

Australian Hereford Selection Indexes: Technical Specifications



Herefords Australia Ltd. currently reports two different selection indexes. These are the:

- Sustainability Production Index
- MSA Production 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 Hereford 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 Australian Hereford 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.

These indexes take a balanced approach and apply selection pressure to all trait categories that impact on productivity, quality of product and cost of production. Importantly both indexes have a focus on sustainable beef production which is achieved through improving the efficiency of the production system, as well as improving eating quality. Significant premiums are applied for increasing marble score up to a marble score of 3. Pressure is also applied to early life growth to maintain low ossification scores and good MSA compliance.

In addition, each selection index targets the following specifications.

Sustainability Production Index - Estimates the genetic differences between animals in net profitability per cow joined in a commercial self-replacing Hereford herd targeting the domestic market and with a strong focus on sustainability. Daughters are retained for breeding, so maternal traits are of importance. Steers are finished on grass until 20 months of age to target 300 kg carcasses with 10 mm P8 fat depth.

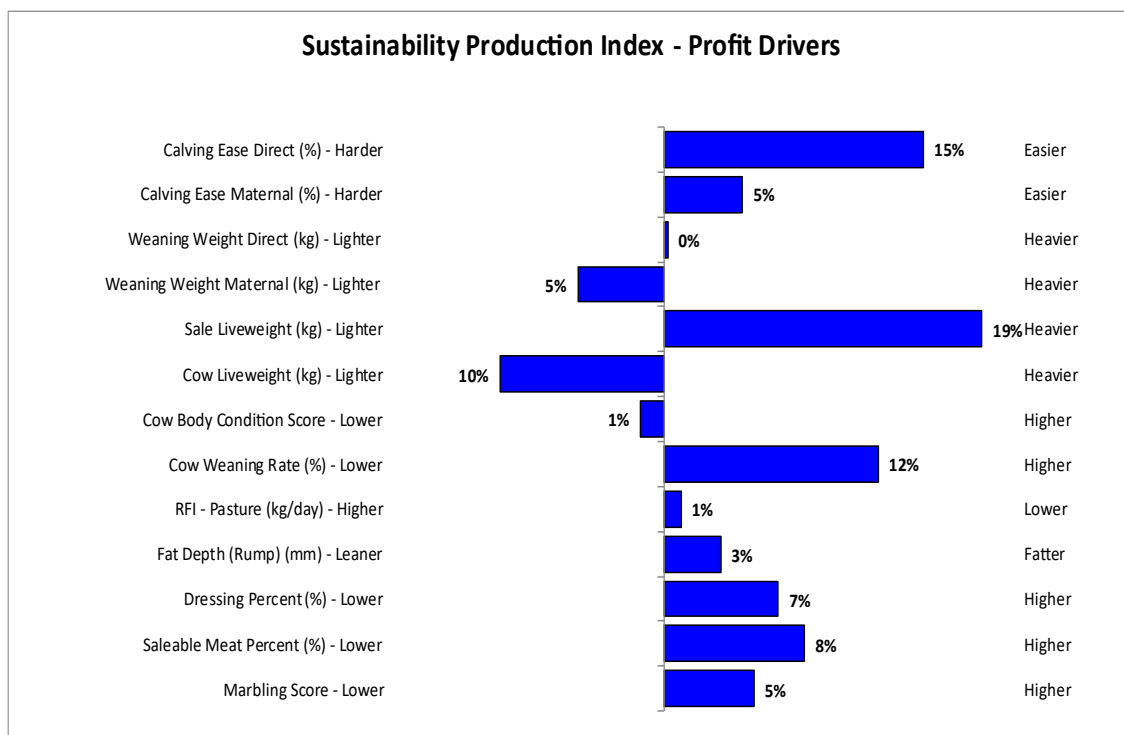
MSA Production Index - Estimates the genetic differences between animals in net profitability per cow joined in a commercial self-replacing herd targeting higher MSA grades in the domestic market. Daughters are retained for breeding and so maternal traits are of importance. Steers are grain finished until 20 of age to target 340 kg carcasses with 12 mm P8 fat depth. A high cost is applied for cow feed costs during the annual feed shortage period which produces little change in mature cow weight.

