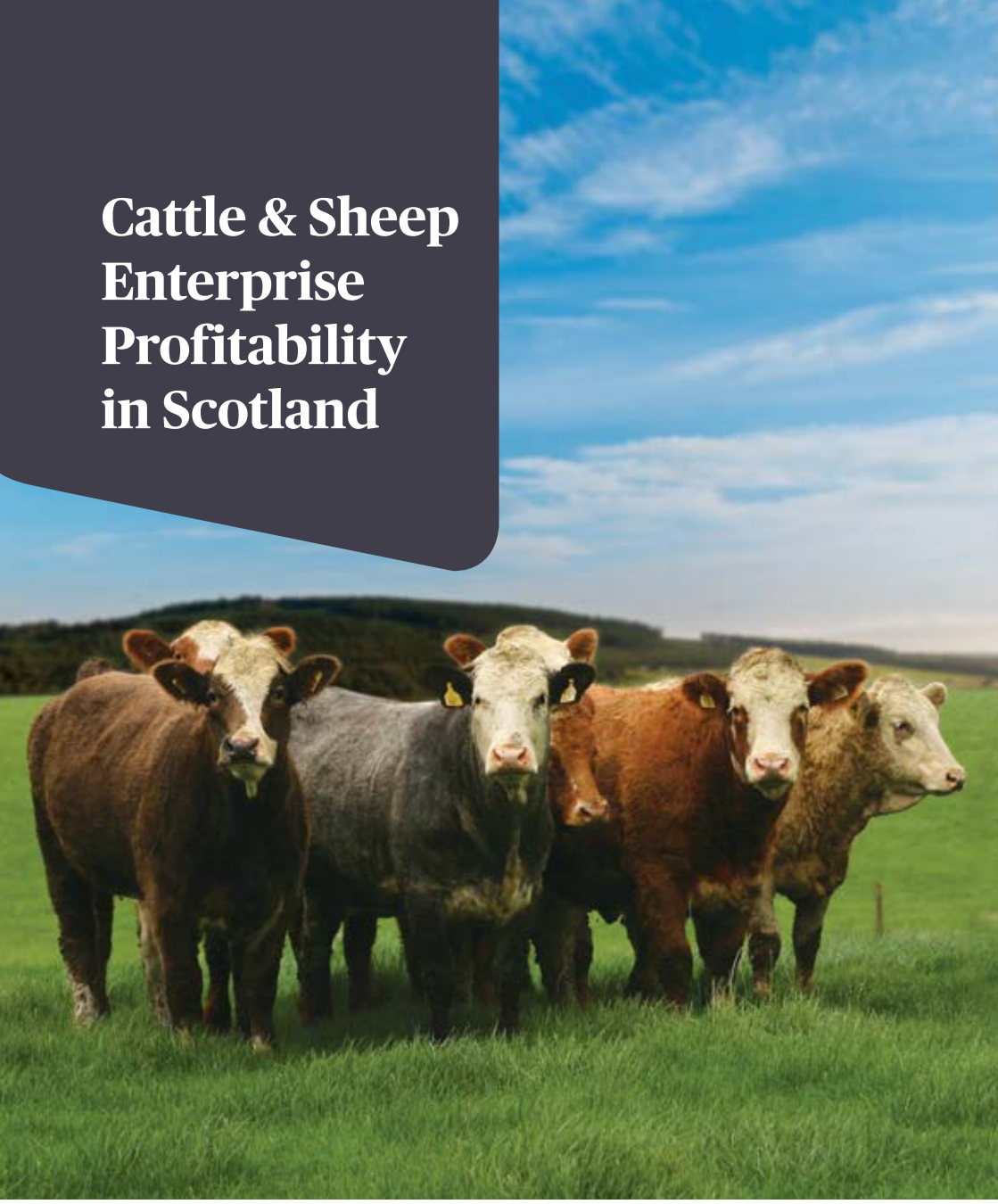
Cattle & Sheep Enterprise Profitability in Scotland



2021 Edition

QMS
Quality Meat Scotland

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Executive Summary

THIS REPORT on enterprise profitability covers the 2020 calf and lamb crop year – a period when, in general, the climate was warmer and wetter than average. A dry spring in 2020 meant grass was slow to grow in spring and early summer but was of good quality, while lambing and spring calving took place under favourable weather. Record autumn rainfalls, particularly in October, impacted on autumn grassland management. Cereal yields were mixed and, in some areas, straw yield and quality was below average. The 2020 calf and lamb crop year will, however, be best remembered for the challenges created by the Covid-19 pandemic and Brexit, which disrupted markets.

While overall input costs were little different to the record highs of 2019, there was significant divergence during 2020. Those linked to the global oil price fell due to the demand shock of the pandemic, whereas the price of fixed assets tended to be more stable and feed became more expensive. Store cattle prices started out the year recovering from the lows of 2019 but slipped back after the onset of the pandemic. However, by the autumn, values had rebalanced higher, in line with the market for finished cattle.

The store lamb season also received a boost from a significant lift in the value of finished stock. The weak prime cattle market of 2019 continued into the first quarter of 2020 and the early weeks of the pandemic led to further downwards pressure. However, the market quickly rebounded through May, as a good spell of weather led to a surge in demand for steaks, and values held firm in the second half of the year.

This market recovery will have been particularly welcome for cattle finishers, who felt a significant squeeze in 2019 when the finished market had fallen more steeply than the market for calves. Meanwhile, after paying significantly more for store lambs in autumn 2020, a strong market for hoggs in the first third of 2021 will have come as a relief for finishers.

- Although the results show improvement in margins among suckler herds, they continue to illustrate the scale of the challenge of achieving a positive margin without Common Agricultural Policy (CAP) support. Some 45% of suckler herds in the survey achieved a positive net margin, this is an increase from the 36% last year.
- Margins among store finishers also increased on the previous year, with 63% of the businesses surveyed achieving a positive net margin, which is up from 30% of businesses last year.
- The proportion of hill ewe flocks making a positive net margin increased from 15% last year to 27% this year. Meanwhile, net profitability among upland flocks stood at 89% of enterprises surveyed achieving a positive net margin for their 2020 lamb crop, up from 55% last year. Lowground flocks also saw a significant increase in margins, with only 93% of surveyed flocks achieving this objective compared with 61% achieving a positive net margin for the 2019 lamb crop. Store lamb finishers maintained the proportion achieving a positive net margin at 93%; the same as last year, although the average net margin increased by more than £4 per lamb.
- 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. Most of this variation is associated with the level of physical performance, characterised by the number of live animals reared to point of sale influencing the liveweight of stock sold per cow or ewe in the herd or flock. Also affecting the variation in margins was the level of mortality among breeding stock and the level of replacements needed to maintain herd or flock size. Improved margins were associated with low breeding stock mortality and generally lower herd replacement rates. Having cull stock to sell to set against the cost of replacement stock affects the cost of herd maintenance.
- Top-third producers are also generally characterised by strong cost control, particularly variable costs. With the exception of lowground sucklers, cereal finishers and hill ewes, all cattle and sheep groups show top-third producers to have lower variable costs per animal. Fixed costs, however, were harder to manage and most in the top third ranked by gross margin did see higher fixed cost per animal.
- The LFA hill suckler herds surveyed had an average gross margin of £348 per cow – an increase on the year of £137 per cow. A recovery in productivity which meant an increase of 66kg in the calf yield per cow over 2019 made a significant contribution to higher market returns per cow, accounting for 90% of the improvement in gross margin. However, increased fixed costs meant that the improvement in net margin was trimmed to (-)£168, £53 better than last year. The top third averaged £497 per cow gross margin, which was an improvement on the average of £148 per cow, and a net margin of (-)£14 per cow. Of the 16 producers surveyed, seven achieved a positive net margin compared with two last year.
- The LFA upland suckler herds were split into two categories, one group selling at weaning and a second group selling yearling stores. Both groups saw net margins increase in comparison with last year; those selling weaned calves by £27 per cow and those selling yearlings by £159 per cow. Higher market prices were a significant driver to improved margins, although both groups were able to trim variable

costs slightly. Those selling at weaning made an average gross margin of £385 per cow but were outperformed by counterparts selling yearlings, who achieved an average gross margin of £498 per cow. Although fixed costs were much higher among those selling older cattle, their net margin was £24 per head better than those selling younger cattle. Some 35% of businesses selling calves at weaning achieved a positive net margin, down from 39% last year. In contrast, among those selling yearlings, half of the businesses achieved a positive net margin – an improvement on the 19% of businesses who achieved this target last year.

- Lower calf mortality led to a higher yield of liveweight sold per 100 cows among non-LFA suckler herds in the survey, which combined with higher market price to lead to higher net output than last year. Variable costs were also lower, which led to the average gross margin among non-LFA suckler herds to be £408 per cow – an increase of £67 per cow on the year. Strong control of fixed cost meant that net margins improved and were positive for the first time in three calf crops, at £49 per cow. A total of 56% of the businesses surveyed achieved a positive net margin, which is an improvement from 41% last year.
- The rearer finisher businesses surveyed recorded an average gross margin of £564 per cow, an increase of £99 on the average from last year, with the top third averaging £681. The average net margin fell to (-)£33, having, on average, been positive a year ago. Average net margins rose to £47 per cow – the first positive average net margin for three years. The proportion of businesses with a positive net margin increased to 64% from 45% last year.
- The cereal-based cattle finishers surveyed reported an average gross margin of £150 per beast and a net margin of £44 – an increase of £74 on the year and the highest net margin since 2017. Although the average carcase weight of 362kg was 13kg lower than last year, the strong market prices meant that income increased by 6%. The cost structure was little changed on the year, so improved market returns fed through to the improvement in margins. Three-quarters of businesses in the survey reported a positive net margin, up from 53% 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. Younger cattle achieved an average gross margin of £178 per beast and reported a net margin of (-)£18, which was an improvement of £145 on the year. Older cattle achieved a gross margin of £249 per head and net margin of £8 – an improvement of £149 per head on the year. Some 63% of those selling younger cattle achieved a positive net margin, a significant increase from the 15% that achieved this objective last year. Similarly, 55% of those selling the older cattle achieved a positive net margin, which was more than double the rate for last year.
- LFA hill sheep enterprises in the survey achieved, on average, a gross margin of £26 per ewe. This was up £4 on the year and a net margin of (-)£20, £2 better than last year, as a consequence of higher costs eroding much of the increase in market returns.

The top third benefited from higher prolificacy and lamb weights, resulting in a net output of £28 per ewe higher than the average, although variable costs were £4 per ewe higher than average, fixed cost were £3 lower, leading to a £27 per ewe increase in net margin between the average and the top third. The general increase in margins meant that 27% of businesses in this group achieved a positive net margin, compared with 15% last year.

- Some 89% of upland ewe enterprises surveyed reported a positive net margin, up from 75% last year, with the average net margin £15 per ewe. This was more than double last year's level.
- Lowground breeding ewe businesses in the survey saw a significant improvement in margins as productivity recovered and market prices climbed to record high levels. The net outcome was the net margin climbing to £23.58, its highest level for four years. The proportion of businesses achieving a positive margin reached 93%, compared with 61% last year.
- Despite paying £10 per lamb more for store lambs, store lamb finishers saw a £4 per lamb increase in net margin, all accounted for by higher market returns for prime hoggs. Only one of the surveyed enterprises recorded a negative net margin, the same proportion as last year.
- For a sixth 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 SAC Consulting's resource efficiency calculator, Agrecalc. The results over the six years show that there has been some general reduction in average emissions per kg of output but the differences are too small, and the range of emissions overlap from year to year, to suggest the movement is a definitive trend. The results also show the challenge of reporting against kg of output, which can be badly affected by weather conditions and the level of inputs needed to maintain animal welfare during periods of weather challenge. Nevertheless, there remains 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 2020 calf and lamb crop year. The survey was commissioned by Quality Meat Scotland and carried out by SAC Consulting.

THE SURVEY covers 75 breeding ewe enterprises farming 45,000 ewes, 113 suckler cattle enterprises farming 10,460 suckler cows, 14 enterprises finishing 9,000 store lambs, and 54 cattle finishing enterprises selling 7,250 prime cattle.

It provides a snapshot of the industry during 2020. This report compares, for each sector, the costs, revenue and margins achieved by the top third of producers, the bottom third, and the sample average.

The concluding section of the report provides some comparative analysis with the results from 2018 and 2019. 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 to receive area payments. However, the Scottish beef calf premium has been included since it is coupled to the level of production.

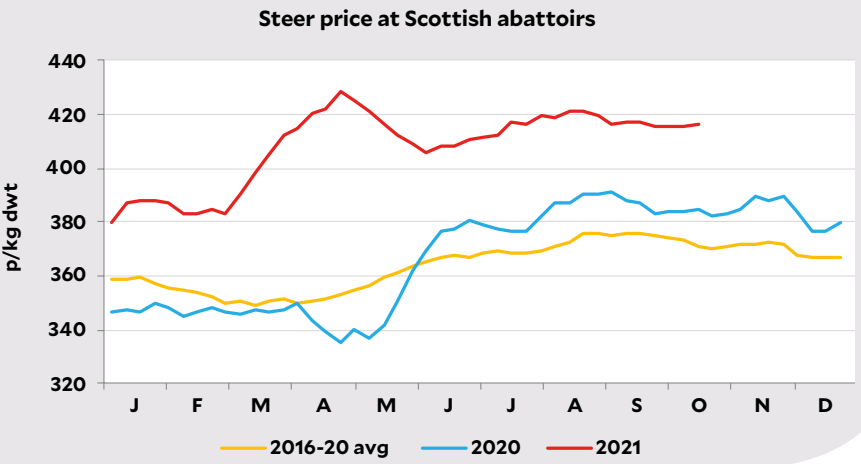
Estimates of carbon efficiency have been made using SAC Consulting's Agrecalc methodology.

The considerable range of land types and production systems found in Scotland inevitably mean 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.

Price changes during 2020

After falling to an eight-year low of 348.7p/kg in 2019, the annual average steer price rebounded by 5.2% in 2020, reaching 366.8p/kg. This was 0.8% above its average level from 2016-20 but still 9% below the 2013 peak.

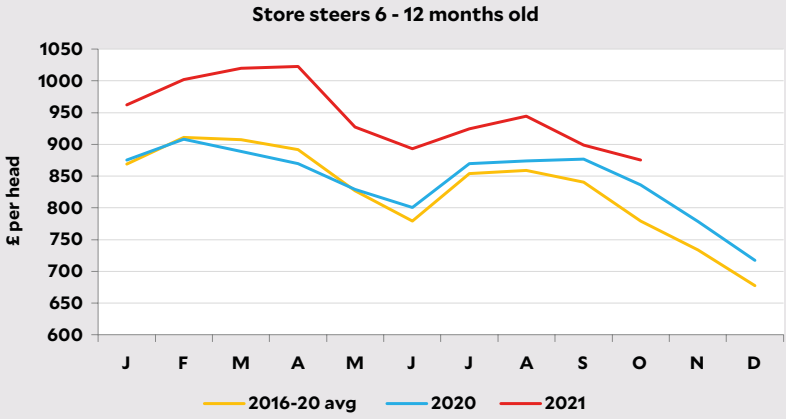
Scottish abattoirs paid an average of £1,353 for an R4L steer carcase in 2020 (UK spec), with lighter weights softening the year-on-year increase from 4.8% per kg to 3.8% on a per carcase basis.

