Lambs reducing days to slaughter

Northumberland Monitor Farm

This technical report has been produced for AHDB by FORRIT Progressive Production

Lambs reducing days to slaughter

Background

A potential focus area identified as part of the monitor farm programme was to reduce the number of lambs still on farm in late autumn through to winter. In 2021, although most lambs were sold fat, nearly 30% were still on farm by tupping time, utilising purchased feed as well as valuable pasture and staff time. The value these lambs were bringing into the business was lower than those finished earlier in the season. Selling lambs ahead of tupping frees up pasture and labour allowing focus on the ewes for next breeding season. For Alnham, it also facilitates the move towards cattle out wintering, further reducing costs across the whole farm system.

Objective

To reduce the days to slaughter and aim to sell all lambs by tupping time.

Starting point

The lamb sales profile for Alnham from 2021 through to 2024 are shown in the spider charts below. The first three years - 2021to 2023 experienced some challenging weather conditions. Met Office data confirms that those three years were characterised by dry springs and summers, with 2022 in particular having only 70-90% average spring rainfall followed by only 30-50% of average summer rainfall. This had a big impact on pasture availability for ewes and lambs. Autumn 2023 was also wetter than average (150-170%) resulting in poor quality pastures. These weather conditions also coincided with system changes on the farm, in particular deferring hill grazing during the summer to out winter cattle and shifting ewes from hill to low ground. Purchased feed showed an according increase to help fill the feed gap and try and keep lambs moving, as shown in table below. The table shows total feed used per lamb sold, but not all lambs will have received feeding. To give a better indication, an assumption is made that feed supplementation is for later sold lambs, so the feed purchased is reflected of the lambs still present after 1 October.

Alnham also has a known cobalt deficiency and usually gives long acting injectable to lambs (SmartShot) at marking, then Dodicile injection at weaning plus a cobalt drench after, if required. Ewes are also bolused. Alnham are also pro-active in targeting worm treatments using FEC and weight gain. Therefore this topic won't be covered in this report.

Alnham purchased lamb feed 2021–2024

	2021 season	2022 season	2023 season	2024 season
Purchased Lamb feed	30T	38T	19T	9T
Total number lambs sold	3,018	2,817	2,230	2,028
Feed used kgs/hd	9.94	13.49	8.52	4.44
Cost/hd @ £0.32/kg	£3.18	£4.32	£2.73	£1.42
Feed used kgs/hd sold >1 Oct	25.73	19.15	12.32	7.21
Cost @ £0.32/kg	£8.23	£6.13	£3.94	£2.31

Lamb sales profile charts 2021–2024

Outcomes

2024 was where efforts were focused, which also coincided with a different spring weather pattern with a cool, wet spring - 150% of the average annual rainfall - but again followed by a drier summer with 70-90% of average annual rainfall. As can be seen from the spider chart, lamb sales profile was much tighter, with all lambs away ahead of tupping. This was achieved through a combination of:

- better pasture availability - partly aided by a wetter spring
- targeted marketing - making good use of an agent to find the right market for lambs as soon as they were in spec and making decisions early. For example, pre-weaning lambs were being sold at 36Kgs taking advantage of the higher killing out % (~17.4 kgs DWT - 48% KO).
- targeted mineral and worm management

This resulted in more pasture availability going into winter, helping to focus on ewes at target BCS (body condition score) for tupping and deferred grazing for cattle. There was also a 55% reduction in purchased lamb feed (on a per head basis, data for 2021 vs. 2024 kgs/lamb sold). This equates to a saving of approximately £2,300 - equivalent to 20 lambs.

Getting there

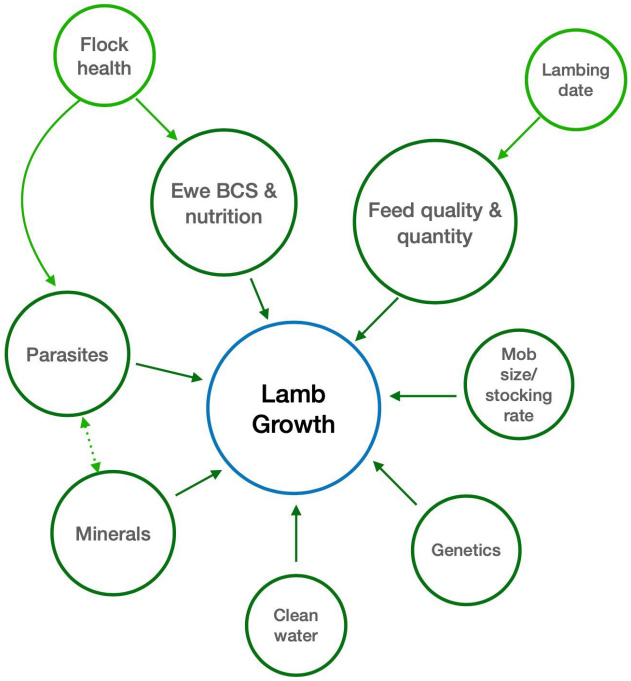
There is no one single influence on lamb growth rates, so the first stage was to highlight where opportunities may lie within the existing system to help achieve reduce days to slaughter. For Alnham, the following objectives and strategies were identified.

