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Kingshay DAIRY MANAGER

DAIRY COSTINGS FOCUS

ANNUAL REPORT **2019**

- **THE LARGE** GET LARGER
- **MILK PRICE &** INPUT COSTS ANALYSIS
- **MILK FROM** FORAGE ANALYSIS
- **REGIONAL** ANALYSIS
- **MILK YIELD &** HERD SIZE BANDS
- **HEALTH &** FERTILITY TRENDS
- **ORGANIC &** CHANNEL ISLAND UPDATES

WELCOME

This year Dairy Manager celebrates its 20th Birthday, whilst at our new state-of-the-art Dairy Development Centre it's a year since the cows arrived. As from the start, Kingshay continues to give independent, unbiased advice to farmers and industry professionals alike.

Dairy Manager started with 50 herds on a relatively simple spreadsheet. Now it is thriving with nearly 2,000 herds on a well-designed online platform. It has evolved over the years from analysis of inputs and margins, to costs of production with **Profit Manager,** then **Health Manager** in 2010 and more recently our **Antimicrobial Reporting** in 2017. Now our main focus is managing large data sets and data integration.

The team has grown to 5 key people, with Kathryn and Richard involved virtually from the beginning. Each team member has their own role to play in the efficiency and development of the service. A brief introduction to everyone can be found on the inside of the back cover, allowing you to put a face to a name.

The Dairy Development Centre officially opened in Autumn 2018. Designed and operated by Kingshay with funding from Innovate UK through the Agri-EPI Centre, the state-of-the-art housing works seamlessly with the precision grazing giving the cows four fresh paddocks every day.

Sensors are utilised for industry leading research, including robotic milkers, collars and many other devices. The herd facilities allow companies to develop and showcase new ideas & technologies which will potentially be part of the future of the dairy industry!

Not only has Kingshay evolved over the last 20 years but dairy productivity has altered considerably, with average herd size growing by 43% and milk yields following a similar trend - but have we reached our peak? The summer of 2018 was a difficult one for all farming businesses with drought conditions seen across the nation. This report discusses in depth the effects this had on udder health, efficiencies and general profitability.

To find out more about **Dairy Manager** and Kingshay's other services, please call our team on **01458 851555**, email **dairy.manager@kingshay.co.uk** or visit **www.kingshay.com**.

The Kingshay Team

Photo above, left to right.

Kathryn Rowland, Hayley Tincknell, Felicity Gale, Christina Ford and Richard Simpson

Contents

Introduction	3	Milk yield bands	15
Trends over the past 10 years	4	Herd size bands	16
Production trends – the large get larger	6	Health trends	17
Milk price analysis	7	Fertility trends	18
Milk from forage	8	Reasons for cows leaving herd	20
Regional analysis	10	Organic update	21
Milking frequency	11	Channel Island update	22
Input price analysis	14	Meet the Team	23

INTRODUCTION

Progressive dairy farmers are increasingly reliant on data-driven decisions; whether in business management or day-to-day cow care. Which is why the **Dairy Costings Focus Report** is such a valuable resource. With in-depth analysis of herds using **Dairy Manager** costings, recent and long-term trends, as well as fact-based comparisons between the top and bottom ranked producers, there is plenty of food for thought.

What is particularly of note this year is the impact that the 2018 dry summer had on production, culling rates and herd size. For the first time in the past decade, the average herd size dropped, probably due to increased culling to preserve forage stocks.

This year, in the **eighth edition** of this report, we have analysed herds by the volume of milk sold, which has revealed some interesting trends (see graph and page 6). The higher output herds have progressively grown larger and are pushing yields as each year passes. By spreading costs of production and making the most of stable, aligned contracts, the largest herds were able to secure the highest margin on a per-cow basis. But that's not to say that bigger is always better or more efficient. Smaller herds were more likely to keep a lid on production costs by making better use of forage. The top 25% of producers (ranked by milk from forage) earned £248/cow (or 3.79p/litre) more than the bottom 25% (see page 8).

There are also some notable trends in the health & fertility figures of herds using **Health Manager** (see pages 17 & 18). Heat stress led to an increase in many health issues, and yet, when comparing the top 25% and the average, it's clear that there is plenty more that producers can do to reduce health problems, with combined savings of £13,836 per 100 cows from improved health status and savings of £20,250 per 150 cows from better fertility.

TRENDS OVER THE PAST 10 YEARS

Herd sizes have clearly grown significantly over the past 10 years, from 152 cows to 205. What is unexpected is the drop in average herd size over the past year, the first time this has happened since the year 2000.

There are several reasons for this, one of the most significant being the dry grazing conditions of last year's summer which reduced grass & forage availability. Many producers proactively sold less productive cows to preserve forage stocks. Heat stress was also a factor which led to increased health issues during those months. As a result, average cull rates increased from 27% last year to 29% in 2018/19.

Average yields have increased over the past decade, by 11.7% to 8,352 litres per cow, although the most recent eight years have seen more fluctuation than in previous years, perhaps due to the removal of milk quota and mirroring changes in seasonal weather and therefore milk from forage. The very wet year of 2012 had a marked effect on both.

Milk from grazing suffered, particularly last year due to the dry summer, although producers made good use of conserved forage as overall yields from forage remained relatively stable over the past four years, comprising about 30% of total yields.

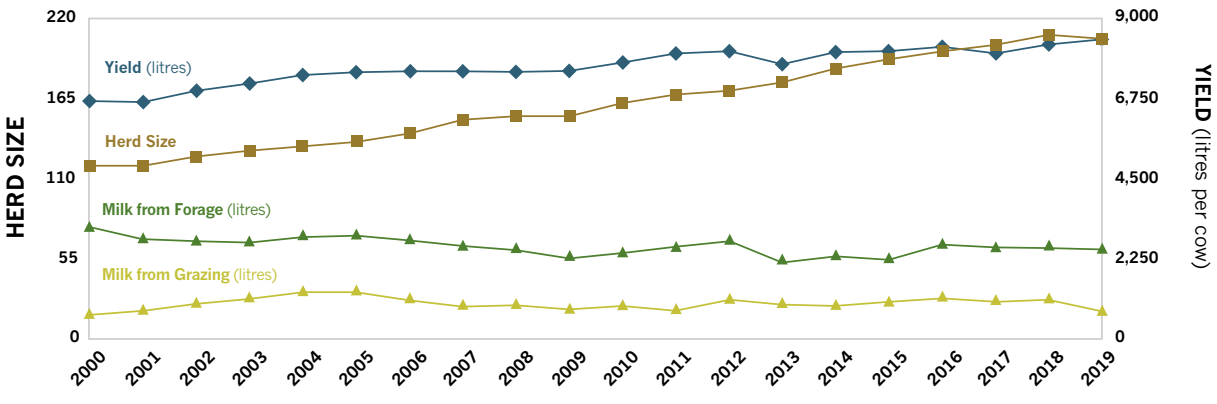
Concentrate use rose by 14.1% over the past decade, to 2,683kg per cow. Although as yields have risen, this has diluted usage on a per litre basis to 0.32kg/litre, just 0.01kg more than in 2009. However, concentrate prices are 18.9% dearer, at £239/t, taking overall total purchased feed costs to £708/cow (a 35.9% increase compared to 2009) or 8.48p/litre (a 21.7% increase).

Milk prices were 2.82p/litre higher in 2019 than 2009, and that, combined with higher yields per cow and larger herd sizes, has positively affected margins, despite increased concentrate use and costs. It's rather disheartening when inflation has risen by 23% over that period.

On average, margins over purchased feed levelled at £1,713/cow and 20.51p/litre in 2019, up 19.4% and 6.9% on 2009, respectively.

ANNUAL ROLLING RESULTS					
HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS Year ending March		2009	2019	Difference	% change
Cows in herd		152	205	53	34.9%
Stocking rate	cows/ha	2.20	2.28	0.08	3.6%
MILK PRODUCTION					
Yield per cow	litres	7,476	8,352	876	11.7%
Yield from all forage per cow	litres	2,247	2,486	239	10.6%
Yield from grazed forage per cow	litres	781	719	-62	-7.9%
% of total yield from forage		30%	30%	-0.3%	-1.0%
Milk price	pence	26.17	28.99	2.82	10.8%
Total milk value per cow	£	1,956	2,421	465	23.8%
Milk price: conc. price ratio		1.30	1.21	-0.09	-6.8%
FEED					
Concentrate use per cow	kg	2,351	2,683	332	14.1%
Concentrate use per litre	kg	0.31	0.32	0.01	3.2%
Concentrate price per tonne	£	201	239	38	18.9%
Other purchased feed cost per cow	£	48	67	19	39.6%
Total purchased feed cost per cow	£	521	708	187	35.9%
Total purchased feed cost per litre	pence	6.97	8.48	1.51	21.7%
All purchased feed @ 86% equivalent per cow	kg	2,610	2,939	329	12.6%
MARGINS					
MOPF per cow	£	1,435	1,713	278	19.4%
MOPF per litre	pence	19.19	20.51	1.32	6.9%

TRENDS IN MILK PRODUCTION AND EFFICIENCY



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- **Online portal (linked to a database)**
- **Phone Apps (for both Android and iPhone users)**
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- **Data integration**
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PRODUCTION TRENDS – THE LARGE GET LARGER

Analysing herds by the volume of milk sold highlights some interesting trends. As might be expected, the higher output herds tend to be larger both in terms of herd size and produce more litres per cow. But it is the rate of annual growth which is particularly notable.

