New Zealand Shorthorn Selection Indexes

There are currently two different selection indexes calculated for New Zealand Shorthorn animals. These are:

- ❑ Self Replacing Index
- ❑ Dairy Index

Each selection index describes a different production/market scenario and relates to a typical commercial herd in New Zealand that is targeting the following specifications.

Self Replacing Index - Estimates the genetic differences between animals in net profitability per cow joined for an example commercial self replacing Shorthorn herd targeting the production of pasture finished steers at 545 kg live weight (300 kg carcase weight & 10 mm P8 fat depth) at 18 months of age. In response to industry feedback regarding eating quality and tenderness, a small premium has been placed on marbling. This index is also suitable in situations where Shorthorn sires are used over mixed British breed cows.

Dairy Index - Estimates the genetic differences between animals in net profitability per cow joined for an example commercial dairy herd using Shorthorn bulls over dairy cows targeting the production of pasture finished steers and heifers at 520 kg live weight (280 kg carcase weight & 6 mm P8 fat depth) at 20 months of age. All progeny are slaughtered with no replacement females being retained. In response to industry feedback regarding eating quality and tenderness, a small premium has been placed on marbling.

All selection indexes are reported as an EBV, in units of relative earning capacity ($) for a given production/market scenario. They reflect both the short term profit generated by a sire through the sale of his progeny, and the longer term profit generated by his daughters in a self replacing cow herd (where applicable).
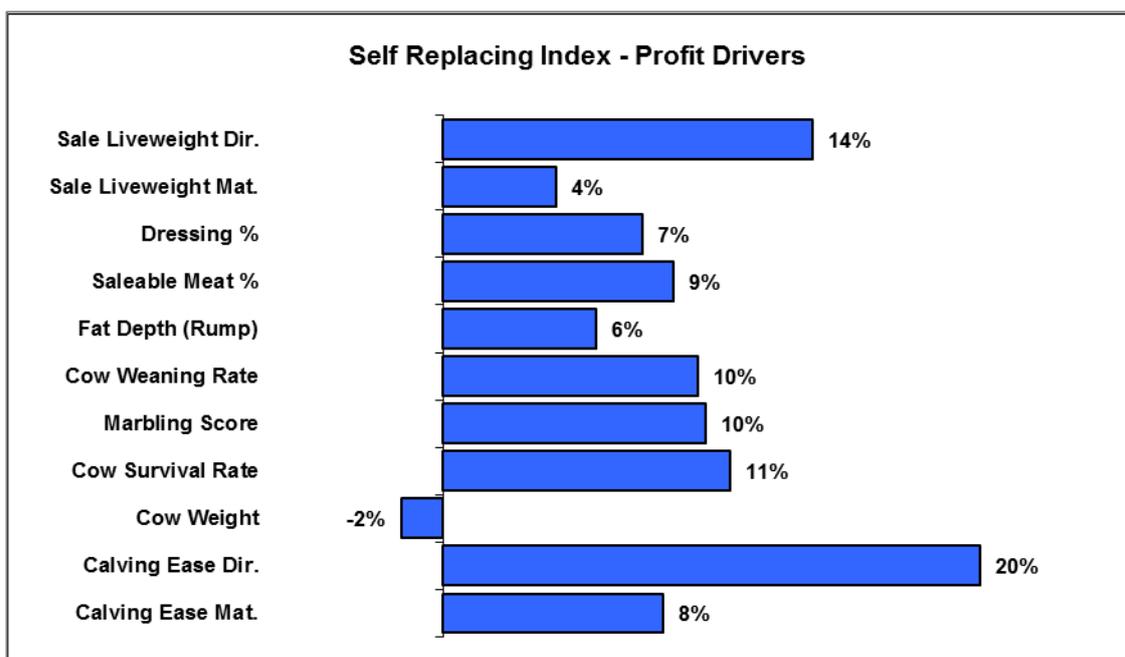
All selection index values have been derived using BreedObject technology. More detailed information regarding each selection index is provided on the following pages.

