

A Quick Guide to Angus Selection Indexes



There are four selection indexes calculated for animals within the TransTasman Angus Cattle Evaluation (TACE) analysis.

- Angus Breeding Index
- Domestic Index
- Heavy Grain Index
- Heavy Grass Index

The Angus Breeding Index is a general purpose selection index that is suitable for use in the majority of commercial beef operations, whereas the Domestic, Heavy Grain and Heavy Grass selection indexes are specific to beef operations targeting a defined production system and market endpoint.

Angus Breeding Index - estimates the genetic differences between animals in net profitability per cow joined in a typical commercial self replacing herd using Angus bulls.

This selection index is not specific to a particular production system or market end-point, but identifies animals that will improve overall profitability in the majority of commercial grass and grain finishing beef production systems.

The Angus Breeding Index is particularly suited to commercial producers who sell progeny into different markets, or to seedstock producers supplying bulls to commercial clients who produce for a range of different production systems and market endpoints.

Domestic Index - estimates the genetic differences between animals in net profitability per cow joined in a commercial self replacing herd targeting the domestic supermarket trade.

Steers are assumed to be finished using either grass, grass supplemented by grain or grain (eg. 50 – 70 days) with steers slaughtered at 490 kg live weight (270 kg carcass weight with 12 mm P8 fat depth) at 16 months of age. Daughters are retained for breeding and therefore maternal traits are of importance. Emphasis has been placed on eating quality and tenderness to favour animals that are suited to MSA requirements.

Table 1 : Selection Index Descriptions

Angus Breeding Index	<ul style="list-style-type: none"> • Self replacing herd • Daughters are retained for breeding • Identifies animals that will improve overall profitability in the majority of commercial grass and grain finishing production systems
Domestic Index	<ul style="list-style-type: none"> • Self replacing herd • Daughters are retained for breeding • Steer progeny finished on either pasture, pasture supplemented with grain, or grain targeting the domestic supermarket trade • Steer progeny slaughtered at a carcass weight of 270 kg at 16 months of age • Eating quality traits important to suit MSA program
Heavy Grain Index	<ul style="list-style-type: none"> • Self replacing herd • Daughters are retained for breeding • Steer progeny pasture grown with a 200 day feedlot finishing period • Steer progeny slaughtered at a carcass weight of 420 kg at 24 months of age • Targeting high quality, highly marbled markets with a significant premium for superior marbling
Heavy Grass Index	<ul style="list-style-type: none"> • Self replacing herd • Daughters are retained for breeding • Steer progeny finished on pasture • Steer progeny slaughtered at a carcass weight of 340 kg at 22 months of age • Eating quality traits important to suit MSA program

Heavy Grain Index - estimates the genetic differences between animals in net profitability per cow joined in a commercial self replacing herd targeting pasture grown steers with a 200 day feedlot finishing period for the grain fed high quality, highly marbled markets.

Steers are assumed to be slaughtered at 760 kg live weight (420 kg carcass weight with 30 mm P8 fat depth) at 24 months of age. Daughters are retained for breeding and therefore maternal traits are of importance. There is a significant premium for steers that exhibit superior marbling.

Heavy Grass Index - estimates the genetic differences between animals in net profitability per cow joined in a commercial self replacing herd targeting pasture finished steers.

Steers are assumed to be slaughtered at 620 kg live weight (340 kg carcass weight with 12 mm P8 fat depth) at 22 months of age. Daughters are retained for breeding and therefore maternal traits are of importance. Emphasis has been placed on eating quality and tenderness to favour animals that are suited to MSA requirements.

Breeding Objective

Table 2 below shows the key objective traits that are important in the four selection indexes, reflecting the underlying profit drivers in a typical commercial self replacing operation targeting each respective selection scenario.

