Cattle and Sheep Enterprise Profitability in Scotland

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CONTENTS

EXECUTIVE SUMMARY 4

INTRODUCTION 7

Cost price changes during 2015 10
2016 prospects 13
Structural changes in 2015 16

CATTLE ENTERPRISES 18

Results from LFA hill suckler herds 19
Results from LFA suckler herds 22
Results from non-LFA lowground suckler herds 28
Results from rearer-finisher enterprises 30
Cattle finishing 33
Results from cereal-based cattle finishing enterprises 33
Results from forage-based cattle finishing enterprises 35

SHEEP ENTERPRISES 41

Results from LFA hill ewe flocks 42
Results from LFA upland ewe flocks 45
Results from lowground breeding flocks 47
Results from store lamb finishing enterprises 49

ESTIMATION OF NON-CASH COST IN PRODUCING CATTLE AND SHEEP 54

COMPARISONS WITH 2013 AND 2014 57

Cattle Enterprises 57
Suckler herds 57
Cattle finishing 57
Sheep Enterprises 58
LFA sheep 58
Lowground sheep 58
Lamb finishing 58

GLOSSARY 62

EXECUTIVE SUMMARY

- This report on enterprise profitability covers the 2015 calf and lamb crop year, a period where prime stock prices generally failed to match the levels seen in the previous year. Store cattle and lamb prices also failed to match year-earlier levels for most of the period. Falling revenues, though, were offset to various degrees by lower feed, fertiliser and energy prices.

- Although the results show some improvement in margins among suckler herds, they continue to illustrate the scale of the challenge of achieving a positive margin without CAP support. Thirty-eight percent of suckler herds in the survey achieved a positive net margin; this is an improvement from the one-third of enterprises surveyed that achieved this objective with the 2014 calf crop and 22% with the 2013 calf crop.

- Margins were significantly reduced among store finishers, where only 30% of businesses surveyed achieved a positive margin – the lowest level for three years. Only cereal finishing systems are estimated, on average, to have made a small return after factoring in unpaid labour and the return on capital and land foregone.

- The proportion of hill ewe flocks making a positive net margin fell slightly from 15% in 2014 to 14% in 2015. Meanwhile, 60% percent of upland flocks recorded a positive net margin, down slightly from the 68% last year. Similarly lowground flocks also saw deterioration in margins, with the proportion of surveyed flocks achieving a positive net margin falling to 66% for the 2015 lamb crop from 75% for the 2014 lamb crop. For store lamb finishers, the proportion achieving a positive net margin slipped to 71% of the sample from 75%. Nevertheless, businesses reporting positive net margins still struggled to deliver a fair return for labour and capital.

- The survey results continue to show significant variation in levels of financial and technical performance within the industry.

- Top producers continue to be characterised by:
  - High physical, or technical, performance
  - Strong control over costs
  - Maximising returns from the market place

- Across suckler herds, those in the top third of gross margin per animal achieved higher output through higher calf-rearing percentages, generally selling heavier calves resulting in higher yield per cow in the herd. They also typically received a small premium in the marketplace for the calves they sold.

- Suckler herds in the top third of financial performance were also characterised by strong variable cost control. Those in the top third had lower total variable costs than the average while achieving higher output. In all cases, variable costs per kg of calf reared were lower among the top third. Fixed costs were also firmly controlled; in all

cases top-third producers had lower fixed costs per kg of output, even if on occasion fixed cost per cow was higher than the average.

- Those in the top third of sheep producers similarly achieved higher outputs through higher stock performance. Typically they reared about 10–18 more lambs per 100 ewes than the average. Although they did not necessarily rear lambs to the heaviest weights, the larger lamb crop typically resulted in top-third flocks selling 5 to 7 kg lwt more lamb per ewe. They also typically sold the highest proportion of lambs for immediate slaughter. The net effect of this was that income per ewe from lamb sales was £14–£20 per ewe more than the average.

- The LFA hill suckler herds surveyed had an average gross margin of £285 per cow. The top third averaged £445 per cow gross margin, an improvement over the average of £160 per cow. The top third recorded a negative net margin of £16 per cow against the average of (-)£154. Of the sixteen producers surveyed, four achieved a positive net margin – a decline on last year, emphasising the challenges of farming in an extensive way on severely disadvantaged land.

- The LFA upland suckler herds were split into two categories, one group selling at weaning and a second group selling yearling stores. Those selling at weaning made an average gross margin of £319 per cow, but were outperformed by their counterparts selling yearlings, who achieved an average gross margin of £426 per cow. Top-third producers selling at weaning made £442 gross margin per cow with 6% more liveweight produced per cow than the average while at the same time keeping variable costs 20% lower. Of those selling yearlings, the top third achieved a gross margin of £572 per cow. Again variable costs were strictly controlled and compared to the average were 8% lower while still producing 2% more liveweight per cow. Thirty-six percent of businesses selling calves at weaning achieved a positive net margin. In contrast, among those selling yearlings, 38% of the businesses achieved a positive net margin.

- Non-LFA suckler herds reported an average gross margin of £413 per cow while those in the top third achieved a gross margin of £495. A contributor to this improvement was the 2% greater sale weight per cow. Fifty-six percent of businesses surveyed achieved a positive net margin.

- Rearer-finisher businesses surveyed recorded an average gross margin of £490 per cow, with the top-third averaging £639. However, the average net margin remained negative at (-)£78 – a fall of £12 over the year. Thirty percent of the businesses surveyed achieved a positive net margin, a decline from 38% last year.

- Cereal-based cattle finishers surveyed reported an average gross margin of £154 per beast and a net margin of £62. Those in the top third achieved a £120 improvement in net margin over the average. Indeed two thirds of businesses in the survey reported a positive net margin down from 80% last year.

- Forage-based finishers have been split into two groups: those selling cattle under 22 months of age and those selling cattle over 22 months of age. Those selling younger cattle achieved an average gross margin of £162 per beast and reported a net margin of (-)£92. Those selling older cattle achieved a gross margin of £164 per head and net margin of (-)£79. Those in the top third of both groups achieved this objective largely through their ability to realise better returns from the marketplace and having the biggest spread between purchase and sale price. One quarter of those selling younger cattle achieved a positive net margin compared to just 6% of those selling the older cattle.

- LFA hill sheep enterprises in the survey achieved, on average, a gross margin of £25 per ewe, a significant improvement on last year. The top-third benefited from higher prolificacy and lamb weights, resulting in a net output £23 per ewe higher than the average; with variable costs only £6 per ewe higher, this improved productivity transferred into a positive gross margin of £17 per ewe. On average the group achieved a net margin of (-)£17 per ewe while those in the top third combined an improved gross margin and a saving of £3 per ewe in fixed costs to deliver a positive net margin of £3 per ewe. Fourteen percent of the sample achieved a positive net margin – a slight improvement on the year.

- Sixty per cent of upland ewe enterprises surveyed reported a positive net margin, up from 45% last year but still trailing the position two years ago, with an average of £2.00 per ewe. However, those in the top third achieved a net margin of £20 per ewe – slightly down on last year. Variable costs and fixed costs among the top third were only marginally lower than the average, but the proportion of lambs sold finished was higher than the average while return from the marketplace was little different. Thus, the major contributor to improved returns was the balance of sales between prime, store and breeding lambs.

- Lowground breeding ewe businesses in the survey saw little change in technical performance from last year, but low prime lamb prices in June and July badly impacted on net output, and despite some savings due to lower feed and fertiliser costs this group saw some deterioration in margins. Nevertheless, the average net margin remained positive at £21 per ewe and two thirds of those surveyed achieved a positive margin.

- Store lamb producers achieved an average gross margin per lamb sold of £10 per lamb, and the average net margin rose on the year to £4.56. The number of enterprises surveyed that reported a positive net margin slipped slightly to 71% from 78% last year.

- This year estimates have been made of the greenhouse gas emissions associated with the enterprises surveyed and reported on the basis of net liveweight produced or added during the surveyed year. The calculations were made using the SAC Consulting's resource efficiency calculator AgRE Calc. The results show a clear correlation between the best financial returns, the best technical efficiency and the lowest greenhouse gas emissions per unit of output. In the same way that this report summarises the opportunity that exists for the industry to improve financial margins, it also shows the scope to reduce emissions at the same time.

INTRODUCTION

This report summarises the results of a survey of Scottish beef and sheep enterprise profitability during the 2015 calf and lamb crop year. The survey was commissioned by Quality Meat Scotland and carried out by SAC Consulting.

The survey covers 74 breeding ewe enterprises farming 45,100 ewes and 108 suckler cattle enterprises farming 10,400 suckler cows, 14 enterprises finishing just over 8,000 store lambs and 52 cattle finishing enterprises selling 4,000 prime cattle. The number of organic herds and flocks in the survey made up 2% of the suckler herds and 1% of the ewe flocks surveyed. The survey provides a snapshot of the industry during 2015. This report compares, for each sector, the costs, revenues and margins achieved by the top third of producers, the bottom third and the sample average.

The concluding sector of the report provides some comparative analysis with the results from 2013 and 2014. However, it must be stressed that the comparisons are not identical samples of businesses.

Within the analysis of the survey, an enterprise's estimated fixed and variable costs can be found, as well as their estimated gross and net margins. The gross margin is left after variable costs have been deducted from an enterprise's revenues. Then, once fixed costs have been subtracted from the gross margin, one is left with the enterprise's net margin, which rewards the farmer for their labour and capital investment. Fixed costs have been allocated to the livestock enterprises on a farm in direct proportion to their share of the total sales revenue of that business. Within mixed livestock farms, fixed costs have been allocated between cattle and sheep enterprises in relation to their proportion of Grazing Livestock Units. The reporting of bottom third, average and top third is based on ranking enterprises by gross margin per head of livestock.

The analysis has been extended to include estimates of the time committed to the enterprises by family labour for which no charge has been recorded in the estimate of net margins. The level of income required to provide a 5% return on an enterprise's working capital has also been estimated, in addition to the opportunity cost of the land used.

All area-based support payments have been excluded from this year's analysis of the returns derived from livestock enterprises since there is no obligation for livestock production to take place in order to receive area payments. However, the Scottish beef calf premium has been included since it is coupled to the level of production.

Estimates of carbon efficiency have been made using SAC Consulting's AgREcalc methodology.

The considerable range of land types and production systems found in Scotland inevitably means that any survey of businesses cannot cover all options. However, results are presented for a comprehensive range of enterprise types, namely:

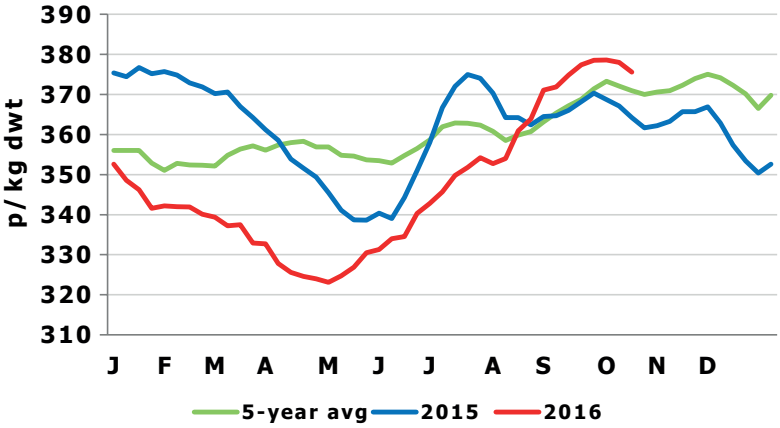
- LFA hill herds selling calves at weaning
- LFA upland herds selling calves at weaning
- LFA upland herds selling forward stores
- Non-LFA herds
- Rearer-finisher herds
- Cereal-based finishing enterprises finishing cattle under 20 months of age
- Forage-based enterprises finishing cattle at under 22 months of age
- Forage-based enterprises finishing cattle at over 22 months of age
- Non-LFA breeding flocks
- LFA upland ewe flocks
- LFA hill flocks using Blackface or Cheviot stock
- Store lamb finishers

Both the range of performance and the key contributing factors to these differences in performance between businesses are demonstrated by the results of the survey. The results also provide individual businesses with a benchmark to gauge their own performance against, thereby allowing them to investigate the strengths and weaknesses of their enterprise compared with those of similar businesses.

Cost price changes during 2015

Although farmgate cattle prices opened 2015 5.5% above the 5-year average (2011–15), they traded 7% less than at the beginning of 2014, with the average steer selling for 375p/kg dwt. After a firm January, prices quickly began to slide. This was despite abattoirs handling fewer cattle than a year earlier, reflecting weak demand. It was not until late May that the market began to stabilise, at around 340p/kg, as slow grass growth resulted in delayed finishing, at a time when supply has traditionally picked up. Prices then rose sharply through June and July, peaking at 375p/kg in late July. The market then followed its historic seasonal trend of dipping back in August before showing two short-lived peaks in September and November. However, there was a more pronounced downturn in December once the festive trade had been supplied, suggesting that processors had fewer orders than expected around Christmas and New Year. In the final week of the year, the average steer price stood at 353p/kg – down 23p on the first week of 2015 and nearly 5% below the 5-year average. The annual average steer price in 2015 was 362p/kg – 2% down on the previous year. However, once heavier carcase weights have been taken into account, the annual average price per steer carcase decreased by only a fraction to £1,417.

