

# Progressive DAIRY

Your essential guide  
to forward-thinking  
dairy farming.

January 2021



## Inside

- Using genetics to drive profitability
  - Making the most of the latest tech
  - Genomic testing
  - Three key areas in addressing sustainability
  - Making nutrition a focus for achieving net zero
- 

A Dairy Farmer  
publication in  
association with



# What's INSIDE

## MORE INFORMATION

Visit the dedicated hub at [fginsight.com/progressivedairy](http://fginsight.com/progressivedairy)

### 4-5

#### COMPANY INTRODUCTION

Stuart Boothman, of Cogent UK, on importance of genetics

### 6-7

#### CASE STUDY

Harnessing the power of genomics is driving genetic gain



### 8-9

#### GENOMIC TESTING

Cogent UK's Rudolph Linde talks genomic testing

### 10-11

#### COMPANY INTRODUCTION

Massey Harpers Feed Group's Kynan Massey on sustainability

### 12-13

#### CASE STUDY

Family dairy farm achieving exceptional feed efficiency



### 14-15

#### CASE STUDY

Climate-conscious dairy compounds have positive impact

Breeding

Nutrition

## WELCOME

IMPROVEMENTS to the progress of genetic gain and the promotion of the dairy industry's environmental credentials will be key to the future sustainability and profitability of our dairy businesses.

When it comes to breeding, sexed semen and genomics can undoubtedly deliver economic and environmental benefits.

Genomic testing, which highlights the heifer calves which will be the most productive and profitable, allows dairy farmers to speed up the progress of genetic improvement.

And coupled with the use of sexed semen, producers have the tools to allow them to breed from the best and efficiently drive genetic gain.

As well as being able to breed dairy replacements from the genomic elite, the gains made in beef genetics also means that the beef calves coming from the lower quartile of dairy cows will be consistent in quality and will meet the requirements of the supply chain.

In an industry driven by marginal gains feed efficiency also plays a vital role. However, with increasing scrutiny around the environmental credentials of our dairy farms it is more important than ever that we strive to show we can feed our dairy cows in a sustainable way.

With soya and palm oil in the spotlight new avenues must be sought. As the farmers featured on pages 12-15 demonstrate it is possible to feed sustainable alternatives with no detriment to yield or performance.

Dairy Farmer  
editor Katie Jones





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GENDER PURITY

THE MOST PRECISE  
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96 TO 97%\* GENDER ACCURACY!

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\* The semen collections being marketed under this program have gender purity of 96% to 97%.

Dairy farming is too often a marginal business, so there is a need to drive profitability, and genetics is a great place to start.

# Using genetics to drive profit and efficiency

Stuart Boothman, managing director of Cogent UK, says 'genetics touch everything' and hold the key to many of the challenges facing the industry, if farmers will embrace the technology.

Mr Boothman adds all the characteristics of cows in a high performing herd – milk production, longevity, fertility and calf quality, are heritable traits. Selecting for these can therefore improve efficiency and drive profitability.

He says: "There is a need across the dairy industry to think progressively. This starts with the use of sexed semen coupled with genomic testing to deliver economic and environmental benefits.

## No reason

"There is no reason anymore to produce dairy bull calves, they have no value and no place. Prevention is definitely better than cure and sexed semen now offers up to 97% gender accuracy so farmers can breed with the certainty of obtaining a heifer calf.

"Conventional dairy semen has become a by-product and a large percentage of our bulls are now only available as sexed semen," Mr Boothman adds.

He points to genomic testing as the next stage in the process of breeding



There is a need across the dairy industry to think progressively

STUART BOOTHMAN



replacements only from the genetic elite, describing the gains to be made as 'mind blowing'.

"Genomic testing creates a pyramid, where the top tier is mated to sexed semen



Stuart Boothman

and everything further down is put to beef semen. It will highlight the heifer calves which will be the most productive and which are the most profitable.

"The best of the

genomically tested calves will outperform the previous generation by a large margin and within three generations, the difference in performance across the generations will be substantial."

When examining the results from genomically tested herds, benchmarking can identify the best individuals compared to standard profitability indices. But Mr Boothman says this is only valuable to a point, because each farm is different and each supplies a milk contract which pays on specific criteria.

## Benchmark

"We will benchmark the results of the genomic testing against a farm's milk contract, because we are looking for cows which produce milk to best match the contract. Every herd is different and ultimately, it is the milk contract which pays the bills.

"For example, if a farmer supplies a constituent contract we can look for those females which will give milk with high protein or butterfat. We can rank the

cows accordingly and then cut the line as required to give the desired number of females served with sexed semen, depending on the herd replacement rate.

"We can also identify animals which are carriers for BB kappa casein for farms with milk sold on a cheesemaking contract, or for A2 milk. This makes it possible to place more selection pressure on the female breeding line to favour these traits," Mr Boothman adds.

