

Economical Feeding Programs for the Doe



Steve Hart

E (Kika) de la Garza Institute for
Goat Research

Langston University, OK

Goat's View

- What would your goat like to eat if turned loose?
- Browse-roses, fruit trees, hedge
- Weeds of various sorts
- Grass-a variety of types
- Goats will eat 10-20 different kinds of plants in a day
- They like diversity

Goat's View

- Goat like diversity in their diet, and generally are healthiest and most productive with diversity in their diet.
- But goats can do well without diversity and for most situations, they do not have diversity.
- Makes nutrition more complex

Objectives



- Describe the nutrients required for health and production
- Discuss how we may provide for these nutrients
- Evaluation animal productivity and body condition to fine-tune your feeding program
- Mention use Langston Interactive Nutrient Calculator to determine how much to supplement

What Does a Goat Need Nutrition For?

- Maintenance
- Walking
- Reproduction
- Lactating
- Growth
- Fattening



What Are Our Production Goals?

- Do we just want to maintain a dry goat?
- Do we want the goat to gestate with twins or triplets?
- Do we want a doeling to gestate and grow?
- How much milk do we want the doe to produce?
- How fast do we want the goat to grow?

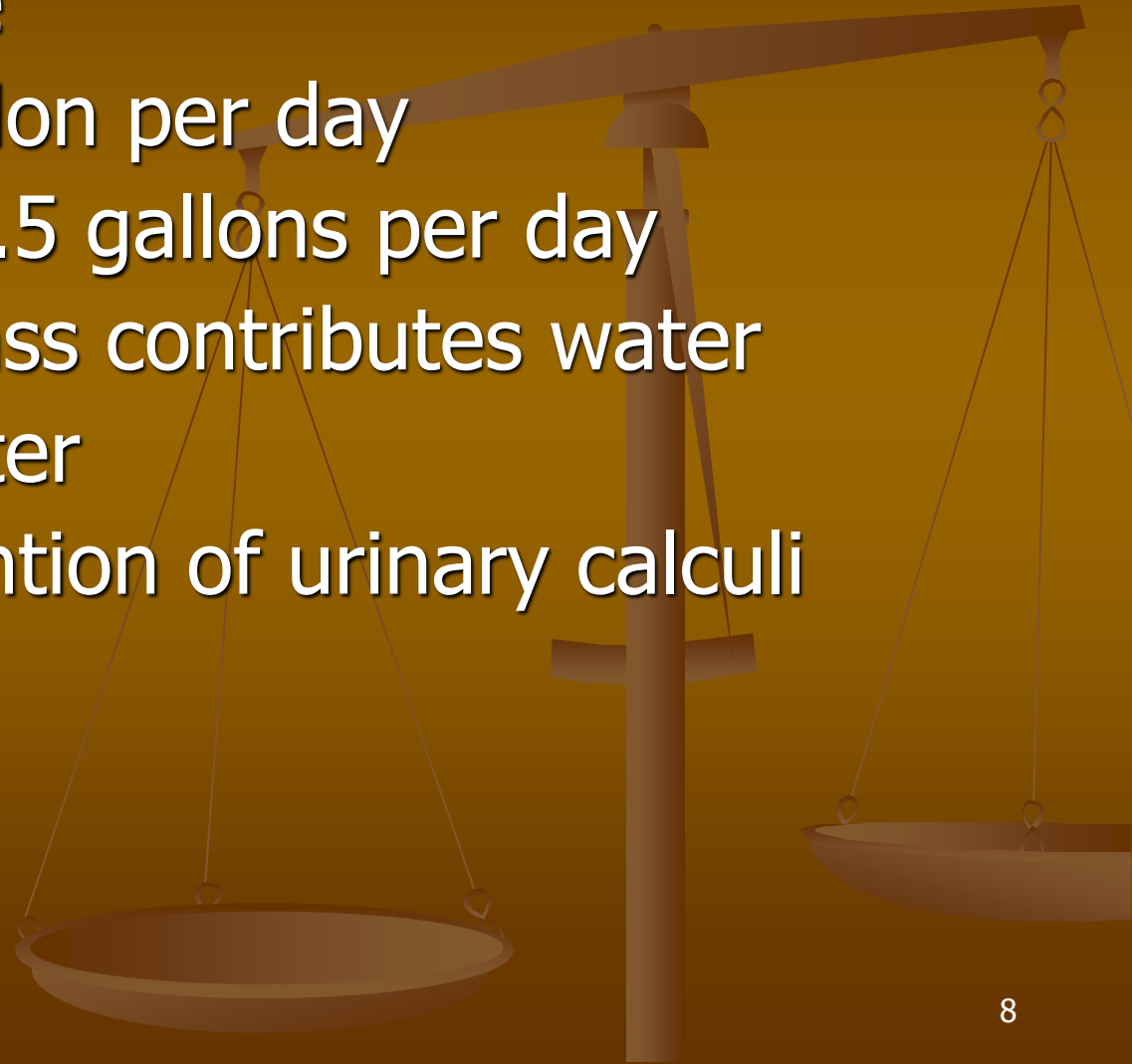
Nutrients for Goat Production

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



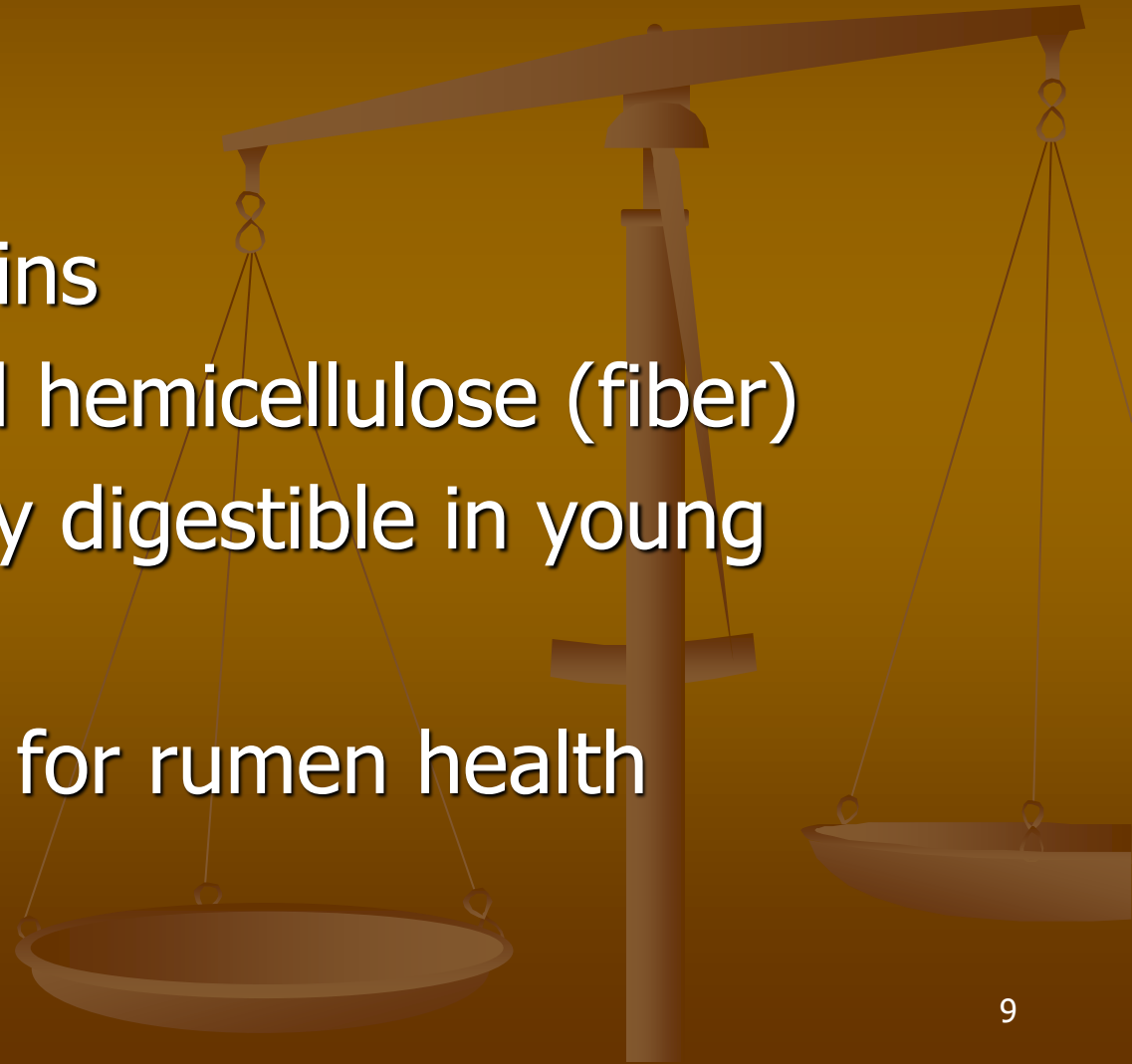
Water

- Essential for life
- Dry doe 1.0 gallon per day
- Lactating doe 2.5 gallons per day
- Fresh green grass contributes water
- Clean liquid water
- Factor in prevention of urinary calculi



