IRDBF
international red dairy breeds federation

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Dear Red Breed Enthusiasts,

In the last newsletter we discussed the topic of lactation persistence, concluding that the best dairy cow is one which can milk consistently for the full length of her lactation and get pregnant easily. **T**hese unsung herd heroes habitually produce their milk with minimal attention over long productive lives- **they are our invisible cows**. The trick for breeders to consistently build these attributes into their herd replacements. Industry identities from both North America and Scandinavia have assured me to just "trust the genomic numbers"! They assert that the reliability of the data means that a sire will always throw toward his genomic prediction, rather than toward what we think his pedigree might deliver, or how he looks.

The Australian dairy cow performance data centre, Datagene researched the question- Does the consistent use of highly ranked bulls increase herd efficiency? They did this by comparing the BPI (Balanced Performance Index) against the milk and management performance of the top 25% of cows in a herd, with the bottom 25%. Based on this comparison over many herds their result was an overwhelming yes, the production efficiency of the national dairy herd has improved and is continuing to improve with the use of this data. But is that comparison positive on every farm, or of consistent magnitude in every breed?

Some breeders claim that although they have been using highly ranked bulls, actual daughter performance is remaining static! One breeder is finding that carefully selected home bred bulls are producing daughters of more consistent quality. In recent decades international average cow production has improved significantly through improved forage quality and better cow nutrition strategies. So what is your opinion, are the genetics improving, or is feed management improving, or is it a combination of both?

Many Red breeding groups do not have high reliability Red genomic predictions available and there is no single breeding value system which is suitable for all the climatic conditions, government policies and farming practices which exist on earth. In countries with large red data sets and high reliability genomic breeding values exist statistical breeding is more evident, but in countries with low reliabilities breeders must scour genetic websites studying individual traits and applying novel parameters to secure genetics which suit their needs. A current example is a Scandinavian bull who transmits many admirable qualities, but his white eye pigmentation means that Australians are likely to limit his use, because of his daughters' potential susceptibility to eye cancers.

Today, breeders have sexed semen and embryo technology to help gain more from their best females, but how should the elite ones be reliably selected? Especially in countries with unique farming practices and smaller data sets with lower reliability, where it is possible for individual cows fool the system and gain inaccurate breeding values. In our herd the most consistent high production cows usually have old pedigrees that reach back quickly to sires from the past. It is useful to compare absolute production and management performance with Production Indicies and Breeding Values, to ensure they accurately reflect the cow's worth. Younger cattle sometimes appear to be over rewarded in these rankings. What does a production study reveal in your herd? How important is lifetime production to you? Would you breed intensively from older proven females, or from younger heroines with the chance of greater gains?

Opinions are divided about perpetuating the antique genetics of older cows, rather than maximising progeny from young high merit cows. Many Holstein geneticists claim that breeding from younger cows and using short generation intervals has successfully changed the health trait profile of that breed. Having younger sires in the pedigree also makes an animal more marketable because the names are more recognisable and younger bulls generally have higher values. Proponents of intensively breeding from younger cows say it is quite a mindset shift to mate sound, high producing older cows to beef bulls just because their breeding value is low, but it will accelerate improved production efficiency. They take the strategy one step further by mating low ranking, high production young cows to beef bulls, while mating moderate production/ high breeding value cows to sexed semen for replacements. They do not advocate culling sound cows prematurely, but that we should not breed replacements from them.

Some say that both older and younger cows can be bred to good advantage and that it depends on the skill of the breeder to make the most from the females he has available. It appears that even in the USA where ET work has been such a big part of the breeding culture, demand for embryo purchases has fallen dramatically. This has changed the focus of ET work and now herd managers are frequently flushing their best commercial females and placing embryos in their lowest ranked cows to eliminate poorer cow families. Using sexed semen in the flushes greatly improves the rate of improvement.

