Breeding from ewe lambs 2 - flock performance

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Breeding from ewe lambs, provided they are managed to meet their nutrient requirements, provides an opportunity to increase flock profitability. In last week's article mating management was discussed. The objective of this article is to discuss management during pregnancy and the performance of the ewe lambs and of their progeny.

Athenry Study

A major study was initiated last year at Athenry with the objective of evaluating the age at first lambing (1 or 2 year old) and ewe genotype (>75% Suffolk, Suffolk x Belclare and Belclare) on the lifetime performance of ewes. The different ewe genotypes are included provide direct evidence on the effect of prolificacy on age at culling, replacement rate and lifetime output of lamb carcass. The study will last until the ewes are culled for natural reasons.

Management during pregnancy

Unlike mature ewes, ewe lambs during early and mid pregnancy require a plane of nutrition that sustains a live weight gain (excluding foetal weight) of approximately 80 g/day. This is required to enable ewe lambs reach their normal mature body size. At Athenry, the mean weight of the ewe lambs at joining and post lambing was 47 kg and 55 kg, respectively. Consequently, ewe lambs need to have access to high feed value pasture from joining to housing, and require high feed-value silage supplemented with concentrate after housing. The level of concentrate supplementation depends on silage feed value and expected litter size.

Energy is normally the first limiting component in the diet of pregnant ewe lambs. When formulating a ration for ewe lambs it is essential to make allowances for requirements for maintenance, live-weight gain, wool growth, stage of pregnancy and expected litter size (as determined by ultrasound scanning). As a general rule, a pregnant ewe lamb requires an extra 2.5 megajoules of ME (metabolizable energy) relative to adult ewes of similar live weight at the same

stage of pregnancy and carrying the same litter size. The additional energy allowance is to facilitate body weight gain.

Management at Athenry

The ewe lambs (most mated in late October/early November) were housed in mid-December, shorn and offered high feed value grass silage (75 % DMD) as the sole diet. In mid-January the pregnant ewe lambs received 200 g of concentrate daily. Concentrate allowance was increased to 250 g/day in late January. Following pregnancy scanning (late January) the ewe lambs were penned according to expected litter size and lambing date. Ewe lambs carrying triplets had their concentrate allowance increased to 300 g/day in mid-February. During the last 6 weeks of pregnancy (mean lambing date late March) ewes carrying singles, twins and triplets received a total of 18, 26 and 33 kg concentrate/head.

If the quality of the silage available is poorer than that used at Athenry then increased concentrate supplementation would be required from housing to lambing.

Reproductive performance

The effects of ewe genotype on litter size and lamb viability are presented in Table 1. Ewe genotype had a major effect on litter size (difference of 0.54 lambs) and number of lambs reared per ewe lambing (0.41 lambs). Whilst the Belclare ewe lambs reared 1.34 lambs per ewe lambing their weaning rate (takes account of barren and dead ewes) was 1.16 lambs per ewe joined. The national average weaning rate for lowland mature ewes in Ireland is 1.2, consequently the performance of the Belclare ewe lambs was close to that achieved from the lowland flock in Ireland. Lamb mortality was high, regardless of ewe genotype. Mean lamb mortality was 27 %; 64 % of total mortality occurred within 48 hours of birth. It is of interest to note that the weight of ewe lambs had a significant effect on productivity. For example ewes that lambed but failed to rear a lamb were, on average, 7.6 kg lighter at lambing than those that reared at least 1 lamb.

Lamb performance

The effect ewe genotype on lamb performance is presented in Table 2. Ewe lambs rearing twins were treated the same as mature ewes rearing triplets, i.e., they were managed in a separate flock and had access to 0.5 kg concentrate daily for 5 weeks post lambing, whilst their lambs had access to up to 300 g concentrate daily. All lambs had access to up to 300 g concentrate daily from 5 weeks of age until weaning at 14 weeks. Concentrate supplementation ceased at weaning. Lambs from Belclare ewes were on average 2.6 kg lighter than lambs from the >75% Suffolk ewes.

However the Belclare ewes weaned 32 % more lamb live weight (due to their larger litter size) per ewe lambing than the >75% Suffolk ewes. Lamb daily live weight gain was 257, 270 and 280 g/day for lambs from the Belclare, Belclare x Suffolk and >75%Suffolk, respectively.

The effect of birth type (litter size) and rearing type (reared as singles or twins) on lamb performance are presented in Table 3. Lambs born and reared as singles gained 288 g/day and were 33.6 kg at weaning, which is similar to the target for twin lambs reared by mature ewes without concentrate supplementation post lambing. Lambs born as twins and reared as singles or twins gained 271 and 243 g/day and weighed 30.8 and 28.8 kg respectively at weaning.

Effect of joining weight of ewe lambs on productivity

As discussed in last week's article ewe lamb weight at joining influences date of puberty, fertility and pregnancy rate. The effect of live weight of ewe lambs at joining on the probability of rearing at least one live lamb is presented in Figure 1. The data presented in Figure 1 takes into consideration fertility, litter size, ewe mortality and lamb mortality to weaning. The data presented clearly illustrate that increasing live weight at joining increases the probability of rearing a live lamb, but that appropriate live weight is influenced by ewe genotype. For example to have an 80% chance of rearing a live lamb, the Belclare and >75%-Suffolk ewe lambs would need to be 44.5 and 51.5 kg at joining, respectively. This clearly shows that whilst the weight of ewe lamb at joining is important, it is linked to genotype.

Conclusions

1. Breeding from ewe lambs can positively impact on farm profitability but requires good management during the breeding season, pregnancy and post lambing.
2. Breeding from ewe lambs can sustain high levels of productivity (weaning rate) that is close to that recorded for the national lowland adult ewe flock.
3. Feed ewe lambs to gain live weight throughout pregnancy.
4. Treat ewe lambs rearing twins the same as mature ewes rearing triplets..
5. Ewe genotype has a big impact on litter size, the number of lambs reared and the weight of lamb weaned.

Table 1. Effect of ewe genotype on litter size and lamb mortality

	Genotype		
	Belclare	Belclare x Suffolk	Suffolk
Litter size	1.81	1.39	1.27
No reared/ewe lambing	1.34	1.03	0.93
Mortality (%) - dead born	14.5	15.9	10.5
- total	27.3	27.3	26.3

Table 2. Effect of dam breed and rearing type on lamb performance

	Genotype		
	Belclare	Belclare x Suffolk	Suffolk
Weight (kg) - birth	4.0	4.3	4.4
- weaning	29.4	31.6	32.0
Weight gain (g/day)	257	270	280
Efficiency (weight (kg) of lamb reared per ewe lambing)	39.4	32.5	29.8

Table 3. Effect of birth and rearing type on lamb performance

	Birth type		
	1	2	
Rearing type	1	1	2
Weight gain (g/d) 0-14 weeks	288	271	253
Weaning weight (kg)	33.6	30.8	28.8

Figure 1. Effect of joining weight of ewe lambs from 3 different genotypes on the probability of rearing one or more lambs