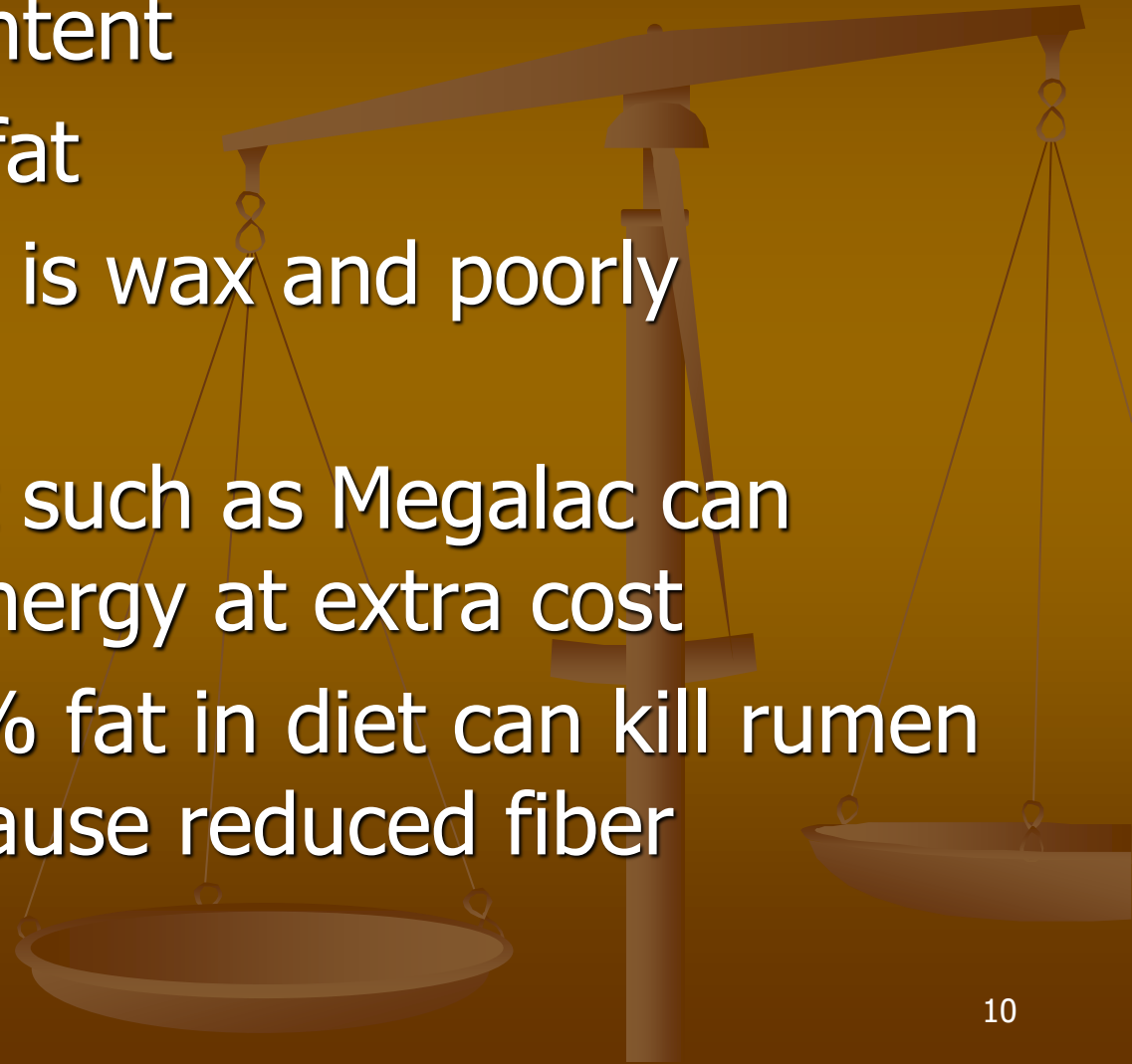
Carbohydrates

- Sugars
- Complex
 - Starch in grains
 - Cellulose and hemicellulose (fiber)
 - Fiber is highly digestible in young plants
- Fiber necessary for rumen health



Fats

- High energy content
- Forages low in fat
- Much fat in diet is wax and poorly digested
- Rumen inert fat such as Megalac can provide extra energy at extra cost
- Greater than 6% fat in diet can kill rumen microbes and cause reduced fiber digestion



Protein

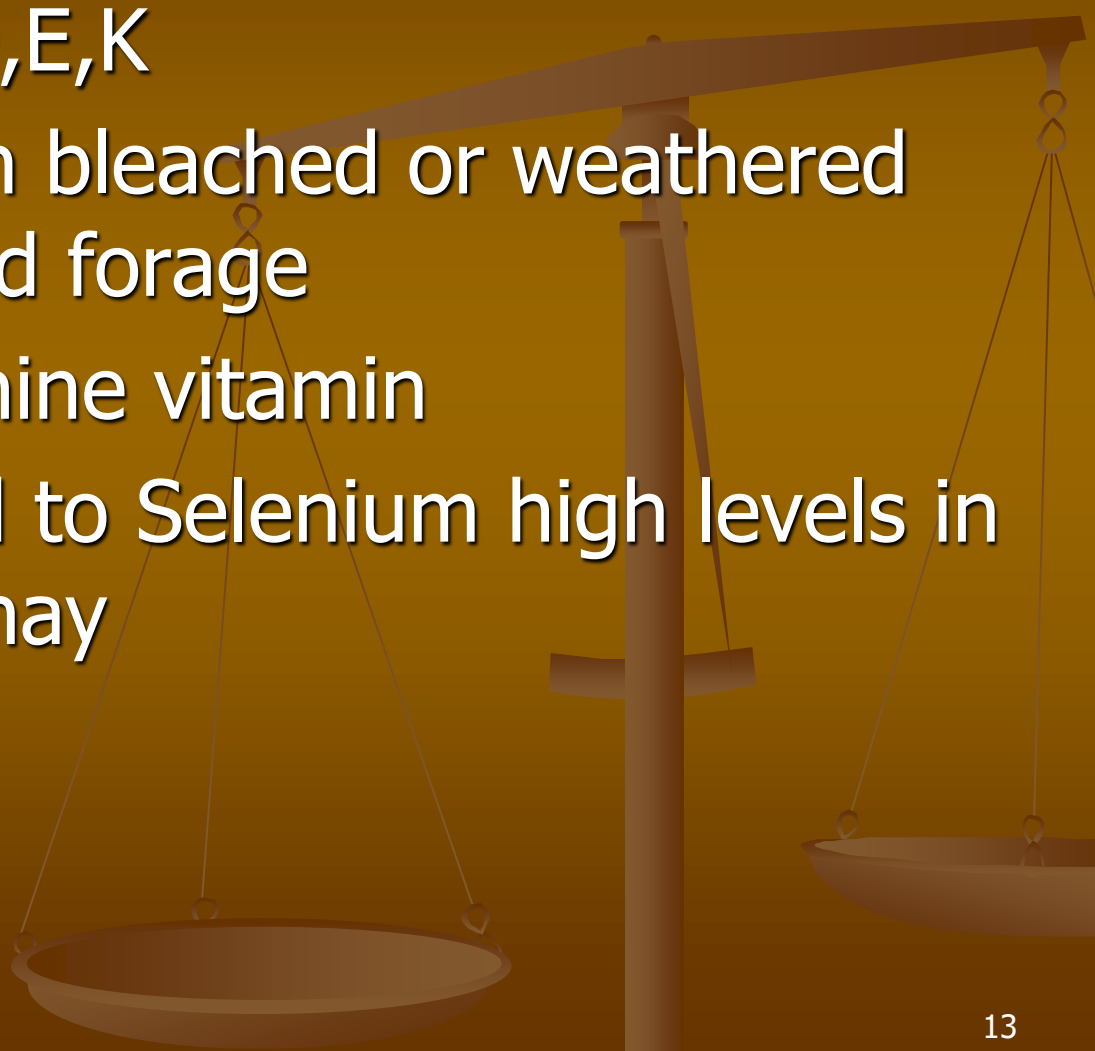
- Composed of amino acids
- Goat is efficient at using dietary protein
- Goats are more subject to urea toxicity from non-protein nitrogen
- Low quality forages <7.0% CP require protein supplementation
- Gestation more than doubles protein req
- Lactation increases protein req by 40%.

B Vitamins

- Water soluble
- Synthesized by rumen microbes
- Deficiency of thiamine polioencephalomalacia
- High concentrate diets especially with sulfur
- Molasses and corn byproducts
- Coccidiostat Corid
- When animal is off-feed or has rumen problems B vitamins may be deficient

Vitamins

- Fat soluble A,D,E,K
- Vit A deficient in bleached or weathered hay or stockpiled forage
- Vitamin D sunshine vitamin
- Vitamin E linked to Selenium high levels in green grass or hay