Over the past year, herds producing less than 0.5m litres saw a 1.5% fall in milk output, to 382,371 litres on average. In contrast, the higher producing herds boosted milk output by progressively larger amounts, rising by 1.2% in the 0.5-1m litre bracket all the way up to a 5.1% increase in the over 5m litre band.

Not only have they boosted milk yields per cow, they have grown their herd size by an average of 17 cows, to 743 head since 2017/18. This trend can be seen in each of the past three years, as shown in the graph.

Possible reasons for this include larger, higher output herds being less reliant on grazing, so the summer drought had less of a negative impact than in lower output herds, which produced a greater proportion of their milk from forage.

Larger herds are also more likely to be on aligned contracts, with a more stable milk price enabling a continued investment programme to increase output.

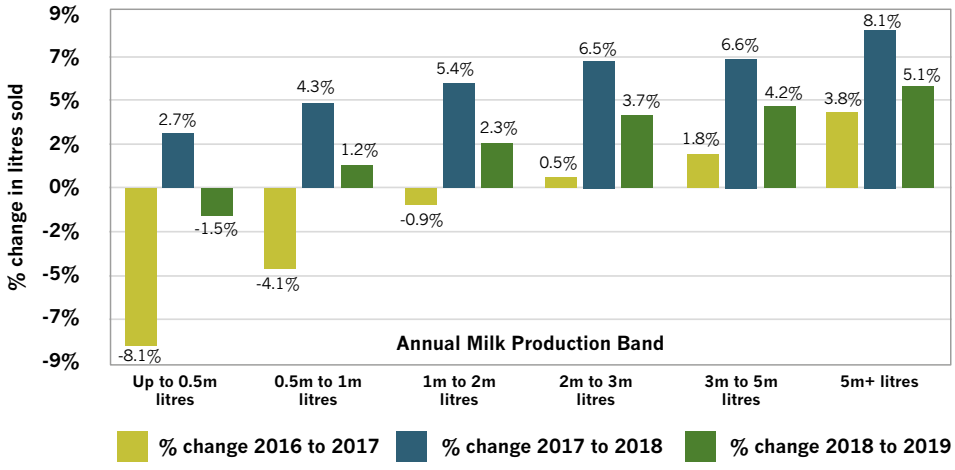
Margins increased steadily in line with overall herd production, from £1,287/cow in the smallest bracket to £2,120/cow in the largest group. In addition, the largest producers benefit from improved efficiencies in several areas and clearly have an appetite for continued expansion.

What is particularly interesting to note is that large herds have a disproportionately high impact on UK milk production. AHDB Dairy recorded a 1.1% year-on-year increase in milk production, to 14.87bn litres in 2018/19, while our own **Dairy Manager** herds increased sales by 2.2%, due to a 1% increase in herd size and 1.3% improvement in yield per cow. Herds producing over 5m litres represented only 3% of **Dairy Manager** herds, and yet contributed to 14% of the total milk sales. They accounted for a whopping 27% of the year-on-year increase in production across the whole pool.

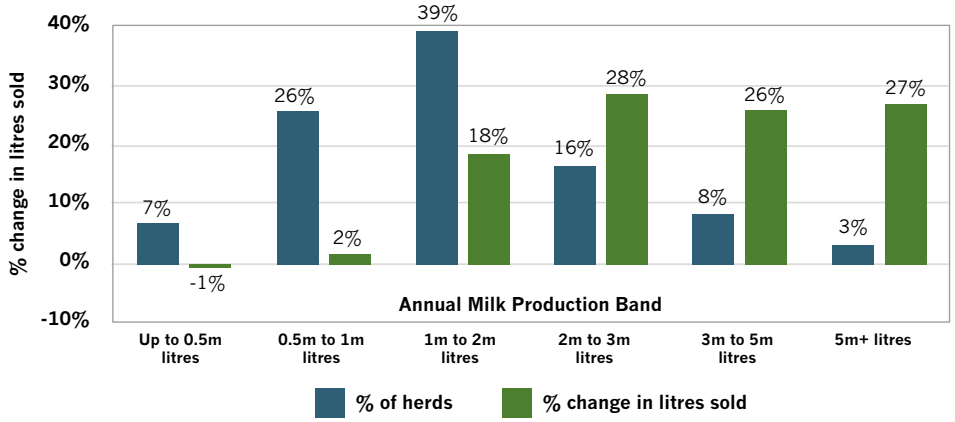
Is this an indication of many processors and their producers being supply driven rather than demand led? What impact will this have on the milk price for the whole market?

MILK SALES BANDS							
HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS		Up to 0.5m litres	0.5m to 1m litres	1m to 2m litres	2m to 3m litres	3m to 5m litres	5m+ litres
Milk sales	litres	382,371	757,845	1,414,559	2,427,020	3,810,396	7,603,428
Cows in herd		62	107	174	278	402	743
Yield per cow	litres	6,589	7,438	8,439	9,034	9,758	10,415
Yield from all forage per cow	litres	2,285	2,635	2,584	2,325	2,165	1,734
Milk Price	pence	27.62	28.41	29.08	29.32	29.53	29.60
MOPF per cow	£	1,287	1,526	1,742	1,858	2,007	2,120
MOPF per litre	pence	19.54	20.52	20.64	20.57	20.57	20.35
YEAR ON YEAR CHANGE							
Milk sales change	litres	-7,009	2,858	21,081	76,233	139,008	379,306
% Milk sales change		-1.5%	1.2%	2.3%	3.7%	4.2%	5.1%
Cows in herd change		0	0	1	4	4	17
% Cows in herd change		-0.4%	0.3%	1.2%	1.9%	1.0%	2.6%
Yield per cow change	litres	-49	80	95	151	286	258
% Yield per cow change		-0.7%	1.1%	1.2%	1.8%	3.1%	2.5%

YEAR ON YEAR CHANGE IN MILK SALES



SOURCE OF INCREASED MILK PRODUCTION



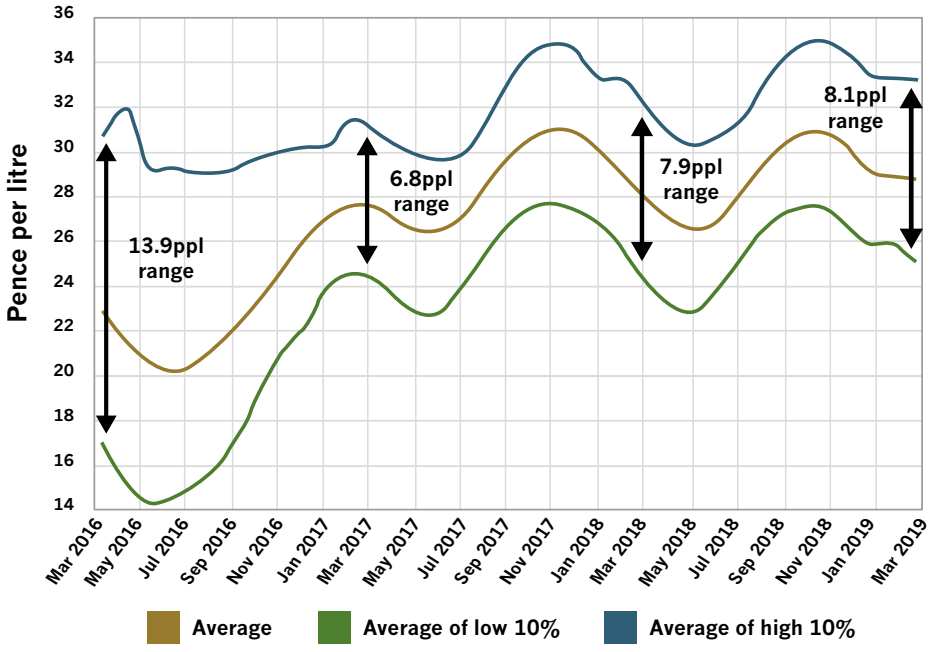
MILK PRICE ANALYSIS

Average milk prices improved slightly by 0.6ppl over the past year, putting them 5% above March 2017 but still 14% below five years ago. Fortunately, prospects for the year ahead look relatively positive, given global and European supply and demand, but with significant Brexit related uncertainty.

It's interesting to note that the gap between the highest and lowest paid 10% of producers has increased year-on-year, to 8.1p/litre. However, this is a considerable improvement on March 2016 when the gap reached 13.9p/litre.

The outlook for the current season looks reasonably optimistic, with global production growth forecast at 0.3% (900m litres) against a 1.8% rise in demand, and a smaller European herd set to limit EU supplies.

