



Look to nutritionists and vets to prevent abortions

VETERINARIANS and nutritionists should get along like cookies and milk. It took me a few years in a nutritionist role, though, to figure out how we can get to this point. There are some that may not recognize this vision; however, veterinary and nutritional science are far from mutually exclusive at your dairy.

Veterinarian Byron Williams and I got into this a few months back, with the article “We can feed for fertility” in the August 2022 edition of *Hoard's Dairyman* on page 394. Now, I'm teaming up with my friend and colleague Angie Rowson, D.V.M., to expand into this space deeper and help you understand how feed and the dairy cow's reproductive tract interact with abortions caused by molds. These are called mycotic abortions.

Despite nearly 15 years of experience with how feed can impact herd performance, I didn't come anywhere close to fully understanding how mold can impact dairy herd health. This changed after I asked my colleague Katie Raver for help on a herd health troubleshooting case. In preparation for this initiative, Katie sent over a few references discussing mycotic abortions.

Then I dialed Angie, as we carry a long history together in troubleshooting and researching feed hygiene and dairy herd health and performance challenges. We enjoyed a valuable phone call, where Angie taught me a great deal. Now our intent is to turn this knowledge journey over to you. Keep reading to understand the symptoms, facts, and other things to be on the lookout for with mycotic abortions.

The biological pathway

Mycotic abortions are responsible for 3% to 10% of bovine abortions and usually occur during the third trimester of gestation. Mycotic abortions occur in cows following mold exposure by two main pathways:

1. Cows inhale mold spores
2. Cows ingest mold in the feed

The mold can then penetrate the lung or digestive tract tissue and enter the bloodstream. Once mold is in the blood, it is disseminated throughout the body and infects the placenta and fetus.

Aspergillus fumigatus is the most common mold implicated in mycotic abortions and is isolated from approximately 75% of cases. *Aspergillus fumigatus* is common in the environment, readily found in soil and plant matter. It can produce airborne spores and is unique from other molds in that it can both infect tissues and produce mycotoxins, some of which are extremely immunosuppressive.

Immunosuppression is thought to predispose cows to mycotic abortions. Healthy cows with competent immune systems can tolerate low mold levels in feed. However, when the bovine immune system is suppressed and/or mold is present at high levels, health problems can follow. Stressors such as overcrowding, frequent pen moves, heat stress, commingling of parities, poor cow comfort, and mycotoxins can contribute to immunosuppression.

Mycotic abortions are sporadic, only affecting one or two cows at a time, and the animals typically appear healthy both before and after the abortion occurs. The aborted fetus may appear normal.

However, in a quarter of cases, the fetus will have dry and scaly raised lesions on its skin. It also may have bronchopneumonia caused by the mold. The placenta is usually inflamed, thickened, and necrotic.

Bring in your vet

The number of phone calls I've fielded over the past few years following a few abortions has been substantial. I'm typically asked what to test for in the feed, but I turn the question around to the caller and ask, “What does the vet think?” Too often I learn that the vet hasn't been consulted.

In the absence of a clinical diagnosis, I usually recommend a shotgun feed hygiene diagnostic approach, including testing for zearalenone, understanding that this mycotoxin mimics estrogen. This is not the best approach, however, because zearalenone interacts with reproductive performance but doesn't necessarily cause abortions. Further, the abortions may actually correspond to a feedborne issue several weeks prior.

Lastly, mold is not evenly distributed in feed. Hence, Angie and I continue to advocate for your farm to consult with your herd veterinarian following unexplained abortion cases. Your veterinarian can submit tissues from the aborted calf and placenta to a veterinary diagnostic laboratory, where the tissues can be cultured and examined under a microscope to look for fungal hyphae, among other tests.

Abortion causes are identified in less than 50% of cases, so producers should continue to have their veterinarian submit tissues and placentas when multiple abortions are occur-

ring on the farm. This will improve the likelihood of determining the reason for the abortions. This is a staggering amount of expensive reproductive losses that go unexplained. In an era where margins are increasingly tight, and more information will contribute toward better decisions, your farm should work with both your nutritionist and veterinarian to craft a diagnostic plan for when abortions occur.

The mold threshold in feed

Part of your diagnostic plan will be feed testing. Start with the total mixed ration (TMR), like we discussed last month, but bear in mind the comments above and avoid placing too much emphasis on a single diagnostic test. When testing, the goal for a clean TMR is virtually no detectable mold.

On the other end of the spectrum, roughly 15% of TMR samples analyzed by Rock River Laboratory are contaminated with 100,000 or more colony-forming units of mold per gram of feed. If your TMR is above this level, corrective action is warranted.

Hopefully, this article gives you a better understanding of how moldy feed can interact with reproductive health. This is another example of why your farm stands to benefit when veterinary and nutritional science come together like cookies and milk. 🐄

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