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### Introduction

Most cow operations would benefit economically by reducing the number of operational days, decreasing culling rates due to non-pregnant females, and shortening their calving interval. Several factors influence reproductive performance, but none require more visual attention than heat or estrus detection.

Cows come into estrus at all times of the day and remain in heat for only 12-18 hours making it difficult to observe especially in hot weather. Keeping cows in groups of three to five with two to three visual observations per day for heat, will increase the chances of detecting cycling animals. The use of synchronization and heat-detection aids can greatly shorten the time spent observing heat but will not benefit non-cycling cows or Anestrous Cows - a condition where the cow does not cycle due to insufficient natural hormonal stimuli. This is different than apparent anestrous due to failure to observe estrus (missed heats). Cycling cows require management that pays attention to details, supplies high-quality nutrition, and provides exceptional cow comfort, including hoof health.

There are primary and secondary indicators of heat. The primary sign of heat occurs when the female stands immobile and allows other animals to mount her. Each stand lasts only 4 to 6 seconds.

Secondary indicators may signal that a cow is in heat, coming into heat or going out of heat. These include:

- mounting other cows
- clear mucous discharge
- chin resting and rubbing
- swollen red vulva, frequent urination
- muddy flanks and ruffled tailhead
- bawling, restlessness, sniffing behavior
- decreased milk production and off feed

The decision to inseminate a cow should be based on standing heat, not on secondary signs of heat.

### There May be Inaccurate Heat Detection if...

- More than 20% of the cows bred on natural heat are inseminated based on secondary signs of heat. This does not apply to estrous synchronization (timed breeding programs where cows are bred at a prescribed time)
- Cattle inseminated on natural heats are bred within 12 hours of the onset of heat (this does not apply to timed breeding programs)

### Effective Heat Detection Should Consider These Questions:

- Is there a high priority for heat detection?
- Do personnel understand the true signs of heat?

- Is there enough time allotted for heat detection?
- Are protocols for heat detection followed?
- Is there one person responsible for insuring that heat detection is performed?
- Are specific individuals responsible for observing estrous behavior?
- How many of the last 10 cows were bred on the basis of true standing heat?
- How often is the herd observed for heat?
- If estrous detection aids are used to supplement heat detection are they used properly?
- Are reproductive events, specifically heats, recorded and posted so other employees know
- Which cows to anticipate in heat?
- What is the voluntary waiting period?
- Does the herd manager intentionally delay the interval to first service beyond 85 days?
- Is the average interval between services greater than 42 days? (this is a diagnostic indicator of the post-breeding heat detection rate)

## Resources

Drill-Down Tools. Penn State University, Dairy and Animal Science. <http://www.das.psu.edu/research-extension/dairy/pa-tool/drill-down-tool>.

Graves, M. W., 2009. *Heat Detection Strategies for Dairy Cattle*. University of Georgia. [http://www.caes.uga.edu/Publications/displayHTML.cfm?pk\\_id=6304](http://www.caes.uga.edu/Publications/displayHTML.cfm?pk_id=6304).

Pennington, A. J., *Heat Detection in Dairy Cattle*. FSA4004. University of Arkansas, Division of Agriculture. Web. [http://www.uaex.edu/Other\\_Areas/publications/PDF/ESA-4004.pdf](http://www.uaex.edu/Other_Areas/publications/PDF/ESA-4004.pdf).

For more information visit [www.umass.edu/cdl](http://www.umass.edu/cdl)

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