

Beef Cattle

Behavior and Handling

Understand Behavior to Improve Handling

By understanding cattle behavioral concepts and sensory characteristics, handlers can take advantage of natural cattle behaviors for low-stress handling. This can improve the overall safety of cattle handling. Proper animal handling also can result in a more efficient handling process and better cattle performance.

Cattle Senses

Cattle sense their environment primarily using their eyes, ears, and nose. They also respond to touch and rely partially on taste in grazing preferences.

The eyes are wide set with panoramic color vision. They can see approximately 300 degrees around but not directly behind themselves. Vertical vision of cattle is limited to about 60 degrees. An animal must lower its head to focus on the ground. Therefore, it is advisable to give cattle time to put their heads down to judge flooring during handling.

Cattle have poor depth perception and cannot focus quickly. They may balk at stark contrasts in lighting. A shadow on the ground may appear to the animal as a deep hole. Cattle have color vision except red. They are sensitive to harsh contrasts between light and dark colors. Cattle may balk less in handling facilities that are uniform in color.

Cattle are less able than humans to pinpoint the exact location of sound sources. They can determine sound sources to within about 30 degrees. Cattle can hear both lower volume and higher frequency sounds better than people and dislike loud, high-pitched sounds. Quiet handling of

cattle is advisable. Generally, cattle rely to a greater extent on hearing only when they have severe sight problems. They may suddenly swing around to investigate a noise.

Cattle use their sense of smell to identify other cattle and for heat detection and breeding activities. When an animal is frightened, it typically relies less on its sense of smell and more on vision and hearing. Certain smells may cause wariness or fear if cattle associate the smells with something bad.

Cattle interpret their environment through touch, as well. Firm strokes are often calming to cattle. This explains why they may reduce struggling when in a squeeze chute. Pats may be misinterpreted as hitting. Light touches may tickle or scare an animal and may be best avoided. Cattle are herd animals and are comforted by the feel of other animals around them, especially when within three feet. Cattle can make specific touch associations, so avoid violent or harassing touches.

Cattle can store fear memories long-term. These memories may be specific and associated with a certain person or object such as handling equipment. It is important to make the first interaction with an animal as stress-free as possible. Use calm handling to teach cattle to trust their handlers. Allow cattle time to investigate their environment to satisfy their curiosity. Habituate cattle to new people or objects.

Flight Zone and Point of Balance

Cattle exhibit a fight or flight response when exposed to a perceived threat. They are more likely to flee than fight in most cases but may fight when agitated. Cattle are easily spooked and will often retreat when facing an uncomfortable situation.



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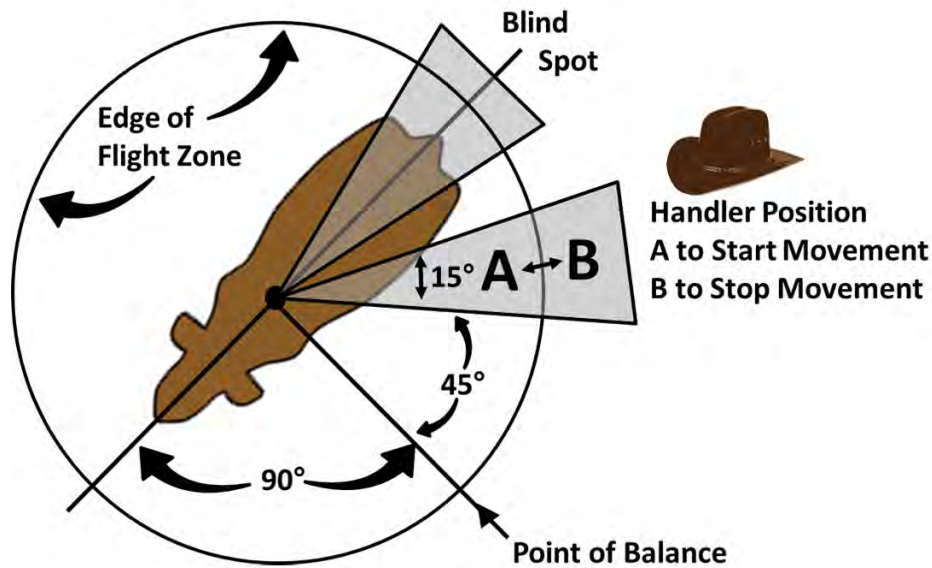


Figure 1. Overhead view of a cow, indicating flight zone, point of balance, blind spot, and handler position to start and stop animal movement. Adapted from Grandin and Deesing, 2008.

