Updating Indirect Herd Life

- November 30, 2021
- Functional Traits

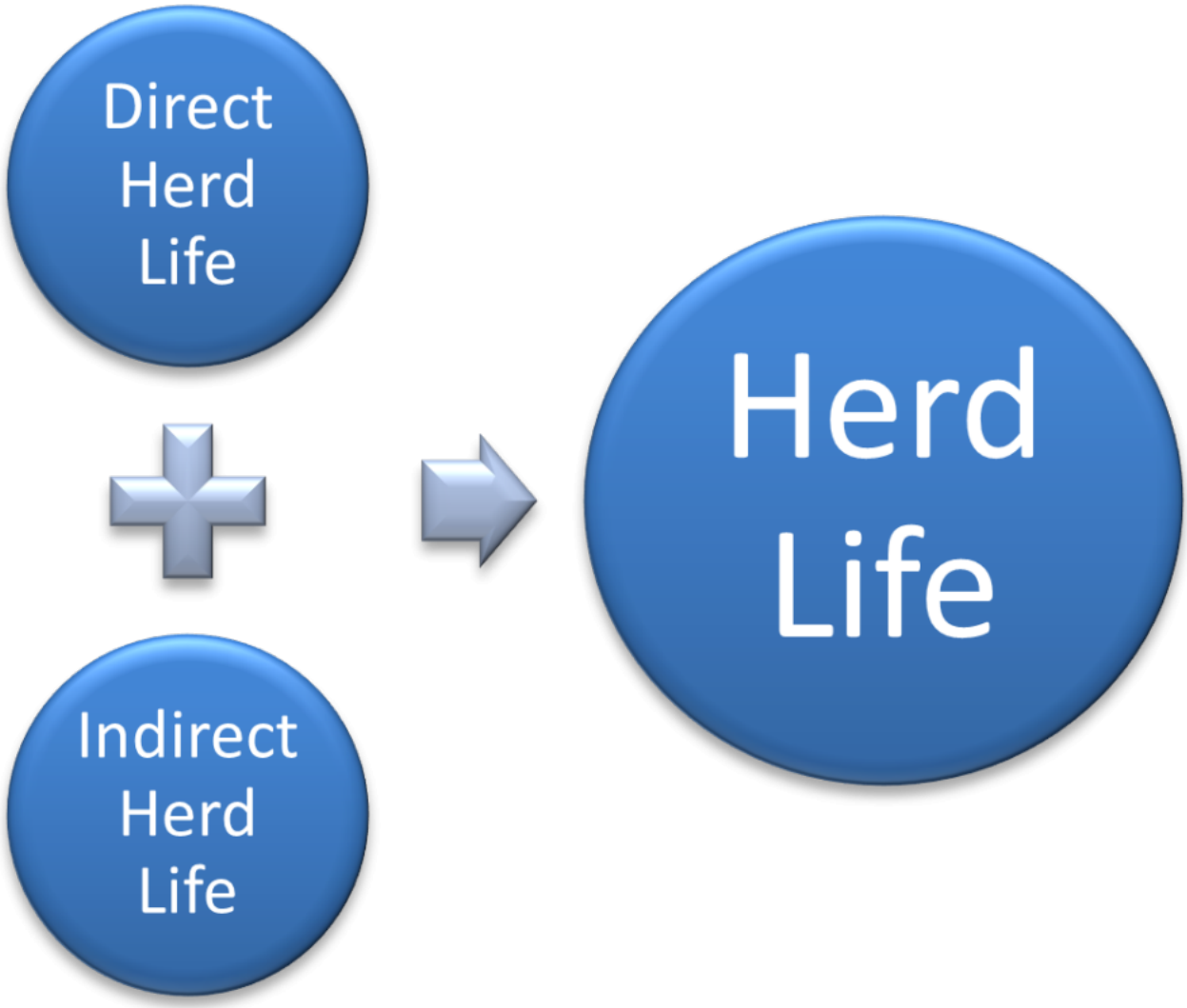
Managing herd turnover is challenging! We want to make sure that cows are leaving your herd because it is the best management choice – not because they have to. Herd turnover is highly related to many non-genetic factors, such as the market environment, but genetics also plays an important role in the longevity potential of your herd. Rearing replacement heifers is expensive, so optimizing your herd's replacement rate is key in maintaining a profitable dairy operation.