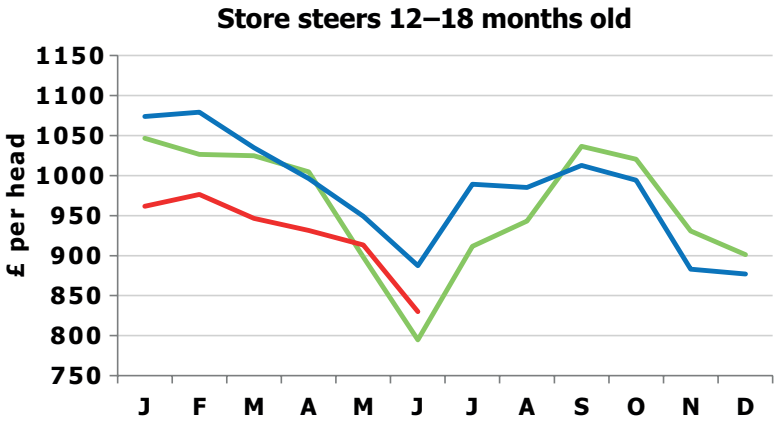
Scottish deadweight steer price



After opening 2015 down 7% year-on-year, the gap narrowed to -2% in February, before gradually widening back to -6% in May. This decline quickly turned into an 8% premium at the peak of the market in July, before quickly reversing again, moving back into deficit in September before edging out to -6% at the year-end.

Store cattle prices followed their traditional seasonal pattern in 2015, though with less of a summer trough and autumn peak as in recent years. Prices were generally above 2014 levels until August, though there was little difference at the peak spring selling period when prices for finished cattle were sliding. At the peak of the autumn sales, prices struggled to match year-earlier levels, reflecting the trade for finished cattle and

prospects that abattoirs were about to impose larger penalties on overweight carcases. For a 12–18-month old store steer, the seasonal peak in September fell 2% short of 2014 levels, with an average per head selling price of £1,013 during the month. In the year as a whole, 1.5% more steers aged 12–18 months were sold than in 2014, but, at £995 per head, they averaged 0.3% less than in the previous year. In the 6–12 month age band, despite numbers rising 4.5%, the average price per head was 0.5% higher at £885.

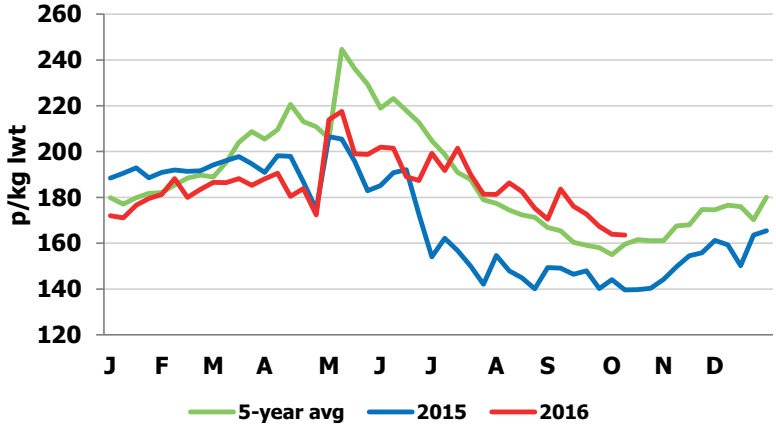


Prime sheep producer prices opened 2015 at 188p/kg lwt. This was marginally in front of year-earlier levels and 5% above the five-year average. Prices then lacked direction during the first quarter of the year and failed to take a seasonal upturn after Easter as there was a long tail of hoggs to keep the market in balance. After a brief dip, the new season then began, but prices were unable to match their 2014 maximum, peaking at 206p/kg lwt in early May compared with 255p/kg in the third week of May in 2014. The market quickly cooled after reaching its peak and fell particularly fast in the second half of June once Ramadan had passed, as lambs came forward to the market more quickly and at heavier weights than in 2014. The 2015 season was characterised by a shallower pricing pattern than in recent years, with prices falling earlier and faster than usual and holding at close to its annual low of 140p/kg from the end of July right up until the beginning of November. The one exception was a brief period in September when demand spiked in the run-up to Eid al-Adha, pushing the market closer to 150p/kg. As supplies began to tighten in November, prices firmed and reached a pre-Christmas peak of 161p/kg in early December. They then closed the year at 165p/kg lwt – 12% below where they had begun 2015.

Prime sheep auction prices spent 47 of the 52 weeks in 2015 below 2014 levels. The declines were around 5% in the first quarter, then as much as 20–25% in May and June. Thereafter, prices were generally 10–15% lower than in 2014, other than a brief period in September around Eid al-Adha. The consequence of these movements was that the annual average price for an SQQ lamb at Scottish auctions was down by almost 9% on 2014 at 167p/kg. This reflected some key factors. These included strong supplies of late

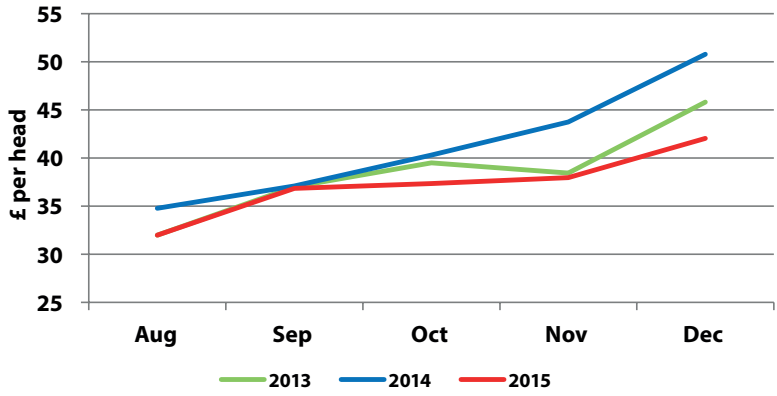
season hoggs and an earlier delivery of new season lambs on to the market. However, perhaps the most important was the considerable headwind of a strong sterling exchange rate against the euro and New Zealand dollar. This made exports less profitable and imports look competitively priced, placing downwards pressure on the price processors were willing to pay for home produced lambs.

SQQ lamb price at Scottish auctions



Store lamb prices trended higher through the autumn of 2015. However, other than in the second half of September, when Blackface store lambs averaged 1–2% dearer than in 2014, prices fell short of 2014 levels, reflecting a difficult trade in finished lambs. Prices were generally 8–10% cheaper in August, October and the first half of November and then 15–20% cheaper year-on-year in the final six weeks of 2015. Suffolk cross lambs showed a similar trend, though the declines towards the year-end were even steeper.

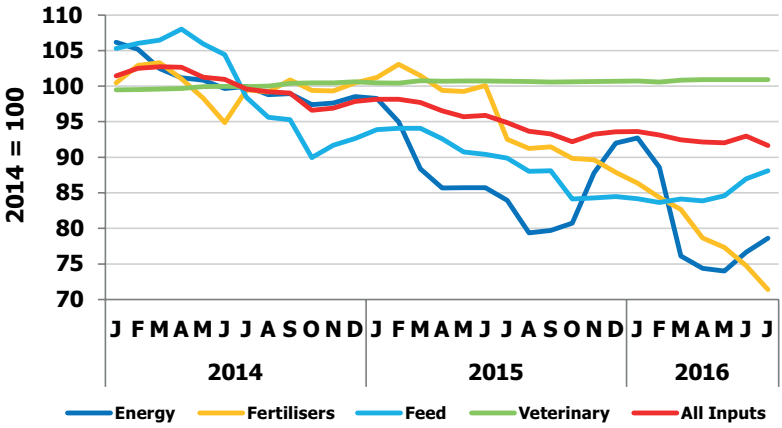
Blackface store lamb autumn sales average prices



Having risen by 12% in 2013 and by 4% in 2014, the average Blackface store lamb price fell back by 6% to £37.40 in the autumn of 2015. This was despite 6% fewer Blackface store lambs being marketed, reflecting weak demand from finishers cautious of their opportunity to generate a profit given the headwinds faced by the finished market.

On average, UK agricultural input costs fell for a second consecutive year in 2015 and slipped to their lowest level since 2010. Feed, fertiliser and energy costs all trended lower through the year while vet costs continued to flatline. Feed costs were stable through the first quarter of 2015, before sliding as estimates of another strong global harvest were made and then materialised. However, prices did pick up a little towards the year-end on the back of concerns over winter wheat planting in the US and Black Sea region. There was also a downwards trend for energy costs in 2015 as the lagged effect of oil price declines in 2014 passed through to electricity, gas and fuel markets. Although the constituent parts of the energy index continued to slide in late 2015, the index rose, possibly down to a shift in relative volume shares within the index. In the fertiliser market, the downwards trend of 2011 to 2013 reasserted itself in 2015. This reflected high global inventories of nitrogen, phosphate and potash.

Selected Agricultural Input Costs **Source: Defra**



2016 Prospects

Since the survey data was collected in the spring of 2016, there have been some changes in the marketplace. Cattle supplies tightened in the summer, exacerbated by an earlier delivery profile due to market signals against overweight carcases. Penalties for heavy carcases also led to reduced carcase weights relative to 2015 from June onwards, adding to the decline in production volumes. In addition, a weaker sterling since the Brexit vote has raised the competitiveness of UK beef in price-sensitive markets both at home and on the Continent. Data from Kantar Worldpanel has also pointed to a significant rise in beef demand over the summer months as heavy competition between multiple retailers has led to a fall in beef retail prices. This combination of factors has pushed up farmgate prices to their highest levels in over a year.

Store cattle prices have followed their traditional pattern again in 2016. However, they rebalanced relative to 2015 levels in the spring to reflect lower prices for finished cattle. In the early autumn sales, they then pushed back ahead of 2015 levels.

On the sheep side, producer prices for hoggs were generally around 5% below 2015 levels, as weak demand was partially offset by tight supplies and a weaker sterling. Moving into the 2016/17 season, slow growth rates and an earlier Ramadan ensured that prices traded higher than in 2015 by 5–10%. From July onwards, lamb numbers began to pick up at the GB level but remained tight in Scotland while carcase weights remained significantly lower across the board, limiting any overall increase in supply at the GB level. Meanwhile, the sterling exchange rate weakened further after the Brexit vote, underpinning farmgate prices by supporting the competitiveness of home-produced lamb in UK and EU markets. As a consequence, prices were around 15% ahead of year-earlier levels in the autumn.

After growing strongly in 2013 and 2014, the pace of economic growth in the UK slowed in 2015 and cooled further in the first half of 2016. On the one hand, businesses exhibited caution with their investment decisions due to the uncertainty of the EU referendum. On the other hand, low inflation meant that historically weak wage growth was still able to boost household finances. Although consumer confidence declined owing to nervousness around the general economy, strong personal finances meant that consumer spending continued to rise strongly. Furthermore, the economy continued to absorb a rising population and the unemployment rate dipped below 5% – close to 'full employment'. Consumer spending, which had previously boosted returns in the household goods and vehicles sectors, began to switch more favourably towards food.

In terms of red meat sales, Kantar Worldpanel data showed increased beef sales volumes (3%) in the 12 weeks to August 14, but that a smaller volume of lamb (-6%) was retailed than a year earlier. It appears that lower retail prices for beef have underpinned consumption in recent months, but a combination of lower supplies and higher prices have turned consumers away from lamb. Looking at the competitor meats, sharply falling prices for chicken have seen its share of meat consumption continue to rise, while heavy price cuts for pork have finally led to a slowing in the rate of pork consumption decline, though volumes were still 0.5% lower year-on-year in the 12 weeks to August 14.

Input costs have generally continued to trend lower in 2016. In particular, fertiliser and energy prices fell heavily in the first half of 2016, though currency movements may slow these declines going forward and potentially lead to slightly higher prices. Also, global oil prices have lifted again, so this may pass through into wholesale and retail prices for energy and fertiliser at a lag. On the feed side, prices were relatively flat in the first four months of the year, before picking up between May and July. This happened after flooding in Argentina disrupted the soyabean harvest while flooding in France and Germany lowered wheat yields significantly. However, prices began to fall back in August following upward revisions to forecasts for global harvests, driven by favourable growing conditions for soyabeans in the US and wheat in the Black Sea region. Exchange rate movements may offset any further declines in global commodity prices.

As is always the case, profitability will also have been linked to the timing of sales and input purchases. For cattle, prices have spent more time below 2015 levels than ahead of them for both store and finished cattle. Store cattle buyers who purchased short-keep cattle in the third quarter of last year are likely to have been particularly hard-hit given the way prime cattle prices fell through the first half of 2016 and abattoirs imposed greater penalties on heavy carcases. For sheep producers, returns are likely to have exceeded year-earlier levels in per kilo terms, but slow growth and lower killing-out percentages may have seen prices per head rising to a lesser extent. Meanwhile, those selling through the auction market system can always choose to sell on a day where the market price falls suddenly as processors have already secured adequate volumes, and vice versa. For both cattle and sheep producers, inputs purchased in the early part of the year are likely to have been cheaper than twelve months earlier, but moving into the second half, costs may have proved little different, or even more expensive in some cases, particularly where buying feed.

Other factors to consider will be mortality rates and productivity of breeding herds and flocks. Producers seeing improvements in these areas are most likely to have seen their business's financial performance increase. On the sheep side, reports over the winter were that scanning rates had been particularly high and then reports after lambing suggested that lambing ratios had been above average. Meanwhile, for cattle, a warm winter may have helped producers to achieve reductions in mortality rates.

