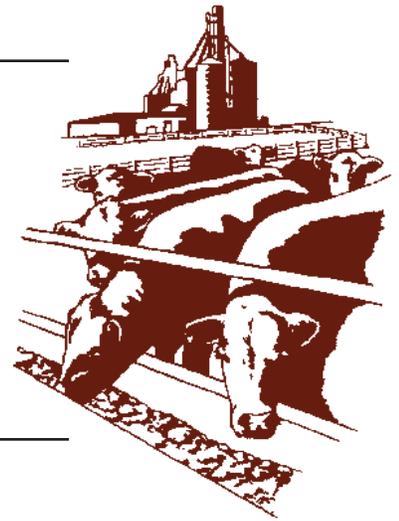


Beef Cattle Handbook



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Heat Detection of Beef Cattle

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New techniques and less expensive products for estrous synchronization have increased the use of this management practice for both commercial and seedstock producers. Hand-in-hand with synchronization comes the need for accurate heat detection.

The intent of this fact sheet is to describe in detail what signs to look for when detecting heat. Although cows are referred to throughout the text, the information applies to yearling heifers as well.

Defining Terms

Estrus, or standing heat, is defined as a regularly occurring state of sexual receptivity during which the female will accept the male. This is indicated in cattle by the cow standing to be mounted by a bull or other cows. Standing heat typically lasts for about 12 -18 hours, but some cows may stand as short as four hours or as long as 24 hours. The term "estrous cycle" refers to the whole sequence of hormonal and reproductive changes that take place from one heat period to the next. The length of the estrous cycle averages 21 days, but may vary among individuals, with 17 - 24 day cycle lengths being common.

Physiology of Standing Heat

Standing heat is the product of a series of hormonal changes. One important hormonal change is related to estrogen production by the follicles on the ovaries. As the time for the next heat approaches, the estrogen output from the primary follicle increases. The estrogen is released into the bloodstream where it is transported to the brain. The estrogen activates the central nervous

system, causing the behavioral changes associated with standing heat.

Signs of Standing Heat

Heat detection is simply the observation of changes in behavior that are due to coming into or being in standing heat. The most definite behavioral change is standing firmly while mounted, with the mounting or riding process repeated several times. The goal of good heat detection is this, before declaring a cow in heat and eligible for artificial insemination, she must be observed standing solid while being ridden. Sometimes, this is a goal that can't be achieved for all cows. A few cows may not be observed in standing heat simply because the heat detector is not in the right place at the right time for observation. In addition, with heat synchronization, an overwhelming number of cows may be showing heat, making it very difficult to see each individual cow actually standing. Therefore, all other signs pointing toward a standing heat must be evaluated.

Through changes in behavior, some physical changes are created that may be associated with standing heat. Individually, these changes may not allow for a confident decision on whether or not a cow should be bred. However, with some experience in heat detection, if enough changes have been noted, a confident decision can be made without actually seeing the cow stand.

The following are signals that a cow may be coming into heat. These signs may be observed from 4 - 48 hours before the onset of standing heat.

Nervousness. This may be observed in excessive, nervous walking, accompanied by bawling. Don't expect

them to be moving at a fast walk without ever stopping, but do watch for movement when other cattle are relatively stationary, as when grazing, nursing calves, laying down, etc. Periodic grazing while walking, or frequent trips to the feed bunk might be observed.

The hyperactivity may start 4 - 48 hours before standing heat and will last until the cow goes out of heat. The duration of hyperactivity before standing heat is extremely variable between individuals. Hyperactivity is nature's way of helping the cow attract a bull or search one out herself. Along with nervousness, cows may appear to be more observant and give the appearance of studying their surroundings or looking for something. Cows that are uncommonly nervous should be checked closely the following 1 - 2 days.

