When A Fungi Really Isn't A Fun Guy

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Throughout the Midwest, farmers have been frantically harvesting their soybeans, sorghum, corn and other grains in order to beat winter to the punch. 2009 has been a bit of an odd year in that much of the crop was planted late and, as a result, was harvested late as well. Because of the late harvest, much of the crop has endured many wet events in the field (especially those grains that were damaged by insects) and has often become infested with various molds and fungi that can render the grain virtually unusable due to mycotoxins.

Mycotoxins can be formed on grain in the field, during transport and even in the grain bin. Common fungi such as Aspergillus, Penicillium, Fusarium and others can produce one or more mycotoxins that can cause death, chronic problems and even cancer due to damage to mammalian kidneys and liver.

Aflatoxin is a mycotoxin produced by the fungus Aspergillus flavus that is formally regulated. Others such as deoxynivalenol (DON), vomitoxin and zearalenone may or may not be regulated depending on grain type, who is buying and grain use.

How can farmers reduce their problems from these naturally occurring detrimental compounds? In the field, use of genetically modified seed can offer protection from insect damage and subsequent fungal growth. Additionally, careful and close monitoring of the crop and timely pesticide applications will help limit grain damage.

Once the grain is in the grain truck, other measures can be taken to limit losses. Take care handling the grain. Don't run augers so that the grain is broken, such as slamming it into a hard flat surface. Screening the grain before it is placed into the grain bin can also help.

Whole kernels are less likely to have fungal damage, while the fines composed of broken kernels and dust provide large amounts of surface area where fungi can thrive.

Grain moisture and temperature are very important for controlling mycotoxin-producing fungi. Bringing grain temperature below 50 degrees Fahrenheit will help suppress fungal growth and will keep kernel-damaging insects in check as well. Grain moisture below 15 percent will suppress virtually all fungi; however, care should be exercised in keeping moisture from getting too low.

Most grain will become very brittle when moisture drops below 12 percent and will break easily, making more fines. Additionally, remember that moisture is also grain weight. I don't know any buyer that will adjust scale weight upward due to moisture content, only downward.

Carefully monitor the grain to discover any "hot spots" where local moisture and fines may be sufficient to support fungal growth. The average moisture of the bin might be 15 percent, but in spots, moisture can easily exceed 20 percent.

As a practical matter, grain that has higher levels of mycotoxins should not be stored for extended periods since toxin levels can increase over time, especially if moisture and temperatures cannot be kept in check.

Don't combine grain from other bins in an attempt to lower mycotoxin concentrations. Removal of fines will frequently bring concentrations below acceptable limits. Δ

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