Ewe Nutrition

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Sheep Feeding Program

- A simple approach is adequate, make it economical, easy
- Keys to feeding sheep:
  - Know nutrient requirements for specific production phases
  - Base feeding program on forages and match quality to production phase
  - Feed to a condition score

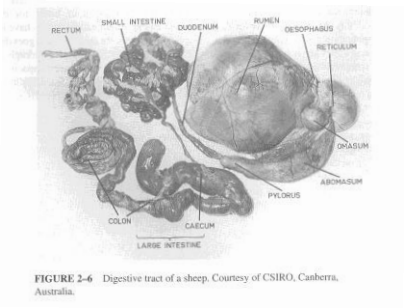


FIGURE 2–6 Digestive tract of a sheep. Courtesy of CSIRO, Canberra, Australia.

Nutrients for Sheep

- Water
- Energy- CHO's, fats, excess protein
- Protein
- Minerals
- Vitamins
- Additives- not a nutrient, but a nutritional consideration

Energy for Sheep

- Most common limiting nutr
- most total input
- Energy status is a function of intake (DMI) and digestibility of feedstuffs
- TDN or Mcal of DE

DMI for production phases

- Maintenance- 2% of BW
- Moderate Prod- 3% of BW
- High Prod- 3.5- 4% of BW
- TDN level of 55 to 60%

Protein

- Can make up to 1/3 of feed costs
- wide range in reqt's
- Ewes- 9 to 16% CP
- Lambs- 12 to 20%
- Metabolizable Protein system- UIP, DIP

Minerals

- 15 minerals essential to sheep
- Macro- Na, Cl, Ca, P, Mg, K, S
- Micro- I, Fe, Mo, Cu, Co, Mn, Zn, Se
- Mineral nutrition can be very complex
- interactions with other minerals, hormonal action, etc.

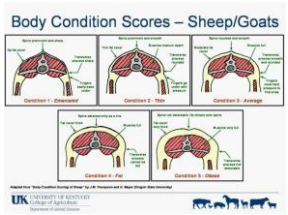
Vitamins

Fat Soluble
- **A**
- **D**
- **E**
- **K**

Water Soluble
- **Thiamine**
- **Other**

Body Condition Scoring

- Sheep have a scoring system from 1 to 5
- A good feeding program will see a normal range of BCS over production cycle
  - Weaning – 2.0
  - Breeding- 3.0
  - Early gest- 2.5 - 3.0
  - Late gest- 3.0 – 3.5
  - Lambing- 3.0 to 3.5 single, 3.5 twin



Body Condition Scoring cont.

- Takes about 10 to 11% of body weight to move one body condition score
- Periodic monitoring of BCS
  - How often depends on what production phase & what feeding program
  - Pick 10 to 15 % of flock and monitor

Matching Forage Q

- Wide diversity in nutrient content
- Hay testing will save money
- Primary saving will be from protein supplementation
- Also will give an indication of intake potential

Production Phases

- Maintenance- after weaning till 15 to 30 days before breeding
- Early gestation- first 2/3, slightly above maintenance
- Breeding Season
- Late gestation- by number
- Lactation- number suckled

Nutrient Requirements

- Latest NRC published in 2007, replaced 1985 report
- Good guide- a base, not gospel
- Some issues-
  - intake requirements, esp. for lactation
  - Met. Protein concept overly complicated
- Should be familiar with

Maintenance and Early Gestation

- Longest part of the nutrition cycle for ewe flock
- Makes up 30 to 50% of the annual feed costs
- This is when the majority of feed savings can occur when feeding the ewe flock

Maintenance
NRC reqt's (2007)- 150 lb ewe

• DMI	• 1.7% or 2.6 lbs
• TDN	• 54% or 1.4 lbs
• Protein	• 8.6% or .22 lbs
• Ca	• .2%
• P	• .17%

Maintenance cont.

- Nutrient needs minimal
- Maintenance phase during grazing season
- Well designed sheep mineral
- Monitor general health

Maintenance and Early Gestation cont.

- Monitor BCS monthly during maintenance phase
  - More frequently before breeding or if pasture conditions are marginal
- Every 2 weeks during early gestation
  - Increase freq as late gest approaches or if marginal forages are used or if weather gets cold

Breeding Season Management and Nutrition

Breeding season feeding

- Goals to increase # born, inc # bred, decr length of lambing season
- Flushing- most effective in thinner ewes
- Increasing energy content to ewes
- Want increased bodyweight
- Incr ovulation & number bred & number settling on first cycle
- Mineral nutrition very important

Early to mid Gestation

- First 100 days of the pregnancy
- First 50 days
  - Conceive, maternal recognition, implantation, Placental development
  - Under or overfeeding or stress can lead to higher embryonic loss
- Mid 50 days of pregnancy
  - Placenta still developing
  - Little fetal development
  - Don't over or under feed
  - Fat ewes can lose a ½ of a BCS

Early gestation

	Single	Twin
• DMI	2.1% or 3.2 lb	2.4% or 3.7
• TDN	54% or 1.7 lb	53% or 1.96
• Protein	8.5% or .26 lb	8.5% or .32
• Ca	.24%	.38%
• P	.18%	.27%

May still be grazing possibilities

Early Gestation cont.

