

Black Corn Fields In Missouri

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This year's Missouri corn crop has had a difficult season and the challenges just seem to keep coming. Portions of fields or entire fields have died prematurely from the heat and drought stress of the last three months. A number of different saprophytic fungi may come in on this senescing, dying or dead plant tissue. These fungi give the plants a black cast or appearance. Add some rain and the black may become quite obvious. Areas of northwest Missouri had significant rainfall Sunday, August 26, and by Tuesday plants, portions of fields or entire fields were "black". This black appearance is obvious from the road. From a closer perspective, the leaves, stalks and husks appear to be coated with black mold growth. With the possibility that much of the state may receive rain over the Labor Day weekend from the remnants of Hurricane Isaac, there is a very real likelihood that the following week will see many more fields of black corn.

Black corn occurs when any of a number of saprophytic or weakly parasitic fungi grow on corn plants in the field. *Alternaria*, *Cladosporium*, *Aureobasidium* and other species are frequently found on these discolored or black plants. Since the affected plants may have a sooty appearance these fungi are sometimes called sooty molds. These sooty molds or secondary fungi tend to develop on plants which have died prematurely, when wet or humid weather occurs as the crop is maturing or after it has matured, or if harvest is delayed because of wet weather. Typically these fungi come in on plants that are shaded, undersized, weakened or prematurely ripened and on senescing foliage. Plants that are lodged or that have been stressed by nutrient deficiencies, plant diseases or environmental conditions may be more severely affected. Although many of these fungi produce dark or black mold growth, the color of the mold growth can range for dark or black to olive green or even pink to white.

These secondary fungi tend to develop on senescing plant tissues, primarily leaf, stalk and husk tissue, but under favorable conditions can cause infection of the kernels. Infected kernels might show a black discoloration.

It is possible that these sooty molds or secondary fungi could contribute to stalk deterioration or stalk rot. Lodging could become a problem in these fields, especially if there are high winds or strong storms before harvest.

Care should be taken when combining fields with high levels of black mold or sooty mold. Cab and engine filters should be kept clean. These black molds produce large quantities of spores. It is not uncommon to see dark clouds of spores around combines moving through fields with high levels of black mold or sooty

molds. Individuals especially those with respiratory problems or mold allergies should be careful to avoid excessive exposure to mold spores.

Grain from fields with high levels of sooty molds should be treated with care if it is stored. Grain should be thoroughly cleaned to remove lightweight, damaged or broken and moldy kernels. Grain should be stored at the proper moisture content and temperature and checked on a regular basis during storage.

Due to the shortage of pasture and hay for livestock, producers are asking about whether black corn residue is safe to bale and feed. Though the parasitic fungi mentioned are not likely to be toxic to livestock, the palatability of blackened corn stalks will be low. In addition, even under ideal circumstance the crude protein of corn stalks is less than 5 percent, and total digestible nutrients (TDN) less than 45 percent. Given the low nutritive value of corn stalks and the low palatability of a mold covered corn stalk, feeding losses will likely exceed 60 percent. Supplemental protein and energy will be needed to meet the nutrient requirements of nearly any class of livestock.

If producers do dry bale black corn stalks, a few tips follow. First, corn stalks are difficult to bale. They often are more moist than they appear; allow the stalks to fully dry (16 percent moisture or less) before baling. Additionally, the dusty stalks do not feed easily into many large round balers and most producers find them difficult to wrap with twine. At harvest, attention needs to be given to the density of the bales. In general, tighter and larger bales stand up to outside storage better than looser or smaller bales and the use of net wrap preserves more feed than does twine tying.

Second, corn stalks and other coarse crops do not store well outside when compared to typical grass hay. This is because they do not form the same kind of thatch over the top of the bale, thus allowing water penetration during hard rain events. Because of this, we recommend that this material be protected from the elements by stacking in a barn or covering with a tarp. If bales must be stored outside, the sooner the stalks are fed this winter, the better the feed quality will be.

Third, the nitrate levels in corn stalks could still be high. Leaving a 12 or even 18 inch stubble in the field helps avoid baling the parts of the plant likely to be highest in nitrates, but it is not guarantee that the feed will be safe. Prior to feeding, the forage should be tested for nitrates by a qualified laboratory. A few dollars for a nitrate test could have thousands in livestock losses. Δ

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