Colorado State University®
Knowledge to Go Places

Beef Nutrition

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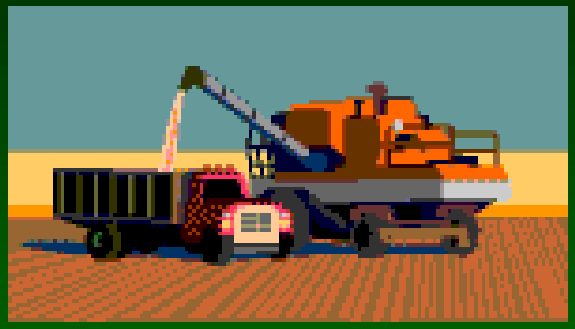
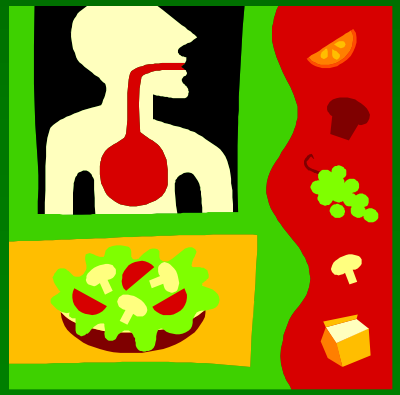
What do animals eat?

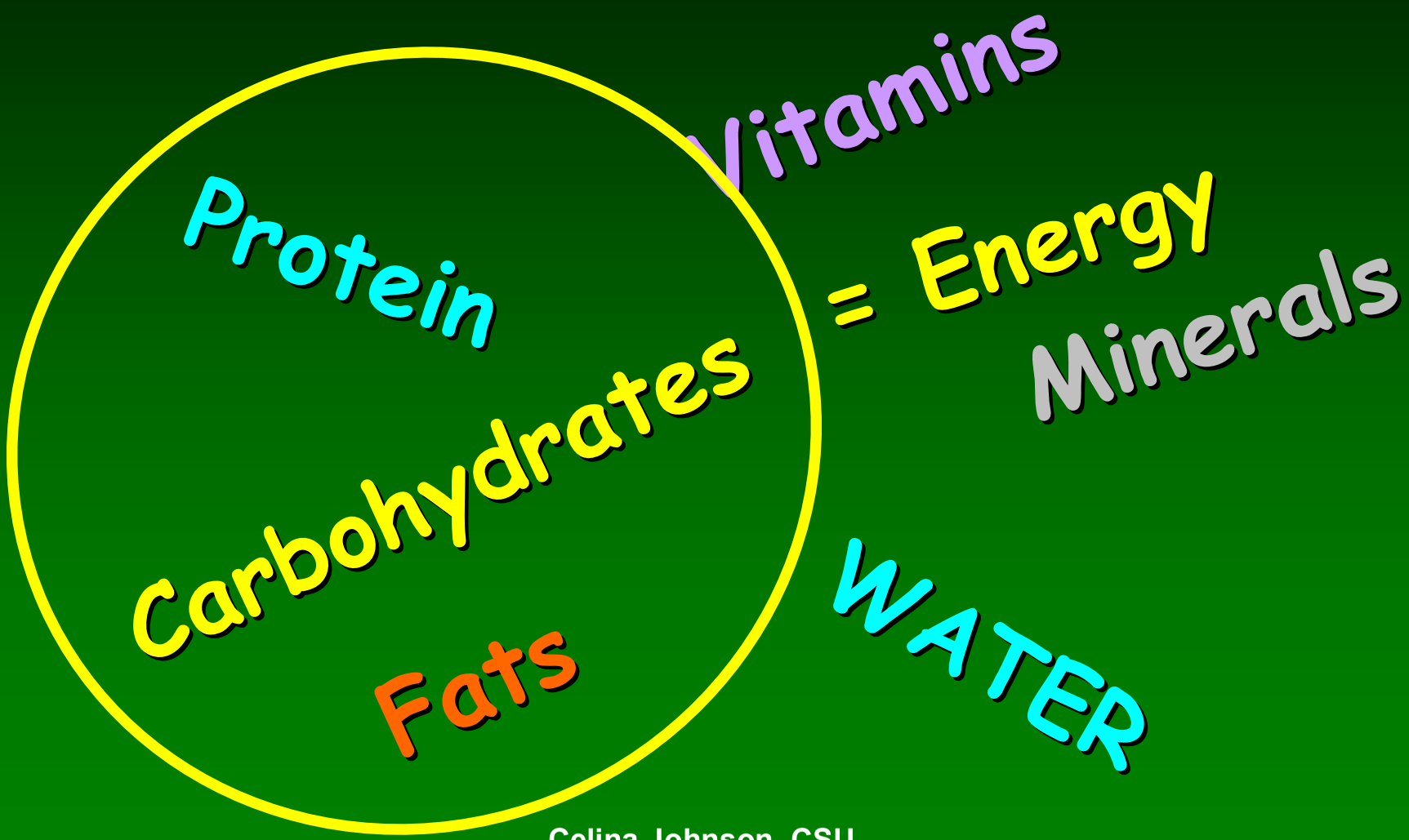


What do feeds provide?

- What is a nutrient?
  - Chemical substance that provides nourishment for the body
- What types of nutrients are there?



What types of nutrients are there?



Types of Nutrients…

- Water – the MOST IMPORTANT
  - Animal's body is 70% water
  - Important for nutrient transport, waste removal, and digestion
  - Supply CLEAN, FRESH SUPPLY daily!!!