Structural changes in 2015

Among the suckler herds surveyed, 41% increased cow numbers by more than 5% while a further 19% reduced cow numbers by more than 5%. Overall, the number of cows farmed by those in the survey increased by 3%, in contrast to a national increase of 0.4% reported in the Scottish agricultural census of December 2015. Growth in cow numbers occurred across all farm types. However, the smallest growth, of around 1%, occurred among the most extensive herds, namely the hill suckler herds and the upland herds selling weaned calves.

With regard to breeding sheep enterprises, the total number of ewes farmed by those in the survey increased by 4%, in contrast to a 1% decline reported in the national flock in the December 2015 Scottish agricultural census. All flock types recorded some increase, with the biggest proportional increase in ewe numbers occurring among lowground flocks while the smallest increases occurred among upland flocks – the reverse of the situation last year. Forty percent of flocks increased in size by more than 5%, while 17% of surveyed businesses reduced flocks by more than 5%.

Greenhouse gas emissions

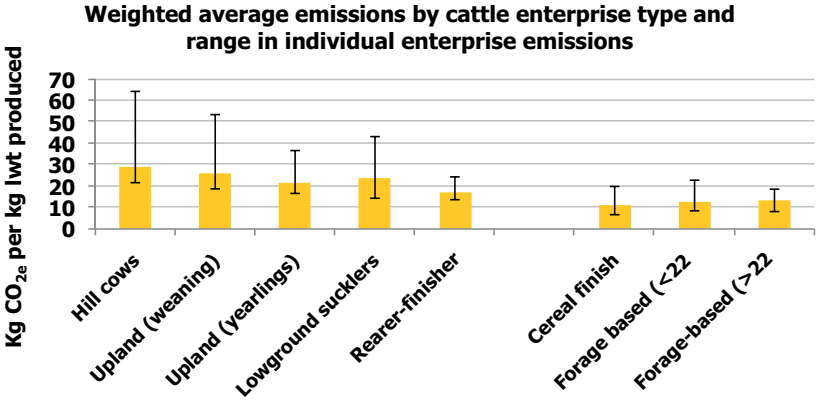
The Scottish Government has detailed its position on climate change through the Climate Change Act (2009) and subsequent secondary legislation. This act sets some clear targets for greenhouse gas reductions in Scotland. Agriculture and livestock production are recognised as a key contributor to GHG emissions in Scotland. All sectors of industry and the wider community are expected to strive to reduce their emissions.

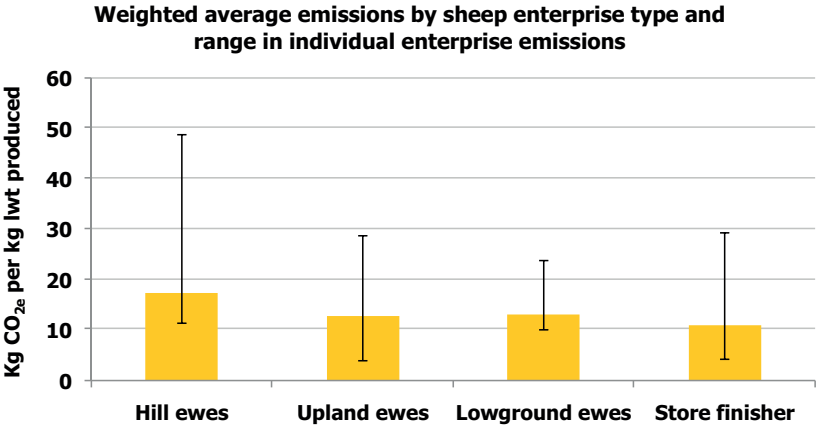
To help scope the scale of variation in emissions from Scottish livestock enterprises, the scope of the enterprise profitability survey has been extended to include estimations of GHG emissions associated with the output, or production, of these enterprises. SAC Consulting's Agricultural Resource Efficiency Calculator AgRE Calc has been used to estimate the type, source and extent of the GHG emissions produced from the cattle and sheep production systems surveyed.

The three main GHGS produced from a farm are Carbon Dioxide (CO_2), Methane (CH_4) and Nitrous Oxide (N_2O). Their sources are as follows:

- Carbon Dioxide (CO_2) occurs when burning fossil fuels such as coal, oil and diesel, disposal of waste and is embedded in inputs such as feed, bedding, fertiliser and lime
- Methane (CH_4) is produced as a natural by-product during ruminant digestion and from the management of organic manures
- Nitrous Oxide (N_2O) is released during the application of inorganic and organic fertilisers, from urine deposition by grazing animals and from crop residues

The emissions are expressed as Carbon Dioxide equivalents (CO_{2e}) based on their relative global warming potential over a 100-year period, with Nitrous Oxide being the most significant at 298 times the impact of CO_2 and Methane 25 times the impact of CO_2. The emissions have been reported as an intensity, i.e. emissions per unit of output. The results highlight the wide diversity of emissions within and between enterprise types, and the correlation between emissions and financial performance. They also illustrate the opportunities that exist to control GHG while maintaining or improving financial sustainability.





CATTLE ENTERPRISES

Results from LFA hill suckler herds

The 16 herds in this category are those enterprises where open, unimproved hill land makes up more than three-quarters of the farm area, resulting in low stocking densities, and where more than half the calves are sold at weaning. Herd size ranged from 20 to 122 cows, with an average size of 50 head.

- Hill suckler herds achieved an average gross margin of £285 per cow. The top third achieved an average gross margin of £444, 56% better than the average and over four times the level among the bottom third. Herd size among the top third was slightly higher than the average and significantly higher than the bottom third.

- Fixed costs averaged £439 per cow, but with a considerable variation from £140 to over £600 per cow. This resulted in an average net margin of (-)£153 per cow, while the top third achieved a net margin of (-) £16. Four enterprises in the survey achieved a positive net margin.

- Although the top third reared only one more calf per 100 cows, they sold them at higher weights than the average. The value of the calf output among the top third was 19% higher than the average, purely a reflection of higher productivity as the selling price per kg was little different between the top third and the average. This gap widened to 50% with the bottom third, as bottom-third producers had lower production and prices than the top third.

- Although the top third had the highest cow mortality rates, they did not have the highest herd replacement rate. Nevertheless, they did have the highest herd maintenance charge.

- Top-third producers had the lowest variable costs, but their fixed costs per cow were higher than both the average and bottom third. Nevertheless, fixed costs per kg of output were lowest among the top third. Top-third producers had notably higher machinery and property costs offset to some degree by lower labour and contract charges.

LFA hill suckler herds – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	16	5
Average herd size (head)	44	50	52
		£ per cow	
Calf output after valuation changes	483.34	608.73	727.79
Subsidies	64.70	67.48	66.26
Gross Output	**548.05**	**676.22**	**794.05**
Less replacements	57.41	63.48	66.27
Net Output	**490.64**	**612.73**	**727.78**
Variable Costs			
Purchased concentrates	73.06	91.38	94.18
Home-grown concentrates	0	0	0
Roughages purchased	61.72	37.37	12.14
Forage	182.95	100.92	70.20
Total feed and forage	*317.74*	*229.68*	*176.52*
Veterinary	27.61	36.91	32.35
Bedding	16.78	25.86	40.40
Other costs	29.34	34.50	33.59
Total Variable Costs	**391.48**	**326.96**	**282.97**
Gross Margin	**99.16**	**285.78**	**444.91**
Fixed Costs			
Labour	92.09	89.03	80.35
Contractors	24.89	26.74	25.17
Power and machinery	92.32	92.67	119.96
Property maintenance and rent	55.08	73.87	89.35
Depreciation	137.32	94.14	104.19
Finance	15.12	27.94	10.92
Administration	32.93	35.23	30.77
Total Fixed Costs	**449.76**	**439.62**	**460.71**
Net Margin	**(-)350.60**	**(-)153.84**	**(-)15.80**
Annual herd maintenance cost – Pence per kg calf produced	26	23	21
Variable cost – Pence per kg calf produced	176	121	87
Fixed cost – Pence per kg calf produced	202	163	142
Unpaid family labour hours	16hrs 30mins	17hrs 10mins	15hrs 10mins

Totals may not add due to rounding

LFA hill suckler herds – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	23	29	29
Calves born dead or alive per 100 cows	93	94	95
Calves born dead per 100 cows	3	4	4
Calves died before weaning per 100 cows	2	1	1
Calves reared per 100 cows	88	89	90
Daily liveweight gain (kg)	0.86	0.94	1.02
Weight – kg per calf sold	252	305	358
Weight produced – kg per cow	222	270	324
Cow replacement rate per 100 cows	7	11	9
Cow mortality %	0.5	2.3	3.5
Purchased concentrates – kg per cow	288	405	405
Home-grown concentrates – kg per cow	0	0	0
Stocking rate GLU/ha	0.14	0.14	0.11
CO_{2e} kg/net lwt kg produced	35.4	29.2	26.8

Results from LFA suckler herds

The upland suckler herd sample has been split into two sub-groups in order to give a better reflection of the production systems in use in Scotland. One group includes farms of a more extensive nature that sell the majority of calves at weaning, while the other group features farms that sell calves as forward stores at around one year old. Although the main calving period was noted, the sample size of autumn calving herds was insufficient to allow separate analysis of the different cost structures between spring and autumn calving.

Extensive upland herds selling calves at weaning

The 30 herds in this category farmed 3,214 cows, giving an average herdsize of 107 cows within a range from 21 to 312 cows, and reported an average gross margin of £319 per cow and a net margin of (-)£87 per cow. The top third of enterprises returned a gross margin of £442 per cow, £123 (38%) better than the average and £289 per cow better than the bottom third. Top-third producers reported a net margin of £81, which is £168 per head better than the average. Thirty-six percent of businesses reported a positive net margin, up from one quarter last year.

- Top-third producers produced 16kg more calf weight per cow than the average and 24kg more than the bottom third. This was achieved through a combination of factors:
  - Higher calving percentages – 89 calves reared per 100 cows (2 more than the average)
  - 12 kg per calf higher sale weights
  - 6p/kg liveweight higher sale prices

- Top-third producers had lower cow mortality rates and lower herd maintenance rates, resulting in lower herd maintenance charges.

- Variable costs were 20% lower among the top third than the average.

- Fixed costs per cow among the top third were lower than the average, with particularly lystrong control over all expense categories with the exception of power and machinery and finance costs. The top-third group also spent less of their own unpaid labour time per cow in the herd than the average. Some of the fixed cost per cow savings may have been a consequence of the larger herds among the top third of financial performance, resulting in some economies of scale.

Upland herds selling calves at around one year old

Twenty-six herds farming an average of 110 cows each were categorised as herds selling calves at an older age of about twelve months. This older age at sale resulted in the average weight of calves sold being 392kg, some 28% higher than those sold at weaning. As a consequence, not surprisingly, variable costs per cow were higher among this group than those of their counterparts selling calves at weaning, by 22%. However, when considered against the weight of animal sold rather than per cow, the variable costs among this group were 7% lower when measured per kg of calf reared.

Heavier sale weights and better rearing percentages among those selling yearlings resulted in an income considerably higher than those selling weaned calves, and the extra variable costs associated with keeping the calves longer were easily recouped from the marketplace. The average gross margin among this group was consequently some 33% better than for those selling weaned calves.

Fixed costs, however, were 14% higher among this group compared to those selling younger cattle, due particularly to higher power and machinery, administration and finance costs. As a result, the £107 per cow improvement in gross margin was eroded to a point where the net margin among those selling yearling stores – while remaining negative – was only £48 per cow better than those selling weaned calves.

- Top-third businesses selling yearlings returned a gross margin of £572 per cow, £146 (25%) better than the average and £270 better than the bottom-third producers. They achieved this better financial return through improved herd productivity, rearing five more calves per 100 cows than the average. They sold these calves at a slightly higher weight, resulting in the yield per cow in the herd being 8% higher than the group average.

- Top-third producers had lower cow mortality rates and a much lower herd replacement rate, resulting in much lower herd maintenance costs than the average. They also delivered higher output while keeping variable costs per cow below the average; however, they did spend more than the average on forage costs and used more home-grown feeds, reducing the need for purchased feeds.

- Top-third producers had a smaller fixed cost burden than the average, largely as a result of substituting unpaid family labour for paid labour. However, they did carry the highest finance charges and had the highest depreciation charges and machinery costs, suggesting a higher degree of mechanisation and capital investment in the business. Nevertheless, seven of the nine businesses in the top third achieved a positive net margin.

Over the year, 28% of those businesses selling yearling calves reduced their herd size while 37% of those selling weaned calves reduced herd size.