He believes the key to realising the full potential of genomic testing across the UK dairy herd will be increasing the level of adoption among dairy farmers. He suggests this will allow more farmers to make better breeding decisions.

"Our early adopting farmers are now genomically testing all their replacements and this allows them to identify

the bottom 10–20% of the cohort. These are then sold as weaned calves because the farmers recognise it makes good sense not to incur costs of between £1,500 and £2,000 rearing these animals to the point of calving.

## Solution

"For others, the solution for the lower quartile of the heifers will be to serve with beef semen, and here genetics can enable the farmer to increase the margins from his beef calves.

"It is important to move away from the mindset that beef is beef, because now 60% of the beef produced in the UK is from a dairy cow. We need to become more sophisticated about how we breed the beef calf and produce a far more consistent product.

"Data from both genomic and progeny testing has allowed us to select for

60%

The amount of beef produced in the UK from a dairy cow

calving ease, calf quality, colour, polled and gestation length, so this should enable the dairy farmer to produce a valuable calf which the supply chain wants.

"It is vital the industry comes together to break the disconnect between the dairy farmer who just wants a calf from his dairy cow and the finisher and processor who are looking for a quality animal which will finish to a high specification at a certain age and weight. Genetics hold the answers to allow dairy farmers to breed a beef animal which is exactly what the market wants," Mr Boothman says.



Stuart Boothman believes the key to realising the full potential of genomic testing across the UK dairy herd will be increasing the level of adoption among dairy farmers.

Case  
STUDY

Harnessing the power of genomics is driving genetic gain and providing the key to improved herd performance on a Wiltshire dairy farm.

# Making the most of latest technology sees genetic gains

Achieving a swift and consistent improvement in genetic merit across his herd of pedigree Holsteins was the primary goal for Steve Pinniger, following an ambitious programme of investment and expansion at Upper Littlecote Farm.

Taking advantage of Cogent's Precision DNA services has enabled him to be guided by the experts to ensure he makes the most of the latest genetic technology.

He says: "After signing up with Cogent's Precision Repro service in 2016, they now do all the heat detection and AI for us. We started genomic testing the bulling heifers about 18 months ago, but we are now testing all the calves at birth because we can see the benefits this will bring.

"This has enabled us to choose the best 30-40% of our milking females and use sexed

semen on these, serving the remainder to beef semen. The genomic testing is providing us with very detailed information and so we are able to focus on the attributes we are seeking for our herd replacements.

## Concentrating

"We are essentially trying to speed up the process of genetic improvement and we are concentrating on the younger cohort of females in the herd. We are looking carefully at the results of the genomic testing so we can select for better fertility, greater longevity and good legs, feet and udders.

"Sometimes the data from the genomic testing will reflect our own observations of our animals, but sometimes it throws up something unexpected. Occasionally we will have a cow which I think is exceptional and performs really well but the results of genomic testing suggest to the contrary, perhaps pointing to the lower potential transmitting ability of these genetics.

"Another time, we might have a cow which genomically is very strong but we know we do not want to breed from her, perhaps because of her temperament or a particular trait we would rather was not passed onto the next generation of females.

"It is important to look carefully at the results but to also use instinct to make



The closed herd of pedigree Holstein Friesians totals 250.

## Farm facts

- Upper Littlecote Farm is situated near Calne, Wiltshire. The farm extends to 365 hectares (900 acres), of which around 101ha (250 acres) is owned and the remainder is rented on various different agreements. Five generations of the Pinniger family has been farming at Upper Littlecote for 120 years
- Of the total acreage, about 81ha (200 acres) of maize is grown alongside a similar area of wheat and the remainder is a mixture of permanent and temporary grass
- The 250-cow closed herd of pedigree Holstein Friesians plus followers are housed for most of the year, with only

the low yielders turned out at grass. They are fed a total mixed ration of grass and maize silage, protein blend, rolled wheat, molasses, protected fat, minerals, bi-carbonate, salt, mycosorb, and yeast plus haylage and wheat straw for scratch factor

- The herd is all-year-round calving to achieve a flat milk profile. Average rolling yield is 10,638 litres on twice-a-day milking, achieving 4.36% butterfat and 3.13% protein, with a 382-day calving interval following a TB outbreak with a further 500 followers. The herd is all-year-round calving and milk is sold on an aligned contract to Muller for Tesco

decisions about the best heifers to breed replacements from," Mr Pinniger adds.

Similar principles apply to the selection of genomic bulls and Mr Pinniger now chooses the sires which will produce the figures required by his milk contract.

"Initially I was seeking increased production but we found we were starting to lean too heavily towards volume and so our butterfat and protein levels reduced. By working closely with our Cogent adviser, we can pick out bulls which will sire daughters which will

continue to produce the yield but without compromising on milk quality," Mr Pinniger says.

