

Dairy performance results 2018/19

AHDB



DAIRY

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Foreword

Dairy performance results 2018/19

Agriculture faces some interesting times and real challenges. We now find ourselves outside the EU, with no idea – as yet – what the final picture will look like once the Prime Minister and his government have concluded their dealings with Europe and international trade agreements with other countries.

While there will be opportunities and little to fear for the best performers, the majority of farmers will need to raise their games, look at their businesses and think about where they want to be in 5 or 10 years' time and dairy is no different.

Every dairy farm must look very carefully at all aspects of the business: output, costs, overheads, labour, future investment and especially the environment, where there will undoubtedly be greater pressure. Farming as a lifestyle will not be the right attitude for success, but the successful will have choices about lifestyle.

The aim should be healthy profits, leading to resilience, competitiveness and opportunities for the next generation to inherit a good business with a work/life balance. Those who might struggle to do this, or who find the challenge daunting, might find it a better alternative to take in a young person or a young couple as share-farming partners – this approach is hugely underutilised and often has a very successful outcome.

In the AHDB Optimal Systems programme, we simply divide the industry into all-year-round (AYR) calving herds or block-calving herds, whether spring, autumn or any other time of year (providing the tight criteria are met). We have shown that the best farmers make money regardless of the system they use; this report sheds light on how they achieve that success.

Unsurprisingly, the best farmers in all systems produce more milk from all feed and forage (efficiency and productivity), but they also have lower costs. There is no doubt that other farms have at least the same level of output, but that is often negated by very high machinery, labour and power costs.

As a country blessed with such incredible growing conditions (despite some extreme weather of late), we do not grow or utilise anywhere near potential when it comes to milk from forage and grazed grass. If we look at New Zealand and Ireland for the extensive comparison, or at the Netherlands for intensive comparison, we see that few of our own dairy farms achieve similar performance.

In the UK, many farmers have made the move to spring block calving – and with good results. This success is mainly due to the enthusiasm and determination of those farmers to make things work and their natural inclination to benchmark and improve all aspects of their business. Autumn block calving, on the other hand, still remains one of the industry's best-kept secrets – many AYR dairy farms should look at this very seriously and consider a change of system.

Unfortunately, we have a very small amount of genuine and proper block-calving data, which is a handicap. AYR on the other hand is by far the largest sector, with a huge range in performance and herd size. There are some amazing farmers within this sector, but this is also where we find most of the poorer performers, regardless of herd size.

I worry about the future viability of those who are struggling today because it is likely that other pressures will materialise over the coming decade, even if the milk price does improve. Therefore, action is needed now. The figures in this report reveal how small differences in every heading add up, with the bottom line showing either profit or loss, given the milk price.

Please do visit our AHDB Strategic Farms and see how the best farmers do it. If you are operating an AYR system and you are struggling, look at our autumn block farms and consider making that change. It offers a simpler system, which concentrates on doing one thing at a time (calving, AI, drying off), with our key performance indicators to measure up against, and can offer a better lifestyle to boot.

Should we accept fixed costs? How many are truly fixed: figures that one can do little about, such as rates and – in some areas – perhaps water and rent. All other costs,

I would argue, are changeable because farmers can alter them at will if they are determined to do so. Material handling is a classic case of costs and activity with – in most cases – no added value.

There are the costs of feed for the cow (little difference other than output from that feed) and then there are the costs of feeding the cow (huge differences here). Can we afford to carry on regardless? Are some dairy farmers more attached to the machines than they are to the cows? The same goes for youngstock: very often there is too great a cost and not enough growth. These days, all dairy heifers should calve at 24 months of age, with no exception.

International comparisons are interesting, but more difficult. However, there is one common denominator across the board: the very best don't do anything radically different. They just make sure they focus on the priorities and they do the basics to a very high standard. It's not easy, but it is certainly not complicated.



Gwyn Jones
AHDB Board Member
and Dairy Sector Chair

Glossary

Average daily lifetime yield – total milk production of cows that left the herd during the year, averaged over their lifespan

Buildings depreciation – imputed depreciation on dairy-specific buildings

Cash cost of production – includes all livestock purchases, variable costs and cash overhead costs (paid labour, power and machinery, property repairs, rent, finance and other operational costs). Excludes imputed cost of unpaid labour, machinery and buildings depreciation and imputed rental value of owned land

Cash net margin – cash output (excluding dairy and youngstock herd valuation changes) minus cash cost of production

Dairy herd valuation change – closing valuation of the dairy herd, minus opening valuation of the dairy herd. This reflects a change in livestock numbers only, because fluctuations in market value throughout the year are not accounted for

Feed and forage cost – actual cost of all purchased feed and forage, plus market value of all home-grown non-forage feed and variable cost of home-grown forage

Forage – grass silage, hay, non-grass forage and straw (both purchased and home-grown)

Full economic cost of production – includes all livestock purchases, variable costs and overhead costs. Includes imputed cost of unpaid labour, machinery and buildings depreciation and imputed rental value of owned land

Full economic net margin – total output minus full economic cost of production

Herd replacement cost – the number of dairy cows leaving the herd (calculated using the herd replacement rate), multiplied by the average value of incoming cows and heifers, minus the value of cows removed from the herd

Herd replacement rate – the number of cows that have left the herd throughout the year, as a proportion of the herd size

IFCN – International Farm Comparison Network, based in Germany

Key performance indicators (KPIs) – the KPIs referred to in this report are from our Optimal Dairy Systems programme, which highlights the areas crucial for delivering financial performance in all-year-round and block-calving systems

Labour cost – actual cost of paid labour, plus imputed cost for unpaid labour

Machinery and equipment depreciation – imputed depreciation on dairy-specific and forage machinery and equipment

Milk solids – butterfat and protein content of milk

Milk yield – calculated from the total amount of milk produced in the year, divided by either the herd size to obtain the average yield per cow per year, or by total area allocated to the dairy herd to obtain the average yield per hectare per year

Non-forage feeds – purchased compound feed, cereals, protein feeds and by-products, plus home-grown cereals, protein feeds and by-products

Other livestock costs – include artificial insemination and breeding costs, bedding costs and dairy, parlour and youngstock sundries

Other operational costs – include water and telephone charges, general insurances, professional fees and other office-related costs

Output – includes the value of milk produced, calves sold, cows sold, youngstock heifers sold, other income (e.g. slurry to arable land), dairy herd valuation change and youngstock valuation change

Output/input ratio – calculated by dividing total output by full economic cost of production

Overheads (excluding rent and finance) – overheads of the dairy and youngstock herd, including imputed cost of unpaid labour and machinery and buildings depreciation, but excluding rent and finance

Power and machinery cost – includes repairs and spares, machinery hire, contracting, fuel, electricity and vehicle tax and insurance

Rental value of owned land – imputed rental value of the hectares of owned land used for the dairy and youngstock herd (grassland and forage areas)

Youngstock herd valuation change – closing valuation of the youngstock herd, minus opening valuation of the youngstock herd. This reflects a change in livestock numbers only, because fluctuations in market value throughout the year are not accounted for



Dairy performance results 2018/19 at a glance

What would you like your business to deliver? Whatever your aim, it is vital to have a net margin that supports those plans now – and in the future. Comparing your farm to similar businesses in this guide helps you find areas where you can make the biggest improvements and increase your control over your net margin.

Overview

Key highlights

- GB average milk production costs increased by around 1.6 pence per litre (ppl) (5%) in 2018/19 compared with the year before
- The top 25% made a positive net margin in 2018/19, whether they were all-year-round (AYR), autumn or spring block calving (Tables 1 and 3)
- The top 25% had considerably lower production costs, whether they were AYR, autumn or spring block calving (Tables 2 and 4)

Other findings

- The increase in costs in 2018/19 was mainly associated with higher feed and forage, labour and fuel costs
- Spring block-calving herds had a particularly sharp rise in feed and forage costs in 2018/19, caused by the drought conditions during summer 2018
- In the previous year, the top 25% and middle 50% across all three calving systems were able to make a positive net margin
- The main areas of cost in which the top farms performed better were:
 - Feed and forage – for AYR and autumn calvers
 - Labour – across all three calving systems
 - Machinery and power – across all three calving systems
 - Buildings and rent – for spring calvers
- Areas in which typical UK farms did not perform well compared with some of their counterparts abroad:
 - Making the most of available forage. You can get the latest advice and research on grass, forage and soil management from our [Grass](#) resources
 - Controlling machinery costs. Use our [Machinery cost calculator](#) to work out the cost of running a machine against the cost of a contractor
 - Managing stocking rates and grass utilisation for efficient output per hectare of forage area. Compare your performance figures to the top 25% for your system – AYR (page 11), autumn block (page 16) or spring block calving (page 21)

Table 1. Full economic net margin in pence per litre for all-year-round, autumn and spring block-calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

Pence per litre	All-year-round	Autumn block	Spring block
Top 25%	4.8	9.7	10.3
Middle 50%	-0.9	3.7	4.9
Bottom 25%	-8.0	-2.1	-4.4

Source: AHDB, Promar International and partners

Table 2. Full economic cost of production in pence per litre for all-year-round, autumn and spring block-calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

Pence per litre	All-year-round	Autumn block	Spring block
Top 25%	29.2	25.2	27.8
Middle 50%	34.0	31.4	31.4
Bottom 25%	39.1	35.3	39.7

Source: AHDB, Promar International and partners

Table 3. Full economic net margin in £ per cow for all-year-round, autumn and spring block-calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

£ per cow	All-year-round	Autumn block	Spring block
Top 25%	436	720	588
Middle 50%	-74	286	262
Bottom 25%	-601	-171	-211

Source: AHDB, Promar International and partners

Table 4. Full economic cost of production in £ per cow for all-year-round, autumn and spring block-calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

£ per cow	All-year-round	Autumn block	Spring block
Top 25%	2,626	1,869	1,591
Middle 50%	2,945	2,413	1,687
Bottom 25%	2,919	2,941	1,894

Source: AHDB, Promar International and partners

About the results

Using the results

- The Dairy performance results provide costs and margins from GB dairy herds across the two optimal systems – all-year-round (AYR) and block calving – with blocks shown in both autumn and spring blocks. This allows you to compare your own figures to farms operating the same calving system
- If you are using these figures to help make a decision about switching your calving system, it is worth bearing in mind:
 - How the system fits with your mindset, your milk buyer's requirements and the resources available on your farm. For more information visit our **Optimal Dairy Systems** webpage
 - The cost of changing system
 - The spring calving data show larger herd sizes than the other systems – average herd size for the middle 50% of spring calvers is nearly double that of the AYR and autumn herds
 - The AYR calving sample is larger than the block samples – the spread of farms in GB means we can report data from a larger sample of AYR herds than block calvers, so there is likely to be much more variation in the AYR results than the block-calving results

Where the data comes from

- The data comes from the annual accounts of 350 GB dairy farms, with financial year-ends between December 2018 and June 2019
- The sample of farms is designed to be representative of GB as a whole (for more information please take a look at Appendix 1)
- The farms are ranked by output/input ratio, as a measure of productivity, then grouped into quartiles of the top 25%, middle 50% and bottom 25%
- The GB data is sourced from Promar International and partners
- Youngstock output and costs are included, with the exception of the time series shown in Changes in milk production costs over time (page 10). This is the first time we have been able to include full youngstock costs, so please note the figures shown for each system are not directly comparable with previous years' results. The time series on page 10 shows figures for the dairy herd only, excluding youngstock, to allow comparisons with the data we have available from previous years
- Decoupled subsidies (e.g. the Basic Payment Scheme) are excluded. In Exploring the world's most profitable farms (page 26), some farms abroad also received coupled subsidies and these are included
- The international data in Exploring the world's most profitable farms (page 26) are from the International Farm Comparison Network (IFCN). The figures in this section are from the 2018 calendar year

If you would like more information about the data, please take a look at the Appendices at the back of this report.

