

Extending the season for prime lamb production from grass

E.J. Grennan
Sheep Production Departemnt
Teagasc, Sheep Research Centre, Athenry,
Co. Galway

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SUMMARY

In recent years there has been some interest shown by exporters in acquiring younger lambs than those remaining from the normal spring-lambing flocks involved in mid-season or store lamb production systems, to supply niche markets in the November to February period. Lambing ewes later in the year, i.e. April to June, offers an opportunity to supply such niche markets with younger lamb.

Two farmlet systems were each operated over two years with 59 to 69 ewes on 4.5 ha of pasture in an all-grass production system. The objectives were: to assess the overall performance of flocks in late-lambing systems, to monitor lamb growth rates and drafting pattern, to monitor carcass quality in terms of weight, conformation and fat-score, and to identify any difficulties that may be associated with late lambing systems.

Lambing dates each year were end of April and early June. Ewes were mated at pasture (early December or early January, respectively) and then housed. In-wintered ewes were offered a diet of silage only until turned out to pasture in mid to late March. No concentrates were offered to ewes at pasture pre-lambing as there was adequate grass available. At lambing ewes were indoor at night and at pasture by day for ease of supervision and to avoid sudden diet changes close to lambing.

Ewes and lambs received normal health care for disease and parasite control as for spring-lambing flocks. Lambs were weaned at age 14 weeks (early August or early September) and remained at pasture until about mid October. Some lambs were drafted off pasture, and the remainder were housed and finished indoor on silage with concentrate supplement at 400 to 500 g/lamb/day. Lambs were drafted by weight and

condition, and carcass weight, conformation and fat score were recorded.

As the peak demand for grass arises a few weeks post lambing, i.e. late May and late June respectively, all silage requirements for ewes and lambs was taken in one cut in late May. This helped to match feed demand with grass supply.

Lamb growth rate to weaning was somewhat lower than for spring lambing, due to the lower quality (DMD) of pastures in mid-season compared with early spring. Growth rate from weaning to housing was variable from year to year and highlights the importance of maintaining high quality grass for lambs.

The drafting pattern of lambs differed for the two lambing dates and also from a normal spring-lambing flock in a mid-season system. For April lambing about 30 per cent of lambs were drafted off pasture by mid-October, with some 60 per cent in November/December and the remainder in January/February. The corresponding figures for June lambing were 0 to 11 percent drafted off pasture, about 60 per cent in November/December and 27 to 42 percent in January/February. Late lambing, therefore, resulted in the majority of the lambs being drafted in the period November to February.

Mean carcass weights, 17.4 to 18.4 kg, and carcass classification, typically R3H, indicate that these late-born lambs produced carcasses suitable for export to the French market. The somewhat lighter carcass weights of June-born lambs may be due to the longer indoor feeding period and associated higher concentrate consumption.

Savings are achieved in concentrate costs by not feeding meals to ewes at pasture pre-lambing but this is offset by that required in this production system to finish lambs indoor. Additional costs involved with indoor finishing include silage and housing. The profitability of late lambing will depend on the seasonal price of lamb and any bonus for producing a younger lamb out of season.

INTRODUCTION

For producers of lamb for home or export markets, continuity of supply may be an important consideration in

Table 1: Pattern of lamb kill in Ireland 1992-1998 (as a percentage of monthly average)

Month	%
January	68
February	60
March	65
April	92
May	127
June	122
July	135
August	130
September	122
October	108
November	92
December	80

winning and retaining market share. The majority of the lowland flock lamb in February/March with lambs drafted for sale off grass in summer and autumn. Early

lambing systems are also well developed with December/January born lambs supplying markets from April to June (Flanagan, 1999). However there is a deficit of prime young lamb in the November to March period, with the market at this time being supplied by older lambs from the normal spring-lambing flocks on lowlands and hills. (Table 1) In recent years there has been some interest shown by factories in Ireland in contracting with farmers to lamb ewes later in the season with a view to supplying younger lamb later in the autumn. This would extend the season for young lamb and help to supply niche markets. In the UK also guidelines have been prepared for farmers interested in late lambing, at pasture, primarily with a view to reducing production costs (Mitchell, 1996: Vipond, 1996). Trials were carried out over two years at Teagasc Research Centre, Athenry to assess the performance of flocks lambing either at the end of April or early June. A previous study at Teagasc Research Centre, Belclare, compared the performance of flocks lambing 10 April and 30 April (Grennan, 1998).