Another significant advancement was the switch to using sexed semen, initially just on the maiden heifers but now on the milking cows as well.

"The new Cogent 4M High Purity sexed semen is extremely reliable, giving us 96-97% females, so we are confident to use it on a higher proportion of our best females. We use sexed semen on the top 70-75% of the heifers and the rest are sired with beef semen.

We are no longer using any conventional Holstein Friesian semen as we find our conception rates from the sexed semen match those from conventional, so the best performing third of the milking herd is now also served with sexed semen.

"We are currently using conventional beef semen for the lower two-thirds of our females. The heifers are served with an Aberdeen-Angus bull and all the cows are served with a British Blue.

"We have found that buying the best beef genetics is paying

dividends as we are breeding a more consistent, quality beef animal with a better shape and growth rates. This gives us a more valuable calf and a higher margin income stream.

"I was concerned we might encounter calving problems when using pure beef breed semen, so we always look for high easy calving indices in our bulls. As a consequence, we have had very few calving difficulties.

"I am now considering switching to sexed beef semen in the future because my buyer is looking for bull calves, so our

Angus male calves have been worth twice as much as the females over the last six to nine months," Mr Pinniger adds.

## Targeted approach

This targeted approach to rearing replacements and maximising income from beef calves has been made possible by genomics, Mr Pinniger says, and by focusing on the younger cohort, it has been possible to speed up the process of genetic gain.

Mr Pinniger believes genomics hold the key to delivering substantial advances in other

key performance indicators, particularly feed efficiency which is one of the main drivers for profitability and reducing a herd's carbon footprint. He also has other objectives for his herd and thinks genomics may allow him to realise these.

"I am looking for increased longevity in my cows as the ones which stay in the herd the longest are the most profitable. I would like to be well above the national average in terms of number of lactations and I think genomics can help me attain this goal."

## Genomics in Practice: Graham Higgott, Regional Sales Manager, Cogent UK

■ GRAHAM Higgott has worked with Steve Pinniger for five years advising him on the use of genomics to inform the selection of females for breeding to sexed semen and the choice of sires. He explains how the process works to maximise genetic gain.

"We are breeding from the best, driving genetic gain as well as saving time and money associated with rearing lower value animals.

"The process has proved particularly useful in identifying outliers which may have been 'average' on parent average, but have proved to be 'super heifers' or 'poor' when genomically

tested. This ensures only the best heifers are served to dairy, meaning only the top performers produce replacements and beef semen is used on the lower end."

### How does the process work?

■ Genomic testing enables an animal's genetic potential to be predicted from a young age by comparing its DNA to a 'key' which is representative of the national bovine population for a specific breed

■ An ear tissue sample is taken from a heifer calf using a device with a tissue sampling unit tube

■ A combined testing and management eartag can be used for Cogent's genomic

testing service, 'Precision DNA'. The tissue sample is sent to Cogent which will send it to Genetic Visions in the US for testing

■ The DNA from the ear tissue sample is extracted and broken down into more than 70,000 pieces

■ This information is sent to AHDB Dairy which formulates the genomic evaluations in the UK by comparing an individual animal's DNA to the UK single nucleotide polymorphism (SNP) chip or 'key'. This takes about six weeks

■ The farmer receives a genomic proof, including genomic breeding indices for the animal



All calves are genomic tested at birth.



Steve Pinniger.

## Genomic TESTING

Identifying the elite females in a herd through genomic testing will increase efficiency and sustainability while improving profitability.

# Cost of genomic testing should make it a 'no-brainer' for progressive dairy farmers

Genomics is now a mainstream technology which comes at a price that should make it a 'no-brainer' for progressive dairy farmers.

This is according to Rudolph Linde, global business development manager at Cogent UK. He points to the impact of genetics as 'cumulative', so using the very accurate genetic information supplied by genomic testing can allow significant progress within the herd in a reasonable timescale.

"Genomic testing allows the farm business to benefit from the maximum genetic and therefore economic gain, customised to the needs of their own system. The information provided by



genomic testing is far more precise and reliable than parental data.

"It also saves time as there is a two- to three-year delay before the performance of a female in her first and second lactation is evident. The

“Why would you take a gamble with genetics when using genomics, which is now proven to be around 67-68% accurate?”

RUDOLPH LINDE

effects of inaccurate breeding decisions will not be seen for at least two years and the cost of this mistake could be significant.”

He adds: "Dairy farming is at best a very marginal business, so it is vital to take advantage

of the phenomenal genetic progress which has been made in recent years. The reliability of the genetic information from genomic testing a three-week-old calf is now equal to the actual production values from a second to third lactation cow.

