



## **Breeding Management**

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### **Ovulation timing**

Ovulation timing is typically performed by measuring the bitch's serum progesterone concentration. Progesterone is measured serially every 1-3 days to indirectly determine when the LH surge and ovulation have occurred. Ovulation timing should begin very early in the cycle of a bitch that has never been bred before or that has been bred unsuccessfully in the past. Ovulation timing can begin later in the cycle if the bitch's reproductive history has been previously established. Progesterone will be low at the beginning of proestrus and will increase to 1.6 – 2.0 ng/ml at the time of the LH surge. At ovulation, progesterone concentrations reach 4.0 – 10.0 ng/ml. Progesterone concentration continues to increase until approximately 25 days after ovulation and then decline over the next 30-40 days.

### **Breeding management with natural mating**

Natural mating is the most successful and widely used form of breeding management and requires the least amount of monitoring. Typically, the bitch is introduced to the stud dog every few days while she is in heat until she will stand to be bred. Once the bitch stands to be bred, she should be bred every other day until she will no longer stand.

Although this is usually highly successful, it should be remembered that some bitches will ovulate after being in heat only a few days and others ovulate after being in heat for several weeks. In addition, some bitches will refuse to stand for the dog, even when in estrus. Ovulation timing allows the breeder to more accurately determine when the bitch should be bred and also allows the breeder to accurately determine when the bitch is due to whelp.

### **Breeding management with fresh semen artificial insemination**

Some breeders choose to have artificial insemination (AI) performed even when the dog and bitch are both readily available. Typically, some ovulation timing is performed to minimize the number of AIs that are performed and to ensure they are performed at the optimal time. When using fresh semen, the bitch is inseminated anywhere from 24 hours before to 48 hours after ovulation. Two AIs are generally performed 48 hours apart. Fresh semen has a very long life span in the uterus (5-10 days).

### **Breeding management with shipped-cooled semen**

The use of shipped-cooled semen allows breeders to breed to stud dogs located in different parts of the country or even other countries without having to ship the bitch. Ovulation timing is performed and semen is ordered to arrive 3-4 days following the LH surge and again about 48 hours later. Cooled semen has a relatively long life span in the uterus (3-4 days).

## Breeding management using frozen semen

Ovulation timing is essential when using frozen semen. Ideally, 2 intrauterine inseminations are performed 4-5 and 6-7 days after the LH surge. The semen is thawed immediately prior to insemination. Intrauterine insemination is necessary for success.

### Methods of artificial insemination

During a natural mating, the dog deposits semen in the cranial vagina of the bitch. The semen is then forced through the cervix, into the uterus during a series of prostatic fluid pulses that follows ejaculation of the sperm-rich fraction the ejaculate.

There are 3 basic artificial insemination methods in the bitch. The first, **vaginal insemination** is performed routinely by most veterinarians and many breeders. Vaginal insemination involves inserting an insemination pipette into the bitch's vagina and advancing it to the cranial vagina. Semen is injected through the pipette into the cranial vagina. The bitch's hindquarters are then elevated to allow gravity to assist the transport of semen through the cervix and to prevent backflow of semen out of the vagina. The benefits of this technique are that it is simple to perform and requires minimal equipment. The disadvantages are that semen is deposited in the vagina and not in the uterus.

The second method is called **trans-cervical insemination (TCI)**. This method requires specialized equipment and training. The procedure involves passing a small, rigid camera through the bitch's vagina until the cervix can be visualized. A flexible plastic catheter is then passed through the cervix into the uterus. Semen is injected through the catheter directly into the uterus. This procedure is performed on the non-sedated bitch and is well tolerated by the majority of bitches. The benefits of TCI include the ability to perform intrauterine insemination without anesthesia. Intrauterine insemination is necessary when using frozen semen and greatly increases the success rate of fresh and cooled semen inseminations. The disadvantage is that it is not yet widely performed because it requires specialized equipment and training. Trans-cervical insemination cannot be performed on some very small dogs because of size limitations.

The final method of artificial insemination is **surgical insemination**. During this procedure, the bitch is anesthetized and her abdomen is clipped and prepared for surgery. An abdominal incision is made (much like a spay) and the uterus is located. Semen is injected directly into the uterus using a needle and syringe. The advantage of surgical insemination is that it allows direct intrauterine deposition of semen and evaluation of the uterus and ovaries in the process. The disadvantage is that it is a surgical procedure, the bitch must undergo general anesthesia and will require a lengthy recovery period before she can resume her normal activities.