Aiming for excellence

Working out how you get your business to deliver what you want can be challenging, but can prove time well spent. Our Optimal Dairy Systems programme is designed to help you prioritise the areas to focus on. Visiting our Strategic Dairy Farms can help you come up with ideas about how to move forward in those areas.

Optimal Dairy Systems

The dairy industry uses over 70 performance measures, so it can be difficult to prioritise the key areas when trying to make improvements. As part of our **Optimal Dairy Systems** work, we have consulted with industry experts to simplify this and have identified a small number of operational key performance indicators (KPIs) for each calving system (Tables 5 and 6), as well as business measures that apply to all systems (Table 7).

For more information on these KPIs, take a look at the individual sections on AYR, autumn- and spring-calving herds. You can also work out and compare your own farm's KPI results using our **KPI calculator**.

Table 5. Operational KPIs for all-year-round calving herds

KPI		Excellent performance	Good performance	Average performance
Pregnancy rate (%)		>25	20	14
Age at first calving (months)		23 (but not less than 22)	24	27.5
Total purchased feed costs (ppl)	8,000 L	7.0	7.5	8.0
	10,000 L	7.8	8.5	9.0
	12,000 L	8.0	8.5	9.5
Average daily lifetime yield (L/day)		>19.0	14.5	12.5
Overheads (excluding rent and finance) (ppl)		9.0	10.0	12.5
Genetic merit (percentile)		5th	25th	50th

Table 6. Operational key performance indicators for block-calving herds

KPI	Excellent performance	Good performance	Average performance
Cows and heifers calved within the first 6 weeks (%)	>90	80	70
Herd replacement rate (%)	<20	22	26
Milk solids output per hectare (kg/ha)	>1,500	1,250	1,100
Milk yield from forage (L) and (solids, kg)	>5,000 (427 kg)	4,000 (432 kg)	2,750 (235 kg)
Overheads (excluding rent and finance) (ppl)	9.0	10.5	12.5
Genetic merit (percentile)	5th	25th	50th

Table 7. Business measures for all dairy herds, including costs and revenue from their replacement youngstock enterprises

Business measure	Excellent performance	Good performance	Average performance
Full economic net margin (ppl)	7.0	2.0	-3.0
Return on tenants' capital (%)	>20	14	3
Full economic costs of production (ppl)	AYR < 27.5 Block < 24.0	30.0	34.5

These KPIs and business measures undergo periodic review to ensure they stay relevant. To see the current KPI definitions in more detail, please visit ahdb.org.uk/optimal-dairy-systems

Strategic Dairy Farms

Our network of GB-wide Strategic Dairy Farms helps farmers to learn from each other. Through regular on-farm meetings, we share their key performance data and showcase the methods used by the best performing farmers.

These farms form part of the Optimal Dairy Systems programme, which aims to help dairy farmers lower costs and increase efficiency by focusing on either a block or AYR calving system.

The growing network of Strategic Dairy Farms has calculated KPIs for their enterprises, which are shared at meetings and published online. These are physical and financial performance measures that are critical to success. Farmers can benchmark their businesses against these KPIs and identify areas for improvement. The best operators often achieve their results by doing the simple and basic things very well – as demonstrated by our Strategic Dairy Farms.

Follow the programme and find other local Strategic Dairy Farms at ahdb.org.uk/farm-excellence

To find a meeting near you, please visit ahdb.org.uk/events

92% of farmers who attended a strategic farming meeting said the changes made would have a positive impact on costs, productivity or profitability.

Changes in milk production costs over time

Trends in milk production costs over time give an overview of what happened in 2018/19 and how it relates to other years.

Overview

- GB average milk production costs increased by around 1.6 ppl (5%) in 2018/19 compared with the year before
- Costs were around 31.1 ppl in 2018/19, which is the highest they have been since 2014/15 (Figure 1)
- GB milk prices averaged around 29.4 ppl in 2018/19

Reasons behind the rise in costs

The main areas that pushed up costs in 2018/19 were:

- Purchased concentrates up 11%
- Purchased forage and bulk feeds up 65%
- Paid labour up 5%
- Fuel up 18%

The rise in purchased concentrate costs was partly associated with higher feed prices, but the full picture varies with calving system. For AYR and autumn calvers, the amount of concentrates fed remained similar or decreased slightly compared with the year before. However, spring-calving herds increased their concentrate feeding in response to the drought in summer 2018, further pushing up their feed costs.

The extremely dry weather during the summer also pushed up purchased forage and bulk feed costs. Farms in some regions were particularly badly affected and resorted to buying in alternatives when home-grown forage stocks ran low. Spring-calving herds had the largest increase in purchased forage costs, rising by 1.5 ppl, on average, compared with the year before.

Paid labour costs increased because of a rise in the number of hours of paid labour being used per cow.

Fuel costs went up in line with the rises in red diesel prices in 2018/19.

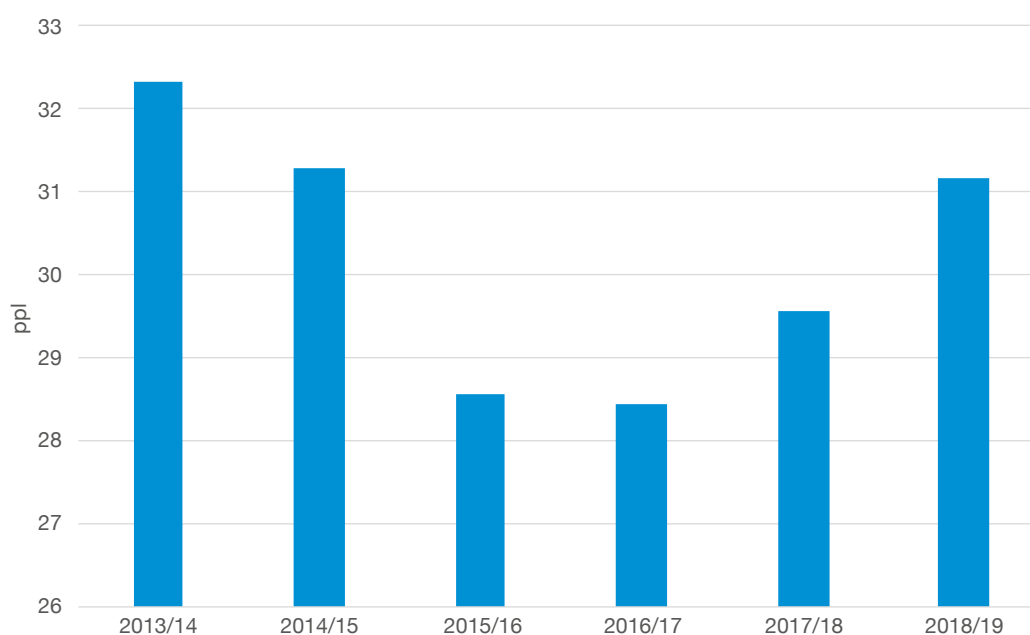


Figure 1. Average full economic cost of milk production for GB dairy herds (excluding youngstock costs) from a representative sample across all calving systems

Source: AHDB, Promar International and partners

About the figures

- The figures in this section are for the dairy herd only, excluding youngstock. This is so we can make comparisons with the data we have available from previous years
- The data is from a representative sample of GB dairy farms, across all calving systems
- Subsidies are excluded
- Data is sourced from Promar International and partners

If you would like more information about the data, please take a look at Appendix 1.

All-year-round calving herds' performance 2018/19

Dairy farms running all-year-round (AYR) calving systems can compare their figures with farms operating a similar system, to see where they are performing well and where they could make improvements. The financial performance figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements.

Overview

- The net margin for the top quarter of AYR calving herds was 4.8 ppl in 2018/19
- Average costs for the dairy herd increased by around 3% compared with the year before
- The net margin for the top quarter of herds was 5.7 ppl higher than the middle performers and 12.9 ppl more than the bottom quarter of herds
- The top farms spent less across all cost areas. The main areas in which they performed better were:
 - Feed and forage
 - Labour
 - Machinery and power
- Looking at technical performance, the top farms performed particularly well on:
 - Fewer labour hours per cow per year
 - Higher milk yield from forage
 - Higher average daily lifetime yield

Technical and financial performance

A range of farms achieve the top 25% performance bracket. The top quarter of AYR herds includes:

- Herd sizes from 105–1,075 cows
- Yields from 3,600–13,600 litres per cow per year
- Full economic net margins from 2.0–11.3 ppl.

Key performance indicators (KPIs) from our Optimal Dairy Systems work are outlined in blue in Tables 8 and 9. If you would like to see financial performance on a per-cow or per-hectare basis, please take a look at Appendix 5.

Farmers operating the AYR system should visit our Strategic Farms and if you are unable to get close to their levels of performance, you should look at whether an autumn block system might suit you and your farm better. When done well, this can offer simplicity, tight KPIs and a better lifestyle.