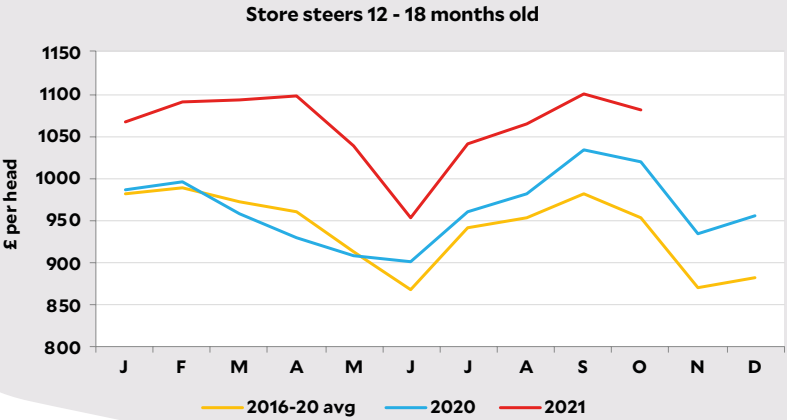
With the general level of consumer prices in the UK rising by 1% in 2020, the prime steer price increase at Scottish abattoirs softened to 4.1% in real terms. Despite rebounding, real terms prices still averaged lower than they had between 2011-18.

After a weak 2019, prime cattle prices remained around the 2019 average through the first quarter of 2020. However, there was a further decline in April as the market rebalancing caused by the pandemic initially had a negative impact. However, a surge in demand for steaks in May helped improve carcase balance and the market quickly recovered, trading above the annual average from the beginning of June.

Prices then followed a typical seasonal trend in the second half of 2020, although processing sector outages at the peak Christmas procurement period in November did lead to a backlog of slaughter-ready cattle and softer market prices towards the year-end.

After two years when store cattle prices

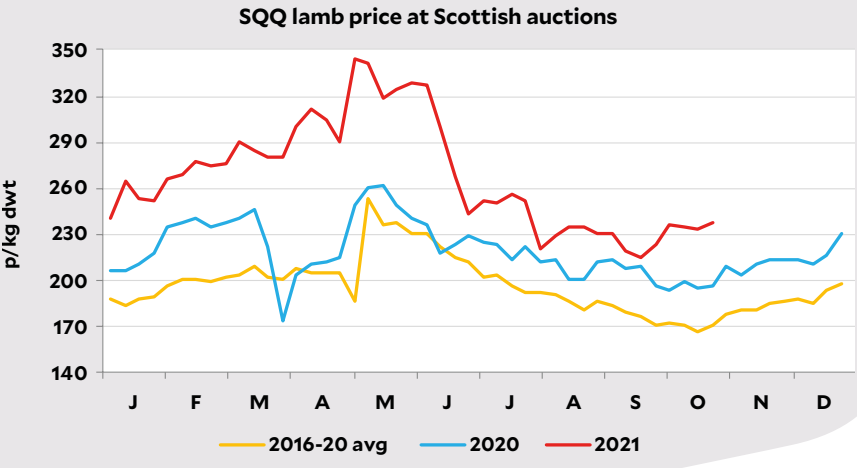




were significantly higher in the spring than autumn, 2020 was a more even picture for young steers in the six to 12-month category, while prices peaked at autumn sales in the 12 to 18-month group.

Having initially shown signs of recovering from the lows of 2019, store prices then softened in the early weeks of the pandemic. However, the store trade eventually rebalanced higher along with the finished cattle trade and, at autumn sales, prices exceeded year earlier levels by around 12-16%, taking them around 4-7% above their five-year average.

In the year as a whole, six to 12-month steers averaged £857 per head, while 12 to 18-month steers sold for £975, working out at respective year-on-year increases of 2.6% and 5.3%, returning values to their highest levels since 2017. These



averages worked out at a respective 63.3% and 72.1% of the average carcase price for a finished R4L steer (£1,353).

In 2020, prime sheep prices jumped by an average of 15.6% on 2019 and by 19.2% on their 2015-19 average, clearing at 215.9p/kg at Scottish marts[1].

After following a relatively normal seasonal pattern in 2019, prime lamb prices showed more volatility in 2020.

Hogg prices were unusually high through February and much of March, averaging around 235-45p/kg, placing them around 25-30% above year earlier levels and in line with the peak of the 2019 new season.

However, as the pandemic led to a collapse in export demand in late March, prices plummeted by 30% despite marketings dropping to 20-25% of normal levels.

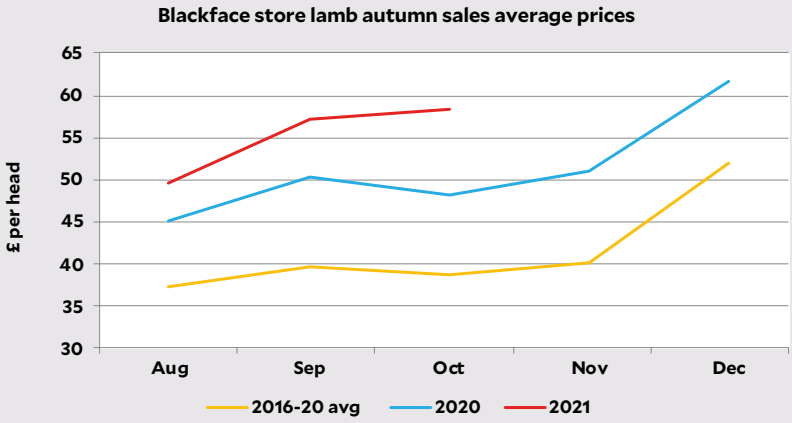
While the market began to recover in April, it failed to rebound to the highs of February and March, clearing around the 215p/kg mark. However, a strong start to the new season was then made, with lamb prices peaking at around 260p/kg in mid-May, supported by demand for the festival at the end of Ramadan, before sliding to around 220-30p/kg through June, placing them slightly above year earlier levels.

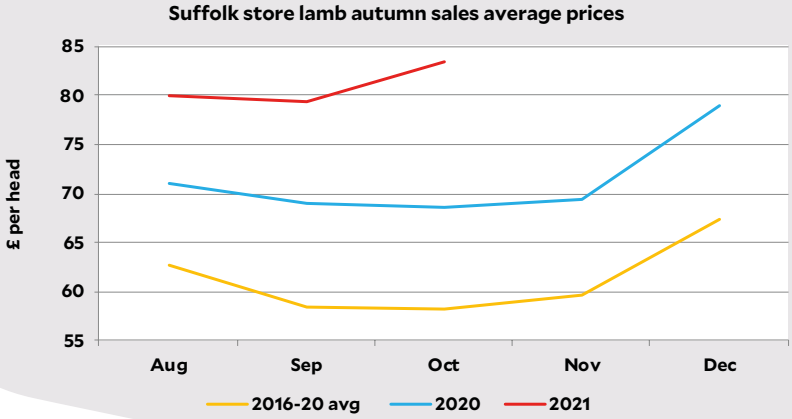
Peak procurement for Eid al-Adha came in late July and it meant prices bounced by around 4% for a week before falling 5% a week later.

Prices slumped to their annual low point between late September and the end of October, but the low point of 193p/kg was 25% above the 2019 low of 155p/kg.

Moving into November, the market bounced higher and then held around the 210-15p/kg mark up until Christmas. The trade was more muted in the run-up to the festive period than it had been in late 2019, resulting in a softening of the year-on-year

[1] Annual average prime sheep prices include the new season lamb price from the beginning of May and are based on the Standard Quality Quotation, which is lambs weighing 25.5-45.5kg liveweight at auction sales.

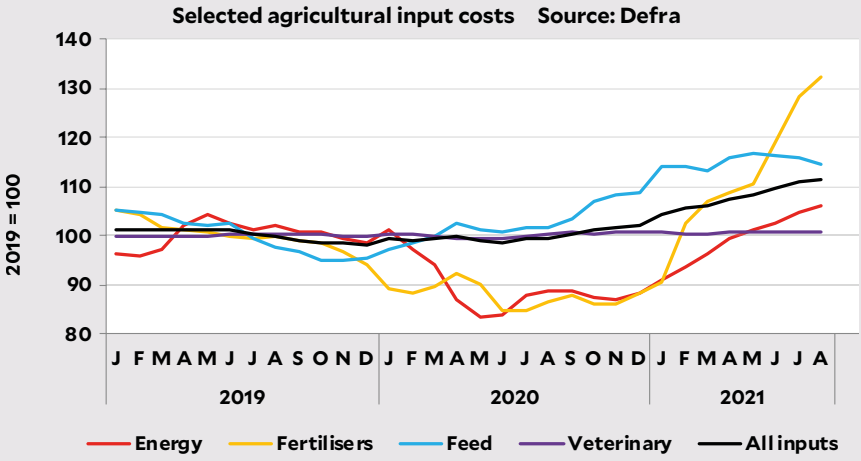




margin to around 10%. However, in the final week of the year prices jumped to 230p/kg.

Between the final week of July and December, the total number of store lambs traded exceeded 2019 levels by 7.4%, with the increase equivalent to just over half of the increased lamb crop reported in the June census, fitting with significantly higher lamb numbers in the Tayside (including Perthshire) and Highland regions.

Despite more lambs being sold through the store ring and a higher proportion of sales taking place in August and September (70.6% in the ten weeks to October 3, up from 67.1% in the corresponding period of 2019), prices followed the finished lamb market higher from the outset, reflecting a general level of confidence in the sheep sector.



Weekly average selling prices for Blackface lambs ranged from £42-54.50 in the 10 weeks to early October, with Suffolk stores ranging from £67-£73.50.

A year earlier, the respective price ranges had been £33-43 and £52-64. In the next 11 weeks to mid-December, price ranges were £45.50-63 for Blackface and £60-80 for Suffolks, compared with a respective £36-56 and £53-71 in 2019.

In Q1 of 2021, prices for finished lambs averaged 30% higher than in the final quarter of 2020, compared with an average uplift of 17% in the previous five marketing years. This suggests a good season for store lamb finishers despite the increased cost of buying lambs in autumn 2020.

In 2020, the annual average UK agricultural input prices, as reported by Defra, edged lower after three years of increases. However, they were still the second highest on record.

Input costs generally lacked direction in the first half of the year before trending slightly higher in the second half, ending the year 3.9% higher than in late 2019, when prices had been sliding.

Prices for different types of inputs showed more divergence in 2020, with raw materials linked to energy markets and the global oil price tending to slide, mostly due to the sharp fall in the spring months as the pandemic reduced global economic activity.

By contrast, the costs of machinery, equipment and vehicles were relatively flat and although straight feed prices increased significantly, compound feed prices were only slightly higher than in 2019. Within plant protection products, fungicides surged, while insecticides and herbicides were slightly cheaper.

Fertiliser prices at a global level generally mirrored the oil market in 2020, though they did weaken before the pandemic hit the UK and briefly rebounded in March and April. Compound fertiliser prices fell at a slightly faster pace than straight fertilisers, while phosphorus-based fertilisers fell more significantly than nitrogen or potassium-based ones.

After falling through 2019, feed prices trended higher in 2020 due to a poor global harvest and firm demand, going beyond their previous highs of late 2018 and early 2019 in the final quarter. However, prices did remain around 9% below their early 2013 peak.

Feed wheat and soyameal showed particularly sharp spikes in late 2020 and ended the year around a third more expensive than in late 2019. Feed barley rose less, but still closed 2020 around 15% more expensive year-on-year. Rising prices for straights were reflected in compound feeds as the year progressed.

However, partial pass-through meant that prices for cattle, sheep and pig feed were 4-9% higher in December 2020 than a year earlier, and failed to return to the levels at which they had opened 2019.

2021 prospects

Since the survey data was collected in the spring of 2021, the market environment has remained firm. After spiking in April and falling back in May, the beef market has settled 7-10% higher than 2020, 11-13% above the five-year average, and 1-2% above the previous record set in 2013. However, after adjusting for inflation, prime cattle remain well below their peak.

With carcase weights averaging similar to 2020, per head prices will have risen in line with per kilo prices. Meanwhile, although the marketing pattern has been different to the highly volatile pattern of 2020, slaughter numbers have fallen slightly overall.

However, weekly slaughter has failed to pick up seasonally through October, falling 5-6% below the five-year average.

Given that calf registrations increased in spring 2020, and previous reductions in older prime cattle had been expected to fall out of the system, it had been anticipated that availability would recover more strongly.

Therefore, it is possible that well-documented labour shortages in the processing sector have been limiting the ability of sites to raise production in line with the seasonal lift in supply.

At store sales, prices paid by finishers held above 2020 levels throughout the main spring and autumn selling periods.

Between mid-February and mid-March, prices traded around 12% above 2020 levels, with the gap widening to around 17% between mid-March and mid-May.

Moving into the autumn selling period, the year-on-year price lead softened to around 5%, largely reflecting the rebalancing higher in autumn 2020.

For sales at six to 12 months, prices have been significantly lower in the autumn than in the spring, whereas prices were similar for those sold at 12-18 months in both periods. In both age groups, prices have also reduced towards the end of the peak selling period.

On the numbers front, volumes were well above 2020 in the spring but have trailed in the autumn season.

For prime sheep, early 2021 saw hogg prices surge beyond autumn 2020 levels. The momentum was strong enough to take them 15-20% above the highs of early 2020, and 35-40% above their five-year

average. Prices approached 290p/kg in early March and, after Easter, spent three weeks averaging above £3/kg, putting them at levels above the highs of most early new season trading periods.

The additional challenges for exporting lamb to the EU appear to have had no significant downside impact on the market and, without trade friction, it is possible that the market could have cleared at an even higher level.

Moving into the new season and prices exceeded 340p/kg at the peak in early May. In mid-June, prices fell below £3/kg for the first time and followed a generally normal seasonal pattern until September, holding 20-30% above year earlier levels.

Eid al-Adha continued to move forward in the marketing year, with peak procurement taking place in mid-July this year, pushing up prices by around 2%. This lift was weaker than in recent years, with a likely contributing factor being that it came too early in the season. After slipping to an autumn low point of around 215p/kg in mid to late September, the market rebounded to trade around 235p/kg in October.

With the low point being earlier in the autumn than usual, prices ran around 40% above their five-year average in October.

Lamb carcase weights have increased by 1-2% in 2021, giving a further boost to per head prices over and above the lift in prices per kg.

In Scotland, the lambing percentage indicated by the June census results matched the previous record high set in 2020 of 130.6%, so this suggests that producers have continued to benefit from increased productivity as well as farmgate prices.

While significant losses were reported at lambing, it is likely that these were more localised than the widespread challenges of 2013 and 2018.

At store lamb sales, marketings increased slightly on the highs of autumn 2020 between late July and late October, reflecting the slight increase in this year's lamb crop.

