Popular Article

How to Breed Dogs: Comprehensive Methods and Best Practices

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Abstract

This comprehensive review explores three distinct methodologies for optimizing canine breeding outcomes. The first approach centers on breeding based on sexual behavior, emphasizing the significance of observing and understanding the natural mating cues exhibited by canines. The second strategy involves breeding guided by vaginal exfoliative cytology, focusing on the examination of cellular changes in the vaginal smear to determine the most fertile stages of the estrous cycle. The third approach delves into breeding based on ovulation timing, incorporating both vaginoscopy and hormonal assays. Vaginoscopy, performed every other day from the early stages of proestrus, aids in detecting crucial signs such as shrinkage without angulation, signaling the onset of ovulation. Concurrently, hormonal assays provide quantitative insights into hormonal fluctuations, offering an additional layer of precision in timing mating events. Each approach presents unique advantages and considerations. Breeding based on sexual behavior harnesses natural cues, while vaginal exfoliative cytology provides a non-invasive means of identifying optimal breeding periods. The ovulation timing approach combines vaginoscopy's visual indicators with hormonal assays for enhanced accuracy. By comparing and contrasting these methodologies, this review aims to guide breeders in selecting the most suitable strategy for their specific breeding objectives.

Introduction

Bitches have only few cycles in their reproductive life, hence it is most important to determine the exact day of breeding in order to get puppies. Several options are described below

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that would help to decide when to breed or perform AI in a bitch.

Primary Objective in Breeding

Ensuring a consistent presence of an ample quantity of sperm in the reproductive tract at the time of ovulation.

Different methods of breeding

1. Breeding based on Sexual Behaviour.
2. Breeding based on Vaginal Exfoliative Cytology.
3. Breeding based on Ovulation timing – based on Vaginoscopy and Hormonal assays.

1. Breeding based on Sexual Behaviour

From the fifth day of proestrus bleeding, introduce the female to the male and observe her receptivity for a duration of 10-20 minutes. If she does not permit mating, return her and repeat the process every two days until acceptance. The day she accepts the male signifies the onset of estrus.

Breeding strategy: Start mating once every four days until the female declines.

2. Breeding based on Vaginal Exfoliative Cytology

From the fifth day of proestrus bleeding, collect and examine the vaginal smears every other day. The presence of >80% superficial and cornified cells in the smear is the distinctive characteristic of cytologic estrus.

Breeding strategy: Multiple matings throughout the period of standing estrus.

3. Breeding based on Ovulation timing

This breeding management aims to identify the LH surge.

a) By utilizing vaginoscopy, either with a rigid or a flexible fiber optic endoscope, insert the endoscope into the vagina in a cranio-dorsal direction. Observe changes in vaginal mucosal folds, contours, profiles, colour of vaginal mucosa and nature of any fluid to determine the stage of estrus.

During anestrus, vaginal mucosa is relatively flat, dry and red in appearance. With the onset of proestrus, the mucosal folds are greatly enlarged, edematous, pink or white in colour with serosanguinous fluids within the folds. During late proestrus or early estrus, corresponding to the declining estrogen levels causes the abrupt withdrawal of the water retaining edematous effect of estrogen resulting in shrinkage of the vaginal mucosal folds without angulation. This wrinkling is

referred to as crenulation. Progressive shrinkage occurs and the mucosal folds assume an angulated appearance. The absence of angulation with shrinkage is indicative of ovulation.

Breeding strategy: Conduct vaginoscopy every other day, commencing from either day 5 or 7 of proestrus. Ovulation is signaled by the initiation of shrinkage without angulation. Subsequently, engage in breeding after a 2-day interval, and repeat the process 48 hours later.

Advantage: Achieving conception is possible with just one mating during the fertile period.

Disadvantages: Relies on subjective observations and involves the use of costly equipment.

    b)   Hormone assays: estimation of LH and progesterone

LH: Determining the time of LH surge is helpful in predicting the ovulation, since ovulation occurs 24 to 48 hours after LH surge. For estimation of LH hormone, enzyme linked immunosorbent assay (Status LH, Synbiotics, San Diego CA) are available in the international market.

Disadvantage: Daily blood sampling, short shelf life.

Breeding strategy: Breeding should be planned between four and six days after the LH surge.
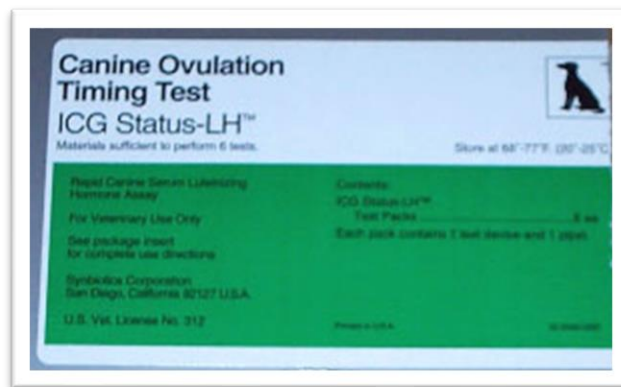
P4 assay: Progesterone may be measured quantitatively by radioimmunoassay or by enzyme linked immunosorbent assay or qualitatively by using commercially available progesterone ELISA kits.

While testing quantitatively, serum or plasma samples should be drawn from the time when the vaginal smears shows about 70% cornification and evaluate once in 2-3 days until levels of 4-10 ng/ml is reached.

For qualitative assay, samples need to be drawn from about 4th day after onset of proestrus and evaluate every other day until 4-10 ng/ml is reached.

Serum progesterone (ng/ml)	Event
2.0-2.9	Day of LH surge
3.0-3.9	Day 1-2 after the LH surge
4.0-10.0	Ovulation day

Breeding strategy: Breed after 2 days and rebred after 48 hours.

Conclusion

In conclusion, the varied approaches to canine breeding—based on sexual behavior, vaginal exfoliative cytology, and ovulation timing—offers diverse tools for optimizing mating decisions. Each method has its unique advantages, catering to different preferences and circumstances. Higher conceptions were achieved with the help of these breeding strategies.

Acknowledgment

References:

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