Table 8. Technical performance of AYR calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

	Top 25%	Middle 50%
Herd		
Average herd size	311	219
Dairy stocking density (livestock units/ha)	2.1	2.0
Labour – paid and unpaid (hours/cow/year)	31	38
Milk production		
Milk production (L/cow/year)	8,749	8,396
Milk solids production (kg/cow/year)	663	636
Average butterfat (%)	4.04	4.06
Average protein (%)	3.32	3.30
Milk from forage (L/cow/year)	2,973	2,943
Calving		
Age at first calving (months)	26.5	26.6
Calving interval (days)	400	399
Herd replacement		
Herd replacement rate (%)	28	30
Number of lactations	3.9	3.7
Average daily lifetime yield (L/day)	14.3	13.7
Dairy herd replacement cost (ppl)	2.5	2.9

Source: AHDB, Promar International and partners



Table 9. Financial performance of AYR calving conventional GB dairy herds (including youngstock*) in 2018/19, when ranked by output/input ratio

	Pence per litre		£/kg milk solids	
	Top 25%	Middle 50%	Top 25%	Middle 50%
Output				
Milk sales	30.4	29.7	4.02	3.91
Calf sales	1.3	1.0	0.17	0.14
Cow sales	1.8	2.3	0.23	0.30
Youngstock heifer sales	0.2	0.2	0.02	0.03
Other income	0.0	0.0	0.00	0.00
Dairy herd valuation change	0.2	-0.1	0.03	-0.01
Youngstock herd valuation change	0.2	0.1	0.02	0.01
Total output	34.0	33.1	4.49	4.37
Livestock purchases	0.5	0.9	0.07	0.12
Variable costs				
Purchased concentrates for dairy herd	8.1	8.4	1.07	1.11
Purchased concentrates for youngstock	1.2	1.6	0.15	0.21
Purchased forage and short-term keep	1.2	1.4	0.16	0.18
Home-grown concentrate and forage costs	1.4	1.6	0.19	0.21
Total feed and forage costs	11.9	13.0	1.57	1.71
Veterinary and medicine costs	1.1	1.1	0.14	0.15
Other livestock costs	2.8	3.1	0.37	0.40
Total variable costs	15.8	17.2	2.08	2.26
Overhead costs				
Labour - paid	2.8	3.0	0.37	0.39
Labour - unpaid	1.4	2.3	0.18	0.30
Power and machinery	3.7	4.6	0.49	0.61
Machinery and equipment depreciation	0.7	1.3	0.09	0.17
Property repairs	0.6	0.6	0.08	0.08
Buildings depreciation	0.3	0.3	0.04	0.04
Rent	1.1	0.9	0.14	0.12
Rental value of owned land	0.4	0.7	0.06	0.09
Finance	0.7	1.0	0.09	0.13
Other operational costs	1.0	1.3	0.13	0.17
Overheads (excluding rent and finance)	10.6	13.4	1.40	1.76
Total overhead costs	12.9	15.9	1.70	2.10
Total production costs and margins				
Cash cost of production	26.3	29.5	3.47	3.89
Cash net margin	7.4	3.7	0.97	0.49
Full economic cost of production	29.2	34.0	3.85	4.48
Full economic net margin	4.8	-0.9	0.64	-0.11

* These figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements. This is the first year we have been able to include full youngstock costs so please note these figures are not directly comparable to previous years' results. If you would like to see changes in milk production costs over time on a like-for-like basis, please turn to page 10. Please note that totals may not add up exactly, due to rounding.

Source: AHDB, Promar International and partners

About the figures

- Accounts from 258 AYR calving herds in GB in 2018/19 have been ranked by output/input ratio, then grouped into quartiles
- The averages for the top 25% and middle 50% groups are reported here
- Youngstock output and costs are included
- Subsidies are excluded
- The data is sourced from Promar International and partners
- The spread of farms in GB means we are able to report data from a larger sample of AYR herds than block calvers – this means there is likely to be much more variation in the AYR results compared with the block-calving results

If you would like more information about the data, please take a look at Appendix 1.

All-year-round calving KPI in focus: full economic cost of production

Higher profit margins are associated with lower production costs (Figure 2). This association is stronger than the link between profit margins and milk prices (Figure 3).

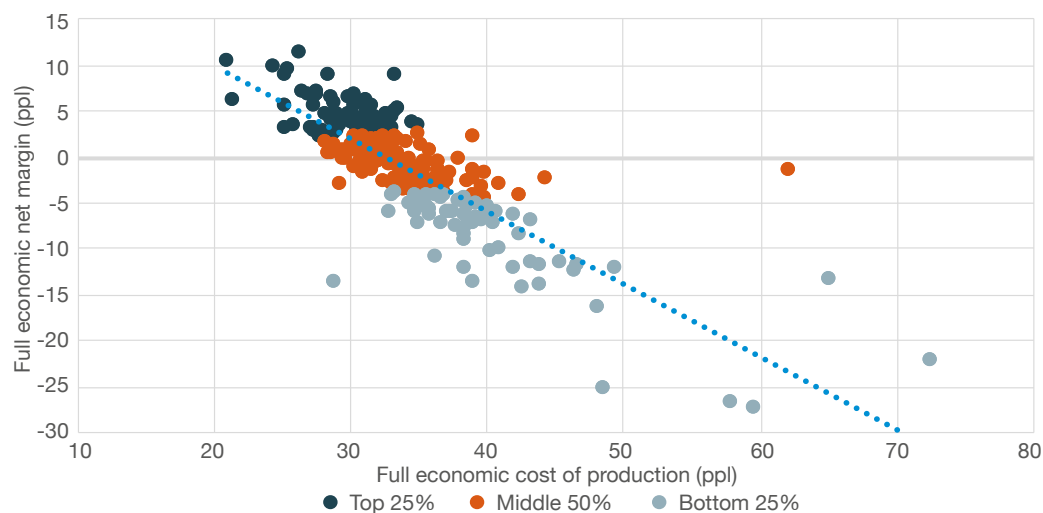


Figure 2. Full economic cost of production versus full economic net margin for all-year-round calving conventional herds in 2018/19

Source: AHDB, Promar International and partners

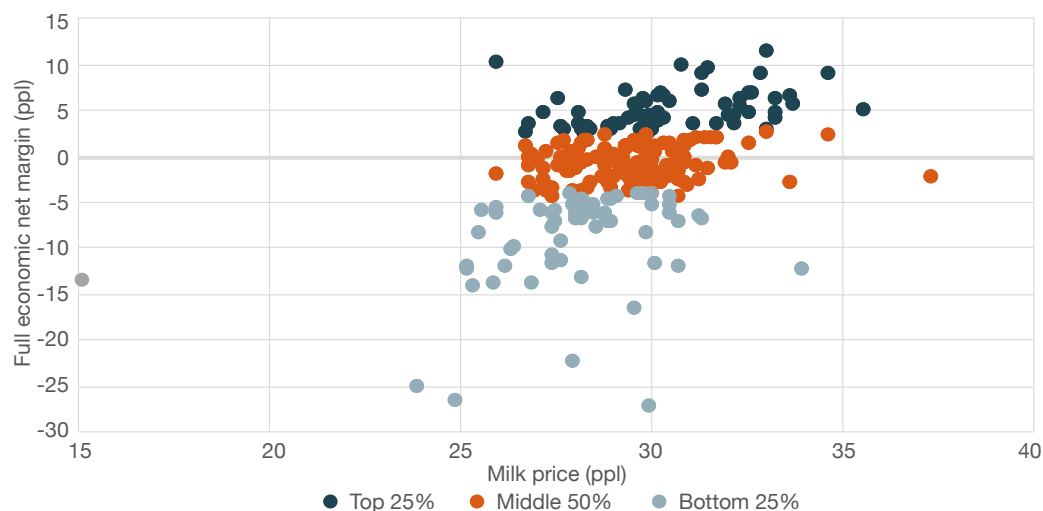


Figure 3. Milk price versus full economic net margin for all-year-round calving conventional herds in 2018/19

Source: AHDB, Promar International and partners

Farms in the top 25% consistently have lower costs than those in the bottom 25%, as shown in Figure 2. However, the top farms do not always have the highest milk prices, as shown in Figure 3. Knowing, monitoring and reviewing your cost of production can help to increase your control over your net margin.

Full economic cost of production is one of the KPIs for AYR calving herds from our **Optimal Dairy Systems** work (Figure 4). 'Full economic' means it covers all costs to the business, including:

- **Feed and forage** – bought-in and home-grown
- **Other livestock or variable costs** – including things like veterinary treatments, bedding, AI and parlour chemicals
- **Purchased livestock**
- **Labour** – including paid labour and an opportunity cost for unpaid labour. We include a cost for unpaid labour because if that person were not working on the farm, they would be able to bring in money from an alternative job. It also means farms can be compared on a like-for-like basis, whether they use paid labour, unpaid or a combination of both
- **Power and machinery** – including spares, repairs, hire, contracting, fuel and electricity. The cost of purchasing machinery and equipment is included as depreciation, spreading the cost over several years
- **Buildings costs** – including repairs and depreciation, which spreads the cost of the initial build over several years
- **Rent** – we also include an opportunity cost for any owned land, which is the revenue that could be gained by renting the land out to be farmed by someone else. This allows farms to be compared on a like-for-like basis, whether they are owned, tenanted or a combination of both
- **Finance costs** – related to borrowing
- **Other operational or overhead costs** – including things like water, telephone and administration costs

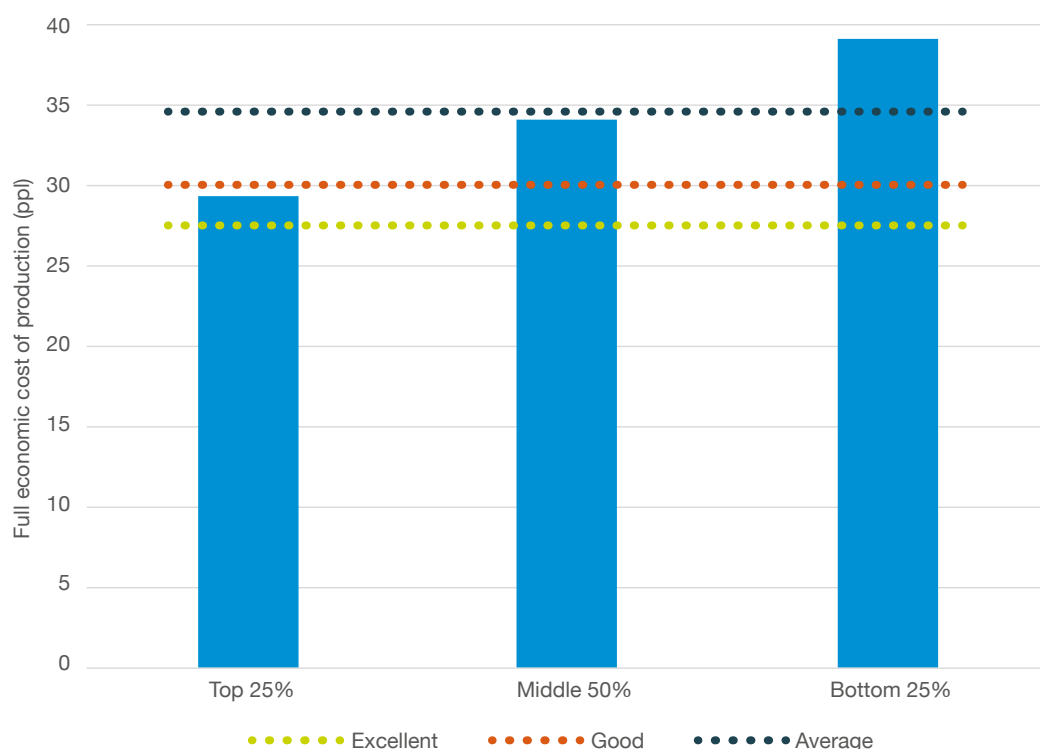


Figure 4. Full economic cost of production for all-year-round calving conventional herds in 2018/19. The dotted lines show the target levels for this KPI within the Optimal Dairy Systems programme. The targets are based on 5-year average figures for the top 5% (excellent), top 25% (good) and average farms