General Recommended Vitamin Levels

- Vitamin A 5,000 IU/lb
- Vitamin D 2,000 IU/lb
- Vitamin E 90 IU/lb



Macro minerals

- Calcium
- Phosphorus
- Sodium
- Potassium
- Chloride
- Sulfur
- Magnesium



Macro minerals

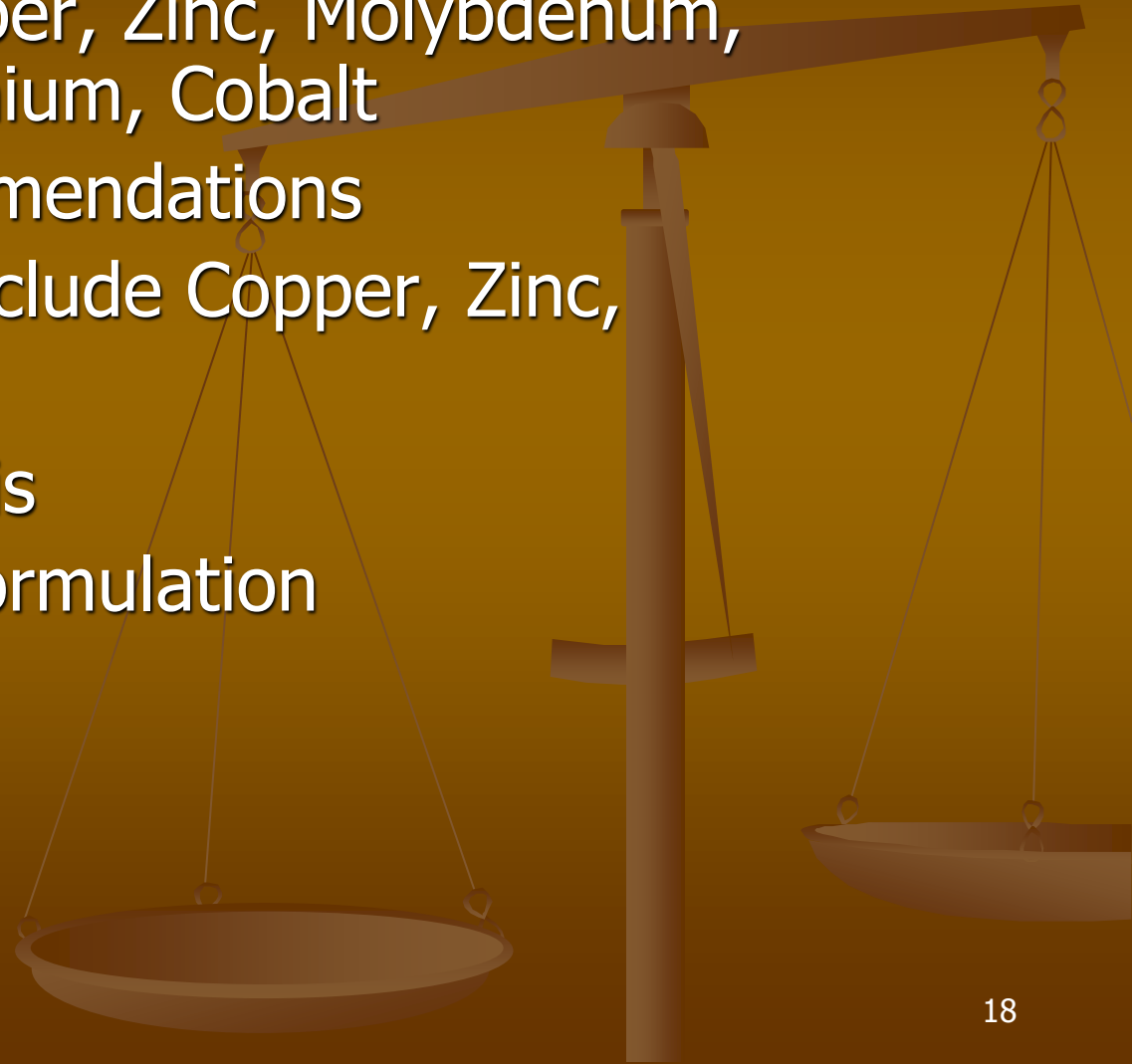
- Calcium major source forage/browse/hay minerals
- Phosphorus-most deficient mineral in diet and most expensive mineral. May be in excess in byproduct feeds.
- Sulfur-may be in excess in byproduct feeds
- Magnesium factor in grass tetany

Urinary Calculi

- High levels of grain for long periods
- Some animals genetically predisposed
- .5% Ammonium Chloride proven effective
- Minimum level of P
- Ca:P > 2.
- Carrots are good pet treats

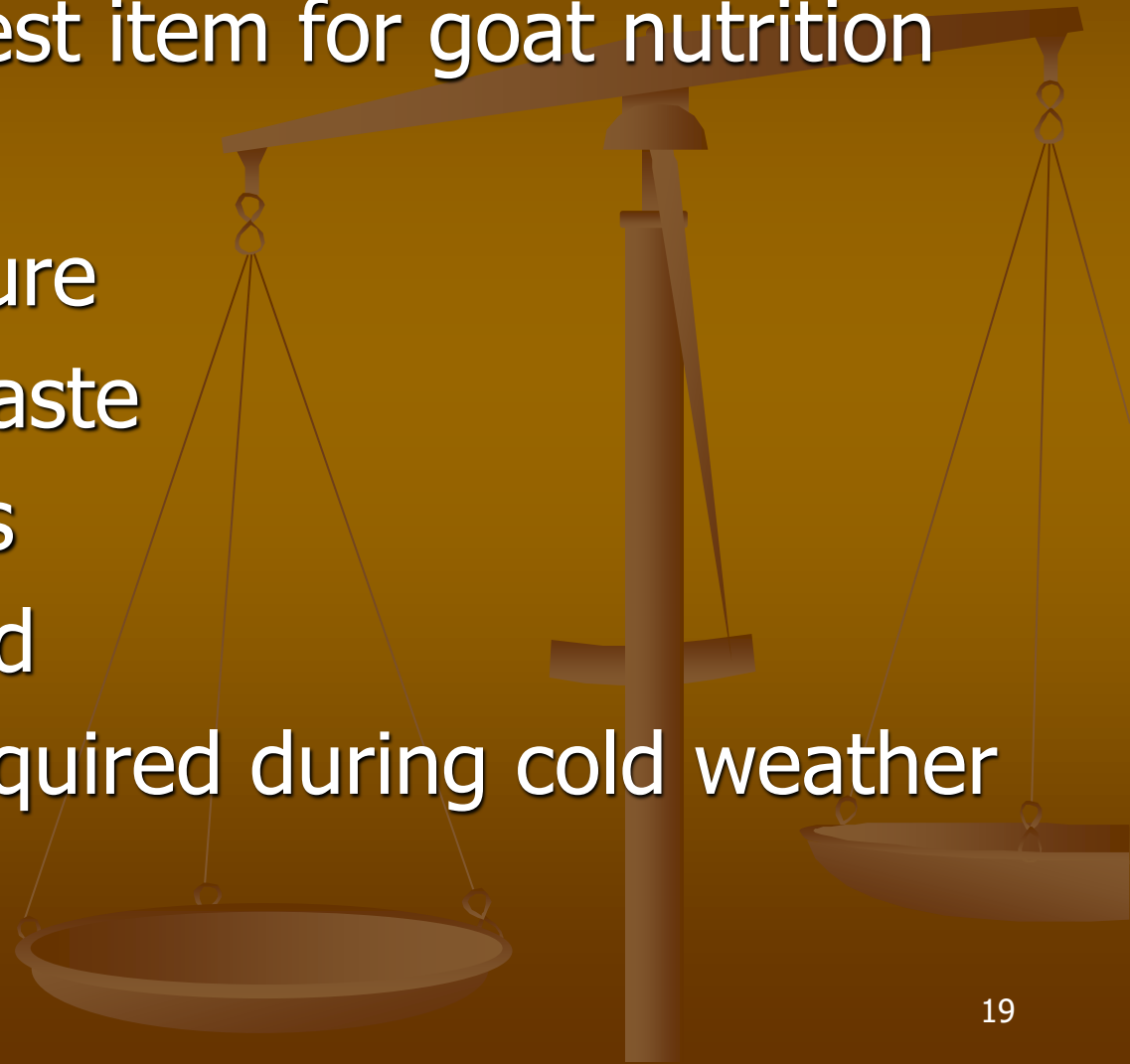
Trace minerals

- Iron, Iodine, Copper, Zinc, Molybdenum, Manganese, Selenium, Cobalt
- Beef cattle recommendations
- NE Deficiencies include Copper, Zinc,
- Plant analysis
- Blood/liver analysis
- Custom mineral formulation




Providing Energy

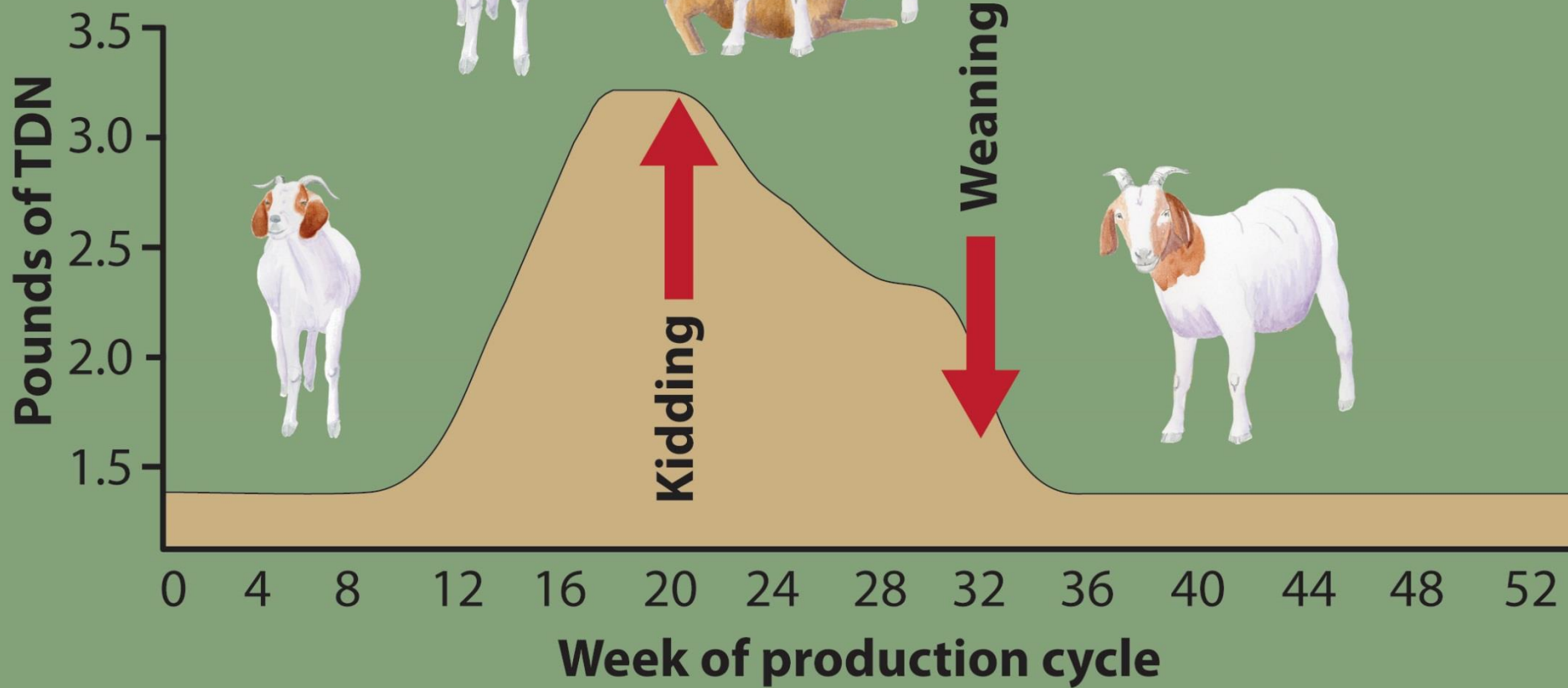
- Energy is costliest item for goat nutrition
- Pasture
- Stockpiled pasture
- Hay- prevent waste
- Byproduct feeds
- Commercial feed
- Extra energy required during cold weather



