

New Zealand Angus Selection Indexes: Technical Specifications



The New Zealand Angus Association currently reports three different selection indexes. These are the:

- Self Replacing Index
- AngusPure Index
- Heifer/Dairy Terminal Index

All of the selection indexes described above have been derived using [BreedObject](#) software. The BreedObject selection index development process involves four major steps. These steps are:

1. A detailed description of the input costs and value generation of the commercial herd and target production system.
2. Once the target production system is described, the BreedObject software evaluates how each trait influences profitability and the economic value of improving each trait.
3. The BreedObject software then assesses what emphasis needs to be applied to each Estimated Breeding Value (EBV) trait to achieve the maximum profitability in the production system and for the market end point for which that index was designed. This step includes evaluating the selection response expected from direct selection on the individual EBVs and the correlated responses expected from selection on related EBVs.
4. The importance placed on each EBV results in the selection index value that is calculated for each animal.

Each selection index describes a different production system/market scenario and relates to a typical commercial herd using Angus bulls. As is the case for EBVs, each selection index can be used to rank and compare animals on their genetic merit. Producers are advised to use the selection index that most closely aligns to their production system. See the [Using New Zealand Angus Selection Indexes](#) tip sheet, available in the [Help Centre](#) on the BREEDPLAN website, for further information on the identification and utilisation of the most applicable selection index for your herd.

All selection indexes are reported in units of net profitability per cow mated (\$) for the production system/market scenario they describe. Selection indexes account for both sides of the profit equation (costs as well as income), and also reflect the relative short and long term profit associated with possible selection decisions. For example, short term profit can be generated by a bull through the sale of his progeny, and the longer term profit generated by his daughters in a self-replacing cow herd.



Each of the selection indexes are focused on efficient beef production while also targeting the following specifications:

Self Replacing Index (SRI) - Estimates the genetic differences between animals in net profitability per cow joined in an example self-replacing commercial herd that targets the production of grass finished steers. Steers are assumed marketed at approximately 480 kg live weight (265 kg carcass weight and 7 mm fat depth) at approximately 16 months of age. Selected heifers are retained for breeding and the balance marketed at approximately 16 months weighing 415 kg (230 kg carcass weight and 8 mm fat depth). As some daughters are retained, maternal traits are also of importance.

AngusPure Index (API) - Estimates the genetic differences between animals in net profitability per cow joined in an example self-replacing commercial Angus herd that targets the production of grass finished steers for the AngusPure programme. Steers are assumed marketed at approximately 530 kg live weight (290 kg carcass weight and 10 mm fat depth) at approximately 20 months of age. Selected heifers are retained for breeding and the balance marketed at approximately 20 months weighing 450 kg (240 kg carcass weight and 10 mm fat depth). A significant premium for carcass quality was assumed and, as some daughters are retained, maternal traits are also of importance.

Heifer/Dairy Terminal Index (HDT) - Estimates the genetic differences between animals in net profitability per female joined in an example herd where all progeny are marketed. All progeny are marketed at approximately 510 kg live weight (280 kg carcass weight and 7 mm fat depth) at approximately 24 months of age.

