Cattle & Sheep Enterprise Profitability in Scotland

2022 Edition

QMS
Quality Meat Scotland

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Executive Summary

THIS REPORT on enterprise profitability covers the 2021 calf and lamb crop year, a period described by the Meteorological Office as fairly average, although it was slightly drier than average particularly in the West of Scotland. The weather was benign through the peak lambing and calving period, however, April and May were cold leading to slow grass growth. The second half of the year was warmer, particularly September. The final third of the year was duller than average and while Central Scotland was drier, the North of Scotland, the South West and Borders were wetter than average. GrassCheck GB reports for 2021 showed that the grass growth curve on beef and sheep farms spent most of the year well below the average from 2019 and 2020. The 2021 calf and lamb crop year though will be best remembered for the continuing challenges created by the Covid-19 pandemic and Brexit which disrupted markets and labour availability in the red meat supply chain.

After a volatile 2020 due to the demand and supply shocks of the Covid-19 pandemic, input costs showed a more consistent upwards trend in 2021 and the UK agricultural input prices index jumped more than 11% above the previous record levels of 2019 and 2020. Feed and energy costs rose by around 15%, passing previous peaks from early in the 2010s, though the rise in compound feed costs came through more slowly than for straights. Meanwhile, linked to a spike in prices for natural gas, the cost of fertiliser surged by more than 50% in 2021. After rebalancing higher in autumn 2020 in line with prices for finished cattle, store cattle prices showed sharp year-on-year increases at spring sales in 2021, followed by more modest uplift in the autumn. For a second year in succession, the store lamb season also received a boost from a rebalancing higher of the market for finished lambs, despite increased marketings. For prime cattle, prices peaked in the spring, driven by a tight supply of older prime cattle, before steadying in the second half of the year, setting new records for the time of year. After paying significantly more for store lambs in autumn 2021, an increased carryover of hoggs pressured the prices available to store lamb finishers in spring 2022.

- 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 agricultural support payments. Fifty-five percent of suckler herds in the survey achieved a positive net margin in the 2021 survey year. This was an increase from 45% in the 2020 survey year.
- Margins among store finishers also increased on the year with 75% of the businesses surveyed achieving a positive net margin, up from 63% of businesses in 2020.
- The proportion of hill ewe flocks making a positive net margin increased from 27% in 2020 to 33% in 2021. Meanwhile, net profitability among upland flocks stood at 87% of enterprises surveyed achieving a positive net margin for their 2021 lamb crop, down from 89% last year. Lowground flocks also saw a slight fall in margins with 85% of surveyed flocks achieving this objective compared to 93% achieving a positive net margin for the 2020 lamb crop. All store lamb finishers surveyed achieved a positive net margin compared to 93% in the previous year, although the average net margin fell by around £3.50 per lamb.

Executive Summary (continued)

- 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 replacement rates. Having cull stock to sell to set off against the cost of replacement stock affects the cost of herd maintenance.
- The LFA hill suckler herds surveyed had an average gross margin of £421 per cow – an increase of £348 per cow on the year. Higher gross margins were attributable to higher market returns as variable costs increased 27% on the year. However, firm control of fixed costs meant they were little changed from 2020 and consequently the average net margin improved by £74, but remained negative. The top-third averaged £635 per cow gross margin, an improvement over the average of £214 per cow, and a net margin of (+)£195 per cow. Of the 17 producers surveyed, five achieved a positive net margin in 2021 compared to seven in the previous year.
- The LFA upland suckler herds were split into two categories, one group selling at weaning and a second group selling yearling stores. Those selling weaned calves saw net margins increase by £54 per cow, while those selling yearlings saw net margins fall by £80 per cow. Higher market prices and better herd productivity helped those selling weaned calves to achieve a higher net output. In contrast, despite better prices, similar herd physical performance and selling calves slightly lighter saw those selling yearlings face falling net output. Both groups faced higher fixed costs, which rose by around 8%, but those selling weaned calves did report savings in variable costs in 2020. Those selling at weaning made an average gross margin of £470 per cow but were outperformed by their counterparts' selling yearlings who achieved an average gross margin of £454 per cow. However, the higher cost base meant that those selling yearlings, on average, returned a negative net margin, while those selling weaned calves achieved a positive net margin. Sixty-two percent of businesses selling calves at weaning achieved a positive net margin in 2021, up from 35% in 2020. In contrast, among those selling yearlings, 46% of the businesses achieved a positive net margin,

down slightly from the 50% of businesses who achieved this target a year earlier.

- Despite rearing more calves to sell than in the 2020 survey year, and selling them at higher prices, a higher cost base in the 2021 survey year meant that the average net margin among this group fell by £3 per head but remained positive. Variable costs climbed by 16%, while fixed costs were nearly 10% higher. This led to an average gross margin among non-LFA suckler herds of £438 per cow, an increase of £30 per cow on the year but a net margin of £44, which was a fall of £5 on the year. Forty-four percent of the businesses surveyed achieved a positive net margin, a decline from 56% in the year before.
- Rearer finisher businesses surveyed recorded an average gross margin of £703 per cow, an increase of £139 on the average from last year, with the top-third averaging £821. Despite variable costs increasing 7% and fixed costs climbing 9%, higher market prices and a higher number of cattle to sell led to average net margins rising to £137 per cow. The proportion of businesses with a positive net margin increased to 86% from 64% in 2020.
- Cereal-based cattle finishers surveyed reported an average gross margin of £242 per beast and a net margin of £142. This was an increase of £98 on the year and the highest net margin since 2017. The average carcase weight of 377kg was 15kg higher than in 2020 and combined with the strong market prices to result in a 14% increase in revenue from stock sales. This was more than sufficient to offset an increase in store cattle buying price of 6% and an increase in costs of 9%. Eighty-eight percent of businesses in the survey reported a positive net margin in 2021, up from 75% in the previous year.
- Forage-based finishers have been split into two groups, those selling cattle under 22 months of age and those selling cattle over 22 months of age. Those selling younger cattle achieved an average gross margin of £236 per beast and reported a net margin of £29, an improvement of £47 on the year. Those selling older cattle achieved a gross margin of £261 per head and net margin of £70, an improvement of £62 per head on the year. Seventy-six percent of those selling younger cattle achieved a positive net margin in the 2021 survey year, an increase from the 63% that achieved this objective in the 2020 survey year. Similarly, 65% of those selling the older cattle achieved a positive net margin, up from 55% in 2020.
- LFA hill sheep enterprises in the survey achieved, on average, a gross margin of £32 per ewe, up £6 on the year and a net margin of (-)£14, £6 better than 2020. Cost structure and flock productivity was very similar between the two lamb crops meaning that all of the improvement in margins was due to better market returns. The top-third benefited from

higher prolificacy and lamb weights resulting in a net output £23 per ewe higher than the average. The cost base among the top-third was very similar to that of the average, meaning that the gain in net margin over the average of £23 per ewe is attributable to better flock productivity. The general increase in margins meant that 33% of businesses in this group achieved a positive net margin, compared to 27% in the previous year.

- Eighty-seven percent of upland ewe enterprises surveyed reported a positive net margin in 2021, down from 89% in the year before. Nevertheless, at £34 per ewe, the average net margin was more than double the level of the year before. Better margins were driven solely by improved market returns as despite having slightly fewer lambs to sell, net output increased by 17%. Overall, costs were little changed on the year, with savings in variable costs offsetting an 8% increase in fixed costs.
- Lowground breeding ewe businesses in the survey saw an improvement in margins as market prices climbed to record high levels. Despite variable costs rising 15% and fixed costs rising 4%, the higher market returns led to a gross margin of £86 per ewe, £9 higher than in 2020 and the average net margin climbed to £30 – its highest level for five years. The proportion of businesses achieving a positive margin reached 85%, compared to 93% in the year before.
- 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. All of the surveyed enterprises recorded a positive net margin, although the average did fall by £4 per lamb to £10 per lamb. Higher market returns were not sufficient to offset the extra £14 per lamb paid for store lambs and an increase of £2 in the cost base.
- For a seventh 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 show that over the seven years there has been some general reduction in average emissions per kg of output but the range of emissions overlaps from year to year and the differences are too small to suggest that the movement is a definitive trend. The results also show the challenge of reporting against kilograms 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 2021 calf and lamb crop year. The survey was commissioned by Quality Meat Scotland and carried out by SAC Consulting.

THE SURVEY covers 72 breeding ewe enterprises farming 44,750 ewes and 114 suckler cattle enterprises farming 10,030 suckler cows, 13 enterprises finishing 5,740 store lambs and 54 cattle finishing enterprises selling 5,000 prime cattle. The survey provides a snapshot of the industry during 2021. This report compares, for each sector, the costs, revenues and margins achieved by the top third of producers, the bottom third, and the sample average.

The concluding sector of the report provides some comparative analysis with the results from 2019 and 2020. However, it must be stressed that the comparisons are not identical samples of businesses.

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

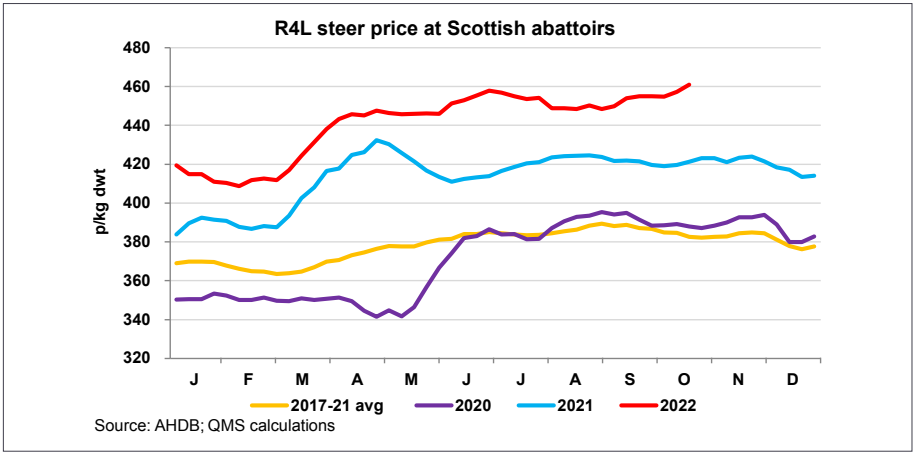
The analysis has been extended to include estimates of the time committed to the enterprises by family labour for which no charge has been recorded in the estimate of net margins. The level of income required to provide a 5% return on an enterprise's working capital has also been estimated in addition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

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

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

The considerable range of land types and production systems found in Scotland inevitably 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 2021

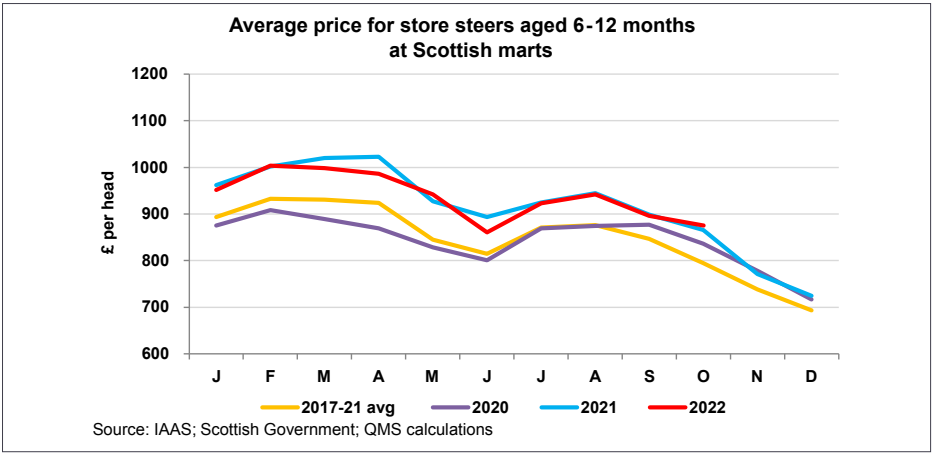
Prices for finished prime cattle reached a new record high at Scottish abattoirs in 2021, peaking at 428.8p/kg in late April and averaging 408.8p/kg during the year as a whole.

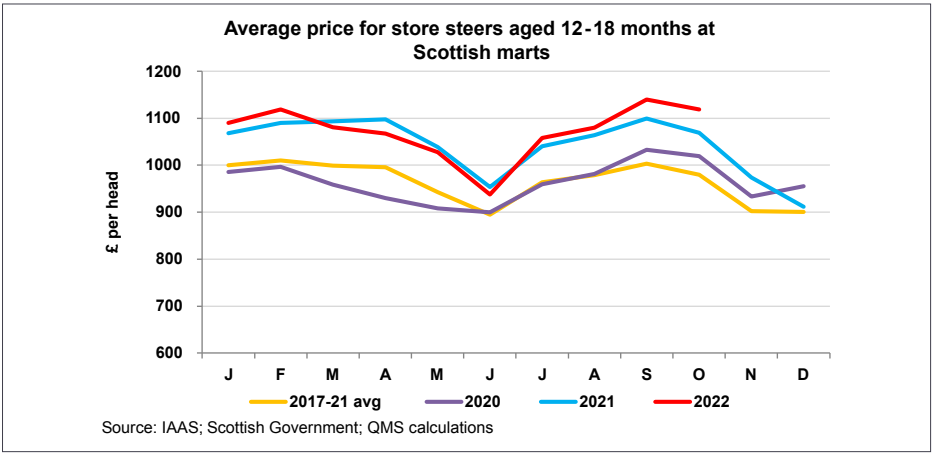
Scottish abattoirs paid an average of £1,503 for an R4L steer carcase in 2021 (UK spec.), with unchanged weights meaning an 11.1% increase on 2020 on both a per kilo and per carcase basis.