### Accurately predict

"Genomics enables us to accurately predict the 'predicted transmitting ability', the 'PTA' for these traits. It is not just about whether the animal has the desired traits, but whether they are able to transmit these genes to the next generation.

"This is vital because if the animal has the sought-after genes, but cannot transmit them to his or her progeny, why would we choose to use

such bull or breed future replacements from that female?"

"Why would you take a gamble with genetics when using genomics, which is now proven to be around 67-68% accurate? This compares to a figure of around 35% accuracy for parent average data."

Mr Linde believes genomics now comes at a price which makes it accessible to all farmers and it is unlikely the price will come down much further in the future. However, he thinks we are likely to see more traits available within a genomic evaluation as a consequence of continuous investment in the technology. In turn, this will offer dairy farmers more accurate information on an increased number of traits.

### Ecofeed – Genomics in action

us to measure expected versus actual feed intake by means of establishing the variation in feed intake beyond that needed to support maintenance and performance requirements.

### Realistic comparisons

"Subsequently we can then make realistic comparisons of feed efficiency between a large-framed Holstein with a smaller sized animal, as RFI is also a measure independent of body size. As a result, we have learnt that a larger framed Holstein could be as equally feed efficient as a smaller framed animal and vice-versa."

Developing the index has

taken ST Genetics almost six years and development is ongoing. It represents a considerable continuous investment due to the infrastructure requirements associated (>445,000 daily intake records over the past seven years) with capturing phenotypic and genomic information of more than 5,000 Holstein females sired by 748 different Holstein bulls. And currently, ST Genetics has produced more than 262,536 female genomic Ecofeed scores.

Mr Linde says: "Feed costs comprise almost half the total variable costs on a typical dairy farm. The highest index

ADVANCED genomics has enabled Cogent to provide its customers with an index which accurately predicts feed conversion efficiency in Holstein females. Ecofeed is currently the largest database of a single operation measuring metabolic feed conversion efficiency which will permit genetic gains for the next generation.

Ecofeed is a measurement of whether daughters of particular sires are likely to consume more or less feed to produce the same amount of output.

Mr Linde says: "Ecofeed is not related to any other trait currently known in the Holstein breed and at 21%, is

considered to be moderately heritable. Compare this figure to fertility [which is less than 5%] it means farmers can select and breed for feed efficiency more rapidly, while also improving all other economic important traits using the Ecofeed index.

"When assessing feed efficiency, there are two possible measures. The first is maintenance efficiency which quantifies energy requirements to support maintenance.

"Cogent and parent Company ST Genetics also measures residual feed intake [RFI] as a measure of metabolic feed efficiency. This enables



"The reliability of the genetic information from genomic testing a three-week-old calf is now equal to the actual production values from a second to third lactation cow," says Rudolph Linde.

### Sexed semen and beef on dairy – working hand-in-hand to maximise opportunity within a breeding strategy

DAIRY farmers are now realising the dual-purpose benefit of a dairy cow which can produce elite female replacements or a commercially valuable beef calf carrying the traits sought-after by the beef supply chain. Sexed semen is now a 'completely different product' from when it was first developed and introduced to the market, according to Mr Linde.

"Cogent's latest product, the 4M High Purity sexed semen achieves between 96-97% purity, resulting in an equivalent per cent female progeny with no compromise on excellent conception rates.

"The majority of the elite bulls on offer with Cogent and ST Genetics are available as sexed semen. Sexed semen is now used by most farmers on the top 30-40% of their herd, with beef semen often used on the remainder. Conventional semen is now viewed by many as largely obsolete," Mr Linde adds.

He points to the 'unacceptable welfare issues' around the management of dairy bull calves because there is now an efficient and sustainable solution available to the wider industry. This has been a major incentive for the

switch to beef semen, which now accounts for almost half of all semen sold onto UK dairy farms'.

As the beef supply chain became more discerning about its specific requirements, dairy farmers rearing beef on dairy animals have had to carefully consider the traits they are seeking when selecting beef genetics.

### Easy calving

"For example, easy calving and small birth weights but with accelerated growth rates will be of most importance for suitable heifer matings. Early lactation in comparison to later lactation cows have different requirements to ensure profitability is maximised with each pregnancy.

"Cogent conduct extensive progeny testing and store comprehensive data on a wide range of traits captured over the progeny of many beef breeds. Information starts with birth weights and continues through to carcass data, to deliver a much more consistent and quality beef carcass as outcome.

"There is significant variation between individual bulls and breeds, but offspring by beef sires from maternal dairy cows differ significantly

from progeny produced from beef on beef matings. Cogent has developed a beef on dairy index, the Cogent Beef Index [CBI], which allows customers to choose genetics which match the needs of their supply chain and individual on-farm requirements."

Equally, the opportunity to use Cogent male sexed beef further presents an opportunity for increased economic gains.

