

DAIRY CATTLE BEHAVIOR



BASICS

OVERVIEW

- Understanding dairy cattle behavior helps humans handle cattle in a safer manner and to identify changes in animal well-being.
- Dairy farmers can use their knowledge of animal behavior to improve cow well-being and milk yield.
- Cattle require the basic needs of food, water, shelter, health, and protection from predators, but other factors related to animal well-being are less understood.
- When the physiological and safety needs for cattle are not met, a dairy operation may experience immediate economic consequences; however, restricting an animal's ability to perform essential behaviors may lead to chronic issues and cumulative economic consequences.
- Cattle maintenance behaviors include eating, drinking, moving, self-grooming, escape activity, resting and rumination, and elimination of feces and urine.
- Conditions that do not allow cattle to meet their behavioral needs typically cause increases in abnormal or stereotypic behaviors. For example, providing limited feed access may lead to tongue rolling behavior.
- Cow housing should provide adequate resources (feed, water, and shelter) and space for all animals to minimize agonistic interactions, improve cow well-being, and support productivity.
- Frequent changes in milking or feeding routines, cow grouping, and stall location may cause additional stress to cows. These incidences should occur as little as possible.

Environmental Perception

- Cows learn readily and respond well to routines.
- Similarly to humans, cattle rely on their five senses to perceive their environment, but cattle have excellent hearing and are sensitive to high-pitched noises.
- Cattle have panoramic vision of 330° with a blind spot directly behind them. Their vertical vision is about 60° (140° in humans) so they lower their heads to focus on objects.
- The poor visual depth perception and definition in cows causes them to balk and resist walking over shadows on the ground.
- Humans walk about twice as fast as cattle. In unfamiliar environments, cows will walk particularly slowly and require enough time to move at their preferred pace.
- Cattle use their sense of smell to identify pheromones related to reproduction and feed selection.
- As prey animals, cows prefer being in groups or herds rather than being isolated.
- The use of new automated technology on dairies appears to be well-received by cows. For example, dairies that converted to automated milking machines experienced increases (on average, about a 5% increase) in milk yield.

Social Behavior

- Dairy cattle are social animals that move as a herd or group led by dominant individuals.

- Each group establishes a social hierarchy in which cows encounter agonistic interactions to determine dominance. Once a social hierarchy is identified, the number of agonistic interactions decreases.
- Dominant animals have first priority for resources and space. They are usually the older cows with more aggression and higher seniority in the group.
- Non-dominant individuals are typically the last cows of the group to walk to and from the parlor.
- Agonistic interactions have three steps: approach, threat, and physical contact.
- As stocking densities increase in pens, more agonistic interactions occur, cow well-being decreases, and a decrease in milk yield may transpire.
- Cows use vocalization and olfaction to communicate; however, visual cues provide the most common form of communication.
- The social development of calves assists with their adjustment to group housing post-weaning and later in life. Calves housed in pairs or groups during the pre-weaning phase resume normal feeding patterns more quickly upon introduction into post-weaning group pens.

Animal Grouping

- As herd sizes increase and loose housing systems gain popularity, the grouping and re-grouping of dairy cattle has become more common.
- Dairy cows are divided into groups according to production level, parity, stage of lactation, reproduction status, health status, or body condition score.
- Regrouping cows may result in increases in aggressiveness and social stress, causing detriments to milk yield, feed intake, locomotion behavior, and somatic cell counts. The reduction in milk yield occurs for only 1-2 weeks, but is significant for cow well-being and performance.
- Non-dominant animals are affected the most by regrouping. Therefore, group composition can influence the degree of social problems observed in different regrouping events.
- It is recommended to keep first lactation animals separated from the older, more aggressive animals.
- To alleviate social problems within groups, the most aggressive cows can be moved to other groups.
- Allogrooming (social licking) indicates formation and maintenance of social bonds.
- Familiar cows can be regrouped together to make social integration easier.
- Mixing of cows in estrus should be avoided because they show a higher frequency of agonistic interactions.
- The number of agonistic behaviors of cows housed indoors is greater (9.5 per hr) than on pasture (1.1 per hr). Agonistic behaviors recorded included pushes, threats, butts, and avoidance.
- After moving cows into new pens, handlers are encouraged to observe and monitor how the cows are adjusting to their new environment. In particular, changes in feeding behavior, lying time, and body condition should be observed.
- Calves reared in isolation and then moved into group housing systems after weaning are susceptible to social stress because they have not learned how to interact with other animals.
- Rearing calves in isolation may result in adult cows that lack social interaction knowledge. They become less dominant, potentially more stressed, and less interactive with other cows.

Lameness, Handling, and Behavior

- Lameness is a major concern for dairy cattle well-being in dairies.
- The incidence of lameness is greater when lying time in cows is reduced. There are significant negative correlations between lying time and the incidence of hoof lesions.
- Social and individual cow behavior may play a role in the development of lameness.

