

Nutrition Edition

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*A healthy rumen microbial population is essential to overall cattle health and profitability.

Microbes 101



Direct-fed microbials, also called probiotics, offer a natural way to boost cattle health and productivity.

by *Kindra Gordon*

“**Y**ou’re feeding microbes, not cattle.” The vital role rumen microbes play in overall cattle health is one of Brandon Boughen’s most important lessons. As the director of education at Bio S.I. Technology, Boughen seeks to educate producers on the positive influence a healthy microbe population has on body condition and, in turn, profitability.

Microbes digest 70-80% of the digestible dry matter in the rumen. Stress disrupts the rumen microbial balance, which decreases nutrient digestibility. This leads to a snowball effect of various health issues. To help maintain a healthy rumen microbial population, research supports that direct-fed microbial (DFM) supplements — more commonly known as probiotics in the human

Probiotic vs. prebiotic

Although only one letter differentiates the spelling of probiotics and prebiotics, the two are very different. A probiotic is defined as “a live microbial feed supplement which beneficially affects the host animal by improving its intestinal microbial balance.” A prebiotic is a compound that promotes the growth of gut bacteria (i.e. yeast cultures, oligosaccharides), but is not a living organism. **HW**

health world — are beneficial to gut health and help fight inflammation. As researchers continue to learn more about the advantages of soil microbes, these microbes are being used in a variety of industries including crop production, landscaping, septic tanks and oil spills.

Probiotic defined

A probiotic is defined as “a live microbial feed supplement, which beneficially affects the host animal by improving its intestinal microbial balance.” In the livestock industry, a probiotic is often called a DFM, which is essentially a source of live, naturally occurring microorganisms. These include yeast, fungi and/or bacteria.

Boughen explains grazing animals have historically maintained microbes in their digestive system because the soil-borne microbes are consumed while animals are grazing. Once in the animal’s gut, microbes feed on concentrates and roughages the animal ingests.

From this “microbial fermentation” of feedstuffs, volatile fatty acids, ammonia and bacteria are created to provide essential nutrients to maintain overall health. Boughen points out that without the microbes, cattle could not utilize the nutrients in the forages they consume. As long as the animal follows a diet fueling the various microbes in the rumen, the animal’s health and nutrition should be in good status.

However, Boughen cautions diet change or environmental stress causes a microbial imbalance in the rumen, which can impact fermentation and limit access to beneficial nutrients. Lower nutrition absorption decreases daily gain and jeopardizes all other aspects of the animal’s health.

Now the question stands — how does the rumen become void of beneficial microbes? According to Boughen, this is primarily influenced by the types and amounts of feedstuffs consumed. For instance, starch-eating bacteria, which produce lactic acid, can take over in the rumen from other microbes when animals are on a high-concentrate diet.

Livestock most at risk for rumen microbial changes include those:

- Kept in confined areas such as feedlots, with minimal access to grazing and/or on high-concentrate diets,
- Grazing on drought-affected pastures,
- Consuming low-quality hay and
- Receiving antibiotics or antimicrobials.

Among these at-risk groups, Boughen explains once the pH of the rumen begins to drop due to a change in the diet, sensitive microbes die off, allowing for another type of bacteria (like the starch-eaters) to take over and cause havoc.

“When the rumen pH decreases, and beneficial microbes die, there’s a decrease in the amount of nutrients being produced for the animal during gut fermentation,” Boughen says.

Cattle tend to go off feed and water when their microbial communities are out of balance, which serves as a warning sign something is amiss. There may also be a change in their manure consistency and coat quality.

Maintaining microbes

To minimize the loss of beneficial microbes in higher-risk groups of cattle, Boughen says DFM supplementation is shown to help boost health and performance.

“Cattle will gain weight, yet eat less, because they are able to get more nutrients from the feed they eat,” he explains.

Boughen reports DFM supplements are being used in feedlots, for show animals, and following a round of worming or antibiotics to get the rumen functioning well. They are also beneficial for

newly weaned calves coming in from the range. Ultimately, DFMs serve to help get animals eating and drinking faster after the stress of shipping or a change in environment or diet.

DFMs can be given as an oral drench or as a topdressing on feed. The supplement can also be added to stock tanks in holding pens before cattle are shipped. Boughen emphasizes there is no risk of

and overdose because the product is natural and not administered based on weight.

Given the industry directive to utilize fewer antibiotics, Boughen points out probiotics offer a natural alternative to help ensure animal health during stressful activities. **HW**

Probiotics for the winter cow herd

The transition to fall and winter presents an opportunity for added stress due to a drop in temperature and less nutritious forage to graze.

"It can also mean fewer soil-borne microbes are consumed and included in the diet," says Brandon

Boughen with Bio S.I. Technology.

Feeding a probiotic supplement helps maintain a balanced microbial population in the gut, which improves the ability to get more nutrients from the fall and winter forage. A higher nutrition plane also

promotes better animal health and reduces stress during sudden weather changes or when cattle are moved to new locations. **HW**

