

Prevent the Problem

Advice on reducing the risk of acute bovine pulmonary emphysema and edema in your herd.

by Heather Smith Thomas



Cattle face challenges with respiratory diseases year-round, most of which are infectious. Death loss from respiratory diseases come at a great cost to stockmen — therefore, it is imperative to be aware of prevention tactics and to understand how respiratory diseases affect herds.

Acute bovine pulmonary emphysema and edema (ABPEE) describes a type of lung disease. While noninfectious, it can still make a negative impact on a herd's health and productivity. This respiratory disease can occur when pastured animals are suddenly changed from dry pastures to lush, green pastures. ABPEE may also occur when changing from dry feed, such as a poor-quality hay, to abundant pasture.

Tim McAllister, Ph.D., Agriculture and Agri-Food Canada, Lethbridge Research Centre research scientist, shares there are

two closely related forms of this disease: one in pastured cattle and the other in feedlot cattle. In pastured animals, ABPEE may also be referenced as fog fever, lung fever, bovine asthma, acute alveolar emphysema or atypical interstitial pneumonia. Affected cattle are called “lungers” or “panthers.”

“The disease in pastured animals is probably connected to tryptophan metabolism, and formation of 3-methylindole,” McAllister says. Rich, rapidly growing forage impacts tryptophan metabolism, as the forage contains an amino acid called tryptophan — a normal component found in protein.

“In the feedlot, by contrast, the problem is not necessarily related to protein level in the feed,” he explains. “There are other complicated factors going on, in terms of immunity and responses in the lungs that lead to the condition.”

Problems at pasture

Grazing animals are generally affected when they go on lush pasture after being in dry conditions. Production of 3-methylindole in the rumen is due to the rapid metabolism of tryptophan by rumen bacteria. “This compound is converted into another toxin that causes damage when it gets into the lungs,” McAllister says. Toxins from the gut are absorbed into the bloodstream and carried to the lungs where the reaction takes place.

“This causes edema in the lungs, and the excess fluid interferes with breathing and the exchange of oxygen,” McAllister shares. While symptoms will appear suddenly, the most obvious

sign to watch for is labored breathing, often with grunting sounds. The animal may try to breathe through its mouth while frothing at the mouth, dripping foamy saliva. Cattle may stand with their head and neck stretched forward, mouth open, with rapid, shallow breathing.

At times it may seem difficult to distinguish the difference between cattle with this condition and cattle with infectious pneumonia. However, cattle will not present a fever if they have ABPEE, and they may still be lively. Whereas cattle with pneumonia are often lethargic, affected animals with emphysema may seem perky and may still try to eat or drink.

“The affected animal experiences respiratory distress, and that's really the only sign of problems,” McAllister says. “Even slight exertion makes it harder to get enough oxygen. If you try to move them, they may have a heart attack.” An animal affected by this disease will have an increased heart rate due to shortage of oxygen in the body — the heart rate could go up to 150 beats per minute if the animal tries to move.

According to the article *Acute Bovine Pulmonary Edema and Emphysema in Beef Cattle* produced in cooperation with the Extension Beef Cattle Resource Committee in the “Beef Cattle Handbook,” clinical signs of this disease usually occur one to 14 days after an abrupt change to fresh pasture. Death may follow within two to four days of the first appearance of clinical signs. Previous studies have shown after death at necropsy, an affected animal's lungs are two to three times heavier than normal, because the air pockets and airways are filled with frothy fluid instead of air.

Due to breathing issues and fluid-filled lungs, McAllister advises against trying to rapidly move affected animals. “If animals



Closely monitor cattle on lush, green grass coming from dry fields because they are most at risk for this disease.

on green pasture start to have problems and show signs of respiratory stress, rounding them up could increase their stress, and they may die,” McAllister says. “You might be able to patiently and gradually move them off the pasture, or you might confine them to the area they’re in, with portable electric fence, and feed hay. The important thing is to remove the animals that are not yet exhibiting clinical signs, and get them off the lush pasture.”

Prevention is key

Treatment after the onslaught of the disease is challenging and not very effective. “There isn’t much we can do,” McAllister explains. “Most of the time these animals are emergency slaughtered.” While some cattle are only mildly affected and will live, their lung damage is permanent. Affected cattle will continue to have respiratory problems and audible wheezing as they breathe.

To prevent this issue, cattle should be given time to adapt to lush, green feed if they are moved to a new pasture. “If you are bringing them in off dry rangeland or any other dry, low-protein forage, you can gradually adjust them to a higher protein diet with a high-quality hay before you turn them out in green pasture,” he advises. “If it’s a grass-based pasture you can probably let them into it for a short time the first day, and bring them back in for hay feeding, gradually increasing their time on pasture over several days.”

Yet, McAllister notes this technique might not work on alfalfa pastures, as moving cattle around would increase the likelihood of bloat. Therefore,



Attempting to gather cattle showing symptoms of this disease is often risky, so it is best to only remove those without symptoms from the group.

another preventative measure producers may take is letting pasture mature before letting cattle graze it. A more mature pasture will have a lower protein level and reduce risk of this disease.

To aid in the prevention of ABPEE, cattlemen should closely monitor pasture conditions and observe grazing animals. Producers should always be prepared to move cattle to better pasture before animals exhaust their current food supply and are forced to eat poor-quality forage. According to the “Beef Cattle Handbook,” cattle allowed to remain on dry, overgrazed rangeland are prime candidates for ABPEE because they are hungry when they go to new pasture and overeat on the lush forage.

Besides feeding hay as a preventative measure, limiting access to the new pasture for the first few days will aid the transition. In some instances, cattle may have to be moved daily on and off the pasture. Additional research suggests cattle that have consumed a large amount of hay can graze for an hour on the lush pasture on the first day of the transition. In the days to follow, grazing time may be increased by one hour per day for the first seven days. Feeding cattle restricted quantities of swathed, green forage in addition to hay will also enable the rumen to adapt to the herd’s transition to lush pasture. **HW**