With the general level of consumer prices in the UK rising by 2.5% in 2021, the 11.2% prime steer price increase at Scottish abattoirs softened to 8.9% in real terms. In real terms, prices still averaged lower than they had been from 2012-14.

Prime cattle prices began the year around where they had been in autumn 2020, before a tight supply of older prime cattle led to a rebalancing higher through March and April. After slipping back from their peak, prices were then relatively stable through the second half of the year, running above previous highs for the time of year. A combination of increased availability of prime cattle on Scottish farms plus labour shortages at Scottish abattoirs did however place some downwards pressure on prices in the autumn, limiting uplift at the peak procurement period for Christmas and then adding to the seasonal declines in the final weeks of the year.

For store cattle, the seasonal pricing pattern for steers aged 6-12 months returned to one where prices peaked higher at spring sales than in the autumn. As a result, year-on-





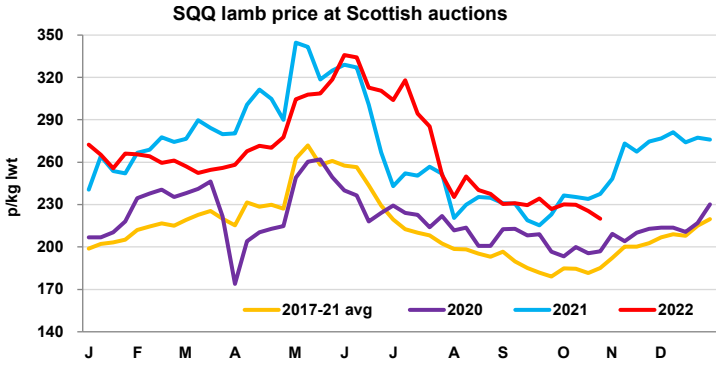
year increases were in the 10-15% range in the first half of the year, before softening to 3.5% in October, the peak month for autumn sales.

For yearling steers aged 12-18 months, prices reached similar peaks in the spring and autumn, but year-on-year increases softened to 5-6% in the autumn from around 15% in the spring.

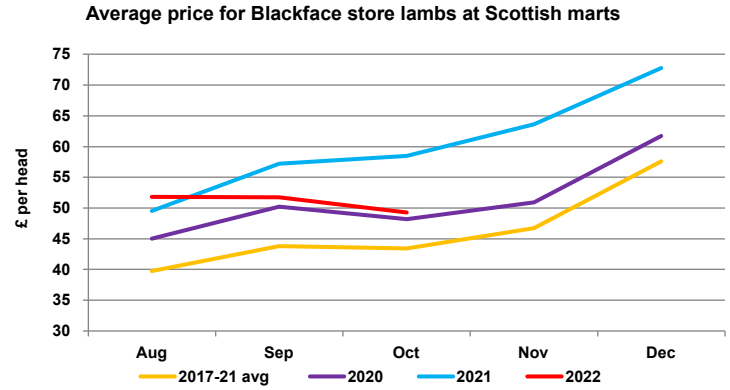
In the year, as a whole, 6-12-month steers averaged £948 per head while 12-18-month steers sold for £1,068, working out at respective year-on-year increases of 10.6% and 9.5%, returning values to their highest levels since 2017. These averages worked out at respective 63% and 71% of the average carcase price for a finished R4L steer (£1,503).

Building on a strong 2020 and reflecting an even tighter market balance, prime sheep prices[1] jumped by another 21.2% at Scottish

1 *Annual average prime sheep prices are based on the old season price from January to April and then 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.*



Source: IAAS; QMS calculations
New season price from May; price for lambs weighing 25.5-45.5kg lwt

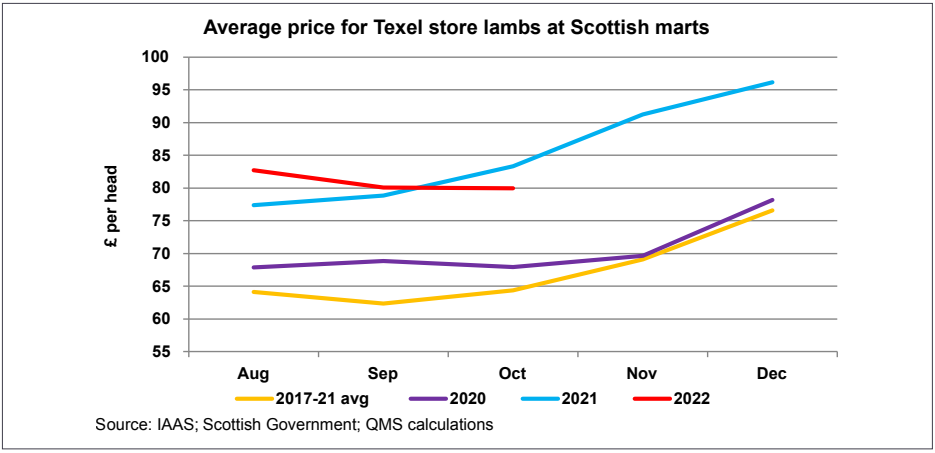


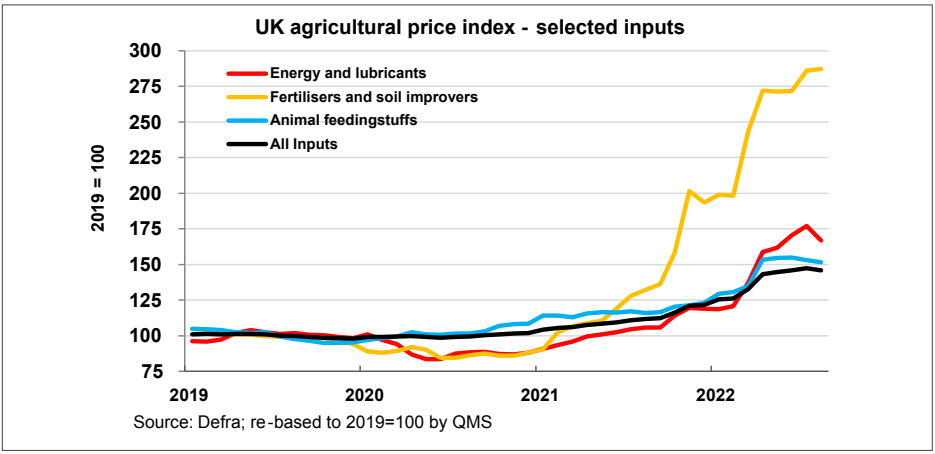
Source: IAAS; Scottish Government; QMS calculations

auctions in 2021, averaging 261.5p/kg liveweight. This saw them move 36.4% above their 2016-20 average while pushing beyond their inflation-adjusted high from 2011.

An early marketing pattern in the 2020/21 season resulted in a tight supply of hoggs in 2021, leading to very high prices for hoggs, peaking above 310p/kg in mid-April. A delayed marketing pattern in 2021/22 then supported prices for new season lambs, which peaked above 340p/kg in the first half of May before cooling as supplies began to build. Nevertheless, this delayed marketing pattern, coupled with reduced imports, helped underpin prices throughout summer and autumn in 2021, holding prices well above previous levels for the time of year. Eid al-Adha moved forward to around 20 July 2021, and this gave a boost of around 2.5% to market prices in the week of peak procurement.

At the low point in September, lambs sold for an average of around 215p/kg, but they spent much of the August to October period trading around 230-40p/kg, around 15% higher





than in autumn 2020 and 25-30% above the five-year average.

There was then a seasonal upturn moving into November, with demand building ahead of the festive period, and the market cleared around the 275p/kg mark for much of November and December. This saw prices trade around 30% above year earlier levels and almost 50% above the five-year average.

However, into the New Year, the delayed marketing pattern meant that an increased carryover of hoggs pressured hogg prices at sales in the run up to Easter. While failing to match 2021 levels, prices of 250-70p/kg were still around 20% above the five-year average.

Having risen more than 7% in 2020, the number of store lambs marketed at Scottish auctions between the final week in July and the year-end rose by another 4% in 2021. This amounted to an additional 22,700 lambs, accounting for 20.5% of the increased lamb crop reported in the June census.

Despite a further uplift in marketings, the annual average new season store lamb price rose

by around 20% for a second consecutive year, approaching £73, highlighting a general strength of confidence. At this level, it was 41% above its five-year average (£51.50).

Of the main breed groups, Blackface was the only one to see a reduction in marketings from 2020, down 9%, whereas there were increases of 7% for Cheviots, 10.5% for Texels and 12% for Suffolks. Prices averaged 17% higher than in 2020 for Cheviots and Suffolks, at £58 and £70 respectively, while Blackface and Texels cleared 19% above year earlier levels, at £50 and £69.

In an unusual development, reflecting the delayed marketing pattern, the average hogg price in the opening quarter of 2022 was nearly 1% below the average from sales in the final quarter of 2021. Indeed, a year earlier there had been an uplift of 30%, with the five-year average movement working out at an increase of 19.5% between the two periods. Given the further uplift in store lamb prices at autumn 2021 sales, it suggests that it may have been more challenging for store lamb finishers to make a margin.

UK agricultural input costs reported by Defra surged to a new record high in 2021, averaging more than 11% higher than in 2019 and 2020, which were the previous record levels.

After a volatile 2020, due to supply and demand shocks linked to the pandemic and lockdowns, input costs showed a more consistent upwards trend in 2021, with a particularly high level of cost inflation during the autumn.

There were considerable increases for energy and feed in 2021, with each averaging around 15% higher than in 2020, and passing previous peaks reached in the early 2010s. Although the cost of fertilisers surged by over 50%, it was still below the peak reached during the oil and gas market boom of 2008.

Energy costs were driven higher by the global economic rebound from the coronavirus lockdowns of 2020 and early 2021. A surge in the cost of gas spilled over into fertiliser costs, given that gas is the main input for many fertilisers. Interestingly, there was similarly strong cost inflation for both straight and compound fertilisers, indicating an immediate pass-through of commodity price movements to end products.

For feed, a tight global grain market, driven by a poor global harvest and firm demand for grain for human food and animal feed led to a fifth consecutive year of cost increases. Unlike fertilisers, the increases for straight feeds were roughly double those of compound feeds, suggesting a slower pass-through. For example, while feed barley rose by 30%, compound cattle and calf feed averaged less than 11% above 2020 levels.

2022 prospects

Since the survey data was collected in the spring of 2022, the market environment for finished cattle and sheep has remained firm, with prices generally trading around 5-10% higher than in 2021. However, input cost inflation has continued to surge following the Russian invasion of Ukraine, likely leading to considerable squeeze on margins.

After a soft start to the year, prime cattle prices rebalanced higher in March and have been trading at record levels of around 440-450p/kg since, placing them 5-10% above 2021 levels and 15-20% above the five-year average. Though, after adjusting for inflation, prime cattle prices remain well below their peak. With carcase weights averaging similar to 2021, per head prices will have risen in line with per kilo prices.

Meanwhile, Scottish abattoirs have continued to struggle with persistent labour shortages and there has been an outflow of store cattle to English farms since the autumn

of 2021, resulting in a reduction in slaughter in Scotland. A reduction in numbers on Scottish farms appears to be boosting competition for the available stock and underpinning prices paid for them in contrast to autumn 2021 where an increase on farm had placed downwards pressure on values.

While prices for finished cattle have been 5-10% above year earlier levels throughout 2022-to-date, there has been less of an uplift in the store ring despite fewer steers and heifers being traded. This reduction in demand from finishers is likely to reflect the sharp rise in input costs faced by finishers. At autumn sales, longer keep stores have been coming under pressure, with steers in the 6-12-month age group averaging slightly cheaper than a year earlier. While prices for the 12-18-month group have been averaging around 3% above 2021 levels, this is less than half the pace of uplift in finished cattle prices.

For prime sheep, early 2022 saw hogg prices look historically firm but fail to reach the highs of early 2021, reflecting an increased carryover of hoggs. However, prices did still pass the 270p/kg mark in April. As the new season began, lambs sold for around 305p/kg but there was a later new season peak than last year, with prices approaching 340p/kg in early June. After peak procurement for Eid al-Adha at the beginning of July, prices fell back sharply and the market has settled at around the 230p/kg mark between mid-August and mid-October, generally holding slightly in front of 2021 levels, though dipping slightly behind in the first half of October. Nevertheless, finished lambs were still trading 25% above their five-year average and 40-45% above the autumn low point of around 160p/kg in 2017, 2018 and 2019.

New season lamb carcase weights have also increased by around 2% year-on-year in 2022, giving a further boost to per head prices.

Meanwhile, auction market data does suggest that we have had a good lamb crop this year, with 1.5% more new season lambs being traded up to the second week of October at Scottish marts than in 2021, suggesting a continuing trend of rising productivity given the decline in ewe flock signalled by the December 2021 *Sheep and Goat Inventory*.

At store lamb sales, after a slow start, marketings have also overtaken 2021 levels, up nearly 2% by the first week of October, again pointing to a good lambing. Prices have been struggling to match 2021 levels, particularly for Blackface lambs, averaging around £52 in the six weeks to early October, compared to £58 a year earlier. Meanwhile, Texels have been averaging around the £80 mark, unchanged on the year.

After rising in 2021, input costs for farmers and red meat processors have surged again in 2022. Russia's invasion of Ukraine has had a major impact on global crop production and trade, while the response to the invasion has led to a breakdown in global energy supply chains, with implications for the availability and cost of fertiliser. Indeed, global commodity price data from the International Monetary Fund (IMF) indicates that as of September 2022, commodity prices were, on average, around 15% higher than in the opening month of the year, while up 28% on a year earlier and more than double September 2020 levels.

