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Alan May

*South Dakota State University*

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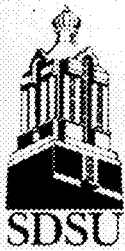
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# ECONOMICS COMMENTATOR

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## GRAIN STORAGE AND OTHER POST HARVEST PRICING STRATEGIES

by

Alan May  
Grain Marketing Specialist

Grain producers are reluctant to sell grain when prices are very low. Therefore, it is not surprising that there is increased interest in storing this year's harvest of corn and soybeans. Storage often is used so that a grain producer will have a commodity to sell if and when prices improve. However, regardless of the price the market is offering for grain, there is still a need to evaluate all the factors associated with grain storage. Other alternatives to storing grain that may allow the capture of higher prices after harvest also should be evaluated.

It is important to note that all of the strategies involved in trying to take advantage of higher prices, including simple grain storage, have certain benefits and disadvantages. All strategies must be evaluated from a standpoint of the risk associated with the strategy; or more importantly, how can the risk of pricing grain now or in the future best be managed. This will help a producer evaluate his/her own comfort level with a particular strategy. Understanding how futures and options work is important if they are used in a marketing strategy. An understanding of the concept of basis, the relationship between the cash market and the futures market, is essential. Also, it is important to understand and evaluate the "carry in the market", the difference between nearby and deferred contract prices. Basis and the amount of "carry in the market" are important in evaluating whether simple storage over time may pay without using any other strategy. In other words, does the market indicate that it will pay for storage?

The reasons why producers store grain may vary. Some of the major reasons include:

- 1.) Low prices at harvest and the hope or expectation of higher prices later on.
- 2.) Harvest time pressure such as unloading delays at the elevator terminals, getting the crop out of the field, equipment-related delays and other factors related to the physical harvest.
- 3.) Grain quality. If grain has a high moisture content and a producer can dry it as efficiently and cost effective at home, storage may be the more appealing choice.
- 4.) Tax implications. Grain may be stored at harvest to shift income into the next tax year. If commodity sales of the previous crop year were made in the current year, the current crop may be held until after the first of the year to avoid income tax liability on two crops in the same tax year.

When grain is stored, it is important to consider the cost of storing the grain. No matter if grain is stored commercially or at home, there are costs associated with storage. Commercial storage will cost approximately 3 cents per bushel per month. Home storage may cost as much especially when the value of the storage facility and the potential for shrink and spoilage over the storage period is considered. There also is the larger consideration of interest cost. If grain is stored, it is an asset that cannot "produce income" or gain in value other than by prices going higher. In other words, if the grain was sold and converted to cash, the cash could be used to pay off loans to reduce interest costs to the business. The cash also could be re-invested in the business or in an interest bearing account. This "opportunity cost" is an important one to evaluate in the decision on whether or not to store grain.

The end result in this analysis is to consider the length of time grain is to be stored and the price that must be received at the end of the storage period to at least recover the cost of storing grain. There will be times when the storage costs will be paid as prices increase. There will be times when prices increase by a small amount, stay constant or decline and storage costs are not recovered.

