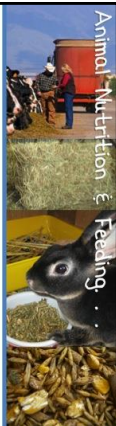


F. Balance a ration

Why is understanding animal nutrition important?

2 Volunteers...

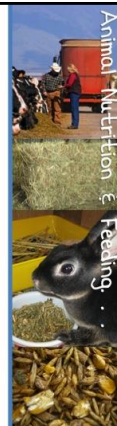
Make a list on the board of 1 days' worth of food that would represent a healthy diet.



Why is understanding animal nutrition important?

Class Discussion

- Are the student's choices healthy?
- Does the food sound appealing?
- Would you eat it?
- What are the benefits of eating healthy?
- What about the problems with eating unhealthily?
- If it is important for us to eat right, what about our animals?



Why is understanding animal nutrition important?



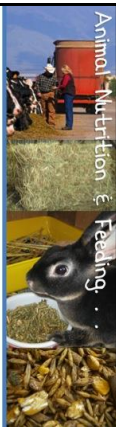
Animal Feed is Expensive!



Improper diet can lead to death or unsoundness



Feeding will make or break an animal's performance



Animal Nutrition & Feeding

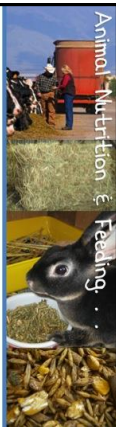
- List essential nutrients & their function
- Identify factors effecting nutrition requirements in animals
- Classify feed types and identify animal feeds
- Compare & contrast common feeds according to species, age, and energy requirements
- Interpret a feed label
- Balance a ration



A. List essential nutrients & their function

The Six Essential Nutrients

- Protein
- Carbohydrates
- Fats
- Minerals
- Vitamins
- Water

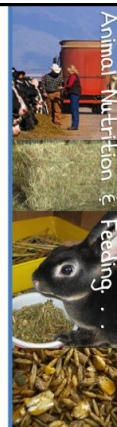


A. List essential nutrients & their function

The Six Essential Nutrients

Protein

- Needed for growth and repair
- Helps form **MUSCLES**, internal organs, skin, hair, wool, feathers, hoofs and horns



A. List essential nutrients & their function

The Six Essential Nutrients

Carbohydrates

- **ENERGY**
- The largest portion of the food supply
- Includes sugars, starch, and cellulose

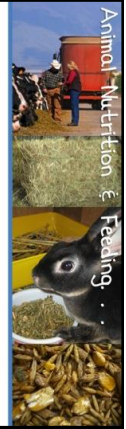


A. List essential nutrients & their function

The Six Essential Nutrients

Fats

- **STORED** Energy
- Insulation & Protection



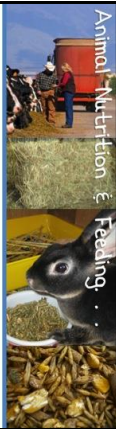
A. List essential nutrients & their function

The Six Essential Nutrients

Vitamins

- Organic substance
- CAN be broken down
- Needed in small quantities

Examples: Vitamin A, B, C, D, E, Folic Acid, etc



A. List essential nutrients & their function

The Six Essential Nutrients

Minerals

- Naturally occurring
- Inorganic substance
- Can't be broken down further
- Needed in small quantities
- Necessary for:
 - Building bones
 - Growth
 - Overall Health

Examples: Calcium, Magnesium, Iron, Manganese, Phosphorus, Potassium, etc

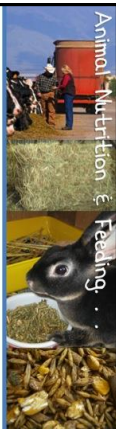
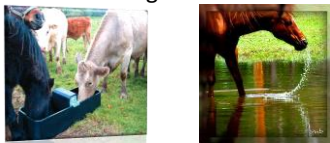


A. List essential nutrients & their function

The Six Essential Nutrients

Water

- Animal's body is made up of 70% water
- Necessary for proper organ function
- Vital to sustaining life

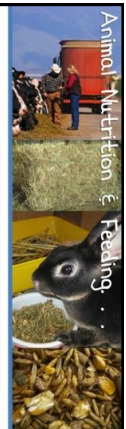


A. List essential nutrients & their function

Where can you find Nutrient Contents of animal feed?