MONTHLY MILK PRICES – CONVENTIONAL HERDS



BEST VS LOWEST MILK PRICE CONTRACTS - CALCULATED BASED ON A LEVEL SUPPLY

Year ending		Mar 14	Mar 15	Mar 16	Mar 17	Mar 18	Mar 19
Top	ppl	34.52	34.41	31.94	31.03	31.79	32.97
Bottom	ppl	31.88	20.99	15.76	24.57	24.93	26.37
Difference	ppl	2.64	13.42	16.18	6.46	6.86	6.60

Source: AHDB Dairy

MILK FROM FORAGE

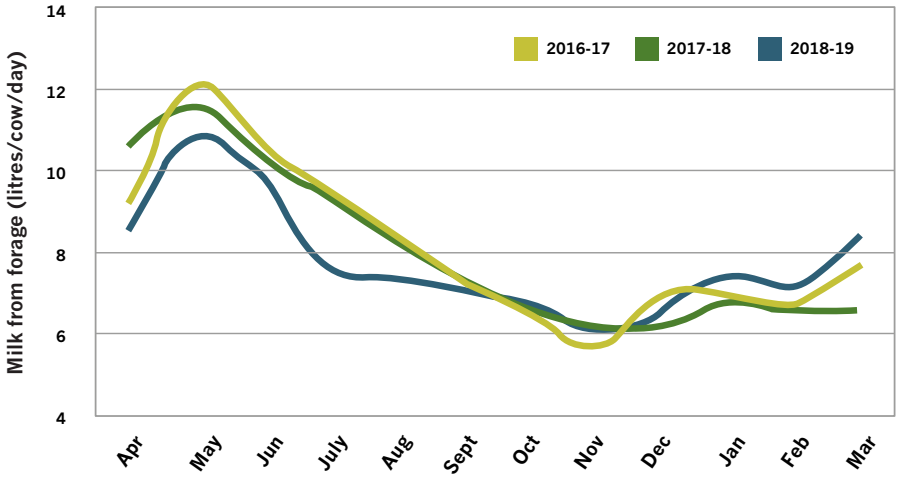
After a challenging year for grass growth in 2017/18 producers were hoping for an easier season this year, but unfortunately it was not to materialise.

The very dry summer led to parched pasture, affecting silage yields and quality as well as grazing availability. It's therefore not surprising that milk yields from forage eased back to an average of 29% for overall yields versus 31% last year, in itself a difficult season.

When comparing the top and bottom quartile of producers, ranked by milk from forage, the leading 25% averaged 3,750 litres from forage (or 45% of production). In contrast, the bottom quartile averaged just 1,118 litres, or just 13% of production.

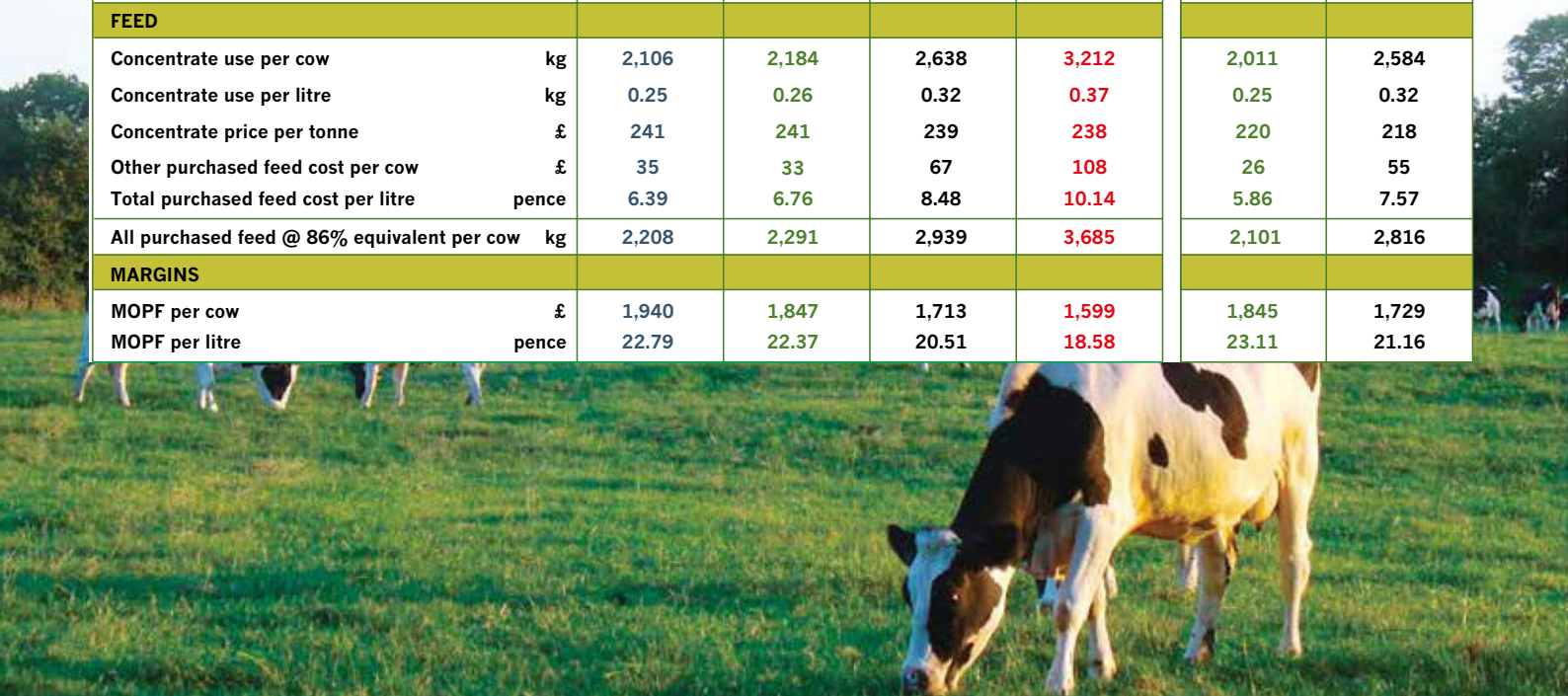
As a result, feed costs averaged 10.14p/litre in the bottom quartile, compared to 6.76p/litre in the top quartile. Naturally, this had a marked effect on margins, both on a per cow and per litre basis, with the top quartile earning £248/cow (or 3.79p/litre) more than the bottom quartile. Extrapolate that up to the average herd size of 205 cows and the benefits of producing more from forage are clear: a difference of £50,840.

MONTHLY MILK FROM FORAGE TRENDS



ANNUAL RESULTS – YEAR END MARCH 2019 (RANKED BY MILK FROM FORAGE)

HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS		Top 10%	Top 25%	Average	Bottom 25%	Top 25% – last year	Average – last year
Cows in herd		191	183	205	236	179	203
Stocking rate	cows/ha	2.02	2.18	2.28	2.40	2.17	2.30
MILK PRODUCTION							
Yield per cow	litres	8,512	8,258	8,352	8,602	7,981	8,172
Yield from all forage per cow	litres	4,169	3,750	2,486	1,118	3,856	2,542
Milk price	pence	29.18	29.13	28.99	28.72	28.97	28.72
FEED							
Concentrate use per cow	kg	2,106	2,184	2,638	3,212	2,011	2,584
Concentrate use per litre	kg	0.25	0.26	0.32	0.37	0.25	0.32
Concentrate price per tonne	£	241	241	239	238	220	218
Other purchased feed cost per cow	£	35	33	67	108	26	55
Total purchased feed cost per litre	pence	6.39	6.76	8.48	10.14	5.86	7.57
All purchased feed @ 86% equivalent per cow	kg	2,208	2,291	2,939	3,685	2,101	2,816
MARGINS							
MOPF per cow	£	1,940	1,847	1,713	1,599	1,845	1,729
MOPF per litre	pence	22.79	22.37	20.51	18.58	23.11	21.16



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REGIONAL ANALYSIS

Yields increased last year across all regions with the exception of the South East, possibly due to the summer drought, which affected that area the worst. There are some surprises in store when delving further into the figures.

For example, the South East actually increased its yields from forage, along with the North and Scotland, whereas all other areas saw yields from forage decline. It's not clear why this is the case. Perhaps the South East used more maize and/or wholecrop in diets than grass silage; crops which weren't affected quite so badly by the drought, provided they got off to a good start. The North and Scotland may also not have been as badly hit by the dry weather as other areas.

It's also interesting to note that concentrate usage increased across every region, except the South East, which used 26kg/cow less concentrates than last year. Feed costs increased across the board, although that was slightly offset by higher milk prices in many areas. Even so, margins declined across the UK, with Wales showing the biggest drop, of 1p/litre to 20.25p/litre, while the South East suffered the smallest cut, of 0.18p/litre, to 22.57p/litre.

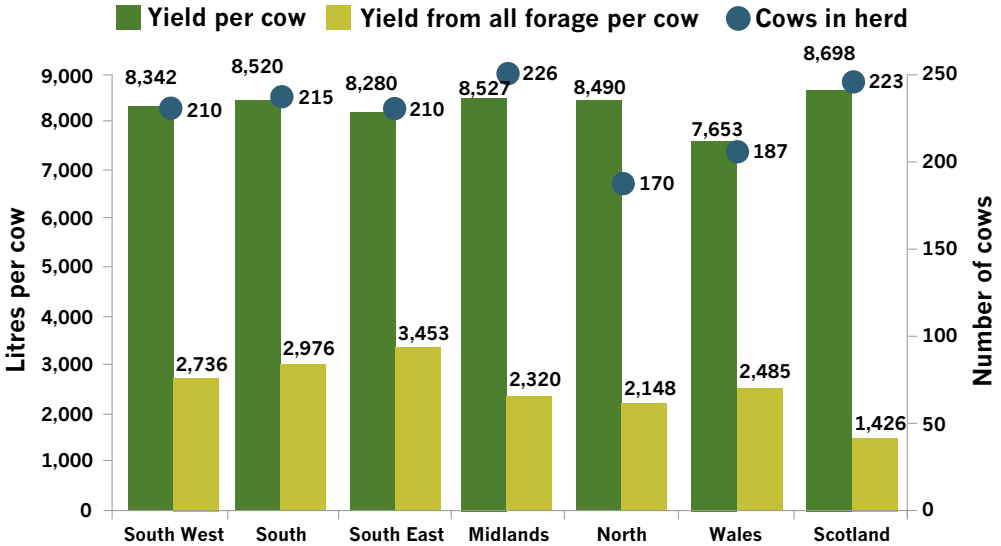
Wales continue to have the lowest yields of any region, and actually widened its gap compared to other areas. This is most likely due to the higher focus on grazing in Wales, making the country more at the mercy of grass conditions over the summer. It also saw a marked contraction in herd size, from 201 cows to 187, potentially due to higher culling rates to cope with reduced forage availability.