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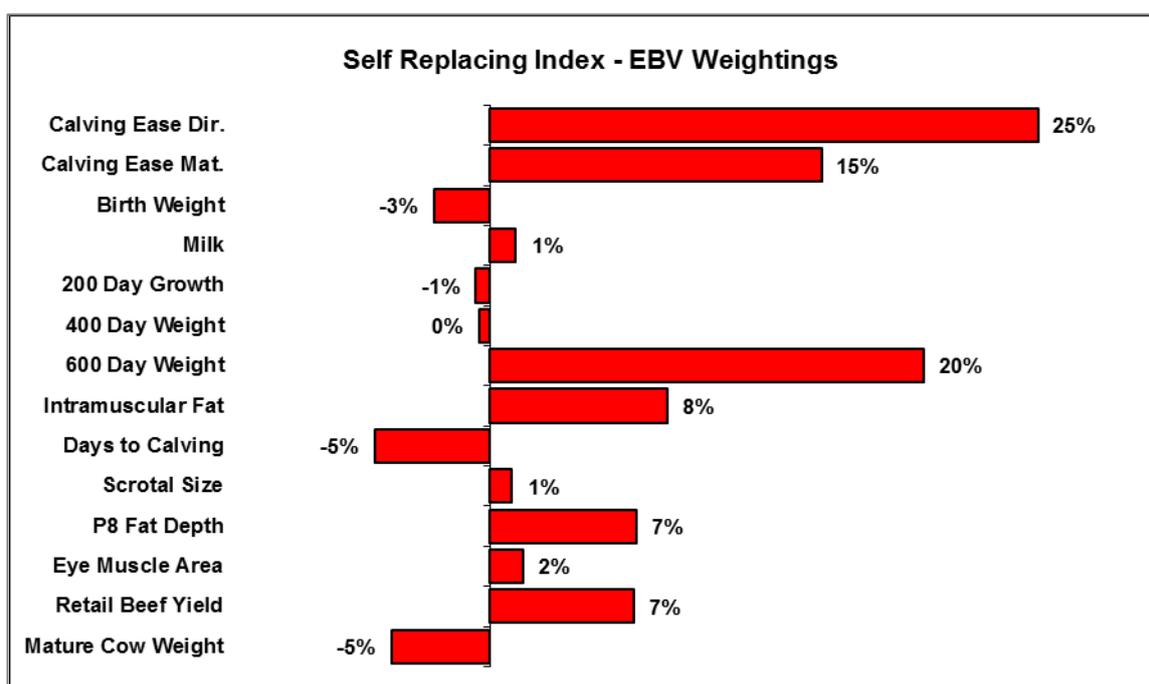
Shorthorn Self Replacing Index

The Shorthorn Self Replacing Index estimates the genetic differences between animals in net profitability per cow joined for an example commercial self replacing Shorthorn herd targeting the production of pasture finished steers at 545 kg live weight (300 kg carcase weight & 10 mm P8 fat depth) at 18 months of age. In response to industry feedback regarding eating quality and tenderness, a small premium has been placed on marbling. This index is also suitable in situations where Shorthorn sires are used over mixed British breed cows.

The following bar graph shows the key economic traits that are important in this selection index. The different trait emphases reflect the underlying profit drivers in a self replacing commercial operation.

Self Replacing Index - Profit Drivers

| Trait	Value
Sale Liveweight Dir.	14%
Sale Liveweight Mat.	4%
Dressing %	7%
Saleable Meat %	9%
Fat Depth (Rump)	6%
Cow Weaning Rate	10%
Marbling Score	10%
Cow Survival Rate	11%
Cow Weight	-2%
Calving Ease Dir.	20%
Calving Ease Mat.	8%

Considering the genetic relationship between the key profit drivers and the EBVs that are available, this transposes to the following EBV emphases. The sign indicates the direction of the emphasis. For example, greater 600 Day Weight EBVs and shorter Days to Calving EBVs are favoured.

