

Agronomic Directions

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You are faced with a variety of choices when it comes to marketing your crop, including several options related to the moisture level at which you deliver your grain. Iowa State University's Ag Decision Maker File A2-32, *Grain Drying and Shrink Comparison*, provides helpful information and a working spreadsheet tool ([click here for the spreadsheet](#)) to help compare the three options described below. *Information gathered from Iowa State University Extension and Outreach, Ag Decision Maker, File A2-32, Dr. William Edwards*

Corn Drying and Shrink Comparison

Moisture Discount: Under the moisture discount approach the total pounds of corn delivered is first divided by 56 pounds to calculate the number of "wet" bushels. A moisture discount equal to a certain percentage of the current number 2 selling price is then assessed against each wet bushel. This discount reflects both the cost of actually drying the grain to a number 2 moisture level or below and the loss of weight that will occur in the drying process. Weight loss is primarily due to the lost water that is removed in the drying process, but it also includes an estimated loss of dry matter due to the escape of some volatile compounds, kernel breakage and respiration of the seed itself. This dry matter loss is also called "handling loss." The assumed percent handling loss will vary from buyer to buyer. Research at Iowa State University found actual handling losses from .064 percent to 1.33 percent at commercial drying facilities, and from 0.22 percent to 1.71 percent at farm-based facilities (Elmore and Abendroth).

Drying Cost and Shrink Factor: Another approach is to charge the producer the direct cost of drying the corn to an acceptable moisture level, then assess a shrink factor to adjust the volume of wet bushels for the water loss and assumed handling loss. This allows the buyer to easily adjust the drying charge based on the actual cost of fuel and electricity each year.

On-farm Drying: Many corn producers have the capacity to dry their grain themselves. This allows them the flexibility to store the grain in their own facilities and to avoid possible bottlenecks when delivering grain at harvest time. However, drying grain on the farm may require extra transportation compared to delivering directly to the buyer, and the producer's drying system may not be as efficient as a large capacity system owned by an elevator.

The cost of on-farm drying depends on the type of drying system used, the amount of moisture to be removed, the current air temperature and relative humidity, and the current price of drying fuel and electricity. When choosing between drying corn on the farm and then delivering it to the elevator or delivering wet corn, only the variable costs for drying need to be considered. Ownership costs such as depreciation, interest and insurance will be the same regardless. Variable costs include items such as repairs and maintenance, labor and the cost of handling the grain in and out of the dryer. However, the major costs will be for drying fuel and electricity. Which of these is larger will depend on the type of system being used.

Corn Harvesting Losses

Adapted from University of Wisconsin—Corn Agronomy

Pre-harvest Losses (hybrid, weather, timeliness)

Ear droppage: One ear (3/4 pound each) in each 1/100 of an acre is equivalent to one bushel per acre. To determine 1/100 of an acre, take the normal 1/1,000 acre distance times ten. For example, in 30" rows, 1/1000 of an acre is 17' 5"; 1/100 acre would be that distance across ten rows. For each ear in that area, there is one bushel per acre loss.

Gathering Losses (grain that does not get into combine)

Shatter losses caused by the header: count the number of ears and kernels under the header. Two kernels per square foot are equal to one bushel per acre of loss. More than a half bushel per acre (or one kernel per square foot average) indicates adjustments would be appropriate.

Machine Losses (Improper adj. of threshing, separating & cleaning sections)

Threshing loss is indicated by kernels attached to pieces of cob behind the combine. These were not shelled by the rotor or cylinder. Separating losses are additional loose kernels on the ground behind the combine. These were not shaken out of the cobs and husks and were lost over the back of the separator.

How to Measure Losses

1. Determine average loose kernel loss and cylinder/rotor loss
*Every 2 kernels per ft.² = 1 bu/a
*Kernel still attached to cob = cylinder/rotor loss
*Acceptable level = 1.2 to 3 kernels per ft.²
2. Determine machine ear loss
*Behind combine, gather all ears on 1/100 acre
*In front of combine, determine pre-harvest ear loss in standing corn on 1/100 acre
*Subtract pre-harvest ear loss from ear loss at the rear of machine
*Each 3/4 pound ear = 1 bu/a
*Each 1/2 pound ear = 2/3 bu/a
*Acceptable level = 0 to 1.0 bu/a
3. Typical level = 0.6 to 2.5 bu/a: Can you limit your total field loss to less than a half bushel per acre? That would place you and your combine in the top ten percent.