



## Where Does This Animal Rank? Introducing The EBV Percentile Graph

While comparing an individual animal to the breed average (calculated from the two year old animals) allows producers to identify whether the animal is better or worse for the trait than the average animal in the breed, it does not allow producers to quantify how much better or worse the individual is.

To do this, BREEDPLAN publishes percentile bands, which allows beef producers to rank animals from the Top 1% of the breed (1<sup>st</sup> percentile) down to the Bottom 1% of the breed (99<sup>th</sup> percentile). While the more traditional Percentile Band table is still available, more recently BREEDPLAN has published the EBV Percentile Graph. This provides producers with a visual representation of how the EBVs of an individual animal rank in comparison to the rest of the breed. This article will outline how to find, interpret and use the EBV Percentile Graph.

### FINDING THE EBV PERCENTILE GRAPH

The EBV Percentile Graph is available from the Animal Details page on Internet Solutions for each individual animal. Firstly, to find the animal, enter the animal name and/or identifier into the EBV Search area on Internet Solutions, and click search. Select the relevant animal to bring up the Animal Details page for that individual. Once on the Animal Details page, scroll down until you see the EBVs, and click on the graph icon, as shown in Figure 1. This will display the EBV Percentile Graph for the animal.

### INTERPRETING THE EBV PERCENTILE GRAPH

The EBV Percentile Graph allows beef producers to compare how the EBVs of an individual animal rank against the two year old animals that have been evaluated within the same genetic evaluation.

	Calving Ease DIR (%)	Calving Ease DTRS (%)	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Cow Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF (%)	Docility
EBV	-1.9	-0.9	<b>-4.6</b>	+2.5	<b>+32</b>	+54	+87	+93	+11	+1.0	+48	+3.6	+0.6	+1.1	+0.4	+0.3	+24
Acc	48%	34%	80%	77%	76%	72%	74%	57%	32%	68%	54%	40%	44%	43%	38%	34%	75%
Breed Avg. EBVs for 2015 Born Calves <a href="#">Click for Percentiles</a>																	
EBV	+0.2	+0.7	-1.7	+1.6	+18	+30	+42	+43	+6	+0.9	+26	+1.4	+0.0	-0.2	+0.7	-0.1	+35

Traits Observed: 200WT,400WT,600WT,SS,FAT,EMA,IMF,DOC

Docility Progeny: 13

Statistics: Number of Herds: 2, Progeny Analysed: 19,

**Figure 1.** To find the EBV Percentile Graph, open the Animal Details page on Internet Solutions for the individual animal of interest. From the Animal Details page, click on the graph icon (circled) above the individual's EBVs to bring up the EBV Percentile Graph.

On the vertical axis, a separate bar is provided in the graph for each individual trait. The bars are coloured depending on the trait type, where:

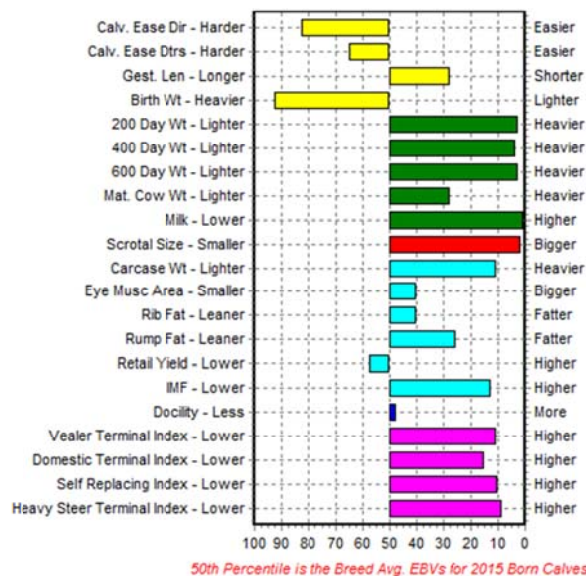
- Calving traits = yellow
- Growth traits = green
- Fertility traits = red
- Carcase traits = light blue
- Other traits = dark blue
- Selection Indexes = pink

It should be noted that while for the majority of traits it is usually more desirable to be on the right hand side of the graph (e.g. in the 0-50<sup>th</sup> percentiles), this is not always the case. The optimum EBVs will depend on the individual producer's breeding objective(s), and the direction in which the producer is trying to move the herd.

For example, a higher percentile for Mature Cow Weight indicates a heavier Mature Cow Weight EBV, which, for those producers trying to limit the mature cow size of their herd, may be undesirable. Similarly, depending on the environment their cattle are running in (e.g. scrubby rangelands), some beef producers do not want cows with a lot of milk. In these cases, producers may decide that they want a sire with a more moderate Milk EBV. Equally, in situations where beef producers are trying to limit or actively decrease the Rib and Rump Fat of their herd, a sire with more moderate Rib and Rump Fat EBVs may be more desirable.

When the EBV Percentile Graph in Figure 2 is examined, it can be quickly seen that the individual animal is below breed average for four traits (Calving Ease Direct, Calving Ease Daughters, Birth Weight and Retail Beef Yield) and above breed average for all other traits. Furthermore, the percentile band rankings can be determined by identifying where the end of the trait bar lines up along the horizontal axis. For example, the animal represented in the EBV

Percentile Graph shown in Figure 2 is in the 58<sup>th</sup> percentile for Retail Beef Yield, and in the 3<sup>rd</sup> percentile for 200, 400 and 600 Day Weight.