In contrast, the North saw a steady reduction in herd size over the three years to 2018 but jumped back up to 170 cows from 164 last year.

Scotland, with its higher proportion of robotic herds, still had the largest herd size, at 223 head, as well as the highest yields, at 8,698 litres per cow. Unsurprisingly, it made the least use of forage and greatest use of purchased feeds, which eroded margins to just 18.73p/litre, the lowest of any region.

ANNUAL RESULTS – YEAR END MARCH 2019								
HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS		**South West**	**South**	**South East**	**Midlands**	**North**	**Wales**	**Scotland**
Cows in herd		210	215	210	226	170	187	223
Stocking rate	cows/ha	2.13	2.20	2.69	2.35	2.30	2.36	2.51
MILK PRODUCTION								
Yield per cow	litres	8,342	8,520	8,280	8,527	8,490	7,653	8,698
Yield from all forage per cow	litres	2,736	2,976	3,453	2,320	2,148	2,485	1,426
Milk price	pence	29.33	29.15	29.66	28.73	28.59	28.48	28.76
Change on last year	pence	0.26	-0.03	0.46	0.22	0.35	-0.13	0.33
FEED								
Concentrate use per cow	kg	2,671	2,539	2,277	2,765	2,792	2,425	3,160
Concentrate use per litre	kg	0.32	0.30	0.27	0.32	0.33	0.32	0.36
Concentrate price per tonne	£	241	235	240	236	240	241	247
Other purchased feed cost per cow	£	47	66	40	75	98	45	93
Total purchased feed cost per cow	£	691	663	586	727	768	630	873
Total purchased feed cost per litre	pence	8.28	7.78	7.08	8.53	9.04	8.24	10.04
Change on last year	pence	0.75	0.60	0.63	1.18	1.05	0.88	0.91
MARGINS								
MOPF per cow	£	1,756	1,821	1,869	1,723	1,660	1,549	1,629
MOPF per litre	pence	21.05	21.37	22.57	20.20	19.55	20.25	18.73
Change on last year	pence	-0.49	-0.63	-0.18	-0.96	-0.70	-1.00	-0.57

HERD PERFORMANCE BY REGION



MILKING FREQUENCY

Choice of milking frequency comes down to a number of considerations: Labour, target milk yield, milk contract, and housing system. It's clear that more frequent milking increases yields, but is it to the detriment of other factors?

Those herds milking three times a day had the highest yields, at 10,064 litres per cow, with twice a day herds lower, averaging 8,185 litres. Robotic milking continues to close the gap on three times a day (a gap of 1,093 litres in 2016, 375 litres last year closing to just 290 litres in 2019). Perhaps continued improvements in technology and management of robotic systems will see yields match or even overtake three times a day milking in the years ahead?

Three times a day milking remains the preserve of the largest herds, with average cow numbers increasing from 409 last year to 464 this year. Robotic milking herds increased by seven, to 167 cows, while twice a day milkers eased by three to 193.

It's interesting to note that herds with robots are fed more concentrates than those milked three times a day, but less other purchased feed. Robotic herds pay more per tonne of concentrate and while the total purchased feed fed (at 86% DM equivalent) is 243 kg/cow less, the balance of feed price and lower yields, mean purchased feed costs are significantly higher for robotic herds, at 9.57p/litre and 9.38p/litre, respectively.

By contrast, those milked twice a day are feeding just 2,819kg per cow, costing 8.31p/litre. Unsurprisingly, twice a day milkers are producing the most from forage, with three times a day bringing up the rear.

Margins on a per cow basis are therefore highest among the three times a day milkers, at £2,016/cow, although the lower yielding twice daily herds performed the best on a per litre basis, at 20.64p/litre.

ANNUAL RESULTS – YEAR END MARCH 2019

HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS		Twice a day milking	Robotic milking	Three times a day milking
Cows in herd		193	167	464
Stocking rate	cows/ha	2.26	2.20	2.28
MILK PRODUCTION				
Yield per cow	litres	8,185	9,774	10,064
Yield from all forage per cow	litres	2,579	2,296	1,921
Milk price	pence	28.95	28.85	29.41
FEED				
Concentrate use per cow	kg	2,582	3,481	3,467
Concentrate use per litre	kg	0.32	0.36	0.34
Concentrate price per tonne	£	239	249	236
Other purchased feed cost per cow	£	62	69	127
Total purchased feed cost per cow	£	680	935	944
Total purchased feed cost per litre	pence	8.31	9.57	9.38
All purchased feed @ 86% equivalent per cow	kg	2,819	3,692	3,935
MARGINS				
MOPF per cow	£	1,689	1,884	2,016
MOPF per litre	pence	20.64	19.28	20.03

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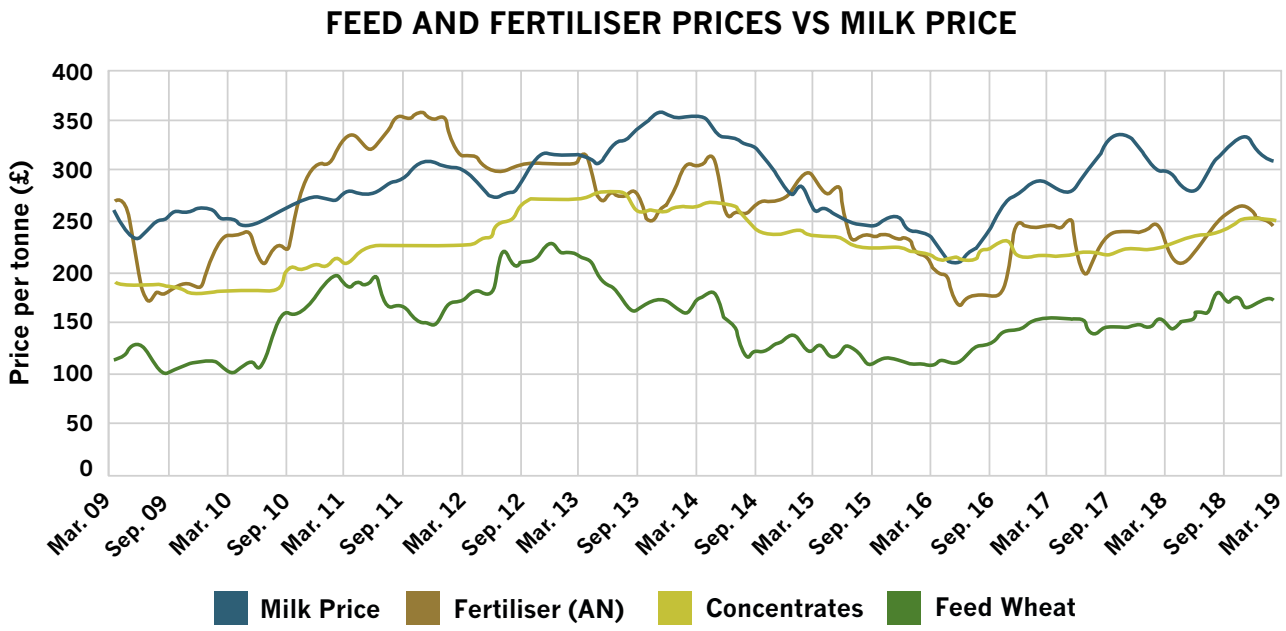
- Shows all costs in total £, pence per litre, £ per cow or £ per hectare.
- Easy to use: Uses figures from end of year accounts.

