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LIMOUSIN

Using Limousin Breeding Values

Estimated Breeding Values (EBVs) and Genomic Estimated Breeding Values (GEBVs)



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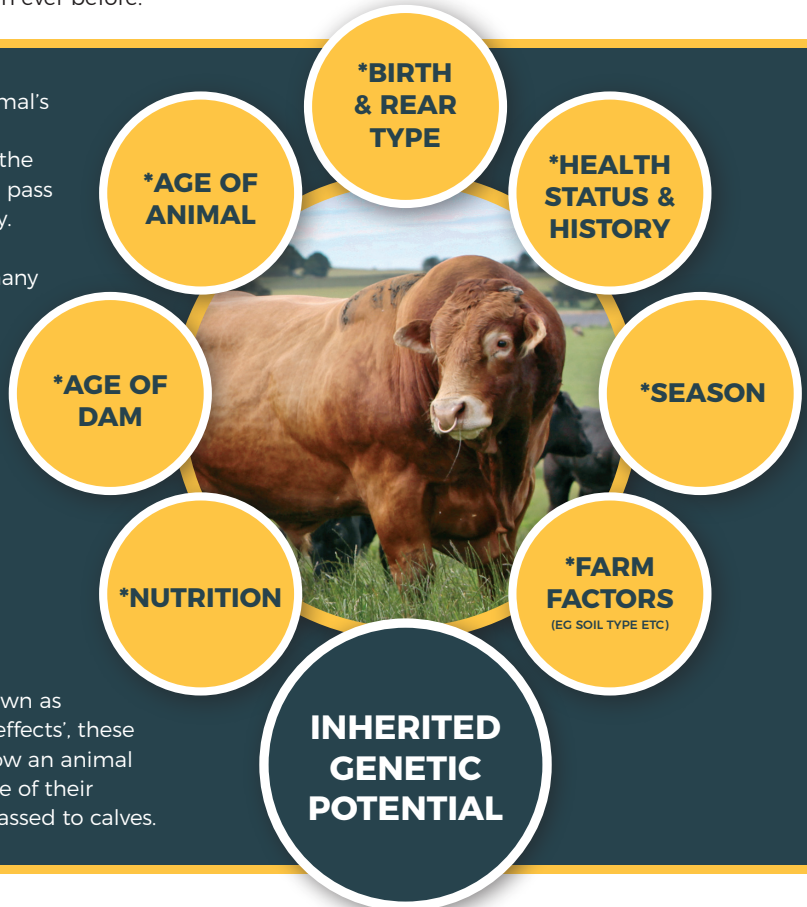
Introduction

All Limousin Breeding Values (EBVs and GEBVs) indicate how much of an animal's performance is due to genetics and how much is due to its environment.

- EBVs are calculated from pedigree information, performance records collected on-farm and records collected from wider sources such as BCMS and abattoir data.
- GEBVs also use the records above, but additionally incorporate information from each animal's DNA.

The incorporation of large, independent sets of commercial Limousin records and the use of DNA in calculations means Limousin breeding values are more accurate and more robust than ever before.

Knowing an animal's genetic merit is **ESSENTIAL**: it is the only thing it can pass on to its progeny. Appearance is influenced by many things...



