

ECONOMICS OF STORING POTATOES

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History

The economic history of potato storage is woven with two common threads: (1) value and (2) ingenuity. Storage creates value to both producers and consumers. In order to capture that value, human ingenuity must be used to maintain quality during storage.

An historical example is from the pioneer days in the Western U.S. W.W. Alderson, born in England, was one of the first potato growers in the West. He wrote the following about growing potatoes in Montana:

"Our potato crop of 1864 was a very excellent one.... After raising our potatoes and getting them well housed, the next thing was to get them marketed.... Sometime during the latter part of November, the weather being very mild, we loaded up two wagons with potatoes and went to market. Our destination was Diamond City in Confederate Gulch, which was then in its balmy days, gold dust being quite abundant, but provisions scarce and correspondingly high."

Alderson recognize the value of storing his potatoes and getting them to market in a gold mining community. When the weather turned bad, he had to use ingenuity to store the potatoes while enroute to market.

"Not having any protection for our loads of potatoes, we unrolled our bedding and blankets and spread them over the potatoes to keep them from getting wet and to protect them from the severe frost.... By the time we arrived at West Gallatin crossing, the snow had fallen about a foot in depth and the weather turned intensely cold. We camped there and built fires all around the wagons, which we kept up during the night to keep our loads from freezing. Having no bedding we stood guard all night and kept the fires roaring."

Getting the crop to market not only tested the Alderson's ingenuity but also their stamina.

"Brother John suggested that during the middle of the day we could make short drives. Our potatoes, covered with blankets, ice and snow would not freeze while in motion.... The remainder of the trip, which consisted of nine days and ,nights, was a repetition of the experience of the first... the thermometer most of the time from 10 to 20 degrees below zero... deprived so long of sleep... being entirely out of funds... the welfare of the best little woman in the world and four precious ones, were directly involved."

They finally got the potatoes to market.

"In the afternoon of December 1, we had our precious load of "spuds" in the very center of the raining camp. The miners, hungry for potatoes, readily offered us 12 1/2 cents per pound. The loads netted us \$554.80 in clean gold dust and nuggets.... We drove past a load of frozen potatoes on the way. We found that frozen potatoes were a ready sale in camp for six cents per pound."

In terms of today's dollars, after accounting for inflation, the price Alderson received was over \$200 per hundredweight. Storing the potatoes was quite valuable to both the growers and the consumers. Alderson and his brother used their ingenuity to capture that value.

Costs and Revenue

Modern potato growers also use their ingenuity to capture value. Potato storage is an opportunity to make money. Revenue from storage comes when the potatoes are sold. Quantity and price affect the amount of revenue. The quantity sold out of storage is determined by shrink and quality loss. Price is affected by quality, but is also determined by open market forces. Of course, prices can be locked in with contracts.

The costs of storage fall into two categories: (1) ownership costs and (2) operating costs. Ownership costs include such things as depreciation, insurance, repairs, taxes and interest on investment. If the storage facility is rented rather than owned, the rental fee replaces the ownership costs. Operating costs are those that are incurred directly from storing potatoes. Included are labor, utilities, chemicals, shrink and interest on the money invested in potatoes. Another cost is the potatoes themselves. When growers put potatoes into storage, the value of those potatoes should be considered a cost. The value can be calculated as the cost of production or the price at harvest.

Typical costs for storing potatoes for six months in a 60,000 cwt capacity facility might be as follows. We assume the open market price of potatoes at harvest is \$5.00. This represents an opportunity cost. The grower had an opportunity to sell off the field at \$5.00 but instead chose to store. The rental cost of \$0.25 per cwt is in lieu of ownership costs. The interest expense is calculated for six months at 6% annual percentage rate (apr) on the \$300,000 value of the potatoes. We estimated shrink at 7% for the six-month storage period. The other operating costs include the labor to fill and empty the storage, utilities and chemicals.

The total cost of storage in this example is \$355,000. Accounting for the 7% shrink we are left with 55,800 cwt to sell. The breakeven price is \$6.36. If the grower receives a price of more than \$6.36 the storage enterprise is profitable.

