



## Improved Selection for Feed Efficiency

**In April 2021, Lactanet made history by publishing the first official Feed Efficiency genetic evaluations for the Holstein breed. Now, after over a year of experience with these new evaluations and additional research, Lactanet is ready to make some improvements to advance its Feed Efficiency evaluations and incorporate it into our national selection indexes.**

The current genetic evaluation for Feed Efficiency considers three traits: Dry Matter Intake (DMI) to estimate feed intake, Metabolic Body Weight to determine maintenance energy requirements, and Energy Corrected Milk to account for production levels. Feed Efficiency is therefore an expression of how much an animal eats independent of its requirements for maintenance and production.

### What's changing?

#### Two Lactation Model

The current feed efficiency system only includes first lactation data, however options for including later lactations have been investigated as more feed intake data continues to be collected on Canadian and international herds. Such data includes 28% more genotyped cows with data for second lactation. Compared to using only first lactation data, this new approach that uses data from both first and second lactations better describes feed efficiency over an animal's lifetime. You can therefore make more accurate decisions when it comes to identifying which animals are more efficient at converting feed into milk production.

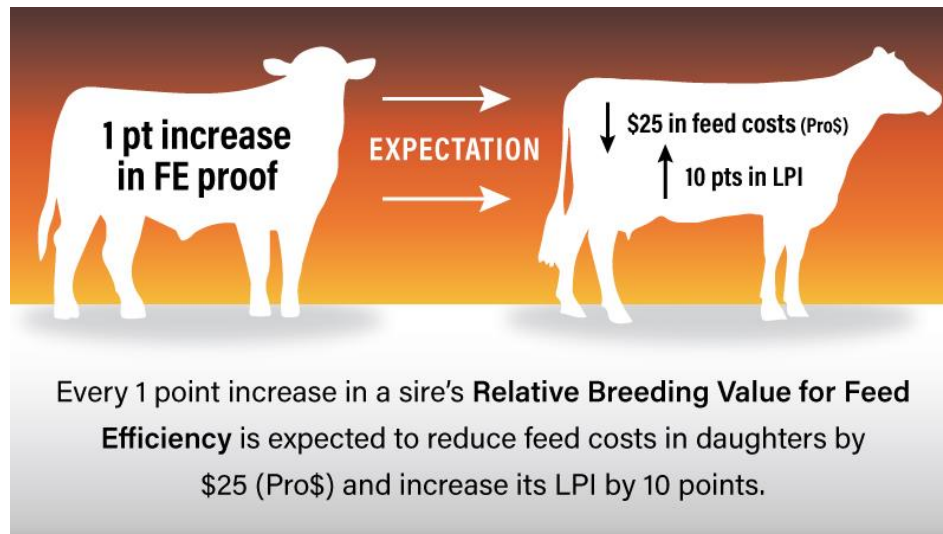
Starting with the August 2022 genetic evaluation release, Relative Breeding Values (RBVs) for Feed Efficiency will include both first and second lactation data. There will remain only one Feed Efficiency evaluation published for all animals, but it will now be the combination of first and second lactation values at equal weights. For every 5-point increase in a sire's RBV for Feed Efficiency, the daughters are expected to reduce their total DMI by approximately 80 kg in first lactation and 120 kg in second lactation. This corresponds to a **2% reduction in feed intake**.

#### Inclusion in LPI and Pro\$

In August 2022, the Holstein breed will also see Feed Efficiency included into its national selection indexes – LPI and Pro\$, which currently do not account for this trait. The formula for LPI and its three components, namely Production, Durability, and Health & Fertility, will remain unchanged. For animals with a published Feed Efficiency evaluation, the LPI and Pro\$ calculations will be modified to include this separate trait as an add-on value.

The weighting for Feed Efficiency in Pro\$ was derived using economic value estimates associated with the reduction in dry matter intake for the most efficient animals. **Every 1-point increase in a sire's RBV for Feed Efficiency (FE) is expected to reduce feed costs in daughters by \$25.** Therefore, as an example, an animal with a FE evaluation of 115 would have an increase in Pro\$ of \$375 (i.e.:  $(115-100) \times 25$ ). Similarly,

an animal with a FE evaluation of 85 would have a decrease in Pro\$ of \$375. The weight in LPI resulted from an extension of this work, ensuring a similar overall weighting in LPI as Pro\$, taking into consideration their differing scales. From this work, **every 1-point increase in a sire's RBV for Feed Efficiency will increase its LPI by 10 points**. The addition of Feed Efficiency into LPI and Pro\$ will revolutionize your selection decisions, allowing the most feed efficient animals to be utilized to create the next generation and maximize profitability.



As a reminder, the Feed Efficiency evaluation is available for all Holstein sires owned by A.I. customers of Lactanet and Holstein females that are part of the herd inventory of animals reported to Lactanet for herds enrolled on its milking recording services. For all other Holstein heifers and cows that were born in Canada or are Canadian owned, Feed Efficiency evaluations are available for purchase at a cost of \$5 per animal, or \$4 for animals in herds participating in type classification. Only those **animals with a published Feed Efficiency evaluation will have it included their LPI and Pro\$ values**. Those animals without a public Feed Efficiency evaluations will not see any change in their LPI or Pro\$ values.

Stay tuned for further updates on the upcoming Feed Efficiency changes as we approach the August genetic evaluation release.

Authors: Hannah Sweett, Knowledge Transfer Advisor – Genetics Portfolio  
Allison Fleming, Geneticist

Date: June 2022