SHORTHORN SB BEEF

technical brief

"Minimising Calving Problems through Management"

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Difficult birth (dystocia) is a relatively common occurrence in heifers calving for the first time, with many herds recording 20% or more heifers needing assistance.

Dystocia increases the cost of a breeding enterprise through lost income as a result of dead calves and heifers, labour for supervision, veterinary attention, and delayed re-breeding of affected heifers.

Dystocia is virtually unknown in undomesticated species where "selection of the fittest" prevails, however the incidence of dystocia in domesticated species has increased steadily since man took over the selection role.

Altering the nutritional environment through pasture improvement, single trait selection for high growth rate sires, and failing to cull breeding animals that have experienced dystocia themselves have all contributed to the problem.

There are 3 main reasons for dystocia, namely;

* the calf is too large for the heifers pelvic size. This is the most common cause of dystocia. It is termed foeto-pelvic disproportion (FPD) and is a complex interaction between genetic (sire & dam) effects and the environment (nutrition & management).

* incorrect presentation of the calf to the pelvis, which is largely a chance effect.

* the heifer doesn't strain sufficiently to expel the calf from the uterus (uterine inertia). This can be caused by nutritional stress, particularly underfeeding of heifers prior to calving or magnesium defficiency, but there is strong evidence that uterine inertia or "lazy heifer syndrome" may be an inherited (genetic) predisposition.

Dystocia in heifers is often the cumulative result of a large calf, marginal pelvic size, and uterine inertia.

Factors that contribute to dystocia

Dystocia as a result of foeto-pelvic disproportion (FPD) is a complex issue with many contributing factors, each factor having a different magnitude of effect under different "mixes" of conditions.

There is rarely "one thing" that causes dystocia. This makes control difficult and frustrating, often with the observation that "what worked last year doesn't necessarily work next year".

The factors that contribute to this form of FPD dystocia fit into 3 distinct groups;

* Dam of calf effects, including the physical size and maturity of the heifer herself, her pelvic size (which can be related to the size of the heifer as well as an independent trait), and the heifer's genetic predisposition to uterine inertia or lack of "push power".

* Sire of calf effects, including the sire's birth-weight which is highly inherited and is the major contributing factor to calf size, and his shape and conformation which influences the cross-sectional dimension of the calf presented to the dams pelvic opening.

* Environmental effects, particularly nutrition. Both over-nutrition (obesity) and under-nutrition of heifers during pregnancy during the last 3 months of pregnancy, and/or magnesium deficiency can cause uterine inertia which directly or indirectly causes dystocia.

There is some evidence that high protein nutrition, particularly during the first 3-4 months of pregnancy influences the birth-weight of the calf to a much greater extent than previously thought.

The sex of the calf is also a contributing factor with male calves experiencing a much higher incidence of dystocia than heifer calves – mainly because they are heavier at birth..

Key points for minimising dystocia

Any program aimed at minimising the incidence of dystocia must address 2 fundamental issues, namely;

- **management** to reduce dystocia in the current herd. These practices address the immediate problem only. They will help reduce the level of dystocia in the next drop of calves but have no effect on future drops of calves.

- **selection** to reduce dystocia in the future. These practices are slow response, long-term, effects as a result of selection for factors of genetic origin.

In the past most efforts to minimise dystocia have been aimed at managing dystocia in the short-term (for example controlling nutrition and selecting sires on shape) to the neglect of long-term selection, which is why the problem recurs each year in most herds.

The long term solution must be based on selection for CALVING EASE, that is the ability to produce a live calf unassisted, not "Band Aid" treatment of recurring problems, however this article addresses management issues aimed to minimise the occurrence of dystocia at the next calving.

Management Options to Minimise Dystocia

A - Selecting heifers for joining:

* **The size and frame** of the heifer will largely determine her pelvic size at calving. If joining yearling heifers to calve as 2 year old, avoid joining heifers that are less than 300 kg in bodyweight, at condition score 3.

You are better to supplement the heifers from weaning to joining to make sure they meet the minimum joining weight than playing catch-up after joining.

Aim for a steady growth rate of about 0.5 kg/day, at condition score 3, from joining to calving.