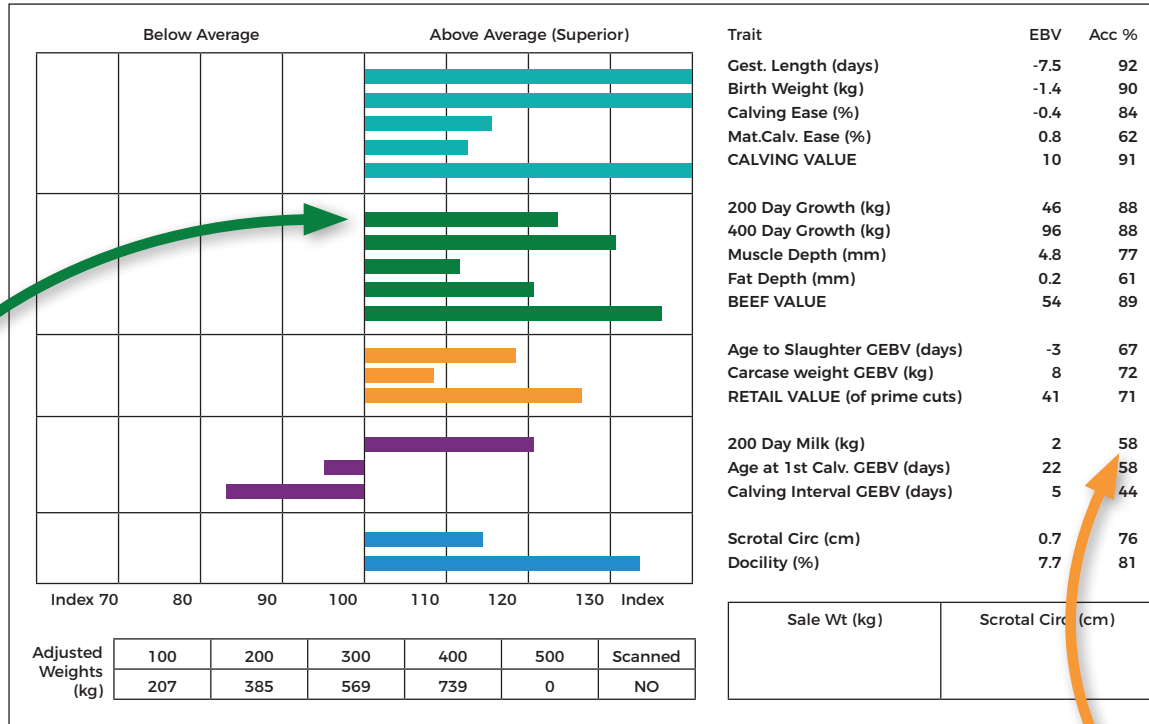
*Collectively known as 'environmental effects', these will influence how an animal appears yet none of their effects can be passed to calves.

Using Limousin Breeding Values



All Limousin Breeding Values are expressed in the same unit as the recorded trait (eg kgs for 400 Day Weight, mm for Muscle Depth etc). They are relative to the Limousin Breed Average, which is updated and published annually. Limousin Breeding Values are typically presented in a bar chart.

- ✓ The central vertical line always represents the current Breed Average for each trait
- ✓ Bars lying to the right of this line indicate the EBV/Index is above Breed Average (ie superior) - and the further to the right it is, the higher above Breed Average it is.
- ✓ In the same manner, bars lying to the left of the line indicate the EBV/Index is below Breed Average (inferior).
- ✓ Breeding values that are GEBVs (ie those that have used information from the animal's DNA in their calculation) are referred to as GEBVs on the graph. EBVs and GEBVs can be used in exactly the same way.



In this example, the EBVs and GEBVs indicate the animal has favourable genetics for the majority of the characteristics. It is predicted to be easy calving, with good growth, speed to finishing and carcase conformation. Its fat depth EBV indicates it is likely to be fatter than average (more negative EBVs indicate leanness). Its daughters are predicted to be easy calving (Maternal Calving Ease) with good milking ability (200 day Milk). A higher Scrotal Size EBV is associated with early maturity of daughters, and a higher Docility EBVs indicates greater calmness during handling.

Breeding Indexes - the Calving Value, the Beef Value and the Retail Value. These combine individual EBVs and GEBVs in to a single figure that indicates overall breeding merit for that range of traits. Each trait within an index is weighted according to its relative economic value. Indexes can be used to select for a number of traits all at the same time. More positive values indicate overall higher genetic merit for the traits involved:

Calving Value -> Gestation Length and Calving Ease EBVs

Beef Value -> Growth, Muscle Depth, Fat Depth, Birthweight, Gestation Length and Calving Ease EBVs

Retail Value -> Fillet, Striploin, Rump, Topside, Silverside and Knuckle.

The Accuracy %. This is an indicator of the quality and quantity of records used in the EBV calculation. They range from 0% (nothing known) to 99% (very well-recorded) and indicate the confidence that can be placed on the breeding value. Breeding values with low accuracy will change over time, as more animal and family records are added to the EBV evaluation.

