

# Small Ruminant Nutrition

2024 Women in Ag Summit

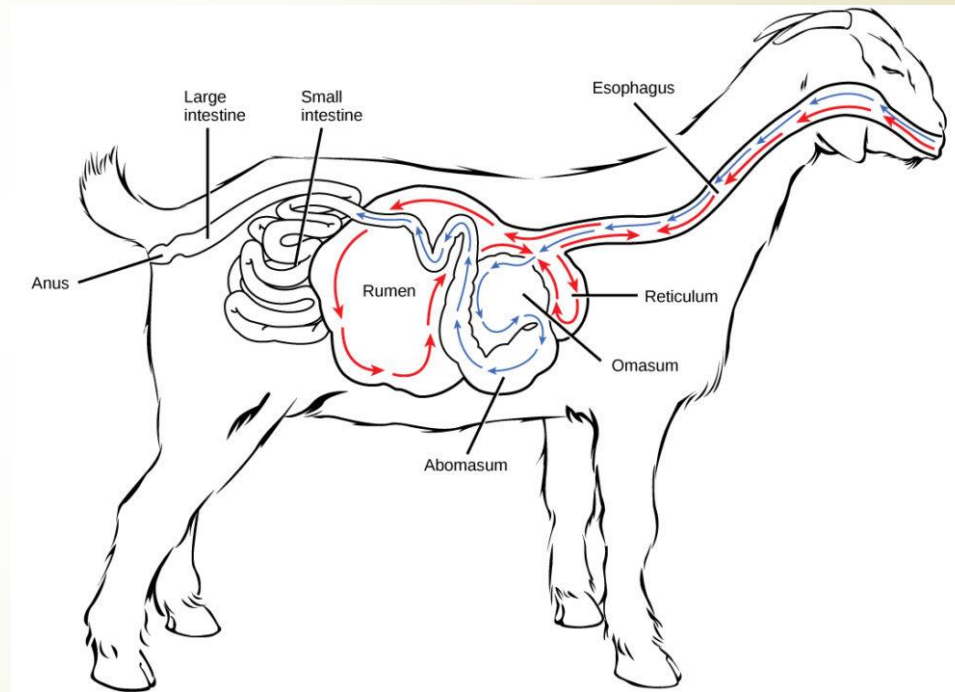


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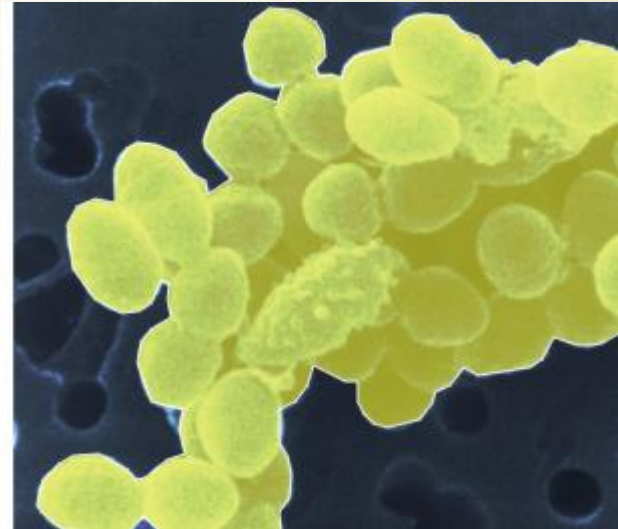
# The “Big Picture”

- Ruminants
- Forages First
- Mineral Supplementation



# Ruminant Digestion is Unique

➤ **Microbes do the Work**



- **Ruminant energy provided in VFAs**
- **Human energy provided in glucose**
- **Only Vitamins A, D and E are not synthesized by the rumen microbes**
- **Vitamin deficiencies are rare**



# Efficiency?

Ruminant:

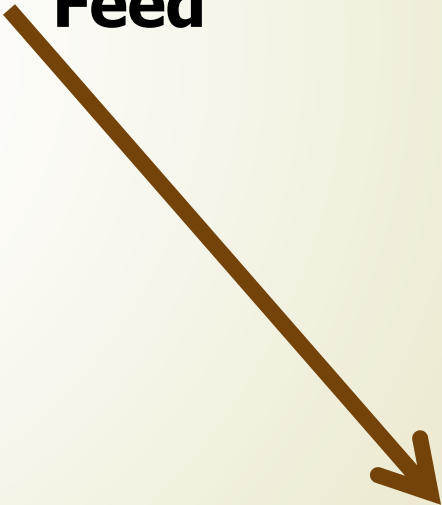


**Microbes**

**Nutrient  
Needs Met**

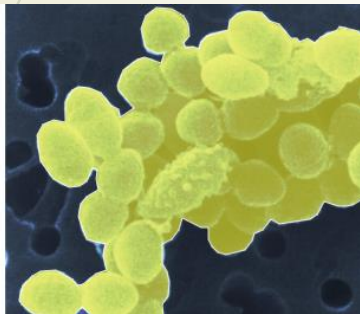
Non-Ruminant:

**Higher Quality  
Feed**



**Nutrient Needs  
Met**

# Basic Nutrients:



- Energy
- Protein
- Vitamins

- Water
- Minerals

Minimum



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# Mineral Supplementation

- ▶ Phosphorus = 4 – 10%
- ▶ Calcium = 2 x Phosphorus
- ▶ Copper = 1500 ppm (higher or lower depending on consumption – organic sources may be preferable)  
**NO copper for sheep**
- ▶ Lower NaCl for goats (< 10%)—DO NOT PROVIDE SEPARATELY
- ▶ Magnesium = 2-4% (maybe higher if grass tetany is problem)
- ▶ Selenium = 26 – 52 ppm
- ▶ Cobalt, Iodine, Zinc, Iron, Manganese, Sulfur



# Vitamins

- ▶ Deficiencies are not usually a problem
- ▶ Only Vitamins A,D and E are not synthesized by the rumen microbes
- ▶ They may need to be supplemented if green, leafy forage is not available for several months
- ▶ Vitamin E is essential for utilization of Selenium

# Goat Nutrient Requirements

	Young Goats Assume	.44 ADG	Does 110 lbs.				Bucks 80-120 lbs
Nutrient	Weanling (30 lb)	Yearling (60 lb)	Pregnant (early)	Pregnant (late)	Lactating (avg)	Lactating (high)	
Dry Matter lbs	2.0	3.0	4.5	4.5	4.5	5.0	5.0
TDN % Lbs.	68 1.36	65 1.95	55 2.48	60 2.70	60 2.70	65 3.25	60 3.0
Protein % Lbs.	14 .28	12 .36	10 .45	11 .50	11 .50	14 .70	11 .55

Nutrient Requirements of Goats in Temperate and Tropical Countries.1981.National Research Council and Pinkerton, F. 1989.Feeding Programs for Angora Goats. Bulletin 605.Langston University



# Sheep Nutrient Requirements

Stage of Production	Ewe Weight							
	130 lb		155 lb		175 lb		200 lb	
	TDN	Protein	TDN	Protein	TDN	Protein	TDN	Protein
Maintenance	1.3	0.23	1.5	0.25	1.6	0.27	1.7	0.29
Early Pregnancy	1.6	0.27	1.7	0.29	1.8	0.31	1.9	0.33
Late Pregnancy	2.6	0.45	2.8	0.47	2.9	0.49	3	0.51
Early Lactation, Single	3.3	0.7	3.6	0.73	3.7	0.76	3.8	0.78
Early Lactation, Twins	3.7	0.89	4	0.92	4.3	0.96	4.6	0.99
Early Lactation, Triplets	3.9	0.99	4.2	1.02	4.6	1.06	5	1.1

# Principles of Nutritional Management

- ▶ Nutrient needs of goats vary throughout the production cycle
- ▶ Quantity and quality of the feed needed vary throughout the production cycle
- ▶ Forage availability and quality also vary throughout the year.


**Understanding the above and planning and managing the nutrition program is key to success**

# Start with Forage





# Factors Affecting Nutrient Requirements

1. Stage of Production
  2. Age
  3. Size and Body Condition
  4. Milk Production
  5. Weather / Topography
  6. Length of Breeding Season
  7. Breed
- 

# How Hard are They working?

## Stages of Production

DO YOUR WORK

### Dry

- ▶ Period of lowest nutritional needs
- ▶ Lower quality feeds (crop residues and dormant pasture) can be used
- ▶ Does may need to increase condition if too thin
- ▶ In case of insufficient energy, feeding a highly digestible fiber source will increase forage digestibility

# Late pregnancy



- **This period can greatly affect female productivity**
- **Most of fetal growth occurs**
- **Insufficient nutrition and body condition will influence kid birth weight, health, vigor, quality of colostrum and survival**
- **It also will reduce milk production thus influencing kid weaning weights**



# Post-kidding

- Most critical period due to peak lactation
- Uterine involution
- Mobilization of minerals
- Nutrition during this period has major influence on productivity, because even under ideal conditions, does will still lose weight, especially with twins and triplets