Despite this, prices paid by finishers have surged, with values around 15% higher than last year through August and September, rising to around 25% higher in October. Indeed, Blackface lambs have been making around £55-60 per head and Suffolk lambs around £80 compared with £45-50 and £65-70 respectively in 2020, and five-year averages of around £40 and £60.

Given the magnitude of the price increases this autumn and the strength of the upswing in the finished lamb market between Q4 2020 and Q1 2021, store lamb finishers may struggle to match the margins of the 2020/21 marketing year.

Another factor at play could be an increased carryover of hoggs, as Defra slaughter statistics are pointing to a much steeper fall in slaughtering between June and September than the combined census results for Scotland and England suggest for the 2021/22 marketing year.

However, the EU market for lamb has been firm this autumn, so any increase in production is likely to be met with increased exports.

Input costs for farmers and red meat processors have been climbing significantly in 2021. Indeed, global commodity price data from the International Monetary Fund indicates that prices were around 30% higher in September 2021 than in March and around 60% higher than 12 months before.

Items such as wheat, palm oil and crude oil were 10-20% more expensive in September than in March 2021, while urea had jumped by around 40% in just six months. Many

of these pressures are a legacy of the pandemic, with the shift in household spending from consumer services to durable goods leading to backlogs in factories and ports across the world.

While the surge in global oil prices has already been reflected in the cost of diesel, increases in raw material prices will continue to pass through to the cost of inputs with a greater level of mixing and processing over the winter, such as compound feeds and fertilisers. One concern and risk going forward is that the surge in fertiliser prices has a knock-on impact on crop areas and yields in 2022, resulting in continuing pressure on feed prices in autumn 2022.

As is always the case, profitability will have been linked to the timing of sales and input purchases. The latter is likely to be a major factor in margin levels in the current marketing year, with earlier purchases likely to have been made at significantly lower costs than purchases later in the year.

Meanwhile, fixed-term pricing contracts for inputs may limit some pressures in the short-term but costs will rise sharply on renewal.

For store calf producers and cattle finishers, increased market prices throughout 2021 are likely to have supported margins.

However, on the downside, input cost pressures have moved well beyond previous levels and data from GB GrassCheck suggests that grass growth rates were weak throughout the summer, potentially leading to longer finishing periods and increased need for supplementary feeding.

However, increased calf registrations from spring 2020 are likely to have boosted output where these animals have been sold store or finished in the current marketing year.

For sheep producers, the 2021 marketing year has seen values for store and finished lambs rise even further beyond the record levels of 2020. In addition, increased confidence in the autumn of 2020 appears to have resulted in a small increase in ewe numbers while, despite some challenging spring weather conditions, lambing rates matched the previous year's record.

As a result, there have been more lambs to sell in the current marketing year. In addition, carcase weights were higher than 2020 over the summer and into autumn, suggesting a further rise in prices per head for finished lambs.

However, some of this may reflect slower finishing periods and potentially additional feeding due to sluggish grass growth.

Structural changes in 2020

Among the suckler herds surveyed, 24% increased cow numbers by more than 5%, while a further 16% reduced cow numbers by more than 5%.

Overall, the number of cows farmed by those in the survey increased by 1.3% in contrast to a national decline of 0.4% reported in the Scottish Agricultural Census of December 2020.

With regard to breeding sheep enterprises, the total number of ewes farmed by those in the survey increased by 0.6%, while the national flock reported in the December 2020 Scottish Agricultural Census increased by 0.8%.

Some 22% of flocks increased in size by more than 5%, while 38% of surveyed businesses reduced flocks by more than 5%.

Non-LFA lowground flocks were more likely to have decreased the size of their sheep enterprise than hill farms.

Greenhouse Gas Emissions

THE SCOTTISH Government has detailed its position on climate change through the Climate Change (Emissions Reduction Target) (Scotland) Act 2019, which sets a target of achieving "net zero emissions" for the country by 2045.

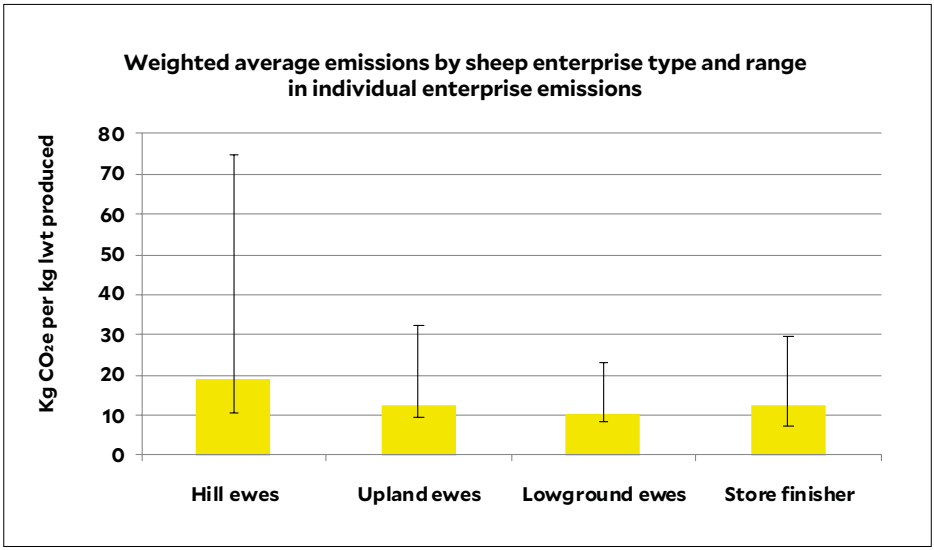
All sectors of industry and the wider community are expected to strive to reduce their emissions. In its Climate Change Plan update of December 2020, the Scottish Government maintained its commitment to net zero by 2045 and introduced a target of a 75% reduction from 1990 levels by 2030. The Scottish Government's greenhouse gas (GHG) emissions statistics for 2019 show agriculture has reduced net emissions by 12.7% between 1990 and 2019.

To help scope the scale of variation in emissions from Scottish livestock enterprises and identify drivers to improve emissions efficiency, the scope of the enterprise profitability includes estimations of GHG emissions associated with the output, or production, of these enterprises.

SAC Consulting's Agricultural Resource Efficiency Calculator, Agrecalc, 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), and their sources include:

- Carbon dioxide from burning fossil fuels such as coal, oil and diesel, and disposal of waste, and is embedded in inputs like feed, bedding, fertiliser and lime.
- Methane is produced as a natural by-product during ruminant digestion and from the management of organic manures.
- Nitrous oxide released during the application of inorganic and organic fertilisers, from urine deposition by grazing animals and from crop residues.



The calculations do not take account of carbon sequestered in the production of grass or by the trees and hedges on these holdings.

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 at 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.

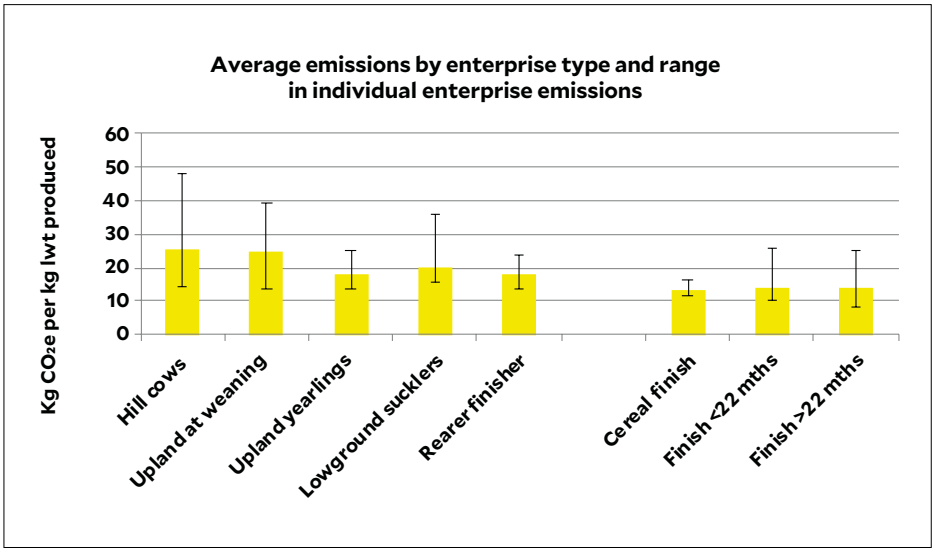
They also illustrate the opportunities that exist to control GHG while maintaining or improving financial sustainability.

Comparison of greenhouse gas emissions

Comparing and contrasting carbon emissions allows some general observations to be made, namely that lower emissions tend to be associated with higher margins.

This should not be a surprise as the drivers for improved margin are also the drivers for improved emissions – namely the productivity of the system and the technical efficiency of that system.

Equally, carbon emissions and enterprise profitability are also influenced by the physical environment in which the enterprise takes place. The levels of rainfall, sunshine hours and temperature can not only influence animal productivity



and performance but can result in considerable seasonal change in input use, for example, fertilisers and animal feeds, and the need for fuel and electricity for extended field work and/or housing periods and feed preparation and delivery.

The results show how high levels of animal efficiency and productivity generally leads to lower emissions intensity, although there were exceptions, e.g. hill sucklers.

The tables below summarise the results for the 2015 to 2020 calf and lamb crop years. They show the considerable variation within enterprise types, between enterprise types, and between years that would be expected from a biological production system. However, in general they also show a reduction in emissions intensity that is achieved by those businesses who also achieve the highest margins.

Across all the enterprises surveyed, the average reduction in emissions intensity between the top third of economic returns and the average was around 8%. This reflects that the capacity for economic sustainability and environmental sustainability goes hand in hand, and a long way towards the targets set for agriculture by the Scottish Government.

Breeding ewe flocks ranked by gross margin per ewe

	Bottom third		Average		Top third	
	Kg output per ewe	CO_2e / kg output	Kg output per ewe	CO_2e / kg output	Kg output per ewe	CO_2e / kg output
Hill flocks						
2015	24.4	23.3	33.3	17.4	40.5	15.2
2016	25.6	20.1	31.9	16.6	36.9	15.7
2017	27.9	22.2	33.5	17.3	44.6	14.0
2018	22.4	31.5	28.6	19.9	33.6	15.1
2019	24.0	21.9	27.9	17.4	32.4	16.3
2020	21.3	23.1	27.8	18.9	33.6	17.5
Upland flocks						
2015	57.3	13.7	60.4	12.7	65.1	11.5
2016	54.9	13.7	59.6	12.9	64.7	12.8
2017	45.7	14.4	57.6	12.9	62.7	12.8
2018	49.0	12.7	53.9	13.0	55.6	13.7
2019	62.2	11.8	62.1	11.1	60.3	10.6
2020	55.5	13.5	58.8	12.3	70.3	10.5
Non LFA lowground flocks						
2015			67.9	12.9		
2016			71.0	9.9		
2017			69.6	11.4		
2018			65.1	10.9		
2019			53.2	12.6		
2020			78.1	10.3		

Suckler herds ranked by gross margin per cow

	Bottom third		Average		Top third	
	Kg output per cow	Co_2e / kg output	Kg output per cow	Co_2e / kg output	Kg output per cow	Co_2e / kg output
Hill suckler herds						
2015	222	35.4	270	29.2	324	26.8
2016	263	29.7	278	25.6	293	23.0
2017	198	40.3	258	26.4	330	21.0
2018	199	39.6	237	29.9	266	24.2
2019	223	42.9	215	30.2	259	23.5
2020	278	21.2	281	23.5	277	25.4
Upland herds selling at weaning						
2015	258	24.2	266	26.1	282	25.6
2016	258	24.6	279	23.6	312	21.5
2017	249	29.7	269	27.1	313	28.3
2018	249	35.0	277	25.1	296	22.9
2019	272	23.7	286	24.3	317	22.6
2020	238	26.2	268	24.5	292	22.7
Upland herds selling yearlings						
2015	334	21.8	347	21.7	374	20.7
2016	310	21.1	343	19.4	362	19.6
2017	344	20.9	345	20.2	345	18.9
2018	330	23.4	336	20.4	355	19.5
2019	315	23.3	344	20.2	395	17.8
2020	348	19.1	364	18.3	390	18.3
Lowground suckler herds						
2015	266	26.8	286	23.8	305	19.1
2016	268	30.8	288	30.1	326	33.6
2017	243	28.7	278	27.6	286	26.3
2018	258	21.0	277	23.4	291	26.0
2019	258	32.5	288	23.4	303	20.1
2020	295	25.6	295	20.0	333	18.2
Rearer finisher herds						
2015	475	17.3	489	17.8	515	17.6
2016	402	19.3	473	18.1	570	16.7
2017	358	22.0	439	20.6	537	16.3
2018	477	20.3	536	18.4	619	16.5
2019	496	19.8	491	18.9	517	16.3
2020	433	19.6	507	18.1	514	14.9

Cattle finishing ranked by gross margin per animal sold

	Bottom third		Average		Top third	
	Kg added per animal sold	CO_2e / kg output	Kg added per animal sold	CO_2e / kg output	Kg added per animal sold	CO_2e / kg output
Cereal-based finishing						
2015	290	12.6	313	11.4	333	10.8
2016	283	14.3	315	12.7	345	10.1
2017	292	20.3	334	15.8	367	10.4
2018	278	13.5	304	12.5	319	11.6
2019	316	11.2	328	11.1	373	10.2
2020	227	16.6	279	13.5	317	12.0
Forage-based finishing under 22 months						
2015	276	14.1	295	12.9	309	12.3
2016	290	15.5	304	13.6	365	11.1
2017	285	14.3	272	14.3	304	14.0
2018	233	15.4	231	15.2	190	16.2
2019	195	17.7	241	15.7	333	13.2
2020	256	15.0	252	13.8	319	12.0
Forage-based finishing over 22 months						
2015	255	14.6	289	13.0	309	11.4
2016	230	14.3	264	13.8	316	11.9
2017	252	13.9	270	13.2	363	10.1
2018	248	14.4	301	12.3	338	10.9
2019	202	17.6	243	14.6	317	10.7
2020	168	18.9	241	14.2	364	9.7

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 19 to 144 cows, with an average size of 51 head.

- Hill suckler herds achieved an average gross margin of £349 per cow. The top third achieved an average gross margin of £498 – 43% better than the average – while the bottom-third reported a gross margin of £203.
- Fixed costs averaged £517 per cow, but with a considerable variation from £192 to £802 per cow. This resulted in an average net margin of (-)£168 per cow, while the top third achieved a net margin of (-)£14.
- Cow productivity was little different among the businesses surveyed, although the top third did rear one more calf per 100 cows than the average and had the lowest cow mortality. Top-third producers did, however, have the lowest barren cow rate and the most calves born within the first nine weeks of the calving period. Higher output among the top third was largely driven by higher selling prices.
- Top-third producers had a stronger control over costs than the average, achieved through slightly better control over fixed costs – spending £5 less per cow (1%) than the average on these items. Greater dependence on family labour contributed to lower labour costs among the top third but higher property and finance costs offset some of this. Variable costs were much lower among the top third due largely to much lower use of concentrate feeds, although this may have contributed to lower daily liveweight gains among the top third.