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

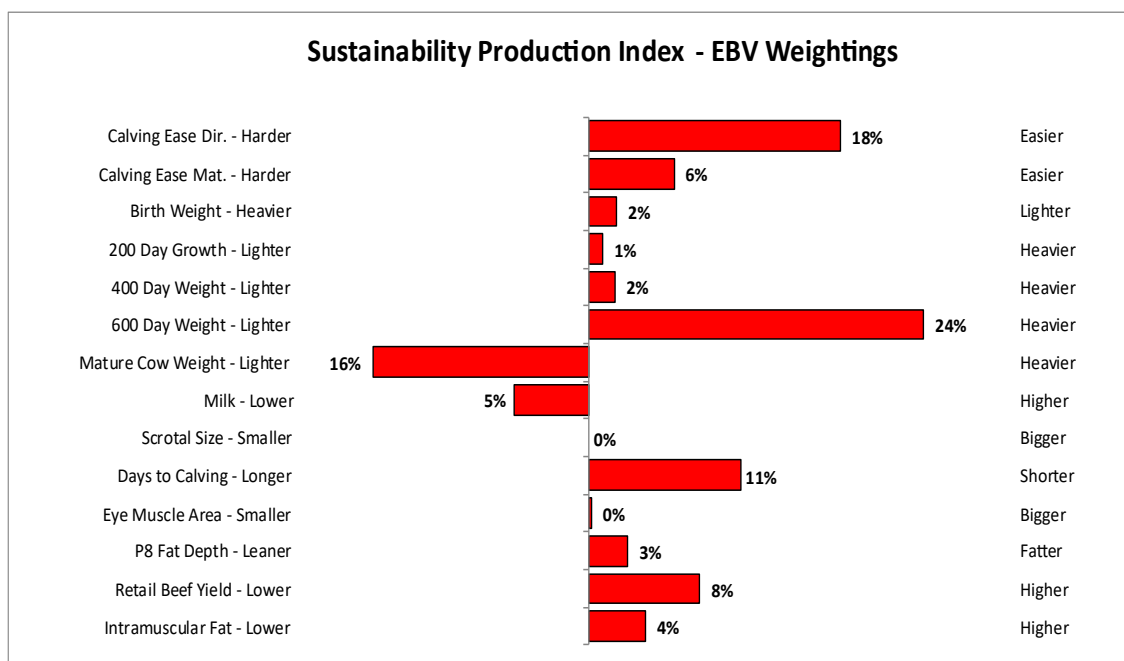
If you have any further queries regarding the Australian Hereford Selection Indexes, please do not hesitate to contact staff at your BREEDPLAN processing centre.

Sustainability Production 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.

