



Aflatoxins in Wildlife Feed: Know How to Protect Wildlife

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What are Aflatoxins?

Aflatoxins are produced by the *Aspergillus* fungus. *Aspergillus* spores occur naturally in the soil and may be transported to grain crops by wind or insects. Aflatoxins affect both native and agricultural grains. Damage to grains from high temperatures, drought or insect infestation may allow colonization of *Aspergillus* leading to aflatoxin contamination.

Regulations of Aflatoxins

At least 48 countries regulate aflatoxin in food and feed crops. The U.S. set action levels in 1968, following the identification of aflatoxin and its associated animal and human health risks. The FDA can support enforcement action if aflatoxin levels exceed 20 ppb when the feed destination is unknown. While feed for wildlife is included in this standard, it is rarely enforced. This results in the frequent use of contaminated grains to bait and feed wildlife.

Additional information on USDA action levels and regulatory guidelines can be found at the following websites:

- [fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-action-levels-poisonous-or-deleterious-substances-human-food-and-animal-feed](https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-action-levels-poisonous-or-deleterious-substances-human-food-and-animal-feed)
- [nal.usda.gov/fsrio/aflatoxins](https://www.nal.usda.gov/fsrio/aflatoxins)

Why the Concern?

Aflatoxin was first identified when it caused the death of commercially-raised turkeys in 1963. Regulation for animal and human consumption soon followed. While aflatoxin has been implicated in mass mortality of waterfowl and other wildlife species, the majority of people involved in wildlife feeding are unaware of the risk it poses to wildlife. Therefore, while it is known to cause many negative effects, the impact of aflatoxin on wildlife populations is largely unknown.

Aflatoxins are known carcinogens. Ingestion of contaminated grains can result in chronic or acute toxicity. Aflatoxin exposure has been characterized by organ dysfunction, internal bleeding and death. Ingestion of small amounts of contaminated grain has been associated with decreased feeding rate and

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nutrient uptake, decreased reproductive performance, birth defects, tumors and suppressed immune system function.

Wildlife may be exposed to aflatoxins through supplemental feeding and baiting practices. While the lethal concentrations of aflatoxin for wild-bred animals have not been determined, care should be taken to reduce the risk of toxicity in wildlife through thoughtful purchase, storage and dispersal of feed.

Purchasing Grain for Wildlife

Avoid grains with any visible signs of mold growth, as this may indicate the presence of aflatoxins. Aflatoxins are invisible, but mold growth is a strong indicator that aflatoxins could be present. Avoid grains that are "clumping," as this may indicate the initial stages of mold growth. Purchase grain from reputable dealers, avoiding damaged or waste grain. To reduce storage time, avoid purchasing grain not planned for use in the immediate future.

Aflatoxin production occurs when the *Aspergillus* fungus has access to the sugar present in grains. Purchasing grains with lower available sugar, such as milo, reduces the chances that aflatoxin will be present at the time of purchase. Damage to grain kernels facilitates aflatoxin contamination. Avoid purchasing visibly damaged grain and intentionally cracked corn. The rapid accumulation of aflatoxin is likely in these products.

Storing Grain

Avoid storing grain for an extended period of time. Aflatoxin contamination increases with length of time, regardless of storage container. Avoid storage of grain during warm, moist periods. Stored grain must be kept dry. Avoid extreme temperature fluctuations, as this may cause condensation within the storage container, leading to aflatoxin formation. Grain beginning to form mold or containing any insects should be disposed of immediately.

**Reducing the risk of aflatoxin exposure
to wildlife is reliant on thoughtful
purchase, storage and dispersal of feed.**

Best Management Practices for Supplemental Feeding

- Determine if supplemental feeding of wildlife is needed to meet your objectives and if it is worth the risks involved. Besides aflatoxin risk, there are other potential negative effects on wildlife associated with supplemental feeding such as disease transmission and increased predation.
- If you are going to feed deer, consider using protein supplements rather than grain to reduce aflatoxin risk.
- Use only feed grain that has been tested for aflatoxin and meets USDA approved levels for feeding to livestock. Grain sold specifically for wildlife may not have been tested and could contain dangerous levels of aflatoxin.
- Avoid feeding grain in warm, moist conditions. Feeding should be limited to times when temperatures are below 60 F. Feeding grain should not be conducted when rain or high humidity is expected. Feeding grain from March through October presents the highest aflatoxin risk.
- Never feed damaged grain to wildlife. Grain that has mold or is clumping should not be used and should be buried or burned.
- Piling grain should be avoided because it holds moisture, increasing the risk of aflatoxin production occurring. Disperse grain as much as possible.
- Reduce the length of time grain is exposed by limiting the amount dispensed at any given time. The prompt removal of uneaten grain is recommended, especially if it is wet and/or moldy.
- Use grain sorghum (e.g., milo) rather than corn. Sorghum tends to accumulate aflatoxin at a slower rate than corn.
- Clean grain feeders regularly with bleach. Avoid refilling grain without first emptying, cleaning and fully drying feeders.

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