure 38 shows the results of this risk management strategy. The net income per acre for the RP plan is \$130.40, Figure 37. The net income per acre for the YP and Call option strategy is \$168.90, Figure 38. In this particular scenario, combining YP and a Call option provides more coverage than just the Combo RP plan. This scenario looks attractive because of the RMA Harvest Price, \$12.00, is above the Call Strike, \$10.00 price. However, this strategy does not pay a higher indemnity if the RMA Harvest Price is below the Call Strike price, but above the RMA Projected Harvest Price. It leaves a gap in coverage where RP does pay indemnities.

Figure 37. Simulated the yield and price protection provided by RP using YP and a Call option.

Introduction		General Inputs		Futures		Options		Summary Results		Cost of Production		Save, Load, Delete Scenarios				
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On <input type="checkbox"/> Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		Cash		Combo Policy		Futures & Options						Results are based on No. of Bu. in a Futures/Options contract				
		Cash Sale	(YP) Yield Protection	Revenue W/Harvest Price Excl.	(RP) Revenue Protection	Hedge Locks Price	Puts Sets Floor	Calls Sets Ceiling								
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b> Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00								
			\$7.50	\$9.80	\$11.60	\$0.02	\$0.29	\$0.17								
		(\$0.70)	NA	NA	NA	(\$0.70)	(\$0.70)	(\$0.70)								
		\$7.70	<b>\$6.96</b>	<b>\$6.86</b>	<b>\$6.91</b>	<b>\$7.68</b>	<b>\$5.51</b>	<b>\$9.47</b>								
			70%	70%	70%	100.00%	100.00%	100.00%								
			100%	100%	100%											
		\$308.00	\$278.50	\$274.40	\$276.20	\$307.20	\$220.40	\$378.80								
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b> Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b>			NA	NA	NA	\$12.00	\$12.00	\$12.00								
			\$12.00	\$12.00	\$12.00	NA	NA	NA								
			<b>\$49.70</b>	<b>\$47.40</b>	<b>\$84.40</b>	NA	NA	NA								
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b> Cash Price at Sale Time Actual Basis @ Harvest--Per Bushel Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.		\$11.30	\$11.30	\$11.30	\$11.30	\$11.30	\$11.30	\$11.30								
			NA	NA	NA	-\$0.70	-\$0.70	-\$0.70								
			NA	NA	NA	\$0.00	\$0.00	\$0.00								
Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.) Profits/Losses From Puts Prorated Over Actual Production (Per Bu.) Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)		Hedge	\$0.00	\$0.00	\$0.00	\$0.00			\$0.00							
		Puts	\$0.00	\$0.00	\$0.00		\$0.00									
		Calls	\$0.00	\$0.00	\$0.00											
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b> Net Revenue Per Acre Based on Actual Bushels Harvested Cost of Production Per Bushel -- Based on APH Yield Expected Net Income Per Acre--Preproduction <b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$11.30	<b>\$13.79</b>	<b>\$13.67</b>	<b>\$15.52</b>	<b>\$11.30</b>	<b>\$11.30</b>	<b>\$11.30</b>								
		\$226.00	\$275.70	\$273.40	\$310.40	\$226.00	\$226.00	\$226.00								
		\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50								
		\$128.00	\$98.50	\$94.40	\$96.20	\$127.20	\$40.40	\$198.80								
		<b>\$46.00</b>	<b>\$95.70</b>	<b>\$93.40</b>	<b>\$130.40</b>	<b>\$46.00</b>	<b>\$46.00</b>	<b>\$46.00</b>								
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b> Spot Harvest Time Futures--Preproduction--NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8	<b>Information at Harvest/Sale/Offset</b> RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest		\$12.00 \$11.30 \$12.00 (\$0.70) \$4.50 20.0											

Reset

Print

Figure 38. Simulated results for price and yield coverage offered by RP with YP and Call options.

