

Australian Murray Grey Selection Indexes: Technical Specifications



The Murray Grey Beef Cattle Society currently reports five different selection indexes. These are the:

- Vealer Terminal Index (VT)
- Supermarket Index (SUP)
- Heavy Grass Fed Steer Index (GF)
- Northern Terminal Index (NT)
- Breeder Replacement (BR)

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 Murray Grey 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 Murray Grey 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:

Vealer Terminal Index (VT) - Estimates the genetic differences between animals in net profitability per cow joined for a typical crossbred commercial herd using Murray Grey bulls to target vealer production. Vealers are finished on grass and target 430 kg live weight (225 kg HSCW and 9 mm P8 fat depth) at 12 months of age. Daughters are NOT retained for breeding and thus no consideration is given to maternal traits.

Supermarket Index (SUP) - Estimates the genetic differences between animals in net profitability per cow joined for a typical Murray Grey commercial herd targeting production of steers for the domestic supermarket trade. Selected heifers are retained for breeding and thus maternal traits are of importance. Steers are either finished on grass, or grain fed for 70 days, and target 470 kg live weight (260 kg HSCW and 12 mm P8 fat) at 15 months of age. In response to industry feedback a premium has been placed on marbling.

Heavy Grass Fed Steer Index (GF) - Estimates the genetic differences between animals in net profitability per cow joined for a typical Murray Grey commercial herd targeting pasture finished steers for heavier grass fed markets. Selected heifers are retained for breeding and thus maternal traits are of importance. Steers target 620 kg live weight (330 kg HSCW and 14 mm P8 fat depth) at 24 months of age. In response to industry feedback a premium has been placed on marbling.

Northern Terminal Index (NT) - Estimates the genetic differences between animals in net profitability per cow joined for a typical commercial herd using Murray Grey bulls over cows containing some *Bos indicus* content. Steers target 550 kg live weight (300 kg HSCW and 10 mm P8 fat depth) at 27 months of age. In response to industry feedback a premium has been placed on marbling.

Breeder Replacement (BR) - Estimates the genetic differences between animals in net profitability per cow joined for a typical Murray Grey commercial herd targeting the production of weaners or yearlings. Selected heifers are retained for breeding and thus maternal traits are of importance. Steers target 440 kg live weight (230 kg HSCW and 9 mm P8 fat depth) at 12 months of age.

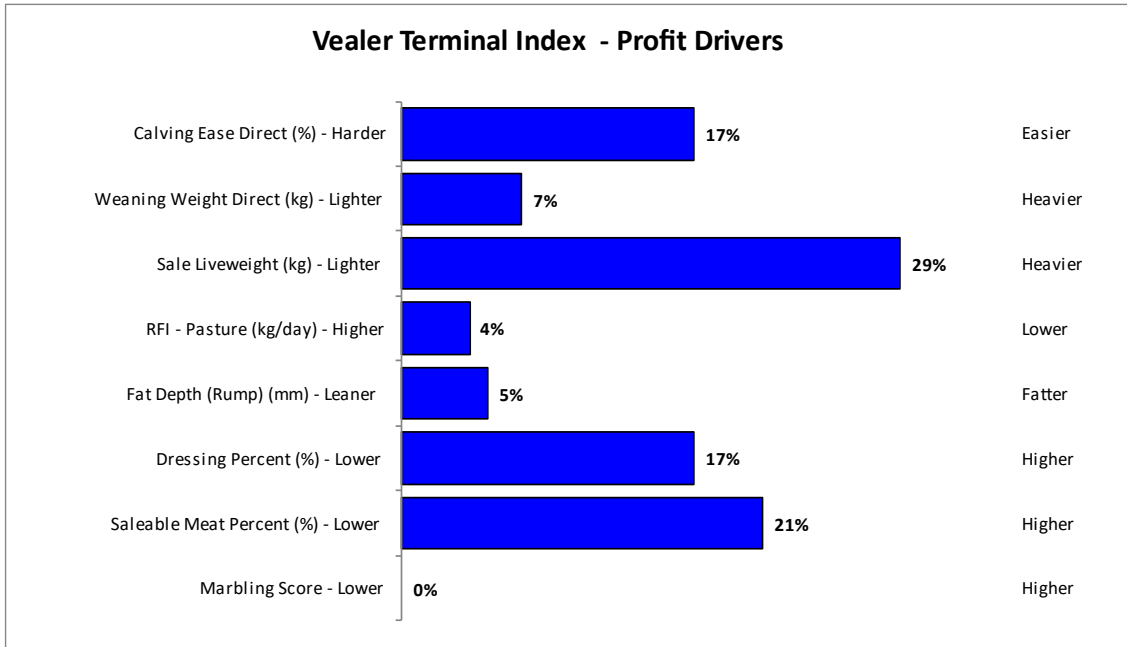
More detailed information regarding each selection index is provided on the following pages.