"Cogent's data on growth rates from easy calving sires shows that while the calf may be small at 10 days old, it has the opportunity to achieve the required growth and weight by the time it reaches slaughter age. This gives the buyer the confidence when seeing a young animal which initially appears small, that it will achieve the desired specification.

"Beef is no longer just beef, it is an important income stream for dairy farmers so they need to select the best genetics which best fit their farm, their system and the market. This will enable them to produce a very attractive and saleable animal," Mr Linde adds.

*'Source: AHDB's report (September 2020) on the increased popularity of sexed semen and the corresponding reduction in the use of conventional semen.'*

## Company INTRODUCTION

Making a difference to the environment within the company and for the wider industry has been the aim of Massey Feeds for 20 years.

# ‘There are three key areas where we can address sustainability’

Improving the dairy industry’s carbon footprint is an issue which has been moving up the political agenda for several years.

In response to public concerns and scientific research pointing to agriculture as a net contributor to climate change, many major retailers are now applying pressure to their milk processors to work with producers to significantly reduce emissions of greenhouse gases.

Kynan Massey, managing director of the Massey Harpers Feed Group, believes farmers should not be expected to bear the brunt of this pressure alone.

He says the supply trade must take a leading and proactive role in helping dairy farmers meet their carbon reduction targets.

And as a business concerned

about its environmental footprint, Mr Massey believes the Massey Harpers Group should lead by example.

He says: “I recognise we need to change the way we work because concerns about sustainability are not going away. I have been measuring the environmental impact of Massey Feeds’ business for more than 20 years, starting with our mills, but encompassing every aspect of our operations so we can identify where we can improve our environmental performance.

“Adopting a holistic approach which tackles every aspect of the footprint of the products we produce from manufacture to feed out will be essential if we are to reach our goal of being carbon net zero by 2040.

“I consider there are three key

areas where we can address the sustainability of our business.

“Firstly, we must consider the feed production process and the wider business operations. This is something we have been focusing on at the Massey Harpers Group for more than two decades to ensure we minimise energy use at all stages of the feed production process.

### Ingredients

“Secondly, we must look at the feed ingredients which are used in our products. The UK uses an estimated 250,000 tonnes of soyameal in dairy diets each year. Data reported at Dairy-Tech last year suggested eliminating soya on farms could reduce carbon dioxide emissions from the sector by more than 6%.

“There are now viable



**I recognise we need to change the way we work because concerns about sustainability are not going away**

KYNAN MASSEY



alternatives to soya and palm products which can be used in dairy diets with no impact on milk production or wider performance.

“Switching to more sustainable diets no longer needs to result in a compromise on feed effectiveness.

“Finally, feed efficiency is

significant because there is potential to increase the amount of milk or meat which can be produced from the same amount of feed on our customers’ farms.”

He points to the investment the Massey Harpers Feed Group has made in its production processes and feed delivery operations, which have already substantially reduced the company’s carbon footprint.

He says: “I am proud of the wide-ranging actions we have taken across our business to reduce the power usage in our premises by 20%. We have also slashed fuel emissions per tonne delivered by 80% by investing in the latest vehicles and seeking to reduce the number of miles driven to deliver our feed.

“The next stage for us was

## Two-thirds

Feed accounts for almost two-thirds of the emissions on a dairy farm

to address the environmental impact of the feeds we produce. Our new Planet dairy feeds contain no soya or palm oil and instead make use of other ingredients which are UK-sourced, such as rapeseed meal, sugar beet and beans.

“We have replaced fats with non-palm alternatives.

### Quality constituents

“The dairy compound is carefully formulated using the highest quality constituents to ensure there is no loss in wellbeing and performance seen when cows are switched to the Planet range.

“Offering this product helps our farmers meet the aspirations of their processors but also allows them to reduce their own carbon footprint.”

Mr Massey explains the Planet dairy compound is available with a range of different protein contents to suit the needs of individual farms depending on their feeding system and the other components in the ration.

“When feeding the Planet dairy compound, it is not only about this single product but rather it is part of the bespoke diet planning where the ration is formulated to precisely meet the needs of the cows and the milk contract.

“We are seeking to drive feed efficiency and specialist products, such as Novatan and pHix-Up, complement the ingredients in Planet

dairy compounds, improving rumen function to maximise performance.”

He says the levels of key parameters including total and rapidly fermentable carbohydrates and proteins are the same with the Planet range; glucogenic energy supply is matched and acid load and fibre index are comparable.

Mr Massey points to feed efficiency as the third component in the equation, suggesting this element is part of a much broader whole farm approach.

He says: “Driving efficiency so each cow can produce more milk from less feed is a key element because feed accounts for almost two-thirds of the emissions on a dairy farm.