INPUT PRICE ANALYSIS

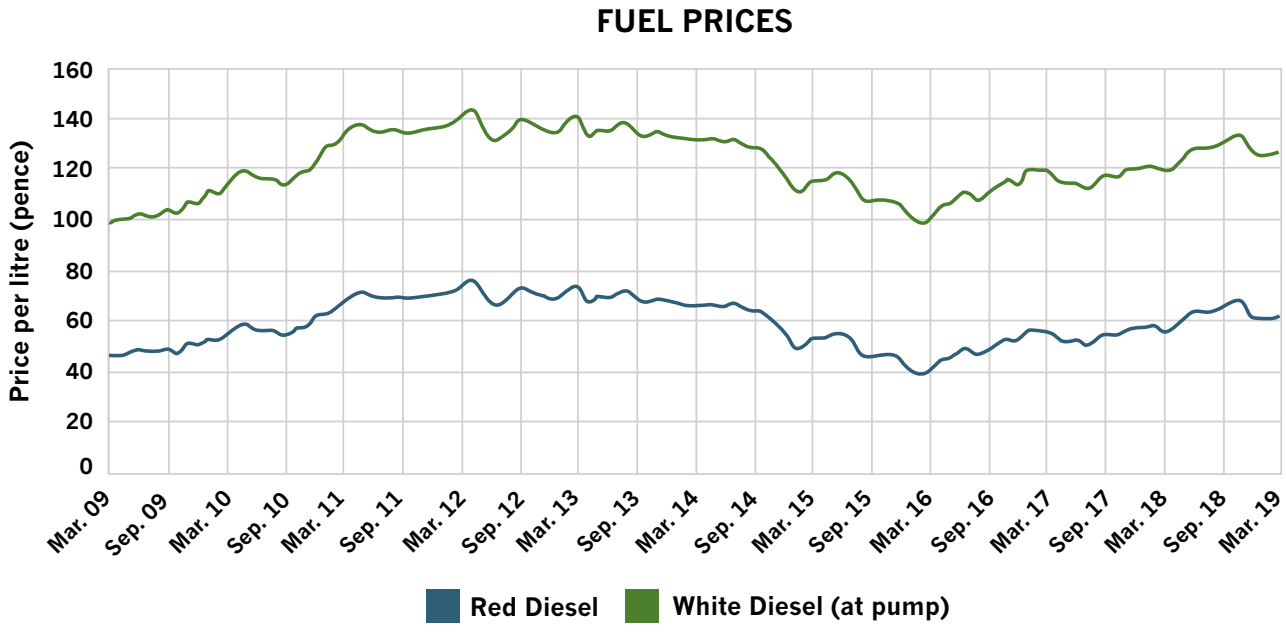
Input prices have generally increased over the past year, although they have dropped back from their peak reached in December. However, milk prices have remained stable year-on-year despite falling, rising and falling again over the season, so overall producers will be out of pocket.



Interestingly, ammonium nitrate fertiliser values have very closely mirrored the fluctuations in milk price, as have white and red diesel, making it difficult to forecast and buy ahead with confidence.

Concentrates, in particular (and feed wheat to a lesser extent) have been on a steady upward trajectory since September 2017, reaching a five-year high in 2019. Red and white diesel reached a similar high over the winter, while AN fertiliser achieved a four-year high despite seasonal dips in the autumn months.

In contrast, the milk price only set an 18-month high, having fluctuated widely from 31.94p/litre in late 2017 to 26.79p/litre in the summer of 2018, and doing much the same the following year, likely due in part to seasonality. With all commodity prices dependent on global supply and demand, politics and economics, uncertainty looks set to remain, so locking into forward prices at budgeted levels is likely to be a wise move.



MILK YIELD BANDS

Milk yields and herd size bands are very closely aligned, with yields per cow progressively increasing as herd size grows. This is a trend which has been seen for many years, but there is an interesting variation this year.

Herds in the lower yielding band (up to 6,000 litres) were smaller than last year, at 120 cows against 130 in 2018. Likewise, those in the highest yielding bracket (over 10,000 litres) were larger, at 316 cows versus 310 last year.

Milk price follows the same trend as herd size, progressively rising as yields increase, most likely due to volume bonuses and more of these herds being on an aligned contract. However, in order to achieve higher yields, producers fed more concentrates, with the highest yielding fed 3,775kg per cow against just 1,534kg in the smallest category.

However, it's clearly worth spending the money, as the higher yields and better milk prices mean the highest yielding herds averaged a margin over purchased feed of £2,123/cow, a margin which drops progressively down to £1,135/cow in the lowest yielding category. That said, on a per litre basis, the trend is slightly reversed, with those in the 6,000-7,000 litre bracket achieving the highest returns, at 21.38p/litre.

Obviously, whether this higher margin over purchased feed results in a higher bottom line profit will depend on many other significant factors, but with purchased feed representing the highest single cost for most herds, those with poor feed efficiency will struggle to make a profit.

ANNUAL RESULTS – YEAR END MARCH 2019

HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS		Up to 6,000 litres	6,000 to 7,000 litres	7,000 to 8,000 litres	8,000 to 9,000 litres	9,000 to 10,000 litres	Over 10,000 litres
Cows in herd		120	164	177	194	222	316
Stocking rate	cows/ha	2.00	2.23	2.37	2.20	2.35	2.39
MILK PRODUCTION							
Yield per cow	litres	5,376	6,576	7,531	8,485	9,493	10,913
Yield from all forage per cow	litres	2,267	2,632	2,634	2,620	2,415	2,100
% of total yield from forage		42%	40%	35%	31%	25%	19%
Milk price	pence	28.25	28.70	28.77	29.00	29.18	29.18
FEED							
Concentrate use per cow	kg	1,534	1,929	2,315	2,703	3,178	3,775
Concentrate use per litre	kg	0.29	0.29	0.31	0.32	0.33	0.35
Concentrate price per tonne	£	241	239	240	240	240	239
Other purchased feed cost per cow	£	14	21	38	61	87	159
Total purchased feed cost per cow	£	384	482	593	708	850	1061
Total purchased feed cost per litre	pence	7.13	7.32	7.88	8.34	8.96	9.73
All purchased feed @ 86% equivalent per cow	kg	1,609	2,032	2,486	2,944	3,509	4,318
MARGINS							
MOPF per cow	£	1,135	1,406	1,574	1,753	1,919	2,123
MOPF per litre	pence	21.12	21.38	20.90	20.66	20.22	19.45

HERD SIZE BANDS

All herd size bands saw an increase in total milk production on last year, but each has also had to spend more on purchased feed to achieve that, with many spending around £100/cow more, year-on-year.

Concentrate use rose steadily in line with herd size, with the smallest herds using 2,357kg/cow while the largest used nearly 1,000kg more at 3,349kg. However, the largest did manage to make use of their purchasing power, paying an average of £226/t compared to the smallest band at £247/t.

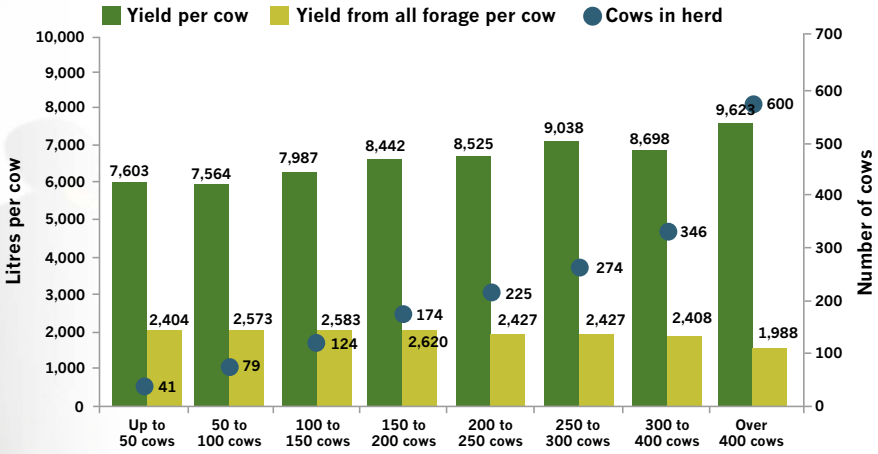
Generally speaking, yields increase with herd size, with the smallest averaging 7,603 litres and the largest 9,623 litres. However, that does hide a couple of fluctuations within the overall trend, something which is also seen in milk from forage. Typically, the smaller herds produce more from forage than the larger herds, although the peak was seen in the 150-200 cow bracket, at 2,620 litres.

That clearly helps them keep production costs down, but smaller herds also suffered the lowest milk prices, at 27.70p/litre in the up to 50 cow bracket against a peak of 29.83p/litre in the 300-400 cow band, largely due to volume bonuses.

As a result, larger herds' milk prices and yields more than offset their increased feed costs, putting the peak margin over purchased feed of £1,990/cow firmly in the over 400-cow camp, compared to a £1,475/cow margin among herds with up to 50 cows.

There was also a marked difference in stocking rate, increasing with herd size.

HERD PERFORMANCE BY HERD SIZE BAND



ANNUAL RESULTS – YEAR END MARCH 2019									
HOLSTEIN/FRIESIAN, CONVENTIONAL HERDS		Up to 50 cows	50 to 100 cows	100 to 150 cows	150 to 200 cows	200 to 250 cows	250 to 300 cows	300 to 400 cows	Over 400 cows
Cows in herd		41	79	124	174	225	274	346	600
Stocking rate	cows/ha	1.39	1.83	2.06	2.41	2.45	2.56	2.65	2.74
MILK PRODUCTION									
Yield per cow	litres	7,603	7,564	7,987	8,442	8,525	9,038	8,698	9,623
Yield from all forage per cow	litres	2,404	2,573	2,583	2,620	2,427	2,427	2,408	1,988
Milk price	pence	27.70	28.02	28.76	29.04	29.34	28.96	29.83	29.48
FEED									
Concentrate use per cow	kg	2,357	2,363	2,501	2,685	2,784	2,892	2,851	3,349
Concentrate use per litre	kg	0.31	0.31	0.31	0.32	0.33	0.32	0.33	0.35
Concentrate price per tonne	£	247	247	245	239	236	237	230	226
Other purchased feed cost per cow	£	49	33	64	61	73	104	77	89
Total purchased feed cost per cow	£	631	617	676	703	729	787	733	847
Total purchased feed cost per litre	pence	8.30	8.16	8.47	8.33	8.56	8.71	8.43	8.80
All P.Feed @ 86% equiv per cow	kg	2,596	2,509	2,736	2,906	3,068	3,276	3,171	3,721
MARGINS									
MOPF per cow	£	1,475	1,502	1,621	1,748	1,772	1,830	1,862	1,990
MOPF per litre	pence	19.40	19.86	20.29	20.71	20.79	20.25	21.41	20.68

HEALTH TRENDS

Incidence of disease and other health problems increased across the board in 2019, according to data from Kingshay's **Health Manager**, most likely due to heat stress over the dry summer.