Reflecting volatility in commodity prices in 2022, with some downwards pressure coming from a resumption of crop exports from Ukraine's Black Sea ports in summer 2022 and fears over the health of the global economy, the September 2022 average was in fact a seven-month low. Though, given that many commodities are traded in US dollars, a significant weakening of sterling will have continued to underpin the cost of imported commodities in the UK.

A concern and risk going forward is that the surge in fertiliser prices over the past couple of years has a knock-on impact on crop areas and yields and leads to potential availability challenges for grazing and forage in 2023. Indeed, the IMF's fertiliser index was three times higher in September 2022 than two years before.

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, it seems likely that input costs will have risen faster than market prices this year, pressuring margins. In addition, data from GrassCheckGB highlighted weak grass growth rates during a dry summer, potentially leading to longer finishing periods and increased need for supplementary feeding. However, increased calf registrations from spring 2021 are likely to have boosted output where these animals have been sold store or finished in the current marketing year.

For sheep producers, the 2022 marketing year has seen values for store and finished lambs continue to trade at historically firm levels, often surpassing the record levels from 2021. Although we do not have census results for Scotland, auction data from sales of prime and store lambs does point to a good lamb crop, with small increases in the season-to-date (as of early October). Abattoir data has also suggested that carcase weights have risen, boosting prices per head. However, a general lift in input costs is likely to have resulted in some downwards pressure on margins.

Structural changes in 2021

Among the suckler herds surveyed, 38% increased cow numbers by more than 5%, while a further 11% reduced cow numbers by more than 5%. Overall, the number of cows farmed by those in the survey increased by 3% in contrast to a national decline of 0.3% reported in the Scottish Agricultural Census of December 2021.

With regard to breeding sheep enterprises, the total number of ewes farmed by those in the survey increased by 0.4%, while the national flock reported in the December 2021 Scottish agricultural census declined by 3.4%. Thirty-five percent of flocks increased in size by more than 5% while 32% 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 latest greenhouse gas emissions (GHG) statistics show agriculture reduced net emissions by 15% between 1990 and 2020[2].

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 (CO_2), burning fossil fuels such as coal, oil and diesel, disposal of waste and is embedded in inputs like feed, bedding, fertiliser and lime.
- Methane (CH_4) is produced as a natural by-product during ruminant digestion and from the management of organic manures.
- Nitrous oxide (N_2O) 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.

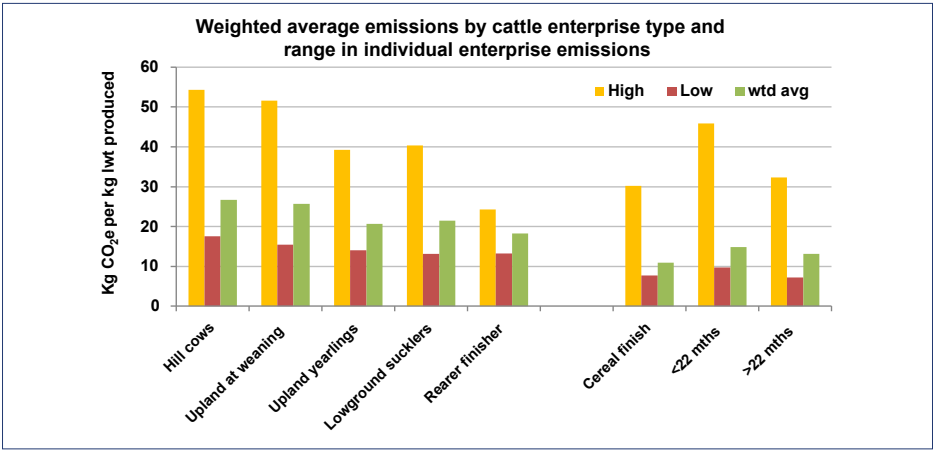
The emissions are expressed as carbon dioxide equivalents (CO_2e) based on their relative global warming potential over a 100-year period, with nitrous oxide being the most significant at 298 times the impact of CO_2 and methane 25 times the impact of CO_2. The emissions have been reported as an intensity, 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.

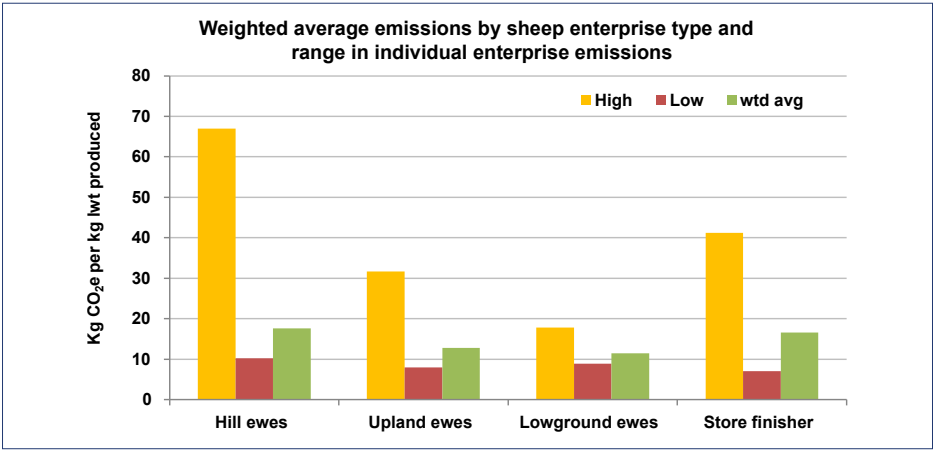
Comparison of greenhouse gas emissions

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

2 *https://www.gov.scot/binaries/content/documents/govscot/publications/statistics/2022/06/scottish-greenhouse-gas-statistics-2020/documents/greenhouse-gas-dataset/greenhouse-gas-dataset/govscot%3Adocument/greenhouse-gas-dataset.xlsx*





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 overleaf summarise the results for the 2015 to 2021 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 are achieved by those businesses which 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 9%. This reflects 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
2021	21.2	22.8	28.0	17.7	36.7	16.8
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
2021	48.0	14.9	56.7	12.8	60.3	11.8
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		
2021			63.3	11.5		

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
2021	237	28.6	275	26.7	306	28.9
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
2021	241	33.6	274	25.7	291	21.6
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
2021	326	21.6	348	20.7	395	19.0
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
2021	250	21.1	302	21.5	350	20.5

Greenhouse Gas Emissions (continued)

	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
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
2021	482	16.9	530	18.3	587	15.7

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
2021	310	10.9	333	10.9	347	11.9
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
2021	247	15.9	276	14.8	332	11.5

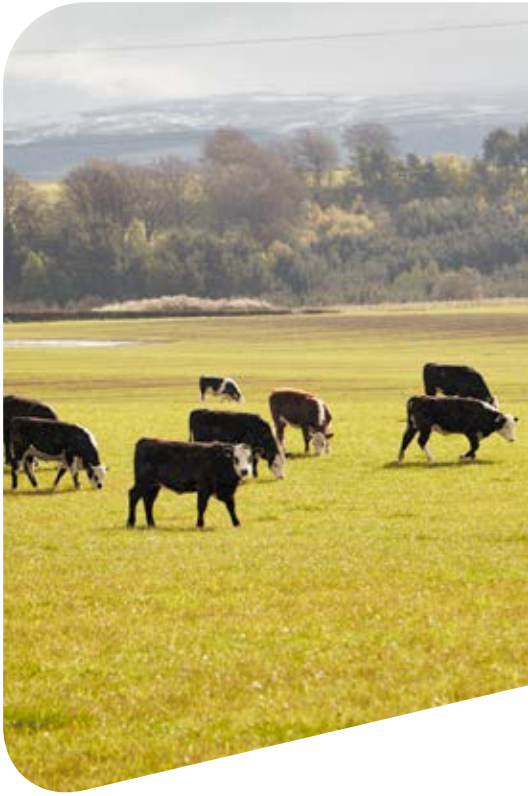
	Bottom third		Average		Top third	
	Kg added per animal sold	CO_2e/ kg output	Kg added per animal sold	CO_2e/ kg output	Kg added per animal sold	CO_2e/ kg output
Forage-based finishing over 22 months						
2015	255	14.6	289	13.0	309	11.4
2016	230	14.3	264	13.8	316	11.9
2017	252	13.9	270	13.2	363	10.1
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
2021	223	15.9	259	13.2	344	8.9

Cattle Enterprises

Results from LFA hill suckler herds

THE 17 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 81 cows with an average size of 41 head. Thirty percent of herds made a positive net margin down from 44% last year.

- Hill suckler herds achieved an average gross margin of £421 per cow. The top third achieved an average gross margin of £635, 50% better than the average while the bottom-third reported a gross margin of £183.
- Fixed costs averaged £515 per cow, but with a considerable variation from £200 to £750 per cow. This resulted in an average net margin of (-)£94 per cow while the top third achieved a positive net margin of £195 per cow.
- Cow productivity was much higher among the top-third herds rearing two more calves than the average and four more than the bottom third. They also had a lower cow mortality rate and a higher proportion of the herd calved within nine weeks of the first calf being born. Calves were sold at a heavier weight and the liveweight reared per cow in the herd was 11% higher among the top third herds than the average. Higher output among the top third was driven by both higher average selling prices per kg/lwt and a higher liveweight.
- Top-third producers had a stronger control over costs than the average. Lower cow mortality will have contributed to herd maintenance cost 20% lower per lwt kg yield per cow in the herd than the average. Similarly, variable cost was much lower per kg of yield while strong control of fixed costs also led to them being lower per kg of yield. 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.
- It must be recognised though that five of the six herds in the bottom-third by financial performance were located in the north west region of Scotland. Incorporating the Highlands, Argyll and the Western Isles the north west region of Scotland is an area where topography and climate impact on the availability and quality of homegrown forages and on animal performance.



LFA hill suckler herds – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	6	17	6
Average herd size (head)	33	41	41
		£ per cow	
Calf output after valuation changes	582.91	705.90	806.64
Subsidies	107.30	106.22	95.52
Gross output	**690.21**	**812.12**	**902.16**
Less replacements	67.51	67.41	62.73
Net output	**622.70**	**744.71**	**839.43**
Variable costs			
Purchased concentrates	111.71	77.58	54.64
Home-grown concentrates	0	14.12	0
Roughages purchased	109.91	59.42	47.63
Forage	94.87	65.47	36.15
Total feed and forage	*316.49*	*216.59*	*138.42*
Veterinary	51.94	45.17	40.50
Bedding	10.45	20.75	6.02
Other costs	60.36	40.80	19.63
Total variable costs	**439.24**	**323.32**	**204.57**
Gross margin	**183.46**	**421.40**	**634.86**
Fixed costs			
Labour	89.03	74.29	80.77
Contractors	42.93	39.20	31.86
Power and machinery	159.99	111.08	80.52
Property maintenance and rent	104.52	100.06	102.26
Depreciation	162.49	136.47	110.05
Finance	13.31	11.38	15.88
Administration	79.33	42.51	18.14
Total fixed costs	**651.60**	**514.99**	**439.48**
Net margin	**(-)468.14**	**(-)93.59**	**195.38**
Annual herd maintenance cost – pence per kg calf produced	28	25	20
Variable cost – pence per kg calf produced	184	117	67
Fixed cost – pence per kg calf produced	274	187	144
Unpaid family labour hours	**21hr 35min**	**24hrs 35mins**	**28hrs 30min**

Totals may not add due to rounding

LFA hill suckler herds – Technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	22	24	20
Barren cows %	6	4	3
% calving within 9 weeks	75	75	83
% calving within 12 weeks	87	86	89
Calves born dead or alive per 100 cows	94	96	97
Calves born dead per 100 cows	2	2	2
Calves died before weaning per 100 cows	2	2	1
Calves reared per 100 cows	90	92	94
Daily liveweight gain (kg)	0.84	0.97	1.01
Weight – kg per calf sold	263	298	326
Weight produced kg per cow	238	275	306
Cow replacement rate per 100 cows	15.3	11.5	8.2
Cow mortality %	1.5	1.8	0.5
Purchased concentrates kg per cow	460	318	245
Home-grown concentrates kg per cow	0	94	0
Stocking rate cow/ha	0.16	0.17	0.20
CO_2e kg/net lwt kg produced	**28.6**	**26.6**	**28.9**

Results from LFA suckler herds

The upland suckler herd sample has been split into two sub-groups in order to give a better reflection of the production systems in use in Scotland. One group includes farms of a more extensive nature that sell the majority of calves at weaning, while the other group 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 32 herds in this category farmed 3,397 cows, an average herdsize of 106 cows within a range from 25 to 369 cows and reported an average gross margin of £470 per cow and a net margin of £59 per cow. The top third of enterprises returned a gross margin of £562 per cow, £92 (19%) better than the average and £214 per cow better than the bottom third. Top third producers reported a net margin of £187,

£127 per head better than the average. Sixty-two percent of businesses reported a positive net margin up from 35% last year.

- Herd productivity was a little different between the top-third and average; barren cow rate, cow mortality and calf mortality for example were little different. However, when combined the small differences that did exist amounted to one more calf being reared per 100 cows in the herd than the average and three more than the bottom third. Similarly, calf selling prices per kg lwt were little different but the higher yield per cow of 17kg (6%) meant an output £39 per cow higher than the average
- Strong control of variable costs resulting in variable cost per kg of yield per cow 27% lower than the average led to the gain in financial output increasing to a gross margin gain of £92 per cow over the average.
- Fixed costs were equally well controlled being 14% lower per kg of yield per cow. As a consequence, top-third producers reported a net margin £128 per cow higher than the average.

Upland herds selling calves at around one year old

Twenty-eight herds farming an average of 89 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 386kg, some 28% higher than those sold at weaning. As a consequence, not surprisingly, variable costs per cow were higher among this group than those of their counterparts' selling calves at weaning, by 80%. However, when considered against the yield per cow, the variable costs among this group were 42% higher per kg of calf reared per cow.