Types of Nutrients…

- Carbohydrates
  - Provide ENERGY!!
  - Energy needed to grow and perform
  - Examples include grain, hays
  - Makes up over 80% of beef ration

Types of Nutrients…

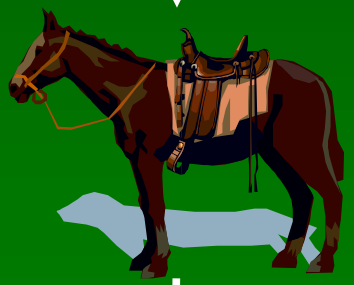
- Protein
  - Needed for growth and development
  - Growing/finishing cattle will require between 12-15%

Are animals different…

- In how they use nutrients?
  - –YES!
- In what we feed them?
  - –YES!
- Why?

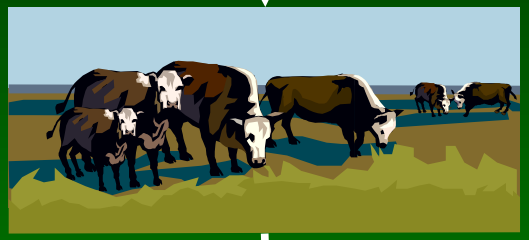
Farm Animals

Simple Stomach System



Non-ruminant
(Monogastric)

Complex Stomach System



Ruminant

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Examples of Ruminants

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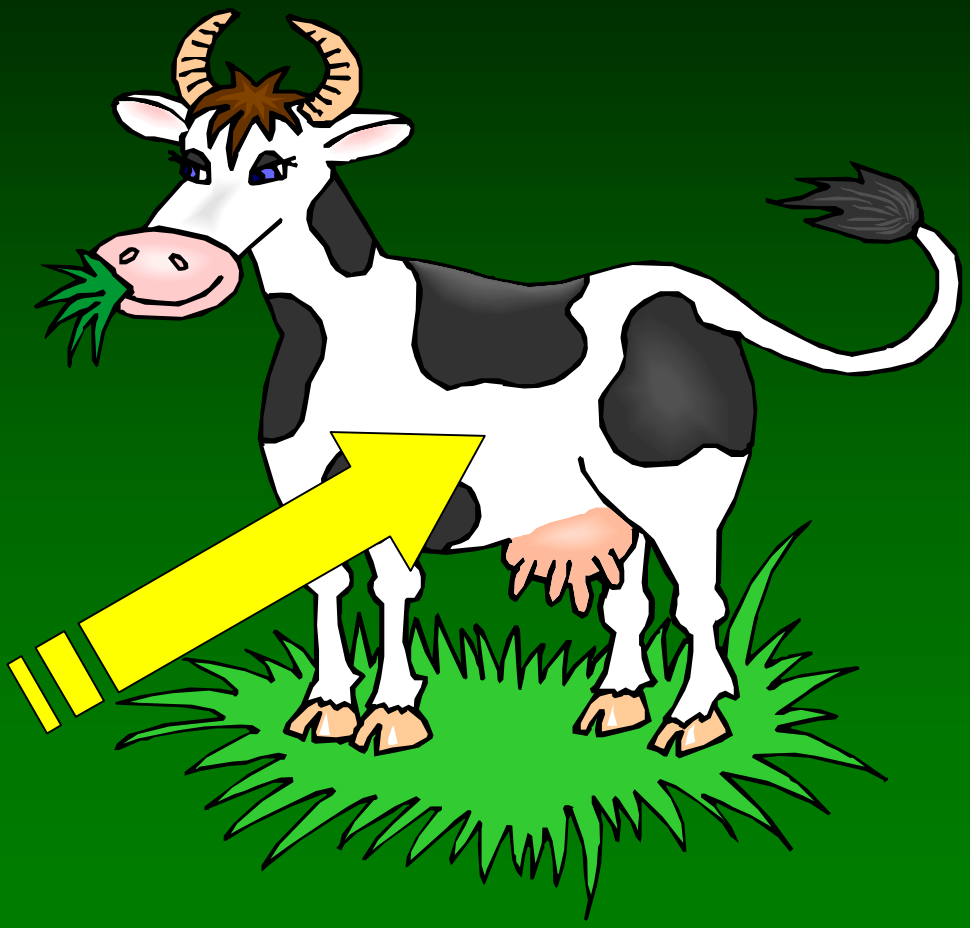
Let's take a look at a ruminant!