Introduction	General Inputs	Futures	Options	Summary Results	Cost of Production	Save, Load, Delete Scenarios		
<input type="checkbox"/> Bushel Buy-Up Calc. Off/On <input type="checkbox"/> MouseOver for Help Off/On Use Check Boxes to display input options. <input type="checkbox"/> Display/Hide Combo Ins. variables at time of purchase <input checked="" type="checkbox"/> Display/Hide Market variables at harvest/sale/offset		<b>Cash</b> Cash Sale YP Yield Protection Revenue Protection W/Harvest Price Excl. (RP) Revenue Protection			<b>Futures &amp; Options</b> Results are based on No. of Bu. in a Futures/Options contract Hedge Locks Price Puts Sets Floor Calls Sets Ceiling			
<b>Conditions at Time Price/Yield/Revenue Risk Protection Purchased</b> Futures/Options Strike Prices/Combo Coverage Prices/Predicted Cash Marketing Brokerage, Margin, Interest & Other Misc. OR Insurance Premium Expected Basis -- Preproduction <b>Net Predicted Cash Floor (Ceiling) Price Per Bushel</b> Percent of Production Insured/Price Protected & Yield Insured Price Election on Combo Insurance Expected Revenue/Acre Net of Marketing & Insurance Cost--Preproduction		\$7.70	\$7.15	\$7.15	\$7.15	\$8.40	\$6.50	\$10.00
<b>Conditions at Time of Harvest/Sale/Offset/Exercise</b> Spot Futures Price for Futures & Options Markets at Sale RMA Avg. Futures Price for Insurance Products @ Harvest/Sale/Offset <b>Net Combo Indemnity Received Per Acre</b>			NA	NA	NA	\$12.00	\$12.00	\$12.00
<b>Results for Futures/Options/Insurance @ Time of Harvest/Sale/Offset</b> Cash Price at Sale Time Actual Basis @ Harvest--Per Bushel Gain/Loss (+/-) on Basis @ Harvest/Sale/Offset--Per Bu.		\$11.30	\$11.30	\$11.30	\$11.30	\$11.30	\$11.30	\$11.30
<b>Profits/Losses From Hedge Prorated Over Actual Production (Per Bu.)</b> <b>Profits/Losses From Puts Prorated Over Actual Production (Per Bu.)</b> <b>Profits/Losses From Calls Prorated Over Actual Production (Per Bu.)</b>		Hedge	\$0.00	\$0.00	\$0.00	\$0.00		
<b>Net Cash Price Per Bushel Harvested Yield @ Harvest/Sale/Offset</b> Net Revenue Per Acre Based on Actual Bushels Harvested Cost of Production Per Bushel -- Based on APH Yield Expected Net Income Per Acre--Preproduction <b>Actual Net Income Per Acre (Actual Yield * Actual Net Price)</b>		\$11.30	\$17.45	\$14.96	\$14.96	\$11.30	\$11.30	\$14.96
<b>Information @ Time Yield/Price/Revenue Protection Implemented</b> Spot Harvest Time Futures-Preproduction--NOT RMA Avg. Expected Basis at Harvest/Sale/Offset Put Strike Price Selected Put Premium Paid Call Strike Price Selected Call Premium Paid Number of Futures/Options Contracts		\$8.40 (\$0.70) \$6.50 \$0.27 \$10.00 \$0.15 8	<b>Information at Harvest/Sale/Offset</b> RMA Harvest Price @ Harvest/Sale/Offset Actual Cash Price Received at Harvest/Sale Spot Futures Price at Harvest/Sale/Offset Actual Basis at Harvest Cost of Production Per Bushel Actual Yield at Harvest			\$12.00 \$11.30 \$12.00 (\$0.70) \$4.50 20.0		

**Scenario #20:** The coverage levels for price and yield have been held constant at 100% and 70% respectively throughout these scenarios. Work through each scenario with different price and yield election levels of your choice. This will require you to visit the RMA Cost Estimator located on the web at: <https://ewebapp.rma.usda.gov/apps/costestimator/> This is web based software that estimates your premiums for each combination of insurance plan, crop, location and coverage level you wish to evaluate. See the appendix in this publication for further details.