Table 2 : Profit Drivers				
	Angus Breeding Index	Domestic Index	Heavy Grain Index	Heavy Grass Index
Sale Liveweight Dir.	15%	14%	16%	17%
Sale Liveweight Mat.	4%	5%	3%	4%
Dressing %	10%	11%	9%	11%
Saleable Meat%	12%	13%	11%	13%
Fat Depth (Rump)	4%	2%	0%	7%
Cow Weaning Rate	20%	14%	23%	14%
Marbling Score	11%	7%	18%	6%
Cow Survival Rate	9%	13%	8%	11%
Cow Weight	-3%	-5%	-3%	-4%
Calving Ease Dir.	9%	11%	8%	10%
Calving Ease Mat.	3%	4%	3%	3%

Selection Traits

Considering the genetic relationship between the breeding objective and the selection traits that are available, Table 3 shows the emphasis that has been

Table 3 : EBV Weightings				
	Angus Breeding Index	Domestic Index	Heavy Grain Index	Heavy Grass Index
Calving Ease Dir.	10%	15%	9%	12%
Calving Ease Mat.	5%	7%	5%	6%
Birth Weight	-1%	-1%	0%	-2%
Milk	-3%	-3%	-3%	-3%
200 Day Growth	-4%	-2%	-6%	-3%
400 Day Weight	3%	19%	3%	3%
600 Day Weight	19%	1%	18%	21%
Intramuscular Fat	11%	9%	16%	7%
Days to Calving	-19%	-12%	-20%	-14%
Scrotal Size	0%	0%	0%	-1%
P8 Fat Depth	6%	6%	3%	8%
Eye Muscle Area	2%	2%	1%	3%
Retail Beef Yield	12%	17%	13%	12%
Mature Cow Weight	-4%	-6%	-2%	-7%

placed on each EBV. The sign indicates the direction of the emphasis. For example, in all selection indexes, greater Intramuscular Fat and shorter Days to Calving EBVs are favoured.

Indicative Response to Selection

Table 4 shows the indicative change in traits after one generation if producers select animals using each of the four selection indexes.

The indicative response reflects the change if the Angus Published Sires (at the November 2014 TransTasman Angus Cattle Evaluation analysis) were ranked on this selection index and the Top 10% selected for use within a breeding program.

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

Table 4 : Indicative Response to Selection				
	Angus Breeding Index	Domestic Index	Heavy Grain Index	Heavy Grass Index
Calving Ease Direct	+0.9%	+1.1%	+0.7%	+0.9%
Calving Ease Dtrs	+1.1%	+1.3%	+0.9%	+1.2%
Birth Weight	-0.2 kg	-0.4 kg	-0.1 kg	-0.1 kg
Gestation Length	-0.8 days	-0.8 days	-0.6 days	-0.9 days
200 Day Growth	+3 kg	+3 kg	+2 kg	+4 kg
400 Day Weight	+6 kg	+6 kg	+5 kg	+7 kg
600 Day Weight	+8 kg	+6 kg	+6 kg	+9 kg
Mature Cow Weight	+5 kg	+1 kg	+4 kg	+5 kg
Milk	+2 kg	+2 kg	+2 kg	+2 kg
Scrotal Size	+0.4 cm	+0.3 cm	+0.3 cm	+0.3 cm
Days to Calving	-1.0 days	-0.8 days	-0.9 days	-0.8 days
Carcass Weight	+3 kg	+4 kg	+2 kg	+5 kg
Eye Muscle Area	+1.0 cm ²	+1.4 cm ²	+1.0 cm ²	+1.1 cm ²
Rib Fat	+0.1 mm	+0.1 mm	+0.1 mm	+0.2 mm
Rump Fat	+0.1 mm	+0.1 mm	+0.0 mm	+0.2 mm
Retail Beef Yield	+0.1%	+0.2%	+0.0%	+0.2%
Intramuscular Fat	+0.5%	+0.4%	+0.7%	+0.3%

Calculation of Selection Indexes

All selection index values have been derived using BreedObject technology, as developed by the Animal Genetics & Breeding Unit (AGBU) in Armidale, NSW.

Selection index values are reported as an EBV, in units of net profit per cow joined (\$) for the given selection scenario.

Each selection index reflects both the short term profit generated by an animal through the sale of their progeny, and the longer term profit generated by their daughters in a self replacing cow herd.

