

Ewe Management

Late pregnancy and early lactation

Key points

- Approximately 70% of foetal growth occurs in the last 6 weeks of pregnancy, restricting rumen capacity and thus reducing feed intake at a time when the energy requirement of the ewe is approximately double normal requirements.
- Adequate protein supply in the last 4 weeks of pregnancy is critical for mammary development and colostrum production.
- For outdoor lambing, early spring grass should provide all the energy and protein needs of the pregnant ewe without the need for additional concentrates, provided weather and ground conditions are favourable.
- If lambing indoors and offering conserved forage, use the Hillsborough Feeding Information System to predict the level of concentrate supplementation required in the last 8 weeks of pregnancy.
- Feed a high quality concentrate, with an energy content of at least 12.5MJ/kg dry matter (DM) and a 16-18% crude protein.
- Provide plenty of water; ewes in late pregnancy require 4.5 litres per day and up to 9 litres per day in early lactation.
- Body condition scoring is a useful management tool throughout pregnancy. In late pregnancy, levels of serum beta-hydroxybutyrate (BOHB) on a representative sample of the flock provide a more immediate indicator of the energy status of the ewe.

Late Pregnancy

Approximately 70% of foetal growth occurs in the last 6 weeks of pregnancy, which restricts rumen capacity and so reduces feed intake. This means that nutrient dense supplementary feeding will be required to meet this increase in energy requirements in late pregnancy.

Many of the common problems experienced around lambing, such as weak or oversized lambs; or ewes having insufficient milk, can be minimised by having a carefully planned feeding strategy in the final 6 weeks of pregnancy. Mammary development and colostrum production, in particular, are very sensitive to protein supply during the last 4 weeks of pregnancy.

Adolescent ewes require extra nutrition since they are still growing. Manage pregnant and lactating adolescent ewes separately as they will not compete well with mature ewes at feeding troughs.

Condition score all ewes 8 weeks before lambing. Aim to achieve a body condition score at lambing of 2.5-3.0 for lowland sheep and 2.0-2.5 for hill ewes. Group ewes according to scanning results, lambing date and body condition score. Avoid wasteful over-feeding of late-lambers and those carrying singles.

Consider asking your private veterinary practitioner to blood sample ewes 4-6 weeks before lambing, to get a more immediate assessment of their energy status in late pregnancy. Blood sample 10-12 ewes, preferably those lambing first and if scanned, equal numbers of single, twin and triplet-bearing ewes. Levels of beta-hydroxybutyrate (BOHB) provide a good indicator of how much fat is being mobilised. Serum BOHB concentrations should be targeted at 1mmol/l or below in a scanned flock or 0.8mmol/l or below if foetal numbers are unknown.

Outdoor lambing

Grass based diets

Early spring grass typically has an energy content of 11.0-11.5MJ/kg DM and a protein content of 18-22%, providing an ideal feed for pregnant ewes. Studies at the Agri-Food and Biosciences Institute (ABFI), Hillsborough have demonstrated that grazed grass has the potential to meet the nutrient requirements of single and twin-bearing ewes in late pregnancy without the need for concentrate feeding. These studies showed that turning ewes out to grass 3 to 6 weeks before lambing could reduce concentrate requirements by up to 80% and labour inputs at lambing by up to 30%, without compromising lamb output.

Good grassland management is the key to success! Target 4-5cm swards (1500-1650kgDM/ha), with stocking rates of approx. 12 ewes/ha (5 ewes/acre) depending on the grass growth. If ewes are scanned, singles may be grazed even more tightly with sward covers of 3-4cm (1300-1500kgDM/ha) sufficient. Triplet bearing ewes will require some concentrate supplementation (0.3kg per day) during the final 2 weeks of pregnancy, mainly to boost energy intake.

Suitable ground conditions are essential. If weather and ground conditions deteriorate, concentrates should be offered.

High energy feed blocks may be used to provide a convenient, palatable source of energy and minerals, if required. They can be expensive, but save on labour and avoid feeding time disruption of the flock.

Indoor lambing

The optimum amount of concentrates to offer ewes in late pregnancy is dependent on the number of lambs being carried, lambing date, body condition score and the nutritive value of the forage on offer.

When planning a feeding strategy for ewes in late pregnancy it is important to know the quality of the forage. The Hillsborough Feeding Information System (HFIS) provides sheep farmers with a prediction of grass silage quality, and provides guidance on the level of concentrate required to supplement the silage in late pregnancy. Baled silage can provide a practical feeding option, when well-preserved and suitably stored. However, unchopped big bale silage will have lower intake characteristics than precision chopped silage and will thus require extra supplementation (Table 1). The effects of grass silage quality on concentrate inputs are also shown in Table 1.

