



F1 TERMINAL \$INDEX

The F1 Terminal Index has an increased weighting to the Marble Score EBV and can be used to select bulls for the production of profitable slaughter animals where no progeny are retained for breeding

The F1 Terminal Index (F1 Index) is one of four Wagyu selection indexes, which are calculated for animals within the Wagyu BREEDPLAN analysis:

- Wagyu Breeder \$Index
- Self-replacing \$Index
- Fullblood Terminal \$Index
- F1 Terminal \$Index

WHAT IS A BREEDOBJECT \$INDEX?

A BreedObject \$Index is designed to give a comparison between animals within the Index based on profitability of their progeny within the commercial supply chain for the defined production system.



CALCULATION OF INDEX VALUES

F1 Index values are derived using BreedObject technology, as developed by the Animal Genetics & Breeding Unit (AGBU) in Armidale, NSW. F1 Index values are reported as Estimated Breeding Values (EBVs), in units of net profit per cow joined (\$) for this defined production system and market scenario.

THE PRODUCTION SYSTEM

The F1 Terminal Index estimates the genetic differences between animals in net profitability per cow joined in a F1 production system using Wagyu bulls and non-Wagyu females where all progeny are sold as feeders for feedlot finishing.

Steers and heifers are assumed to be slaughtered at 28 months after 370 days of feedlot finishing targeting carcass weights of 420kg and 387kg respectively. No heifers are retained for breeding and therefore maternal traits are not of importance in this \$Index. There is a significant premium for carcasses that exhibit superior marbling. Table 1 describes the targeted production system in more detail.

Table 1 Production systems for F1 Terminal Index

Criteria	Value
Weaning Rate	95%
Feedlot entry weight - Steers	370 kg
- Heifers	350 kg
Days on feed - Steers	370 days
- Heifers	370 days
Slaughter age - Steers	28 months
- Heifers	28 months
Carcass weight - Steers	420 kg
- Heifers	387 kg
Carcass price @MS5 - Steers	\$8.25/kg
- Heifers	\$8.25/kg
Marbling premium	~\$1.00/MS



BREEDING OBJECTIVE

The key production traits for the F1 Terminal Index have particular emphasis on marbling, along with sale weight and yield as shown in Figure 1, reflecting the underlying profit drivers in a commercial operation targeting this production system.

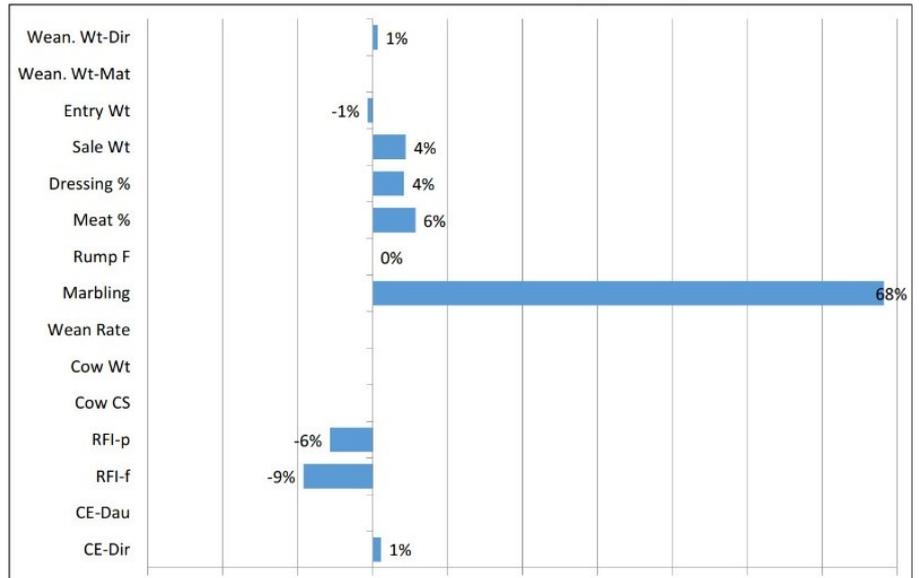


Figure 1 Emphasis placed on key production traits

SELECTION TRAITS

The genetic relationship between the breeding objective and selection traits highlights the emphasis that is placed, and available through EBVs as illustrated in Figure 2. EBVs with a positive bias are favoured – for example higher 200 and 400 Day Weight and Marble Score EBVs.

