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Concentrate feed selection, home mixing straights and ration formulation

The place to start is forage analysis – preferably getting a full analysis from your feed supplier or sending a sample off yourself to a reputable laboratory. Unless forage quality is known supplementary feeding levels cannot be worked out with any accuracy. Always check the analysis against what the forage looks and feels like. For silages squeeze a sample to check on dry matter (if juice can be squeezed out then dry matter will be less than 25%), feel a sample to check for the sharpness of the stems and smell a sample to check on the fermentation, presence of moulds etc. If you are in any doubt that the analysis is correct then send in another sample to make sure.

The analysis will help you and your feed supplier make a decision on the right formulation of compound or concentrate required to compliment your forage. Remember that silages above 11MJ/kg DM need very little supplementation whereas silages below 10MJ/kg DM need significant amounts. High protein forages – eg red clover silage may only need a small amount of an energy supplement. Likewise low protein forages with high energy may only need a small amount of high protein supplement eg soyabean meal. I looked at the analysis of 11 grass silages recently with a huge range in ME and protein values. The difference between the best and worst in the group meant a difference of 28kg of compound feed pre-lambing or about £6.50/ewe.

When selecting a compound feed you should check the declaration – the legal statement on each bag declaring: oil, protein, fibre and ash. This gives basic information that gives you some idea of the quality – ash and fibre levels above 10% generally indicate low energy feeds. The protein level simply tells you how much protein there is in total – and tells you nothing about the protein quality – RDP and DUP. It is only when you look at the ingredients and full formulation that you can tell what types of energy, protein and fibre sources have been used. Refer to the recent Eblex Mini Feeds Directory for detailed information on typical straights and compound feed ingredients. The recently revised 'Improving Ewe Nutrition' Eblex booklet also provides excellent information on feed quality. When checking compound formulations look out for the low energy ingredients – sunflower (9.5MJ/kg DM) and oat feed (6.0MJ/kg DM – no better than chopped straw). More than 10% of low energy sunflower in a compound will inevitably compromise the energy content. Likewise more than 3 to 5% oat feed will mean a low energy compound unless other much higher energy ingredients have been included. You should select a compound to complement your forage but in general the higher quality compounds tend to be better value for money – meaning you can feed less to get the same energy intake.

Ideally look for a compound with:

- o 12.5MJ/kgDM
- o 18 to 21 % protein – to suit your forage
- o <10% ash
- o <10% fibre
- o Some good quality protein – eg soya bean meal or other protected protein feed (to add in DUP for prolific ewes)
- o 100 to 200mg/kg Vitamin E – especially important on low quality forages

Likewise when formulating home mixes or blends the same rules apply – use the Eblex Blend Calculator to formulate suitable mixes and to check on energy and protein levels.

To work out levels of compound or home mix to feed you will need to know the energy content of your forage since dry matter intake varies with forage ME – with straw having the lowest potential intake and high quality hay and silage the best. The table below shows how dry matter intake from forage as a percentage of the ewe's bodyweight varies according to forage quality and stage of pregnancy.

Dry matter intake as % of ewe liveweight by twin bearing ewes in pregnancy:

Forage	ME (MJ/kgDM)	Weeks 12 to 3 pre-lambing	Weeks 3 to 0 pre-lambing
Straw	6.5	1.0	0.8
Average hay	8.5	1.5	1.1
Good hay	9.5	1.8	1.4
Poor silage	9.5	1.4	1.2
Good silage	10.5	1.6	1.4*

Source – 'Year round feeding the ewe for lifetime performance' SAC.

To work out how much to feed, follow these simple instructions eg

For a 70 kg ewe just before lambing eating a good silage of 10.5 MJ/kgDM she can eat:

$70 \text{ (ewe liveweight)} \times 1.4^* \text{ (\% of ewe liveweight that can be eaten in dry matter terms)} / 100 = 0.98\text{kg}$ of silage dry matter = 10.3MJ (0.98×10.5 – energy content of silage).

The ewe needs about 18MJ to fully meet her requirements so she is short of about 8MJ. This can be provided by compound feed:

$8/12.5$ (ME of compound) = 0.64kg DM of compound feed or 0.75kg of fresh compound (assuming the compound is 86% dry matter. If ewe condition is good (BCS 3+) and ewes have enough body reserves then concentrate allowance could be reduced slightly (0.1kg).

When feeding concentrate feeds never feed more than 0.5kg in one feed as large amounts of high energy feeds can lead to rumen acidosis and subsequent twin lamb disease.

Very few forages justify more than 1.0kg of supplementary compound feed in a day so look to other ways of providing additional concentrates if your forage is particularly poor – eg feed blocks/licks as an additional easy access supplement.