METHODS

Flock management

Two farmlet systems were operated over two years in an all sheep production system. Flock size ranged from 59 to 69 ewes stocked on 4.5 ha

of permanent pasture. Lambing dates each year were either the last week of April or the first week of June (Table 2). The objective was to produce and draft lambs for sale at carcass weight suitable for home and export markets.

The flocks consisted of mature Belclare x Scottish Blackface ewes and were mated to Suffolk rams. A new flock was assembled each autumn. Ewes were synchronised and mated at pasture in early December or early January. April-lambing ewes were housed in late December while early-June lambing ewes were housed about mid January and all ewes were shorn at housing. Rams were run with ewes indoor to cover any repeats. Inwintered ewes were offered a silage-only diet until turn-out to grass in mid to late March. No concentrates were offered to ewes pre-lambing at pasture as there was adequate grass available and ewes were at pasture for 6 and 10 weeks pre-lambing for April and June lambing flocks respectively.

Table 2: Dates relevant to flock management

	Year 1		Year 2	
	April	June	April	June
Mean lambing date	30 Apr	4 Jun	29 Apr	3 Jun
Ewes housed	18 Dec	13 Jan	21 Dec	10 Jan
Ewes turnout	16 Mar	18 Mar	22 Mar	22 Mar
Lambs weaned	10 Aug	10 Sep	6 Aug	3 Sep
Lambs housed	8 Oct	8 Oct	12 Oct	12 Oct

At lambing ewes were indoor by night and at pasture by day for ease of supervision and to avoid sudden diet changes close to lambing. Ewes with lambs were usually returned to pasture within 1 to 2 days of lambing.

Health care interventions for disease and parasite control were as for a normal spring-lambing flock. Lambs were weaned at age 14 weeks (early August and early September respectively), and remained at pasture until about mid-October. Some lambs were drafted off pasture, and all remaining lambs were then housed to have enough grass for flushing and mating ewes. They were finished on silage with concentrate supplement at 400 to 500 g/day and drafted by weight and condition when considered fit in November to February. All lambs were sent for slaughter and carcass weight and classification were recorded.

Grassland management

Ryegrass-dominant permanent pasture of negligible clover content was used. Each farmlet was subdivided into five or six paddocks. Paddocks were closed as they were grazed off with the last paddock closed when ewes were housed in late December or mid January. Fertiliser N was applied in February and ewes were turned out between 16 and 22 March when there was sufficient early grass, with a sward

height of 5 to 7 cm. The whole farmlet was available for grazing until 1 April at 13 to 15 ewes/ha when 44 to 55 per cent of the area was closed for silage and cut in late May. From 1 April until lambing stocking rate was 25 to 30 ewes/ha. After lambing ewes with lambs were stocked at 24 to 27 per ha until aftergrass became available in mid June. From then until lambs were housed in mid October, stocking rate was 12 to 13 ewes plus lambs/ha. (Table 3). All the silage requirements for ewes and lambs was taken as first cut. This helped to match grass supply with feed demand. The latter is relatively low pre-lambing but increased rapidly post lambing, to peak a few weeks post lambing, i.e. about end of May and end of June for the two lambing dates being compared.

Apart from early grass, N fertiliser was applied for silage and for grazing to ensure enough grass to maintain the flocks with total N use of 144 kg/ha.

Table 3: Stocking rate (ewes/ha) during season for April and June lambing flocks.