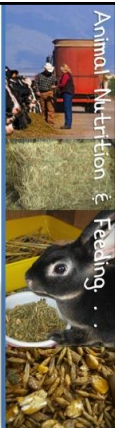


Nutrient	Dry Matter (%)
Protein	24.5
Fat	15.8
Carbohydrate (NFE)	52.8
Crude Fiber	1.8
Calcium	0.78
Phosphorus	0.7
Sodium	0.30
Potassium	0.75
Magnesium	0.096
Taurine	0.13
Vitamin C	291 mg/kg
Vitamin E	785 IU/kg



B. Identify factors effecting nutrition requirements in animals

Are all animal's dietary requirements equal?.....
NO!

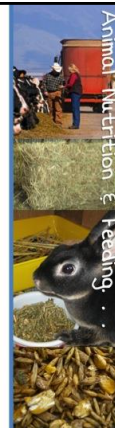


B. Identify factors effecting nutrition requirements in animals

Factors effecting nutritional needs:

1- Maintenance

- Energy required to simply keep animal alive
- Every second an animal is alive it takes energy
- No loss or gain of weight
- Known as *Basal Maintenance Requirement*
- 50% of animal's diet is used for maintenance

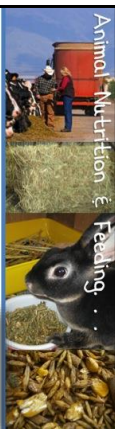


B. Identify factors effecting nutrition requirements in animals

Factors effecting nutritional needs:

2- Growth

- Young animals who are not fully grown
- Extra energy required to grow bones, support organ systems, develop muscle, etc.
- Need high levels of fats and carbohydrates



B. Identify factors effecting nutrition requirements in animals

Factors effecting nutritional needs:

3- Work

- Animals used for heavy work, require more energy
For Example: hunting dogs, draft horses, race horses, etc.



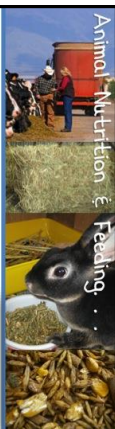
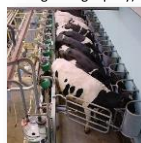
B. Identify factors effecting nutrition requirements in animals

Factors effecting nutritional needs:

4- Gestation & Lactation

(Gestation = Pregnancy, Lactation = milk production)

- Nutrition deficiencies are the most common cause of reproductive failures
- Pregnancy requires higher levels of nutrition and energy intake
(Especially at the end of pregnancy when the fetus is growing rapidly)
- Milk production requires even more energy
(Especially calcium, phosphorus, protein)



B. Identify factors effecting nutrition requirements in animals

Rank these animals from the HIGHEST energy (calorie) requirement to the lowest

Breeding Stallion



2 18,800 Cal/day

Lactating Brood Mare



1 27,400 Cal/day

Weanling Colt



4 15,100 Cal/day

Pregnant Mare



3 17,500 Cal/day

Heavy Work Performance

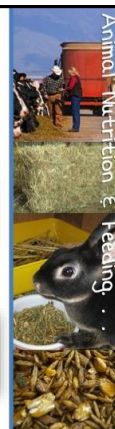


5 14,500 Cal/day

Full Grown Horse, minimum use



6 8,300 Cal/day



C. Classify feed types and identify animal feeds

Which would you choose?