Source: AHDB, Promar International and partners

Reviewing full economic cost of production

- Work out your full economic cost of production using our **KPI calculator**
- See where your herd performs well and where it could improve by comparing your own figures to the top 25% in Tables 8 and 9
- Top performing farms often have lower overhead costs – if you'd like more information on reviewing overheads, please turn to page 19
- Start tackling the areas you want to improve by coming along to one of our farmer meetings or events. We have a growing network of Strategic Dairy Farms across the country, which are part of our **Farm Excellence** programme. Visit these farms to see the latest practical research, discuss the challenges facing your business and learn from other farmers. Take a look at our **events** webpage to find meetings near you

Autumn-calving herds' performance 2018/19

Dairy farms running autumn-calving systems can compare their figures with farms operating a similar system to see where they are performing well and where they could make improvements. The financial performance figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements.

Overview

- The net margin for the top quarter of autumn-calving herds was 9.7 ppl in 2018/19
- Average costs for the dairy herd increased by around 8% compared with the year before
- The net margin for the top quarter of herds was 6.0 ppl more than the middle performers and 11.8 ppl more than the bottom quarter of herds
- The top farms spent less across nearly all cost areas. The main areas in which they performed better were:
 - Feed and forage
 - Labour
 - Machinery and power
- Looking at technical performance, the top farms performed particularly well on:
 - Higher milk solids output per hectare
 - Higher milk yield from forage
 - Lower herd replacement rate

Technical and financial performance

A range of farms achieve the top 25% performance bracket. The top 25% of autumn-calving herds includes:

- Herd sizes from 161–444 cows
- Yields from 5,600–9,000 litres per cow per year
- Full economic net margins from 8.1–12.3 ppl.

Key performance indicators (KPIs) from our Optimal Dairy Systems work are outlined in blue in Tables 10 and 11. If you would like to see financial performance on a per-cow or per-hectare basis, please take a look at Appendix 6.

Table 10. Technical performance of autumn-calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

	Top 25%	Middle 50%
Herd		
Average herd size	251	217
Dairy stocking density (livestock units/ha)	1.9	1.9
Labour – paid and unpaid (hours/cow/year)	35	34
Milk production		
Milk production (L/cow/year)	7,550	7,808
Milk solids production (kg/cow/year)	606	601
Average butterfat (%)	4.21	4.05
Average protein (%)	3.59	3.42
Milk solids output per hectare (kg/ha)	1,139	1,024
Milk yield from forage (L/cow/year)	3,077	2,967
Milk yield from forage (kg milk solids/cow/year)	247	228
Calving		
Age at first calving (months)	24.3	24.3
Calving interval (days)	388	390
Herd replacement		
Herd replacement rate (%)	24	28
Number of lactations	4.3	4.0
Average daily lifetime yield (L/day)	13.4	13.5
Dairy herd replacement cost (ppl)	3.2	3.5

Source: AHDB, Promar International and partners

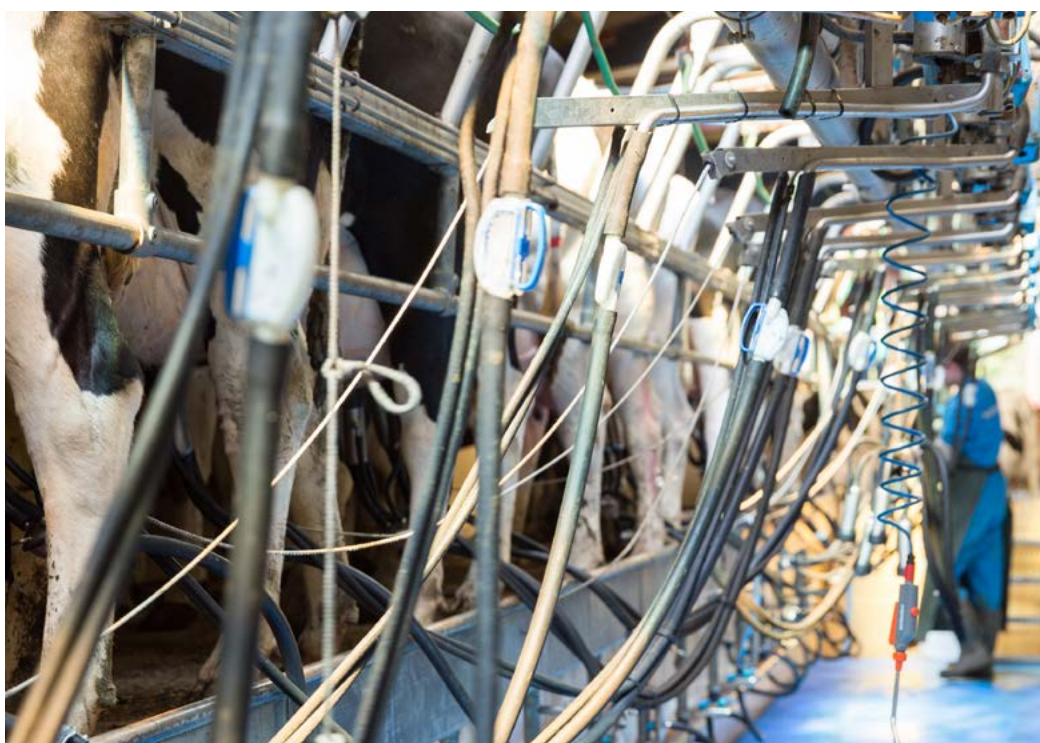


Table 11. Financial performance of autumn-calving conventional GB dairy herds (including youngstock*) in 2018/19, when ranked by output/input ratio

	Pence per litre		£/kg of milk solids	
	Top 25%	Middle 50%	Top 25%	Middle 50%
Output				
Milk sales	31.4	30.6	3.90	3.98
Calf sales	1.7	1.9	0.22	0.24
Cow sales	1.5	1.9	0.19	0.24
Youngstock heifer sales	0.1	0.1	0.01	0.01
Other income	0.6	0.0	0.08	0.00
Dairy herd valuation change	-0.2	0.5	-0.03	0.07
Youngstock herd valuation change	-0.1	0.1	-0.02	0.01
Total output	34.9	35.1	4.35	4.56
Livestock purchases	0.3	0.6	0.03	0.08
Variable costs				
Purchased concentrates for dairy herd	5.8	8.0	0.72	1.04
Purchased concentrates for youngstock	0.9	1.1	0.12	0.14
Purchased forage and short-term keep	0.5	1.1	0.06	0.14
Home-grown concentrate and forage costs	1.7	1.9	0.21	0.24
Total feed and forage costs	8.9	12.0	1.11	1.56
Veterinary and medicine costs	1.0	1.3	0.12	0.16
Other livestock costs	2.2	2.4	0.27	0.32
Total variable costs	12.0	15.7	1.50	2.04
Overhead costs				
Labour - paid	2.6	3.2	0.32	0.42
Labour - unpaid	2.0	1.7	0.25	0.23
Power and machinery	3.0	3.7	0.38	0.48
Machinery and equipment depreciation	0.8	1.3	0.09	0.17
Property repairs	0.6	0.7	0.08	0.10
Buildings depreciation	0.8	0.5	0.10	0.06
Rent	0.7	1.7	0.09	0.22
Rental value of owned land	1.2	0.6	0.15	0.07
Finance	0.4	0.3	0.05	0.04
Other operational costs	0.8	1.3	0.10	0.16
Overheads (excluding rent and finance)	10.7	12.5	1.33	1.63
Total overhead costs	12.9	15.1	1.61	1.96
Total production costs and margins				
Cash cost of production	20.5	27.3	2.55	3.54
Cash net margin	14.8	7.2	1.84	0.94
Full economic cost of production	25.2	31.4	3.14	4.08
Full economic net margin	9.7	3.7	1.21	0.48

* These figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements. This is the first year we have been able to include full youngstock costs so please note these figures are not directly comparable with previous years' results. If you would like to see changes in milk production costs over time on a like-for-like basis, please turn to page 10. Please note that totals may not add up exactly, due to rounding.

Source: AHDB, Promar International and partners

About the figures

- Accounts from 29 autumn block-calving herds in GB in 2018/19 have been ranked by output/input ratio, then grouped into quartiles
- The averages for the top 25% and middle 50% groups are reported here
- Youngstock output and costs are included
- Subsidies are excluded
- The data is sourced from Promar International and partners
- The spread of farms in GB means we have smaller samples of autumn- and spring block-calving herds than AYR calvers – this means there is likely to be much less variation in the autumn and spring block-calving results compared with the AYR calving results

If you would like more information about the data, please take a look at Appendix 1.

Autumn block-calving KPI in focus: overheads (excluding rent and finance)

Higher profit margins are associated with lower overhead costs (Figure 5). Minimising overhead costs is a characteristic of the top performing farms across all sectors, not just in dairy. You can find out more about the things that top performers have in common in our Horizon brochure *Preparing for change: the characteristics of top-performing farms*. Getting familiar with your overheads and reviewing them can help you gain more control over your net margin.

