National Program for Integrated Dairy Risk Management Education & Research	Basic strategies for Managing Milk Price Risk by Bob Cropp University of Wisconsin-Madison

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Basic Strategies for Managing Milk Price Risk: An Introduction

This paper discusses the following basic strategies dairy producers could use for managing the risk from changing milk prices (their mailbox price): Hedging in futures, buying a PUT option, and cash forward price contracts. In order for a dairy producer to successfully use any of these strategies they need to relate to business goals and personal goals. That is, what mailbox price do I need to try to achieve to meet these goals? These goals should be developed into a marketing plan. The marketing plan will guide the producer in deciding which of these strategies is best to use when to use the strategy and what portion of future milk production to use the strategy on. Based on this marketing plan, future prices offered may not meet the established goals and the decision will be to use none of these strategies. At other times there may be excellent forward pricing opportunities for reaching these goals and one or more strategies may be applied to a relatively large percentage of future milk production. Finally, producers need to have knowledge about the probabilities of certain levels of milk prices occurring and what prices have been historically for each month. This information will assist the producer in deciding what is a good milk price in relation to their goals. For specific discussion on this, please refer to Probability and Statistical Distributions: Definitions and Examples for Your Dairy Farm and Milk and Feed Price Variability: An Introduction for Dairy Producers.

Dairy producers have no way of knowing exactly what their mailbox price will be down the road. In a sense they are gambling or speculating that milk prices will be satisfactory to meet their goals when they sell their milk. Each of the strategies discussed here offer opportunities to reduce this speculation and put some certainty in producer's mailbox price and resulting profit margins. The BFP futures contract and BFP options are used to illustrate these strategies.

Hedging in Futures

Hedging in futures involves taking opposite positions on the cash market and the futures to reduce the risk of price change. In dairy this involves producing milk to be sold to the milk plant and selling dairy futures contracts to protect the price of that milk.

Hedging where milk is mostly used for manufacturing : Let's assume Mr. Smith has determined his cost of production for milk produced in October is $13.00 per hundredweight. In order to meet his business and personal goals Mr. Smith needs a profit margin of $0.50. Thus, Mr. Smith needs to protect an October mailbox price of $13.50. It is now July 10 and October BFP futures are trading at $12.70. Mr. Smith has determined that his October historical basis is $1.20, that is, his milk plant pays about $1.20 over the BFP. This gives Mr. Smith a projected October mailbox price of $13.90, well above the minimum $13.50 needed to meet his profit objective. Mr. Smith also knows that an October BFP of $12.70 is historically a good price for October. For the period of 1988 through 1997, the BFP averaged $12.51 with the upper 1/3 price range $12.83 and higher. Therefore, the probability for an October BFP higher than $12.70 is less than for a lower October BFP. Mr. Smith decides to protect the $13.90 mailbox price on 400,000 pounds of October production.

One of three things can happen between July 10 and when the October milk is produced and sold to the milk plant, the October BFP may be $12.70, it may be higher, or it may be lower. But hedging will assure Mr. Smith will receive the $12.70 BFP plus the milk plant premium which was estimated to be $1.20 (basis). The only price risk here is this $1.20. If it changes, it could be more or less. This is the basis risk (see Understanding Your Milk Price Basis).

The BFP futures contract is not a deliverable contract, but rather it is cash settled against the announced BFP for the month. For example, the October BFP futures contract will be cash settled against the announced October BFP. Since the BFP is announced on or before the 5th of the following month, the October BFP will be announced on or before November 5th. The BFP futures contract trades up to the day before the BFP is announced, in this case November 4th.

Potential outcomes of Mr. Smith's hedging decision are illustrated below. The CME BFP futures contract is 200,000 pounds of milk and the New York Board of Trade is 100,000 pounds of milk. To protect 400,000 pounds of milk Mr. Smith needs to buy two CME October BFP futures or four New York Board of Trade October BFP futures. The CME BFP futures contract is used here.

