



Reproductive Management of the Female Dog

A Public Service Brochure from the
American College of Theriogenologists

Physiology of the Estrous of Cycle

After a bitch reaches puberty between six and 24 months of age, she will be sexually receptive (in heat or estrus) twice a year. The average period between heats is seven months. Heats may occur any time of the year and last an average of nine days (range 3 to 21 days).

The reproductive cycle in the bitch has distinct phases that must be recognized to ensure proper breeding management. These phases are influenced by hormones, which are responsible for the changes in the reproductive tract and behavior in the bitch.

1. Proestrus

This period is dominated by increasing levels of the hormone estrogen, which causes swelling of the vulva. A blood-tinged discharge is often seen at this time.

The male dog may be attracted during proestrus, but the female usually will not permit him to breed. Late in proestrus a second hormone, progesterone, begins to increase while estrogen begins to decline. The combination of these two events is responsible for the bitch demonstrating receptivity to the male.

2. Estrus

Decreased swelling of the vulva, cessation of the bloody discharge and acceptance of the male are characteristics of estrus (heat).

3. Diestrus

The beginning of this phase is characterized by the refusal of the male.

4. Anestrus

This is a period of sexual inactivity. The length of this cycle phase varies from one female to the next but usually lasts for several months.

Breeding Management

Many bitches will not fit into the “average” cycle. Therefore, proper management of the individual brood bitch is required to ensure a fertile mating and the delivery of a litter of pups. Sexual behavior differs greatly between bitches and by itself is not a reliable means of monitoring cycles. Greater accuracy in the timing of breeding can be achieved by combining behavioral observations with daily vaginal cytologies and measurements of serum progesterone levels.

Monitoring vaginal cytology and serum progesterone levels should begin after the first day of proestrus. The vaginal lining changes in response to estrogen levels and the cell types presented are characteristic for the different stages of the reproductive cycle. During proestrus and early estrus, the number of layers of cells increases as much as tenfold and the most superficial cells are altered to resemble those much like the outer layer of skin.

Late in estrus with the decline in estradiol levels, the vaginal lining quickly returns to normal. Progesterone levels begin to increase. Maximum fertility occurs between four and six days following this initial increase.

Each bitch should be exposed to a male only when the vaginal cytology demonstrates she is in estrus. Cytologic estrus and elevated serum progesterone levels correlate with increased conception rates.

Additional breedings should take place at three to four day intervals as long as the vaginal cytology samples indicated the bitch is still in heat. When the cytology sample indicates that diestrus has begun, breeding should cease. If she becomes pregnant, the bitch should be expected to whelp 56 to 58 days from the first day of diestrus.

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