Profitability

Interest, shrink and other operating costs would be different each month. These costs can be modified for each month during the storage season. Figures 1-8 show the monthly storage costs for a typical Idaho storage during the marketing years in the 1990s. The graphs also show the open market prices for potatoes. When the open market price is above the cost line, it is profitable to sell out of storage.

It was unprofitable to store potatoes for the open market during the marketing seasons of 1990-91, 1992-93, 1993-94, 1996-97 and 1997-98. Profits were available at the end of the 1991-92 season and the 1994-95 season. Storage of the 1995-96 crop was profitable for most of the season, but growers who held into July suffered losses.

Declining Profits

I estimated storage profits for the Idaho open-market back to the 1980 crop and found what seems to be a fundamental change in storage profitability. Storage was more profitable during the 1980s than the 1990s. Six of the 10 crops (60%) in the 1980s had at least two months when storage was profitable. During the 1990s only 2 of the 8 crops (25%) fit that standard.

I gave five possible reasons for scarce storage profits during the 1990s. First, I said my cost estimates might be wrong. But if I overestimated costs, I did it the same way each year. This would still give a difference between the 1980s and 1990s.

Second, there may be too many "holders" in recent years. If grower attitudes changed, and more hold longer, it would push down prices later in the season.

Third, maybe there is excess storage capacity. If the number of storage facilities grew faster than market demand, there may be too much product in storage.

A fourth reason is USDA underestimates of potato crop size. One argument against this point is that USDA also underestimated crops in the 1980s. Another reason is that a large 1990s underestimate was during a profitable storage year.

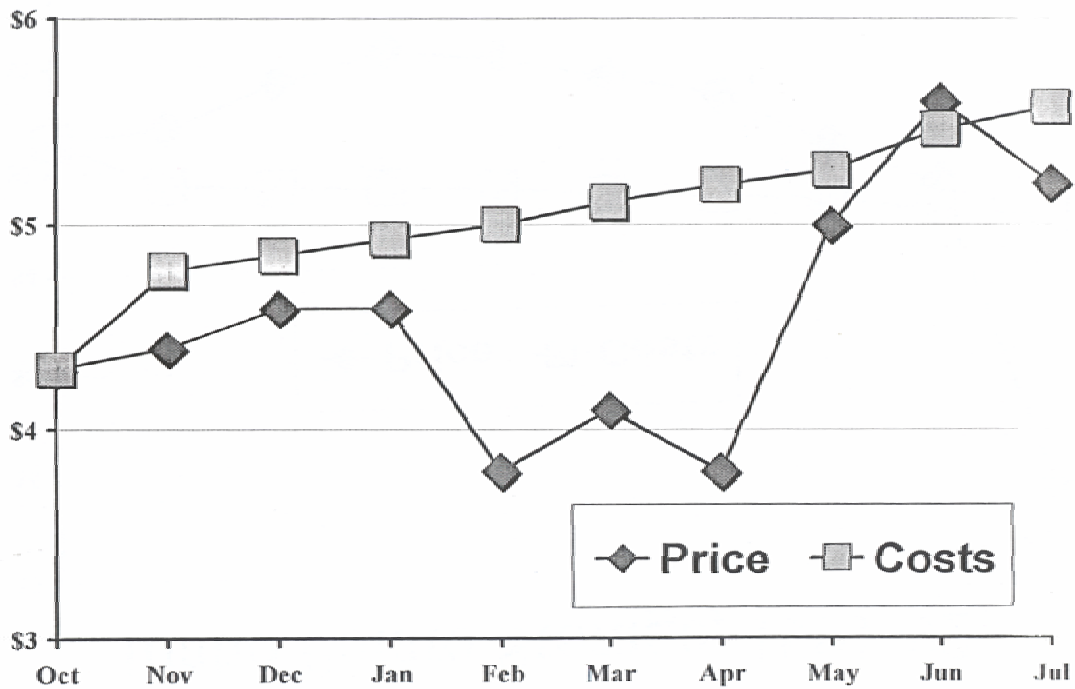
Fifth, there may be more competition during the storage season. Maybe some new spring-crop or summer-crop regions or even some new fall-crop regions provide more competition during the 1990s.

