

AG. BUSINESS
DAIRY ENTERPRISE

I. Ruminant Digestive Systems

A. Ruminant stomachs

1. cows and sheep
2. four stomach compartments
3. use roughages more efficiently than simple stomach
4. 25-28% of body weight

B. Monogastric stomach

1. simple stomach
2. pigs(4% of body weight)

C. 4 stomach compartments

1. Rumen(1st compartment)
 - a. first and largest stomach
 - b. bacterial digestion takes place in rumen
 - c. 70 -85% of digestible D.M. disappears in rumen and is absorbed by cow
 - d. also rumination, regurgitation, mixing of feedstuffs
2. Reticulum(2nd)
 - a. same function as the rumen
 - b. continous with rumen, food passes from reticulum to omasum
3. Omasum(3rd)
 - a. function is to absorb 60 -70% of water and some minerals of feedstuffs -
4. Abomasum(4th)
 - a. *true stomach*: only stomach that secretes digestive enzymes produced by cow.
Similar to the monogastric stomach.

II. Nutrient Requirements(5 total)

A. Energy

1. ability to do work
2. greatest requirement of a cow except water
3. other nutrients must have energy to work
4. energy is most limiting nutrient for high milk production

AA. What ways do cows use energy?

1. milk production
2. maintenance
3. growth
4. weight gain and fetus growth

AAA. What are the different types of energy?

1. **gross energy**: always is 100% and found in feed. Amount of heat produced if burned in lab.
2. **digestible energy**: available after a 30 % loss of thru the manure
3. **net energy**: after subtracting energy loss from heat: 45-47% of total
 - a. this is the energy available to the cow for growth, milk production, reproduction, and maintenance.
4. **total digestible nutrients(T.D.N.)**
 - a. most common method of measuring energy
 - b. $\%TDN = \frac{DCP + DCF + (DEE \times 2.25) + DNFE}{\# \text{ dry matter}} \times 100\%$

dry matter