Genetic Expansion in Canadian Milking Shorthorns:

The History and the Reality Today

by Ryan Barrett

The current membership of the Milking Shorthorn breed in Canada is dominated by breeders who are relatively new to our wonderful breed. This is encouraging, as they are breeders who have chosen to breed Milking Shorthorns based on their merit as efficient, durable, and productive, and profitable dairy cattle rather than simply carrying on a family history with the breed. Conversely, many of these newcomers to the breed may be less familiar with some of the recent history of the breed, particularly the embracing of genetic expansion for the survival and growth of the breed. Therefore, let's take a look at where we've come from, where we are today, and the future for Milking Shorthorns in Canada.

As most breeders would know, the Milking Shorthorn breed that we know today developed from a dual purpose history. From the very beginnings of the Shorthorn breed in the late 1700's, lines were established within the breed that emphasized milk production as well as beef production. For many years, breeders emphasizing dairy Shorthorn genetics in Canada were organized under the Dual Purpose Shorthorn Society, while all Shorthorns were registered in the same herdbook.

At one time, Shorthorn dairy cattle were a common sight in many parts of Canada. Following World War II and a move toward farm specialization and consolidation that continues today, the versatile Dual Purpose Shorthorn fell out of favour, with dairy producers favouring the high production of Holstein cattle, bred only to produce milk. As the number of herds with Dual Purpose cows reduced across the country, the genetic base of the breed also contracted. With a smaller genetic base, it is harder to identify the top genetics to breed for desired traits without becoming a victim of inbreeding.

In the late 1970's and 1980's, dairy-type Shorthorn breeders around the world began exploring options for outside blood that would enable the breed to modernize and emphasize milk production while retaining many of the traits that have made Shorthorns a durable and efficient breed for years. American Milking Shorthorn breeders embarked on their genetic expansion trajectory a bit earlier than their Canadian counterparts, with Milking Shorthorn genetics from New Zealand and Illawarra genetics from Australia being imported as early as the 1960's. While these genetics were not 100% descended from the Coates Herdbook, they were Shorthorn-dominant genetics bred for milk production that helped start a wave of modernization in North America. This was followed by use of the Norwegian Red bull K Schie, who brought significant yield improvements to the breed. These genetics made their way north of the border into Canada with some time delay, as most Illawarra semen at the time could not be imported into Canada, but Illawarra-influenced Milking Shorthorns from the USA were routinely brought across the border.

By the 1980's, a number of breeders also began to incorporate some Red Holstein genetics into their breeding programs, particularly through the use of Glenafton Enhancer and Hanover Hill Triple Threat. Sons and grandsons of these bulls would go to Al in Canada, the United States and Australia, and would have immediate impact on the breed. Other Red Holstein sires would also be used; however, cattle still needed to be 75% purity to show in Canada and the USA, so Shorthorn genetics still tended to dominate, and animals would often be crossed back to a 100% pure bull after a Red Holstein sire was.

At the end of the 1980's, Dual Purpose Shorthorns changed their name in Canada to Milking Shorthorns, to reflect the new reality and genetic focus of the breed. At the same time, massive improvements to both the productivity and dairy conformation of the breed were taking place. From 1989 to 1999, average 305 day milk production in Canada increased by more than 33%, a fantastic rate of improvement. At the same time, cows were being bred with better udders, improved persistency of production, and more angularity than cows of previous generations.



On the left is Cheapside Peri 17, Grand Champion at the 1986 Canadian National Exhibition. On the right is Richford Ironman Iceland, Grand Champion at the 2016 National Milking Shorthorn Show. While Peri 17 is shown as a mature cow and Iceland is a first lactation heifer, you can see some differences from 30 years of breeding and genetic expansion.

A combination of outcross genetics, primarily from the United States with Illawarra and Holstein influence, as well as 100% genetics that still featured strong production levels like Pinehurst Rebel 9th and Meriville Peerless, fundamentally changed the nature of our breed.