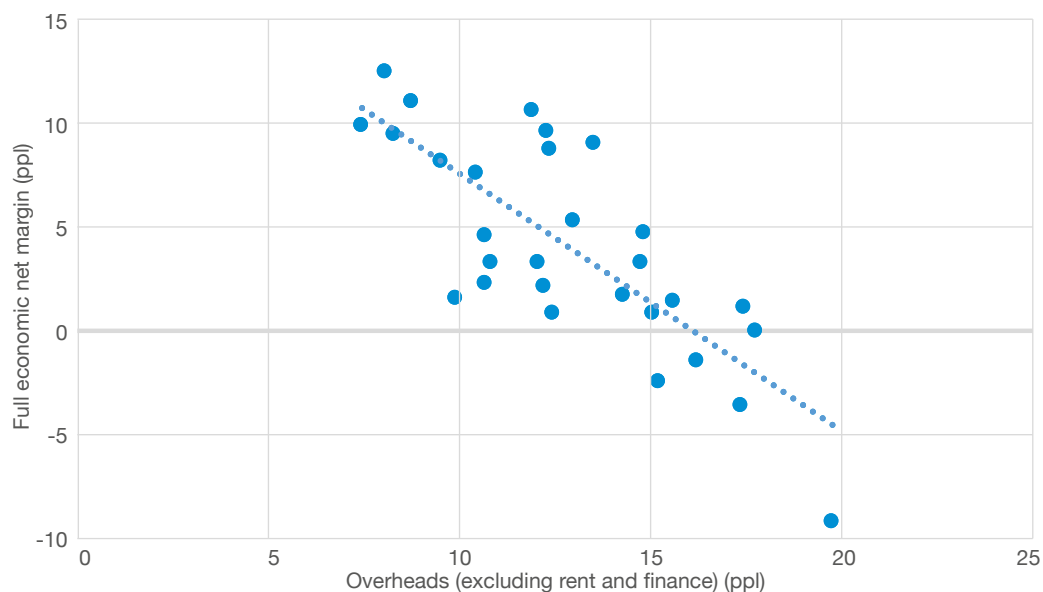


Figure 5. Overheads (excluding rent and finance) versus full economic net margin for autumn-calving conventional herds in 2018/19

Source: AHDB, Promar International and partners

Overheads (excluding rent and finance) are a KPI for autumn block-calving herds from our **Optimal Dairy Systems** work (Figure 6). Although overheads are sometimes referred to as ‘fixed costs’, you can take action to reduce them to help improve your margin. Here is what is included in overheads (excluding rent and finance) and some suggestions for considering changes:

- **Labour** – the top 25% of herds produce an extra 25 litres of milk per labour hour compared with the bottom 25%. Consider whether the farm’s labour is running as effectively and efficiently as it could. Involving staff in a re-evaluation of the work processes can help generate ideas for better ways of working. This could free up more time for you to concentrate on the farm business strategy, which could have an even bigger positive impact in the longer term

- **Power and machinery** – consider whether you are spending too much money on maintaining old machinery, or on buying new kit that you could manage without or hire
- **Building costs** – as with machinery, there is an optimum balance between repairing old buildings and investing in new ones. Planning ahead as far as possible is important, so dedicating time to work on the farm's business strategy can prove extremely valuable (see the first point on labour, above)
- **Other operational and overhead costs** – these are the little things that can all add up. Looking through your accounts and trimming these smaller costs can add up to a significant saving. There might be subscriptions you don't use or administration fees you could reduce by organising things differently

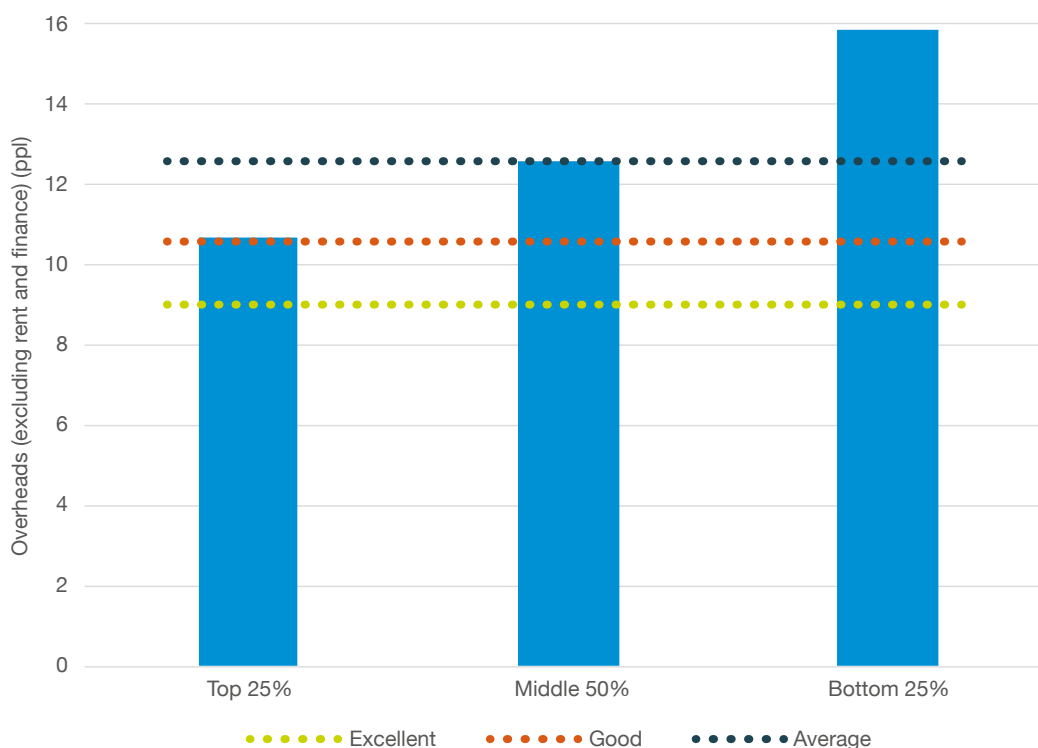


Figure 6. Overheads (excluding rent and finance) for autumn block-calving conventional herds in 2018/19. The dotted lines show the target levels for this KPI within the Optimal Dairy Systems programme. The targets are based on 5-year average figures for the top 5% (excellent), top 25% (good) and average farms

Source: AHDB, Promar International and partners

Reviewing overheads (excluding rent and finance)

- Work out your overheads using our **KPI calculator**
- See where your herd performs well and where it could improve by comparing your own figures with those of the top 25% in Tables 10 and 11
- Find out what the top farms are doing in **Preparing for change: the characteristics of top-performing farms** – minimising overheads is covered on pages 6 and 7
- Start tackling the areas you want to improve by coming along to one of our farmer meetings or events. We have a growing network of Strategic Dairy Farms across the country, which are part of our **Farm Excellence** programme. Visit these farms to see the latest practical research, discuss the challenges facing your business and learn from other farmers. Take a look at our **events** webpage to find meetings near you

Spring-calving herds' performance 2018/19

Dairy farms running spring-calving systems can compare their figures with farms operating a similar system, to see where they are performing well and where they could make improvements. The financial performance figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements.

Overview

- The net margin for the top quarter of spring-calving herds was 10.3 ppl in 2018/19
- Average costs for the dairy herd increased sharply – up 19% compared with the year before. This was mostly associated with higher feed and forage costs because of the extremely dry conditions during summer 2018
- The net margin for the top quarter of herds was 5.4 ppl more than the middle performers and 14.7 ppl more than the bottom quarter of herds
- The top farms spent less across nearly all cost areas. The main areas in which they performed better were:
 - Labour
 - Machinery and power
 - Buildings and rent
- Looking at technical performance, the top farms performed particularly well on:
 - Higher dairy stocking density
 - Higher milk solids output per hectare
 - Higher milk yield from forage

Technical and financial performance

A range of farms achieve the top 25% performance bracket. The top 25% of spring-calving herds includes:

- Herd sizes from 320–960 cows
- Yields from 5,100–6,400 litres per cow per year
- Full economic net margins from 7.9–11.8 ppl.

Key performance indicators (KPIs) from our Optimal Dairy Systems work are outlined in blue in Tables 12 and 13. If you would like to see financial performance on a per-cow or per-hectare basis, please take a look at Appendix 7.



Table 12. Technical performance of spring-calving conventional GB dairy herds in 2018/19, when ranked by output/input ratio

	Top 25%	Middle 50%
Herd		
Average herd size	451	432
Dairy stocking density (livestock units/ha)	2.7	2.1
Labour – paid and unpaid (hours/cow/year)	22	24
Milk production		
Milk production (L/cow/year)	5,656	5,392
Milk solids production (kg/cow/year)	492	466
Average butterfat (%)	4.75	4.69
Average protein (%)	3.70	3.71
Milk solids output per hectare (kg/ha)	1,359	1,013
Milk yield from forage (L/cow/year)	2,869	2,507
Milk yield from forage (kg milk solids/cow/year)	250	217
Calving		
Age at first calving (months)	23.9	23.9
Calving interval (days)	376	377
Herd replacement		
Herd replacement rate (%)	27	26
Number of lactations	4.5	4.8
Average daily lifetime yield (L/day)	10.4	9.1
Dairy herd replacement cost (ppl)	4.5	4.4

Source: AHDB, Promar International and partners



Table 13. Financial performance of spring-calving conventional GB dairy herds (including youngstock*) in 2018/19, when ranked by output/input ratio

	Pence per litre		£/kg of milk solids	
	Top 25%	Middle 50%	Top 25%	Middle 50%
Output				
Milk sales	32.9	32.0	3.79	3.70
Calf sales	1.8	1.1	0.20	0.13
Cow sales	2.2	2.1	0.25	0.25
Youngstock heifer sales	0.0	0.4	0.00	0.04
Other income	0.1	0.5	0.02	0.06
Dairy herd valuation change	0.4	0.1	0.05	0.01
Youngstock herd valuation change	0.7	0.0	0.08	0.00
Total output	38.1	36.2	4.38	4.19
Livestock purchases	0.1	0.3	0.01	0.03
Variable costs				
Purchased concentrates for dairy herd	4.9	4.8	0.56	0.56
Purchased concentrates for youngstock	0.9	0.8	0.10	0.09
Purchased forage and short-term keep	3.1	1.9	0.35	0.22
Home-grown concentrate and forage costs	1.7	2.2	0.19	0.25
Total feed and forage costs	10.5	9.7	1.21	1.12
Veterinary and medicine costs	0.8	1.0	0.09	0.11
Other livestock costs	1.9	2.6	0.22	0.30
Total variable costs	13.2	13.2	1.52	1.53
Overhead costs				
Labour - paid	3.5	4.8	0.40	0.55
Labour - unpaid	1.3	1.0	0.15	0.11
Power and machinery	4.0	4.8	0.46	0.55
Machinery and equipment depreciation	0.4	0.3	0.05	0.03
Property repairs	1.0	1.5	0.12	0.17
Buildings depreciation	0.5	0.8	0.06	0.09
Rent	0.4	1.0	0.05	0.11
Rental value of owned land	2.1	2.5	0.24	0.29
Finance	0.2	0.3	0.03	0.03
Other operational costs	1.0	1.0	0.12	0.12
Overheads (excluding rent and finance)	11.7	14.1	1.35	1.63
Total overhead costs	14.5	17.8	1.67	2.06
Total production costs and margins				
Cash cost of production	23.4	26.8	2.70	3.10
Cash net margin	13.5	9.3	1.56	1.08
Full economic cost of production	27.8	31.4	3.20	3.63
Full economic net margin	10.3	4.9	1.18	0.56

* These figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements. This is the first year we have been able to include full youngstock costs so please note these figures are not directly comparable with previous years' results. If you would like to see changes in milk production costs over time on a like-for-like basis, please turn to page 10. Please note that totals may not add up exactly, due to rounding.