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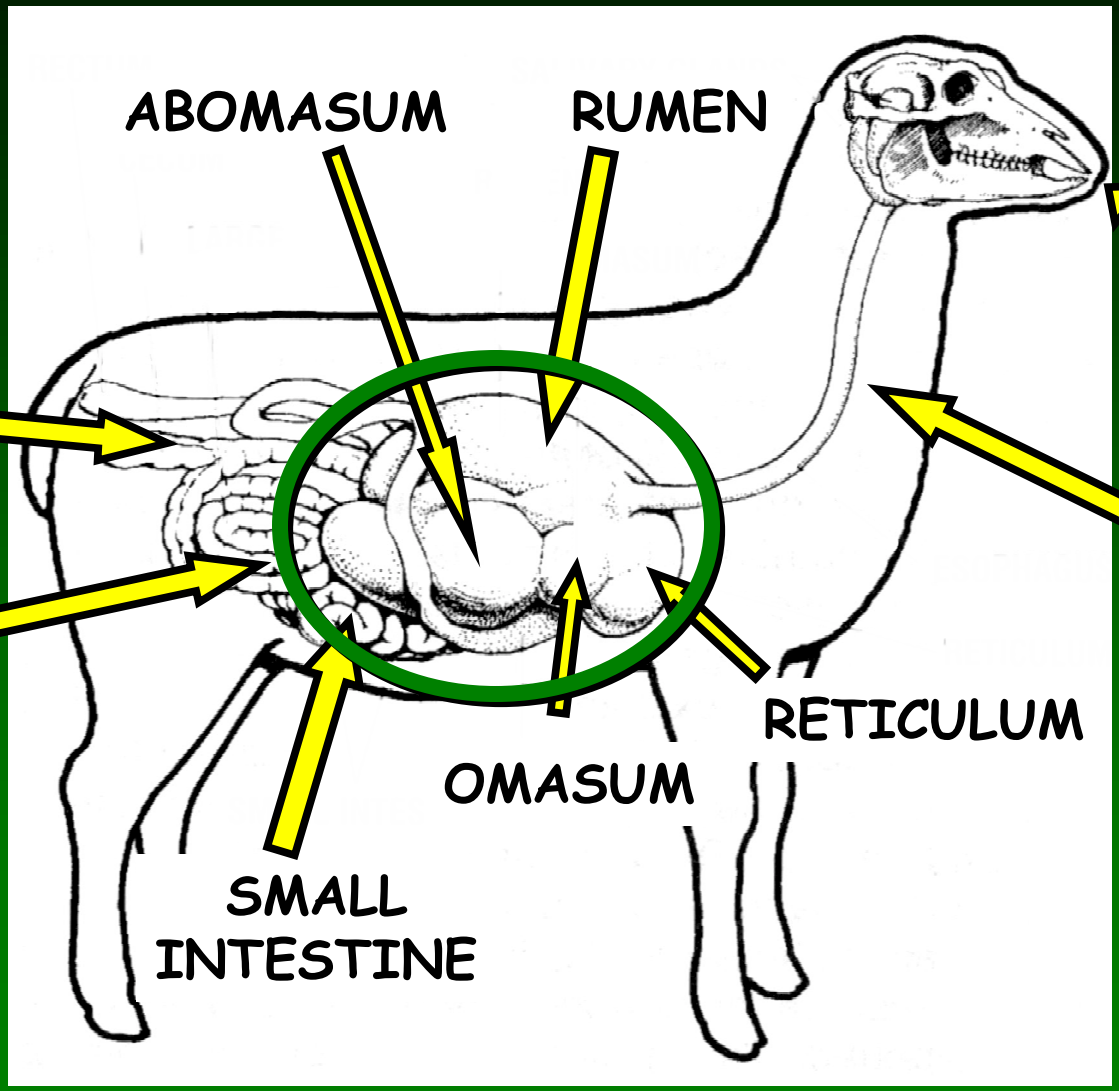
Digestive tract anatomy



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So what does each part do?

- **Mouth:**
  - Reduces food size (chewing)
- **Esophagus:**
  - Transport to stomach (swallowing)
  - Regurgitation (cud-chewing)

So what does each part do?

- Stomach:

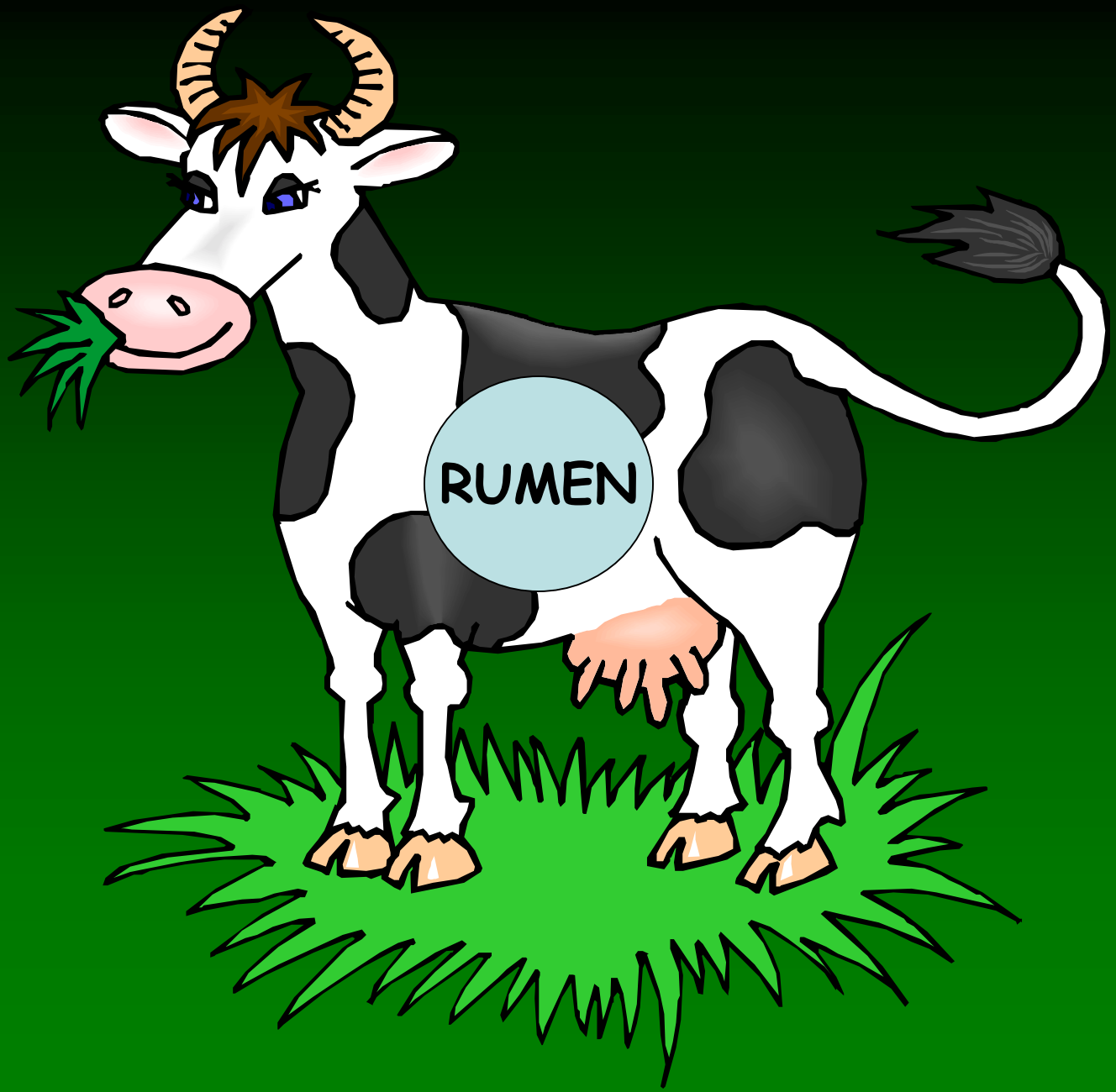
  4 compartments:

  - Reticulum (honeycomb)
  - Rumen (fermentation)
  - Omasum (many plies)
  - Abomasum (true stomach)

So what does each part do?

- Reticulum (honeycomb)
  - Traps foreign material (nails, wire, etc.)
- Rumen (fermentation)
  - Largest of the 4 compartments
  - Contains microbes (bacteria, protozoa)
  - Microbes digest feeds
  - Animal digests microbes

} Partners!



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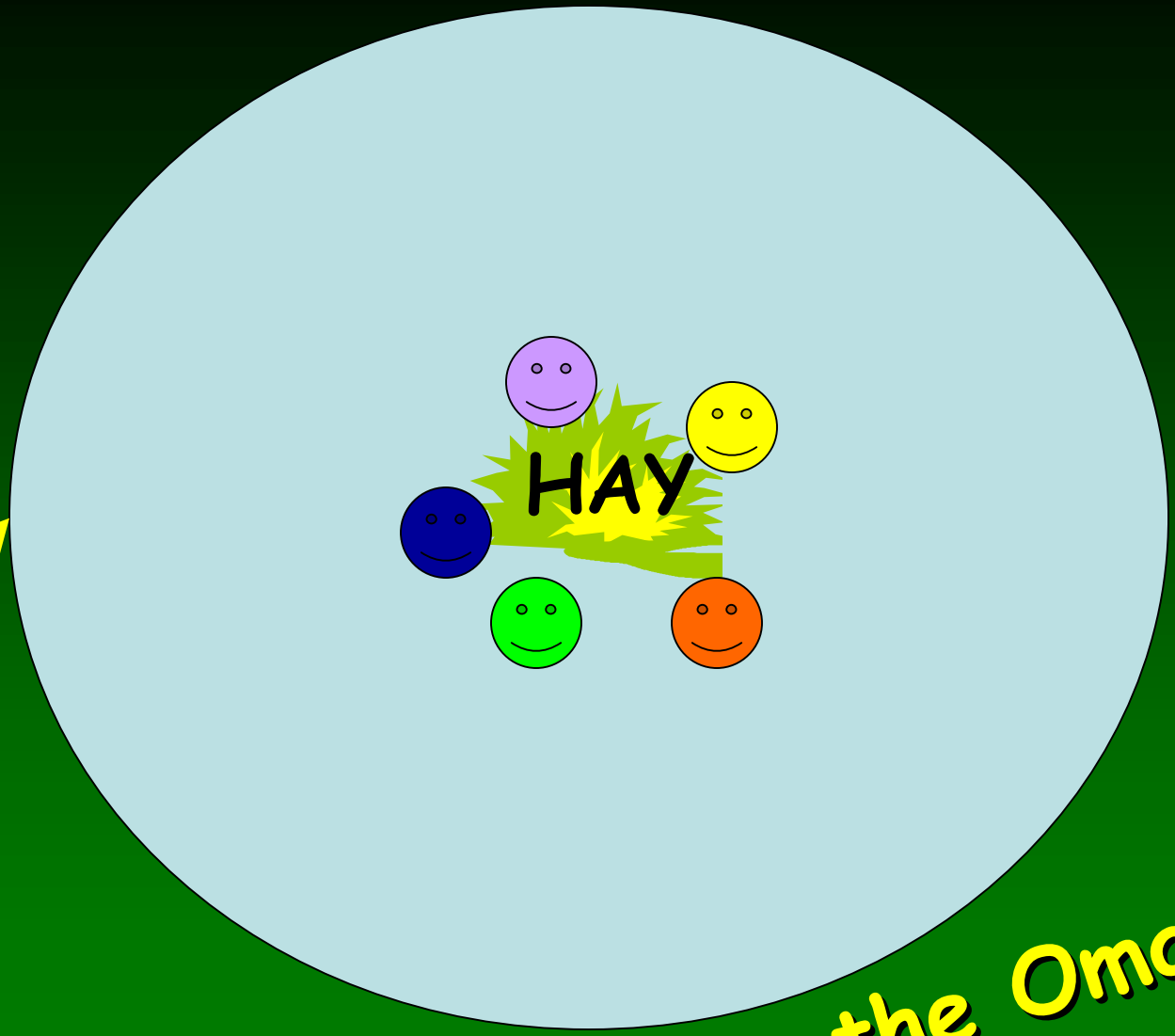
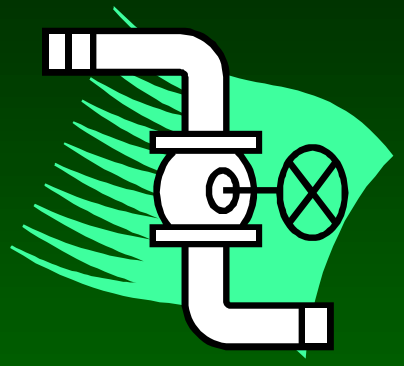


RUMEN

To the Omasum and Beyond!