Higher production per cow among those selling yearlings resulted in a gross output 22% higher than those selling weaned calves however, the extra variable costs associated with keeping the calves longer were not recouped from the marketplace. The average gross margin among this group was consequently some £16 per cow lower (3%) lower than for those selling weaned calves.

Fixed costs were 23% higher among this group compared to those selling younger cattle. All fixed costs were higher per cow with the exception of contractor charges. As a result, the £16 per cow lower gross margin was eroded further to a point where the net margin among those selling weaned calves was £109 per cow better than those selling yearlings. Forty-six percent of the enterprises selling yearlings surveyed achieved a positive net margin down from 50% last year.

- Top-third businesses selling yearlings returned a gross margin of £616 per cow, £162 (36%) better than the average and almost one and three quarters 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 five more than the bottom-third. They sold these calves at a slightly higher weight than the average leaving the production per cow 14% higher than the average.
- Top third producers also delivered higher output while keeping variable costs per cow 13% below the average.
- Top third producers had a slightly higher fixed cost burden than the average, 6% higher. Uniquely, this top-third group recorded no paid labour but consequently the unpaid family labour provision was more than double the average while the use of contractors was greater than the average. Higher machinery and property costs, along with higher depreciation, may reflect greater investment in machinery and infrastructure.
- Upland herds selling yearling cattle achieved a net margin of (-)£50 per cow which improved to £83 per cow among the top-third.

Extensive upland suckler herds selling weaned calves – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	11	32	11
Average herd size (head)	77	106	136
		£ per cow	
Calf output after valuation changes	598.51	675.79	697.43
Subsidies	87.04	96.82	104.12
Gross output	**685.55**	**772.61**	**801.55**
Less net replacement cost	85.98	74.47	64.21
Net output	**599.57**	**698.14**	**737.34**
Variable costs			
Purchased concentrates	44.38	35.24	28.89
Home-grown concentrates	5.81	8.25	6.50
Roughages purchased	50.01	34.51	19.32
Forage	71.75	70.64	61.52
Total feed and forage	*171.95*	*148.64*	*116.23*
Veterinary	40.35	35.01	23.06
Bedding	10.12	20.33	13.31
Other costs	28.46	23.49	22.25
Total variable costs	**250.88**	**227.47**	**174.85**
Gross margin	**348.69**	**470.67**	**562.49**
Fixed costs			
Labour	55.98	53.95	46.39
Contractors	62.97	41.92	21.60
Power and machinery	109.58	88.82	79.37
Property maintenance and rent	66.51	80.24	78.25
Depreciation	95.32	97.08	105.90
Finance	20.32	18.66	12.38
Administration	20.54	30.40	30.63
Total fixed costs	**431.22**	**411.07**	**374.52**
Net margin	**(-)82.53**	**59.60**	**187.96**
Annual herd maintenance cost – pence per kg calf sold	36	27	22
Variable cost – pence per kg calf produced	104	83	60
Fixed cost – pence per kg calf produced	179	150	129
Unpaid family labour hours	**9hrs 10min**	**8hrs 55min**	**8hrs 55min**

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	23	24	24
Barren cows %	7	7	6
% calving within 9 weeks	68	70	63
% calving within 12 weeks	76	79	74
Calves born dead or alive per 100 cows	97	96	96
Calves born dead per 100 cows	5	3	3
Calves died per 100 cows	3	2	1
Calves reared per 100 cows	89	91	92
Daily liveweight gain (kg)	1.1	1.1	1.1
Weight – kg per calf sold	271	302	317
Weight produced kg per cows	241	274	291
Cow replacement rate per 100 cows	14.2	13.3	13.6
Cow mortality %	2.7	1.7	1.6
Purchased concentrates kg per cow	293	173	113
Home-grown concentrates kg per cow	43	58	62
Stocking rate cows/ha	0.9	1.0	1.1
CO_2e kg/net lwt kg produced	**33.6**	**25.7**	**21.6**

Upland suckler herds selling yearling calves – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	9	28	9
Average herd size (head)	83	89	62
		£ per cow	
Calf output after valuation changes	775.38	852.61	957.35
Subsidies	91.62	92.88	98.68
Gross output	**867.00**	**945.49**	**1056.03**
Less net replacement cost	82.78	81.31	83.48
Net output	**784.22**	**864.18**	**972.56**
Variable costs			
Purchased concentrates	69.66	72.83	73.38
Home-grown concentrates	39.54	44.00	15.26
Roughages purchased	41.48	45.47	22.27

	Bottom Third	Average	Top Third
Forage	98.89	95.65	112.19
Total feed and forage	*249.57*	*257.95*	*223.10*
Veterinary	64.29	55.96	52.32
Bedding	71.88	62.06	49.06
Other costs	45.09	33.79	32.26
Total variable costs	**430.83**	**409.76**	**356.74**
Gross margin	**353.39**	**454.42**	**615.82**
Fixed costs			
Labour	85.35	95.07	0.00
Contractors	57.13	38.42	42.14
Power and machinery	90.50	109.85	169.87
Property maintenance and rent	78.22	87.90	120.94
Depreciation	83.13	108.51	134.43
Finance	57.34	33.21	15.92
Administration	20.31	31.26	50.00
Total fixed costs	**471.98**	**504.22**	**533.30**
Net margin	**(-)118.59**	**(-)49.80**	**82.52**
Annual herd maintenance cost – pence per kg calf sold	25	23	21
Variable cost – pence per kg calf produced	132	118	90
Fixed cost – pence per kg calf produced	145	145	135
Unpaid family labour hours	**8hr 35min**	**14hr 55min**	**34hr 5min**

Totals may not add due to rounding

Upland suckler herds selling yearling calves – Technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	15	19	21
Barren cows %	7	6	6
% calving within 9 weeks	86	85	80
% calving within 12 weeks	91	90	86
Calves born dead or alive per 100 cows	95	96	98
Calves born dead per 100 cows	2	3	1
Calves died per 100 cows	4	3	3
Calves reared per 100 cows	89	90	94
Daily liveweight gain (kg)	1	1.0	1.1
Weight – kg per calf sold	366	386	421
Weight produced kg per cow	326	348	395
Cow replacement rate per 100 cows	15.6	16.2	14.9
Cow mortality %	1.8	1.5	1.0
Purchased concentrates kg per cow	251	273	333
Home-grown concentrates kg per cow	251	261	106
Stocking rate cows/ha	0.9	1.0	0.9
CO_2e kg/net lwt kg produced	**21.5**	**20.7**	**18.9**

Results from non-LFA lowground suckler herds

SIXTEEN NON-LFA suckler enterprises farming 1,076 cows were surveyed. They achieved an average gross margin of £438 per cow and an average net margin of £44 in a range from (-)£558 to +£199. Seven businesses, 44%, reported a positive net margin per cow a fall from the 56% of those surveyed who achieved a positive net margin last year.

- Top-third producers achieved an average gross margin of £545 per cow, £107 (24%) better than the overall average. Fixed costs per cow among the top third were £73 per cow higher than the average and thus the improvement in financial performance narrowed to £34 at net margin level.
- Top-third enterprises reared two more calves per 100 cows than the average and produced 48 kg more liveweight per cow than the average. This was largely achieved through lower barren cow rates, and slightly lower mortality among calves. They also achieved a tighter calving pattern. Cow mortality rates were similar to the average among the top-third, but the overall replacement rate was lower resulting in lower herd maintenance charges and a net output £120 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, lower sale weights.

Non LFA lowground suckler herds – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	16	5
Average herd size (head)	34	67	60
		£ per cow	
Calf output after valuation changes	620.80	754.58	865.24
Subsidies	90.24	93.77	97.30
Gross output	**711.04**	**848.35**	**962.54**
Less net replacement cost	71.24	65.41	59.77
Net output	**639.80**	**782.94**	**902.77**
Variable costs			
Purchased concentrates	112.75	56.04	73.68
Home-grown concentrates	0.00	13.60	29.25
Roughages purchased	36.95	56.72	79.32
Forage	85.52	83.79	65.98
Total feed and forage	*235.22*	*210.15*	*248.23*
Veterinary	66.82	51.62	35.22
Bedding	34.44	57.91	57.93
Other costs	56.30	25.29	16.03
Total variable costs	**392.78**	**344.97**	**357.41**
Gross margin	**247.02**	**437.97**	**545.36**
Fixed costs			
Labour	38.98	71.73	102.89
Contractors	27.22	28.75	31.96
Power and machinery	97.59	77.19	87.51
Property maintenance and rent	58.58	83.99	108.11
Depreciation	91.41	71.88	62.68
Finance	57.96	27.60	40.60
Administration	52.64	32.89	33.82
Total fixed costs	**424.38**	**394.03**	**467.57**
Net margin	**(-)177.36**	**43.94**	**77.79**

	Bottom Third	Average	Top Third
Annual herd maintenance cost – pence per kg calf sold	28	22	17
Variable cost – pence per kg calf produced	157	114	102
Fixed cost – pence per kg calf produced	169	130	134
Unpaid family labour hours	**13hrs 30min**	**8hrs 15min**	**11hr 30min**

Totals may not add due to rounding

Non LFA lowground suckler herds – Technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	18	24	25
Barren cows %	9	5	3
% calving within 9 weeks	69	80	86
% calving within 12 weeks	79	89	94
Calves born dead or alive per 100 cows	94	97	98
Calves born dead per 100 cows	4	3	2
Calves died per 100 cows	4	1	1
Calves reared per 100 cows	86	93	95
Daily liveweight gain (kg)	1.1	1.1	1.1
Weight – kg per calf sold	290	324	367
Weight produced kg per cow	250	302	350
Cow replacement rate per 100 cows	16.4	12.9	8.5
Cow mortality %	0	1	1
Purchased concentrates kg per cow	503	288	390
Home-grown concentrates kg per cow	0	86	193
Stocking rate GLU/ha	1.5	1.5	1.7
CO_2e kg/net lwt kg produced	**21.1**	**21.5**	**20.5**

Results from rearer finisher enterprises

IN THE case of these 21 enterprises farming 2,248 cows, the reported margins relate to the costs and income for a 12-month period to the end of April 2022.

The businesses surveyed produced an average gross margin per cow of £703, within a range from £571 to £924 per cow, and an average net margin of £137 per cow. Eighteen (85%) enterprises reported a positive net margin, up from 64% that achieved this objective last year.

- The top-third producers ranked by gross margin per cow achieved a net output £101 higher than the average. This was largely through the production of 11% more saleable output per cow through selling heavier cattle at higher sale prices per kg lwt than the average.
- While achieving a higher yield per cow, those among the top-third had higher cow mortality rates and a higher number of calves born dead or dying. To achieve the level of calves born dead or alive required a number of twin births which may have contributed to the level of mortality among cows and calves.
- Although higher cow mortality rates for top-third enterprises would have pushed up herd maintenance costs, this was more than offset by an increased yield per cow, resulting in higher net output for the top-third.
- Despite higher yield per cow, top-third producers achieved this with marginally lower variable costs. Fixed costs among the top third though were £75 (13%) per cow higher than the average, principally due to higher property, depreciation and finance charges.
- Those businesses in the bottom third had the highest variable cost base while their fixed cost base was lower than the average. This group had higher calf mortality rates than the average, but lower than the top-third. Nevertheless, they did have the highest barren cow rate and the lowest calf rearing rate, rearing one calf less than the average and four fewer than the top-third, while having the highest feed and forage costs.

Rearer finisher herds – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	7	21	7
Average herd size (head)	97	107	68
		£ per cow	
Calf output after valuation changes	1211.19	1282.05	1393.17
Subsidies	92.68	93.47	94.21
Gross output	**1303.87**	**1375.52**	**1487.38**
Less net replacement cost	69.89	67.58	77.65
Net output	**1233.98**	**1307.94**	**1409.73**
Variable costs			
Purchased concentrates	182.96	178.47	174.31

	Bottom Third	Average	Top Third
Home-grown concentrates	94.13	72.35	77.38
Roughages purchased	55.06	67.41	68.73
Forage	97.06	92.64	87.71
Total feed and forage	*429.21*	*410.87*	*408.13*
Veterinary	63.43	54.10	51.41
Bedding	90.07	79.24	72.18
Other costs	58.77	60.57	56.81
Total variable costs	**641.48**	**604.78**	**588.53**
Gross margin	**592.50**	**703.16**	**821.20**
Fixed costs			
Labour	100.85	111.81	93.86
Contractor	36.45	45.76	47.02
Power and machinery	121.24	116.98	143.10
Property maintenance and rent	69.53	109.50	119.46
Depreciation	100.78	107.93	143.46
Finance	32.93	19.67	31.42
Administration	42.32	54.80	62.70
Total fixed costs	**504.10**	**566.45**	**641.01**
Net margin	**88.40**	**136.71**	**180.19**
Annual herd maintenance cost – pence per kg calf sold	15	13	13
Variable cost – pence per kg calf sold	133	114	100
Fixed cost pence – pence per kg calf sold	105	107	109
Unpaid family labour hours	**9hrs**	**10hrs 30min**	**16hrs 30min**

Totals may not add due to rounding

Rearer finisher herds – Technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	29	26	19
Barren cows %	9	5	4
% calving within 9 weeks	61	74	69
% calving within 12 weeks	73	85	82
Calves born dead or alive per 100 cows	96	96	101
Calves born dead per 100 cows	3	3	4
Calves died per 100 cows	2	1	2

	Bottom Third	Average	Top Third
Calves reared per 100 cows	91	92	95
Daily liveweight gain (kg)	1.1	1.0	1.0
Weight – kg per calf sold finished	569	614	644
Weight reared kg per cow per year	482	530	587
Cow replacement rate per 100 cows	10.5	13.1	15.0
Cow mortality %	0.9	1.3	2.7
Purchased concentrates kg per cow	939	922	661
Home-grown concentrates kg per cow	588	428	482
Stocking rate cows/ha	1.1	1.2	1.3
Selling price p/kg dwt finished	375	386	399
CO_2e kg/net lwt kg produced	**16.9**	**18.3**	**15.7**

Cattle Finishing

Results from cereal-based cattle finishing enterprises

SEVENTEEN CEREAL-BASED cattle finishing enterprises were surveyed. They sold 1,116 cattle and achieved an average gross margin of £242 per animal. The average net margin among those surveyed was £142 per head and ranged from (-)£60 to £355 per head. Fifteen businesses (88%) reported a positive net margin, up from 75% last year.

