



October 2001

Fog Fever

The cattle disease we are going to discuss is sometimes called “*fog fever*.” Some of you will think I am now going to predict a cold foggy winter and the cattle health problems that can occur due to bad weather. No, I have no idea what kind of winter we will have—although I am hoping for an average amount of rain that comes when we need it!

What is fog fever?

First, it has nothing to do with foggy weather and the cattle do not usually run a fever. It is an acute (rapidly developing) respiratory disease of cattle. It is sometimes called Acute Bovine Pulmonary Edema and Emphysema (ABPEE; fog fever). It occurs when hungry, adult cattle have been on dry feed, usually in the foothills or desert range, and are suddenly moved to green pasture that is rapidly growing and lush. In England, where this condition was originally described, this rapidly growing pasture is called “foggage,” hence the term “fog fever.” The rapidly growing pasture can be grass, grass-clover mix, alfalfa, or a number of other forages such as turnip tops. The main factors are hungry cattle that have been on dry feed for some time and are allowed free access to rapidly growing, lush green feed.

What do the cattle look like when they are affected?

Usually the cattle become ill within two weeks of the pasture change. They have a rapid onset of respiratory difficulty. They are reluctant to move, breathe rapidly (35 to 80 breaths per minute), grunt, breathe with their mouth open, froth at the mouth, and stand with their head and neck

extended and elevated temperature (>103) due to the increased work of breathing.

What causes this condition?

Fog fever is caused by the abrupt change in diet and the subsequent biochemical changes in the rumen of the cattle. The affected cattle have been on dry, low protein feed for an extended period of time and the rumen fermentation pattern has adapted to this situation. With the change to lush green pasture, the dietary protein concentration increases dramatically. One of the amino acids in this plant protein, tryptophan, is the culprit. The tryptophan in the feed is converted by rumen bacteria to a substance called 3-methylindole (3-MI) at a very high rate. This 3-MI is absorbed through the rumen wall and circulated around the body. The 3-MI is toxic to the primary cells that line the interior surface of the lungs. Thus, as the high levels of 3-MI move from the rumen to the lungs more and more lung tissue is destroyed.

How will I know if my cattle have fog fever?

If a large number of adult cattle are having respiratory problems within two weeks of moving from dry feed to lush pasture, you should suspect this condition. If an animal dies with suspicious symptoms, be sure your veterinarian performs a postmortem exam to be certain of the cause of death.

How can I treat affected cattle?

Most severely affected cattle will not respond to any treatment and will die within a day or two. Typical antibiotic treatments have no effect. Also, moving the affected animals may cause them to die immediately. It is better to not treat them at all than

to stress them by movement or treatment. Your veterinarian may prescribe Banamine® or other treatments that may help the cattle feel better.

How can I prevent fog fever?

The main idea in prevention is to make the change from dry feed to lush feed over an extended period of time (7-14 days). Below are some strategies to help this process. It is only necessary to utilize the method that will work best for your operation.

1. Move the cattle into a dry lot and feed them good quality dry hay for a few days and slowly introduce them to the lush pastures. Start by allowing them to graze 2 or 3 hours per day and work this up over a 10-14 day period.
2. Delay grazing of lush pastures until after a hard frost.
3. Cut, windrow, and dry the lush pasture before turning the cattle out.
4. Use the pasture before it becomes lush.
5. Change the rumen fermentation pattern with drugs. Feed Rumensin® or Bovatec® before turning the cattle onto the lush pastures. These compounds change the rumen fermentation of tryptophan and decrease the chances for fog fever. The Rumensin or Bovatec should be fed at 200 mg/head/day to be effective. The Rumensin feeding should be started at least one day before the cattle are put onto the lush pastures. The Bovatec should be started six days prior to turnout. Both should be fed for at least ten days after introducing the cattle to the new lush pasture. Do not allow horses access to either of these products as toxicity can occur if horses consume any amount of these drugs. Consult your veterinarian if you anticipate using either of these drugs to prevent fog fever.

What is different about this year in relation to the risk of fog fever?

We have already seen a few cases of fog fever this year in California. This is mainly due to the drought and early grazing of lush pastures that have just been hayed and irrigated. If you have cattle that have been on dry feed and are hungry, consult with your veterinarian *before* you turn

them into lush, rapidly growing pasture. Prevention of this condition is important, as it is common for 50% of a herd to become ill and 30% of these animals can die.

