

## Mycotoxins: What Are They, Why Should We Care?

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Mycotoxins are poisonous compounds produced by molds that commonly grow on forages and feed crops.

Although we have known of the existence of these compounds in feed grains for many years, recent evaluations have shown that they are more widespread and may be causing far more damage in forage crops than was previously thought.

Mycotoxins are very diverse in their modes of action: some affect the nervous system, while others attack the liver, kidneys, or reproductive organs.

Effects of mycotoxin poisoning (mycotoxicosis) range from very subtle changes in animal performance to very dramatic reactions, including birth defects, abortions, tumors, and even death. All mycotoxins will affect feed intake, animal performance, and long-term health if present in sufficient quantities.

The main mycotoxins associated with forages include aflatoxin, vomitoxin (also called deoxynivalenol or DON), fumonisin, T2, zearalenone, and ochratoxin. Some scientists believe that there are a number of other very important mycotoxins that have yet to be identified and characterized.

As Table 1 shows, the maximum recommended level of the major mycotoxins that can be safely fed in livestock diets varies from several hundred parts per million (ppm) to only a few parts per billion (ppb). To put this in perspective, one part per billion is equivalent to one kernel of corn in 11,000 bushels! Mycotoxins are potent and must be considered as a serious threat when present.

Forages can become contaminated with molds and mycotoxins at any point in the process of growth, harvesting, storage, or transportation. Prolonged exposure to moisture tends to be the most common factor associated with mycotoxicosis, such as occurs when hay is baled too wet or forage sits for an extended period of time in the windrow prior to harvest.

Mycotoxin levels in excess of the recommended safe levels have even been detected in a standing crop of alfalfa prior to harvest, indicating that the molds that produce mycotoxins can thrive on growing alfalfa.

Diagnosing mycotoxin poisoning can be very difficult as the affected feedstuffs do not always appear to be moldy and moldy feeds do not always contain mycotoxins. The exact conditions that induce toxin production are not fully understood, but include temperature, moisture, pH of the substrate, and environmental stress during

the plants' growth.

Diagnosis is further complicated by the wide array of symptoms that can be expressed in animals depending upon the specific mycotoxin and its concentration in the diet. Acute mycotoxicosis is usually manifested as the sudden death or abortion of several animals within a short time period or a sudden decrease in the health status of a number of animals that is not corrected through the use of antibiotics. Often the effects of mycotoxicosis are not this dramatic and are more commonly observed as decreases in ani-

mal performance, conception rates, and feed intake levels and an increased susceptibility to diseases.

Laboratory analyses to identify mycotoxin contamination are available through several commercial testing laboratories but are too expensive to be used on a routine basis. If mycotoxicosis is suspected, however, all feeds in use at the time should be analyzed. Because the presence of mold does not guarantee that mycotoxins are present, the samples should be analyzed specifically for mycotoxins and not just the

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Table 1. Acute toxicity levels of mycotoxins in the diets of ruminant livestock.

MYCOTOXIN	ACUTE TOXICITY LEVEL
Aflatoxin	20 ppb (Lactating Dairy Cows) 200 ppb (Breeding Cattle) 300 ppb (Finishing Cattle)
Ochratoxin	5 ppm
Vomitoxin (DON)	10 ppm
T-2 Toxin	50 ppm
Fumonisin	95 ppm
Zearalenone	500 ppm



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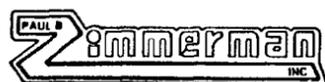
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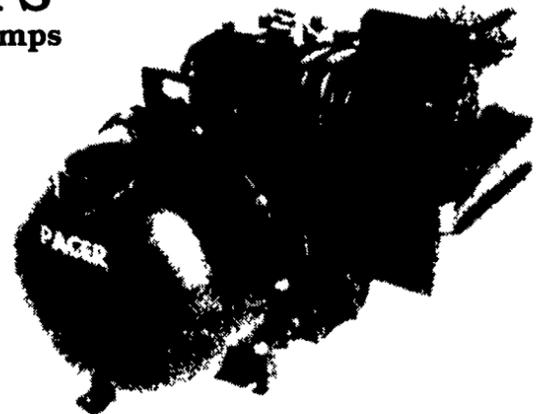
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