

MANAGE THOSE MICROBES

PHOTO BY ELLA JORDAN FROM NIAA/ANGUS JOURNAL PHOTO CONTEST



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

by **KINDRA GORDON,**
field editor

“You’re feeding microbes, not cattle.” That’s a statement Brandon Boughen often uses to get cattle producers’ attention as he explains the important role rumen microbes have on cattle health and production.

Boughen goes on to explain that microbes digest between 70% and 80% of the digestible dry matter in the rumen. Thus, if the rumen microbial population gets out of balance — brought on by stress from shipping or changes in feed — that can have a negative impact on the animal’s ability to digest and get nutrients from the feed, which can snowball into animal health issues.

To help maintain a healthy rumen microbial population, research is now indicating that direct-fed microbial supplements (more commonly known as probiotics in the human health supplement world) may be beneficial to the animal.

Boughen works for the company Bio S.I. Technology, which produces Jackpot Livestock Probiotics, one of the direct-fed

microbials on the market for livestock. As researchers learn more about the benefits of soil microbes, they are being used in a variety of industries, from crop production to lawn and gardens, and even to reduce toxicity in septic tanks and in the event of an oil spill. Bio S.I. produces a full range of microbial inoculants for such uses.

Probiotic defined

A probiotic is defined as “a live microbial feed supplement [that] beneficially affects the host animal by improving its intestinal microbial balance.” In the livestock industry, probiotics are often called a direct-fed microbial (DFM), which is essentially a source of live, naturally occurring microorganisms. These can be yeast, fungi and/or bacteria.

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 ingested by the animal, Boughen explains.

From this “microbial fermentation” of feedstuffs, volatile fatty acids, ammonia and bacteria are created to provide animals essential nutrients to maintain health. Boughen points out that without the microbes, cattle couldn’t access the nutrients in the forages they consume.

As long as the rumen has a diet that allows a variety of microbes to be

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maintained, the animal’s health and nutrition should be in good status.

However, if the animal experiences a change in diet or environmental stress, the microbial balance in the rumen can be affected, which can impact fermentation and the animal’s access to beneficial nutrients, says Boughen. Lower nutrition can then impact daily gain and jeopardize animal health.

How can the rumen become void of

Probiotics for the winter cow herd

The transition to fall and winter also represents a change for cattle in both weather stress and less nutritious forage to graze. It can also mean fewer soil-borne microbes are being consumed and included in the diet, points out Brandon Boughen with Bio S.I., makers of microbial supplements.

Feeding the cow herd a probiotic supplement, which helps maintain a balanced microbial population in the gut, can improve the animal’s ability to get more nutrients from the fall and winter forage, says Boughen. A higher plane of nutrition can also promote better animal health, and reduces stress when the weather changes suddenly or livestock are moved to new locations.

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beneficial microbes? This is primarily influenced by the types and amounts of feedstuffs consumed, says Boughen. For example, starch-eating bacteria, which produce lactic acid, are one kind that 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:

- livestock kept in confined areas, such as feedlots, with minimal access to grazing and/or on high-concentrate diets;
- cattle grazing drought-affected pastures;
- cattle being fed low-quality hay; and
- cattle administered antibiotics or antimicrobials.

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

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

A warning sign that something is amiss is that cattle tend to go off feed and water when their microbial communities are out of balance. There may also be a change in their manure and their coat can get rough.

Maintaining microbes

To minimize the loss of beneficial microbes in these higher-risk groups of cattle, Boughen says direct-fed microbial supplementation has been 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 that direct-fed microbial supplements are being used in feedlots, for show animals, and in small and large herds after worming or antibiotic use to get the rumen functioning well. It is also beneficial for newly weaned calves coming

in from the range to help get animals eating and drinking faster after the stress of shipping, a new environment, and a diet change.

Direct-fed microbials can be given as an oral drench or as a top dress on feed. The supplement can also be added to stock tanks in holding pens before cattle are shipped.

Boughen emphasizes that because the

product is natural and not administered based on weight, there is no overdosing.

He notes that given the industry directive to utilize fewer antibiotics, probiotics offer a natural alternative to help ensure animal health during stressful times in the calf's life.



Probiotic vs. prebiotic

Brandon Boughen with Bio S.I. emphasizes that probiotic and prebiotic are not the same. A probiotic is defined as “a live microbial feed supplement that 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 culture, oligosaccharides), but prebiotics are not living organisms.