LFA hill suckler herds – Financial performance measures

	Bottom third	Average	Top third
Number in sample	5	16	5
Average herd size (head)	64	51	37
		£ per cow	
Calf output after valuation changes	437.78	565.91	693.99
Subsidies	88.47	104.80	104.56
Gross output	**526.25**	**670.71**	**798.55**
Less replacements	63.04	66.17	70.03
Net output	**463.21**	**604.51**	**728.52**
Variable costs			
Purchased concentrates	134.76	88.07	38.89
Home-grown concentrates	0	0	0
Roughages purchased	34.34	51.37	98.43
Forage	23.89	47.80	44.32
Total feed and forage	*192.99*	*187.24*	*181.64*
Veterinary	22.54	30.46	29.41
Bedding	11.01	7.33	3.33
Other costs	33.84	34.34	16.19
Total variable costs	**260.38**	**255.64**	**230.57**
Gross margin	**202.83**	**348.90**	**497.95**
Fixed costs			
Labour	227.12	138.43	96.66
Contractors	16.06	40.42	46.68
Power and machinery	74.75	90.90	83.06
Property maintenance and rent	62.82	89.71	144.21
Depreciation	90.84	112.81	93.38
Finance	9.65	12.02	20.24
Administration	26.54	33.06	27.60
Total fixed costs	**507.78**	**517.35**	**511.83**
Net margin	**(-)304.95**	**(-)168.45**	**(-)13.88**
Annual herd maintenance cost Pence per kg calf produced	23	23	25
Variable cost Pence per kg calf produced	94	91	83
Fixed cost Pence per kg calf produced	182	184	184
Unpaid family labour hours	**1hr 55min**	**15hrs 10mins**	**39hrs 20min**

Totals may not add due to rounding

LFA hill suckler herds – Technical performance measures

	Bottom third	Average	Top third
Cows per bull	24	27	29
Barren cows	6	7	5
% calves born in 9 weeks	53	58	80
% calves born in 12 weeks	82	72	87
Calves born dead or alive per 100 cows	94	93	94
Calves born dead per 100 cows	1	1	1
Calves died before weaning per 100 cows	2	1	1
Calves reared per 100 cows	91	91	92
Daily liveweight gain (kg)	0.85	0.95	0.86
Weight – kg per calf sold	306	309	302
Weight produced kg per cow	278	281	277
Cow replacement rate per 100 cows	33.0	17.2	4.5
Cow mortality %	3.5	1.9	1.1
Purchased concentrates kg per cow	462	310	158
Home-grown concentrates kg per cow	0	0	0
Stocking rate cow/ha	0.06	0.15	0.17
CO_2e Kg/net lwt kg produced	**21.2**	**23.5**	**25.4**

Results from LFA upland suckler herds

THE UPLAND suckler herd sample has been split into two sub-groups 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 has 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 31 herds in this category farmed 3,158 cows – an average herd size of 102 cows within a range from 24 to 359 cows – and reported an average gross margin of £385 per cow and a net margin of £4 per cow. The top third of enterprises returned a gross margin of £523 per cow, £138 (35%) better than the average and £293 per cow better than the bottom third. Top-third producers reported a net

margin of £134, £130 per head better than the average. Some 35% of businesses reported a positive net margin, down from 39% last year.

- Top-third producers produced 24kg more calf weight per cow than the average and 54kg more than the bottom third. They reared four more calves per 100 cows to the average, they sold them 13kg heavier, and sale prices were 3p/kg lwt higher than the average. Higher physical production resulted in income 10% higher than the average. Lower cow mortality and a slightly lower herd replacement rate to the average meant that the top third had slightly lower herd maintenance charges, resulting in a net output £82 (13%) higher than the average.
- Despite higher physical output among the top-third producers, they were able to achieve this with lower variable costs than the average. Fixed costs were higher, however, with heavier use of contractors offsetting lower paid labour and higher spend on property and machinery also apparent.

Upland herds selling calves at around one year old

Twenty-eight herds farming an average of 106 cows each were categorised as herds selling calves at an older age of about 12 months. This older age at sale resulted in the average weight of calves sold being 407kg, some 33% 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 47%. However, when considered against the weight of animal sold rather than per cow, the variable costs among this group were 8% higher per kg of calf reared.

Higher production per cow among those selling yearlings resulted in a gross output 33% higher than those selling weaned calves, and the extra variable costs associated with keeping the calves longer were recouped from the marketplace. The average gross margin among this group was consequently some 29% better than for those selling weaned calves.

Fixed costs, however, were 22% higher among this group compared with those selling younger cattle. All fixed costs were higher per cow with the exception of contractor charges, which were the same. As a result, the £112 per cow improvement in gross margin was eroded to a point where the net margin among those selling yearling stores was £27 per cow better than those selling weaned calves. Half the enterprises surveyed achieved a positive net margin, up from 19% last year.

- Top-third businesses selling yearlings returned a gross margin of £627 per cow, £129 (26%) better than the average and almost one-and-three-quarter times that of the bottom-third producers. They achieved this better financial return through improved herd productivity, rearing four more calves per 100 cows than the average and seven more than the bottom third. They sold these calves at a slightly higher weight than the average, leaving the production per cow 7% higher than the average.
- Top-third producers also delivered higher output while keeping variable costs per cow 12% below the average.
- Top-third producers had a slightly higher fixed cost burden than the average, 2% higher, where lower labour and machinery charges were offset by higher property, depreciation and finance costs. Top-third producers did, however, have a greater dependence on family labour.
- Upland herds selling yearling cattle achieved a net margin of £31 per cow, which improved to £150 per cow among the top third.

Extensive upland suckler herds selling weaned calves – Financial performance measures

	Bottom third	Average	Top third
Number in sample	10	31	10
Average herd size (head)	96	102	122
		£ per cow	
Calf output after valuation changes	538.65	633.15	695.97
Subsidies	89.73	95.93	106.84
Gross output	**628.38**	**729.08**	**802.81**
Less net replacement cost	88.37	81.46	72.57
Net output	**540.01**	**647.62**	**730.24**
Variable costs			
Purchased concentrates	50.03	40.12	32.12
Home-grown concentrates	25.40	13.61	10.31
Roughages purchased	18.87	27.50	22.84
Forage	108.10	94.91	86.61
Total feed and forage	*202.40*	*176.14*	*151.91*
Veterinary	42.67	37.68	31.99
Bedding	35.93	26.31	9.81
Other costs	28.56	21.74	13.79
Total variable costs	**309.56**	**261.87**	**208.50**
Gross margin	**230.45**	**385.75**	**522.74**
Fixed costs			
Labour	71.33	58.37	33.23
Contractors	43.56	48.68	63.37
Power and machinery	73.31	78.10	81.01
Property maintenance and rent	46.46	72.18	75.28
Depreciation	60.06	75.14	88.09
Finance	16.57	24.61	25.11
Administration	22.10	25.01	22.68
Total fixed costs	**333.39**	**382.09**	**388.77**
Net margin	**(-)102.94**	**3.66**	**133.97**
Annual herd maintenance cost Pence per kg calf sold	37	30	25
Variable cost Pence per kg calf produced	130	98	71
Fixed cost Pence per kg calf produced	140	142	133
Unpaid family labour hours	**8hrs 30min**	**10hrs 15min**	**12hrs 5min**

Totals may not add due to rounding

Upland suckler herds selling yearling calves – Financial performance measures

	Bottom third	Average	Top third
Number in sample	9	28	9
Average herd size (head)	84	106	119
		£ per cow	
Calf output after valuation changes	831.09	882.34	964.43
Subsidies	86.77	90.16	95.50
Gross output	**917.86**	**972.50**	**1059.93**
Less net replacement cost	87.72	87.19	91.71
Net output	**830.14**	**885.31**	**968.22**
Variable costs			
Purchased concentrates	50.18	54.97	75.26
Home-grown concentrates	74.35	51.86	27.91
Roughages purchased	63.46	37.01	16.41
Forage	87.72	94..65	93.73
Total feed and forage	*275.71*	*238.49*	*213.31*
Veterinary	65.55	50.21	45.74
Bedding	72.92	60.06	47.16
Other costs	54.25	38.49	34.10
Total variable costs	**468.43**	**498.06**	**340.31**
Gross margin	**361.71**	**498.06**	**627.91**
Fixed costs			
Labour	96.10	77.70	57.67
Contractors	37.89	35.62	44.14
Power and machinery	95.61	100.75	91.70
Property maintenance and rent	72.48	83.00	81.47
Depreciation	74.23	97.11	116.04
Finance	39.83	33.02	34.70
Administration	23.50	39.76	52.31
Total fixed costs	**449.64**	**466.96**	**478.03**
Net margin	**(-)87.93**	**31.10**	**149.88**
Annual herd maintenance cost Pence per kg calf sold	25	24	24
Variable cost Pence per kg calf produced	135	106	87
Fixed cost Pence per kg calf produced	129	128	122
Unpaid family labour hours	**9hr 5min**	**12hr 20min**	**13hr 45min**

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	25	24	23
Barren cows	6	5	4
% calves born in 9 weeks	94	91	88
% calves born in 12 weeks	97	96	94
Calves born dead or alive per 100 cows	94	94	96
Calves born dead per 100 cows	4	4	2
Calves died per 100 cows	5	2	2
Calves reared per 100 cows	85	88	92
Daily liveweight gain (kg)	1.0	1.1	1.2
Weight – kg per calf sold	279	305	318
Weight produced kg per cows	238	268	292
Cow replacement rate per 100 cows	18.3	15.3	13.6
Cow mortality %	3.2	2.2	2.0
Purchased concentrates kg per cow	209	170	145
Home-grown concentrates kg per cow	174	98	85
Stocking rate cows/ha	1.1	1.0	1.0
CO2e Kg/net lwt kg produced	**26.2**	**24.5**	**22.7**

Upland suckler herds selling yearling calves – Technical performance measures

	Bottom third	Average	Top third
Cows per bull	16	22	27
Barren cows	7	7	3
% calves born in 9 weeks	92	93	95
% calves born in 12 weeks	96	96	99
Calves born dead or alive per 100 cows	93	95	97
Calves born dead per 100 cows	4	3	2
Calves died per 100 cows	3	3	2
Calves reared per 100 cows	86	89	93
Daily liveweight gain (kg)	0.9	1.0	1.1
Weight – kg per calf sold	405	407	419
Weight produced kg per cow	348	364	390
Cow replacement rate per 100 cows	19.2	17.8	19.8
Cow mortality %	2.3	1.9	2.4
Purchased concentrates kg per cow	204	257	364
Home-grown concentrates kg per cow	495	339	184
Stocking rate cows/ha	0.8	1.0	1.2
CO_2e Kg/net lwt kg produced	**19.1**	**18.3**	**18.3**

Results from non-LFA lowground suckler herds

SEVENTEEN NON-LFA suckler enterprises farming 1,216 cows were surveyed. They achieved an average gross margin of £408 per cow and an average net margin of £48 in a range from (-)£386 to +£255. Nine businesses, 56%, reported a positive net margin per cow – an increase from the 35% of those surveyed who achieved a positive net margin last year.

- Top-third producers achieved an average gross margin of £400 per cow, £92 (23%) better than the overall average. Fixed costs per cow among the top third were £2 per cow higher than the average, thus the improvement in financial performance narrowed to £90 at net margin level.
- Top-third enterprises reared three more calves per 100 cows than the average and produced 38kg more liveweight per cow than the average. Although top-third performers had a higher cow mortality rate, the overall replacement rate was lower, resulting in lower herd maintenance charges and a net output £115 higher than the average.
- In contrast those businesses in the bottom third were constrained by lower herd performance, seven fewer calves reared per 100 cows than the average, and lower sale weights.

Non LFA lowground suckler herds – Technical performance measures

	Bottom third	Average	Top third
Cows per bull	23	21	19
Barren cows	12	6	3
% calves born in 9 weeks	95	88	96
% calves born in 12 weeks	98	95	100
Calves born dead or alive per 100 cows	88	94	97
Calves born dead per 100 cows	3	2	1
Calves died per 100 cows	1	1	2
Calves reared per 100 cows	84	91	94
Daily liveweight gain (kg)	1.15	1.20	1.25
Weight – kg per calf sold	295	327	353
Weight produced kg per cow	247	295	333
Cow replacement rate per 100 cows	13.0	13.25	11.8
Cow mortality %	2.2	2.0	2.2
Purchased concentrates kg per cow	123	169	236
Home-grown concentrates kg per cow	262	198	320
Stocking rate GLU/ha	1.5	1.8	2.1
CO_2e Kg/net lwt kg produced	**25.6**	**20.0**	**18.2**

Non LFA lowground suckler herds – Financial performance measures

	Bottom third	Average	Top third
Number in sample	5	16	5
Average herd size (head)	60	76	78
		£ per cow	
Calf output after valuation changes	574.46	683.28	772.53
Subsidies	78.95	90.08	96.62
Gross output	**653.41**	**773.36**	**869.15**
Less net replacement cost	77.98	69.06	50.26
Net output	**575.43**	**704.30**	**818.89**
Variable costs			
Purchased concentrates	25.77	29.96	44.27
Home-grown concentrates	37.16	28.59	46.68
Roughages purchased	50.71	48.09	48.25
Forage	66.87	63.35	54.41
Total feed and forage	*180.51*	*169.99*	*193.61*
Veterinary	45.56	44.81	46.10
Bedding	38.02	57.40	61.99
Other costs	37.72	23.84	16.80
Total variable costs	**301.81**	**296.04**	**318.50**
Gross margin	**273.62**	**408.26**	**500.39**
Fixed costs			
Labour	6.77	89.83	135.97
Contractors	37.99	24.23	18.06
Power and machinery	84.26	70.96	70.33
Property maintenance and rent	111.73	62.75	49.78
Depreciation	81.00	63.72	43.64
Finance	35.88	23.17	25.65
Administration	36.04	24.82	18.39
Total fixed costs	**393.67**	**359.48**	**361.82**
Net margin	**(-)120.05**	**48.78**	**138.57**
Annual herd maintenance cost Pence per kg calf sold	32	23	15
Variable cost Pence per kg calf produced	122	100	96
Fixed cost Pence per kg calf produced	159	122	108
Unpaid family labour hours	**10hrs 30min**	**6hrs 25min**	**6hr 20min**

Totals may not add due to rounding

Results from rearer finisher enterprises

IN THE case of these 22 enterprises farming 2,305 cows, the reported margins relate to the costs and income for a 12-month period to the end of April 2021.

The businesses surveyed produced an average gross margin per cow of £564, within a range from £335 to £850 per cow, and an average net margin of £48 per cow. Fourteen (64%) enterprises reported a positive net margin, down from the 45% that achieved this objective last year.