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

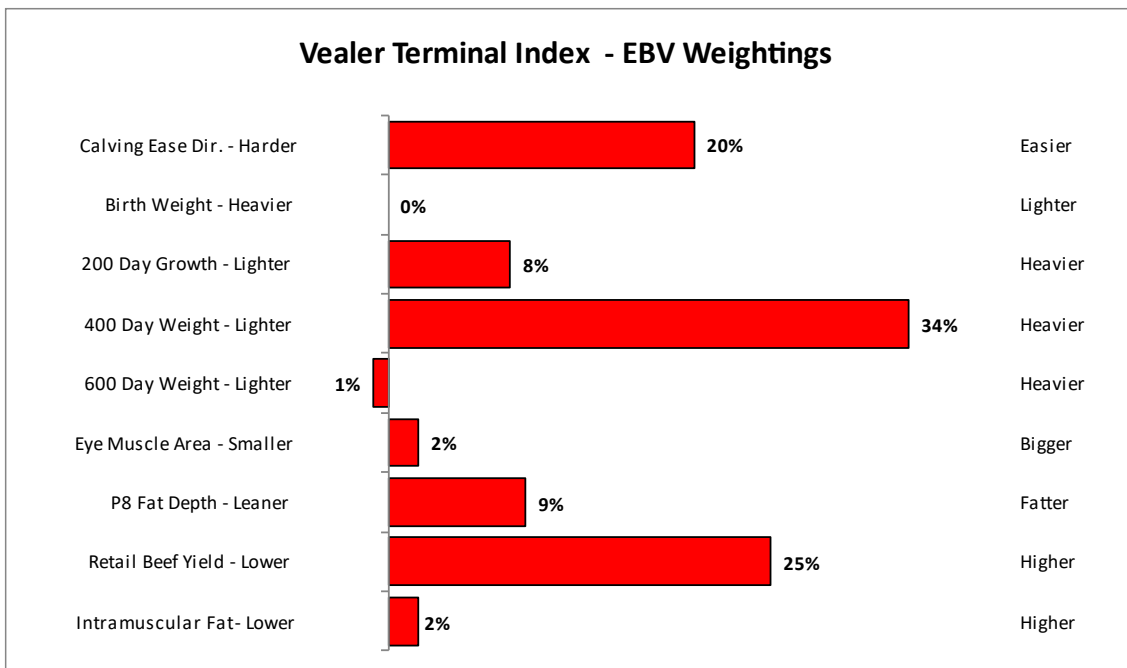


Vealer Terminal Index

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.

