The Veterinary Link

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Preventing calving difficulty

An acceptable level of difficult birth (dystocia) is typically set around 10% for first-calf heifers and 2% for mature cows. While it would seem logical to aim for 0% difficult births, this is usually not possible or even desirable because of the relationship between birth weights and other traits such as calf growth and weaning weight.

Evaluate sire selection

If a farm is experiencing too many difficult births, the first area to consider changing is sire selection. Most difficult births are due to calves that are too large to pass through the heifer's or cow's pelvis.

In reviewing records, look for patterns of large calves resulting from the same sire. The most accurate means of evaluating sires relative to dystocia prevention is expected progeny differences (EPDs). There are three EPD measures specifically related to calving: birth weight EPD (BW EPD), calving ease direct (CED) and calving ease maternal (CEM).

When selecting heifers for the replacement pool of animals, both management and genetic decisions are being made, and it should be remembered that phenotype is not a perfect predictor of genotype.

BW EPDs predict the difference in birth weight, in pounds (lb.), of a particular sire's calves relative to those of other sires. Both CED and CEM are reported as differences in percentages of unassisted births among first-calf heifers, with higher values being associated with higher calving ease. In herds with an unacceptable number of difficult calvings, bulls with high BW EPDs and low calving ease EPDs should be discriminated against.

Grow heifers appropriately

Heifers giving birth to their first calves are at a much greater risk for dystocia than cows. Many factors contribute to heifers having a higher risk of dystocia, the greatest of which is body weight and size. Body size is a reflection of the nutritional development of a heifer. It is advised that replacement heifers weigh 65%-70% of their anticipated mature weight at the time of breeding and 85%-90% of their mature weight at first calving.

Using these targets, periodic weight determination of a subset of heifers during the growth phase would be advisable to monitor that heifers are at an appropriate weight per day of age (WDA) in relation to their target breeding dates and mature weight.

At 7 through 12 months of age, heifers should be fed to gain 0.1% of their anticipated mature weight per day (1.3 lb. per day for heifers that will mature at 1,300 lb.). At 18 months of age, they should gain 0.06% of their mature weight daily (approximately 0.75 lb. per day for heifers that will mature at 1,300 lb.), and at 24 months they should gain 0.04% of mature weight daily (approximately 0.5 lb. per day for heifers that will mature at 1,300 lb.).

Higher rates of gain than these may result in deposition of fat into the pelvis, leading to calving difficulty. When evaluating rates of gain in growing heifers, particular attention should be paid to parasite control programs as well as to macro- and micromineral balance, for their particular influence on skeletal growth.

Implant options

To increase body weight, some may consider the use of growth-promoting implants and creep-feeding. Implanting may increase weaned and yearling body size and pelvic area vs. non-implanted heifers, but this difference has been shown to dwindle by the time of calving. Implants have mixed results in their

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ability to reduce calving difficulty and have been shown to inhibit reproductive tract function and impair fertility.

It is recommended that implanting replacement heifers be avoided. If implants are utilized in replacement heifers, increased numbers of replacements should be retained as compensation for reduced pregnancy percentage.

Similarly, creep-feeding replacement heifers increases weaning weight, but this difference is absent by 1 year of age. Creep-feeding of heifers can significantly reduce reproductive productivity and should not be practiced if additional energy results in fat deposition in the udder.

Pelvic assessment

Pelvic area is a specific, calving-oriented assessment of skeletal size. Pelvimetry involves measurement of the internal height and width of the bony pelvis in yearling heifers, with subsequent calculation of the pelvic area.

Pelvimetry is often used as a means of predicting whether an individual heifer will experience dystocia. Under this concept, a threshold pelvic measurement, usually 140-170 square centimeters (sq. cm), is preset, and any heifer having a smaller pelvic area is culled.

Pelvimetry suffers from poor accuracy for prediction of which individuals are likely to have difficulty calving. Its utility may be improved when it is used to describe the status of the population rather than the individual.

When selecting heifers for the replacement pool of animals, both management and genetic decisions are being made, and it should be remembered that phenotype is not a perfect predictor of genotype. We are often confined to selecting animals based on phenotype for many traits because it is our only readily accessible estimation of their genetic potential. In using pelvimetry, we are selecting genotypic contribution to herd dystocia risk based on phenotypic expression. When making genetic decisions for the herd, the genetic diversity of the evaluated population should be considered when evaluating phenotypic characteristics such as pelvic area, reproductive tract score and body weight.

Because pelvimetry is known to better evaluate the group than the individual, the population diversity influences the interpretation of the data obtained. If an unacceptably large percentage of genetically similar heifers fall below the predetermined pelvic area cutoff, one has evidence that the genetics of that group do not support adequate pelvic area, and the entire group should be culled. Another way to look at it is that even though there will be individual heifers that exceed the cutoff (phenotypic acceptability), they share the genetic potential to have offspring with unacceptable pelvic area (genotypic unacceptability).

A more appropriate evaluation of heifers is the CEM EPD of their sire, which encompasses a number of criteria that contribute to dystocia, including calf shape and size, sire effects, heifer skeletal size, metabolism and uterine environment.

Another well-recognized factor in risk of dystocia is age of the dam, as skeletal growth increases through 4 years of age. Not only does dystocia risk decrease as the age of the dam increases, but — among heifers that calve at about 2 years of age — heifers that are a few weeks older are at lower risk than younger heifers. Because older replacement heifers may tolerate heavier calves, replacement heifers should be selected from those born early in the calving season.