The flight zone is the distance that the cattle can be from handlers and still feel comfortable. It is their personal space. The flight zone distance varies from animal to animal. It tends to increase for less tame cattle, when cattle are approached from the head, when cattle are excited, or when cattle are worked on horseback. The flight zone tends to decrease when cattle are in a single-file chute.

Use the flight zone concept to move cattle quietly. When a person enters the flight zone, the animal typically moves away from the person. The animal stops moving when the handler moves out of the flight zone. Cattle have a wide area of peripheral vision, with only a small blind spot immediately behind them. Standing in an animal's blind spot is a bad idea because it may startle the animal, and the handler may be kicked. An animal is likely to turn when a handler enters its blind spot. Do not approach cattle from directly behind.

The point of balance is a place on the shoulder of the animal. Use this point to encourage the animal to go forward and backward. Cattle typically move forward (or backward) when a handler crosses the point of balance of each animal. If you don't want to move cattle in the opposite direction, be sure to exit the flight zone when crossing the point of balance. Move cattle calmly and slowly. Quick movements or loud noises can spook cattle and make moving them more difficult.

Take advantage of the flight zone and point of balance to herd cattle. Use non-electric driving aids ("persuaders"), such as plastic paddles, sorting sticks, flags, or streamers affixed to long handles, to quietly guide and turn animals. These tools can be used to turn cattle by blocking their vision on one side and should replace

electric prods as much as possible. To reduce the chance of an animal fighting its handler, never prod it when it has no place to go. Cattle may butt or intentionally run over people, particularly when provoked.

For safety and welfare reasons, minimize the use of electric prods. An electric prod should not be a person's primary driving tool. It should only be used when absolutely required to move a stubborn animal and then should be put back down. When cattle continuously balk, investigate and correct the reason rather than resort to overuse of electric prods. When cattle prods must be used, avoid contact with the eyes, rectum, genitalia, and udder. Never use driving aids powered by AC current unless manufactured and labeled specifically for that purpose.

Cattle Self-Defense Mechanisms

Cattle use several different methods to protect themselves, including flight, kicks, stomps, head butts, and squeezes. A spooked animal (even a small calf) can run into or over a person and cause severe injury. Mature cattle and calves have a powerful kick. Cows tend to kick with a roundhouse motion, whereas calves tend to kick straight back (see **Figure 2**). Leave plenty of room between cattle and people when working animals. Handlers need to be cautious of head butts and slinging. These head movements are especially dangerous with horned cattle, which can gore handlers or other cattle. Do not assume restraining cattle removes these risks. Cattle restrained in squeeze chutes can still sling their heads, stomp, and cause injury.

Cattle can squeeze or crush handlers or other animals between themselves and facilities. Standing

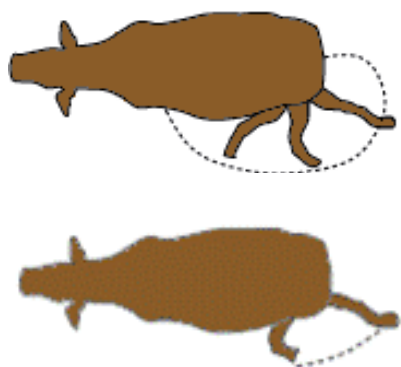


Figure 2. Mature cattle tend to kick forward, to the side, and then back (top). Calves tend to kick slightly out to the side and then back or straight back (bottom).

behind a gate (even a latched one) can result in injury if cattle kick or run into the gate. A person standing between a gate and a fence or otherwise in the path of cattle can be crushed between the gate and the fence or between cattle and the fence. The weight of cattle can put a great deal of force on a person. Even an animal turning can press a person against a fence and cause injury. Another risk is being pushed into sharp objects that may cause punctures.

Cattle tend to move in groups and follow the leader. This herd mentality can be used to move groups with less stress by focusing on getting the lead animals to move in the desired direction and then allowing the rest of the herd to follow. Avoid isolating individual animals when possible. Isolated animals are more likely to seek escape routes and display nervous behavior, leading to increased injury risk or performance losses. They will seek the company of other cattle and may run through fencing or people trying to rejoin the herd. Highly temperamental cattle may attack handlers when isolated. If an animal needs to be penned away from the herd, place a companion herdmate in the pen or nearby. It may be easier to move additional cattle along with one that needs to be handled rather than moving just the one animal. Do not chase lone animals.

Even tame cattle can injure handlers, especially if surprised. Never trust an animal, even if it is halter broken and normally docile. Maternal instincts, removal from familiar surroundings, and environmental agitators can all contribute to unpredictable cattle behavior. Handlers should never let their guards down when handling cattle. Dams with calves may exhibit aggressive behaviors to try to protect their young from danger. Cattle moved away from a familiar pasture or pen, removed from feed, separated from the herd, or approached by an unfamiliar person may act unexpectedly. Shadows, yelling, or other agitators may also cause unexpected behavior.

