

South Dakota State University  
**Open PRAIRIE: Open Public Research Access Institutional  
Repository and Information Exchange**

---

Economics Commentator

Economics

---

9-10-1985

## Economics of Drying Grain

Richard C. Shane  
*South Dakota State University*

Follow this and additional works at: [http://openprairie.sdstate.edu/econ\\_comm](http://openprairie.sdstate.edu/econ_comm)

 Part of the [Agricultural and Resource Economics Commons](#), and the [Regional Economics Commons](#)

---

### Recommended Citation

Shane, Richard C., "Economics of Drying Grain" (1985). *Economics Commentator*. Paper 224.  
[http://openprairie.sdstate.edu/econ\\_comm/224](http://openprairie.sdstate.edu/econ_comm/224)

This Newsletter is brought to you for free and open access by the Economics at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in Economics Commentator by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact [michael.biondo@sdstate.edu](mailto:michael.biondo@sdstate.edu).



Editor: Donald C. Taylor

Economics Department

SDSU, Box 504A

Brookings, SD 57007

Tele: (605) 688-4141

No. 228

September 10, 1985



## ECONOMICS OF DRYING GRAIN

by

RICHARD C. SHANE

Grain Marketing Specialist

The farmer's decision to market grain directly from the field or to condition and store the grain for later season sale can have a large impact on the profitability of the farm business. The most profitable choice depends on many factors. The purpose of this Newsletter is to provide you information on shrink, moisture discounts, drying costs, and returns to drying.

### Shrink

The principal cost incurred when drying grain is shrinkage. Shrinkage represents an excess of weight in field harvested grain--represented by above-standard moisture and/or chaff content. If the moisture content of grain at harvest is above the amount allowed, a purchaser is not only paying for unwanted content but also may incur spoilage unless the moisture is reduced through artificial drying. The amount of moisture shrinkage brought about by artificial drying can be calculated with the following formula:

Percent moisture shrinkage (in decimal form) =

$$1 - \frac{100\% - \text{Initial \% moisture}}{100\% - \text{Final \% moisture}}$$

In addition to moisture shrinkage, drying results in an invisible or handling shrink consisting of small particles blown into the air. This dry matter shrink varies among grains from 1/4 to one percent; often 0.5 percent is allowed.

### Moisture Discounts

Moisture discount is the amount that grain price is reduced because the

grain contains excess moisture. The moisture discount reflects the amount of dry matter in excess moisture grain, as a percentage of the dry matter in standard moisture grain. The discount covers the loss of weight in drying and cleaning the grain, the cost of drying and the risk associated with high moisture grain spoiling.

A common moisture discount practice is to reduce price by five to six cents per bushel per percentage point of moisture removed. A second often used practice is to "pencil" shrink grain 1.3 to 1.5 percent per percentage point of moisture removed and charge the seller the costs of drying.

### Costs of Drying

Costs of drying grain vary with the type of system, volume utilization of system and moisture content of the grain. Total costs of drying consist of fixed and variable costs in addition to shrinkage. Fixed drying costs consist of depreciation, interest and insurance. Fixed costs per bushel decrease rapidly as the number of bushels dried increases. After a utilization of 50 to 60,000 bushels, economies of size are very slight. For a batch dryer with 400 bushels per hour capacity, fixed costs vary from 12 cents per bushel for 10,000 bushels dried to one cent per bushel for 150,000 bushels dried. The variable costs of drying consist of fuel, labor, repair and miscellaneous and amount to about .3 cent per bushel plus one cent per bushel per percentage point of moisture removed (propane at 50 cents).

### Return to drying

Return to drying is sometimes referred to as the return to pay the costs of drying. This reference arises because return to drying is calculated by subtracting the value of wet corn from the value of the dried corn. An example will be used to explain this concept.

The shrinkage from drying the corn is computed with the above formula as follows:

Your corn has 10 percent excess moisture so the moisture discount is 60 cents per bushel. If you were to sell your corn directly from the field, you would receive \$1.40 per bushel or \$1,400. The elevator has, in effect, made an adjustment for the extra water and chaff they would be buying plus the cost of drying the corn to an acceptable moisture content for storage.

Assume you have just harvested 1,000 bushels of corn containing 25 percent moisture. The elevator will pay \$2 per bushel for No. 2 corn which has a standard (USDA) of 15.5 percent moisture. The moisture discount is six cents per bushel per point above 15 percent. The elevator deducts an additional .5 percent below the standard because moisture content cannot be measured accurately over an entire load of grain.

Drying costs in this situation would be 12 cents fixed cost plus 10.3 cents variable costs (see costs of drying section) or 22.3 cents per bushel and \$223 for 1,000 bushels. The profit from drying is \$354 - \$223 = \$131. After your drying situation is calculated, you are now in a position to combine your drying and storing costs to make the decision of whether or not to store grain.

If the cost of drying the corn is less than \$354, it pays you to dry. If the cost of drying exceeds \$354, it does not pay to dry and the corn should be sold wet.

Add .5 percent for dry matter loss for a total shrink of 12.3 percent. So after drying you have lost 123 bushels (of water and chaff) and have 877 bushels of acceptable standard corn remaining. The 877 bushels at \$2 per bushel could be sold for \$1,754. Therefore, the return to drying is \$1,754 - \$1,400 = \$354.

100% - 25 = .75  
 100% - 15 = .85  
 .75 / .85 = .88 or 11.8%

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the USDA Richard A. Battaglia, Director of CES, SDSU, Brookings Educational programs and materials offered without regard to age, race, color, religion, sex, handicap, or national origin. An Equal Opportunity Employer

Cooperative Extension Service  
 U.S. Department of Agriculture  
 South Dakota State University  
 Brookings, SD 57007

**BULK RATE  
 POSTAGE & FEES PAID  
 USDA  
 PERMIT NO. G 268**

OFFICIAL BUSINESS  
 Penalty for Private Use \$300

## Economics Newsletter

Address Correction Requested