I then asked the audience what they thought were some reasons. Jim Fuller of McCain Foods mentioned new varieties. Processors have replaced some late-season Russet Burbanks with early crops of other varieties. Growers may be in the habit of storing too many Russet Burbanks.

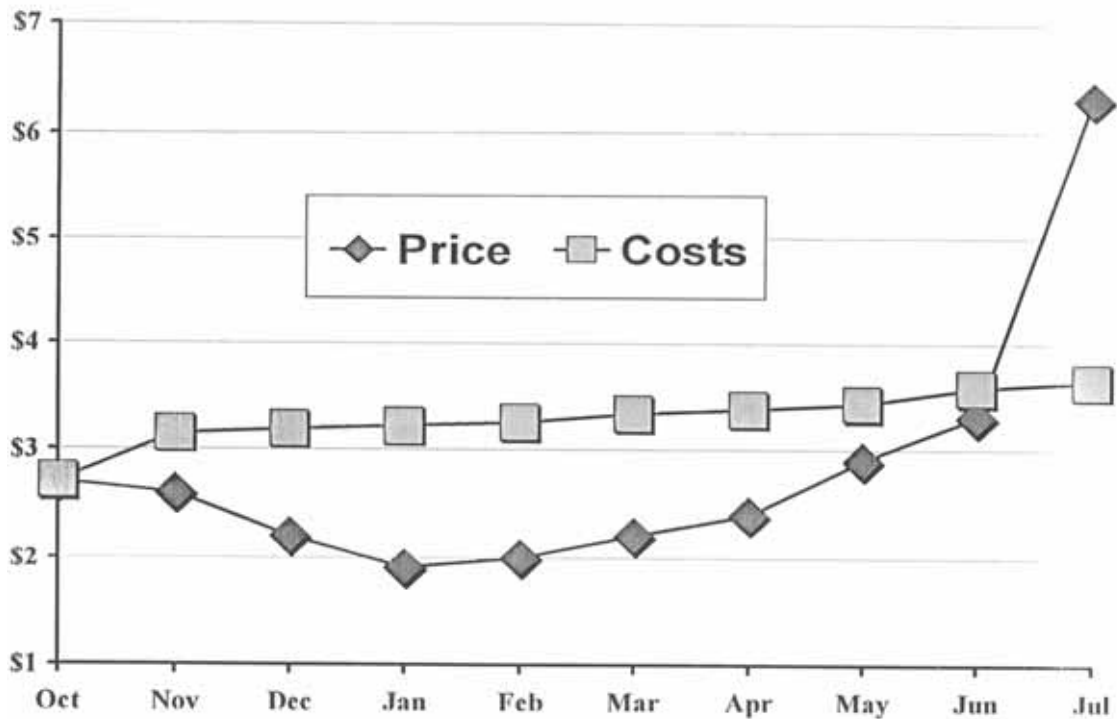
Idaho grower Klaren Koopin cited U.S. farm policy. The old policy did not let program-crop growers plant potatoes on set-aside acres. The new freedom-to-farm policy encourages growers all over the country to try new crops such as potatoes.

Whatever the reasons for declining profits, I think it will change. In free markets, people stop doing unprofitable things. When enough people stop, profits return.