Extensive upland suckler herds selling weaned calves – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	10	30	10
Average herd size (head)	93	107	122
		£ per cow	
Calf output after valuation changes	539.22	609.67	659.83
Subsidies	67.70	65.43	66.50
Gross Output	**606.92**	**675.10**	**726.34**
Less net replacement cost	111.70	82.04	64.91
Net Output	**495.22**	**593.06**	**661.42**
Variable Costs			
Purchased concentrates	33.21	25.35	16.38
Home-grown concentrates	7.39	8.78	7.06
Roughages purchased	43.86	43.57	37.35
Forage	125.25	90.50	76.02
Total feed and forage	*209.71*	*168.20*	*136.81*
Veterinary	58.69	48.16	37.92
Bedding	42.43	33.54	25.51
Other costs	30.94	23.70	18.24
Total Variable Costs	**341.77**	**273.61**	**218.48**
Gross Margin	**153.45**	**319.45**	**442.95**
Fixed Costs			
Labour	112.60	85.01	63.23
Contractors	36.14	36.23	20.56
Power and machinery	83.58	82.70	96.58
Property maintenance and rent	61.66	82.09	78.96
Depreciation	103.55	80.20	72.92
Finance	12.65	16.39	17.42
Administration	36.97	23.69	11.90
Total Fixed Costs	**447.16**	**406.32**	**361.58**
Net Margin	**(-)293.71**	**(-)86.87**	**81.37**
Annual herd maintenance cost – Pence per kg calf sold	43	31	23
Variable cost – Pence per kg calf produced	132	103	77
Fixed cost – Pence per kg calf produced	173	153	128
Unpaid family labour hours	8hrs 50min	7hr 50min	6hr 35min

Totals may not add due to rounding

Extensive upland suckler herds selling weaned calves – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	21	26	31
Calves born dead or alive per 100 cows	93	93	94
Calves born dead per 100 cows	5	4	4
Calves died per 100 cows	3	2	1
Calves reared per 100 cows	85	87	89
Daily liveweight gain (kg)	1.07	1.12	1.18
Weight – kg per calf sold	304	306	318
Weight produced – kg per cows	258	266	282
Cow replacement rate per 100 cows	14.1	14.5	13.2
Cow mortality %	3.6	2	1.2
Purchased concentrates – kg per cow	163	138	81
Home-grown concentrates – kg per cow	61	71	57
Stocking rate GLU/ha	0.91	1.07	0.87
CO_{2e} kg/net lwt kg produced	24.2	26.1	25.6

Upland suckler herds selling yearling calves – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	9	26	9
Average herd size (head)	108	110	75
		£ per cow	
Calf output after valuation changes	706.01	776.26	878.80
Subsidies	61.01	63.62	68.47
Gross Output	**767.02**	**839.89**	**947.27**
Less net replacement cost	78.03	81.33	69.01
Net Output	**688.99**	**758.55**	**878.26**
Variable Costs			
Purchased concentrates	65.29	71.98	64.10
Home-grown concentrates	15.68	27.77	28.21
Roughages purchased	46.63	30.07	14.06
Forage	98.63	88.47	92.11
Total feed and forage	*226.23*	*218.29*	*198.48*
Veterinary	52.15	43.45	37.10
Bedding	69.22	42.55	31.04
Other costs	39.49	28.18	38.94
Total Variable Costs	**387.09**	**332.47**	**305.57**
Gross Margin	**301.90**	**426.08**	**572.69**
Fixed Costs			
Labour	128.07	87.93	38.05
Contractors	25.30	46.06	47.79
Power and machinery	107.69	99.87	122.85
Property maintenance and rent	91.97	84.88	87.18
Depreciation	92.40	91.79	100.45
Finance	15.59	19.92	21.04
Administration	43.73	33.73	25.99
Total Fixed Costs	**504.77**	**464.19**	**443.36**
Net Margin	**(-)202.87**	**(-)38.11**	**129.33**
Annual herd maintenance cost – Pence per kg calf sold			
Annual herd maintenance cost – Pence per kg calf sold	23	23	18
Variable cost – Pence per kg calf produced	116	96	82
Fixed cost – Pence per kg calf produced	151	134	118
Unpaid family labour hours	6hrs 35min	9hrs 50min	17hrs 30min

Totals may not add due to rounding

Upland suckler herds selling yearling calves – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	24	31	28
Calves born dead or alive per 100 cows	90	95	98
Calves born dead per 100 cows	4	3	3
Calves died per 100 cows	4	3	1
Calves reared per 100 cows	82	89	94
Daily liveweight gain (kg)	0.91	0.96	1.01
Weight – kg per calf sold	406	392	400
Weight produced – kg per cow	334	347	374
Cow replacement rate per 100 cows	16.0	12.7	6.7
Cow mortality %	1.1	1.5	0.6
Purchased concentrates – kg per cow	452	470	391
Home-grown concentrates – kg per cow	120	209	242
Stocking rate GLU/ha	0.68	0.98	0.91
CO_{2e} kg/net lwt kg produced	21.8	21.7	20.7

Results from non-LFA lowground suckler herds

Sixteen non-LFA suckler enterprises farming 1,560 cows were surveyed. They achieved an average gross margin of £413 per cow and an average net margin of £8 in a range from (-)£184 to +£245. Nine businesses reported a positive net margin per cow.

- Top-third producers achieved an average gross margin of £495 per cow, £82 (20%) better than the overall average. Fixed costs per cow among the top third were £9 per cow higher than the average, and thus the improvement in financial performance narrowed to £74 at net margin level.

- Improved margin was aided by better physical performance including the following:
  - Higher calf rearing rates – 4 more calves reared per 100 cows than the average
  - Higher sale weights – 8 kg per head heavier at sale than the average; resulting in
  - Higher weight of production per cow

- These elements combined to result in gross output £49 per cow higher than the average, as the sale price per kg did not differ significantly between the average and top third.

- This improved output among the top third came at a higher herd maintenance cost, although mortality and replacement rates were lower than the average. The higher output was achieved despite the top third having lower variable costs per cow.

- Fixed costs per cow were highest among the top third, but when expressed per kg of output they had the lowest fixed cost per kg of output. Higher fixed costs then have supported higher physical output per cow in the herd.

- In contrast, bottom-third producers had the highest variable costs per cow and per kg of output. They also had the lowest fixed costs per cow, but because of the lower physical performance, three fewer calves reared per 100 cows and lower sale weights, they had the highest fixed costs per kg of output.

Non-LFA lowground suckler herds – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	16	5
Average herd size (head)	126	97	128
		£ per cow	
Calf output after valuation changes	639.80	681.33	727.90
Subsidies	61.76	63.55	65.81
Gross Output	**701.56**	**744.87**	**793.71**
Less net replacement cost	63.39	70.41	83.38
Net Output	**638.17**	**674.47**	**710.33**
Variable Costs			
Purchased concentrates	46.39	40.10	32.70
Home-grown concentrates	15.24	12.94	5.28
Roughages purchased	46.74	35.88	32.04
Forage	84.16	65.70	42.97
Total feed and forage	*192.53*	*154.63*	*113.00*
Veterinary	49.97	39.43	32.40
Bedding	47.44	43.84	37.94
Other costs	12.43	23.35	31.06
Total Variable Costs	**302.37**	**261.26**	**214.39**
Gross Margin	**335.80**	**413.21**	**495.94**
Fixed Costs			
Labour	102.53	75.27	62.77
Contractors	6.84	18.62	30.83
Power and machinery	52.67	74.02	85.86
Property maintenance and rent	66.25	86.87	89.27
Depreciation	75.32	84.96	92.15
Finance	39.47	27.94	22.45
Administration	51.91	40.19	30.81
Total Fixed Costs	**395.01**	**405.18**	**414.15**
Net Margin	**(-)59.21**	**8.03**	**81.79**
Annual herd maintenance cost – Pence per kg calf sold	19	20	22
Variable cost – Pence per kg calf produced	90	75	57
Fixed cost – Pence per kg calf produced	118	117	111
Unpaid family labour hours	3hrs	6hrs 25min	6hrs 15min

Totals may not add due to rounding

Non LFA lowground suckler herds – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	28	27	25
Calves born dead or alive per 100 cows	90	91	94
Calves born dead per 100 cows	5	3	2
Calves died per 100 cows	2	2	2
Calves reared per 100 cows	83	86	90
Daily liveweight gain (kg)	1.2	1.16	1.29
Weight – kg per calf sold	320	332	340
Weight produced – kg per cow	266	286	305
Cow replacement rate per 100 cows	13	12	11
Cow mortality %	1.8	1.7	1.6
Purchased concentrates – kg per cow	296	340	424
Home-grown concentrates – kg per cow	127	107	51
Stocking rate GLU/ha	1.5	1.8	2.8
CO_{2e} kg/net lwt kg produced	26.8	23.8	19.1

Results from rearer-finisher enterprises

In the case of these 20 enterprises farming 1,934 cows, the reported margins relate to the costs and income for a twelve-month period to the end of April 2016.

The businesses surveyed produced an average gross margin per cow of £490, within a range from £288 to £848 per cow, and an average net margin of (-)£78 per cow. Six (30%) enterprises reported a positive net margin.

- The top-third producers ranked by gross margin per cow achieved a net output £81 higher than the average, largely through the production of 5% more saleable output per cow which was also sold at a higher average price than the average, leading to a 7% increase in gross output. Net output was also impacted by the lower cow replacement rates and lower mortality rates, which contributed to lower herd maintenance charges among the top third.

- Top-third producers achieved higher output with lower variable costs per cow, and per kg of output, through lower feed and veterinary costs.

- Fixed costs were little different between the average and top third resulting in the improvement of £149 per cow in gross margin being maintained at net margin level. Lower paid labour cost among the top third was offset by higher contractor, machinery and property costs.

- Although fixed and variable costs were 2–3% higher per cow than the average among the bottom third, the lower financial performance was due largely to 12% lower output per cow. Lower output per cow was a reflection of lower quantities of product sold, related to lower rearing rates, calving rates, and higher herd maintenance charges.

Rearer-finisher herds – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	7	20	7
Average herd size (head)	97	97	97
		£ per cow	
Calf output after valuation changes	885.25	988.67	1059.54
Subsidies	66.72	65.63	66.19
Gross Output	**951.97**	**1054.30**	**1125.72**
Less net replacement cost	85.99	68.50	58.80
Net Output	**865.98**	**985.80**	**1066.93**
Variable Costs			
Purchased concentrates	97.96	103.64	55.85
Home-grown concentrates	101.52	81.40	96.63
Roughages purchased	38.46	50.67	43.63
Forage	119.54	106.70	102.80
Total feed and forage	*357.49*	*342.41*	*298.91*
Veterinary	59.32	55.01	41.59
Bedding	46.88	52.51	32.56
Other costs	42.20	45.82	54.54
Total Variable Costs	**505.88**	**495.75**	**427.59**
Gross Margin	**360.11**	**490.05**	**639.33**
Fixed Costs			
Labour	138.44	116.69	81.45
Contractors	49.17	46.16	54.80
Power and machinery	91.13	104.08	144.09
Property maintenance and rent	92.60	114.13	136.19
Depreciation	104.10	99.45	98.76
Finance	63.20	38.49	29.51
Administration	48.33	49.31	24.20
Total Fixed Costs	**586.97**	**568.32**	**569.01**
Net Margin	**(-)226.87**	**(-)78.27**	**70.33**
Annual herd maintenance cost – Pence per kg calf sold	21	15	12
Variable cost – Pence per kg calf sold	125	108	86
Fixed cost – Pence per kg calf sold	145	124	114
Unpaid family labour hours	9hr 40min	7hrs 40min	8hrs 55min

Totals may not add due to rounding

Rearer-finisher herds – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	30	29	27
Calves born dead or alive per 100 cows	94	93	93
Calves born dead per 100 cows	4	4	4
Calves died per 100 cows	3	3	2
Calves reared per 100 cows	87	86	87
Daily liveweight gain (kg)	1.0	0.90	0.91
Weight – kg per calf sold finished	623	602	580
Weight reared – kg per cow per year	475	489	515
Cow replacement rate per 100 cows	14.4	13.6	13.7
Cow mortality %	2.4	1.6	1.5
Purchased concentrates – kg per cow	451	505	324
Home-grown concentrates – kg per cow	806	646	757
Stocking rate GLU/ha	1.01	1.18	1.43
Selling price p/kg dwt finished	312	341	350
Selling price p/kg lwt store	196	236	233
CO_{2e} kg/net lwt kg produced	17.3	17.8	17.6

Cattle finishing

Results from cereal-based cattle finishing enterprises

Fifteen cereal-based cattle finishing enterprises were surveyed. They sold 869 cattle and achieved an average gross margin of £154 per animal. The average net margin among those surveyed was positive at £62 per head and ranged from (-)£146 to £301 per head. Ten businesses (66%) reported a positive net margin.

- Enterprises in the top third of those surveyed had a net output £82 per animal better than the average and £234 better than the bottom third. They finished only young bulls but also the heaviest cattle, producing carcase weights of around 380–400 kg. They also had the widest margin between purchase and selling prices and the best daily liveweight gains. Output was also helped by having minimal mortality during the finishing period and having the highest daily liveweight gains.

- Those in the bottom third of financial performance, in contrast, had the highest dependence on heifers in their sales mix, had the longest finishing period and the highest mortality rate. Although on average they had the lowest finishing weight, this reflected their dependence on heifer finishing and when genders are considered separately they had the highest weights in each gender group and the lowest sale price among heifers and young bulls.

- Although variable costs among the bottom third were only £6 per head higher than those in the top third, the output did not match the best. Those in the top third had minimal use of forage but highest use of alternative, or other, feeds. They also had the highest use of purchased concentrate feeds – largely offsetting their lower, but significant, use of home-grown cereals.

- Fixed costs among the top third were £10 per head lower than the average and £12 per head lower than the bottom third. While making a contribution to higher net margins the most significant contributor was the £82 per head higher net output.

