

# MOLDS vs. PRODUCTIVITY

## How does mold affect your bottom line?

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**Mold spores are found in virtually every environment.** When the conditions necessary for mold growth are present, molds will proliferate. Molds are a common problem in the livestock industry due to the highly variable growing, harvesting and storage conditions of feeds.

Adams, et al from Penn State University, states that the risks of **mold contamination rises dramatically with diverse weather conditions** such as drought, high moisture, cool temperatures or early frost. In addition, when crops are overly mature or immature, mold problems are common. To compound these issues, problematic metabolites produced by certain molds favor these conditions as well.

Frank T. Jones, a Cooperative Extension Specialist from the University of Arkansas, writes that **“moisture is the single most important factor in determining if and how rapidly molds will grow in feeds”**. Jones states that molds can grow on almost anything, and as these molds grow they use up the nutrients and vitamins needed by the animal for production. The quality of the feedstuff is reduced due to mold contamination. **“The lack of moisture is most often what prevents molds from growing in feeds”**.

A common belief is that the amount of moisture in grain is too small to permit mold growth except in rare and unusual circumstances. However, Jones states that moisture is not evenly distributed in grain kernels. Some kernels may contain 10% moisture, while other kernels will test at 20% moisture. In addition, broken kernels have a 5-times higher incidence of mold growth than intact kernels.

Jones says **that mold problems are also found when grains are ground.** The grinding process causes heat to build, producing a “significant migration of moisture encouraging mold growth”. In addition, during cold weather moisture accumulation on the sides of bins is increased due to temperature differences. Pelleting in general adds

3-5% more moisture to the feed and if this excess moisture is not removed, it can also be a source of mold growth.

Although pelleting has been shown to reduce mold, spores still remain after the pelleting process. If conditions are right, the remaining spores can grow and cause mold contamination. Jones writes that, **“the pelleting process delays, but does not prevent the onset of mold growth** and plays only a minor role in efforts to control molds. In addition, pelleted feeds may be more easily attacked by molds than non-pelleted feeds”.

Molds are also self-supporting, because as molds grow they produce their own moisture. Therefore, the **molds feed upon themselves and reproduce faster and faster as time goes on.**

**Some molds can produce metabolites or mycotoxins** that compromise performance or hinder reproduction including decreased fertility, shortened heat cycles, cystic ovaries, swollen vulvas, reduced milk production and mammary gland enlargements.

Fusarium is one of the most common molds and is responsible for producing the mycotoxins zearalenone, T-2 toxin and deoxynivalenol also known as DON or vomitoxin. Aflatoxin, fumonisin and ochratoxin are also problematic mycotoxins. Adams et al comment that the Fusarium species favor high moisture conditions and grow well in cool temperatures below 40°F. **The Midwest corn crop is highly susceptible to mold contamination in the fall**, due to the diverse conditions in which the crops are grown and harvested.

Dried Distillers Grains (DDGS) are being used extensively in the livestock industry as a feed additive. However, **the high moisture content of DDGS can be problematic and can result in high mold levels in the feed.** A 2007 study by Rodrigues evaluated 103 DDGS samples and **found 99% of the samples were contaminated with at least one mycotoxin produced by molds**, due to the high moisture content of DDGS. Charles Woloshuk, from Purdue University states that mycotoxin

contamination of DDGS can be as much as three times that of the original contaminated grain.

In contrast, in many field trials, feed samples have been shown to have no detectable levels of mycotoxins, but the animals still exhibited symptoms of mycotoxin exposure. Researchers are investigating the accuracy of the testing procedures of mycotoxins, as well as the exposure levels that cause poor production. Lower levels of mycotoxins may be causing more problems than once thought. **Symptoms of low level pathogen contamination can result in non-descript and chronic low productivity problems.**



In addition, research has also shown that the combined effects of several mycotoxins at lower levels has a negative effect that has been under estimated. **Feed quality should always be investigated as a possible cause when production goals are not being met.**

In summary, the livestock industry is looking at researching production goals during a time when the rising costs for feed are increasing the demands for feed efficiency. Improving the quality of feedstuffs is of great importance. The damage to livestock production due to mold contamination may be greatly underestimated. In addition, the development of mycotoxins from moldy feed can be the cause of many serious productivity problems. However, when MMi has been used on these farms, the production rates have improved.

MMi will reduce the moisture content of feeds and therefore will reduce the incidence of pathogenic bacteria, mold and other fungi problems associated with feeding grains, especially high-moisture feeds such as DDGS .

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