“At Massey Harpers, our nutritionists work with farmers to identify the most appropriate ingredients to add to the ration to support improved feed efficiency.”

Mr Massey believes a holistic approach must be adopted to improving sustainability if ambitious net zero targets are to be achieved within a relatively short timescale.

He adds: “Increasing efficiency of forage production and utilisation is one area where significant gains can be made as milk from forage is a key performance indicator driving efficiency and also greenhouse gas emissions.

“Similarly, optimising heifer production makes a significant contribution, because minimising the number of animals reared and reducing age at first calving will make a sizeable difference to the carbon footprint by reducing the number of non-productive animals.



**It is about supporting our customers to help them to optimise all the parameters necessary to drive improved efficiency at the farm scale**

KYNAN MASSEY



“Calving down heifers at no more than two years old should be the aim. Increasing longevity of cows across the herd is also paramount, as each additional lactation means the greenhouse gas emissions from rearing an animal are spread over a longer productive lifetime and fewer replacements are needed.

“By challenging all aspects of their business, dairy farmers will be able to identify opportunities to lower their overall carbon footprint. At the same time, the supply trade must play its part by understanding the net carbon contribution of farm inputs and creating ways to lessen these.

“For Massey Harpers, it is about supporting our customers to help them to optimise all the parameters necessary to drive improved efficiency at the farm scale so they can produce the milk with minimal impact on the environment.”



**Massey Feeds has slashed fuel emissions per tonne delivered by 80%.**

Case  
STUDY

Exceptional feed efficiency and fertility drive the success of one family dairy farm on the edge of the Peak District.

The current herd average milk yield is 7,000 litres per annum.



## Impressive fertility and feed efficiency drive farm profitability

Nestled among the western slopes of the Peak District hills is Higher Blakelow Farm and the Pearson family's herd of Friesians. Despite the traditional appearance of the farm and the cows, it is in the top quartile of all milk recorded herds with fertility figures coveted by most herdsman.

Jarl Pearson has been farming here since 1967 after his parents bought the farm in 1959. He has masterminded the gradual expansion from the initial 50 hectares (125 acres) to the current 97ha (240 acres), with an additional 61ha (150 acres) rented.

This growth in area has been

mirrored by both an increase in herd size and improvements in milk yield to the current herd average of 7,000 litres per annum. All-year-round calving necessitates a continual focus on fertility and this effort has been rewarded by an enviable calving interval of 355 days.

### Investing

Jarl says: "We supply a Muller Coop contract and we are constantly investing to improve and keep one step ahead."

Jarl embraces progress and after attending a farmer meeting with Muller Coop almost two years ago, he approached his feed company, Massey Feeds, to see if it could help him stay one step ahead.

### Farm facts

- Higher Blakelow Farm extends to 158ha (390 acres), of which 97ha (240 acres) is owned and 61ha (150 acres) is rented. It is an all-grass farm and land rises to 291m (960ft). The farm is located less than a mile from the centre of Macclesfield

- Jarl Pearson farms with his son Richard and partner Gina and their two sons Harry and Liam. They employ some casual help at busy times. Jarl's wife Linda is responsible for all farm administration and is coordinates the regular farm meetings

- The milking herd is

British Friesians and currently numbers 166 cows, plus followers. The herd is all-year-round calving and the family has a Friesian and an Aberdeen-Angus bull

- There are 132 replacement heifers of various ages and 140 Aberdeen-Angus cross beef animals – about 40 of these are finished and sold to Dovecote Park each year

- The cows average 24 litres per day and 156 days in-milk with a 355-day calving interval. Butterfat is currently 4.35% and protein 3.54%. They produce a litre of milk for 0.22kg of feed

"The topic of achieving net zero carbon by 2040 was discussed at the meeting. The impact of soya and palm oil in feed on a farm's carbon footprint was raised and I realised in the future we would need to consider how we could replace this constituent in the cows' diet, even though no restrictions are in place currently.

"We were already feeding a no soya and no palm oil nut to our beef animals because they are sold to Dovecote Park for Waitrose, so this is a condition

of our contract. I asked our nutritionist Dai Lewis if Massey could provide us with a soya and palm oil free feed for our dairy cows.

"We care about the environment and making this change to our feed is essential if we are serious about our dairy farm achieving carbon neutral in 20 years," Jarl adds.

Dai describes this move as a 'challenge', but it was one he was willing to take on. He soon formulated a soya and palm oil-free feed which he was confident

would not adversely affect the performance of the cows.

"When the soya and palm oil was removed, we added a fat product to ensure adequate levels of rumen-protected methionine and choline and to maintain quantities of bypass proteins. This included Novatan plus a rumen buffer to improve rumen function and increase the conversion of nitrogen into bypass protein.