- The top-third producers ranked by gross margin per cow achieved a net output £48 higher than the average. This was largely through the production of 1% more saleable output per cow, through selling heavier cattle at higher sale prices per kg lwt than the average.
- Variable costs were £68 lower among the top third, mainly through lower feed, associated with a 1% lower use of concentrates, and bedding costs.
- Fixed costs among the top third were £9 (2%) per cow higher than the average, principally due to higher machinery, depreciation and finance charges.
- Those businesses in the bottom third had the highest variable cost base but their fixed cost base was lower than the average. This group had the highest calf mortality rates and reared two fewer calves than the average while having the highest feed and forage costs.

Rearer finisher herds – Technical performance measures

	Bottom third	Average	Top third
Cows per bull	27	25	23
Barren cows	7	6	6
% calves born in 9 weeks	92	92	93
% calves born in 12 weeks	96	97	97
Calves born dead or alive per 100 cows	94	94	94
Calves born dead per 100 cows	5	4	4
Calves died per 100 cows	4	3	1
Calves reared per 100 cows	85	87	89
Daily liveweight gain (kg)	1.2	1.0	0.8
Weight – kg per calf sold finished	633	601	633
Weight reared kg per cow per year	433	507	514
Cow replacement rate per 100 cows	15.8	15.2	16.0
Cow mortality %	3.0	2.6	3.1
Purchased concentrates kg per cow	502	750	488
Home-grown concentrates kg per cow	686	550	676
Stocking rate cows/ha	1.2	1.3	1.2
Selling price p/kg dwt finished	367	369	366
CO_2e Kg/net lwt kg produced	**19.6**	**18.1**	**14.9**

Rearer finisher herds – Financial performance measures

	Bottom third	Average	Top third
Number in sample	7	22	7
Average herd size (head)	91	105	93
		£ per cow	
Calf output after valuation changes	1051.20	1118.01	1180.60
Subsidies	84.79	85.19	77.49
Gross output	**1135.99**	**1203.20**	**1258.09**
Less net replacement cost	80.37	74.61	81.36
Net output	**1055.62**	**1128.59**	**1176.73**
Variable costs			
Purchased concentrates	114.08	143.63	77.00
Home-grown concentrates	122.85	79.83	101.86
Roughages purchased	56.87	61.69	64.87
Forage	110.72	100.78	88.11
Total feed and forage	*404.52*	*385.93*	*331.84*
Veterinary	45.51	51.06	54.43
Bedding	114.90	80.71	66.92
Other costs	51.02	46.12	42.24
Total variable costs	**615.95**	**563.82**	**495.44**
Gross margin	**439.67**	**564.77**	**681.29**
Fixed costs			
Labour	189.52	134.31	96.85
Contractors	57.93	51.34	32.95
Power and machinery	71.02	88.10	116.86
Property maintenance and rent	71.63	102.46	87.60
Depreciation	69.05	75.41	99.45
Finance	13.55	26.87	52.66
Administration	28.67	38.67	40.16
Total fixed costs	**501.37**	**517.17**	**526.53**
Net margin	**(-)61.70**	**47.59**	**154.77**
Annual herd maintenance cost Pence per kg calf sold	19	15	16
Variable cost Pence per kg calf sold	142	111	96
Fixed cost Pence per kg calf sold	115	102	102
Unpaid family labour hours	**3hrs 15min**	**6hrs 30min**	**8hrs 40min**

Totals may not add due to rounding

Results from cereal-based cattle finishing enterprises

SEVENTEEN CEREAL-BASED cattle finishing enterprises were surveyed. They sold 884 cattle and achieved an average gross margin of £150 per animal. The average net margin among those surveyed was £44 per head and ranged from (-)£83 to £165 per head. Thirteen businesses (75%) reported a positive net margin up from 53% last year.

- Enterprises in the top third of those surveyed had a net output £97 per animal better than the average and £235 better than the bottom third. They achieved the best growth rates but started with the lightest weight cattle, feed them for the longest period and sold them 3kg heavier than the average. However, they were the most dependant on selling young bulls – 77% of sales compared with 63% among the average – and had the highest average selling price.
- Although those in the top third achieved higher output, they did have the highest variable costs, using more concentrate feed than the average and spending more on veterinary services and products and bedding. Consequently, the gap between the top third's gross margin and the average was reduced to £62 per animal finished. They did, however, have the lowest fixed costs, leading to a net margin £132 per head, £88 higher than the average.
- Those in the bottom third had the shortest finishing period, starting with the heaviest cattle and selling the heaviest cattle with the lowest contribution from young bulls. As a result, their margin between buy in price and sale price was lowest. However, the shorter turnaround did result in lower variable costs, but this was not enough to offset the lower margin between buying in and sale price and the resulting gross margin was £66 per head lower than the average. Higher fixed costs than the average meant that the bottom third delivered a negative net margin of £36.

Cereal-based cattle finishing enterprises – Financial performance measures

	Bottom third	Average	Top third
Number in sample	6	17	6
Average herd size (head)	56	52	50
		£ per head	
Stock sales	**1324.02**	**1330.43**	**1367.10**
Less stock purchases	890.76	758.85	698.27
Net output	**433.26**	**571.58**	**668.83**
Variable costs			
Purchased concentrates	229.54	269.38	279.91
Home-grown concentrates	26.60	31.48	37.87
Other feeds	7.35	14.84	18.45
Forage	2.38	4.15	6.36
Total feed and forage	*265.87*	*319.85*	*342.59*
Veterinary	17.20	19.52	22.11
Bedding	30.24	42.42	49.78
Other costs	36.19	39.46	41.52
Total variable costs	**349.50**	**421.25**	**456.00**
Gross margin	**83.76**	**150.33**	**212.83**
Fixed costs			
Labour	32.22	28.84	25.43
Contractors	7.10	10.39	4.33
Power and machinery	25.60	18.94	11.31
Property maintenance and rent	7.59	16.68	22.31
Depreciation	28.48	18.10	0.88
Finance	8.00	3.99	0.88
Administration	11.13	9.60	6.68
Total fixed costs	**120.12**	**106.54**	**80.98**
Net margin	**(-)36.36**	**43.79**	**131.85**
Stores purchased Pence per kg lwt sold	140	121	112
Variable cost Pence per kg lwt sold	55	67	73
Fixed cost Pence per kg lwt sold	19	17	13
Unpaid family labour hours	**1hr 10min**	**1hr 15min**	**50min**

Totals may not add due to rounding

Cereal-based cattle finishing enterprises – Technical performance measures

	Bottom third	Average	Top third
Feeding period (days)	184	212	227
Start weight (kg lwt)	410	345	304
Finish weight (kg lwt)	637	624	621
Daily liveweight gain (kg)	1.2	1.3	1.4
Mortality (%)	0.6	1.1	1.3
Purchased concentrates kg/head	976	1347	1355
Home-grown concentrates kg/head	190	225	270
Purchase price (p per kg lwt)	**216**	**218**	**227**
Sale price sold dwt (p /kg dwt)	**358**	**367**	**379**
Sales			
Steers % of sales	28	15	0
Liveweight at sale	636	631	0
Steer selling price p/kg dwt	372	367	0
Heifers % of sales	15	22	23
Liveweight at sale	539	551	565
Heifer selling price p/kg dwt	357	366	367
Young bulls % of sales	57	63	77
Liveweight at sale	664	647	650
Young bull selling price p/kg dwt	350	367	382
CO_2e kg/net lwt kg produced	**16.6**	**13.5**	**12.0**

Results from forage-based cattle finishing enterprises

THE FORAGE-BASED finishers surveyed have been split into two groups, based on the age at which most of the cattle has been sold. The average age at which Scottish prime cattle is slaughtered remains around 22 months. 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.

The first group, selling younger cattle, comprises 19 businesses finishing an average of 116 cattle, while the second group, selling older cattle, comprises 18 businesses but with an average size of 232 cattle.

- Those selling younger cattle reported a gross margin of £178 per animal sold, falling to a net margin of (-)£18 per animal sold. Twelve (63%) of the businesses in this group achieved a positive net margin, up from the 15% achieving a positive net margin last year. Their counterparts selling older cattle reported a gross margin of £249 per head and a net margin of £8. Ten businesses in this group achieved a positive net margin, double the number of last year.
- Those selling younger cattle finished them around nine weeks quicker than those selling older cattle, while those older cattle were 4kg heavier at sale.
- Those in the top third of performers showed an improvement in net margin of £128 per animal among those selling younger cattle, delivering a net margin of £110 per head. In contrast, those in the top third group of enterprises selling older cattle achieved a net margin £146 better than the average but, like those selling younger cattle, still reported a positive net margin.
- Among those selling younger cattle, those in the top third sold heavier cattle than the average and had the lowest mortality rates and greatest dependence on steers. They started with the lightest weight store cattle and had the longest finishing period but did achieve the better growth rate than the average, with the lowest use of concentrate feeds but greatest use of forage resource. Despite having the longest finishing period, variable costs among the top third were £48 lower than the average, mainly through lower feed and forage costs. Fixed costs however, were higher as a consequence of the longer feeding period – up £13 from the average.
- Among those selling older cattle, those in the top third were characterised by low mortality over the finishing period. Although they had the longest finishing period, they did not sell the heaviest cattle but achieved the highest selling prices per kg lwt. They did carry the highest variable costs but the highest margin between buying in price and selling price offset these higher variable costs. Fixed costs were highest among the top third, possibly associated with the longer period on farm, but they also had highest dependence on family labour.

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

	Bottom third	Average	Top third
Number in sample	6	19	6
Average herd size (head)	199	116	106
		£ per head	
Stock sales	**1365.79**	**1336.78**	**1298.12**
Less stock purchases	886.77	804.46	671.85
Net output	**479.02**	**532.32**	**626.27**
Variable costs			
Purchased concentrates	166.52	128.97	62.31
Home-grown concentrates	100.13	91.14	90.76
Other feeds	9.91	12.26	17.43
Forage	15.60	27.97	47.41
Total feed and forage	*292.16*	*260.34*	*217.91*
Veterinary	14.38	15.19	17.77
Bedding	46.71	43.74	39.86
Other costs	34.46	34.48	30.24
Total variable costs	**387.71**	**353.75**	**305.78**
Gross margin	**91.31**	**178.57**	**320.49**
Fixed costs			
Labour	48.35	47.93	57.98
Contractors	11.99	13.98	12.57
Power and machinery	44.76	42.08	29.88
Property maintenance and rent	17.61	29.13	54.56
Depreciation	40.79	37.95	41.57
Finance	21.19	13.34	3.59
Administration	11.62	12.56	10.08
Total fixed costs	**196.31**	**196.97**	**210.23**
Net margin	**(-)105.00**	**(-)18.40**	**110.26**
Stores purchased Pence per kg lwt sold	135	130	108
Variable cost Pence per kg lwt sold	59	57	49
Fixed cost Pence per kg lwt sold	30	32	34
Unpaid family labour hours	**1hr 45min**	**3hr 5min**	**2hr 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)	233	289	325
Start weight (kg lwt)	399	364	305
Finish weight (kg lwt)	655	616	624
Daily liveweight gain (kg)	1.1	0.9	1.0
Mortality (%)	1.2	0.8	0.3
Purchased concentrates kg/head	782	623	354
Home-grown concentrates kg/head	695	634	637
Purchase price (p per kg lwt)	**220**	**219**	**220**
Sale price sold dwt (p/kg dwt)	**359**	**363**	**368**
Sales			
Steers % of sales	55	50	55
Liveweight at sale	641	640	630
Steer selling price p/kg dwt	357	363	372
Heifers % of sales	45	50	45
Liveweight at sale	673	591	618
Heifer selling price p/kg dwt	360	363	365
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	**15.0**	**13.8**	**12.0**

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

	Bottom third	Average	Top third
Number in sample	6	18	6
Average herd size (head)	584	232	39
		£ per head	
Stock sales	**1243.48**	**1333.02**	**1397.63**
Less stock purchases	938.89	771.57	627.24
Net output	**304.59**	**561.45**	**770.39**
Variable costs			
Purchased concentrates	58.87	90.36	85.17
Home-grown concentrates	44.88	56.64	78.14
Other feeds	26.13	20.91	24.31
Forage	26.54	48.59	56.76
Total feed and forage	*156.42*	*216.50*	*244.38*
Veterinary	13.75	18.73	22.76
Bedding	23.18	37.35	36.98
Other costs	25.21	39.67	46.54
Total variable costs	**218.56**	**312.25**	**350.66**
Gross margin	**86.03**	**249.20**	**419.72**
Fixed costs			
Labour	15.08	31.28	31.68
Contractors	12.37	21.44	29.60
Power and machinery	46.57	56.48	57.27
Property maintenance and rent	22.54	30.02	39.26
Depreciation	36.83	47.71	47.01
Finance	24.53	30.49	36.09
Administration	18.45	23.42	24.43
Total fixed costs	**176.37**	**240.84**	**265.34**
Net margin	**(-)90.34**	**8.36**	**154.39**
Stores purchased Pence per kg lwt sold	142	118	98
Variable cost Pence per kg lwt sold	33	48	54
Fixed cost Pence per kg lwt sold	27	37	41
Unpaid family labour hours	**1 hr 20 min**	**1 hr 30 min**	**4hr 45 min**

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)	228	352	467
Start weight (kg lwt)	417	344	280
Finish weight (kg lwt)	658	652	642
Daily liveweight gain (kg)	0.5	0.9	0.8
Mortality (%)	1.1	0.9	0.5
Purchased concentrates kg/head	323	394	463
Home-grown concentrates kg/head	315	528	385
Purchase price (p per kg lwt)	**230**	**225**	**223**
Sale price sold dwt (p /kg dwt)	**331**	**353**	**374**
Sales			
Steers % of sales	32	37	25
Liveweight at sale	606	650	687
Steer selling price p/kg dwt	333	360	389
Heifers % of sales	68	63	75
Liveweight at sale	694	656	629
Heifer selling price p/kg dwt	322	348	367
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	**18.9**	**14.2**	**9.7**

Sheep Enterprises

Results from LFA hill ewe flocks

THIS GROUP of enterprises comprises pure-bred Blackface and Cheviot flocks farmed on some of the most disadvantaged land in Scotland. The sample covered 33 such flocks, farming more than 24,000 ewes. These flocks are characterised by low lambing percentages, averaging 90% lambs reared within a range of 55% to 132%. The average gross margin achieved across this group was £26 per ewe, while the average net margin was (-)£20 per ewe within a range of (-)£55 to £56 per ewe. Nine producers (27%) 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 £25 over the average is largely due to:
  - A higher number of lambs reared – 24 more lambs per ewe than average;
  - Benefited from lower mortality of both lambs and ewes;
  - Lambs were sold at a slightly lighter weight but the higher rearing rate led to 21% more lamb produced per ewe;
  - The higher lambing percentage left those in the top third with a greater number of lambs for sale, a higher proportion of which (17% compared with 8%) were sold as prime lamb and at a higher price per head than the average. Store and breeding lamb values were also higher than the average. Overall, top third achieved £30 per ewe more income, although slightly higher flock maintenance charges trimmed the increase in net output to £2 over the average.
- Higher productivity among the top-third producers did lead to higher variable costs, particularly higher feed costs and higher veterinary costs. They did, however, have lower fixed costs per ewe, particularly due to higher machinery and property costs.
- Bottom-third producers achieved a gross margin £21 lower than the average – a consequence of much higher purchased feed costs, but also because of the much lower output per ewe because of lower productivity; 68 lambs reared per 100 ewes compared to the average of 90. On average, lambs were s old at a higher weight than the average but lower volumes for sale reduced production per ewe to 21 kg per ewe – 7kg lower than the average. Although variable costs were lower than the average, fixed costs were higher and the net margin among the bottom third of (-)£44 per ewe is £23 per ewe worse than the average. However, it must be recognised that 73% of the flocks in the bottom third were flocks in the North-West Highlands and Islands region, where climate and topography have a severe impact on ewe performance and the ability of producers to sell prime lambs.

