Optimizing conception rates:
Natural, Fresh Chilled, and Frozen Semen Breedings

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PCA – what an exciting and amazing event for poodle people! And this year was no exception, with multiple winners and placers from a variety of countries; the PCA "national" becomes more and more "international" as owners and breeders want to show off their best of the best. As poodles were exhibited from all over the United States as well as other countries, this article will focus on how to "import" bloodlines without necessarily involving shipping dogs. When one wants to breed to a dog who resides in another country, or across a country as large as the U.S., sometimes shipping the bitch to the dog is an impossibility. There will also be a brief description on how to optimize conception with natural breedings, which may be particularly important if one breeds to an older dog.

Gone are the days when one simply puts the dog and the bitch together and lets nature take its course. With the time, effort, and money put into many breedings, as well as the fact that bitches at a maximum come into season twice a year, optimizing conception rates and litter size is a must. Also, it is not always feasible to ship the bitch to the dog, given distance, airline schedules and restrictions. When using a natural breeding, timing is not as critical, however even natural breedings can result in non-conception if the fertility of the dog or bitch is not optimal at the time of breeding.

In a young, healthy stud dog, with minimal stress, the average life span of fresh chilled semen is 4-6 days. In an older dog, or a dog with a busy show schedule, the life span of fresh chilled semen may be as low as 24-48 hours. Frozen semen has an even shorter life-span at an average of 12-24 hours. In all cases, quality of the semen, motility, viability, and sperm count, as well as proper ovulation timing and fertility of the bitch, are critical. Another crucial aspect of planning fresh chilled and frozen breedings is the experience of both the veterinarian collecting and shipping the semen, and the veterinarian timing and inseminating the bitch.

Before planning a fresh chilled or frozen breeding, the bitch owner should find out if the stud dog has successfully reproduced using these methods, how many puppies he averages per litter using these methods, and if he has recently reproduced successfully using these methods. Even if a stud dog has successfully reproduced using fresh chilled semen in the past, it does not mean he will continue to have high quality semen as he gets older. It is also important to note that different collections of frozen semen can have different viability and may not be of the same quality. A general word of advice to stud dog owners: especially for frozen semen, it is best to collect a dog when he is young and healthy, as sperm count and quality are at their highest level.

It is important to plan ahead for a fresh chilled breeding. The stud dog owner should have had the dog's semen test chilled and determine if fresh chilling is even an option. If semen quality is sufficient, a fresh chilled breeding must be coordinated between the collecting and inseminating veterinarians, and the bitch owner must have accurate ovulation timing performed. When the bitch comes into season, the inseminating veterinarian should begin vaginal cytology

(evaluating the cellular changes of the lining of the vaginal vault) within 5 days of the first day color discharge was noted from the bitch.

Once the vaginal cytology has reached 50% or greater cornification (changes of the epithelial cells in response the estrogen stimulation), ovulation timing using either progesterone or luteinizing hormone assays should begin. Progesterone is a hormone which is rises during the estrous cycle preceding the release of luteinizing hormone (LH). Progesterone is necessary to prepare the uterus for implantation of the fertilized eggs, and for maintaining pregnancy, however it is not the hormone which causes the release of the eggs from the ovary. Luteinizing hormone is the actual metabolic signal to the ovaries to release the eggs which leads to ovulation.

The advantage of using progesterone measurements for ovulation timing includes drawing blood every other day, having a variety of assays available, and decreased expense. The disadvantage of progesterone timing is that it is not the primary hormone indicating egg release. Progesterone can, in fact, rise up to 48 hours before the LH release. In either a natural or fresh chilled breeding, the sperm will usually live long enough to allow for some variability in determining the fertile period. In frozen semen breedings, where the sperm usually live less than 24 hours, it is crucial to determine the exact day of ovulation. In natural and fresh chilled breeding, it is recommended to breed the bitch on days 3, 5, and 7 or days 2, 4, and 6 post-progesterone rise. This should adequately cover the fertile period and any variability in progesterone release. If only two breedings are possible then either days 3 and 5 or days 4 and 6 are recommended. If only one breeding is possible then day 4 or 5 is ideal. Progesterone will remain elevated for approximately two months post-estrous, regardless of whether or not pregnancy has occurred.

The advantage of using LH testing for ovulation timing is that one is testing the actual hormone which stimulates release of the eggs. The LH will surge approximately 48 hours before release of the eggs. LH spikes will occur over a period of 12-24 hours, making daily measurements a requirement for accurate timing. It is important that the bitch have blood drawn every day and at approximately the same time each day. This can be very difficult for the bitch owner and veterinarian to coordinate, and often makes progesterone timing more appealing. Also, serum samples which are hemolyzed (containing lysed red blood cells) or lipemic (containing fat droplets) can affect the accuracy of the results. In the case of frozen semen breedings, where semen lives less than 24 hours, using a combination of progesterone and LH testing to pinpoint ovulation is ideal. When using LH testing, it is recommended to breed 4-5 days post-LH surge using either natural or fresh chilled semen, or 5-6 days post-LH surge using frozen semen.

When planning frozen semen breedings, the planned method of insemination is important. There are three methods for insemination: 1) vaginal insemination using a sterile pipette and placing the sperm as close to the cervix as possible, 2) trans-cervical insemination using a sterile pipette with or without endoscopic visualization of the cervix, and 3) surgical intra-uterine insemination. When properly performed, including careful handling of the semen, methods 2 and 3 are the most successful.

There are several important facts to note concerning fresh chilled and frozen breedings. First and foremost, the fertility of the dog and bitch are paramount. It is not recommended to use frozen semen on a virgin bitch or one which has a poor reproductive history. Conversely, it is not recommended to use fresh chilled semen from a stud dog who has a low sperm count or decreased viability and motility due to age or other factors. Secondly, semen collection and ovulation timing are crucial – if the veterinarian performing either of these tasks is inexperienced, chances of a successful pregnancy will be lower. The stud dog should feel comfortable in order to release the highest quality sperm, and if the veterinarian is inexperienced or rushed in the collection, quality can be affected. Also, proper handling and chilling of collected semen is important and again can affect semen quality. On the receiving end, ovulation timing, handling, evaluating, and inseminating a semen collection, also requires experience and an understanding of the metabolic cycle of the bitch.

In general, one does not save any money using fresh chilled or frozen semen as opposed to shipping the bitch to the dog. In many cases, using these methods can be much more expensive than shipping. The advantage is, when the stud dog is not available for a natural breeding, one can still have access to his genetic material. Many factors can lead to a stud dog not being available for a natural breeding – a busy show schedule, location, age, health, and sadly, death. Frozen and fresh chilled methods offer the bitch owner the opportunity to perform a breeding which might otherwise have been impossible. After seeing the wonderful quality of stud dogs at PCA in all three varieties, it is nice to know that there are methods available to increase the chance of using the stud of choice, regardless of distance or otherwise, in a breeding program.