

## Understanding Structural Soundness EBVs

Since cattle were first domesticated, it has been recognised that animals should conform to certain structural requirements to ensure high levels of production and adaptability to the environment. When structural integrity is not maintained, substantial financial loss can occur. These losses could be due to such things as complete bull breakdown, bulls not being able to cover the allocated cows resulting in lower conception rates, steers being unable to finish a long feeding program, or cows with badly structured udders being unable to rear their calves properly. Importantly, structural soundness is heritable and can be improved by selection.

### Interpreting Structural Soundness EBVs

Structural Soundness EBVs are provided for five important structural traits:

- ❑ Front Feet Angle (FA)
- ❑ Front Feet Claw Set (FC)
- ❑ Rear Feet Angle (RA)
- ❑ Rear Leg Hind View (RH)
- ❑ 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.** That is, higher EBVs indicate a greater percentage of progeny with a desirable score for that particular trait. For example, a bull with a Front Feet Angle EBV of +25.3 would be expected to on average produce 41% more progeny with desirable front feet angle than a bull with an EBV of -56.1 [i.e.  $25.3 - (-56.1) \times \frac{1}{2}$ ].

Animals with very low (i.e. negative) EBVs for each trait are identified with an additional flag to indicate the nature of their structural fault.

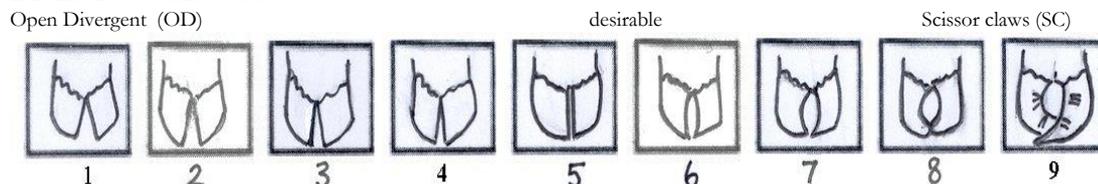
- ❑ Front Feet Angle & Rear Feet Angle EBVs are identified with a flag of “ST”, indicating increased probability of steep feet angle and “SH”, indicating increased probability of shallow feet angle
- ❑ Front Feet Claw Set EBVs are identified with a flag of “OD”, indicating increased probability of open divergent claws and “SC”, indicating increased probability of scissor claws.
- ❑ Rear Leg Hind View EBVs are identified with a flag of “BL”, indicating increased probability of bow legged rear legs and “CH”, indicating increased probability of cow hocked rear legs.
- ❑ Rear Leg Side View EBVs are identified with a flag of “SR”, indicating increased probability of straight rear legs and “SI”, indicating increased probability of sickle hocked rear legs.

### Information used to calculate Structural Soundness EBVs

Structural Soundness EBVs are calculated from structural scores recorded on animals by an accredited scorer when the animals are younger than 750 days of age.

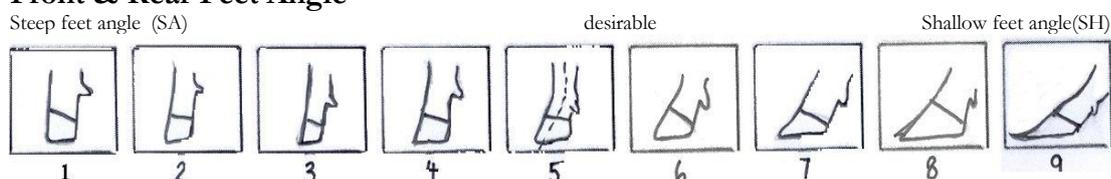
To record structural score information, accredited scorers use the Beef Class scoring system to assess the animal's structure on a scale of 1 – 9 for each of the five traits as shown below.

### Front Feet Claw Set



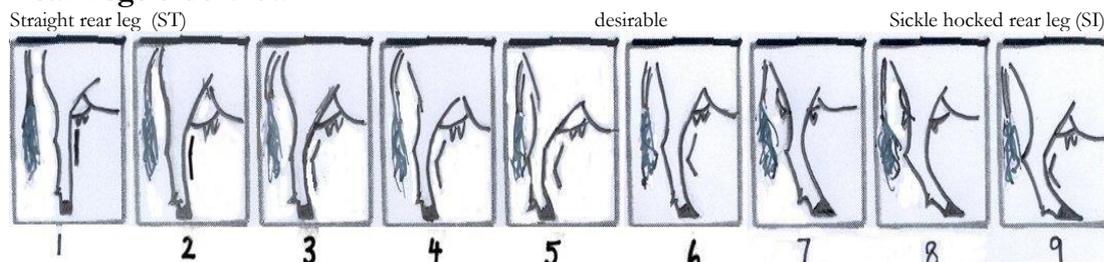
Reference: Shape (primarily curl) and evenness of the claw set.