	Year 1		Year 2	
	April	June	April	June
At turn-out	14.0	13.1	15.3	14.7
1 April to lambing (Silage area closed)	25.2	29.5	30.6	29.3
Lambing to mid-June	23.6	26.5	26.2	26.6
Mid-June to Mid-October	13.1	11.8	13.1	13.3

Flushing and mating ewes

The late mating date of ewes, i.e. early December or early January necessitates providing grass for flushing ewes later in the year than for normal spring lambing. To conserve grass for ewes the lambs were housed in early to mid-October. In addition, in autumn of year one, silage was offered to ewes in the later lambing flock on bare pasture for a few weeks pre-flushing in November to allow a build up of herbage. However it is desirable to allow thin ewes recover body condition in the period after weaning rather than trying to achieve weight gain on pasture in late November and December. Finally ewes were housed when grass supply was depleted and rams were run with ewes indoor to cover repeats. Mating can be completed at pasture when sufficient grass is available.

The grass cover required for flushing and mating may be estimated as follows. To provide 1.7 kg DM/ewe for 35 days requires 59.5 kg DM/ewe or 833 kg DM/ha at a stocking rate of 14 ewes/ha. This is equivalent to a grass cover of 7 or 8 cm where pasture is grazed down to 3 or 4 cm before closing. Thus for 30 April lambing, ram turnout is 4 December and flushing ewes starts about mid-November with ewes housed about 20 December. A farm cover of 7 to 8 cm is required in mid November or mid December if lambing is end of

April or end of May. Less grass is required at lower stocking rates or if ewes are housed earlier.

RESULTS

Flock performance: Some aspects of flock performance are given in Table 4. The proportion of ewes lambing was over 90 percent, except for April flock in year 2. Rams were with ewes for 1 repeat service only. Litter size was satisfactory but was particularly high in April of year 1, due to a high incidence of triplets and quadruplets. A relatively high incidence of lamb mortality in year 2 was associated with multiple births in the April flock, and 1 set of 8 lambs in the June flock. Lambs drafted per ewe joined (excluding artificially reared lambs) ranged from 1.42 to 1.71 – the lower figure being partially associated with the high incidence of barrenness and lamb mortality indicated above.

Table 4: Flock performance each year for April and June lambing flocks

	Year 1		Year 2	
	April	June	April	June
No. ewes joined	63	59	69	66
No. ewe deaths	1	1	2	2
No. ewes barren	3	5	8	4
No. ewes lambed	60	54	59	60
Litter size	2.33	1.93	2.07	2.07
Live litter size	2.20	1.80	1.76	1.83
Lambs reared per ewe ¹	1.88	1.79	1.76	1.83

Lambs drafted per ewe joined ¹	1.71	1.56	1.42	1.56
No. lambs drafted	108	92	98	103

¹Excluding artificially reared lambs (21 in April of year 1, and 2 in June of year 1).

Lamb growth rate

Data in relation to lamb performance are shown in Tables 5 and 6. Lamb birth weights were satisfactory taking account of the fact that ewes were at pasture and without concentrate supplementation in late pregnancy. At weaning lambs tend to be lighter than for normal spring lambing flocks, and this was particularly so for the June lambing (table 5). This is attributed to the fact that the late-born lambs mainly graze mid-season pasture pre-weaning and this will be of lower quality (DMD) than that available in April/May for normal spring lambing flocks. Growth rates from 5 to 14 weeks in particular were lower than for normal spring lambing (Table 6). Lamb growth rates from weaning to housing were moderate but within the range normally found on grass swards at this time. At housing, remaining April-born lambs were 4 to 5 kg heavier than June lambs reflecting their earlier date of birth and higher weaning weight. This difference is also reflected in the overall drafting dates for April and June born lambs.

