

Why Cattle, Sheep, and Goats Can Eat Forages



By Donna M. Amaral-Phillips

Sheep, goats, beef and dairy cattle, buffalo, and deer are all considered ruminants. All of these animals have three fore-stomachs in addition to a true stomach. Thus, they are often said to have four stomachs. The biggest of these stomachs is the rumen, which in an adult animal can occupy almost three-quarters of the abdominal cavity. The rumen is a large fermentation vat where the digestion of forages and other feeds takes place.

In the rumen, bacteria help the cow, sheep or goat digest its feed such as grass or hay, feeds non-ruminants cannot digest. A symbiotic relationship exists here where both the animal and bacteria benefit. In this case, the ruminant animal provides the rumen bacteria with an ideal environment to grow and a continuous supply of food. The bacteria, in turn, digest the forages and grains fed to the cow, sheep, or goat. Products produced by the bacteria are then used by these animals to make milk, meat or for the animal to grow. These products include volatile fatty acids and microbial protein. Basically, microbial protein is the protein in the bacteria's body. Bacteria make this protein from ammonia (a source of nitrogen) and an energy or fuel source found in the rumen itself. Microbial protein contains the best blend of amino acids for the animal and supplies around 75% of the animal's protein needs. The bacteria also produce other byproducts which the animal uses as energy or fuel sources. These include the volatile fatty acids, such as acetate and propionate.

Different types of bacteria live within the cow's rumen. Some types of bacteria digest the fiber found in grasses and other forages. Others prefer to digest the starches and sugars found in the grains fed to these animals.

In order for these bacteria to live in the most ideal environment, these animals have evolved where they chew their cud or rechew their food after they have eaten it. When they chew their cuds they are decreasing the particle size of the forage, so that the bacteria can digest the forage better. Also, when cattle chew their cuds they secrete saliva. This saliva contains a natural antacid which helps to buffer the rumen. Proper buffering of the rumen allows the bacteria to live in a more ideal environment where they can digest forages better. This relationship benefits the animal since she gets more nutrients, can eat more feed and, then, can produce more milk, meat or can grow better.

Thus, when balancing rations for cattle, sheep and goats it is important to keep in mind that the ration digested by the bacteria in the animal's rumen are ultimately the major source of nutrients for the animal. The bacteria which live within the animal's large fermentation vat are very beneficial and help ruminants, such as cattle, sheep, goats and deer, digest grasses and other forages.

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