



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.

Perspectives on Artificial Insemination

Artificial insemination (AI) in cattle is hardly new technology with reports of cows being inseminated with fresh semen dating back to the middle ages. English scientists were the first to freeze bovine semen in 1949 which facilitated long-term preservation and widespread distribution that is undoubtedly the cornerstone event responsible for unprecedented genetic advancement that we have seen over the last several decades.

At one time, bull semen collection and distribution organizations were numerous. Mergers and consolidation over the last 30 years have resulted in fewer than 10 such establishments remaining in existence in Canada. Deregulation in the 1990s allowed the collection and freezing of bovine semen exclusively for on-farm use; without the need for lengthy health certification or accredited facilities. The number of cows inseminated in Canada actually peaked in the 1960s and has been in decline ever since. This decline should not be attributed to poor results, but instead is really a case of working yourself out of a job. The dairy industry has always utilized AI extensively. As productivity, more specifically milk production, improved fewer cows were needed; therefore, fewer cows needed to be inseminated.

The beef industry was initially reluctant to embrace AI fearing that it would reduce the value of bulls. The proportion of beef cattle Aled in Canada and the US remains small to this day and is largely limited to seedstock producers. Without at least some AI it is probably difficult to remain competitive in the purebred sector. Advantages for purebred producers include access to new genetics at an affordable price. Not only do they have a chance to have progeny from expensive bulls, but they can inseminate a few cows without the risk associated with breeding the entire herd to what may later turn out to be a genetic disaster. Having the ability to offer progeny from a variety of proven and marketable genetic lines to commercial bull buyers is another benefit.

Artificial insemination can also be useful for commercial producers. Yes, there are numerous top quality bulls being purchased nowadays by commercial producers, and few of us would argue the fact that a bull is more effective at detecting heat and breeding cows than we are – but there are advantages to be had through AI: 1) Uniformity of the calf crop – there is no way that natural service can exceed the ability of AI to generate large numbers of half-sib progeny in a single season. You could potentially AI 100 heifers, or more, all in the same day to a single AI sire. With a 60% pregnancy rate, 60 calves would be born over a 10 day to 2 week period; 2) Increased performance of calves – assuming that superior bulls are available through AI one can select bulls using highly accurate expected progeny differences (EPDs); 3) Access to proven genetics – many older AI sires will have 100's, or even 1000's of progeny with numerous sons and daughters in production. Semen from many excellent older sires may be available to commercial producers at a reduced cost; 4) Introduction of new genetics – sample a new line, or a new breed without buying a bull;

5) Potentially shorter calving season – complete your AI program on the first day of the breeding season and turn the bull in for cleanup a few days later; 6) Increased utilization of bull power – semen can be frozen from a valuable bull and used to inseminate more cows in a season. In addition, a successful AI program might enable a producer to keep fewer bulls; 7) Sexed semen – available from an ever increasing number of beef bulls.

So why don't more commercial breeders use AI? Probably because it takes too much time and is too complicated. Learning and perfecting the technical skills requires a short course and a great number of hours spent practicing with animals. For a beginner inseminator with a tank full of expensive semen, a long list of cows and no mentor, the first breeding season might well be his last. Twice daily heat checking gets old pretty fast; especially, if you have other jobs to do. I think the best solution for many of those wanting to try AI for the first time is to hire an inseminator and use Fixed-Time AI. Fixed-Time AI means that you pick the date and time you want to inseminate and then, with a knowledgeable accomplice, you choose the most appropriate estrus synchronization protocol to fit your situation. The most popular and generally effective protocols use a vaginal implant containing progesterone called a CIDR (pronounced Cē der, like the tree) which stands for Controlled Internal Drug Release. Cattle will need to go through the chute 3 to 4 times including insemination, but each time through handling gets easier. Protocols can be completed in as few as 8 to 10 days and cleanup bulls can be turned in about 10 days later; sooner if parentage will not be a concern at calving.

Most producers should be happy with a conception rate between 60 and 70% to a single insemination. Poor results are below 40 to 50%. Aside from putting good quality semen in the right place at the right time, success depends on a lot of little things I include under the heading MANAGEMENT. Cows should be at least 40 days post calving; 50 to 60 is even better and on a good plane of nutrition including an effective mineral program. Heifers should be at least 65 to 70% of mature weight. Facilities should be in good order and handlers should be skilled. Modified live vaccines should be administered weeks ahead of beginning a protocol to avoid inflammation of the ovaries that may reduce conception rates. All protocols should be written and times of treatment recorded. I prefer to use a 2 cc volume for each drug employed in the protocol to prevent dosing mistakes. Avoid including more cows than can be inseminated in a 4 hour period.

Calving distribution to a single insemination date will be within a 10 to 14 window; however, it is wise to be prepared to handle 1/3 of the calves over a 2-3 day period. Failure to do so could prove to be a problem in the event of a cold snap.

A successful first go usually leads to repeated use of Fixed-Time AI technology and the generation of many excellent herd replacements.