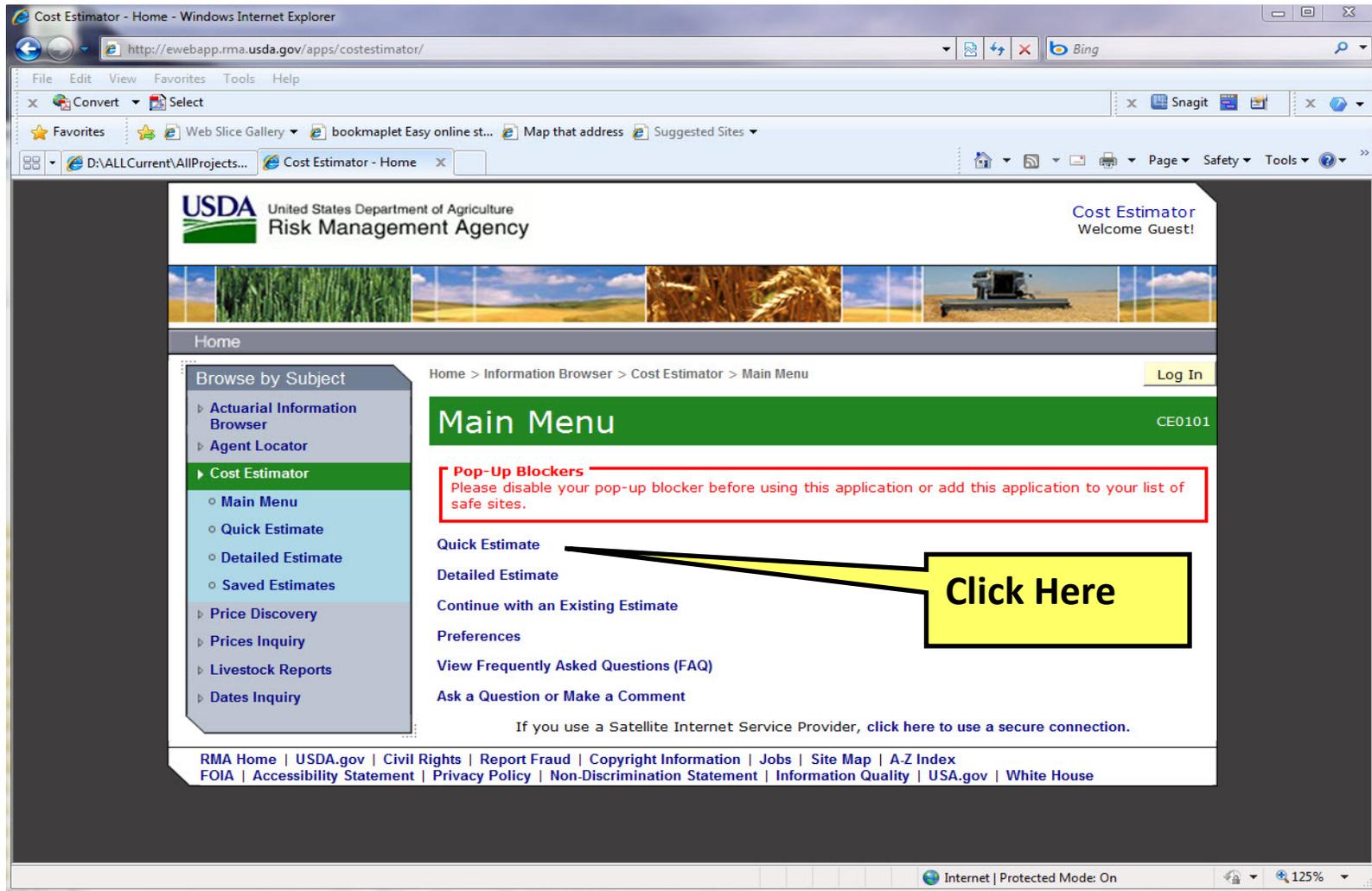
**Scenario #21:** The number of futures or options contracts was held constant at eight for all of the scenarios provided. Typically, producers will not have a situation where expected production exactly matches actual production and an even number of contracts. In these instances, using futures and options puts the producer in an over hedged or under hedged position. In either of these positions, profits or losses from a hedge, when prorated over actual yield, can either help or hurt the cash position. Even if a perfect match for production existed, producers will not usually hedge 100% of their expected production. Work back through some of the scenarios presented using a number of contracts more or less than the eight contracts used to examine the effects of over or under hedging.