Safety for Cattle Handlers

Cattle can seriously injure or kill people. Being careless or in the wrong place at the wrong time can be costly. Livestock are a major cause of farm accidents. Nearly half of all cattle handling injuries involve gates and other physical barriers that handlers were pushed into or had pushed into them.

Safety is paramount for both handlers and livestock, and good facilities provide a safe working environment. Good pens, gates, and equipment help prevent injuries. Proper restraint is important when working with animals. If cattle are immobilized, they are less likely to be able to injure people during handling.

Use experienced people to operate squeeze chutes. Avoid standing directly in front of cattle when working with the head gate. Make sure restraining squeezes allow proper access to the animal.

Pay close attention to what is going on at all times during cattle handling to help keep injuries from occurring. Injuries are more likely if handlers are distracted. Observe cattle closely for signs of fear or distress. These signs include increased tail swishing, exposure of eye whites, raised heads appearing vigilant, ears pointed toward a concern, increased defecation, loose manure, quivering skin, and increased breathing rate. Signs of aggression include erratic movements, tail flicking, ground pawing, turning sideways, pinned back ears, and snorting. If an animal becomes agitated, the best thing to do may be to wait until the animal calms down before trying to move it.

Work calmly and try not to get too hurried or frustrated. Getting impatient and trying to go too fast can increase injury risk or reduce efficiency. Fill the crowd pen only half full instead of packing it. Do not make handling choices that increase injury risk like tying a lead rope to a person or standing directly behind a gate that could be pushed open.

Anticipate what cattle might do during handling, and adjust handling in response to animal behavior cues. Avoid leading cattle into an enclosed area without an escape route. Plan escape routes in advance of cattle handling. Wear appropriate attire, such as long pants and closed-toed shoes with good traction.

Cattle do not like to be restrained and will look for a way to escape. Most cattle have a great weight advantage over their handlers. Yet even smaller calves can hurt their handlers. Work with at least one other person when possible. Having enough workers on hand not only helps to improve efficiency but also ensures people are available in the case of a handling injury. Keep a mobile phone handy when handling cattle to call for assistance if needed.

Table 1. Temperament scoring scale and description.

Temperament score	Temperament classification	Temperament description
1	docile	Mild disposition. Gentle and easily handled. Stands and moves slowly during processing. Undisturbed, settled, somewhat dull. Does not pull on headgate when in chute. Exits chute calmly.
2	restless	Quieter than average, but may be stubborn during processing. May try to back out of chute or pull back on headgate. Some flicking of tail. Exits chute promptly.
3	nervous	Typical temperament is manageable, but nervous and impatient. A moderate amount of struggling, movement, and tail flicking. Repeated pushing and pulling on headgate. Exits chute briskly.
4	flighty, wild	Jumpy and out of control; quivers and struggles violently. May bellow and froth at the mouth. Continuous tail flicking. Defecates and urinates during processing. Frantically runs fence line and may jump when penned individually. Exhibits long flight distance and exits chute wildly.
5	aggressive	May be similar to Score 4, but with added aggressive behavior, fearfulness, extreme agitation, and continuous movement, which may include jumping and bellowing while in chute. Exits chute frantically and may exhibit attack behavior when handled alone.
6	very aggressive	Extremely aggressive temperament. Thrashes about or attacks wildly when confined in small, tight places. Pronounced attack behavior.

Adapted from Beef Improvement Federation, 2010.

Temperament

Important behaviors to beef cattle production include reactions to processing through a squeeze chute, maternal instincts at calving, newborn calf vigor, bull serving capacity, and foraging behavior. Among the most important of behavioral traits, temperament reflects the ease with which animals respond to handling, treatment, and routine management. Temperament is also referred to as disposition. Animals with temperament problems are a safety risk to handlers, themselves, and other animals in the herd. Temperament affects handling equipment requirements, operation liability exposure, beef quality assurance, and performance. Highly excitable cattle are more likely to have lower average daily gains and carcass quality grades.

Subjective pen or chute scores can be used to evaluate cattle temperament. The Beef Improvement Federation scoring scale for processing through a chute appears in **Table 1**. Evaluation of cattle temperament in a pen may be a more reliable evaluation of animal temperament than evaluation of an animal restrained in a chute. In addition, note that highly excitable cattle are more likely to exit chutes faster than less excitable cattle.

Temperament scoring should be conducted at weaning or yearling ages because an animal's behavior can be influenced by past experiences. This will reduce the extent to which current behavior has been influenced by prior handling experiences. Some breeds have developed temperament-related expected progeny differences (EPD) such as docility EPD. It is recommended to use this selection tool to select against highly excitable cattle.

