

Alison Lawrie – The Presidents Medal Award (Scotland HYB)

“Your Mission: With the end consumer in mind, develop a breeding strategy that keeps milk relevant.”

Just 3% of UK adults identify as vegan<sup>1</sup>. That leaves 97% of the UK adult population as potential consumers of dairy. In countries such as China where 85% of the population are considered lactose intolerant<sup>2</sup> demand grows for speciality dairy products such as A2 Milk. But in the UK with just 8% of the population considered lactose intolerant the demand for raw milk remains high and will continue to do so for the foreseeable future.

More than 1 billion KIT KAT® products are eaten in the UK every year – the equivalent of 564 fingers every second!<sup>3</sup> Along with my husband and his family we milk three hundred cows (pedigree Holsteins and Ayrshires) on a modern Dairy complex on Myremill Farm in Ayrshire, Scotland. We are on a Nestle – First Milk contract with the milk being collected and taken to the processing unit in Girvan - only 14 miles from the farm, where the raw milk is turned into chocolate crumb which is then turned into KitKats which are consumed all over the country. We require high volumes of good quality milk to meet the standard of this contract. We operate a high input high output system.

Over the last couple of years, we have drastically changed and developed our breeding strategy to meet the commercial demands of our cows but also as pedigree breeders and admirers of deep cow families - to breed a cow we love to milk every day.

### Genomic testing

20% of female Holstein calves born in 2022 in the UK have been Genomic tested<sup>5</sup>. With such a large population base contributing allowing genomic information of a pedigree 4-week-old Holstein heifer calf to be >75% reliable<sup>6</sup>, it was a no brainer for us to take advantage of this tool, genomic testing 100% of our Holstein calves through Semex Elevate since 2019. This also allowed us to analyse each animal individually for traits to improve and traits to monitor. From these official genomic results, we can run a ‘Herd view’ report which allows us to compare our full herd (youngstock and cows split) averages against the UK average on each trait. We can use this report to identify hidden trends in our herd and set accurate breeding goals to correct problems two years earlier than we normally would if we had to wait on youngstock calving in before major problem trends could be identified.

With 8-10% of dairy cows in the UK estimated to have a parentage error<sup>4</sup>, genomic testing puts in that extra step of traceability for the consumer allowing them to ironically trust that many UK Dairy cows have more traceable family trees than the majority of humans in the UK.

### Production

A trend we found in 2019 within our production figures was that we were below average for genetic milk (kg) this is something we focused and worked hard to get to positive figures by 2022. You can go too far the other way - we had one cow for example who was 2016 born and is still >+800kg milk (CDN Aug 23). This cow worked extremely hard her whole life peaking at 73kg/day and struggled to keep up with how much milk she was producing leading to her leaving the herd young at the start of her third lactation. With all 5 of her daughters testing >800kg milk it is a family we are not afraid of mating to lower (yet positive) milk sires to reach that happy medium of pushing above average milk production.

A predominately Ayrshire herd we are gradually and naturally increasing our Holstein numbers to a Holstein majority – as the larger Holstein cow fits in our new modern system comfortably and offers 8kg more milk on average with very similar fat and protein levels to the Ayrshire cow. With this in mind our milk contract offers bonus’ for fat% and this is something we are breeding to increase over the next few years to make up the current 0.51% average difference between our Ayrshire and Holstein Cows.

### Health & Functionality

There is no point investing in good cows unless you can get them in-calf. A trend we identified to improve on was our genetic and physical fertility particularly in our higher type heifers. We have corrected this by mating lower fertility individuals to high fertility sires, sometimes having to sacrifice high type which has brought our herd average to breed average for fertility. To allow us to focus on many traits we do not mind this falling very slightly below the breed average as it is slightly lower heritability, and we monitor fertility figures closely through Uniform Agri.

In March 2021 we started three times a day milking. A practice that is highly reliant on milking being as quick and efficient as possible and stress free for the cows. We are happy with how our milking speed has always been with few individual cows having a noticeable issue in this area – I am not sure of the exact reason why but we have noticed while selecting bulls in 2023 the type of bulls we are looking at, appear to be more on the far below average side of milking speed - so a trait to consider and monitor in the near future.