So what does each part do?

- Omasum (many plies)
  - "Regulator"
  - Regulates flow from rumen to abomasum



- Abomasum (true stomach)
  - Similar to yours!
  - Begin digestion of microbes

So how does ANATOMY affect what we feed?

Ruminants…

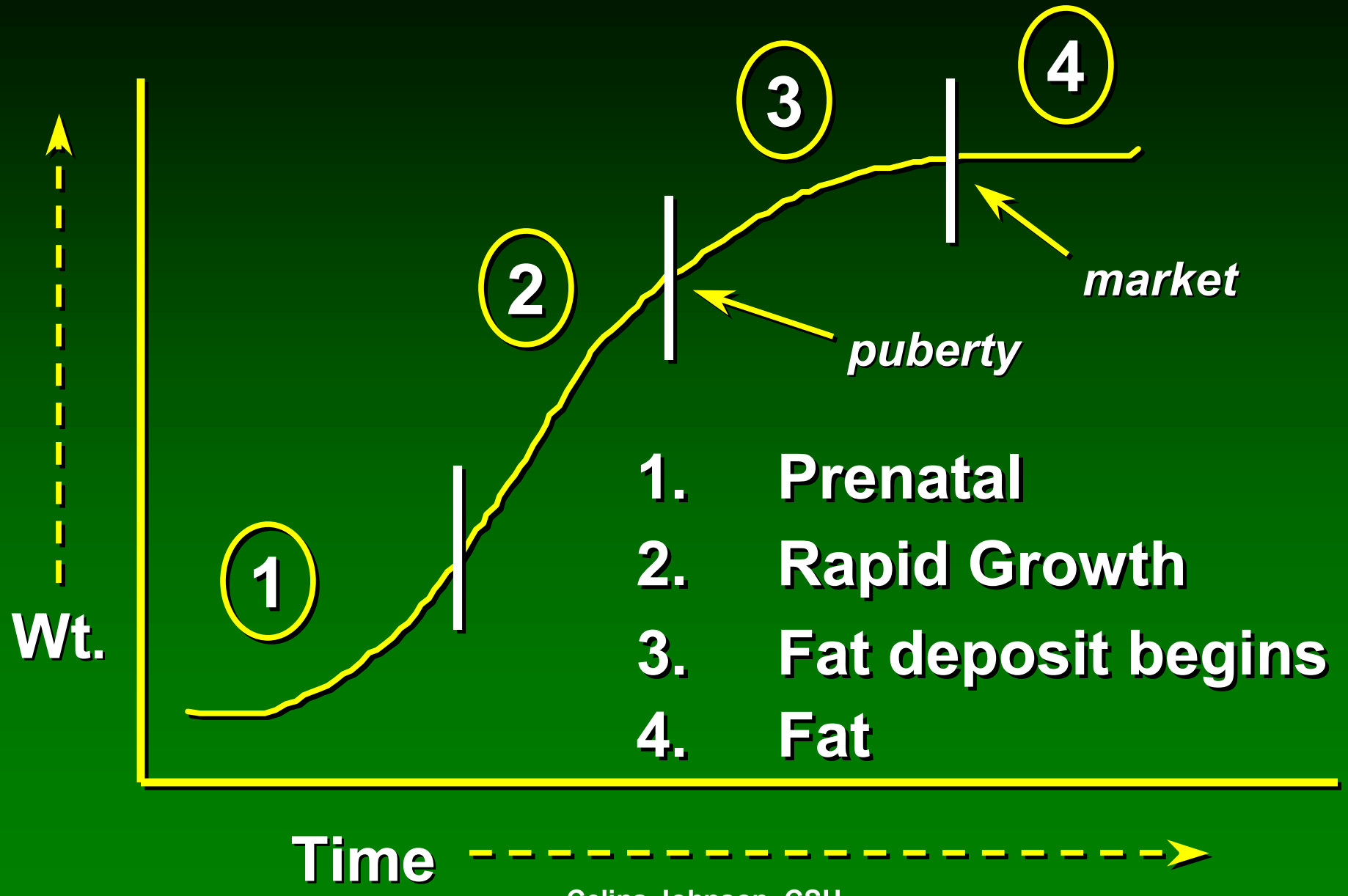
- Meant to eat grass!
  - Remember: partners with microbes!
  - Microbes digest "tough stuff" and animal digests microbes!

