

CANINE ARTIFICIAL INSEMINATION

Dog breeding can be confusing for breeders and owners, especially those just getting started. For example, natural mating or artificial insemination (AI) are the first options to consider. If AI is chosen, then you must decide whether to use fresh semen, fresh chilled semen or frozen semen. Then, you must consider whether to use vaginal insemination or surgical insemination to impregnate the bitch. It is helpful to contact a veterinarian who specializes in AI to help you better understand the process and to supervise the process. When weighing dog breeding options, your most important concerns should be to protect your animal and to make sure the potential results are satisfactory to both breeders. If things were ideal, a tied mating through natural breeding would achieve maximum fertility and result in a successful litter. However, in breeding, conditions are not always ideal.

Avoiding Breeding Concerns

Behavioral problems are a frequent reason breeders turn to AI. A nervous or aggressive bitch who will not allow a stud to mount her or a stud dog who doesn't understand the process are examples. "Sometimes you'll run into a stud dog, especially a young one, that just doesn't get it," says Fran Smith, DVM, Ph.D., a small-animal theriogenologist in Burnsville, MN. "On the other hand, behavior in experienced stud dogs is remarkable. An experienced dog can detect receptive behaviors in the bitch." Some dogs simply won't attempt to breed. "If every time your dog tried to mount another dog before you decided to use him as a stud, you corrected it as negative behavior, then his sexual behavior might be affected by the past experiences," Smith says. An excitable dog that becomes erect before penetrating the vagina is another example of a sex behavior problem. Normally a male dog becomes fully erect after penetration; otherwise, vaginal penetration is shallow and the mating dogs are unable to tie for successful breeding. A dog's environment also can play a role in sexual behavior. Dogs perform best on their home turf. Their sexual behavior may be inhibited in a strange place. For natural matings, the bitch should be brought to the male's home. If it's not possible, or if the male exhibits aggressive behavior toward the bitch, then AI is an option.

The Advantages of AI

As a breeding option, AI offers distinct advantages. It provides convenience for owners and breeders. It eliminates the cost, risk and time involved in shipping bitches. From the stud owner's point of view, if the dog is having a great field or show year, AI allows his semen to be collected and used to inseminate bitches without disrupting current activities. AI using frozen semen allows breeders to continue breeding from an outstanding stud long after he is dead. For the young stud showing great promise, his semen can be collected and stored in the event of his untimely death or infertility. Another benefit of AI is its exactness. Semen quality and quantity is known. In natural matings, people hope for the best and deal with anything less afterward. Since AI allows dogs to be bred without coming in contact with each other sexually, the risk of transmitting sexual diseases

also is minimized. Robert Hutchison, DVM, a canine reproduction specialist in North Ridgeville, OH, says the choices for AI are clear. "if the bitch is ready and the stud dog is nearby, then by all means naturally mate the animals," he says. "But, if for some reason they can't or won't mate, then using AI with fresh semen is the way to go. If the stud dog is not available, then AI with fresh chilled semen is the next best option." Fresh semen that is chilled or cooled stays best up to six days, with maximum fertility limited to the first 48 hours. In the uterus, sperm cells that have been chilled at 40 degrees Fahrenheit are viable for 24 to 72 hours. This narrow window of viability means owners, breeders, and veterinarians must time ovulation and inseminate as precisely as possible. Both Smith and Hutchison agree that quality of the semen, the correct number of high-quality sperm cells available for each insemination, and the timing of the insemination are key to producing the largest litters of healthy pups. "When proper timing of the estrous cycle is performed and proper semen handling and delivery is accomplished, AI conception rates rival those of natural breeding," says Hutchison. Problems in otherwise healthy animals that reduce AI efficiency include improper placement of the semen rod, improper placement of the semen, and semen damage due to mishandling.

Methods of Insemination

Vaginal insemination involves inserting a rod loaded with semen into the bitch's vagina and advancing it to the cervix opening. Called the os, the cervical opening is the ideal place to deposit semen. Once the rod is in place, the semen is deposited and the rod is withdrawn. Surgical insemination allows for direct insemination of the semen into the uterus. Similar to the technique used to spay a bitch, it involves injecting semen into the exposed uterus through a needle. Surgical conception rates using frozen semen closely match those of natural mating, Hutchison says. Fresh chilled semen can also be used in surgical AI. Surgical insemination provides an opportunity to examine the bitches suspected of having uterine or ovarian diseases. In addition, giant and toy breeds, with historically poor conception rates, can benefit from surgical insemination. The technique also benefits males with low sperm cell counts who have difficulty impregnating bitches in natural breeding. Laparoscopic insemination, a less invasive and potentially faster surgical procedure, is a new technique becoming more prevalent. In laparoscopy, a small telescope inserted into the bitch's abdomen is used to locate and identify the uterus for semen injection. Regardless of the type of artificial insemination used, it is important to properly prepare a stud dog's semen for transportation. Extenders are chemical solutions added to semen for transport or frozen storage. Though extenders do not determine AI success, say Smith and Hutchison, without them semen would not survive. Extenders increase the volume and protect sperm cells from factors that can reduce their ability to fertilize the ovum. "There is no "magic" extender," Hutchison says. "For instance, we use three different formulas." A good extender needs to do four things. "It needs to have the right pH, a measure of the acid/base balance in a solution; it needs to have the high osmolarity, a measure of a solution's concentration; it needs to provide a source of nutrition and energy for the cells, and it needs to be formulated to protect the cells through the critical phases of chilling and rewarming or freezing and thawing," Hutchison says. State regulations determine who can perform an AI procedure. Check with your

veterinarian to learn the regulations in your state. You also should check with breed registries and national breed kennel clubs to learn their rules regarding who can perform an AI procedure in order to register a litter.

Registering AI Litters

Owners and breeders considering artificial insemination (AI) to produce registered dogs are advised to contact breed registries and their national breed kennel club to learn the latest policies and guidelines. Most kennel clubs encourage breeders to communicate early and often and to keep meticulous records of their correspondence, especially when considering using imported semen. Written correspondence sent by registered mail, return receipt requested, is crucial for documentation in the event there is a question regarding registration. While some kennel clubs have a voluntary registration program and make no distinction regarding the AI method used to produce a litter, others require DNA certification for stud dogs collected for fresh, extended, and frozen semen use, including foreign stud dogs collected for imported semen use in the United States. Some organizations require that a veterinarian be involved in the process. When frozen semen is used, registration rules are sometimes more stringent. Some kennel clubs require semen collectors/storers to be on record as complying with record keeping regulations and identification of dogs. In addition, a special litter application form must be submitted containing the certifications completed by the owner of the semen, the owner of the dam, and the veterinarian who performed the artificial insemination. Use of imported frozen semen is sometimes considered only on a case-by-case basis and provided the breed registry or kennel club has received notification several months before an intended insemination. To obtain registration policy and guideline information, contact breed registries and your national breed kennel club. Some clubs even post registration information on the Internet.