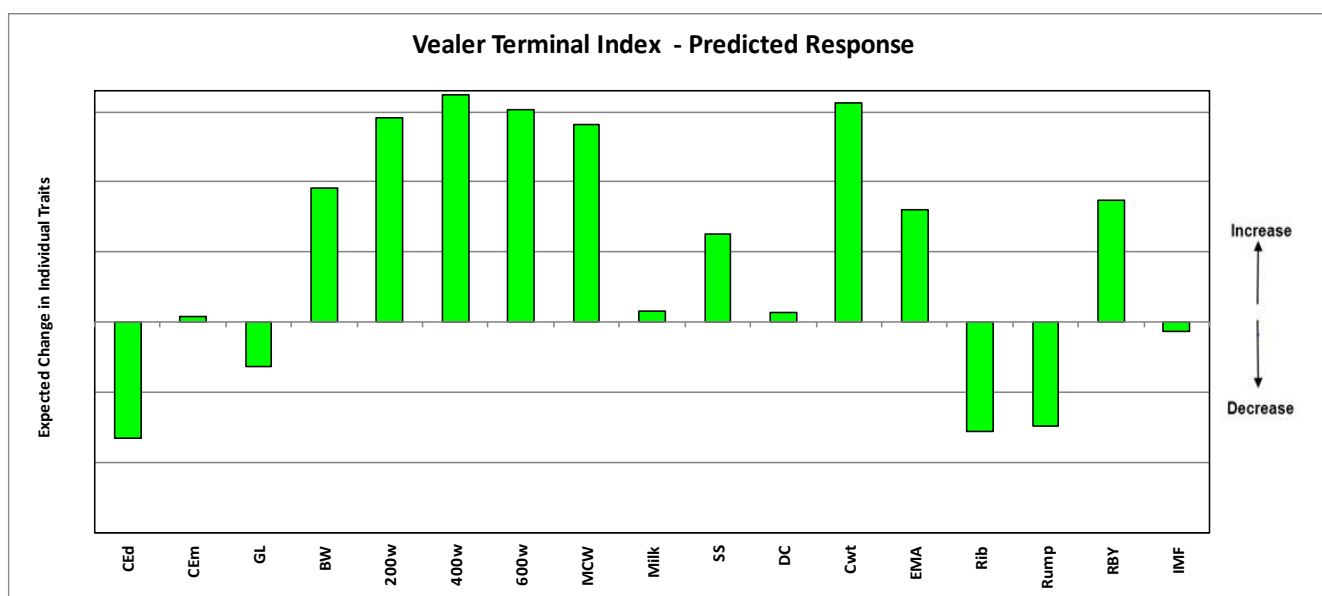


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



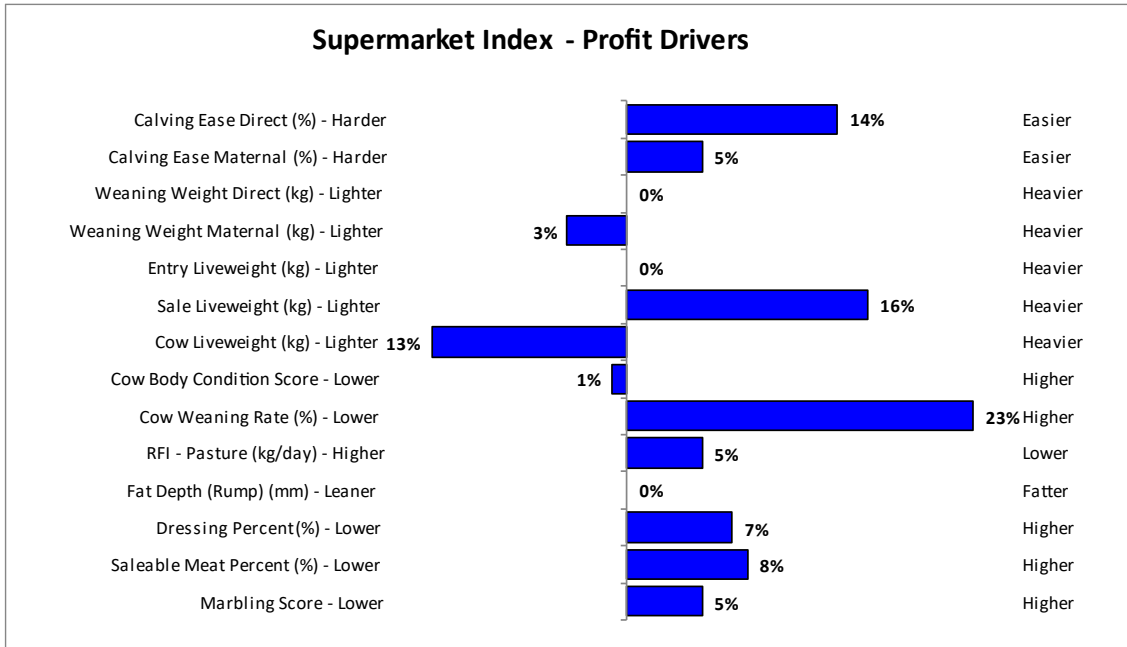
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Vealer Terminal Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection response will also be influenced by factors such as the genetic relationship between traits and the animals that are available for selection. For example, while maternal traits such as Mature Cow Weight and Days to Calving receive no emphasis in a Terminal index, some response can be observed due to the strong genetic correlations between the maternal traits and the traits included in the index.

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 Vealer Terminal Index. The graph reflects the relative change if the Murray Grey Published Sires in 2023 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.

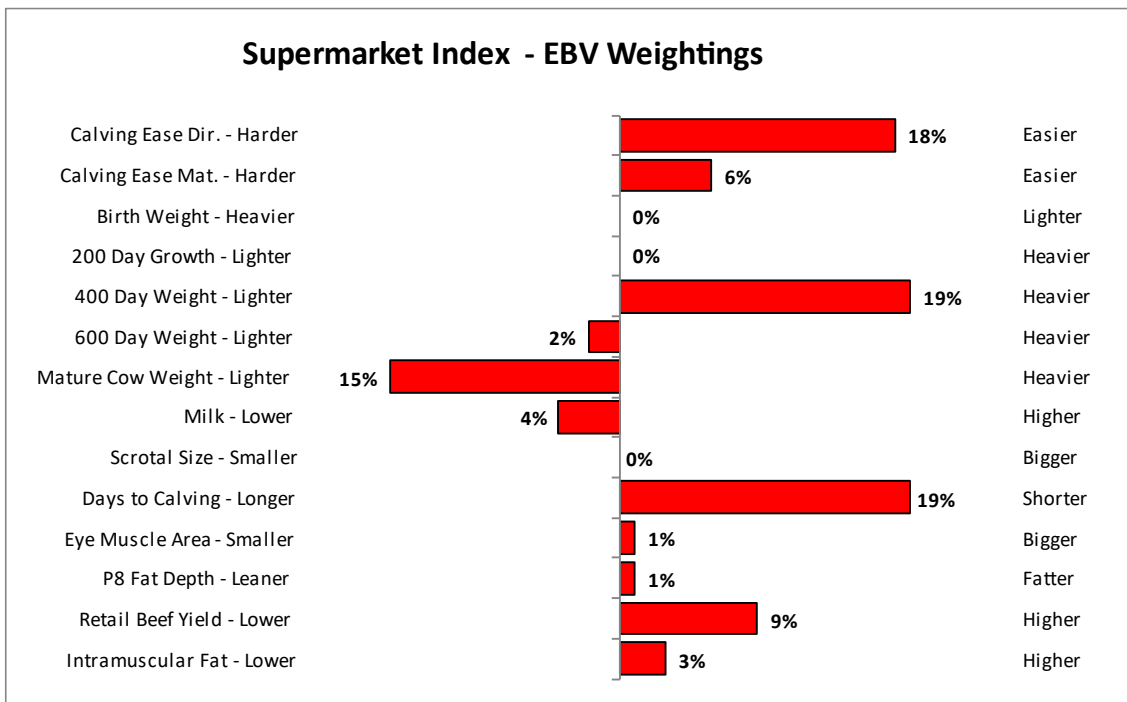


Supermarket Index

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.