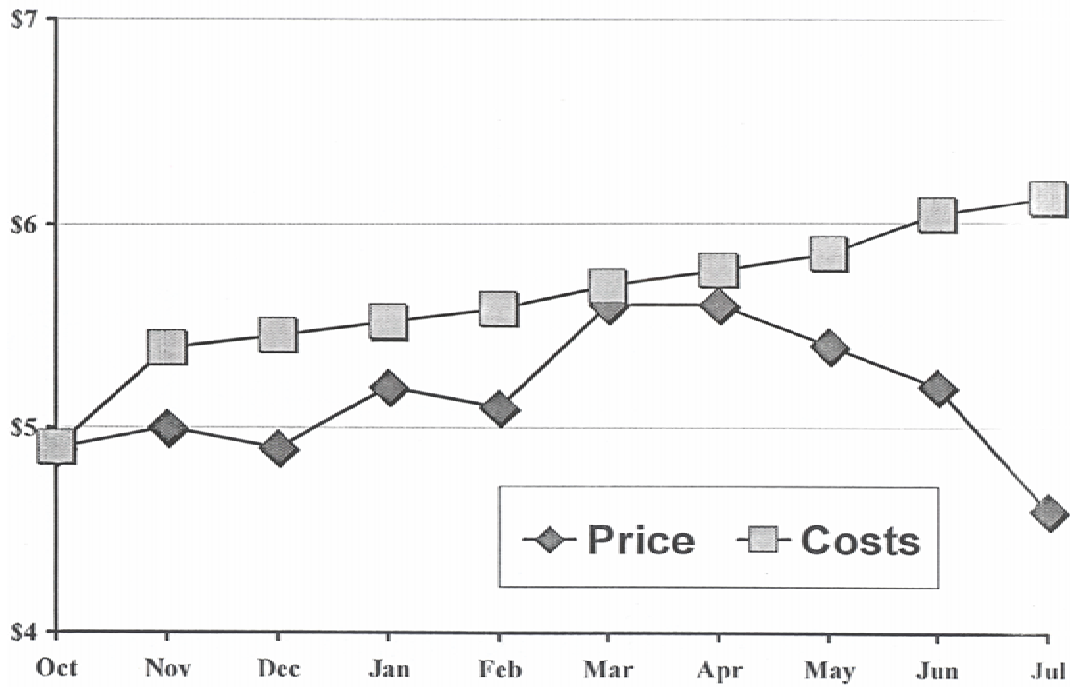
Idaho Potato Storage, 1990-91



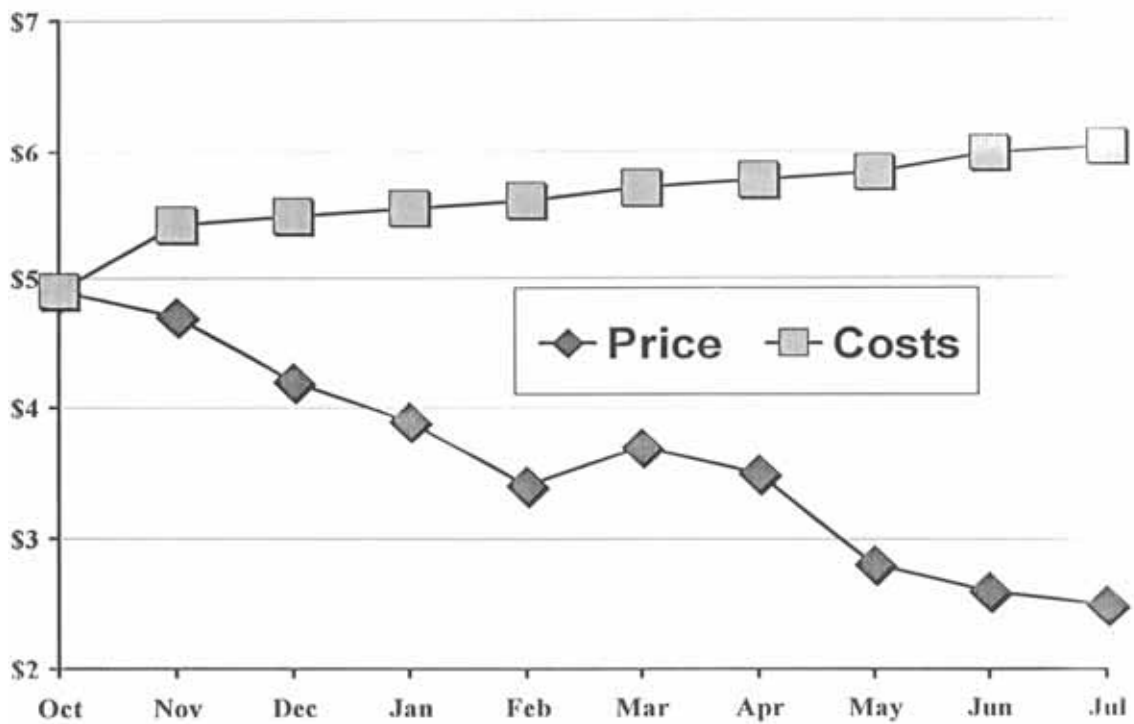
Idaho Potato Storage, 1991-92



