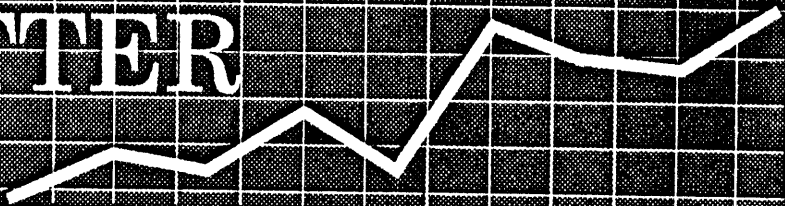


MARKET

NEWSLETTER



Harvest Marketing Strategies for PNW White Wheat

Introduction

As the harvest approaches, wheat growers are completing the production component of their business and must turn their attention to deciding on their strategies for a separate component of their wheat enterprise — how they will market their crop. Figures 1 and 2 illustrate what a difficult task this is. Over the past fifteen years Portland white wheat prices have ranged from a low around \$2.70/bu. to a high above \$5.00/bu. Figure 1 reveals that over this time period there has been only a very mild seasonal price trend. Once the costs of holding grain are taken into account it does not pay, on average, to hold grain much past harvest.

Figure 2 demonstrates that this average advice ignores substantial year to year variation. In 1988/89 it was profitable to store wheat while in 1989/90 it was disastrous. An initial question is whether there are observable indicators at harvest that can give a producer an idea of what kind of a year it will be. If reliable indicators are identified, the next step is to define marketing strategies based upon the signals given. Although we will discuss all or nothing

Figure 1

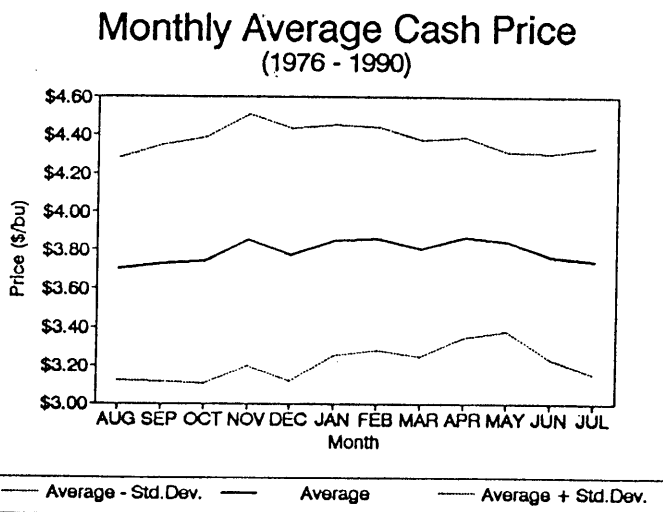
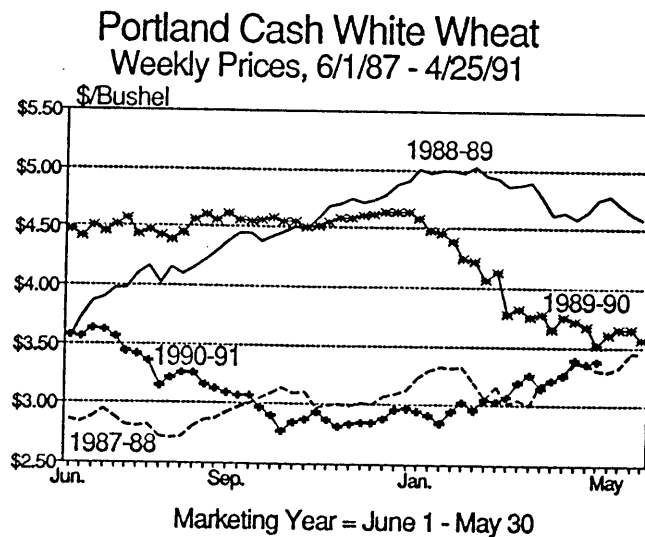


Figure 2



AREC 91-01

June 25, 1991

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strategies in this paper, in general producers will want to combine different marketing alternatives and adjust the timing and percentage of sales based on the indicators observed in a particular year.