# Environmental Stress



- Plan for additional feed during cold weather stress
- Forages produce more heat of fermentation than concentrates
- Provide shelter
- Heat stress effects intake, digestibility and the rate of passage



## Body Condition Score for Meat Goats\*

	BCS 1**	Lumbar spine	Ribs	Sternum	
Emaciated		<p><b>Top of spine:</b> clearly visible, can easily be pinched. Deep depression between each vertebra.</p> <p><b>Short ribs:</b> form a continuous shelf that fingers can grasp. Deep depression between each.</p> <p><b>Transition:</b> no fat and little muscle is felt between the top of the spine and short ribs.</p>	<p><b>Ribs:</b> Clearly visible. Fingers easily penetrate space between ribs.</p>	<p><b>Cartilage:</b> easily felt</p> <p><b>Fat pad:</b> can easily be grasped between thumb and forefinger and moved side to side.</p>	
	Thin		<p><b>Top of spine:</b> visible, some muscle can be felt between skin and bone.</p> <p><b>Short ribs:</b> form a shelf that fingers can grasp.</p> <p><b>Transition:</b> deep depression from the top of the spine to the short ribs.</p>	<p><b>Ribs:</b> some can be seen. Fingers easily penetrate space between ribs.</p>	<p><b>Cartilage:</b> not easily felt.</p> <p><b>Fat pad:</b> can be grasped and moved slightly from side to side.</p>
Ideal			<p><b>Top of spine:</b> not prominent, slight hollow between vertebrae. Cannot easily be grasped.</p> <p><b>Short ribs:</b> shelf is slightly noticeable, cannot be grasped.</p> <p><b>Transition:</b> smooth slope from top of the spine to short ribs.</p>	<p><b>Ribs:</b> difficult to see. Space between ribs felt with pressure.</p>	<p><b>Cartilage:</b> barely felt.</p> <p><b>Fat pad:</b> wide and thick. It can be grasped, but has very little movement.</p>
	Overweight		<p><b>Top of spine:</b> cannot be seen. No indent between vertebrae. Top of spine is flat and cannot be grasped.</p> <p><b>Short ribs:</b> no ridge or shelf present.</p> <p><b>Transition:</b> rounded from the top of the spine to the short ribs.</p>	<p><b>Ribs:</b> cannot be seen. Side of the animal is flat in appearance. Space between ribs only felt with strong pressure.</p>	<p><b>Cartilage:</b> cannot be felt.</p> <p><b>Fat pad:</b> difficult to grasp, cannot be moved side to side.</p>
Obese			<p><b>Top of spine:</b> buried in fat, slight indent surrounded by bulging fat. Rump looks like the top of a heart. Individual vertebrae cannot be felt.</p> <p><b>Short ribs:</b> individual vertebrae cannot be felt.</p> <p><b>Transition:</b> fat bulges out from the top of the spine to the short ribs.</p>	<p><b>Ribs:</b> not visible. Space between ribs cannot be felt.</p>	<p><b>Cartilage:</b> cannot be felt</p> <p><b>Fat pad:</b> cannot be grasped or moved.</p>

\*One unit of Body Condition Score is equivalent to 7-10 kg (15-22 lb)

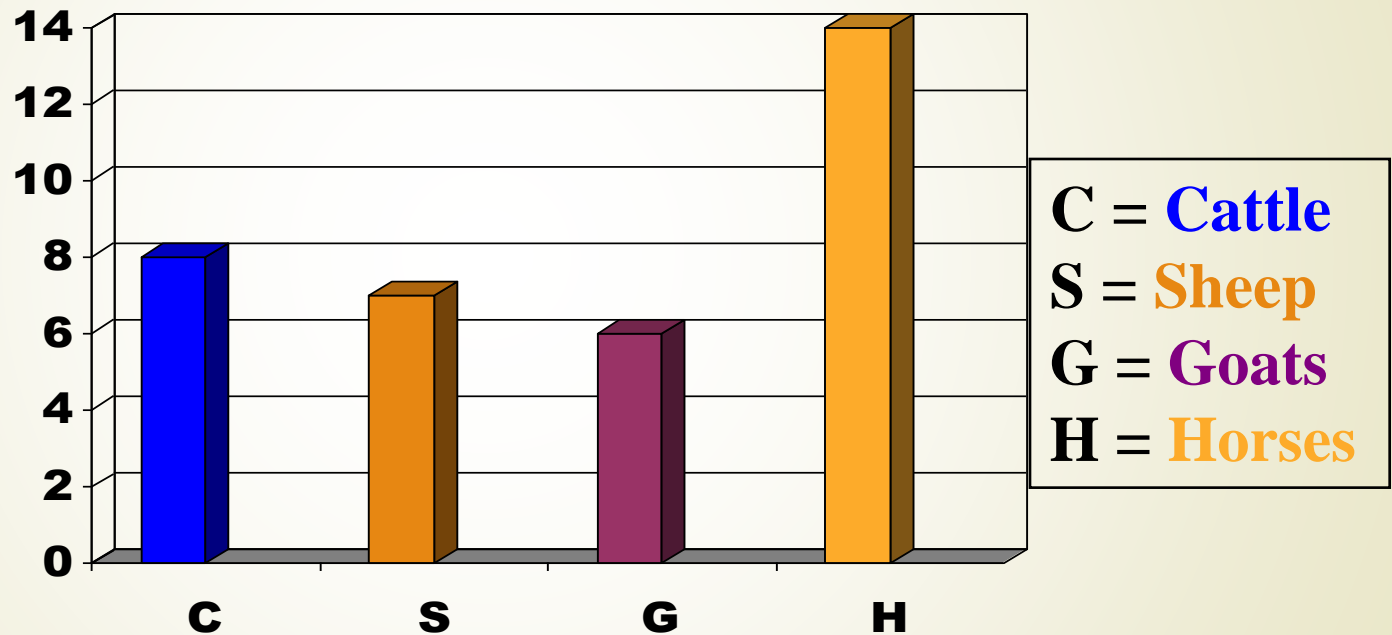
\*\*Int'l for transcript other than under advice of veterinarian

