



## Price risk management: What to expect

# Mechanical Marketing Strategies

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This is the fourth of a five part series on managing price (marketing) risk. The first fact sheet (F-589) presented the fact that few, if any, people can predict prices. Prices cannot be predicted because the market uses all available information to determine price. What makes today's price different from yesterday's price is "new information." If this "Efficient Market" hypothesis is correct, then one marketing strategy is nearly as good as any other marketing strategy. What is important is that producers develop "rules" for marketing.

Fact sheet 2 (F-590) reported on research conducted at Kansas State University by Drs. Terry Kastens and Kevin Dhuyvetter. They used records from over 1,000 Kansas farms during a 10-year period to evaluate management practices that explained the difference between the top one-third of the farms and the bottom one-third of the farms. Their conclusion was that price (marketing strategy) made little or no difference in the profitability of the farms. Important management factors were costs, yields, and use of technology.

Fact sheet 3 (F-591) reports on the AgMAS project conducted at the University of Illinois by Irwin, Good, and Martines-Filho (<http://www.farmdoc.uiuc.edu/agmas/reports/index.html>). This report addressed two basic performance questions for market advisory services in wheat: (1) Do market advisory services, on average, outperform an appropriate market benchmark, and (2) do market advisory services exhibit persistence in their performance from year-to-year? Data on wheat net price received for advisory services, as reported by the AgMAS Project, are available for the 1995 through 1999 crop years. Not only do market advisory programs in wheat consistently fail to "beat the market," their performance is significantly worse than the market.

### Mechanical marketing strategies

If prices cannot be predicted and if price is among the least important management practices in increasing the profitability of a farm then how should crops be marketed? Mechanical marketing strategies may be developed that do not rely on price outlook, market information, or any new analysis.

A producer using a mechanical marketing plan sells the commodity the same way every year. An example is to sell the commodity at harvest every year. Price level or outlook does not change the marketing plan. No price outlook is needed or used. Market information may be ignored. Mechanical marketing plans require that actions be taken irrespective of what is happening in the market.

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### Marketing Plans or Strategies

By using forward contracts, futures contracts, put option contracts, or call option contracts, producers may sell wheat before it is harvested. After harvest, the wheat may be sold, stored, stored and hedged, stored and protected with a put option, or sold and protected with a call option.

A marketing plan involving the use of a mechanical strategy consists of selecting a marketing plan and using that plan every year. The following sections show the net price if different plans had been used during the last 18 years.

Marketing plans are divided into two groups: pre-harvest and post-harvest. Selling wheat at harvest (June 20) each year is included in both the pre- and post-harvest strategies.

Prices for strategies using futures and option contracts were adjusted for brokerage and interest costs. Post-harvest prices were adjusted for interest costs and storage. Interest costs were the prime interest rate plus 2 percent and storage costs were per bushel costs charged by central Oklahoma elevators (about 2.6 cents per bushel per month).

Producers that have on-farm storage and/or lower interest rates (self-financed) would receive higher net prices for storing wheat than shown in this fact sheet. Thus, on-farm storage and lower interest makes storing wheat into the fall more attractive.

Averages were calculated for the most recent 5-, 10-, and 18-year periods. The 5- and 10-year averages emphasize how the results may change by dropping or adding marketing years. The 18-year averages are the most reliable.

### Pre-harvest Results

For pre-harvest strategies, only one-half of expected production is forward contracted, hedged, or covered with option contracts. Pre-harvest strategies consist of:

1. Selling wheat on June 20.
2. Forward contracting one-half of expected production on April 1 and selling remaining production on June 20.
3. Hedging one-half of expected production on April 1 and offsetting the hedge and selling the wheat on June 20.
4. Buying "at the money" July put option contracts for one-half of expected production on April 1 and offsetting the put and selling the wheat on June 20.
5. Forward contracting wheat and buying "at the money" July call option contracts for one-half of expected production on April 1 and delivering the wheat, offsetting the call option, and selling the remainder of the wheat on June 20 (Table 1).

Remember that it is the 18-year average that provides the most useful results (Table 1). The difference between the best pre-harvest strategy and the worst pre-harvest strategy is 8 cents for the 5- and 10-year averages and 5 cents for the 18-year average.

Note that selling at harvest produced the highest 18-year average price. Because of greater costs the pre-harvest strategies were expected to yield a price that was a few pennies less than the harvest price.

Forward contracting and buying call option contracts tied for the highest price in 1993, 1994, and 1998 and produced the highest 10-year average price. During the 18-year period, forward contracting and buying a call option was 2 cents better than just buying put option contracts.