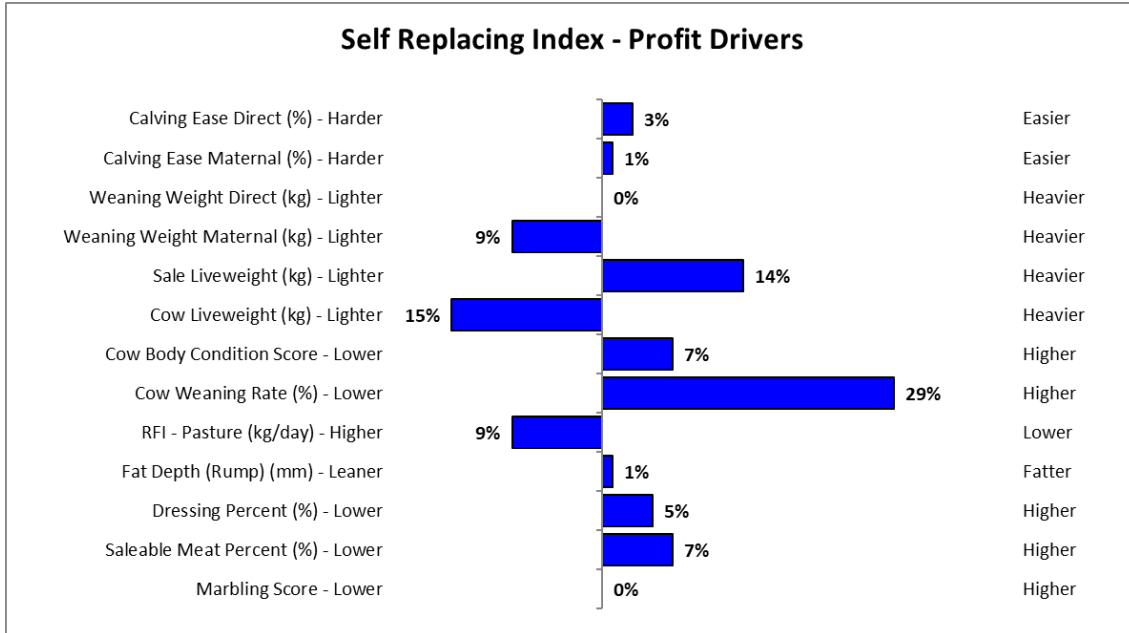
More detailed information regarding each selection index is provided on the following pages.

If you have any further queries regarding the New Zealand Angus Selection Indexes, please do not hesitate to contact staff at the New Zealand Angus Association.

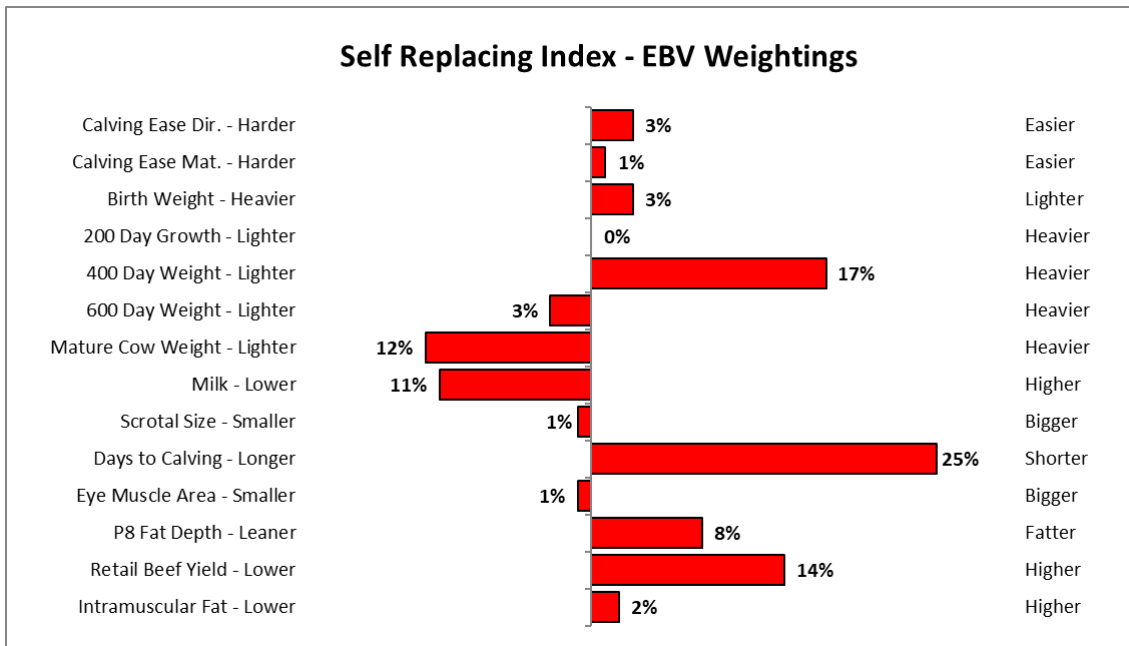


Self Replacing Index

The following bar graph shows the **key economic traits**, as determined by the BreedObject software, that are important in this selection index. The different trait emphases reflect the **underlying profit drivers in a commercial operation** targeting the described production system/market.