# Appendix

Appendix Figures 1 through 7 are screen captures of the RMA Cost Estimator. This online tool provides premium estimates for commodities by location. The example shown here is an estimate for Winter Wheat in Montana grown in Hill County under summer fallow conditions. Cropped acres is 1,000 with an ownership factor of 100% = 1.0. Approved Yield and Rate Yield are both 40 bushels. A 100% price election and 70% yield election are shown. The RMA Projected Harvest Price for this commodity, determined prior to the September 30, 2010 sales closing date was \$7.15 per bushel.

Appendix Figures 8 through 10 are screen captures of the ***RMA Information Browser*** and the ***RMA Actuarial Browser***. The information browser is a general purpose information browser covering a wide array of topics. The actuarial browser provides information about selected insurance products. This browser is an excellent source of detailed information about individual insurance products.

Appendix Figure 1. RMA Cost Estimator located at: <https://ewebapp.rma.usda.gov/apps/costestimator/>



Appendix Figure 2. The first screen in the Quick Estimate series which is not yet completed.

The screenshot shows the USDA Risk Management Agency Cost Estimator Quick Estimate page. At the top left is the USDA logo and text: "United States Department of Agriculture Risk Management Agency". At the top right is "Cost Estimator Welcome Guest!". Below the header is a banner image with four panels: green crops, a field, golden wheat, and a combine harvester. A navigation bar contains "Home" and "Log In". The breadcrumb trail reads "Home > Information Browser > Cost Estimator > Quick Estimate". The main heading "Quick Estimate" is in a green box with the ID "CE0401". A "Quick Criteria" form has six dropdown menus: Commodity (set to "--Select A Commodity--"), Commodity Year, State, County, Type, and Practice. Below the form, it says "Data valid as of: 11/27/2010" and provides a disclaimer: "The Cost Estimator only provides a general premium estimate. Refer to your crop insurance agent and policy for specific information regarding insurance coverage, actuarial information, conditions and exclusions." A footer contains various links: "RMA Home | USDA.gov | Civil Rights | Report Fraud | Copyright Information | Jobs | Site Map | A-Z Index | FOIA | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Information Quality | USA.gov | White House".

USDA United States Department of Agriculture  
Risk Management Agency

Cost Estimator  
Welcome Guest!

Home

Home > Information Browser > Cost Estimator > Quick Estimate [Log In](#)

## Quick Estimate

CE0401

**Quick Criteria**

\* Commodity : --Select A Commodity--

\* Commodity Year :

\* State :

\* County :

\* Type :

\* Practice :

Data valid as of: 11/27/2010

The Cost Estimator only provides a general premium estimate. Refer to your crop insurance agent and policy for specific information regarding insurance coverage, actuarial information, conditions and exclusions.

[RMA Home](#) | [USDA.gov](#) | [Civil Rights](#) | [Report Fraud](#) | [Copyright Information](#) | [Jobs](#) | [Site Map](#) | [A-Z Index](#)  
[FOIA](#) | [Accessibility Statement](#) | [Privacy Policy](#) | [Non-Discrimination Statement](#) | [Information Quality](#) | [USA.gov](#) | [White House](#)

Appendix Figure 3. The second screen in the Quick Estimate series with all values completed.

