

Survival and Australian breeding indices

Technote 4

HIGHLIGHTS

- Selecting for Australian breeding indices improves survival and profitability.
- From April 2019, *residual* survival is no longer included in Australia's three dairy breeding indices: Balanced Performance Index, Health Weighted Index and Type Weighted Index.
- The indices still account for the main determinants of a cow's survival in a herd: production, fertility, cell count, functional type and workability.
- By using these indices, you will be breeding cows that last longer in the herd.

Breeding for survival

Survival – also known as longevity or productive herd life – refers to a bull's ability to produce daughters that last in the herd for many lactations.

Survival is a significant contributor to overall profitability on Australian dairy farms. By improving longevity:

- fewer replacements are needed, which means lower heifer rearing costs (or greater income as surplus heifers are sold);
- the herd is more mature – more mature cows produce more milk than younger cows;
- a greater proportion of the culling decisions can be based on production, resulting in an increase in the average production of the herd.

Residual survival

Until now, the three indices – BPI, HWI and TWI – included seven trait groups that influence profit and longevity in the herd: Production (ASI), Fertility, Cell Count, Type, Workability and Residual Survival.

While a cow's survival in the herd is influenced by production, fertility, cell count, type and workability, it is also influenced by other traits that we don't measure such as lameness, metabolic disorders, maternal calving ease and susceptibility to disease. Residual Survival aimed to capture the economic value of these additional traits that influence survival, while avoiding double counting those traits already included in the indices.

Residual survival in practice

The implementation of residual survival has presented some challenges. It is unstable from run to run (when information from different sources is added to bulls). This instability, combined with residual survival's high contribution to the BPI (8%), led to larger movements of bulls from run to run than was originally anticipated. This has created some confusion.

Globally, there has been a move away from including a wholistic survival breeding value in indices. The alternative is to measure the individual

contributors to survival and apply the economic value directly to the trait of interest. For example, evaluate lameness and place the economic value on lameness.

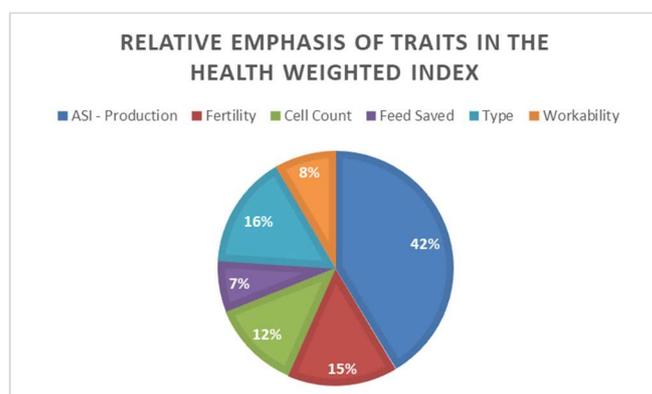
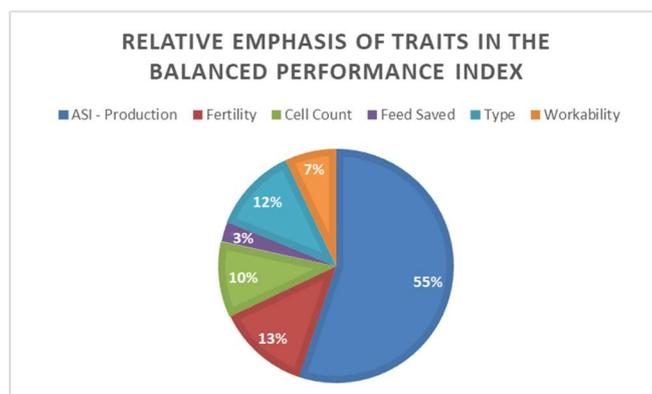
Removing residual survival

From April 2019, residual survival will no longer be included in the BPI, HWI and TWI.

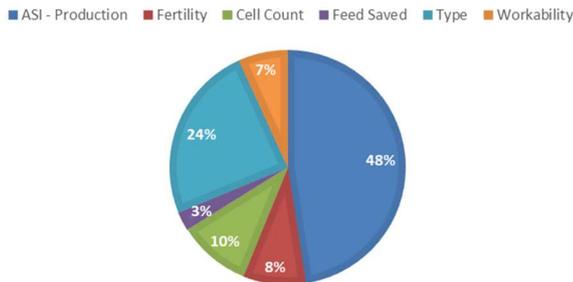
Australia will still be breeding for longevity. All three indices – BPI, HWI and TWI – still account for longevity and survival because they include the traits that have the greatest impact on longevity – production, fertility, cell count, type and workability.