Reduce Stress on Cattle

Stress compromises cattle health and makes cattle handling more difficult. There are many potential sources of cattle stress such as climate extremes, climate changes, disease, parasites, injuries, mud, noise, predators, poor nutrition, handling, calving, weaning, castration, dehorning, hauling, commingling, and isolation. Some of these factors are difficult to control or avoid, whereas management can largely control others. Minimize cattle stress by planning management procedures with stress reduction as a goal.

Reducing cattle stress during handling improves cattle performance, health, and well-being. Use of proper cattle handling techniques is critical for low-stress handling. Employ the cattle handling guidelines

listed above to make working cattle easier and safer for people and cattle. Adhere to best management practices and Beef Quality Assurance guidelines for cattle handling. Follow these tips to reduce cattle stress during handling:

- assess cattle flow
- use proper, maintained facilities
- have solid footing
- familiarize cattle with facilities
- move cattle carefully
- work cattle in groups
- use point of balance concepts
- call cattle rather than drive them
- prevent noise and distractions
- avoid stark lighting changes
- remove sharp objects
- use experienced people
- treat cattle with respect
- stay alert and calm
- watch for kicks and head butts
- limit use of prods
- use products carefully
- move cattle into chute easily
- prevent backing in working chute
- prevent turning in working chute
- properly restrain cattle when working them

Ensure that cattle handling facilities are designed and maintained to reduce cattle stress. Mississippi State University Extension Service Publication 2787 *Beef Cattle Handling Facilities* provides guidance on facilities design and use. For example, provide traction on flooring in barns and handling alleys to help prevent injuries to animals and handlers. Handling alleys and housing pens must be free of sharp edges and protrusions to prevent injuries to animals and handlers. Design and operate alleys and gates to avoid impeding cattle movement. When operating gates and catches, reduce excessive noise, which may cause distress to the animals. Adjust hydraulic or manual restraining chutes to the appropriate size of cattle to be handled. Regularly clean and maintain working parts of handling facilities to ensure the system functions properly and is safe for cattle and handlers. Mechanical and electrical devices used in cattle housing facilities must be safe.

Environmental conditions that contribute to cattle stress are not uncommon in Mississippi. Storms, heat, and humidity are examples of such conditions. MSU Extension Publication 2507 *Hurricane Preparedness and Recovery for Beef Cattle Operations* details management considerations with regard to severe weather. Extreme heat and humidity conditions can be problematic in Mississippi and pose a significant health risk to stressed cattle. When cattle are stressed during extreme heat conditions, they are more likely to become non-ambulatory, get sick, and die. In addition, feed

intake may be depressed in these conditions. Breeding programs in Mississippi should consider cattle heat stress tolerance and ability to adapt to their regional environment.

At a constant temperature, the heat index (temperature humidity index) increases as the relative humidity increases. Each one mile per hour increase in wind speed decreases the heat index by approximately one. Extreme heat conditions exist when temperature and humidity are at levels to create a heat index of 100 °F or higher.

During periods of high heat and humidity and little wind, take actions to minimize the effects of heat stress as cattle are processed. Provide adequate water. If possible, avoid handling cattle when the risk of heat stress is high. If cattle must be handled, a general rule is to work them before the heat index reaches 84, if possible. Work cattle more prone to heat stress first, earlier in the day. Limit the time cattle spend in handling facilities where heat stress may be more significant. Heat management tools, such as shades and sprinklers, should be considered if sufficient natural shade is not available.

Another means of limiting cattle stress is to offer cattle adequate space for comfort, socialization, and environmental management. Maintain pens, including manure harvesting, to help improve pen conditions. Monitor accumulation of mud on cattle as a measure of pen condition and cattle care in relation to weather conditions. Properly drain floors in housing facilities. Implement dust reduction measures where needed to improve animal performance.

Take seriously the responsibility to provide proper care to cattle. The Producer Code of Cattle Care funded by the Beef Checkoff includes general recommendations for care and handling of cattle addressing provision of—

- adequate food, water, and care,
- disease prevention practices,
- facilities that allow safe and humane cattle movement and/or restraint, and
- personnel properly trained to handle and care for cattle.

Make sure that all cattle handlers and caregivers follow the Producer Code of Cattle Care. Provide employees of the cattle operation with proper instruction, training, and oversight to perform their duties in accordance with these guidelines. Abuse of cattle is not acceptable under any circumstances. Do not tolerate anyone who willfully mistreats cattle.

For more information on cattle behavior and handling or other beef cattle production topics, contact an office of the Mississippi State University Extension Service or visit msucares.com/livestock/beef.

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