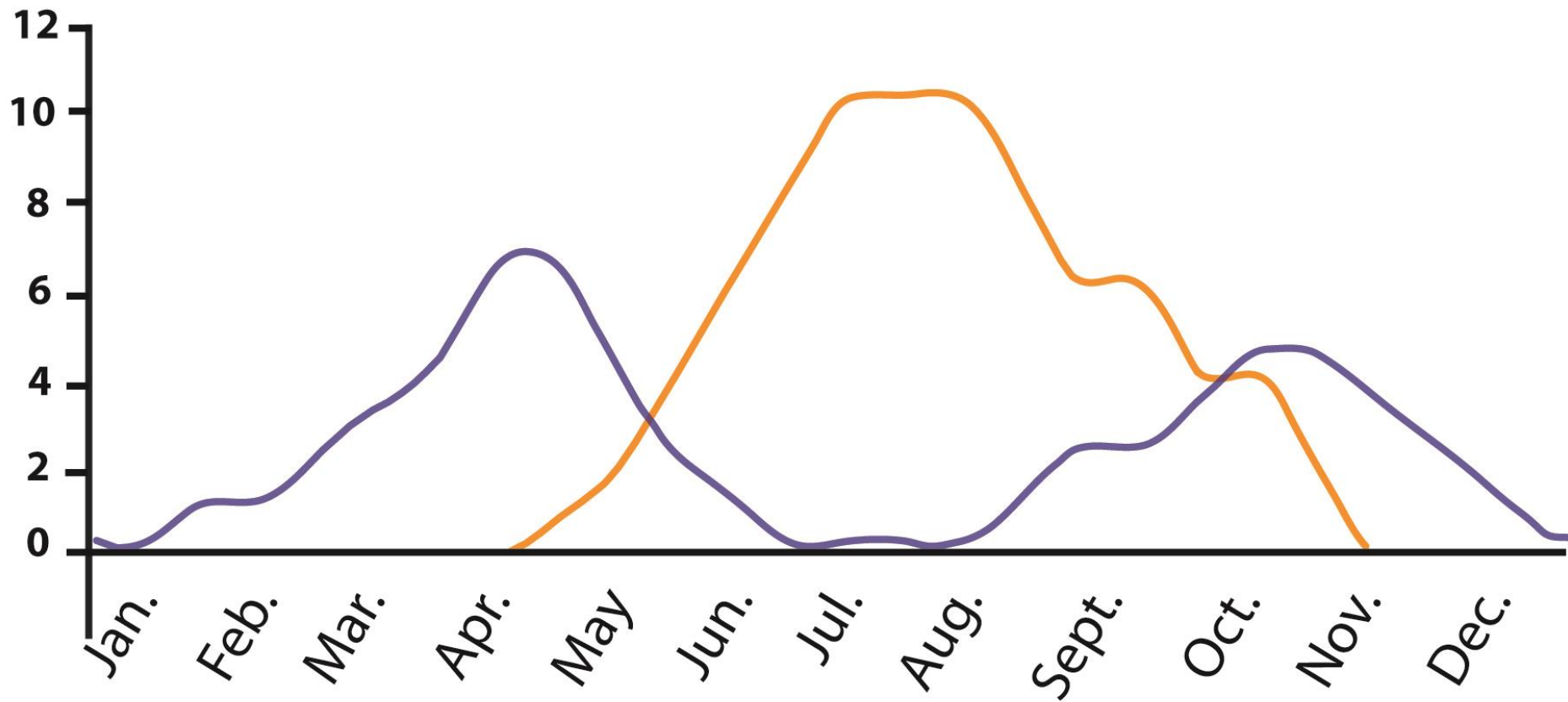
Additional Maintenance Energy Required for Cold Weather



■ Temperature	Lb Grain for 150 lb goat
■ 40°F	0
■ 30	.25
■ 20	.50
■ 0	1.0
■ -20	1.5
■ -40	2.0



Relative production



Month of production cycle

Cool and warm season forage production

 Cool season forage

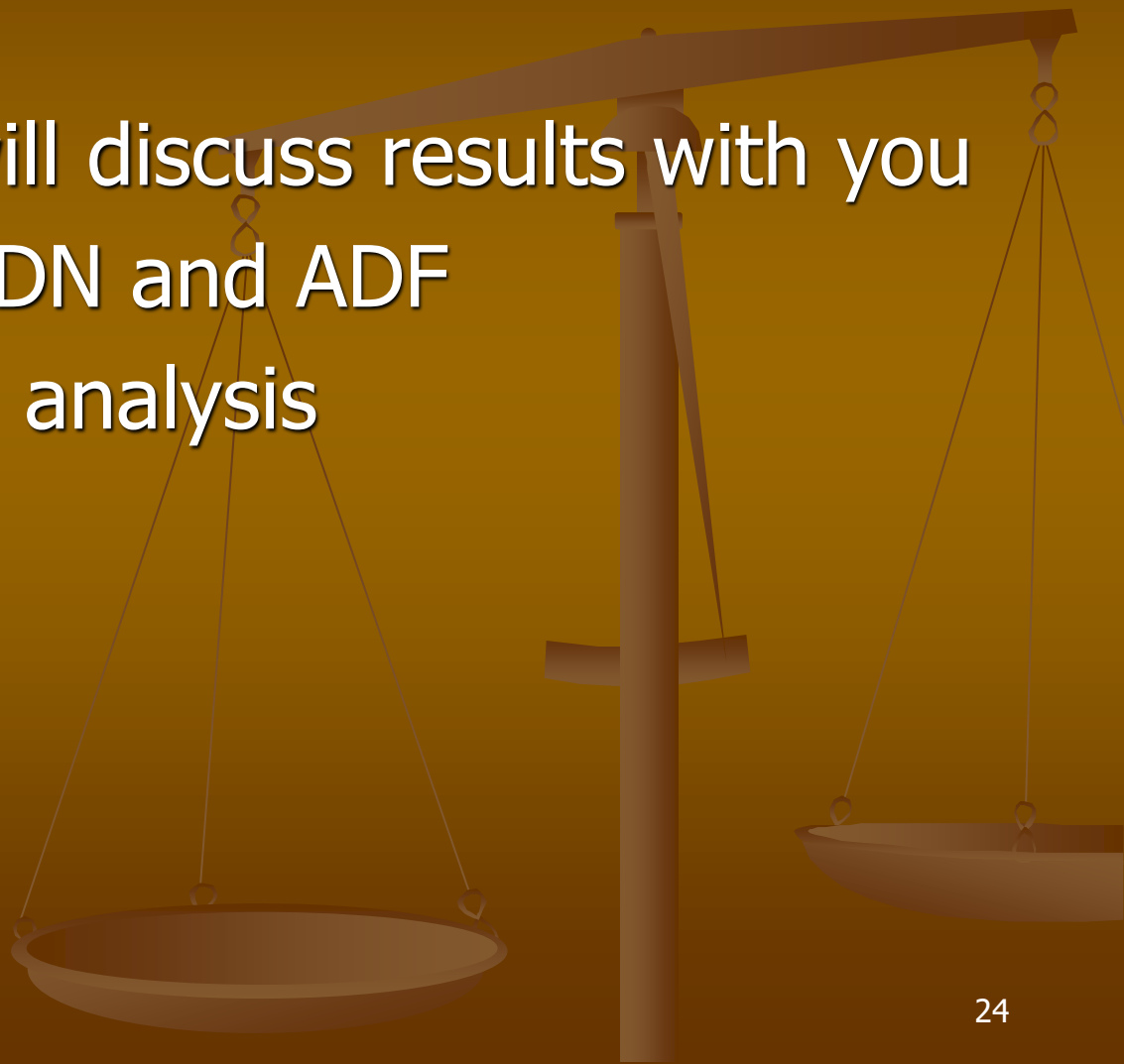
 Warm season forage

Providing Protein

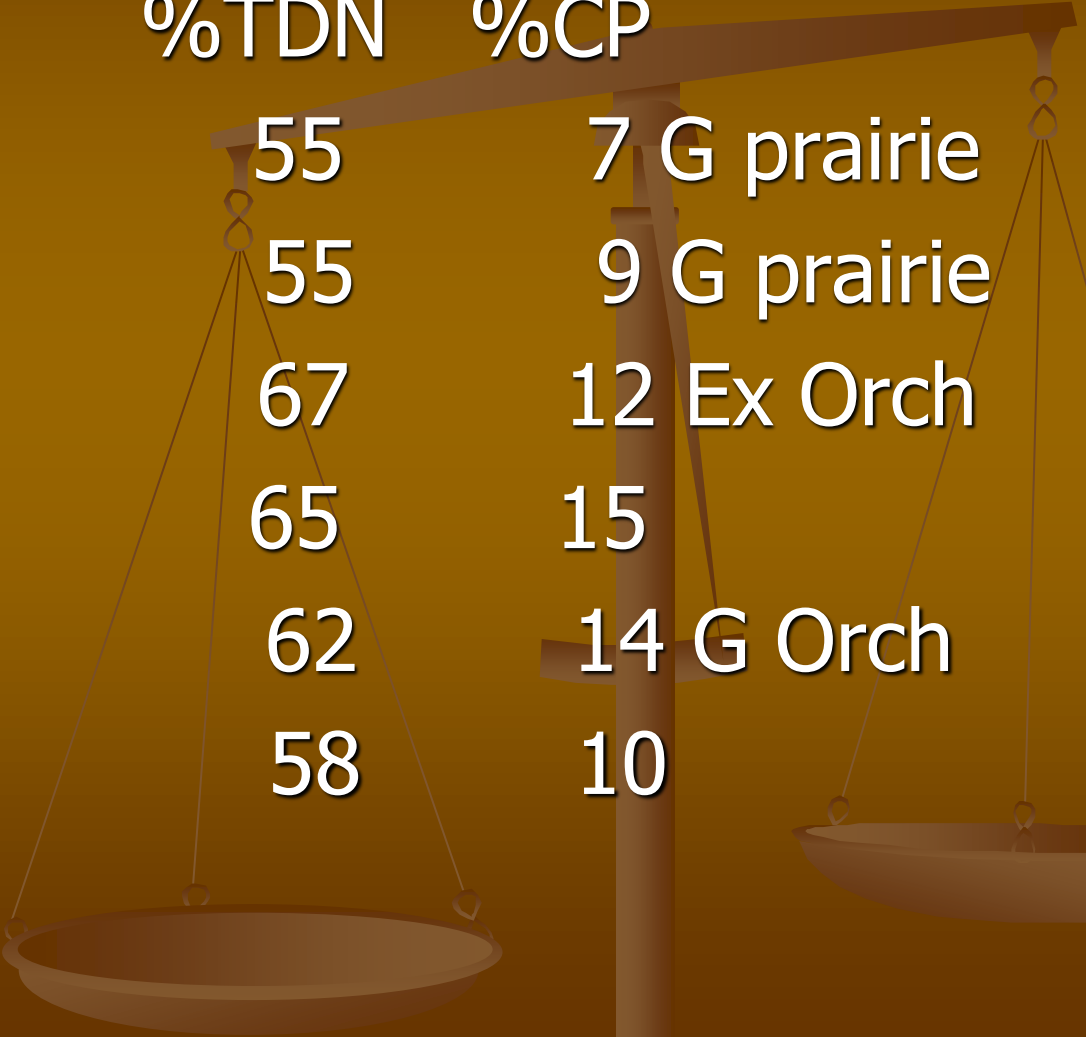
- Protein on growing pasture often adequate
- Poor, mature pasture, protein is deficient
- Milk production requires significant protein
- Hay-need hay analysis of each batch
- Protein supplement
- Formulated feed and byproduct feeds
- Feed protein tubs