Cereal-based cattle finishing enterprises – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	15	5
Average herd size (head)	58	58	59
		£ per head	
Stock Sales	**1098.11**	**1228.63**	**1339.05**
Less stock purchases	763.31	741.69	770.11
Net Output	**334.80**	**486.94**	**568.93**
Variable Costs			
Purchased concentrates	75.07	84.13	83.99
Home-grown concentrates	114.45	134.22	95.63
Other feeds	12.62	26.81	40.58
Forage	24.40	8.22	0.22
Total feed and forage	*226.54*	*253.37*	*220.42*
Veterinary	20.10	16.31	9.83
Bedding	21.91	30.43	30.68
Other costs	32.02	32.67	33.48
Total Variable Costs	**300.57**	**332.78**	**294.41**
Gross Margin	**34.23**	**154.16**	**274.53**
Fixed Costs			
Labour	29.24	23.70	21.20
Contractors	3.45	6.34	7.62
Power and machinery	16.74	17.42	15.13
Property maintenance and rent	8.28	17.16	14.37
Depreciation	14.86	14.03	12.95
Finance	13.38	7.13	5.74
Administration	7.08	5.92	4.54
Total Fixed Costs	**93.05**	**91.71**	**81.55**
Net Margin	**(-)58.82**	**62.45**	**192.88**
Stores purchased – Pence per kg lwt sold	126	118	115
Variable cost – Pence per kg lwt sold	50	53	44
Fixed cost – Pence per kg lwt sold	15	15	12
Unpaid family labour hours	15mins	58mins	1hr 15min

Totals may not add due to rounding

Cereal-based cattle finishing enterprises – technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	222	214	214
Start weight (kg lwt)	313	315	334
Finish weight (kg lwt)	603	628	667
Daily liveweight gain (kg)	1.3	1.4	1.5
Mortality (%)	1.4	0.7	0
Purchased concentrates – kg/head	379	487	675
Home-grown concentrates – kg/head	897	1077	816
Purchase price (£ per kg lwt)	2.40	2.34	2.30
Sale price sold dwt (£ /kg dwt)	3.20	3.39	3.46
Sales			
Steers % of sales	32	10	0
Liveweight at sale	651	650	0
Steer selling price – p/kg dwt	326	326	0
Heifers % of sales	58	30	0
Liveweight at sale	563	552	0
Heifer selling price – p/kg dwt	317	327	0
Young bulls % of sales	10	60	100
Liveweight at sale	682	660	667
Young bull selling price – p/kg dwt	316	346	346
CO_{2e} kg/net lwt kg produced	12.6	11.4	10.8

Results from forage-based cattle finishing enterprises

The forage-based finishers surveyed have been split into two groups based on the age at which the majority of their cattle have been sold. The average age at which Scottish prime cattle are slaughtered is around twenty-two months of age. This has been taken as the age for splitting the businesses surveyed. Thus the two groups are those selling finished cattle under 22 months of age and those selling finished cattle at over 22 months of age.

The first group, selling younger cattle, comprises 20 businesses finishing an average of 95 cattle and the second group, selling older cattle, comprises 17 businesses but with an average size of 96 cattle.

- Those selling younger cattle reported a gross margin of £162 per animal sold, falling to a net margin of (-)£92 per animal sold; five (25%) of the businesses in this group achieved a positive net margin. Their counterparts selling older cattle reported a gross margin of £165 per head and a net margin of (-)£79; one business in this group achieved a positive net margin.

- Those selling younger cattle finished them around nine weeks more quickly than those selling older cattle and lower finished weights. While there was little difference between the two groups as regards the weight of heifers at sale and their sale price, those selling younger cattle sold lighter weight steers than those selling older steers and received higher per kg prices. There was little difference as regards the average stock sale revenue between those selling younger and older cattle.

- Among those selling younger cattle, those in the top third sold lighter cattle than the average, with greater per head revenue. They bought slightly lighter cattle and had slightly lower mortality rates, but there was little difference in growth rates. They made greatest use of home-grown cereals but had slightly lower overall concentrate use. Overall variable costs per animal were £12 lower than the average among the top third. Combined with better revenue, the lower fixed costs meant that top-third producers in this younger age group achieved a gross margin £112 per head better than the average.

- Among those selling older cattle, those in the top third had lower revenue per animal sold. However, because of slightly better growth rates and lower mortality and significantly lower use of concentrate feed, with no commensurate increase in forage costs, they had significantly lower variable costs – which resulted in an increase of £94 per head at gross margin level.

- Top-third producers in both groups carried higher fixed costs than both the average and the bottom third. Among those selling younger cattle, notably lower finance and administration costs were offset by higher contractor, property and depreciation costs, leading to only a £7 per head higher fixed cost. Although those in the older age group also had lower finance costs, all other fixed costs were marginally higher resulting in fixed costs £37 per head higher. Nevertheless, despite slightly higher fixed costs, the strong variable cost control delivered improved net margins as well as improved gross margins for top-third producers.

Forage-based cattle finishing under 22 months – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	7	20	7
Average herd size (head)	78	75	80
		£ per head	
Stock Sales	**1230.46**	**1260.78**	**1292.06**
Less stock purchases	862.56	776.12	706.00
Net Output	**367.90**	**484.65**	**586.06**
Variable Costs			
Purchased concentrates	116.14	74.82	34.20
Home-grown concentrates	89.53	98.01	120.07
Other feeds	15.97	18.71	22.34
Forage	27.03	34.63	28.73
Total feed and forage	*248.67*	*226.17*	*205.34*
Veterinary	17.46	19.26	23.56
Bedding	42.92	39.91	55.45
Other costs	31.69	36.72	26.46
Total Variable Costs	**340.73**	**322.06**	**310.81**
Gross Margin	**27.17**	**162.59**	**275.24**
Fixed Costs			
Labour	49.40	44.85	40.14
Contractors	9.99	17.27	9.40
Power and machinery	45.31	56.78	79.62
Property maintenance and rent	32.16	45.46	54.65
Depreciation	60.03	60.11	65.51
Finance	32.35	16.95	5.53
Administration	16.13	13.82	7.99
Total Fixed Costs	**245.37**	**255.26**	**262.84**
Net Margin	**(-)218.20**	**(-)92.67**	**12.41**
Stores purchased – Pence per kg lwt sold	134	124	116
Variable cost – Pence per kg lwt sold	53	52	51
Fixed cost – Pence per kg lwt sold	38	41	43
Unpaid family labour hours	3hrs 5min	2hrs 50min	2hrs 50min

Totals may not add due to rounding

Forage-based cattle finishing under 22 months – technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	302	315	328
Start weight (kg lwt)	367	330	297
Finish weight (kg lwt)	643	625	606
Daily liveweight gain (kg)	0.91	0.94	0.94
Mortality (%)	0.5	0.8	0.7
Purchased concentrates – kg/head	554	363	146
Home-grown concentrates – kg/head	784	789	972
Purchase price (p per kg lwt)	233	233	237
Sale price sold dwt (p /kg dwt)	329	348	371
Sales			
Steers % of sales	54	45	39
Liveweight at sale	662	643	613
Steer selling price – p/kg dwt	338	352	374
Heifers % of sales	46	52	56
Liveweight at sale	620	613	593
Heifer selling price – p/kg dwt	319	341	367
Young bulls % of sales	0	2	5
Liveweight at sale	0	658	656
Young bull selling price – p/kg dwt	0	371	371
CO_{2e} kg/net lwt kg produced	14.1	12.9	12.3

Forage-based cattle finishing over 22 months – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	6	17	6
Average herd size (head)	96	96	93
		£ per head	
Stock Sales	**1266.39**	**1265.09**	**1221.16**
Less stock purchases	893.77	845.97	778.06
Net Output	**372.61**	**419.11**	**443.11**
Variable Costs			
Purchased concentrates	28.86	66.39	48.36
Home-grown concentrates	123.14	53.46	10.97
Other feeds	12.45	13.09	14.27
Forage	30.21	37.51	38.91
Total feed and forage	*194.66*	*170.45*	*112.51*
Veterinary	15.35	16.42	17.69
Bedding	21.65	22.30	14.52
Other costs	57.76	44.98	39.16
Total Variable Costs	**289.42**	**254.15**	**183.89**
Gross Margin	**83.19**	**164.96**	**259.21**
Fixed Costs			
Labour	35.63	53.60	64.41
Contractors	22.52	15.36	19.52
Power and machinery	35.13	48.23	54.32
Property maintenance and rent	22.27	40.20	54.91
Depreciation	23.86	46.70	54.07
Finance	23.20	22.06	13.77
Administration	4.43	18.38	20.48
Total Fixed Costs	**167.05**	**244.55**	**281.47**
Net Margin	**(-)83.86**	**(-)79.59**	**(-)22.26**
Stores purchased – Pence per kg lwt sold	141	131	121
Variable cost – Pence per kg lwt sold	46	39	28
Fixed cost – Pence per kg lwt sold	26	38	44
Unpaid family labour hours	1hr 40min	3hr 10min	2hr 30min

Totals may not add due to rounding

Forage-based cattle finishing over 22 months – technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	367	380	386
Start weight (kg lwt)	380	357	336
Finish weight (kg lwt)	635	646	645
Daily liveweight gain (kg)	0.7	0.76	0.8
Mortality (%)	0.3	0.4	0
Purchased concentrates – kg/head	258	462	353
Home-grown concentrates – kg/head	983	436	96
Purchase price (p per kg lwt)	233	234	231
Sale price sold dwt (p /kg dwt)	343	338	335
Sales			
Steers % of sales	70	58	67
Liveweight at sale	645	666	665
Steer selling price – p/kg dwt	345	338	336
Heifers % of sales	30	42	33
Liveweight at sale	610	618	604
Heifer selling price – p/kg dwt	337	341	334
Young bulls % of sales	0	0	0
Liveweight at sale	0	0	0
Young bull selling price – p/kg dwt	0	0	0
CO_{2e} kg/net lwt kg produced	14.6	13.0	11.4

SHEEP ENTERPRISES

Results from LFA hill ewe flocks

This group of enterprises comprises purebred Blackface and Cheviot flocks farmed on some of the most disadvantaged land in Scotland. The sample covered 29 such flocks farming over 20,650 ewes. These flocks are characterised by low lambing percentages, averaging 98% lambs reared within a range of less than 60% to over 130%. The average gross margin achieved across this group was £25 per ewe, while the average net margin was (-)£17 per ewe within a range of (-)£66 to £24 per ewe. Four producers (14%) within this group made a small positive net margin.

- Producers in the top third benefit from better technical performance. The improvement in gross margin per ewe of £17 over the average is largely due to:
  - A higher number of lambs reared – 18 more lambs per ewe than average.
  - Lambs were sold at a slightly heavier weight resulting in 21% more lamb produced per ewe.
  - A higher proportion of the lamb crop was sold prime and while the proportion of lambs retained for breeding was the same, those in the top third did sell more lambs for breeding and fewer store lambs than the average. They also achieved better prices for all classes of stock, leading to a £20 per ewe improvement in lamb sales over the average.

- Bottom-third producers achieved a gross margin of £6 per ewe, £19 lower than the average, and a net margin of (-)£25 per ewe – £9 worse than the average. However, it must be recognised that the bottom third contain all the businesses in the survey from the North West Highlands and Islands region and also flocks in North Argyll and South Lanarkshire, where climate and topography have a severe impact on ewe performance and the ability of producers to sell prime lambs. This is reflected in a lambs reared percentage of 76%, and only 9% of lambs sold finished – compared to 17% on average. On average, lambs were sold at lighter weights and production per ewe was 27% lower than the average. Higher mortality rates among ewes, and a higher replacement rate than the average, contributed to those in the bottom third carrying the highest flock maintenance costs.

- Variable costs among the top-third producers were £6 per ewe higher than the average due mainly to higher feed and forage costs but also higher veterinary costs, lower purchased concentrate, other feeds and veterinary costs. Lower ewe mortality rates meant that top-third producers had more revenue from draft ewe sales to offset replacement costs and so had the lowest flock maintenance charge. These elements combined to give the top third a £17 per ewe higher gross margin than the average.

- Top-third producers also carried lower fixed costs per ewe, largely due to lower paid labour and contractor costs, which resulted in a net margin almost £20 per ewe better than the average.