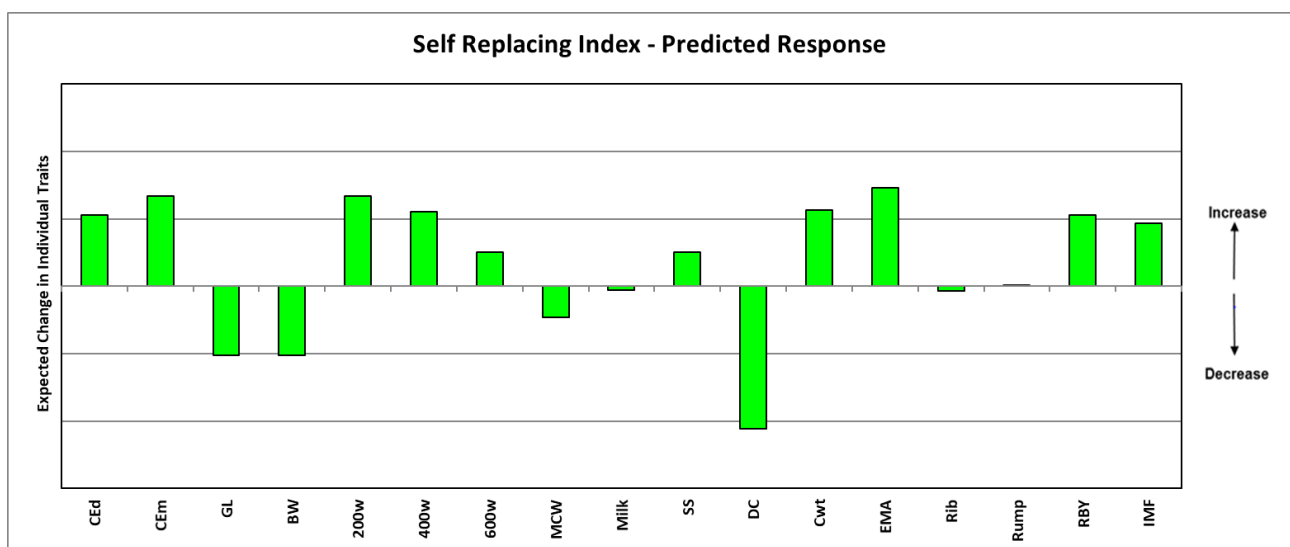


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



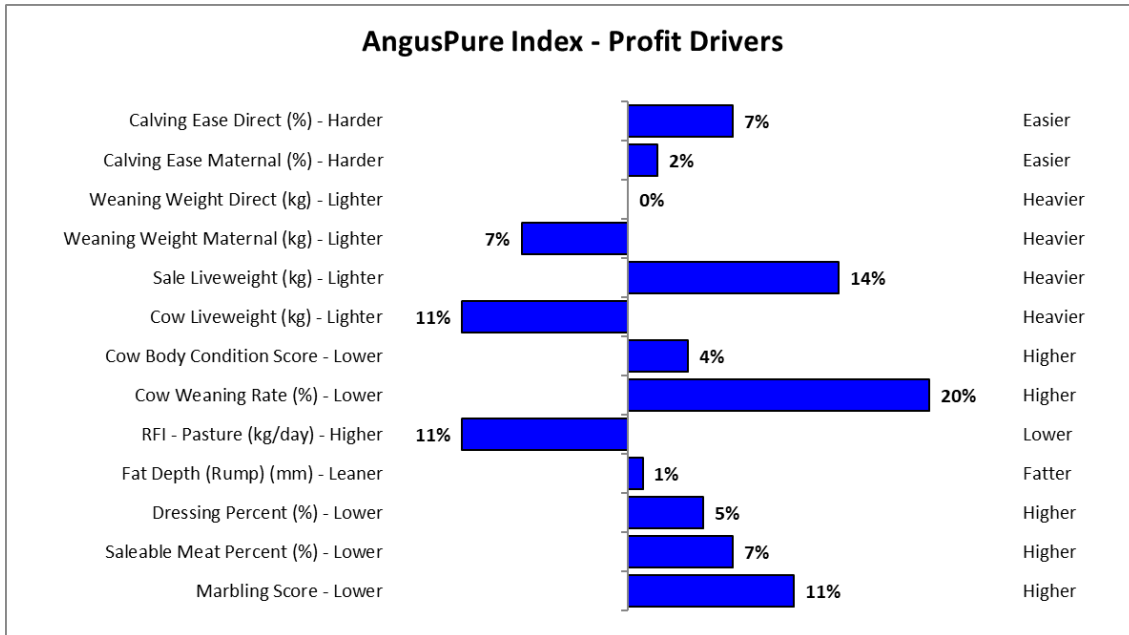
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Self Replacing Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection response will also be influenced by factors such as the genetic relationship between traits and the animals that are available for selection. For example, while there is a negative weighting on 600 Day Weight in this selection index, it would be expected that growth to 600 days would typically increase due to the large positive weighting on 400 Day Weight, and the strong genetic correlation between the two traits.

