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Richard C. Shane
South Dakota State University

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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 a 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) =

\[
\frac{100\% - \text{Initial } \% \text{ moisture}}{100\% - \text{Final } \% \text{ moisture}}
\]

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 scale 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 0.3 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.
Store grain, make the decision of whether or not to combine your drying and storing costs to calculate what you are now in a position to do after drying is $7.73. The total cost of drying per bushel would be $7.73 plus 10.3%.

Drainage costs in this situation are $1.40 per bushel and $2.33 for 1,000 bushels. The profit would be 12 cents per bushel (see cents per bushel formula).

If the cost of drying the corn is more than $7.73, it pays to dry. If the cost of drying the corn is less than $7.73, it pays to dry. Otherwise, the return is $7.73 per bushel.

The return from draining $77 bushels at $2 per bushel could be acceptable. The standard deviation is 2.5% per cent for dry matter loss, which is 12.5% of the standard deviation. The moisture content of a bushel is six percent. The moisture content is six percent. The moisture content is six percent. The moisture content is six percent.

Calculating the shrinkage from drying the corn follows:

The shrinkage from drying the corn to an acceptable moisture content can be reduced by using a heat source to dry the grain. The heat source can be a gas or electric heater. The heat source can be a gas or electric heater. The heat source can be a gas or electric heater. The heat source can be a gas or electric heater.

Assume you have just harvested a bushel of corn containing 12% water.

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