LFA hill ewe flocks – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	10	29	10
Flock size	540	712	606
		£ per ewe	
Lamb sales	35.83	54.92	74.88
Wool	2.07	2.25	2.46
Gross Output	**37.90**	**57.17**	**77.34**
Less replacement costs	12.59	10.96	7.81
Net Output	**25.32**	**46.21**	**69.53**
Variable Costs			
Purchased concentrates	3.76	5.09	6.88
Home-grown concentrates	0	0	0
Other feeds	3.00	2.11	1.78
Forage	0.79	1.28	2.96
Total feed and forage	*7.55*	*8.49*	*11.62*
Veterinary	5.54	5.61	7.73
Bedding	0.01	0.01	0.02
Other costs	6.08	6.63	7.47
Total Variable Costs	**19.18**	**20.74**	**26.84**
Gross Margin	**6.14**	**25.47**	**42.70**
Fixed Costs			
Labour	9.07	14.28	12.36
Contractors	2.64	2.55	2.13
Power and machinery	4.90	7.16	7.49
Property maintenance and rent	3.80	6.82	6.80
Depreciation	5.83	5.92	6.31
Finance	0.84	0.61	0.92
Administration	4.21	4.76	3.46
Total Fixed Costs	**31.30**	**42.11**	**39.48**
Net Margin	**(-)25.16**	**(-)16.64**	**3.22**
Flock replacements – Pence per kg lamb produced	52	33	19
Variable cost – Pence per kg lamb produced	79	62	66
Fixed cost – Pence per kg lamb produced	128	126	97
Unpaid family labour hours	1hr 10min	33min	35min

Totals may not add due to rounding

LFA hill ewe flocks – technical performance

	Bottom Third	Average	Top Third
Ewes per ram	41	38	39
Ewe mortality %	10.7	6.7	4.6
Ewe replacement rate %	25.8	23.6	23.9
Lambs born dead or alive per 100 ewes	99	113	128
Lamb mortality (inc. born dead) %	23	15	12
Lambs reared per 100 ewes	76	98	116
Average weight of lambs – kg	32.4	34.1	34.9
Weight of lamb produced per ewe – kg	24.4	33.3	40.5
Purchased concentrates – kg/ewe	17	21	26
Home-grown concentrates – kg/ewe	0	0	0
Lambs sold finished per 100 ewes	7	17	31
Value per lamb – £/head	46.20	61.08	65.32
Lambs sold/transferred store per 100 ewes	43	46	32
Value per lamb – £/head	42.45	43.25	44.69
Lambs sold/transferred for breeding per 100 ewes	26	35	48
Value per lamb – £/head	56.77	70.28	79.05
CO_{2e} kg/net lwt kg produced	23.3	17.4	15.2

Results from LFA upland ewe flocks

LFA upland breeding flocks are identified as LFA farms running crossbred flocks. Thirty-three such flocks were recorded in this survey, which collectively farmed some 17,320 ewes. These enterprises achieved an average gross margin of £51 per ewe and average net margin of £2 per ewe. Twenty-one of the businesses surveyed (60%) returned a positive net margin within a range (-)£40 to £36 per ewe.

- Producers in the top third produced a gross margin of £68 per ewe, 33% better than the average and one and three quarters times the bottom third.

- All of this improvement in gross margin among the top third effectively came from higher gross output, as the variable costs per ewe differed little between the top third and the average. Higher output was achieved through improved flock performance including lamb sale weights which were slightly higher, by 1%, and ten more lambs were reared per 100 ewes than the average. This combination led to 7.5% more liveweight produced per ewe than the average. In addition, higher sale prices for all classes of lamb sales were achieved.

- In contrast, bottom third producers delivered:
  - 8 fewer lambs reared per 100 ewes than the average
  - 5% less liveweight lamb produced per ewe than the average
  - Lower revenue from all classes of lamb sales

- Fixed costs among the top third were less than £2 per ewe lower than the average. Consequently, the improvement in net margin can also be traced back to improved output and lower flock maintenance charge – a reflection of lower ewe mortality and lower ewe replacement rate.

- Those in the bottom third carried both higher variable and fixed costs per ewe than the average despite having the largest breeding flock, which suggests little benefit from scale.

LFA upland ewe flocks – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	11	33	11
Flock size	575	525	458
		£ per ewe	
Lamb sales	91.44	101.29	115.76
Wool	3.37	2.90	2.79
Gross Output	**94.81**	**104.19**	**118.54**
Less replacement costs	14.17	13.10	11.24
Net Output	**80.63**	**91.09**	**107.30**
Variable Costs			
Purchased concentrates	11.81	10.75	12.00
Home-grown concentrates	0.30	0.27	0.29
Other feeds	3.84	2.11	1.34
Forage	7.81	8.19	7.89
Total feed and forage	*23.76*	*21.32*	*21.51*
Veterinary	8.72	8.97	8.54
Bedding	0.81	1.02	0.65
Other costs	9.50	8.62	8.68
Total Variable Costs	**42.79**	**39.94**	**39.38**
Gross Margin	**37.84**	**51.16**	**67.92**
Fixed Costs			
Labour	10.79	9.65	8.17
Contractors	3.59	4.69	4.39
Power and machinery	9.83	9.79	10.48
Property maintenance and rent	11.61	10.44	9.97
Depreciation	11.17	9.06	6.71
Finance	2.11	2.16	4.05
Administration	3.33	3.33	3.69
Total Fixed Costs	**52.43**	**49.11**	**47.46**
Net Margin	**(-)14.58**	**2.04**	**20.46**
Flock replacements – Pence per kg lamb produced	25	22	17
Variable cost – Pence per kg lamb produced	75	66	60
Fixed cost – Pence per kg lamb produced	92	81	73
Unpaid family labour hours	1hr 20min	1hr 10min	1hr 5min

Totals may not add due to rounding

LFA upland ewe flocks – technical performance

	Bottom Third	Average	Top Third
Ewes per ram	28	32	33
Ewe mortality %	5.2	5.2	4.5
Ewe replacement rate %	24.3	22.9	16.1
Lambs born dead or alive per 100 ewes	160	169	174
Lamb mortality (inc. born dead) %	19	20	15
Lambs reared per 100 ewes	141	149	159
Average weight of lambs – kg	40.56	40.56	40.98
Weight of lamb produced per ewes – kg	57.27	60.44	65.07
Purchased concentrates – kg/ewe	44	47	65
Home-grown concentrates – kg/ewe	2	2	2
Lambs sold finished per 100 ewes	90	106	128
Value per lamb – £/head	67.19	67.59	69.91
Lambs sold/transferred store per 100 ewes	34	21	3
Value per lamb – £/head	51.90	53.93	55.57
Lambs sold/transferred for breeding per 100 ewes	17	22	28
Value per lamb – £/head	79.20	82.58	87.03
CO_{2e} kg/net lwt kg produced	13.7	12.7	11.5

Results from lowground breeding flocks

The twelve businesses in the survey farmed some 7,133 ewes. The small sample size means that it is not sufficiently large to make sensible comparisons between the top and bottom third of businesses.

- Two thirds of the flocks in this group achieved a positive net margin, with the average being £21 per ewe within a range from (-)£20 to £53 per ewe.

- Better financial returns tend to be associated with high physical performance, with those at the top of financial returns typically having lamb weaned rates 4–5 lambs per 100 ewes greater than the average and, consequently, higher weights of lamb produced per ewe.

- While higher output is an indicator of better financial performance overall, it did not come at a higher cost. Better performing flocks showed some propensity to achieving improved lamb revenue while trimming both fixed and variable costs compared to the overall average.

Lowground ewe flocks – financial performance measures

	Average
Number in sample	12
Flock size	594
	£ per ewe
Lamb sales	118.09
Wool	3.74
Gross Output	**121.83**
Less replacement costs	12.60
Net output	**109.23**
Variable costs	
Purchased concentrates	12.15
Home-grown concentrates	2.28
Other feeds	1.82
Forage	7.96
Total feed and forage	*24.22*
Veterinary	8.87
Bedding	1.43
Other costs	9.50
Total Variable Costs	**44.02**
Gross Margin	**65.20**
Fixed Costs	
Labour	9.86
Contractors	3.05
Power and machinery	7.95
Property maintenance and rent	9.32
Depreciation	8.48
Finance	1.64
Administration	3.52
Total Fixed Costs	**43.82**
Net Margin	**21.38**
Flock replacements – Pence per kg lamb produced	19
Variable cost – Pence per kg lamb produced	65
Fixed cost – Pence per kg lamb produced	64
Unpaid family labour hours	45min

Totals may not add due to rounding

Lowground ewe flocks – technical performance

	Average
Ewes per ram	34
Ewe mortality %	4
Ewes replacement rate %	17.3
Lambs born dead or alive per 100 ewes	176
Lamb mortality (inc. born dead) %	16
Lambs reared per 100 ewes	160
Average weight of lambs – kg	42.55
Weight of lamb produced per ewe kg	67.89
Purchased concentrates – kg/ewe	99
Home-grown concentrates – kg/ewe	18
Lambs sold finished per 100 ewes	130
Value per lamb – £/head	74.34
Lambs sold/transferred store per 100 ewes	13
Value per lamb – £/head	60.19
Lambs sold/transferred for breeding per 100 ewes	17
Value per lamb – £/head	82.00
CO_{2e} kg/net lwt kg produced	12.9

Results from store lamb finishing enterprises

Fourteen store lamb finishing businesses, selling just over 8,300 lambs achieved an average gross margin of £10 per lamb. Net margins averaged £4.60 per lamb in a range from (-) £5 to £19 per lamb, with 70% of those surveyed achieving a positive net margin.

- The average finishing period was 132 days within a range of 45 days to 190 days, with the average finisher adding some 11kg to their lambs' purchase weight of 29.6kg.
- Average mortality among the group was 2% within a range from 0% to 3.5%.
- Those with better financial returns had a longer feeding period and sold heavier lambs than the group average. Longer keep meant these lambs were sold into a rising market and consequently not only were the lambs heavier, but the sale price per kg was also higher than the average – leading to a considerable increase in output.
- Longer-keep lambs did carry slightly higher variable and significantly higher fixed costs, as may be expected, but the movement in market prices and heavier lambs rewarded this extra cost.

Store lamb finishing – financial performance measures

	Bottom	Average	Top
Number in sample	5	14	5
Flock size	679	597	559
		£ per lamb	
Lamb Sales	**60.34**	**70.49**	**82.86**
Less purchases	49.02	50.34	52.80
Net Output	**11.32**	**20.15**	**30.05**
Variable Costs			
Purchased concentrates	0.86	2.47	3.18
Home-grown concentrates	0	0.10	0.30
Other feeds	0.15	0.37	0.36
Forage	1.91	1.28	1.26
Total feed and forage	*2.92*	*4.22*	*5.10*
Veterinary	0.28	1.08	1.67
Bedding	0.11	0.05	0
Other costs	3.77	4.51	3.33
Total Variable Costs	**7.08**	**9.86**	**10.10**
Gross Margin	**4.24**	**10.29**	**19.95**
Fixed Costs			
Labour	1.53	1.44	1.61
Contractors	0.37	0.29	0.06
Power and machinery	0.67	1.47	2.64
Property maintenance and rent	0.53	0.58	0.60
Depreciation	0.68	1.24	2.10
Finance	0.09	0.43	0.97
Administration	0.24	0.27	0.35
Total Fixed Costs	**4.10**	**5.73**	**8.33**
Net Margin	**0.13**	**4.56**	**11.62**
Lambs purchased – Pence per kg lwt lamb sold	143	124	111
Variable cost – Pence per kg lwt lamb sold	21	24	21
Fixed cost – Pence per kg lwt lamb sold	12	14	17
Unpaid family labour hours	5min	20min	20min

Totals may not add due to rounding

Store lamb finishing – technical performance

	Bottom	Average	Top
Weight of lamb purchased kg	29.5	29.6	28.8
Liveweight of lamb sold	34.2	40.7	47.5
Carcase weight of lamb sold	14.7	17.5	20.4
Sale price – p/kg dwt	359	381	407
Daily liveweight gain	0.05	0.08	0.10
Finishing period – days	87	132	177
Mortality %	1.9	2	1.9
Purchased concentrates – kg/lamb	4	12	16
Home-grown concentrates – kg/lamb	0	1	3
CO_{2e} kg/net lwt kg produced	23.3	10.9	7.7

Beef

The quality of the stock presented to the market and its value to processors through improved meat yield, or less carcase trimming, will be reflected in market prices. For example, in 2015 the average price paid for a –U3 steer exceeded that of an R4L steer by 2.9p/kg dwt, while for heifers this differential was higher at 6.9p/kg dwt. An improvement in carcase quality from O+4H to R4L was worth 10.7p/kg dwt to producers for steers and 11.9p/kg dwt for heifers during 2015.

Compared to 2014, the premium for leaner, better-conformation steers (-U3) fell back by a third while the premium between the benchmark R4L grade and the poorer conformation and fatter O+4H decreased to a lesser extent, down by a penny to 10.7p/kg dwt. Smaller premia may well reflect a fall in slaughter numbers from 2014, which could have made abattoirs slightly less discerning buyers. Smaller differentials were also the case for heifers. However, they did not narrow back to the levels of 2013, when supplies were very tight.

Moving into 2016, there has been a significant change in the market for U grade steers. In April 2016, a previously consistent premium of 2–4p/kg for a –U3 steer over and R4L steer reversed, turning into a deficit from then until mid-to-late August. While in the past the premium has tended to narrow seasonally in the summer, this year it reversed considerably earlier and to a greater extent. A possible explanation is that since -U grade steers are more likely to exceed target carcase weights than R grade steers, this deficit reflects pricing penalties.

	Average –U3 premium over R4L (p/kg)			Average R4L premium over O+4H (p/kg)		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Steer	1.1	4.4	2.9	3.7	11.7	10.7
Heifer	5.1	7.7	6.9	5.9	13.4	11.9

Lamb

As is the case for beef, there is also a financial reward from the marketplace where a lamb carcase meets an improved conformation and fat level. The average premium in Great Britain at price-reporting abattoirs for a carcase achieving a grade of U2 over a carcase with an R3L grading was 10.5/kg dwt during 2015, down 1.5p/kg from the previous year. Meanwhile, the average extra price paid per kilo for an R3L carcase over an O3H lamb fell back for a second consecutive year. Although the R3L to O3H premium narrowed, it remained wider than that between a U2 and an R3L carcase, reflecting than an O3H grade is outwith the target range.