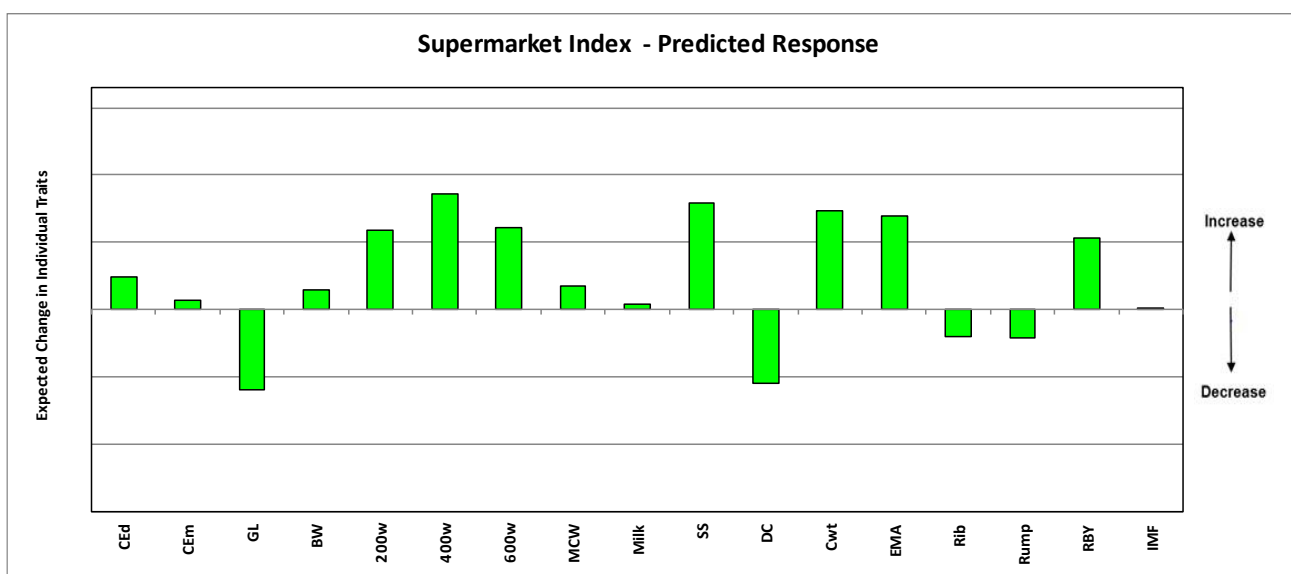


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



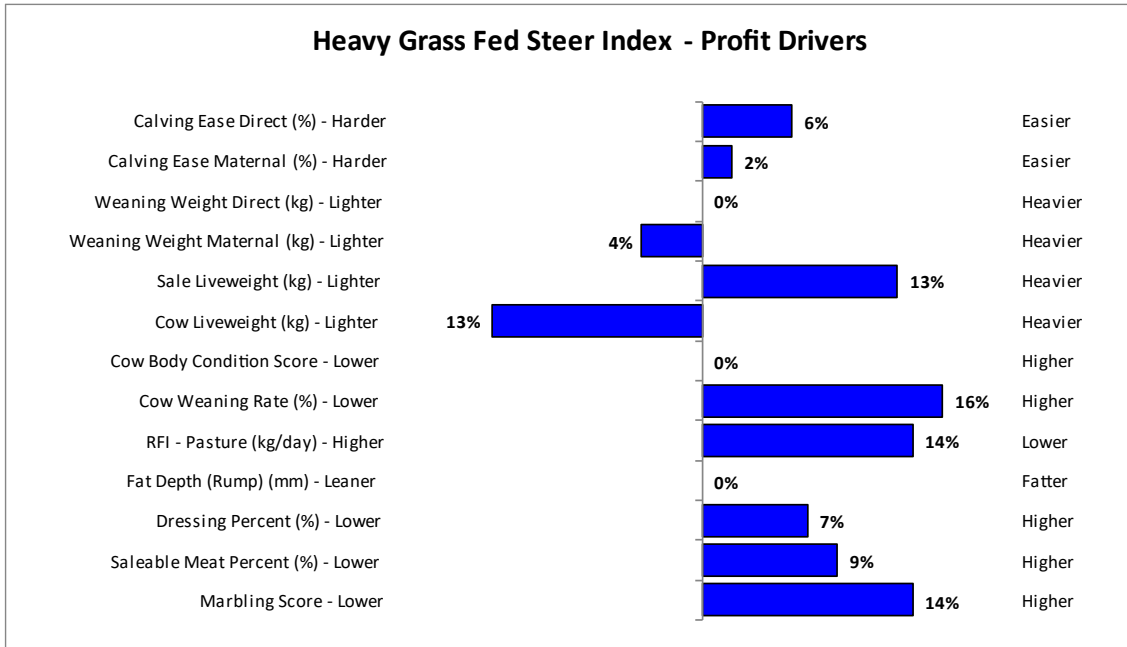
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Supermarket Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection response 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 small negative weighting on 600 Day Weight EBV 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 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 Supermarket Index. The graph reflects the relative change if all Murray Grey Published Sires in 2023 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.