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Anthrax

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Anthrax is as old as antiquity. The Bible speaks of “the plague, which caused sudden death in livestock.” The Animal Health Branch – Emergency Disease Programs has historical records dating from 1926 showing 34 anthrax outbreaks in 12 counties of California. During 1984, an anthrax outbreak occurred in the Carrisa Plains that affected 12 general areas and killed 43 cattle and 135 sheep. Since 1991, there have only been 10 known cases of anthrax in California livestock, nine of which occurred in cattle.

With the thoughts of bioterrorism and reported human anthrax cases, this article will review anthrax primarily as it occurs in cattle so that livestock owners may be aware of the signs and risk factors of anthrax in cattle.

The bacteria *Bacillus anthracis* cause anthrax. The bacteria are found in two states – the vegetative state and the spore state. The vegetative state is the growing, reproducing form of the bacteria found in infected animals and people. The vegetative form causes the disease anthrax. If untreated the disease in animals is generally fatal. After an animal dies from anthrax, if the carcass is opened by a veteri-

narian during a necropsy, scavengers or by decay, the vegetative state is exposed to oxygen in the air. When the vegetative state is exposed to oxygen in the air, it forms spores. The spores are highly resistant to disinfectants and remain viable for years in the soil. The spores are found naturally in the soil of California and many western states. When the spores enter another animal, usually through grazing contaminated vegetation or inhaling spores, the bacteria revert to the disease causing vegetative form.

In cattle, a common initial sign is animals found suddenly dead. The disease is usually short at 1-3 days. Once an outbreak begins, animals may be seen with fever, lack of rumination, excitement followed by depression, difficulty breathing, uncoordinated movements, convulsions and death. Bloody discharges from the natural body openings as well as edema in different parts of the body are sometimes observed. Some animals may be saved if treated very early with penicillin or tetracyclines.

In animals that die, bloody discharges from the body openings are commonly found. Enlargement of the spleen is almost always present. An open, decaying carcass as well as discharges and secretions from the carcass or dying animals will contaminate the ground and protected spores will develop. The vegetative form of the bacteria dies rapidly in unopened carcasses.

Most outbreaks occur in areas where animals have previously died of anthrax, as the spores remain viable for many years. Spores over 35 years old have been able to cause the disease. Often, the outbreaks occur after climatic changes such as heavy rain, flooding, or drought. Climatic changes bring spores to the ground surface and perhaps concentrates the spores in low spots. Working the land may also bring the spores up to the soil surface. Once the animals eat the spores, the vegetative form develops, multiplies and is ready to cause anthrax again. In August 2000, an anthrax outbreak in Nevada killed 30 cattle. This outbreak was associ-

ated with a recent ditch cleaning, which may have disturbed spores deep in the soil.

When anthrax is suspected, dead animals should not be opened for routine examination, as the discharges and blood are highly infectious to humans and other animals. Your veterinarian can confirm anthrax by taking blood from a peripheral vein (ear or tail) and submitting it to the diagnostic laboratory. Proper carcass disposal is important to prevent surface soil contamination. Vaccines are available to protect animals in endemic areas or when outbreaks occur.

Always keep in mind that anthrax can cause serious disease in humans as well as animals. Three syndromes are recognized in man: skin, respiratory or inhaled and intestinal. For this reason, great care should be taken to protect anyone handling the carcass or live animals suspected to have anthrax. Meat obtained from animals dying of unknown causes, or suspected of having anthrax or another infectious disease, should not be consumed.

In summary, anthrax is caused by bacteria that can exist in two forms. The vegetative form causes disease in both animals and man but is rapidly killed in unopened carcasses. The spore form lives for years in the soil. When the spores surface, they revert to the vegetative form to cause further disease when eaten by animals. Carcasses of animals dying with anthrax should not be opened as the vegetative form turns to spores when exposed to air. Suspected cases of anthrax should be reported to your veterinarian first and then to state animal health agencies. Animal health officials are available 24 hours a day to assist your veterinarian in managing an outbreak and minimizing losses. Use caution when handling dead animals suspected to have anthrax.

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