Source: AHDB, Promar International and partners

About the figures

- Accounts from 29 spring block-calving herds in GB in 2018/19 have been ranked by output/input ratio, then grouped into quartiles
- The averages for the top 25% and middle 50% groups are reported here
- Youngstock output and costs are included
- Subsidies are excluded
- The data is sourced from Promar International and partners
- The spread of farms in GB means we have smaller samples of spring and autumn block-calving herds than AYR calvers – this means there is likely to be much less variation in the spring and autumn block-calving results compared with the AYR calving results

If you would like more information about the data, please take a look at Appendix 1.

Spring block-calving KPI in focus: milk solids output per hectare

For spring-calving herds, higher profit margins are associated with more milk solids per hectare of forage area (Figure 7). The top performers achieve this by optimising their stocking rate as part of a sound grazing management strategy (Figure 8).

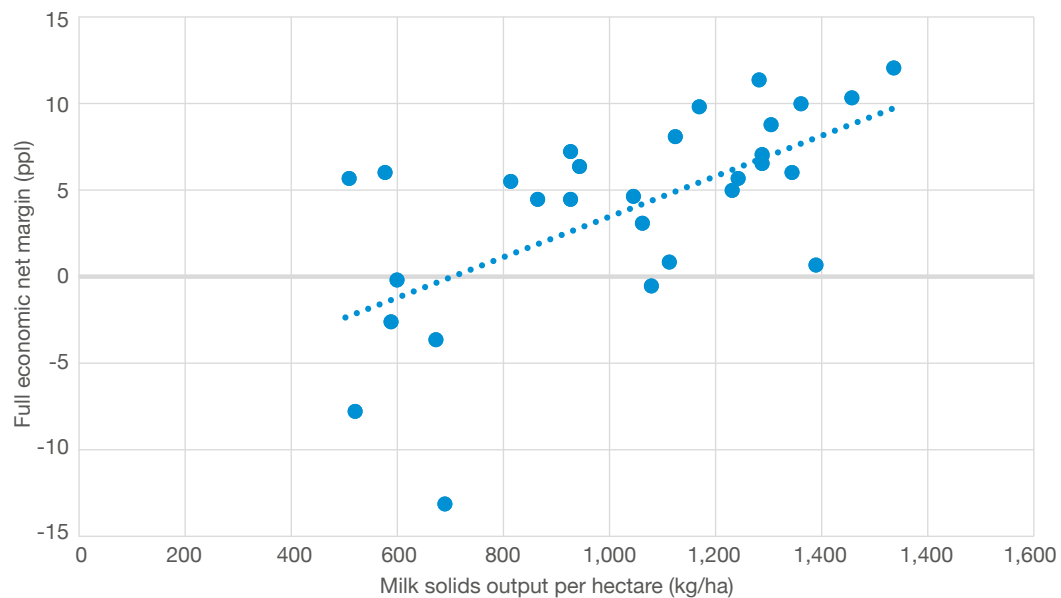


Figure 7. Milk solids output per hectare versus full economic net margin for spring-calving conventional herds in 2018/19

Source: AHDB, Promar International and partners



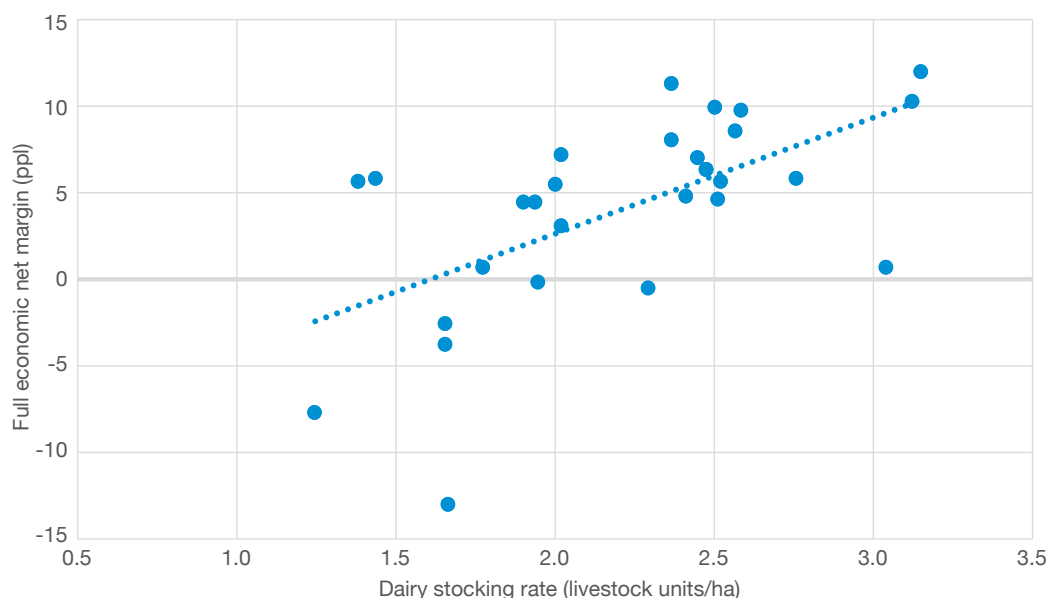


Figure 8. Dairy stocking rate versus full economic net margin for spring-calving conventional herds in 2018/19

Source: AHDB, Promar International and partners

Milk solids output per hectare is a KPI for spring block-calving herds from our **Optimal Dairy Systems** work (Figure 9). It is worked out by taking the herd's total annual yield of butterfat and protein in kilograms and dividing this by the number of hectares of forage area used for the dairy herd. Solids output per hectare can be improved by looking at:

- **Stocking rates** – consider whether your stocking rate and pasture management system allows you to make the most use of the forage hectares you have available
- **Milk solids** – focusing on kilograms of milk solids produced, rather than just litres, gives you more information about herd performance and may also help you reach higher payments on your milk contract

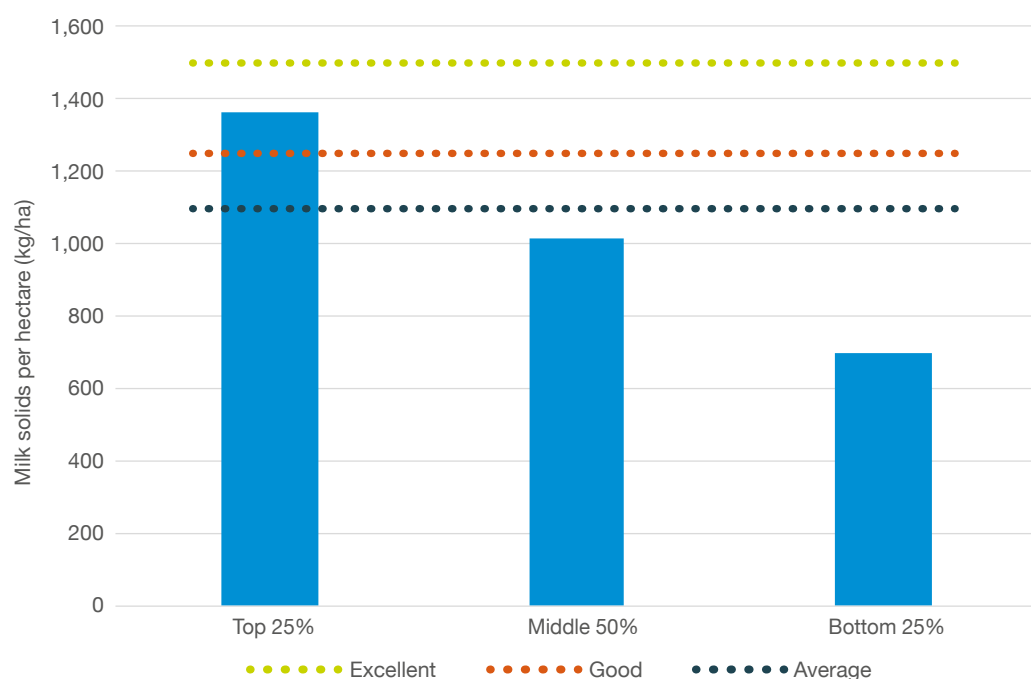


Figure 9. Milk solids output per hectare for spring block-calving conventional herds in 2018/19. The dotted lines show the target levels for this KPI within the Optimal Dairy Systems programme. The targets are based on 5-year average figures for the top 5% (excellent), top 25% (good) and average farms

Source: AHDB, Promar International and partners

Reviewing milk solids output per hectare

- Work out your milk solids per hectare using our **KPI calculator**
- See where your herd performs well and where it could improve by comparing your own figures to the top 25% in Tables 12 and 13. For this KPI, focus on stocking density and milk solids production per cow
- Well-managed grassland is the most economic feed for dairy cows – use our **Grass** resources to help you make the most of it
- Start tackling the areas you want to improve by coming along to one of our farmer meetings or events. We have a growing network of Strategic Dairy Farms across the country, which are part of our **Farm Excellence** programme. Visit these farms to see the latest practical research, discuss the challenges facing your business and learn from other farmers. Take a look at our **events** webpage to find meetings near you

Exploring the world's most profitable farms

To help British farms to be more productive and profitable, we can learn from the world's most successful farms. British dairy products compete with products from other countries in our shops and in export markets, so it makes good business sense to understand how other farms operate.

Overview

- Comparing the net margins of typical farms in the UK with those of typical farms in other countries that export dairy products, UK farms sit around the lower-middle area of the pack (Figure 10)
- The top quarter of British farms are achieving similar profit margins to the most profitable typical farms abroad
- The most profitable typical farms include herds in Poland, Ireland, Spain, USA, Australia and New Zealand
- These typical farms vary widely in terms of their size, system, yield and milk price (Figure 11). No particular system or size dominates
- The most profitable farms are operating in a way that best suits the resources and markets available to them.