Which one would be **BEST** for the **STOMACHS?**

- 1 Snickers bar = 266 calories
- 1 cup broccoli = 30 calories

1 snickers bar OR
9 cups of broccoli (270 calories)

C. Classify feed types and identify animal feeds

3 Types of Feed:

Roughage



Concentrates



Supplements



C. Classify feed types and identify animal feeds

Roughage

- Contains MORE than 18% Crude Fiber
- Fed in HIGH quantities
- Contains MINIMAL energy per pound of feed

C. Classify feed types and identify animal feeds

Examples... Roughage



Dry Hay

C. Classify feed types and identify animal feeds

Examples... Roughage



**Corn
Silage**



C. Classify feed types and identify animal feeds

Examples... Roughage



Haylage

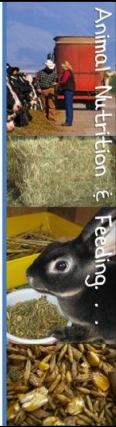


C. Classify feed types and identify animal feeds

Examples... Roughage



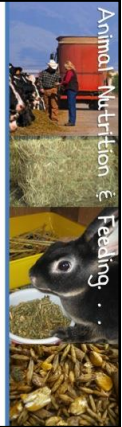
Grass & Pasture



C. Classify feed types and identify animal feeds

Concentrates

- Contain LESS than 18% Crude Fiber
- Feed in SMALL quantities
- Contains HIGH amounts of energy per pound of feed

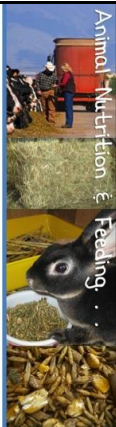


C. Classify feed types and identify animal feeds

Examples... Concentrates



Corn

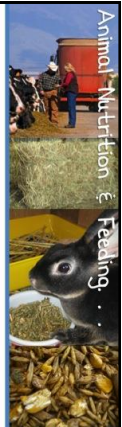


C. Classify feed types and identify animal feeds

Examples... Concentrates



Oats

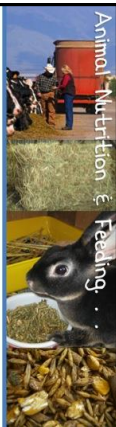


C. Classify feed types and identify animal feeds

Examples... Concentrates



Barley

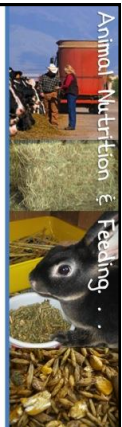


C. Classify feed types and identify animal feeds

Examples... Concentrates



Cotton Seed



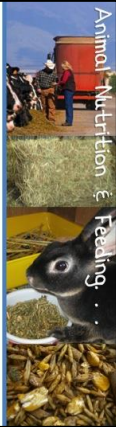
C. Classify feed types and identify animal feeds

Examples... Concentrates



Grain

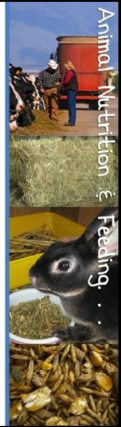
FYI: "Grain" is a general term for a mixture of specific grains such as corn, oats, barley, etc.



C. Classify feed types and identify animal feeds

Supplements

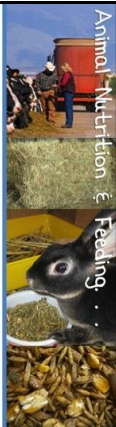
- Nutritional Boost to a ration:
- Usually vitamins, minerals, or protein in form of:
 - Powders
 - Lick blocks



C. Classify feed types and identify animal feeds

Examples... Supplements

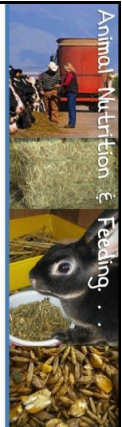
- Salt or mineral block



C. Classify feed types and identify animal feeds

Examples... Supplements

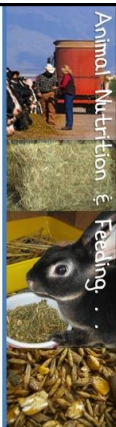
- Protein Licks



D. Compare & contrast common feeds according to species, age, and energy requirements

Comparing Feeds

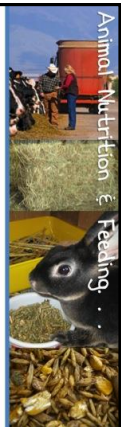
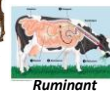
How do you choose?