Hay/forage Analysis

- County Agent
- County Agent will discuss results with you
- Need protein, TDN and ADF
- Can get mineral analysis



Energy & Protein Dairy Requirements



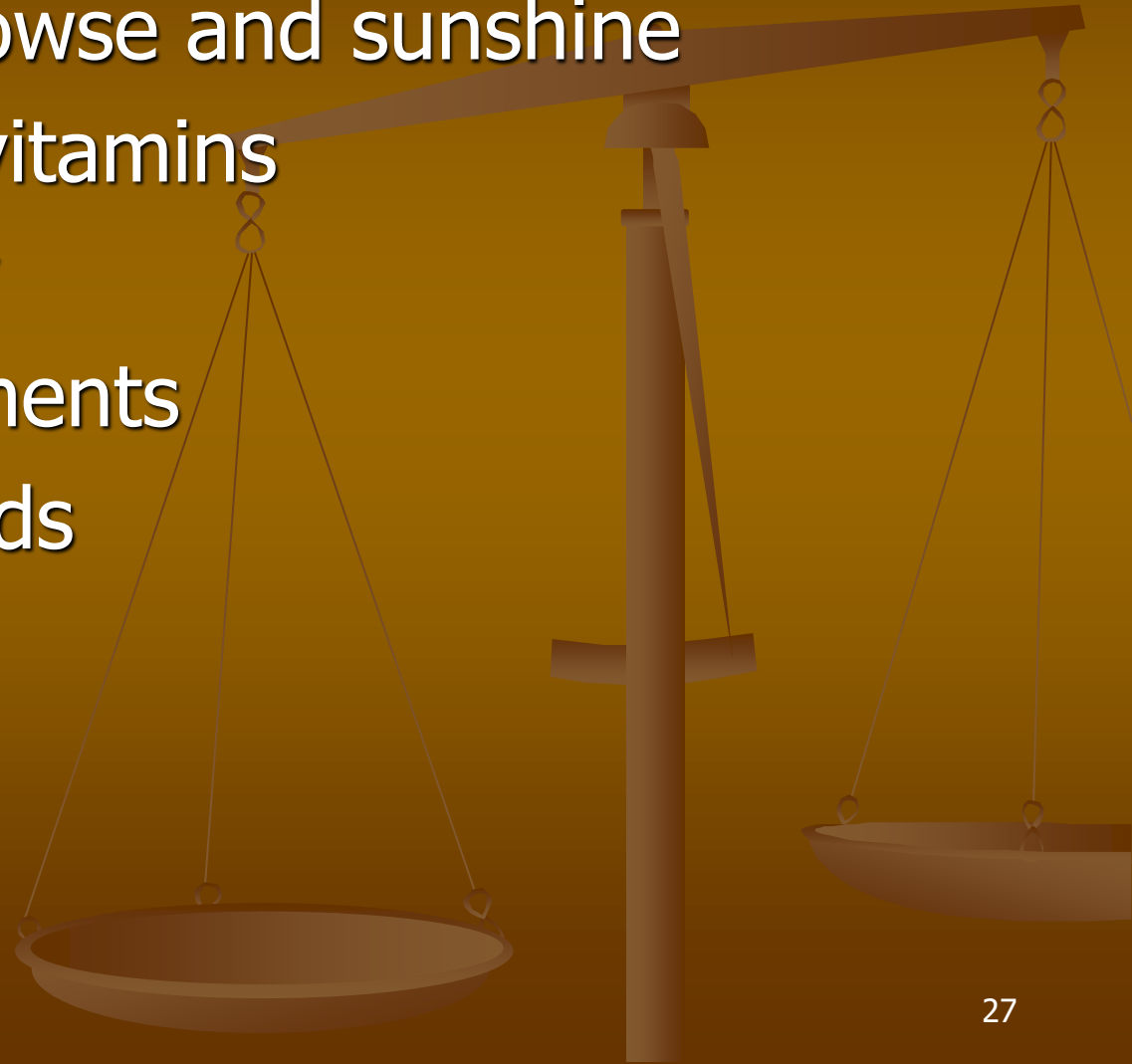
■ Class	DMI	%TDN	%CP
■ Maint	2.2	55	7 G prairie
■ E Gest	3.0	55	9 G prairie
■ L Gest	3.2	67	12 Ex Orch
■ E Lact	4.4	65	15
■ M Lact	3.6	62	14 G Orch
■ L Lact	2.9	58	10

Forage Quality Analyses

-
- **Basic Plus Energy** Protein and Moisture, ADF - Acid Detergent Fiber and TDN, Net Energy for: Gain, Lactation, Maintenance **\$17.00**
- **Basic Plus EnergyPlus RFV** Protein, Moisture, ADF, TDN and Energy, NDF - Neutral Detergent Fiber RFV - Relative Feed Value (Alfalfa only) **\$18.00**
- **Minerals** Ca, P, Na, Mg, K, S, Mn, Cu, Fe, Zn and Moisture **\$20.00**

Providing for Vitamin Requirements

- Green grass/browse and sunshine
- Liver stores of vitamins
- Green leafy hay
- Mineral supplements
- Commercial feeds
- Injections
- Read labels

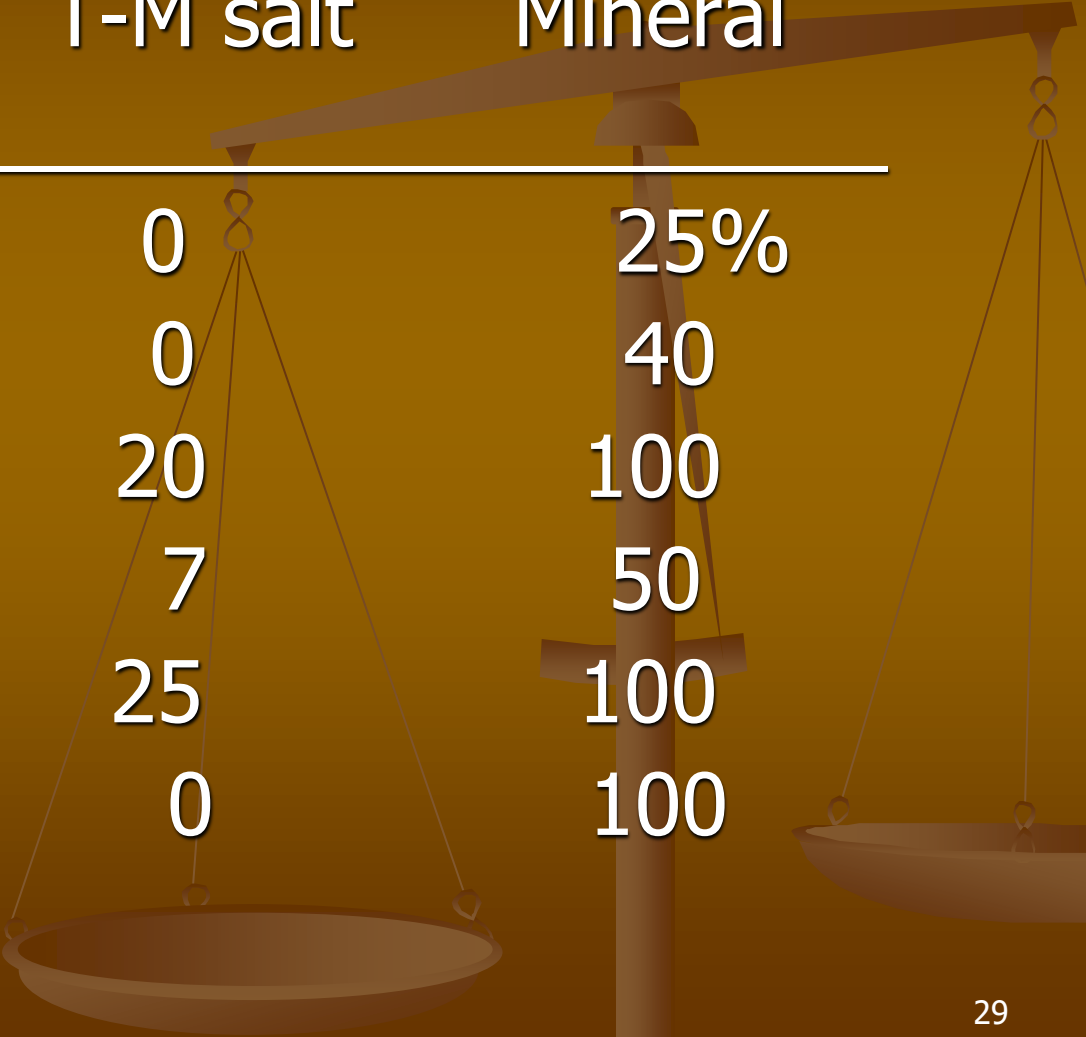


Providing for Mineral Requirements

- Present in browse/forage consumed
- Some body stores, but usually limited
- Green grass
- Hay
- Mineral supplements
- Commercial feeds