Riding others in heat. The cows that are doing the riding may or may not be in heat or coming into heat themselves. The cow that mounts a few times, drifts off and shows no further interest probably warrants no serious observation. However, the cow that is constantly riding others and doesn't drift away from the activity, or perhaps goes away and comes back, should be checked closely. Look for a thick, clear mucus discharge and signs of having been ridden. Cows that are in heat usually thrust quite vigorously with their hips when riding another cow. This resembles the movement of a bull when breeding a cow. This string of mucus may be expelled from a cow in heat as she rides other cows.

Congregation. Cattle in heat naturally seek each other out, forming little clusters of activity. Several, clusters may be formed when a large number of cattle are in heat at the same time. Watch for little groups of cattle that are on the move and for fence line attraction between two groups of cattle in bordering pastures. If there is little riding activity in the heat detection pasture, a cow in heat may try and seek out the neighbor's bull, or she may be attracted to cows in heat across the fence. This may be particularly notable if the cow is a long distance from herd mates or in an area not commonly grazed. If a bull is observing from across the fence, he may be excited and trying to ride something in his own bunch, even if they are not in heat.

When a cluster of cattle is noted and there appears to be excessive, uncharacteristic movement, including some cows attempting to ride others, the cluster should be monitored closely. Make careful note, either mentally or in your heat detection book, which cows are present in these clusters. Attention to detail and knowing which cows are participating is the only way to later use more subtle signs of standing heat.

When working with synchronized cattle, it is desirable (and most times essential) to sort them as soon as you are confident they are standing. Some cows will be rode excessively if left in the bunch, which probably isn't a problem, but other cows may be in heat and are going undetected. After sorting and restructuring the social group, new cows will usually be detected. Sorting in increments of 10 - 25 head allows easy handling and leaves enough riding activity to keep the larger group

interested.

If possible, pen the "hot" cows where they can be viewed by the remaining cattle. Make note of the individuals that walk briskly up to the fence to watch the others ride each other. These cows will often times be bawling more than normal. Quite often individuals displaying this type of behavior are 1 - 12 hours away from standing heat. Because of the attraction between cows in heat, penning the "hot" cows in view of the remaining cows, and next to an empty pen, may make sorting much easier.

Small amounts of mucus. Some cows will have a small amount of mucus that may be observed when she is lying down or upon standing up and stretching. This is not to be confused with the long string of clear, thick mucus associated with standing heat. A small amount of mucus is not too uncommon, and by itself may not be a good indicator that heat is approaching. However, this does represent a potential change in heat status and the cow should be watched closely the next couple days.

The signs described in items 1 - 3 above may be observed among cattle from 48 hours prior to, through the duration of standing heat. The items below usually indicate actual standing heat, or a cow that is less than 12 hours from coming into heat.

Thick, clear mucus. Estrogen also affects the reproductive tract itself, causing a thick, clear mucus to be released within the cervix. This mucus aids in the lubrication of the bull's penis during natural mating and in sperm transport into the reproductive tract. The physical activity of riding other cows, being ridden or stimulation of the reproductive tract while Aling may cause the mucus to be expelled. Often times the mucus is observed hanging from the vulva, where it becomes caught on the tail. As the cow switches her tail, the mucus may be smeared over each rear quarter. Dried mucus will leave a very distinct mark for several hours.

All cows in heat should produce cervical mucus; however, the mucus may not be expelled by all cows in heat. Observing thick, clear mucus, or evidence of this mucus on the tail or hip, should be taken as a strong indication of standing heat. These cows should probably be inseminated even if they are not observed standing.

Close physical contact. This goes along with congregation of cattle. This may include cows standing head to tail and circling, butting heads in mock fighting, and chin resting on the back, or rubbing on the hip of other cows.

For example, cattle will frequently place their chins on the back of another animal before attempting to mount. Sometimes they will vigorously rub their chin along the hip or back and push with their body at the same time. Cattle may also be observed standing head-to-tail, with chin resting on the hip, while circling and pushing with their bodies. This also is a prelude to mounting and may be accompanied by mock fighting or head butting.

Cows in heat will form attachments with each other. They may try and prevent other cows from riding their

partner. Head butting and attempting to drive the other cow off is commonly observed.