- Enterprises in the top third of those surveyed had a net output £139 per animal better than the average and £252 better than the bottom third. They achieved the best growth rates but started with the lightest weight cattle. This resulted in the top-third finishing cattle 13 days quicker than the average while selling them 7kg heavier. The top-third had the highest proportion of young bulls in the kill – 80% of sales compared to 59% 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 also 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 £124 per animal finished. Fixed costs were also slightly higher leading to a net margin £260 per head, £118 higher than the average.
- Those in the bottom third had the shortest finishing period, starting with the heaviest cattle, at highest cost, but selling the lightest cattle with the lowest contribution from young bulls. However, while variable costs were lower than the top-third, they were higher than the average. Combined with higher store costs, this resulted in a gross margin £124 per head lower than the average. Lower fixed costs than the average trimmed the difference in net margin between the average and the bottom-third to £53.

Cereal-based cattle finishing enterprises – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	6	17	6
Average herd size (head)	56	66	67
		£ per head	
Stock sales	**1472.02**	**1520.30**	**1544.71**
Less stock purchases	866.67	801.85	688.10
Net output	**605.35**	**718.45**	**856.61**
Variable costs			
Purchased concentrates	137.00	199.58	308.96
Home-grown concentrates	199.10	114.76	18.70
Other feeds	25.82	32.03	35.09
Forage	10.35	7.03	0.24
Total feed and forage	*372.27*	*353.40*	*362.99*
Veterinary	18.68	18.71	22.47
Bedding	39.56	48.99	49.38
Other costs	57.08	55.22	55.83
Total variable costs	**487.59**	**476.32**	**490.67**
Gross margin	**117.76**	**242.13**	**365.94**
Fixed costs			
Labour	19.81	24.59	22.74
Contractors	16.65	16.50	12.17
Power and machinery	15.50	17.16	19.36
Property maintenance and rent	10.60	13.80	18.19
Depreciation	10.60	15.13	16.83
Finance	6.87	4.79	3.80
Administration	5.96	8.24	12.67
Total fixed costs	**88.61**	**100.21**	**105.76**
Net margin	**29.15**	**141.92**	**260.18**
Stores purchased – pence per kg lwt sold	135	123	105
Variable cost – pence per kg lwt sold	76	73	75
Fixed cost – pence per kg lwt sold	14	15	16
Unpaid family labour hours	**1hr 55min**	**1hr 40min**	**1hr 35min**

Totals may not add due to rounding

Cereal-based cattle finishing enterprises – Technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	219	234	221
Start weight (kg lwt)	328	317	310
Finish weight (kg lwt)	638	650	657
Daily liveweight gain (kg)	1.4	1.4	1.6
Mortality (%)	1.2	0.8	0.7
Purchased concentrates kg/head	536	1079	1754
Home-grown concentrates kg/head	1059	618	110
Purchase price (p per kg lwt)	261	251	220
Sale price sold dwt (p/kg dwt)	397	404	408
Sales			
Steers % of sales	12	27	0
Liveweight at sale	647	659	0
Steer selling price p/kg dwt	364	406	0
Heifers % of sales	22	14	20
Liveweight at sale	570	572	582
Heifer selling price p/kg dwt	398	401	402
Young bulls % of sales	66	59	80
Liveweight at sale	659	664	675
Young bull selling price p/kg dwt	403	403	410
CO_2e kg/net lwt kg produced	**10.8**	**10.9**	**11.9**

Results from forage-based cattle finishing enterprises

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

The first group, selling younger cattle, comprises 17 businesses finishing an average of 134 cattle, and the second group, selling older cattle, comprises 20 businesses but with an average size of 78 cattle.

- Those selling younger cattle reported a gross margin of £236 per animal sold, falling to a net margin of £29 per animal sold; 13 (76%) of the businesses in this group achieved a positive net margin, up from the 63%

achieving a positive net margin last year. Their counterparts selling older cattle reported a gross margin of £261 per head and a net margin of £69, thirteen businesses (65%) in this group achieved a positive net margin, up from 55% that achieved this objective last year.

- Both groups started with cattle of similar weight. Nevertheless, those selling younger cattle finished them around 14 weeks quicker than those selling older cattle while selling them 18kg heavier than the longer keep group.
- Those in the top-third of performers showed an improvement in net margin of £132 per animal among those selling younger cattle, delivering a net margin of £161 per head. In contrast, those in the top-third group of enterprises selling older cattle achieved a net margin £100 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, 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 achieved a 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 £42 lower than the average, mainly through lower bedding costs but also concentrate feed. Fixed costs though were higher as a consequence of the longer feeding period; up £12 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, contributing to the highest net output. Longer keep did, however, lead to higher variable costs and fixed costs.

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

	Bottom Third	Average	Top Third
Number in sample	6	17	6
Average herd size (head)	163	134	107
		£ per head	
Stock sales	**1472.23**	**1411.05**	**1421.96**
Less stock purchases	966.18	840.90	750.13
Net output	**506.05**	**570.15**	**671.83**
Variable costs			
Purchased concentrates	116.38	109.33	84.42
Home-grown concentrates	149.95	103.98	94.73
Other feeds	22.40	20.94	19.73
Forage	8.20	20.96	39.60

	Bottom Third	Average	Top Third
Total feed and forage	*296.93*	*255.21*	*238.48*
Veterinary	9.41	11.29	10.95
Bedding	53.28	40.13	11.48
Other costs	29.80	27.50	30.83
Total variable costs	**389.42**	**334.13**	**291.74**
Gross margin	**116.63**	**236.02**	**380.09**
Fixed costs			
Labour	47.70	42.21	53.56
Contractors	8.20	16.23	32.83
Power and machinery	45.99	38.79	25.10
Property maintenance and rent	22.14	31.12	37.02
Depreciation	47.76	45.04	50.98
Finance	19.19	14.88	4.93
Administration	16.80	18.31	14.28
Total fixed costs	**207.78**	**206.58**	**218.70**
Net margin	**(-)91.15**	**29.44**	**161.39**
Stores purchased – pence per kg lwt sold	147	131	116
Variable cost – pence per kg lwt sold	59	52	45
Fixed cost – pence per kg lwt sold	32	32	34
Unpaid family labour hours	**2hr 15min**	**2hr 55min**	**1hr 35min**

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)	223	267	302
Start weight (kg lwt)	409	364	313
Finish weight (kg lwt)	656	640	645
Daily liveweight gain (kg)	1.1	1.0	1.1
Mortality (%)	0.6	0.7	0.1
Purchased concentrates kg/head	494	499	330
Home-grown concentrates kg/head	864	638	687
Purchase price (p per kg lwt)	235	233	239
Sale price sold dwt (p/kg dwt)	387	386	380
Sales			
Steers % of sales	32	26	39
Liveweight at sale	653	670	685
Steer selling price p/kg dwt	367	374	382
Heifers % of sales	68	74	61
Liveweight at sale	658	628	619
Heifer selling price p/kg dwt	396	390	379
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	**15.9**	**14.8**	**11.5**

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

	Bottom Third	Average	Top Third
Number in sample	7	20	7
Average herd size (head)	131	78	48
		£ per head	
Stock sales	**1412.98**	**1420.04**	**1421.08**
Less stock purchases	908.94	853.19	699.34
Net output	**504.04**	**566.85**	**721.74**
Variable costs			
Purchased concentrates	82.15	111.41	149.01

	Bottom Third	Average	Top Third
Home-grown concentrates	59.76	46.75	21.85
Other feeds	15.83	17.90	24.34
Forage	55.27	41.79	27.12
Total feed and forage	*213.01*	*217.85*	*222.32*
Veterinary	12.50	15.28	24.51
Bedding	34.36	32.92	30.54
Other costs	37.70	40.03	37.76
Total variable costs	**297.57**	**306.08**	**315.13**
Gross margin	**206.47**	**260.77**	**406.61**
Fixed costs			
Labour	26.23	25.95	33.00
Contractors	28.66	26.75	33.78
Power and machinery	30.83	41.24	61.44
Property maintenance and rent	30.89	33.06	25.22
Depreciation	40.91	38.20	26.43
Finance	2.01	9.64	26.10
Administration	8.40	16.38	30.83
Total fixed costs	**167.93**	**191.22**	**236.80**
Net margin	**38.53**	**69.55**	**169.81**
Stores purchased – pence per kg lwt sold	146	137	114
Variable cost – pence per kg lwt sold	48	49	51
Fixed cost – pence per kg lwt sold	27	31	38
Unpaid family labour hours	**5hr 35 min**	**5hr 45min**	**5hr 20 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)	353	370	443
Start weight (kg lwt)	398	363	268
Finish weight (kg lwt)	621	622	612
Daily liveweight gain (kg)	0.6	0.7	0.8
Mortality (%)	1.6	1.5	1.5
Purchased concentrates kg/head	360	511	662
Home-grown concentrates kg/head	328	266	152
Purchase price (p per kg lwt)	225	232	257
Sale price sold dwt (p/kg dwt)	392	393	400
Sales			
Steers % of sales	65	54	42
Liveweight at sale	640	642	650
Steer selling price p/kg dwt	391	392	396
Heifers % of sales	35	46	58
Liveweight at sale	590	600	585
Heifer selling price p/kg dwt	397	395	404
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	**15.9**	**13.1**	**8.9**

Sheep Enterprises

Results from LFA hill ewe flocks

THIS GROUP of enterprises will largely consist of purebred Blackface and Cheviot flocks being farmed on some of Scotland's most disadvantaged land. The sample covered 27 such flocks farming over 22,000 ewes. These flocks are characterised by low lambing percentages, averaging 89% lambs reared within a range of 53% to 138%. The average gross margin achieved across this group was £32 per ewe, while the average net margin was (-)£14 per ewe within a range of (-)£75 to £49 per ewe. Nine producers (33%) 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 £23 over the average is largely due to:
  - A higher number of lambs reared – 20 more lambs per ewe than average
  - Benefited from lower mortality of both lambs and ewes
  - Lambs were sold at a slightly higher weight which combined with higher rearing rates led to 31% 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 to 9%) 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 £22 per ewe more income.
- Higher productivity among the top-third producers did lead to higher feed costs and higher veterinary costs, although total variable costs were little different from the average. Fixed costs per ewe among the top-third were equally little different from the average thus, the higher net margins were purely driven by higher flock productivity.
- Bottom third producers achieved a gross margin £26 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; 67 lambs reared per 100 ewes compared to the average of 89. Lambs were sold at a lower weight than the average which combined with lower volumes for sale reduced production per ewe to 21kg per ewe – 7kg lower than the average. Variable costs were £1 per ewe higher than the average, while fixed costs were £2 higher, resulting in a net margin among the bottom third of (-)£42 per ewe working out at £28 per ewe worse than the average. However, it must be recognised that all 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	9	27	9
Flock size	786	818	638
		£ per ewe	
Lamb sales	35.33	62.19	84.45
Wool	0.21	0.48	0.67

	Bottom Third	Average	Top Third
Gross output	**35.54**	**62.67**	**85.12**
Less replacement costs	9.36	10.88	10.44
Net output	**26.18**	**51.79**	**74.68**
Variable costs			
Purchased concentrates	5.28	4.70	6.07
Home-grown concentrates	0	0.00	0
Other feeds	2.57	2.10	1.31
Forage	1.07	1.00	1.45
Total feed and forage	*8.92*	*7.80*	*8.83*
Veterinary	5.75	6.34	6.42
Bedding	0	0.04	0.06
Other costs	5.93	5.58	4.31
Total variable costs	**20.60**	**19.75**	**19.62**
Gross margin	**5.58**	**32.04**	**55.06**
Fixed costs			
Labour	11.66	15.55	15.61
Contractors	2.45	1.83	1.71
Power and machinery	9.38	8.94	9.56
Property maintenance and rent	9.27	8.20	6.37
Depreciation	10.27	8.22	9.27
Finance	0.90	0.48	0.70
Administration	3.63	2.40	2.46
Total fixed costs	**47.58**	**45.62**	**45.68**
Net margin	**(-)42.00**	**(-)13.58**	**9.38**
Flock replacements – pence per kg lamb produced	44	39	28
Variable cost – pence per kg lamb produced	97	71	53
Fixed cost – pence per kg lamb produced	224	163	124
Unpaid family labour hours	**1hr 5min**	**1hr 5min**	**2hr 30min**

Totals may not add due to rounding

LFA hill ewe flocks – Technical performance

	Bottom Third	Average	Top Third
Ewes per ram	26	26	21
Ewe mortality %	5.4	5.7	4.7
Ewe replacement rate %	25.9	25.9	17.0
Lambs born dead or alive per 100 ewes	85	99	115
Lamb mortality (inc. born dead) per 100 ewes	18	10	6
Lambs reared per 100 ewes	67	89	109
Average weight of lambs kg	31.6	31.6	33.7
Weight of lamb produced per ewe kg	21.2	28.0	36.7
Purchased concentrates kg/ewe	18	17	25
Home-grown concentrates kg/ewe	0	0	0
Lambs sold finished per 100 ewes	0	9	17
Value per lamb £/head	0.00	74.32	75.21
Lambs sold/transferred store per 100 ewes	37	44	52
Value per lamb £/head	51.66	66.38	73.54
Lambs sold/transferred for breeding per 100 ewes	31	35	40
Value per lamb £/head	53.64	73.84	83.66
CO_2e kg/net lwt kg produced	**22.8**	**17.7**	**16.8**

Results from LFA upland ewe flocks

LFA UPLAND breeding flocks are identified as LFA farms running crossbred flocks. Thirty-two such flocks were recorded in this survey, which collectively farmed some 17,050 ewes. These enterprises achieved an average gross margin of £85 per ewe and an average net margin of £34 per ewe. Twenty-eight of the businesses surveyed (87%) returned a positive net margin within a range (-)£49 to £87 per ewe compared to 85% who achieved this objective last year.