"Other changes to the diet included removing all the sulphates from the pre-mixes to aid fibre digestion because I was concerned copper sulphate could have a negative impact on vitamin E levels. The cows have now been on this diet for at least 18 months and there has been no drop in performance," Dai says.

Jarl's son, Richard, is now responsible for the day-to-day management of the herd and he shares his father's absolute commitment to the business and his passion for the cows and their grass-based system.

"We are not pushing for big yields. It simply would not work here. We are not looking for an extreme cow, we want something which can graze and can cope with our hills. We farm at almost 275 metres and it is all on a slope, so we need something solid and not too leggy," Richard adds.

The milking herd is out at grass from as early as March if conditions allow and rarely come in before the end of October.

"We introduced a paddock grazing system seven years ago and we have invested in providing water to all the paddocks. Because of the layout of the farm and the steepness of the fields we cannot have even-sized paddocks, so the time cows spend in each paddock has to be adapted accordingly.

"We try to take a first cut of silage from some of the ground around the farm and then we



From left: Dai Lewis with Richard and Jarl Pearson.

mow all the land which we own away from the farm. We usually take our first cut at the end of May as spring grass growth starts quite late up here.

"We reseeded much of our mowing land recently and this has improved the quality of the silage we make significantly. We feed a total mixed ration comprising the grass silage and some hay and the Massey blend."

### Under the spotlight

The cows are buffer fed throughout summer and Dai will monitor the milk records so he picks up if anything needs tweaking to maintain butterfat and protein levels in the milk.

Richard says: "We invested in a new parlour five years ago and the investment has paid dividends. It means Dai can adjust the parlour ration just by logging on to our system from home."

The installation of the new parlour was to coincide with an expansion in herd numbers. The family's best laid plans

were in tatters when the farm suffered a TB outbreak and lost 68 cows in a month.

Richard adds: "Most of the cows lost were our sexed semen heifers and it took us over two years to recover from this. We now have higher numbers of youngstock on the farm than we would normally need because our aim is to get herd numbers back to the 200-head we were at before TB. We dare not cull some of the lower end cows to improve the herd because we are always worried we will lose some to TB."

Sexed semen is only used for first service on the heifers and they usually calve down at between 26 and 27 months. No conventional semen is used as they have a pedigree Holstein Friesian bull which is used on the cows and an Aberdeen-Angus bull which is used on heifers not conceiving to the first service and the lower yielding cows.

After receiving colostrum the calves are kept in individual pens and as soon as possible, they go into group pens where Richard says they 'do better'. They are

fed a Massey 23% protein milk replacer twice-a-day and given ad lib hay plus a Massey 19% soya and palm oil free rearing nut from a few days old.

Calves are weaned at between eight and 10 weeks old, with the precise date dictated by when they are eating enough corn. They are turned out to grass at between three and four months old and will stay out until late autumn if the weather and ground conditions permit.

Richard's partner Gina is responsible for the calves and youngstock and their two boys Harry and Liam, who are nine and seven years old respectively, help out by mucking out the sheds and feeding. The permanent smile on the boys' faces when they are around the cows is proof enough that they want to follow in their father's footsteps.

"We are doing this 100% for our boys. With the pressure of the job these days I am not sure we would still be here, working as hard as this, if it wasn't for them," Richard says.

Dai adds their hard work and commitment has paid off and the performance of the farm stands out.

"It is the exceptional fertility and impressive feed efficiency which is driving the profitability on this farm. The Pearson family recognise they need to take on the challenges posed by their buyer to achieve the best price and the business is thriving as a consequence."



The family invested in a new parlour five years ago.

Case  
STUDY

Feeding a sustainable dairy compound is helping one Cornish dairy farmer to meet the climate change challenge.

# At the cutting edge of climate-conscious farming

**W**est Penquite Farm is at first glance a traditional grass-based dairy farm in the foothills of Bodmin Moor. But Colin Dymond is at the cutting edge of climate-friendly farming as one of a small number of West Country farmers trialling one of the industry's first climate-conscious dairy feeds.

The Massey Harpers Feed Group's new Planet range of dairy compounds is one of the first products containing no soya or palm oil products, representing a major step towards the target of achieving net zero dairy farming. Mr Dymond was unsure how his cows would respond when he volunteered to trial the Planet dairy compound. Six months on and he is completely reassured they have successfully made the switch to the new sustainable feed and herd performance has continued on a steady upwards trajectory.

Many milk processors are

looking to their farmer suppliers to improve their carbon footprint through producing more milk from sustainable inputs. As their retailer customers are promoting their sustainability credentials, they are examining their own supply chains to ensure they are following suit.