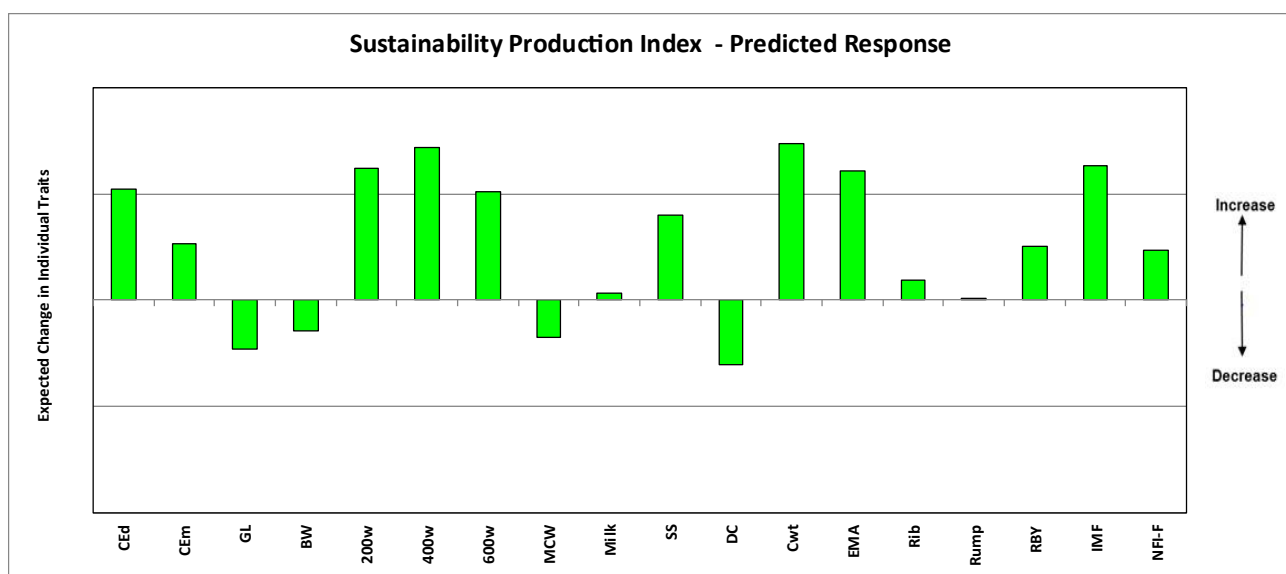


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



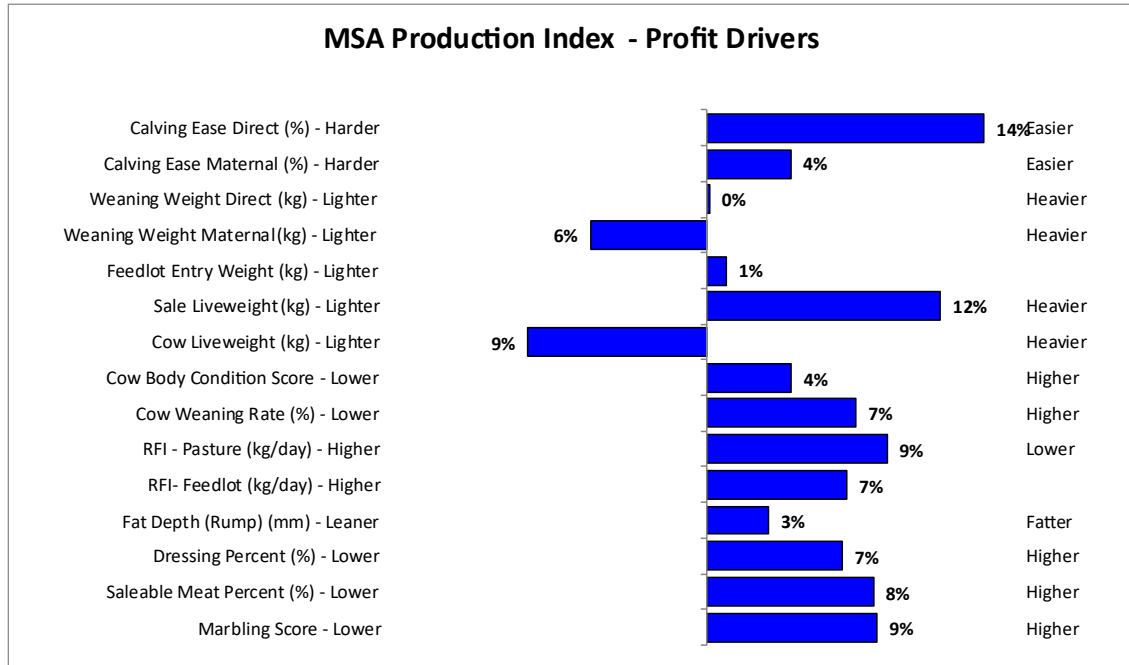
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Sustainability Production Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection 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 very small direct weighting on 200 & 400 Day Weights in this selection index, it would be expected that growth to 400 days would typically increase due to the large positive weighting on 600 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 Sustainability Production Index. The graph reflects the relative change if the Hereford Published Sires in 2024 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.

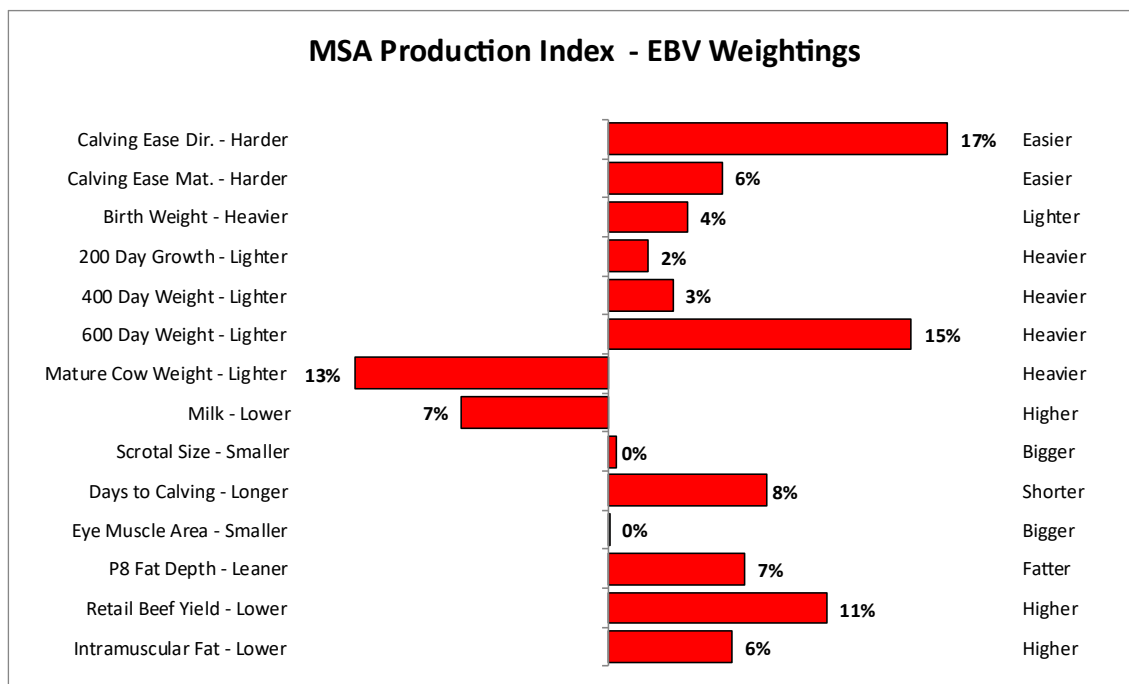


MSA Production Index

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 MSA Production 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 very small direct weighting on 200 & 400 Day Weights in this selection index, it would be expected that growth to 400 days would typically increase due to the large positive weighting on 600 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 MSA Production Index. The graph reflects the relative change if the Hereford Published Sires in 2024 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.