Objectives	Setting the lambs up	Setting the ewes up
To have all lambs sold by tupping by: • Making the decision on selling store lambs earlier - 8 week weighing can inform • Prioritising finishing the low store value hill lambs on farm • Establishing/utilising high clover leys (30%) - including red clover • Consider weaning hill lambs earlier - BUT onto high quality feed • Making best use of livestock agent on best selling options best option eg store or fat/light	• target 8 week weight of 20kgs (285g/head/day) lambs < 17kgs will struggle beyond weaning • have high quality digestible pastures available • check mineral status early & monitor as necessary • choose genetics to finish off grass - the right EBVs to match • continue with FEC testing/TST • If necessary, undertake FEC reduction test • target 90 days weaning weight of 30Kgs • If sufficient fat cover, draft off mum at 38Kgs	• check ewe BCS on target at key stages (weaning, tupping, scanning) 2.5—>3-3.5—>3-3.5 • monitor health status on any lean ewes • metabolic profile ewes ahead of lambing • manage first time lambers well • check mineral status of ewes - particularly if cutting concentrates on pre-lambing rotation

Key principles behind lamb growth rates

Lamb growth to slaughter is the outcome from two individuals. It starts with the ewe - as the early source of lamb feed, then shifts to the lamb itself. Adding in management, it's a mix of optimising nutrition -

pasture quality, quantity, addressing limiting minerals - alongside minimising health issues - particularly parasites - whilst selecting the right genetics for growth and fat class.



What's possible?

As can be seen from the table below, the highest daily live weight gains are possible during the pre-weaning period; that is, lactation is the easiest time to achieve high growth.

Table 1. Potential growth rates at pre- and post weaning

	Target	What's possible?	What's common?
Pre weaning DLWG	300g/day	500g/day (eg single with milky mother)	Less than 200g/day
Post weaning DLWG	200g/day	350g/day (eg high clover pasture grazed at optimal height)	Less than 100g/day

Adapted from Lovatt & Gasgoine (2015) https://www.researchgate.net/publication/281470214_Lamb_growth_rates_and_optimising_production

This is in part due to the fact that feed conversion is better in younger animals, but also due to milk as a high quality diet. Pre weaning the ratio of feed eaten:growth (feed conversion efficiency) is around 3-4:1. Post weaning, that figure falls to 6-10:1.

In addition, lambs growing fast also require less feed to achieve target weights. As shown in Table 2 below, a lamb growing at 300g/day consumes only 63Kgs DM, vs. a lamb growing at 100g/day consuming almost twice at 120Kgs DM. Effectively high growth rates support high resource (pasture) use efficiency.

Table 2. Feed conversion efficiency for different lamb growth rates between weaning at 24kg and a target liveweight of 34kg

	Lamb growth rate (g/day) from 24-34kg			
	100	200	300	400
Feed requirement (kg DM/day)	1.2	1.5	1.9	2.4
Days to target weight (34kg)	100	50	33	25
Feed consumed (kg DM)	120	75	63	60
Conversion efficiency % (kg DM/liveweight gain x 100	8.3	13.3	15.8	16.6

Source: https://beeflambnz.com/knowledge-hub/PDF/400-plus-guide.pdf

Nutrition

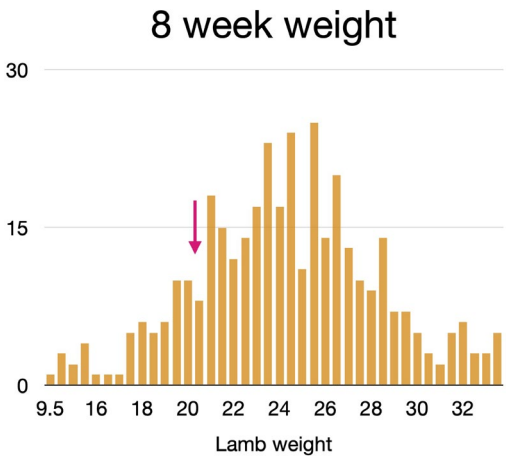
Livestock grow when energy and protein supplied exceeds maintenance requirements. Milk provides the most important source of nutrition for the first 6 weeks of life and is an ongoing, albeit declining contribution to the diet up until weaning. It is a high quality feed, perfectly designed for lamb growth with an ME of 12.5MJ/Kg. Because of this high ME value, any reduction in milk production requires more high quality pasture to make up the energy shortfall, particularly for twins.