- Producers in the top third produced a gross margin of £108 per ewe, 27% 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 (+£17 per ewe) and reduced variable costs (£6 per ewe less). Higher output reflected a higher lamb rearing rate leading to a 4kg higher production per ewe. Higher output was also helped by a larger proportion of lambs sold finished – 73% compared to the 57% average across the whole sample. The average sale price was also slightly higher.

- Lower variable costs were primarily the result of lower use of purchased feeds and lower forage costs, but the group also paid lower veterinary charges.
- Flock performance among the bottom-third was below the average, rearing 129 lambs per 100 ewes compared to the average of 142. Slightly fewer lambs were sold finished at a lower weight and price than the average. This contributed to a lower sales revenue of £21 per head. Variable costs were also £6 per ewe higher than the average, driven mainly by higher veterinary costs although higher feed and forage costs contributed as well. As a consequence, the gross margin among the bottom third was £28 lower than the average.
- Fixed costs among the top third were the highest among the surveyed enterprises particularly expenditure on labour, contractors and machinery maintenance
- Those in the bottom third carried lower fixed costs than the average with only power and machinery charge higher than the average.

LFA upland ewe flocks – Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	11	32	11
Flock size	455	533	521
		£ per ewe	
Lamb sales	115.10	136.29	152.45
Wool	1.29	1.12	0.98
Gross output	**116.39**	**137.41**	**153.43**
Less replacement costs	15.27	13.93	12.86
Net output	**101.12**	**123.48**	**140.57**
Variable costs			
Purchased concentrates	11.75	10.36	8.92
Home-grown concentrates	1.19	0.54	0.59
Other feeds	3.04	2.15	1.32
Forage	5.68	6.97	5.92
Total feed and forage	*21.66*	*20.02*	*16.75*
Veterinary	12.56	9.90	9.20
Bedding	1.23	0.95	0.32
Other costs	8.69	7.18	6.06
Total variable costs	**44.14**	**38.05**	**32.33**
Gross margin	**56.98**	**85.43**	**108.24**

	Bottom Third	Average	Top Third
Fixed costs			
Labour	8.03	8.77	9.07
Contractors	5.27	5.40	6.72
Power and machinery	12.21	9.97	10.55
Property maintenance and rent	8.86	10.54	10.86
Depreciation	9.66	10.20	8.55
Finance	3.04	3.06	2.73
Administration	3.17	3.46	4.46
Total fixed costs	**50.24**	**51.40**	**52.94**
Net margin	**6.74**	**34.03**	**55.30**
Flock replacements – pence per kg lamb produced	32	24	21
Variable cost – pence per kg lamb produced	92	67	53
Fixed cost – pence per kg lamb produced	105	91	87
Unpaid family labour hours	**1hr 15min**	**1hr 5min**	**1hr 10min**

Totals may not add due to rounding

LFA upland ewe flocks – Technical performance

	Bottom Third	Average	Top Third
Ewes per ram	20	29	36
Ewe mortality %	5.4	4.5	3.1
Ewe replacement rate %	28.5	24.7	23.1
Lambs born dead or alive per 100 ewes	140	157	155
Lamb mortality (inc. born dead) per 100 ewes	11	15	9
Lambs reared per 100 ewes	129	142	146
Average weight of lambs kg	37.2	39.6	41.5
Weight of lamb produced per ewe kg	48.0	56.3	60.8
Purchased concentrates kg/ewe	39	34	30
Home-grown concentrates kg/ewe	8	4	4
Lambs sold finished per 100 ewes	56	80	107
Value per lamb £/head	95.37	102.72	106.61

	Bottom Third	Average	Top Third
Lambs sold/transferred store per 100 ewes	45	36	10
Value per lamb £/head	78.20	78.07	71.71
Lambs sold/transferred for breeding per 100 ewes	28	25	29
Value per lamb £/head	94.41	100.55	108.03
CO_2e kg/net lwt kg produced	**14.8**	**12.7**	**11.8**

Results from lowground breeding flocks

THE 13 businesses in the survey farmed some 5,600 ewes. Two of the flocks in this group recorded a negative net margin, the average was £30 per ewe within a range from (-)£8 to £63 per ewe.

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 trends do emerge including:

- Better financial returns tend to be associated with high physical performance, and lower barren ewe rates, 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 as those with the best gross margins had lower-than-average variable costs, particularly feed and veterinary costs. While those with the thinnest margins often had below-average variable costs, lower output outweighed cost control, squeezing margins.
- Fixed costs per ewe were lowest among those with the lowest gross margins, thus recovering some of the difference at gross margin level. Those with the highest gross margins tended to have good control of fixed costs that were little different from the average.

Lowground ewe flocks – Financial performance measures

	Average
Number in sample	13
Flock size	430
	£ per ewe
Lamb sales	**161.69**
Wool	1.52
Gross output	**163.21**

Sheep Enterprises (continued)

	Average
Less replacement costs	15.21
Net output	**148.00**
Variable costs	
Purchased concentrates	18.08
Home-grown concentrates	4.04
Other feeds	4.83
Forage	12.37
Total feed and forage	*39.32*
Veterinary	10.47
Bedding	1.82
Other costs	10.09
Total variable costs	**61.70**
Gross margin	**86.30**
Fixed costs	
Labour	12.36
Contractors	5.20
Power and machinery	9.53
Property maintenance and rent	12.25
Depreciation	11.10
Finance	2.06
Administration	3.77
Total fixed costs	**56.27**
Net margin	**30.03**
Flock replacements – pence per kg lamb produced	24
Variable cost – pence per kg lamb produced	97
Fixed cost – pence per kg lamb produced	89
Unpaid family labour hours	**1hr 5min**

Lowground ewe flocks – Technical performance

	Average
Ewes per ram	26
Ewe mortality %	5
Ewes replacement rate %	24.8
Lambs born dead or alive per 100 ewes	174
Lamb mortality (inc. born dead) per 100 ewes	22
Lambs reared per 100 ewes	153
Average weight of lambs kg	41.3
Weight of lamb produced per ewe kg	63.3
Purchased concentrates kg/ewe	61
Home-grown concentrates kg/ewe	24
Lambs sold finished per 100 ewes	112
Value per lamb £/head	109.93
Lambs sold/transferred store per 100 ewes	19
Value per lamb £/head	86.00
Lambs sold/transferred for breeding per 100 ewes	22
Value per lamb £/head	99.69
CO_2e kg/net lwt kg produced	**11.5**

Results from store lamb finishing enterprises

THIRTEEN STORE lamb finishing businesses, selling some 5,700 lambs, achieved an average gross margin of £15 per lamb. Net margins averaged nearly £10.50 per lamb, with all enterprises delivering a positive net margin in a range from £3 to £35 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, which was similar to the average of the whole group, while lower margins were associated with slightly lower sale weights.
- Top performers tended to be longer keep systems. Although the total cost of feed and forage tended to be below average, veterinary costs were higher, and this may have contributed to lower mortality rates among those with higher margins.
- Longer keep did not, though, lead to higher fixed costs.

Store lamb finishing – Financial performance measures

	Average
Number in sample	13
Flock size	443
Lamb sales	**103.06**
Less purchases	75.44
Net output	**27.62**
Variable costs	
Purchased concentrates	3.97
Home-grown concentrates	0.00
Other feeds	0.35
Forage	2.25
Total feed and forage	*6.57*
Veterinary	1.44
Bedding	0.30
Other costs	4.72
Total variable costs	**13.03**
Gross margin	**14.59**
Fixed costs	
Labour	1.17
Contractors	0.46
Power and machinery	0.82
Property maintenance and rent	0.56
Depreciation	0.77
Finance	0.11
Administration	0.24
Total fixed costs	**4.13**
Net margin	**10.46**
Lambs purchased – pence per kg lwt lamb sold	189
Variable cost – pence per kg lwt lamb sold	33
Fixed cost – pence per kg lwt lamb sold	10
Unpaid family labour hours	**5 mins**

Totals may not add due to rounding

Store lamb finishing – Technical performance

	Average
Weight of lamb purchased kg	32
Liveweight of lamb sold	40
Carcase weight of lamb sold	18.7
Sale price p/kg dwt	548
Daily liveweight gain kg/day	.07
Finishing period – days	110
Mortality %	2.5
Purchased concentrates kg/lamb	14
Home-grown concentrates kg/lamb	0
CO_2e kg/net lwt kg produced	**16.5**

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, although the gap narrowed in 2021. For heifers, where -U grade carcase weights are low enough to avoid carcase weight penalties, -U3 heifers extended their lead over R4L grades beyond the 5% mark.

An improvement in carcase quality from O+4H to R4L continued to be worth around 13p/kg for heifers in 2021 but it fell back significantly for steers.

As of early October, the steer price differentials have widened year-on-year, whereas they have narrowed 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 2021, 94.3% of steer carcases and 97.3% of heifer carcases were graded in this range, down slightly from 2020. There were also declines in the proportion of steer and heifer carcases grading E, U or R and 3 or 4L, slipping back to a respective 68.3% and 59.8%. The falls were driven by both conformation and fat cover for steers, and conformation for heifers.

R4L continued to be the most common grade for steers and heifers at Scottish abattoirs in 2021, but for young bulls, R3 overtook the -U3 grade. One-third of the price-reported heifers graded at R4L in 2021 compared to 29.4% of steers, while 21.5% of young bulls graded at R3.

	Average -U3 premium over R4L (p/kg)			Average R4L premium over O+4H (p/kg)		
	2019	2020	2021	2019	2020	2021
Steer	-1.5	-1.3	-0.3	14.8	15.0	9.5
Heifer	4.0	4.8	5.4	12.8	13.2	12.9

Steer carcases by grade at Scottish abattoirs in 2021			
	3	4L	4H
-U	8.6%	11.5%	1.7%
R	16.3%	29.4%	6.7%
O+	5.0%	7.7%	1.1%

Others: 12.0%
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. While remaining within its narrow range over the past decade, the U2 to R3L premium did soften to a seven-year low. However, the R3L premium over O3H rebounded slightly after slumping to a 10-year low in 2020.

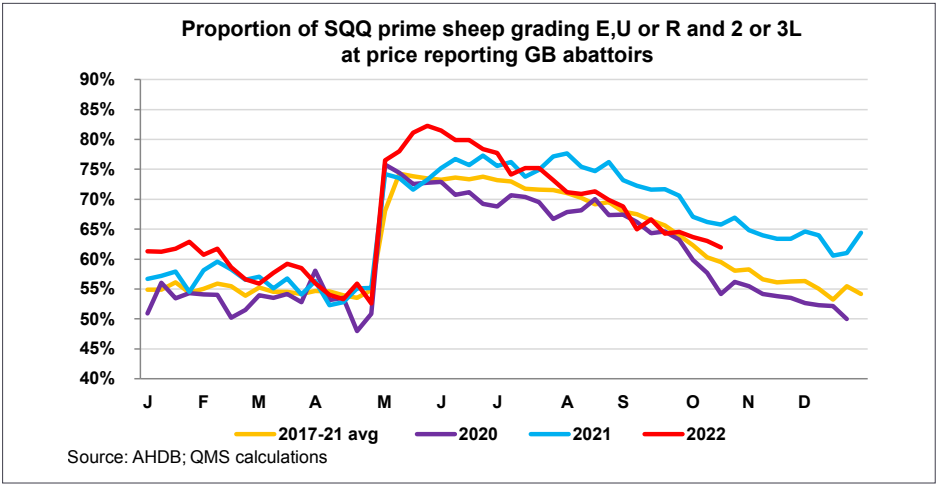
	Average U2 premium over R3L (p/kg)			Average R3L premium over O3H (p/kg)		
	2019	2020	2021	2019	2020	2021
Lambs	11.1	11.7	10.0	12.7	10.7	11.3

Up to early October 2022, these premia have narrowed slightly compared to a year earlier.

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 2021, carcase quality jumped higher at GB price-reporting abattoirs, with 66.8% of SQQ[3] carcases grading at E, U or R for conformation and 2 or 3L for fat cover, up from 60.9% in 2020.

In the first third of the year, around 56% of hogg carcases were in this range. For



3 *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. Based on new seasons lambs from the beginning of May.*

new season lambs, quality peaked unusually late at the start of August (78%) before its seasonal slide began, but it continued to show a significant improvement on previous levels for the time of year right up until the end of 2021.

In general, carcases were significantly leaner than in 2020 but conformation rebalanced towards R grades from E and U.