In the early 2000's, Canadian breeders suffered from a lack of AI sire options. American genetic companies were testing fewer Milking Shorthorn sires, and many that were sampled couldn't be exported to Canada; the same with genetics from other Shorthorn populations. Canadian breeders had no domestic young sire program, so selection suffered. Due in part to this lack of selection, as well as over-use of some sires that were not genetically superior, production levels stagnated in the mid-2000's. However, by the late 2000's, sire selection had grown significantly, and rates of genetic improvement have also recuperated. As well, a number of breeders have made wise use of embryo transfer to improve the genetic merit of their own herds by multiplying the influence of their best females.

This review of recent Milking Shorthorn history allows me to circle back to the topic of genetic expansion. Without the infusion of new genetics from genetic expansion programs, I am positive that the Milking Shorthorn breed would be functionally extinct in Canada today. It has modernized a breed while allowing us to retain so much of what makes Milking Shorthorns unique and desirable. As many breeders will say, today's Milking Shorthorn is not your grandfather's Dual Purpose Shorthorn. Our breed has the lowest inbreeding rate of any dairy breed in Canada...a notable feat for a breed with a comparatively small population.

At the same time, it is important to find balance in breeding philosophy and in genetic expansion. The breed needs to retain breed identity, breed character, and the durability and functionality that set it apart from other breeds. There is a need for a range of genetics to allow for progress without detrimental inbreeding depression.

Many new breeders mention to me that they are frustrated by the lack of 100% purity sire options, as they would like to use purebred sires as much as possible. This is quite understandable, given the reality of pure breeding in our other major dairy breeds. In Holstein or Jersey circles, animals at less than 100% purity are usually not looked upon the same way, and are not often considered for honours, the show ring, or sire selection. This is not the case in the Milking Shorthorn breed. We continue to require than females must be 75% purity or higher to show or to be recognized with production awards from our Society, but cattle at various levels of purity can still be profitable, a pleasure to work with, and strong foundational stock from which to build herds on.

As a result of our breed's embracing of genetic expansion, particularly in the past 30 years, it will be less common to see 100% purebred sires being offered by AI organizations. Our Society will continue to search for a diver-

sity of genetics which include higher purity pedigrees. Nonetheless, I feel it would be unwise to discount sires with lower purity percentages simply because of that number. If a breeder choses only to use bulls with purity levels over 87%, for example, they would be dealing with a very small subset of available sires, and they may miss out on some top genetics that still have a majority of Milking Shorthorn genes, but that are definitely not "purebred" by conventional standards.

Compared to other Shorthorn populations, Canadian Milking Shorthorns tend to be at a higher purity level. This may be a benefit to our breeders, as breeders in Australia, New Zealand, the United Kingdom and the United States look for high quality genetics that allow them to consolidate the "Shorthorn" identity of their respective populations. I will admit that currently there are fewer high purity (greater than 75%) sire options available through AI than I would prefer. This presents a challenge for us to work together with our international Societies to ensure that a range of genetics are selected in sire programs, not just multiple bulls from Grand Champion show cow or bulls where Shorthorn/Illawarra genetics are in the minority. At the same time, some of these outcross sires may work very well on high purity cows, balancing milk production with component percentages, functional conformation, longevity, fertility, and health traits.

I continue to be encouraged by the new producers being attracted to our breed by the merits of the breed itself. The breed continues to make in-roads with dairy producers emphasizing feed efficiency, animal health, longevity of production, and milk quality. I want to do whatever I can to foster continued growth and breed improvement, so I felt it important to provide some context on how far our breed has come, as well as empowering our next generation of Milking Shorthorn breeders to capitalize on all of the genetic resources available to breed dairy cattle that make you money while being a pleasure to work with. It continues to be great to own the Red, White and Roan!



Shown above is Oceanbrae Pingerly Betty, Grand Champion at the 2015 National Show. Betty is a fine example of a modern Canadian Milking Shorthorn, with a pedigree that includes genetics from Australian Illawarra (Pingerly, TVCassius), Red Holstein (Tulip-Red, Triple Threat, others), and Swedish Red (B Jurist). She carries a purity of 76.3%, with Shorthorn genetics still making up threequarters of her genetic make-up.