Ewe lactation is dependent upon:

- what she is being fed during lactation and
- her body condition going into lactation

Underfeeding during late pregnancy and into lactation can reduce milk yield by 7-35% (Gasgoine & Lovatt, 2015). Metabolic profiling of ewes ahead of lambing can inform if the ewes are receiving the correct nutrition.

Lambs born to ewes fed well in late pregnancy also have greater fat reserves and are better able to survive challenging weather conditions. They also maintain their suckling drive longer than those whose mothers are poorly fed, a key determinant of survival.



A valuable indicator of ewe lactation and lamb growth potential is 8-week weight. The target weight should be 20Kgs (adjusted to 8 weeks). Lambs that don't grow well to eight weeks and are less than 85% of their target weight ie <17kgs continue to struggle up to and beyond weaning, and these lambs are likely to be tail-enders. Taking an eight week weight can provide useful insight not only into ewe management and feeding, but also allows early decisions on the future of those smaller lambs eg consider creep feeding, or targeting then at early store markets.

Lactation is the part of the ewe's production cycle that has the highest energy requirement and having sufficient body condition helps maximise lactation. Research shows that ewes which hit target Body Condition Score (BCS) at tupping, weaning and lambing and don't lose more than 0.5 BCS over winter or pre-lambing wean heavier lambs.

Spring pasture, whatever species of grass it's made-up of, is always high quality. The key focus during early lactation is to not limit the quantity of pasture supplied. As lambs grow and increase their intake, the

main challenge is to maintain pasture supplied, both in terms of quantity and quality. Lambs do not perform well on poor quality (digestibility) pasture, even if offered lots of it.

Lambs need high quality digestible feed to replace the milk supplied by mum. As the season progresses from late spring into summer, grass quality declines as it matures and starts to produce stem and seed head. Clover and other legumes can help fill this feed quality challenge. Clovers will have around 10% higher digestibility than grasses due to being less fibrous, allowing faster rumen passage rate and thereby higher feed intake. They also maintain their digestibility for longer than grasses, even as flowers and seed heads develop. They are highly palatable and will be preferentially grazed, plus have higher levels of crude protein and cobalt compared to ryegrass, providing a valuable diet for growing lambs, particularly as they transition off milk.

Research from Ireland (see table below) shows that lambs supplied with a higher sward height (6cm vs. 5cm) grew to heavier weaning weights and reached sale 13 days earlier than lambs on low sward height (no creep). The findings also showed that weaning weight for the higher 6cm sward, with no creep was close to the lower sward 5cm + 300g/hd/day of creep feed - 33.7 vs. 34.3 kgs.

The lower part of the table table also shows the benefits of the inclusion of clover on growth rates alongside increased post grazing sward heights on a rotational system. It is recommended that target sward height for set stocked, or residual height for rotational systems increase as spring progresses into summer. As a rough rule of thumb add 1cm in May, another in June-July. For rotational systems, 4cm residual in early spring, 5cm in May, 6cm from weaning. For set stocked 5cm, to 6cm in May, 7cm from weaning.

Table 3 - effect of sward height and pasture type on lamb growth

	Creep feed (g/lamb/day)						
	Low sward height **(5 cm)**				High sward height **(6 cm)**		
	0	300	600		0	300	600
Weaning weight (kgs)	31.4	34.3	36.9		33.7	36.7	37.5
Drafted at weaning (%)	7.3	20.7	42.8		20.4	41.2	53.7
Age at sale (days)	167	140	125		154	126	118
Creep intake (kgs)	0	32.5	52.9		0	27.5	46.0

Lamb growth rate g/day	Post grazing height (cm)		
Pasture type	4	5	6
Grass	100	140	160
Grass/clover	117	173	222

Adapted from Brennan (2005) https://www.irishgrassland.ie/wp-content/uploads/2022/04/Irish-Grassland-and-Animal-Production-Association-Journal-2005_CompressPdf.pdf

Feed supply - both quantity and quality - are the main drivers of lamb growth rates. Although it will vary a little across the country, somewhere between 75-85% of annual pasture growth in the UK occurs from April until September. Profitability will be maximised if lambs reach their target slaughter weight during this period.

