

## **Industry Presentation - Selecting for Low Heritability Traits**

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The dairy genetics landscape has changed over the last 20 yr. Selection for traits with low heritability was discouraged before this time as little progress could be realized. With better data collection, analysis techniques, and now most importantly the advent of genomic testing, these low heritability traits have become common place in selection emphasis points for most dairies.

When looking at low heritability traits, most have a heritability of less than 10 % according to the Council of Dairy Cattle Breeding (**CDCB**) website. This means that environmental effects explain over 90 % of the variation and genetic differences are responsible for the rest. With genomic testing, we can now have more reliable estimates for young bulls and heifers for these low heritability traits.

Traits like Daughter Pregnancy Rate (**DPR**), Heifer Conception Rate (**HCR**), and Daughter Stillbirth (**DSB**) are now used frequently among industry index rankings for bulls and cows. According to the CDCB,

DPR heritability is estimated at 4 %, HCR is at 1 %, while DSB is at 7 %. We have seen progress, and in the case of DPR rapid progress, in genetic and phenotypic response. We will examine how these traits are ranked and used in herds to achieve this progress. For example, for herds that are genomic tested, we can see that genetically superior cows (top 25 % of the herd for genomic estimates for DPR) have a 10 to 15 % advantage over those in the bottom quartile for genomic DPR ratings. Additionally, we will take a look at a few other low heritability traits and the future opportunities that they offer for us that are not currently available.

In summary, the dairy genetic industry has historically done a fantastic job of increasing easily measured and recorded traits. The future holds even more promise as we develop more and more tools to place genetic selection on areas of the dairy where we have not been able to utilize this area of improvement previously.