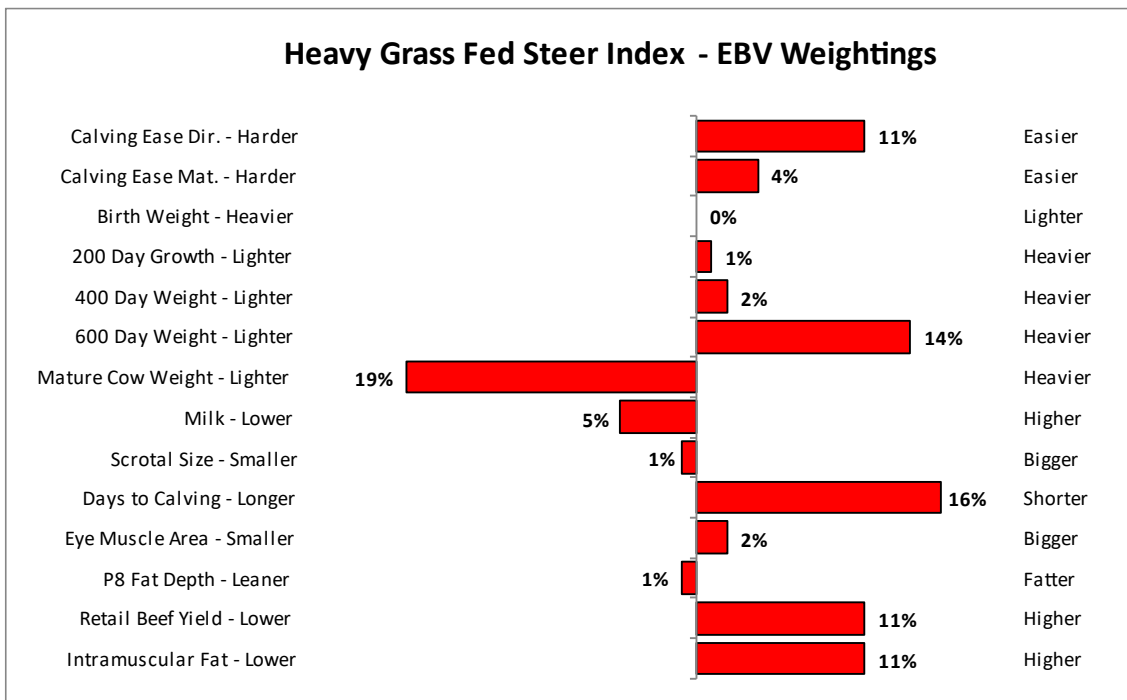


Heavy Grass Fed Steer Index

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.

