
1996 corn may have a greater than usual chance of going out of condition this year. It should be checked weekly beginning in March.

Have you checked your grain bin?

Unique conditions

The problem is with low test weight corn that was either slow to mature or did not fully mature before it was harvested last fall. Corn with a high moisture content may have been dried to 13-14 percent last fall, but those readings might not be reliable.

Initial moisture readings on low test weight corn can be unreliable for several reasons. First, low test weight corn is soft so only the surface dries. The internal portion remains wet, but evens out in storage to raise the overall moisture content. For example, low test weight corn put in storage last fall at 14-15 percent moisture could be 16-17 percent this spring. Softer corn also absorbs moisture from air, invites attack by fungi, and breaks easily when handled.

Low test weight corn can take on moisture in storage, especially if not properly managed. Low test weight corn is twice as likely to spoil as heavier corn at the same moisture, so weekly bin checks will help identify problems before they become unmanageable.

Cool, wet weather last October and November has added to storage problems. The weather made it difficult to dry corn in bins using only unheated, natural air. Slow-to-mature or not-fully-mature corn does not dry down as well in the field. The result is that wet corn may have been moved to storage later in the year. Winter moisture migration is expected to cause problems this spring.

The other complicating factor is the plentiful 1996 harvest. Market conditions led many producers to store grain. Iowa elevators report that some farmers have found out-of-condition grain in bins as early as mid-February, several weeks before storage problems tend to occur in Iowa. Elevator operators also have reported grain with up to 10-20 percent mold-damaged kernels, unusually high compared to normal years.

Because of these unique conditions, immediately check all stored grain. Grain in good condition last fall may have developed problems over the winter. Sample bins from the top and bottom for moisture content to determine general condition of the grain.

Checking grain

- **Look for signs of moisture, such as**
 - crusted grain (usually at the top center of the grain surface),
 - wet, slimy grain,
 - ice or frost accumulation on the grain (it also may accumulate under roof surfaces, hatches, and vents, or in cold grain near the bin wall, often on the north side), and
 - heating.
- **Smell the grain.** A musty or moldy odor indicates the beginning of a storage problem; a fermented or sour odor indicates a serious problem. On cold, clear days when the air and grain are about the same temperature, run the aeration fan briefly and smell the exhaust for bad odors. With positive pressure aeration or drying fans, smell air on the grain surface that has been forced through the grain. Do not do this in wet weather.
- **Use a long, slender rod to pinpoint problems.** Poke into corn mass in several places to find hard, compacted, or moist areas.
- **Record grain temperature.** Attach a grain thermometer to the end of a metal rod to detect hot spots, or record temperature of the first air that comes through the grain. The thermometer can be left at an 8-ft. depth to get a weekly temperature check. A rise of only 3-4 degrees indicates a possible problem; monitor temperature daily.

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- **If there are no problems, continue to check regularly.** Set aside one day each week and mark it on your calendar. It's best to check when air temperature is equal to or less than the grain temperature and it's not foggy, rainy, or damp.

Safety concerns

When checking grain, it helps to climb into the bin to feel the surface and the first several feet of grain.

Enter a bin only if you know its history (i.e., when it was filled or unloaded) and if you are not alone.

If grain has not been removed, you should see a cone in the middle of the bin. If grain has been removed, look for an inverted cone or flat area, and a shiny surface on the side of the bin. If you do not see these signs, the surface may be crusted and is unsafe to enter!

Never enter a bin while unloading equipment is running or turned on! To guard against accidental operation, always padlock the electrical disconnect and tell someone in the area what you are doing.

If you suspect dusty or moldy grain, a dust mask or respirator can be used, but only after checking with your doctor. Spores from mold fungi can cause respiratory problems or a condition known as "farmer's lung." Some people are more susceptible to it than others.

Test moldy grain for mycotoxins before feeding it to livestock. Check with your veterinarian for more information.

For further questions

Contact your ISU Extension field agricultural engineer for more information or ask for these publications:

- *Checking Stored Grain*, AE-3009,
- *Handling Corn Damaged by Autumn Frost*, NCH-57,
- *Grain Drying, Handling, and Storage Handbook*, MWPS-13, and
- *Handle Your Grain Harvest with Care*, Pm-1265i.

A normal test weight is about 56 pounds per bushel for shelled corn. Last year's harvest averaged 54 lb./bu. and 50-52 lb./bu. for many areas in north and northeast Iowa.

Recommendations

- **If moisture content is 16-17 percent**, turn on aeration fans or deliver grain to an elevator for proper storage. Many elevators have pricing options, such as free deferred price, in which the owner pays no storage fee but takes the price at a later date. Be sure to operate fans long enough to cool all the grain.
- **If moisture content is over 17 percent**, dry corn commercially or in a dryer.
- **Use test weight to determine how long you should keep corn.** If grain test weight is less than 53 lb./bu., consider selling it before summer. If you can, sell lighter corn first because it will go out of condition earlier than heavier corn. Expect to experience more storage problems as temperatures increase.
- **Keep separate corn with a test weight of 54 lb./bu. or higher.** In a year in which much of the stored corn tests light, heavier corn may sell at a premium.
- **If problems has arisen, move the corn to market as soon as possible.** Repeated handling to control hot spots will cause more broken grain and foster deterioration.

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