Are Your Animals Structurally Sound?

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. The list of structural requirements can be quite exhaustive but importantly, 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 adequately cover the allocated cows resulting in lower conception rates, increased calving difficulty, steers being unable to finish a long feeding program, or cows with badly structured udders being unable to rear their calves properly. Thankfully, most of the structural traits are under some genetic control (i.e. moderate heritability of 0.20 to 0.35 depending on the structural trait) and so can be improved by selection.

Breeding Values for Structural Traits

To assist in the selection of animals that will produce progeny with acceptable structural soundness, BREEDPLAN has recently developed software that enables the calculation of Estimated Breeding Values (EBVs) for five important structural traits being:

- Front Feet Angle (FA)
- Front Feet Claw Set (FC)
- Rear Feet Angle (RA)
- Rear Leg Hind View (RH)
- Rear Leg Side View (RS)

The Trial Structural Soundness EBVs provide an estimate of genetic differences between animals in the percentage of progeny that will have desirable structural soundness for each particular structural trait. In other words, animals with higher EBVs are expected to produce a greater percentage of animals with desirable structural soundness for that particular trait. Further information on the new Trial Structural Soundness EBVs is available from the Tip Sheets page within the Technical area on the BREEDPLAN website (http://breedplan.une.edu.au).

While the system now exists to enable the calculation of Trial Structural Soundness EBVs, there is not sufficient structural trait information currently recorded on the Shorthorn Beef database to facilitate the calculation of EBVs for the Shorthorn breed. Breeders interested in this suite of traits are encouraged to collect the appropriate information and submit to Shorthorn BREEDPLAN as explained in the next section.

What Structural Soundness Information is Required?

Trial Structural Soundness EBVs are calculated from structural score information recorded on animals by an accredited scorer when the animals are younger than 750 days of age. A list of accredited scorers can be found in the Technical area on the BREEDPLAN website (http://breedplan.une.edu.au) or by contacting staff at Shorthorn BREEDPLAN. The majority of animals are usually scored as rising 2 year olds (i.e. around 600 days of age) at the same time that they are scanned for the carcase traits.

When recording structural score information, the accredited scorer will 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
Open Divergent (OD) desirable Scissor claws (SC)
Reference: Shape (primarily curl) and evenness of the claw set.

Front & Rear Feet Angle
Steep feet angle (SA) desirable Shallow feet angle (SH)
Reference: Strength of pastern, depth of heel and length of foot.

Rear Legs Side View
Straight rear leg (ST) desirable Sickle hocked rear leg (SI)
Reference: Angle measured at the front of the hock.

Rear Leg Hind View
Bow Legged rear leg (BL) desirable Cow hocked rear leg (CH)
Reference: Direction of the feet when viewed from the rear.

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.

Once collected, structural score information is submitted directly to the Shorthorn BREEDPLAN office. There are several methods of submitting the structural score information, including:
- 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).
Using and Displaying Structural Score Information

In addition to collecting the Beef Class structural scores for the generation of Structural Soundness EBVs some breeders also choose to display this information (the “scores”) in sale catalogues (see example below). This highlights to clients that structural soundness is an important suite of traits in the breeding program as it is independently assessed by an experienced assessor using a standard industry scoring system. This system should not replace the breeders assessment of structure and associated selection but be used as an extra level of scrutiny of the bulls being offered to clients or entering the breeding herd.

As with any information included in sale catalogues, a comprehensive set of notes should be included in the front of the sale catalogue to assist the buyer to understand the information being displayed. For Structural Soundness scores this may include the following descriptions:

- A score 5 is considered “ideal”.
- A score 4 or 6 shows slight variation from ideal, but this includes most animals. An animal scoring 4 or 6 would be accepted in any breeding program. Interestingly, in populations of cattle that have been scored the most common score is 6 for most leg and feet traits.
- A score of 3 or 7 shows greater variation from ideal however this would still be acceptable in most commercial programs. Seedstock producers should be vigilant and understand that this score indicates greater variation from ideal.
- A score of 2 or 8 are low scoring animals that should be scrutinized thoroughly before purchasing.
- A score of 1 or 9 should not be catalogued and considered as culls.

The above table also includes a sheath score (1 to 5 scoring system with 1 being pendulous and 5 being tight), scrotal circumference in centimeters (with date of measure) and a description of maturity pattern. Again, this information was assessed independently by an accredited Beef Class Assessor.

For further information regarding the recording and submission of structural scores or Structural Soundness EBVs in general, please contact Christian Duff at SBTS by phone on (02) 6773 2472 or email christian@sfts.une.edu.au.

Further Reading:

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