



# Cattle Producer's Handbook

Reproduction Section

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## Tips to Improve A.I. Pregnancy Rates

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Numerous factors contribute to the success of an artificial insemination (A.I.) breeding program. The four factors that affect A.I. pregnancy rate include percentage of females detected in heat and inseminated, inseminator efficiency, fertility level of the herd, and fertility level of the semen. Attention to detail in each of these factors is important for obtaining high pregnancy rates.

With A.I., we assume the role of the bull and should focus our efforts on breeding and settling each female within the herd. Listed below are some of the little things that improve our odds of consistently obtaining high pregnancy rates.

The percentage of females that are inseminated within a herd depends on the efficiency and accuracy of heat detection as well as the percentage of females that are cycling. Proper development, genetics, sound herd health, adequate nutrition, and the time interval since calving will dictate the percentage of heifers and cows that are cycling. As long as females are individually identifiable, our accuracy at heat detection (percentage of cows exposed to A.I. that were actually in heat) is usually quite high. However, our heat detection efficiency (ability to accurately detect all heats) can vary greatly between operations, and is dependent upon the intensity and duration of estrous behavior exhibited by the cow and the amount of time we spend observing cows for signs of estrus.

### Heat Detection Efficiency

Synchronization of estrus increases estrous behavior among cows and increases our heat detection efficiency. When the estrous cycles of beef cows are synchronized, the average number of times a cow stands to be mounted per heat at least doubles (Table 1). In addition, the average

duration of estrus (defined as the time interval between the first and last time a cow stands to be mounted) increases from 8 to 12 hours.

By dividing the total time spent displaying standing behavior by the duration of estrus, we find that the average cow exhibits standing behavior only .005 to .04 percent of the time she is in estrus (natural and synchronized heats, respectively) (Table 1). It is no wonder that so many heats go unnoticed.

The net effect is that cows whose estrous cycles are synchronized spend 10 percent more time each estrous cycle exhibiting signs of estrus, and thus, producers have a 10 percent greater chance of detecting each cow in heat. Also, estrous synchronization decreases the number of days that producers must observe cows for signs of estrus, so it is easier to allocate sufficient time for this important task.

A Colorado study showed that 10 percent fewer cows exhibited estrus only during hours of darkness if their estrous cycles were synchronized (3 vs. 28 percent, for

**Table 1. Estrous behavior intensity of natural and synchronized heats in beef cows.**

Measurement	Natural heat	Synchronized heat
No. of mounts/cow (Range)	22 mounts (2 to 68)	48 mounts (2 to 211)
Duration of mounts (Range)	4.5 seconds (2 to 22)	3.5 seconds (2 to 24)
Duration of estrus (Range)	8 hours (.02 to 22)	12 hours (.1 to 27)
Total time spent displaying standing behavior (Range)	99 seconds (9 to 306)	168 seconds (7 to 739)