Mineral supplements

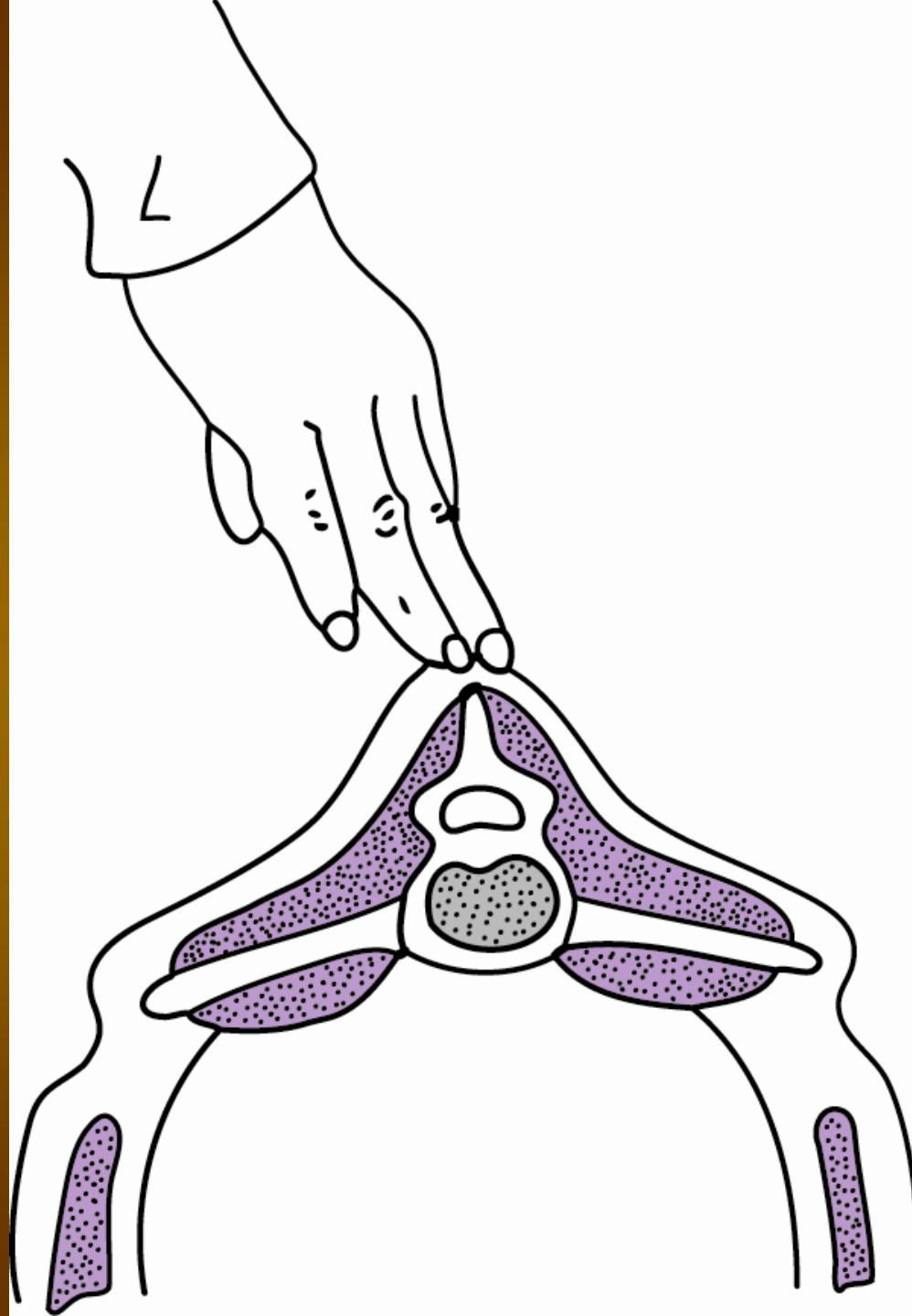


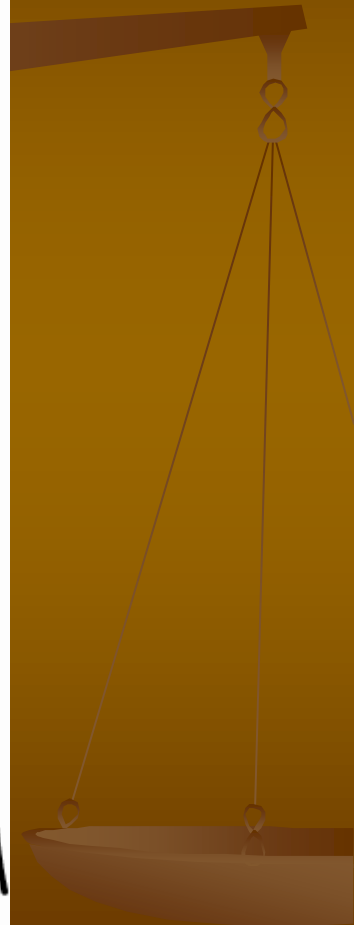
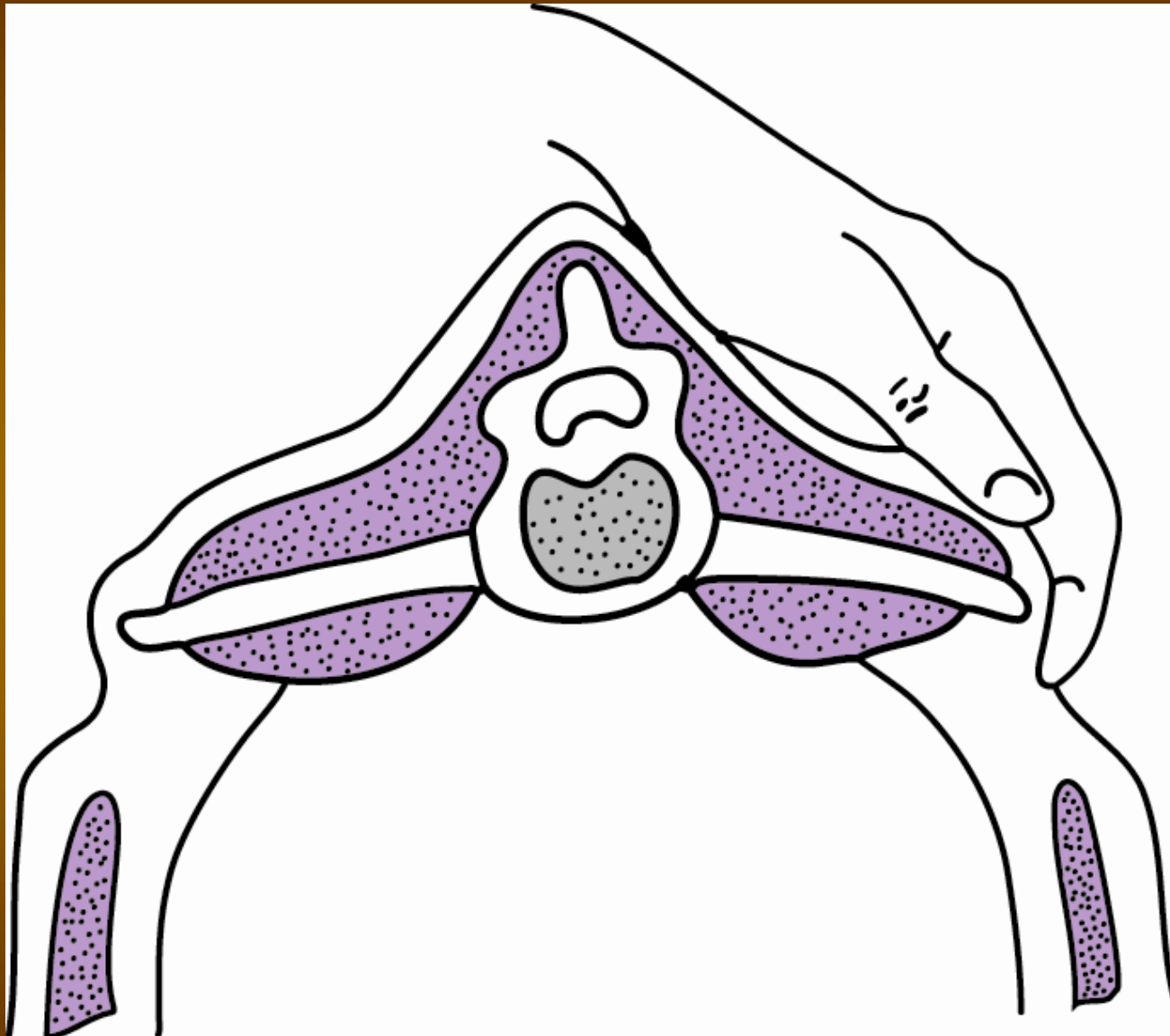
Item	T-M salt	Mineral
Calcium	0	25%
Phosphorus	0	40
Copper	20	100
Zinc	7	50
Selenium	25	100
Vitamins	0	100