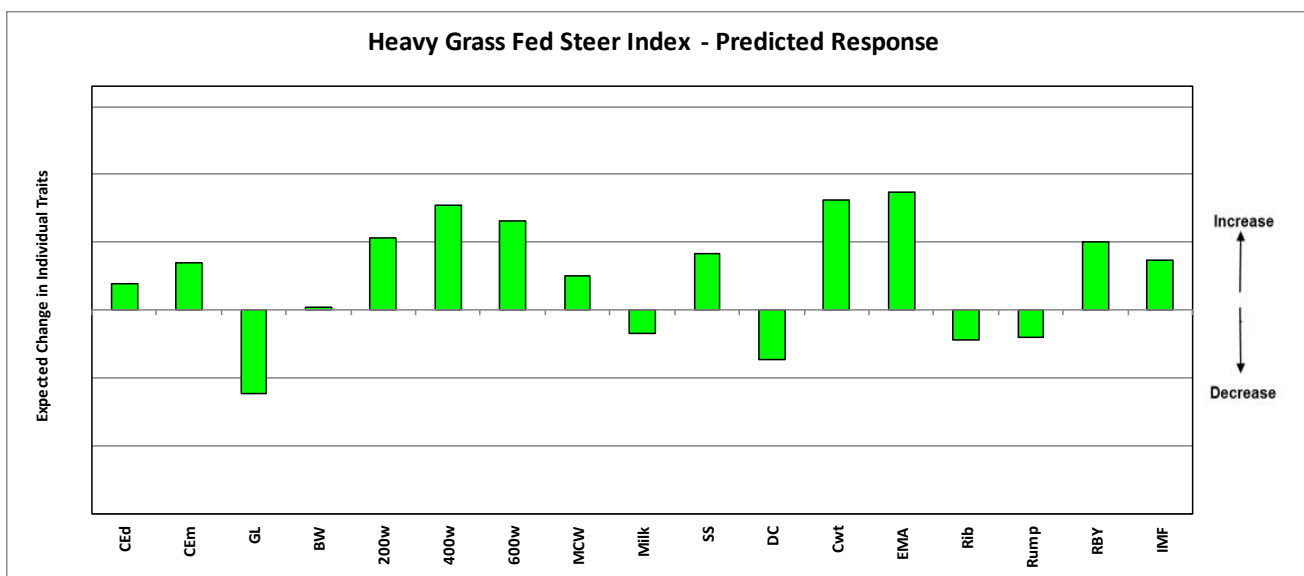


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



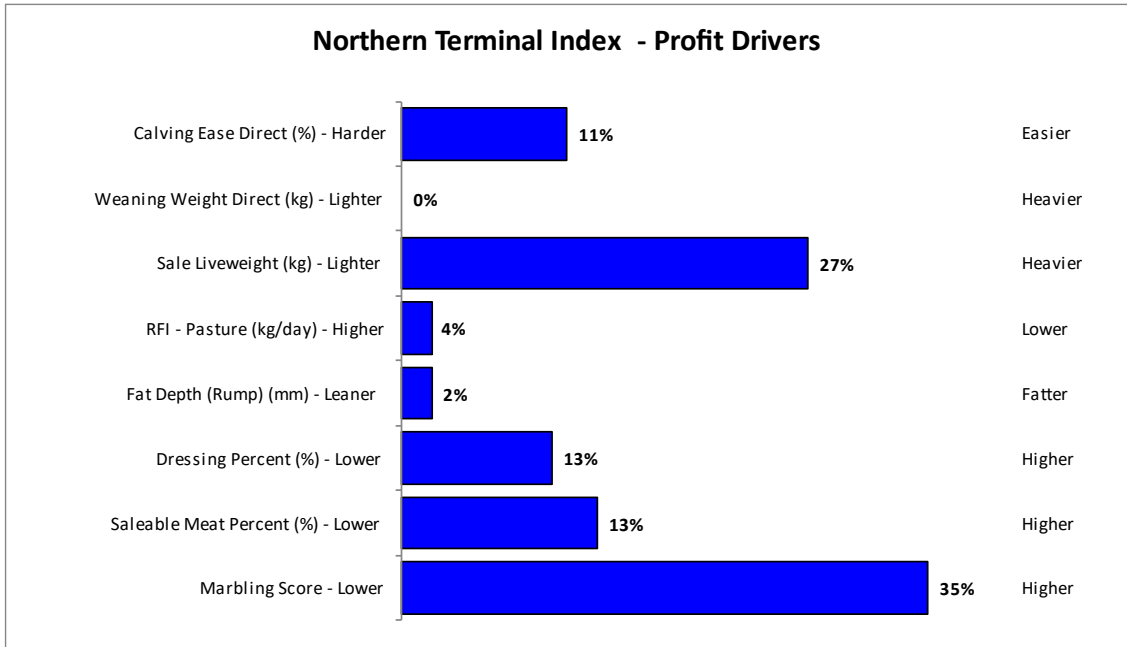
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Heavy Grass Fed Steer Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection 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 only small weightings on the 200 and 400 Day Weight EBVs in this selection index, it would be expected that growth to 200 and 400 days would typically increase due to the large positive weighting on 600 Day Weight, and the strong genetic correlation between the 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 Heavy Grass Fed Steer Index. The graph reflects the relative change if all Murray Grey Published Sires in 2023 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.