D. Compare & contrast common feeds according to species, age, and energy requirements

Comparing Feeds

What body system has a HUGE impact on what type of feed an animal can digest??



E. Interpret a feed label

Feed Label Shuffle

Directions: Each student should have 1 feed label. As a class we will establish a pattern of rotating the feed labels. With each pass you will record the name of the feed, crude fiber, protein content, type of feed, and list the first 3 ingredients. Note that the labels are color coded according to species.

If the feed is MEDICATED, put a star by the name of the feed.

F. Balance a ration

How to Balance a Ration

• Ration = Daily Intake of food

• Successful ration must:

1. Fill them up
2. Taste Good
3. Provide required nutrients/energy
4. Be cost effective

F. Balance a ration

How to Balance a Ration

• A few hints:

- Rations vary by species and energy requirement
- Some rations mix roughage, concentrates, and supplements
- Some rations meet all dietary requirements with 1 feed

E. Balance a ration

Example Ration

Full grown, 6 year old horse, minimum use:



Ration #1:

- Free choice grass pasture
- Salt/mineral block

Ration #2:

- 11 lbs hay
- 2.75 lbs Purina Strategy

"This ration mixes a roughage (hay) and concentrate (Strategy) to meet all dietary requirements"

Ration #3:

- 11.25 lbs Purina Equine Adult

"This is a 'Complete' feed which means it has roughage and concentrate mixed together. It meets all dietary requirements in 1 feed"

E. Balance a ration

Example Ration



Ration #1:

- Free choice Lay Mash or Pellets

*This is a complete feed, premixed to exact nutrition requirements

E. Balance a ration

Example Ration

5 Month old Market Lamb



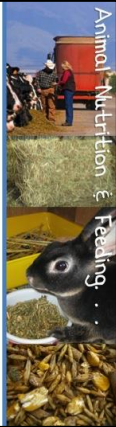
Ration #1:

- Show Lamb Grain Mix
- Hay

F. Balance a ration

Protein content is an important factor
in most rations

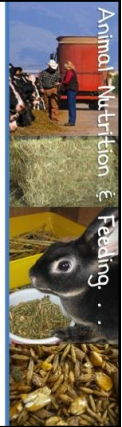
How is protein content calculated when mixing feeds?



Bell Quiz

Objective A & B

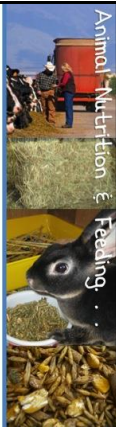
1. What are 3 reasons it's important to have a good understanding of animal nutrition & feeding?
2. Which essential nutrient builds and repairs muscle?
3. Name the 6 essential nutrients
4. List 4 factors that effect an animals nutrition requirement.
5. Which essential nutrients are needed in the smallest amounts?



Bell Quiz

Objective C & D

1. What is the difference between a roughage and a concentrate?
2. Give 2 examples of a roughage.
3. When comparing animal feeds, what 3 things should you consider when choosing a feed?
4. Which body system has a huge effect on what types of feed an animal can digest?
5. Give an example of an animal supplement.



Bell Quiz

Objective E & F

1. What is a guaranteed analysis?
2. List 3 things that can be found on a feed label.
3. What is a ration?
4. Sam wants to make 1 ton of a 16% protein ration using alfalfa hay (18.7%) and oats (13.3%). How much of each will she have to mix together?
5. If you should feed $1\frac{1}{2}$ lbs of hay per 100 lbs of your horse's body weight, how much should you feed a 1200 lb horse?