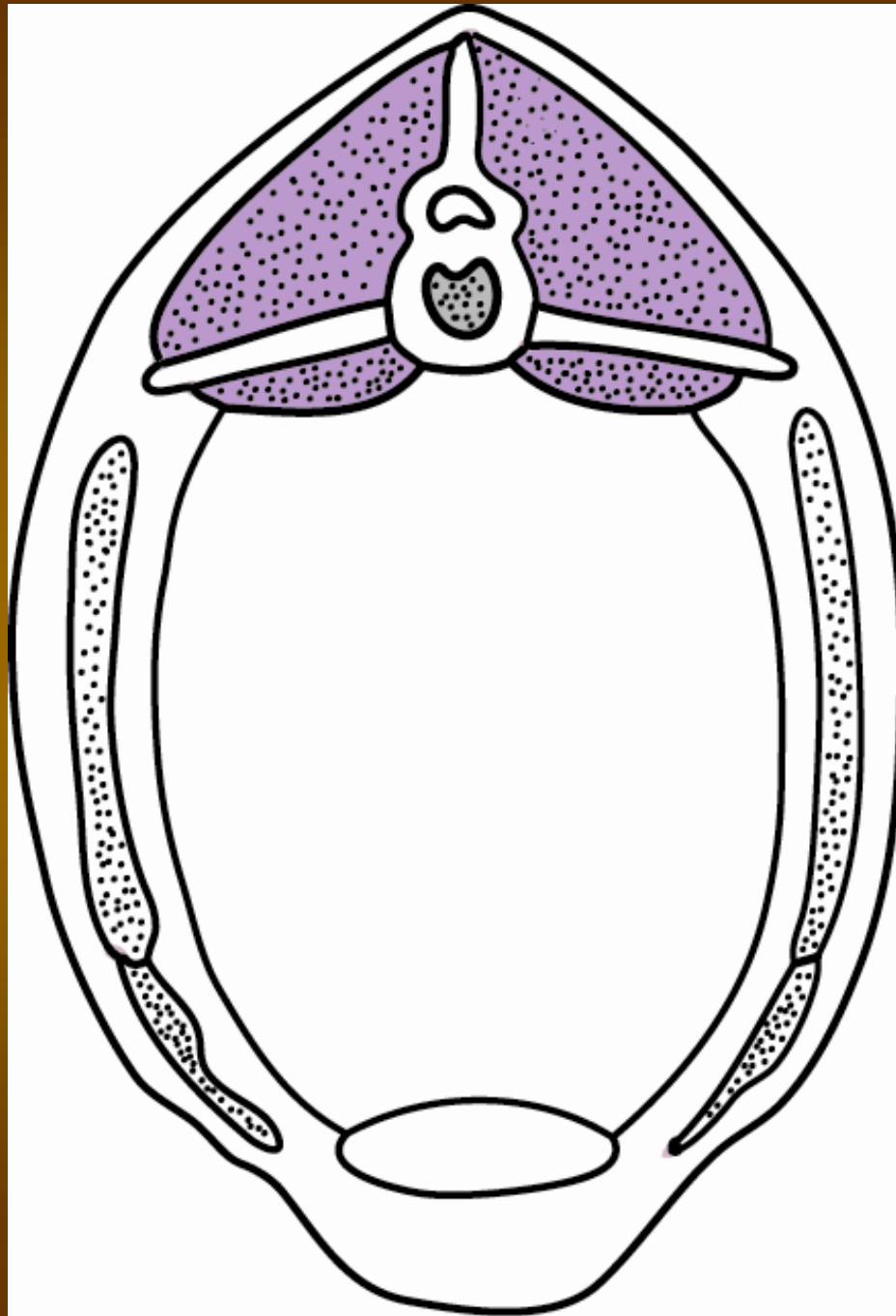
How Are We Doing?

- Animal production
- Body condition scoring
- Animal reproduction
- Animal health









Body Condition Scoring

- <http://www.luresext.edu/?q=content/body-condition-score>



Body condition scoring



BCS 2 - Spinous process is felt as a ridge. A depression is felt between the spinous and transverse processes. Little muscle and fat can be felt. If bone ends are sharp and individual vertebrae felt, the BCS is 1.



BCS 3 - Spinous process does not feel like a ridge, but smooth with small ripples indicating the bones. Area between spinous and transverse processes is filled with muscle and fat cover and felt as a straight or slightly bowed out slope.



BCS 4 - Spinous process feels smooth but not buried in tissue. Individual bones are difficult to feel. Area between the spinous and transverse processes feels full and rounded. If bones are buried in tissue and not felt, the BCS is 5.

Body Condition Scoring

- We want the animal going into the winter having BCS of 3.5
- We want to maintain body condition score throughout the winter
- BCS over 4 makes goats prone to pregnancy toxemia
- When animals are lactating they may lose BCS down to less than a 2
- Late lactation, they should regain BCS

Pregnancy Toxemia

- Cause-Animals too fat or too thin underfed last 6 weeks gestation
- Last 6 weeks of pregnancy, fetuses push against rumen reducing its size and amount of feed the doe can eat.
- Prevent-good, not excessive BCS
- Feed grain last 6 weeks of pregnancy
- Exercise is important

Feeding Level Factors

- Dairy vs meat
- Breed and individual within breed
- Forage quality! *Very important for dairy
- Weather-cold increases need for feed
- Production level esp milk
- Doeling vs mature doe
- Commercial vs registered vs show
- Animal adaption/selection

Transition Period Dairy Feeding

- Feed 1.0 lbs concentrate/day beginning 4 weeks before kidding.
- Gradually increase concentrate to where doe is consuming 2 lbs/day by kidding.
- Increase grain .2 lbs/day every 3-4 days until she is consuming 3 lbs/day.
- Make changes gradually.
- Provide all the high quality hay she will eat.

Feeding Early Lactation

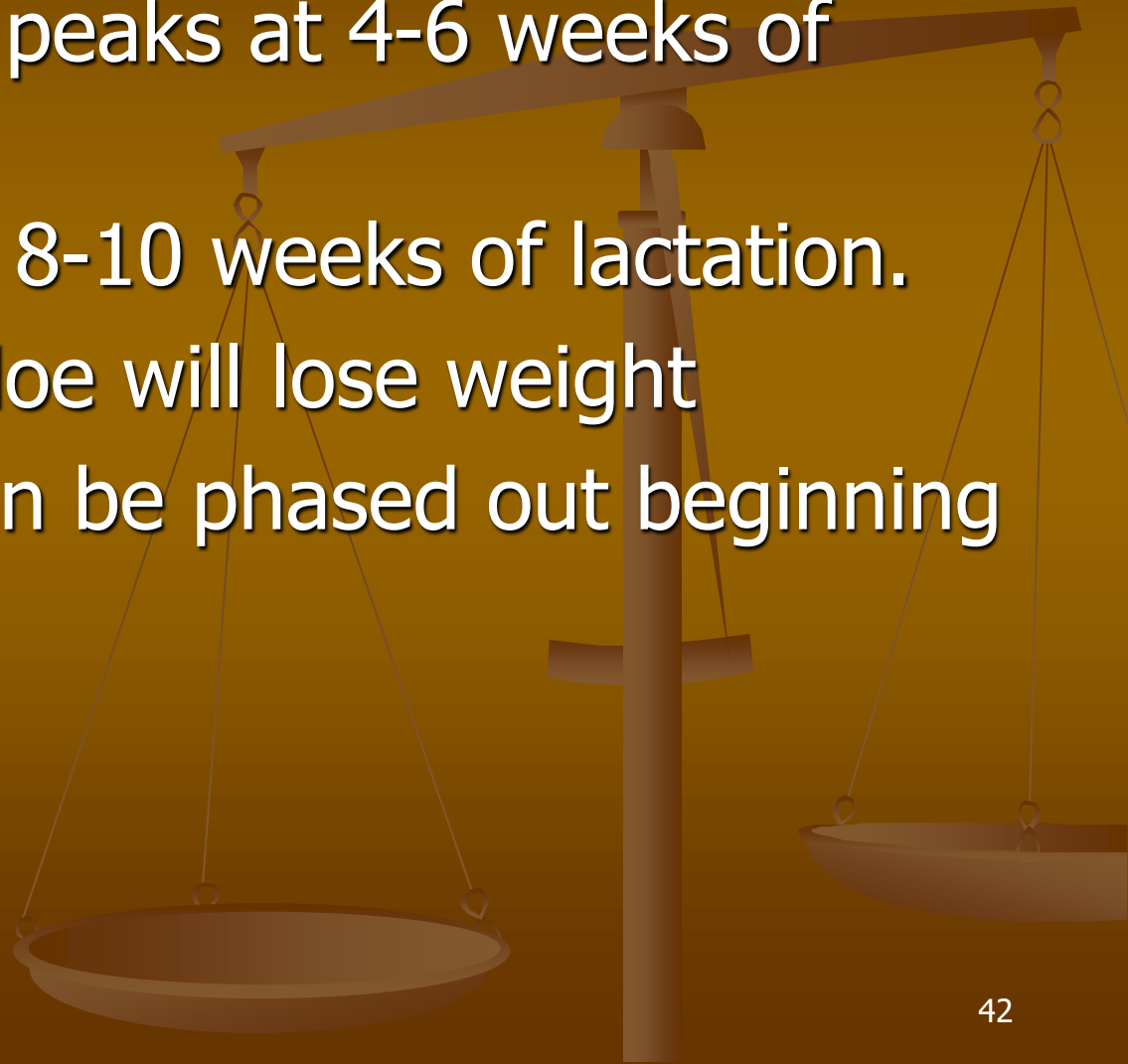
- At 4 weeks, adjust concentrate level to milk production with .5 lb additional concentrate per day (lead feed).
- Feed .3 lbs of grain for every lb of milk over 3 lbs/day with high quality forage (18% CP and 125 RFV).
- May need more grain with mediocre quality forage.

Feeding Early Lactation

- Do not adjust concentrate level by more than .25 lbs in 4 days.
- Do not feed more than 2.0 lbs of grain per feeding to prevent enterotoxemia and acidosis.
- If more concentrate needs to be fed, use a third feeding 4 hours away from any other feeding.