#1] October BFP is unchanged and basis is unchanged.

Cash market	Futures market	Basis
July 10: Predicted October mailbox price = \$13.90 (\$12.70+\$1.20)	July 10: Sell 2 October BFP futures @\$12.70	\$1.20
October Mr. Smith delivers milk to the milk plant and the mailbox price is \$13.90 (\$12.70+\$1.20)	Nov. 5th the Oct. BFP is announced @\$12.70 The Oct BFP futures is cash settled.	\$1.20
Change in value = \$0.00	Change in value = \$0.00	Change in basis = \$0.00

***Net October Mailbox price** = \$13.90 cash price + \$0.00 futures = \$13.90*

#2] October BFP decreased and the basis is unchanged

Cash market	Futures market	Basis
July 10: Predicted October mailbox price =\$13.90 (\$12.70+\$1.20)	July 10: Sell 2 October BFP futures @\$12.70	\$1.20
October Mr. Smith delivers milk to the milk plant and the mailbox price is \$12.90 (\$11.70+\$1.20)	Nov. 5th the Oct. BFP is announced @ \$11.70 The Oct BFP futures is cash settled.	\$1.20
Loss: \$13.90-\$12.90= \$1.00	Gain: \$12.70-\$11.70= \$1.00	Change in basis = \$0.00

***Net October mailbox price** = \$12.90 cash price + \$1.00 futures gain = \$13.90*

In illustration #1 there is no change in the BFP or the basis. With no change in the BFP from when the hedge was set in July and what was predicted, and no change in the basis, there is no loss or gain on either the cash or futures market. Mr. Smith more than achieves his goal of \$0.50 profit. Profit is \$13.90 net mailbox price - \$13.00 cost = \$0.90.

In illustration #2 the BFP decreased with no change in the basis. Even though the mailbox price paid by the milk plant ended up \$1.00 lower than what Mr. Smith predicted in July, he still received the \$13.90 predicted mailbox price and more than achieved his goal of \$0.50 profit. Profit is the \$13.90 net mailbox price - \$13.00 cost = \$0.90. However, if Mr. Smith had decided not to hedge but to remain unprotected, he would have fallen short of his profit goal. By staying open he would have actually sustained a loss of $0.10 ($12.90 mailbox price - $13.00 cost). This loss perhaps could create financial difficulties for Mr. Smith.

#3] October BFP increased and the basis is unchanged.

Cash market	Futures market	Basis
July 10: Predicted October mailbox price =$13.90 ($12.70+$1.20)	July 10: Sell 2 October BFP futures @$12.70	$1.20
October Mr. Smith delivers milk to the milk plant and the mailbox price is $14.90 ($13.70+$1.20)	Nov. 5th the Oct. BFP is announced @$13.70 The Oct. BFP is cash settled	$1.20
Gain: $14.90-$13.90= $1.00	Loss: $13.70-$12.70= $1.00	Change in basis = $0.00

***Net October mailbox price** = $14.90 cash price - $1.00 futures loss = $13.90*

In illustration #3 the BFP increased with no change in the basis. Although the October BFP actually increased $1.00, Mr. Smith still only receives a net mailbox price of $13.90 The $1.00 increase in price was offset by a $1.00 loss on the futures. Mr. Smith more than achieves his goal of $0.50 profit. But if Mr. Smith had stayed open his mailbox price would have $1.00 higher or $14.45 and his profit would have been $1.90 ($14.90 mailbox price - $13.00 cost). Mr. Smith may be disappointed that he decided to hedge and gave the opportunity for the higher mailbox price and profit. This disappointment is common for dairy producers. But we must recall the purpose of risk management strategies—***not to achieve the highest mailbox price but rather a mailbox price that achieves or exceeds business and personal goals.*** Based on these goals, on July 10th a BFP of $12.70 that would yield a mailbox price of $13.90 was determined by Mr. Smith to be very good price. Therefore, when milk is delivered in October and a net mailbox price of $13.90 is received, this is still a good price because it achieved Mr. Smith's goals. There is no question that when prices declined Mr. Smith made the right decision by hedging. But with hedging you cannot have it both ways—protect from declining milk prices, but gain from increasing milk prices. This risk management strategy has an opportunity cost associated with it, the lost opportunity to get a better price, if prices increase. But the old saying applies, one cannot go broke making a profit.