- What do steers eat?
  - Forage source
    - hay, silage, pasture
  - Grain as well

Nutrient Requirements

- Your animal requires minimum amounts of the various nutrients
- This amount varies based upon
  - Age, weight, breed, exercise/stress level, balance of the other nutrients, etc
- Important to know how your animal's requirements change over the feeding period

Growth Curve



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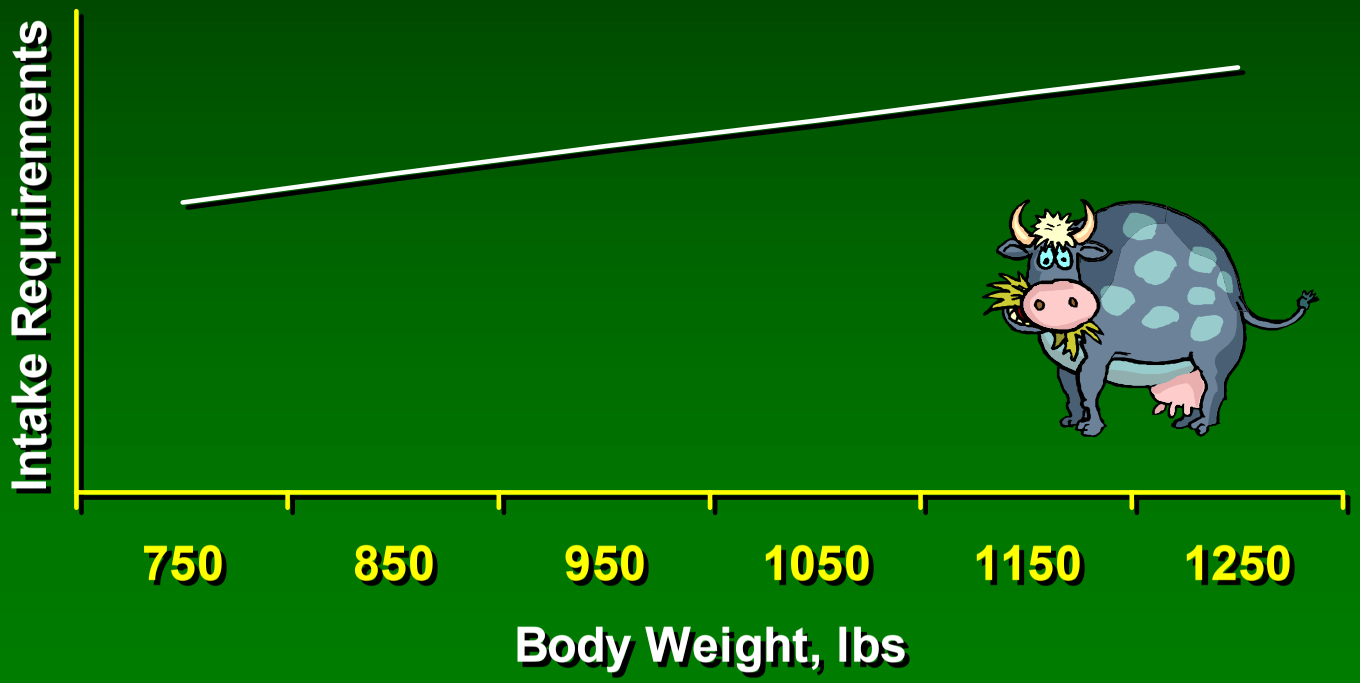
Growing Cattle Intake Requirements

(For large framed steers that will finish at 1250 lbs, gaining 3 lbs per day)



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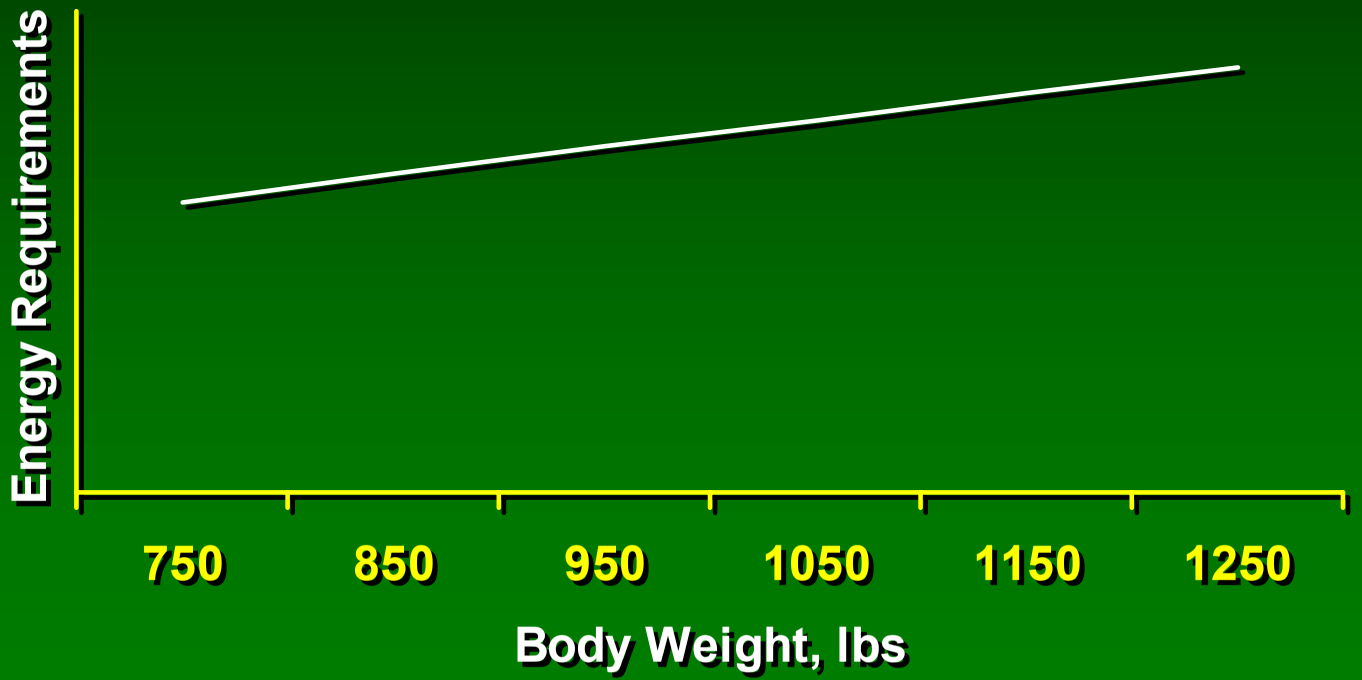
Units are POUNDS OF DRY MATTER PER DAY

