

Flushing with Sexed Semen

With the appropriate application, understanding and knowledge, the use of sexed semen in conventional embryo transfer can be a valuable tool for the beef producer.

Up to this point, the use of sexed semen with conventional embryo transfer has been limited – but as the availability and understanding of the use of sexed semen is growing, it is a reproductive tool that is increasing in both interest and application.

One of the reasons it has been limited has been due to the availability of sexed semen on popular sires. In the dairy industry where sexed semen has been most prevalent, elite bulls with high demand have not had sexed semen available. In the beef industry, only a small percentage of sires are available. Even when there is Sexed Semen available, it is predominantly packaged in a concentration suitable for AI, not ET.

Secondly, there has been common perception that sexed semen cannot be successfully utilized with conventional embryo transfer. Both availability and understanding of the utilization of sexed semen is growing rapidly.

How do you determine if the use of sexed semen in conventional embryo transfer is a wise choice in your program? Most importantly, one must determine if there is a significant difference in the value of the male and female offspring. If not, un-sexed semen will provide the best results at the lowest cost.

Fertilization rate with sexed semen will likely be decreased. The number of viable embryos will be reduced by 10 to 50 percent when compared to unsexed controls. There are two main reasons for this decrease. First, the semen has been through the sorting process, which adds additional stress to the sperm cell. Secondly, low dose inseminations are being utilized. Conventional straws contain 15 to 35 million, while sexed semen straws prepared for embryo transfer contain 5 million.

Embryo programs averaging 6 transferrable embryos per collection would likely be reduced to 3 to 5.4 embryos per collection. However, one would expect 90 percent of the resulting embryos to be of the desired sex. An important point to realize is that even if you decrease the number of embryos you receive, you may have more of the desired sex. If you were looking for more females and decide to use sexed semen in flushing, you may take your embryo yield per flush from six to four. Thus, you should expect 3.6

female embryos as opposed to 3.0 with unsexed semen (90 percent vs. 50 percent sex ratio).

Even if you produced less heifer embryos, one still may be ahead. This reduction may seem significant – however, the ability to decrease gestation costs of the unwanted sex maybe much more significant. If one has a limited number of resources or recipients, the opportunity costs of having half of your calves being the unwanted sex is high. In these situations, the most cost effective means is to eliminate the unwanted sex at fertilization or in the embryo dish.

Equally important to the decision, is the management of using sexed semen, the handling of the semen, insemination timing and insemination dose. Trans Ova Genetics recommends using five million count straws and inseminating with one straw at 12 hours and two straws at 24 hours post standing heat. Semen is often available as two million or five million count straws. It is important to make sure that the semen has been prepared for embryo transfer purposes. Because these straws have much lower sperm numbers, the technique is of much greater importance than conventional semen. AI equipment must be able to accommodate ¼ cc straws.

In order to ensure proper insemination timing, estrus detection surveying time must be increased as to determine when the donor was in first standing heat.

Donor selection is also an important component to consider. Not only does one need to select donors that have a difference in gender value of their offspring, but donor selection should include consideration of fertility. In general, heifers and young fertile donors will respond well with sexed semen. This is not an application to attempt on donors that are geriatric, problem breeders, or have provided poor results or reduced fertilization rates in previous embryo transfer attempts.

A commonly asked question is if straws of previously frozen semen can be thawed, sexed, and utilized in embryo transfer. While this is widely used in IVF where limited sperm numbers are required, it is NOT possible in conventional embryo transfer. In IVE, around half of the donors have oocytes fertilized with sexed semen. This is because there is no decrease in embryo production. While there is a decrease with conventional embryo transfer, and therefore a decrease in application, it is still an extremely valuable tool with the appropriate situations and management techniques.