Predicting Ovulation and Timing for Optimum Breeding of Your Bitch

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When finally, you have decided to mate your bitch, having given much thought in the choosing of the ideal match for her, and making the necessary arrangements to convey her to the stud dog – there is nothing more disappointing than hearing that she had no interest in your best laid plans, and was already on her way out of standing heat upon her arrival. Conversely, if you are the owner of a stud dog, it can be a challenge to figure out just when the visiting bitch should be bred, especially if the owners are not really sure exactly when she started into her cycle, and you are wondering if she is just 'early', or 'too late'.

There is something akin to the 'Peter Principle' when it comes to breeding – 'accidental matings' or matings with little pre planning can seem to happen effortlessly, while those whose owners have gone to great lengths in forethought, plans and arrangements, are fraught with roadblocks and disappointment! However with the advancement of knowledge in the field of canine reproduction, there are some readily available tests that your vet can provide you with to help more accurately predict the optimum time to breed your bitch. This is especially helpful with bitches that are reluctant or first time breeders, have a history of irregular cycles, or if you are planning on using artificial insemination with chilled or frozen semen.

The Estrous Cycle of the Bitch

The estrous cycle of the bitch consists of four stages:

1) **Proestrus: Begins with the first signs of an observable heat cycle, including softening and swelling of the vulva, a bloody vaginal discharge, and the bitch may be attracting inspection from both other male and female dogs. Estrogen levels are rising during this time. Typically this period will last 9-10 days, although some bitches may have either a shorter or longer proestrus phase than what is described as typical. Non-observant owners can often miss this time in the bitch's heat cycle, especially if she is quite fastidious about cleaning herself, if she is in a single dog household, and if the owner does not specifically inspect her vulva for changes, (especially with rough coated bitches with heavy petticoats).**
2) **Estrus: During this phase, the discharge generally lightens in colour from a frank red to a straw or clear colour. The vulva continues to soften, and the bitch may exhibit 'standing' or 'flagging' behaviors, indicating her receptiveness to accept a male for mating. Several key hormonal changes are noted in this phase; estrogen levels decline, while progesterone levels rise. Additionally, luteinizing hormone (LH) rises rapidly, with a sharply defined peak, corresponding with rising progesterone. Ovulation occurs within 24-48 hours after the LH peak. Bitches will often accept a male for breeding multiple times over a four to five day period, including just prior to ovulation and just after eggs are released from the ovaries.**
3) **Diestrus: Diestrus signifies the end of the bitch's fertile period, and begins approximately 6-10 days after the LH surge. Progesterone levels continue to rise, and will remain elevated, as this hormone is necessary to maintain pregnancy.**

4) Anestrus: This is the transition phase between one heat cycle and the next. Progesterone levels return to baseline gradually in the non-pregnant bitch, and just prior to whelping in the pregnant bitch. The reproductive tract will 'rest' for a number of months, with some hormonal changes occurring to prepare the bitch for her next heat cycle. This interval can vary considerable between bitches, with some cycling every 6 months, and some every 9-10 months, with the bitch usually keeping a similar interval or time period between heats by the time they reach full maturity.

Tracking Hormonal Changes to Predict Ovulation

Identifying the LH surge and corresponding rising progesterone levels, is possible with simple blood tests, which your vet can draw, and usually have the results within 24 hours. As these levels are rising and peak in a short window of time, it may be necessary to repeat blood work over a period of several days to track and identify the LH peak. It is recommended to breed on days 2 and 4, post LH surge, as this is the start of the time when the bitch will be most fertile. Normal healthy sperm can live within the reproductive tract for five days, and so breedings performed a day or two before ovulation can still impregnate the released eggs during this fertile period. Accommodations for earlier breedings may be suggested with using chilled or frozen semen, or when using an older male with diminished sperm count or volume, as the longevity of the sperms' viability will be shorter.

In addition to blood testing for hormone levels, your vet may first consider doing a simple vaginal smear, which can be immediately viewed on a microscopic slide, which also can be helpful as an aid to tracking the bitch's progression through her cycle. The vagina is lined with squamous epithelial cells, which normally are present in only a very thin layer, expect for during the proestrus and estrus phases of the bitch's cycle. As these layers thicken, the cells will change from normal epithelial cells to 'cornified' epithelial cells. When predominately cornified cells are present, the bitch is in proestrus or estrus. This alone is not enough to predict ovulation, but if the cells have reverted to mostly non cornified cells, then the Diestrus phase has commenced, and so in this manner, it is possible to tell when a bitch will no longer be fertile or capable of breeding. This simple cytology review can confirm that a bitch is now past the time when she can be bred.

As a breeder and owner of stud dogs, I now discuss the availability and possible use of both a vaginal smear, and hormonal blood testing as aids to facilitate a successful breeding; especially if the bitch owners are not sure of the start of the bitch's cycle. Optimally, I will hope that the owners have made arrangements to send her to me earlier rather than later in her heat cycle, so that I can put her with the prospective male daily and thus have them both together when 'the timing is right'. I now would not hesitate to utilize the testing for my bitches, especially maiden bitches that I was having to ship any distances to an outside stud dog, as I would want to optimize a positive outcome for breeding, with as much help at my disposal as reasonably possible.

Experienced male stud dogs can become as reliable indicators as to when a bitch is ovulating as any lab work; but with difficult matings where the timing in uncertain, or when 'nature has not taken its own course', it is good to have some data and objective findings to aid a much anticipated breeding or confirm a missed opportunity.