

Grassland Management for High Lamb Performance

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To improve the financial margin from mid-season prime-lamb production it is essential to optimise performance for grazed pasture. Whilst grazed grass is an expensive forage to produce, it is the cheapest feed available to the ewe flock. In well managed systems of mid-season prime-lamb production, grass is the only feed, except for the mother's milk, that lambs receive from birth to slaughter. To achieve high levels of lamb performance from grazed grass a continuous supply of high feed value pasture is required for the duration of the grazing season. Feed value is a combination of nutritive value (i.e. digestibility) and intake characteristics (combination of herbage supply and digestibility). The aim of this paper is to present information, based on research studies undertaken at Athenry, on maximising lamb performance from grazed pasture, and the management necessary to achieve this.

Lamb Performance from Grazed Grass

Lamb performance pre-weaning is influenced by rearing type i.e. number of lambs reared by a ewe (Table 1). Studies at Athenry have clearly shown that high daily liveweight gains of lambs reared as singles or twins are achievable from grazed grass offered as the sole diet.

Table 1. Target lamb pre-weaning daily live weight gain from grazed pasture

Rearing type	Gain (g/day)
1	340
2	295
3	290

(Keady, 2010)

At Athenry lambs reared as triplets are offered up to a maximum of 300g of concentrate daily until weaning whilst their dams receive 0.5 kg daily for the first 5 weeks post-lambing. Using the data presented in Table 1, flocks weaning 1.3, 1.5, 1.7 and 1.9 lambs per ewe put to the ram, target flock lamb average daily liveweight gains from birth to weaning are 322, 312, 303 and 293g/day, respectively.



Urea is up to 40% cheaper than CAN and is equally effective in moist conditions in spring

Autumn Closing Date

One of the main factors influencing grass availability in early spring is the date of closing the previous autumn. The data presented in Table 2 clearly illustrate the effects of autumn closing date on subsequent herbage yield and that the effect is still clearly evident by 1 May.

Table 2. The effect of closing date on subsequent cumulative herbage dry matter yield (kg/ha)

Grazing date	Closing date			
	5 Dec	19 Dec	2 Jan	23 Jan
3 April	610	337	175	62
17 April	1810	1443	1156	846
1 May	3570	3323	3015	2462

(Keady and Hanrahan 2011)

Previous studies at Athenry have shown that for each one day delay in autumn closing date herbage dry matter yield in spring is reduced by 22 kg/ha. Consequently, delaying sward closure by one week in the autumn would reduce grass dry matter availability the following spring by 154 kg/ha, which is equivalent to 50 ewe grazing days. Therefore, to ensure grass availability for ewes at lambing, paddocks should be closed from early November onwards

Pasture Management for High Lamb Performance

Effective grassland management involves matching grass supply and feed value with animal requirements. Grass growth varies throughout the grazing season. For example, typical daily grass dry matter growth rates for March, April, May, June, July, August, September and October are 10, 30, 70, 60, 50, 60, 40 and 30 kg/ha, respectively. Meanwhile, the demand of the ewe and lamb flock increases reaching a peak prior to weaning and declines thereafter as the requirements of dry ewes decline and lambs are being drafted for sale.

The main objective of grassland management is to have a plentiful supply of highly digestible grass available to the animals for the duration of the grazing season. However, as the grazing season progresses grass matures and goes from vegetative to reproductive state consequently increasing the proportion of stem and reducing digestibility and intake potential. Therefore, to achieve optimum levels of lamb performance from grazed grass, pasture must be managed to maximise the proportion of leaf in the sward canopy, thus maintaining herbage digestibility and intake potential. This is achieved by grazing swards to predetermined residual heights during the grazing season. Sward height measurement is the easiest and most effective way of managing pasture. For ewes and their lambs target post-grazing sward heights, which differ for rotational and set stocked grazing systems, based on many studies undertaken at Athenry are summarised in Table 3.



Each cm of grass above 3 cm will provide about 60 ewe grazing days per hectare

Table 3. Recommended sward heights for target lamb performance (cm)

Month	Grazing system	
	Rotational – post grazing	Set stocked
March	3.5 – 4	5
April	3.5 – 4	5 – 6
May	4.5 – 5	6
June	5.5 – 6	6 – 7
July	6	7 – 8
August	6	7 – 8
September	6	8

(Keady 2010)

To obtain high levels of lamb performance from pasture it is essential to graze the swards tight (low post grazing sward height) in April and May. Tight grazing during this period reduces stem elongation and thus maintains a higher proportion of leaf in the sward canopy for the remainder of the grazing season. Increasing the proportion of leaf maintains herbage feed value due to higher digestibility which positively affects intake characteristics. Furthermore, lax grazing necessitates topping which reduces herbage utilisation subsequently increases the costs of production.