If more than 400g of concentrates are to be offered daily, the feed should be equally split into two feeds. The timing of feeding should be consistent to maintain rumen function, which is thought to reduce the risk of prolapse.

An alternative to increasing the concentrate allowance in a step-wise pattern is to feed at a flat rate. For example, the excellent quality silage in

Table 1 could be supplemented with 300g concentrate/ day for the last 6 weeks of pregnancy. This means there is initially an over-supply of nutrients, but this compensates for an under-supply during the last few weeks.

Concentrate composition

Concentrates should have an energy content of at least 12.5 MJ/kg dry matter (DM) and a protein content of at least 16-18% on a fresh basis. Examples of suitable rations for pregnant ewes include:

1. 500kg barley, 250kg soyabean meal, 225kg sugar beet pulp and 25kg vitamins and minerals.
2. 350kg barley, 250kg sugar beet pulp, 100kg maize meal, 200kg soyabean meal, 50kg protected soya, plus 25kg molasses and 25kg vitamins and minerals.
3. 250 kg sugar beet pulp, 250kg citrus pulp, 250kg soyabean meal, 200kg soya hulls, plus 25kg molasses and 25kg vitamins and minerals.

Studies at AFBI, Hillsborough have shown that increasing the supply of digestible undegradable protein (DUP) by including protected soyabean meal in the ration can improve lamb survival and increase lamb output at weaning. Concentrates also serve as a carrier for essential minerals and vitamins such as selenium

Table 1. Concentrate feed level required for twin-bearing ewes (kg/ewe/day)

Week before lambing	Precision chopped		Big Bale
	Excellent quality silage †	Poor quality silage ‡	Excellent quality silage†
4-6	0	0.4	0.25
2-4	0.35	0.7	0.55
0-2	0.50	1.0	0.70
Total concentrate offered (kg)	12	29	21

† (ME 11.7 MJ/kg DM; CP 14.6% DM)

‡ (ME 9.6 MJ/kg DM; CP 10.5% DM)

(target 0.5mg/kg) and Vitamin E (target 100-150IU/kg).

Information from the industry would suggest that where a flock has a history of prolapse, energy should be supplied in the form of fibre such as sugar beet pulp, rather than as starch from cereals, as in ration 3.

All concentrate diets

Studies at AFBI, Hillsborough have shown that ewes offered all-grain diets perform equally as well as those offered grass silage-based diets. All grain diets should include a high proportion (around 30%) of fibrous by-products, such as sugar-beet pulp or soya hulls, to avoid acidosis and should supply no more than 14% crude protein. Small amounts of straw (0.1kg/d) are needed to maintain a healthy rumen.

PUFA (polyunsaturated fatty acids) supplementation

Long-chain PUFAs are essential for pre-natal development of nervous tissues. However sheep diets generally supply very low levels of PUFA. Discuss the inclusion of fish oils with your feed merchant as they are an excellent source of long-chain PUFA. Recent research at AFBI, Hillsborough has shown improvements in lamb survival when diets supplied 20g/ewe/day fish oil.

Alternative indoor feeding systems

Maize silage.

Maize silage can be a cost-effective alternative to grass silage, with studies at AFBI, Hillsborough finding that the higher intakes with maize silage can reduce concentrate inputs. However

maize silage requires a high protein supplement (minimum 23% CP) to balance its low protein content.

Early Lactation

Lactation places the highest nutrient demands on the ewe, both in terms of energy and protein. A ewe requires three times as much energy per day in early lactation compared to maintenance. If the supply of energy or protein is deficient, milk yield and subsequently lamb growth rates will be affected. Growth rate of lambs in the first 5-6 weeks of life is almost entirely dependent on the ewe's milk yield. It is normal for the ewe to be in a state of negative energy balance during lactation so the loss of body condition can be expected. Aim to lose no more than 0.5 units of condition score from lambing to weaning. The greater the weight loss, the higher the ewe's protein requirements will be. Maximise the use of well managed early grass swards. Concentrate feeding is not required for ewes rearing singles and twins provided grass cover is maintained above 5cm (1650kgDM/ha). If grass supply is insufficient, continue to feed concentrates after lambing (up to a maximum of 1kg/day of a high energy and protein concentrate, depending on the severity of the grass shortage). Slowly reduce the amount of supplementation as grass growth improves and discontinue after six weeks. Provide unlimited access to fresh, clean water in lactation; a lactating ewe can drink up to 9 litres water/day!

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