LFA hill ewe flocks – Financial performance measures

	Bottom third	Average	Top third
Number in sample	11	33	11
Flock size	719	731	495
		£ per ewe	
Lamb sales	**33.31**	**56.40**	**86.23**
Wool	0.61	0.84	0.95
Gross output	**33.92**	**57.24**	**87.18**
Less replacement costs	9.30	10.82	12.35
Net output	**24.62**	**46.42**	**74.83**
Variable costs			
Purchased concentrates	6.05	5.10	5.08
Home-grown concentrates	0.04	0.01	0.00
Other feeds	1.13	2.20	2.54
Forage	2.16	1.48	1.88
Total Feed and Forage	*9.38*	*8.79*	*9.50*
Veterinary	5.77	6.87	8.65
Bedding	0.01	0.15	0.10
Other costs	4.29	4.61	6.05
Total variable costs	**19.45**	**20.42**	**24.30**
Gross margin	**5.17**	**26.00**	**50.53**
Fixed costs			
Labour	14.84	15.54	11.59
Contractors	3.70	3.08	1.51
Power and machinery	6.62	7.38	9.97
Property maintenance and rent	10.55	9.87	9.91
Depreciation	9.28	7.29	7.57
Finance	0.62	0.52	0.89
Administration	3.44	2.73	2.33
Total fixed costs	**49.05**	**46.41**	**43.77**
Net margin	**(-)43.88**	**(-)20.41**	**6.76**
Flock replacements – Pence per kg lamb produced	44	39	37
Variable cost – Pence per kg lamb produced	91	73	72
Fixed cost – Pence per kg lamb produced	206	167	130
Unpaid family labour hours	**50 min**	**1hr 5 min**	**3hr 5min**

Totals may not add due to rounding

LFA hill ewe flocks – Technical performance

	Bottom third	Average	Top third
Ewes per ram	27	28	35
Ewe mortality %	4.3	5.5	3.6
Ewe replacement rate %	22.6	24.0	21.6
Lambs born dead or alive per 100 ewes	80	104	127
Lamb mortality (inc. born dead) per 100 ewes	14	14	13
Lambs reared per 100 ewes	68	90	114
Average weight of lambs kg	31.4	30.7	29.6
Weight of lamb produced per ewe kg	21.3	27.8	33.6
Purchased concentrates kg/ewe	20	18	22
Home-grown concentrates kg/ewe	0	0	0
Lambs sold finished per 100 ewes	2	8	17
Value per lamb £/head	45.00	65.75	71.58
Lambs sold/transferred store per 100 ewes	37	49	55
Value per lamb £/head	48.76	56.36	63.53
Lambs sold/transferred for breeding per 100 ewes	29	33	42
Value per lamb £/head	49.34	70.33	93.70
CO_2e kg/net lwt kg produced	**23.1**	**18.9**	**17.5**

Totals may not add due to rounding

Results from LFA upland ewe flocks

LFA UPLAND breeding flocks are identified as LFA farms running crossbred flocks. Twenty-eight such flocks were recorded in this survey, which collectively farmed some 14,500 ewes. These enterprises achieved an average gross margin of £63 per ewe and an average net margin of £15 per ewe. Twenty-five of the businesses surveyed (85%) returned a positive net margin within a range (-)£58 to £60 per ewe.

- Producers in the top third produced a gross margin of £85 per ewe, 35% better than the average and almost double the bottom-third.
- The improvement in gross margin between the average and the top third was due to both higher net output (+£15 per ewe) and reduced variable costs (£8 per ewe less). Higher output reflected a higher lamb rearing rate leading to a 11kg higher production per ewe. Higher output was also helped by a larger proportion of lambs sold finished – 65% compared with the 53% average across the whole sample. The average sale price was also slightly higher.
- Lower variable costs were primarily the result of lower use of purchase feeds and lower forage costs, but the group also paid lower veterinary charges.
- Flock performance among the bottom third was below the average, rearing 142 lambs per 100 ewes compared with the average of 155. Slightly fewer lambs were sold finished at a lower weight and price than the average. This contributed to a lower sales revenue of £10 per head. Variable costs were also £10 per ewe higher than the average, driven mainly by higher feed and forage costs, although higher veterinary costs contributed as well. As a consequence, the gross margin among the bottom third was £19 lower than the average.
- Fixed costs among the top third were the highest among the surveyed enterprises, particularly expenditure on contractors, machinery and property maintenance.
- Those in the bottom third carried lower fixed costs than the average, with only paid labour charge higher than the average.

LFA upland ewe flocks – Financial performance measures

	Bottom third	Average	Top third
Number in sample	9	28	9
Flock size	789	521	478
		£ per ewe	
Lamb sales	**108.16**	**117.86**	**141.96**
Wool	1.07	1.36	1.78
Gross output	**109.23**	**119.22**	**143.74**
Less replacement costs	12.44	13.57	23.66
Net output	**96.79**	**105.65**	**120.08**
Variable costs			
Purchased concentrates	13.16	12.02	12.83
Home-grown concentrates	0.34	0.36	0.17
Other feeds	2.00	2.04	2.32
Forage	12.46	8.72	5.63
Total feed and forage	*27.96*	*23.14*	*20.95*
Veterinary	14.33	10.89	7.37
Bedding	1.91	1.21	0.60
Other costs	8.53	7.43	5.96
Total variable costs	**52.73**	**42.67**	**34.88**
Gross margin	**44.06**	**62.98**	**85.20**
Fixed costs			
Labour	7.31	5.64	5.73
Contractors	5.68	6.62	10.78
Power and machinery	9.65	10.47	11.71
Property maintenance and rent	5.80	8.57	13.05
Depreciation	7.87	9.45	12.15
Finance	3.89	3.36	1.07
Administration	4.15	3.38	2.78
Total fixed costs	**44.35**	**47.49**	**57.27**
Net margin	**(-)0.29**	**15.49**	**27.93**
Flock replacements – Pence per kg lamb produced	22	23	34
Variable cost – Pence per kg lamb produced	95	73	50
Fixed cost – Pence per kg lamb produced	80	81	81
Unpaid family labour hours	**1hr 15 min**	**1 hr 20 min**	**1 hr 35min**

Totals may not add due to rounding

LFA upland ewe flocks – Technical performance

	Bottom third	Average	Top third
Ewes per ram	21	25	30
Ewe mortality %	6.8	6.0	5.0
Ewe replacement rate %	31.5	28.0	28.5
Lambs born dead or alive per 100 ewes	155	160	180
Lamb mortality (inc. born dead) per 100 ewes	13	14	12
Lambs reared per 100 ewes	142	146	168
Average weight of lambs kg	39.0	40.1	41.9
Weight of lamb produced per ewe kg	55.5	58.8	70.3
Purchased concentrates kg/ewe	83	59	41
Home-grown concentrates kg/ewe	2	3	1
Lambs sold finished per 100 ewes	63	77	109
Value per lamb £/head	86.82	87.44	89.16
Lambs sold/transferred store per 100 ewes	26	34	41
Value per lamb £/head	64.27	71.73	72.92
Lambs sold/transferred for breeding per 100 ewes	53	35	18
Value per lamb £/head	69.19	73.86	83.53
CO_2e kg/net lwt kg produced	**13.5**	**12.3**	**10.5**

Results from lowground breeding flocks

THE 14 businesses in the survey farmed some 6,750 ewes. Only one of the flocks in this group recorded a negative net margin – the average was £23 per ewe within a range from (-)£2 to £44 per ewe.

The number of enterprises surveyed did not allow comparisons to be made between high and low financial margins. Nevertheless, by ranking enterprises based on gross margin per lamb, some trends do emerge, including:

- Better financial returns tend to be associated with high physical performance, lower barren ewe rates and lower lamb mortality, leading to those with higher gross margins tending to have the highest lamb weaning rates. They also sold the highest proportion of their lambs finished and benefited from the best prices per lamb sold.
- Better financial returns tend to be associated with strong cost control. Those with the best gross margin associated with lower-than-average variable costs, with the exception of forage costs. In contrast, lowest margins tended to be associated with the highest feed and forage costs, but also higher than average veterinary and bedding costs.
- Fixed costs per ewe were highest among those with the beast gross margins, thus trimming some of the advantage at net margin level. Highest gross margins tend to be associated with higher use of paid labour, and higher property and machinery costs.

Lowground ewe flocks – Financial performance measures

	Average
Number in sample	14
Flock size	482
	£ per ewe
Lamb sales	**145.88**
Wool	1.51
Gross output	**147.39**
Less replacement costs	15.60
Net output	**131.79**
Variable costs	
Purchased concentrates	17.73
Home-grown concentrates	3.70
Other feeds	2.91
Forage	8.48
Total feed and forage	*32.82*
Veterinary	10.76
Bedding	1.33
Other costs	9.32
Total variable costs	**54.23**
Gross margin	**77.56**
Fixed costs	
Labour	12.21
Contractors	5.10
Power and machinery	9.70
Property maintenance and rent	11.71
Depreciation	9.75
Finance	1.95
Administration	3.55
Total fixed costs	**53.98**
Net margin	**23.58**
Flock replacements – Pence per kg lamb produced	23
Variable cost – Pence per kg lamb produced	82
Fixed cost – Pence per kg lamb produced	81
Unpaid family labour hours	**1hr 5min**

Totals may not add due to rounding

Lowground ewe flocks – Technical performance

	Average
Ewes per ram	26
Ewe mortality %	5.8
Ewes replacement rate %	29.5
Lambs born dead or alive per 100 ewes	179
Lamb mortality (inc. born dead) per 100 ewes	21
Lambs reared per 100 ewes	158
Average weight of lambs kg	42.1
Weight of lamb produced per ewe kg	66.4
Purchased concentrates kg/ewe	76
Home-grown concentrates kg/ewe	25
Lambs sold finished per 100 ewes	122
Value per lamb £/head	94.01
Lambs sold/transferred store per 100 ewes	21
Value per lamb £/head	83.26
Lambs sold/transferred for breeding per 100 ewes	15
Value per lamb £/head	93.56
CO_2e kg/net lwt kg produced	**10.3**

Results from store lamb finishing enterprises

FOURTEEN STORE lamb finishing businesses, selling some 8,900 lambs, achieved an average gross margin of £19 per lamb. Net margins averaged £14 per lamb, with all enterprises delivering a positive net margin in a range from £0.10 to £38 per lamb.

- The number of enterprises surveyed did not allow comparisons to be made between high and low financial margins. Nevertheless, by ranking enterprises on the basis of gross margin per lamb, some themes begin to emerge, including:
- Top performers tended to benefit from the highest sale prices per kg lwt. They sold lambs at around 41.5kg lwt, similar to the average of the whole group, while lower margins were associated with slightly lower sale weights.
- Top performers did, however, spend more than average on variable costs, particularly concentrate feed. These enterprises tended to have the longest feeding period and sales into a rising market.
- Longer keep is also associated with higher fixed costs but the higher returns from selling later in the season has been sufficient in 2021 to offset these higher costs.

Store lamb finishing – Financial performance measures

	Average
Number in sample	14
Flock size	635
	£ per lamb
Lamb sales	**89.54**
Less purchases	60.67
Net output	**28.87**
Variable costs	
Purchased concentrates	2.47
Home-grown concentrates	0.17
Other feeds	0.28
Forage	0.34
Total feed and forage	*3.26*
Veterinary	1.91
Bedding	0.09
Other costs	**4.50**
Total variable costs	**9.76**
Gross margin	**19.11**
Fixed costs	
Labour	1.68
Contractors	0.24
Power and machinery	0.91
Property maintenance and rent	0.81
Depreciation	0.85
Finance	0.21
Administration	0.27
Total fixed costs	**5.07**
Net margin	**14.05**
Lambs purchased – Pence per kg lwt lamb sold	164
Variable cost – Pence per kg lwt lamb sold	26
Fixed cost – Pence per kg lwt lamb sold	14
Unpaid family labour hours	**5 mins**

Totals may not add due to rounding

Store lamb finishing – Technical performance

	Average
Weight of lamb purchased kg	31
Liveweight of lamb sold	37
Carcase weight of lamb sold	17.4
Sale price p/kg dwt	516
Daily liveweight gain	0.05
Finishing period – days	110
Mortality %	2
Purchased concentrates kg/lamb	10
Home-grown concentrates kg/lamb	1
CO_2e kg/net lwt kg produced	**12.3**

The Effect of Quality on Prices

The quality of the stock presented to the market and its value to processors through product size, improved meat yield, or less carcase trimming, will be reflected in market prices.

Beef

IN RECENT years, the price of R4L steers has been slightly higher than -U3 grade steers, likely a reflection of penalties for heavier carcases and there was minimal change in 2020. For heifers, where -U grade carcase weights are low enough to avoid carcase weight penalties, -U3 heifers extended their lead over R4L grades towards 5%.

An improvement in carcase quality from O+4H to R4L continued to be worth around 15p/kg for steers and 13p/kg for heifers in 2020.

In the first 10 months of 2021, the steer price differentials have slipped back, whereas they have widened for heifers.

To be labelled as Scotch Beef, beef from eligible animals must also meet product specifications. Carcases must be classified as either 2, 3, 4L, 4H or 5L for fat cover and E, U, R or O+ for conformation.

In 2020, 94.8% of steer carcases and 97.5% of heifer carcases were graded in this range, down slightly from 2019. However, there were slight increases in the proportion of steer and heifer carcases grading E, U or R and 3 or 4L, reaching a respective 69.1% and 61%. In general, carcases were leaner and less muscular than in 2019.

R4L continued to be the most common grade for steers and heifers, accounting for an increased 29.1% of the former and 32.4% of the latter in 2020. However, the second most common differed, being R3 for steers but R4H for heifers. For young bulls, -U3 was most common, at 19.6%, followed by R3 on 18.8%.

	Average -U3 premium over R4L (p/kg)			Average R4L premium over O+4H (p/kg)		
	2018	2019	2020	2018	2019	2020
Steer	-2.1	-1.3	-1.5	14.4	14.8	15.0
Heifer	3.9	4.0	4.8	13.1	12.8	13.2

Steer carcases by grade at Scottish abattoirs in 2020			
	3	4L	4H
-U	9.2%	12.0%	1.8%
R	16.2%	29.1%	6.2%
O+	4.7%	7.8%	1.1%

Others: 11.9%
Source: AHDB; QMS calculations

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 U2 to R3L premium widened slightly in 2020, extending its narrow range over the past decade. By contrast, the R3L premium over O3H fell to its lowest level since 2011 and was smaller than the U2 to R3L premium. Perhaps the tightly supplied market raised the relative price of grades outwith the target range in 2020.

