

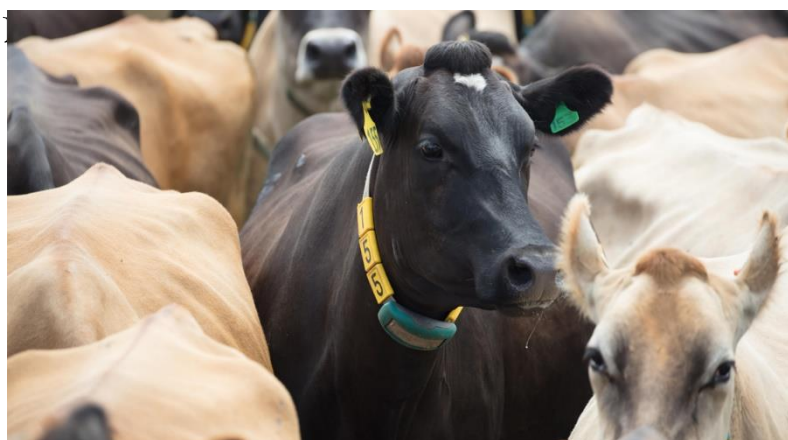


Popular Article

Estrus detection and its importance in livestock animals

Dr. Piyali Kuri & Dr. Nripendra Singh

Assistant Professor in the Department of Veterinary Physiology and Biochemistry at M.R. College of Veterinary Science & Research Centre Hasanpur Jhajjar
Ph.D. Scholar, Department of Veterinary Anatomy & Histology, College of Veterinary Science & Animal Husbandry, OUAT, Bhubaneswar, Odisha



Abstract

Scientific theories and high-tech equipment are thought to be necessary for the development of dairy farming in order to fulfill the demands of the industry's rapid expansion. Estrous detection is crucial for livestock animals as it is related directly to production performance and reproductive efficiency in dairy farming. Inaccurate estrus detection results in lost revenue from longer calving intervals, milk loss, veterinarian expenses, etc. Several aspects must be taken into consideration in order to accomplish accurate estrus detection.

Keywords: Estrus, Ovarian follicle, CL and Cow

Introduction

The livestock industry has grown significantly in recent years, and managing cattle breeding operations is now a crucial aspect of the expanding sector. Estrus identification is crucial for managing cattle breeding, among other things. Cattle are artificially inseminated after estrus identification by livestock farm managers and if estrus behaviors are not promptly identified, the limited window for artificial fertilization may be lost, and the cattle's infertile phase may continue. A time of estrous cycling starts when cows enter their postpartum anestrous period or when heifers reach puberty (first ovulation). Every 21 days or so, an estrous cycle gives a cow or heifer the possibility to get pregnant. Each estrous cycle contains two to three follicular wave-like patterns, as a set of follicles develop synchronously, one of them becomes dominant and grows to the largest diameter, suppressing the growth of the other, smaller, subordinate follicles and this phenomenon is known as a wave of follicular growth (Pierson et al., 1987)

by the development of the corpus luteum (CL). The length of an estrous cycle is measured by the number of days between each standing estrus.

Visual observation

Heat detection techniques frequently use visual observation. It requires a skilled observer to detect and record symptoms of heat. When a cow or heifer permits other cattle to mount her while she is still standing, that is the surest sign that she is in heat. We refer to this as standing heat. It is the window of opportunity for sexual activity for females. Cattle oestrus typically lasts 15 hours, however it can also last anywhere from less than 6 hours to almost 24 hours.

Signs of estrous

The following behaviors are indicative of being in the heat of cow:

- I. Mounting or attempting to mount other cattle
- II. Standing to be mounted by other cattle
- III. Smelling other females
- IV. Following other females
- V. Bellowing
- VI. Having a decreased appetite
- VII. Acting nervous and excitable
- VIII. Having mud on their sides and hindquarters
- IX. Having roughed up tail hair
- X. Having clear vaginal mucus discharge
- XI. Having mucus smeared on their rump

Following standing estrus, the dominant follicle that is present in the cycle will ovulate, referred to as ovulation and release the egg/ovum it contains, and this occurs between 24 and 32 hours after the onset of standing heat. When an ovum is released from an ovulatory follicle, the egg enters the female reproductive system and, if the female has been mated, is fertilized.

Ovarian follicle and CL:

Follicle development in cattle follows wave-like patterns. Normally two to three follicular waves are found during each estrous cycle of a cow. These waves in cattle can be seen during most of the reproductive stages, including the prepubertal stage in heifers, estrous cycles, and pregnancy. In cattle, the development of the ovaries' follicles leads to the selection of a single dominant follicle that can mature to the point of ovulation once or twice during the luteal phase, toward the conclusion of the estrous cycle, as well as during other reproductive phases. Lysis of dominant follicle which is also known as luteolysis occurs when a fully grown dominant follicle ovulate and becomes corpus luteum and if no luteolysis occurs then the growing follicle leads to atresia.

Methods of heat detection:

1. **Fern pattern of cervical mucus discharge:** During estrus cervical mucus displays a distinctive fern pattern. More branching in the fern pattern indicates the right moment for insemination. A device called a cystoscope can also be used to view the air-dried stain.
2. **Uterine tone:** The uterine horns become upright, coiling, and turgid during estrus. That is among the most trustworthy signs of estrus.
3. **Heat expectancy charts:** This straightforward management tool enables the recording of heat and the prediction of the time of the following heat so that cows can be observed more closely at the time of the following predicted heat.
4. **Use of teaser bulls in female heard:** Vasectomy bulls, androgenized steers/cows, and surgically altered bulls/Gomer bulls are the ones that show interest in an estrous cow, alerting the stockperson to its presence. If they have chin ball markers, they are more useful.
5. **Use of Ultrasonography for monitoring of ovarian status:** The knowledge and understanding of follicular dynamics and the number of developing follicles have improved as a result of monitoring ovarian function in cattle using ultrasonography. Estrus identification and ovulation timing are precisely guided by ultrasonography. Ultrasonography has an efficiency rate of between 85 and 95 percent.

Conclusion:

India ranked first in the world for milk production, but cow productivity is not adequate. Not recognizing the estrus indication is a frequent issue. On dairy farms, accurate estrus identification is essential because it connects to pregnancy and results in the highest milk production for each cow.

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