



# Understanding and using Limousin EBV's

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## 1. What is an EBV?

An animal's breeding value can be defined as its genetic merit for each trait. While it is not possible to determine an animal's true breeding value, it is possible to estimate it. These estimates of an animal's true breeding value are called EBVs (Estimated Breeding Values).

EBVs are expressed as the difference between an individual animal's genetics and the genetic base to which the animal is compared. EBVs are reported in the units in which the measurements are taken (e.g. kilograms for the weight EBVs). Thus a value of +12 kg for 400 day weight means the animal is genetically superior by 12 kg at 400 days compared with the genetic base of the relevant cattle population. On average, half of this difference will be passed on to the animal's progeny (the other half will come from the dam).

BREEDPLAN produces EBVs for a range of economically important traits. These traits currently include:

Weight	Fertility/ Calving	Carcase	Other
Birth Weight	Scrotal Size	Eye Muscle Area	Docility
Milk	Days to Calving	Fat Depth	Net Feed Intake
200 Day Growth	Gestation Length	Retail Beef Yield	Structural Soundness
400 Day Weight		Intramuscular Fat	
600 Day Weight	Calving Ease	Carcase Weight	Flight Time
Mature Cow Weight		Shear Force	

It should be noted that EBVs will only be available if sufficient data has been recorded for that trait and as such, the full range of EBVs may not be available from each breeder.



## **2. Understanding and Interpreting EBV's.**

When using EBVs to assist in selection decisions it is important to achieve a balance between the different groups of traits and to place emphasis on those traits that are important to the particular herd, markets and environment. Please note that as each BREEDPLAN analysis has its own unique genetic base, only EBVs produced in the same BREEDPLAN analysis can be directly compared.

One of the advantages of having a comprehensive range of EBVs is that it is possible to avoid extremes in particular traits and select for animals with balanced overall performance. In the calculation of EBVs, the performance of individual animals within a contemporary group is directly compared to the average of other animals in that group. A contemporary group consists of animals of the same sex and age class within a herd, run under the same management conditions and treated equally. Indirect comparisons are made between animals reared in different contemporary groups, through the use of pedigree links between the groups.

EBVs are expressed in the units of measurement for each particular trait. They are shown as + ive or - ive differences between an individual animal's genetics difference and the genetic base to which the animal is compared. For example, a bull with an EBV of +50 kg for 600-Day Weight is estimated to have genetic merit 50 kg above the breed base of 0 kg. Since the breed base is set to an historical benchmark, the average EBVs of animals in each year drop has changed over time as a result of genetic progress within the breed.

The absolute value of any EBV is not critical, but rather the differences in EBVs between animals. Particular animals should be viewed as being "above or below breed average" for a particular trait.

Whilst EBVs provide the best basis for the comparison of the genetic merit of animals reared in different environments and management conditions, they can only be used to compare animals analysed within the same analysis. Consequently, Limousin BREEDPLAN EBVs cannot be validly compared with EBVs for any other breed. Although EBVs provide an estimate of an animal's genetic merit for a range of production traits, they do not provide information for all of the traits that must be considered during selection of functional animals.

In all situations, EBVs should be used in conjunction with visual assessment for other traits of importance (such as structural soundness, temperament, fertility etc). A recommended practice is to firstly select breeding stock based on EBVs and to then select from this group to ensure that the final selections are otherwise acceptable.

For more information check out [BREEDPLAN's Guide to Animal Selection](#).

**SUMMARY OF LIMOUSIN BREEDPLAN EBV's**  
(For more information visit [BREEDPLAN](#))

**Weight EBV's**

Birth Weight	Birth Weight EBV (kg) is based on the measured birth weight of progeny, adjusted for dam age. The lower the value the lighter the calf at birth and the lower the likelihood of a difficult birth. This is particularly important when selecting sires for use over heifers.
Milk	Milk EBV (kg) is an estimate of an animal's milking ability. For sires, this EBV indicates the effect of the daughter's milking ability, inherited from the sire, on the 200-day weights of her calves. For dams, it indicates her milking ability.
200 Day Growth	200-Day Growth EBV (kg) is calculated from the weight of progeny taken between 80 and 300 days of age. Values are adjusted to 200 days and for age of dam. This EBV is the best single estimate of an animal's genetic merit for growth to early ages.
400 Day Weight	400-Day Weight EBV (kg) is calculated from the weight of progeny taken between 301 and 500 days of age, adjusted to 400 days and for age of dam. This EBV is the best single estimate of an animal's genetic merit for yearling weight.
600 Day Weight	600-Day Weight EBV (kg) is calculated from the weight of progeny taken between 501 and 900 days of age, adjusted to 600 days and for age of dam. This EBV is the best single estimate of an animal's genetic merit for growth beyond yearling age.
Mature Cow Weight	Mature Cow Weight EBV (kg) is based on the cow weight when the calf is weighed for weaning, adjusted to 5 years of age. This EBV is an estimate of the genetic difference in cow weight at 5 years of age and is an indicator of growth at later ages and potential feed maintenance requirements of the females in the breeding herd. Steer breeders wishing to grow animals out to a larger weight may also use the Mature Cow Weight EBV.

