Finishing store lambs: what are the options?

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Introduction

Data from the Department of Agriculture, Food and the Marine implies that there are up to 98,000 extra lambs in the system compared with this time last year - an increase in supply of approximately 10 to 15%. The market consequences for slaughter lamb depends, of course, on what proportion of the increase is kept as additional replacements for the breeding flock. An increase in lamb availability may affect the opportunities for profitable store to finishing systems. The three main factors influencing profitability in store lamb finishing systems is buying price, the increase in lamb carcass price (c/kg) during the finishing phase and cost efficient carcass gain during the finishing period.

My aim in this article, the fifth in the current series, is to present data based on studies undertaken at Athenry on different opportunities for finishing store lambs.

Performance from pasture

Finishing lambs from a pasture-based system is a low cost option on some farms. The main objective of grassland management should be to have a plentiful supply of highly digestible grass available to the animals throughout the finishing period. A question often asked by producers is ‘what level of lamb performance is achievable from autumn pasture’. A number of studies were undertaken at Athenry over the years to evaluate the performance of lambs grazing pasture between early October and mid-November. The results of the studies are summarized in Table 1. The data presented in Table 1 illustrates that acceptable levels of daily live weight gain are achievable from grazed grass into late autumn provided lambs have access to suitable pasture and are not forced to graze to a low sward height. The evidence shows that lamb gain increased as post-grazing sward height increased.

Supplementing lambs with concentrate at pasture increases lamb performance. The results of a study completed at Athenry on supplementing finishing lambs with concentrate on autumn pasture are summarized in Table 2. The response to concentrate supplementation at pasture depends on pasture availability and concentrate feed level. The highest response to concentrate supplementation

was achieved for the first increment of supplementation and declines as concentrate feed level increased. Studies at Athenry have shown that increasing the level of concentrate supplementation from 0 to 0.25 kg/day and from 0.25 to 0.5 kg/day yielded mean carcass gain responses of 0.18 and 0.11 kg carcass per 1 kg concentrate. Therefore 5.5 and 9.1 kg of concentrate was required for each 1 kg of carcass gain when daily concentrate feed level was increased from 0 to 0.25 kg and from 0.25 to 0.5 kg, respectively.

Finishing indoors

Many lambs that are to be slaughtered next spring will be finished indoors on intensive diets consisting of concentrate offered *ad lib* or in combination with ensiled forages.

Athenry Studies

Two studies have been undertaken at Athenry to evaluate the effects of forage feed value, forage type and concentrate feed level on the performance of finishing lambs. A total of 550 Suffolk cross lowland lambs that were purchased in local markets were used.

Two grass silages and a maize silage were produced for each of these studies. The silages differed in feed value and were precision chopped at ensiling. The medium and high feed value grass silages had mean dry matter digestibilities (DMD) of 710 and 750 g/kg DM, respectively. The mean dry matter and starch concentrations of the maize were 270 g/kg and 250 g/kg DM respectively. The concentrate was formulated to have a crude protein concentration of 160 g/kg.

One of the treatments evaluated was concentrate offered *ad lib*. The level of concentrate offered was increased daily and *ad lib* intake was achieved within 10 days post housing. Lambs offered the *ad lib* concentrate diets received 0.5 kg fresh weight of the high feed-value silage as a fibre source. The lambs offered concentrate *ad lib* consumed an average of 1.5 kg concentrate daily for the duration of the study.

The effects of forage feed value and concentrate feed level on lamb daily gain are presented in Table 3. Regardless of forage feed value increasing concentrate feed level increased daily gain. The greatest response to increasing concentrate feed level was achieved with the medium feed value grass silage. Increasing grass silage feed-value yielded the same response as increasing concentrate feed level by 0.35 kg per lamb daily.

Diet type had a major effect on lamb kill out. The effects of forage feed value and concentrate feed level on kill out are presented in Table 4. Kill out varied from 42.5% to 49.1% for the medium feed value silage supplemented with 0.3 kg concentrate daily and the *ad lib* concentrate treatments respectively. Consequently weight at drafting is influenced by the diet offered during the finishing period as well as by desired carcass weight. For example, if the objective is to achieve a carcass weight of 22 kg, lambs offered the *ad lib* concentrate and lambs offered medium feed-value grass silage supplemented with 0.3 kg concentrate daily would need to be drafted at 44.8 and 51.8 kg, respectively. The difference in drafting weight is due to gut fill differences.

