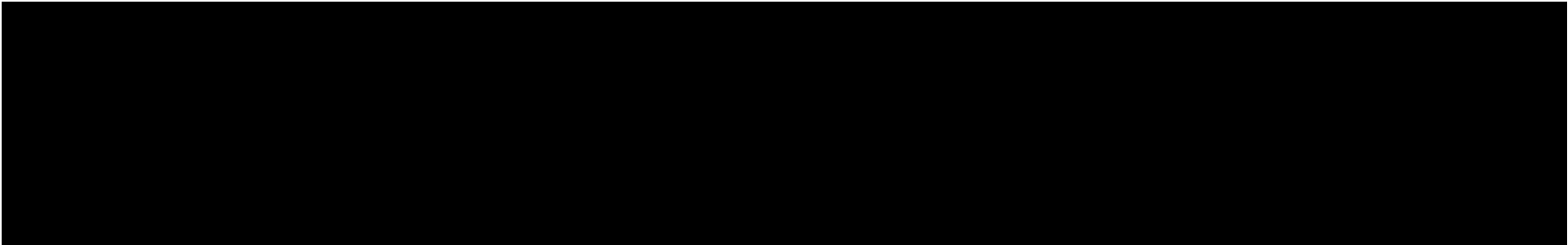
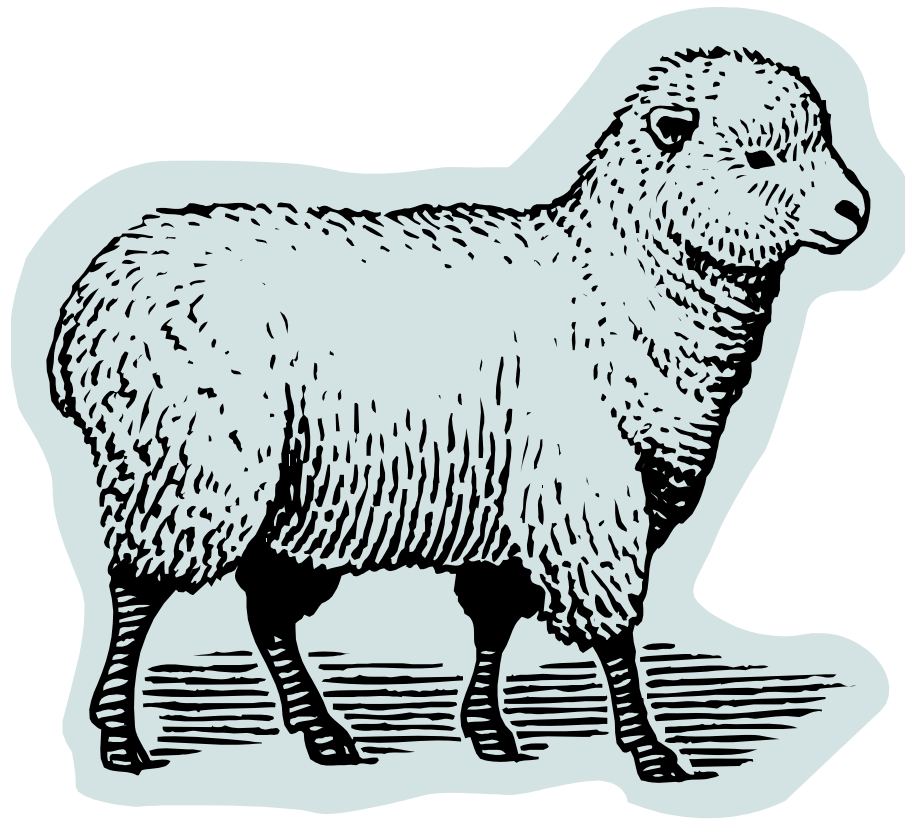


4-H Premier Exhibitor

Intro. to Feeding & Nutrition for Livestock

- 
- What is the single biggest expense to livestock producers?

FEED



Important Terms

- **Nutrients** – something that nourishes an animal
- **Concentrate** – Feed which is high in energy or protein and low in fiber & are easily digested – Grains such as corn, oats, soybean meal, etc.
- **Roughage** – Feed high in fiber, low in TDN, low in energy (hay, pasture, straw, silage)
- **Forage** – Vegetable material either fresh (pasture), dried (hay), or ensiled (silage) fed to livestock

Important Terms

- **Total Digestible Nutrients** – TDN – An estimate of a feed's energy value, usually expressed as a percentage
- **Ration** – The total combination of foods that an animal is consuming and the proportions being fed.

