



Corn Mold Update

by
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Every producer by now is aware of the problems we been experiencing with this year's corn crop.

According to Penn State agronomist Greg Roth, the cool summer we had occurs only once every 30 years. That slowed the maturation of the corn plant, so that when the killing frosts hit, a lot of moisture was left in the kernels.

Grain dry-down this fall averaged about 1 percent per week, compared to 3.5 percent per week in a normal year, Roth says.

Those facts seem to be pretty well understood, but producers are still searching for solutions amidst some messages that seem a bit confusing. Since I wrote on this subject in December, we have a better handle on how serious the problem is, and it's also apparent that some laboratories are better than others when it comes to mycotoxin analysis.

What Problems Have We Seen?

Low test weight grains

The cool conditions we had this summer, or hot and dry conditions lead to grains with a low test weight (low bushel weight) for grain.

While low test-weight grains often have normal or higher protein contents, they're usually lower in energy. If the drop in energy density is not extreme, low test weights will not change growth rate, but feed efficiency will be impaired.

Data from Central Soya Research shows that for each pound decrease in bushel weight, metabolizable energy will drop by 5-10 kcal/pound. For example, a 50-pound bushel weight for corn (vs. a normal weight of 56 pounds) would contain about 1,513 kcal/pound (vs. a normal ME value of 1,555 kcal/pound). Pigs consuming a diet with this light-test corn would grow 2-3 percent less efficiently.

Studies at Kansas State University show pigs fed sorghum with very low test weights (35-45 pound vs. a normal of 55 pounds) will grow slower and less efficiently. In those studies, researchers observed a 5-7 percent reduction in growth rate and a 7-12 percent reduction in feed efficiency. These observations fit the predictions by the Central Soya Research.

When feeding suspect grains, check bushel weights and protein contents. If these two values are normal, hog performance should not change.

Damaged kernels

Corn that contains more than 35-40 percent moisture may break apart as it goes through the harvesting and drying process. The fines that result are open for mold infection, and should not be fed to pigs. Fines under normal conditions may pose minimal risk even for pigs, but this year they should be unconditionally avoided.

Laboratory Tests

Blacklight

Some feed mills use a "blacklight" as a screening method for mold problems. Shining an ultraviolet light (wavelength of 365 nm) on a sample of corn will sometimes cause kernels to glow bright green-yellow. If one or more kernels fluoresce in a 10-pound sample, most mills will consid-



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er the sample positive for aflatoxin.

Actually, the fluorescence is due to compound, kojic acid, that is produced by the Aspergillus mold (which also produces aflatoxin). Using the blacklight alone will produce both false positives and false negatives.

Enzyme-linked

Immunosorbent Assay

This process, called ELISA, is the concept behind the rapid test kits that some producers and many feed mills use. With ELISA, an antibody in the kit reacts with a specific mycotoxin.

This reaction is often converted to a color change in the solution, which tells the user whether the sample is positive or negative for the mycotoxin in question.

The advantage is that the ELISA test is quick. The disadvantage is that the antibody in the kit occasionally reacts with something besides the mycotoxin, which creates a false positive reading.

Many researchers recommend that ELISA tests be followed with other procedures wherein cross reactions are not

a problem. This is especially true for dirty samples or products of fermentation (silages).

Chromatography

This is simply a means of separating and identifying a mixture of compounds. You will hear it by different names — thin layer chromatography (TLC), gas liquid chromatography (GLC), or high pressure liquid chromatography (HPLC), to name a few. The soup in question is introduced at one end of the system (often a "column" or tube), and the components in the soup emerge from the other end at different times.

Chromatography is often expensive, but as long as it's run properly, it's more fool-proof than Elisa. It can be used to accurately identify mycotoxins (qualitative) and measure the amount of mycotoxins (quantitative).

Lab Test Results

From This Year's Crop

I recently spoke with Paul Nelson, professor of plant pathology and head of the Fusarium Research Center at

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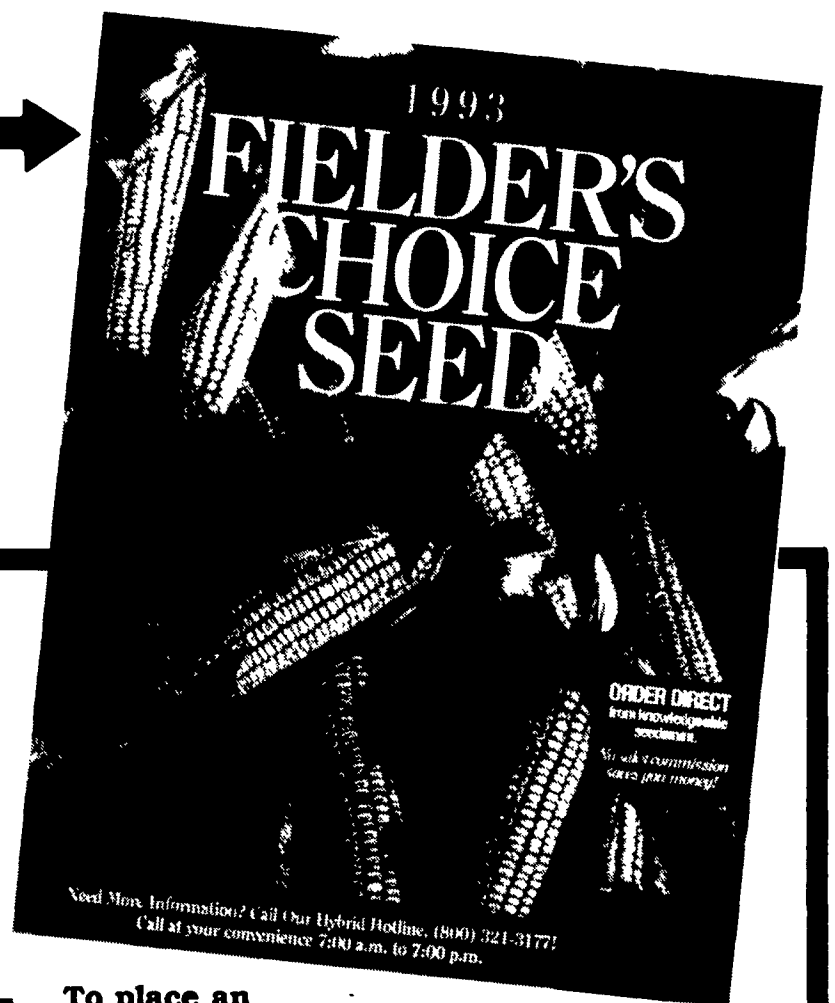
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