Self Replacing Index - EBV Weightings

EBV	Value
Calving Ease Dir.	25%
Calving Ease Mat.	15%
Birth Weight	-3%
Milk	1%
200 Day Growth	-1%
400 Day Weight	0%
600 Day Weight	20%
Intramuscular Fat	8%
Days to Calving	-5%
Scrotal Size	1%
P8 Fat Depth	7%
Eye Muscle Area	2%
Retail Beef Yield	7%
Mature Cow Weight	-5%

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While the graphs on the previous page show the different profit drivers and emphases that have been placed on each EBV within the Self Replacing Index, they do not illustrate the likely change that will occur to each individual trait if producers select animals using this selection index. The response to selection will also be influenced by such factors as the genetic relationship between traits and the animals that are available for selection. For example, while there is no direct weighting on 400 Day Weight in this selection index, it would be expected that growth to 400 days would increase as there is a large weighting on 600 Day Weight.
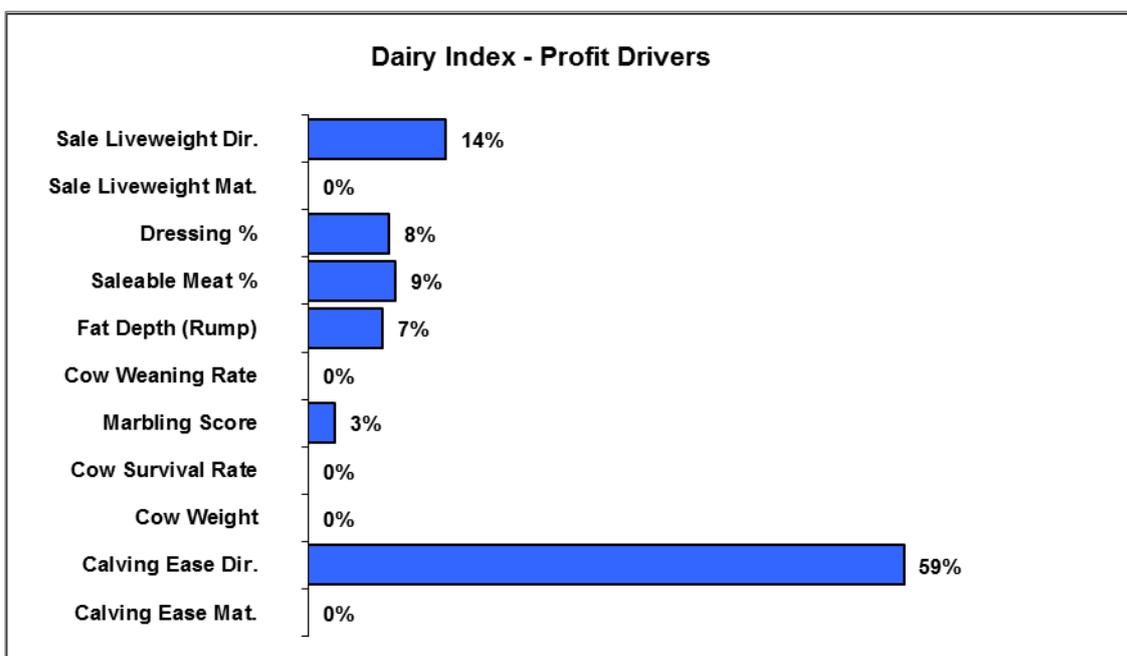
The following bar graph provides an indication of the relative change that would be expected in each individual trait if producers select animals using the Self Replacing Selection Index. The graph reflects the relative change if the Shorthorn Published Sires (at the October 2011 Shorthorn GROUP BREEDPLAN analysis) 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.
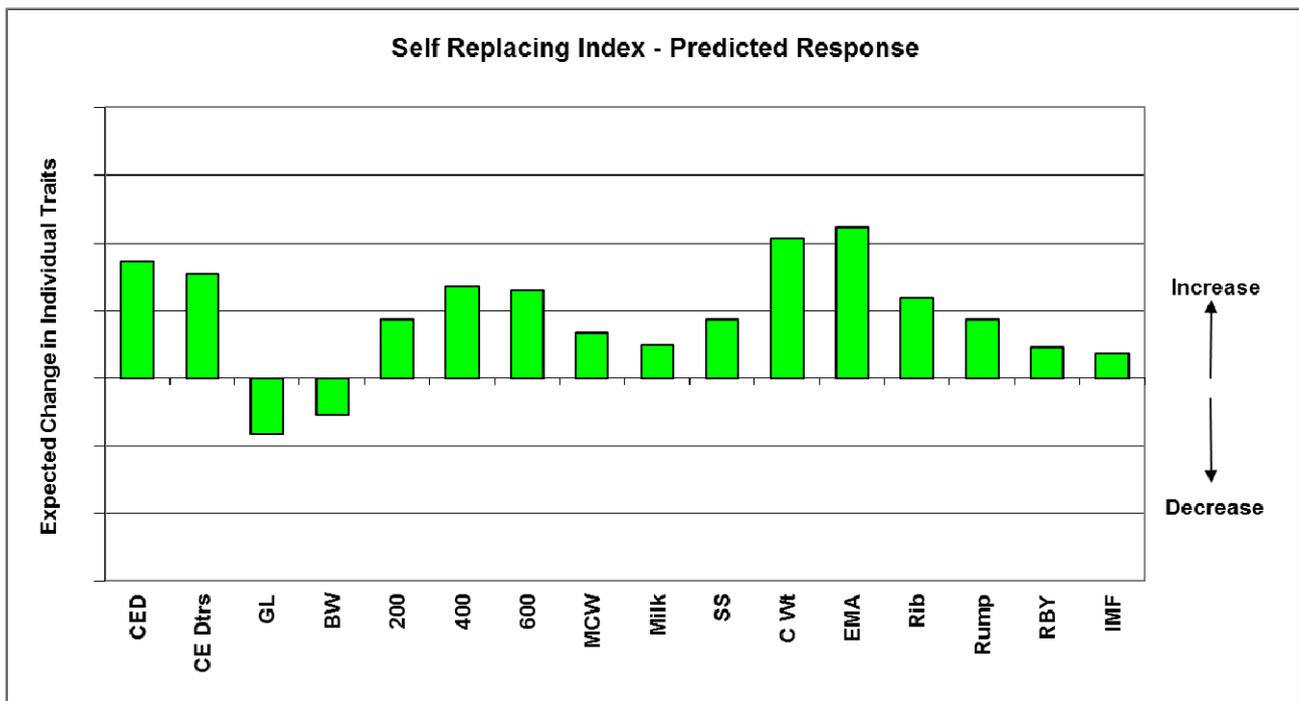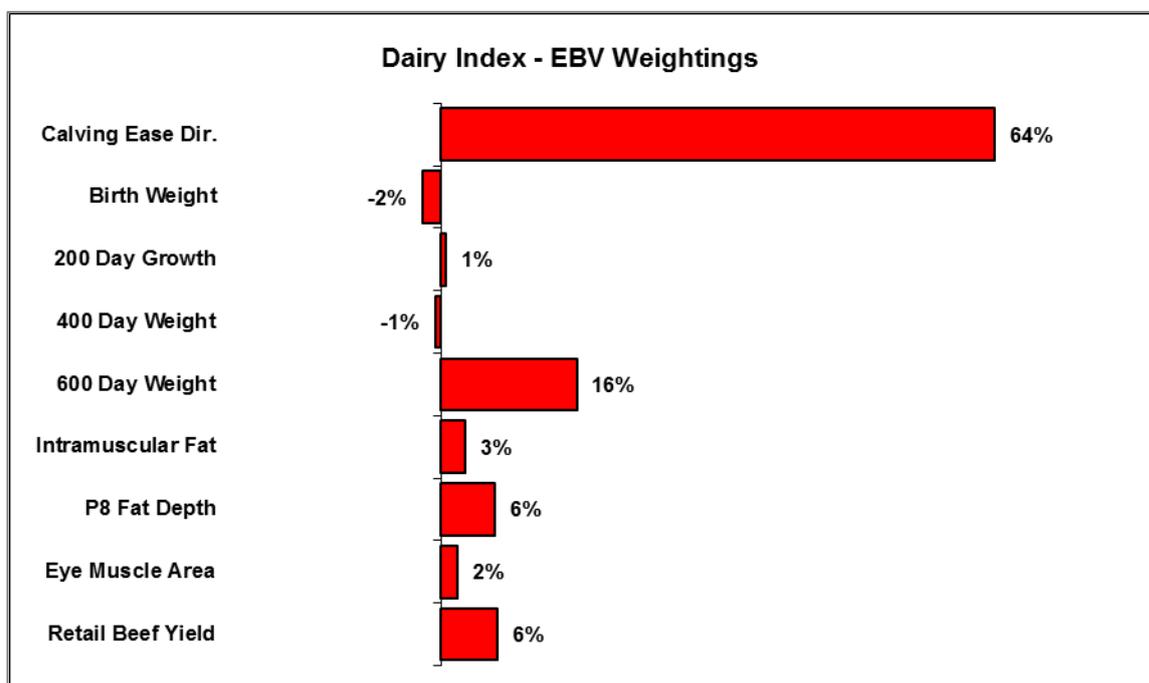
Shorthorn Dairy Index