Ingredients which are imported from across the globe or which have been linked to adverse environmental impacts,

## Farm facts

- West Penquite Farm is situated about three miles north east of Liskeard. The farm extends to around 195ha (480 acres), with land rising to around 200 metres (650 feet). Colin Dymond farms with his wife Jill and sons Tom and Matt and daughter Louise

- The herd of Holstein Friesian cows numbers 180-head in the milking herd and a further 100 followers.

All calves are reared at the farm in small groups and are grazed for most of spring, summer and autumn season

- Yield averages 8,600kg and protein has averaged 3.3% and butterfat 4% throughout the summer months since the Planet 17% compound was introduced in May. The farm supplies Arla for cheese manufacturing; Mr Dymond is a farmer representative on the Arla board

such as de-forestation or soil degradation, are especially under the spotlight.

## Initiative

Harpers Feeds has taken the initiative with its soya and palm oil free dairy range. Mr Dymond supplies Arla and conscious of the cooperative's aspiration to reach net zero by 2040, he opted to trial the product.

He says: "As an Arla representative, I am aware of



West Penquite Farm is trialling feeding one of the industry's first climate-conscious dairy compounds.

the efforts the cooperative is making to address its carbon footprint. Arla members are all now completing detailed climate checks for their farms and the amount of purchased feed containing soya is one of the most important factors influencing the final result.

"Reducing the amount of imported protein in my cow's diet is clearly good for the environment and means as an industry we are less reliant on volatile global markets. So I was keen to feed the Planet

compound to do my bit but I was a little nervous that the change in diet might affect milk yield or quality.

"I need not have worried as the cows adjusted to the Planet feed very easily and we saw a consistent milk yield, while butterfats and proteins held up well. I could not detect any outward changes in our cows and fertility has remained excellent.

"I noticed a very subtle change early on with the dung when we first used the feed as it contained less fibre, but as the summer went on, it returned to normal. I have been really pleased with how the cows have performed on it," Mr Dymond says.

The herd is all-year-round calving and a day after calving the cows will be fed 7kg of the Planet feed. This will be increased gradually over a three-week period up to a maximum of 10kg, through out-of-parlour feeders.

"We keep the cows on 10kg per day for 100 days in-milk and then feed to yield thereafter. If they are still giving over 40kg of milk then they will be kept on

10kg a day. After 270 days in-milk for the last month of the lactation, we stop feeding the compound to help dry cows off.

"We did find some fresh calvers were not peaking as quickly when we switched to the Planet feed, but any shortfall in milk yield at the start of the lactation was soon caught up later on. We found persistency was improved," Mr Dymond adds.

## Herd

The Holstein Friesian herd at West Penquite Farm grazes across a 40-hectare (100-acre) grazing platform for more than half the year. The platform is split into 17 separate paddocks and the cows rotationally graze, spending 24 hours in each paddock.

Grass silage is made from the outlying land extending to a further 154ha (380 acres), including a rented farm next door. Grass silage is made available throughout summer and forms the mainstay of the winter ration, to which some home-grown crimped barley is added through the mixer wagon.

The cows have round-the-clock access to the feeding yard which contains the out-of-parlour feeders. The concentrate feed is provided as two feeds at 4am and 4pm and this means the milking herd is in the right place ready for milking.

The youngstock at West Penquite are currently fed a conventional Harpers 18% calf rearing feed, but Mr Dymond would have no qualms about switching the youngstock to a no soya rearer feed if and when one becomes available.

Looking to the future, Mr Dymond believes the dairy industry will need to source more of the protein fed to cows from home-grown feedstuffs.

"I have seen how feeding a no soya and palm oil product has had no adverse effect on milk yield or quality, but does have a positive impact on this farm's carbon footprint.

"We will see how it feeds over winter but I am confident the cows will continue to milk well on it and it can only be a good thing that we are feeding them UK-sourced ingredients now."

## The nutritionist's view – Steve Jones, ruminant feed specialist at Harpers

STEVE Jones has been providing nutritional advice to Colin Dymond for 17 years and he is very pleased with how the cows are performing on the Planet 17% feed.

He says: "When we switched the cows to the Planet feed, we left everything else in the ration unchanged. Planet Dairy has a well-balanced starch and sugar ratio and contains 10% beans, together with other ingredients such as rapeseed meal, sunflower, sugar beet and a molasses coating, which produces a very high quality nut.

"It also contains Novatan which converts excess rumen degradable nitrogen into bypass protein. This means the cows are not producing as much urea from the excess nitrogen in the rumen and in turn this reduces the energy wastage.

"We have succeeded in using almost entirely UK-sourced products for the Planet range and this means the 'food miles' are kept to a minimum. Overall, this will enable our customers to meet the aspirations of achieving a reduction in their carbon footprint as purchased feed accounts for a significant proportion of overall farm greenhouse gas emissions."



Colin Dymond (right) with son Tom in the cubicle shed.



All calves are reared at the farm in small groups.



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