However, in 2021, a year of even tighter supply, the U2 over R3L premium has fallen back below the R3L to O3H level, with their respective averages being 9.7p and 11.1p in the first 42 weeks of the year.

These figures are average variations across Great Britain at price reporting abattoirs for Standard Quality Quotation lambs (12-21.5kg), 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.

During 2020, carcase quality increased at GB price reporting abattoirs, with 60.9% of SQQ[2] carcases grading at E, U or R for conformation and 2 or 3L for fat cover, compared with 59.7% in 2019.

In the first third of the year, 50-55% of hogg carcases were in this range. Quality peaked early in the new season, with around three-quarters of lamb carcases within this range, trending downwards to around half at the year-end. In general, carcases were slightly leaner than in 2019 but conformation also reduced.

Moving into 2021, carcase quality has been good in the opening 10 months, opening the year around three percentage points higher than 2020 over the main hogg selling period. In the summer, quality unusually trended slightly higher, doubling the rate of improvement.

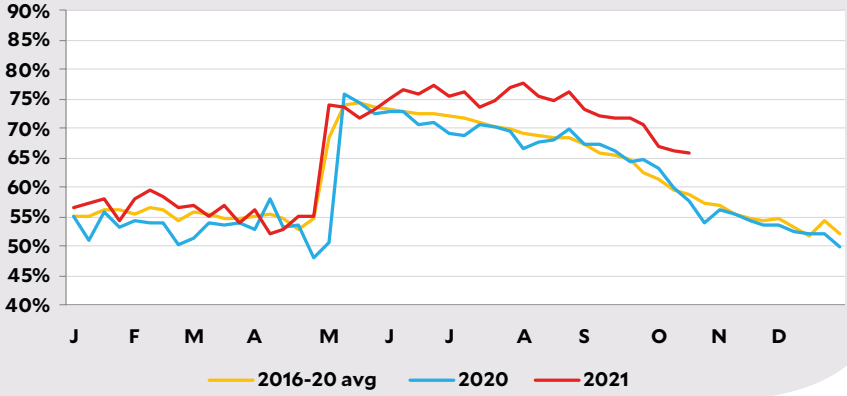
While quality did then trend downwards into the autumn, the margin of improvement on 2020 held firm at around six percentage points.

R3L was the most common grade in 2020, accounting for 32.3% of the total, up from 30.7% in 2019.

	Average U2 premium over R3L (p/kg)			Average R3L premium over O3H (p/kg)		
	2018	2019	2020	2018	2019	2020
Lambs	11.5	11.1	11.7	17.1	12.7	10.7

[2] SQQ stands for Standard Quality Quotation. In deadweight price reporting, this encompasses carcases weighing between 12 and 21.5kg, while in auction market price reporting, it encompasses live lambs sold at weights of 25.5-45.5kg.

Proportion of SQQ prime sheep grading E, U or R and 2 or 3L at price reporting GB abattoirs



One thing noticeable in the data each year is a fall in carcase quality in the week of peak demand before Eid al-Adha. In 2021, this was the week ending 17 July and the proportion of O grade carcases rose to 11% of the total, compared with 7% in the previous week.

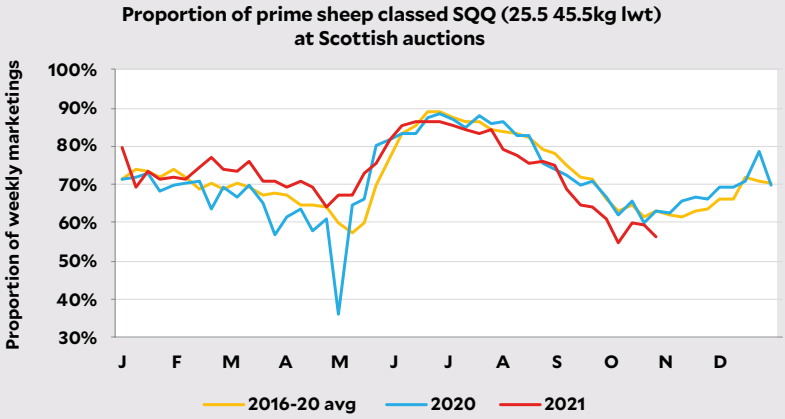
A further proxy of lamb quality is the proportion of prime sheep sold at auction markets that qualify as SQQ due to their live weight at sale. During 2020, this proportion rose sharply, to 70.7% from 66% in 2019, but it still trailed 2018's 71.8% and remained slightly below the five-year average. The vast majority of lambs sold outside the SQQ range are to the heavy side.

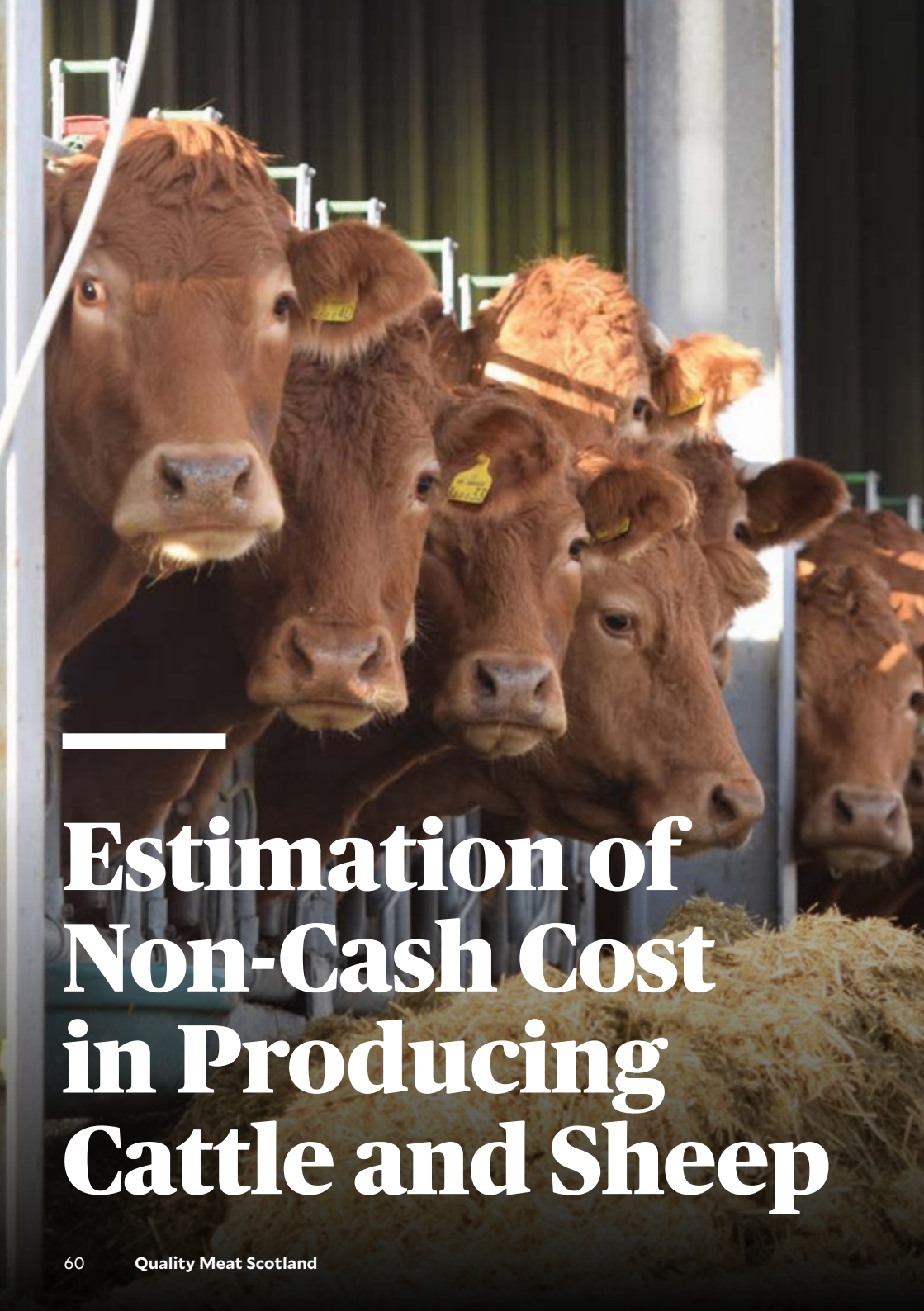
In 2021, the hogg selling period saw an increased share of lambs fall into the target range at Scottish marts, and this stayed the same in the early weeks of the new season. However, between June and October, the market data has signalled a reversal, suggesting that weights have increased relative to their five-year average, as well as in line with the seasonal trend.

SQQ Lamb carcases by grade at GB price reporting abattoirs in 2020

	2	3L	3H
U	2.9%	12.0%	5.8%
R	11.4%	32.3%	16.1%
O	4.4%	5.7%	2.0%

Others: 7.2%
Source: AHDB; QMS calculations


Proportion of prime sheep classed SQQ (25.5 45.5kg lwt) at Scottish auctions
Proportion of weekly marketings
100%
90%
80%
70%
60%
50%
40%
30%
J
F
M
A
M
J
J
A
S
O
N
D
2016-20 avg
2020
2021



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 the rental value of the land used by an enterprise. This analysis draws rental values from the Scottish Government's December Scottish Agricultural Survey[3]. 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[4]. One hour of labour has been valued at £17.14 – an increase of 6.2% on the year, in line with the increase agreed by the Scottish Agricultural Wages Board for 2020.

Cattle enterprises	Unpaid labour	Return on working capital[5]	Rent of land and buildings
		p/kg liveweight sold	
Hill suckler herds	93	21	29
Upland suckler herds selling calves at weaning	65	27	18
Upland suckler herds selling yearlings	58	22	13
Lowground suckler herds	37	26	30
Rearer finisher herds	22	17	19
Cereal-based store finishing	3	8	1
Forage-based store finishing <22 months old	8	9	5
Forage-based store finishing >22 months old	4	9	4

Sheep enterprises	Unpaid labour	Return on working capital[6]	Rent of land and buildings
		p/kg liveweight sold	
Hill flocks	66	19	22
Upland flocks	39	11	9
Lowground non-LFA flocks	24	10	20
Store lamb finishers	4	3	3

[3] December 2020 Scottish Agricultural Survey, Scottish Statistical Publication March 2021
[4] 47 hour average week, assuming five weeks of leave
[5] Return required to give a 5% return on working capital
[6] 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. Therefore, 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, bringing all businesses, whether owner-occupied or tenant, to a common standard of cost of production and ability to deliver a return on working capital and unpaid family labour.

The table below summarises the cost of production for a kilogram liveweight of beef or sheepmeat produced by the average performer among the enterprises covered by the survey.

On the basis of these assumptions, only store lamb finishers delivered an adequate return on working capital and unpaid family labour. Hill sheep and hill suckler herds were the furthest from meeting this objective.

	Non-cash estimates						Total Cost	Selling price
	Repl cost	Var cost	Fixed cost	Labour	Working capital	Rental value		
	Pence p/kg liveweight sold							
Sheep enterprises								
Store lambs	164	26	12	4	3	3	212	242
Hill ewe	39	73	151	66	19	22	370	203
Upland ewe	23	73	68	39	11	9	223	200
Lowland	23	82	72	24	20	24	245	219
Cattle enterprises								
Hill suckler	23	91	167	93	21	29	424	201
Upland selling at weaning	30	98	118	65	27	18	356	235
Upland selling yearlings	24	106	111	58	22	13	334	242
Non LFA suckler	23	100	104	37	26	30	320	231
Rearer finisher	15	89	102	22	17	19	264	214
Forage finisher <22 months	130	57	28	8	9	5	237	210
Forage finisher >22 months	130	57	31	4	9	4	235	206
Forage finisher alternate	137	44	29	8	9	4	231	211
Cereal finisher	121	67	15	3	8	1	215	212

Labour based on £17.41 per hour and 2,200 hours per man-year (£38,302 employment cost per year)
Rental values based on values published in Scottish Government's December 2020 Scottish Agricultural Survey
Working Capital charged at 5%
Fixed cost adjusted for rent and finance paid.

Comparisons with 2018 and 2019

The following tables summarise and compare the results from the 2020 calf and lamb crop with those of 2018 and 2019. 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

- Lowground suckler herds saw a robust improvement in margins returning to positive levels and the highest level for more than five years. Firm market prices and some improvement in productivity helped to secure increased output. However, margins were also helped by lower feed costs and lower fixed costs.
- Hill sucker herds selling weaned calves saw significant improvement in margins but the average net margin remained negative. Productivity recovered, as did growth rates and market prices, resulting in a significant increase in output from little changed variable costs. Fixed costs climbed, trimming some of the improvement seen at gross margin, such that net margin, despite remaining negative, improved by £52 per head to the best level for three calf crop years.
- Both groups of upland herds recorded increased in margins, recovering to the highest level for three years. Both groups reported average net margins to be positive. A strong market for store cattle saw both groups increase market returns, although those selling weaned calves were constrained slightly by selling fewer and lighter calves than last year. Both groups were able to trim variable costs, although those selling older calves faced increased bedding and veterinary expenditure. Equally, both groups trimmed fixed costs.

Cattle finishing

- Rearer finisher margins recovered ground and were positive for the first time in four years as a consequence of higher market returns. Although physical herd performance and weight of cattle at sale were similar to last year, increased market prices saw output climb around £142 per cow. Some of the increase in market returns was offset by higher feed and forage costs.
- Store cattle finishers all saw gains in net margins to the highest levels for three years, although only intensive finishers reported a positive margin. The improvement in margins in all cases is dominated by the significant improvement in market prices.
- Cereal finishers saw little change in variable costs, although fixed costs kept 3% higher. However, shorter keep forage finishers did see some increase in purchased feed costs and bedding costs, which pushed total variable costs higher. They also saw fixed costs edge higher.

Sheep enterprises

LFA Sheep

- Hill sheep flocks reported modest improvement in net margins. Productivity measured as lamb weaning percentages was little different to 2019. A slightly higher proportion were sold finished rather than store which, combined with higher market prices, saw output climb £6 per ewe. Although variable costs were little changed, an increase in fixed costs of £4 per ewe offset most of the improvement in output, leading to net margins rising by only £2 per ewe. Nevertheless, the net margin was the best since the 2017 lamb crop.
- Upland flocks also saw marginal decline in productivity, with lamb weaning rates dropping back slightly but remaining historically high. High prices in both prime and store markets combined with Brexit uncertainty may have contributed to a lower proportion of the lamb crop sold prime and being sold store instead. Nevertheless, net output increased by around £10 per ewe. Increased market returns were offset by higher variable costs, with both feed and veterinary expenses increasing. Fixed costs were little changed. The net effect was for net margins to climb around £8 per ewe to £15 per ewe – their highest level for more than five years.