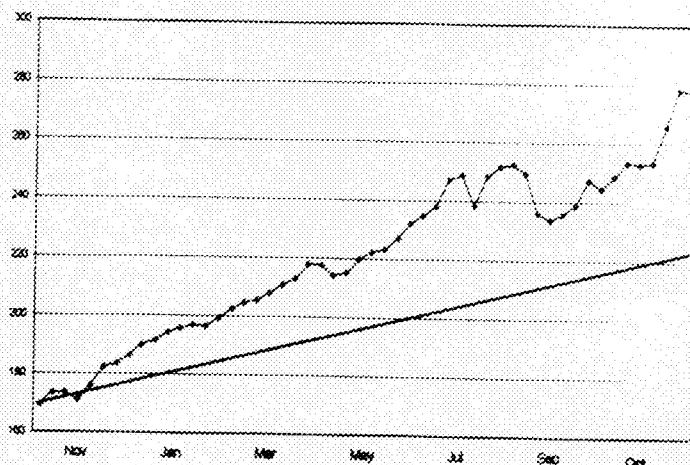
Price history shows how one may evaluate the cost of storing grain over time. The following charts show the average cash corn price for the East Central region of South Dakota and the price that would have to be received after harvest in order to pay the cost of storage. The following assumptions are made about the cost of storage: Physical storage costs: This cost is calculated at 3¢ per bu. per month. This includes the return on the storage asset along with the cost of shrink and spoilage. Interest costs: This cost is calculated using the average harvest price of corn in east central South Dakota multiplied by simple 10% interest, divided by twelve months to arrive at the monthly interest cost in cents per bushel per month. Harvest time prices vary in the following examples, so the interest cost will vary based on the formula used in the interest calculation. For example, interest cost calculated on corn valued at \$1.70/bu. will be less than the interest cost on corn valued at \$2.80/bu. This same formula would be used for other crops. Interest would vary depending upon the harvest time price per bushel of that particular crop.

Figures 1 - 4 can be used to show the average East Central South Dakota cash corn prices from November through October of 1994-95, 1995-96, 1996-97 and November through September 1997-98. Although most grain is not stored for a full year, the examples use the full year to make the following analysis consistent.

**Figure 1.** (Next Column) The average harvest time price for corn in November 1994 was approximately \$1.70/bu. Assume storage costs of 3¢/bu./mo. and interest cost of 1.4¢/bu./mo. (4.4¢/bu./mo. or 53¢/yr). In other words, cash price for corn had to be 4.4¢ higher each month than the harvest time price to recover the cost of storage. If grain is stored for the entire year, a minimum price of \$2.23/bu. would be required to recover a year of storage costs ( $\$1.70 + .53 = \$2.23$ ). The straight, upward sloped line on the chart represents the storage recovery price. The average price for corn during that same time frame in east central South Dakota increased from \$1.70 to almost \$2.80/bu. by late October of 1995. Since cash prices remained higher than the price necessary to recover storage costs, storage costs were recovered. However, it must be noted that strategies other than storing grain may have accomplished the same, or better, net price results. Simply recovering the storage costs may not have been the best, or only, alternative to pricing the corn.

Figure 1

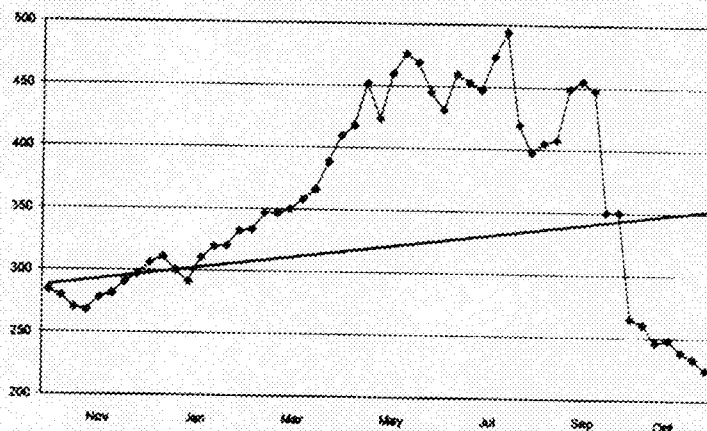
East Central Corn Prices 1994-95



**Figure 2** (Below). When cash prices are compared with the storage recovery price, it indicates that costs associated with the storage of the 1995 crop would have been paid until early September of 1996. Storage costs: 2.3¢ interest, 3¢ physical storage (5.3¢/bu./mo., 64¢/yr.).