The following bar graph provides an indication of the **relative change** that would be expected in each individual BREEDPLAN EBV if producers select animals using the Self Replacing Index. The graph reflects the relative change if the New Zealand Angus Published Sires in 2020 were ranked on this selection index and the Top 10% **selected for use within a breeding program**. The response to selection may differ if a different group of animals were available for selection.

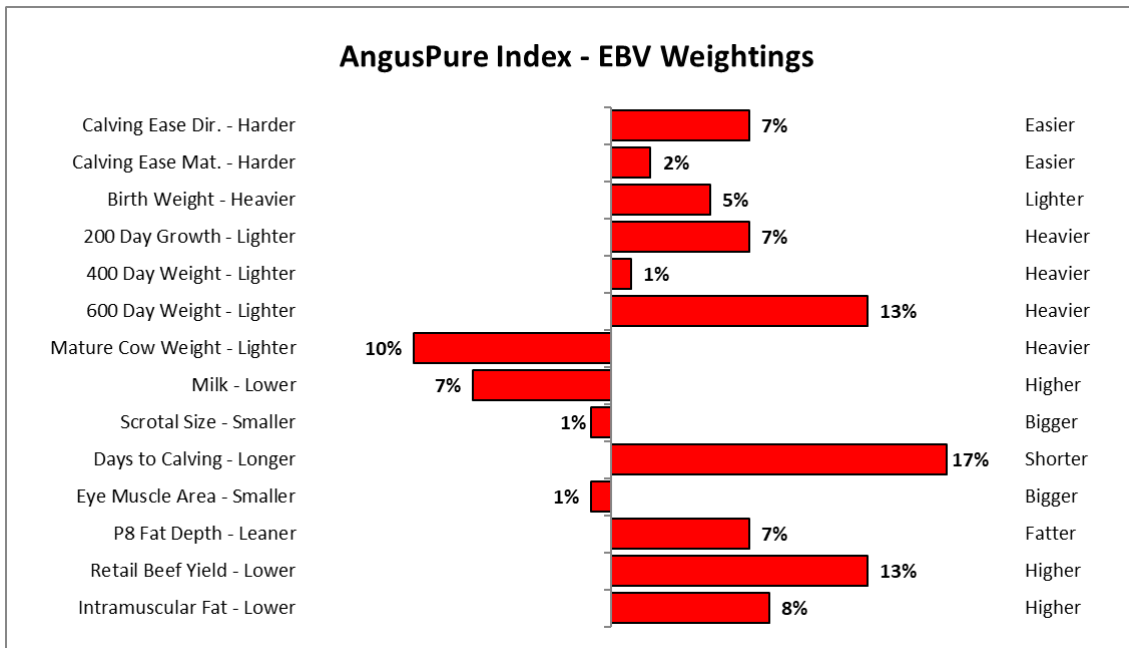


AngusPure Index

The following bar graph shows the **key economic traits**, as determined by the BreedObject software, that are important in this selection index. The different trait emphases reflect the **underlying profit drivers in a commercial operation** targeting the described production system/market.