Feeding Peak Lactation

- Milk production peaks at 4-6 weeks of lactation.
- Intake peaks at 8-10 weeks of lactation.
- Heavy milking doe will lose weight
- Lead feeding can be phased out beginning at week 8.



Feeding Late Lactation

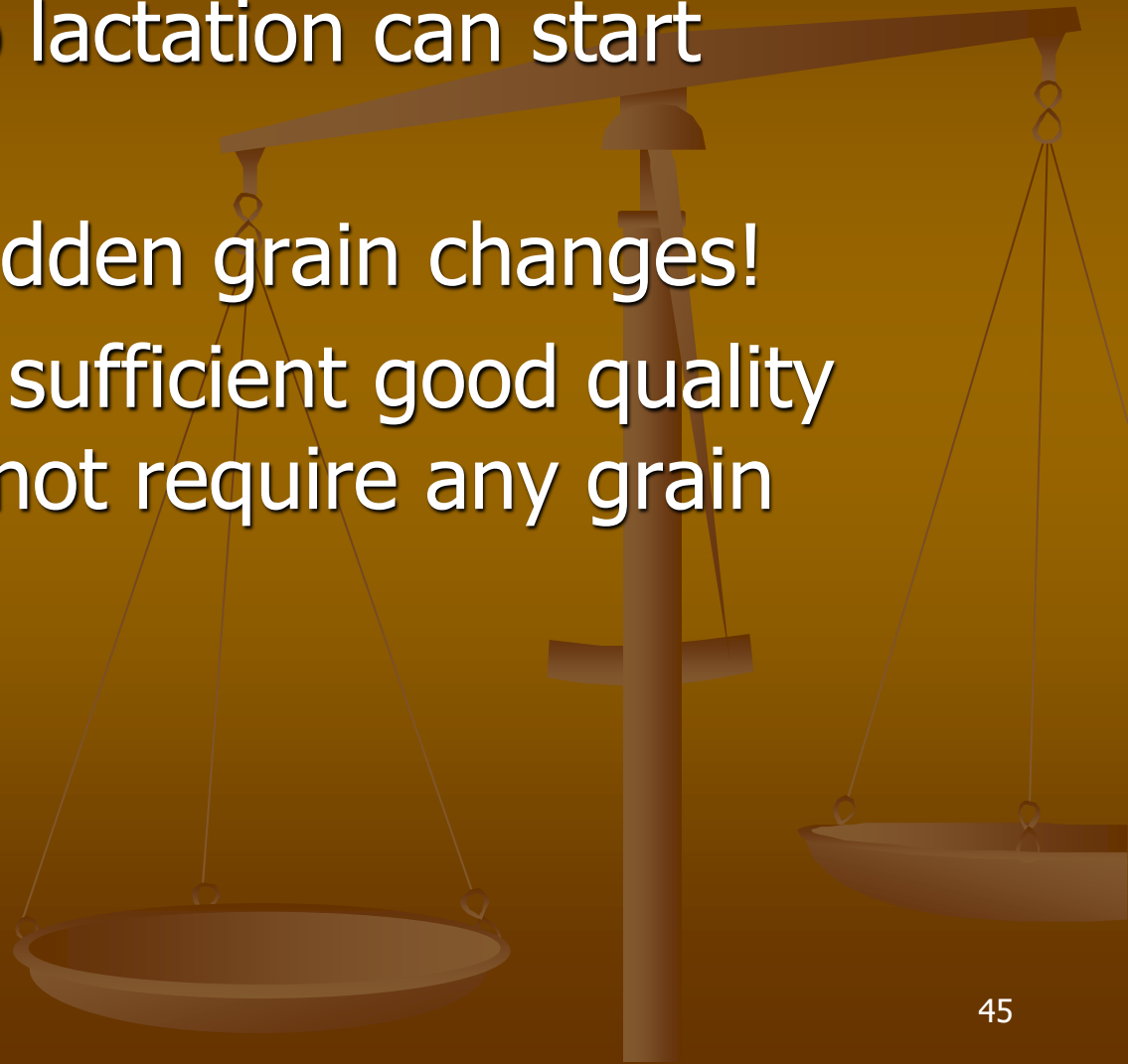
- Reduce concentrate level as milk production decreases.
- Feed sufficient grain in the last 3 months of gestation so that the doe is body condition score of 3 to 3.5. The doe does not have to gain weight during the dry period.

Feeding Meat Goats

- High nutrient requirements last 6 weeks of gestation for growing fetuses
- Fetuses are growing into rumen reducing intake
- Six weeks prior to kidding feed .5-1.0 lb of grain/day. Hay quality is important!
- Increase grain by .5 lb 2 weeks prior to kidding

Feeding Meat Goats

- Four weeks into lactation can start reducing grain
- Do not make sudden grain changes!
- A dry goat with sufficient good quality pasture should not require any grain

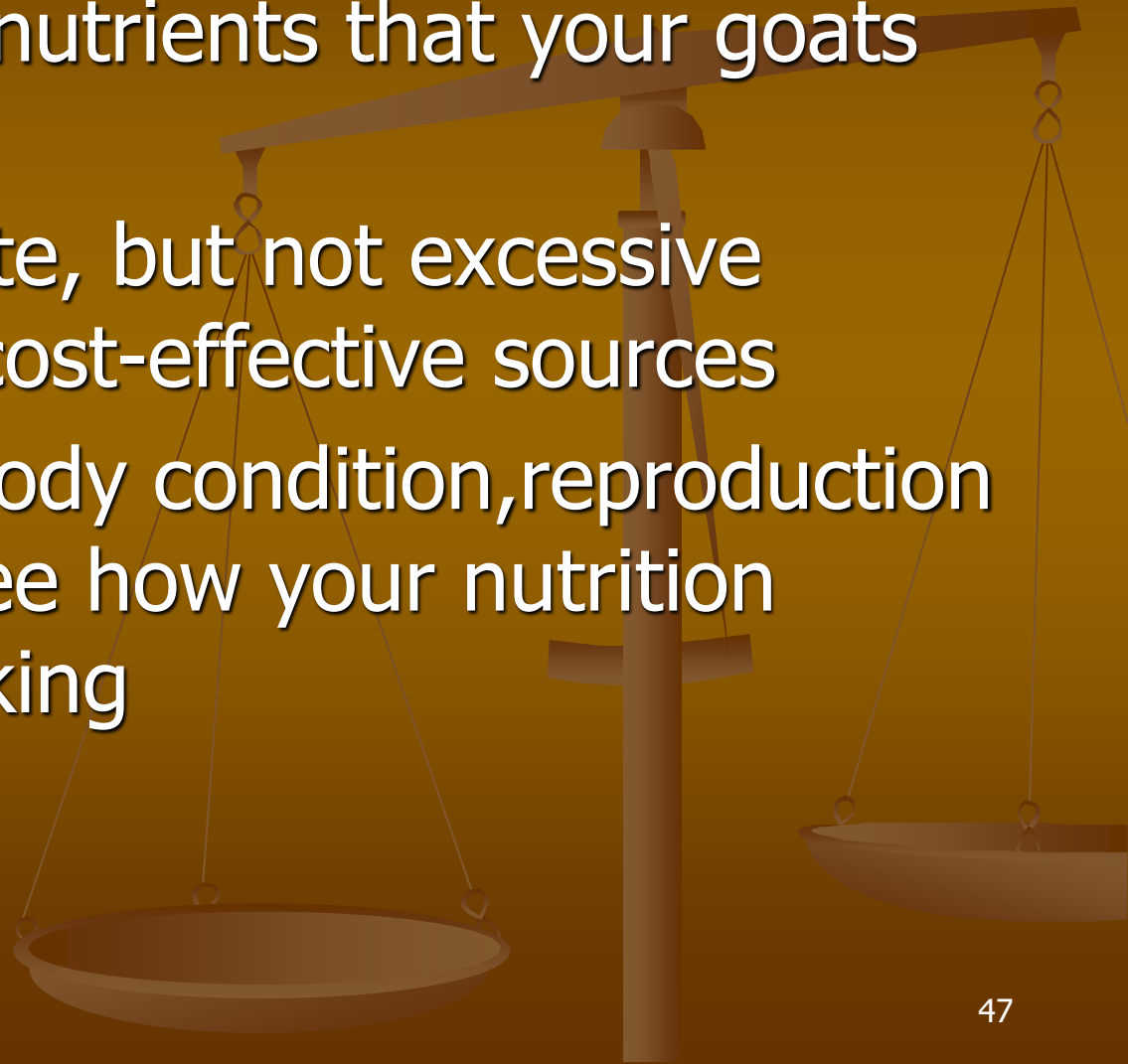


Resources

- Body Condition Scoring
http://www.luresext.edu/?q=Body_Condition_Scoring
- Ration Calculator
<http://www.luresext.edu/?q=content/nutrient-requirement-calculator-and-ration-balancer>
- Goat Handbooks
<https://meatgoats.ces.ncsu.edu/wp-content/uploads/2016/08/Dairy-Goat-Production-Handbook-Order-Form.pdf? fwd=no>

Conclusion

- Remember the nutrients that your goats needs
- Provide adequate, but not excessive nutrients from cost-effective sources
- Follow animal body condition, reproduction and health to see how your nutrition program is working



Coccidiosis



- Major parasite of lambs and kids
- Prevention by preventing-fecal oral transfer
- Locate waterers and feeders outside pens or high
- Major problem in just-weaned animals
- Low stress weaning program
- Rumensin for goat prophylaxis and Bovatec for sheep

Coccidiosis

- Deccox is so effective that animals will not develop immunity to coccidia
- Major symptom is diarrhea (seldom bloody) in an animal with history of stress
- Treatment Corid or Albon. Calf long acting sulfamethazine bolus
- Treatment with Toltrazuril, Diclazuril or Ponazuril (Marquis)-10 mg/kg, long withdrawal off-label use.

Coccidiosis

- Can be treated with Oregano oil
- Sericea lespedeza is effective against coccidiosis.
- Can develop resistance to drugs with overuse of them. Use management such as low stress weaning and hygiene.
- Wet or humid conditions increase problems with coccidiosis.