



How Beef Semen is Reshaping Dairy Herds

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The dairy industry has undergone a significant transformation in its genetic strategies, driven by the advancements in genomics, the widespread adoption of sexed semen, and the growing use of beef sire semen. By leveraging genomics, we can more accurately assess the genetic potential of herds, enabling the selective use of sexed semen on top performing females. Meanwhile, the introduction of beef sire semen into dairy farms has allowed for the efficient breeding of remaining females. This dynamic combination is changing the mindset of farmers to being more than a “dairy” farmer while reshaping herd management and boosting profitability across the dairy sector.

The Choice Between Dairy and Beef Semen

In 2013, only 2% of Holsteins were bred using sexed semen in Canada. A decade later, this number has risen to 18%, guaranteeing the required

number of replacement heifers born while optimizing the genetic quality of future replacements. This guarantee also reduces the number of purchased animals and the risk of infectious diseases entering your herd. When there is no need or interest in a replacement from a particular dam, more farmers are opting for beef semen to enhance the sale value of the resulting calves. The trend in beef semen usage has risen across all major dairy breeds, most notably in Ayrshires, Holsteins, and Jerseys. In 2023, beef semen was used on 39% of Ayrshires, 29% of Holsteins, and 25% of Jerseys in Canada. Moreover, by 2022, 60% of dairy herds had used at least one beef sire, a number that has doubled since 2000 and is expected to continue rising in the coming years.

As one might expect, the choice between dairy and beef semen (conventional or sexed) is highly dependent on lactation and insemination number. Looking to Figure 1, which looks at inseminations since 2021, 85% of first time calvers were inseminated with dairy semen with the remaining 15% bred to beef. Similarly, Figure 2 shows the type of semen used since 2021 per insemination number, with dairy semen representing 78% of first inseminations. The use of dairy semen gradually decreases with subsequent lactation and insemination numbers. By the eighth parity or higher, the use of beef semen comprises 38% of breedings. Similarly, by the seventh or higher insemination, dairy semen usage drops to 45% with beef semen becoming more dominant at 55%.

Figure 1. Breakdown in Type of Semen Used in Canada Since 2021 by Lactation Number