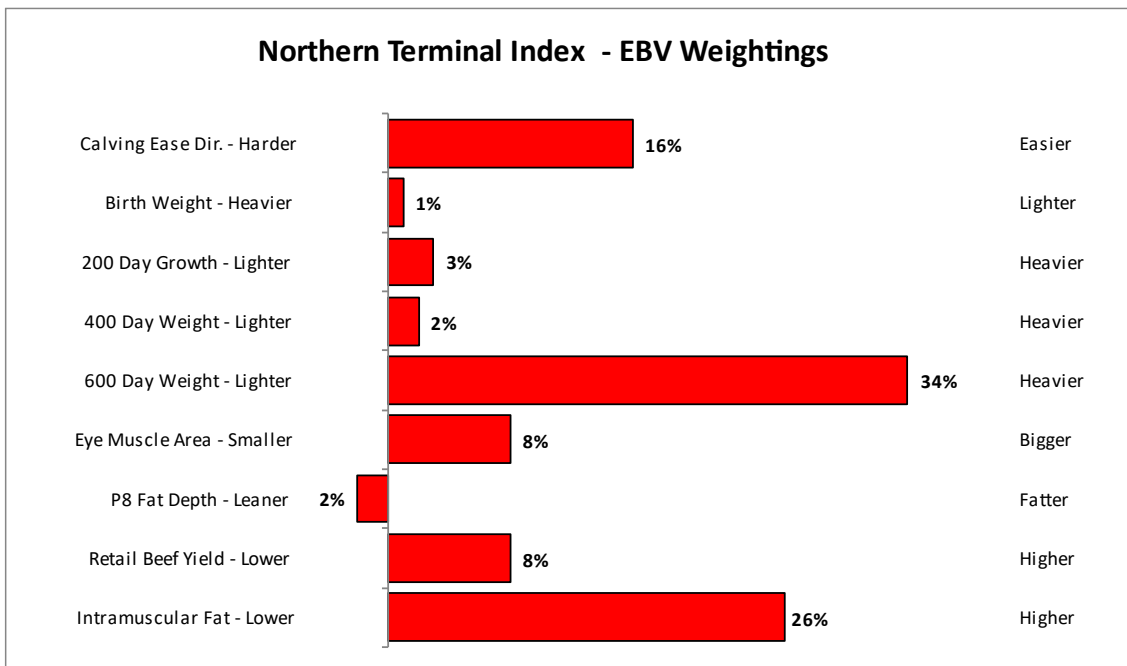


Northern Terminal Index

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.

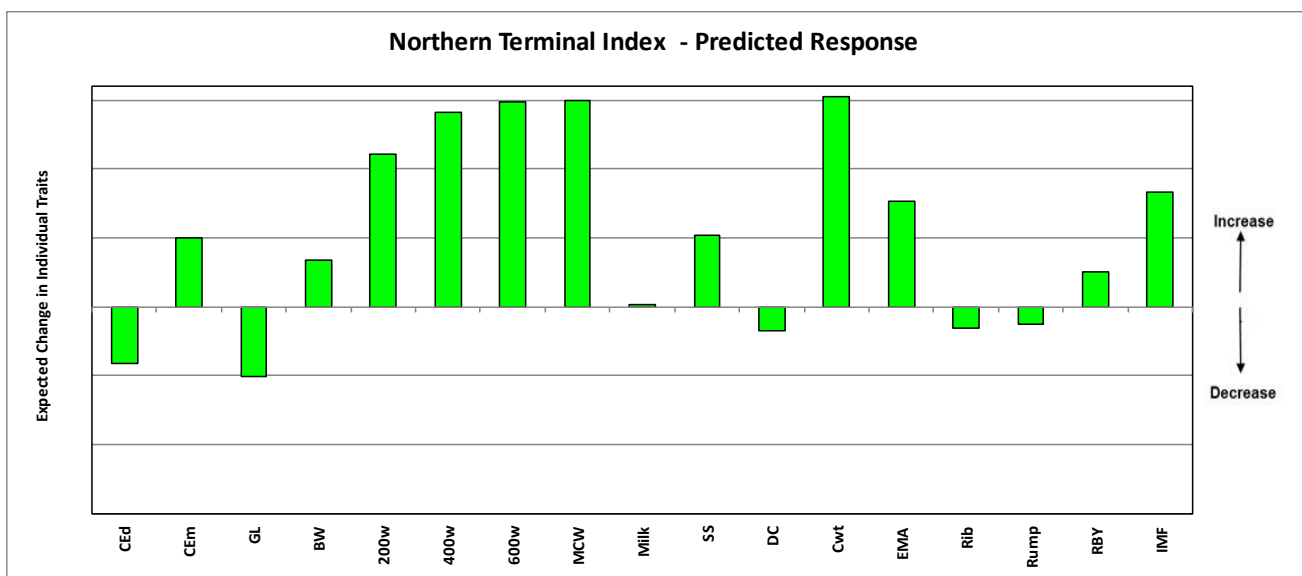


The bar graph below illustrates the magnitude and direction of emphasis that has been placed on each **BREEDPLAN EBV** within this selection index. These weightings represent the **most profitable combination of EBVs**, as determined by the BreedObject software, for the described production system/market.