Herd Life genetic evaluations help you improve the longevity of your herd and make sure you are replacing animals because you want to, not because you have no other choice. But how can we tell if a cow is expected to last long in the herd when they are just a young heifer?

Herd Life Evaluations

Herd Life – Canada’s genetic evaluation for longevity – gives producers the choice when it comes to removing animals from their herd. It is designed to reduce involuntary disposals and, as a result, increase the percentage of herd culling decisions that producers take intentionally.

Published evaluations for Herd Life are made up of two parts: Direct Herd Life and Indirect Herd Life. Sire proofs for Direct Herd Life are based on actual survival data of their daughters, which means these bulls are old enough to have lactating daughters. Indirect Herd Life is used as an early predictor of daughter survival and is calculated based on a formula that combines genetic evaluations for a list of traits known to affect lifetime daughter survival. Lactanet geneticists have recently updated the formula for calculating Indirect Herd Life in each breed.



Predicting Longevity in Early Life

In young animals, it can be challenging to predict longevity. While we wait for young bulls to acquire survival data from their daughters, we use a group of traits that are highly related to survival as an indicator. Originally, this included traits related to female fertility, resistance to mastitis and other diseases, as well as various type and functional traits. Since the last update of the Indirect Herd Life formula, genetic evaluations have been introduced for new health and functional traits that are also known to influence longevity.

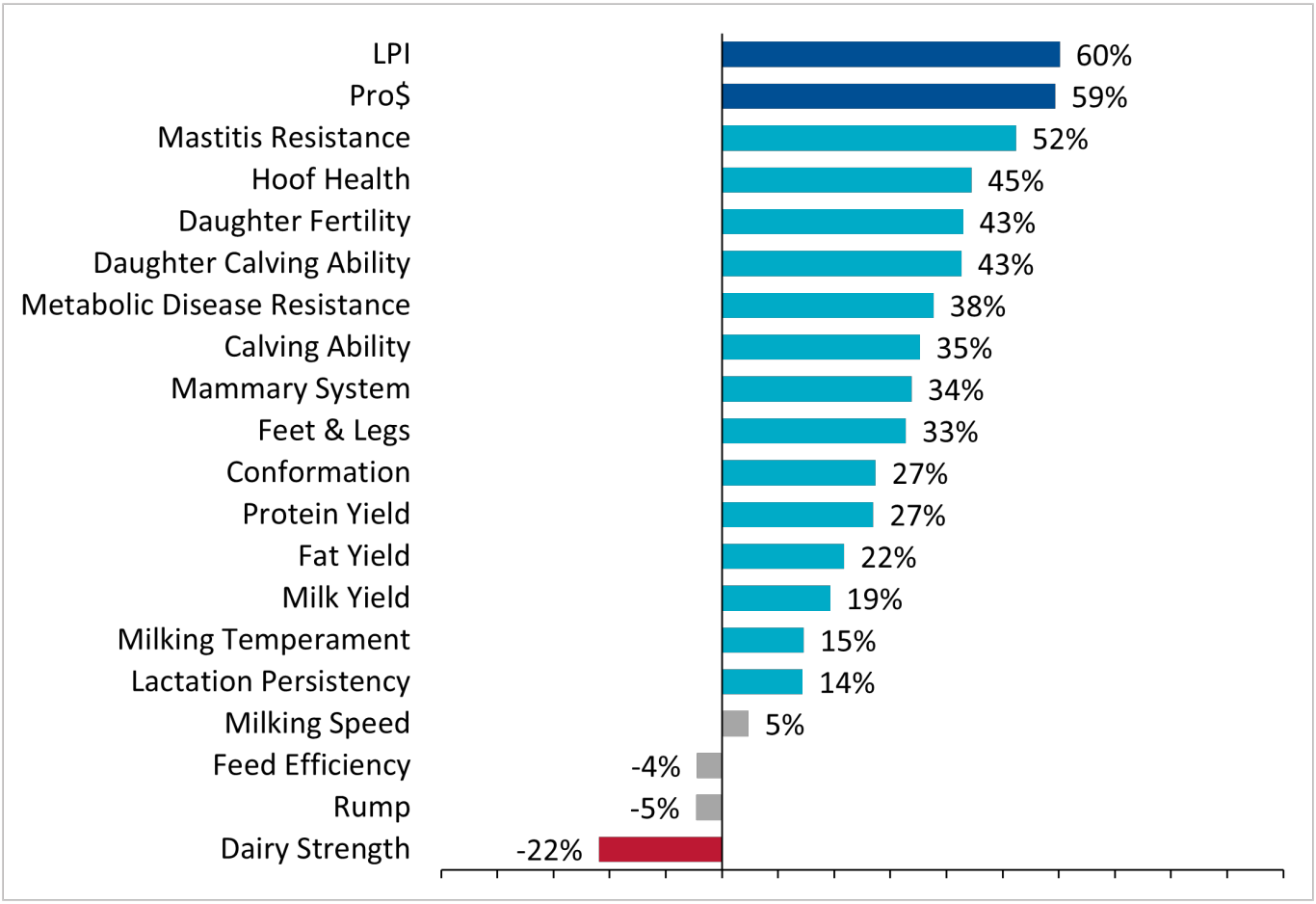
Lactanet routinely updates the Indirect Herd Life formula to ensure the best predictor of longevity is used. While this new Indirect Herd Life