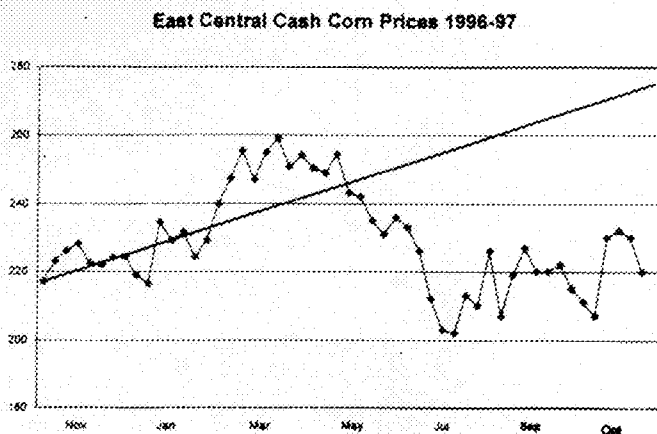
Figure 2

East Central Cash Corn Prices 1995-96



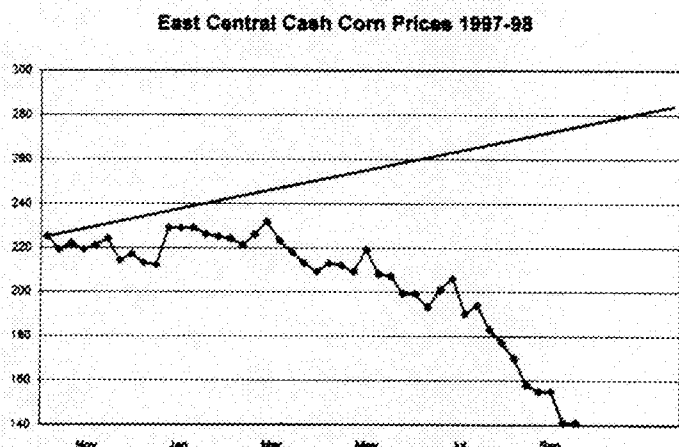
**Figure 3** (Next Page). In 1996-97, cash prices were at sufficient levels until May of 1997 to recover the costs related to storage. From that point until late October of 1997, cash prices declined under levels necessary to pay the simple storage costs. Storage cost: 1.8¢ interest, 3¢ physical storage (4.8¢/bu./mo., 58¢/yr.).

Figure 3



**Figure 4.** (below) In 1997-98, prices remained somewhat steady during the winter months but declined steadily since spring. At no point during this time frame did cash prices reach levels necessary to pay for storage costs. Storage cost: 1.9¢ interest, 3¢ physical storage (4.9¢/bu./mo. or 59¢/yr.).

Figure 4



### POST-HARVEST MARKETING STRATEGIES:

Many strategies may be used to take advantage of higher prices after harvest. Those strategies must be evaluated carefully. There may be times when these strategies will reduce the level of price risk but there are times when they may only add to price risk. A brief description of these strategies follows. *The following strategies are described only in very basic terms. It must be noted that to use some of these strategies, a more thorough knowledge of each strategy's purpose and function is necessary. Knowledge of futures, options, basis, and the amount of "carry" in the market also is very necessary. It should be noted that any strategy*

*used should be based on each individual producer's risk position and comfort level with each strategy. It should not be assumed or implied that any of these strategies are necessarily recommended. Each individual must develop his/her own marketing plan and use a pricing alternative based on business goals and risk position.*

1.) Store grain after harvest. Interest costs and physical storage costs must be considered. There also is the risk of prices going lower after the grain is put into storage. Other considerations include the timing of when the grain is sold and the impact of cold weather, snow, spring's work, etc. on the grain hauling process. Also, consider the availability of labor to haul grain, condition of the roads (snow or mud), and the condition of trucks and loading equipment. The benefit of maintaining ownership during storage creates the ability to take advantage of higher prices if and when they occur. A market plan should be developed to establish target or "trigger" prices at which grain would be sold. Finally, evaluate the amount of "carry" in the market. If a sufficient carrying charge is indicated in the market, storage of grain may be a viable alternative. But, this does not mean there is no risk of even lower prices. Although there may be sufficient "carry" in the market, prices could continue to decline creating further downward price risk.