Home > Information Browser > Cost Estimator > Quick Estimate Log In

## Quick Estimate CE0401

**Browse by Subject**

- Actuarial Information Browser
- Agent Locator
- Cost Estimator
  - Main Menu
  - Quick Estimate
  - Detailed Estimate
  - Saved Estimates
- Price Discovery
- Prices Inquiry
- Livestock Reports
- Dates Inquiry

**Quick Criteria**

- \* Commodity : Wheat 0011
- \* Commodity Year : 2011
- \* State : Montana 30
- \* County : Hill 041
- \* Type : Winter 011
- \* Practice : Summerfallow 005

**Individual Coverage**

- \* Reported Acreage : 1000
- \* Insured Share Percent : 1
- \* Unit of Measure : BU
- \* Approved Yield : 40
- \* Rate Yield : 40

**Yield Protection 01**

- \* Projected Price : 100 % \$7.15

**Revenue Protection 02**

- \* Projected Price : 100 % \$7.15
- \* Price Volatility Factor : 0.33

**Revenue Prot with Harvest Price Exclusion 03**

- \* Projected Price : 100 % \$7.15
- \* Price Volatility Factor : 0.33

[Get Estimates](#)

After entering all relevant information, click the Get Estimates button.

**These are only estimates.**

Appendix Figure 4. The third screen in the Quick Estimate series showing summary results.



United States Department of Agriculture  
Risk Management Agency

Cost Estimator  
Welcome Guest!

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**Quick Estimate 23264**

[Back](#) [Save](#) [Print/ Export](#)

**Selected Initial Criteria**

* Commodity : Wheat 0011	* Commodity Year : 2011	* State : Montana 30
* County : Hill 041	* Type : Winter 011	* Practice : Summerfallow 005

---

**Individual Coverage**

* Reported Acreage : 1000	* Insured Share Percent : 1	* Unit of Measure : BU
* Approved Yield : 40	* Rate Yield : 40	

---

**Yield Protection 01**

\* Projected Price : 100 % \$7.15

---

**Revenue Protection 02**

* Projected Price : 100 % \$7.15	* Price Volatility Factor : 0.33
----------------------------------	----------------------------------

---

**Revenue Prot with Harvest Price Exclusion 03**

* Projected Price : 100 % \$7.15	* Price Volatility Factor : 0.33
----------------------------------	----------------------------------

**Show In Grid**

Liability Amount
  Total Premium Amount
  Producer Premium Amount
  Subsidy Amount

**Liability Amount**

**Individual Coverage**

	85 %	80 %	75 %	70 %	65 %	60 %	55 %	50 %	View
Yield Protection 01	\$243,100.00	\$228,800.00	\$214,500.00	\$200,200.00	\$185,900.00	\$171,600.00	\$157,300.00	\$143,000.00	Worksheets Detailed Estimate CEPP SPOI AIB
Revenue Protection 02	\$243,100.00	\$228,800.00	\$214,500.00	\$200,200.00	\$185,900.00	\$171,600.00	\$157,300.00	\$143,000.00	Worksheets Detailed Estimate CEPP SPOI AIB
Revenue Prot with Harvest Price Exclusion 03	\$243,100.00	\$228,800.00	\$214,500.00	\$200,200.00	\$185,900.00	\$171,600.00	\$157,300.00	\$143,000.00	Worksheets Detailed Estimate CEPP SPOI AIB

The Cost Estimator only provides a general premium estimate. Refer to your crop insurance agent and policy for specific information regarding insurance coverage, actuarial information, conditions and exclusions.

Data valid as of: 11/27/2010

From this screen, you can click on the word “[Worksheets](#)” in the lower right corner to get detailed or summary results and the premium costs estimate for the crop, location, practice type, yields, ownership, etc. you have entered.