Lameness stepped up from 38 to 40 cases per 100 cows, with mastitis remaining at 39 cases, with a particularly high summer peak but lower early spring and autumn levels.

Milk fever and fertility issues all increased marginally, too. However, looking at the longer-term trends, mastitis and lameness have decreased markedly since 2015, dropping by 20% and 11%, respectively, most likely due to improved cow management during the winter periods.

Costs per case, for most health issues, declined year-on-year due to changes to feed costs although milk prices were similar. Although milk fever, displaced abomasums, retained cleansings and abortions costs increased per case.

When comparing the top 25% and the average, it's clear that there is plenty more that producers can do to reduce health problems. Overall, the top 25% saw combined savings of £13,836 per 100 cows when compared to the average. The top 25% continued to make progress in reducing mastitis and lameness, year-on-year, although other health issues did see a slight upturn, reflecting the general trend of the season.

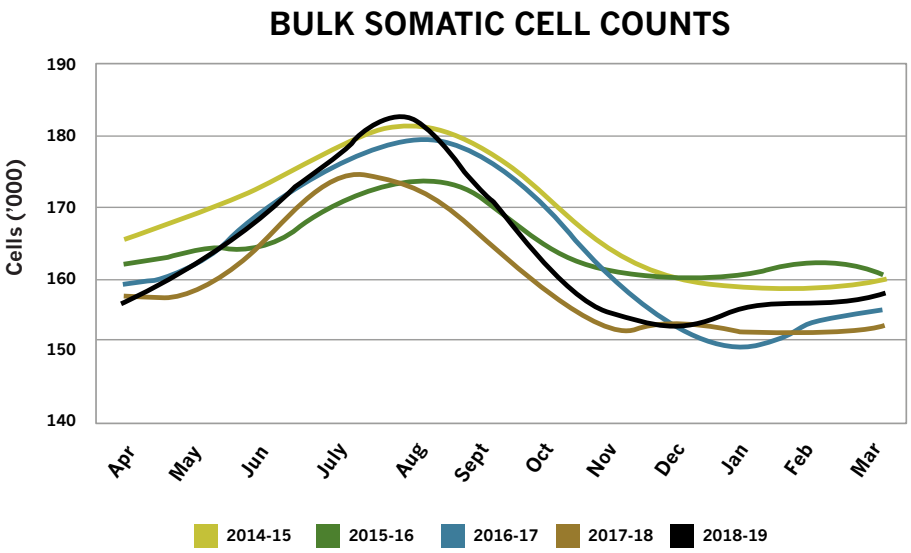
Cases per 100 cows	Group	Top 25%	Est. cost per case	Group cost	Top 25% cost	Difference
Mastitis	39	17	£258	£10,062	£4,386	£5,676
Lameness	40	21	£196	£7,840	£4,116	£3,724
Milk Fever	5.1	1.8	£219	£1,116	£394	£722
Displaced Abomasums	2.8	0.6	£262	£732	£157	£575
Difficult Calvings	4.8	2.6	£345	£1,656	£897	£759
Retained Cleansings	5.6	4.1	£390	£2,181	£1,597	£584
Abortions	3.9	1.5	£480	£1,873	£720	£1,153
Metritis	7.6	4.2	£189	£1,436	£794	£643
Total				£26,897	£13,061	£13,836

Cases per 100 cows	2015	2016	2017	2018	2019
Mastitis	49	49	41	39	39
Lameness	45	45	43	38	40

CELL COUNTS

The dry summer last year had a marked effect on somatic cell counts, sending them soaring to their highest level for at least five years.

Although cell counts started the year at their lowest level for five years or more, averaging 156 in April 2018, they rose sharply to 183 in August. Summer always sees a peak in cell counts as cows are out at grass and therefore environmental management becomes more difficult. The very hot, dry summer last year would have contributed to heat stress, increasing cell counts and summer mastitis cases.



However, cell counts dropped equally sharply over the autumn to bottom at 151 in December: A time when management is easiest as the cows are housed and temperatures are low. They ended the milk year averaging 156 in March 2019, reflecting farmers' generally good levels of cow management.

FERTILITY TRENDS

Fertility generally improved in 2019, with a shorter average calving interval, fewer days to first service, higher conception rates and a better 100-day in-calf rate.

This possibly reflects harder culling measures, with a 6.8% infertility culling rate compared to 6.4% last year.

Comparing the average group with the top 25% of producers, there are certainly improvements which can be made. For example, the top 25% had a 15-day shorter calving interval, 31% fewer services per conception and a conception rate of 59% versus the average of 44%. Their infertility culling rate was also considerably lower, at 3.6%.

Assuming a milk price of 29p/litre, concentrate costs of £240/t and yields of 8,500 litres, there are significant savings to be made by improving herd fertility. Overall, infertility cost 2.31p/litre (£197/cow) across the average, whereas the top 25% incurred losses of just 0.73p/litre (£62 a cow). Extrapolate that up across a 150-cow herd and the savings could potentially equate to £20,250.

FERTILITY TRENDS

Fertility Status	Group	Top 25%
Calving interval	400	385
Days to first service	71	56
Services per conception	2.6	1.8
Conception rate	39%	53%
100 day In calf rate	44%	59%
200 day not in calf rate	19%	10%
Infertility culling rate	6.8%	3.6%
Cost of Infertility (ppl)	2.31	0.73
Cost of Infertility (£/Cow)	£197	£62
Cost of extended calving interval per day	£4.26	£3.70

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REASONS FOR COWS LEAVING THE HERD

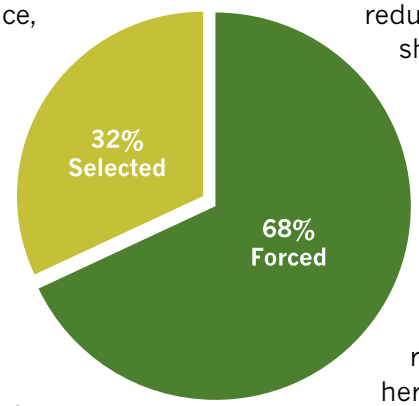
The average rate of cows leaving the herd in 2018/19 was 29%, up from last year's 27%, possibly due to farmers choosing to cull more animals given the tight forage availability, according to **Dairy Manager** data.

Overall, 32% of culls were selected, the same as last year, while 68% were forced, with 19% of those were casualty or dead cows against 17% last year. Worryingly 49% left in their first three lactations, potentially highlighting heifer rearing as an area for improvement.

As in previous years, the most common reason (16.7%) for a cow leaving the herd was not being in-calf, with mastitis in second place (8.3%) and lameness in third at 6.6%. Those figures compare to 17.3%, 7.5% and 7.1% last year, respectively, with the higher mastitis rates likely due to heat stress over the hot summer.

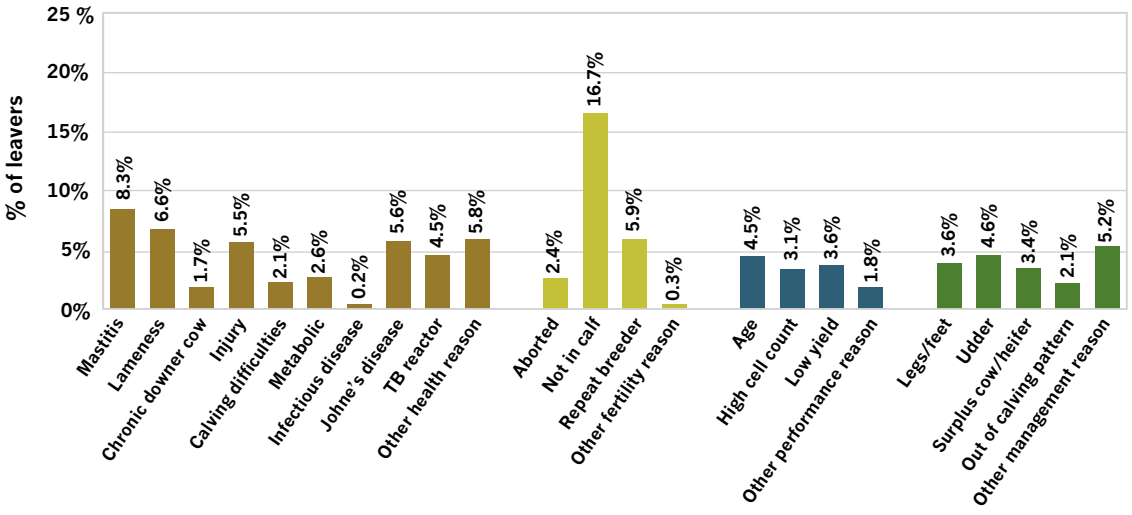
In total, 42.9% of culls were attributed to health reasons, with 25.3% down to fertility, 13% to performance, and 18.9% due to management reasons.