Breeding decisions all come down to confidence and trust, especially when we consider that the full effect of breeding decisions do not always become clear for a considerable period of time after the technician has placed the semen in a cow. It is very costly to make bad breeding decisions and it actually costs if we stop making improvement. Trustworthy information is a breeders' most valuable tool and while breeding value systems try to gain reliability by using data from large populations, it is often more complex than simply looking at the reliability value next to each trait.

Some websites carry aAa information about their bulls. This system has devotees all over the world, most notably in parts of North America and some Swiss breeders. It was developed in the 1950s to allow animals to be compared with an ideal, without penalising lower ranked individuals. More comprehensive information can be found on the website www.aaaweeks.com . The analysis is quite different to the more universal type classification system and separates outward appearance into six broad categories: 1. **Dairy** character; 2. **Tallness** and udder texture; 3. **Openess** including locomotion; 4. **Strength** including chest width, spring of rib and feet and legs; 5. **Smoothness** can be compared to body condition or body maintenance; 6. **Style** which includes alertness and vigour. While these terms could be considered old fashioned and too broad, the aim is to produce consistent lines of dairy cattle which do not display extreme characteristics. It aims to quantify traits rather than reward or penalise good and bad. The evaluations are displayed as either three or a six digit numbers, where each numeral represents the most prominent characteristics, listed from most to least evident. Typically a Holstein might score 1 2 3, while a Red might score 4 5 6. aAa users point to the ability to blend old proven strategies with new information and claim more consistency in the cattle they are breeding. The question is: does aAa have the ability to highlight aspects overlooked by other selection systems and is it another useful tool to refine our breeding choices? Remember, any system is only as good as the people who design, maintain and collect data for it.

In this issue we read the views of Ryan Barrett from Prince Edward Island, in Canada. He is Secretary-Manager of The Canadian Milking Shorthorn Society and his comments relate to a portion of the international Red Dairy population which has not shared close association with Scandinavian Reds in the past. But many people are coming to believe that these links must be strengthened for mutual benefit and if we did not realise the necessity of universal red data sharing before, participants in the 2019 IRDBF conference were certainly given a call to arms by David Kendall of ST Genetics in the USA. Here is a Canadian perspective:

Oceanbrae Ironman Ginger EX-91
6-7 305d 10,037 kg M 510F 5.1% 394P 3.9%

Milking Shorthorns: Past, Present and Future

The Shorthorn breed was one of the first breeds to be developed using selective breeding in the late 18th century, with dairy-focused genetic lines a priority since the development of the breed in northern English counties and Scottish Borders. The breed was a dominant presence in Britain and British colonies around the world for more than a century before being overtaken by the Holstein-Friesian breed in the early 20th century in most of these regions. In recent years, Milking/Dairy Shorthorn breeders in several countries are seeing renewed interest in the breed as a result of the significant progress that has been made in production levels and modern dairy conformation while retaining so many of the workability traits that kept Shorthorn genetics relevant in a changing dairy industry.

Here in Canada, the breed was for many years viewed as a "dual purpose" breed, kept for both milk production as well as for beef. In the 1980's, breed leadership embarked on a modernization programme that involved use of top red breed genetics. This has continued to the present day, expanding the genetic base of the breed while significantly improving milk yields and udder conformation. Genetic expansion programs have differed a bit by country, reflecting the needs and priorities of different populations as well as access to different genetic sources.

The name of the breed changed to Milking Shorthorn in Canada in 1990. At that time, national average milk production was approximately 5100 kg of milk in 305 days. Contrast that with today, when the Canadian breed average is closer to 7500 kg of milk in 305 days. In the same time, average fat percentage has also increased from 3.65% to 4.0%, with most of this improvement coming in the past 10 years. It is now quite common for mature Milking Shorthorn cows to produce in excess of 10,000 kgs of high

component milk in a single lactation. While this level is lower than production seen in the Holstein breed, it is comparable with other breeds like Ayrshire, Guernsey or Jersey.