Similar levels of lamb performance are achievable from well-managed set stocked and rotational-grazed systems. The main advantage of the rotational grazing system is that it simplifies the removal of excess herbage (paddocks) from the system during periods of rapid grass growth (e.g. early May), for forage conservation and enables the inclusion of extra herbage (e.g., aftergrass) when grass growth slows down in mid-summer. Also the rotational grazing system facilitates higher grass utilisation consequently reducing costs of production.

Grazing Management at Athenry

Pastures at Athenry are closed in rotation in the autumn, the first paddocks are normally closed in early November and all sheep are housed by mid December. The effects of autumn closing date on sward heights on 29 January and 20 March are presented in Figure 1.

Earlier closing results in higher sward heights at each time of measurement. Furthermore, swards closed in early November had the same sward height on 29 January as swards closed on 28 November had on 20 March. All grazing ground receives N at 33 kg/ha in mid February.

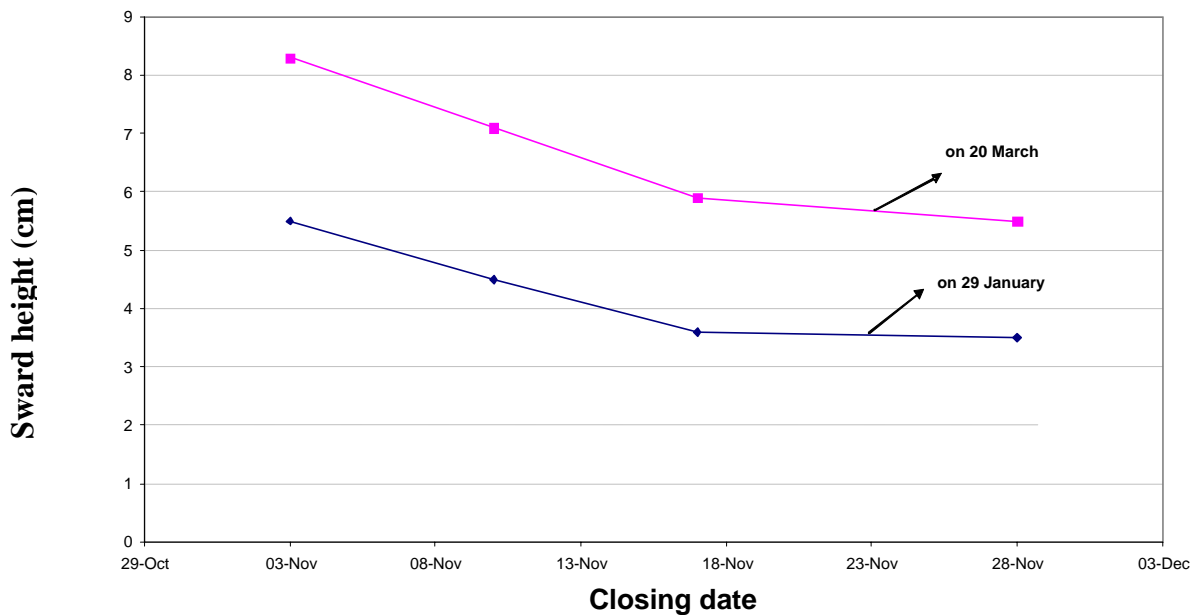


Figure 1. Effect of autumn closing date on sward height in early spring

The flock at Athenry, which is used for grassland and nutrition research consists of 350 crossbred ewes and is stocked at 14 ewes/ha. Each year, for experimental reasons, approximately 100 ewe hoggets are included in the flock. Prior to lambing (depending on experimental treatment) ewes receive an average of 20 kg concentrate in late pregnancy. Lambing commences on 1 March and the majority of ewes are lambed by 20 March. Post lambing ewes rearing singles and twins, and their lambs receive no concentrate supplementation whilst at pasture. Ewes rearing triplets receive 0.5 kg concentrate per ewe daily for 5 weeks post lambing whilst lambs reared as triplets receive up to 300g concentrate daily until weaning. Post weaning all lambs are grazed as one flock and receive no concentrate supplementation.

Drafting for Athenry flock

The drafting information for all the lambs (regardless of experimental treatment) from the Athenry flock for 2008, 2009 and 2010 are presented in Figure 2. During 2008, 2009 and 2010 the number of lambs reared per ewes were 1.7, 1.7, and 1.7, respectively. Average carcass weight increased from 19.0 to 20.6 kg between 2008 and 2010.