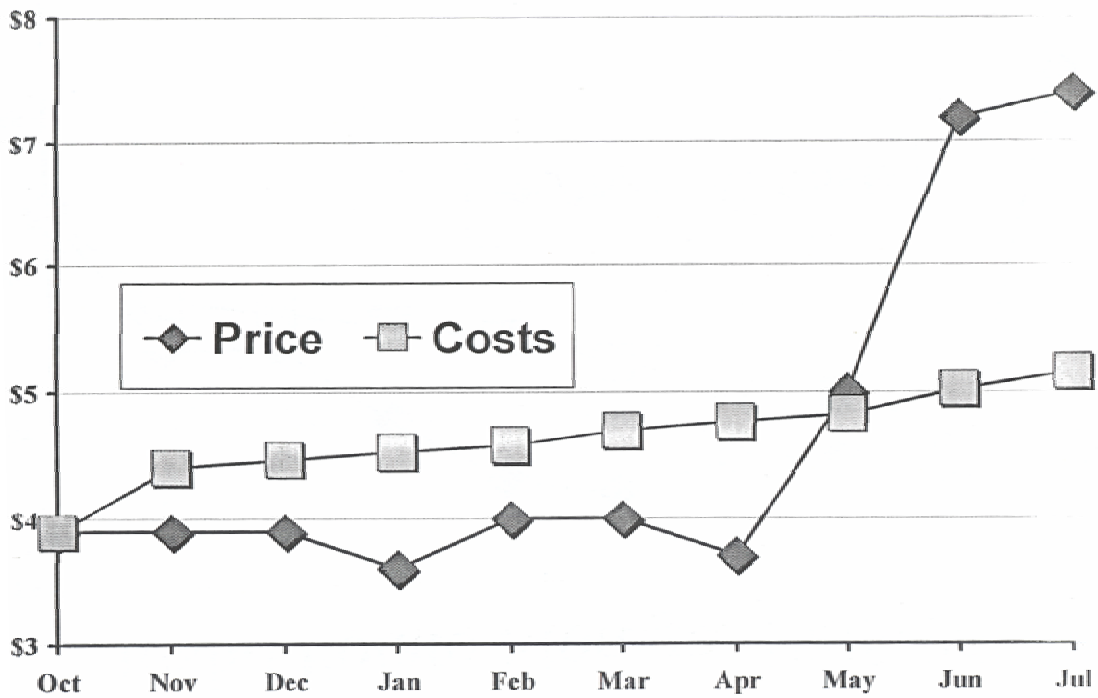
Idaho Potato Storage, 1992-93



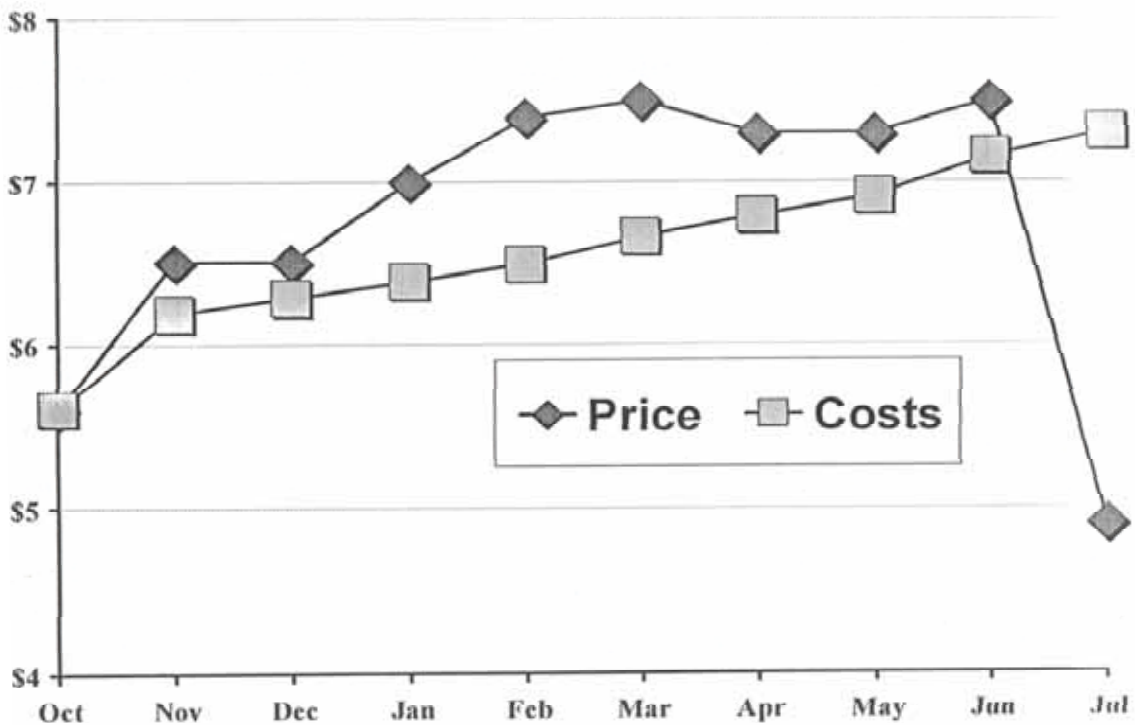
Idaho Potato Storage, 1993-94