Marketing Alternatives

This article reports on specific indicators growers can use to identify opportunities for earning higher returns through selectively extending the marketing year. There are a variety of ways to extend the marketing year. The pure speculative activity of holding grain unpriced is potentially the most lucrative (if prices go up) but is also the riskiest since the grower suffers the consequences of all price declines as well as the costs associated with holding grain. It will be argued here that the risks of storing unpriced are only justified when harvest prices are extremely low.

The costs of holding grain include both the variable costs associated with on or off-farm storage of grain and the opportunity costs of holding grain rather than transforming it into money. Whereas money can be invested or used to pay off loans, grain can't. In this analysis the cost of holding grain is charged as 1% per month of the harvest price of the grain (actual holding costs may be substantially higher). Therefore \$4.00 wheat costs 4 cents a month to store while \$3.00 wheat costs only 3 cents a month to store.

The relentless nature of these holding costs should force producers to think twice before storing. Faced with \$4.00 wheat in the market, how confident is the producer that prices will go up by more than 4 cents a month? In our analysis the alternative of storing grain unpriced after harvest is only selected in the three of fifteen years that the harvest price was below \$3.00. In this situation the holding cost is reduced and the likelihood of a price rise is increased. In the three years that the harvest price was below \$3.00, the net return (i.e., after accounting for holding costs) for storing until April was 37 cents as the average net return rose from \$2.69 to \$3.06. In the other twelve years, the average net return to storage was a -23 cents as the net return fell from \$3.88 to \$3.65.

Entering into cash forward contracts, in contrast, permits a grower to lock in a return but rules out any additional benefits from price increases. In recent years these forward contracts have barely reimbursed growers for storage costs.

In other parts of the country growers have long made use of futures contracts to extend their marketing year. Futures contracts are commitments to deliver or

accept delivery of grain in the future. Only a small proportion of grain traded as futures contracts actually changes hands, as most commitments are satisfied with offsetting positions. Before trading commodity futures, a producer must understand the mechanics of the transactions including the role and function of margin accounts. These topics will not be treated here.

This paper focuses on the use of futures contracts by grain producers to "hedge" their positions in the cash market by taking the opposite position in the futures market (options on futures contracts, another marketing alternative, will not be discussed in this paper). Once the hedge is set the grower's return is not influenced by changes in the cash market price. Rather, the return is only dependent on the difference between the cash and futures price (known as the "basis"). The producer is thus protected from swings in the cash market price but still retains the opportunity to speculate on basis variation.

The futures that we will be considering are the soft red wheat futures traded on the Chicago Board of Trade (CBT). In the Midwest, the wheat basis varies less than cash market prices and follows predictable patterns. In contrast, the wheat basis in the PNW varies more than in other areas of the country and is, in some years, more volatile than cash prices. Although this makes hedging more complicated, there do appear to be predictable patterns.

Setting a Hedge

The hedging alternative mentioned above would consist of the following transactions. At harvest, the producer sells one or more Chicago wheat futures (either March or May of the following year depending on which is more attractive) and stores the harvested crop. At some point before the futures contract expires the producer buys back the futures contract and sells the cash wheat.

The effective price that the producer receives through hedging is equal to the futures contract price at the time the hedge is set plus the basis (cash price - futures price) at the time the hedge is lifted minus storage costs and commissions. Since the harvest time price for the May (or March) futures contract is known when the hedge is set, the only "unknown" in this equation is what the basis will be when the hedge is lifted. Once that level is predicted, the entire equation can be compared with the current price to see if it provides an attractive opportunity.

A Selective Hedging Strategy

Defining a marketing strategy would be easy if a routine practice of hedging at harvest would consistently increase a grower's net price. The past data do not indicate that this relationship exists. Routine hedging provides a return that almost exactly equals the return earned from selling at harvest each year.

Selective hedging, based upon the recognition of two easily identifiable indicators, does however provide a modest but reliable improvement over the practice of selling at harvest. The two indicators that we track are:

1. The level of the nearby basis (the difference between the current cash price and the next Chicago futures contract).
2. The amount of "carry" in the futures market (the difference between more distant and nearby futures).

