



## Molds and Mycotoxins

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*Heidi Jackson demonstrates the procedure for analyzing mycotoxins at the Dairy One Forage Lab, Ithaca N.Y.*

A wide range of different molds (fungi) can produce poisons called mycotoxins that affect animals when they consume contaminated feeds. *Aspergillus*, *Fusarium* and *Penicillium* molds are probably the most common culprits involved. Spores of these molds can be found in the soil or on plant debris where they can infect the plant as it grows in the field. Volunteer small grains, infected seed or even grassy weeds are another source of inocula. Plants are

often most susceptible to infection when growing conditions are stressful. Spores may infect via roots and pollen tubes or by entering plant tissue injured by insects, wind, or hail. Research has shown that most of the mold growth and mycotoxin production occurs in the field, but it can continue into storage and feedout as long as there is adequate moisture and oxygen to support continued growth.

Mycotoxins affect animals in a number of ways. Some toxins may produce acute symptoms but most often, symptoms may be fairly non-specific and chronic in nature. Cows may show reduced feed intake and production. They may exhibit diarrhea, sometimes bloody diarrhea, reduced reproductive efficiency, rough coats, and general unthriftiness. In extreme cases, they may die. It is speculated that today's high producing animal is exposed to more toxins just by virtue of the fact that she is eating so much more feed to support higher levels of milk production. Visit our web site for information about specific toxins and problem levels at <http://www.dairyone.com/Forage/FactSheet/default.htm>.

If possible, avoid feeding silage, hay, or grains that are moldy. Spoilage can reduce feed intake and digestibility, which in turn can have adverse effects on animal health and production. Dilution or removal of contaminated feeds can help minimize problems. Likewise, cleaning and ammoniation can reduce the concentration of certain toxins found in grains, however it

is often impractical to remove contaminated forages from the ration and there are no effective methods to detoxify them.

If that is the case, it is important to talk to your veterinarian and develop a strategy for feeding affected feeds safely.

- Test suspect feeds to determine the type and concentration of toxins present.
- Increasing dietary levels of protein, energy and antioxidants may be helpful.
- Make sure dietary fiber and buffers are adequate since acidic diets may magnify mycotoxin effects.
- Dry cows, springing heifers and calves should receive the cleanest feeds possible.
- Use mold inhibitors to minimize mold and toxin production in risky feeds during storage or feedout.

### Sampling Guidelines

Mycotoxins are present in very small amounts and are not always related to the amount of mold seen. Like anything else, the results are only as good as the sample. It is recommended that you take 8-12 sub-samples at each of 3 to 5 feedings. Mix subsamples completely and take a one pound composite sample to send to the lab. Keep another one pound sample in the event additional testing (for other toxic substances) is needed. Remember, toxins may be present in feed that is not visibly moldy as well as very moldy feeds so it is important to take multiple sub-samples from several feedings.

Dry feed samples should be kept in a cool dry place. Wet or moist samples should be placed in a plastic sample bag and excess air should be squeezed out before sealing the bag. Refrigerate moist sub-samples and promptly freeze the final composite sample before shipping them in an insulated mailer or box with ice packs to keep them cold until they reach the lab. Ship samples for mid-week arrival so they don't sit in the post office or lab over the weekend. Overnight express delivery is highly recommended for wet samples to avoid additional mold & toxin production in transit. Ship samples to the Dairy One Forage Lab, 730 Warren Road, Ithaca NY 14850.

Consult with your veterinarian to develop a feeding strategy if you suspect that mycotoxins could be limiting herd health and production. And it is not too soon to talk to your Certified Crop Adviser about agronomic practices, i.e., tillage, variety selection, planting/harvest strategies, pest management, and crop nutrition to minimize the risk for plant diseases and mycotoxins next year!

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