Mold Affects Drying Corn

This news release may also be found on the Web at http://www.ag.ndsu.edu/news/.

Mold problems in standing corn will get worse until the corn has dried to about 20 percent moisture or grain temperatures drop below 40 degrees, says North Dakota State University Extension Service agricultural engineer Ken Hellevang.

Typical outdoor temperatures soon will be below 40 degrees, which should limit mold growth. Average daily maximum temperatures will remain below 40 degrees until about the middle of March.

However, field drying is very slow at cold temperatures. The estimated amount of corn field drying is about 2 percent during the last two weeks of November, about 2 percent per month for December and January, and about 3 percent during February. Corn at 30 percent moisture on Nov. 15 may dry to about 21 percent by early March. Therefore, corn at 30 percent moisture might be expected to dry during the winter to a moisture content approaching that required to limit field mold growth before typical outdoor temperatures reach 40 degrees.

The amount of corn field loss during the winter depends on factors such as the corn stalk strength and how well the cob is attached to the stalk, Hellevang says.

Drying harvested corn to a moisture level of 18 percent to 20 percent and cooling it to near freezing will stop development of field molds. The corn can be dried later to a storage moisture level.

Rapid cooling after drying is important because storage molds also are affected by corn moisture and temperature. Each 10 degrees that corn is cooled at temperatures above freezing approximately doubles the allowable storage time.

High-temperature drying will not kill the mold. Any mycotoxins that formed prior to drying will remain in the corn and will not be destroyed during drying and storage. Mycotoxins, which are toxins that mold produces, may be a concern if the corn is fed to livestock.

Most of the mold observed so far in North Dakota has not produced mycotoxins.

Because damaged kernels have a shorter storage life and storage molds will grow at moisture contents exceeding about 15 percent at spring air temperatures, natural-air and low-temperature drying may be problematic. Those drying methods can be used for spring drying, but initial corn moisture should be less than 20 percent and the airflow rate should be at least 1 cubic foot per minute per bushel. The desired moisture content is less than 13 percent for summer storage.

Corn with damaged kernels should be marketed or fed to animals by early summer because of its shorter storage life.

Hellevang also recommends producers incorporate a screen cleaner into their handling system to remove fine materials before the corn is placed in the bin to enhance storability. The cleaner also may remove some of the smaller shriveled kernels that have been infected by ear rots.

In addition, exposure to mold spores can cause respiratory problems. Farmers and grain handlers should wear respiratory protection, such as an N-95-rated mask, to minimize exposure to mold spores associated with moldy grain and plant material.

Many tips and guidelines for corn drying and storage are available online at http://www.ag.ndsu.nodak.edu/abeng/postharvest.htm.

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