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.

A Breeder's ... Veterinary Perspective

Key Points for Breeding Bull Management

Bulls are an integral part of every cow-calf operation requiring your best when it comes to their management. The work never ends around most outfits hence the tendency to find a place to park the bulls for the winter; essentially, forgetting about them until it is time to pull 'em out, dust 'em off and turn 'em out to pasture. Protecting your investment and restoring him to his pre-breeding condition should be included on your management check list.

Bull breeding soundness evaluations are common place in beef cattle country. Most producers realize the importance of these exams and won't buy a bull unless he has been "semen checked". Sperm quality is important, but really only part of the picture. Physical soundness roughly translates into the ability to breed. Feet and legs need to be in good shape, bulls need two good eyes and they need to have adequate body condition to sustain themselves throughout the breeding season. Research has shown that scrotal circumference is likely the most important indicator of fertility in the breeding soundness evaluation. Because all bull testicles are essentially the same shape, scrotal circumference can be used to calculate testicle weight. In turn, testicle weight is very highly correlated with sperm producing ability with each gram of testicular tissue accounting for the production of approximately 17 million sperm daily. Each additional centimeter (cm) of scrotal circumference is equivalent to 50 grams (g) of testicular tissue, therefore, a bull with a 30 cm scrotal circumference has 200 g of testicle, whereas a bull with 38 cm has 600 g. In other words, three times as much sperm producing ability. Which bull would you rather turn out with a bunch of cycling cows? Scrotal circumference is also related to age of puberty of daughters and lifetime fertility of those daughters. Bulls with larger scrotal circumferences have daughters that reach puberty at a younger age and those daughters are more fertile over their lifetimes. These are the cows that get bred every year and generally during the first estrous cycle of the breeding season. Bulls with smaller than the minimum acceptable scrotal circumference can still have viable sperm, but they produce less of it and are more likely to have poor quality sperm. The combination of all of these negatives can cost your herd thousands in lost opportunity for years to come.

Scrotal circumference may also be influenced by the amount of scrotal fat that is present. Fat is deposited in many areas in the body including the scrotum. At one time it was believed that any and all scrotal fat would be found in the neck of the scrotum above the testicles, but feeding and testicular development studies have shown that fat can be found in the tissues encasing the testicles. The tendency to deposit fat in the scrotum increases after a year of age and can lead to, or be related, to erroneously high scrotal circumference measurements, poor semen quality and a lack of libido. Every spring I see bulls that have "melted", including a loss of scrotal circumference, after they have been switched to pasture or a forage-based diet. Bulls that have become fat from the feeding of high energy rations are also more likely to develop feet and leg problems later in life.

Satisfactory sperm quality indicated by greater than 70% normal sperm is in most cases the most important result from the microscopic assessment of sperm. Volume of semen, concentration, sperm motility and percent live sperm can all be influenced by the collection technique; however, in most cases when there is a real problem with sperm production or quality it will be evident in the sperm morphology assessment. A well done semen assessment should include all of these parameters and more often than not one or more will support the sperm morphology findings.

Every attempt should be made to examine the penis; especially, to see if it protrudes properly. Breeding bulls are prone to injury and young bulls may have warts, hair rings or congenital issues that can ruin their breeding potential. Sex drive and mating ability is often overlooked as it is impossible to assess during a routine breeding soundness evaluation. I encourage all bull owners to check bulls frequently during the breeding season to ensure that mounting and completion of the breeding process are occurring normally. If observations are made routinely and cows are cycling properly there should be no reason to discover a large number of open cows at pregnancy checking or calving.

Your bulls should be evaluated annually! Prior to the breeding season is ideal, but with enough time to find a replacement bull if one is needed. Remember, it can be really hard to find a bull in late June. Another issue I see is that some believe that the presale breeding soundness evaluation means that the bull will always remain highly fertile. Heat, stress, nutrition, toxins and genetics can influence sperm production with very serious insults to sperm production requiring months to recover from or in extreme cases causing permanent sterility.

Hard working bulls normally lose some condition throughout the breeding season, but excessive weight loss should be avoided. It is common for bulls, especially those with a body condition score in excess of 7 to 7.5 (9-point scale), or 4.0 (5-point scale) to lose up to 2 cm of scrotal circumference between the beginning and end of breeding season. Breeding seasons of not more than two or three months are not only important for calving management, but also provide several months to restore condition for the next breeding season. Encouraging weighing and body condition scoring of bulls is a sound practice on any operation. Breeding bulls should have a body condition score of 6 to 7 (9-point scale), or 3.5 (5-point scale) at the onset of the breeding season. In my opinion, Charolais, Angus and Hereford bulls with an average frame size and aged between 2 and 4 years, should weigh in the range of 1800 to 2100 pounds (820 to 950 kg) at the time of turnout and sport the look of a well-muscled athlete. Too heavy and they are more prone to feet and leg injury; too light and they will not have enough condition to sustain themselves throughout the breeding season. Bulls will usually consume 30 to 50 percent more feed than cows; therefore, the risk of bloat is compounded, especially, if feed quality or quantity are inconsistent. Depending on a combination of breed, individual characteristics and ranch management, overfeeding can be as much of a problem as underfeeding. Selection for "easy fleshing" animals has undoubtedly resulted in mature animals that will gain weight with surprisingly limited resources; especially if they are sedentary. Minerals and vitamins are essential to proper nutrition. Deficiencies of zinc, and vitamins A and E have been shown to have a direct, negative effect on testicular function. Other deficiencies may have an indirect effect via disturbances in hormone production that are integral to the regulation of sperm production.

In cold climates, consideration must be given to increasing feed quantity and quality during winter months as maintenance requirements dictate. All bulls, but especially those younger than 2 ½ to 3 years and therefore still growing, will often benefit from a pelleted supplement fed as part of a balanced ration. Providing easy access to fresh water at all times will help maintain bulls in adequate condition. Limiting water will also limit feed intake and having to walk a considerable distance to water will use additional energy. Adequate bedding and shelter from the wind are crucial for preventing scrotal frost bite. Don't forget about vaccination and parasite control. Bulls should receive the same vaccinations as the cow herd and the same treatments for internal and external parasites.