

# Daughters or direct - understanding calving ease

*Breedplan displays two calving ease figures – direct and daughters.*

**Dr Nicky Turner** explains how the two EBVs work.

Breedplan calving ease estimated breeding values (EBVs) are calculated using a range of information, including pedigree data, birth difficulty scores, gestation length records and birth weights and assumptions about underlying genetics and relationships. Non-genetic effects, such as calf sex and age of dam, are also taken into consideration.

Calving ease is affected by both the calf's ability to be born easily (the direct effect), and the ability of the dam to give birth without problems, or the maternal effect. As such, Breedplan reports two calving ease EBVs – calving ease direct (CE direct) and calving ease daughters (CE dtrs).

The direct effect is important to consider when choosing a stock bull as it predicts the percentage of its calves which will not require assistance at birth out of two year old females, says Dr Nicky Turner, Breedplan operations manager. This component is passed from both sire and dam, and influences the likelihood of progeny born without any calving problems.

The maternal genetic component relates to the dam's likelihood of calving without difficulty. For sires, this is based on the genetics of its daughters as dams, regardless of any considerations about the calf.

The CE daughters EBV combines half of the direct effect and all of the maternal component and indicates the ability of the bull's female progeny to give birth without assistance as two year olds.

Nicky says: "The CE dtrs value is generally how commercial producers look at calving ease in replacement females rather than separating maternal and direct."

In terminal production systems, it is only the direct genetic effect that matters as females are not retained for breeding.

"If daughters are being kept for replacements, both direct and daughters calving ease need to be considered as there is some antagonism between the



two. An extreme example is to select a sire with a very high CE direct figure that produces low growth progeny. The calves are born without difficulty but the daughters are likely to be too small to calve unassisted to sires with more growth," says Nicky.

"Profitability in the beef industry is a function of numerous traits, some of which have antagonistic relationships to each other. To improve profitability, selection must be applied to those traits that contribute most to the costs and returns of an enterprise. If a trait has no economic value, it should not be included in the selection programme. Therefore for terminal sires, selecting on CE direct only is sufficient.

"Over-emphasis of selection on any one trait can have unwanted consequences and calving ease factors are no exception. For example, selection on light birth weight alone will lead to lower growth rates and increased chances of calving problems among female progeny. Similarly, selection on large pelvic area alone will increase birth weight and reduce the beneficial effects on calving ease. Therefore a balance between direct and daughters calving ease is needed with breeders ultimately trying to balance

calving ease, growth and carcass."

Basil Lowman, SAC Consulting beef specialist says: "EBVs allow producers to avoid bulls with high positive values for one trait but large negative values for the other.

"It is the internal diameter of the pelvic opening which influences maternal calving ease and the external width which influences calving ease direct. While there is some link between internal and external pelvic size, it is not overly strong."

One of the biggest variations is in the shape of the pelvic opening and the actual shape can be considerably varied between animals.

"The position, strength and fitness of muscles also play a major role in ease of calving. Although this is not documented, variation is bound to occur," says Basil.

Nicky concludes: "If calving ease EBVs are to be useful, then the best strategy is to record birth difficulty scores for all calves born within the season and to weigh them at birth. This information, along with gestation length records for calves born by AI, gives the basic ingredients needed to obtain reliable EBVs for both calving ease traits."