Managing your flock during the breeding season

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Introduction

A key factor influencing profitability from prime lamb production is ewe productivity; that is the number of lambs weaned per ewe joined with rams. The factors influencing ewe productivity are litter size, the proportion of ewes joined that actually produce lambs, and lamb survival. My aim in this article, the third article in the current series, is to provide information on the influence of ewe genotype and management during the breeding period on ewe productivity.

Effect of ewe genotype

A number of studies have been undertaken by Teagasc at Athenry, and previously at Belclare, Blindwell and Knockbeg, to evaluate the effect of ewe genotype on ewe productivity. These studies were initiated in the 1980's and completed in 2006. In these studies crossbred ewes were out of either Scottish Blackface or Cheviot ewes and were sired by rams from different breeds. The resultant female progeny were retained for 3 production cycles, i.e., had an opportunity to produce 3 litters of lambs. The crossbred ewes were managed in a lowland grass-based system for prime lamb production. The results of these studies are summarised in Table 1. The number of lambs reared per ewe joined varied among genotypes by up to 0.44 lambs, which is equivalent to approximately €40 per ewe joined. The ewe genotypes that reared the highest number of lambs per ewe joined were the Belclare-X and the Charollais-X. As outlined in a previous article in the current series the Suffolk and Texel breeds (the two main terminal sire breeds) currently account for 61% of the sires of the national ewe population. Relative to Belclare-X ewes Suffolk-X and Texel X ewes reared 0.21 less lambs per ewe joined. Nationally the mean number of lambs reared per ewe

joined is only 1.3 lambs and this relatively low level of performance is in part a reflection of the breed profile of the national flock.

A more recent study currently underway in the Research Flock at Athenry includes further evaluation of the influence ewe genotype on lamb productivity. The ewe genotypes being evaluated are Belclare, Belclare x Suffolk and ewes that are >75% Suffolk. The Belclare and Belclare x Suffolk ewes were born at Athenry while the '>75%' Suffolk ewes were purchased off farms in Galway, Mayo and Roscommon. All ewes were March born and managed as one group from 4 months of age anf will be retained until they die or are culled for natural reasons. The effect of ewe genotype on productivity is presented in Table 2. Ewe genotype altered litter size and the number of lambs reared per ewe joined by 0.33 and 0.29 respectively, which is equivalent to approximately €28 per ewe joined. Furthermore, relative to the >75% Suffolk ewes, the Belclare and Belclare x Suffolk ewes increased the weight of lamb weaned per ewe joined by 19% and 23% respectively. Less of the Belclare and Belclare x Suffolk ewes were barren relative to the >75% Suffolk ewes.

The evidence presented in Tables 1 and 2 shows that breed replacement can result in an immediate, and significant, increase in ewe productivity primarily due to increased litter size. If a producer wants to increase productivity but retain the breed currently in their flock then rams should purchased that have a high replacement index and sub index for the number of lambs born (Sheep Ireland recorded flocks). Increasing ewe productivity by breeding will take a considerable number of years of a consistent breeding policy.

Ram effect

Producers with small or medium sized flocks may wish to compact the lambing season, for reasons such as labour availability and to increase the number of lambs drafted at each drafting occasion. This requires a compact mating period. The mating period may be compacted by synchronising the flock by using either progestagen-impregnated sponges or the 'ram effect'. The 'ram effect' is a natural way of synchronising the the onset of the breeding season in a flock of ewes.

The “ram effect” can be used to induce ewes (ewe lambs or adult ewes) to start cycling provided they are sufficiently close to the time of normal onset of their breeding season. The time of onset of the breeding season will vary by breed and nutritional pattern and typically starts with what is called a ‘silent heat’ – the ewe ovulates but does not exhibit oestrus (i.e., will not be detected as being in heat by rams). The occurrence of first heat (i.e., detectable by rams) will be 17 to 23 days later. The available evidence from studies under Irish conditions indicates that 14 September is around the mean date of the first heat of the breeding season for adult ewes of the type in lowland flocks in Ireland. The average date will be somewhat later for Scottish-Blackface-cross ewe types.