Hedging produced the highest price in 9 of the 18 years and produced the highest average price for the last 5 years. Hedging produced the lowest average price for the last 10-year and 18-year periods.

## Post-Harvest Strategies

Post-harvest strategies are:

1. Sell wheat on June 20.
2. Sell wheat on October 15.
3. Sell wheat on December 15.
4. Sell wheat in lots of one-third on June 20, October 15, and December 15.

5. Sell wheat on June 20 and buy “at the money” December call option contracts.
6. Store wheat and buy “at the money” December put option contracts.
7. Store wheat and sell December wheat futures contracts.

## Post-harvest Results

Price data that did not include the 2002/03 and 2003/04 wheat marketing years indicated that selling at harvest produced the highest average price. Selling at harvest produced the highest average net price until the \$4.35 net price was received in October 2002. The October price was \$1.35 higher than the harvest price, \$1.33 higher than the storage hedge price, and \$0.60 to \$0.65 higher than the net price from the other strategies.

The \$4.35 net price made “selling on October 15” the best strategy for the 5-year, 10-year and 18-year averages. However, there is still not a statistical difference between “selling on October 15” and the other strategies.

The difference between the 5-year, 10-year, and 18-year net prices declines as the number of years increase. With the 5-year results, there is a 20-cent spread between the alternatives, an 18-cent spread for the 10-year averages, and a 10-cent spread for the 18-year averages.

If the “storage hedge” alternative is not considered, there is only 3 cents difference between the post-harvest alternatives.

**Table 1. Pre-harvest Marketing Strategies.**

Wheat Crop year <sup>a</sup>	Sell 20-Jun <sup>b</sup>	1-Apr FC + 20-Jun Ave <sup>c</sup>	1-Apr Hedge Offset 20-Jun <sup>d</sup>	1-Apr Buy @ \$ Put/Offset & Sell 20-Jun <sup>e</sup>	1-Apr FC Buy @ \$ Call Offset 20-Jun <sup>f</sup>
1986	2.20	2.17	2.24	2.18	2.05
1987	2.33	2.31	2.30	2.23	2.20
1988	3.58	3.11	2.72	3.29	3.29
1989	3.84	3.75	3.81	3.64	3.51
1990	2.91	2.99	3.08	3.01	2.98
1991	2.52	2.58	2.68	2.56	2.52
1992	3.26	3.27	3.28	3.12	3.12
1993	2.47	2.60	2.64	2.59	2.64
1994	2.98	2.95	2.90	2.95	2.98
1995	3.74	3.42	3.05	3.59	3.64
1996	5.47	5.18	4.77	5.19	5.31
1997	3.09	3.38	3.58	3.36	3.44
1998	2.61	2.79	2.87	2.73	2.87
1999	2.28	2.42	2.57	2.43	2.39
2000	2.53	2.57	2.42	2.38	2.53
2001	2.79	2.88	2.84	2.74	2.85
2002	2.72	2.87	3.02	2.73	2.80
2003	2.72	2.70	2.73	2.67	2.65
99-03 Avg	\$2.66	\$2.69	\$2.71	\$2.63	\$2.65
94-03 Avg	\$3.12	\$3.12	\$3.07	\$3.10	\$3.15
<b>86-03 Avg</b>	<b>\$3.02</b>	<b>\$3.00</b>	<b>\$2.97</b>	<b>\$2.98</b>	<b>\$2.99</b>

<sup>a</sup> June 1 through May 31

<sup>b</sup> Price received if all wheat had been sold on June 20 each year.

<sup>c</sup> One half of expected production was sold on April 1 and the remainder sold on June 20.

<sup>d</sup> One half of expected production was hedged on April 1 and the remainder sold on June 20.

<sup>e</sup> KCBT July “at the money” put option contracts were purchased to cover expected production.

<sup>f</sup> Expected production was forward contracted and KCBT July “at the money” call option contracts were purchased to cover the forward contracts.

Another strategy that produced a higher 18-year average net price than “selling at harvest” was “selling at harvest and buying ‘at the money’ Kansas City Board of Trade (KCBT) December call option contracts.” The “selling at harvest and buying call option contracts” produced an 18-year average net price the same as selling on “October 15.”

The strategy that produced the lowest average price was the storage hedge. This may be because once a storage hedge is established, profit depends on the basis increasing. It is interesting to note that the “storage hedge” did produce the highest net price (post-harvest) in five of the 18 years. This is the same number of times that “selling on June 20” produced the highest price.