Adjusted weightings

Without residual survival, the relative contribution of the remaining traits increases, as shown in the following pie charts.



RELATIVE EMPHASIS OF TRAITS IN THE TYPE WEIGHTED INDEX



Impact over time

One way of assessing the effect of removing Residual Survival from the indices is to look at projected differences in individual traits with selection for an index over time. In other words, what happens to Survival and other traits if bulls gained 100 BPI units over time – and comparing the difference between the index with and without Residual Survival? The bar chart shows that overall, the removal of Residual Survival reduces the survival response only marginally and cows bred for BPI will continue to improve their survival. In addition, the removal of residual survival also brings improved responses in other important traits such as Fertility, Somatic Cell Count and milk solids.

Who decided?

The decision to remove residual survival out of the three indices was made by industry through the Genetic Evaluation Standing Committee, which advises DataGene on policy. This group includes representatives of the herd improvement industry, farmers and technical and science advisors.

Survival ABV

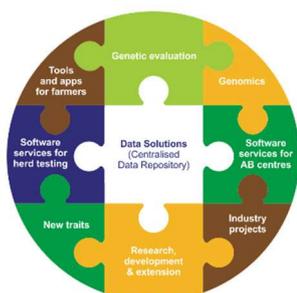
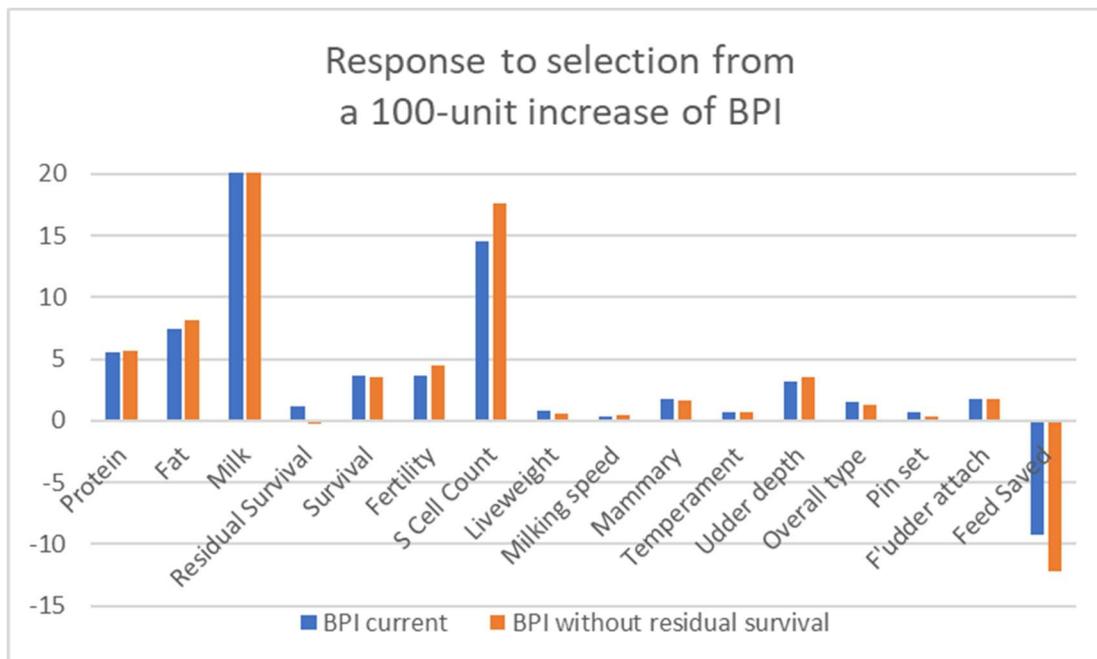
DataGene will continue to publish the Survival ABV. This breeding value includes all the factors that influence a cow's herd life.

To give even greater priority to breeding for survival, look for high BPI bulls with a Survival ABV of greater than 100.

The Survival ABV is not included in the indices. This is because most of the traits that influence survival are already in the indices (eg fertility, cell count, type). Including the Survival ABV in the indices would mean they were double counted.

More information

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About DataGene

DataGene is an independent and industry-owned organisation responsible for driving genetic gain and herd improvement in the Australian dairy industry. DataGene performs pre-competitive herd improvement functions such as genetic evaluation, herd testing and herd improvement software development and data systems. DataGene is a Dairy Australia and industry collaboration.

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