The Ruminant Stomach

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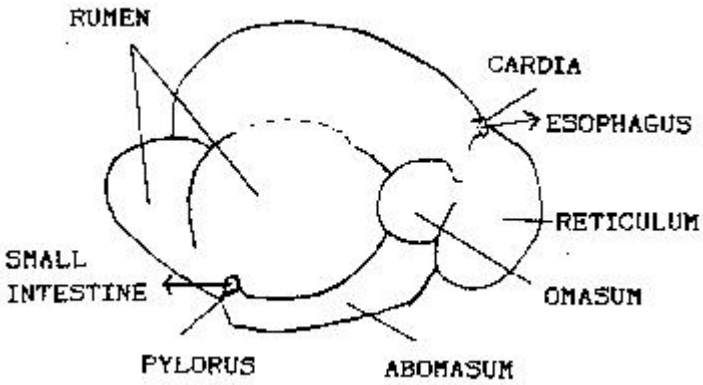
Pygmy goats are ruminants like sheep, cattle, deer, llamas, etc. Their digestive tract looks and functions quite differently from simple-stomached animals such as man, swine, dogs, and cats. Knowing some of these differences can be very important to achieving the best herd management.

The ruminant animal has a rumen, reticulum, omasum, and abomasum; the simple-stomached animal has a stomach. The newborn ruminant functions as a simple-stomached animal. At birth, the rumen is small and nonfunctional. When the kid nurses, a band of muscle tissue (the esophageal groove) closes to form a direct tubular connection from the esophagus to the abomasum. If you bottle-feed kids, it is important to hold the kid in a natural nursing position so the esophageal groove closes properly. If milk is put into the rumen, either by tube-feeding or improper bottle-feeding, a considerable time may elapse before the milk makes it to the abomasum and can be digested for use. Milk may also curdle in the rumen and cause some colic symptoms.

As the kid matures and nibbles on his environment, he slowly introduces the microorganisms (bacteria) necessary for proper rumen function. Kids raised by their mothers develop rumens more quickly than bottle babies, presumably due to the mother's influence on their eating habits. Very few bottle babies observe their two-legged mothers eating hay!

Each of the four "stomachs" has a particular purpose and function. The rumen is the largest chamber of the ruminant stomach (1-2 gallon capacity) and has no digestive enzymes. It is a large fermentation vat populated by microorganisms which change nondigestible cellulose into proteins which can be used by the body. Roughage is worked on by the microorganisms, regurgitated and rechewed (as a cud), then swallowed and the process is repeated. Eventually the processed food passes on through the reticulum to the omasum in a condition ready to be digested by normal body enzymes. Methane is produced continuously as a by-product of bacterial action, so odiferous belches are a sign of health rumen. Anything which harms the rumen microorganisms can effectively halt the digestive process.

The reticulum lies in front of and below the rumen, near the liver. Its lining is honeycombed and it serves as a catch chamber for heavy articles in the feed. In cattle, magnets are often placed in the reticulum to catch and hold nails, pieces of wire and other hardware the animal might swallow. Since goats are more fastidious in their eating habits, magnets are not necessary. The reticulum from cattle is sold in the market as tripe.



The omasum is divided by long folds of tissue which help decrease the size of food particles coming from the rumen and which also help remove excess fluid.

The abomasum is the true stomach and is the only compartment which produces digestive enzymes. It acts on food prepared by the rumen just like the simple stomach acts on food entering from the mouth. It is the area of primary digestion of all grain and milk. Grain and milk do not require the efforts of rumen microorganisms.

While being a ruminant allows our Pygmies to thrive on a diet of hay, it also leaves them open to many different diseases which affect the four chambers of the ruminant stomach.

Excerpts from:
Kinne, Maxine, ed. Pygmy Goats: Best of Memo 2 (1982-1987)
National Pygmy Goat Association: pp 135