

# Cattle Producer's Handbook

Reproduction Section

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## Handling Calving Difficulties

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Reproductive problems cost the beef industry up to \$500 million annually. Approximately half of this financial loss can be attributed to calf deaths during difficult calving (dystocia), which can also lead to many negative outcomes in the cow such as retained placenta, uterine infection, and subsequent cow infertility. Calves that experience dystocia at birth are 13 times more likely to be born dead or die within the first 12 hours of life. If calves survive a difficult birth, they are 2.5 times more likely to become ill, and 5 times more likely to die during the first 45 days of life compared to calves with normal births. Therefore, cattle producers should always pursue management strategies that minimize the incidence of dystocia in the cowherd.

### The Calving Process

Understanding the anatomy of the cow's reproductive tract is the first step for good calving management. The major structures of the cow reproductive tract associated with calving are the vulva, vagina, cervix, and uterus. Specific information about the anatomy of the female reproductive tract is presented in fact sheet 440.

The fetus triggers the calving process by initiating a cascade of hormones that result in several biologic events. Briefly, when the fetus grows to a stage when uterine space becomes limited, the fetus becomes stressed and produces cortisol ("stress hormone") that leads to several hormonal changes in the cow's placenta. Other events that occur are stimulating stretching of pelvic ligaments, uterine contraction, cervix dilatation, and consequent delivery. Therefore, the fetus actually determines when it will be born.

During the last few weeks of pregnancy (up to 6 weeks), the cow's udder starts to develop and fill with colostrum, and the vulva swells. These are the first signs that calving is near. During the last 4 to 6 days of pregnancy, the vulva swells even more and the pelvic ligaments relax causing the area between the tailhead and pin bones to become loose and sunken.

The actual calving process can be divided into three stages that last up to 20 hours:

#### Stage 1—Preparatory Stage (2 to 6 hours of duration)

Fetal cortisol stimulates synthesis of maternal estradiol and, consequently, uterine contractions. As pressure inside the uterus increases, the fetus rotates so the front feet and head are positioned to the posterior of the cow (Fig. 1A). If the fetus is positioned incorrectly, dystocia (difficult birth) may occur. Uterine contractions become more frequent and begin to push the fetus toward the cervix, which starts to dilate and allows the fetus to enter the birth canal (Fig. 1B).

During Stage 1, cows typically show signs of discomfort due to the contractions. Producers may notice restlessness, arching of the back, straining slightly, and kicking at the belly. Cows may separate themselves from the rest of the herd and also urinate frequently. However, cows are still alert, fully aware of their surroundings, and may eat, drink, and behave normally. The end of Stage 1 is typically marked by expulsion of the water bag (Fig. 1C), which is the most external of the fetal membranes.

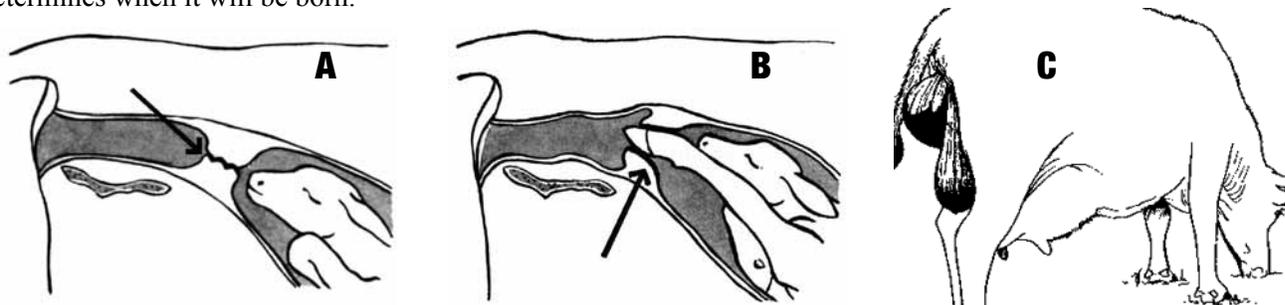


Fig. 1. The cervix is closed at the beginning of Stage 1 (A), but begins to dilate throughout this stage, allowing the fetus to enter the birth canal (B). Water bag expelled indicates the end of Stage 1 (C).