

CLARIFIDE® PLUS INDEXES PROVIDE POWERFUL SELECTION TOOLS



KEY TAKEAWAYS:

- CLARIFIDE® Plus is the first to deliver genomic wellness trait information in one comprehensive package.
- Wellness Trait Index™ (WT\$™) places economic weights on wellness traits, directly estimating potential profit contribution of these traits for an individual animal.
- Dairy Wellness Profit Index™ (DWP\$™) includes information provided from WT\$ with additional wellness trait information.
- Selection for DWP\$ can result in a difference in lifetime profitability of more than \$1,200 between top 10th percentile and bottom 10th percentile of ranked animals.¹

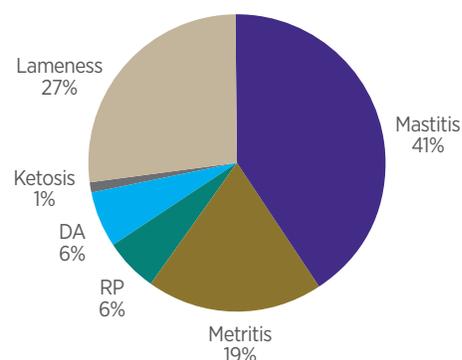
Selection indexes such as Net Merit \$ (NM\$) are critical components of any selection strategies to provide a path for dairy producers to rank and select animals for comprehensive genetic improvement across a host of traits. Once traits are chosen and weighted based on economic importance in an index, producers can rank animals according to the index value and make specific management and breeding decisions that impact future herd health and performance and profitability.

CLARIFIDE Plus is a first-of-its-kind genomic test that delivers information on six wellness traits—mastitis, lameness, metritis, retained placenta, displaced abomasum and ketosis—previously unavailable to dairy producers in one comprehensive offering. Zoetis developed the Wellness Trait Index (WT\$) and Dairy Wellness Profit Index (DWP\$) to provide the appropriate weighting and economic relevance to these trait predictions while helping dairy producers utilize these new wellness traits in effective genomic herd strategies (and protocols).

INSIDE WT\$ AND DWP\$

WT\$ is made up of the six new wellness traits and the economic impact of each trait on expected profitability outcomes. Chart 1 depicts the traits included in WT\$ and the associated weighting.

Chart 1: WT\$ Relative Value (%)



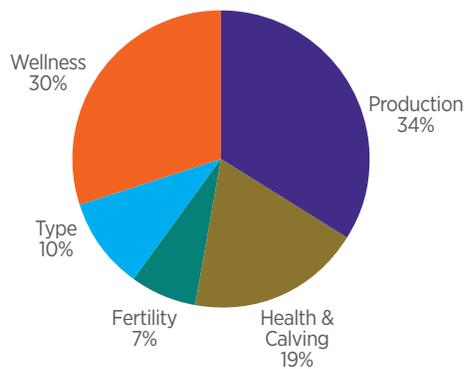


Like WT\$,™ DWP\$™ includes wellness traits but also covers important productivity traits impacting performance and additional profitability outcomes such as fertility, longevity and calving ability. The use of DWP\$ offers selection emphasis comparable to other well-known selection indexes such as Net Merit (NM\$) and Total Performance Index® (TPI). This similarity makes DWP\$ a practical consideration for producers who have historically used either index, but would like to apply additional selection emphasis on wellness traits.

An extensive review of peer-reviewed publications informed the development of both indexes, the weights and economic inputs. In addition, a team of dairy industry experts reviewed the DWP\$ outcomes and foundational components. The final product reflects their invaluable input and knowledge regarding animal breeding and producer application of genetic technology.

The following chart depicts the general categories included in DWP\$ and the weights included within the index.

Chart 2: DWP\$ Relative Value (%)



In addition to wellness traits, CLARIFIDE® Plus includes direct genetic information for the Polled trait. Results will indicate animals as either tested homozygous polled, polled carriers, tested free of polled or indeterminate.



GREATER CLARITY WITH CLARIFIDE PLUS

With DWP\$, producers can make strategic decisions on animals based on wellness outcomes without compromising selection for production traits that impact profitability. By combining wellness traits with traits found in NM\$, DWP\$ directly estimates the potential profit contribution that an individual animal will pass, on average, onto the next generation. The following charts are a comparison between DWP\$ and NM\$ and expected changes when improving each index by one standard deviation.²

