# Factors Affecting Calving Difficulty

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Calving difficulty, otherwise known as *dystocia*, may result in reduced calf performance, delayed estrus and, in some cases, loss of the calf and/or dam. This publication discusses several factors affecting calving difficulty and provides management suggestions that may be useful to prevent its occurrence.

The majority of non-disease related calf losses in beef herds consist of calf deaths associated with dystocia. Researchers from Montana evaluated 798 autopsied calves lost in a disease-free herd over a 15-year period. They determined that more than twice as many calves were lost around the time of calving than at any other time from birth to weaning (Bellows et al., 1987; Table 1). Of the calves that were lost at or around calving, 51 percent died as a result of dystocia. The second most common cause of death was disease, mainly scours and pneumonia.

**Table 1. Calf loss percentages and birth weights of autopsied calves.**

| Time of death | Number | Percent | AVG BW (lbs.) |
|---|---|---|---|
| Day 0 | 492 | 61.6[a] | 69.7 |
| Days 1-10 | 187 | 23.4[a,b] | 77.6 |
| Days 11-41 | 72 | 9[b] | 81.4 |
| Days 42-101 | 25 | 3.1[b] | 82.9 |
| Days 102 - weaning | 22 | 2.8[b] | 80.7 |
| Total | 798 | 100% | |
| [a,b] Means with different superscripts differ (P < 0.05). Adapted from Bellows et al., 1987. | | | |

## Sire Selection

Some cattle producers blame calving difficulty on the breed of the sire because of heavy calf birth weight and large frame size. There are sires within each breed that can cause calving difficulty when bred to certain females. Try to match the type of sire to that of the females. This will help prevent breeding large-framed sires to small-framed heifers. Consider sires that have been proven to produce low birth weight calves when breeding heifers to reduce possible calving difficulty. As heifers mature into cows, they can be bred to larger-framed sires since they will be more capable of delivering larger calves.

Although many producers evaluate breed, structure, frame score and genetics when selecting sires, the dystocia potential of a sire cannot be visually determined. Producers must rely on past calving records or the expected progeny difference (EPD) for each bull.

Sire summaries provide an array of EPDs that can be used to compare birth weight and calving ease as well as many other useful traits. Selecting for multiple traits is recommended to prevent over-selection for one trait. Breed associations typically publish updated breed averages for each EPD as additional calves are added to their

databases. Each EPD should be compared to its breed average to determine how a sire ranks among its contemporaries for a particular trait. An EPD from one breed cannot be directly compared to the breed average of another breed. Generated adjustment factors should be used for across-breed EPD comparisons.

To determine reliability, each EPD has an accuracy value that is reported numerically between 0 and 1 and can be viewed as a percentage. For example, a value of 0.39 could be seen as 39 percent accurate, while a value of 0.98 could be viewed as 98 percent accurate. When a large number of progeny have been reported to a breed association, the accuracy values will move closer to 1. A low accuracy value indicates that a sire may be young or that few calves have been reported to the breed association. For example, yearling bulls will have lower accuracy values compared to bulls that have had progeny reported to their breed associations. Initial accuracy value is based on ancestry, full and half siblings, and, as their calves are registered, the accuracy value will increase and the EPDs adjusted accordingly. As the EPD value is adjusted to more accurately define the bull's capabilities, the accuracy value is also adjusted. Since accuracy varies among breed associations, producers should review the most current sire summary when comparing bulls within a breed.

By using EPDs, producers can evaluate genetic potential of sires and reduce the occurrence of dystocia by lowering calving birth weights and using bulls with a history of high calving ease. It is important to understand that these values are "expected, not exact," so there may be some variations within each calf crop.

## Temperature

Temperature has been shown to have a significant impact on calf birth weight. Although using sires with low birth weight EPDs may reduce some calving problems, environmental factors are responsible for approximately 55 percent of calving difficulties. Calf birth weights can vary significantly from year to year even though the same genetics and management are used.

Several studies have shown that calves born in the fall weigh less than calves born in the winter and spring months. The increase in fetal weight during the cooler winter months is most likely because of increased nutrient intake from supplemental feeding by the cow. As the nutrient intake increases, nutrient flow to the fetus increases, which can result in increased growth rate.

A long-term study was conducted at the University of Nebraska to determine the effects of temperature on calf birth weight (Deutscher et al., 1999). The coldest winter during this trial resulted in an 11 degree F difference in winter temperatures. This difference resulted in an 11 pound increase in calf birth weight. This research concludes that calf birth weights will increase by 1 pound and calving difficulty will increase by 2.6 percentage points for each 1 degree F reduction in average winter temperatures.