The Limousin Breed Benchmark indicates the distribution of EBVs across the breed for each trait. The benchmark can be used to identify an animal's specific ranking within the breed for a specific trait. The benchmark can be found under 'Breed Improvement' on the Limousin website www.limousin.co.uk

Which EBVs?

- Select animals using EBVs that are relevant to your farm, cow type and end market
- Consider the traits that will make you most money, but
- Don't forget to check all important traits such as Calving Ease.
- To establish just how much influence a bull will pass on to his progeny it is important to halve the EBV value, since the other half of a calf's genes comes from the cow.

For example, a bull with a 400-Day Growth EBV of +62 is estimated to have the genetic potential to be 62kg heavier at 400 days of age compared to a bull with an EBV of 0.

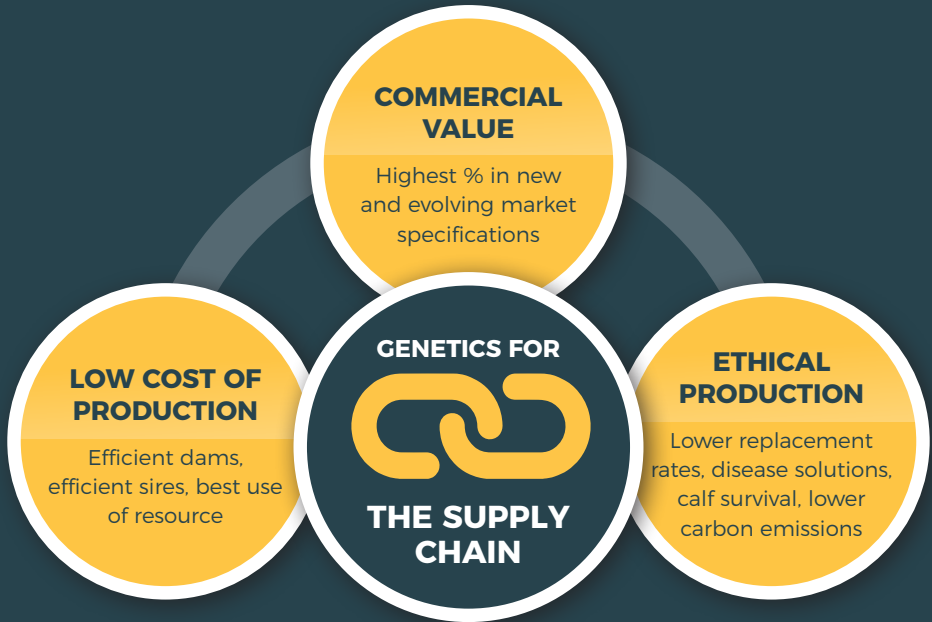
Based on this, his calves would be expected to be 31kg heavier at that age when compared to calves by a bull with an EBV of 0, since they only inherit half of their growth genes from their sire (the other half coming from their dam).

| EBVs Influencing Calving Ease | EBVs Influencing Growth and Carcase Quality | EBVs Influencing Maternal Performance |
|---|---|--|
| How easy-calving a bull's calves will be: <ul style="list-style-type: none">• Birthweight• Calving Ease• Gestation Length | <ul style="list-style-type: none">• 200 Day Growth• 400 Day Growth• Muscle Depth (Loin)• Fat Depth• Carcase Weight• Age to Slaughter• The 6 Prime Cuts: Fillet, Striploin, Rump, Topside, Silverside, Knuckle | <ul style="list-style-type: none">• 200 Day Milk• Age at First Calving• Calving Interval• Longevity• Calf Survival |
| How easy-calving a bull's daughters will be: Maternal Calving Ease | | These traits are passed from bulls to their daughters. |

Where to find Limousin Breeding Values:

- On the Limousin database www.taurusdata.co.uk. Search for individual animals, by breeding values and by breeder
- From the owner/breeder
- In sale catalogues
- In the Limsale app – download from your usual app store.
- From the Limousin Society – get in touch or check out the EBV section on our website www.limousin.co.uk

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