Measuring pelvic size before calving helps identify heifers with below average pelvic area, however your veterinarian should be able to identify these heifers by manual palpation during pregnancy testing. As a guide the average pelvic size for Shorthorn heifers is about 185 sq cm at 14 months of age. (Breedplan Validation data)

* The **age** at which the heifer has her first calf has little effect on the likelihood of dystocia as long as she is well grown and of sufficient size. On improved country calving at 2 years of age is generally the preferred option, where-as calving at 2.5 or 3 years of age may be a better alternative on unimproved country.

B – Selecting bulls to join to heifers:

* **birth-weight** is one of the most important contributing causes of dystocia. Selecting sires that have low birth-weight themselves will produce lower birth-weight/lower dystocia risk calves, however as birth-weight is correlated to growth rate, low birth calves will also have lower than average growth rate.

The most accurate method for selecting sires on the basis of birth-weight is to use Group Breedplan EBVs. These allow across-herd selection of sires on birth-weight.

In most instances, avoiding above average birth-weights rather than selecting for below average birth-weights is adequate.

* **shape and conformation** of the sire can have a significant affect on the shape and consequent calving ease of its progeny. Length of body and smooth shoulders are important attributes in a sire for joining to heifers.

Avoid short bodied, and/or thick muscled sires even if they are relatively "small".

In reality, the sire effect is the relationship between calf birth-weight and shape, rather than either as individual traits. Circumstantial evidence suggests that the birth-weight/calving ease threshold of a sire increases as frame score increases, (at about 1kg EBV per frame score). That is, you can generally tolerate a higher birth-weight potential on a larger framed smooth shouldered sire than you can in a smaller, thick bodied sire.

The use of bulls of a different breed to reduce dystocia, for example Angus or Jersey, whilst usually effective is not recommended.

Firstly you are avoiding placing selection pressure on the heifers for their ability to calve normally, and over time you will increase the level of dystocia in the herd if you keep heifers as replacement breeders. Secondly, with the exception of Jersey bulls, the chance of success is not high and the result is more an individual sire effect than a breed effect. Finally, if you use a bos-indicus or derived breed sire, you will most likely experience increased dystocia as result of in-utero hybrid vigour giving higher than expected birth-weights.

Selection of a Shorthorn bull of average birth-weight and correct conformation that was the result of a natural birth itself is the preferred and most natural option.

It is a selection bonus if such a sire was a heifer's first calf, born un-assisted. The use of "littermate" sires (half-sibs) has proven to be a useful option for commercial herds.

C – Managing the heifer during pregnancy

* avoid running pregnant heifers on clover dominant pasture, particularly during the last 3-4 months of pregnancy. Moving the time of calving to better synchronise pregnancy with pasture growth patterns to calve before the "spring flush" is a good practice.

* aim to keep heifers at a healthy condition score 3. Avoid heifers becoming over-fat, but don't "starve" heifers in an attempt to restrict the birth-weight of the calf. It doesn't work and you finish up with weak heifers more prone to uterine inertia.

* aim to give the pregnant heifers exercise – running them on hill country (if available), unimproved country or as followers to other stock where they have to work a bit harder for a feed and water is a good practice as long as you can maintain the target weight gain and condition.

* if you are calving heifers on lush, improved pasture where magnesium deficiency might occur, magnesium boluses might useful – check with you vet.

* identify any heifers that require assistance at calving. They, and any female progeny, should either be culled or only used as in a terminal breeding program thereafter – don't use them to breed future replacements.

***** place heifers on high quality feed immediately after calving. They need to regain pre-calving weight and condition by joining if high re-joining conception rates are to be realised.

Supplementary feeding may be necessary in poor years if they are to overcome the challenges of lactation, continued growth, cutting teeth and conceiving.

Genetic Selection (long-term, permanent) Options to Minimise Dystocia.

Selection for calving ease as an independent trait is the long-term solution to minimising the incidence of dystocia in a herd. Selection for Calving Ease as such is in fact selecting for the genetic balance between pelvic size, calf size, calf shape, birth-weight and "push power" that results in unassisted births.

For more information on selection to minimise dystocia, refer to the technical bulletin ***Minimising Calving Difficulties through SELECTION*** available from Shorthorn Beef.

Note - This information is of a general nature and does not take into account your personal needs and circumstances and you should decide whether or not it is appropriate for you. You should discuss this information with your veterinarian before changing your current management and/or selection practices as a means of reducing the incidence of dystocia in your herd.