Data presented in Figure 2 clearly shows that, during 3 consecutive years, which differed dramatically in weather patterns and consequently grass production, all lambs from a prolific flock can be consistently finished from grazed grass offered as the sole diet.

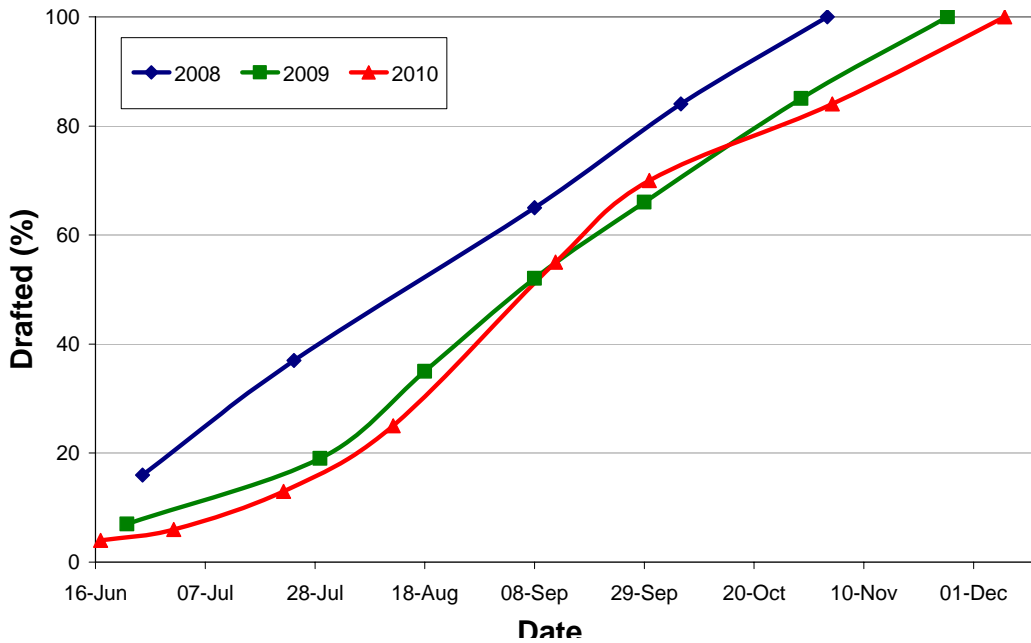


Figure 2. Drafting pattern for the Athenry flock for the past 3 years

At Athenry from 1 April to 30 June, total rainfall was 225 mm, 350 mm and 156 mm in 2008, 2009 and 2010 respectively. In 2008, grass supply was scarce due to low temperatures in mid-April, with the post grazing sward height being as low as 2.6 cm at times. However, no concentrate was offered to either the ewes or their lambs. For April, May and June 2008 mean post-grazing sward heights were 3.5, 4.8 and 5.5 cm and mean pre-grazing sward height were 6.4, 8.6 and 7.9 cm respectively. Managing the sward as described above resulted in mean daily liveweight gains from birth to weaning of 336, 292 and 296 g daily for singles, twins and triplets respectively.

April and May in 2009 were characterised as extremely wet with total monthly rainfall of 150 mm and 131 mm, respectively. For April, May and June mean post-grazing sward heights were 3.8, 3.8 and 4.0 cm and pre-grazing sward height were 5.8, 7.0 and 6.6 cm respectively. Pre-weaning lamb daily liveweight gains were 338, 279 and 284 g for singles, twins and triplets, respectively.

In 2010 March, April and May was characterised as a period of low temperatures consequently grass supply was scarce. Ewes were supplemented with concentrate for 3 weeks post lambing. Furthermore June was extremely dry with only 13 mm of rainfall recorded during the first 26 days of June 2010. Consequently, in June due to drought conditions grass supply was scarce and its feed value was low due to seed head elongation. For April, May and June mean post-grazing sward heights were 3.0, 4.6 and 4.9 and pre-grazing sward heights were 4.4, 7.2 and 7.7 cm, respectively. Pre-weaning lamb daily liveweight gains were 310, 265 and 257 g for singles, twins and triplets, respectively.

The data presented for 2008 show that even when there was grass shortage in April and May, due to low temperatures, and for 2009 which was extremely wet and in 2010 due to cold temperatures in March and April and drought in June that high levels of lamb performance can be achieved consistently when grazed grass is the sole diet offered to ewes and their lambs.