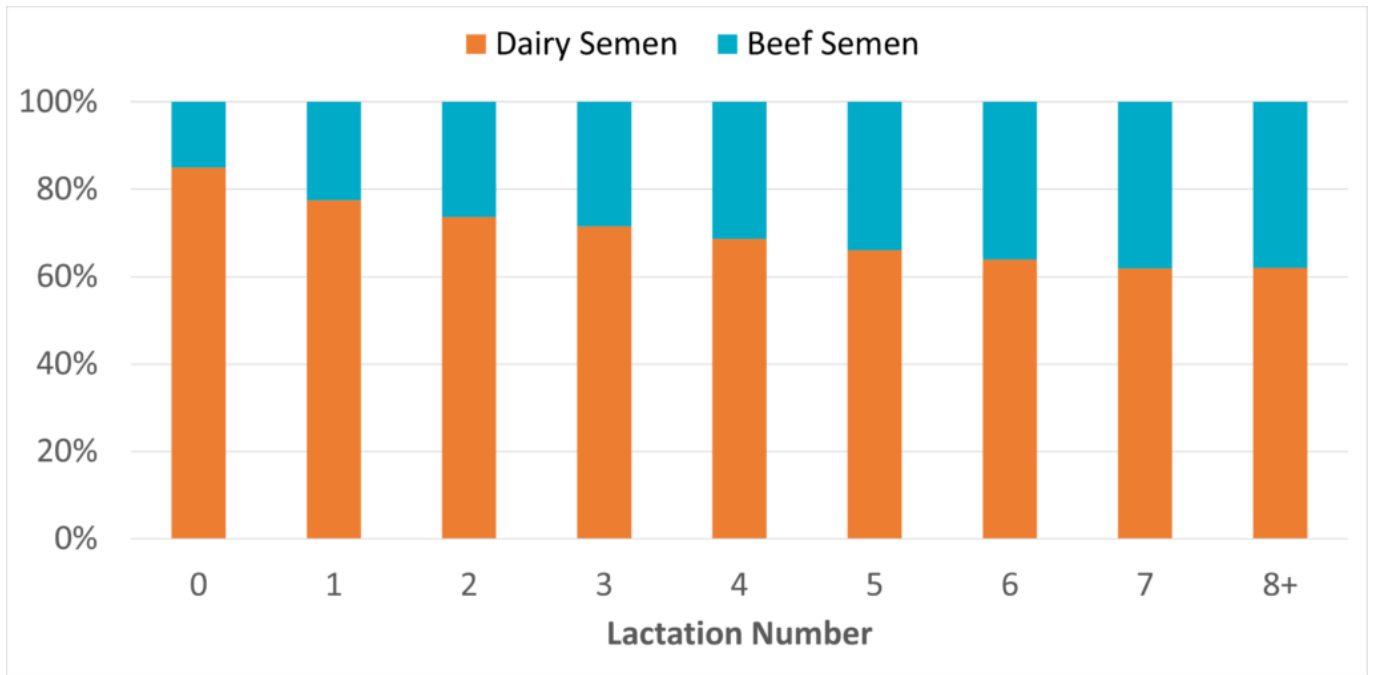
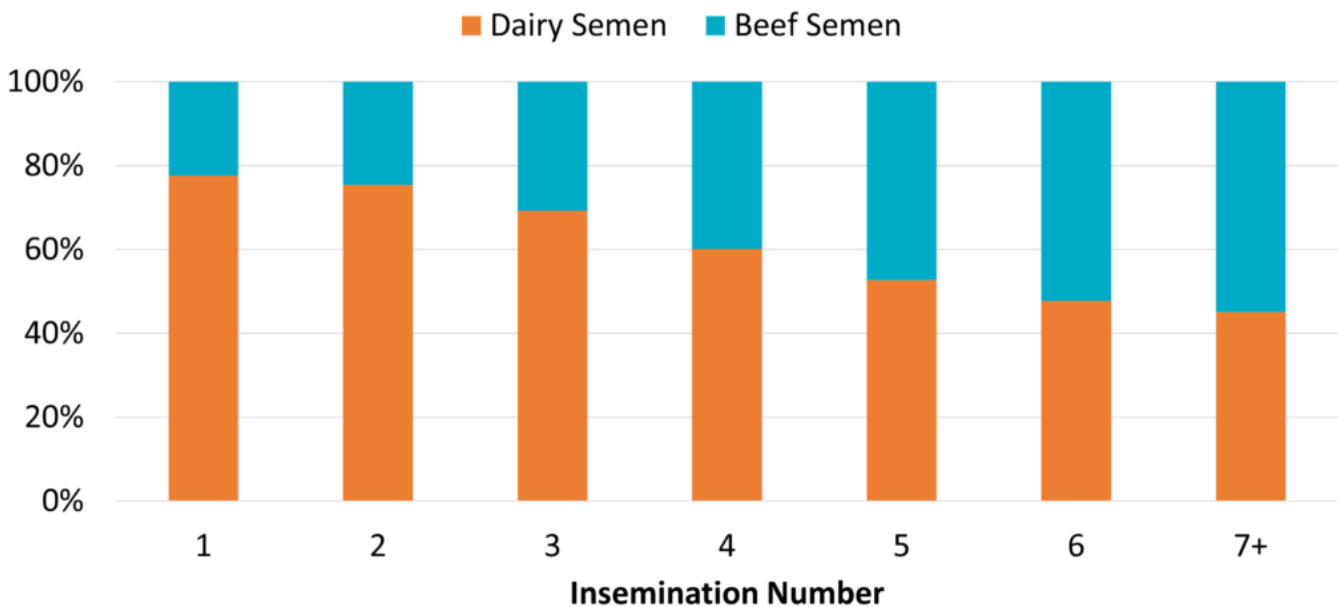


Figure 2. Breakdown in Type of Semen Used in Canada Since 2021 by Insemination Number



The strategic use of dairy semen, for younger cows and early inseminations once again highlights the potential to maximize the genetic improvement of your replacement heifers. In addition, with the cost of dairy semen doubling since 2010, reaching an average of \$45 for conventional and \$64 for sexed in 2023, it is important for your bottom line to use dairy semen only on the top performing animals. If the cow is either a repeat breeder or older with less superior genetics, beef semen

can be used to minimize costs at \$22 on average (for conventional beef semen) and generate value through the beef market.