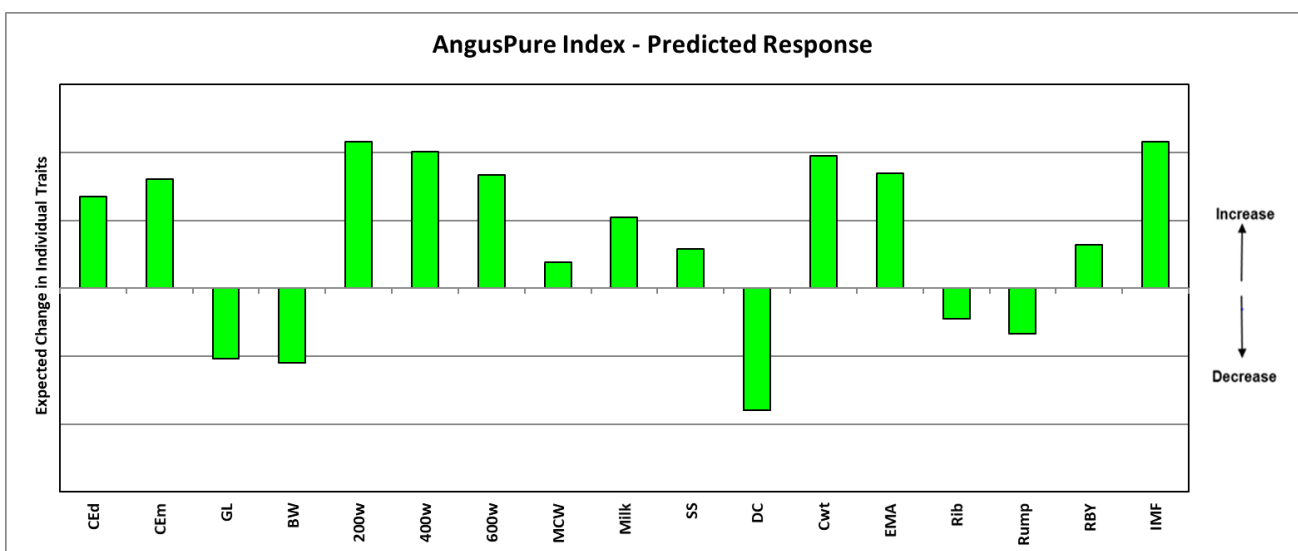


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



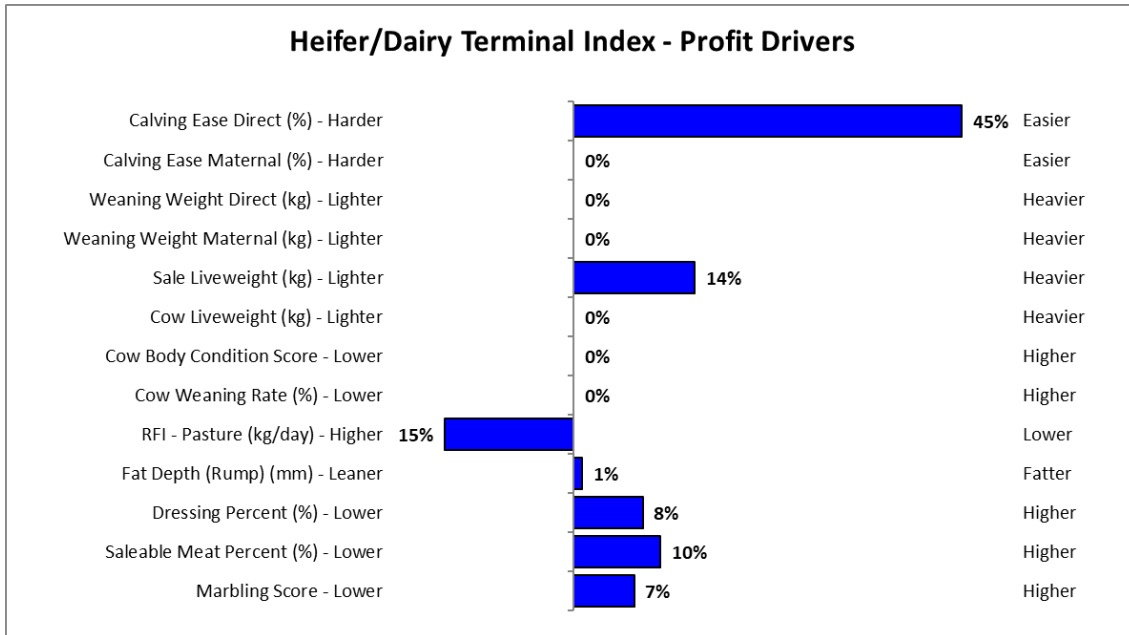
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the AngusPure Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection response will also be influenced by factors such as the genetic relationship between traits and the animals that are available for selection. For example, while there is only a slight weighting on 400 Day Weight in this selection index, it would be expected that growth to 400 days would typically increase due to the large positive weighting on both 200 Day Growth and 600 Day Weight, and the strong genetic correlations between these traits.