As is presented in Figure 3, the nearby basis in the PNW is generally around 25–30 cents in the fall and strengthens thereafter. The basis can be thought of as representing the market difference between midwestern wheat and PNW white wheat. There seems to be a

fairly strong tendency for these two wheat markets to move back towards a "normal" relationship. When a marketing year begins with a strong basis, the average basis level at the end of the year is virtually unchanged. In contrast, when the basis is weak to begin with (below 30 cents) there is strong tendency for it to strengthen over the course of the marketing year. In the eight years that started with a weak basis, the basis strengthened by an average of 19 cents. Since a producer setting a hedge wants a strengthening basis, it makes sense to set a hedge when the initial basis is relatively weak.

The second indicator, the "carry" provides an indication of how much the market is willing to pay a producer to hold stored crop for later delivery. Over the past fifteen marketing years the average carry (May futures minus September futures) has been 25 cents ranging from a high of 76.5 cents to a low of -1.75 cents. In seven of the fifteen years the March carry was actually greater than the May carry and therefore March would be the contract considered for hedging purposes.

The rules of thumb that we have established for hedging at harvest require that all three of the following conditions hold:

1. The Portland cash price is greater than \$3.00 (if less than \$3.00, store unpriced)
2. The nearby basis is less than 30 cents.
3. The carry in the futures market is greater than 20 cents.

It has made sense historically to hedge under these conditions because it is likely that the basis will move in a positive direction for the producer and the carry will pay for most of the storage cost.

The strategy we have established involves setting a hedge on the first Thursday in August using either March or May futures and then re-evaluating the futures position on the first Thursday in November and February. If the revised conditions are no longer met in either of those months the hedge is lifted and the cash grain is sold. Any remaining hedges are lifted on the first Thursday in April.