NOTE: Not included in the above examples are the brokerage fees and the interest on margin accounts. These costs can vary among brokers, and of course the interest cost varies with the amount of margin money that was required. But normally these associated costs are in the range of $0.05 to $0.07 per hundredweight. These costs would be deducted from the above net mailbox prices.

#4] October BFP declines and the basis narrows (weakens).

Cash market	Futures market	Basis
July 10: Predicted October mailbox price = \$13.90 (\$12.70+\$1.20)	July 10: Sell 2 October BFP futures @\$12.70	\$1.20
October Mr. Smith delivers milk to the plant and the mailbox price is \$12.70 (\$11.70+\$1.00)	Nov. 5th the Oct. BFP is announced @\$11.70 The Oct. BFP futures is cash settled	\$1.00
Loss: \$13.90-\$12.70= \$1.20	Gain: \$12.70-\$11.70= \$1.00	Change in basis = \$0.20

Net mailbox price *= \$12.70 cash price + \$1.00 futures gain = \$13.70*

In illustration #4 the BFP declines and the basis narrows (weakens). As can be seen, when the basis narrows the net mailbox price ends up less than what was predicted. In this case \$0.20 (\$13.90-\$13.70). This \$0.20 is exactly equal to the change in the basis. But Mr. Smith still achieves more than his goal of \$0.50 profit. Profit is \$0.70 (\$13.70 net mailbox price - \$13.00 cost).

#5] October BFP declines and the basis widens (strengthens).

Cash market	Futures market	Basis
July 10: Predicted October mailbox price \$13.90 (\$12.70+\$1.20)	July 10: Sell 2 October BFP futures @\$12.70	\$1.20
October Mr. Smith delivers milk to the plant and the mailbox price is \$13.10 (\$11.70+\$1.40)	Nov. 5th the Oct. BFP is announced @\$11.70 The Oct. BFP futures is cash settled	\$1.40
Loss: \$13.90-\$13.10= \$0.80	Gain: \$12.70-\$11.70= \$1.00	Change in basis = \$0.20

Net mailbox price *= \$13.10 cash price + \$1.00 futures gain = \$14.10*

In illustration #5 the BFP declines and the basis widens (strengthens). As can be seen, when the basis widens the net mailbox price ends up more than what was predicted. In this case \$0.20 (\$14.10-\$13.90). This is also exactly equal to the change in the basis. Here Mr. Smith actually does \$0.20 better than what he predicted. Profit ends up \$1.10 (\$14.10 net mailbox price - \$13.00 cost).

The conclusion of all of this is simply that when the basis is unchanged, with hedging a dairy producer will receive a net mailbox price exactly as predicted. If the basis narrows, the producer will receive a net mailbox price less than what was predicted . And if the basis widens, the producer will receive a net mailbox price more than what was predicted. So hedging is not a perfect risk management too. But nevertheless, it is an excellent strategy to reduce the price risk because the basis risk is less than the price risk. Hedging allows the producer to achieve or closely achieve his/her business and personal goals.