Appendix Figure 5. This screen shows summary results (Producer Worksheet) for a 70% yield election for Revenue Protection (RP)

**Producer and Detail Worksheets for Estimate 23264**




 Back Save Print/ Export

**Selected Initial Criteria**

* Commodity	: Wheat 0011	* Commodity Year	: 2011	* State	: Montana 30
* County	: Hill 041	* Type	: Winter 011	* Practice	: Summerfallow 005

**Individual Coverage**

Revenue Protection 02 < Show Item Details >>

85 %
  80 %
  75 %
  70 %
  65 %
  60 %
  55 %
  50 %

Detail Worksheet

**Producer Worksheet**

Dates		
Final Planting	Acreage Reporting	Sales Closing
11/15/2010	11/15/2010	09/30/2010
Computed Results		
	Total	Per Acre/Quantity
Coverage:	\$200,200.00	\$200.20
Production Guarantee Amount:	\$200,200.00	\$200.20
Total Premium Amount (Including A&O):	\$33,329.31	\$33.33
Premium Subsidy:	\$21,797.31	\$21.80
Administrative and Operating Subsidy:	\$5,203.31	\$5.20
Producer Premium (No Administrative Fee Included):	\$11,532.00	\$11.53
Administrative Fee:	\$30.00	\$0.03
<b>Producer Premium (Administrative Fee Included):</b>	<b>\$11,562.00</b>	<b>\$11.56</b>
Factors and Codes		
	Factor	Code(s)
Unit Structure:	1.000	OU
Sub County Code:	N/A	N/A
Additive Optional Rate Adjustment:	0.00000000	
Multiplicative Optional Rate Adjustment:	1.00000000	
Fixed Rate:	0.040	N/A

THIS WORKSHEET IS INTENDED TO ASSIST IN ESTIMATING PRODUCER PREMIUM ONLY.

Appendix Figure 6. This screen shows summary results (Producer Worksheet) for a 70% yield election for RP with the Harvest Price Exclusion (HPE) or RP-HPE.

**Producer and Detail Worksheets for Estimate 23264**

Back Save Print/ Export

**Selected Initial Criteria**

\* Commodity : Wheat 0011 \* Commodity Year : 2011 \* State : Montana 30  
\* County : Hill 041 \* Type : Winter 011 \* Practice : Summerfallow 005

**Individual Coverage**

Revenue Prot with Harvest Price Exclusion 03 << Show Item Details >>

85 % 80 % 75 % 70 % 65 % 60 % 55 % 50 %

Detail Worksheet **Producer Worksheet**

Dates		
Final Planting	Acreage Reporting	Sales Closing
11/15/2010	11/15/2010	09/30/2010
Computed Results		
	Total	Per Acre/Quantity
<i>Coverage:</i>	\$200,200.00	\$200.20
<i>Production Guarantee Amount:</i>	\$200,200.00	\$200.20
<i>Total Premium Amount (Including A&amp;O):</i>	\$29,012.20	\$29.01
<i>Premium Subsidy:</i>	\$19,254.20	\$19.25
<i>Administrative and Operating Subsidy:</i>	\$5,212.20	\$5.21
<i>Producer Premium (No Administrative Fee Included):</i>	\$9,758.00	\$9.76
<i>Administrative Fee:</i>	\$30.00	\$0.03
<b><i>Producer Premium (Administrative Fee Included):</i></b>	<b>\$9,788.00</b>	<b>\$9.79</b>
Factors and Codes		
	Factor	Code(s)
<i>Unit Structure:</i>	1.000	OU
<i>Sub County Code:</i>	N/A	N/A
<i>Additive Optional Rate Adjustment:</i>	0.00000000	
<i>Multiplicative Optional Rate Adjustment:</i>	1.00000000	
<i>Fixed Rate:</i>	0.040	N/A

THIS WORKSHEET IS INTENDED TO ASSIST IN ESTIMATING PRODUCER PREMIUM ONLY.

Appendix Figure 7. This screen shows summary results (Producer Worksheet) for a 70% yield election for the Yield Protection Plan.