Effect of shearing

To shear or not to shear? A question often asked by producers. There is an opinion that shearing prior to finishing increases food intake and lamb performance. Results from a study at Athenry on the effects of shearing on the performance of finishing lambs are presented in Table 5. All lambs were slaughtered on the same day. Lambs that were shorn had a higher daily food intake than lambs which had not been shorn but there was no difference in carcass weight. Therefore, shearing lambs prior to finishing reduced the efficiency of conversion of metabolizable energy to carcass gain by approximately 10%.

Effect of diet on margin over feed

The effects of diet type on margin over feed are presented in Table 6. It is assumed that concentrate is purchased at €260/t and carcass price is €5/kg. The margin over feed is presented as cent per lamb per day. The data presented in Table 6 clearly illustrate that medium feed-value grass silage (71% DMD), when offered as a sizable proportion of the diet, does not have a role in finishing store lambs. Offering concentrate *ad lib* resulted in the higher margin over feed due to the high level of performance and the better feed conversion efficiency.

For each change in carcass value of ± 30 c/kg margin over feed changed by ± 2 and ± 4.5 c/day for lambs offered the high feed value silage supplemented with 0.3 kg concentrate daily and *ad lib* concentrate diets, respectively. For each change in concentrate value of ± €30/tonne the margin over feed changed by ± 1 c and ±4.5 c/day for lambs offered the high feed-value silage supplemented with 0.3 kg concentrate daily and *ad lib* concentrate diets, respectively. The greater effects, of a change in concentrate and carcass prices, on the margin from lambs offered the *ad lib* concentrate diets reflects the higher concentrate intake and carcass gain of these lambs compared to the other diets.

Conclusions

1. Whilst finishers have little influence on lamb carcass price they can control the level of performance during the finishing period.
2. Good levels of lamb performance are achievable from autumn pasture.
3. Response to concentrate supplementation at pasture declines as feed level increases
4. For intensive indoor finishing, *ad lib* concentrate feeding resulted in the greatest daily margin over feed.
5. For lambs offered *ad lib* concentrate the food conversion ratio was 10.7 kg concentrate per 1 kg of carcass gain.
6. Increasing silage DMD by 4 units had a concentrate saving effect of 0.35 kg daily
7. Medium feed value silage (i.e. DMD around 70%) should not be included as a major component of finishing diets for lambs.
8. Shearing lambs increases food intake, has no effect on carcass gain, and reduces the efficiency of conversion of energy intake to carcass weight.
9. It is important to base drafting weight on the type of diet as well as on desired carcass weight.

Table 1. Lamb performance form autumn pasture

	Post grazing sward height (cm)		
	4.2	5.2	6.1
Daily live weight gain (g/day)	68	121	147

(Greenan 1987, 1988, 1999)

Table 2. Effect of concentration supplementation of autumn pasture on lamb performance

	Concentrate feed level (kg/day)		
	0	0.25	0.50
Slaughter weight (kg)	41.6	44.8	46.6
Carcass weight (kg)	17.1	19.1	20.3
Daily live weight gain (g/day)	114	186	227

(Greenan 1999)

Table 3. Effect of forage type, feed value and concentrate feed level on lamb daily gain (g/day)

	Concentrate feed level (kg/day)			
	0.30	0.65	1.0	Ad lib
Medium feed value silage	50	147	182	
High feed silage	132	182	204	248
Maize silage	124	156	183	

(Keady and Hanrahan 2014,2015)

Table 4. Effect of forage type, feed value and concentrate feed level on lamb kill out (%)

	Concentrate feed level (kg/day)			
	0.30	0.65	1.0	Ad lib
Medium feed value silage	42.5	45.7	46.1	
High feed silage	44.4	45.9	47.6	49.1
Maize silage	44.2	46.3	47.2	

(Keady and Hanrahan 2014,2015)

Table 5. Effect of shearing on lamb performance

	Treatment	
	Unshorn	Shorn
Food intake (kg/day)	1.29	1.39
Carcass weight (kg)	22.4	22.4
Carcass gain (g/day)	90	89
Efficiency (g carcass/ MJ ME intake)	5.3	4.9

(Keady and Hanrahan 2015)

Table 6. Effect of forage type and feed value, and concentrate feed level on margin over feed (c/lamb daily)

	Concentrate feed level (kg/day)			
	0.30	0.65	1.0	Ad lib
Medium feed value silage	-3	15	18	
High feed silage	20	25	26	35
Maize silage	19	21	22	