Hedging where most of the milk is used for beverage purposes: Illustrating the use of hedging as a price risk management tool for a dairy producer in a region where most of the milk is used for beverage purposes would be the same as shown above for the heavy manufacturing use area with one exception. Since the minimum class I price (beverage milk) is the BFP *two-months-previous* plus a differential, the basis, as discussed above, would be the mailbox price minus the BFP two-months previous. Mr. Smith, would also add this basis to the BFP futures contract two-months previous to predict his mailbox price for a given month and use this price to decide whether or not to hedge. In essence, Mr. Smith has a good idea what his October mailbox price will be once the August BFP is announced on September 5th. Let's use one illustration to examine this case, (#6) below. Mr. Smith wishes to protect his October milk price. In July Mr. Smith would look at the "August" BFP futures contracts (August is two months previous to October). The historical basis of $1.15 is added to the $12.35 August BFP futures to predict an October mailbox price of $13.50. Mr. Smith decides that is a good price and sells 2 August BFP futures contract. The rest is the same as illustrated above. The August BFP is announced $1.00 lower and the plant October mailbox price is also $1.00 lower than predicted. The $1.00 loss on the cash market is offset by $1.00 gain on the futures market and the $13.50 October mailbox price is achieved.

#6] BFP declines and the basis is unchanged.

Cash market	Futures market	Basis
July 10: Predicted October mailbox price = $13.50 ($12.35+$1.15)	July 10: Sell 2 "August" BFP futures @$12.35	$1.15
October Mr. Smith delivers milk to the plant and the mailbox price is $12.50 ($11.35+$1.15)	Sept 5th the "Aug." BFP is announced @$11.35. The Aug. BFP futures is cash settled	$1.15
Loss: $13.50-$12.50= $1.00	Gain: $12.35-$11.35= $1.00	Change in basis = $0.00

Net mailbox price *= $12.50 cash price + $1.00 futures gain = $13.50*

Hedging where 50% of the milk is used for manufacturing and 50% for beverage use: Assume Mr. Smith is in an area where 50 percent of his milk is used for manufacturing purposes and 50 percent is used for beverage milk. Here Mr. Smith will hedge 50 percent of his October milk production using the October BFP futures and 50 percent using the August BFP and calculate the corresponding basis. Mr. Smith will protect 400,000 pounds of October milk by selling one October BFP futures and one August BFP futures. This is shown in illustration #7.

#7] BFP declines and the basis is unchanged.

Cash market	Futures market	Basis
July 10: Predicts October mailbox price = $13.70 [($12.70+$1.20)x50% +($12.35+$1.15)x50%]	July 10: Sell 1 ***October*** BFP futures @$12.70 ***and*** 1 ***August*** BFP futures @$12.35	Oct. $1.20 Aug. $1.15
October Mr. Smith delivers milk to the plant and the mailbox price is $12.70 [($11.70+$1.20)x50% +($11.35+$1.15)x50%]	Nov 5th the Oct BFP is announced @$11.70 and is cash settled; Sep 5th the Aug. BFP is announced @$11.35 and cash settled.	Oct. $1.20 Aug. $1.15
Loss: $13.70-$12.70= $1.00	Gain: [($12.70-11.70)x50% +($12.35-$11.35)x50%]= $1.00	Change in the basis = $0.00

Net mailbox price *= $12.70 cash price + $1.00 futures gain = $13.70*

Fifty percent of the predicted $13.70 October mailbox price is derived from the October BFP futures and associated basis and 50 percent by the August BFP futures and associated basis. In this illustration both the October and August BFP futures prices decline. Since the basis is unchanged Mr. Smith achieves the $13.70 October mailbox price. With an unchanged basis this will be the case whether the October and August BFPs increase, decrease, or change in different amounts.

Buying a PUT option

A buyer of a PUT option has the right but not the obligation to sell a futures contract at a strike price at any time prior to its expiration. Mr. Smith could protect a floor mailbox price on 400,000 pounds of October milk by buying two October PUT options. Buying a PUT option to establish a floor price is a good price risk management strategy. Mr. Smith will know that his October mailbox price will not fall below this floor and he knows that if the October milk prices do strengthen, he does not forgo all of the price increase, as with hedging. But buying a PUT option may be an attractive risk management strategy under the following conditions:

1. The October BFP futures are trading at or below the historical average October BFP.

2. The October BFP futures are trading at a level does not allow Mr. Smith to hedge or establish a mailbox price that achieves his business and personal goals.