Typical farms are middle-performing herds that represent the 'norm' for milk production in their country.

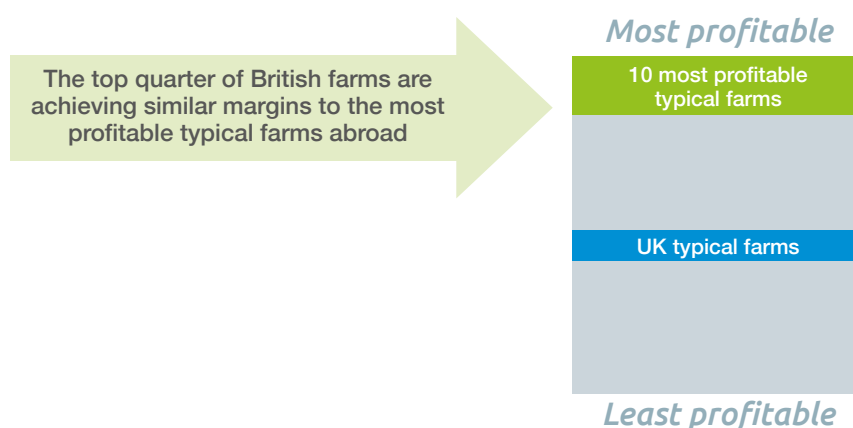


Figure 10. Position of UK typical farms compared with the 10 most profitable typical farms in selected dairy-exporting countries. This is based on 56 typical farms from 16 different countries, which have been ranked by their full economic net margin for 2018

Source: AHDB, IFCN

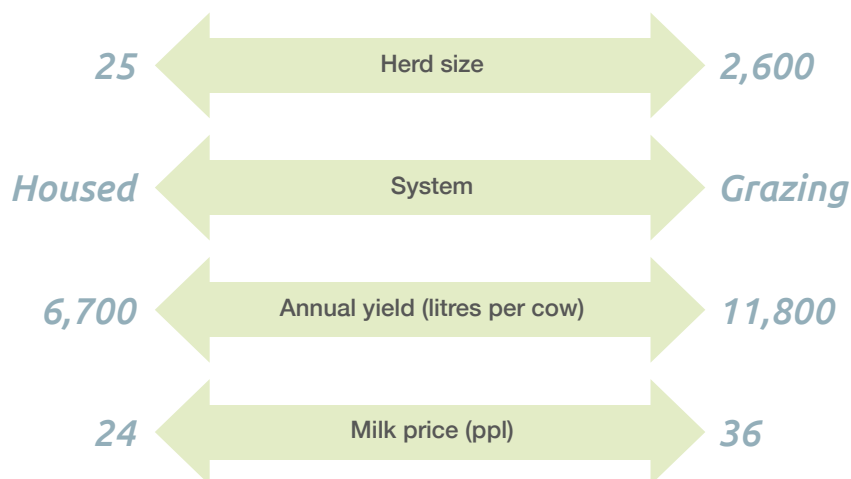


Figure 11. The range in characteristics of the 10 most profitable typical farms from selected dairy-exporting countries. This is based on 56 typical farms from 16 different countries, which have been ranked by their full economic net margin for 2018

Source: AHDB, IFCN

Learning more from the top performers

We have looked at data from two of the most profitable typical farms in selected dairy-exporting countries to find some interesting areas in which British farms might be able to improve. In this section, we try to include a variety of farms from different areas – last year we covered Ireland and Germany. This year, two typical farms in Spain and Australia attracted our attention because:

- They were two of the most profitable typical farms in 2018, both appearing in the top 10 in a group of 56 typical farms from around the world
- Although neither Spain nor Australia are very large exporters of dairy products, the volume and value of their dairy exports are similar to the UK's
- Both farms operate different systems and have their own strengths and weaknesses, in the same way that AYR and block systems in the UK have different strengths and weaknesses. It is important to consider this when looking at farm performance data – some of the main advantages and risks for these two farms are summarised in the box on page 28

The farms are very different, but – in their own ways – both made a positive net margin in 2018 (Table 14). We have compared their data to that of a typical farm in southwest England.

Spain

Our Spanish farm is an average-sized farm in northwest Spain, with 84 Holstein–Friesian cows. Around 30% of the dairy cows in Spain live on similar farms. Annual rainfall in this area of Spain is 1,000–1,300 mm and the average annual temperature is 12°C, allowing some pasture grazing. The annual yield is around 10,000 litres per year, with 3.9% butterfat and 3.3% protein*. The cows are housed in cubicles and fed on home-grown grass and maize silage, plus bought-in concentrates and alfalfa. The farm is 31 ha in area and is purely a dairy farm. Family members do all of the work on the farm.

Australia

This farm is a larger sized farm for Australia, with 393 cows. More than 20% of the dairy cows in Australia live on farms like this. The cows are Holstein–Friesian, yielding around 7,200 litres per year with 4.0% butterfat and 3.6% protein*. This is a grazing system with an area of 270 ha, most of which is irrigated to produce grazed grass and some grass silage. Concentrates and any additional forage are bought in. It is purely dairy, with no other farming enterprises. Family members carry out about one-third of the work and the rest is done by employees.

*Protein % quoted here is crude protein because this is comparable with the reporting method commonly used in the UK

Comparing performance of typical farms

Table 14. Performance of three typical farms in the UK, Spain and Australia in 2018

	UK	Spain	Australia
Technical performance			
Herd size	259	84	393
Dairy farm area (ha)	273	31	271
Stocking rate (livestock units/ha)	1.6	4.1	2.2
Yield (L/cow/year)	7,752	10,003	7,211
Solids production (kg/cow/year)	588	735	563
Financial performance (ppl)			
Milk sales	30.4	27.4	24.3
Total output	33.9	31.4	27.0
Feed and forage costs	14.1	13.9	11.6
Other variable costs	3.9	3.1	1.7
Labour costs (paid and unpaid)	5.1	3.1	4.9
Machinery*	4.3	2.4	2.4
Power, fuel and water	1.8	1.3	0.8
Property and buildings*	1.5	1.3	0.0
Rent†	2.3	1.1	1.7
Finance	1.9	1.1	1.2
Other overheads	1.0	1.0	0.8
Full economic cost of production	35.9	28.4	25.1
Full economic net margin	-2.0	3.0	1.8

* Includes depreciation

† Includes imputed rental value of owned land

Please note that totals may not add up exactly, due to rounding.

Source: IFCN, AHDB

When considering changes and improvements, it is crucial to look at the type of system that suits your farm and milk contract. This Australian farm has low costs, but its milk production is seasonal, which doesn't suit all farm businesses and milk buyers. Its local environment and need for irrigation means it is also exposed to volatility in water prices. The Spanish farm is able to deliver a relatively flat profile of milk, but at a higher cost. It uses more concentrates, so is more exposed to feed price volatility. Every system has its own advantages and risks. For more information about weighing up options in the UK, take a look at our **Optimal Dairy Systems** programme.

- Milk sales and total output (ppl) on the typical Spanish and Australian farms were lower than on the UK farm
- Feed and forage costs were much lower on the Australian farm because of its grazing system and low reliance on purchased feed. The UK and Spanish farms had similar feed costs and both utilise grazing as part of their system (the Spanish farm is in northwest Spain). The Spanish farm uses a higher stocking density, getting as much as it can from forage to help support its high-yielding cows. Better utilisation of grazing and forage could help UK farms to reduce costs and improve productivity

- Machinery costs on the UK farm were nearly double those on the Spanish and Australian farms. UK farms often spend more on machinery than their competitors abroad. Careful consideration of machinery costs and policy could help many UK farms to reduce their production costs
- Rent costs per litre of milk were much higher on the UK farm, despite it having a similar area to the Australian farm. The rental value is similar for both farms, at around £205/ha. The difference in ppl costs is actually due to the higher stocking rate on the Australian farm, which makes more efficient use of the grazing land available (the Australian farm is reliant on irrigation to achieve this)

Improving grassland management

- Compare your stocking rates with the top 25% of GB farms for your system:
 - AYR calving – turn to page 12
 - Autumn calving – turn to page 17
 - Spring calving – turn to page 22
- Choose the best grass and clover for your system using **Recommended Grass and Clover Lists**
- Get the latest advice and research on grass, forage and soil management from our **Grass** resources

Driving down machinery costs

- Compare your machinery costs with the top 25% of GB farms for your system:
 - AYR calving – turn to page 13
 - Autumn calving – turn to page 18
 - Spring calving – turn to page 23
- Check the cost of running a machine against the cost of a contractor using our **Machinery cost calculator**
- See how some of our AHDB Cereals & Oilseeds monitor farmers **reviewed their machinery** to better understand their equipment spend

Start tackling the areas you want to improve by coming along to one of our farmer meetings or events. We have a growing network of Strategic Dairy Farms across the country, which are part of our **Farm Excellence** programme. Visit these farms to see the latest practical research, discuss the challenges facing your business and learn from other farmers. Take a look at our **events** webpage to find meetings near you.

About the figures

- To keep it relevant to British farmers, we have only used data from farms in countries that export dairy products to global markets. We have selected 16 exporting countries, which together made up around 80% of global dairy exports in 2018
- Within these selected exporting countries, we have focused the top performing farms when ranked by full economic net margin
- The data comes from the International Farm Comparison Network (IFCN)
- The figures come from farms that are typical in that country. These farms represent the most common systems producing the highest share of milk within their region or country. Their figures are not national averages
- This data is from the 2018 calendar year
- Youngstock output and costs are included
- Decoupled subsidies are excluded. Some farms receive coupled subsidies and these are included
- Most countries are represented by more than one typical farm because there are several farm 'types' present in the country

If you would like more information about the IFCN data, please take a look at Appendix 1.