2.) Sell cash grain at harvest. The advantage with this simple strategy is that all costs related to storage are eliminated once the grain is sold. Also eliminated are concerns over the timing, labor, and weather concerns for hauling grain later in the year. If prices are at relatively high levels at harvest this could be a feasible strategy especially if the prices offer a reasonable profit. If prices are at historically low levels at harvest when grain is sold, any chance of higher prices later on are locked out.

3.) Sell cash grain at harvest, buy a call option: It is possible to sell grain at harvest and buy a call option. This strategy requires an understanding of basis and the options market. By using this strategy, storage costs and the other risks associated with storage are eliminated when the grain is sold. The purchase of the call option allows the producer to "own the grain on paper". The producer's risk is limited to the premium cost of the call option. After the grain is sold and the call option is purchased, if futures go higher than the strike price of the option purchased by the producer, the call will become worth more money. This allows a producer to sell the call option at a higher premium than he/she paid for it, thereby allowing the producer to take advantage of higher prices without owning the physical commodity. Understanding basis is important in this strategy both in terms of when grain is

sold in the fall and whether basis improvement will occur in the months following harvest. This strategy must be fully understood before it is used.

4.) Sell cash grain at harvest, buy futures. This strategy eliminates costs of storage but it does not eliminate any price risk. This strategy also is referred to as "owning the crop on paper". However, leaving the cash market by selling grain and entering the futures market by buying futures, simply shifts all price risk from one market to another. There is the chance of prices going higher allowing a gain in the futures market but there is also the risk of prices going lower. If prices decline after a producer sells grain and he/she buys a futures contract, there is the same risk of losing money in the futures market, as would have been the case in the cash market.

5.) Store grain at harvest, enter into a cash forward contract. If a deferred cash forward contract can be executed for delivery at a later date and the price is high enough to cover the cost of storage and reflects a reasonable basis level, this may be a safe strategy. There still are the risks associated with storage; timing of delivery, available labor for hauling, weather and road conditions to contend with, but a price has been locked in. The downside to this strategy is that upward movement in price above the cash forward contract price is locked out. Also, there may be no offers of cash forward contracts at the time when it is desired to physically move the grain.

6.) Use of marketing assistance loans and loan deficiency payments (LDP's). The USDA Farm Service Agency offers marketing assistance loans to eligible producers. The nonrecourse loan allows a producer to store the production of an eligible crop using the crop as collateral against the marketing loan. The loan is intended to help an

eligible producer with cash flow without having to sell grain during low market prices. The loan allows the producer to keep the commodity in storage in order to take advantage of higher prices if and when they occur at a later date. If prices rise, a producer may pay off the loan and sell the crop at the higher price. If prices don't improve or if they decline, the producer may repay the loan with the balance of the principal and interest being waived. A producer also may choose to take a loan deficiency payment (LDP) in lieu of securing a loan as long as the commodity is eligible for a nonrecourse loan. In this case the producer takes the difference between the posted county price (PCP) and the market loan rate (the PCP must be lower than the loan rate).

There are specific rules and procedures that must be followed when utilizing a marketing assistance loan or an LDP. Producers must contact their local Farm Service Agency for specific details.

No matter what strategy is used to market grain, it is important to fully evaluate advantages and disadvantages of each strategy. Each alternative must be looked at in terms of managing price risk for an individual producer. Many strategies require an understanding of the futures and/or options markets, the concept of "carry" in the market and the concept of basis. Developing a marketing plan in advance and being flexible with the marketing plan can be of great benefit in managing price risk.

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ECONOMICS DEPARTMENT  
South Dakota State University  
Box 504  
Brookings, SD 57007-0895

Phone: (605) 688-4141  
Fax: (605) 688-6386

E-mail: [StoverP@mg.sdstate.edu](mailto:StoverP@mg.sdstate.edu)

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**SOUTH DAKOTA STATE UNIVERSITY**  
Economics Department  
Box 504A  
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