- Non-dominant cows spend less time lying down, and more time standing half in the stalls and standing still in the alleys than higher-ranking cows. Non-dominant cows try to avoid dominant cows so they spend less time lying, in case they need to move away from dominant cows.
- Lamé cows return from the parlor later and lie down more than non-lamé cows.
- Negative consequences of lameness include decreases in animal well-being, feed intake, and milk yield.
- Toe abscesses were reduced by 50% in a beef feedlot where quieter handling methods were used. One cause of toe abscesses is scuffing of the toes when cattle get agitated in a chute.
- The behavior of the herds person in moving cows may relate to the incidence of lameness.
- It is most efficient to move cows by walking slowly and quietly. Move cows from the side and not from directly behind them. They cannot see directly behind them so they spend more time turning their heads to look behind them rather than moving forward.
- Startling cows with loud noises or sudden movements causes them to balk or run. Running may lead to cows slipping and injuring themselves or others.
- Proper handling methods should be implemented with calves at an early age to help them learn how they should behave as adult cows.
- Negative human-animal interactions in the milking parlor causes a stress response that negatively impacts milk letdown.

Feeding Behavior

- Cattle eat and drink using their lips, teeth, and tongue.
- When eating grass, cattle use their lips, teeth, and tongue to secure forage and rip it from the pasture.
- When they eat concentrates and preserved forages from a feed bunk/manger, they use their tongue to a larger extent.
- Feeding behavior in cattle may be influenced by grouping strategy, feeding system equipment, and the physical characteristics of the feed. Additionally, the availability of feed (and bunk space) greatly influences whether non-dominant cows are able to perform normal feeding behavior. The goal is to reduce competition at the feed bunk.
- Cows on pasture tend to synchronize their feeding times to a higher degree than cows housed indoors, possibly as a result of increased competition for feed when indoors.
- Cows that participate in synchronized eating tend to consume more and be more productive.
- The delivery of fresh feed has the greatest impact in attracting cows to the feed bunk.
- In loose housing confinement systems, the highest competition at the feed bunk occurs when cows return from milking or fresh feed is offered. At these times, dominant cows will have priority at the feed bunk.
- When a competitive situation exists at the feed bunk, such as limited feed bunk space, dominant cows generally spend more total time eating than cows of lower rank, resulting in greater feed intake.
- When two feet of feed bunk space per cow is available, cow feeding behavior does not differ between a post and rail system or a headlock system at the feed bunk.
- Cows are more efficient when consuming few, longer meals than when consuming shorter meals, possibly because longer meals allow for more time to ruminate and rest.
- As competition for feed bunk space increases, cows display shorter average feeding times and faster eating rates, but total feed intake is not affected.
- In contrast, when cows are offered limited amounts of feed, dominant cows consume 14% more feed than submissive cows. Therefore, it is important that dairy cows have access to feed at all times of the day.

- The number of agonistic interactions, represented as displacements from the feed bunk, increases during the most competitive situations, and cows of lower social rank are more frequently displaced from the feed bunk than more dominant cows.
- With more competition at the feed bunk, cows of lower social rank tend to adjust their behavior to a larger extent than more dominant cows.
- Instead of eating, the subordinate cows are observed standing and lying more often near milking time, when feeding is preferred.

Resting Behavior and Rumination

- The amount of time cattle spend lying is important to promote rest and recovery.
- Cattle demonstrate a strong motivation to lie down.
- Most adult cattle lie on their sternum. Occasionally, they will lie flat on their sides.
- Some benefits of adequate resting time include reduced stress on feet and legs, reduced lameness, increased blood flow to the mammary gland, and greater overall cow health.
- The preferred amount of lying time by dairy cattle is estimated to be a minimum of 10 hours per day.
- In a typical day, a cow will spend 47% of her day lying in a stall, 18% feeding, 12% standing in a stall, 11% milking, 10% standing in the alley, and 2% drinking.
- If the facilities are not properly designed, cows might have a difficult time standing up and lying down, and might not get the amount of rest they need for optimal health and productivity.
- Adequate rumination activity, which occurs primarily during resting periods, is very important to maintain a healthy rumen microenvironment.
- A minimum of 50% of cows lying in stalls should be ruminating if the barn is well-designed.
- Social stress, such as overcrowding, can reduce rumination activity.
- Rumination acts as a relaxing and anti-boredom activity for dairy cows.

Behavior Disturbances

- Efforts must be made to reduce competition for feed, water, and shelter. Stocking density, space per cow, and the distribution of feed will affect cow feeding behavior and productivity.
- Highly repetitive coping behaviors help cows deal with stress. One common behavior is lapping the water cup. In general, if these behaviors are prevented from being performed, stress and its undesired health effects will increase.
- Frequent changes in milking or feeding routines, cow grouping, and stall location may add to the amount of stress a cow is experiencing.
- Nose pressing or leaning tends to increase when cows are housed in poorly designed stalls. Small or poorly designed stalls can increase standing time. Nose pressing can be seen as a cow's effort to achieve an endorphin release that relieves pain from severe lameness, mastitis, or abdominal discomfort.
- Rearing calves in isolation can result in adult cows that are not socially adjusted. They become less dominant and less interactive with other cows.
- Cattle reared in inadequate conditions can display behaviors that are considered abnormal or stereotypic, such as cross-sucking, biting objects, and tongue rolling.
- Dairy bulls are not to be trusted. Without warning, previously docile, submissive bulls can attack their handler and cause serious injury.



MISCELLANEOUS

SEE ALSO

Animal Welfare (www.fiveminutevet.com/ruminant)

Dairy Neifer Nutrition: Basics (www.fiveminutevet.com/ruminant)

Dairy Economics (www.fiveminutevet.com/ruminant)

Dairy Heifer Management Program (www.fiveminutevet.com/ruminant)

Suggested Reading

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Author Amber Adams-Progar

Consulting Editor Erica McKenzie

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