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## **Q&A: FROZEN CANINE SEMEN AND ITS USE**

### **WHEN IS FROZEN SEMEN USED?**

Frozen semen is used in a variety of situations. Often, frozen semen is used for convenience. For example, if the stud dog is on the show circuit and unavailable for breeding or collection, frozen semen is a good alternative. Another advantage of frozen semen is that it can be shipped weeks or months before the female is in estrus and can be stored on location ready to use when it is needed. In cases where the stud dog is old and no longer fertile, semen collected and frozen at an earlier time, when the stud dog was fertile, can be used. If the stud dog is deceased, frozen semen is the only option available. Frozen semen can also be used for various types of DNA tests to be certain the stud dog is not a carrier of specific heritable disorders.

### **WHAT IS THE DIFFERENCE BETWEEN FREEZING SEMEN IN PELLETS OR IN STRAWS?**

Semen can be frozen in pellets or straws. The extenders, semen freezing methods, and thawing techniques are different for these procedures. We are experienced in both techniques, however, it has been our experience that when freezing guidelines are carefully followed, canine semen has a very good post-thaw recovery when we freeze in pellets using ICSB proprietary extenders and media. This is the technique we have chosen to use to maximize conception rates for our clients' animals.

### **HOW DOES DR. VANDERLIP DETERMINE A BREEDING/INSEMINATING DOSE?**

International Canine Semen Bank (ICSB) has developed a list of the ideal number of live-motile sperm required per insemination with ICSB frozen pellets *for each individual breed*, based on more than 35 years of experience inseminating canines with frozen pellets and recording the doses that yielded the best results on average for each breed, depending on the ICSB media used and the inseminating techniques. The ICSB "Inseminating Dose per Breed" information is proprietary, but ICSB can share that our experience is that the required number of live-motile sperm post-thaw required to maximize chances of conception varies, sometimes significantly, among breeds. An ICSB "inseminating dose" is what we have found to be sufficient to achieve a pregnancy with one single insemination. Many dogs produce more than one inseminating dose per semen collection. The number of inseminating doses produced depends on the stud dog's fertility, semen quality, sperm count, post-thaw motility, and breed.

### **HOW MANY INSEMINATING DOSES ARE THERE IN A COLLECTION?**

Depending on the stud dog's fertility, a single semen collection can yield more than one inseminating dose and several frozen pellets. When the semen is pelleted, one frozen test pellet is always thawed and assessed, to make sure the post-thaw quality and motility are good, before the balance of the semen is placed into storage.

## **WHAT IS THE RECOMMENDED INSEMINATING TECHNIQUE?**

In the 1980s and 1990s, we performed the majority of artificial inseminations using frozen pelleted semen by simple vaginal insemination using an inseminating pipette or rod, or by surgical inseminations. Because every reproductive case is different, we still offer these inseminating technique options to our clients, however, in many cases we recommend transcervical insemination (TCI). This technique involves the use of a cystourethroscope and a small video camera to visualize the inseminating process, which entails passing a small catheter through the cervical opening to deposit the semen directly into the uterine tube. The TCI procedure is brief, painless, and non-invasive. TCI allows the semen to be deposited directly into the uterine tube without subjecting the bitch to the risks and discomfort of anesthesia and surgery.

## **HOW MANY INSEMINATING DOSES ARE NEEDED?**

The majority of pregnancies that Dr. Vanderlip has achieved in canines over the years have been accomplished using only one inseminating dose, however, the number of doses used depends on many factors, including the stud dog's fertility and the female's breeding/conception history. Correct timing of insemination is essential to achieve a pregnancy. Of course, the higher the post-thaw, live, motile, sperm count is and the better the semen quality is, the greater the chances are for conception when the insemination is correctly timed.

## **WHAT IS THE AVERAGE LITTER SIZE USING FROZEN SEMEN?**

As with natural matings, litter sizes can range from one puppy to many. Influencing factors include (but are not limited to) accurate timing of the female's estrous cycle, the female's fertility, and the post-thaw quality and sperm numbers in the dose of frozen semen used. Dr. Vanderlip's largest litter to date from semen she collected, froze, and shipped to Australia, is 15 puppies (Rottweilers). That number is exceptionally high. More typical are three Great Danes inseminated using semen collected and frozen by Dr. Vanderlip. Two litters consisted of 6 puppies (semen shipped to New Zealand) and there were 8 puppies in the third litter (semen shipped to Canada). All three Great Dane bitches were inseminated using TCI technique.

## **HOW LONG CAN THE SEMEN BE PRESERVED STORED IN LIQUID NITROGEN?**

As long as there is liquid nitrogen in the tank, the semen should retain its original freeze quality. ICSB has produced litters from semen frozen by ICSB and stored for more than 38 years. Dr. Vanderlip has produced several litters of her own Collies from semen frozen by ICSB more than 15 to 20 years ago.

## **DOES PELLETTED SEMEN WORK FOR OTHER SPECIES?**

Yes! ICSB has produced offspring of other species in addition to canines using ICSB semen freezing techniques, such as equines (including a mule!) and exotic wild mammals—even dolphins!