# FORAGE PREFERENCES

Forage type	Cattle	Sheep	Goats	Horses
<b>Grasses</b> (Pastures)	<b>70%</b>	<b>60%</b>	<b>20%</b>	<b>90%</b>
<b>Forbs</b> (Weeds)	<b>20%</b>	<b>30%</b>	<b>20%</b>	<b>0.04%</b>
<b>Browse</b> (Shrubs)	<b>10%</b>	<b>10%</b>	<b>60%</b>	<b>0.06%</b>

# Grazing Time

**HOURS SPENT GRAZING / BROWSING PER DAY**



# Nutritional Tidbits...



## They are **NOT** little cows

- Will consume vegetation of lower palatability than cattle prefer.
- Utilize leaves, shrubs and stems that cattle avoid.
- Graze grass and browse forbs/brush closer if not managed effectively.
- Can sort grain mixes; pelletized or textured supplements prevent this.
- Goats will **NOT** eat anything....

# Browsing is Important

- Goats like to eat with their heads up
- Select portions with higher nutrient content
- Browsing is less likely to result in picking up parasites



# Food Preferences...

## ➤ Desirable

- Multiflora rose
- Briars
- Ironweed
- Ragweed
- Lambsquarter
- Sericea lespedeza
- Annual lespedezas
- Honeysuckle
- Spiny amaranth
- pigweed
- Privet
- Kudzu
- Buckbush
- Curly dock
- Winter annuals

## ➤ Intermediate

- bermudagrass
- Chickweed
- Thistle
- Burdock
- Tree of heaven
- White clover
- Buttercup
- Japanese grass

## ➤ Undesirable

- Horse nettle
- Black nightshade
- Perilla mint
- Poison hemlock



**Legumes:**  
**Crimson clover**

**Common Weeds:** **butter cup,**  
**henbit, purple deadnettle,**  
**common chickweed**

**Legumes:**  
**White Clover**

**Common Weeds:** **Mouse-**  
**ear chickweed, plantains**



**Legumes:**  
**Annual lespedeza**

**Common Weeds:**  
**Pigweed, foxtails, perilla**  
**mint, bitter sneezeweed,**  
**wooly croton**

**Legumes:**  
**Sericea lespedeza**

**Common Weeds:**  
**Dog fennel**



# “Forage Practices that Pay”

**November 8, 2024 - 8:30am**

Lane Agri-Park - Auditorium

315 John R. Rice Blvd. Murfreesboro TN 37129

Learn the results of the nationwide survey of forage producers. How did they respond when asked to identify forage practices making an economic difference in their operation?

## Topics Included:

- Demystifying Fertilizer and Lime Products
- What's in that Bale? –Nutrients removed, nutrients recycled through manure, and what they are worth
- Forage Plot Tour
- Hear from Your Peers: Producer Panel
- Winter Grazing Options
- TN State Fair Best of Fair Hay winners
- Trade Show & Lunch Included
- **Cost: \$40 prior to November 1, \$50 after**

*Please Join Us!*

**Tennessee Forage  
and Grasslands  
Council**

November 8, 2024

Lane Agri-Park

Murfreesboro, TN



# Questions?