**Producer and Detail Worksheets for Estimate 23264**

[Back](#) [Save](#) [Print/ Export](#)

**Selected Initial Criteria**

\* Commodity : Wheat 0011      \* Commodity Year : 2011      \* State : Montana 30  
\* County : Hill 041      \* Type : Winter 011      \* Practice : Summerfallow 005

**Individual Coverage**

Yield Protection 01 [<< Show Item Details >>](#)

85 % 80 % 75 % **70 %** 65 % 60 % 55 % 50 %

[Detail Worksheet](#) [Producer Worksheet](#)

Dates		
Final Planting	Acreage Reporting	Sales Closing
11/15/2010	11/15/2010	09/30/2010
Computed Results		
	Total	Per Acre/Quantity
<i>Coverage:</i>	\$200,200.00	\$200.20
<i>Production Guarantee Amount:</i>	\$200,200.00	\$200.20
<i>Total Premium Amount (Including A&amp;O):</i>	\$22,135.82	\$22.14
<i>Premium Subsidy:</i>	\$14,690.82	\$14.69
<i>Administrative and Operating Subsidy:</i>	\$3,976.82	\$3.98
<i>Producer Premium (No Administrative Fee Included):</i>	\$7,445.00	\$7.45
<i>Administrative Fee:</i>	\$30.00	\$0.03
<b><i>Producer Premium (Administrative Fee Included):</i></b>	<b>\$7,475.00</b>	<b>\$7.48</b>
Factors and Codes		
	Factor	Code(s)
<i>Unit Structure:</i>	1.000	OU
<i>Sub County Code:</i>	N/A	N/A
<i>Additive Optional Rate Adjustment:</i>	0.00000000	
<i>Multiplicative Optional Rate Adjustment:</i>	1.00000000	
<i>Fixed Rate:</i>	0.040	N/A

THIS WORKSHEET IS INTENDED TO ASSIST IN ESTIMATING PRODUCER PREMIUM ONLY.

Appendix Figure 8. RMA Information Browser located at: <http://www.rma.usda.gov/tools/>

The screen capture shown below is a partial list of information sources provided by RMA.

USDA United States Department of Agriculture  
Risk Management Agency

RMA

Home About RMA Field Offices News Opportunities Publications Help Contact Us

You are here: Home / Information Browser / Information Browser

## Information Browser

RMA's Information Browser is the **landing page** for all data and web applications available on the RMA public Web site. It combines links formerly available through the "Actuarial Documents," "Data," and "Tools and Calculators" areas on our left-hand navigation bar.

- [Actuarial Information Browser, 2011 Reinsurance Year and beyond](#) | [Actuarial Document Browser, before Reinsurance Year 2011](#)
- [Agent and Insurance Provider Locators](#)
- [Cause of Loss \(historical data files\)](#)
- [Codes and Abbreviations](#)
- [Cost Estimator, 2011 and beyond](#) | [Premium Calculator, before 2011](#)
- [County Crop Programs](#)
- [Crop Indemnity Maps](#)
- [Data Acceptance System \(Appendix III/M-13 Handbook\)](#)
- [Data Archive](#)
- [Dates Inquiry System](#)
- [Date Summaries: 2010](#) | [2009](#) | [2008](#) | [2007](#) | [2006](#) | [2005](#) | [2004](#) | [2003](#) | [2002](#) | [2001](#) | [2000](#) | [1999](#) | [1998](#) | [1997](#) | [1996](#)
- [FTP file access](#) | [HTTP interface](#)
- [GIS Actuarial Maps](#)
- [GRIP Final County Revenues](#)
- [GRP Final Payment Yields](#)
- [Livestock Reports \(LRP and LGM\)](#)
- [Loss Ratios by Fund Designation: 2009 PDF - XLS](#) | [2008 PDF - XLS](#) | [2007 PDF - XLS](#) | [2006 PDF - XLS](#) | [2005 PDF - XLS](#) | [2004 PDF - XLS](#) | [2003 PDF - XLS](#) |
- [Nursery Software and Eligible Plant List and Plant Price Schedule Books](#)
- [Pilot Biotechnology Endorsement Qualifying Hybrids](#)
- [Prairie Pothole National Priority Area Maps](#)

