Feeding dairy ewes

Sam Peterson

Institute of veterinary, animal and biomedical sciences

Massey University

The literature on sheep nutrition is complicated by different

- National nutrition systems
- Foodstuffs available
- Breeds
- Management and production systems

I shall present a simplified outline

- Based on energy requirements only
  (since protein is not limiting in our pasture)
- Nutrition during lactation only
  but remember that prepartum BCS and nutrition are important too

Feed intake limitation

Correlation between milk yield and feed intake ranges from 0.2-0.8

since some ewes are unable to consume the amount of feed needed to meet their energy requirements for milk production

- 75-kg East Friesian has expected VFI of 2.5 kg DM/d (3.3%)
- 73-kg Lacaune has VFI of 2.67 kg/d (3.66%) (Avondo & Lutri 2004)

But can they eat that much of what you intend to feed them?

- Ewes can eat more of a highly digestible diet with high ME
- But the highest producers (and smaller ewes) cant eat enough of fibrous diets
- So negative energy balance (NEB)
- Hence, calculation of requirements based only upon actual milk yields will not account for their inability to eat that much

Calculation of energy requirements

Energy required (MJME) = Maintenance + activity + lactation + LWT change

More complicated formulae are available from MPI (2012) and in OVERSEER

Cant et al. (2001)	ME cost MJ/d
maintenance	$0.423 \times LWT^{0.75}$
grazing activity	0.15 x M
lactation	milk yield x (fat % x 0.038 + protein % x 0.021 + lactose % x .021)/64,000
LWT loss	10.5 x LWT loss
LWG	11 x LWG

NRC (1985) gave no values for maintenance during lactation but gave estimates of energy required for ewes of different weights with singles or twins at various stages of lactation.

Example NRC (1985)

- 70 kg ewe first 6-8 weeks, losing 60 g/d suckling twins
- Requires diet with 10 MJME/kgDM
- 35% concentrate 65% forage 15% CP
- 2.8 kgDM (4% LWT) or 27.6 MJ
- This compares with
- 70 kg ewe producing 2 kg milk needs 24.6 MJ (Jordan 2001)

Formulating diet

1. Select major feed type
2. Determine nutrient and energy content
3. Determine ME requirements of ewes
4. Calculate amount of feed needed (kgDM)
5. If required DM exceeds VFI, find suitable high-energy supplement
6. Balance the ration

Pasture

- Spring pasture 11.5-12.5 MJME/kgDM
- Summer dry 9-10 MJME/kgDM
- Even the highest quality pasture will eventually limit VFI
- Requires supplementing with high-energy concentrate

Herb & clover mixes

- Hutton et al. (2010) at Massey
- mix of chicory, plantain, white and red clover (Herb), or a ryegrass dominant sward
- Romney ewes
- Milk yields 3237 g versus 2428g at day 21
- Heavier lambs and better BCS

Condensed tannins (CT)

- Wang et al. (1996) at Massey
- *Lotus corniculatus* (birdsfoot trefoil)
- Romney ewes suckling twin lambs
  - increased milk yield (21%)
  - secretion rates of protein (14%)
  - lactose (12%)
- without affecting VFI, thereby increasing the efficiency of milk production.

Geenty & Sykes (1986)

- Milked unselected Dorset dairy ewes on ryegrass/clover pasture at Lincoln
- 2 levels of nutrition during pregnancy
  - difference in LWT of 14 kg (48 vs 62 kg) or BCS of 1.5 and 3.5 at lambing
- 3 levels of nutrition during a 6-week lactation
- all ewes lost between 3 and 12 kg LWT or 0.5 - 2 BCS.

they concluded

- Efficiency of energy use for milk production increases as LWT loss decreases
- Target ewe body condition of 3.0 at lambing and 2.5 during machine milking
- Minimise ewe weight loss by offering over 3,500 kg pasture DM/ha for milking ewes

Recommendations

- Do what we are best at in NZ
- Feed highest quality pasture at 3500 kgDM/ha down to 2500 kgDM/ha
- Grow specialist crops according to what suits your soils, climate, and management
  - lucerne, lotus
  - herb-clover mix (chicory, plantain, red clover)
- Supplement with high-energy concentrate