However, Mr. Smith does not want to risk the possibility of an even lower October BFP mailbox price. Seldom, if ever, would a producer want to hedge and lock in a loss. But options have the advantage over hedging in preventing any further deterioration in future milk prices, yet leaving open the opportunity for better milk price, if market conditions strengthen.

Let's assume on July 10th October BFP futures are trading at $12.05. This is $0.46 below the nine year $12.51 average October BFP. The market outlook is not overly bullish. If Mr. Smith decided to hedge, his predicted mailbox price would be the $12.05 October BFP futures plus the $1.20 October basis or only $13.25. Remember Mr. Smith has a $13.00 cost of production and needs a $0.50 profit to meet his business and personal goals. Which means the mailbox price needs to be a minimum of $13.50. Thus, a hedge at a $13.25 mailbox price falls short of these goals. But any further deterioration in prices would make matters worse. So Mr. Smith decides to look at October BFP PUTs. On July 10th Mr. Smith sees that October BFP PUTs are trading at the following strike prices and premiums:

Strike Price	**Premium**
$12.50	$0.48
$12.25	$0.38
$12.00	$0.21
$11.75	$0.18
$11.50	$0.14

Mr. Smith decides to buy an "out-of-the-money" October BFP PUT, relative to the BFP price of $12.05, with a strike price of $12.00 and at a premium of $0.21. In doing so, Mr. Smith establishes a floor under his October mailbox price of:

$12.00 PUT
-0.21 premium
$11.79
+ 1.20 basis
$12.99 October mailbox price 'floor'

Mr. Smith could establish a higher floor price by buying an "in-the-money" PUT with a strike price of $12.25 at a premium of $0.38 (Floor = {$12.25 - $0.38} + $1.20} or $13.07). But, the mailbox price would also have to increase by $0.38 to recapture that premium. The probability of milk prices increasing by $0.21 and recapturing the premium is greater, so Mr. Smith decides on a $0.25 lower floor price.

If the announced October BFP falls below the $12.00 strike price, the PUT option will be exercised. That is, Mr. Smith will sell an October BFP futures at $12.00 and cash settle it at the announced lower October BFP, take the net gain and add it to his October mailbox price received from the milk plant. On the other hand, if the announced October BFP is at or higher than the $12.00 strike price, Mr. Smith will let the October PUT option expire worthless. The potential outcomes are shown in illustration #8

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#8] Potential outcomes of buying an October BFP PUT with a strike price of $12.00 and a premium of $0.21; assume the basis is unchanged

Announced Oct. BFP	Plus Oct. Basis of $1.20 = Oct. mailbox price	Plus PUT options gain	Minus PUT options premium	Net Oct. mailbox price, ***with PUT option***	Net mailbox price, ***if had hedged***
$13.00	$14.20	$0.00	$0.21	$13.99	$13.25
$12.00	$13.20	$0.00	$0.21	$12.99	$13.25
$11.00	$12.20	$1.00	$0.21	$12.99	$13.25
$10.00	$11.20	$2.00	$0.21	$12.99	$13.25

As can be seen, regardless of how low the BFP goes, Mr. Smith has protected a floor of $12.99 on his October mailbox price. But when prices decline the net mailbox price is better with hedging than buying a PUT option. If Mr. Smith had hedged, the net October mailbox price will not go below $13.25. But the advantage of buying a PUT over hedging is when prices increase. Regardless of how high the announced BFP goes, with a hedge in October BFP futures of $12.05 and a basis of $1.20. Mr. Smith's October mailbox price cannot go above $13.25. By buying a PUT Mr. Smith's October mailbox price increases with an announced BFP above the $12.00 strike price minus the $0.21 premium. For example, at an announced $13.00 October BFP Mr. Smith receives a net October mailbox price of $13.99 by using PUTs compared to $13.25, if he had hedged.