If heat detection is being performed when the cattle are grazing, look for cows that are almost touching each other. Cows don't normally stand close together, and if you watch long enough, you might catch a brief mount. Cows nursing calves do not ride as vigorously during their grazing mode if only a few cows are in heat.

Swollen vulva. A characteristic of standing heat that is often mentioned refers to a somewhat reddened and swollen, loose vulva. Practical experience suggests that this may be very subject to interpretation and difficult to view, and is thus of limited value as a heat detection aid.

Natural markers. Normally the hair on the tail-head is lying down and pointed toward the tail. A cow that has been ridden hard will sometimes have the hair rubbed off her tailhead down to the hide. Before this occurs the hair may be roughened up to the point where it sticks almost straight up. The hair on the sides along the hip and over the hip may be rubbed off, in the case of cows that haven't shed off, or have a roughened, disorganized appearance in shorter haired cows. This is created by being gripped by the front legs of the cow that is riding. Muddy conditions create an excellent natural marker, as the cows will have mud plastered on both flanks and maybe further up along the back ribs. Care should be taken when using mud and hair loss as a sign of being ridden. Both sides of the cow in question must show the signs, as a cow could not have been ridden and marked on only one side.

Hot iron hip brands that are fresh, but scabbed over make excellent heat detection aids. When ridden the scab will be peeled off, leaving the brand a bright-red color. Brands should be applied about 6 weeks before heat detection starts. Normal branding procedures for ownership (as calves, on locations other than the hip) will limit the use of this aid; however, it might be useful to use a year brand for heat detection purposes.

Cattle can be inseminated based solely on natural markers with good results, if the heat detector is observant and knows approximately when the cow might have been standing. Thus the natural markers can be used effectively only if you have a record from the previous heat detection period of cows that showed signs of approaching standing heat.

Calf Behavior. It is true that calves will try and ride cows in heat. They will also try and ride cows that are not in heat. So, being ridden by calves is not a very reliable heat detection aid. However, if 2 or 3 calves are determined in their efforts to follow and mount a cow, perhaps she should be watched.

Cows in heat travel the pasture and consequently the calf sometimes gets left behind. Take note of the calf that's bawling and acts like they are looking for their dam or haven't nursed for awhile. The dam could possibly be in heat.

Bloody Discharge. Two to three days after standing heat, a bloody discharge from the vulva may be

observed. Evidence of a bloody discharge may be present on the tail or rear quarter. The bloody discharge is normal and only means the cow was in heat, and if not inseminated already, it is too late. A bloody discharge has no relationship to whether or not conception occurred.

General Heat Detection Considerations

Cycle lengths of 7-10 days are termed "short cycles." Beef cattle may have a short cycle after the first standing heat postcalving or after the pubertal heat in heifers. The short cycle is caused by a short-lived corpus luteum. The heat preceding the short cycle is not fertile, the next one will be fertile and the cow that short-cycles should be inseminated again.

Establish a heat detection routine that allows initial observation of the cattle without disruption of their estrous behavior. Therefore, don't do anything that will cause the cattle to be distracted from riding cows in heat, for instance, allowing the cattle to hear the sound of the feed vehicle, feeding the cattle, gathering before observation. If possible don't check heat in the same vehicle used to carry the feed.

Cattle confined in close quarters will try mounting each other. If mounting activity is observed when the cattle are being herded or after they are corralled, take some time to determine if anything is actually standing.

Heat detection is a skill that is learned through experience. Some producers experienced in heat detection suggest that 20 - 30 minutes night and morning is adequate, others suggest 45 minutes to an hour is necessary. In practice, time spent on heat detecting should be based on how long it takes you to be confident that you have found all the cows in heat. It is a bad feeling when you leave the cows, wondering if you have missed a heat. It is true that very early in the morning and in the evening are the best times to heat detect, particularly cow/calf pairs on grass.

If 100 percent of the cows or heifers in a management group are cycling, then about five percent should show estrus each day. A daily average of less than five percent may be indicating that a portion of the females are not cycling, and estrous synchronization results may be disappointing. This may also be an indication of inadequate heat detection.

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