

Use Caution When Turning

Grain overload can occur in cattle with unlimited access to grains.

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The practice of turning cattle out on corn stover is common and a great way to utilize crop residue and extend the grazing

season. Recently, veterinarians at Michigan State University (MSU) became involved with a case that reminds us of the potential

dangers when turning cattle out on corn stover.

The case involved an 85-cow commercial herd that had been grazing mixed-grass pastures throughout the summer and into early December. In mid-December, cattle were introduced onto a 40-acre cornfield that had been harvested late the week prior to turnout.

Four days after turnout, three cows were found dead in the field. They were all lying down and looked as if they had essentially fallen asleep and died. No signs of a struggle or violent death were noted. There were multiple other cows that looked lethargic, moved slowly and acted as if their feet were sore.

The three dead cows were taken to the MSU Diagnostic Center for Population and Animal Health (DCPAH) for necropsy. All three cows had evidence of severe rumen acidosis, including reddening and erosions of the rumen mucosa. Rumen pH was less than 5.0 (normal range: 6.0-6.5). The rumen contents included an abundance of whole-kernel and partially digested corn. The diagnosis was acute rumen acidosis, also known as grain overload.

Grain overload is most common in cattle that gain access to large quantities of readily digestible carbohydrates, usually grain, with no or limited previous exposure. The amount of feed required to produce acute illness depends on the kind of grain, previous exposure of the cattle to that grain, and the nutritional status and condition of the animal.

Effects of grain overload

Ingestion of large amounts of highly fermentable carbohydrates/grain is followed rapidly (within hours) by a change in the microbial population in the rumen. Gram-positive bacteria increase markedly, resulting in the production of large quantities of lactic acid. The rumen pH falls to less than 5, which destroys protozoa and other lactate-utilizing organisms and impairs rumen motility.

The low pH allows the remaining lactobacilli to further utilize the carbohydrate and to produce excessive quantities of lactic acid. The low ruminal pH causes a chemical rumenitis



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(inflammation of the rumen), and the absorption of lactate into the blood results in acidosis. High osmotic pressure in the rumen results in the movement of excessive quantities of fluid into the rumen, causing dehydration.

Consequences of all these changes are cardiovascular collapse, renal failure, muscular weakness, shock and acute death. Animals that survive may develop mycotic (fungus) rumenitis and liver abscesses several weeks or months later. In pregnant cows, subsequent abortions may occur. Laminitis, or founder, is a common sequel as well.

With the most recent case, after the initial deaths, three more cows died during the next 48 hours. On further examination of the cornfield, it was noted there were large areas of corn that had been knocked down and not harvested. This may have occurred due to crop damage from wind or excessive corn being knocked down during harvest. In addition, there appeared to be more grain than expected throughout the field, again possibly due to crop damage, excessive ear drop due to late harvest or poor harvesting technique.

Prevention

How can farmers reduce the risk of this occurring?

First, carefully inspect the entire field prior to introducing cattle onto corn stover. Make sure there is not excessive whole corn available. If there appears to be excessive corn, then managing introduction, and monitoring the cattle becomes critical.

Introducing cattle to corn stover slowly can allow the rumen to adjust to the increased grain exposure. Do this by allowing them to graze a few hours initially and then gradually increase their grazing time in the cornfield.

Strip-grazing can reduce the grain exposure and force cattle to eat the whole corn plant (cob, husk, stocks), thus increasing fiber input and decreasing grain intake.

Make sure there is plenty of easily available water. You may also provide supplemental hay to increase fiber intake.

Corn stover is a great low-cost feed source for beef cattle; however, if not managed properly, it can have deadly consequences.

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Editor's Note: This news release was posted Dec. 29, 2014, by Dan Grooms, veterinarian, MSU Extension, MSU Department of Large Animal Clinical Sciences.