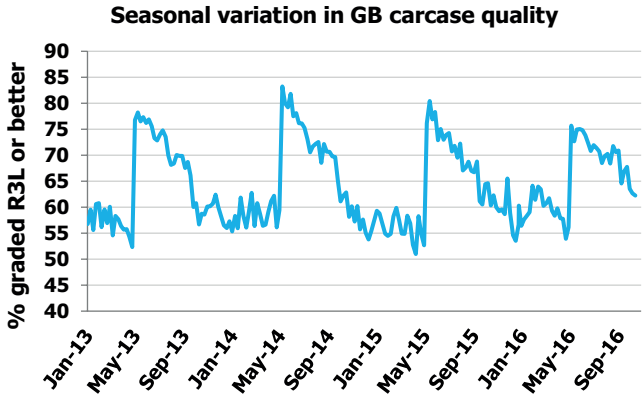
	Average U2 premium over R3L (p/kg)			Average R3L premium over O3H (p/kg)		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Lambs	11.2	9.6	10.5	18.4	17.5	14.9

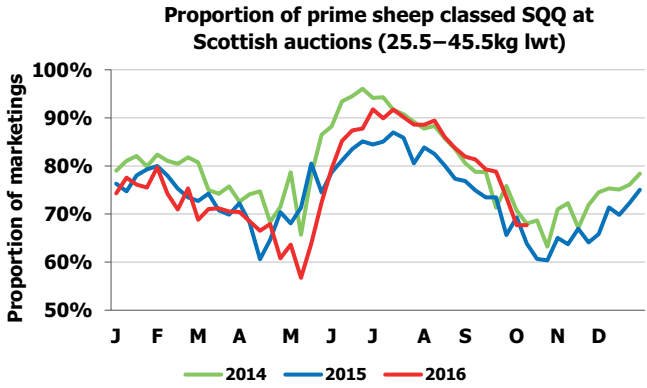
Moving into 2016, the first 40 weeks of the year have seen average price differentials of 9.8p/kg between a U2 and an R3L grade, and 14.7p between an R3L lamb carcase and an O3H. This means that the U2 premium has increased marginally from the same period last year, while the R3L premium over O3H has declined by 2.4p/kg.

These figures are average variations across Great Britain, but individual processors will have different requirements, and hence different pricing structures, which may have led to deviation from these levels. Therefore, a good relationship between producer and buyer – which involves regular dialogue and feedback – is very important.

The following chart illustrates the seasonality of lamb quality. As the new season began in 2015, 76% of lambs at GB price-reporting abattoirs achieved at least an R3L grading. This was seven percentage points down on the previous year and at its lowest level since 2012. Carcase quality then generally remained behind year-earlier levels until the end of September, before moving marginally in front of 2014 throughout the final quarter. In early 2016, hogg carcase quality was better than in 2015.

From the start of the 2016 marketing season, carcase quality was consistently poorer than in 2015 up until the end of July. However, as lambs which had been slow to finish finally reached the market in August, quality improved, pushing it ahead of last year and to a historically high level for this time of year.





With reports of ample grass supplies common during the summer of 2015, lambs grew well, on average, and carcase weights were subsequently higher than in the previous year. This resulted in an increased proportion of the lambs traded at Scottish auction markets exceeding the 45.5kg upper bound on the Standard Quality Quotation (SQQ). However, in 2016, the combination of delayed grass growth and additional twins and triplets has resulted in a smaller proportion of heavy lambs. While this may have had a positive impact on price per kilo in 2016, it will have limited price increases on a per carcase basis.

ESTIMATION OF NON-CASH COST IN PRODUCING CATTLE AND SHEEP

The enterprise costings produced in this survey indicate the reward for the unpaid labour of those working with the herds and flocks and the reward for investing capital in an enterprise. A negative net margin indicates that there is no return for the labour and investment committed to an enterprise.

In this chapter, estimates are made of how much should be set against an enterprise if unpaid labour were to be charged for and if a return of 5% was required from the investment in livestock and running costs (but not buildings and land). The reward for investment in land and buildings can be considered to be the rental value of the land used by an enterprise. This analysis draws rental values from the Scottish Government RESAS 2015 report on tenanted land[1]. This rental value gives a measure of the opportunity cost of the land used by beef and sheep enterprises.

The value of unpaid labour is estimated using the proportion of a man-year committed to the enterprise and an average value for an hour of work. Time committed by the average farmer is drawn from the survey data, with one man-year defined as 2,200 hours of annual work[2]. One hour of labour has been valued at £14.74; an increase of 2% on the year.

Cattle enterprises

	Unpaid Labour	Return on Working Capital[3]	Rent of Land and Buildings
	p/kg liveweight sold		
Hill suckler herds	94	23	33
Upland suckler herds selling calves at weaning	43	27	15
Upland suckler herds selling yearlings	37	19	11
Lowground suckler herds	33	25	24
Rearer-finisher herds	25	23	21
Cereal-based store finishing	2	8	1
Forage-based store finishing <22 months old	7	9	6
Forage-based store finishing >22 months old	7	9	8

1 "Tenanted Agricultural Land in Scotland 2015" Scottish Statistical Publication, April 2016

2 47-hour average week, assuming five weeks of leave

3 Return required to give a 5% return on working capital

Sheep enterprises

	Unpaid Labour	Return on Working Capital[4]	Rent of Land and Buildings
	p/kg liveweight sold		
Hill flocks	24	16	34
Upland flocks	28	11	7
Lowground non-LFA flocks	16	11	12
Store lamb finishers	12	7	2

4 Return required to give a 5% return on working capital

Total cost of producing a kilogram of beef or sheep meat

Adding together the value of non-cash costs and the running costs of an enterprise provides an indication of the total cost of producing a kilogram of beef or sheep meat. However, before doing this, all enterprises need to be brought to a common standard. Thus, finance charges and rents paid have been excluded from the fixed costs of the enterprises surveyed in making the following estimate. They have been replaced by the imputed value for return on working capital and rental value for the land used for the livestock enterprise.

The table on the following page summarises the cost of production for a kilogram liveweight of beef or sheep meat produced by the average performer among the enterprises covered by the survey.

	Non-Cash Estimates						Total Cost	Selling Price
	Repl Cost	Var Cost	Fixed Cost	Labour	Working Capital	Rental Value		
	Pence per kg liveweight sold							
Sheep enterprises								
Store lambs	124	24	12	12	7	2	181	164
Hill ewe	33	62	111	24	16	34	280	164
Upland ewe	22	66	69	28	11	7	203	168
Lowland	19	65	57	16	11	12	180	174
Cattle enterprises								
Hill suckler	23	121	138	94	23	33	432	225
Upland selling at weaning	31	103	131	43	27	15	350	228
Upland selling yearlings	23	96	119	37	19	11	305	224
Non-LFA suckler	20	75	94	33	25	24	271	238
Rearer finisher	15	108	104	25	23	21	296	198
Forage finisher <22 month	124	52	35	7	9	6	233	202
Forage finisher >22 month	131	39	33	7	9	8	227	196
Cereal finisher	118	53	13	2	8	1	195	197

Labour based on £14.74 per hour and 2,200 hours per man year (£32,428 employment cost per year).

Rental values based on values published in Scottish Government's Tenanted Agricultural land in Scotland 2015.

Working Capital charged at 5%.

Fixed cost adjusted for rent and finance paid.

COMPARISONS WITH 2013 AND 2014

The following tables summarise and compare the results from the 2015 calf and lamb crop with those of 2013 and 2014. Analysis is based on a comparison of the average from each of the three years surveyed and does not compare an identical sample.

Cattle enterprises

Suckler herds

- All sucker herd groups saw some modest improvement in margins from the 2015 calf crop. Nevertheless, it was only the lowground suckler group where the average net margin was positive. Market prices were lower than in 2014 and, despite some modest improvement in sale weights, revenue from calf sales at best matched 2014 levels and in most cases was down slightly. However, herd maintenance charges fell across all groupings.

- The biggest contribution to improved margins was a much reduced feed and forage cost across all groupings reflecting the lower cereal and fertiliser prices of 2015 and early 2016. These savings resulted in lower variable costs across all groupings.

Cattle finishing

- Rearer-finisher enterprises surveyed in 2015–2016 saw an improvement in margins although net margins remained, on average, negative. Income derived from the sale of cattle fell slightly as prime stock prices came under pressure and weights of animals sold fell slightly. The loss of income was quickly offset by lower herd maintenance charges, but more significantly by reduced feed and forage costs – reflecting falling feed and fertiliser prices through 2015. There was also some modest reduction in fixed costs reflecting falling energy costs.

- Margins among store cattle finishers were heavily determined by timing of purchase and sale. On average, prime cattle prices were 9–10% lower in 2014 than 2013 but the scale of decline varied during the year from (-)4% in spring 2014 to (-)17% in summer 2014 back to (-)9% in autumn and winter. Prime cattle sold in early 2015 also realised prices lower than twelve months earlier. Meanwhile store cattle prices were strong in the first half of 2014 before following a similar level to twelve months earlier in the autumn 2014 sales for older stores, while younger stores sold at lower prices than twelve months earlier.

- All store cattle finishers were badly affected by lower prime stock prices throughout the year, with particularly steep falls in the first half of 2016 affecting long-keep finishers. Store cattle bought in spring and summer 2015 were more expensive than a year earlier, but cattle bought later in the year were cheaper. Intensive finishers and long-keep finishers consequently saw lower sales revenues. Shorter-keep forage finishers saw revenues

increase slightly as they pushed average weights higher, but still below the critical 380 kg dwt level, to offset lower p/kg prices. All finishers benefited from lower feed and fertiliser costs contributing to lower variable costs per head. Movements in fixed costs were not consistent between groups, with intensive finishers and long-keep finishers seeing some trimming of fixed costs but shorter-keep, grass-based finishers facing higher fixed costs. However, the common conclusion to these moves in revenue and cost changes was for all groups to see some improvement in both gross and net margins.

Sheep enterprises

LFA sheep

- The 2015–2016 lamb crop year was characterised by prime lamb prices lower than twelve months previous throughout the year, with the exception of a short period in September and February. Store lamb prices also generally failed to match year-earlier levels. Consequently, lamb sales revenue fell among upland producers and was marginally higher among hill flocks, with the latter benefiting from a small switch from store lamb sales to prime lamb sales.

- Lower feed and fertiliser prices helped both groups make savings in feed and forage costs, and both groups saw some reduction in variable costs. However, the fall in revenue among upland flocks more than offset these savings, and this group saw a reduction in gross margins. Hill flocks, in contrast, saw a modest improvement in gross margins.

- Both groups saw little movement in fixed costs and, as a result, upland flocks saw a small deterioration in net margins, although on average they remained positive. Hill flocks saw a modest improvement in net margin, but they still remained negative.

Lowground sheep

- Earlier-lambing lowground flocks faced a particularly weak market for prime lambs sold through June and July, which contributed significantly towards lower gross output than last year. The savings seen in feed and forage costs were not sufficient to offset this significant fall in revenue, and gross margins fell sharply. Although there was also a modest reduction in fixed costs, net margins fell significantly to the lowest level of the past three years although they remained positive.

Lamb finishing

- Store lamb producers saw a slight deterioration in margins over the year 2015–2016. A small fall in output was offset by reduced feed and forage cost, and gross margins were little different from last year. An increase in fixed costs meant that net margins fell slightly.

Suckler herds

	Hill Suckler Herds			Lowland Suckler Herds		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Number in sample	16	16	16	16	17	16
Avg. herd size (head)	60	54	50	86	90	97
	£ per cow					
Calf output including beef calf premium	**687.46**	**666.95**	**608.73**	**716.25**	**770.59**	**774.87**
Less replacements	61.01	74.76	67.48	89.32	90.07	70.41
Net Output	**626.45**	**592.19**	**612.73**	**626.92**	**680.52**	**674.47**
Variable Costs						
Total concentrates	126.01	106.32	91.38	47.30	54.86	53.04
Other feeds	48.72	62.15	37.37	41.94	47.10	35.88
Forage	78.20	104.43	100.92	82.36	74.66	65.70
Total feed and forage	*252.93*	*272.90*	*229.68*	*171.60*	*176.62*	*154.63*
Veterinary	31.04	37.16	36.91	54.46	38.28	39.43
Bedding	18.13	26.27	25.86	43.08	41.70	43.84
Other costs	34.96	36.50	34.50	24.82	25.99	23.35
Total Variable Costs	**337.05**	**372.83**	**326.96**	**290.95**	**282.59**	**261.26**
Gross Margin	**289.40**	**219.36**	**285.78**	**335.97**	**397.93**	**413.21**
Fixed Costs	**385.46**	**399.64**	**439.62**	**401.01**	**431.49**	**405.18**
Net Margin	**(-) 96.06**	**(-)180.28**	**(-)153.84**	**(-) 68.04**	**(-)33.56**	**8.03**

	Hill Herds			Lowland Herds		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Physical Performance						
Calves born dead or alive per 100	95	94	94	90	93	91
Calves reared per 100	89	88	89	85	89	86
Daily liveweight gain (kg)	0.90	0.92	0.94	1.16	1.08	1.16
Return per calf (£ per head)	713	700	608	784	809	790
Calf price (£ per kg lwt.)	2.43	2.34	1.99	2.41	2.49	2.38
Weight per calf (kg)	293	299	305	325	324	332