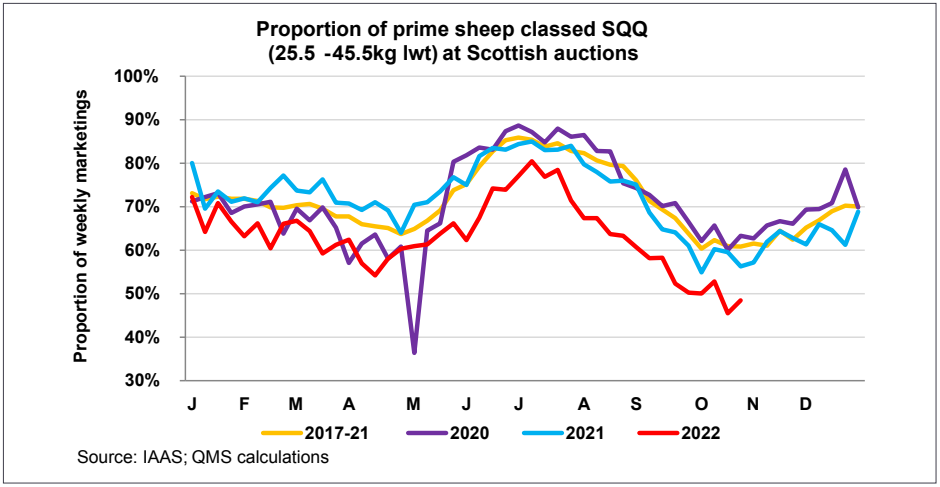
Moving into 2022, hogg carcase quality continued to show year-on-year improvement, though the gap did narrow to an average of two percentage points between January and April. This quality improvement was maintained in the early weeks of the new season but had petered out by late-July. With a more normal seasonal reduction occurring, quality then averaged five percentage points below 2021 between August and early October, though it did hold above 2020 levels.

R3L strengthened its position as the most common grade in 2021, with R2 taking over from R3H as the second most common, having been in fourth and also behind U3L in 2020.

SQQ Lamb carcases by grade at GB price-reporting abattoirs in 2021			
	2	3L	3H
U	3.5%	12.1%	4.6%
R	14.8%	34.8%	12.9%
O	4.9%	5.4%	1.5%

Others: 5.4%
Source: AHDB; QMS calculations

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 to 7% in the



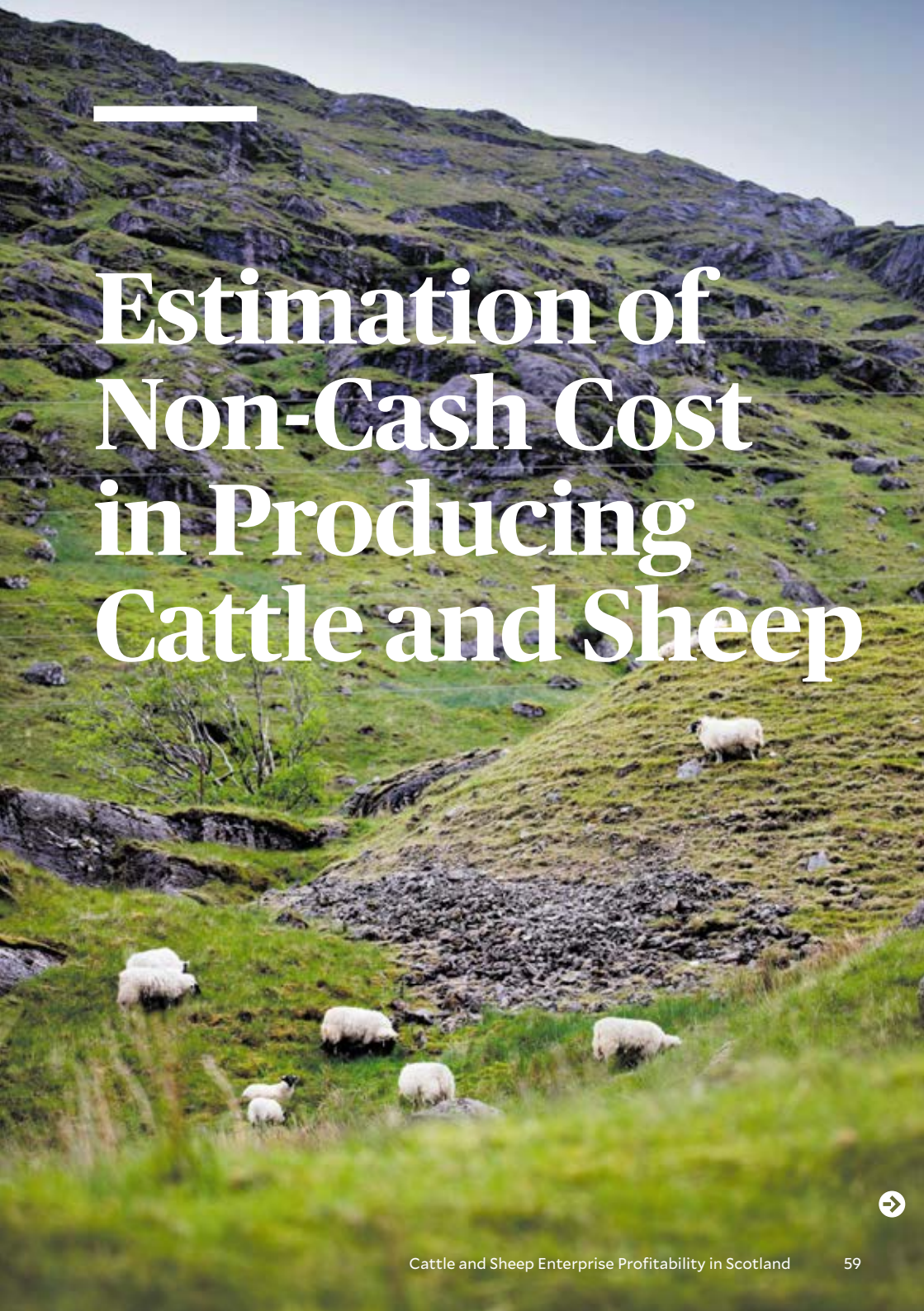
The Effect of Quality on Prices (continued)

previous week. These proportions were similar in 2022, with peak procurement taking place in the first week of July.

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. After an increase of nearly five percentage points to 70.7% in 2020, this proportion softened slightly to 70.0% in 2021.

With the vast majority of lambs sold outwith the SQQ range being to the heavy side, it suggests that hoggs were lighter than usual in 2021, with new season lambs then proving heavier than usual.

In 2022, the hogg selling period saw a considerably smaller share of lambs fall into the target range at Scottish marts, pointing to higher weights. This has continued for the 2022 lamb crop, with 2022 being the second consecutive year to show a significant rise in heavy lambs being traded through the summer and into the autumn, compared to a year earlier. This fits with the pattern of higher carcase weights at Scottish abattoirs in summer 2022.



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 2020 Scottish Agricultural Survey[4]. 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[5]. One hour of labour has been valued at £17.80 – an increase of 2.2% on the year, in line with the increase agreed by the Scottish Agricultural Wages Board for 2021.

Cattle enterprises

	Unpaid labour	Return on working capital[6]	Rent of land and buildings
		p/kg liveweight sold	
Hill suckler herds	147	22	26
Upland suckler herds selling calves at weaning	58	26	17
Upland suckler herds selling yearlings	76	23	14
Lowground suckler herds	50	27	24
Rearer finisher herds	35	17	15
Cereal-based store finishing	5	8	2
Forage-based store finishing <22 months old	8	9	3
Forage-based store finishing >22 months old	16	9	5

4 *"December 2020 Scottish Agricultural Survey" Scottish Statistical Publication March 2021*
5 *47-hour average week, assuming five weeks of leave*
6 *Return required to give a 5% return on working capital*

Sheep enterprises

	Unpaid labour	Return on working capital[7]	Rent of land and buildings
		p/kg liveweight sold	
Hill flocks	68	21	6
Upland flocks	34	13	9
Lowground non-LFA flocks	30	14	15
Store lamb finishers	4	3	2

Total cost of producing a kilogramme of beef or sheepmeat

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 kilogramme of beef or sheepmeat. However, before doing this all enterprises need to be brought to a common standard. Thus, finance charges and rents paid have been excluded from the fixed costs of the enterprises surveyed in making the following estimate. They have been replaced by the imputed value for return on working capital and rental value for the land used for the livestock enterprise, 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 kilogramme 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, upland ewe flocks and cereal-based store cattle 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
	Replacement costs	Variable costs	Fixed costs	Labour	Working capital	Rental value		
				Pence per kg liveweight sold				
Sheep enterprises								
Store lambs	189	33	10	4	3	2	241	257
Hill ewe	39	71	148	68	21	6	353	222
Upland ewe	24	67	73	34	13	9	220	240
Lowland	24	97	78	30	14	15	258	255
Cattle enterprises								
Hill suckler	25	117	165	147	22	26	502	257

7 *Return required to give a 5% return on working capital*

Estimation of Non-Cash Cost in Producing Cattle and Sheep (continued)

	Non-cash estimates						Total Cost	Selling price
	Replacement costs	Variable costs	Fixed costs	Labour	Working capital	Rental value		
Upland selling at weaning	27	83	132	58	26	17	343	247
Upland selling yearlings	23	118	127	76	23	14	381	246
Non LFA suckler	22	114	116	50	27	24	353	250
Rearer finisher	13	114	96	35	17	15	290	242
Forage finisher <22 month	131	52	29	8	9	3	232	224
Forage finisher >22 month	137	49	28	16	9	5	244	228
Cereal finisher	123	73	14	5	8	2	225	234

Labour based on £17.80 per hour and 2,200 hours per man-year (£39,160 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 2019 and 2020

The following tables summarise and compare the results from the 2021 calf and lamb crop with those of 2019 and 2020. 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 physical performance little changed on the year, but firm market prices saw net output rise 11%. Inflation in input costs however saw variable costs rise 17%, with steep rises in forage costs (32%) and total feed and forage (23%). The rise in variable costs trimmed back the rise in output, resulting in the gross margin rising 8%. Fixed cost inflation was less, at 10%, but was still sufficient to offset the gain in gross margin with net margin falling by £5 per head although it did remain positive.
- Hill sucker herds selling weaned calves saw significant improvement in margins. Productivity increased, as did growth rates and market prices climbed 27%, resulting in a significant increase in output. However, variable costs also climbed steeply by 26% with particularly steep climbs in bedding, veterinary costs and forage. Nevertheless, higher market returns more than offset increased variable costs leading to higher gross margins. In contrast, fixed costs were kept firmly under control. Still, despite a second year of improvement, net margins remained in negative territory.
- The two groups of upland herds had contrasting fortunes. Those selling weaned calves saw an increase in net margin for a second year, driven largely by better productivity than in the previous two years but, uniquely among the enterprise types, they trimmed variable costs. Those selling yearling calves, while having slightly higher productivity, did not benefit from significant year-on-year gains in sale prices and indeed sold calves slightly lighter. Longer retention may also have contributed to the increase in variable costs recorded. Both groups saw an increase in fixed costs of around 8% which, for those selling yearlings, led to negative net margins. Those selling weaned calves in contrast maintained positive net margins.

Cattle finishing

- Rearer finisher margins increased for a second year, largely as a consequence of better herd productivity and higher market returns, which led to a 16% increase in net output. Variable costs climbed 7% with significantly higher concentrate feed costs and vet costs. Fixed costs climbed 9%. Nevertheless, the higher output more than offset the higher cost base.
- Store cattle finishers all saw gains in net margins to the highest levels for three years and, for the first time in three years, all groups achieved a positive net margin. The improvement in margins in all cases is dominated by the significant improvement in market prices.
- Forage-based systems saw some reduction in variable costs and improved gross margins per head; however, a longer finishing period on the year for the long keep systems meant that their gross margin per day was unchanged on the year. The longer keep systems, unusually, reported lower fixed costs, as did the intensive finishers. Intensive finishers faced higher variable costs, particularly higher feed costs.

Sheep enterprises

LFA sheep

- Hill sheep flocks reported significant improvement in net margins. Productivity, measured as lamb weaning percentage, was little different to 2020. A slightly higher proportion of lambs were sold finished, but at lower weights, than in 2020 and fewer store lambs. Nevertheless, firm market prices meant that net output climbed £5 per ewe. Variable and fixed costs reduced by 4% and 2% respectively and, combined with the higher market returns, this led to net margins rising by £7 per ewe and despite being the best since the 2017 lamb crop they remained negative.
- Upland flocks also saw marginal decline in productivity for a second year with lamb weaning rates dropping back by four lambs per 100 ewes. A higher proportion of the lamb crop was sold finished delivering market returns some 17% higher than in the previous year. Store lamb market returns also increased; by 9%. Consequently, net output climbed almost £18 per ewe. Variable costs fell slightly, boosting gross margins. However, fixed costs rose 8%, almost offsetting the fall in variable costs. Consequently, the year-on-year increase in net margin was almost entirely due to higher market returns.

Lowground sheep

- Earlier lambing lowground flocks failed to maintain the lambs reared percentages of 2020, but much higher market returns, despite selling fewer lighter lambs, saw net output climb 16%. Variable costs, particularly feed costs, rose significantly, up 14% in total and 20% for feed and forage. Fixed costs also rose by 4%. Nevertheless, the strength of the market meant that, despite increased costs, net margins rose £6 to the highest level of the past three years.

Lamb finishing

- Store lamb producers saw net margins fall slightly but remain positive. Despite higher returns from the marketplace, higher store lamb purchase prices and a doubling of feed costs more than offset higher market returns.