The data presented in this paper, based on many years of research at Athenry clearly illustrate that high levels of lamb performance are achievable from grazed grass offered as the sole diet. The key to achieving high levels of lamb performance from pasture is the provision of adequate quantities of high digestibility herbage. The easiest way to manage grassland for the flock is to use sward height when deciding on flock management to new pasture, and the removal of paddocks for forage conservation.



Twin lambs born on March 10 should weigh at least 34kg by June 16, at 14 weeks of age

Producer 1 – A Case Study

Producer 1 produces heavy lamb carcasses from grass without any concentrate supplementation offered to ewes rearing singles or twins or their lambs post lambing. Ewes rearing triplets receive 0.5 kg concentrate daily for 5 weeks post lambing whilst lambs reared as triplets are offered up to 300g supplement until weaning. The mean lambing date varied from 15 to 20 March for the years 2008, 2009 and 2010. Weaning rate for this flock, for the years 2008-2010, varied from 1.7 to 1.8 lambs weaned per ewe to the ram. Post weaning all lambs are grazed in one flock without any concentrate supplementation. The mean carcass weight for the lambs in 2008, 2009 and 2010 was 21.8, 21.1 and 21.7 kg respectively. The drafting patterns for the flock, for the last 3 years, are presented in Figure 3.

The data in Figure 3 clearly illustrate that heavy carcasses can be consistently produced from mid-season prime lamb systems where grass is offered as the sole diet to lambs reared as single and

twins pre-weaning and to all lambs post weaning. Furthermore, due to the adoption of good grassland management i.e. grazing to the recommended post grazing sward heights, particularly tight grazing in April and May, the drafting pattern improved between 2008 and 2010.

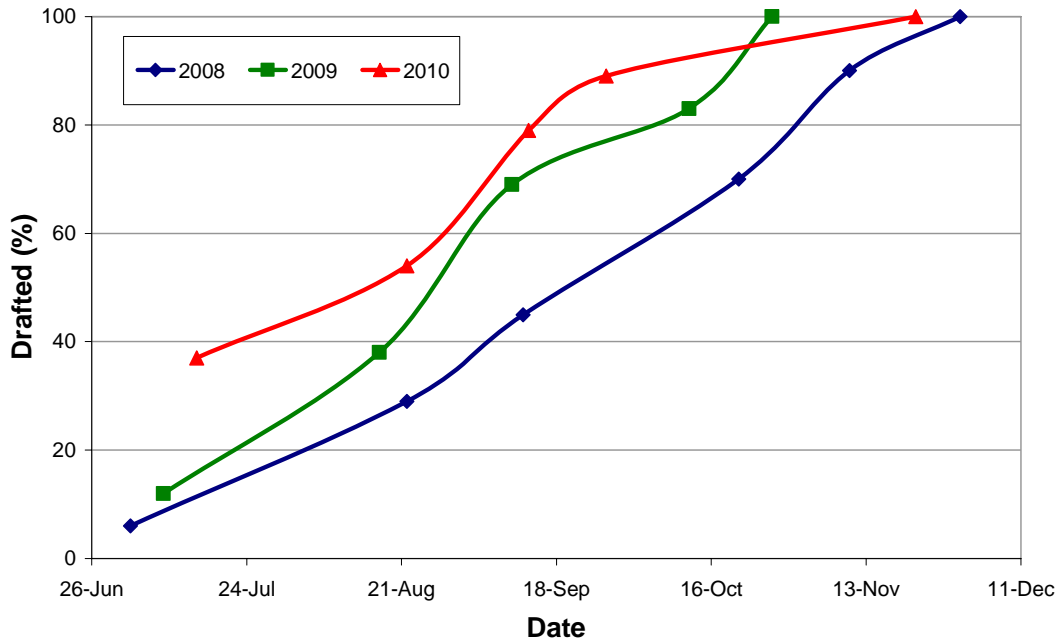


Figure 3. Drafting pattern for the commercial flock for the past 3 years

Summary

- 1) Heavy lamb carcasses can be produced from grazed grass offered as the sole diet.
- 2) To achieve high lamb performances match grass supply and feed value with animal requirements.
- 3) Graze pastures to pre-determined sward heights.
- 4) Grass swards tight, post-grazing sward heights of 3.5 to 4 cm, during April
- 5) Increase post grazing sward height as the season progresses.

References

- Keady, T.W.J. (2010) Finishing lambs from grazed pasture – the options and the facts. Paper to Irish Grassland Association Sheep Conference pp 81 – 92.
- Keady T.W.J. and Hanrahan J.P. (2012). The effects of allowance and frequency of allocation of autumn-saved pasture, when offered to spring lambing ewes in mid pregnancy, on ewe and lamb performance and subsequent herbage yield. *Livestock Science*. 143:15-23