**Fertility / Calving**

Scrotal Size	Scrotal Size EBV (cm) is calculated from the circumference of the scrotum taken between 300 and 700 days of age and adjusted to 400 days of age. This EBV is an estimate of an animal's genetic merit for scrotal size. There is also a small negative correlation with age of puberty in female progeny and therefore selection for increased scrotal size will result in reduced age at calving of female progeny.
Days to Calving	Days to Calving EBV (days) is an estimate of genetic differences between animals in the time from the start of the joining period (i.e. when the female is introduced to a bull) until subsequent calving. Days to Calving EBVs are calculated from the joining records submitted for both heifers and mature cows. Lower, or more negative, Days to Calving EBVs are generally more favourable. For example, a bull with a Days to Calving EBV of -5 days would be expected to produce daughters that conceive earlier in the joining period than the daughters of a bull with a Days to Calving EBV of +5 days.
Gestation Length	Gestation Length EBV (days) is an estimate of the time from conception to the birth of the calf and is based on Artificial Insemination and hand mating records. Lower (negative) Gestation Length EBVs indicate shorter gestation length and therefore easier calving and increased growth after birth.
Calving Ease	Calving Ease EBVs (%) are based on calving difficulty scores, birth weights and gestation length information. More positive EBVs are favourable and indicate easier calving. <ul style="list-style-type: none"> <li>CE % Dir = Direct Calving Ease - The EBV for direct calving ease indicates the influence of the sire on calving ease in purebred females calving at two years of age.</li> <li>CE % Daughters = Daughters' Calving Ease - The EBV for daughters' calving ease indicates how easily that sire's daughters will calve at two years of age.</li> </ul>



## SUMMARY OF LIMOUSIN BREEDPLAN EBV's Cont.

### Carcase

Eye Muscle Area	Eye Muscle Area EBV (sq cm) is calculated from measurements from live animal ultrasound scans and from abattoir carcass data, adjusted to a standard 300 kg carcass. This EBV estimates genetic differences in eye muscle area at the 12/13th rib site of a 300 kg dressed carcass. More positive EBVs indicate better muscling on animals. Sires with relatively higher Eye Muscle Area EBVs are expected to produce better muscled and higher percentage yielding progeny at the same carcass weight than will sires with lower Eye Muscle Area EBVs.
Fat Depth	Rib Fat and Rump Fat EBVs (mm) are calculated from measurements of subcutaneous fat depth at the 12/13 rib site and the P8 rump site (from live animal ultrasound scans and from abattoir carcasses) and are adjusted to a standard 300 kg carcass. These EBVs are indicators of the genetic differences in fat distribution on a standard 300 kg carcass. Sires with low, or negative, fat EBVs are expected to produce leaner progeny at any particular carcass weight than will sires with higher EBVs.
Retail Beef Yield	Retail Beef Yield EBV (%) indicates genetic differences between animals for retail yield percentage in a standard 300 kg carcass. Sires with larger EBVs are expected to produce progeny with higher yielding carcasses.
Intra-muscular Fat	Intramuscular Fat EBV (%) is an estimate of the genetic difference in the percentage of intramuscular fat (marbling) at the 12/13th rib site in a 300 kg carcass. Depending on market targets, larger more positive values are generally more favourable.
Carcass Weight	Carcass Weight EBV (kg) is based on abattoir carcass records and is an indicator of the genetic differences in carcass weight at the standard age of 650 days. Larger, more positive, Carcass Weight EBVs are generally more favourable.
Shear Force	Shear Force EBVs are estimates of genetic differences between animals in meat tenderness. Shear Force EBVs are expressed as differences in the kilograms of shear force that are required to pull a mechanical blade through a piece of cooked meat. Lower, more negative, Shear Force EBVs are more favourable.

### Other

Docility	Docility EBVs (%) are estimates of genetic differences between animals in temperament. Docility EBVs are expressed as differences in the percentage of progeny that will be scored with acceptable temperament (i.e. either "docile" or "restless"). Higher, more positive, Docility EBVs are more favourable.
Net Feed Intake	<p>Net Feed Intake (Post Weaning) EBVs are estimates of genetic differences between animals in feed intake at a standard weight and rate of weight gain when animals are in a growing phase. For example, animals placed in a feedlot post weaning. NFI-P EBVs are expressed as kilograms of feed intake per day (kg/day). Lower, or more negative, NFI-P EBVs are more favourable.</p> <p>Net Feed Intake (Feedlot Finishing) EBVs are estimates of genetic differences between animals in feed intake at a standard weight and rate of weight gain when animals are in a feedlot finishing phase. NFI-F EBVs are expressed as kilograms of feed intake per day (kg/day). Lower, or more negative, NFI-F EBVs are more favourable.</p>
Structural Soundness	Structural Soundness EBVs are provided for five important structural traits; these are Front Feet Angle (FA), Front Feet Claw Set (FC), Rear Feet Angle (RA), Rear Leg Hind View (RH) and Rear Leg Side View (RS). Structural Soundness EBVs are reported as an estimate of genetic differences between animals in the percentage of progeny that will have a desirable score for a particular structural trait. Higher Structural Soundness EBVs are more favourable
Flight Time	Flight Time EBVs are estimates of genetic differences between animals in temperament. Flight Time EBVs are expressed as differences in the number of seconds taken for an animal to travel approximately 2.0 metres after leaving the crush. Higher (i.e. longer) Flight Time EBVs are more favourable.