Chart 3: Estimated Genetic Improvement Comparisons

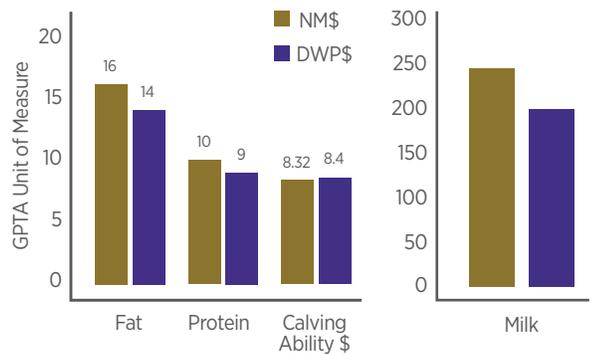
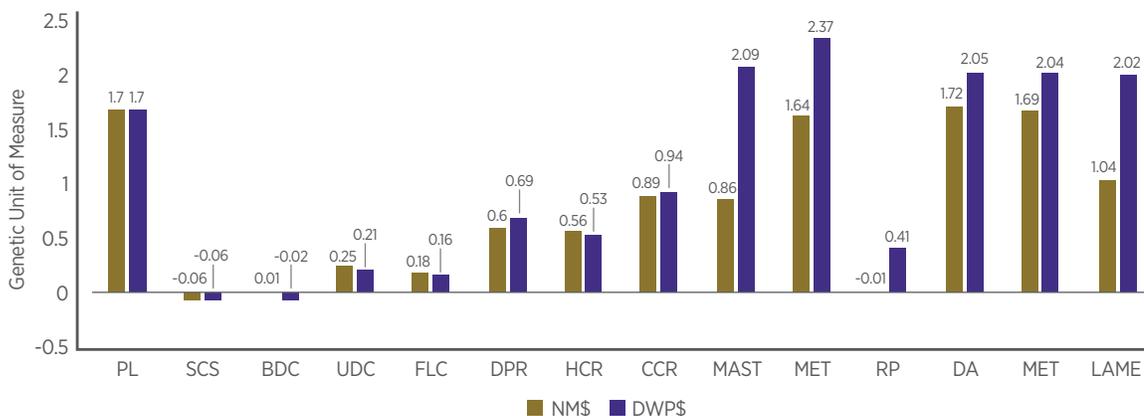


Chart 4: Estimated Genetic Improvement



Through examining the response of selection between DWP\$ and NM\$ it was found that DWP\$ offers largely the same selection response for production traits, **but with greater emphasis in wellness traits.**

INDEX ACCOUNTS FOR SIGNIFICANT GENETIC VARIATION IN PROFITABILITY, LEADING TO GREATER PROFIT POTENTIAL WITH DWP\$

DWP\$ describes variation in expected profitability of dairy animals attributed to differences in genetic potential for production, fertility, longevity and risk of disease. The index differs from other economic indexes by including direct predictions for health events that have significant economic implications.

By including more characteristics affecting profitability, DWP\$ describes more genetic variation in profitability than other indexes.

The more variation present within the population for an index or trait of interest, the greater the impact of selection decisions.

Chart 5: Dairy Wellness Profit Index (DWP\$)

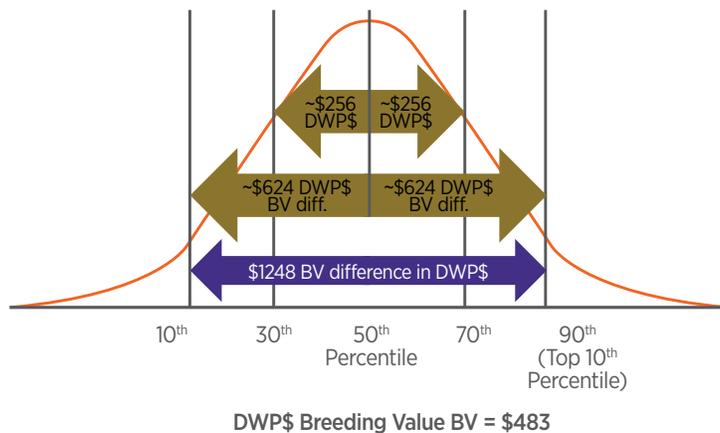


Chart 5 shows the expected difference in lifetime profitability between the top 10th percentile and bottom 10th percentile animals ranked by DWP\$ in a given population is more than \$1,200. For reference, the expected difference in profitability between the top 10th percentile and bottom 10th percentile of animals ranked by NM\$ is approximately \$990.¹

Chart 6: Increase in Average Lifetime Profitability*



*Assumes selection of top 85% of females as replacements as compared to no selection. Does not account for increases in profitability from progeny of selected animals.

The impact of DWP\$,™ when used as a primary ranking tool, has benefits over other ranking methods that employ NM\$. Chart 6 compares the projected increase in lifetime profitability between female genetic selection based on NM\$ genomic predictions and DWP\$ when selecting the top 85% of heifers to keep as replacements, compared to no selection strategy (\$0).

The values in the chart represent differences in selected heifers. Genetic merit will become greater with subsequent progeny creating additional value with each generation.¹

The wellness traits delivered through CLARIFIDE® Plus and the WT\$™ and DWP\$ indexes offer dairy producers unprecedented opportunities to select heifers based on predicted future health and profitability performance. The economic values placed on these traits, coupled with the level of variation accounted for, **give dairy producers a greater edge to make significant, profitable genetic progress toward a healthier, more trouble-free herd by using DWP\$ as part of CLARIFIDE Plus.**



1. Data on file, December 2015 Data Package, Zoetis, Inc.
 2. Data on file, Zoetis internal data. August 2015, Zoetis, Inc.