Vet Call

by Bob L. Larson, DVM, University of Missouri

Strategies to decrease dystocia

Because the greatest proportion of calving difficulty in any herd is found with the first-calf heifers, strategies to decrease dystocia should be implemented during the heifer development period – long before the start of the calving season.

Management tools that decrease the risk of difficult births fall into one of two categories: assuring the adequate size of the heifer, and decreasing the risk of a large calf.

Assuring that heifers will be large enough and have a large enough pelvic area at the time of first calving involves hitting target weights. Heifers should weigh 60 to 65 percent of their mature weight at the start of the breeding season. Hitting the target weight not only will result in a large percentage of the heifers cycling at the start of the breeding season, it will assure heifers have had adequate nutrition for full expression of skeletal (including pelvic) growth. The heifers should continue to grow so that they reach the target of 85 percent of their mature weight at the time of calving as a two-year-old.

Pelvic area measurements can be taken at one year of age, before the onset of the breeding season. These measurements will have a good correlation with pelvic area at the start of the calving season nearly a year later.

Pelvic area measurements are helpful in identifying and culling any heifer that falls below a minimum standard. Pelvic areas do not fall into the category of "bigger is better." This is because pelvic area and calf birth weight are closely related and heifers with larger pelvic areas tend to have larger calves.

A minimum standard of 150 square centimeters (cm^2) at one year of age or 180 cm^2 by 18 months of age is reasonable. Pelvic area increases about 0.27 cm^2 per day in heifers from 9 to 24 months of age, therefore, pelvic area can easily be adjusted to a standard age (365 days).

It's important to realize that selection based on pelvic area alone does not significantly reduce the incidence of dystocia in groups of heifers. This is particularly true if few heifers have pelvic areas that are below accepted standards.

Bulls used to produce replacement heifers may also be pelvic measured as an indication of their daughters' calving ease. Estimates of pelvic growth rates are 0.21 cm^2 per day of age and 0.07 cm^2 per pound of body weight in bulls ranging in age from 10 to 15 months of age and 700 to 1,400 pounds. These values can be used to adjust a set of bulls to a given standard, such as 365 days of age.

The genetic correlation between pelvic area in heifers and pelvic area in bulls has been estimated in two large studies to be only 0.6. This indicates that although many of the same genes likely control pelvic area in both heifers and bulls, there are important differences in regulation between the sexes. Selecting sires that are 27 cm^2 larger than the mean for pelvic area would increase daughter pelvic area only 3.55 cm^2 per generation.

Numerous studies have shown that heifers implanted with anabolic growth promotants at two to three months of age have a larger pelvic area as yearlings than controls without implants. Still, the advantage for implanted heifers seen as yearlings was lost by the time they were ready to calve as two-year-olds and no difference in the occurrence of difficult births has been found.

At calving, heifers should have a body condition score of 6. This will increase the likelihood that she will have enough energy to complete delivery and yet avoid any complications that can occur in heifers that are over-fat at calving. Heifers should not be restricted in protein intake late in gestation in an effort to decrease calf sire. This strategy is only slightly successful in reducing calf sire, but fails to reduce dystocia because the heifers are not nutritionally fit to complete the delivery — they tend to tire and quit before the calf is born.

In addition, absorption of colostral antibodies is diminished and milk production is decreased when protein is restricted.

Use of expected progeny differences (EPDs) to select bulls that produce low birth weight calves is a powerful tool to reduce the incidence of dystocia. Calf birth weight is a primary factor in dystocia, and being able to accurately predict the birth weight of calves from a given bull compared to other bulls decreases the risk involved with selection of bulls used to breed heifers.

Use of artificial insemination (AI) allows producers to utilize high accuracy bulls (bulls that have many offspring in many different herds), which is ideal if current management is compatible with AI. If young bulls must be used in a natural service breeding program, the risk is increased compared to using proven (high accuracy) bulls, but EPDs are still valuable as predictors of calf birth weight.

The least risk from using young bulls is captured if selection is limited to yearlings out of proven, superior calving-ease bulls.

By combining proper nutritional development of heifers with selection of low birth weight bulls to breed to, the rate of dystocia can be decreased. Decreasing dystocia rates in a herd results in a lower death loss at calving, reduced veterinary expenses, and improves calf health and performance through weaning. The positive impacts on profitability are substantial.

Bob Larson's E-mail address:
vmlarson@ext.missouri.edu