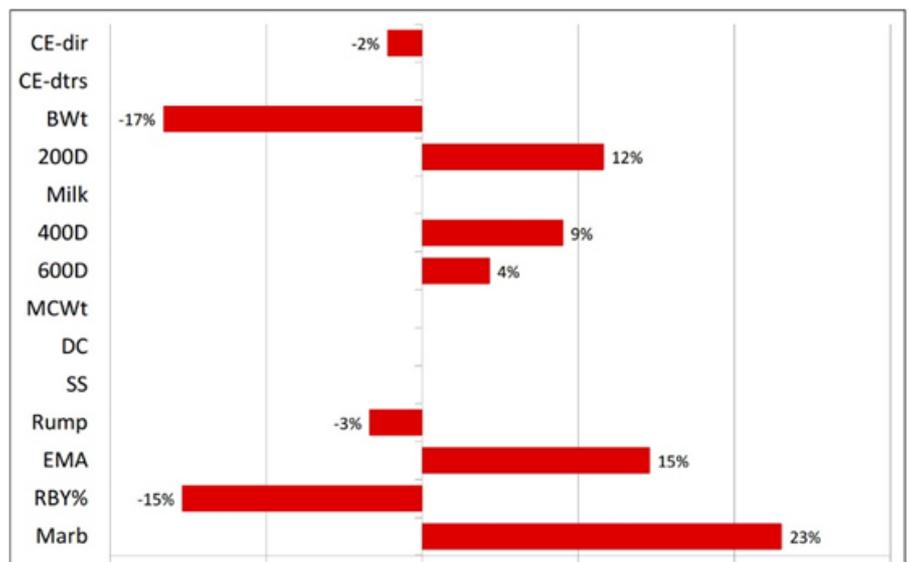


Figure 2 Emphasis placed on EBVs in calculating the F1 Terminal Index

INDICATIVE RESPONSE TO SELECTION

While the graphs of Figure 2 and 3 show the emphasis that have been placed on the production traits and each EBV within the Wagyu F1 Terminal Index, they do not illustrate the likely change that will occur to each individual EBV if producers select high ranking animals (top 10%) using this \$Index.

Table 2 & Figure 3 provide an indication of the relative change that would be expected in each individual trait by selecting animals in the top 10% of the F1 Terminal Index.

The indicative response reflects the change if the Wagyu Published Sires (at the June 2020 Wagyu GROUP BREEDPLAN analysis) which were ranked on this selection index and the average of the Top 10% were selected for use within a breeding program.

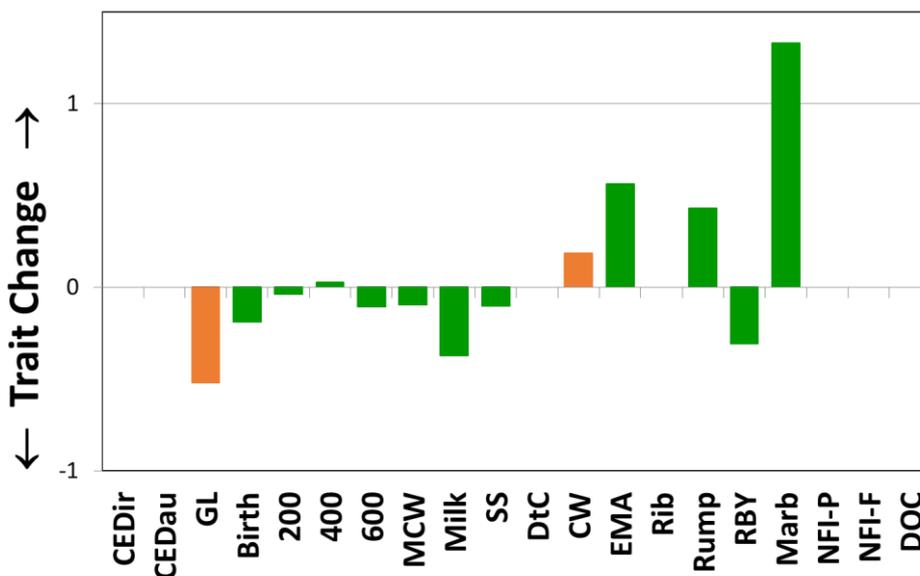


Figure 3 Indicative response to genetic standard deviations selection

The response will differ if a different group of animals was available for selection and/or a different selection intensity was applied.

POINTS TO CONSIDER WHEN USING THE F1 TERMINAL INDEX

The F1 Index places very high pressure on Marble Score. Due to genetic relationships between traits, when selecting high ranking animals for the F1 Index, on average, there are positive responses in the EMA and Rump Fat EBVs. However, this will vary greatly between sires in the top 10% for this \$Index.

Table 2 Indicative EBV response to selection

Trait	Change
Gestation Length	-0.13 days
Birth Weight	-0.6 kg
200 Day Weight	-1 kg
400 Day Weight	-2 kg
600 Day Weight	-3 kg
Mature Cow Weight	-2 kg
Milk	-2.3 kg
Scrotal Size	-0.1 cm
Carcase Weight	+3 kg
Eye Muscle Area	+1.6 cm ²
Rump Fat	+1.5 mm
Retail Beef Yield	-0.38 %
Marble Score	+0.85 MS