	Upland Suckler Herds Early Weaning			Upland Suckler Herds Late Weaning		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Number in sample	33	30	30	27	25	26
Avg. herd size (head)	126	117	107	104	106	110
	£ per cow					
Calf output incl. beef calf premium	**681.61**	**687.91**	**675.10**	**837.13**	**841.34**	**839.89**
Less replacements	92.18	87.78	82.04	83.03	86.81	81.33
Net Output	**589.43**	**600.13**	**593.06**	**754.10**	**754.52**	**758.55**
Variable Costs						
Total concentrates	46.22	45.04	34.13	146.38	100.08	99.75
Other feeds	47.54	42.22	43.57	38.43	39.84	30.07
Forage	109.01	97.76	90.50	99.20	95.75	88.47
Total feed and forage	*202.76*	*185.02*	*168.20*	*284.01*	*235.67*	*218.29*
Veterinary	46.13	49.53	48.16	53.78	44.26	43.45
Bedding	29.96	34.50	33.54	39.01	51.50	42.55
Other costs	22.54	18.19	23.70	33.61	24.46	28.18
Total Variable Costs	**301.39**	**287.23**	**273.61**	**410.41**	**355.89**	**332.47**
Gross Margin	**288.04**	**312.90**	**319.45**	**343.69**	**398.63**	**426.08**
Fixed Costs	**411.79**	**422.48**	**406.32**	**446.52**	**457.02**	**464.19**
Net Margin	**(-) 123.76**	**(-)109.58**	**(-)88.87**	**(-)102.83**	**(-)58.39**	**(-)38.11**

	Upland Herds – Early Weaning			Upland Herds – Late Weaning		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Physical performance						
Calves born dead or alive per 100	93	95	93	91	94	95
Calves reared per 100	87	88	87	85	87	89
Daily liveweight gain (kg)	1.12	1.06	1.12	1.06	0.94	0.96
Return per calf (£ per head)	735	729	701	934	910	876
Calf price (£ per kg lwt.)	2.52	2.43	2.29	2.38	2.36	2.24
Weight per calf (kg)	292	300	306	393	384	392

	Rearer/Finishers		
	2013	**2014**	**2015**
Number in sample	24	23	20
Average herd size (head)	117	112	97
	£ per cow		
Calf output incl. beef calf premium	**1198.71**	**1084.89**	**1054.30**
Less replacements	90.18	98.58	68.50
Net Output	**1108.53**	**986.31**	**985.80**
Variable Costs			
Total concentrates	237.71	233.87	185.04
Other feeds	65.23	79.26	50.67
Forage	147.11	132.95	106.70
Total feed and forage	*450.05*	*446.09*	*342.41*
Veterinary	58.37	58.93	55.01
Bedding	53.60	55.56	52.51
Other costs	45.48	44.74	45.82
Total Variable Costs	**607.50**	**605.31**	**495.75**
Gross Margin	**501.03**	**381.00**	**490.05**
Fixed Costs	**567.60**	**598.56**	**568.32**
Net Margin	**(-)66.58**	**(-)217.56**	**(-)78.27**

	Rearer/Finishers		
	2013	**2014**	**2015**
Physical Performance			
Calves born dead or alive per 100	92	94	93
Calves reared per 100	86	88	86
Daily liveweight gain (kg)	0.81	0.89	0.90
Return per calf (£ per head)	1318	1307	1191
Sale price (pence per kg dwt.)	375	350	341
Weight per calf (kg)	606	644	602

Businesses finishing cattle under cereal-based systems

	Cereal-based		
	2013	**2014**	**2015**
	£ per head		
Number in sample	15	19	15
Stock Sales	**1345.38**	**1258.02**	**1228.63**
Less stock purchases	752.72	727.06	741.69
Net Output	**592.66**	**530.96**	**486.94**
Variable Costs			
Concentrates	258.98	266.14	218.35
Other feeds	25.42	18.89	26.81
Forage	7.15	4.69	8.22
Total feed and forage	*291.55*	*289.73*	*253.37*
Veterinary	15.29	13.46	16.31
Bedding	27.86	26.07	30.43
Other Costs	32.32	31.86	32.67
Total Variable Costs	**367.02**	**361.12**	**332.78**
Gross Margin	**225.64**	**169.84**	**154.16**
Fixed Costs	**99.63**	**114.94**	**91.71**
Net Margin	**126.01**	**54.90**	**62.45**

	Cereal-based		
	2013	**2014**	**2015**
Physical Performance			
Feeding period (days)	247	241	214
Start Wt (kg lwt)	309	307	315
Average carcase weight (kg dwt)	371	364	364
Daily LWT gain (kg)	1.3	1.3	1.4
Mortality (%)	1	1.3	0.7
Sale price (£ per kg dwt)	3.70	3.46	3.39
Purchase price (£ per kg lwt)	2.40	2.32	2.34
Gross margin per day (£ per day of feeding period)	0.91	0.70	0.72

Businesses finishing cattle under forage-based systems

	Forage-based <22 Month at Slaughter			Forage-based <22 Month at Slaughter		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
	£ per head					
Number in sample	18	19	20	17	17	17
Stock Sales	**1236.62**	**1201.53**	**1260.78**	**1266.85**	**1303.52**	**1265.09**
Less stock purchases	658.58	791.75	776.12	737.19	813.35	845.97
Net Output	**578.04**	**409.78**	**484.65**	**539.66**	**490.17**	**419.11**
Variable Costs						
Concentrates	212.21	182.88	172.83	190.66	220.25	119.85
Other feeds	29.88	30.81	18.71	29.00	74.95	13.09
Forage	39.81	45.57	34.63	63.81	49.72	37.51
Total feed and forage	*281.90*	*259.26*	*226.17*	*283.47*	*345.41*	*170.45*
Veterinary	18.35	15.96	19.26	10.89	15.12	16.42
Bedding	32.64	24.10	39.91	21.06	23.42	22.30
Other costs	41.76	34.03	36.72	30.38	36.37	44.98
Total Variable Costs	374.64	333.35	322.06	345.80	420.33	254.15
Gross Margin	**203.40**	**76.42**	**162.59**	**193.87**	**69.85**	**109.98**
Fixed Costs	**251.28**	**203.18**	**255.26**	**206.02**	**272.94**	**244.55**
Net Margin	**(-)47.88**	**(-)126.76**	**(-)92.67**	**(-)12.15**	**(-)203.09**	**(-)79.59**

	Forage-based <22 Month at Slaughter			Forage-based <22 Month at Slaughter		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Physical Performance						
Feeding period (days)	318	326	315	406	414	380
Start Wt (kg lwt)	300	343	330	316	338	357
Average carcase weight (kg dwt)	331	344	362	371	385	375
Daily LWT gain (kg)	0.80	0.77	0.94	0.80	0.79	0.76
Mortality (%)	0.8	1.5	0.8	0.5	0.5	0.4
Sale price (£ per kg dwt)	379	355	348	348	341	338
Purchase price (£ per kg lwt)	218	227	233	228	239	234
Gross margin per day (£ per day of feeding period)	0.64	0.23	0.52	0.48	0.17	0.29

Results from LFA sheep flocks

	LFA Upland Sheep Flocks			LFA Hill Sheep Flocks		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
	£ per ewe					
Number in sample	31	31	33	29	27	29
Lamb sales	**104.21**	**108.28**	**101.29**	**52.53**	**54.25**	**54.92**
Wool	2.68	2.81	2.90	2.28	2.22	2.25
Gross Output	**106.89**	**111.08**	**104.19**	**54.81**	**56.47**	**57.17**
Less replacement costs	14.34	13.12	13.10	13.19	11.86	10.96
Net Output	**92.55**	**97.97**	**91.09**	**41.62**	**44.61**	**46.21**
Variable Costs						
Concentrates	15.11	12.47	11.02	7.91	5.80	5.09
Forage cost	8.20	7.16	8.19	3.38	4.06	1.28
Roughages	2.92	3.17	2.11	2.32	2.41	2.11
Total feed and forage	*26.38*	*22.81*	*21.32*	*13.61*	*12.26*	*8.49*
Bedding	0.80	1.26	1.02	0.12	0.05	0.01
Veterinary	7.50	8.21	8.97	6.24	6.26	5.61
Other costs	7.38	8.30	8.62	5.61	6.43	6.63
Total Variable Costs	**42.06**	**40.58**	**39.94**	**25.59**	**25.01**	**20.74**
Gross Margin	**50.49**	**57.39**	**51.16**	**16.03**	**19.60**	**25.47**
Fixed Costs	**53.08**	**49.35**	**49.11**	**38.70**	**41.78**	**42.11**
Net Margin	**(-)2.59**	**8.04**	**2.04**	**(-)22.67**	**(-)22.18**	**(-)16.64**

	LFA Upland Sheep Flocks			LFA Hill Sheep Flocks		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Physical Performance						
Average no. ewes	606	520	525	685	789	712
Lambs born/ 100 ewes	159	165	169	107	114	113
Lambs died/ 100 ewes	16	16	20	19	18	15
Lambs reared/ 100 ewes	143	149	149	88	96	98
Lambs sold/retained:						
Slaughter %	65	70	71	16	13	17
Stores %	21	13	14	46	51	47
Breeding %	14	17	15	38	36	36
Return per lamb sold finished (£)	75.76	72.34	67.59	63.29	60.63	61.08
Carcase weight lambs sold finished (kg)	19.6	19.8	19.7	17.1	17.3	17.5
Return per lamb sold store (£)	58.95	60.65	53.93	45.38	46.45	43.25

Results from lowground sheep flocks

	2013	2014	2015
	£ per ewe		
Number in sample	12	12	12
Lamb sales	**138.50**	**136.93**	**118.09**
Wool	2.67	2.58	3.74
Gross Output	**141.16**	**139.52**	**121.83**
Less replacement costs	14.30	13.19	12.60
Net Output	**126.86**	**126.33**	**109.23**
Variable Costs			
Concentrates	26.05	16.61	14.43
Forage cost	8.64	7.26	7.96
Roughages	3.06	4.25	1.82
Total feed and forage	*37.74*	*28.11*	*24.22*
Bedding	0.78	1.01	1.43
Veterinary	10.26	8.81	8.87
Other costs	8.01	8.18	9.50
Total Variable Costs	**56.79**	**46.11**	**44.02**
Gross Margin	**70.07**	**80.22**	**65.20**
Fixed Costs	**43.28**	**45.48**	**43.82**
Net Margin	**26.79**	**34.73**	**21.38**

	2013	2014	2015
Physical Performance			
Average no. ewes	585	598	594
Lambs born per 100 ewes	177	174	176
Lambs died per 100 ewes	16	14	16
Lambs reared per 100 ewes	161	160	160
Lambs sold/retained:			
Slaughter %	81	86	81
Stores %	4	4	8
Breeding %	15	10	11
Return per lamb sold finished (£)	89.78	86.31	74.34
Carcase weight lambs sold finished (kg)	21.9	20.0	20.2
Return per lamb sold store (£)	70.42	67.10	60.19

Store lamb finishing

	2013	2014	2015
	£ per lamb		
Number in sample	14	12	14
Lamb Sales	**74.74**	**70.91**	**70.49**
Less store lamb purchase costs	52.75	49.34	50.34
Output	**21.80**	**21.57**	**20.15**
Concentrates	5.92	4.08	3.57
Other feed	0.22	0.95	0.37
Forage	2.13	0.90	1.28
Total feed and forage	*8.27*	*5.93*	*4.22*
Bedding	0.10	0.02	0.05
Veterinary	1.63	1.24	1.08
Other costs	3.69	4.04	4.51
Total Variable Costs	**13.69**	**11.23**	**9.86**
Gross Margin	**8.11**	**10.33**	**10.29**
Fixed Costs	**4.43**	**4.42**	**5.73**
Net Margin	**3.68**	**5.92**	**4.57**

	2013	2014	2015
Physical Performance			
Feeding period (days)	102	110	132
Liveweight at start (kg)	33.5	31.6	29.6
Liveweight at finish (kg)	41.1	38.2	40.7
Mortality (%)	1.7	1.5	2.0
Concentrates (kg)	22	18	12
Average carcase weight (kg dwt)	19.3	18.0	17.5

GLOSSARY

Output: Income to the enterprise after deducting the cost of maintaining the breeding flock or purchasing store livestock and after valuation changes.

Variable costs: Costs which vary directly with the size of production of the enterprise and which can be easily allocated to an enterprise.

Gross margin: The surplus income left over after deducting variable costs from output. It is the contribution of the enterprise towards covering the farmer's fixed costs and overheads, rewarding the owner of the business for their work and capital investment.

Fixed costs: Costs reflecting the overall running of the business, but which cannot be easily allocated to an enterprise because in many cases they are shared costs. In this analysis they have been broken down into the following categories:

Labour costs: All paid labour including regular wages and casual wages.

Contract: All contract labour and contractor services.

Power and machinery: Machinery repairs; fuel; electricity; hire charges; tax and insurance.

Property maintenance and rent: Farm and property repairs; council taxes and water charges; rent and grazing lets.

Depreciation: Machinery and property depreciation charges.

Finance: Bank and loan interest and charges.

Administration: Insurance; professional fees; miscellaneous expenses.

Net margin: The surplus income left after deducting all costs from the output. It is the contribution the enterprise makes to cover the cost of unpaid family labour and to reward the owner for their investment in the enterprise.

Working capital: The sum of money tied up in productive livestock and the average capital needed to finance the annual costs of running the business; the latter is estimated to be half of the total variable and fixed costs for the year.

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