Comparisons with 2019 and 2020 (continued)

Suckler herds

	Hill suckler herds			Lowland suckler herds		
	2019	2020	2021	2019	2020	2021
Number in sample	15	16	17	17	16	16
Avg. herd size (head)	42	51	41	79	76	67
			£ per cow			
Calf output including beef calf premium	**541.47**	**670.71**	**812.12**	**735.34**	**773.36**	**848.35**
Less replacements	62.25	66.17	67.41	73.55	69.06	65.41
Net output	**479.22**	**604.54**	**744.71**	**661.79**	**704.30**	**782.94**
Variable costs						
Total concentrates	88.14	88.07	91.70	53.94	58.55	69.64
Other feeds	69.67	51.37	59.42	67.16	48.09	56.72
Forage	29.73	47.80	65.47	65.32	63.35	83.79
Total feed and forage	*187.54*	*187.24*	*216.59*	*186.42*	*169.99*	*210.15*
Veterinary	46.48	30.46	45.17	48.80	44.81	51.62
Bedding	2.60	7.33	20.75	56.40	57.40	57.91
Other costs	31.03	30.61	40.80	28.48	23.84	25.29
Total variable costs	**267.65**	**255.64**	**323.32**	**320.10**	**296.04**	**344.97**
Gross margin	**211.57**	**348.90**	**421.40**	**341.69**	**408.26**	**437.97**
Fixed costs	**432.80**	**517.35**	**514.99**	**389.40**	**359.48**	**394.03**
Net margin	**(-)221.23**	**(-)168.45**	**(-)93.59**	**(-) 47.71**	**48.78**	**43.94**

	Hill herds			Lowland herds		
	2019	2020	2021	2019	2020	2021
Physical performance						
Calves born dead or alive per 100	90	93	96	94	94	97
Calves reared per 100	86	91	92	89	91	93
Daily liveweight gain (kg)	0.90	0.95	0.97	1.15	1.2	1.1
Return per calf (£ per head)	512	621	763	728	755	810
Calf price (£ per kg lwt.)	2.03	2.01	2.56	2.24	2.31	2.50
Weight per calf (kg)	252	309	298	325	327	324

	Upland suckler herds Selling weaned calves			Upland suckler herds Selling yearling calves		
	2019	2020	2021	2019	2020	2021
Number in sample	31	31	32	26	28	28
Avg. herd size (head)	105	102	106	115	106	89
	£ per cow					
Calf output including beef calf premium	**713.86**	**729.08**	**772.61**	**861.24**	**972.50**	**945.49**
Less replacements	**82.16**	**81.46**	**74.47**	**83.66**	**87.19**	**81.31**
Net output	**631.70**	**647.62**	**698.14**	**777.58**	**885.31**	**864.31**
Variable costs						
Total concentrates	56.87	53.73	43.49	130.47	106.83	118.83
Other feeds	35.49	27.50	34.51	57.34	37.01	45.47
Forage	78.28	94.91	70.64	71.30	94.65	95.65
Total feed and forage	*170.64*	*176.15*	*148.64*	*259.11*	*238.49*	*257.95*
Veterinary	43.16	37.68	35.01	48.98	50.21	55.96
Bedding	28.19	26.31	20.33	49.61	60.06	62.06
Other costs	29.49	21.74	23.49	38.35	38.49	33.79
Total variable costs	**271.48**	**261.88**	**227.47**	**396.05**	**387.25**	**409.76**
Gross margin	**360.22**	**385.74**	**470.67**	**381.53**	**498.06**	**454.42**
Fixed costs	**384.94**	**382.09**	**411.07**	**509.59**	**466.96**	**504.22**
Net margin	**(-)24.72**	**3.64**	**59.60**	**(-)128.08**	**31.10**	**(-)49.80**

	Upland herds Sold at weaning			Upland herds Sold yearlings		
	2019	2020	2021	2019	2020	2021
Physical performance						
Calves born dead or alive per 100	95	94	96	93	95	96
Calves reared per 100	90	88	91	85	89	90
Daily liveweight gain (kg)	1.12	1.09	1.1	1.00	1.02	0.97
Return per calf (£ per head)	684	717	743	916	984	953
Calf price (£ per kg lwt)	2.15	2.35	2.46	2.25	2.42	2.47
Weight per calf (kg)	318	305	302	407	407	386

Comparisons with 2019 and 2020 (continued)

	Rearer/Finishers		
	2019	2020	2021
Number in sample	22	22	21
Average herd size (head)	96	105	107
		£ per cow	
Calf output including beef calf premium	**1061.26**	**1203.20**	**1375.52**
Less replacements	75.06	74.61	67.58
Net output	**986.20**	**1128.59**	**1307.94**
Variable costs			
Total concentrates	203.69	223.46	250.82
Other feeds	68.00	61.69	67.41
Forage	90.77	100.78	92.64
Total feed and forage	*362.46*	*385.92*	*410.87*
Veterinary	50.82	51.06	54.10
Bedding	70.05	80.71	79.24
Other costs	41.13	46.12	60.57
Total variable costs	**524.46**	**563.82**	**604.78**
Gross margin	**461.74**	**564.77**	**703.16**
Fixed costs	**530.43**	**517.17**	**566.45**
Net margin	**(-) 68.69**	**47.59**	**136.71**

	Rearer/Finishers		
	2019	2020	2021
Physical performance			
Calves born dead or alive per 100	94	94	96
Calves reared per 100	88	87	92
Daily liveweight gain (kg)	1.0	1.0	1.0
Return per calf (£ per head)	1201	1286	1375
Sale price (pence per kg dwt.)	334	369	386
Weight per calf (kg)	620	601	614

Businesses finishing cattle under cereal-based systems

	Cereal-based		
	2019	2020	2021
		£ per head	
Number in sample	15	17	17
Stock sales	**1250.48**	**1330.43**	**1520.30**
Less stock purchases	756.06	758.85	801.85
Net output	**494.42**	**571.58**	**718.45**
Variable costs			
Concentrates	293.83	300.86	314.34
Other feeds	26.44	14.84	32.03
Forage	4.64	4.15	7.03
Total feed and forage	*324.91*	*319.85*	*353.40*
Veterinary	16.79	19.52	18.71
Bedding	44.43	42.42	48.99
Other costs	35.12	39.46	55.22
Total variable costs	**421.25**	**421.25**	**476.31**
Gross margin	**73.17**	**150.33**	**242.13**
Fixed costs	**103.34**	**106.54**	**100.21**
Net margin	**(-)30.17**	**43.79**	**141.92**
Physical performance			
Feeding period (days)	233	212	234
Start wt (kg lwt)	318	345	317
Average carcase weight (kg dwt)	375	362	377
Daily LWT gain (kg)	1.4	1.3	1.4
Mortality (%)	2.0	1.1	0.8
Sale price (£ per kg dwt)	3.29	3.67	4.04
Purchase price (£ per kg lwt)	2.27	2.18	2.51
Gross margin per day (£ per day of feeding period)	0.31	0.71	1.03

Businesses finishing cattle under forage-based systems

	Forage-based <22 month at slaughter			Forage-based >22 month at slaughter		
	2019	2020	2021	2019	2020	2021
	£ per head					
Number in sample	20	19	17	18	16	20
Stock sales	**1158.55**	**1336.78**	**1411.05**	**1201.79**	**1333.02**	**1420.04**
Less stock purchases	826.30	804.46	840.90	819.46	771.77	853.19
Net output	**332.25**	**532.32**	**570.15**	**382.30**	**561.45**	**566.85**
Variable costs						
Concentrates	174.49	220.11	213.31	145.26	147.00	158.16
Other feeds	26.27	12.26	20.94	24.16	20.91	17.90
Forage	25.93	27.97	20.96	42.44	48.59	41.79
Total feed and forage	*226.69*	*260.34*	*255.21*	*211.86*	*216.50*	*217.85*
Veterinary	12.45	15.19	11.29	16.44	18.73	15.28
Bedding	33.84	43.74	40.13	40.95	37.35	32.92
Other costs	29.46	34.48	27.50	43.59	39.67	40.03
Total variable costs	**302.44**	**353.75**	**334.13**	**312.84**	**312.25**	**306.08**
Gross margin	**29.81**	**178.57**	**236.02**	**69.46**	**249.20**	**260.77**
Fixed costs	**193.13**	**196.97**	**206.58**	**210.76**	**240.84**	**191.22**
Net margin	**(-) 163.32**	**(-)18.40**	**29.44**	**(-) 141.30**	**8.36**	**69.55**
Physical performance						
Feeding period (days)	283	289	267	375	353	370
Start wt (kg lwt)	389	364	364	384	344	363
Average carcase weight (kg dwt)	365	357	371	363	378	361
Daily LWT gain (kg)	0.9	0.8	1.0	0.65	0.87	0.70
Mortality (%)	0.5	0.8	0.7	2.2	0.9	0.7
Sale price (p per kg dwt)	325	363	386	330	353	393
Purchase price (p per kg lwt)	211	219	233	207	225	232
Gross margin per day (p per day of feeding period)	11	62	88	19	70	70

Results from LFA sheep flocks

	LFA upland sheep flocks			LFA hill sheep flocks		
	2019	2020	2021	2019	2020	2021
	£ per ewe					
Number in sample	33	28	32	39	33	27
Lamb sales	**108.00**	**117.8**	**136.29**	**50.02**	**56.40**	**62.19**
Wool	2.06	1.36	1.12	1.23	0.84	0.48
Gross output	**110.06**	**119.22**	**137.41**	**51.25**	**57.24**	**62.67**
Less replacement costs	14.26	13.57	13.93	10.50	10.82	10.88
Net output	**95.80**	**105.65**	**123.48**	**40.75**	**46.42**	**51.79**
Variable costs						
Concentrates	10.89	12.38	10.90	5.06	5.11	4.70
Forage cost	7.92	8.72	6.97	0.87	1.48	1.00
Roughages	2.49	2.04	2.15	2.17	2.20	2.10
Total feed and forage	*21.30*	*23.14*	*20.02*	*8.10*	*8.79*	*7.80*
Bedding	1.42	1.21	0.95	0.09	0.15	0.03
Veterinary	9.61	10.89	9.90	6.01	6.87	6.34
Other costs	7.99	7.43	7.18	5.73	4.61	5.58
Total variable costs	**40.32**	**42.67**	**38.05**	**19.93**	**20.42**	**19.75**
Gross margin	**55.48**	**62.98**	**85.43**	**20.82**	**26.00**	**32.04**
Fixed costs	**48.27**	**47.49**	**51.40**	**42.24**	**46.41**	**45.62**
Net margin	**7.21**	**15.49**	**34.03**	**(-)22.42**	**(-)20.41**	**(-)13.58**
Physical performance						
Average no. ewes	481	521	533	656	731	818
Lambs born/ 100 ewes	167	160	157	105	104	99
Lambs died/ 100 ewes	18	14	15	16	14	10
Lambs reared/ 100 ewes	149	146	142	89	90	89
Lambs sold/retained:						
Slaughter %	58	53	57	7	9	10
Stores %	15	23	25	52	54	50
Breeding %	26	24	18	41	37	40
Return per lamb sold finished (£)	76.71	87.44	102.72	58.22	65.75	74.32
Carcase weight lambs sold finished (kg)	19.6	19.8	19.9	16.7	17.1	15.0
Return per lamb sold store (£)	58.61	71.23	78.07	46.60	56.36	66.38

Comparisons with 2019 and 2020 (continued)

Results from Lowground sheep flocks

	2019	2020	2021
		£ per ewe	
Number in sample	13	14	13
Lamb sales	**111.76**	**145.88**	**161.69**
Wool	1.87	1.51	1.52
Gross output	**113.63**	**147.39**	**163.21**
Less replacement costs	16.13	15.60	15.21
Net output	**97.50**	**131.79**	**148.00**
Variable costs			
Concentrates	16.63	21.43	22.12
Forage cost	7.64	8.48	12.37
Roughages	3.65	2.91	4.83
Total feed and forage	*27.92*	*32.82*	*39.32*
Bedding	1.68	1.34	1.82
Veterinary	9.22	10.76	10.47
Other costs	7.79	9.32	10.09
Total variable costs	**46.61**	**54.23**	**61.70**
Gross margin	**50.89**	**77.56**	**86.30**
Fixed costs	**55.23**	**53.98**	**56.27**
Net margin	**(-)4.34**	**23.58**	**30.03**
Physical performance			
Average no. ewes	698	482	430
Lambs born per 100 ewes	151	179	175
Lambs died per 100 ewes	18	21	22
Lambs reared per 100 ewes	133	158	153
Lambs sold/retained:			
Slaughter %	71	77	73
Stores %	16	14	12
Breeding %	12	9	14
Return per lamb sold finished (£)	90.46	94.01	109.93
Carcase weight lambs sold finished (kg)	20.4	24.9	19.7
Return per lamb sold store (£)	54.55	83.26	86.00

Store lamb finishing

	2019	2020	2021
		£ per lamb	
Number in sample	14	14	13
Lamb sales	**74.78**	**89.54**	**103.06**
Less store lamb purchase costs	50.20	60.77	75.44
Output	**24.58**	**28.87**	**27.62**
Concentrates	1.95	2.63	3.97
Other feed	0.23	0.28	0.35
Forage	1.93	0.34	2.25
Total feed and forage	*4.11*	*3.26*	*6.57*
Bedding	0.02	0.09	0.30
Veterinary	1.14	1.91	1.44
Other costs	4.39	4.50	4.72
Total variable costs	**9.66**	**9.76**	**13.03**
Gross margin	**14.92**	**19.11**	**14.59**
Fixed costs	**5.13**	**5.07**	**4.13**
Net margin	**9.79**	**14.05**	**10.46**

Physical performance			
Feeding period (days)	118	110	110
Liveweight at start (kg)	30.1	31.0	32.3
Liveweight at finish (kg)	39.9	37.0	39.8
Mortality (%)	2.2	2.0	2.4
Concentrates (kg)	8	11	14
Average carcase weight (kg dwt)	18.7	17.4	18.7

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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