Semex Launched its new Methane Efficiency trait at the Semex Conference in 2023 which identifies a cow’s genetic ability to produce less methane than its herd mates which has almost no correlation to any other traits. When all our Elevate tested females received a figure for this trait in April - as expected our herd average was 100 (Average) as there was no way to select for it previously. Although it would be the correct thing to say, it would be a blatant lie to say we will purely select for this new trait to breed for the most ‘eco-friendly’ cow possible, but it will be a trait we have a global responsibility to take advantage of. Making sure to breed animals on the lower side of the scale on the trait to higher

bulls if required. If we did not take advantage of this latest information and other herds did start to make decisions with this new information – pretty soon over time we would fall into the below average category.

## Type

Breeding type is a very personal thing. We have genomic information for things we cannot identify before first calving such as udder traits, but it is important not to forget the best tool we have – our eyes. Also taking advantage of services such as Type Classification. We are breeding for (within reason) an above average sized cow with chest width, deep rib and wide pins; functional legs and feet – not too straight yet not too curved with good bone quality for our sawdust cubicles. Shallow well attached udders that will last many lactations. We believe that a cow must be of a certain size and capacity to have the space for the forage that it needs to consume to be able to produce large quantities of good quality milk while being able to maintain body condition for good functionality. We are happy with our overall type of cow but are pushing for more rump width which in turn should improve overall capacity, rear udder width, functional locomotion and easier calving.

## Custom index

Index's such PLI, TPI, UKTM etc are great for looking through copious quantities of bulls quickly. Unfortunately, I am almost certain if you had to ask 5 different people who all breed purely off a PLI figure of a bull, for example, what their ideal cow would be, you would get 5 very different answers.

The next step in our breeding strategy is considering all of the above information so that a couple of times a year we can use all these traits which we are focusing on improving and maintaining in the short term, to create a custom client breeding index through Semex solutions. This would then allow us to identify groups of bulls worth looking at that would suit our herd overall and would help uniformity. Indeed custom index's often show you are not after the same number 1 'hot bull' as everyone else that there are often lengthy waits on receiving semen from.

As Table 1 shows we have found our custom index follows a similar trend to the Canadian index LPI, so we are able to use this figure to filter down bulls from all companies before looking at them in more detail.



Table 1- Semex Elevate Graph – LPI vs Custom Client Index

Mating programs are there to be taken advantage of to find the best use of the bulls in your tank, but we like to mate each animal manually individually from the group of bulls in our tank to be able to make genetic gain as quickly as possible.

## Alternative Breeding

The same common problem many farmers face is having too many youngstock for the number of replacements required. The long-term goal is to have less stock on farm all working harder and more efficiently. This involves being a bit more ruthless with animals that get bred to Beef semen rather than Sexed semen.

There is no doubt the quickest way to make genetic gain is through Embryos. In the future we would love to take advantage of modern technology by purchasing larger quantities of genetically tested embryos bought specifically for our breeding goals. This would be a large investment that carries some risk of the success of the outcome of alive and well heifer calves being born. In the meantime, we continue to regularly flush our better genetic cows implanting fresh embryos and imported North American IVF Embryos with most Heifers destined for a Beef serving getting one opportunity at holding an embryo before getting AI'd with beef semen. The key part of this strategy is planning and preparation - looking months ahead of time and making breeding decisions for individuals before they reach breeding age.

## Conclusion

As milk producers it is our duty to educate the consumer from the source. It is important to take part in events such as open farms, host school visits and have a social media presence being completely transparent about the daily decisions we make as well as also engaging in discussions.

At Myremill Farm, breeding from popular indexes is a thing of the past. We are looking to the future breeding with a custom index which is regularly under review, so we can breed a cow personal to us which fits into our environment but also keeping in mind the world's environment. An all round nice to look at cow that puts milk in the tank and settles in calf easily. A system where Genomic information is taken advantage of daily. Highly reliable official traceable information that is available publicly



School visits are a vital part of transparency with the consumer at Myremill Farm

to the consumer if they so wish to view. The consumer can therefore trust that we work hard using every tool to breed a Dairy cow of the future that lives a long life of comfort that the farmer looks forward to caring for every day.