Growing Cattle Energy Requirements

(For large framed steers that will finish at 1250 lbs, gaining 3 lbs per day)



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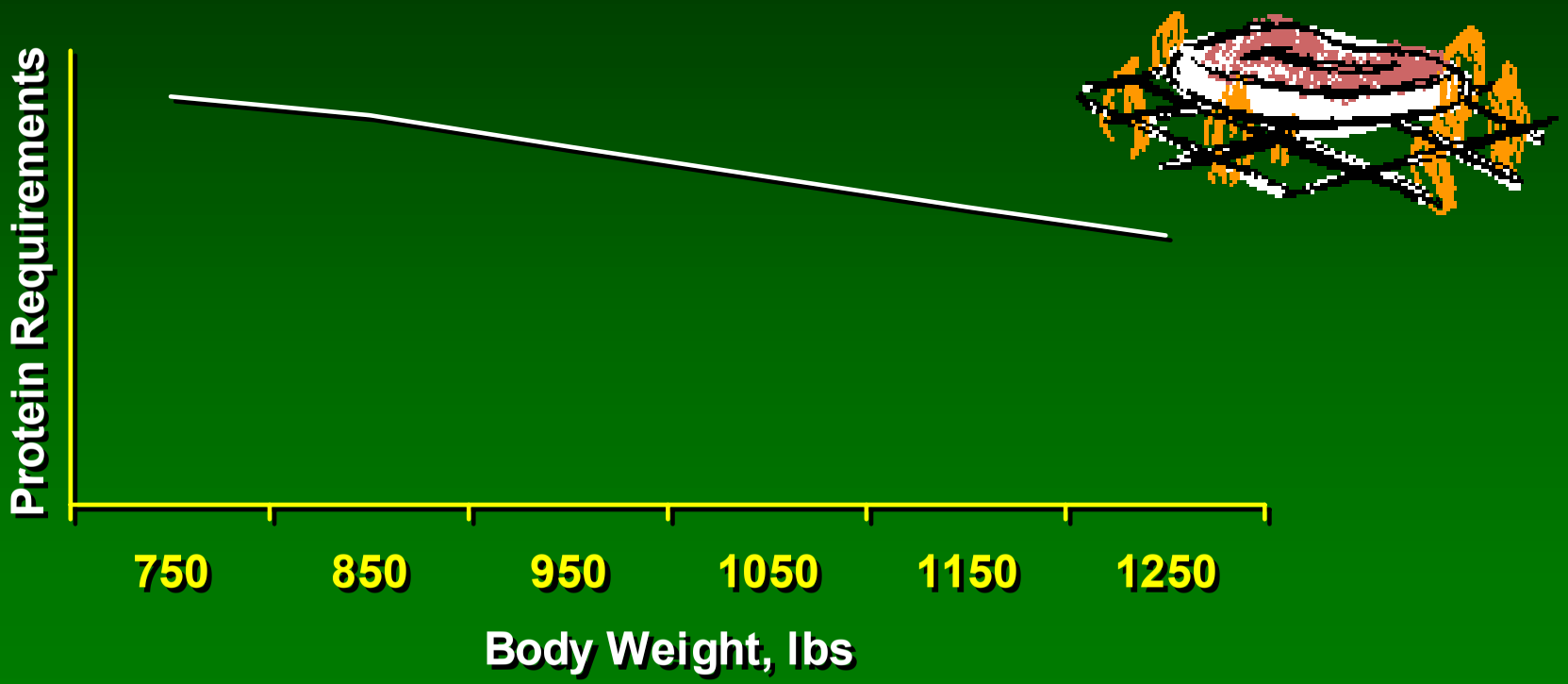
Units are % OF DIET

Growing Cattle Protein Requirements

(For large framed steers that will finish at 1250 lbs, gaining 3 lbs per day)