Appendices

Appendix 1 – Methodology behind the data

GB data

- The data comes from the annual accounts of 350 GB dairy farms, with financial year-ends between December 2018 and June 2019
- The GB data is sourced from Promar International and partners
- The sample of farms is designed to be representative of GB as a whole and is stratified based on:
 - Geographical location
 - Level of milk production
 - Calving pattern
 - Housing period
 - Type of contract
 - Financial and physical performance
- The farms are ranked by output/input ratio, as a measure of productivity, then grouped into quartiles of the top 25%, middle 50% and bottom 25%
- Youngstock output and costs are included, with the exception of the time series shown in Changes in milk production costs over time on page 10. This is the first time we have been able to include full youngstock costs, so please note the figures shown for each system are not directly comparable with previous years' results. The time series on page 10 shows figures for the dairy herd only, excluding youngstock, to allow comparisons with the data we have available from previous years
- Decoupled subsidies (e.g. the Basic Payment Scheme) are excluded
- The financial data are provided as a cash cost of production and full economic cost of production. Each dairy business will have its own management accounting conventions for evaluating financial performance. By presenting both cash costs and full economic costs, this report provides the range of costs within which most businesses will fall. Cash costs of production are recognisable as the day-to-day costs of running a dairy operation. Full economic costs allow farms of different ownership structures and farming systems to be compared

International data

- Our membership of the International Farm Comparison Network (IFCN), which is based in Germany, gives us access to annual data from 54 dairy-producing countries around the world
- The data comes from a selection of 'typical farms' that represent the most common systems producing the highest share of milk within their region or country. The figures are not national averages. Most countries are represented by more than one typical farm, because there are several farms 'types' present in the country
- The data is from the 2018 calendar year
- To keep the analysis relevant to GB farmers, we have only used data from farms in countries that export dairy products to global markets. We have selected 16 exporting countries, which together made up around 80% of global dairy exports in 2018:

- Argentina	- France	- Poland
- Australia	- Germany	- Spain
- Austria	- Ireland	- UK
- Belgium	- Italy	- USA
- Czechia	- Netherlands	
- Denmark	- New Zealand	

- Decoupled subsidies are excluded. Some farms receive coupled subsidies and these are included
- The pence per litre figures are converted from IFCN's units, which are US dollars per 100 kg of solids-corrected milk (SCM, which is standardised to 4.0% butterfat and 3.3% protein). The conversions and comparisons have been made by:
 - Converting to British pounds and pence, using the average USD/GBP exchange rate for 2018
 - Standardising to typical GB milk solids levels, using the average butterfat and protein percentages in GB for 2018

Appendix 2 – Calculating £/kg of milk solids

More and more people are measuring and comparing in kilograms of milk solids, instead of focusing solely on litres.

The figures in this report have been calculated by:

1. Total litres produced multiplied by 1.02969, because this is the weight of 1 litre of milk in kilograms.
2. Multiply the weight of the milk in kilograms by the proportion of fat and protein present in the milk. For example, if butterfat is 4.0% and protein is 3.3%, total solids are 7.3%, so you multiply by 0.073.

Appendix 3 – Depreciation

- There are several ways to calculate depreciation. The method chosen should depend on your intended use of the figures
- The method used for our figures is given below. This allows users of this report to assess whether it meets their needs and to adjust the figures for their own purposes if required

Machinery – Purchase price depreciated at a flat rate of 20% per annum over 5 years

Plant equipment – Purchase price depreciated at a flat rate of 4% per annum over 25 years

Buildings – Purchase price depreciated at a flat rate of 2.5% per annum over 40 years

This methodology is different to the Dairy performance results (and previous Evidence reports and Milkbench reports) produced in 2016/17 or earlier. These older reports used rates of 7% for both machinery and plant equipment (depreciated over 15 years) and 5% for buildings (depreciated over 20 years).

Appendix 4 – Unpaid labour

- There are many ways to calculate unpaid labour costs, depending on how you decide to value unpaid labour hours
- The method used in our figures is given below. This allows users of this report to assess whether it meets their needs and to adjust the figures for their own purposes if required

The number of unpaid labour hours used is converted into costs based on full time equivalents (FTE) working 2,860 hours per annum and earning a wage of £30,000 per annum.

This methodology is different to the Dairy performance results (and previous Evidence reports and Milkbench reports) produced in 2016/17 or earlier. These older reports used an average hourly rate for agricultural workers from the Office for National Statistics.

Appendix 5 – All-year-round calving herds' performance 2018/19 in £ per cow and £ per hectare

Table 15. Financial performance of AYR calving conventional GB dairy herds (including youngstock*) in 2018/19, when ranked by output/input ratio

	£ per cow		£ per hectare	
	Top 25%	Middle 50%	Top 25%	Middle 50%
Output				
Milk sales	2,741	2,570	5,494	4,880
Calf sales	117	89	234	169
Cow sales	158	198	317	376
Youngstock heifer sales	14	17	28	33
Other income	0	0	0	0
Dairy herd valuation change	19	-8	37	-15
Youngstock herd valuation change	14	4	27	8
Total output	3,062	2,871	6,138	5,451
Livestock purchases	47	82	93	156
Variable costs				
Purchased concentrates for dairy herd	732	729	1,467	1,384
Purchased concentrates for youngstock	104	137	208	260
Purchased forage and short-term keep	109	121	219	231
Home-grown concentrate and forage costs	128	136	257	259
Total feed and forage costs	1,073	1,123	2,151	2,133
Veterinary and medicine costs	98	99	196	187
Other livestock costs	251	264	503	502
Total variable costs	1,422	1,486	2,850	2,822
Overhead costs				
Labour – paid	255	257	511	489
Labour – unpaid	126	196	253	373
Power and machinery	336	398	673	757
Machinery and equipment depreciation	64	113	129	215
Property repairs	57	55	114	105
Buildings depreciation	29	26	59	50
Rent	96	76	192	144
Rental value of owned land	40	57	81	107
Finance	64	85	129	161
Other operational costs	90	112	181	213
Overheads (excluding rent and finance)	957	1,159	1,918	2,201
Total overhead costs	1,158	1,376	2,320	2,613
Total production costs and margins				
Cash cost of production	2,366	2,552	4,743	4,847
Cash net margin	664	322	1,330	611
Full economic cost of production	2,626	2,945	5,264	5,591
Full economic net margin	436	-74	874	-140

* These figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements. This is the first time we have been able to include full youngstock costs so please note these figures are not directly comparable with previous years' results. If you would like to see changes in milk production costs over time on a like-for-like basis, please turn to page 10. Please note that totals may not add up exactly, due to rounding.

Appendix 6 – Autumn block-calving herds' performance 2018/19 in £ per cow and £ per hectare

Table 16. Financial performance of autumn block-calving conventional GB dairy herds (including youngstock*) in 2018/19, when ranked by output/input ratio

	£ per cow		£ per hectare	
	Top 25%	Middle 50%	Top 25%	Middle 50%
Output				
Milk sales	2,323	2,355	4,445	4,075
Calf sales	129	144	246	250
Cow sales	111	143	213	248
Youngstock heifer sales	8	7	15	12
Other income	45	2	87	4
Dairy herd valuation change	-18	39	-35	68
Youngstock herd valuation change	-9	7	-17	13
Total output	2,589	2,698	4,954	4,670
Livestock purchases	19	47	36	82
Variable costs				
Purchased concentrates for dairy herd	431	615	825	1,064
Purchased concentrates for youngstock	70	82	134	141
Purchased forage and short-term keep	36	82	69	141
Home-grown concentrate and forage costs	123	143	235	248
Total feed and forage costs	660	922	1,264	1,595
Veterinary and medicine costs	71	98	135	169
Other livestock costs	161	187	307	323
Total variable costs	892	1,206	1,706	2,087
Overhead costs				
Labour – paid	192	250	367	432
Labour – unpaid	148	134	284	232
Power and machinery	226	287	432	496
Machinery and equipment depreciation	56	103	107	178
Property repairs	48	57	92	99
Buildings depreciation	59	35	113	60
Rent	53	128	102	222
Rental value of owned land	87	44	167	77
Finance	28	24	53	42
Other operational costs	62	97	119	168
Overheads (excluding rent and finance)	790	962	1,512	1,665
Total overhead costs	959	1,159	1,835	2,006
Total production costs and margins				
Cash cost of production	1,519	2,097	2,906	3,628
Cash net margin	1,097	555	2,099	961
Full economic cost of production	1,869	2,413	3,577	4,175
Full economic net margin	720	286	1,377	495

* These figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements. This is the first time we have been able to include full youngstock costs so please note these figures are not directly comparable with previous years' results. If you would like to see changes in milk production costs over time on a like-for-like basis, please turn to page 10. Please note that totals may not add up exactly, due to rounding.

Appendix 7 – Spring block-calving herds' performance 2018/19 in £ per cow and £ per hectare

Table 17. Financial performance of spring block-calving conventional GB dairy herds (including youngstock*) in 2018/19, when ranked by output/input ratio

	£ per cow		£ per hectare	
	Top 25%	Middle 50%	Top 25%	Middle 50%
Output				
Milk sales	1,884	1,719	5,147	3,746
Calf sales	100	61	274	132
Cow sales	124	115	339	251
Youngstock heifer sales	0	21	0	46
Other income	8	27	21	59
Dairy herd valuation change	24	4	67	9
Youngstock herd valuation change	38	2	105	5
Total output	2,179	1,949	5,952	4,248
Livestock purchases	6	15	17	34
Variable costs				
Purchased concentrates for dairy herd	279	259	762	564
Purchased concentrates for youngstock	50	42	138	92
Purchased forage and short-term keep	176	104	482	226
Home-grown concentrate and forage costs	96	116	262	253
Total feed and forage costs	602	521	1,644	1,135
Veterinary and medicine costs	46	53	125	116
Other livestock costs	108	138	295	301
Total variable costs	755	712	2,064	1,552
Overhead costs				
Labour – paid	199	256	543	559
Labour – unpaid	73	52	199	113
Power and machinery	227	256	621	557
Machinery and equipment depreciation	24	15	66	32
Property repairs	58	78	158	171
Buildings depreciation	31	44	85	95
Rent	22	53	61	115
Rental value of owned land	121	137	331	298
Finance	14	14	37	31
Other operational costs	60	55	163	121
Overheads (excluding rent and finance)	672	756	1,836	1,648
Total overhead costs	829	959	2,266	2,091
Total production costs and margins				
Cash cost of production	1,341	1,440	3,665	3,138
Cash net margin	775	503	2,116	1,096
Full economic cost of production	1,591	1,687	4,346	3,677
Full economic net margin	588	262	1,606	571

* These figures include revenue and costs for the dairy herd and dairy youngstock being reared as replacements. This is the first time we have been able to include full youngstock costs so please note these figures are not directly comparable with previous years' results. If you would like to see changes in milk production costs over time on a like-for-like basis, please turn to page 10. Please note that totals may not add up exactly, due to rounding.

Produced for you by:

AHDB Dairy
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

T 024 7669 2051
E comms@ahdb.org.uk
W ahdb.org.uk
🐦 @AHDB_Dairy

If you no longer wish to receive this
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