



# Vet Call

► by **Bob Larson**, professor of production medicine, Kansas State University

## Grain overload

*As we move into winter months, cattle in many parts of the country are more likely to be fed or supplemented with grain to offset reduced quantity and quality of available forage. Too rapid or dramatic a change from a roughage diet to a concentrate diet can be accompanied by acidosis or grain overload.*

### System shock

Rumen bacteria populations are different depending on the diet consumed. The bacteria species that are most common with a high-forage diet are different than those that are most common with a high-grain diet. If the rumen has a bacterial population intended to deal with a high-forage diet and you all of a sudden dump in a bunch of starch — you've got the wrong type of microbes to deal with the situation, and problems can follow.

If cattle unaccustomed to grain are allowed to eat large quantities of feeds rich in readily fermentable carbohydrates, an unhealthy cycle of fermentation occurs in the rumen. This causes rapid production of organic acids, which can spill over into the blood stream and cause a number of different problems, each of which can cause death.

Cereal grains such as corn, wheat, barley, sorghum (and to a lesser extent oats) as well as high-sugar or -starch fruit or root crops (apples, potatoes, sugar beets, etc.) are more

likely to cause acidosis.

Green, unripe corn, corn or milo stubble fields, and byproduct feeds such as bakery waste and elevator fines are also high in starch or simple sugars, putting cattle eating these feeds also at risk for acidosis.

Feeds that are not likely to cause acidosis are hay, ensiled forages and fiber-type byproduct feeds. Hay does not contribute to acidosis because the energy source is mostly cellulose rather than simple sugars, and the large particle size resists rapid fermentation. Ensiled forages have already gone through fermentation, thereby decreasing their risk. Fiber-type byproduct feeds such as soy hulls, corn gluten feed, and corn distillers' grain are similar to hay in that the energy source is primarily cellulose with little starch or simple sugar present.

### Prevention

Feed only small amounts of rapidly fermentable grains to prevent grain overload. Or if a high-grain diet is necessary, step up rations slowly. I often find that a grain overload situation in cow herds follows a feed delivery problem such as:

- "I just pulled this self-feeder into the pasture yesterday, and a few of the cows ate more than I intended ..."
- "They ran out of feed last Friday, and I didn't get a feed delivery until today (Monday) ..."
- "It's been storming so bad they haven't been coming up to eat much until today ..."
- "They didn't like that last batch, so I

had the mill (decrease salt content, add molasses, add soybean meal, etc.) for this batch ..."

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disease by showing a lack of appetite, slow movement without "purpose," increased heart rate and breathing rate, and elevated body temperature. In mild cases of acidosis, cattle will appear to have a full rumen. They may act colicky (uncomfortable due to a sore belly), they will have a decreased appetite, and they will probably have grey-green pasty to soupy diarrhea.

In more severe cases, dehydration is severe, the animal will usually be lying down, the abdomen is markedly distended, and the animal is noticeably uncomfortable (groaning

and grinding teeth). Diarrhea is very noticeable and yellow-green and then progresses to watery or foamy.

In some cases, large amounts of toxins are released by bacteria dying in the rumen, which results in cattle that show signs such as laying on their side, diarrhea and shock. Death commonly follows severe cases. Cattle that recover from acidosis may develop liver abscesses, laminitis or other secondary diseases.

Veterinarians can treat cases of grain overload by removing rumen contents and giving intravenous (IV) fluids, but unless the condition has been caught early and the problem is pretty mild, the chances of the animal recovering are not good. By far, it is more important to prevent than to treat cases of grain overload.

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