Higher yielding herds suffered the highest leaving herd rates, at 30.2%, with rates dropping away alongside yields to a low of 26.4% in the 7,000-8,000 litre bracket. However, below 7,000 litres the rate increased again, to 27.4%, possibly linked to regional variations, as Welsh herds had the lowest yields and reduced cow numbers sharply this year, probably due to the dry summer.

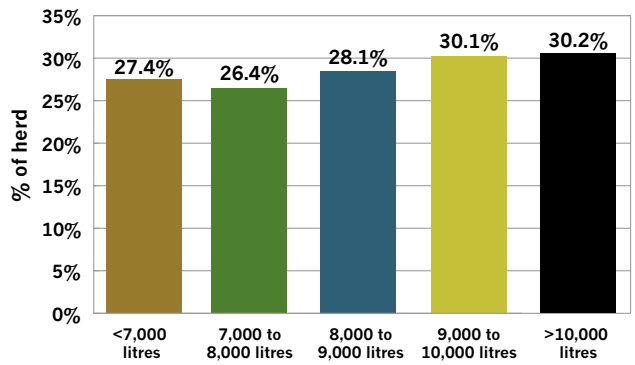


When we look at herd size, there is a similar pattern, as leaving herd rates increased with herd size up to a peak of 29.8% in the 200-300 cow band. Above that, it dropped quite sharply back to 27.1% in the 300-400 cow band, before rising again in herds above 400 cows. It's not clear why this is, perhaps due to the challenges of managing arger herds?

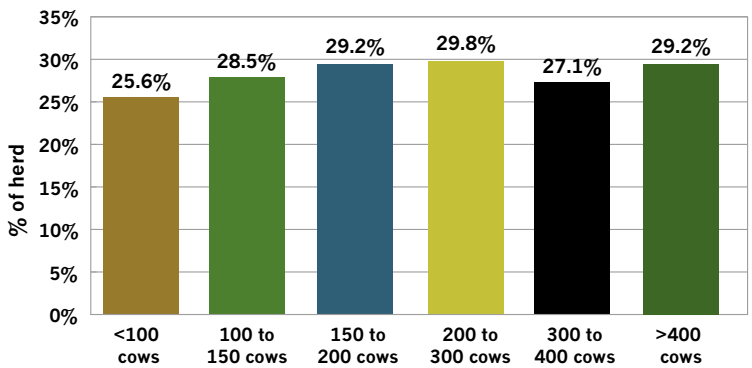
INDIVIDUAL LEAVING REASONS



COWS LEAVING HERD BY YIELD LEVEL (CULLING RATE)



COWS LEAVING HERD BY HERD SIZE BAND (CULLING RATE)



ORGANIC UPDATE

Organic herds were hit particularly badly by the dry summer, with yields from grazing dropping sharply, from 1,288 litres to 821 litres.

In total, yields from all forage fell to 2,821 litres, down 6.2% on last year, with overall yields per cow down by 1.7% to 6,636 litres. Cow numbers and stocking rates also fell on the year, by 2.3% and 4.9%, to 215 cows and 1.76 cows/ha, respectively. This reflects farmers reducing herd size to cope with the tighter forage availability.

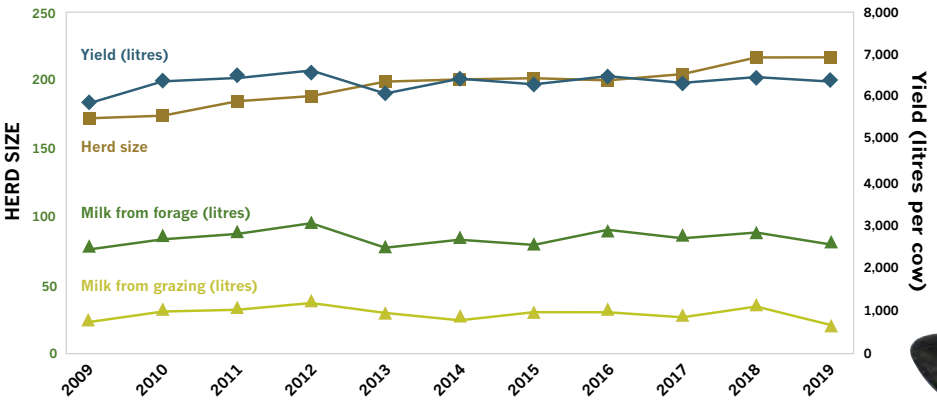
Organic milk prices increased by 0.9%, to average 39.31p/litre, not sufficient to offset the higher feed costs and lower yields, so margins declined by 3.7% to £1,866/cow.

Looking at the figures over the past 10 years, herd size has mirrored the conventional trend, increasing by 23% over that period (vs 35% in conventional herds). In contrast, though, yields have remained relatively flat at between 6,202 litres and 6,890 litres, depending on the season. This could be because it's the optimum yield range without pushing cows too hard or feeding more concentrates. But it's surprising that genetic improvements have not filtered through to improved yields in organic systems, perhaps an area on which to focus.

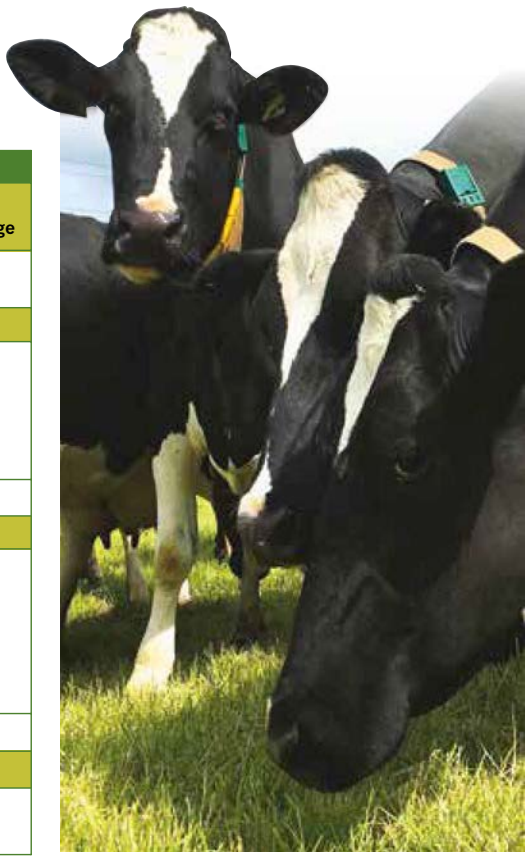
Milk from forage has fluctuated within a similar range over the past decade, from 2,671 litres to 3,268 litres, comprising anywhere between 41% and 47% of production, well up on the c.30% achieved by conventional producers. Unsurprisingly, concentrate use has therefore also remained fairly level at between 1,707kg/cow and 1,890/cow, the latter being in 2019, likely due to the limited forage availability.

Concentrate prices reached a 10-year high in 2019, at £392/t, so purchased feed costs jumped sharply, eroding margins both on a per-cow and per-litre basis. Even so, margins remained £178/cow and 7.72p/litre above the conventional average.

ORGANIC HERD TRENDS



ANNUAL ROLLING RESULTS					
HOLSTEIN/FRIESIAN, ORGANIC HERDS (comparing matched herds)		**Year ending March 2018**	**Year ending March 2019**	**Difference**	**% Change**
Cows in herd		220	215	-5	-2.3%
Stocking rate	cows/ha	1.85	1.76	-0.09	-4.9%
MILK PRODUCTION					
Yield per cow	litres	6,749	6,636	-113	-1.7%
Yield from all forage per cow	litres	3,006	2,821	-185	-6.2%
Butterfat	%	4.01	4.01	0.00	0.0%
Protein	%	3.27	3.26	-0.01	-0.3%
Cellcount		183	187	4	2.2%
Milk price	pence	38.96	39.31	0.35	0.9%
FEED					
Concentrate use per cow	kg	1,839	1,869	30	1.6%
Concentrate use per litre	kg	0.27	0.28	0.01	3.7%
Concentrate price per tonne	£	372	392	20	5.4%
Other purchased feed cost per cow	£	7	10	3	42.9%
Total purchased feed cost per cow	£	691	743	52	7.5%
Total purchased feed cost per litre	pence	10.24	11.20	0.96	9.4%
All purchased feed @ 86% equivalent per cow	kg	1,862	1,898	36	1.9%
MARGINS					
MOPF per cow	£	1,938	1,866	-72	-3.7%
MOPF per litre	pence	28.72	28.12	-0.60	-2.1%



CHANNEL ISLAND UPDATE

Channel Island yields have remained pretty static over the past year, although, like other production systems, milk from forage and grazing dropped due to the dry weather.

On average, yields per cow fell by 0.5% to 5,832 litres, while yield from all forage dropped by 8.1% to 1,877 litres, meaning just under a third of all yields came from forage.