The following bar graph provides an indication of the **relative change** that would be expected in each individual BREEDPLAN EBV if producers select animals using the AngusPure Index. The graph reflects the relative change if the New Zealand Angus Published Sires in 2020 were ranked on this selection index and the Top 10% **selected for use within a breeding program**. The response to selection may differ if a different group of animals were available for selection.

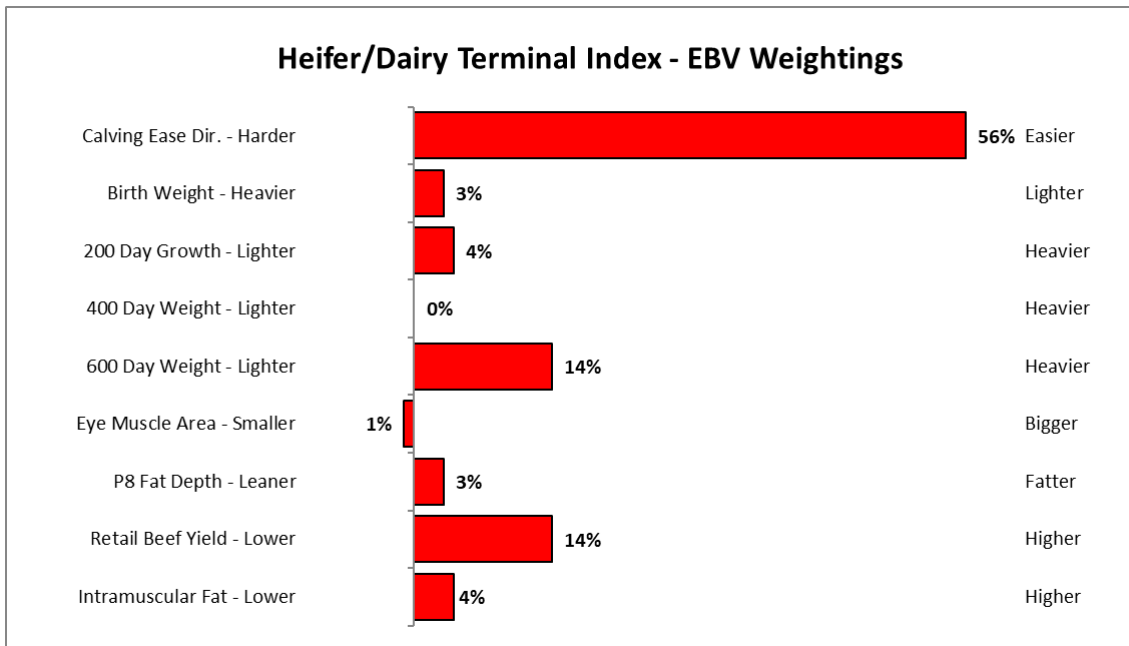


Heifer/Dairy Terminal Index

The following bar graph shows the **key economic traits**, as determined by the BreedObject software, that are important in this selection index. The different trait emphases reflect the **underlying profit drivers in a commercial operation** targeting the described production system/market.



The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Heifer/Dairy Terminal Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection response will also be influenced by factors such as the genetic relationship between traits and the animals that are available for selection. For example, while there are no weightings applied to maternal traits (e.g. days to calving) in a terminal index, it would be expected that the maternal traits will still have selection responses due to correlations between them and other traits which do have selection emphasis applied to them (e.g. growth).

The following bar graph provides an indication of the **relative change** that would be expected in each individual BREEDPLAN EBV if producers select animals using the Heifer/Dairy Terminal Index. The graph reflects the relative change if the New Zealand Angus Published Sires in 2020 were ranked on this selection index and the Top 10% **selected for use within a breeding program**. The response to selection may differ if a different group of animals were available for selection.