Table 5: Average values for birth weight and growth rate

	Year 1		Year 2	
	April	June	April	June
Birth weight (kg)				
Single	5.5	5.1	6.1	5.5
Twin	4.8	4.6	4.8	5.0
Triplet	4.4	3.6	4.3	4.3
Quadruplet	3.5	3.6	3.6	3.6
Weaning weight. (kg)	30.7	28.0	31.6	28.7
Weight. at housing (kg) ¹	36.8	32.7	35.8	30.4
Growth rate (g/day)				
Weaning to housing	141	173	96	98

¹Remaining lambs not drafted off pasture

Table 6: Lamb growth rate (g/day)

Time of lambing		0-5 weeks	5-10 weeks	10-14 weeks
April	Year 1	292	264	226
April	Year 2	300	286	223
June	Year 1	285	243	204
June	Year 2	303	229	197

Lamb drafting

The drafting dates, live and carcass weights, kill-out, conformation and fat score of lambs each year and for two lambing dates are given in Tables 7, 8, 9 and 10. As expected the seasonal drafting pattern of lambs was different for the two lambing dates and also quite different from normal lowland spring-lambing flocks. For April lambing 30 to 33 percent of lambs were drafted off pasture by about mid-October; 56 to 62

percent were drafted in November/December and the remaining 4 to 10 percent in January/February. Delaying lambing to early June resulted in 0 to 11 percent of lambs being drafted off pasture by mid-October, with 58 to 62 percent drafted in November/December and 27 to 42 percent in January/February. It is evident therefore that end of April lambing would supply the market mainly in October/December while delaying lambing until early June would supply lambs mainly in November to February.

Table 7: Drafting dates and carcass data (April , Year 1)

Draft date	No. drafted	Live wt. (kg)	Carcass wt. (kg)	Fat score	Conformation score	Kill-out %
19 Aug	3	41.7	18.0	3.1	3.7	43.2
15 Sept	7	41.9	19.2	3.3	3.4	45.9
7 Oct	22	42.0	18.2	3.3	2.8	43.4
10 Nov	50	42.2	18.5	3.5	3.0	43.9
27 Nov	16	41.5	18.1	3.6	3.0	43.6
22 Dec	6	40.8	18.4	3.3	2.7	45.0
18 Jan	2	41.5	19.9	3.8	3.5	47.8
11 Feb	1	42.0	19.1	3.8	3.0	45.5
2 Mar	1	37.5	17.7	2.8	3.0	47.2
Average		41.9	18.4	3.4	3.0	44.0

Table 8: Drafting dates and carcass data (June, Year 1)

Draft date	No. drafted	Live wt. (kg)	Carcass wt. (kg)	Fat score	Conformation score	Kill-out %
7 Oct	10	41.6	17.5	3.2	2.4	42.0
10 Oct	16	41.5	17.4	3.3	2.8	42.0
27 Nov	18	39.3	16.8	3.3	3.1	42.8
22 Dec	23	38.9	17.3	3.3	2.9	44.6
18 Jan	9	38.9	17.9	3.5	3.1	46.1
11 Feb	8	40.3	18.7	3.4	3.1	46.4
2 Mar	8	36.3	16.7	2.9	2.5	45.8
Average		39.6	17.4	3.3	2.9	43.8

Carcass Weight and Classification

Average carcass weight was about 18.5 kg for April lambing but was lower for June born lambs in both years. The somewhat lower carcass weights of June born lambs may reflect the higher concentrates required to finish these lambs over a longer indoor feeding period.

Each carcass was classified, by Teagasc personnel, using the MLC (1987) grid for lamb carcasses. This system consists of a 5-point conformation scale (denoted by E, U, R, O, P; E = best to P = worst) and a 5-point fat scale (1, 2, 3, 4, 5; 1 = least fat) in which classes 3 and 4 are subdivided into low (L) and high (H) subclasses. The conformation classes were re-coded as 1 to 5 (1 = P to 5 = E) and fat classes were coded as 1, 2, 2.75, 3.25, 3.75, 4.25, 5 (corresponding to 1, 2, 3L, 3H, 4L, 4H and 5, respectively). Thus, a carcass classified as R3L was scored as 3 for conformation and 2.75 for fatness.

Average fat scores was 3.2 to 3.4 and conformation was 2.9 to 3.0. Therefore a typical average carcass would be R3H on the classification grid. These carcass weights and classification indicate that late lambing systems yielded carcasses suitable for the French market. Kill-out percentage varied with date of drafting, with overall average values of 44 to 45 percent. However the market acceptability of these lambs relative to older spring-born lambs in the October to February period was not assessed.