Appendix Figure 9. Completed initial screen for the RMA Actuarial Browser located at: <http://webapp.rma.usda.gov/apps/actuarialinformationbrowser/>

The screenshot displays the RMA Actuarial Browser interface. At the top left is the USDA logo and the text "United States Department of Agriculture Risk Management Agency". At the top right is the title "Actuarial Information Browser". Below the header is a decorative banner with agricultural images. A "Home" button is located in the top left navigation bar. On the left side, there is a "Browse by Application" menu with the following items: Actuarial Information Browser (selected), Crop, Livestock Gross Margin, Livestock Risk Protection, Rainfall Index, Vegetation Index, Agent Locator, Cost Estimator, Price Discovery, Prices Inquiry, AGR Commodity, Livestock Reports, Subsidy/Admin Fees, and Dates Inquiry. The main content area is titled "Actuarial Information Browser" and includes a breadcrumb "Information Browser > Actuarial Information Browser". Below the title, it says "Please select a functional area from the navigation menu or begin an unfiltered search below". A "Select - Criteria" form contains the following fields: \*Commodity (Wheat (0011)), \*Commodity Year (2011), \*Insurance Plan (Yield Protection (01)), \*State (Montana (30)), and \*County (Hill (041)). There are "clear" and "View Report" buttons. The version information "Version 2.5.46 Build 28133" is located at the bottom right of the main content area. A note states: "Commodity Year, as used throughout this application, represents Crop Year / Insurance Year as applicable for the commodity." The footer contains a list of links: RMA Home | USDA.gov | Civil Rights | Report Fraud | Copyright Information | Jobs | Site Map | A-Z Index FOIA | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Information Quality | USA.gov | White House.

Appendix Figure 10. Sample report generates by the RMA Actuarial Browser.

USDA United States Department of Agriculture  
Risk Management Agency

Actuarial Information Browser  
Information Browser > Actuarial Information Browser > Crop > Crop Report

Crop Report

Hide Selection Criteria

Criteria Order  
Commodity  
Commodity Year  
Insurance Plan  
State/County

Select - Criteria  
\*Commodity : Wheat (0011)  
\*Commodity Year : 2011  
\*Insurance Plan : Yield Protection (01)  
\*State : Montana (30)  
\*County : Hill (041)

clear View Report

Types / Practices Unit Structure Prices T-Yield Dates Rates Special Provisions Subsidy Factors Maps Links

Prices  
Selection Criteria

Year: 2011 Commodity: Wheat (0011) State: Montana (30)  
Data: Released Plan: Yield Protection (01) County: Hill (041)

Types / Practices									
Type	Winter 011	Winter 011	Winter 011	Winter 011	Winter 011	Winter 011	Winter 011	Winter 011	Winter 011
Practice	Irrigated 002	Continuous Cropping 004	Summerfallow 005	Organic(Certified) Irr. 702	Organic(Transitional) Irr. 712	Continuous Cropping(OC) 715	Continuous Cropping(OT) 716	Summerfallow(OC) 717	Summerfallow
Type/Practice # (T/P #)	T/P 4	T/P 5	T/P 6	T/P 7	T/P 8	T/P 9	T/P 10	T/P 11	T/P 12
Prices - Base County									
Type/Practice # (T/P #)	T/P 4	T/P 5	T/P 6	T/P 7	T/P 8	T/P 9	T/P 10	T/P 11	T/P 12
Projected Price		\$7.1500	\$7.1500	\$7.1500	\$7.1500	\$7.1500	\$7.1500	\$7.1500	\$7.1500
Catastrophic Price		\$3.9400	\$3.9400	\$3.9400	\$3.9400	\$3.9400	\$3.9400	\$3.9400	\$3.9400

1

Each tab contains information about the crop, location, and insurance plan selected.