Lowground sheep

- Earlier lambing lowground flocks saw considerable recovery in lamb reared percentages – rearing 25 more lambs per 100 ewes than in 2019 and the highest level for three years. More lambs to sell and higher market prices meant net output climbed by more than a third. Equally, higher productivity did require some increase in costs, with feed and veterinary costs both returning to levels seen two years ago. In contrast, fixed costs were trimmed slightly. Nevertheless, the £34 per ewe increase in market returns was trimmed back to a £28 increase in net margins and the highest net margin for four lamb crops.

Lamb finishing

- Store lamb producers saw net margins climb for a second year to a level not seen for more than five years. Despite having to pay more for store lambs, firm prime lamb prices meant that the margin between buying price and selling price climbed £4 per head. Feed costs fell slightly but were offset by increased veterinary costs, which meant variable costs were little changed, as were fixed costs.

Suckler herds

	Hill suckler herds			Lowland suckler herds		
	2018	2019	2020	2018	2019	2020
Number in sample	16	15	16	15	17	16
Avg. herd size (head)	40	42	51	75	79	76
			£ Per Cow			
Calf output including beef calf premium	**650.50**	**541.47**	**670.71**	**698.06**	**735.34**	**773.36**
Less replacements	64.20	62.25	66.17	82.19	73.55	69.06
Net output	**586.30**	**479.22**	**604.54**	**615.87**	**661.79**	**704.30**
Variable costs						
Total concentrates	104.41	88.14	88.07	39.20	53.94	58.55
Other feeds	95.77	69.67	51.37	43.61	67.16	48.09
Forage	60.56	29.73	47.80	72.28	65.32	63.35
Total feed and forage	*260.74*	*187.54*	*187.24*	*155.09*	*186.42*	*169.99*
Veterinary	39.46	46.48	30.46	41.97	48.80	44.81
Bedding	20.24	2.60	7.33	52.24	56.40	57.40
Other costs	44.42	31.03	30.61	16.84	28.48	23.84
Total variable costs	**364.86**	**267.65**	**255.64**	**266.13**	**320.10**	**296.04**
Gross margin	**221.44**	**211.57**	**348.90**	**349.73**	**341.69**	**408.26**
Fixed costs	**423.86**	**432.80**	**517.35**	**366.12**	**389.40**	**359.48**
Net margin	**(-)202.42**	**(-)221.23**	**(-)168.45**	**(-)16.39**	**(-) 47.71**	**48.78**

	Hill herds			Lowland herds		
	2018	2019	2020	2018	2019	2020
Physical performance						
Calves born dead or alive per 100	95	90	93	91	94	94
Calves reared per 100	90	86	91	87	89	91
Daily liveweight gain (kg)	0.89	0.90	0.95	1.11	1.15	1.2
Return per calf (£ per head)	609	512	621	701	728	755
Calf price (£ per kg lwt.)	2.30	2.03	2.01	2.21	2.24	2.31
Weight per calf (kg)	265	252	309	317	325	327

Totals may not add due to rounding

	Upland suckler herds Selling weaned calves			Upland suckler herds Selling yearling calves		
	2018	2019	2020	2018	2019	2020
Number in sample	30	31	31	27	26	28
Avg. herd size (head)	105	105	102	130	115	106
			£ Per Cow			
Calf output including beef calf premium	**732.07**	**713.86**	**729.08**	**863.90**	**861.24**	**972.50**
Less replacements	77.33	82.16	81.46	80.96	83.66	87.19
Net output	**654.74**	**631.70**	**647.62**	**782.94**	**777.58**	**885.31**
Variable costs						
Total concentrates	47.75	56.87	53.73	113.85	130.47	106.83
Other feeds	37.62	35.49	27.50	51.71	57.34	37.01
Forage	80.50	78.28	94.91	95.42	71.30	94.65
Total feed and forage	*165.87*	*170.64*	*176.14*	*260.98*	*259.11*	*238.49*
Veterinary	43.44	43.16	37.68	49.18	48.98	50.21
Bedding	46.95	28.19	26.31	47.41	49.61	60.06
Other costs	27.35	29.49	21.74	40.76	38.35	38.49
Total variable costs	**283.61**	**271.48**	**261.87**	**398.33**	**396.05**	**387.25**
Gross margin	**371.13**	**360.22**	**385.75**	**384.61**	**381.53**	**498.06**
Fixed costs	**395.24**	**384.94**	**382.09**	**491.25**	**509.59**	**466.96**
Net margin	**(-)24.11**	**(-)24.72**	**3.66**	**(-)106.64**	**(-)128.06**	**31.10**

	Upland herds Early weaning			Upland herds Late weaning		
	2018	2019	2020	2018	2019	2020
Physical performance						
Calves born dead or alive per 100	96	95	94	93	93	95
Calves reared per 100	90	90	88	87	85	89
Daily liveweight gain (kg)	1.10	1.12	1.09	1.05	1.00	1.02
Return per calf (£ per head)	716	684	717	894	916	984
Calf price (£ per kg lwt.)	2.31	2.15	2.35	2.31	2.25	2.42
Weight per calf (kg)	310	318	305	387	407	407

Totals may not add due to rounding

	Rearer/Finishers		
	2018	2019	2020
Number in sample	22	22	22
Avg. herd size (head)	103	96	105
		£ per cow	
Calf output including beef calf premium	**1191.06**	**1061.26**	**1203.20**
Less replacements	79.36	75.06	74.61
Net output	**1111.70**	**986.20**	**1128.59**
Variable costs			
Total concentrates	247.82	203.69	223.46
Other feeds	68.41	68.00	61.69
Forage	96.31	90.77	100.78
Total feed and forage	*412.54*	*362.46*	*385.93*
Veterinary	56.09	50.82	51.06
Bedding	92.14	70.05	80.71
Other costs	48.56	41.13	46.12
Total variable costs	**609.33**	**524.46**	**563.82**
Gross margin	**502.37**	**461.74**	**564.77**
Fixed costs	**535.81**	**530.43**	**517.17**
Net margin	**(-)33.44**	**(-) 68.69**	**47.59**

	Rearer/Finishers		
	2018	2019	2020
Physical performance			
Calves born dead or alive per 100	95	94	94
Calves reared per 100	89	88	87
Daily liveweight gain (kg)	0.9	1.0	1.0
Return per calf (£ per head)	1280	1201	1286
Sale price (pence per kg dwt.)	355	334	369
Weight per calf (kg)	622	620	601

Totals may not add due to rounding

Businesses finishing cattle under cereal-based systems

	Cereal-based		
	2018	2019	2020
		£ per head	
Number in sample	15	15	17
Stock sales	**1316.60**	**1250.48**	**1330.43**
Less stock purchases	728.55	756.06	758.85
Net output	**588.05**	**494.42**	**571.58**
Variable costs			
Concentrates	317.25	293.83	300.86
Other feeds	24.89	26.44	14.84
Forage	4.78	4.64	4.15
Total feed and forage	*346.92*	*324.91*	*319.85*
Veterinary	20.71	16.79	19.52
Bedding	54.97	44.43	42.42
Other costs	42.11	35.12	39.46
Total variable costs	**464.71**	**421.25**	**421.25**
Gross margin	**123.34**	**73.17**	**150.33**
Fixed costs	**83.44**	**103.34**	**106.54**
Net margin	**39.90**	**(-)30.17**	**43.79**
Physical performance			
Feeding period (days)	219	233	212
Start wt (kg lwt)	319	318	345
Average carcase weight (kg dwt)	361	375	362
Daily LWT gain (kg)	1.4	1.4	1.3
Mortality (%)	1.0	2.0	1.1
Sale price (£ per kg dwt)	3.61	3.29	3.67
Purchase price (£ per kg lwt)	2.24	2.27	2.18
Gross margin per day (£ per day of feeding period)	0.56	0.31	0.71

Totals may not add due to rounding

Businesses finishing cattle under forage-based systems

	Forage-based <22 month at slaughter			Forage-based >22 month at slaughter		
	2018	2019	2020	2018	2019	2020
	£ per head					
Number in sample	17	20	19	18	18	16
Stock sales	**1207.46**	**1158.55**	**1336.78**	**1306.19**	**1201.79**	**1333.02**
Less stock purchases	805.67	826.30	804.46	755.81	819.49	771.57
Net output	**401.79**	**332.25**	**532.32**	**550.38**	**382.30**	**561.45**
Variable costs						
Concentrates	140.40	174.49	220.11	194.70	145.26	147.00
Other feeds	14.54	26.27	12.26	25.73	24.16	20.91
Forage	40.03	25.93	27.97	40.92	42.44	48.59
Total feed and forage	*194.97*	*226.69*	*260.34*	*261.35*	*211.86*	*216.50*
Veterinary	12.62	12.45	15.19	17.70	16.44	18.73
Bedding	29.21	33.84	43.74	50.67	40.95	37.35
Other costs	32.83	29.46	34.48	37.86	43.59	39.67
Total variable costs	**269.63**	**302.44**	**353.75**	**367.58**	**312.84**	**312.25**
Gross margin	**132.16**	**29.81**	**178.57**	**182.80**	**69.46**	**249.20**
Fixed costs	**218.55**	**193.13**	**196.97**	**242.34**	**210.76**	**240.84**
Net margin	**(-)86.39**	**(-)163.32**	**(-)18.40**	**(-)59.54**	**(-)141.30**	**8.36**
Physical performance						
Feeding period (days)	275	283	289	410	375	353
Start wt (kg lwt)	367	389	364	332	384	344
Average carcase weight (kg dwt)	347	365	357	367	363	378
Daily LWT gain (kg)	0.8	0.9	0.8	0.73	0.65	0.87
Mortality (%)	1.0	0.5	0.8	1.1	2.2	0.9
Sale price (£ per kg dwt)	352	325	363	356	330	353
Purchase price (£ per kg lwt)	217	211	219	225	207	225
Gross margin per day (£ per day of feeding period)	48	11	62	46	19	70

Totals may not add due to rounding

Results from LFA sheep flocks

	LFA Upland Sheep Flocks			LFA Hill Sheep Flocks		
	2018	2019	2020	2018	2019	2020
	£ per ewe					
Number in sample	31	33	28	25	39	33
Lamb sales	**102.63**	**108.00**	**117.86**	**47.50**	**50.02**	**56.40**
Wool	2.25	2.06	1.36	1.81	1.23	0.84
Gross output	**104.88**	**110.06**	**119.22**	**49.31**	**51.25**	**57.24**
Less replacement costs	14.42	14.26	13.57	12.85	10.50	10.82
Net output	**90.46**	**95.80**	**105.65**	**36.46**	**40.75**	**46.42**
Variable costs						
Concentrates	13.48	10.89	12.38	8.14	5.06	5.11
Forage cost	5.84	7.92	8.72	1.49	0.87	1.48
Roughages	4.35	2.49	2.04	2.34	2.17	2.20
Total feed and forage	*23.67*	*21.30*	*23.14*	*11.97*	*8.10*	*8.79*
Bedding	1.25	1.42	1.21	0.08	0.09	0.15
Veterinary	8.34	9.61	10.89	5.63	6.01	6.87
Other costs	8.10	7.99	7.43	6.45	5.73	4.61
Total variable costs	**41.36**	**40.32**	**42.67**	**24.13**	**19.93**	**20.42**
Gross margin	**49.10**	**55.48**	**62.98**	**12.33**	**20.82**	**26.00**
Fixed costs	**48.75**	**48.27**	**47.49**	**38.48**	**42.24**	**46.41**
Net margin	**0.35**	**7.21**	**15.49**	**(-)26.15**	**(-)21.42**	**(-)20.41**

	LFA Upland Sheep Flocks			LFA Hill Sheep Flocks		
Physical performance						
Average no. of ewes	567	481	521	587	656	731
Lambs born/100 ewes	157	167	160	118	105	104
Lambs died/100 ewes	17	18	14	16	16	14
Lambs reared/ 100 ewes	140	149	146	102	89	90
Lambs sold/retained:						
Slaughter %	57	58	53	11	7	9
Stores %	20	15	23	52	52	54
Breeding %	23	26	24	37	41	37
Return per lamb sold finished (£)	77.79	76.71	87.44	67.35	58.22	65.75
Carcase weight lambs sold finished (kg)	19.5	19.6	19.8	17.3	16.7	17.1
Return per lamb sold store (£)	56.30	58.68	71.73	44.45	46.60	56.36

Totals may not add due to rounding

Results from Lowground sheep flocks

	2018	2019	2020
		£ per ewe	
Number in sample	13	13	14
Lamb sales	**137.05**	**111.76**	**145.88**
Wool	2.25	1.87	1.51
Gross output	**139.30**	**113.63**	**147.39**
Less replacement costs	14.28	16.13	15.60
Net output	**125.02**	**97.50**	**131.79**
Variable costs			
Concentrates	20.85	16.63	21.43
Forage cost	8.38	7.64	8.48
Roughages	4.35	3.65	2.91
Total feed and forage	*33.58*	*27.92*	*32.82*
Bedding	1.29	1.68	1.33
Veterinary	9.40	9.22	10.76
Other costs	9.78	7.79	9.32
Total variable costs	**54.05**	**46.61**	**54.23**
Gross margin	**70.97**	**50.89**	**77.56**
Fixed costs	**52.58**	**55.23**	**53.98**
Net margin	**18.39**	**(-)4.34**	**23.58**

Physical performance			
Average no. of ewes	515	698	482
Lambs born/100 ewes	177	151	179
Lambs died/100 ewes	24	18	21
Lambs reared/100 ewes	153	133	158
Lambs sold/retained:			
Slaughter %	83	71	77
Stores %	5	16	14
Breeding %	12	13	9
Return per lamb sold finished (£)	92.30	90.46	94.01
Carcase weight lambs sold finished (kg)	20.6	20.4	24.9
Return per lamb sold store (£)	65.41	54.55	83.26

Totals may not add due to rounding

Store lamb finishing

	2018	2019	2020
		£ per lamb	
Number in sample	13	14	14
Lamb sales	**75.94**	**74.78**	**89.54**
Less store lamb purchase costs	50.73	50.20	60.67
Output	**25.21**	**24.58**	**28.87**
Concentrates	5.03	1.95	2.64
Other feed	0.32	0.23	0.28
Forage	2.28	1.93	0.34
Total feed and forage	*7.63*	*4.11*	*3.26*
Bedding	0	0.02	0.09
Veterinary	1.42	1.14	1.91
Other costs	4.23	4.39	4.50
Total variable costs	**13.28**	**9.66**	**9.76**
Gross margin	**11.93**	**14.92**	**19.11**
Fixed costs	**7.23**	**5.13**	**5.07**
Net margin	**4.70**	**9.79**	**14.05**

Physical performance			
Feeding period (days)	165	118	110
Liveweight at start (kg)	30.4	30.1	31.0
Liveweight at finish (kg)	38.5	39.9	37.0
Mortality (%)	4.6	2.2	2.0
Concentrates (kg)	19	8	11
Average carcase weight (kg dwt)	18.0	18.7	17.4

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 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 estimated to be half of the total variable and fixed costs for the year.

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