Minerals

Although feed quality or quantity is usually the primary driver of poor lamb growth rates, on some farms minerals can be limiting too. We don't often necessarily see clear deficiency symptoms (eg copper deficiency and swayback) - but more subtle subclinical issues that impact on lamb performance. Some minerals are involved in growth and immune function - so are important for growing lambs. Cobalt, Copper and Selenium, iodine and zinc are key ones. It's important to determine mineral status and take professional advice. Any supplementation beyond 'adequate status' is unlikely to yield further benefit and is only going to add to costs. For some minerals, eg copper and selenium, over supply can cause toxicity issues.

Cobalt is probably the most widely reported limiting mineral for growing lambs. Cobalt is essential for the rumen microbes to produce vitamin B12, which is needed for energy and protein metabolism as well as immune function. Sheep don't have the ability to store cobalt, so need a steady dietary supply. In addition, growing lambs have high requirements, particularly as their diet transitions from milk to pasture. This increasing need coincides with falling pasture cobalt levels in the summer along with parasite challenges.

A number of factors can impact on the intake, absorption and utilisation of trace elements. Supply is often dependent on pasture content, which in turn is impacted by forage species, soil conditions, geographical location, season and environmental conditions. Undertaking analysis will give you a clearer picture of stock needs.

Testing for Alnham showed that some lambs were within target for selenium (GSHPx), but B12 in poorer lambs was below target.

Follions Sheep Trace Element Report July 2024

A group of 6 (three well doing, 3 less well doing) lambs were bled 26/07/2024 for cobalt (VitB12) and selenium (GSHPx). Results received 06/08/2024.

Black Sheep Farm Health
Dedicated farm vets

Follions – **varied B12**, GSHPx consistently good

VitB12 – reference >295, varied results, **need B12 supplementaQon**, consider Dodicile.

>738	717	308	**127**	**<111**	**174**

GSHPx – reference >50, all good levels

133.8	95.6	216.9	186.7	173.8	227.1

Marketing

Typical market requirements for lambs are carcasses of 16-21Kgs for supermarkets, 16-25Kg for butchers and 9-21Kg for export (AHDB, 2018), with fat cover of 2-3L for supermarkets and export, 2-3H for butchers. In terms of energy supplied, overweight or overfat lambs have utilised feed that could have been used by other stock on farm. To avoid penalties and maximise value, it's important to ensure that lambs are as in spec as possible for your chosen market.

In terms of carcase weight, it's important to note that killing out percentage will reduce with age, so earlier selection of finished lambs can still give you a desired carcase weight. Whilst there will be some breed differences, the table below shows estimated killing out % for different ages. Looking at this data - a 40Kgs lamb at weaning (48% KO) will yield an 19.2Kg carcase. Post weaning, this lamb will need to weigh 42.7Ks to achieve the same 19.2Kg deadweight. By late autumn/winter (43% KO), the lamb will need a live weight of 44.7Kgs - 4.7 Kgs heavier.

Making use of an agent can help you find the right market for the lambs you have available. Although kilograms of liveweight sold is a key profit driver, lighter lambs with the desired level of finish may also be suited to the export market.

Table 2. Kill out rates (%) for lambs of different ages

Lamb Age	Estimate Kill Out %
Pre weaning	
10 – 13 weeks	50%
14 weeks	48%
Post weaning	
Late summer	45%
Autumn/Winter	43%

Source: Teagasc (2002) - Lamb Drafting and Market Specifications

Summary of key areas of focus

- Nutrition is the key driver of production and live weight gain. The main aim should be to maintain good leafy pasture covers and wherever possible, high clover content
- Have all ewes in target BCS at critical control points - tupping, scanning & lambing (3-3.5)
- Metabolic profiling ewes pre-lambing will guide if ewes nutritional needs are being met
- Ensure ewes have sufficient feed (quality & quantity) to support lactation
- Have high quality feed to wean lambs onto and raise target sward heights up to and beyond weaning
- Be on parasite management & minerals. Test, then treat accordingly
- Consider your marketing strategy. Take advantage of higher killing out percentages for younger animals, particularly pre-weaning. Make sure lambs are in spec.
- Be prepared to adjust when things don't go to plan - eg late spring growth, summer dry, changes in lamb market prices

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