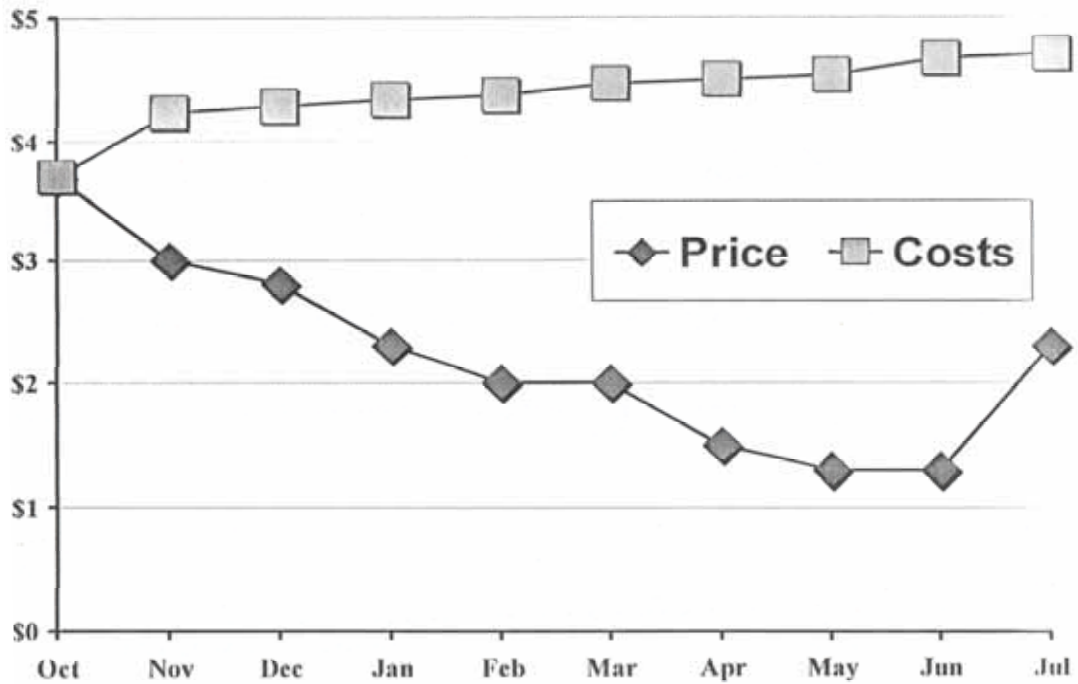
Idaho Potato Storage, 1994-95



Idaho Potato Storage, 1995-96



Idaho Potato Storage, 1996-97



Idaho Potato Storage, 1997-98