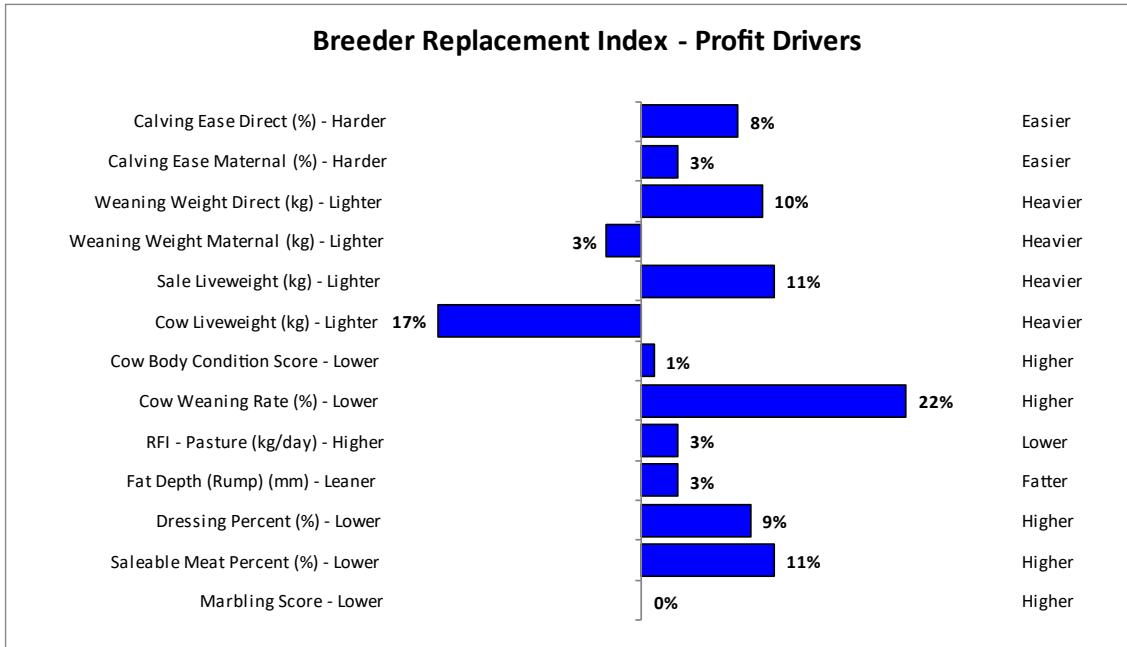
While the graphs on the previous page show the emphasis that has been placed on the production traits and each EBV within the Northern Terminal Index, they do not reflect the expected change that will occur to each individual EBV if producers select animals using this selection index. The selection response 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 only small weightings on the 200 and 400 Day Weight EBVs in this selection index, it would be expected that growth to 200 and 400 days would typically increase due to the large positive weighting on 600 Day Weight, and the strong genetic correlation between the 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 Northern Terminal Index. The graph reflects the relative change if all Murray Grey Published Sires in 2023 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.

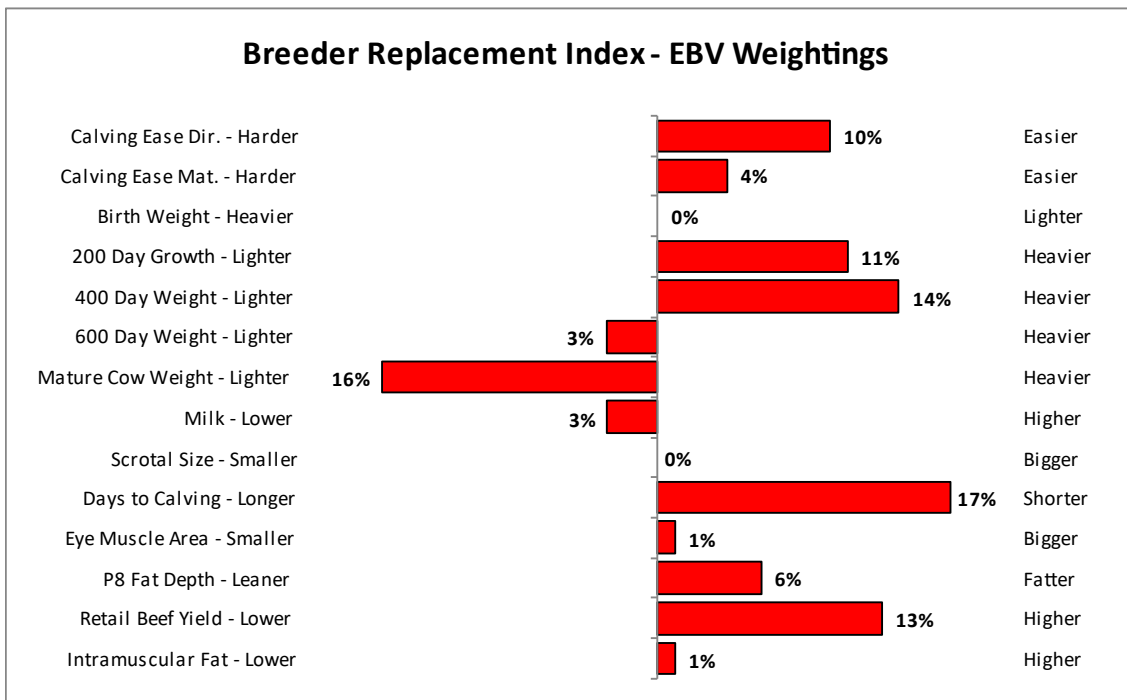


Breeder Replacement Index

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 Breeder Replacement 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 small negative weighting on 600 Day Weight EBV 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 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 Breeder Replacement Index. The graph reflects the relative change if all Murray Grey Published Sires in 2023 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.