## Comparison of Pre- and Post- Strategies

With both the pre-harvest and post-harvest strategies, storing until October 15 produced the highest net price. Since there is no statistical difference between the alternatives, producers should select the alternative or combination of alternatives they are comfortable with and concentrate on production and management activities rather than marketing.

## Perfectly Predicting Prices

If each year the strategy that would produce the highest price were selected, the net price received would be higher

than selling at harvest. Using the 18-year average, always selecting the right pre-harvest strategy would increase the net price from \$3.02 (harvest) to \$3.11.

Selecting the best post-harvest strategy would increase the net price from \$3.05 to \$3.28. If the strategy that produced the highest net price had been selected each year, the average net price would have been \$3.34 per bushel. This is 29 cents higher than “selling October 15.”

With perfect predictive ability, the best prices could be increased is 29 cents per bushel.

## Conclusions

Few, if any, people can predict wheat prices. If producers cannot predict prices or know someone who can predict prices and get the predictions to them in a timely manner, mechanical marketing strategies may be the best way to sell wheat.

Mechanical strategies will produce a relatively good net price with minimal effort. The differences between one marketing strategy and another are small. One interpretation of these results suggests, “It does not matter which marketing alternative you use, in the long run the average price received will be very close to any other choice.”

The good news for producers that enjoy marketing and that enjoy keeping up with price trends, cycles, and patterns is that efforts to “beat the market” will, on average, only cost a few cents a bushel.

**Table 2. Post-harvest Marketing Strategies.**

Wheat Crop year <sup>a</sup>	Sell 20-Jun <sup>b</sup>	Net 15-Oct <sup>c</sup>	Sell 1/3 20-Jun, 15-Oct, & 15-Dec <sup>d</sup>	Sell 20-Jun Buy @ \$ Call Offset 15-Nov <sup>e</sup>	Net Storage & Hedge <sup>f</sup>
1986	\$ 2.20	\$ 2.09	\$ 2.13	\$ 2.11	\$ 2.00
1987	\$ 2.33	\$ 2.40	\$ 2.44	\$ 2.31	\$ 2.11
1988	\$ 3.58	\$ 3.52	\$ 3.52	\$ 3.11	\$ 3.59
1989	\$ 3.84	\$ 3.52	\$ 3.61	\$ 3.64	\$ 3.78
1990	\$ 2.91	\$ 2.19	\$ 2.37	\$ 2.77	\$ 2.93
1991	\$ 2.52	\$ 3.06	\$ 2.98	\$ 3.00	\$ 2.44
1992	\$ 3.26	\$ 3.01	\$ 3.12	\$ 3.04	\$ 3.21
1993	\$ 2.47	\$ 2.80	\$ 2.87	\$ 3.00	\$ 2.43
1994	\$ 2.98	\$ 3.64	\$ 3.33	\$ 3.22	\$ 2.89
1995	\$ 3.74	\$ 4.59	\$ 4.30	\$ 4.41	\$ 3.58
1996	\$ 5.47	\$ 3.98	\$ 4.35	\$ 5.12	\$ 4.96
1997	\$ 3.09	\$ 3.23	\$ 3.04	\$ 2.87	\$ 3.07
1998	\$ 2.61	\$ 2.47	\$ 2.47	\$ 2.43	\$ 2.64
1999	\$ 2.28	\$ 1.97	\$ 2.00	\$ 2.05	\$ 1.98
2000	\$ 2.53	\$ 2.60	\$ 2.51	\$ 2.32	\$ 2.68
2001	\$ 2.79	\$ 2.42	\$ 2.53	\$ 2.61	\$ 2.91
2002	\$ 3.00	\$ 4.35	\$ 3.70	\$ 3.80	\$ 3.02
2003	\$ 2.72	\$ 2.99	\$ 3.05	\$ 2.18	\$ 2.85
99-03 Avg	\$ 2.66	\$ 2.86	\$ 2.76	\$ 2.79	\$ 2.69
94-03 Avg	\$ 3.12	\$ 3.22	\$ 3.13	\$ 3.20	\$ 3.06
86-01 Avg	\$ 3.02	\$ 3.05	\$ 3.02	\$ 3.05	\$ 2.95

<sup>a</sup> June 1 through May 31

<sup>b</sup> Price received if all wheat had been sold on June 20 each year.

<sup>c</sup> Price received if all wheat had been sold on October 15.

<sup>d</sup> Average price received if wheat was sold 1/3 at a time on June 20, October 15, and December 15.

<sup>e</sup> Net price received if wheat was sold on June 20 and “at the money” December call option contracts purchased and then sold on November 15.

<sup>f</sup> Net price received if a storage hedge was set on June 20 and offset on November 15.

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