The average Canadian Milking Shorthorn features a mix of Canadian genetics with American Milking Shorthorn, Australian Illawarra, North American Red Holstein, Scandinavian Red breeds (primarily SRB), and British Dairy Shorthorn genetics. The Canadian population tends to have a higher percentage of Shorthorn genetics than some of the other dairy type Shorthorn populations. This relates in part to the percentage minimums for showing and production awards (75% purity minimum), the selection of available AI sires, as well as interest from new breeders in pursuing non-Holstein genetics. Nonetheless, there are very few Milking Shorthorns in Canada that do not some level of non-Shorthorn genetics. At the same time, breeders have prioritized retaining a very distinct Shorthorn identity and breed character.

The size of the Canadian Milking Shorthorn population has been relatively steady for a number of years. The Society lost a number of long-time herds to dispersal in the early 2000s from retirement of breeders and large numbers of producers exiting the industry at the time of BSE (2003-2006). However, these dispersals seeded a number of new herds with quality Milking Shorthorn cattle, with many of these breeders now to be counted among the breed leadership. Recent years have seen significant growth for the breed in the French-speaking province of Quebec, a region without a strong Shorthorn history. Many producers are attracted by the low-maintenance, trouble-free reputation of the breed as well as the improvements in production and type that has made the breed much more acceptable to those more used to a herd of Holsteins.

The American Milking Shorthorn population has seen some contraction in recent years, due in large part to the challenges in milk pricing that has resulted in many farms exiting the industry. Like Canada, the majority of Milking Shorthorns are in mixed herds with other breeds. On the other hand, Dairy Shorthorn numbers in the United Kingdom appear to be on the upswing, with considerable interest in Dairy Shorthorns as a cross-breeding alternative. The Milking Shorthorn breed population in New Zealand also appears to be remaining steady; however, it is the population with the highest percentage of non-Shorthorn genetics in the national herd.

One of the major challenges for the breed at the moment will be moving forward with research into genomic evaluations. The small population of the breed has been a stumbling block in advancing this research, leaving Milking Shorthorns as one of the few Canadian breeds without genomic evaluations (the Canadienne breed is the only other). To build a more sizable reference population, cooperation and collaboration between international Shorthorn populations will be essential, particularly as there is more exchange of genetics between countries than ever before. Some countries are further along with testing than others, but no country has routine genomic evaluations available to-date. A number of breed leaders have indicated an interest to collaborate on advancing this effort in the short term, but identification of research funding and buy-in from national genetic evaluation centres will also be necessary.

Another challenge remains the relatively small breed population and the resulting low number of AI sires available. This limits the rate of genetic progress (particularly without genomic evaluations) and can be a challenge for breeders new to the Shorthorn breed who are used to a wider selection of sires in other breeds. Here in Canada, we have developed a successful sire proving program with Semex where breeders purchase shares in the newly released bulls, with this money going to pay some testing and marketing costs. This reduces the costs to the company, ensures interest from breeders in the genetics on offer, and improves communication with international markets on available sires. So far, this program has been a win-win for both the company and Canadian breeders. In a world of increasing consolidation of AI companies, we hope that model can remain successful in future years.

As we look to the future, I feel that the Milking Shorthorn breed most definitely has a place in an ever-changing dairy industry. Our breed has one of the higher percentages of naturally polled cattle of the dairy breeds in North America, which is sure to be of increased interest to consumers focused on animal welfare. Milking Shorthorns (particularly those of high Shorthorn purity) also tend to have higher frequencies of the A2 beta casein allele, which is also gaining importance in many countries. Here in Canada, Milking Shorthorns have an advantageous ratio of fat to protein in their milk, enabling producers to maximize

revenue per unit of milk quota (defined by kgs of butterfat per day). Milking Shorthorns lead all other dairy breeds in Canada for productive longevity, somatic cell score and breedings per cow…all highly correlated with rates of involuntary culling and lost profitability. Continuing to foster success for these management traits while improving production of milk solids is at the core of our breed's genetic selection criteria.

Richford Ironman Iceland EX-90
3-2 305d 8705 kg M 379F 4.3% 323P 3.7%

Happy breeding and if you have feedback or comments about comments in this newsletter please email me your thoughts, it is probable they will provide inspiration for future discussions.

Graeme Hamilton