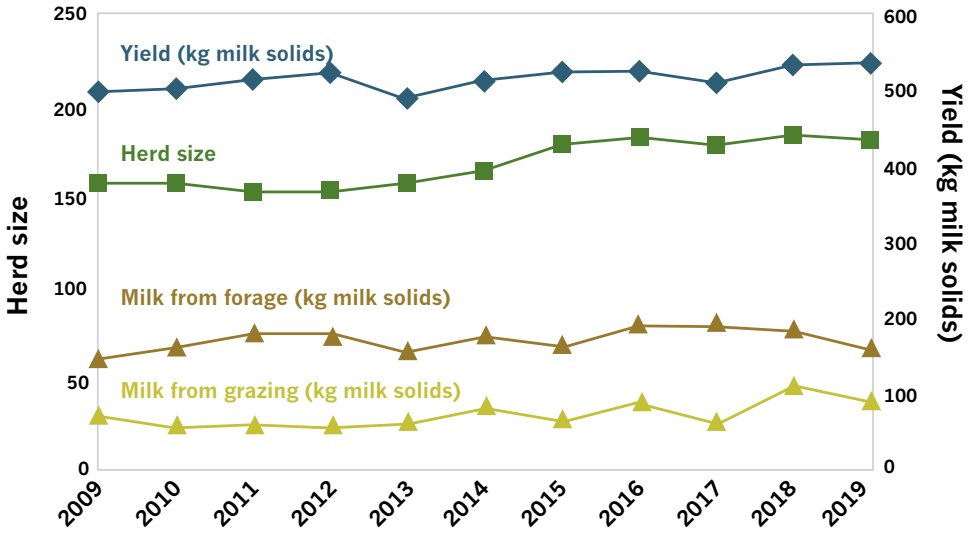
Perhaps surprisingly, concentrate use per cow remained virtually unchanged, year-on-year, at 2,042kg – so what plugged the gap? It seems that producers made more use of other purchased feeds, (such as moist and liquid feeds, minerals and supplements) spending 24% more than last year at £93/cow. Combined with higher concentrate feed costs, all purchased feed costs increased by 10.4%, to £614/cow.

Given that milk prices only rose by 0.5%, to 35.98p/litre, it's therefore unsurprising that margins over purchased feed fell by 3.9%, to average £1,484 a cow. This does not look attractive compared to conventional and organic margins of £1,713/cow and £1,866/cow, respectively. However, when considered on a per-litre basis (reflecting the lower yields but higher milk solids of Channel Island breeds) it looks far better, at 25.45p/litre versus conventional margins at 20.51p/litre, with organics leading the way at 28.12p/litre.

ANNUAL ROLLING RESULTS

CHANNEL ISLAND, CONVENTIONAL HERDS (comparing matched herds)		Year ending March 2018	Year ending March 2019	Difference	% change
Cows in herd		179	180	1	0.6%
Stocking rate	cows/ha	2.60	2.50	-0.10	-3.8%
MILK PRODUCTION					
Yield per cow	litres	5,864	5,832	-32	-0.5%
Yield from all forage per cow	litres	2,043	1,877	-166	-8.1%
Butterfat	%	5.47	5.41	-0.06	-1.1%
Protein	%	3.86	3.83	-0.03	-0.8%
Milk price	pence	35.81	35.98	0.17	0.5%
FEED					
Concentrate use per cow	kg	2,045	2,042	-3	-0.1%
Concentrate use per litre	kg	0.35	0.35	0.00	0.0%
Concentrate price per tonne	£	235	255	20	8.5%
Other purchased feed cost per cow	£	75	93	18	24.0%
Total purchased feed cost per cow	£	556	614	58	10.4%
Total purchased feed cost per litre	pence	9.48	10.53	1.05	11.1%
All purchased feed @ 86% equivalent per cow	kg	2,317	2,358	41	1.8%
MARGINS					
MOPF per cow	£	1,544	1,484	-60	-3.9%
MOPF per litre	pence	26.33	25.45	-0.88	-3.3%

CHANNEL ISLAND HERD TRENDS



MEET THE TEAM

Everyone at Kingshay plays a key part in the efficient running of Dairy Manager, not just the team below, it's very much a whole team effort. Give us a call on **01458 851555** or email **dairy.manager@kingshay.co.uk**

KATHRYN ROWLAND

Senior Farm Services Manager

Kathryn joined in 2002 and now manages the Dairy Manager service. A key part of her role is analysing key performance data and writing technical articles for publication. She also runs the Profit Manager service and business management training workshops.

FELICITY GALE

Farm Services Specialist

Felicity is the main contact for any technical & customer service queries regarding your herd(s) and is responsible for the smooth running of the costings service. She joined the team in 2013 and now regularly analyses production results and industry trends for key clients.

HAYLEY TINCKNELL

Service Support Specialist

Hayley joined the team in 2018 and is now responsible for producing the marketing & promotional materials for Dairy Manager, as well as managing the website & social media content. She also supports other areas of the business including managing FarmIQ, an online training platform for a variety of agricultural/ veterinary topics.

CHRISTINA FORD

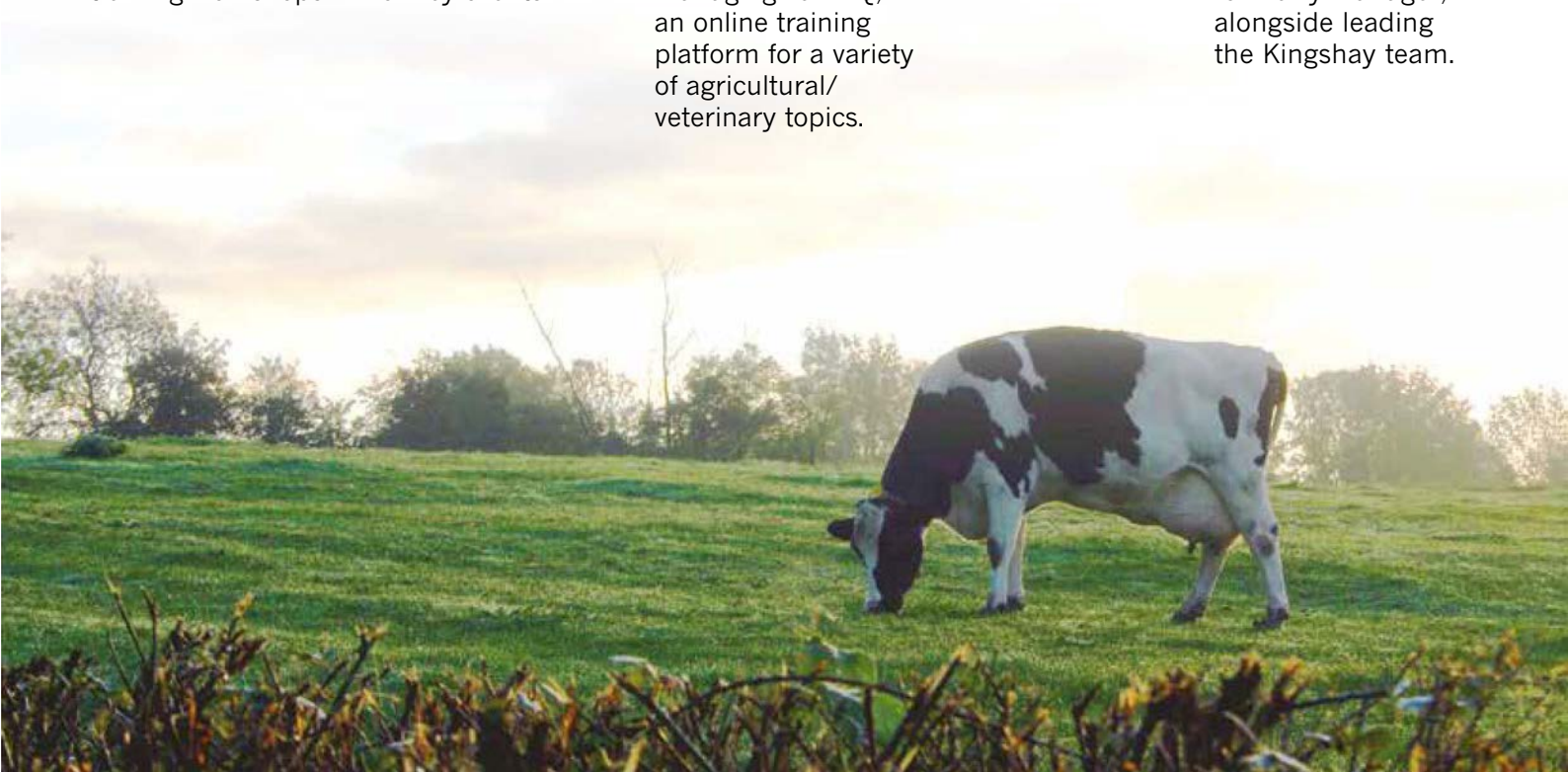
Services Development Specialist

Christina manages the Antimicrobial reporting service alongside other Corporate projects and joined Kingshay in 2019 to further develop the services we provide. She is also involved with data analysis and industry trends.

RICHARD SIMPSON

Development Director

Richard has been heavily involved in the design, development and operation of the costings service from the beginning, when it first started 20 years ago. He joined Kingshay in 1994 and now manages the data integration and large data projects for Dairy Manager, alongside leading the Kingshay team.



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We provide the everyday analysis and tools every Dairy Farmer needs to maximise their resources, from soil analysis to plate meters.

South West Dairy Development Centre

Kingshay, in partnership with the Agricultural Engineering Precision Innovation (Agri-EPI) Centre, part of the Government funded Innovate UK Agri Tech programme, has developed a state-of-the art dairy centre to promote sustainable milk production in the UK.

For any further information on the above services, call our team today on **01458 851555**.

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