Figure 3

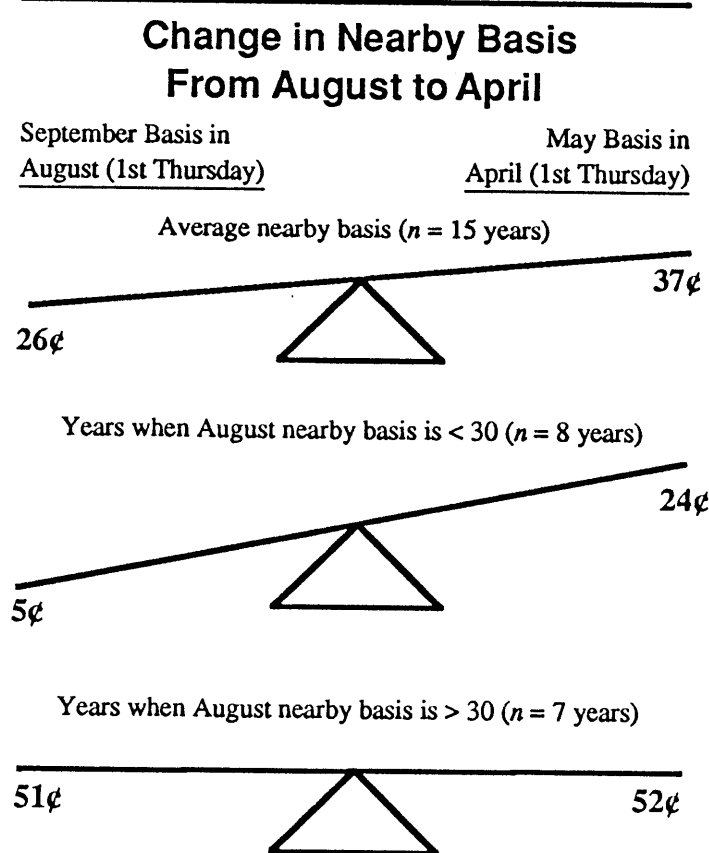


Table 1. Store, Sell or Hedge Decision Model, 1976/77 – 1990/91

| Year | August Price | Nearby Basis | Best Carry | Decisions Taken | | | | Net Strategy Return | Net April Return |
|---------|--------------|--------------|------------|-----------------|----------|----------|------|---------------------|------------------|
| | | | | Aug | Nov | Feb | Apr | | |
| 1976/77 | 3.39 | .035 | .34 | Hedge | Maintain | Maintain | Sell | 3.69 | 2.68 |
| 1977/78 | 2.92 | .65 | .2425 | Store | Store | Store | Sell | 3.35 | 3.35 |
| 1978/79 | 3.70 | .5725 | -.0175 | Sell | — | — | — | 3.70 | 3.37 |
| 1979/80 | 4.33 | .1850 | .0825* | Sell | — | — | — | 4.33 | 3.78 |
| 1980/81 | 3.94 | -.6225 | .3925 | Hedge | Maintain | Maintain | Sell | 4.69 | 4.11 |
| 1981/82 | 4.22 | .175 | .765 | Hedge | Maintain | Sell | — | 4.71 | 3.76 |
| 1982/83 | 4.10 | .63 | .48 | Sell | — | — | — | 4.10 | 4.35 |
| 1983/84 | 4.04 | .265 | .2525* | Hedge | Sell | — | — | 4.1925 | 3.72 |
| 1984/85 | 3.70 | .16 | .3225 | Hedge | Sell | — | — | 3.9025 | 3.67 |
| 1985/86 | 3.47 | .5575 | .1025 | Sell | — | — | — | 3.47 | 3.60 |
| 1986/87 | 2.70 | .0825 | -.0175* | Store | Store | Store | Sell | 2.81 | 2.81 |
| 1987/88 | 2.68 | .0875 | .225* | Store | Store | Store | Sell | 3.04 | 3.04 |
| 1988/89 | 4.15 | .325 | .13* | Sell | — | — | — | 4.15 | 4.28 |
| 1989/90 | 4.39 | .52 | .1825* | Sell | — | — | — | 4.39 | 3.41 |
| 1990/91 | 3.15 | .32 | .275 | Hedge | Maintain | Sell | — | 3.256 | 3.02 |
| Average | 3.66 | .26 | .25 | — | — | — | — | 3.85 | 3.53 |

* March Carry is Best.

Decision Summary:

Sell in August — 6 years
 Hedge — 6 years
 Store unpriced — 3 years

Table 1 provides the market conditions at harvest, the decisions taken throughout the marketing year that are based on this strategy, the net return earned from following the strategy, and the net return earned from storing unpriced until April. Table 2 provides the relevant cash and futures prices for the first Thursday of August, November, February, and April.

As mentioned earlier, in three years the decision is taken to store the grain unpriced as a function of the extremely low harvest price. In six years the grain is sold at harvest because the two additional conditions for hedging are not met.

A hedge signal is given in August in six of the fifteen years considered. In five of the six years the hedge is set with May futures while in the other year the harvest hedge is set with March futures. In November when the hedges are first re-evaluated the nearby basis criteria remains the same but the required carry is decreased to 12 cents to reflect the reduced number of storage months. Two of the six hedges are lifted in

November. Similarly in February the carry indicator is reduced to 8 cents. Again two hedges are lifted. The final two hedges are lifted in April.

Each of the six hedges provides a net return that is greater than either selling at harvest or storing until April. Considered across the entire fifteen year period, the selective strategy outlined here would provide an average net return of \$3.85 or 5.2% more than the \$3.66 earned from selling at harvest and 9% greater from the net return of \$3.53 earned from storing until April.

The advantage of this strategy is that it provides clear signals as to when it pays to store, sell, or hedge. In very low price years remaining unpriced is the most attractive alternative because the holding costs are lower and the likelihood of a price increase is greater. In other years, the basis and carry indicators are used to determine whether hedging or selling at harvest is the recommended action.