6 Classes of Nutrients

- Water
- Protein
- Carbohydrates (Energy)
- Vitamins
- Minerals
- Fats (Lipids)

WATER

- Cheapest, most important
- Provides fluids for all bodily functions such as metabolism, temperature control, etc.
- Provide clean, fresh water, unlimited
- An average of 70% of an animals body is composed of water
- HOW MUCH DOES ONE GALLON OF WATER WEIGH?

- 
- **1 Gallon of Water
Weighs 8 Pounds**

PROTEIN

- Build body tissues such as muscle, blood, hoofs etc.
- Amino Acids are building blocks of protein
- Different A.A. requirements for each specie
 - Soybean meal
 - Corn gluten meal
 - Cottonseed meal, hulls, or whole
 - Animal tissues (smell bad) such as
 - Fish meal
 - Bone meal
 - Blood meal
 - Feather meal

CARBOHYDRATES

- Provide energy or ability to do work
- Basic unit is glucose or sugar
- Found in plant materials, grains, concentrates
 - Corn - - - - - Dried Distillers Grain
 - Milo or Grain Sorghum
 - Barley
 - Rye
 - Oats
 - Wheat

VITAMINS

- Help with enzymatic functions, etc.
- Needed in small amounts
- 2 Classes
 - Water Soluble Vitamins
 - B-vitamins, Niacin, Thiamine, B6, B12, etc.
 - Vitamin C
 - Fat Soluble Vitamins
 - ADEK
- Vitamin pre-mix – (smells and looks like ground up vitamins for humans)

MINERALS

- Help build bone, teeth, help with certain functions such as lactation, etc.
- Macro-minerals – Large amounts needed
 - Calcium, Phosphorous, Potassium, Sodium, Chlorine
- Micro-minerals – Small amounts needed
 - Iron, Zinc, Copper, Cobalt, Selenium
- Look like rocks, crystals, or flour or powder
- Limestone, salt, Di- or Mono- Calcium Phosphate, Oyster shell flour

FATS/LIPIDS

- Provide energy
- All animals needs some fat in diet
- Help absorb fat-soluble vitamins
 - Animal tallow
 - Vegetable oil
 - Corn oil

Types of Rations

- Starting
 - Highest in protein
 - Fed for a few weeks only
- Growing
 - High in protein (usually soybean meal)
 - Less energy
- Finishing
 - More energy (usually corn)
 - Less protein
 - End of project, to put on fat
- Holding
 - Lower in energy
 - Higher in fiber
 - To help keep weight down

Lamb Rations

- Starter: 20-22% Protein
- Grower: 18-20% Protein
- Finisher: 16-19% Protein

Types of Rations

- Maintenance
 - Depends on frame size of animal
 - Often roughage or grazing pasture is enough
 - Sometime supplemental grain given
- Early Gestation (Pregnancy)/Breeding
 - High energy requirement
- Late Gestation (Pregnancy)/Lactation (Milk)
 - Highest energy requirement
 - More Calcium needed

HAY

- Legume hay
 - Alfalfa or other clover
 - Peas, soybean
 - Vetch
- Grass hay
 - Oats, wheat
 - Ryegrass
 - Bahia, Dallisgrass
 - Bermuda

Judging Hay

- Color – bright green, not yellow or brown
- Leafiness – visible leaf surface, few stems
- Odor – fresh like cut lawn, not musty
- Maturity (how old) – stage of development of plant material, younger better than older
- Foreign Material – No rocks, weeds, manure
- Texture – Fine stems, pliable, soft to touch
- Dust – could cause respiratory problems, sprinkle with water just before eating if dusty

Factors Affecting Hay Quality

- Kind of hay
- Fertilizers
- Age or Stage of Maturity
- How well it dried after being cut
- Storage & handling

Storing Hay

- In shed, or on dry level-drained site
- Crushed rock or limestone base works well
- Bales soak up moisture from the ground, more spoilage on bottom sides of bales

Feeding Hay

- If feeding balanced ration, could throw off balance of nutrients
- More hay needed for animals in late gestation and lactation

Ruminants

- Sheep
- 4 Compartment Stomach
 - Rumen
 - Reticulum
 - Omasum
 - Abomasum
- Microbes in rumen help digest feedstuffs
- Learn to identify the digestive system parts

Feed to Gain Ratio

- Sheep: 15-20:1