Selecting the Right Beef Sire

Since the introduction of beef semen into the dairy industry, Angus bulls have consistently been the most utilized breed comprising 80% of beef-on-dairy inseminations in 2024. Angus is favoured for their short gestation length, averaging 279 days when crossed with a Holstein dam, as well as smaller birth weights, good marbling and high carcass weight. However, each beef breed has its own strengths that may be ideal for the breed of your dairy herd and market for crossbred calves. For example, Limousin, used for 10% of beef-on-dairy inseminations in 2023, excels in feed efficiency as well as ribeye area, one of the factors that impacts carcass grading. Simmental also has a large ribeye area, in addition to a small calf size, a 281-day gestation length and 84% of births categorized as unassisted when crossed with a Holstein. While some concerns have been raised about calving ease with certain beef breed crosses, Lactanet analyzed nine different beef breeds crossed with Holstein dams since 2021 and found the average unassisted calvings ranged from 77% for Belgian Blue crosses to 86% for Red Angus crosses. However, calf sizes are more variable, with Kobe Wagyu crosses producing the smallest calves to Charolais crosses producing the largest.

Regardless of the beef breed you choose; it is important to also consider genetics when making sire selection decisions. Those keen in genetic selection can utilize genetic evaluations for beef bulls available through various organizations in North America. Such evaluations are different from Estimated Breeding Values (EBVs) in that they are published as Expected Progeny Differences (EPDs) and predict how future offspring of a sire will perform relative to the offspring of other sires. In other words, an EPD is half of an EBV and are expressed in the units of measurement for each trait. For example, ribeye area is expressed in squared inches

and describes the difference in the ribeye area of a bull's progeny compared to the progeny of other bulls. When the genotype is available, EPDs become Genomic Enhanced EPDs (GE-EPDs) and as with dairy EBVs the accuracy significantly improves. Considering beef GE-EPDs in your beef-on-dairy breeding program, for traits such as conception rate, calving ease, and birth weight, will allow you to maintain dairy production and performance. However, also considering traits related to carcass weight, carcass quality, growth and efficiency will allow you to cater terminal progeny to the preferences of your buyer and maximize your profitability.

To further help with sire selection decisions, Lactanet is collaborating with Angus Genetics Inc (AGI) and the Canadian Angus Association to develop a new "Beef-on-Dairy Query" tool. Angus Genetics Inc is a globally recognized provider of genetic evaluations for the Angus breed publishing GE-EPDs for the United States, Canada, and Australia. They also publish two Beef-on-Dairy selection indexes, Angus-on-Holstein (\$AxH) and Angus-on-Jersey (\$AxJ) to predict profitability differences in progeny. Key traits within these indexes are calving ease, growth from birth to finishing, feed intake, and muscling, amongst others. The new "Beef-on-Dairy Query" tool will showcase both indexes as well as several other traits on Canadian and American Angus bulls so you can gain confidence in your beef sire selection decisions. Keep an eye out for more information as we approach the implementation of this exciting new tool!

Summary

The integration of beef semen into dairy breeding programs has proven to be a game changer for the industry. By leveraging genomics, you can make more informed breeding decisions, ensuring the right balance between sexed and beef semen use to maximize performance and herd profitability. Regardless of your preferred beef breed, the careful consideration of traits like calving ease, carcass quality and growth

allows you to select the best sires for optimal terminal progeny. As the market for beef-on-dairy calves continues to expand, dairy farmers are well positioned to enhance both herd management and overall profitability!

Partager



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