It is important to understand the differences in these two risk management strategies. In July, when October BFP futures were trading at $12.05, Mr. Smith could not lock in with hedging a mailbox price that would allow him to achieve his business and personal goals. But, Mr. Smith did not want to risk the potential of prices going a lot lower. So Mr. Smith purchased price insurance by buying an October BFP PUT with a strike price of $12.00 at a premium of $0.21. If the BFP falls below $12.00, this strategy does not allow Mr. Smith to achieve his goals either, but it does limit how low his October mailbox price can go. Mr. Smith has limited any risk of his October mailbox price going below $12.99. Mr. Smith can, at least in the short run, live with a floor price of $12.99. But when prices increase and the October BFP is announced at $13.00, Mr. Smith realizes with the October BFP PUT a net mailbox price of $13.99. Mr. Smith's net profit is $0.99 ($13.99 October mailbox price - $13.00 cost), well above the $0.50 needed to achieve his business and personal goals. So by buying a PUT Mr. Smith left open the potential of still achieving his goals. With hedging, because of a locked in $13.25 October mailbox price, regardless of high prices increase, Mr. Smith could not never achieve these goals.

The above example assumes most of the milk is used for manufacturing purposes and the current month's BFP is the major factor determining the mailbox price. For areas where most of milk is used for beverage purposes, a dairy producer would, as illustrated with hedging above, buy a BFP PUT two-months previous to the monthly mailbox price to establish a floor price. To establish a floor under the October mailbox price a producer would buy an August BFP PUT. For producers in an area where 50 percent of the milk is used for manufacturing purposes and 50 percent for beverage purposes, half of a given month's floor mailbox price would be established by buying a current month's BFP PUT and half by buying a two-month's previous BFP PUT. That is, to establish a floor under an October mailbox price, both an October and August BFP PUT would be purchased. The resulting floor mailbox price for October would be a weighted average between these two PUT floors.

Cash Forward Contracts

Dairy producers can protect mailbox prices without directly engaging in dairy futures and options. They can sell their milk to a milk buyer that offers a cash forward contract. These milk buyers base the offered contract milk price off of the futures or options market. They will consider the futures or options transaction costs in determining the contract price offered. But the dairy producer may prefer this price risk management strategy because they don't need to worry about establishing an account with a broker or maintain margin accounts. Further, the minimum amount of milk that can be contracted is usually or often less than the minimum BFP futures contracts.

<u>Base milk contract</u>: Mr. Smith's milk plant offers a base milk price contract. That is, a base price for future milk production and pays all the same premiums and discounts as producers receive who did not contract.

Let's assume that on July 10th, Mr. Smith calls his milk buyer. The milk buyer is offering an October base price of $12.60. The milk buyer based this October price off of the October BFP which is trading at $12.70 minus $0.10 for transaction costs related to using the futures market to protect offer contract prices. Mr. Smith applies the October basis of $1.20 to this contract price offer and sees that this would give him an October mailbox price of $13.80. With a cost of production of $13.00 this gives a profit of $0.80. In order for Mr. Smith to achieve his business and personal goals he needs a profit of $0.50. The $12.60 base milk price contract allows Mr. Smith to more than achieve his goals. So on July 10th Mr. Smith accepts the $12.60 October price on 400,000 pounds of milk. The milk plant protects this contract price by selling an October BFP futures contract at $12.70.

In October Mr. Smith delivers his 400,000 pounds of milk to the milk plant. The October BFP is announced at $12.00, $0.70 less than what the October BFP futures contract was traded for in July. But the milk buyer pays Mr. Smith the base contract price of $12.60 and the normal premiums of $1.20. Thus, Mr. Smith's October mailbox price is $13.80. The milk buyer can pay this higher contracted base price because it cash settles the October BFP futures against the announced October BFP and gains $0.70 (July sells October BFP futures at $12.70 and cash settles at $12.00).

If the October BFP is announced at $13.25, the milk buyer still only pays Mr. Smith the $12.60 October base price plus the normal premiums of $1.20. The milk buyer experiences a $0.55 loss on the futures market (July sells the October BFP futures at $12.70 and cash settles at $13.25).