In practice the ram effect can be employed to ensure that all ewes in the flock are at the stage of exhibiting overt oestrus during the first 17 days of the joining period. The “ram effect” is due to the impact of pheromones released by sexually mature rams on ewes that have not yet entered their breeding season. For the “ram effect” to work the ewes should have not been in contact (either sight or smell) with rams for the previous month. When such ewes are exposed to rams the rams pheromones cause hormonal changes in the ewe that precipitate the onset of ovarian cyclicity.

The “ram effect” is illustrated in Table 3. When introduced on day 1 an apron can be used on the ram to prevent mating any ewe that is already cycling and happens to be on heat at the time. Upon introduction of rams most ewes that have not entered their breeding season will have a ‘silent heat’ within 36 hours and a proportion will have a second silent heat after 6 days. These ‘silent heats’ are not detected by rams. The rams should be removed after 24 to 36 hours. Ewes will cycle (i.e., be detected by the rams as on heat) at approximately 17 days after the last ‘silent heat’. Consequently there are 2 peak dates for the number of ewes showing heat, namely 18 and 23 days after exposure to the rams. Consequently, fertile rams should be introduced to the flock 14 days after the rams used to induce the ‘ram effect’ were introduced; the peak mating times will be 4 and 9 days later. The reason the rams are introduced at day 14 is to allow for any short cycles and to pick up any individuals that were already cyclic at the time of ram introduction.

At Athenry the “ram effect” was used on the ewe lamb flock – the onset of the breeding season is much later than for adult ewes. The effect on lambing spread is presented in Figure 1. All ewe lambs were mated during the joining period and the lambing season was compact with 75 and 90% lambing within 2 and 3 weeks, respectively. This clearly illustrates that the “ram effect” synchronised lambing. When using the “ram effect” to synchronise the mating season it is essential to have an adequate number of rams for mating (1 ram per about 20 ewes). Also it is essential to have adequate facilities - especially lambing pens (1 pen per 6 ewes) and labour- to cope with the flock during the lambing season.

Raddling rams

Many producers do not raddle rams and therefore may not be aware of issues that can occur during the breeding season. Raddling rams, if done correctly, brings many advantages in flock management between joining and lambing the following spring. The benefits of raddling include:

1) Rams that are raddled provide a clear indication of the number of ewes mated and mating date and consequently the lambing spread next spring
2) Infertile rams, particularly if single-sire mating, can be identified. Whilst ram infertility is rare, should it occur it is necessary to identify early and remove the offending ram. Changing the raddle colour prior to day 17 will enable the identification of ewes that return to service; if too many ewes ‘repeat’ a faulty ram should be suspected and replaced.
3) Changing raddle colour frequently (e.g., every 7 to 10 days) enables ewes to be grouped together at housing by expected lambing date. Grouping ewes by expected lambing date and scanned litter size enables optimum levels of concentrate be offered prior to lambing and avoids excessive concentrate feeding thus reducing the cost of concentrate inputs and will also reduce the incidence of oversized lambs and potential lambing difficulty. For example, ewes scanned as carrying singles and due between 1 and 7 March could be grouped with ewes scanned carrying twins and due between 7 and 14 March. If the raddle colour was changed weekly in this example then all ewes would receive adequate concentrate (this will be discussed in more detail in a later article).

In the absence of mating data information (via raddle colours) additional concentrate will inevitability by consumed by ewes in late pregnancy.

Take an example where the objective is to offer twin bearing ewes 20 kg concentrate in late pregnancy. If the ewes are housed by week of expected lambing (as known by raddle colour) the concentrate feeding regime can be tailored so that the ewes will have been received their total target concentrate feed level by the day 3 of the week, thus on average ewes will have consumed the target concentrate feed level (as lambing is spread throughout the week). However if ewes are housed as a group with no known mating information available (thus expected lambing date) then some ewes will receive the target concentrate feed level whilst others will receive up to 48 kg. On average in this scenario the flock will consume, on average, an extra 60% concentrate. Whilst this would result in increased cost there may also be an issue with oversized lambs and thus lambing difficulty and mortality in the later lambing ewes.