Table 2. Cash and Futures Prices for the First Thursday of Four Months

| | —August— | | | | —November— | | | | —February— | | | —April— | |
|---------|------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|-------------|------------|-------------|
| | Cash Price | Sep Futures | Mar Futures | May Futures | Cash Price | Dec Futures | Mar Futures | May Futures | Cash Price | Mar Futures | May Futures | Cash Price | May Futures |
| 1976/77 | 3.39 | 3.3550 | 3.6300 | 3.6950 | 3.06 | 2.7413 | 2.8475 | 2.9013 | 2.96 | 2.7587 | 2.8288 | 2.95 | 2.6763 |
| 1977/78 | 2.92 | 2.2675 | 2.4500 | 2.5050 | 2.78 | 2.6413 | 2.7387 | 2.7962 | 3.26 | 2.6850 | 2.7425 | 3.58 | 3.1975 |
| 1978/79 | 3.70 | 3.1275 | 3.1100 | 3.0750 | 3.74 | 3.6075 | 3.5350 | 3.4950 | 3.62 | 3.5175 | 3.3075 | 3.67 | 3.3775 |
| 1979/80 | 4.33 | 4.1450 | 4.2275 | 4.2150 | 3.91 | 4.0650 | 4.2950 | 4.3850 | 4.23 | 4.5775 | 4.7225 | 4.13 | 4.0550 |
| 1980/81 | 3.94 | 4.5625 | 4.9150 | 4.9550 | 4.69 | 5.2200 | 5.4625 | 5.4850 | 4.59 | 4.7125 | 4.7925 | 4.43 | 4.3625 |
| 1981/82 | 4.22 | 4.0450 | 4.6475 | 4.8100 | 4.43 | 4.3800 | 4.6425 | 4.7350 | 4.14 | 3.7175 | 3.8925 | 4.10 | 3.6475 |
| 1982/83 | 4.10 | 3.4700 | 3.8775 | 3.9500 | 4.36 | 3.3050 | 3.4375 | 3.4725 | 4.55 | 3.4675 | 3.5400 | 4.68 | 3.6400 |
| 1983/84 | 4.04 | 3.7750 | 4.0275 | 4.0025 | 3.99 | 3.5750 | 3.6950 | 3.6900 | 3.75 | 3.3300 | 3.3775 | 4.04 | 3.6850 |
| 1984/85 | 3.70 | 3.5400 | 3.8425 | 3.8625 | 3.78 | 3.6400 | 3.6775 | 3.6200 | 3.82 | 3.5400 | 3.4625 | 3.97 | 3.6425 |
| 1985/86 | 3.47 | 2.9125 | 3.0150 | 2.9150 | 3.77 | 3.2400 | 3.2975 | 3.1300 | 3.71 | 3.2275 | 2.8825 | 3.88 | 3.0525 |
| 1986/87 | 2.70 | 2.6175 | 2.6000 | 2.4600 | 2.84 | 2.8650 | 2.7100 | 2.5550 | 3.04 | 2.8650 | 2.7150 | 3.03 | 2.7650 |
| 1987/88 | 2.68 | 2.5925 | 2.8175 | 2.8000 | 2.96 | 2.8550 | 2.9850 | 2.9800 | 3.33 | 3.3475 | 3.3300 | 3.25 | 3.1300 |
| 1988/89 | 4.15 | 3.8250 | 3.9550 | 3.7450 | 4.58 | 4.1700 | 4.2550 | 4.0600 | 4.97 | 4.2725 | 4.2550 | 4.61 | 4.0050 |
| 1989/90 | 4.39 | 3.8700 | 4.0525 | 3.9100 | 4.51 | 4.0150 | 4.0350 | 3.8300 | 4.25 | 3.7525 | 3.6450 | 3.76 | 3.7000 |
| 1990/91 | 3.15 | 2.8300 | 3.0875 | 3.1050 | 2.87 | 2.6225 | 2.7675 | 2.8550 | 2.96 | 2.5075 | 2.6100 | 3.27 | 2.8550 |
| Average | 3.66 | 3.40 | 3.62 | 3.60 | 3.75 | 3.53 | 3.63 | 3.60 | 3.81 | 3.49 | 3.47 | 3.82 | 3.45 |

The 1991 harvest has not yet arrived but the early indications are that the selective strategy will call for a harvest sale. The harvest forward contracts have been in the range of \$3.40 to 3.50 or quite a bit above the \$3.00 level for storing unpriced. The nearby basis has been running quite high at about 50 cents. The carry in the market (through March) has been slightly less than 20 cents. Thus neither hedging nor storing unpriced looks like a sure winner.

A Final Note

Although the time isn't right to act on this information now, our research indicates that *preharvest* hedging provides higher returns over time than the harvest strategy just considered. Selectively setting preharvest hedges based solely on whether or not the level of CBT futures is attractive provides an average return of 4.02 if started as early as January (before harvest).