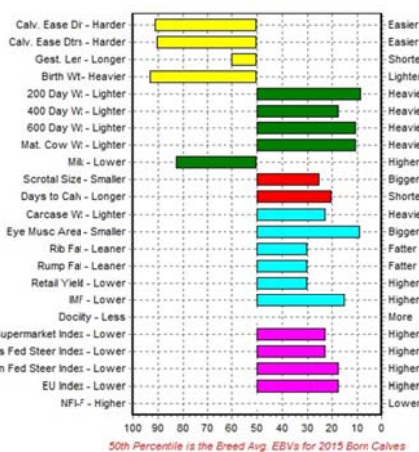
**Figure 2.** The EBV Percentile Graph allows beef producers to compare how the EBVs of an individual animal rank against those of the two year old animals that have been evaluated within the same genetic evaluation; thus allowing the strengths and weaknesses of an individual animal to be assessed.

### USING THE EBV PERCENTILE GRAPH

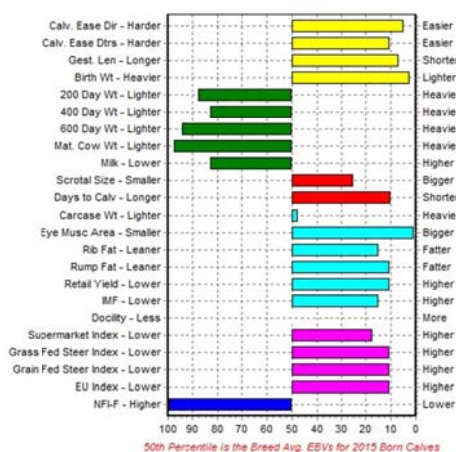
As seen in the above section, the EBV Percentile Graph can be utilised as a visual tool to understand the strengths and weaknesses of an individual animal. It can also be used to compare the attributes of different animals, and to identify which has the best combination of genetics for a given scenario.

Consider the three bulls in Figure 3, and their potential to be used as heifer bulls (i.e. joined to heifers which will calve at 2 year old). While the percentile band ranking for each trait does vary across the bulls, all three bulls are below breed average for Milk, and above breed average for the fertility traits (Scrotal Size and Days to Calving), the carcase traits (EMA, Rib Fat, Rump Fat, Retail Beef Yield and IMF) and the four selection indexes (Supermarket, Grass Fed Steer, Grain Fed Steer and EU).

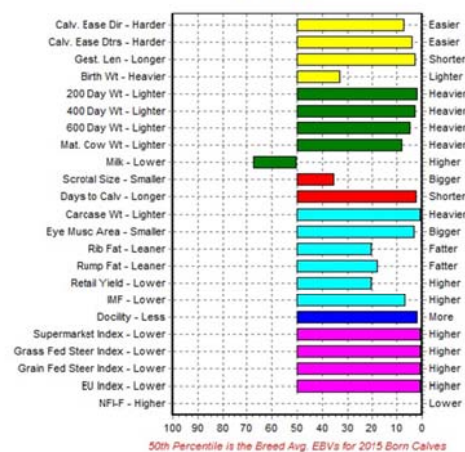
## Bull 1



## Bull 2



## Bull 3



**Figure 3.** The EBV Percentile graphs for three bulls, which, when compared, allow beef producers to quickly compare the genetic potential of each as a sire, and identify which would best suit a certain scenario (in this case, a heifer bull).

The biggest differences between these three bulls are seen for the calving traits (Calving Ease Direct, Calving Ease Daughters, Gestation Length and Birth Weight) and the weight traits (200 Day Weight, 400 Day Weight, 600 Day Weight and Mature Cow Weight).

Bull 1 is a high growth bull, being in the 10<sup>th</sup> percentile (Top 10% of the breed) for 200, 600 and Mature Cow Weight, and in the 20<sup>th</sup> percentile for 400 Day Weight. However, this bull is also likely to have heavy calves which may require assistance at calving, being in the 90<sup>th</sup> percentile (Bottom 10% of the breed) for Calving Ease Direct, Calving Ease Daughters and Birth Weight and the 60<sup>th</sup> percentile for Gestation Length.

In contrast, Bull 2 would be expected to produce calves with low growth, being in the 80<sup>th</sup> percentile or lower for 200, 400 and 600 Day Weight and Mature Cow Weight. However, with Bull 2 being in the 10<sup>th</sup> percentile or higher for Calving Ease Direct, Calving Ease Daughters, Gestation Length and Birth Weight, his calves are also likely to be lighter than the calves Bull 1 would produce, with a shorter gestation length and less assistance required at calving.

Bull 3, like Bull 1, is a high growth bull, being in the 5<sup>th</sup> percentile or higher for 200, 400 and 600 Day Weight, and the 10<sup>th</sup> percentile for Mature Cow Weight. However, Bull 3 is also in the 10<sup>th</sup> percentile or higher for Calving Ease Direct,

Calving Ease Daughters and Gestation Length, and in the 35<sup>th</sup> percentile for Birth Weight. Therefore, Bull 3 is likely to produce heavier calves at 200, 400 and 600 days than Bulls 1 and 2, and also likely to produce calves of more moderate birth weight and which require less assistance at calving than those sired by Bull 1.

So which of these three bulls would make the best heifer bull? Given the potential for calving difficulty, Bull 1, despite his high growth, is not the best choice (dead calves don't grow). Bull 2 should sire calves that are more likely to be born without assistance, but these calves are unlikely to have the genetic potential for growth. Therefore, Bull 3, which should sire calves that are likely to be born without assistance and which will also have the genetic potential for high growth, is the best choice for a heifer bull.

## CONCLUSION

The EBV Percentile Graph can be used to quickly get a feel for the strengths and weaknesses of individual bulls, and to compare the attributes of different bulls. This makes it a great tool for beef producers looking to use BREEDPLAN EBVs and Selection Indexes as a part of their bull selection decisions.

For further information on interpreting or using the EBV Percentile Graph, please contact staff at Southern Beef Technology Services (SBTS) or Tropical Beef Technology Services (TBTS).