formula helps better predict an animal's true longevity, for most animals there will only be minor changes in their published Herd Life evaluation since Direct Herd Life remains unchanged.

Correlation to other major traits

Longevity is connected to almost every trait we select for. It's no surprise that many traits, as well as the LPI and Pro$, are strongly correlated to Indirect Herd Life. As expected, Indirect Herd Life has a favourable correlation to major health and fertility traits, as well as production. However, we see that some conformation traits had a negative correlation with Indirect Herd Life, especially Dairy Strength. Our breeding goal is to extend the productive life of dairy animals, and Herd Life continues to be a major component.

Figure 1: Proof correlations (%) between Indirect Herd Life and the national selection indexes (depicted in dark blue) as well as other major traits.



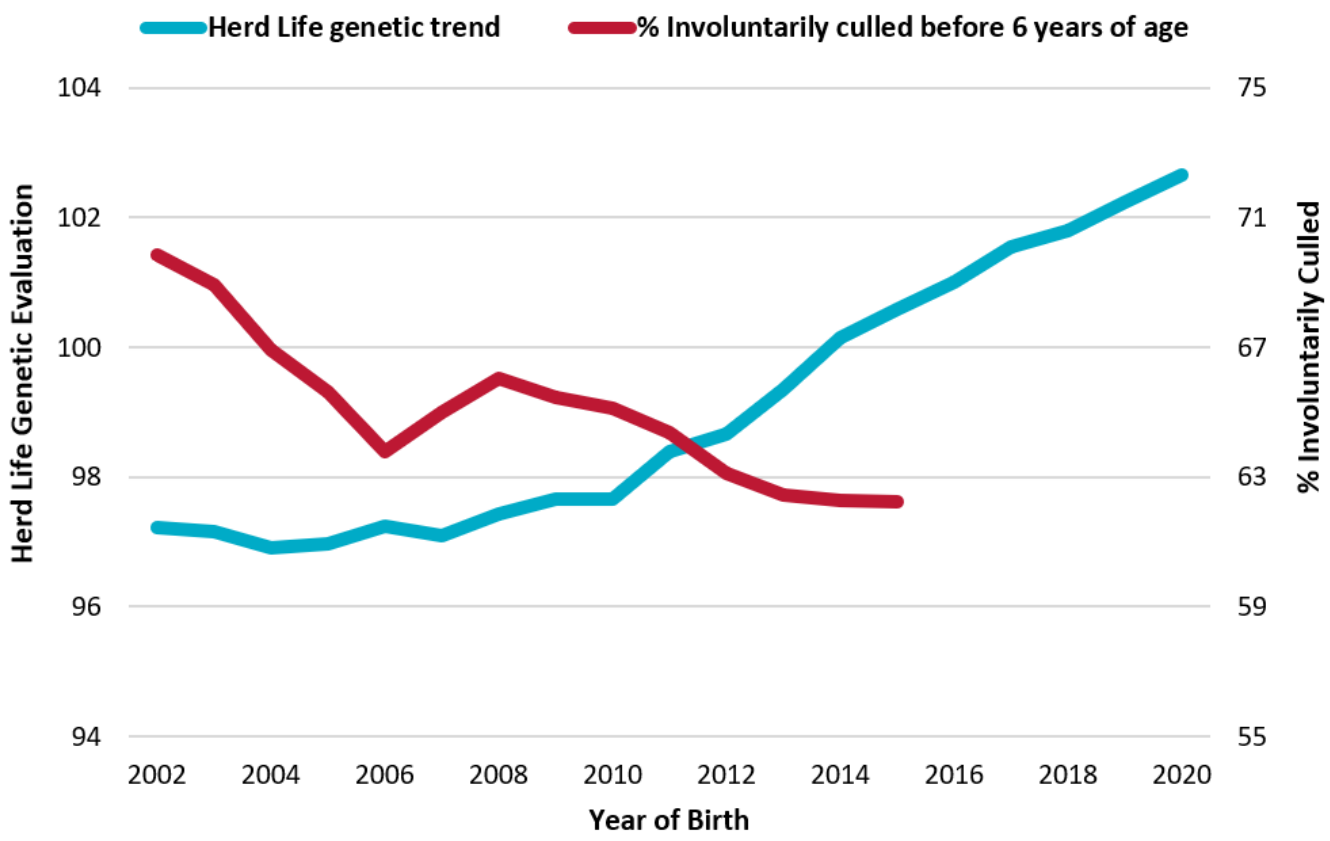
Neutral relationships are depicted in grey, positive relationships in light blue and negative relationships in red.

Using Herd Life

Selecting for animals above average for Herd Life (or greater than 100 RBV) will improve the longevity of your herd. Over time, we have continued to reduce the rate of involuntary culling by selecting for improved Herd Life as shown in Figure 2. Here, we can see that the percentage of involuntary culling (red) is decreasing as the genetic trend (blue) for Herd Life increases. Six years of survival data for each birth year is required to estimate the percent of involuntary culling. Therefore, this parameter was estimated up to the 2015 birth year. Selection for Herd Life decreases the involuntary turnover of animals on farm and lowers the proportion of animals being culled for reasons we don’t expect or aren’t able to manage. This means that animals increasingly leaving

the herd because they have finished their productive life, not because of unanticipated events.

Figure 2: Trend for the percentage of herd disposals that are involuntary (as opposed to voluntary) relative to the annual genetic progress observed in the Holstein breed.



Herd Life evaluations reflect the expected survival rates of each sire's daughters relative to daughters of a breed average sire. Selection for Herd Life puts producers in the driver's seat, giving them the chance to make herd disposal decision themselves, as opposed to having the cow, one way or another, making those decisions for them. Now with the updated Indirect Herd Life formula, we can better predict the expected longevity in young heifers. Continue using Herd Life to improve the longevity and profitability potential of your herd!

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