



Vet Call

► by **Bob Larson**, Kansas State University

Acidosis

Cattle are an amazing animal species for many reasons. One of the most important reasons is because they can thrive when fed a wide variety of diets and feedstuffs. Because of the rumen stomach, cattle are able to utilize forages that are not appropriate for simple-stomached animals. In addition, cattle can eat grains, byproducts of grain processing, and waste from human food production. However, it is important to know that if diets are changed without an adaptation period, or if cattle have sudden access to a new feedstuff, health problems can follow.

Risk factors

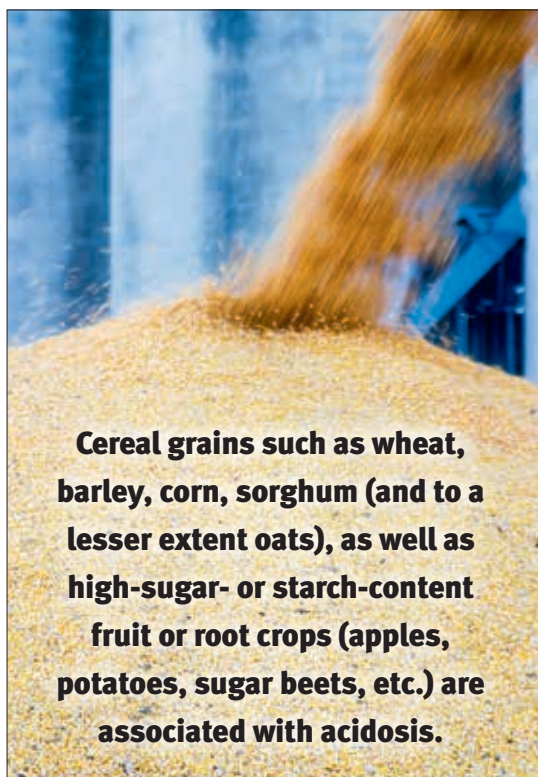
Changing from one roughage source to another or from a high-grain, concentrate diet to a roughage diet is usually well-tolerated; in contrast, suddenly changing from a roughage diet to a concentrate diet can be accompanied by acidosis, a serious digestive problem in grain-fed animals.

In cow-calf operations, cattle are rarely intentionally fed a diet made up primarily of grains, but sometimes growing bulls or heifers are fed a high-grain diet, and cows may have the opportunity to consume more grain than the producer intends when grain is used to supplement low-quality, dormant forage.

Acidosis can occur following a large meal of feed rich in readily fermentable carbohydrates that causes the rate of lactic-acid production in the rumen to exceed how quickly it can be used. Cereal grains such as wheat, barley, corn, sorghum (and to a lesser extent oats), as well as high-sugar- or starch-content fruit or root crops (apples, potatoes, sugar beets, etc.) are associated with acidosis. Green, unripe corn; corn or milo stubble fields; and byproduct feeds such as bakery waste, elevator fines, “Red Dog,” and some brewer’s grains are also high in starch or simple sugars, making cattle eating these feeds also at risk for acidosis.

Feeds that are not likely to induce acidosis are hay and fiber-type byproduct feeds. Hay does not contribute to acidosis because the energy source is mostly cellulose rather than simple sugars, and the physical properties (large particle size) resist rapid fermentation. Fiber-type byproduct feeds such as soy hulls, distillers’ grains, or corn gluten feed are similar to hay in that the energy source is primarily cellulose with little starch or simple sugars present.

Fine grinding of grain, rapid changes in



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the amount of grain or other high-starch feeds in the diet, or cattle that become hungry and then eat a large meal of grain are often implicated in the disease.

Signs of acidosis

Cattle that are suffering from acidosis can look a lot like cattle with respiratory disease by showing a lack of appetite, slow movement, 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 uncomfortable due to a sore belly, and they will probably have grey-green pasty to soupy diarrhea.

In more severe cases, dehydration is severe, the animal will usually be laying down, the abdomen is markedly distended, and the animal is noticeably uncomfortable (groaning and grinding of teeth). Diarrhea is profuse and yellow-green and then progresses to watery, often foamy with a pungent odor. Death commonly follows severe cases. Cattle that recover from acidosis may develop liver abscesses, laminitis or other secondary diseases.

Treatment of acidosis involves removing

the feed causing the problem, and for some individuals, may include siphoning off ruminal contents with a stomach tube or surgically opening the rumen and removing the rumen contents (re-inoculation with 10-15 liters of fresh rumen contents from a healthy animal will speed up recovery). In addition, large volumes of intravenous (IV) fluids are given.

In this disease process, IV fluids must be used because fluids given by mouth (via stomach tube) will not be absorbed from the rumen into the rest of the body. Oral antibiotics are commonly given to kill lactic-acid-producing bacteria in the rumen, thereby lowering lactic-acid production.

Feeding management that prevents a sudden increase in the intake of grain or other readily fermentable feeds controls acidosis. For cow-calf farms, this means if high levels of potentially acidosis-producing feeds are fed,

the feed is introduced gradually and then feed intake is kept steady. Inclusion of an ionophore in the ration helps to decrease the incidence and severity of acidosis, while dietary buffers (sodium bicarbonate) and other feed additives have not been shown to have consistently positive results.

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