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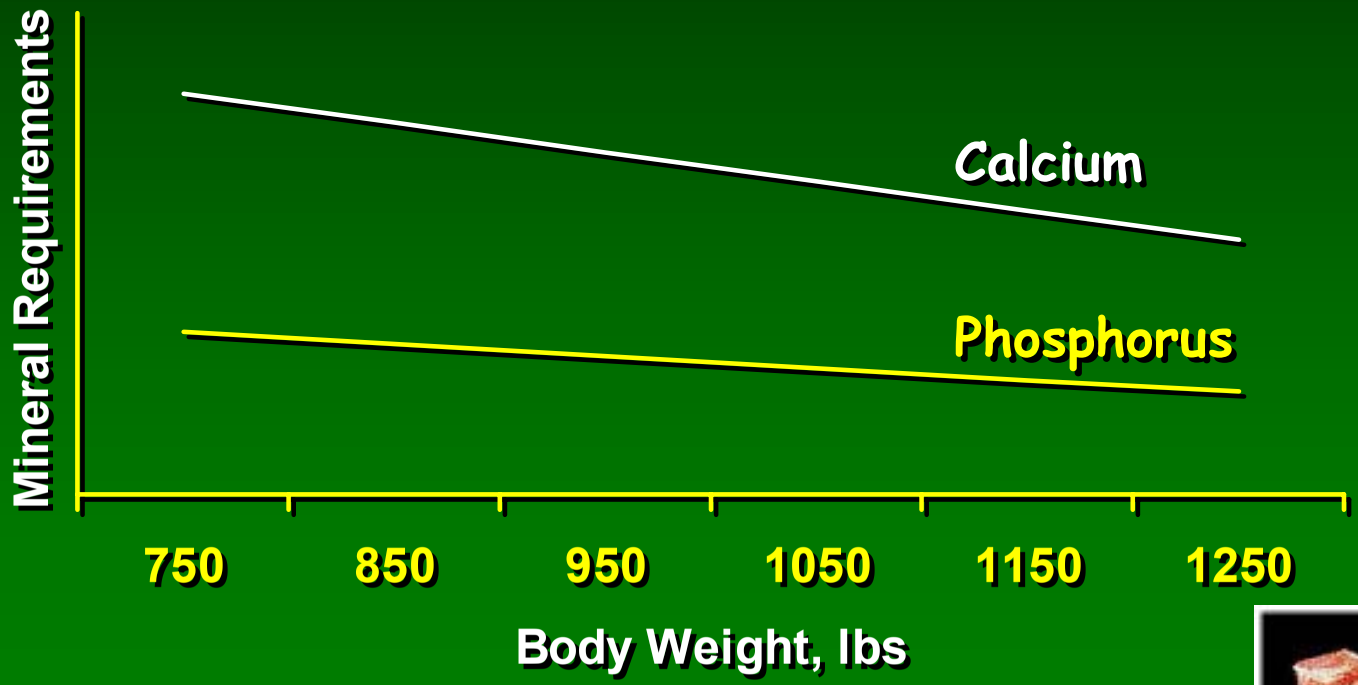
Units are % OF DIET

Growing Cattle Ca/P Requirements

(For large framed steers that will finish at 1250 lbs, gaining 3 lbs per day)



Units are % OF DIET

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Growing Cattle Requirements
Summary

- As BODY WEIGHT INCREASES…
  - Dry Matter Intake INCREASES
  - Energy Needs INCREASE
  - Protein Needs DECREASE
  - Calcium and Phosphorus Needs DECREASE

Important Terms

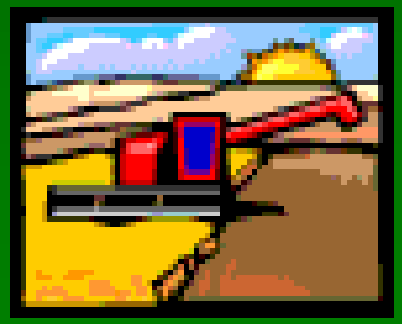
- Starter/Grower
  - Fed from about 400 to 900 lbs (depends upon feed company instructions)
- Finisher
  - Fed from about 900 lbs to finish (depends upon feed company instructions)

Important Terms

- Supplement
  - Used in addition to locally available forages and grains ("supplements" other feeds)
- Complete Feed
  - Designed to be the only feed fed, includes all nutrients an animal needs (roughage included)

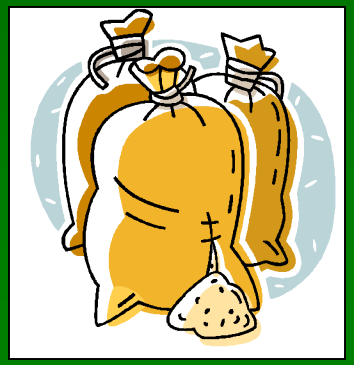
Important Terms

- Dry Matter (DM)
  - Feeds vary in water content
    - Fresh pasture can be 70% water
    - Corn or other grains are about 10% water
  - By accounting for water content, feeds can be accurately evaluated for the other nutrients!



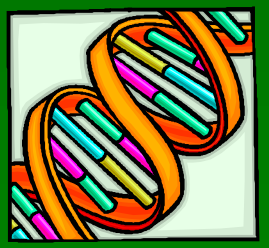
Important Terms

- TDN (total digestible nutrients)
  - A good way to estimate energy density of a feed
  - Growing beef animals require between 65-75% TDN
  - Ask your feed dealer for this value (not on feed tag)



Important Terms

- CP (crude protein)
  - Estimates how much protein in a feed, but doesn't tell how much can actually be used by the animal
  - Growing beef animals require between 10-13%, show beef animals need 12-15%
  - Info on feed tag



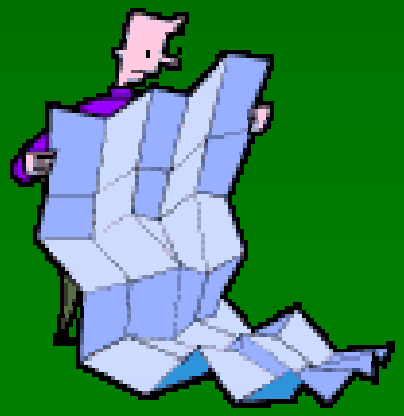
Some Feeding Guidelines

- FRESH WATER AT ALL TIMES!
- Include a good quality forage at all times (minimum of 3-5 lbs per day) to maintain health of digestive system

Some Feeding Guidelines

- Once on full feed, beef animal should have about 2.5 to 3 lbs of grain per 100 lbs of body weight
  - Ex: 700 lbs steer = ~ 17.5 to 21 lbs of grain
  - Ex: 1000 lbs steer = ~ 25 to 30 lbs of grain

- Follow the label directions!!!
  - Manufacturers include directions for a reason!



Questions?

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