



## Biography:

Dr. Colin Palmer is an Associate Professor of Theriogenology (Animal Reproduction) at the Western College of Veterinary Medicine. Originally from Nova Scotia, Dr. Palmer worked in mixed practices in Ontario and British Columbia and has owned/operated a practice in Saskatchewan. Dr. Palmer along with his wife Kim and children Lauren, Emily and Carter run a herd of purebred Red Angus cattle under the KC Cattle Co. name.

## Dystocia - Prevalence and Risk Factors

Ask any question about calving and bred cow management and there will be no shortage of old wives tales, conjecture, and opinions. From time to time I like to review the literature to see if there have been any scientific studies to support or refute what we believe. You might be surprised at what I find.

Dystocia means difficult calving which can range from a very prolonged spontaneous calving to prolonged or severe assisted extraction. Any calving requiring a calf puller or a caesarean section would certainly qualify as a dystocia. We all know that assistance in the form of a light pull is often provided when it would have normally not been required - perhaps someone was there, or there was a reason for speeding up the process. These cases are more appropriately called assisted calvings rather than dystocias.

The number one cause of dystocia in cattle is fetomaternal disproportion (aka. feto-pelvic disproportion) and is the primary reason caesarean sections are performed. Heifers are more likely to experience this cause of dystocia than all other age groups combined. The two determinants of feto-maternal disproportion are calf birth weight and maternal pelvic size with calf birth weight being the most significant contributor. Birth weight accounts for 50% of the variance in dystocia, whereas pelvic size accounts for only 5 - 10%. These numbers seem reasonable since it is widely accepted that measuring the pelvic width and height (pelvimetry) is probably only useful for culling the very smallest heifers. Pelvimetry has fallen out of favour as a management practice largely due to an inability to predict dystocia. Small heifers may have small calves and large heifers may have large calves. Pelvic area at calving has been shown to be more predictable of dystocia than a pre-breeding measurement. Effective pelvic area can increase by as much as 15% at calving in heifers due to increased mobility of iliosacral joints, pelvic ligament relaxation, abdominal straining and changes in posture. However, using pelvimetry at calving as a replacement selection tool seems pointless. These facts support the position that reducing calf birthweight is a more effective way to reduce dystocia than selecting heifers based on pelvic size.

The occurrence of dystocia in beef cattle is declining

in Canada as evidenced by the substantial decrease in c-sections performed by veterinarians today compared to 15-20 years ago which was, in turn, modest in comparison to the 1970's and 80's. Calf birth weight can be influenced by many factors: gestation length, age of the cow, sex of the calf, sire, strain, breed, nutrition and climate; however, genetics accounts for 60% of the variation in birth weight. The use of Expected Progeny Differences (EPDs) to select sires with more modest birth weights deserves most of the credit for the reduction in dystocia. Calf birth weight is greatly influenced by gestation length. Two-thirds of calf birth weight is accrued during the last trimester with an estimated increase in calf birth weight of 0.3 – 0.4 kg/ day during the last month of gestation. Typically, male calves weigh 9% more than females; single calves 8% more than twins and calves from cows can weigh a whopping 15% more than those from heifers - average calf birth weight is reportedly highest at the third calving in Holsteins.

Reduced feeding during the last trimester will result in a negligible reduction in calf birth weight, but may increase the occurrence of dystocia due to insufficient uterine contractions and inadequate relaxation of pelvic ligaments. Calves may also be stillborn or too weak to stand; especially, when protein has been inadequate. I often hear of newborn calves apparently suffocating due to membranes over their nose. It is my opinion that these calves were most likely stillborn with poor third trimester nutrition being the suspected cause when there are a few to several occurrences within a herd.

Cold weather (< - 5oC), made even worse by wind chill, during the last trimester has been shown to increase calf birth weight and dystocia in cattle. Increased feed intake, increased thyroid hormone concentration, increased blood and nutrient flow to the uterus, and increase gestation length are all linked to cold climatic conditions. I suspect that we may see slightly higher average birth weights on the Canadian prairies this spring.

Fetal malposition occurs relatively infrequently (<5% of calvings), but is the number 1 cause of dystocia in all age groups of cattle with the obvious exception of heifers. Malpresented calves are at a 5 times higher risk of stillbirth probably because they are not noticed until it is too late. Herds that have a higher occurrence of twin