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Why Do Cows Bloat?

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WHY DO COWS bloat on alfalfa or clover pastures but not on bluegrass? Is there something in clover or alfalfa and not in bluegrass or other grass pastures that causes bloat?

We can't answer those questions as we should like, but the studies we have made at the Iowa Station have given us some rather definite opinions. Here they are:

1. Bloating apparently is entirely a physical problem. We think it is because the cattle sometimes eat too much of these legumes in too short a time. It is not because sweet clover, red clover and alfalfa contain a "poison" or something that is bad and isn't found in grass.

2. Salt, soda, lime and similar "bloat remedies" will not prevent bloat because they are too mild in their action. Remedies which are powerful enough to prevent gas formation interfere with normal digestion and should not be used.

3. Feeding grain, dry hay or silage before putting cattle on legume pastures will help prevent overeating and, in turn, bloat.

4. Turning cows on grass pasture for half an hour or more before turning them on the legume will help if the grass pasture is green and succulent so the cows will eat it.

5. Legume pasture with dew or frost on it may be more likely to cause bloating because it permits the cow to eat and swallow the forage faster. The dampened legume also may cut down the amount of saliva secreted, and saliva helps lessen gas formation.

6. As much gas is formed by bluegrass per pound of grass eaten as per pound of alfalfa.

Regardless of what cows eat—hay, grain, bluegrass or legume pasture— they are continually forming gas. Gases are formed which, if absorbed in sufficient quantities, may kill the cow. But normally a cow from time to time belches and rids herself of the gas. Apparently it's only when the opening from the stomach gets blocked with food that the cow starts bloating. After that we're not sure whether it's the pressure of the gas in the stomach or the absorption of certain poisonous gases that may finally kill the animal. In either case, the important thing is to prevent the cow from eating so much so fast that the stomach cannot "mow it away" in the usual manner.

If a cow eats rapidly in a luscious, legume pasture for a couple of hours, she might consume 100 or more pounds of feed, our studies show. If she then takes a good drink of water and lies down to chew her cud and rest, the conditions are ideal for bloating.

Our theory is that under conditions like this, she has loaded up so heavily and gas forms so rapidly that the opening of the esophagus into the rumen is closed and the gas can't get out—the cow can't belch. So we think it best to let the cow drink before she goes onto the legume pasture, and if she has loaded up quickly with legumes, don't let her finish filling up with water.

We have at the Iowa Station a cow with a rumen fistula—a hole healed up down into her rumen—so that we can peek in and even reach inside the stomach to find out some-
thing about how she handles her food.

We used this cow in our experiments on bloat. She was fed fresh, young, green alfalfa, bluegrass and other feeds. Portions of these materials were then removed from the rumen (paunch) and tests run to find out what gases were formed. The gases formed by the green alfalfa were not greatly different in kind or quantity from those formed by bluegrass.

Then we put this cow and others out on alfalfa and bluegrass pastures, trying to produce bloat and to observe how the cows ate. We found that the cows on the alfalfa pasture were able to eat about three times as much per minute as when they were on bluegrass pasture. To arrive at this, the cows were accurately weighed before and after pasturing and all excretions collected and taken into account.

The cows ate about 1 pound per minute of the young, green alfalfa but only about 1/3 pound of bluegrass even on a good pasture. The reason for this, at least in part, is that the cows could pinch off the alfalfa, whereas grass had to be cut off against the sharp edges of the lower teeth.

We put bluegrass and alfalfa through a meat grinder and found that a given weight of ground alfalfa formed a much more compact mass than a similar weight of bluegrass. This probably is part of the explanation why one causes bloat and the other doesn't.

The cows used in our tests were fed a full-feed of grain in the evening and then were fed nothing before they went onto the pasture in the morning. Under these conditions we were unable to get any of the cows to bloat at any time. They apparently just wouldn't eat enough of the alfalfa to cause trouble.

So one of the ways to prevent bloat, we think, is to see that cattle are not turned on legume pasture when they are very hungry. It is the filling up quickly with a heavy load of compact legume that seems to cause the trouble. Bluegrass or other grass pastures are more bulky and the cows can't fill up so fast on them.

Recommendations have sometimes been made to feed cows on legume pasture a mixture of equal parts of lime, salt and soda to prevent bloat- ing. When we tried this and removed some of the material, we found gas forming faster than when the mixture was not fed.

One of the California stations has recently reported work which they did on bloat, and their results largely confirm ours. They, too, are of the opinion that bloating is a physical problem—the cow does not belch up the gas formed.

The California workers say "... bloat is caused not by excessive gas formation but by interference with belching. In our opinion bloat most frequently results from absence of the stimuli (like scratchy feed) to initiate belching. Fibrous roughage is effective because prickly. This bloat seldom occurs on rations of hay and grain."

Why do cows on some farms go along for years without bloating and then a farmer may lose several animals suddenly? We don't have the answer, but it is probably tied up with this business of eating too much too fast.

Dry cows seldom bloat. It is usually the milking cows or growing animals with the large appetites that gorge themselves and have the trouble. But knowing all this, suppose the cow does bloat, what should you do for treatment? Keep the cow on her feet and moving if possible. To induce belching, put a bit in her mouth as you would a bit for a horse, or insert a piece of smooth, heavy hose in her mouth and carefully work it down the esophagus into the paunch. Be sure you don't get it into her windpipe.

After the gas has escaped, drench the cow through the tube with some antiferment recommended by your veterinarian. Before drenching, elevate the front feet to remove pressure on the heart and lungs. An ice pack or cold water poured on the bloated side will tend to check fermentation.

The general idea in treating bloat is to prevent further formation of gas and to eliminate that already present. If the cow is badly bloated and other methods fail, a trocar (or knife if a trocar is not handy) should be inserted in the left side at the highest point of the bloat. Do not remove the cannula covering the trocar (or rubber tube if a knife has been used) until all danger of bloat is past.

We can't afford to lose cows any- time and especially in wartime with the heavy demand for our meat supply and milk products. Feeding some bulky roughage before turning cattle on legume pasture and seeing that they are not too hungry or that they do not fill up with water when they are already nearly full of legume will help in prevention of bloat. But there just isn't any drug or a "something" you can give that will solve this bloat problem so far as we know.

Hybrid Chick Tests

The Iowa Station for several years has been inbreeding certain strains of Leghorn chickens, testing the effects of inbreeding.

Now these inbred strains are being crossed to develop so-called hybrid chicks that would correspond to our hybrid strains of corn which result from crossing inbred lines.

It has been found that the results have come from crossing inbred lines of chickens that were not related. These have laid more eggs than have birds from inbred related lines that have been crossed, more than top-cross birds and more than the random-bred ones. They have also been superior in body weight, mortality and egg weight to all other types of inbred crosses, and better than the random-bred Leghorns in all these respects except egg weight.

This cow with a rumen fistula was used in the bloat studies so that we could remove samples of feed she had eaten to find out just how each acted.