Table 9: Drafting dates and carcass data (April, year 2)

Draft date	No. drafted	Live wt. (kg)	Carcass wt. (kg)	Fat score	Conformation score	Kill-out %
13 Aug	11	41.1	18.3	3.3	3.5	44.4
10 Sept	3	42.8	17.9	2.9	2.7	41.9
19 Oct	19	42.2	18.3	3.4	3.0	43.3
10 Nov	15	39.7	17.6	2.9	2.8	44.3
1 Dec	33	42.7	18.6	3.3	3.0	43.5
21 Dec	7	40.5	18.8	3.7	3.1	46.4
27 Jan	9	42.1	19.0	3.2	2.8	45.2
17 Feb	1	37.5	17.0	2.8	2.0	45.3
Average		41.7	18.4	3.2	3.0	44.0

Table 10: Drafting dates and carcass data (June, Year 2)

Draft date	No. drafted	Live wt. (kg)	Carcass wt. (kg)	Fat score	Conformation score	Kill-out %
10 Nov	6	39.0	17.4	3.0	2.8	44.4
1 Dec	34	40.8	17.7	3.3	3.0	43.3
21 Dec	20	39.6	17.9	3.4	3.1	45.2
27 Jan	27	41.9	19.0	3.3	3.0	45.4
17 Feb	16	36.8	17.1	3.2	3.1	46.4

Average	40.1	18.0	3.3	3.0	44.7
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Concentrates for finishing lambs

The rate of concentrate supplement offered to lambs finished indoor and the total concentrate used per lamb finished indoor and per lamb drafted are shown in Table 11. In the case of the April lambing flock the quantity of concentrate used to finish lambs is approximately equal to the rate of concentrate normally offered to ewes in late pregnancy. Therefore the saving achieved by not feeding concentrates to these late-lambing ewes at pasture pre-lambing is largely negated by the requirement to offer supplement to lambs finished indoor in this system.

For June lambing the concentrate requirement for finishing lambs indoor was greater than that normally offered to ewes pre-lambing. The higher requirement for June born lambs is due to the fact that these lambs were lighter at housing, had a longer indoor finishing period, and fewer lambs were drafted off pasture without concentrate supplementation. In farm situations alternative finishing systems may be available, including catch crops and root crops (Fitzgerald, 1983, 1986), or finishing at pasture with concentrate supplementation.

Table 11: Concentrates for finishing lambs indoor

	Year 1	Year 2
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	April	June	April	June
Quantity offered (g/day)	400	400	400	500
Concentrates consumed (kg)				
per lamb finished indoor	18	30	23	39
per lamb drafted	13	27	15	39

CONCLUSIONS

- Lambing ewes in April to June offers the opportunity to market younger lambs, than those normally remaining from spring-lambing flocks involved in mid-season or store lamb production, in niche markets in November to February.
- With late lambing about 60 percent of the lambs were drafted in November/December for each lambing date. April lambing resulted in some 30 percent of lambs being drafted off pasture by mid-October while June lambing moved the drafting date to January/February for 28 to 42 percent of the lambs. The majority of lambs were, therefore, drafted in November to February.
- Lambs were drafted at carcass weights of 17.4 to 18.4 kg, and classification typically R3H, which should make them suitable for export to the French market.
- Late lambing changes the peak demand for grass for grazing from spring towards summer

and autumn. While this demand is out of synchrony with normal grass growth, this is partly compensated for by taking all silage requirements for ewes and lambs as first cut in late May. However careful planning is still needed to ensure sufficient grass for flushing and mating ewes at pasture in November to January.

- While some cost savings are achieved by not feeding concentrates to ewes at pasture pre-lambing, this is offset by the necessity to supplement lambs finished indoor on silage. Profitability of late-lambing will depend on the seasonal price of lamb and, any bonus payment, if any, for producing younger lamb.

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