The Shorthorn Dairy Index estimates the genetic differences between animals in net profitability per cow joined for an example commercial dairy herd using Shorthorn bulls over dairy cows targeting the production of pasture finished steers and heifers at 520 kg live weight (280 kg carcase weight & 6 mm P8 fat depth) at 20 months of age. All progeny are slaughtered with no replacement females being retained. In response to industry feedback regarding eating quality and tenderness, a small premium has been placed on marbling.

The following bar graph shows the key economic traits that are important in this selection index. The different trait emphases reflect the underlying profit drivers in a commercial dairy beef operation where all progeny are assumed to be for slaughter.

Dairy Index - Profit Drivers

Trait	%
Sale Liveweight Dir.	14%
Sale Liveweight Mat.	0%
Dressing %	8%
Saleable Meat %	9%
Fat Depth (Rump)	7%
Cow Weaning Rate	0%
Marbling Score	3%
Cow Survival Rate	0%
Cow Weight	0%
Calving Ease Dir.	59%
Calving Ease Mat.	0%

Considering the genetic relationship between the key profit drivers and the EBVs that are available, this transposes to the following EBV emphases. The sign indicates the direction of the emphasis.

Dairy Index - EBV Weightings

EBV	%
Calving Ease Dir.	64%
Birth Weight	-2%
200 Day Growth	1%
400 Day Weight	-1%
600 Day Weight	16%
Intramuscular Fat	3%
P8 Fat Depth	6%
Eye Muscle Area	2%
Retail Beef Yield	6%

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While the graphs on the previous page show the different profit drivers and emphases that have been placed on each EBV within the Dairy Index, they do not illustrate the likely change that will occur to each individual trait if producers select animals using this selection index. The response to selection will also be influenced by such factors as the genetic relationship between traits and the animals that are available for selection.

The following bar graph provides an indication of the relative change that would be expected in each individual trait if producers select animals using the Dairy Selection Index. The graph reflects the relative change if the Shorthorn Published Sires (at the October 2011 Shorthorn GROUP BREEDPLAN analysis) 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.

Dairy Index - Predicted Response

Expected Change in Individual Traits

Increase ↑

Decrease ↓

CED | CE Dtrs | GL | BW | 200 | 400 | 600 | MCW | Milk | SS | C Wt | EMA | Rib | Rump | RBY | IMF