Most fetal growth occurs three months prior to calving. Therefore, temperatures during this time period will have a greater effect on calf birth weight. When considering temperature, fall calving herds should have fewer calving problems and lower death loss than herds calving in the winter and spring months. Producers should avoid calving in the summer months. Research has shown that calves born from May through September have lower weaning weights than calves born in cooler months (Sprott, L-5381). High summer temperatures and humidity are stressful to young calves, which reduce their growth. In addition, forage quality declines throughout the summer and contributes to poor performance of calves born in the summer months.

## Feeding

The effects of different feeding levels on dystocia and birth weight are summarized in Table 2. High feeding levels precalving had no significant impact on birth weight or dystocia. Reduced feeding levels, however, can actually reduce cow weight gain, decrease milk production, increase incidence of scours and, most importantly, decrease pregnancy rate (Table 3).

Developing heifers on a low nutrient diet has clearly demonstrated an increase in dystocia. This is primarily due to poor skeletal growth and, therefore, smaller pelvic areas. Research has demonstrated that heifers with a pelvic area of less than 140 cm2 have increased incidence of dystocia compared to their above-average contemporaries (Deutscher, 1990). Delaying the time of first calving until 3 years of age decreases but does not eliminate dystocia.

**Table 2. Effects of precalving feed level and sex of calf on calving.**

| Precalving[a] Feed Level | | Number | AVG BW (lbs.) | Calving Difficulty Percent |
|---|---|---|---|---|
| High (13.9 lbs. TDN) | Male | 16 | 64.2 | 50 |
| | Female | 16 | 61.3 | 22 |
| | AVG | | 62.8 | 36 |
| Low (7.5 lbs. TDN) | Male | 15 | 58.6 | 46 |
| | Female | 15 | 58.6 | 34 |
| | AVG | | 58.6 | 40 |
| [a] 90 days before calving. Adapted from Bellows and Short, 1978. | | | | |

**Table 3. Effect of feed level on factors other than dystocia.**

| Feed Level | Cow Weight Change | Milk Production | % Treated for Scours | Pregnancy Rate |
|---|---|---|---|---|
| Low (9 lbs. corn) | — | — | — | 65% |
| High (15 lbs. corn last 90 days) | 100 lbs. | — | — | 83% |
| Low (5 lbs. corn) | (-142.2 lbs.) | 9.1 lbs. | 52 | 68% |
| High (12 lbs. corn last 30 days) | (-21.8 lbs.) | 12 lbs. | 33.4 | 82% |
| Adapted from Bellows, 1978; Corah, 1978. | | | | |

Overfeeding heifers causes internal fat deposition, which obstructs the pelvic canal. In a beef cattle operation, overfeeding is seldom a major contributing factor to dystocia. All managers, however, must balance between achieving maximum frame growth without allowing excessive fat deposits. Fat heifers will have high incidences of dystocia just as often as underdeveloped heifers (Table 4). Feed heifers to calve with a body condition score of 5 to 6 (scale 1 to 9; 1 = emaciated and 9 = obese). These heifers will have a much better chance of producing a live calf with minimal difficulty and returning to estrus sooner than a cow in poor condition.

**Table 4. Effect of heifer condition at calving on dystocia.**

| | Calf Loss | |
|---|---|---|
| **Heifer Condition** | **At Birth** | **Within 24 hours** |
| Fat | 18% | 27% |
| Moderate | 9% | 0 |
| Adapted from Wiltbank, 1969. | | |

## Abnormal Presentation

Abnormal presentations cause some of the difficulty at calving. In a normal presentation, the feet are presented within an hour or so of the beginning of labor and the head follows on top of the knees. There is often a slight delay between the appearance of the feet and the head. After the head is presented, complete delivery should proceed rapidly. The posterior presentation only poses a serious threat when delivery is prolonged. If the hind feet are presented first, allow less time to pass before assistance is given. Slight deviations of one foot or the head can be easily manipulated and corrected. When more severe deviations occur, however, expert assistance from a large animal veterinarian may be needed. Remember: The only thing worse than doing nothing for a calf presented abnormally is to do everything wrong before calling the veterinarian.

## Summary

Many factors affect calving difficulty, which can reduce the maximum production capability of the calf and extends the post-partum interval of the dam. Producers who focus on sire selection, time of year they calve (temperature) and feeding may reduce the incidence of calving difficulty. Managing your herd with the goal of reducing calving difficulty should result in more live, vigorous calves that achieve desired weight gains, along with dams that breed during the designated breeding season, and ultimately improve overall production potential.

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