### Front & Rear Feet Angle



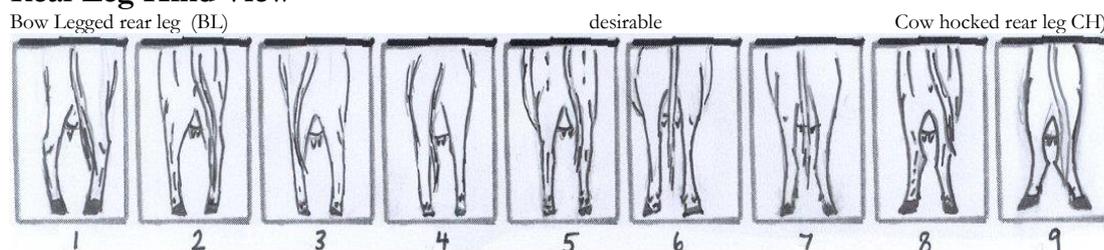
Reference: Strength of pastern, depth of heel and length of foot.

### Rear Legs Side View



Reference: Angle measured at the front of the hock.

### Rear Leg Hind View



Reference: Direction of the feet when viewed from the rear.

When collecting structural scoring information, breeders should consider:

- ❑ Structural score information will only be accepted by BREEDPLAN if it has been recorded by an accredited scorer. A list of accredited scorers can be found in the Technical area on the BREEDPLAN website (<http://breedplan.une.edu.au>) or by contacting the BREEDPLAN office.
- ❑ BREEDPLAN can only analyse the structural score information from animals that are younger than 750 days of age when measured. Subsequently, it is important to

score your animals when they are within this age range. The majority of animals are scored as rising 2 year olds (i.e. around 600 days of age) at the same time that they are scanned

- ❑ While more than one set of structural score information can be recorded for an individual animal, BREEDPLAN is only analysing the first set of structural score information for each animal at this stage. Similarly, BREEDPLAN is not currently analysing the structural score information that has been recorded on the mature cow herd.
- ❑ Structural score information can also be collected for a range of other traits such as sheath and navel scores, udder evenness and attachment, teat size and shape and capacity. These scores are not currently included in the BREEDPLAN analysis however they may be used to develop Structural Soundness EBVs for these traits in the future.

### **Submitting Structural Score Information to BREEDPLAN**

Structural score information should be submitted directly to the BREEDPLAN office at ABRI. Importantly, the submission of structural score information to BREEDPLAN is the breeder's responsibility NOT the accredited scorers.

There are several methods of submitting structural score information to BREEDPLAN.

- ❑ Electronically using a BREEDPLAN compatible herd recording computer program (eg. Herdmaster, StockBook)
- ❑ Electronically via a BREEDPLAN compatible Microsoft Excel template (available from BREEDPLAN)
- ❑ On paper using the structural score form that is provided by the accredited scorer
- ❑ On paper using a specific BREEDPLAN structural score recording form (available from BREEDPLAN).

### **Selecting Animals with Structural Soundness EBVs**

Through selection of breeding animals using Structural Soundness EBVs, beef producers have the ability to produce progeny with more desirable structure for a range of important feet and leg traits.

When selecting animals using Structural Soundness EBVs, remember:

- ❑ Animals with **higher** Structural Soundness EBVs are more favourable.
- ❑ Selection for improved structural soundness should be balanced with selection for other economically important traits.
- ❑ Always consider the accuracy of the Structural Soundness EBVs. It is important to remember that EBVs with low accuracy may change considerably with the addition of more information.

- While the Structural Soundness EBVs provide an indication of likely differences in the structural soundness of the progeny from an animal available for use within a breeding program, the structural scores that have been recorded for the animal itself should also be used to assess the current feet and leg soundness of the animal. For example, a young bull may have EBVs that indicate an acceptable percentage of progeny will be produced with desirable structure, but his own score may indicate they he is susceptible to breakdown if joined. Therefore both the Structural Soundness EBVs and the actual structural scores should be considered when selecting animals for use within a breeding program.

*For more information regarding Structural Soundness EBVs or the recording of structural score information, please contact staff at BREEDPLAN.*