

## ***Stomach Microorganisms: Why Can a Cow Eat Grass?***

Cows are ruminants. Ruminants are herbivores that have a four compartment stomach. This first stomach compartment is called the *rumen* (the largest compartment that can hold over 50 gallons of food), any foreign non-food item (like nails, wire, etc.) then drop into the *reticulum*. Food passes through the third compartment called the *omasum* and the final digestion takes place in the *abomasum*. Cows and other ruminants can regurgitate their food (cud) and chew it again for further breakdown. This aids in digestion. Each stomach compartment contains billions of bacteria, anaerobic fungi, and protozoa that help to break down the proteins and carbohydrates. Without the microorganisms ruminants would be unable to digest cellulose, the fiber that makes up the bulk of plant cell walls found in grass and hay.

The rumen is like a giant fermentation vat. Ruminants belch to expel the build up of carbon dioxide produced by the billions of microbes in their stomach.

What other animals are ruminants? (*elephants, zebras, sheep, and other animals that eat forages such as grass and hay. Horses are not ruminants. They have a large cecum, "blind stomach," between the small and large intestine that helps them to digest the cellulose.*)

Be sure to borrow the video "Why Can a Cow Eat Grass?" from Utah AITC. Visit the web site (<http://www.ext.usu.edu/aitc>) for more information. The video is complete with an educators guide and microscopic views of the microorganisms in the stomach.