When raddling rams light colours should be used first followed by darker colours (e.g., yellow, red, green, blue, black). Depending on flock size, mating activity and housing arrangements raddle colour should be changed every 1 to 2 weeks.

Conclusions

1. Ewe productivity, which is the number of lambs reared per ewe joined, is a key factor influencing ewe productivity.
2. Ewe genotype can alter lamb productivity by up to 0.44 lambs per ewe which is equivalent to approximately €40/ewe joined.
3. Breed replacement is the quickest way of increasing ewe productivity in a flock which has an inherently low litter size
4. The ‘ram effect’ is an efficient way of ensuring that all ewes exhibit heat during the first 17 days of the joining period and thus compacting the lambing season.
5. If using the ram effect additional rams and lambing facilities (lambing pens) may be required during the breeding and lambing periods, respectively

Table 1. Effect of ewe genotype on ewe productivity (lambs reared per ewe joined)

Breed of sire of ewe	Lambs reared /ewe joined
Belclare	1.70
Charollais	1.66
Blue Leicester	1.55
Vendeen	1.51
Bleue du Maine	1.51
Border Leicester	1.51
Texel	1.49
Suffolk	1.49
Rouge de l'Ouest	1.37
Galway	1.35
Charmoise	1.27
Cheviot	1.26

(Source: after Hanrahan and Keady 2014)

Table 2. Effect of ewe genotype on ewe productivity (lambs reared per ewe joined)

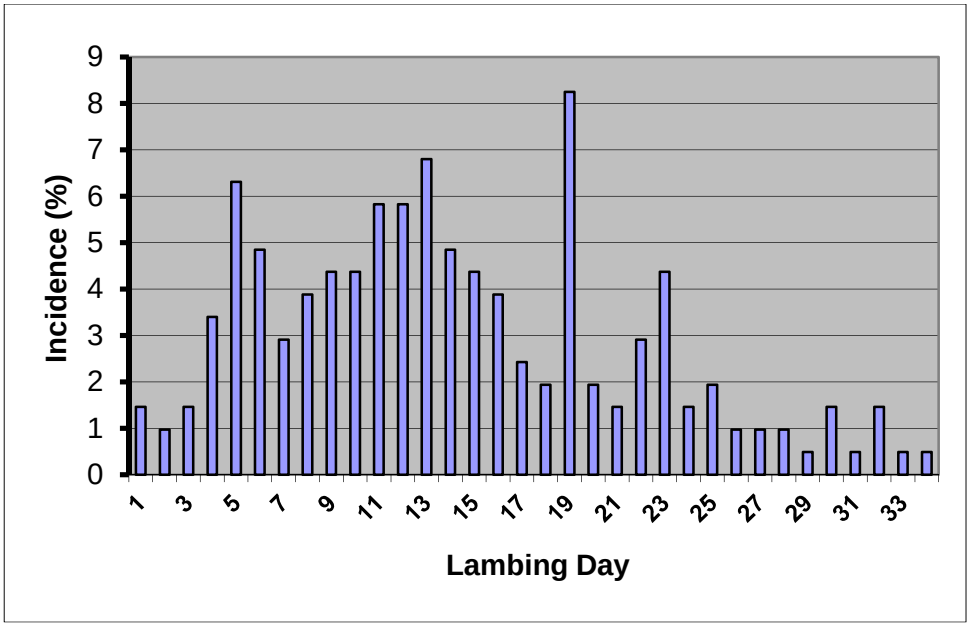
	Ewe genotype		
	Belclare	Belclare x Suffolk	>75% Suffolk
Litter size	2.02	1.93	1.69
Barrenness (% of ewes joined)	5.8	5.5	8.5
Lambs reared/ewe joined	1.62	1.63	1.33
Weight (kg) of lamb weaned per ewe joined	50.2	51.8	42.2

(Source: Keady 2016- unpublished)

Table 3. Timetable for use of the “ram effect”

Day	
1	Introduce aproned rams
3	Remove aproned rams
14	Introduce fertile rams
18	1st peak in matings
23	2nd peak in matings

Figure 1. Distribution of lambing of ewe lambs which were exposed to the “ram effect” at Athenry



(Source: Keady and Hanrahan 2016)