- Usually fall- stretch grazing if possible. Cheaper and healthier sheep.
  - Stockpiling
  - Crop residues
  - Harvested hay fields

Late gestation

- Very important time nutritionally- 30 to 45 d
- Ewes need adequate nutrition for fetal growth, mammary tissue synthesis and high quality colostrum
- inadequate nutrition leads to weak lambs, low milk, incr death loss and labor
- Not as much opportunity to cut costs

Ewe Late Gestation (NRC, 2007)

	Single	Twin
DMI	2.6% or 4.0 lb	2.6% or 4.0
TDN	53.3% or 2.1 lb	66 % or 2.7
Protein	8.7% or .34 lb	11% or .43
Ca	.34%	.48%
P	.24%	.29%

Late gestation cont

- Ewes need to be gaining from .3 to .5 lbs per day
- Mineral nutrition very important- Se, Ca, I and Vit E
- Additives- coccidiostat, antibiotics (changes since VFD)

Example Diets for Late Gestation

- Rations can be simple and still meet reqt's
- Ewes
  - 1 lb of shelled corn, 4 lbs mixed legume/grass (16% CP, 54% TDN)
  - 14.8% CP as fed, 17% CP dry
  - 60% TDN AF, 70% DM
  - Mineral availability
  - additives

Mineral Nutrition in Late Gest.

- Selenium (along with Vit E)
- Delivery of Se & E
  - In mineral- purchase a mineral with maximum amount allowed (90 ppm)
  - In complete feed- mixed in via protein supplement or premix
  - Injected via BoSE
  - Combination of methods depending on farm history
  - Se is potentially toxic

Mineral Nutrition in Late Gest.

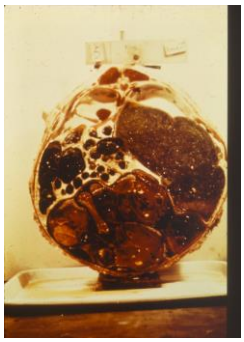
- Ca & P
  - Needed for lamb/kid skeletal formation
  - Ewes/does can get hypocalcemia
- Iodine
  - IN and KY are deficient in I- Goiter belt
  - Make sure minerals fed have I included
- Other minerals important- ZN, Mg, Mn
- Be sure to feed a good quality mineral at daily rec rate (usually ½ to 1 ounce /day)

Additives- fed to prevent disease

- Depends on farm history- work with a food animal veterinarian to design program
- Ionophores- acts as cocidiostat and as a control of toxoplasmosis
  - Rumensin (approved in goats), Deccox (approved for sheep)
- Antibiotics
  - Usually used to help prevent abortion problems
  - Due to VFD, some no longer legal

Other Management Considerations

- Treat for internal parasites- last 30 days of gest.
- Vaccinate for CD & T
  - 6 weeks before, booster 4 weeks later, annual booster 4 weeks before
- Wool sheep- short fleece
  - Many advantages
- Exercise & Fitness
  - Keeps females more fit, parturition easier



Late gestation cont

- Adequate rumen space can become an issue with ewes gestating twins or more
- Especially when high moisture feeds or high roughage forages are fed
- Feed some type of concentrate to ensure adequate energy status

Lactation

- Amount of nutrition depends on number suckled and stage of lactation
- Ewes suckling twins produce 20 to 30% more milk
- Due to increased suckling stimulus
- More than one feeding group

Boer Goat Lactation Curve

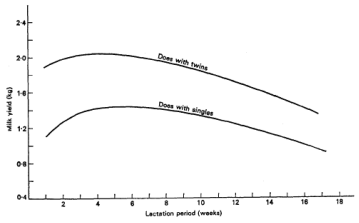


FIG. 1. Lactation curves of Boer goat does with twins and singles (from Ueckermann, 1969).

Composition of Ewes Milk

• Dry matter	• 18%
• Fat	• 5 to 10%
• Protein	• 24 to 25%
• Lactose	• 26.5%
• Ash	• .85%
• Fiber	• 0

Lactation Nutrient Reqt (2007 NRC) 150 lb ewe

	• Single	Twins
• DMI	• 2.8% or 4.3 lbs	2.9% or 4.4 lbs
• TDN	• 53.1% or 2.3 lbs	66% or 2.9 lbs
• Protein	• 12% or .5 lbs	15.5 or .7 lbs
• Ca	• .3%	.4%
• P	• .28%	.35%

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Weaning Management

- Ewe mgmt
- Prevent mastitis
- Planned program to reduce milk production
- Decrease energy and protein intake over a period of time

Summary

- Simple and economical can still meet needs
- Feed according to production phase
- Match forages and feedstuffs to the phase
- Sort animals by nutritional needs
- Feed to a body condition score