If Mr. Smith's milk composition changes or milk quality deteriorates, the premiums or discounts may total up different than the normal $1.20 (basis). But this risk is the same under each of the strategies discussed. A producer can not eliminate the basis risk.

A floor price contract: Some milk buyers offer a floor price contract by using the BFP PUT option. For example, let's assume that Mr. Smith's milk buyer on July 10th offers the following October floor price contracts:

Floor price	**Associated premium**
$13.00	$0.45
$12.75	$0.30
$12.50	$0.20
$12.25	$0.10

Mr. Smith accepts the $12.50 contract floor price for October. Mr. Smith is responsible for the $0.20 premium. So Mr. Smith is really establishing an October floor mailbox price of $13.50 ($12.50 floor - $0.20 premium + $1.20 basis). With a cost of production of $13.00 this allows Mr. Smith to achieve his objectives. The milk buyer protects this floor price by buying an October BFP PUT with a strike price of $12.50 and at a premium of $0.15. The $0.20 charged to Mr. Smith includes this $0.15 premium plus $0.05 associated transactions costs.

The October BFP is announced at $12.00. The milk buyer pays Mr. Smith the $12.50 floor price minus $0.20 PUT premiums plus $1.20 of normal pay premiums, or $13.50. The milk buyer will exercise the October PUT at the strike price of $12.50 (sell an October BFP futures at $12.50) and cash settle at the announced $12.00 October BFP. The milk buyer experiences a futures gains of $0.35 (Sell a $12.50 BFP futures and cash settle at $12.00 minus $0.15 premium cost). The milk buyer can pay Mr. Smith the $13.50 October mailbox price ($12.00 October BFP + $0.35 futures gain + $1.20 normal premiums- $0.05 options transactions costs).

If the October BFP was announced at $13.25, Mr. Smith would receive a higher $14.25 October BFP mailbox price calculated as follows:

+ 1.20	Basis (normal premiums)
- 0.20	PUT premium charged by buyer
$14.25	Net October mailbox price

A floor price contract, like buying a PUT, protects the downside of prices but leaves open the opportunity for higher prices. The previous base price contract functions much like hedging in futures. Regardless of whether prices go up or down the same base price is received. When prices do decrease the base price contract does result in a higher net mailbox price than if a floor price contract is used. So contract prices offered may be a factor in deciding which of these two cash forward contracts to use. If prices are relatively high and the probability of prices declining being greater than increasing, perhaps the base price cash forward contract may look like the best strategy. On the other hand, if prices are relatively low, the floor contract may be the best strategy because if prices do improve, a higher net mailbox price can be achieved.

Combination of Strategies

Seldom would any one price output risk management strategy by itself on a producers entire future milk production. Normally a portion of future milk production is left open, and not protected. This is not a bad strategy. If a producer is hedged or has a base price cash forward contract with a milk buyer, and milk prices strengthen, the portion of milk not protected receives this higher price. Of course when prices decline the portion not protected receives the lower price. This is important to recognize. In the above illustrations, Mr. Smith was attempting to achieve a profit of $0.50 per hundredweight on a portion of his future milk production. But the average mailbox price received the average of the portion protected and the portion not protected, may or may not result in at least a profit of $0.50 per hundredweight on all Mr. Smith's production. So in establishing this $0.50 profit objective Mr. Smith had to consider what portion of future milk production was going to be price protected and then how that relates to achieving a profit on all of the future milk production sold. Perhaps a higher hedged price or the purchase of a PUT option at a higher strike price needs to be considered when not all of future milk production is being price protected. A dairy producer may wish to consider hedging a portion of their milk, and establishing a floor under another portion with the purchase of a PUT option or some other combination of strategies. As BFP futures contracts or premiums on options change, or the market situation and outlook changes, a dairy producer may employ another strategy or replace a strategy with another strategy. Using the futures and options contracts in this manner requires a very in-depth understanding and should be approached with caution. Papers in the Curriculum Level 400 series will focus on these more advanced strategies for price risk management.

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